



CONSTRUCTION PROJECT

REQUEST FOR PROPOSAL (RFP)

RFP NO. 5004-0-2020

MARTIN COUNTY HIGH SCHOOL (MCHS) IMPROVEMENTS

**PURCHASING DEPARTMENT
2845 SE DIXIE HWY STUART, FL., 34997
TEL (772) 219-1255
EMAIL bids@martin.k12.fl.us**



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NOTICE OF REQUEST FOR PROPOSAL

Sealed Proposal packages must be received either by mail or hand delivery and time stamped in the Purchasing Office, on or before the date and time referenced below. It is the proposer’s responsibility to ensure that proposals are received in the Purchasing Department. Proposals received after closing date and time or submitted to any other District office will not be accepted or considered and will be retained unopened.

Solicitation Documents may be obtained by registering with DemandStar or Vendor Registry from the Purchasing Website: <https://www.martinschools.org/Page/945>.

Proposers who obtain solicitation documents from any other source are cautioned that the solicitation package may be incomplete. Furthermore, all addenda issued will be posted and disseminated by DemandStar and Vendor Registry to planholders/members.

The following meeting dates are subject to change according to the needs of the District.

RFP Number:	5004-0-2020
RFP Name:	Martin County High School (MCHS) Improvements
RFP Advertising/Publish Date:	January 31, 2020, February 7, 2020 & February 14, 2020
Preproposal Meeting followed by Site Visit:	February 19, 2020, at 10:00am
Questions Deadline:	February 26, 2019, by no later than 2:00 PM
RFP Closing Date/Time:	March 4, 2020, by no later than 2:00 PM
Proposed Evaluation Committee Mtg	March 17, 2020 at 11:00am
Anticipated Award / Contract Date	April 21, 2020
Contact Information:	Phone: (772) 219-1255 ext 203 Email: bids@martin.k12.fl.us
Email Notifications:	Start all email subject lines with the RFP number for faster recognition.
Submittal Requirements:	ONE (1) MARKED ORIGINAL, ONE FLASHDRIVE, AND FOUR (4) PHOTOCOPIES, OF THE COMPLETED PACKAGE in a sealed package to the address listed below. Facsimile or electronic responses shall not be accepted.
Submit RFP to:	Martin County School District Attn: Purchasing Department 2845 SE Dixie Hwy, Stuart, FL., 34997-5037
Mark Outside of Envelope	The Project Name, RFP Number, and time and date of the RFP opening shall be clearly marked on the outside of sealed package.
RFP Statement of Work:	This project consists of soliciting a licensed general contractor for the enhanced safety improvements and to perform work required for the Cafeteria and Music Buildings of the Martin County High School campus.

Proposers may not withdraw their RFP submittal for a period of ninety (90) calendar days after the day set for the opening of RFPs.

The District reserves the right to waive any informalities or irregularities, reject any and all proposals that are incomplete, conditional, non-responsive, or which contain additions not allowed for; to reject any or all proposals in whole or in part with or without cause; to re-advertise for proposals, to award in whole or in part to one or more Proposers, and to accept the proposal which best serves the District.



ADVERTISEMENT PUBLICATION

Martin County School Board
2845 S.E. Dixie Highway
Stuart, FL 34997

RFP# 5004-0-2020

MARTIN COUNTY HIGH SCHOOL (MCHS) IMPROVEMENTS

The School Board of Martin County, Florida, is seeking qualified, experienced, licensed General Contractors to enhance safety improvements and to perform the required work for the Cafeteria and Music Buildings of the Martin County High School (MCHS) campus located at 2801 South Kanner Highway, Stuart, FL 34994. All work for this project, including but not limited to, all profit and overhead, incidentals, all labor, mobilization/demobilization, supervision, testing, machinery, equipment, tools, materials, coordination with utility companies, cleanup and other means of construction necessary to complete the described work in accordance with drawings, specifications, and other contract documents.

Solicitation Documents may be obtained by registering with DemandStar and/or Vendor Registry from the Purchasing Website: <https://www.martinschools.org/Page/945>. The District is not responsible for the content of any submittal package received through any 3rd party service or any other source.

There will be a **non-mandatory pre-proposal meeting**, followed by a site visit, **on February 19, 2020, at 10:00 AM**, at the Martin County High School, 2801 S. Kanner Highway, Stuart, Florida 34994. All prospective proposers are encouraged to attend.

Firms desiring to provide the services described shall submit one (1) marked original and four (4) copies with **one (1) electronic copy (PDF format preferred) on a flash drive** of their submittal package, containing all of the required information **no later than 2:00pm, March 4, 2020** to:

Mail/Overnight/Hand Deliver Submittal Responses to:

Martin County School District
Attn: Purchasing Department
2845 SE Dixie Hwy
Stuart, FL., 34997-5037

Mark outside of envelope: RFP#, Project Name, time and date of the RFP opening

Questions: Email bids@martin.k12.fl.us

Publish Date: January 31, 2020, February 7, 14 2020



SECTION II

DEFINITIONS, ABBREVIATIONS, & ACRONYMS

Wherever used in the Contract Documents the following terms have the meanings indicated in the industry which are applicable to both the singular and plural thereof:

- 1.1. **Acceptance:** By the DISTRICT'S PROJECT MANAGER of the Work as being fully complete in accordance with the Contract Documents.
- 1.2. **Addenda:** Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bidding Requirements or the Contract
- 1.3. **Application for Payment:** The form accepted by the CONSULTANT which is to be used by CONTRACTOR to request progress payments or final payment and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
- 1.4. **RFP:** The formal firm price offer of the PROPOSER submitted on the prescribed form setting forth the prices for the WORK in response to the REQUEST FOR PROPOSALS.
- 1.5. **PROPOSER:** Any person, firm or corporation submitting to this RFP for the Work directly to the DISTRICT.
- 1.6. **RFP Documents:** Includes the Request for Proposal, Instructions to Proposers, RFP Form, and proposed Contract Documents (including all Addenda issued prior to receipt of RFPs).
- 1.7. **Bonds:** Bond Guarantee, performance and payment bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the Contract Documents and in accordance with the law of the place of the project.
- 1.8. **Cable:** An assembly of one or more insulated conductors or optical fibers, within an enveloping sheath
- 1.9. **Change Order:** A written order to the CONTRACTOR executed by the DISTRICT, CONSULTANT, and CONTRACTOR authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after execution of the Contract.
- 1.10. **Consultant/Engineer of Record:** The Architect or Engineer, also referred to as **EOR (Engineer or Record)**, firm or corporation named as such in the Contract Documents that acts as the District's authorized agent within the scope of work entrusted to them by the District.
- 1.11. **Consultant's Representative:** An authorized representative of the Consultant assigned to observe the work performed and materials furnished by the CONTRACTOR.
- 1.12. **Contract:** The written agreement between DISTRICT and CONTRACTOR covering the WORK to be performed.
- 1.13. **Contract Documents:** The Contract Documents establish the rights and obligations of the parties. The Notice of Tentative Award, including the contract is directed for signature as acceptance of offer by the Contractor, prior to Board approval for award. Once approved, a notice of award requesting the bonds and insurance are requested. The executed contract documents, including exhibits (solicitation/submittal), bonds, and insurance are provided to the Contractor.
- Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by DISTRICT to CONTRACTOR are not Contract Documents.
- 1.14. **Contract Price:** The total monies payable by the DISTRICT to the CONTRACTOR under the terms and conditions of the Contract Document.
- 1.15. **Contract Time:** The number or numbers of successive days or dates stated in the Contract Documents for the completion of the WORK.
- 1.16. **CONTRACTOR:** The individual, partnership, corporation, joint-venture, or other legal entity with whom the DISTRICT has entered into the Contract. Can be used interchangeably with the term bidder and / or vendor.
- 1.17. **Day:** A calendar day of 24 hours measured from midnight to the next midnight.
- 1.18. **Defective Work:** WORK that is unsatisfactory, faulty, or deficient; or that does not conform to the Contract Documents; or that does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents; or WORK that has been damaged prior to the Consultant's recommendation of final payment.
- 1.19. **District:** The Martin District School District, Florida, a Florida school district, its authorized and legal representatives, the public entity with whom the Contractor has entered into the Contract and for whom the WORK is to be provided.
- 1.20. **District Representative:** The person or persons designated by the DISTRICT'S PROJECT MANAGER. The DISTRICT'S PROJECT MANAGER. This may include the CONSULTANT/EOR.
- 1.21. **DP:** Dead pairs: Unused copper pairs terminating within splice case, but without being splices to outgoing cable.
- 1.22. **Drawings:** The drawings, plans, maps, profiles, diagrams, and other graphic representations which show character, location, nature, extent and scope of the WORK, which have been prepared or approved by Consultant and are included and/or referred to in the Contract Documents. Shop Drawings are not Drawings as so defined.
- 1.23. **Effective Date of the Contract:** The date indicated in the Contract, but if no such date is indicated it means the date on which the Contract is signed by the last of the two parties to sign the Contract.
- 1.24. **Field Order:** A written order issued by the DISTRICT'S PROJECT MANAGER or by the CONSULTANT which clarifies or interprets the Contract Documents in accordance with Article 9.4 or orders minor changes in the Work in accordance with Article 10.1 of Supplementary Conditions.

1.25.**GEC:** Grounding electrode conductor: Conductor used to connect grounding electrode to equipment grounding conductor, or to grounded conductor of circuit at service equipment, or at source of separately derived system

1.26.**GP:** Grounding electrode: Conductor (rod, pipe or plate or group of conductors) in direct contact with earth for purpose of providing low-impedance connection to earth.

1.27. **General Requirements:** See Special Conditions and Division 1 of the Technical Specifications.

1.28.**Handbox:** Rectangular or square underground pathway element similar to small maintenance hole, which cannot be fully entered, that allows for pulling point or splice point in power, security or communications pathway

1.29.**Handhole:** A round underground pathway element similar to a handbox, which cannot be fully entered, that allows for a pulling point in a pathway

1.30.**ICP:** Inside Cable Plant: Part of Information Transport System running within buildings. ICP elements include workstation outlet assembly, cabling to the workstation from network rooms, backbone cabling within building, backbone cabling running between physically contiguous buildings, network racks and hardware (routers, switches, hubs, firewalls, etc.), patch panels, punch blocks, fiber distribution panels, patch cords, and cross-connect cables/wires.

1.31.**Identifier:** An item of information that links a specific element of the Information Transport System infrastructure with its corresponding record.

1.32.**Infrastructure (Information Transport System):** A collection of those Information Transport System components, excluding equipment, that together provides the basic support for the distribution of all information within a building or campus

1.33. **Irregular Bids:** Irregular Bids are defined as those containing serious omissions, unauthorized alternative Bids, incomplete Bids or unbalanced Bids.

1.34.**ITS:** Information Transport System: Copper cabling or optical fiber for transmission of information on School District property. Transmission includes data, video, voice, fire alarm, security, access control, and other low-voltage networks. Information Transport System is not limited to School District-owned cabling, but includes copper and optical fiber, and equipment owned by outside providers carrying School District's information. Pathways are not limited by School District's ownership, but include those owned by any third party. Information Transport System may be referred to as "the network" within project documents

1.35.**Laws and Regulations:** Laws, rules, codes, regulations, ordinances and/or orders promulgated by a lawfully constituted body authorized to issue such Laws and Regulations.

1.36.**Linkage:** A connection between a record and an identifier or between records.

1.37.**Maintenance (man) holes:** Underground pathway element large enough for person to fully enter work, used to provide access to underground cable to pull, splice, and maintain.

1.38.**Media (Information Transport System):** Wire, cable, or conductors used for Information Transport System.

1.39. **Notice to Proceed:** The written notice issued by the DISTRICT, or its agents, to the CONTRACTOR authorizing the CONTRACTOR to proceed with the WORK and establishing the date of commencement of the Contract Time and the date the Contract WORK is to be completed.

1.40. **Notice of Tentative (or Intent to) Award:** The official written notice by the DISTRICT to the apparent successful PROPOSER giving authorization to enter into an agreement,

stating that upon compliance and Board approval with the conditions precedent enumerated therein within the time specified, and receipt of accepted offer.

1.41.**OB:** Outlet box: Metallic or nonmetallic box used to hold Information Transport System outlets/connectors or transition devices

1.42.**OCP:** Outside Cable Plant: Part of Information Transport System running between buildings, from building to definable exterior point, between definable exterior points, or from non-School District source to School District building or definable exterior point. OCP includes termination punch blocks, fiber distribution panels, interior splices for outside to inside optical fiber transition, and other initial device into which outside cable attaches. OCP does not include backbone cable running between physically contiguous buildings unless cabling enters OSP pathway element (e.g. OSP conduits, maintenance holes, etc.). OCP includes underground cabling and aerial cabling.

1.43.**Outlet(Connector) (Information Transport System):** Connecting device in work area on which horizontal cable or outlet cable terminates

1.44.**Partial Utilization:** Placing a portion of the WORK in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the WORK.

1.45.**Pathway:** Facility for the placement of Information Transport System cable.

1.46. **Project:** The total construction of which the WORK to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.47.**Record:** Collection of detailed information related to specific element of Information Transport System infrastructure

1.48.**Report:** Presentation of collection of information from various records.

1.49. **Resident Project Representative (RPR):** The authorized representative of the CONSULTANT who is assigned to the Site or any part thereof.

1.50.**RESPONSIBLE BIDDER, PROPOSER, OFFERER, QUOTER, OR RESPONDENT** - means an individual or business which has submitted a bid, offer, proposal, quotation, or response, which has the capability in all respects to perform fully the contract requirements, and the integrity and reliability which will give reasonable assurance of good faith and performance.

No proposal will be accepted from, nor will any contract be awarded to, any person who is in arrears to the District, upon any debt or contract, or who has defaulted, as surety or otherwise, upon any obligation to the District, or who is deemed irresponsible or unreliable by the Martin County School Board in its sole discretion

1.51.**RESPONSIVE BIDDER, PROPOSER, OFFERER, QUOTER, OR RESPONDENT, VENDOR, CONTRACTOR** means an individual or business which has submitted a bid, offer, proposal, quotation or response, which conforms in all material respects to the solicitation, including, but not limited to compliance with any M/WBE requirements contained within the solicitation.

1.52. **Shop Drawings:** All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by or for the CONTRACTOR, a Subcontractor, manufacturer, supplier or distributor and which illustrate the equipment, material or some portion of the Work and as required by the Contract Documents. Shop Drawings are not part of the Contract Documents and failure of the CONSULTANT or the COUNTY or any of his representatives to take exception to any product, material, system or installation depicted on Shop Drawings that are not in conformance with the requirements of the Contract Documents shall not constitute a Field Order or Change Order or any other Modification of the Contract Documents, and shall not relieve the CONTRACTOR from complying with any portion of the Contract Documents.

1.53. **Space (Information Transport System):** Area used for housing installation and termination of Information Transport System equipment and cable, e.g., equipment rooms, network rooms, work areas, and maintenance holes/handboxes/handholes

1.54. **Special Conditions:** When included as a part of the Contract Documents, Special Conditions refer only to the Work under this Contract. Special Conditions take precedent over the General Conditions.

1.55. **Specifications:** Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the WORK and certain administrative details applicable thereto.

1.56. **Splice:** Joining of conductors in splice closure, meant to be permanent.

1.57. **Splice box:** Box, located in pathway run, intended to house cable splice.

1.58. **Splice closure:** Device used to protect splice.

1.59. **Sub-Proposer:** One who submits a proposal to Primary Proposer.

1.60. **Subcontractor** - An individual, firm, or corporation having a direct contract with the CONTRACTOR or with any other Subcontractor for the performance of a part of the WORK at the Site.

1.61. **Substantial Completion:** For purposes of this Contract, and for compliance of those procedures, duties and obligations as set forth in Florida Statutes §218.70 and §218.735, the term Substantial Completion shall be as follows, in lieu of any other definition:

- A. "Substantial Completion" is defined as that point where the District is able to enjoy beneficial occupancy of the Work and where the Work has achieved that level of completion such that District is able to utilize the entire Project for its intended purposes, including but not limited to the completion of all specified systems and items relating to life safety and regulatory use, with the exception of incidental or incomplete items except where a lack of completion of such incidental or incomplete items of Work shall adversely affect the complete operation of other areas of the Work.
- B. Additional conditions (if any) needed to achieve Substantial Completion of the Work and which are project specific are as set forth in attached Technical Specifications.
- C. When the entire Project is considered to be Substantially Complete, this does not constitute Final Acceptance or Final Completion of the entire Project.

1.62. **Successful Proposer:** The most qualified, responsible and responsive Proposer to whom District (on basis of District's evaluation as hereinafter provided) makes an award.

1.63. **Supplementary Conditions:** The part of the Contract Documents which amends or supplements these General Terms and Conditions.

1.64. **Supplier:** A manufacturer, fabricator, supplier, distributor, materialman or vendor.

1.65. **Surety:** The corporate body which is bound with the CONTRACTOR and which engages to be responsible for the CONTRACTOR and his acceptable performance of the Work.

1.66. **Termination position:** Discrete element of termination hardware where information Transport System conductors are terminated

1.67. **Unbalanced Bids:**

- A. **Mathematically Unbalanced Bid** means a bid containing lump sum or unit bid items which do not reflect reasonable

actual costs plus a reasonable proportionate share of the bidder's anticipated profit, overhead costs, and other indirect costs.

- B. **Materially Unbalanced Bid** means a bid which generates a reasonable doubt that award to the bidder submitting a mathematically unbalanced bid will result in the lowest ultimate cost to the City; or which is so mathematically unbalanced as to result in an advance payment.

1.68. **Unit Price Work:** WORK to be paid for on the basis of unit prices.

1.69. **Utilities:** All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground or above ground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water supply or distribution, sewage and drainage removal, traffic or other control systems.

1.70. **Work:** Any and all obligations, duties and responsibilities necessary to the successful completion of the Project assigned to or undertaken by Contractor under the Contract Documents, including all labor, materials, equipment and other incidentals, and the furnished thereof.

1.71. **Work Area (work station):** Building space where occupants interact with Information Transport System terminal equipment

1.72. **Work Change Directive:** A written directive to Contractor, issued on or after the Effective Date of the Contract and signed by the District and recommended by the Consultant/EOR, ordering an addition, deletion or revision in the WORK, or which references an emergency or unforeseen physical conditions under which the WORK is to be performed. A Work Change Directive may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Change Directive shall be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time.

1.73. **Written Amendment:** A written amendment of the Contract Documents, signed by the DISTRICT and CONTRACTOR on or after the Effective Date of the Contract and normally dealing with the non-engineering or non-technical rather than strictly WORK related aspects of the Contract Documents.

149. **Intent of Certain Terms:**

- A. Furnish, Install, Perform, Provide

- 1) The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
- 2) The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
- 3) The words "perform," or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials or equipment complete and ready for intended use.

- B. When "furnish," "install," "perform," or "provide," is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of contractor, "provide" is implied.

- C. Unless stated otherwise in the contract documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the contract documents in accordance with such recognized meaning.

150. Abbreviations, Acronyms, and Symbols:

Reference, Design Standards and Abbreviations: Any reference to published specifications or standards of any organization or association or as noted in Florida Building Code, Chapter 2, and Florida Fire Prevention Code are applicable; and shall comply with the requirements of the specification or standard which is current on the date of Advertisement for Bids. In case of a conflict between the referenced specifications or standards, the one having the more stringent requirements shall govern.

Documents listed shall be standard references currently in effect at project commencement.

In case of conflict between the referenced specifications or standards and the Contract Documents, the Contract Documents shall govern.

A. ABBREVIATIONS, REFERENCE STANDARDS, AND ACRONYMS

AA	Aluminum Association
AAA	American Arbitration Association
AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AASHO	American Association of State Highway Officials
ABA	American Bar Association
ABMA	American Boiler Manufacturers Association
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
ACR	Attenuation-to-Crosstalk Ratio
ADA	Americans with Disabilities Act
AEIC	Association of Edison Illuminating Companies
AFBMA	Anti-Friction Bearing Manufacturers Assoc.
AFF	Above finished floor
AGA	American Gas Association
AGC	Associated General Contractors of America
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AI	The Asphalt Institute
AIA	American Institute of Architects
AIA	American Insurance Association
AIMA	Acoustical and Insulating Materials Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Condition Association
ANSI	American National Standard Institute
ANSI/UL263	Fire Tests of Building Construction and Materials.
ANSI/UL723	Surface Burning Characteristics of Building Materials.
ANSI/UL1479	Fire Tests of Through Penetration Firestops.
ANSI/UL2079	Tests for Fire Resistance of Building Joint Systems.
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ARI	American Refrigeration Institute
ASA	American Standards Association (Now ANSI)
ASAHC	American Society of Architectural Hardware Consultants
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASSCBC	American Standard Safety Code for Building Construction
ASSHTO	American Association of State Highway Transportation Officials
ASTM	American Society for Testing and Materials
ASTM/D16	Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products for interpretation of terms used herein.

ASTM/D4442	Test Method for Moisture Content of Wood.
ASTM/E-84	Surface Burning Characteristics of Building Materials.
ASTM/E119	Fire Tests of Building Construction & Materials
ASTM/E814	Fire Tests of Through Penetration Fire Stops,
ASTM/E1966	Test Method for Fire Resistive Joint Systems.
ASTM/E1399	Test Method for Cyclic Movement & Measuring Minimum & Maximum Joint Widths of Architectural Joint Systems
AWG	American Wire Gauge
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Bureau
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America (formerly SCPI)
BD	Building distributor (replacing main-cross connect and MDF as "building service" room identifiers).
BICSI®	Building Industry Consulting Service International, Inc.
BTU	British Thermal Unit.
CATV	Community Antenna Television (cable television).
CD	Campus distributor (replacing main-cross connect and MDF as "campus-wide service" room identifiers). Also, compact disk for storage of audio or video information.
dB	Decibel.
CDA	Copper Development Association
CFS	Cubic Feet Per Second
CMAA	Crane Manufacturers Association of America
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard
DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Association
DOT Spec	Standard Specification for Road and Bridge Construction Florida Department of Transportation, 1982
E/A	Engineer and/or Architect
EDA	Economic Development Association
EEI	Edison Electric Institute
EF	Entrance Facility
EIA	Electronic Industries Alliance
ELFEXT	Equal Level Far-End Crosstalk
EMC	Electromagnetic Compatibility.
EMI	Electromagnetic Interference.
EMT	Electrical metallic tubing.
ENT	Electrical nonmetallic tubing.
EPA	Environmental Protection Agency
EPDM	Ethylene-polypropylene-diene membrane
ER	Equipment Room. Replacing "TR"
FCC	Federal Communications Commission
FCI	Fluid Control Institute
FD	Floor distributor (replacing network room, intermediate and horizontal cross-connect, and telecommunications as "building service" room identifiers). Also, Floor Drain as part of building plumbing system
FDDI	Fiber Distribution Data Interface.
FDER	Florida Department of Environmental Regulation
FDOT	Florida Department of Transportation
Fed Spec	Federal Specification
FEXT	Far-End Crosstalk
FMC	Flexible metallic conduit
FOTP	Fiber Optic Test Procedure
FPL	Florida Power and Light
FPS	Feet Per Second
Freq	Frequency
FS	Federal Standards
GA	Gypsum Association
GE	Grounding Equalizer

Gnd Ground
 GPM Gallons Per Minute
 HB Handbook. Also, hose bibb for water supply part of plumbing system.
 HC Horizontal Cross-Connect (replaced by floor distributor "FD")
 HH Handhole
 HMI Hoist Manufacturers Institute
 HP Horsepower
 HSBII Hartford Steam Boiler Inspection and Insurance Co.
 HVAC Heating, Ventilation, and Air Conditioning
 Hz Hertz
 IC Intermediate Cross-Connect (replaced by building distributor "BD").
 ID Inside Diameter
 IDC Insulation Displacement Connectors
 IEEE Institute of Electrical and Electronic Engineers
 IFI Industrial Fasteners Institute
 IMC Intermediate metal conduit
 IPCEA Insulated Power Cable Engineers Association
 IPS Iron Pipe Size
 ISO International Organization for Standardization
 ISP Inside Cable Plant
 LFMC Liquidtight flexible metal conduit
 LFNC Liquidtight flexible nonmetallic conduit
 Mbps Megabits per second.
 MER Main Equipment Room
 MF Factory Mutual System
 MGD Million Gallons Per Day
 MH Maintenance Hole
 MHI Materials Handling Institute
 MIL Military Specification
 MMA Monorail Manufacturers Association
 MHz Megahertz
 NBFU National Board of Fire Underwriters
 NBHA National Builders' Hardware Association
 NBR Acrylonitrile-butadiene rubber
 NBS National Bureau of Standards
 NCSA National Crushed Stone Association
 NCSPA National Corrugated Steel Pipe Assoc
 NEC National Electrical Code
 NECA National Electrical Contractors' Assoc
 NEMA National Electrical Manufacturers' Association
 NESC National Electric Safety Code, C2-1997.
 NFPA National Fire Protection Association
 NLA National Lime Association
 NPC National Plumbing Code
 NPT National Pipe Threads
 NR Network Room
 NRTL National Recognized Testing Laboratory
 NSC National Safety Council
 NSF National Sanitation Foundation
 OD Outside Diameter
 OSHA U.S. Department of Labor, Occupational Safety and Health Administration
 OCP Outside Cable Plant.
 OTDR Optical Time Domain Reflectometer
 PCA Portland Cement Association
 PCI Prestressed Concrete Institute
 PR Pair
 PS United States Products Standards
 PSI Pounds per Square Inch
 PSIA Pounds per Square Inch Atmosphere
 PSIG Pounds Per Square Inch Gauge
 RCDD® : Registered Communications Distribution Designer
 RPM Revolutions Per Minute
 RFI: Radio Frequency Interference
 RH Relative Humidity.
 RNC Rigid nonmetallic conduit.
 SAE Society of Automotive Engineers
 SDI Steel Decks Institute
 SIGMA Sealed Insulating Glass Manufacturer's Association
 SJI Steel Joists Institute

SMACNA Sheet Metal and Air Conditioning Contractors' National Association
 SM Single Mode
 SSI Scaffolding and Shoring Institute
 SSPC Steel Structures Painting Council
 SSPC Structural Steel Painting Council
 STA Station (100 feet)
 TAS Technical Aid Series
 TBB Telecommunication Bonding Backbone
 TCA Tile Council America
 TDH Total Dynamic Head
 TE Telephone Equipment (Wall Mounted Equipment Rack)
 TGB Telecommunications Grounding Buss Bar
 TH Total Head
 TIA Telecommunications Industry Association.
 TMGB Telecommunications Main Grounding Buss Bar
 UBC Uniform Building Code
 UL Underwriter's Laboratories, Inc.
 UOM Units of Measure-Weights and Measures shall be as identified by Weights and Measures Division, NIST, U. S. Department of Commerce, 100 Bureau Dr., Stop 2600, Gaithersburg, MD 20899-2600.
 UPS Uninterruptible Power Supply
 USASI United States of American Standards Institute
 WAO Work Area Outlet

B. ITSA/WARNOCK-HERSEY - PRODUCT DIRECTORY

NFPA 101: Life Safety Code - National Fire Protection Association (NFPA).
 NFPA 70: National Electrical Code - National Fire Protection Association (NFPA).
 ANSI/NECA/BICSI-568-2001 "Installing Commercial Building Telecommunications Cabling".
 ANSI/TIA/EIA-568-B.1 and addenda "Commercial Building. Telecommunications Cabling Standard - Part 1: General Requirements".
 ANSI/TIA/EIA-568-B.2 and addenda "Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair".
 ANSI/TIA/EIA-568-B.3 and addenda "Commercial Building Telecommunications Cabling Standard - Part 3: Optical Fiber Cabling and Components Standard".
 ANSI/TIA/EIA-569-B and Addenda "Commercial Building Standard for Telecommunications Pathways and Spaces".
 ANSI/TIA/EIA-606-A and Addenda "Administration Standard for Telecommunications Infrastructure of Commercial Buildings".
 ANSI-J-STD-607-A and Addenda "Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications".
 ANSI/TIA/EIA-526-7 and Addenda "Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant".
 ANSI/TIA/EIA-526-14A and Addenda "Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant".
 ANSI/TIA/EIA-758 "Customer Owned Outside Plant Telecommunications Cabling Standard".
 IEC/TR3 61000-5-2 - Ed. 1.0 and amendments. "Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines – Section Earthing and cabling".
 ANSI/NFPA 70 National Electrical Code, 2008 Edition.
 BICSI Telecommunications Distribution Methods Manual (TDMM).
 BICSI Telecommunications Cabling Installation Manual (TCIM).
 BICSI Customer-Owned Outside Plant Design Manual, 3rd, Edition (CO-OSP).
 Applicable Martin County Codes and Regulations.

Underwriters Laboratories (UL).

FCC -Federal Communications Commission.

Occupational Safety and Health Regulations (OSHA).

Florida Fire Protection Code (including NFPA 101 Life Safety Code).

Applicable Florida Statutes and Administrative Rules.

Manufacturers Training Manuals (Design and Installation).

NACE (National Association of Corrosion Engineers) - Industrial Maintenance Painting.

NPCA (National Paint and Coatings Association) - Guide to U.S. Government Paint Specifications.

PDCA (Painting and Decorating Contractors of America) - Painting - Architectural Specifications Manual.

SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

- o SSPC-SP 1 – Solvent Cleaning.
- o SSPC-SP 2 – Hand Tool Cleaning.
- o SSPC-SP 3 – Power Tool Cleaning.
- o SSPC-SP 13 – Nace No 6 Surface Preparation for Concrete.

UL Underwriters Laboratories Fire Resistance Directory.

Note: Additional abbreviations and symbols are shown on the Drawings.



SECTION III

INSTRUCTIONS TO PROPOSERS

1. **REQUIREMENTS FOR PERSONNEL ENTERING DISTRICT PROPERTY:**

Possession of firearms will not be tolerated in or near school buildings. Nor will violations of Federal or State Laws and any applicable District policy regarding Drug Free Workplace be tolerated. Violators shall be subject to immediate termination. "Firearm" means any weapon (including a starter gun or antique firearm) which will, is designed to, or may readily be converted to expel a projectile by the action of an explosive; the frame or receiver of any such weapon; any destructive device; or any machine gun.

No person who has a firearm in their vehicle may park their vehicle on District property. Furthermore, no person may possess or bring a firearm on District property.

If any employee of an awarded Proposer or subcontractor is found to have a firearm on District property, said employee shall be terminated from the project. If the awarded Proposer or subcontractor fails to ensure that said employee is restricted from the project may result in contract cancellation and/or termination.

Proposers are advised that they are responsible to ensure that no employee, agent or representative of their company who has been convicted or who is currently under investigation for a crime against children in accordance with section 435.04, Florida Statutes shall enter any school site.

2. **FINGERPRINTING, JESSICA LUNSFORD ACT:** Contractor, his subcontractors, vendors and suppliers who are to be permitted access to school grounds while students are present, or have direct contact with students or have access to or control of school funds shall obtain Level 2 background screening in accord with Florida Statute FS1012.465 – Jessica Lunsford Act.

- 2.1 Level 2 screening excludes personnel working on school district property where students are present who have criminal records that include sexual offender, sexual misconduct with developmentally disabled or mental health patients, terrorism, murder, kidnapping, lewd, lascivious or indecent acts or exposure, incest, child abuse or neglect.
- 2.2 Persons screened as noted above with other types of criminal history may be allowed on school grounds provided under following conditions:
- 2.3 Contractor/CM, subcontractors, vendors and suppliers shall be under continuous direct supervision of school district employee or Level 2 screened and cleared employee as noted above.
- 2.4 Contractor/CM, subcontractors, vendors and suppliers may be allowed on student occupied site if area of construction is isolated from students by continuous six foot high chain link fence separating work area and school.
- 2.5 Persons with current Level 2 clearance who are subsequently arrested for disqualifying offenses shall be disqualified from access to school sites and shall immediately surrender their Photo ID Badge to their employer who shall be responsible for returning badge to Martin County School District's Department of Human Resources within 48 hours of arrest or notice of arrest or criminal offense.
- 2.6 Persons failing to notify their employer and Martin County School District's Department of Human Resources within 48 hours of arrest will be charged with 3rd degree felony, punishable by up to five year's imprisonment and \$1,000 fine.
- 2.7 Employers of persons having been arrested for disqualifying offenses who subsequently allows said employee to continue working on school property may also be charged with 3rd degree felony, punishable by up to five year's imprisonment and \$1,000 fine.

- 2.8 Contractor/CM, his subcontractors, vendors and suppliers working on school board sites shall be fingerprinted and obtain work badges.
- 2.9 Questions regarding fingerprinting or identification badge processing may be directed to District Personnel Department at (772)219-1200, Ext. 296.
- 2.10 The fingerprint screening must be completed in advance of the awarded Proposer providing any services. The awarded Proposer shall bear the cost of acquiring the background screening required by Fla. Stat. 1012.32, and any fee imposed by the Florida Department of Law Enforcement to maintain the fingerprints provided with respect to the awarded Proposer and its employees. Awarded Proposer shall provide District with a list of its employees. Awarded Proposer shall update these lists in the event that any new employees are added and awarded Proposer agrees that new employees shall be fingerprinted. Awarded Proposer agrees that in the event any employee is convicted of a criminal offense, the awarded Proposer shall notify the District within forty-eight (48) hours.
- 2.11 The parties agree in the event that the awarded Proposer fails to perform any of the duties described in the above paragraph, this shall constitute a breach of the contract entitling the District to terminate immediately with no further responsibility to make payment or perform any other duties under this contract. Awarded Proposer agrees to indemnify and hold harmless the District, its officers and employees from any liability whatsoever resulting from awarded Proposer's failure to comply with the requirements of this paragraph or Fla. Stat. 1012.32 and 1012.465.

3. **QUALIFICATIONS OF PROPOSERS:** To demonstrate qualifications to perform the WORK, each Proposer must be prepared to submit within five (5) calendar days of District's request written evidence acceptable to the District documentary evidence demonstrating, financial data/fiscal responsibilities, previous experience, present commitments and other such data as may be called for to meet all of the Proposer's obligations set forth in the RFP documents. Each submittal must contain evidence of Proposer's qualifications to do business in the State of Florida or obtain such qualification prior to award of the contract.

The District reserves the right to contact any of the firms listed by Proposers in any sections as references or any additional firms or individuals to review Proposer's qualifications. Submittals that do not comply with these requirements may be rejected at the option of the District.

The project shall be constructed by a firm with the primary qualifying agent licensed as a Contractor pursuant to and as defined by Florida Statute 489, and shall have been employed full time by the construction firm for at least one year prior to this project's due date.

4. **ANNUAL APPROPRIATION:** This RFP is conditional upon the District having funding to implement the Contract.
5. **DEFINED TERMS:** Terms used in these Instructions to Proposers, have the meanings assigned to them in the Industry involved in the subject matter of the RFP, in the Martin County School District, Standard General Conditions of the Construction Contract.
6. **COST OF PROPOSAL:** Costs, either direct or indirect, incurred by the Proposer in the preparation, presentation, demonstration, delivery or for any other reason associated with the submittal of



this RFP is solely the responsibility of the Proposer and not the District, and are not to be charged to the District.

7. **BACKGROUND INVESTIGATION:** As a part of the RFP evaluation process, the District may conduct a background investigation including a criminal record check of Proposer's officers and/or employees, by the Sheriff's Office. The Proposer's submission of a RFP constitutes acknowledgement of and consent to such investigation. The District shall be the sole judge in determining the Proposer's qualifications.

8. **FACILITIES:** The District reserves the right to inspect the Proposer's facilities at any reasonable time, prior to award of the Proposal, during normal working hours, with prior notice to determine that it has a bona fide place of business, and is a responsible Proposer.

9. **INQUIRIES/AVAILABILITY:** Inquiries concerning Proposal Submittals should be made in writing. The District will respond to written inquiries, if received at least 10 calendar days prior to the date scheduled for opening the proposals. The District shall record its responses to inquiries and any supplemental instructions in the form of a written addendum. If addenda are issued, the District **shall make every attempt to issue such addenda at least 7 calendar days before the date fixed for receiving the proposals. Written addenda shall be disseminated via the Purchasing Website: <https://www.martinschools.org/Page/945>** to Vendor Registry and DemandStar. No interpretation shall be considered binding unless provided in writing to the Martin County School District Purchasing Department. **It is the sole responsibility of the Proposer to ensure all addenda are received.**

CONTACT WITH MARTIN COUNTY SCHOOL DISTRICT PERSONNEL OTHER THAN PURCHASING STAFF OR A DESIGNATED REPRESENTATIVE REGARDING THIS REQUEST FOR PROPOSALS SHALL BE GROUNDS FOR ELIMINATION FROM THE SELECTION PROCESS.

10. **INTERPRETATIONS AND ADDENDA:** All Proposers shall carefully examine the Proposal Documents. Any ambiguities or inconsistencies should be brought to the attention of the Purchasing contact person through written communication prior to opening of the proposals. Failure to do so on the part of the Proposer shall constitute an acceptance by the Proposer of any subsequent decision by the District. MCSB will receive written requests for clarification concerning the meaning or interpretation of this RFP by issuance of addenda via DemandStar and Vendor Registry, until (7) days prior to the bid opening date. Questions shall be emailed to bids@martin.k12.fl.us with reference to the RFP number in the subject for faster recognition. Only questions answered by formal written Addenda issued by the MCSB Purchasing Department shall be binding. Oral and other interpretations or clarifications shall be without legal effect.

It is the sole responsibility of the Proposer to ascertain whether any addenda to this RFP has been issued, and to submit all such addenda properly acknowledged with the Bid response.

The District may delay scheduled due dates if it is to the advantage of the District. The District shall notify Proposers of all changes in scheduled due dates by written addenda.

11. **RFP DOCUMENTS:** Solicitation Documents may be obtained by registering with DemandStar in order to receive all required documents and notification of addenda. Register for FREE at <http://www.demandstar.com/subscriptions> "FREE AGENCY", toll-free 1-800-711-1712, or from Vendor Registry at the Purchasing Website: <https://www.martinschools.org/Page/945>. Proposers who obtain solicitation documents from any other source are cautioned that the solicitation package may be incomplete.

Complete sets of RFP Documents shall be used in preparing submittals. Neither District nor EOR assumes and each disclaims

any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Documents.

District and EOR in making copies of Documents available on the above terms do so only for the purpose of obtaining bids on the WORK and do not confer a license or grant for any other use.

12. **SUBMITTAL INFORMATION:** Proposer shall submit **one (1) marked original, 1 electronic copy provided on a thumb drive, and four (4) copies** of the completed package in an opaque sealed envelope to the Purchasing Department. All submittals must be accompanied by the Bond Security (if required) and all other required documents. The RFP opening shall be public. Therefore, all Proposers and their representatives are invited to attend at the District's Purchasing Department on the date and time specified in the RFP. The RFP opening may be delayed if, at the sole discretion of the District, it is considered to be in the District's best interest. Under no circumstances shall submittals delivered after the RFP opening time has begun be considered, and such submittals shall be retained unopened. It is the Proposer's sole responsibility to assure that Contractor's submittal is complete and delivered at the proper time and place of the RFP opening. Offers by facsimile, telegram, or telephone are not acceptable. A submittal may **NOT** be altered or modified by the Proposer after opening of the submittals.

Submittals will be opened and read aloud publicly at the time and place indicated in the RFP. Submittal of a response to this RFP constitutes an offer by the Proposer.

All submittals shall remain subject to acceptance for ninety (90) calendar days after the day of the RFP opening, but the District may, at the sole discretion of the District, release any submittal and return the Bond Security prior to that date.

13. **EVALUATION METHODOLOGY:** The District shall assemble an evaluation/selection committee comprised of staff and additional consultants, if necessary. This committee shall evaluate the proposals and may recommend the top ranked firms for oral presentations or discussions. The committee shall evaluate the proposals based on the demonstrated proficiency level of the proposing firm for work of a similar type as specified in the Statement of Services and other requirements as required by the District.
14. **EVALUATION CRITERIA: General:** The District shall be the sole judge of its own best interests, the proposal, and the resulting agreement. The District reserves the right to investigate the financial capability, reputation, integrity, skill, business experience and quality of performance under similar operations of each Proposer, including stockholders and principals before making an award. Awards, if any, shall be based on both an objective and subjective comparison of Proposals and Proposers. The District's decisions shall be final.

The District's evaluation criteria shall include, but shall not be limited to, consideration of the following:

- Overall knowledge and experience
- Team Qualifications, Background
- Approach/Methodology
- Proposed Cost
- Current workload
- References
- Statement of Work Requirements

15. **SELECTION PROCEDURE:** A Selection Committee shall be appointed by the District Superintendent. The Selection Committee reserves the right to select the most qualified individuals/firms from review and evaluation of the packages submitted and request authorization to negotiate an agreement with the highest ranked individual/firm. The committee may also short list the most qualified firms or at its sole discretion, request



additional or clarifying information and visual presentations from any responder. The Selection Committee may expressly request such information to remedy any incomplete response, but shall not be obligated to do so. The occurrence or absence of such a request shall not be cause for objection by any responder. Disclosure and proprietary information shall be subject to Public Records Law, Chapter 119, Florida Statutes.

15.1 Shortlisted firms may be asked to make a presentation of its qualifications and methodology to staff and /or the District Board. Individuals/firms will be notified in writing if they are selected for interview. Notices for interviews will contain explicit instructions concerning location, date, time and length of interviews.

15.2 The committee reserves the right to negotiate an agreement with the shortlisted firms individually based upon ranking or to conduct concurrent negotiations to reach an agreement with the next ranked firm, who shall then be recommended to the District Board for award. The District reserves the right to award to one Proposer, to multiple Proposers or to reject all responses. The District shall be the sole judge and final arbiter of its own best interests in this matter.

16. **AWARD OF CONTRACT:** The District reserves the right to reject any and all Proposals, waive any and all informalities, minor irregularities, and to make a multiple award if it is in the best interest of the District.

16.1 District contracts are awarded only when a fully executed written agreement has been returned to the Proposer by the District. No one shall be entitled to rely on any other action as an award. The District shall not be liable for any costs incurred by the Proposer prior to execution of the contract by the parties.

16.2 NO AWARD WITH RESPECT HERETO SHALL BE DEEMED FINAL AND ALL SUCH AWARDS SHALL BE DEEMED CONDITIONAL, UNLESS AND UNTIL THE PARTIES SHALL HAVE FULLY EXECUTED THE AGREEMENT(S) CONTEMPLATED HEREIN, AND A FULLY EXECUTED AGREEMENT HAS BEEN RETURNED TO THE PROPOSER, OR A PURCHASE ORDER HAS BEEN ISSUED BY THE DISTRICT TO THE PROPOSER. THE DISTRICT RESERVES THE RIGHT TO REVOKE ANY AWARD MADE HEREUNDER, WITHOUT PENALTY, PREMIUM OR OBLIGATION, AT ANY TIME PRIOR TO THE DELIVERY OF THE FULLY EXECUTED AGREEMENT(S) OR PURCHASE ORDER TO THE PROPOSER, NOTWITHSTANDING THAT AN AWARD MAY HAVE BEEN PUBLISHED. NO PROPOSER SHALL BE ENTITLED TO RELY ON ANY ANNOUNCEMENT OF AN AWARD, AND THE DISTRICT SHALL IN NO WAY BE ESTOPED IN THE REVOCATION OF AN AWARD PREVIOUSLY GRANTED.

17 **CONTRACTUAL AGREEMENT:**

The District may attach as a part of this solicitation, a Sample Contract document. Proposers shall be responsible for complying with all of the terms and conditions of the Sample Contract document if included herein, except where variant or conflicting language may be included in any Special Conditions contained herein. Proposers shall note any deviation or variance with the Sample Contract document at the time of submission. Should no revisions be noted, the District will assume and the Contractor agrees that the terms and conditions of agreement are acceptable.

The submission of your Proposal constitutes a firm offer by the Proposer. Upon acceptance by the Board, the Purchasing Department shall issue a notice of award and purchase order(s) and/ or contract for any supplies, equipment and/or services as a result of this Proposal. The terms, conditions, and provisions in this Request for Proposal and the corresponding purchase order(s) and /or contract shall constitute the complete agreement

between the successful Proposer and the Board. Unless otherwise stipulated in the Proposal documents or agreed to in writing by both parties, no other contract documents shall be issued or accepted.

18 **REJECTION CRITERIA/ DISQUALIFICATION OF PROPOSER:**

More than one Proposal from an individual, firm, partnership, corporation, or association under the same or different names shall not be considered. The District reserves the right to reject the proposal of any Proposer in arrears or in default upon any debt or contract to the District or who have failed to perform faithfully any previous contract with the District or with other governmental jurisdictions. All Proposals shall be rejected if there is reason to believe that collusion exists between Proposers. Proposals in which the prices obviously are unbalanced shall be subject to review and/or rejection. Your proposal shall be rejected as non-responsive if any of the following criteria exist (this list is not all inclusive):

18.1 The RFP response Package is found to have concealed or contained false and/or misleading information.

18.2 Executed requested Attachments/Affidavits or Tab sections are not submitted with the response.

18.3 Substitution of (SF) 330, 254 or 255 for Specific Related Experience of the Firm selection and Management Team Tabs shall result in your proposal being rejected as non-responsive.

18.4 Not including an executed Proposer signature page.

18.5 Not licensed to perform the required work or provide the required product.

18.6 Not eligible to Propose due to violations listed under paragraph #25, Public Entity Crimes.

18.7 The right is reserved to reject any and all Proposals or to accept the one deemed by the District to be the most advantageous.

18.8 Irregular Proposals are defined as those containing serious omissions, unauthorized alternative Proposals, incomplete Proposals or unbalanced Proposals. Failure to provide all of the information required to accompany the Proposal, Proposal Form and Specifications shall be considered a serious omission, which may result in the Proposal being rejected as non-conforming. Failure to fill out forms completely, indicating compliance or deviation for each item may be used as reason for rejection of the Proposal.

18.9 The Proposal shows non-compliance with applicable laws or contains any unauthorized additions or deletions, is a conditional Proposal, is an incomplete Proposal, or contains irregularities of any kind which make the Proposal incomplete, indefinite, or ambiguous as to its meaning.

19 **WAIVERS:** The Board, at its sole discretion, reserves the right to reject any and all proposals, accept any proposal or any combination of proposals or waive any minor irregularity or technicality in proposals received and may, at its sole discretion, request a re-proposal, when in its sole judgment, it shall best serve public interest.

20 **EXECUTION OF PROPOSAL:** Proposal must contain a manual signature, in ink, of an authorized representative, who has the legal ability to bind the firm in contractual obligations. Proposal must be typed or legibly printed in ink. Use of erasable ink is not permitted. All corrections made by Proposer to any part of the Proposal document must be initialed in ink. The signature as reflected on the Transmittal Letter shall certify the veracity of the contents of the submittal and bind the firm to this response to the District's Request for Proposal.

21 **NO PROPOSAL:** If not submitting a Proposal, please respond no later than three (3) days prior to the Proposal opening date and time, by returning an acknowledgment, noting the reason.

21.1 Proposals by corporations must be executed in the corporate name by the President or Vice President (or other corporate



- officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed and attested by the Secretary or Assistant Secretary. The corporate address and State of Incorporation shall be shown below the signature.
- 21.2 Proposals by partnership must be executed in the partnership name and signed by a general partner, his title must appear under his signature and the official address of the partnership must be shown below the signature.
- 21.3 All names of persons signing documents must be typed or printed below the signature, and must include a list of authorized personnel to sign on behalf of the company on company letterhead, signed by an authorized agent as designated on the Division of Corporations for the State of Florida.
- 22 **WITHDRAWAL OF PROPOSALS:** Proposers may not withdraw their RFP submittal for a period of ninety (90) calendar days after the day set for the opening of RFPs. Otherwise all Proposals shall be irrevocable unless the Proposal is withdrawn only by written communication delivered to the Purchasing Department prior to the solicitation closing date and time. The Proposer must present certification to assure that they are indeed an authorized representative of the Proposer's firm at the time such communication to withdraw the Proposal is presented.
- 23 **CONFLICT OF INTEREST:** The Contractor represents and warrants to the District that no officer, employee, or agent of the District has any interest, either directly or indirectly, in the business of the Contractor to be conducted hereunder. The Contractor further represents and warrants to the District that it has not employed or retained any company or person, other than a bona fide employee working solely for the Contractor, to solicit or secure this contract, and that it has not paid, or agreed to pay any person, company, corporation, individual, or firm, other than bona fide Personnel working solely for the Contractor any fee, commission, percentage, gift or other consideration, contingent upon, or resulting from the award or making of this contract. The Contractor also acknowledges that it has not agreed as an expressed or implied condition for obtaining this contract, to employ or retain the services of any person, company, individual or firm in connection with carrying out this contract. It is understood and agreed by the Contractor that, upon the breach or violation of this Section, the District shall have the right to terminate the contract without liability and at its sole discretion, and to deduct from the contract price, or to otherwise recover, the full amount of such fee, commission, percentage, gift or consideration paid by the Contractor.
- 23.1 The Contractor represents that it presently has no interest, either direct or indirect, while performing the services required by this contract, which would conflict in any manner with Florida Statutes. The Contractor represents that no person having any such interest shall be employed during the term of this contract, including any officer, employee or agent of the District.
- 23.2 The Contractor represents and warrants that it has no current contracts with any entity that would create any conflict of interest in the Contractor's ability to perform the services required by this contract. Further, the Contractor represents and warrants that throughout the term of this contract, it will not undertake any work that would create such a conflict in interest.
- 23.3 The Contractor shall promptly notify the District in writing by certified mail or electronic mail of all potential conflicts of interest for any prospective business association, interest or other circumstance that may influence or appear to influence the Contractor's judgment or quality of services being provided hereunder. Such written notification shall identify the prospective business association, interest or circumstance, the nature of work that the Contractor may undertake and request an opinion of the District as to whether the association, interest or circumstance would, in the opinion of the District, constitute a conflict of interest if entered into by the Contractor. If, in the opinion of the District, the prospective business association, interest or circumstance would not constitute a conflict of interest by the Contractor, the District shall so state in the notification and the Contractor shall, at its option, enter into such association, interest or circumstance and it shall be deemed not in conflict of interest with respect to services provided to the District by the Contractor under the terms of this Contract.
- 24 **NON-COLLUSION:** By submitting a Proposal the Proposer certifies that it has not divulged discussed or compared its Proposal with other Proposers and has not colluded with any other Proposer or parties to a Proposal whatsoever. Any such violation shall result in the cancellation and/or return of materials (as applicable) as being non-conforming and removal from the District's Proposal list(s).
- 25 **PUBLIC ENTITY CRIMES:** The Proposer certifies by submission of this Proposal and by signature on Attachment F, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this transaction by the State of Florida or Federal Government. Further, Proposer certifies that it has divulged, in its Proposal response information regarding any of these actions or proposed actions with other governmental agencies
- 25.1 Pursuant to F.S. 287.133, as amended: a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a Proposal on a Contract to provide any goods or services to a public entity, may not submit a Proposal on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Proposals on leases of real property to a public entity, may not be awarded or perform work as a Vendor, supplier, sub-vendor, or consultant under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in F.S. 287.017 for CATEGORY TWO or higher for a period of 36 months from the date of being placed on the convicted vendor list.
- 25.2 The awarded Proposer or any subcontractor shall not employ any persons with multiple felonies and / or crimes against children. The awarded Proposer must provide documented proof of efforts to comply with this requirement. The Owner may declare any noncompliance or lack of diligent effort by the awarded Proposer to comply as a breach of contract and immediately terminate the services of the awarded Proposer.
- 25.3 Any employees involved in any Chapter 435, Florida Statutes offenses are precluded from continuing to work on a project and must be replaced. Failure to comply may result in the immediate termination of the awarded Proposer's contract at the sole discretion of the District. Lack of knowledge by the Proposer shall in no way be a cause for relief from responsibility.
26. **PROPOSAL AS PUBLIC DOMAIN:** All documents and other materials made or received in conjunction with this project will be subject to public disclosure requirements of chapter 119, Florida Statutes. This includes material that the responding Proposer might consider to be confidential or a trade secret. The proposal will become part of the public domain upon opening. **Vendors shall not submit pages marked "proprietary" or otherwise "restricted".**
27. **PUBLIC RECORDS:** Pursuant to Florida Statute Section 119.071 (3)(b) F.S., sealed Proposals or proposals received by an agency pursuant to invitations to Proposal or requests for proposals are exempt from the provisions of 119.07(1) and s. 24(a), Art. I of the State Constitution until such time as the agency



28. provides notice of a decision or intended decision pursuant to §120.57(3)(a), F.S. or within 10 days after Proposal/proposal opening, whichever is earlier.

If the contractor has questions regarding the application of chapter 119, Florida statutes, to the contractor's duty to provide public records relating to this contract, contact the custodian of public records, staff attorney's office at 772. 219.1200, extension 30241, Instructional Center Bldg. 30, 500 E. Ocean Blvd, Stuart, Florida 34994, email publicrecords@martin.k12.fl.us.

28. **LICENSES:** Proposers, both corporate and individual, must be fully licensed and certified for the type of work to be performed in the State of Florida and must be registered with the State of Florida DBPR Construction Industry Licensing Board at the time of receipt. The submittal of any Proposer that is not fully licensed and/or certified shall be rejected.
29. **SUNBIZ:** Proposers, both corporate and individual, must provide proof that their firm is registered with the Division of Corporations for the State of Florida.
30. **PROPOSER MAILING ADDRESS:** It is the responsibility of every Proposer to register and maintain their current registration information. Proposers that have received the RFP from DemandStar.com or Vendor Registry must maintain their information on the registrant's database. Awarded firms must maintain their current registration information with the Purchasing Department.
31. **MINORITY BUSINESS PARTICIPATION:** The District strongly encourages the use of Minority/Woman owned business enterprises for participation as associates, joint ventures, prime proposers, and sub-proposers in contracting opportunities.
32. **JOINT PROPOSALS:** In the event multiple Proposers submit a joint Proposal in response to the Proposal, a single Proposer shall be identified as the Prime Vendor. If offering a joint Proposal, Prime Vendor must include the name and address of all parties of the joint Proposal. Prime Vendor shall provide all bonding and insurance requirements, execute any Contract, complete the required response form shown herein, and have overall and complete accountability to resolve any dispute arising within this contract. Only a single contract with one Proposer shall be acceptable. Prime Vendor responsibilities shall include, but not be limited to, performing of overall contract administration, preside over other Proposers participating or present at District meetings, oversee preparation of reports and presentations, and file any notice of protest and final protest as described herein. The Prime Vendor shall also prepare and present a consolidated invoice(s) for services performed. The District shall issue only one check for each consolidated invoice to the Prime Vendor for services performed. The Prime Vendor shall remain responsible for performing services associated with response to this Proposal.
33. **LOBBYING:** Proposers are hereby advised that they are not to lobby any District personnel or board members related to or involved with this Proposal until the administration's

recommendation for award. All oral or written inquiries must be directed through the Purchasing Department. Any Proposer or any individuals that lobby on behalf of Proposer during the time specified shall result in rejection / disqualification of said Proposal.

34. **CONE OF SILENCE:** A cone of silence is hereby established for all competitive selection processes for the provision of goods and services. The cone of silence is designed to protect the integrity of the procurement process by shielding it from undue influences prior to the recommendation of contract award. This cone of silence shall be imposed on these procurements after advertisement of same.
- 34.1 The cone of silence prohibits any communication regarding a competitive solicitation process. The cone of silence commences after the advertisement of the competitive solicitations. Competitive procurements are advertised on the purchasing department's web page or in a newspaper of general circulation.
- 34.2 The cone of silence terminates at the time the School Board acts on a written recommendation from the purchasing department or planning and construction department regarding contract award; provided, however, that communications are permitted when the School Board receives public comment at the meeting when the recommendation is presented.
- 34.3 Section 119.071(1)(b)2., F.S., provides an exemption for "sealed bids, proposals, or replies received by an agency pursuant to a competitive solicitation" until such time as the agency provides notice of an intended decision or until 30 days after opening "the bids, proposals, or final replies," whichever is earlier.
- 34.4 The purchasing department and planning and construction department shall ensure that all solicitations include provisions describing the requirements and prohibitions of the cone of silence, including how a potential vendor, service provider, Proposer, lobbyist, or consultant may communicate with District personnel.
- 34.5 Any person, whether employed by the District or not, who knowingly violates a provision of this policy shall be prohibited from serving on a District competitive selection committee.
- 34.6 Violation of this policy by a particular Proposer, respondent, and/or representative may, at the discretion of the District, result in rejection of said Proposer R, respondent, and/or representative's RFP, proposal, or offer and may render any contract award to said Proposer, or respondent voidable.
- 34.7 In addition to any other penalty provided by law, violation of this policy by a District employee shall subject said employee to disciplinary action up to and including dismissal from service.
35. **TRADE SECRETS:** Any language contained in the Proposer's response to the RFP purporting to require confidentiality of any portion of the Proposer's response to the RFP, except to the extent that certain information is in the School District's opinion a Trade Secret pursuant to Florida law, shall be void.
- 35.1 If a Proposer submits any documents or other information to the School District which the Proposer claims is Trade Secret information and exempt from Florida Statutes Chapter 119.07 ("Public Records Law"), the Proposer shall clearly designate that it is a Trade Secret (in bold 14 point font and capitalized letters) and that it is asserting that the document or information is exempt. The Proposer must specifically identify the exemption being claimed under Florida law. The School District shall not be liable for the use or disclosure of trade secret data that Proposer has failed to mark as such.
- 35.2 The Proposer agrees and consents that the School District shall be the final arbiter of whether any information



contained in the Proposer's response to the RFP constitutes a Trade Secret. Pricing will not be considered a Trade Secret.

- 35.3 The School District's determination of whether an exemption applies shall be final, and the Proposer agrees to defend, indemnify, and hold harmless the School District and School Board and the School District's officers, employees, School Board members, and agents, against any loss, damages, judgments, attorneys' fees or costs incurred by any person or entity as a result of the School District's treatment of records as public records or records exempt as Trade Secrets. Proposals purporting to be subject to copyright protection in full or in part will be rejected.

EXCEPT FOR CLEARLY MARKED PORTIONS THAT ARE BONA FIDE TRADE SECRETS PURSUANT TO FLORIDA LAW, DO NOT MARK YOUR RESPONSE TO THE RFP AS PROPRIETARY OR CONFIDENTIAL, AND DO NOT MARK YOUR RESPONSE TO THE RFP OR ANY PART THEREOF AS COPYRIGHTED.

- 35.4 The School District will provide Proposer with prompt notice by phone and/or email of any request for public records in which that Proposer has claimed an exemption information being a Trade Secret so that the Proposer may seek, at its sole expense, an appropriate protective order from a court of competent jurisdiction. In the event the Proposer elects not to seek an appropriate protective order or is unable to obtain such an order within no later than ten (10) business days following receipt of notice, the Proposer agrees and consents that the School District shall be permitted to respond to the public records request with the response not being deemed a breach by the School Board of its obligations under the Agreement or the Florida Statutes governing Trade Secret exemptions. The Proposer would then be waiving any rights relating to Trade Secrets under Florida law. Proposer agrees to defend, indemnify, and hold harmless the School District and School Board and the School District's officers, employees, School Board members, and agents, against any loss, damages, judgments, attorneys' fees or costs incurred by School Board as a result of the School District's providing the records in response to the public records request or withholding them based on Proposer's assertion of the Trade Secret exemption.

- 35.5 The indemnification provisions survive the School Board's award of the contract and remain as long as the trade secret data is in the possession of the School Board.

36. **ASSIGNMENT:** The successful Proposer shall not sub-contract, assign, transfer, convey, sublet, or otherwise dispose of the contract, or of any or all of its rights, title, or interest therein, or its power to execute such contract to any person, firm, or corporation without prior written consent of the District. Furthermore, the awarded Proposer shall not transfer or assign the performance required by this RFP without the prior written consent of the District. Any award issued pursuant to this RFP and monies that may become due hereunder are not assignable except with prior written approval of the District

37. **SUBCONTRACTING:** If an awarded Proposer intends to subcontract any portion of the Contract for any reason, the name and address of the subcontracting firm must be submitted along with the Proposer's Proposal or prior to use for approval. No subcontracting shall take place prior to awarded Proposer furnishing this information and receiving written approval from the District at least thirty (30) days prior to the start of any work. The Purchasing Department reserves the right to reject a subcontractor who previously failed in the proper performance of a contract or failed to deliver on-time contracts of a similar nature, or who, the District has determined in its sole discretion, is not in the position to perform the contract due to the subcontractor's size, experience, or resources.

- 37.1 The District reserves the right to inspect all facilities of any subcontractor in order to make determination as to the foregoing. The subcontractor shall be equally responsible for meeting all requirements specified in the Request for Proposal.

- 37.2 Nothing contained in this RFP will be construed as establishing any contractual relationship between any sub-proposer(s) and the District. The awarded Proposer (s) shall be fully responsible to the District for the acts and omissions of the subcontractor (s) and their employees. After award of contract, any changes in subcontractors requires prior School District written approval.

38. **BONDING GUARANTY/EVIDENCE:** The submittal response **must** be accompanied by a notarized letter from your firm's Surety guaranteeing that if your firm is awarded a contract, the Surety will issue a letter of credit that attests to the bonding capacity (the maximum amount of surety credit a surety company) will provide to a contractor, contingent upon a top-notch organization, strong financial presentation, and experience. The Surety shall also guarantee your firm by issuing Performance and Payment bonds as required by the District. Failure to submit the Surety Guaranty letter with your submittal shall cause your submittal response to be rejected as non-responsive. The District shall be the sole judge in determining Bonding Capacity.

- 38.1 When required by the RFP documents each submittal response must be accompanied by a Security Bond made payable to the Martin County School District in an amount of five percent (5%) of the Proposer's projected maximum price and in the form of a certified check or cashier's check drawn upon any State or National Bank of Florida or a Security Bond issued by a Surety that must have a "Best" rating of "A", and be authorized to do business in Florida.

- 38.2 Said check or Security Bond shall be given as a guarantee that Proposer, upon receipt of Notice of Tentative Award of the purchase order or contract, shall enter into the Contract or accept the purchaser order with the District, and furnish the necessary documents including, but not limited to: insurance certificates, other required Bonds, each of the said Bonds to be in the amount stated on the RFP.

- 38.3 The Attorney-in-Fact who signs the bond must file with the bond a current certificate of proof of appointment as Attorney-In-Fact.

- 38.4 The Security Bond of the Successful Proposer shall be retained until such Proposer has been awarded a binding Contract or Purchase Order or Contract security whereupon the security bond shall be returned.



**SECTION IV
GENERAL CONDITIONS**

These general terms and conditions apply to all offers made to the Martin County School District by all prospective Proposers including but not limited to Request for Quotes, Invitations to Bid, and Request for Proposals. As such the words "RFP", "bid", and "proposal" are used interchangeably in reference to all offers submitted by prospective Proposers.

Where there appears to be variances or conflicts between the General Terms and Conditions and the Special Conditions and/or Detailed Specifications outlined in this RFP, Section IV, General Conditions, Item #2, Order of Precedence shall prevail.

1. **ADVERTISING:** By submitting, Proposer agrees not to use the results there from as a part of any commercial advertising.
2. **ORDER OF PRECEDENCE:** In resolving conflicts resulting from errors or discrepancies in any of the RFP or Contract Documents, the order of precedence (lower number item controls) shall be as follows:
 - Amendment
 - Change Order
 - Contract/Agreement or Purchase Order
 - Addenda
 - Proposal Form, if applicable
 - Technical Specifications
 - Contract Drawings/Attachments
 - Supplementary Conditions
 - General Conditions
 - Instructions to Proposers
 - Request for Proposal
3. **EXAMINATION OF DOCUMENTS & SITE:** Pursuant to Article 4, Supplementary Conditions, Proposer must satisfy itself by personal and thorough examination of the location of the proposed WORK, RFP Documents, requirements of the WORK and the accuracy of the estimate of the quantities of the WORK to be done; and Proposer shall not at any time after submitting their response dispute or complain of such estimate nor the nature or amount of WORK to be done.

By submitting a response, Proposer affirms that it has, at its own expense, made or obtained any additional examinations, investigations, explorations, tests, and studies and obtained any additional information and data which pertain to the physical conditions (surface, subsurface, and Underground Utilities) at or contiguous to the site or otherwise, prior to submitting which may affect cost, progress, or performance of the WORK and which Proposer deems necessary to determine its response for performing the WORK in accordance with the time, price, and other terms and conditions of the RFP Documents and/or Proposer has satisfied itself with respect to such conditions and it shall make no claims against the District or the EOR if on carrying out the WORK it finds that the actual conditions do not conform to those indicated.

On request, the District will provide Bidder access to the site to conduct such investigations and tests, as Bidder deems necessary for submission of its Bid. Bidder shall schedule such access in advance with the District.

Upon completion of such additional field investigations and tests, Bidder shall completely restore disturbed areas.
4. **UNBALANCED PROPOSALS:** Proposals that are judged to be mathematically or materially unbalanced shall be cause for the Proposal to be rejected as non-responsive.
5. **ESTIMATED DOLLAR VALUE:** No guarantee of the dollar amount of this RFP is implied or given.
6. **INVOICING AND PAYMENT:** Payment for any and all invoice(s) that may arise as a result of a Contract or Purchase Order issued pursuant to this Proposal shall be stated in the contract to meet the following conditions to be considered a valid payment request. **If progress payments are applied for, all invoicing and payments shall be as stipulated in the Supplementary Conditions section under Article 14.**

Timely submission of a properly certified invoice(s) in strict accordance with the price(s) and delivery elements as stipulated in the Contract document should be submitted to:

Martin County School District
Attn: Accounts Payable Department
500 East Ocean Blvd
Stuart, FL., 34994
invoices@martin.k12.fl.us

Payment will be made after the goods/services from the awarded Proposer have been received/completed; installed/inspected and found to comply with negotiated contract, free of damage or defect; and a properly billed invoice is received and processed in the Accounting Services Department.
7. **INCORRECT PRICING/INVOICES:** Any pricing on invoices that are incorrect and were not included on the original Purchase Order, must be brought to the attention of the Purchasing Agent and corrected prior to the shipment(s) of goods or initiation of services. Additional costs that were not brought to the District's attention and did not receive written approval via a Change Order issued by the Purchasing Agent shall not be honored.
8. **DISTRICT PURCHASING CARD:** The School District has authorized the use of a Purchasing Card to expedite small dollar purchases for materials, supplies, and other items needed for daily operations. Awarded Proposers may be presented these credit cards by authorized School District personnel for the above mentioned purchases. Proposer (with the exception of travel). Purchase orders are strongly discouraged for purchasing materials, and supplies under \$1,000.
9. **CHANGE ORDERS:** Any addition(s) to the Statement of Work or to a Purchase Order as a result of the RFP award that adds additional costs must be brought to the School Districts attention and approved by the Purchasing Department prior to commencement of additional work, shipment of goods or the addition of unauthorized freight charges. Once approved, a Change Order shall be issued to include the additional costs and work may commence and/or shipment of goods can begin. Additional costs that were not brought to the District's attention and did not result in a Change Order approved by the Purchasing Department shall not be honored.



10. **DISPUTES:** In case of any doubt or difference of opinion as to the services to be furnished hereunder, the decision of the District shall be final and binding on both parties.
11. **PROPOSAL PROTEST:** Failure to file a protest within the time prescribed in Section 120.57(3), Florida Statutes, shall constitute a waiver of proceedings under Chapter 120, Florida Statutes.
- 11.1 "Any person who is adversely affected by the agency decision or intended decision shall file with the agency a notice of protest in writing within 72 hours after the posting of the notice of decision or intended decision.
- 11.2 With respect to a protest of the terms, conditions, and specifications contained in a solicitation, including any provisions governing the methods for ranking proposals, or replies, awarding contracts, reserving rights of further negotiation, or modifying or amending any contract, the notice of protest shall be filed in writing within 72 hours after the advertisement of the solicitation.
- 11.3 The formal written protest shall be filed within 10 days after the date the notice of protest is filed. Failure to file a notice of protest or failure to file a formal written protest shall constitute a waiver of proceedings under this chapter. The formal written protest shall state with particularity the facts and law upon which the protest is based. Saturdays, Sundays, and state holidays shall be excluded in the computation of the 72-hour time periods provided by this paragraph.
- 11.4 In order for the District to consider the protest, the protesting party shall deliver with the formal written protest to the District a "protest bond" in the amount as follows:
- 11.4.1 Twenty-five thousand dollars (\$25,000) or two percent (2%) of the lowest accepted proposal, whichever is greater, for projects valued over \$500,000; and
- 11.4.2 Five percent (5%) of the lowest accepted proposal for all other projects, conditioned upon payment of all costs and fees which may be adjudged against the protestor in the administrative hearing.
- 11.4.3 If at the hearing the agency prevails, it shall recover all costs and attorney's fees from the protestor; if the protestor prevails, the protestor shall recover from the agency all costs and attorney's fees.
- 11.4.4 If the protest (with respect to 11.2 above) the protest bond shall be the same as 11.4.1 and 11.4.2, except that the protest bond amount shall be calculated against the budgeted amount of the project.
12. **DEBARMENT:** The Board shall have the authority to debar a person / corporation for cause for consideration or award of future contracts. The debarment shall be for a period commensurate with the seriousness of the causes, generally not to exceed three (3) years. When the offense is willful or blatant, a longer term of debarment may be imposed, up to an indefinite period.
13. **DELETION/OVERSIGHT/MISSTATEMENT:** Any deletion, oversight or misstatement of the Specifications shall not release the Proposer from the responsibility of completing the project within the agreed upon time frame.
14. **INDEMNIFICATION:** Awarded Proposer agrees to protect, defend, indemnify, and hold harmless the District, its employees, representatives, and elected officials from any and all claims and liabilities including all attorney's fees and court costs, including appeals, for which the District, its employees, representatives, and elected officials can or may be held liable as a result of injury (including death) to persons or damage to property occurring by reason of any negligence, recklessness, or intentional wrongful misconduct of the Awarded Proposer, its employees, or agents, arising out of or connected with this Agreement. The Awarded Proposer shall not be required to indemnify the District or its agents, employees, representatives, or elected officials when an occurrence results solely from the wrongful acts or omissions of the District, or its agents, employees or representatives.
- 14.1 The Awarded Proposer, without exemption, shall indemnify and hold harmless, the District, its employees, representatives and elected officials from liability of any nature or kind, including cost and expenses for or on account of any copyrighted, service marked, trademarked patented or unpatented invention, process, or any other intellectual property right or item manufactured by the Awarded Proposer. Further, if such a claim is made, or is pending, the Awarded Proposer may, at its option and expense, procure for the District the right to use, replace, or modify the item to render it non-infringing. If none of the alternatives are reasonably available, the District agrees to return the article on request to the Awarded Proposer and receive reimbursement from the awarded Proposer. If the Awarded Proposer used any design, device or materials covered by letters, patent or copyright, it is mutually agreed and understood, without exception, that the RFP prices shall include all royalties or cost arising from the use of such design, device or materials in any way involved in the work. This article will survive the termination of any contract with the School District.
- 14.2 The parties agree that Ten Dollars (\$10.00) of the total compensation paid to the Proposer for performance of this Agreement shall represent the specific consideration for the Proposer's indemnification of the Owner.
- 14.3 The District reserves the right to select its own legal counsel to conduct any defense in any such proceeding and all costs and fees associated therewith shall be the responsibility of Awarded Proposer under the indemnification agreement.
- 14.4 It is the specific intent of the parties hereto that the foregoing indemnification complies with F.S. 725.06 (Chapter 725). It is further the specific intent and agreement of the parties that all of the Contract Documents on this Project are hereby amended to include the foregoing indemnification and the "Specific Consideration" therefore.
15. **DEMONSTRATIONS:** The District may request a full demonstration of any product or service before the award of a contract. All demonstrations will be done at the expense of the Proposer.
16. **COPYRIGHTS OR PATENT RIGHTS:** The Proposer warrants that there has been no violation of copyrights or patent rights in the manufacturing, producing or selling the goods shipped or ordered as a result of this RFP. The seller agrees to hold the District harmless from all liability, loss or expense occasioned by any such violation.
17. **EMPLOYEES:** Employees of the awarded Proposer shall at all times be under its sole direction and not an employee or agent of the District. The Awarded Proposer shall supply competent and physically capable employees. The District may require the Awarded Proposer to remove an employee it deems careless, incompetent, insubordinate or otherwise objectionable. Awarded Proposer shall be responsible to the District for the acts and omissions of all employees working under its directions.
18. **ANTI-DISCRIMINATION:** The Proposer certifies that they are in compliance with the non-discrimination clause contained in Section 202, Executive Order 11246, as amended by



Executive Order 11375 relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin. The provisions of the ADA Act of 1990 pertaining to employment shall also be applicable.

19 **NON-DISCRIMINATION & EQUAL OPPORTUNITY EMPLOYMENT:** The Proposer certifies that they are in compliance with the non-discrimination clause contained in Section 202, Executive Order 11246, as amended by Executive Order 11375 relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin. The provisions of the ADA Act of 1990 pertaining to employment shall also be applicable.

19.1 During the performance of the Contract, the awarded Proposer shall not discriminate against any employee or applicant for employment because of race, gender, gender identity or expression, religion, national origin, ethnicity, sexual orientation, marital status, political affiliation, familial status, age or disability in the solicitation, selection, hiring, or treatment of sub-contractors, vendors, suppliers, or commercial customers

19.2 The awarded Proposer will take affirmative action to ensure that employees are treated during employment, without regard to their race, religion, color, gender or national original, or disability. Such actions must include, but not be limited to, employment, promotion; demotion or transfer; recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

19.3 The awarded Proposer shall agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

19.4 The awarded Proposer further agrees that he/she will ensure that Subcontractors, if any, will be made aware of and will comply with this nondiscrimination clause. Proposer shall provide equal opportunity for sub-contractors to participate in all of its public sector and private sector sub-contracting opportunities.

19.5 Proposer understands and agrees that violation of this clause is a material breach of the contract and may result in contract termination, debarment, or other sanctions.

20 **TAXES:** The District is exempt from all Federal, State, and Local taxes. An exemption certificate will be provided to the successful proposer.

21 **INSURANCE REQUIREMENTS:** Proposer hereby agrees to procure and maintain insurance, as may be required, for the term of this agreement, and provide proof of insurance as evidenced by a valid Certificate of Insurance. A Certificate of Insurance (COI), deemed acceptable to the Martin County School District, must be received by 10 days from award and prior to the start of any work. Notice of cancellation prior to the expiration date thereof, for any reason other than non-payment of premium or fraud, must be delivered to the contract administrator with at least thirty (30) days advance notice. If requested, a complete copy of the insurance policy must be provided nee within seven (7) days from the date requested.

22 **RECORDS/AUDITS:** The awarded Proposer shall maintain during the term of the contract all books, reports and records in accordance with generally accepted accounting practices and standards for records directly related to this contract. The form of all records and reports shall be subject to the approval of the District's Auditor. The awarded Proposer agrees to make available to the District's Auditor, during normal business hours all books of account, reports and

records relating to this contract for the duration of the contract and retain them for a minimum period of one (1) year beyond the last day of the contract term.

23 **LIABILITY, INSURANCE, LICENSES, AND PERMITS:** Where awarded Proposers are required to enter or go onto District property to deliver materials or perform work or services as a result of RFP award, the Proposer will assume the full duty obligation and expense of obtaining all necessary licenses, permits and insurance. The awarded Proposer shall be liable for any damage or loss to the District incurred by the awarded Proposer, the awarded Proposer's employees, licensees of the awarded Proposer or agent or any person the awarded Proposer has designated in the performance of his or her contract as a result of the RFP; further, the awarded Proposer shall be liable for all activities of the awarded Proposer occasioned by performance of the Contract. Notwithstanding the foregoing, the liability herein shall be limited to ten million dollars (\$10,000,000) and the awarded Proposer recognizes that and covenants that it has received consideration for indemnification provided herein.

24 **RIGHTS TO PROPOSAL/RFP DOCUMENTS:** All copies and contents of any proposal, attachment, and explanation thereof submitted in response to this Request for Proposals (except copyright material), shall become the property of the School District of Martin County, Florida. The School District reserves the right to use, at its discretion, and in any manner it deems appropriate, any concept, idea, technique or suggestion contained therein. All copyright and industrial/commercial proprietary, confidential and/or privileged information such as financial records, must be clearly identified, as such confidentiality is protected until award of contract, in accordance with Chapter 119, F.S. Said material shall be returned to the Proposers prior to award of contract so as to preserve the proprietary and confidential nature of its contents.

25 **SEVERABILITY:** Indulgence by the District on any non-compliance by the Proposer does not constitute a waiver of any rights under this Request for Proposals. If any term or provision of this RFP or resulting Contract, or the application thereof to any person or circumstances shall, to any extent, be held invalid or unenforceable, the remainder of this RFP or Contract, or the application of such terms or provisions to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected, and every other term provision of this RFP/Contract shall be deemed valid and enforceable to the extent permitted by law.

26 **VENUE:** All contracts shall be governed by the laws of the State of Florida and venue shall be in Martin County, Florida. The venue of any legal action resulting from this Proposal shall be Martin County, Florida.

27 **UNAUTHORIZED WORKERS:** The District shall not intentionally award publicly-funded contracts to any contractor who knowingly employs unauthorized alien workers, constituting a violation of the employment provisions contained in 8 U.S.C. Section 1324a(e) [Section 274A(e) of the Immigration and Nationality Act ("INA")]. The District shall consider the employment by any contractor of unauthorized aliens a violation of Section 274A(e) of the INA. Such violation by the Recipient of the employment provisions contained in Section 274A(e) of the INA shall be grounds for unilateral cancellation of this Agreement by the District.

28 **IRREGULARITIES:** Proposals not meeting stated minimum terms and qualifications may be rejected by the District as non-responsive or irregular. However, the District reserves the right to waive any irregularities, technicalities or informalities in any proposal. The District reserves the right to allow for the clarification of questionable entries and for the correction of typographical and mathematical errors.



29. **SOVEREIGN IMMUNITY:** No Waiver of Sovereign Immunity: Nothing contained herein is intended to serve as a waiver of sovereign immunity by any agency or political subdivision to which sovereign immunity may be applicable or as a waiver of limits to liability or rights existing under Section 768.28, Florida Statutes.

30. **SCRUTINIZED COMPANIES LIST:** Contractor certifies that pursuant to Sections 287.135, 215.4725, and 215.473, of the Florida Statutes which prohibits agencies from contracting with any company, principals, or owners on the Scrutinized Companies with Activities in Sudan List, participation in the Boycott of Israel, the Scrutinized Companies with Activities in the Iran Petroleum Energy List, and is not engaged in business operations in Cuba or Syria are prohibited from contracting for goods or services in any amount at the time of submitting to this RFP through the term of this contract, including renewals or extensions.



SECTION V
SUPPLEMENTARY CONDITIONS
BY ARTICLES FOR
THE CONSTRUCTION CONTRACT

(ARTICLE 1- Definitions are identified and incorporated in Section I, Definitions, Abbreviations, and Acronyms)

ARTICLE 2 – PRELIMINARY MATTERS

2.1 DELIVERY OF BONDS AND INSURANCE CERTIFICATES:

2.1.1 When the CONTRACTOR delivers the signed Contracts to the DISTRICT, the CONTRACTOR shall also deliver to the DISTRICT such Bonds and Insurance Policies, Certificates or other documents as the CONTRACTOR may be required to furnish in accordance with the Contract Documents. The aforementioned documents must be submitted to the DISTRICT prior to any WORK being performed.

2.2 COPIES OF DOCUMENTS:

2.2.1 The DISTRICT shall furnish to CONTRACTOR ONE (1) copy (unless additional copies exist) of the Contract Documents for the execution of the WORK. CONTRACTOR shall be responsible for procuring additional copies.

2.3 NOTICE TO PROCEED:

2.3.1 The Contract Times shall commence to run on the date stated in the Notice to Proceed.

2.4 STARTING THE WORK:

2.4.1 CONTRACTOR shall begin to perform the WORK on the commencement date stated in the Notice to Proceed, but no WORK shall be done at the Site prior to said commencement date.

1.4.2 CONTRACTOR'S Review of Contract Documents: Before undertaking each part of the WORK, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to EOR any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from EOR before proceeding with any WORK affected thereby; however, CONTRACTOR shall not be liable to DISTRICT or EOR for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents, unless CONTRACTOR knew or reasonably should have known thereof.

2.4.3 INTERIOR INSPECTION FORM: Prior to beginning work, inspect with Owner's Representative or Architect, building interior(s). Log conditions of ceiling tiles, lights, walls and flooring materials using the Interior Inspection Form attached at the end of this Section. Confirmation of existing conditions shall be made and recorded onto a video disk.

Submit two copies of the form signed by the Contractor, Owner's Representative or Architect and one copy of video disk.

2.4.4 EXTERIOR INSPECTION FORM: Prior to beginning work, inspect with Owner's Representative or Architect, existing building exterior(s) and site conditions. Log, as required, conditions of exterior walls, building attachments, sidewalks, miscellaneous paving and landscaping using the Exterior Inspection Form attached at the end of this Section. Confirmation of existing conditions shall be recorded onto a video .

Submit two copies of form signed by the Contractor, Owner's Representative or Architect and one copy of video disk.

2.5. PRECONSTRUCTION CONFERENCE:

2.5.1 The CONTRACTOR is required to attend a preconstruction conference within twenty (20) days after award of the Contract, and before any WORK at the site is started. This conference shall be attended by the DISTRICT, CONSULTANT, and others as appropriate in order to discuss the WORK.

2.5.2 The CONTRACTOR'S initial schedule for shop drawings submittals, obtaining permits and Plan of Operation and CPM Schedule shall be reviewed and finalized. As a minimum, the CONTRACTOR'S representatives should include its project manager and schedule expert. If the submittals are not finalized at the end of the meeting, additional meetings shall be held so that the submittals can be finalized prior to the submittal of the first Application for Payment. No Application for Payment shall be processed prior to receiving acceptable initial submittals from the CONTRACTOR.

2.5.3 DISTRICT shall schedule preconstruction conference.

2.5.3.1 Attendance Required: DISTRICT's Project Manager, EOR, and Contractor/CM Project Manager and Superintendent.

2.5.3.2 Agenda:

Distribution of Contract Documents.

Confirmation of prior submission (during bid process) of list of Subcontractors, list of Products, Schedule of Values, and Progress Schedule.

2.5.3.3 Designation of personnel representing the parties in Contract, and the EOR.

2.5.3.4 Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.

Scheduling.

2.5.3.5 Scheduling activities of a Geotechnical Engineer.

2.5.3.6 Issuance of Notice to Proceed.

2.5.3.7 Record minutes and distribute copies within two days after meeting to participants, with copies to EOR, DISTRICT, participants, and those affected by decisions made.

2.6 SITE MOBILIZATION MEETING

2.6.1 DISTRICT will schedule a meeting at the Project site prior to Contractor occupancy.

2.6.2 Attendance Required: DISTRICT, EOR, Special Consultants, and Contractor, Contractor's Superintendent, and major Subcontractors.

2.6.3 Agenda:

2.6.3.1 Use of premises by DISTRICT and Contractor.

2.6.3.2 DISTRICT's requirements and partial occupancy.

2.6.3.3 Construction facilities and controls provided by DISTRICT.



- 2.6.3.4 Temporary utilities provided by DISTRICT.
- 2.6.3.5 Survey and building layout.
- 2.6.3.6 Security and housekeeping procedures.
- 2.3.3.7 Schedules.
- 2.6.3.8 Application for payment procedures.
- 2.6.3.9 Procedures for testing.
- 2.6.3.10 Procedures for maintaining record documents.
- 2.6.3.11 Requirements for start-up of equipment.
- 2.6.3.12 Inspection and acceptance of equipment put into service during construction period.

2.6.3.13 Record minutes and distribute copies within two days after meeting to participants, with copies to CONSULTANT, DISTRICT, participants, and those affected by decisions made.

2.7 PROGRESS MEETINGS

2.7.1 Schedule and administer meetings throughout progress of the work at maximum monthly intervals.

Make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

2.7.2 Attendance Required: Job superintendent, major Subcontractors and suppliers, DISTRICT, EOR, as appropriate to agenda topics for each meeting.

2.7.3 Agenda:

- 2.7.3.1 Review minutes of previous meetings.
- 2.7.3.2 Review of Work progress.
- 2.7.3.3 Field observations, problems, and decisions.
- 2.7.3.4 Identification of problems that impede planned progress.
- 2.7.3.5 Review of submittals schedule and status of submittals.
- 2.7.3.6 Review of off-site fabrication and delivery schedules.
- 2.7.3.7 Maintenance of progress schedule.
- 2.7.3.8 Corrective measures to regain projected schedules.
- 2.7.3.9 Planned progress during succeeding work period.
- 2.7.3.10 Coordination of projected progress.
- 2.7.3.11 Maintenance of quality and work standards.
- 2.7.3.12 Effect of proposed changes on progress schedule and coordination.
- 2.7.3.13 Other business relating to work.

2.7.3.14 Record minutes and distribute copies within two days after meeting to participants, with copies to EOR, DISTRICT, participants, and those affected by decisions made.

2.8 PREINSTALLATION MEETING

2.8.1 When required in individual specification section, convene a pre-installation meeting at the site prior to commencing work of the section.

2.8.2 Require attendance of parties directly affecting, or affected by, work of the specific section.

2.8.3 Notify DISTRICT and EOR five (5) working days in advance of meeting date.

2.8.4 Prepare agenda and preside at meeting:

2.8.5 Review conditions of installation, preparation and installation procedures.

2.8.6 Review coordination with related work.

2.8.7 Record minutes and distribute copies within two days after meeting to participants, with copies to EOR, DISTRICT, participants, and those affected by decisions made.

2.9 FINALIZING SCHEDULES:

2.9.1 Within ten (10) days of receiving the Notice to Proceed the CONTRACTOR shall submit the final schedule approved by the DISTRICT and EOR. The finalized progress schedule shall be acceptable to the DISTRICT as providing an orderly progression of the WORK to completion within the Contract Time, but such acceptance shall neither impose on the DISTRICT responsibility for the progress or scheduling of the WORK nor relieve CONTRACTOR from full responsibility thereof. The finalized schedule of Shop Drawing submissions shall be acceptable to the DISTRICT as providing a workable arrangement for processing the submissions. The finalized Schedule Of Values shall be acceptable to the DISTRICT as to form and substance.

2.10 SUBMITTAL PROCEDURES

2.10.1 SCOPE OF WORK

Administrative and procedural requirements for processing of submittals during construction process. Submittals may include the following:

- Proposed Products Lists.
- Proposed Vendor List.
- Product Data.
- Shop Drawings.
- Samples.
- Design Data.
- Field Test Reporting.
- Quality Control Reporting.
- Certificates.
- Manufacturer's Installation, Handling and Storage Instructions.
- Manufacturer's Field Reports.
- Erection Drawings.
- Closeout Documents
- Warranties.
- Scheduling of Work
- Construction Progress Schedule.
- Submittals Schedule.
- Survey and Layout Data.
- Construction Progress Reporting.
- Periodic Work Observation.
- Photographic Documentation.
- Purchase Order Tracking.
- Operation and Maintenance Documentation

2.10.2 RELATED SECTIONS

- A. Payment Procedures.
- B. Project Coordination.
- C. References.
- D. Quality Control.
- E. Product Storage and Handling Requirements.
- F. Closeout Submittals.

2.10.2.1 SEE 2.10.2 RELATED SECTIONS AND SUBMITTAL SECTIONS 2.10.1 FOR INDIVIDUAL SUBMITTAL PROCEDURES.



2.10.3 SUBMITTAL PROCEDURES-GENERAL

2.10.3.1 Submittal Procedures shall be in conformance with General Conditions of the Contract and as amended by District.

2.10.3.2 Transmit each submittal with District's Standard Transmittal form.

2.10.3.3 Sequentially number each transmittal forms. Revise submittals with original number and a sequential alphabetic suffix.

2.10.3.4 Identify project, Contractor, subcontractor or supplier pertinent drawing and detail number, and specification section number, as appropriate.

2.10.3.5 Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information are in accord with requirements of the work and contract documents.

2.10.3.6 Schedule submittals to expedite the project, and deliver to Consultant and District at business address. Coordinate submission of related items.

2.10.3.7 For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.

2.10.3.8 Identify variations from contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.

2.10.3.9 Provide space for Contractor and EOR review stamps.

2.10.3.10 When revised for resubmission, identify all changes made since previous submission.

2.10.3.11 Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

2.10.3.12 Submittals not requested will not be recognized or processed.

2.10.4 PRODUCT DATA

2.10.4.1 Product Data for Review:

2.10.4.1.1 Submit to EOR for review for purpose of checking for conformance with information given and design concept expressed in Contract Documents.

2.10.4.1.2 After review, provide copies and distribute per Submittal Procedures article above and for record documents purposes described in Section 01 78 00 – Closeout Submittals.

2.10.4.2 Product Data for Information:

2.10.4.2.1 Submittal for EOR'S knowledge as contract administrator or for District.

2.10.4.3 Product Data for Project Close-out:

2.10.4.3.1 Submit for District's benefit during and after project completion.

2.10.4.4 Submit number of copies, which Contractor/CM requires, plus two copies for Consultant.

2.10.4.5 Mark each copy to identify applicable products, models, options, and other data.

2.10.4.6 Supplement manufacturers' standard data to provide information unique to project.

2.10.4.7 Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

2.10.4.8 After review, distribute in accord with Submittal Procedures article above and provide copies for record documents described in Section 6.37 Closeout Submittals.

2.10.5 CONSTRUCTION SUBMITTALS

2.10.5.1 Submit one copy of Building Permit, Site Permits, Environmental Permits, or other permits required for construction of work.

2.10.5.2 Submit Payment Applications to Consultant for review for purpose of checking conformance with information given and design concept expressed in Contract Documents.

2.10.5.3 Certificates:

2.10.5.3.1 When specified, submit certification by manufacturer, installation/application subcontractor, or contractor to Consultant, in quantities specified for Product Data.

2.10.5.3.2 Indicate material or Product conforms to or exceeds specified requirements.

2.10.5.3.3 Submit supporting reference date, affidavits, and certifications as appropriate.

2.10.5.3.4 Certificates may be recent or previous test results on material or Product, but must be acceptable to Consultant.

2.10.5.4 Manufacturer's Instructions:

2.10.5.4.1 When specified, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Consultant for delivery to District in quantities specified for Product Data.

2.10.5.4.2 Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

2.10.5.4.3 Refer to Quality Control and Warranty sections for quality assurance requirements.

2.10.5.5 Manufacturer's Field Reports:

2.10.5.5.1 Submit reports to EOR and District's Project Manager.

2.10.5.5.2 Submit report within 5 days of observation to EOR.

2.10.5.5.3 Submit for information for purpose of assessing conformance with information given and design concept expressed in Documents.

2.10.5.6 Erection Drawings:

2.10.5.6.1 Submit drawings to Consultant and District's Project Manager.

2.10.5.6.2 Submit for information for purpose of assessing conformance with information given and design concept expressed in Documents.

2.10.5.6.3 Data indicating inappropriate or unacceptable work is subject to rejection by EOR or District.

ARTICLE 3 – USE OF CONTRACT DOCUMENTS

3.1 INTENT:

3.1.1 The Contract Documents comprise the entire agreement between the DISTRICT and CONTRACTOR



concerning the WORK. The Contract Documents are complementary: what is called for by one is as binding as if called for by all. The Contract Documents shall be construed in accordance with the laws of the State of Florida with venue in Martin County, Florida.

3.1.2 It is the intent of the Contract Documents to describe the WORK, functionally complete, to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result shall be provided whether or not specifically called for.

3.2 REFERENCE TO STANDARDS:

3.2.1 Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties or responsibilities of the DISTRICT, CONTRACTOR or EOR or any of their agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to DISTRICT, EOR OR EOR'S agents or employees, any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of the Contract Documents.

3.3. REVIEW OF CONTRACT DOCUMENTS

3.3.1 The Contract Documents which comprise the Contract between the DISTRICT and the Contractor are attached hereto and made part hereof and consist of the following:

- 3.3.1.1 The Purchase Order.
- 3.3.1.2 Contractor's Bid and Bid Bonds
- 3.3.1.3 Bid Documents, consisting of:
 - 3.3.1.4 Invitation to Bid and Instructions to Bidders.
 - 3.3.1.5 General Terms & Conditions.
 - 3.3.1.6 Supplementary Conditions
 - 3.3.1.7 Special Conditions.
 - 3.3.1.8 Technical Provisions.
 - 3.3.1.9 All Plans.
 - 3.3.1.10 All Addenda.
 - 3.3.1.11 Recorded Public Construction Performance and Payment Bond in a form supplied by the DISTRICT, which shall be provided to the DISTRICT by the Contractor, along with the return of an executed Purchase Order. The Contractor shall be responsible for recording the Public Construction Bond.
 - 3.3.1.12 Insurance Certificates which shall be provided by the Contractor, along with the return of an executed copy of this Contract.
 - 3.3.1.13 Any Modifications, including change orders, duly delivered after execution of this Contract.
 - 3.3.1.14 Executed Notice of Intent to Award.
 - 3.3.1.15 Executed Notice to Proceed

3.3.2 Except for duly authorized and executed Modifications including but not limited to change orders and contract amendments, any conflict between the terms and conditions of this Contract and the terms and conditions of any of the other contract documents shall be interpreted in favor of this Contract

3.3.3 If, during the performance of the WORK, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so notify the CONSULTANT, in writing, at once and before proceeding with the WORK affected thereby shall obtain a written interpretation or clarification, except in an emergency as authorized by paragraph 6.13.

3.4 ORDER OF PRECEDENCE OF CONTRACT DOCUMENTS

3.4.1 In resolving conflicts resulting from errors or discrepancies in any of the Contract Documents, the order of precedence shall be as follows:

- 1. Amendment
- 2. Change Order
- 3. Construction Contract or Purchase Order
- 4. Addenda, with later date having greater priority
- 5. Proposal Form. If applicable
- 6. Technical Specifications
- 7. Contract Drawings/Attachments
- 8. Supplementary Conditions
- 9. General Conditions
- 10. Instructions to Proposers
- 11. Request for Proposal

The captions or subtitles of the several articles and divisions of these Contract Documents constitute no part of the context and hereof, but are only labels to assist in locating and reading the provisions hereof.

3.4.2 With reference to the Drawings, the order of precedence is as follows:

- 1. Figures govern over scaled dimensions
- 2. Detail drawings govern over general drawings
- 3. Addenda/Change Order drawings govern over any other drawings
- 4. Drawings govern over standard drawings

3.4.3. Except as otherwise specifically stated in the Contract Documents or as may be provided by amendment or supplement thereto issued by one of the methods indicated in paragraph 3.5, (Amending of Contract Documents) the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:

- 1. The provisions of any such standard, specification, manual, code or instruction (whether or note specifically incorporated by reference in the Contract Documents); or
- 2. The provisions of any such Laws or Regulations applicable to the performance of the WORK (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of DISTRICT, CONTRACTOR or CONSULTANT, or any of their subcontractors, agents or employees from those set forth in the Contract Documents, no shall it be effective to assign to DISTRICT, EOR'S or any of EOR's agents or employees any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.10, (Limitations on EOR) or any other provision of the Contract Documents.



3.5 AMENDING CONTRACT DOCUMENTS:

3.5.1 The Contract Documents may be amended to provide for additions, deletions and revisions in the WORK or to modify the terms and conditions thereof by a Change Order (pursuant to Article 10, Changes in the Work).

3.5.2 Additionally, the requirements of the Contract Documents may be supplemented and minor variations and deviations in the WORK may be authorized, in one or more of the following ways:

3.5.2.1 A Field Order (pursuant to paragraph 9.5, Changes in the Work)

3.5.2.2 EOR'S approval of a Shop Drawing or sample (pursuant to paragraphs 6.11, Shop Drawings and Samples), or

3.5.2.3 EOR'S written interpretation or clarification (pursuant to paragraph 9.4 Clarifications and Interpretations).

3.6 REUSE OF DOCUMENTS:

3.6.1 Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the WORK under a direct or indirect contract with the DISTRICT shall have or acquire any title to or ownership rights in any of the Contract Documents, drawings, technical specifications or other documents used on the WORK; and, they shall not reuse any of them on extensions of the Project or any other project without prior written consent of the DISTRICT and EOR.

ARTICLE 4 – SITE OF THE WORK

4.1 AVAILABILITY OF LANDS:

4.1.1 The DISTRICT shall furnish, as indicated in the Contract Documents, the lands upon which the WORK is to be performed, rights-of-way and easements for access thereto and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities shall be obtained and paid for by the DISTRICT, unless otherwise provided in the Contract Documents. Nothing contained in the Contract Documents shall be interpreted as giving the CONTRACTOR exclusive occupancy of the lands or rights-of-way provided. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.1.2 Occupying Private Land: The Contractor shall not enter upon nor use any property not under the control of the DISTRICT until a written temporary construction easement agreement has been executed by the CONTRACTOR and the property owner, and a copy of said easement furnished to the DISTRICT and EOR prior to said use; and, neither the DISTRICT nor the EOR shall be liable for any claims or damages resulting from the CONTRACTOR'S trespass on or use of any such properties. The CONTRACTOR shall provide the DISTRICT with a signed release from the property owner confirming that the lands have been satisfactorily restored upon completion of the WORK.

4.1.3 WORK in State, County and DISTRICT Rights-of-Way and Easements: When the WORK involves the installation of sanitary sewers, storm sewers, drains, water mains, manholes, underground structures, or other disturbances of existing features in or across streets, rights-of-way, easements, or other property, the CONTRACTOR shall (as the WORK progresses) promptly back-fill, compact, grade and otherwise restore the disturbed area to a basic condition which shall permit resumption of pedestrian or vehicular traffic and any other critical activity or function consistent with the original use of the land. Unightly mounds of earth, large stones, boulders, and debris shall be removed so that the site presents a neat appearance as part of the contract.

4.1.4 WORK Adjacent to Telephone, Power, Cable TV and Gas Company Structures: In all cases where WORK is to be performed near telephone, power, water, sewer, drainage, cable TV, or gas company facilities, the Contractor shall provide written notification to the respective companies of the areas of which WORK is to be performed, prior to the actual performance of any WORK in these areas.

4.1.5 Use of Public Streets: The use of public streets and alleys shall be such as to provide a minimum of inconvenience to the public and to other vehicular and non-vehicular traffic. The CONTRACTOR shall remove any earth or excavated materials spilled from trucks and clean the streets to the satisfaction of the DISTRICT, the EOR, the Florida Department of Transportation, or other agency or governmental entity having jurisdiction, as applicable.

4.2 REPORTS OF PHYSICAL CONDITIONS:

4.2.1 Subsurface Explorations: Where applicable, reference is made in the technical specifications for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by EOR in preparation of the Contract Documents.

4.2.2 Existing Structures: Where applicable, reference is made to the technical specifications, for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3 herein) which are at or contiguous to the site that have been utilized by EOR in preparation of the Contract Documents.

4.2.3 Neither the DISTRICT nor EOR makes any representation as to the completeness of the reports or drawings referred to in Paragraph 4.2.1. Subsurface Explorations or 4.2.2. Existing Structures above or the accuracy of any data or information contained therein. CONTRACTOR may rely upon the general accuracy of the technical data contained in such reports and drawings but not for the completeness thereof for CONTRACTOR'S purposes including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. However, the CONTRACTOR may not rely upon any interpretation of such technical data, including any interpolation or extrapolation thereof, or any non-technical data, interpretations, and opinions contained therein.

4.2.4 Where the dimensions and locations of existing structures are of critical importance in the installation or connection of new WORK, the CONTRACTOR shall verify such dimensions and locations in the field before the fabrication of any materials or equipment which is dependent on the correctness of such information. There shall be no additional cost to the DISTRICT for CONTRACTOR'S failure to verify such dimensions and locations, or for inaccurate verifications by CONTRACTOR.

4.3 PHYSICAL CONDITIONS -- UNDERGROUND FACILITIES:

4.3.1 Indicated: The information and data indicated in the Contract Documents with respect to existing Underground Utilities at or contiguous to the site is based on information and data furnished to the DISTRICT or EOR by the owners of such Underground Utilities or by others.

4.3.1.1 The DISTRICT and EOR shall not be responsible for the accuracy or completeness of any such information or data; and,

4.3.1.2 The CONTRACTOR shall notify the Underground Service Alert (USA) System, Phone No. 1-800-227-2600, and Sunshine State One Call Services (1-800-432-4770) at least 48 hours in advance of the commencement of WORK at any site to allow the member utilities to examine the construction site and mark the location of the utilities' respective facilities.



4.3.1.3 The CONTRACTOR acknowledges that some (or all) of the utility companies with facilities shown on the drawings may not be members of the USA System or Sunshine State One Call Services; and, therefore, not automatically contacted by the above referenced telephone number. The CONTRACTOR shall be responsible for making itself aware of utility company facilities not reported by the USA System or Sunshine State One Call Services, and shall be liable for any and all damages stemming from repair or delay costs or any other expenses resulting from the unanticipated discovery of underground utilities. The CONTRACTOR shall be responsible for notifying all of the utilities at least 48 hours in advance of the commencement of WORK at any site to allow the utilities to examine the construction site and mark the location of the utilities' respective facilities. The CONTRACTOR shall also be responsible for verifying that each utility has responsibly responded to such notification.

4.3.1.4 CONTRACTOR shall have full responsibility for reviewing and checking all such information and data. Further, the CONTRACTOR shall be responsible for locating all Underground Facilities whether or not shown or indicated in the Contract Documents, for coordination of the WORK with the owners of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.10, and repairing any damage thereto resulting from the WORK, the cost of all of which shall be considered as having been included in the Contract Price.

4.3.1.5 All water pipes, sanitary sewers, storm drains, force mains, gas mains, or other pipe, telephone or power cables or conduits, pipe or conduit casings, curbs, sidewalks, service lines and all other obstructions, whether or not shown, shall be temporarily removed from or supported across utility line excavations. Where it is necessary to temporarily interrupt services, the CONTRACTOR shall notify the DISTRICT or occupant of such facilities both 48 hours before the interruption and again immediately before service is resumed. Before disconnecting any pipes or cables, the CONTRACTOR shall obtain permission from the DISTRICT or occupant, or shall make suitable arrangements for their disconnection by the DISTRICT or occupant. The CONTRACTOR shall be responsible for any damage to any such pipes, conduits or cables, and shall restore them to service promptly, as part of the work, as soon as the WORK has progressed past the point involved. Approximate locations of known water, sanitary, drainage, natural gas, power, telephone and cable TV installations along the route of new pipelines or in the vicinity of new WORK are shown, but are to be verified in the field by the Contractor prior to performing the WORK. The CONTRACTOR shall uncover these pipes, ducts, cables, etc., carefully, by hand prior to installing his WORK. Any discrepancies or differences found shall be immediately brought to the attention of the EOR in order that necessary changes may be made to permit installation of the WORK.

4.3.2 Not Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown, nor located by the facilities DISTRICT and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any WORK affected thereby (except in an

Contract Amount	Best Key Rating
Under \$500,000	Class IX A or better
\$500,000 to \$2,499,999.99	Class XI A or better
Over \$2,500,000	Class XIV A or better

emergency as permitted by paragraph 6.10), identify to the DISTRICT of such Underground Facility and give written notice thereof to that owner and to the DISTRICT and the CONSULTANT. The CONSULTANT shall promptly review the

Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents shall be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.13.

4.4 DIFFERING SITE CONDITIONS

4.4.1 The CONTRACTOR shall notify the EOR in writing, of the following unforeseen conditions, hereinafter called differing Site conditions, promptly upon their discovery (but in no event later than 14 days after their discovery) and before they are disturbed:

4.4.1.1 Subsurface or latent physical conditions at the Site of the WORK differing materially from those indicated, described, or delineated in the Contract Documents, including those reports discussed in Paragraph 4.2 and 4.3; (Physical Conditions, Underground facilities) and

4.4.3.2 Any unknown physical conditions and the Site of the WORK of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents, including those reports and documents discussed in Paragraph 4.2 and 4.3.

4.4.2 EOR shall promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise the DISTRICT in writing (with a copy to the CONTRACTOR) of EOR'S findings and conclusions.

4.4.3 If EOR concludes that because of newly discovered conditions a change in the Contract Documents is required, a Change Order shall be issued as provided in Article 10 (Changes in the Work) to reflect and document the consequences of the difference.

4.4.4 In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, shall be allowable to the extent that they are attributable to any such inaccuracy or difference. If the DISTRICT and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Article 11, Change of Contract Price, and Article 12, Change of Contract Time.

4.4.5 The CONTRACTOR'S failure to give notice of differing Site conditions within seven (7) days of their discovery and before they are disturbed shall constitute a waiver of all claims in connection therewith, whether direct or consequential in nature.

4.5 REFERENCE POINTS:

4.5.1 The DISTRICT shall provide, if available, engineering surveys to establish reference points for construction, which in EOR'S judgment are necessary to enable CONTRACTOR to proceed with the WORK.

4.5.2 CONTRACTOR shall be responsible for laying out the WORK (unless otherwise specified in the General Requirements), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of the DISTRICT. The CONTRACTOR shall report to the EOR whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 5 – BONDS AND INSURANCE

5.1 BONDS:



5.1.1 CONTRACTOR shall upon delivery of the executed Contract or receipt of a Notice of Tentative Award to the DISTRICT furnish Performance and Payment Bonds, each in an amount at least ONE HUNDRED PERCENT (100%) of the Contract Price as security for the faithful performance and payment of all CONTRACTOR'S obligations under the Contract Documents. Said bonds must be provided to the DISTRICT within TEN (10) business days of the Notice of Award or delivery of a Purchase Order or contract to CONTRACTOR to execute and return to the District, or the DISTRICT, at its sole discretion and option may terminate the contract. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. Each Bond shall be furnished in an amount equal to ONE HUNDRED PERCENT 100% of the amount of the Contract award. The form and conditions of the Bonds and the Surety shall be as specified and supplied by the DISTRICT in the Bid Documents.

5.1.2 The CONTRACTOR shall provide a Maintenance and Guaranty Bond in the amount of 50% of the Performance and Payment Bonds to provide a guarantee against defects in the WORK occurring during the year following the one-year correction period. The Bond shall be payable to the DISTRICT, and be at the sole cost of the CONTRACTOR. The form and conditions of the Bonds and the Surety shall be as specified and supplied by the DISTRICT in the Bid Documents.

5.1.3 The Surety shall be a nationally recognized Surety Company acceptable to the DISTRICT, listed on the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department, and meet the other requirements of Florida Statutes Section 287.0935 (1989).

For projects exceeding five hundred thousand dollars, all bonds shall be placed with sureties with Best Ratings as stated below. The name, address and telephone number of the surety and its agent must be listed on the bond.

5.1.4 For contracts up to \$499,999.99 the surety shall have twice the minimum surplus and capital required by the Florida Insurance Code at the time the bid is issued for the Work, otherwise the surety shall have the following minimum ratings:

5.1.5 The Bond shall specifically incorporate and acknowledge the Surety's responsibility for liquidated damages.

5.1.6 Bonds shall be executed and issued by a resident agent, licensed and having an office in Palm Beach, Dade, Broward, St. Lucie, Indian River and Martin Counties, Florida, representing such corporate sureties.

5.1.7 If the CONTRACTOR is a partnership, the Bond shall be signed by each of the individuals who are partners; if a corporation, the Bond shall be signed in the correct corporate name by duly authorized officer, agent or attorney-in-fact. There shall be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts in the Contract. Each executed bond shall be accompanied by (a) appropriate acknowledgment of the respective parties; (b) appropriate duly certified copy of Power-of-Attorney or other certification of authority where bond is executed by agent, officer or other representative of Contractor or Surety; (c) duly certified extract from by-laws or resolutions of Surety under which Power-of-Attorney, or other certificate of Authority of its agent, officer or representative was issued.

5.1.8 If the surety on any Bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent or its right to do business is terminated in the state of Florida or it ceases to meet

the requirements of paragraph 5.1.3 and 5.1.4, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which must be in conformance with paragraph 5.1.3 and 5.1.4. **Under no circumstances shall the successful CONTRACTOR begin WORK until he/she has supplied to the DISTRICT Performance and Payment Bonds and Affidavit for Bond using the DISTRICT form, and the DISTRICT has approved the bond. Contractor shall execute and record all bonds in the public records of the county where the improvement is located prior to delivering the bonds to the owner. Non-registered bonds shall be rejected.**

5.2 INSURANCE:

5.2.1 The CONTRACTOR agrees to, in the performance of work and services under this Agreement, comply with all Federal, state, and local laws and regulations now in effect, or hereinafter enacted during the term of this agreement that are applicable to the CONTRACTOR, its employees, agents, or subcontractors, if any, with respect to the work and services described herein. The CONTRACTOR shall obtain at CONTRACTOR's expense all necessary insurance in such form and amount as required by the District's Risk & Safety Officer before beginning work under this Agreement. The CONTRACTOR shall maintain such insurance in full force and effect during the life of this Agreement. The CONTRACTOR shall provide to the District's Risk & Safety Officer certificates of all insurance required under this section prior to beginning any work under this Agreement. The CONTRACTOR shall indemnify and save the District harmless from any damage resulting to it for failure of either CONTRACTOR or any subcontractor to obtain or maintain such insurance. The following are required types and minimum limits of insurance coverage, which the CONTRACTOR agrees to maintain during the term of this contract:

Professional Liability	\$1,000,000	\$2,000,000
Line of Business/ Coverage	Occurrence	Aggregate
Umbrella Liability	\$3,000,000	Occurrence
Commercial General Liability	\$1,000,000	\$2,000,000
Including:		
Premises/		
Operations		
Contractual Liability		
Personal Injury		
Explosion, Collapse, Underground Hazard		
Products/Completed Operations		
Broad Form Property Damage		
Cross Liability and Severability of Interest Clause		
Automobile Liability (including owned, non-owned and hired)	\$1,000,000	\$2,000,000

Workers' Compensation & Statutory limits
 Employer's Liability
 \$500,000 per each disease;
 \$500,000 per each accident;
 and \$500,000 each employee.

5.2.2 The District reserves the right to require higher limits depending upon the scope of work under this Agreement.

5.2.3 Neither the CONTRACTOR nor any subcontractor shall commence work under this contract until they have obtained all insurance required under this section and have supplied the District with evidence of such coverage in the form of an insurance certificate and endorsement. The CONTRACTOR shall



ensure that all subcontractors shall comply with the above guidelines and shall maintain the necessary coverage throughout the term of this Agreement.

5.2.4 All insurance carriers shall be rated at least A-VIII per A.M. Best's Key Rating Guide and be licensed to do business in Florida. Policies shall be "Occurrence" form. Each carrier shall give the District sixty (60) day's notice prior to cancellation.

5.2.5 The CONTRACTOR's general and automobile liability insurance policies shall be endorsed to add the Martin County School District, its board, employees, officers and agents as an "additional insured". The CONTRACTOR's Worker's Compensation carrier shall provide a Waiver of Subrogation to the District. The CONTRACTOR shall be responsible for the payment of all deductibles and self-insured retentions.

5.2.6 The District may require that the CONTRACTOR purchase a contract or performance bond equal to the cost of the project. If the CONTRACTOR is to provide professional services under this Agreement, the CONTRACTOR must provide the District with evidence of Professional Liability insurance with, at a minimum, a limit of \$1,000,000 per occurrence and \$2,000,000 in the aggregate. "Claims-Made" forms are acceptable for Professional Liability insurance.

5.2.7 The District may require higher limits for Professional Liability depending on the size of the project. In any event, the Bidder shall maintain such Professional Liability insurance in effect three (3) years after the completion of the project.

5.2.8 Should the District require the Bidder to carry Builders Risk insurance for the project, it must be in the amount equal to the full replacement cost of the project. School Board to be listed as additional insured and Contractor responsible for deductibles.

5.2.9 Fulfillment by the Bidder of the insurance provisions does not limit the Bidder's liability to the amount of the policy limits.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.1 CONTRACTOR STATUS:

6.1.1 The Contractor is an independent contractor and is not an employee or agent of the DISTRICT. Nothing in this Contract shall be interpreted to establish any relationship other than that of an independent contractor, between the DISTRICT and the Contractor, its employees, agents, subcontractors, or assigns,

during or after the performance of this Contract. The Contractor shall take the whole responsibility for the means, methods, techniques, sequences, and production of the Work.

6.2 CONTRACTOR RISK:

6.2.1 The Contractor shall bear all losses resulting to him, or its, on account of the amount or character of the Work, or because of the nature of the ground beneath, in or on which the Work is done is different from what was assumed or expected, or because of bad weather, or because of errors or omissions in his or its bid on the Contract price, or except as otherwise provided in the Contract Documents because of any other causes whatsoever. Execution of this Contract by the Contractor is a representation that the Contractor has visited the site, has conducted a sufficient investigation of the surface and sub-surface conditions in order to submit its bid, has become familiar with the local conditions under which the Work is to be performed, and correlated personal observations with the requirements of the Contract Documents.

6.2.2 The Contractor shall protect the entire Work, all materials under the Contract and the DISTRICT's property (including machinery and equipment) in, on, or adjacent to the site of the Work until final completion and Work, from the action of

the elements, acts of other contractors, or except as otherwise provided in the Contract Documents, and from any other causes whatsoever; should any damage occur by reason of any of the foregoing, the Contractor shall repair at his, or its, own expenses to the satisfaction of the DISTRICT or its Project Manager. Neither the DISTRICT nor its officers, employees or agents assume any responsibility for collection of indemnities or damages from any person or persons causing injury to the Work of the Contractor.

6.2.3 At his, or its expense, the Contractor shall take all necessary precautions (including without limitation) the furnishing of guards, fences, warnings signs, walks, flags, cables and lights for the safety of and the prevention of injury, loss and damage to persons and property (including without limitation) in the term persons, members of the public, the DISTRICT and its employees and agents, the Project Manager and his employees, Contractor's employees, his or its subcontractors and their respective employees, other contractors, their subcontractors and respective employees, on, about or adjacent to the premises where said Work is being performed, and shall comply with all applicable provisions of safety laws, rules, ordinances, regulations and orders of duly constituted public authorities and building codes.

6.2.4 The Contractor assumes all risk of loss, damage and destruction to all of his or its materials, tools appliances and property of every description and that of his or its subcontractors and of their respective employees or agents, and injury to or death of the Contractor, his or its employees, subcontractors or their respective employees or agents, including legal fees, court costs or other legal expenses, arising out of or in connection with the performance of this Contract.

6.3 SUPERVISION AND SUPERINTENDENCE:

6.3.1 The CONTRACTOR shall supervise and direct the Work. He shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR shall employ and maintain on the Work a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the Work. (Copies of written communications given to the Superintendent shall be mailed to the Contractor's home office.)

6.4 LABOR, MATERIALS AND EQUIPMENT: CONDITIONS, SUBSTITUTIONS

Related Article: 6.40; Product Substitution Requirements and Procedures

6.4.1 The CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. He shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR shall not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday, observed by the DISTRICT, without the DISTRICT'S PROJECT MANAGER'S written consent.

6.4.2 Materials and Equipment: The CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work. All material stored on the



job site shall remain the responsibility of the CONTRACTOR until incorporated into the work. The DISTRICT shall not reimburse the CONTRACTOR for materials lost, stolen, or damaged while stored on the job site.

6.4.3 Condition of Materials: All materials and products supplied by the Bidder in conjunction with this bid shall be new, warranted for their merchantability, fit for a particular purpose, free from defects and consistent with industry standards. The products shall be delivered to the District in excellent condition. When special makes or grades of material which are normally packaged by the supplier or manufacturer are specified or approved, such materials shall be delivered to the site in their original packages or container with seals unbroken and labels intact. In the event that any of the products supplied to the District are found to be defective or do not conform to the specifications, the District reserves the right to return the product to the Bidder at no cost to the District.

6.4.4 Installation / Assembly: All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator or processors, except as otherwise provided in the Contract Documents.

6.4.5 Materials, Equipment, Products, and Substitutions: Materials, equipment and products incorporated in the Work must be approved for use before being purchased by the CONTRACTOR. The CONTRACTOR shall submit to the EOR and the DISTRICT'S PROJECT MANAGER a list of proposed materials, equipment or products, together with such samples as may be necessary for him to determine their acceptability and obtain his approval, per Section III General Terms and Conditions if prior to award, or after award, within ten (10) calendar days after the CONTRACTOR should have been aware of then need for substitution, unless otherwise stipulated in the Special Conditions. No request for payment for "or equal" equipment shall be approved until this list has been received and approved by the EOR. The District may require the CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute.

6.4.6 Should any work or materials, equipment or products not conform with requirements of the Drawings and Specifications or become damaged during the progress of the Work, such Work or materials shall be removed and replaced, together with any work disarranged by such alterations, at any time before completion and acceptance of the Project. All such work shall be done at the expense of the CONTRACTOR.

6.4.7 No materials or supplies for the Work shall be purchased by the CONTRACTOR or by any Subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the Seller. The CONTRACTOR warrants that he has good title to all materials and supplies used by him in the Work.

6.4.8 If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction if acceptable to the DISTRICT and EOR, if CONTRACTOR submits sufficient information to allow DISTRICT and EOR to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by DISTRICT and EOR shall be similar to that provided in paragraph 6.4.5.1 (Materials, Equipment, Products and Substitutions, par 2) as applied by EOR and as may be supplemented in the Technical Specifications.

6.4.9 Any two (2) or more pieces of material or equipment of the same kind, type or classification, and being used for identical types of service, shall be made by the same manufacturer.

6.4.10 The successful CONTRACTOR shall furnish all guarantees and warranties to the Purchasing Department prior to final acceptance and payment. The warranty period shall commence upon final acceptance of the product.

6.5 CONCERNING SUBCONTRACTORS:

6.5.1 The CONTRACTOR shall not employ any Subcontractor, other person or organization (whether initially or as a substitute) against whom the DISTRICT or the EOR may have reasonable objection, nor shall the CONTRACTOR be required to employ any Subcontractor against whom he has reasonable objection. The CONTRACTOR shall not make any substitution for any Subcontractor who has been accepted by the DISTRICT'S PROJECT MANAGER and the EOR, unless the EOR determines that there is good cause for doing so. If after bid opening and prior to the award of the contract, the DISTRICT objects to certain suppliers or subcontractors, the DISTRICT may permit CONTRACTOR to submit an acceptable substitute so long as there is no change in the contract price or contract time. If the contract price or contract time is increased, the DISTRICT may return the bid bond and award the contract to the next qualified, competent BIDDER. If after the award of the contract, the DISTRICT objects to certain suppliers or subcontractors, the DISTRICT shall permit CONTRACTOR to make an appropriate and acceptable substitution which is also acceptable to the DISTRICT. No acceptance by the DISTRICT or the EOR of any such Subcontractor, supplier or other person or organization shall constitute a waiver of any right of the DISTRICT or EOR to reject defective WORK.

6.5.2 Responsibility: The CONTRACTOR shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between DISTRICT or EOR and any Subcontractor or other person or organization having a direct contract with CONTRACTOR, nor shall it create any obligation on the part of DISTRICT or EOR to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by law. DISTRICT or EOR may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to CONTRACTOR on account of specific Work done in accordance with the schedule of values.

6.5.3 Division of Work: The divisions and sections of the Specifications and the identifications of any Drawings shall not control the CONTRACTOR in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.

6.5.4 Terms and Conditions: The CONTRACTOR agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the DISTRICT.

6.5.5 Agreement: All Work performed for the CONTRACTOR by a Subcontractor shall be pursuant to any appropriate agreement between the CONTRACTOR and the Subcontractor.

6.5.6 Responsibility: The CONTRACTOR shall be responsible for the coordination of the trades, Subcontractors and material men engaged upon His Work.

6.5.7 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the CONTRACTOR by the terms of these General Conditions and other Contract Documents insofar as applicable to the Work of Subcontractors, and to give the



CONTRACTOR the same power as regards terminating any subcontract that the DISTRICT may exercise over the CONTRACTOR under any provisions of the Contract Documents.

6.5.8 The DISTRICT or EOR shall not undertake to settle any differences between the CONTRACTOR and his Subcontractors or between Subcontractors.

6.5.9 If in the opinion of the DISTRICT'S PROJECT MANAGER or EOR, any Subcontractor on the Project proves to be incompetent or otherwise unsatisfactory, he shall be replaced if and when directed in writing.

6.5.10 CONTRACTOR shall also:

6.5.10.1 Observe work of each subcontractor to monitor compliance with schedule.

6.5.10.2 Verify that labor and equipment are adequate for the work and the schedule.

6.5.10.3 Verify that product procurement schedules are adequate.

6.5.10.4 Verify that product deliveries are adequate to maintain schedule.

6.5.10.5 Report noncompliance to EOR, with recommendation for changes

6.6 PATENT, FEES AND ROYALTIES:

6.6.1 The CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use of any invention, design, process or device which is the subject of patent rights or copyrights held by others. He shall indemnify and hold harmless the DISTRICT and EOR and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorney's fees) arising out of any infringement of such rights during or after completion of the Work, and shall defend all such claims in connection with any alleged infringement of such rights.

6.6.2 Patent Rights: The CONTRACTOR shall be responsible for determining the application of patent rights and royalties on materials, appliances, articles or systems prior to bidding. However, he shall not be responsible for such determination on systems which do not involve purchase by him of materials, appliances and articles.

6.7 PERMITS, LAWS AND REGULATIONS:

6.7.1 Permits: The CONTRACTOR shall secure and pay for all construction permits and licenses and shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of his Bid. The DISTRICT shall assist the CONTRACTOR, when necessary, in obtaining such permits and licenses. The DISTRICT shall be invoiced at actual cost without markup.

6.7.2 The CONTRACTOR shall also pay all public utility charges. The Contractor shall be responsible for obtaining dewatering permits as required. CONTRACTOR shall be responsible for complying with the South Florida Water Management District, Florida Department of Environmental Regulation, United States Environmental Protection Agency and any other regulatory agency requirements including financial responsibility (fines, etc.).

6.7.2 Laws and Regulations: The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If the CONTRACTOR observes that the Specifications or Drawings are at variance therewith, he shall give the EOR prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Modification. If the CONTRACTOR performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations,

and without such notice to the EOR, he shall bear all costs arising therefrom; however, it shall not be his primary responsibility to make certain that the Drawings and Specifications are in accordance with such laws, ordinances, rules and regulations.

6.8 TAXES:

6.8.1 Cost of all sales and other taxes for which the CONTRACTOR is liable under the Contract shall be included in the Contract Price stated by the CONTRACTOR.

6.9 RECORD DOCUMENTS/RIGHT TO AUDIT:

6.9.1 The CONTRACTOR shall keep in a safe place one record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to the EOR and shall be delivered to him for the DISTRICT upon completion of the project. It shall be used for this purpose only. Final acceptance of the project shall be withheld until approval of the documents is made by the DISTRICT'S PROJECT MANAGER.

6.9.2 The awarded CONTRACTOR shall maintain during the term of the contract all books, reports and records in accordance with generally accepted accounting practices and standards for records directly related to this contract. The form of all records and reports shall be subject to the approval of the District's Auditor. The awarded CONTRACTOR agrees to make available to the District's Auditor, during normal business hours all books of account, reports and records relating to this contract for the duration of the contract and retain them for a minimum period of one (1) year beyond the last day of the contract term.

6.9.3 If the CONTRACTOR submits a claim to the DISTRICT for additional compensation, the DISTRICT shall have the right, as a condition to considering the claim, and as a basis for evaluation of the claim, and until the claim has been settled, to audit the CONTRACTOR'S books to the extent they are relevant. This right shall include the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to discover and verify all direct and indirect costs of whatever nature claimed to have been incurred or anticipated to be incurred and for which claim has been submitted. The right to audit shall include the right to inspect the CONTRACTOR'S plants, or such parts thereof, as may be or have been engaged in the performance of the WORK. The CONTRACTOR further agrees that the right to audit encompasses all subcontracts and is binding upon all subcontractors. The rights to examine and inspect herein provided for shall be exercisable through such representatives as the DISTRICT deems desirable during the CONTRACTOR'S normal business hours at the office of the CONTRACTOR. The accounting records and documents, and other financial data, and upon request, shall submit true copies of requested records to the DISTRICT.

6.10 SAFETY, PROTECTION, STORAGE AND EMERGENCIES:

Related Articles:

6.2-Contractor Risk and Work Protection

6.21-Protection of Existing Property Improvements

6.38-Temporary barriers and Enclosures

6.39-Security

6.10.1 CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:



6.10.1.1 All employees on the Work and other persons who may be affected thereby,

6.10.1.2 All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and

6.10.1.3 Store and protect Products in accordance with manufacturers' instructions, with seals and labels intact and legible.

6.10.1.4 Store sensitive Products in weather tight, climate controlled enclosures.

6.10.1.5 For exterior storage of fabricated Products, place on sloped supports, above ground.

6.10.1.6 Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Product.

6.10.1.7 Store loose granular materials on solid flat surfaces in a well drained area. Prevent mixing with foreign matter.

6.10.1.8 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

6.10.2. CONTRACTOR shall comply with all applicable laws, ordinances, rules and regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss on or off the WORK and shall erect and maintain all necessary safeguards for such safety and protection.

6.10.3 CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the WORK may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property.

6.10.4 All damage, injury or loss to any property referred to in paragraph 6.10.1.2. or 6.10.1.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the WORK for anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of the DISTRICT or the EOR or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR).

6.10.5 CONTRACTOR'S duties and responsibilities for the safety and protection of the WORK shall continue until such time as all the WORK is completed and EOR has issued a notice to the DISTRICT and CONTRACTOR in accordance with paragraph 14.6.(Substantial Completion) that the WORK is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.10.6 The safety provisions of applicable laws and building and construction codes shall be observed and the Contractor shall take or cause to be taken such additional safety and health measures as the Local Public Agency involved may determine to be reasonably necessary. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction" as published by the Associated General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable laws.

6.10.7 The Contractor shall maintain an accurate record of all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from WORK, arising out of an and in the course of employment on WORK under the

Contract. The Contractor shall promptly furnish the Local Public Agency with reports concerning these matters.

6.10.8 SAFETY REPRESENTATIVE: CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR'S superintendent unless otherwise designated in writing by CONTRACTOR to the DISTRICT.

6.10.9 HAZARD COMMUNICATION PROGRAMS: CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employees at the Site in accordance with Laws and Regulations.

6.10.10 SUPERINTENDENT: The CONTRACTOR shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the CONTRACTOR'S superintendent unless otherwise designated in writing by the CONTRACTOR to the DISTRICT'S PROJECT MANAGER.

6.10.11 EMERGENCIES: In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the EOR or the DISTRICT'S PROJECT MANAGER, is obligated to act, at his discretion, to prevent threatened damage, injury or loss.

6.10.11.1 CONTRACTOR shall give DISTRICT PROJECT Representative and EOR prompt written notice if CONTRACTOR believes that any significant changes in the WORK or variations from the Contract Documents have been caused thereby. If EOR determines that a change in the Contract Documents is required because of the action taken in response to an emergency, or Change Order shall be issued to document the consequences of the changes or variations.

6.10.11.2 During adverse weather, and against the possibility thereof, the CONTRACTOR shall take all necessary precautions to ensure that the WORK shall be done in a good and workmanlike condition and is satisfactory in all respects. When required, protection shall be provided by the use of tarpaulins, wood and building paper shelters, or other acceptable means. The CONTRACTOR shall be responsible for all changes caused by adverse weather, including unusually high winds and water levels and he shall take such precautions and procure such additional insurance as he deems prudent. The EOR may suspend construction operations at any time when, in his judgment, the conditions are unsuitable or the proper precautions are not being taken, whatever the weather or water level conditions may be, in any season.

6.10.11.3 If the CONTRACTOR believes that additional work done by him in an emergency which arose from causes beyond his control entitles him to an increase in the Contract Price or an extension of the Contract Time, he may make a claim therefore as provided in Articles 11 (Change in Contract Price) and 12, (Change in Contract Time).

6.10.12. **NATIONAL EMERGENCY:** In the event the DISTRICT is prevented from proceeding with any or all of this WORK as stated in this Contract, due to a declaration of war, or national emergency by the United States government, whereas the construction of the type contracted for herein is specifically prohibited by statute or governmental edict, or due to the stoppage of construction caused by any governmental agency, State, DISTRICT, Town, or County regulations, orders, restrictions, or due to circumstances beyond the DISTRICT'S control, then the DISTRICT herein reserves the right to either suspend the WORK to be done for an indefinite period of time or to cancel this Contract outright by giving notice by registered mail of such intention to the CONTRACTOR herein. In the event of any conditions above mentioned occurring after the WORK herein



has already been commenced, then the DISTRICT herein shall be liable for only the cancellation or suspension without the addition of prospective profits or other changes whatsoever.

6.11 SHOP DRAWINGS AND SAMPLES:

Related Article 6.41: Field Samples and Mockups

6.11.1 SHOP DRAWINGS: After checking and verifying all field measurements, the CONTRACTOR shall submit to the CONSULTANT and the DISTRICT'S PROJECT MANAGER for review, in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9) copies (or at the CONSULTANT'S option, one reproducible copy) of all Shop Drawings, which shall have been checked by and stamped with the approval of the CONTRACTOR. The data shown on the Shop Drawings shall be complete with respect to dimensions, design criteria, materials of construction and the like to enable the EOR to review the information as required.

Shop drawings shall include, but not be limited to the following information:

- 6.11.1.2 Fabrication and installation Drawings and details.
- 6.11.1.3 Template placement diagrams.
- 6.11.2.4 Manufacturer's installation instructions.
- 6.11.1.5 Product patterns and colors.
- 6.11.1.6 Coordination Drawings.
- 6.11.1.7 Schedules.
- 6.11.1.8 Product mix formulae.
- 6.11.1.9 Product design or engineering calculations.
- 6.11.1.10 Other information as required by project.

After review, produce copies and distribute per Submittal Procedures article above and for record documents purposes described in Section 6.37 Closeout Submittals.

Submit to EOR for purpose of checking conformance with information given and design concept and District's Project Manager.

6.11.2 SAMPLES: The CONTRACTOR shall also submit to the EOR for review, with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples shall have been checked by and stamped with the approval of the CONTRACTOR, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.

Contractor shall submit to Consultant for purpose of checking conformance with information given and design concept expressed in the documents.

After review, Consultant shall submit color board to District's Project Manager per Submittal Procedures. Samples shall also conform to the following:

6.11.2.1 Sample finishes and colors shall be from full range of manufactures' standard colors, textures, and patterns for Consultant's selection and preparation of color board for District's approval.

6.11.2.2 After review and approval by District, provide duplicates and distribute per Submittal Procedures.

6.11.2.3 Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

6.11.2.4 Include identification on each sample, with full project information.

6.11.2.5 Submit number of samples specified in specification, one of which Consultant shall retain.

Reviewed samples may be used in work, if indicated.

6.11.3 DEVIATIONS: At the time of each submission, the CONTRACTOR shall in writing call the EOR'S attention to any deviations that the Shop Drawings or sample may have from the requirements of the Contract Documents.

6.11.4 CONFORMANCE REVIEW: The EOR shall review within ten (10) days or as extended by District Shop Drawings and samples, but his review shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The review of a separate item as such shall not indicate review of the assembly in which the item functions. The CONTRACTOR shall make any corrections required by the EOR at CONTRACTOR'S expense and shall return the required number of corrected copies of Shop Drawings and resubmit new samples until the review is satisfactory to the EOR. The CONTRACTOR shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by the CONSULTANT on previous submissions. The CONTRACTOR'S stamp of approval on any Shop Drawings or sample shall constitute a representation to the DISTRICT and the EOR that the CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalogue numbers and similar data or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents. Shop Drawings submitted without the CONTRACTOR'S stamp or specific written indication shall be returned without action. Shop Drawings and submittal data shall be reviewed two times, thereafter all further review time shall be charged to the CONTRACTOR.

6.11.5 APPROVAL: No work requiring a Shop Drawing or sample submission shall be commenced until the submission has been reviewed and approved by the EOR. A copy of each Shop Drawing and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the EOR.

6.11.6 SPECIFIC DEVIATIONS: The EOR'S review of Shop Drawings or samples shall not relieve the CONTRACTOR from his responsibility for any deviations from the requirements of the Contract Documents unless the CONTRACTOR has in writing called the EOR'S attention to such deviation at the time of submission and the EOR has given written approval to the specific deviation, nor shall any review by the EOR relieve the CONTRACTOR from responsibility for errors or omissions in the Shop Drawings.

6.11.7 Where a Shop Drawing or sample is required by the Specifications, any related WORK performed prior to EOR'S review and acceptance of the pertinent submission shall be the sole expense and responsibility of CONTRACTOR.

6.12 SITE CLEAN UP:

6.12.1 SITE: The CONTRACTOR shall clean up behind the Work as much as is reasonably possible as the Work progresses. Upon completion of the Work, and before acceptance of and final payment for the Project by the DISTRICT, the CONTRACTOR shall remove all his surplus and discarded materials, excavated material and rubbish from the roadways, sidewalks, parking areas, lawns and all adjacent property; shall clean his portion of Work involved in any building under this Contract, so that no further cleaning by the DISTRICT is necessary prior to his occupancy; shall restore all property, both public and private, which has been disturbed or damaged during the prosecution of the Work; and shall leave the whole in a neat and presentable condition.



6.12.2 **BUILDING CLEAN-UP:** Clean-up operations shall consistently be carried on by the CONTRACTOR at all times to keep the premises free from accumulation of waste materials and rubbish. Upon completion of the Work he shall remove all rubbish, tools, scaffolding, surplus materials, etc., from the building and shall leave his work "broom clean", or its equivalent, unless more exactly specified elsewhere in the Contract. The CONTRACTOR shall do the following special cleaning for all trades upon completion of the Work:

6.12.2.1 Remove putty stains and paint from and wash and polish all glass. Do not scratch or otherwise damage glass.

6.12.2.2 Remove all marks, stains, fingerprints and other soil and dirt from painted, stained and decorated work.

6.12.2.3 Remove all temporary protections and clean and polish floors.

6.12.2.4 Clean and polish all hardware for all trades; this shall include removal of all stains, dust, dirt, paint, etc.

6.12.2.5 General: In case of dispute, the DISTRICT may remove the rubbish and charge the cost to the CONTRACTOR.

6.13 PUBLIC CONVENIENCE AND SAFETY:

6.13.1 Convenience: The CONTRACTOR shall, at all times, conduct the Work in such a manner as to insure the least practicable obstruction to public travel. The convenience of the general public and of the residents along and adjacent to the area of the Work shall be provided for in a satisfactory manner, consistent with the operation and local conditions.

6.13.2 Safety: "Street Closed" signs shall be placed immediately adjacent to the Work, in a conspicuous position, at such locations as traffic demands. At any time that streets are required to be closed, Contractor shall obtain approval to close the street from the appropriate regulatory agencies having jurisdiction. The CONTRACTOR shall notify law enforcement agencies, fire departments, and parties operating emergency vehicles before the street is closed and again as soon as it is opened. Approval from the DISTRICT shall be coordinated through the office of the Director of Facilities including notification of the news media and affected property owners. Access to fire hydrants and other fire extinguishing equipment shall be provided and maintained at all times. Traffic paths shall be maintained for local traffic.

6.14 SANITARY PROVISIONS:

6.14.1 The CONTRACTOR shall furnish necessary toilet conveniences, secluded from public observation, for use of all personnel on the Work, whether or not in his employ. They shall be kept in a clean and sanitary condition and shall comply with the requirements and regulations of the Public Authorities having jurisdiction. He shall commit no public nuisance. Temporary sanitary facilities shall be removed upon completion of the Work and the premises shall be left clean.

6.15 INDEMNIFICATION:

6.15.1 CONTRACTOR agrees to protect, defend, indemnify, and hold harmless the District, its employees, representatives, and elected officials from any and all claims and liabilities including all attorney's fees and court costs, including appeals, for which the District, its employees, representatives, and elected officials can or may be held liable as a result of injury (including death) to persons or damage to property occurring by reason of any negligence, recklessness, or intentional wrongful misconduct of the CONTRACTOR, its employees, or agents, arising out of or connected with this Agreement. The CONTRACTOR shall not be required to indemnify the District or its agents, employees,

representatives, or elected officials when an occurrence results solely from the wrongful acts or omissions of the District, or its agents, employees or representatives.

6.15.2 The CONTRACTOR, without exemption, shall indemnify and hold harmless, the District, its employees, representatives and elected officials from liability of any nature or kind, including cost and expenses for or on account of any copyrighted, service marked, trademarked patented or unpatented invention, process, or any other intellectual property right or item manufactured by the CONTRACTOR. Further, if such a claim is made, or is pending, the CONTRACTOR may, at its option and expense, procure for the District the right to use, replace, or modify the item to render it non-infringing. If none of the alternatives are reasonably available, the District agrees to return the article on request to the CONTRACTOR and receive reimbursement from the CONTRACTOR. If the CONTRACTOR used any design, device or materials covered by letters, patent or copyright, it is mutually agreed and understood, without exception, that the Bid prices shall include all royalties or cost arising from the use of such design, device or materials in any way involved in the work. This article shall survive the termination of any contract with the School District.

6.15.3 The parties agree that Ten Dollars (\$10.00) of the total compensation paid to the Bidder for performance of this Agreement shall represent the specific consideration for the Bidder's indemnification of the Owner.

6.15.4 The District reserves the right to select its own legal counsel to conduct any defense in any such proceeding and all costs and fees associated therewith shall be the responsibility of CONTRACTOR under the indemnification agreement.

6.15.5 It is the specific intent of the parties hereto that the foregoing indemnification complies with F.S. 725.06 (Chapter 725). It is further the specific intent and agreement of the parties that all of the Contract Documents on this Project are hereby amended to include the foregoing indemnification and the "Specific Consideration" therefore.

6.15.6 Nothing contained herein is intended nor shall be construed to waive District's rights and immunities under the common law or Florida Statutes 768.28, as amended from time to time.

6.16 CLAIMS:

6.16.1 In any and all claims against the DISTRICT or the EOR or any of their agents or employees, by any employee of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.15 (Indemnification) shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any Subcontractor under worker's compensation acts, disability benefit acts or other employee benefit acts.

6.16.2 Obligation: The obligations of the CONTRACTOR under paragraph 6.13 shall not extend to the liability of the EOR'S negligent acts, errors or omissions or those of his employees or agents.

6.17 RESPONSIBILITY FOR CONNECTING TO EXISTING WORK:

6.17.1 It shall be the express responsibility of the CONTRACTOR to connect his Work to each part of the existing work or work previously installed as required by the Drawings and Specifications to provide a complete installation.

618 WORK IN STREET, HIGHWAY AND OTHER RIGHTS-OF-WAY: (move to 4.1 section)



6.18.1 Excavation, grading, fill, storm drainage, paving and any other construction or installations in rights-of-way of streets, highways, public carrier lines, utility lines (either aerial, surface or subsurface), etc., shall be done in accordance with requirements of these Specifications and authorities having jurisdiction. The CONTRACTOR shall be responsible for obtaining all permits necessary for the work. Upon completion of the Work, CONTRACTOR shall present to EOR certificates, in triplicate, from the proper authorities stating that the Work has been done in accordance with their requirements.

6.18.2 The DISTRICT shall cooperate with the CONTRACTOR in obtaining action from any utilities or public authorities involved in the above requirements.

6.19 COOPERATION WITH GOVERNMENTAL DEPARTMENTS, PUBLIC UTILITIES, ETC.:

6.19.1 The CONTRACTOR shall be responsible for making all necessary arrangements with governmental departments, public utilities, public carriers, service companies and corporations owning or controlling roadways, railways, water, sewer, gas, electrical, cable television, telephone, and telegraph facilities such as pavements, tracks, piping, wires, cables, conduits, poles, guys, etc., including incidental structures connected therewith, that are encountered in the Work in order that such items may be properly shored, supported and protected, or the CONTRACTOR may relocate them with Utility Owner's approval, if he so desires.

6.19.2 NOTICES: The CONTRACTOR shall give all proper notices, shall comply with requirements of such parties in the performance of his Work, shall permit entrance of such parties on the Project in order that they may perform their necessary work, and shall pay all charges and fees made by such parties for this work.

6.19.3 GOVERNMENT AGENCY CAUSED DELAYS: The CONTRACTOR'S attention is called to the fact that there may be delays on the Project due to work to be done by governmental departments, public utilities, and others in repairing or moving poles, conduits, etc. The CONTRACTOR shall cooperate with the above parties, in every way possible, so that the construction can be completed in the least possible time.

6.19.4 CODES, LAWS, ORDINANCES AND REGULATIONS: The CONTRACTOR shall have made himself familiar with all codes, laws, ordinances and regulations which in any manner affect those engaged in the Work, or materials and equipment used in or upon the Work, or in any way affect the conduct of the Work, and no plea of misunderstanding shall be considered on account of his ignorance thereof.

6.20 USE OF PREMISES: (move to contractor responsibilities)

6.20.1 CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by laws, ordinances, and regulations, rights-of-way, permits, easements, and directions of the DISTRICT'S REPRESENTATIVE, and shall not reasonably encumber the premises with construction equipment or other materials or equipment.

6.20.2 CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the DISTRICT or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the WORK. Should any claim be made against the DISTRICT or EOR by any such owner or occupant because of the performance of the WORK, CONTRACTOR shall promptly attempt to settle with such other party by Contract or otherwise resolve the claim. CONTRACTOR shall, to the fullest extent permitted by laws and regulations, indemnify and hold the DISTRICT and EOR harmless from and

against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against the DISTRICT or EOR to the extent based on a claim arising out of CONTRACTOR'S performance of the WORK.

6.20.3. During the progress of the WORK, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the WORK. At the completion of the WORK CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by the DISTRICT. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.20.4 CONTRACTOR shall not overload or permit any part of any structure to be loaded with such weight as shall endanger its safety, nor shall he subject any part of the Work to stresses or pressures that shall endanger it.

6.20.5 CONTRACTOR shall enforce the DISTRICT'S PROJECT MANAGER's instructions in connection with signs, advertisements, fires and smoking.

6.20.6 CONTRACTOR shall arrange and cooperate with DISTRICT in routing and parking of automobiles of his employees, Subcontractors and other personnel, and in routing material delivery trucks and other vehicles to the Project site.

6.21 PROTECTION OF EXISTING PROPERTY IMPROVEMENTS:

Related Articles:

- 6.2- Contractor Risk and Work Protection
- 6.10-Safety, Protection, Storage and emergencies
- 6.38-Temporary barriers and Enclosures
- 6.39-Security

6.21.2 Any existing surface or subsurface improvements, such as pavements, curbs, sidewalks, pipes or utilities, footings, or structures (including portions thereof), trees and shrubbery, not indicated on the Drawings or noted in the Specifications as being removed or altered shall be protected from damage during construction of the Project. Any such improvements damaged during construction of the Project, whether or not such improvements appear on the drawings, shall be restored to a condition equal, or better, to that existing at time of award of Contract. Such restoration or repair shall be at the sole expense of the Contractor, and no claim for an increase in the Contract Price under paragraph 6.21 or under Article 10 shall be allowed.

6.22 TEMPORARY HEAT:

6.22.1 The CONTRACTOR shall provide heat, fuel and services as necessary to protect all work and materials, within all habitable areas of permanent building construction, for all contracts against injury from dampness and cold until final acceptance of all work and materials for the Project, unless building is fully occupied by the DISTRICT prior to such acceptance, in which case the DISTRICT shall assume all expenses of heating from date of full occupancy. Unless otherwise specifically permitted by Special Conditions, the permanent heating system shall not be used to provide temporary heat. CONTRACTOR'S proposed methods of heating shall be submitted for approval.

6.23. SCHEDULE

6.23.1 CONTRACTOR shall submit to EOR for review and comment (to the extent indicated in paragraph 2.6.Finalizing



Schedule) proposed adjustments in the progress schedule to reflect the impact thereon of new developments; these shall conform generally to the progress schedule then in effect and additionally shall comply with any provisions of the General Requirements applicable thereto. All approved changes shall be memorialized as change orders.

6.24 CONTINUING THE WORK:

6.24.1 CONTRACTOR shall carry on the WORK and adhere to the progress schedule during all disputes or disagreements with the DISTRICT. No WORK shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Article 15 (Suspension and termination of Work) or as CONTRACTOR and the DISTRICT may otherwise agree in writing.

6.25 CONTRACTOR'S GENERAL WARRANTY AND GUARANTEE:

Related Articles: Warranties Attachment 14.4, Contractor's Warranty of Title

6.25.1 CONTRACTOR warrants and guarantees to DISTRICT and EOR that all work shall be in accordance with the Contract Documents and shall not be *defective*. That Contractor guarantees to repair, replace or otherwise make good to the satisfaction of the DISTRICT any defect in workmanship or material appearing in the Work; and further guarantees the successful performance of the Work for the service intended.

Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

6.25.1.1 Abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or Suppliers; or;

6.25.1.2 Normal wear and tear under normal usage.

6.25.2 Contractor's obligation to perform and complete the WORK in accordance with the Contract Documents shall be absolute. None of the following shall constitute an acceptance of WORK that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the WORK in accordance with the Contract Documents:

6.25.2.1 Observations by EOR;

6.25.2.2 Recommendation of any progress or final payment by EOR;

6.16.2.3 The issuance of a certificate of Substantial Completion or any payment by DISTRICT to CONTRACTOR under the Contract Documents;

6.25.2.4 Use or occupancy of the WORK or any part thereof by DISTRICT;

6.25.2.5 Any acceptance by DISTRICT or any failure to do so;

6.25.2.6 Any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by EOR pursuant to paragraph 14.10;

6.26 DELETION/OVERSIGHT/MISSTATEMENT:

6.26.1 Any deletion, oversight or misstatement of the Specifications shall not release the Bidder from the responsibility of completing the project within the agreed upon time frame.

6.26.2 The cost of incidental work described in these Contract Requirements, for which there are no specific Contract Items, shall be considered as part of the general cost of doing the work and shall be included in the prices for the various Contract Items. No additional payment will be made therefore.

6.27 EXCEPTIONS TO SPECIFICATIONS:

6.27.1 Any exceptions to the Specifications and/or drawings must be brought to the attention of the Purchasing Department in writing prior to the expiration of the Bid question period. Failure to list any exceptions with the Purchasing Department in writing prior to the end of the Bid question period means the Bidder is complying 100% with the Specifications. All materials may be inspected by the District upon delivery for compliance with the Specifications. Deviations from the specifications shall be cause for the bid to be rejected as non-responsive unless the deviation was approved prior to the submittal of bids.

6.27.2 Any deletion, oversight or misstatement of these Specifications shall not release the Bidder from full responsibility for unsatisfactory workmanship and /or materials, together with all appurtenances necessary for unrestricted operation, as determined by the District in its sole discretion.

6.28 SILENCE OF SPECIFICATIONS:

6.28.1 The apparent Silence of any Specification as to any details, or the omission from the specifications of a detailed description concerning any point shall be regarded as meaning that only the best commercial practices are to prevail and that materials of the first quality and correct type, size and design are to be used. All workmanship is to be of first quality.

6.28.1.1 Work not specified in the Specifications, but involved in carrying out their intent or in the complete and proper execution of the work, is required and shall be performed by the Contractor as though it were specifically delineated or described.

6.29 QUALITY

6.29.1 Items delivered as a result of award from this bid shall be free of defects. Any item(s) not meeting this specification shall be picked-up by the awarded Bidder for immediate replacement at no additional charge to the District.

6.30 TRANSPORTATION AND HANDLING:

6.30.1 Transport and handle Products in accordance with manufacturer's instructions.

6.30.2 Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.

6.30.3 Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

6.31 DISPOSAL:

6.31.1 Before the Contractor disposes of any existing improvements or equipment which is to be removed as a portion of the work, and for which disposition is not specifically provided for elsewhere in these Specifications, he shall contact the DISTRICT and determine if the removal items are to be salvaged. Items to be salvaged by the DISTRICT shall be neatly stockpiled or stored in a neat and acceptable manner at the construction site easily accessible to the DISTRICT. Equipment and materials which shall not be salvaged by the DISTRICT shall become the property of the Contractor to be removed from the site and disposed of in an acceptable manner.

6.32 OCCUPATIONAL HEALTH AND SAFETY:

6.32.1 The CONTRACTOR, as a result of award of the bid, delivering any toxic substances item as defined in Code of Federal Regulation Chapter 29, shall furnish to the Purchasing Department, a Material Safety Data Sheet (MSDS). The material safety data sheet shall be provided with initial shipment and shall be revised on a timely basis as appropriate. The MSDS must include the following information:

6.32.2 The chemical name and the common name of the toxic substance.



6.32.3 The hazards or other risks in the use of the toxic substance, including:

6.32.3.1 The potential for fire, explosion, corrosion and reactivity;

6.32.3.2 The known acute and chronic health effects of risks from exposure, including the medical conditions which are generally recognized as being aggravated by exposure to the toxic substance; and

6.32.3.3 The primary routes of entry and symptoms of overexposure.

6.32.4 The proper precautions, handling practices, necessary personal protective equipment, and other safety precautions in the use of or exposure to the toxic substances including appropriate emergency treatment in case of overexposure.

6.32.5 The emergency procedure for spills, fire, disposal and first aid.

6.32.6 A description in lay terms of the known specific potential health risks posed by the toxic substance intended to alert any person reading this information.

6.32.7 The year and month, if available, that the information was compiled and the name, address and emergency telephone number of the manufacturer responsible for preparing the information. Any questions regarding this requirement should be directed to: Department of Labor and Employment Security, Bureau of Industrial Safety and Health, Toxic Waste Information Center, 2551 Executive Center Circle West, Tallahassee, FL 32301-5014, Telephone 1800-367-4378.

6.33 OSHA:

6.33.1 The CONTRACTOR warrants that the product/services supplied to the District shall conform in all respects to the standards set forth in the Occupational Safety and Health Act 1970, as amended, and the failure to comply with this condition shall be considered as a breach of contract.

6.34 CONDITIONS AND PACKAGING:

Related Article: 6.4 Labor, Materials And Equipment: Conditions, Substitutions

6.34.1 It is understood and agreed that any item offered or shipped as a result of this bid shall be new (current production model at the time of the bid). All containers shall be suitable for storage or shipment, and all prices shall include standard commercial packaging.

6.35 UNDERWRITERS' LABORATORIES:

6.35.1 Unless otherwise stipulated in the bid, all manufactured items and fabricated assemblies shall be UL listed or re-examination testing where such has been established by UL for the items offered and furnished.

6.36 ASBESTOS:

6.36.1 Contractor shall not use any asbestos or asbestos-based fiber materials in the Work performed under this Contract.

6.36.2 If the CONTRACTOR during the course of the WORK observes the existence of asbestos in any structure, building or facility, the CONTRACTOR shall promptly notify the DISTRICT and the EOR. The DISTRICT shall consult with the EOR regarding removal or encapsulation of the asbestos material and the CONTRACTOR shall not perform any WORK pertinent to the asbestos material prior to receipt of special instructions from the DISTRICT through the EOR.

6.37 CLOSEOUT SUBMITTALS:

PART 1 GENERAL
SECTION V

6.37.1 SCOPE OF WORK

- 6.37.1.1 Closeout procedures.
- 6.37.1.2 Final cleaning.
- 6.37.1.3 Adjusting.
- 6.37.1.4 Project record documents.
- 6.37.1.5 As-built survey.
- 6.37.1.6 Operation and maintenance data.
- 6.37.1.7 Spare parts and maintenance Products.
- 6.37.1.8 Warranties and bonds.
- 6.37.1.9 Maintenance service.

6.37.2 RELATED SECTIONS

- Payment Procedures.
- Submittal Procedures.
- Commissioning.
- Testing, Adjusting and Balancing of HVAC.
- Commissioning of HVAC.

6.37.3 CLOSEOUT PROCEDURES

6.37.3.1 Submit written certification that contract documents were reviewed, work inspected, and that work is complete in accordance with contract documents and ready for DISTRICT'S Project Manager and EOR'S review.

6.37.3.2 Provide submittals to EORT and DISTRICT'S Project Manager that are required by governing or other authorities.

Submit final application for payment identifying total adjusted contract sum, previous payments, and sum remaining due.

DISTRICT may opt to occupy or portions of completed facilities upon substantial completion of those portions of work.

Contractor/CM shall provide punch list to EOR identifying items remaining to be completed.

EOR shall inspect project to determine completion of punch list and project compliance with Contract Documents.

6.37.4 FINAL CLEANING

6.37.4.1 Execute final cleaning prior to final project assessment.

6.37.4.2 Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, wax, clean and polish transparent and glossy surfaces, vacuum carpet and soft surfaces.

6.37.4.3 Clean equipment and fixtures to sanitary condition with cleaning materials per manufacturer's written recommendations.

6.37.4.4 Replace filters of operating equipment.

6.37.4.5 Clean debris from roofs, gutters, downspouts, and drainage systems.

6.37.4.6 Clean site; sweep paved areas, rake clean landscaped surfaces.

6.37.4.7 Remove waste and surplus materials, rubbish, and construction facilities from the site.

6.37.4.8 Clean and sanitize water fountains (coolers).

6.37.4.9 Clean ledges countertops and shelves with all-purpose non-abrasive cleaner leaving no residue.

6.37.5 ADJUSTING



6.37.5.1 Adjust operating products and equipment to ensure smooth and unhindered operation.

6.37.6 PROJECT RECORD DOCUMENTS

6.37.6.1 Maintain on site one set of record documents, recording accurate field revisions to contract documents to include:

- Drawings/specifications and addenda.
- Change orders and other modifications to work.
- Reviewed shop drawings, product data, and samples.
- Manufacturer's instruction for assembly, installation, and adjusting.

6.37.6.2 Ensure entries are complete and accurate, enabling ready access and reference by DISTRICT's Project Manager.

6.37.6.3 Store record documents separate from documents used for construction.

6.37.6.4 Record information concurrent with construction progress.

6.37.6.5 Specifications shall be legibly marked and recorded for each product used indicating the following:

- Manufacturer's name, product model and number.
- Product substitutions or alternates utilized.
- Changes made by addenda and modifications.

6.37.6.6 Record drawings and shop drawings shall be legibly marked with each item recorded to indicate actual construction as follows"

1. Measured depths of foundations in relation to finish first floor datum.
2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
4. Field changes of dimension and details.
5. Details not on original contract drawings.

6.37.6.7 As-built survey: Upon completion of site construction improvements, provide EOR and DISTRICT's Project Manager with complete and accurate field survey prepared, signed and sealed by Florida registered surveyor.

6.37.6.8 Provide exact horizontal and vertical location relative to property lines and NGVD of buildings, concrete and asphalt surfaces and all drainage features including lakes, detention areas, berms, embankments, swales drainage inlets, storm-water outfalls, storm and sewer manholes and water shut off valve locations.

6.37.6.9 Provide actual grades of spot elevations shown on paving and drainage plans.

6.37.6.10 Provide sufficient information indicating a true representation of constructed grade conditions for areas where grading between two elevation points is not constructed at uniform slope.

6.37.6.11 Survey shall include cross sections elevations at 50' stations of swales, lakes, and drainage retention areas including banks, berms, bottoms and transitions constructed or improved.

Elevations shown shall be accurate to the nearest tenth of a foot.

6.37.6.12 Upon project completion, transfer project record drawing information and recording of building and site survey

information to Autocad (2008 or later format) files and provide two copies of CD's to EOR for review and transmitted to DISTRICT, prior to claim for final Application for Payment.

Contractor/CM shall also submit hard copies of record drawings and project manual maintained during project to DISTRICT's Project Manager.

DISTRICT will be responsible for making prints from CD's and for their distribution to DISTRICT's user groups.

6.37.6.13 Submit one additional CD in Autocad to DISTRICT for distribution to Sheriff's Department with following information:

Provide Site Plan on black background indicating the following site information and in colors and layers indicated.

- | | |
|---|---------|
| a. Roads and Driveways into and on site | White |
| b. Backflow and PIV Valves | Cyan |
| c. Valves for Fire Lines | Magenta |
| d. Fire Hydrants | White |
| e. Emergency Generator | Cyan |
| f. Flammable Storage Buildings | Red |
| g. Gas Tanks | Red |

Provide separate drawing files for each floor plan along with mechanical mezzanines and roof access locations showing following systems and in colors and layers indicated.

- | | |
|---|---------|
| a. Intercom Panel | Yellow |
| b. Fire Alarm Panel | Red |
| c. Electrical Panels | Magenta |
| d. HVAC Control Panels | White |
| e. Roof Access Panels | Cyan |
| f. Flammable Storage Spaces | Red |
| g. Custodial Storage | Orange |
| h. Walls, windows, room names and numbers | Gray |

6.37.7 OPERATION AND MAINTENANCE DATA

6.37.7.1 Submit documentation as noted in individual product specifications and as noted herein.

6.37.8 SPARE PARTS AND MAINTENANCE PRODUCTS

6.37.8.1 Provide spare parts, maintenance, and extra products in quantities specified in specification.

6.37.8.2 Deliver to DISTRICT; obtain receipt prior to final payment.

6.37.9 WARRANTIES

6.37.9.1 Submit documentation as noted in individual product specifications and as noted herein.

6.37.9.2 Provide duplicate notarized copies.

6.37.9.3 Execute and assemble transferable warranty documents from subcontractors, suppliers, and manufacturers.

6.37.9.4 Provide Table of Contents and assemble in D-side 3-ring white binders with typed title sheet of contents inside durable plastic front cover.

6.37.9.5 Submit prior to final application for payment.

6.37.9.6 For items of work delayed beyond date of substantial completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.



6.37.10 MAINTENANCE SERVICE

6.37.10.1 Furnish service and maintenance of components indicated in specification sections for one-year from date of substantial completion.

6.37.10.2 Examine, clean, adjust, and lubricate system components as required for reliable operation.

6.37.10.3 Include systematic examination, adjustment, and lubrication of components repairing or replacing parts as required with parts produced by the manufacturer of the original component.

6.37.10.4 DISTRICT shall approve in writing of transfers or reassignments of maintenance service tasks.

6.37.11 ASBESTOS CERTIFICATION

6.37.11.1 Provide notarized letter from Contractor/CM certifying that "to the best of his/her knowledge no asbestos containing building materials were used as a building material in the project", per FS 255.40.

6.37.12 PRODUCTS

6.37.12.1 APPROVED PRODUCTS Use only cleaning and maintenance products approved for use in Florida Educational Facilities.

6.38 TEMPORARY BARRIERS AND ENCLOSURES

6.38.1 GENERAL

Related Articles:

- 6.2- Contractor Risk and Work Protection
- 6.10-Safety, Protection, Storage and emergencies
- 6.21 Protection of Existing Property Improvements
- 6.38-Temporary barriers and Enclosures
- 6.39-Security

6.38.1.1 SCOPE OF WORK

6.38.1.2 Temporary barriers and enclosures to provide construction work areas separate from Owner's on-going school operations.

6.38.1.3 Protection of new work, existing facilities and grounds from damage, theft, vandalism, and unauthorized entry.

6.38.1.4 Six (6) foot high chain link fencing surrounding and separating areas under construction including area for contractor's mobilization and parking separate from existing school facilities and on-going school activities.

6.38.1.5 Demising walls and other barriers as required to separate building areas under construction that permits safe and unobstructed exiting of partially Owner occupied buildings.

6.38.1.6 Safety of construction workers and students, faculty and visitors located in areas of school facilities not under renovation or construction.

6.38.1.7 Control dust, erosion and sediment, noise, pollution, rodent and environmental control.

6.38.2 RELATED DOCUMENTS

- Project Management and Coordination.
- Security Procedures.
- Submittal Procedures.

6.38.3 ENTRY CONTROL

6.38.3.3 Restrict entrance of persons and vehicles into Project site and existing facilities in accord with Section 01 35 33 – Security Procedures.

6.38.3.4 Prior to project commencement, Contractor's on-site personnel shall meet with Owner's Project Manager and School staff for renovation and new construction to delineate areas for Contractor's operations to include storage and office trailers, parking, material storage lay-down areas.

6.38.3.5 Material deliveries shall be coordinated with school staff to ensure safe transit of students and staff across delivery routes.

6.38.3.6 Interruption of preapproved entry controls shall be coordinated with Owner's Project Manager and School staff prior to proposed interruption.

6.38.3.7 Allow entrance only to authorized persons with proper identification.

6.38.3.8 Contractor/CM shall post "No Trespassing" and "Hard Hat Area" signs along project perimeter and at construction access points.

1. No Trespassing sign shall include statutory language that area is construction site and that trespassing and theft are felonies and violators will be prosecuted.

2. No Trespassing sign shall include name of Contractor/CM.

3. No Trespassing signs shall not be larger than 24"(600mm) by 24"(600mm).

4. Hard Hat Area sign shall not be larger than 12"(300mm) by 12"(300mm).

6.38.4 DEMISING WALLS

6.38.4.1 Where location of construction is contiguous to or within existing school, Provide demising walls to physically separate new or renovation work from existing on-going school operations.

6.38.4.2 Demising walls shall be continuous plywood with vapor barrier and wood framing to prevent unauthorized entrance, dust or debris from entering occupied portion of school.

6.38.4.3 Where construction is overhead, provide safe and secure method of access through or adjacent to work with system of scaffolding, plywood or wood planking overhead to prevent falling debris or materials from interrupting safe passage through construction area.

6.38.5 FENCING

6.38.5.1 Areas under construction including area for contractor's mobilization and parking shall be separated from existing school facilities and on-going school activities with fencing.

6.38.5.2 Provide 6' high chain link fencing along construction zone boundaries not facing existing buildings.

6.38.5.3 Provide with 6' high chain link fencing with visual fabric covering along construction zone boundaries greater than 20' of existing buildings not in construction zone.

6.38.5.4 Provide with 6' high chain link fencing with plywood covering along construction zone boundaries greater less than 20' of existing buildings not in construction zone.

6.38.5.5 Fencing shall be designed to resist winds up to 74 miles per hour.

6.38.5.6 Contractor (CM) shall have option of providing fencing designed to withstand 140 miles per hour or be completely removed 24 hours prior to occurrence of anticipated high wind event.



6.38.5.7 Provide access gates required by code for ingress and egress and for Owner's and Contractor/CM's access to Owner's access to occupied portion of site and for construction access.

6.38.6 ENVIRONMENTAL CONTROLS

6.38.6.1 Protect existing buildings and adjacent property from dust produced by construction operations. Use encapsulating or wetting devices to control moisture content of traffic and construction areas.

6.38.6.2 Control surface drainage to prevent off site discharge of pollutants and prevent erosion and sedimentation.

6.38.6.3 Provide berms, dikes or drains to divert water flow away from new or existing structures into storm water retention areas.

6.38.6.4 Provide methods necessary to prevent mud and debris from entering storm water system.

6.38.6.5 Provide methods necessary to prevent excessive noise on site.

1. Comply with OSHA and Owner's noise requirements.
2. Coordinate with Owner's Construction Manager for construction activities to limit or cease construction activities creating any noise associated with construction on active school sites when FCAT testing occurs for one week in March of each year.

6.38.6.6 Provide methods necessary to prevent pests and insects from damaging the work.

6.38.6.7 Provide methods necessary to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances or pollutants from construction operations.

6.38.7 SUBMITTALS

6.38.7.1 Comply with Section "Submittal Procedures."

6.38.7.2 Submit site plan and floor plans indicating locations and material construction of proposed protective structures.

6.38.8 TEMPORARY FENCING

6.38.8.1 Six (6) foot high, minimum 10 gage aluminum or galvanized steel fabric.

6.38.8.2 Fencing shall have six foot high visual fabric cover to block visual access to construction activities.

6.38.8.3 5/8" C/D plywood sheets, pressure treated or other means of weather protection, with 2 x 4 wood framing at edges and 24" maximum vertical spacing.

6.38.9 TEMPORARY WALLS

6.38.9.1 Demising Wall: 5/8" C/D plywood sheets, 2 x 4 wood framing at 24" maximum spacing, and 10 mil black polyethylene vapor barrier covering with sealed joints.

6.38.9.2 Overhead Protection: Metal scaffolding with 3/4" B/C plywood or 2" x 12" wood planking.

6.38.10 EXECUTION/ 1 INSTALLATION AND REMOVAL

6.38.10.1 Temporary fencing shall be installed prior to start of vertical construction and removed upon completion of work.

6.38.10.2 Demising walls shall be installed prior to start of renovations or building additions and removed work

6.38.10.3 Walls shall be protected or removed during storm events where winds are anticipated to exceed 74 miles per hour.

6.39 SECURITY PROCEDURES

6.39.1 SCOPE OF WORK

6.39.1.1 Development of site security program, project entry control procedures, personnel screening and identification in compliance with Florida Statute FS1012.465 – Jessica Lunsford Act for vendors, and Contractor/CM's.

6.39.1.2 RELATED SECTIONS

- Project Management and Coordination.
- Submittal Procedures.
- Temporary Barriers and Enclosures.

6.39.1.3 JESSICA LUNSFORD ACT

1. Contractor/CM, his subcontractors, vendors and suppliers who are to be permitted access to school grounds while students are present, or have direct contact with students or have access to or control of school funds shall obtain Level 2 background screening in accord with Florida Statute FS1012.465 – Jessica Lunsford Act.

2. Level 2 screening excludes personnel working on school district property where students are present who have criminal records that include sexual offender, sexual misconduct with developmentally disabled or mental health patients, terrorism, murder, kidnapping, lewd, lascivious or indecent acts or exposure, incest, child abuse or neglect.

3. Persons screened as noted above with other types of criminal history may be allowed on school grounds provided under following conditions:

4. Contractor/CM, subcontractors, vendors and suppliers shall be under continuous direct supervision of school district employee or Level 2 screened and cleared employee as noted above.

5. Contractor/CM, subcontractors, vendors and suppliers may be allowed on a student occupied site if area of construction is isolated from students by continuous six foot high chain link fence separating work area and school.

6. Persons with current Level 2 clearance who are subsequently arrested for disqualifying offenses shall be disqualified from access to school sites and shall immediately surrender their Photo ID Badge to their employer who shall be responsible for returning badge to Martin County School District's Department of Human Resources with 48 hours of arrest or notice of arrest or criminal offense.

7. Persons failing to notify their employer and Martin County School District's Department of Human Resources with 48 hours of arrest will be charged with 3rd degree felony, punishable by up to five years imprisonment and \$1,000 fine.

8. Employers of persons having been arrested for disqualifying offenses who subsequently allows said employee to continue working on school property may also be charged with 3rd degree felony, punishable by up to five years imprisonment and \$1,000 fine.

9. Contractor/CM, his subcontractors, vendors and suppliers working on school board sites shall be fingerprinted and obtain work badges.

10. Contractor/CM, his subcontractors, vendors and suppliers have worked and obtained in other school districts must be screened to obtain new badges.

11. Questions regarding fingerprinting or identification badge processing may be directed to District Personnel Department at (772)219-1200, Ext. 30296.

12. Fingerprinting services are provided by private vendor through Florida Dept. of Education. DOE sponsored website will direct individuals to nearest fingerprinting location.



Cost of fingerprinting is \$81.25 per person and shall be prepaid either by money order to Fingerprinting Services, LLC or by credit card payment via Internet. Website is <http://www.flprints.com>. For information, telephone (877)357-7456.

13. After fingerprinting and criminal background check is complete, individuals shall make appointment for photo ID's by making appointments at Martin County School District Personnel Department located in Building 20 at School District Administration Center, 500 E. Ocean Blvd., Stuart, FL 34994.

Appointments for ID photo badges shall be made after completion of fingerprinting with Martin County School District Personnel Department by phone at (772) 219-1200, Ext. 30296

Cost of Photo ID's is \$6.00. Payment may be made with company check, money order or personal check.

6.39.2 SECURITY PROGRAM

6.39.2.1 Protect new work, existing facilities and grounds from damage, theft, vandalism, and unauthorized entry.

6.39.2.2 Initiate security program in coordination with Owner's existing security system at time of project mobilization to ensure safety of students, faculty and visitors to the unaffected portions of the school facilities.

6.39.2.3 No student contact is permitted between the Contractor's personnel and students. Any breach of this requirement will result in the immediate removal of the personnel from the job site upon direction by the Owner.

6.39.2.4 Smoking is not allowed on School Board property. Any breach of this restriction will result in immediate removal of personnel from the site upon direction by Owner's Project Manager.

6.39.2.5 Maintain security program throughout construction period until Owner's project acceptance.

6.39.3 ENTRY CONTROL

6.39.3.1 Restrict entrance of persons and vehicles into Project site and existing facilities as indicated by Owner approved security plan.

6.39.3.2 Allow entrance only to authorized persons with proper identification.

Maintain log of workers and visitors, make available to Owner on request.

Coordinate access of Owner's personnel to site in coordination with Owner's security forces.

6.39.4 PERSONNEL IDENTIFICATION

6.39.4.1 Contractor/CM on-site staff, subcontractors and vendors on site shall wear identification badges at all times on site.

6.39.4.2 Identification badges shall be current at time of project and shall be reverified and reissued yearly if project extends past original badge expiration date.

6.39.5 SUBMITTALS

6.39.5.1 Comply with Section Submittal Procedures.

6.39.5.2 Provide list of personnel proposed to be used on project for fingerprinting and background checks (only required for existing school projects).

6.39.5.3 Contractor/CM shall submit initial list of accredited persons and provide monthly updated lists to Owner.

6.39.5.4 Provide security plan to Owner indicating how construction site is to be secured and separated from existing school and its operations including normal and emergency egress and

exiting from the operational portion of school and for new additions and existing portion under construction.

6.40 PRODUCT SUBSTITUTION REQUIREMENTS AND PROCEDURES

6.40.1 SCOPE OF WORK

6.40.1.1 Administrative and procedural requirements for consideration of request for substitution during the design and construction phases.

6.40.2 REFERENCES

Submittal Procedures.

References.

Quality Control.

Closeout Submittals.

6.40.3 REQUIREMENTS

6.40.3.1 Whenever a material, article or piece of equipment is identified on the Drawings or Specifications by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements, and that other products of equal capacities, quality and function may be considered. The CONTRACTOR may request the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the Contract Documents by reference to brand name or catalogue number, and if, in the opinion of the EOR and DISTRICT, such material, article, or piece of equipment is of equal substance and function to that specified, the EOR with concurrence of the DISTRICT'S PROJECT MANAGER may approve its substitution and use by the CONTRACTOR

6.40.3.2 A request constitutes a representation that the Contractor or Bidder:

6.40.3.2.1 Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.

6.40.3.2.2 Will provide the same warranty for the Substitution as for the specified Product.

6.40.3.2.3 Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.

6.40.3.2.4 Waives claims for additional costs or time extension which may subsequently become apparent.

6.40.3.2.5 Will reimburse Owner and Consultant for review or redesign services associated with substitution.

6.40.3.3 The application shall state that the evaluation and acceptance of the proposed substitute shall not prejudice CONTRACTOR'S achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the WORK shall require a change in any of the Contract Documents (or in the provisions of any other direct contract with the DISTRICT for WORK on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the WORK is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service shall be indicated.

6.40.3.4 The application shall also contain an itemized estimate of all costs and cost savings that shall result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by EOR in evaluating the



proposed substitute. EOR may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

6.40.3.5 Incidental changes or extra component parts required to accommodate the substitute shall be made by the CONTRACTOR without an increase in the Contract Price or Contract Time. The CONTRACTOR shall reimburse the DISTRICT for charges of the EOR and EOR'S consultants for review evaluating each proposed substitution. These costs shall include transportation to operating installation at factories, etc.

6.40.3.6 No substitute shall be ordered or installed without the written approval of the EOR with the DISTRICT'S PROJECT MANAGER'S concurrence. The District may require the CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute.

6.40.3.7 Delay caused by obtaining approvals for substitute materials or installations shall not be considered justifiable grounds for an extension of construction time.

6.40.4 SUBMITTAL PROCEDURES

6.40.4.1 Transmit three (3) copies of each substitution request on company letterhead with completed Product Substitution Request Form in the Sample Forms Section of the Document.

6.40.4.2 During bidding phase, substitution requests shall be directed to the DISTRICT.

6.40.4.3 During construction phase substitution requests shall be directed to the District.

6.40.4.4 Substitution Form shall identify project, Contractor/CM and EOR during bidding phase plus Subcontractor or supplier during construction phase indicating Specification Section and Paragraph number of specified material and pertinent drawing and detail numbers, as appropriate.

Include complete information as required in the Substitution Form. Incomplete information will result in automatic rejection of the substitution request.

6.40.4.5 Apply contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information are in accordance with the requirements of the work and contract documents.

6.40.4.6 Schedule submittals to expedite the project, and deliver to EOR or Contractor/CM at business address. Coordinate submission of related items.

6.40.4.7 For each submittal for review, allow five(5) work days excluding delivery time to and from the EOR or CM/Contractor.

6.40.4.8 Identify variations from contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.

6.40.4.9 Provide space for Contractor/CM and EOR review stamps.

6.40.4.10 When revised for resubmission, identify all changes made since previous submission.

6.40.4.11 Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

6.40.4.12 Submittals not requested will not be recognized or processed.

6.40.4.13 Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.

6.40.4.14 The Consultant will notify Contractor in writing of decision to accept or reject request.

6.40.5 SUBSTITUTION REQUESTS

Requests for substitutions shall be made not later than ten (10) calendar days prior to bid date. Requests received after the above dates may not be considered.

6.41 FIELD SAMPLES AND MOCKUPS

6.41.1 SCOPE OF WORK

Administrative and procedural requirements for assure quality of construction before and during construction.

General requirements for mockups and field samples, constructed, applied or assembled at the site for reviewed for use as a quality standard.

6.41.2 RELATED SECTIONS

6.11: Shop Drawings and Samples

Payment Procedures

Submittal Procedures.

References.

Quality Control.

Project Storage and Handling Requirements.

Closeout Submittals.

6.41.3 COORDINATION AND PROJECT CONDITIONS

6.41.3.1 Coordinate scheduling, submittals, and work to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

6.41.3.2 Verify utility requirements and characteristics of operating equipment are compatible with building utilities.

6.41.3.3 Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

6.41.3.4 Coordinate space requirements, supports and installation of mechanical and electrical work that is indicated diagrammatically on Drawings.

6.41.3.5 Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

6.41.3.6 In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

6.41.3.7 Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for DISTRICT'S partial occupancy.

6.41.3.8 After DISTRICT occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of DISTRICT'S activities.

6.41.3.9 DISTRICT change orders for extra work required by Contractor/CM due to poor coordination with sub trades will not be considered.

6.41.4 FIELD ENGINEERING

Employ Land Surveyor registered in State of Florida approved by DISTRICT from DISTRICT'S continuing services providers. Obtain list from DISTRICT'S Project Manager.



6.41.4.1 Contractor shall locate and protect survey control and reference points.

6.41.4.2 Control datum for survey is that established by DISTRICT provided survey.

6.41.1.3 Verify setbacks and easements; confirm drawing dimensions and elevations.

6.41.4.4 Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

6.41.4.5 Submit copy of site drawing and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.

6.41.5 MOCKUP REQUIREMENTS

6.41.5.1 Tests will be performed under provisions identified in this section and identified in respective product specification sections.

6.41.5.2 Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

6.41.5.3 Accepted mock-ups shall be comparison standard for remaining Work.

6.41.5.4 Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Architect/Engineer.

ARTICLE 7 – OTHER WORK

7.1. RELATED WORK AT SITE:

7.1.1 The DISTRICT may perform other WORK related to the Project at the site by the DISTRICT'S own forces, let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other WORK is to be performed was not noted in the Contract Documents, written notice thereof shall be given to CONTRACTOR prior to starting any such other WORK; and, if CONTRACTOR believes that such performance shall involve additional time and the parties are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 (Change in Contract Price) and Article 12 (Change in Contract Time). If the performance of additional WORK by other Contractor or the DISTRICT is noted in the Contract Documents, no additional adjustment of time or compensation shall be considered.

7.1.2 CONTRACTOR shall afford the DISTRICT and other contractors who are a party to such a direct contract (or the DISTRICT, if the DISTRICT is performing the additional WORK with the DISTRICT'S employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such WORK, and shall properly connect

7.1.2 CONTRACTOR shall afford the DISTRICT and other contractors who are a party to such a direct contract (or the DISTRICT, if the DISTRICT is performing the additional WORK with the DISTRICT'S employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such WORK, and shall properly connect and coordinate the WORK with theirs. CONTRACTOR shall do all cutting, fitting and patching of the WORK that may be required to make its several parts come together properly and integrate with such other WORK. CONTRACTOR shall not endanger any WORK of others by cutting, excavating or otherwise altering their WORK and shall only cut or alter their WORK with the written consent of the DISTRICT, EOR, and others whose WORK shall be affected. The duties and responsibilities of CONTRACTOR under this

paragraph are for the benefit of the DISTRICT and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between the DISTRICT and other contractors.

7.1.3 If any part of CONTRACTOR'S WORK depends for proper execution or results upon the WORK of any such other contractor other than CONTRACTOR'S OWN SUBCONTRACTOR, (or the DISTRICT), CONTRACTOR shall inspect and promptly report to CONSULTANT in writing any delays, defects or deficiencies in such other WORK that render it unavailable or unsuitable for such proper execution and results of CONTRACTOR'S WORK. CONTRACTOR'S failure to report shall constitute an acceptance of the other WORK as fit and proper for integration with CONTRACTOR'S WORK except for latent defects and deficiencies in the other WORK.

7.2. COORDINATION:

7.2.1. If the DISTRICT contracts with others for the performance of other WORK on the Project at the site, the person or organization who shall have authority and responsibility for coordination of the activities among the various prime contractors shall be identified in the Technical Specifications and the specific matters to be covered by such authority and responsibility shall be itemized, and the extent of such authority and responsibilities shall be provided in the Technical Specifications. Unless otherwise provided in the Technical Specifications, neither the DISTRICT nor the EOR shall have any authority or responsibility in respect of such coordination.

ARTICLE 8 – DISTRICT'S RESPONSIBILITIES

8.1 COMMUNICATIONS TO CONTRACTOR:

8.1.1 DISTRICT shall issue all communications to CONTRACTOR, copy to EOR.

8.2 FURNISH DATA:

8.2.1 DISTRICT shall promptly furnish the data required of the DISTRICT under the Contract Documents.

8.3. PAYMENTS:

8.3.1 DISTRICT shall make payments to CONTRACTOR promptly when they are due as provided in Sections 14.5 (Review of Application for Progress payment), and 14.10, (Final Payment and Acceptance).

8.4 LANDS, EASEMENTS: REPORTS AND TESTS:

8.4.1 The DISTRICT'S duties in respect of providing lands and easements and providing engineering surveys, if available, to establish reference points are set forth in paragraphs 4.1.1(Availability of Land) and 4.5.1 (Reference Points).

8.4.2 The DISTRICT shall identify and make available to CONTRACTOR copies of reports of physical conditions at the Site and drawings of existing structures that have been utilized in preparing the Contract Documents as set forth in Paragraph 4.2, (Report of Physical Conditions).

8.5 CHANGE ORDERS

8.5.1 The DISTRICT is obligated to execute Change Orders as indicated in Article 10, (Changes in the Work).

8.6 SUSPENSION OF WORK

8.6.1 In connection with the DISTRICT'S right to stop WORK or suspend WORK see paragraph 13.5 (District May Stop Work) and 15.1 District May Suspend Work). Paragraph 15.2 (District May Terminate for Cause) and 15.3 (District May terminate Without Cause) deals with the DISTRICT'S right to terminate services of CONTRACTOR.

8.7 ESTIMATED DOLLAR VALUE:



8.7.1 No guarantee of the dollar amount of this bid is implied or given.

8.8 QUANTITIES:

8.8.1 Quantities shown are estimates only. No guarantee or warranty is given or implied by the District as to the total amount that may or may not be purchased from any resulting contract. The District reserves the right to decrease or increase quantities or add or delete any item from the contract if it is determined that it best serves the interests of the District. Orders shall be placed as needed by individual locations during the contract period. The CONTRACTOR agrees that the price(s) offered shall be maintained irrespective of the quantity actually purchased.

8.9 ADDITIONAL TERMS AND CONDITIONS:

8.9.1 No additional terms and conditions included with the Bid response shall be evaluated or considered, have any force or effect, and are inapplicable to this Bid. It is understood and agreed that the conditions in these Bid Documents are the only conditions applicable to this Bid and the CONTRACTOR's authorized signature on the Bid Form attests to this.

ARTICLE 9 – CONSULTANT'S (EOR) STATUS DURING CONSTRUCTION

9.1 DISTRICT'S REPRESENTATIVE:

9.1.1 The EOR (if specifically designated), or a specifically designated employee of the DISTRICT, shall act as the DISTRICT'S REPRESENTATIVE during the construction period. The duties and responsibilities and the limitations of authority of the EOR as one of the DISTRICT'S REPRESENTATIVES during construction are set forth in Articles 1 through 17 of these Supplementary Conditions and shall not be extended without written consent of the DISTRICT'S PROJECT MANAGER and the EOR.

9.1.2 The EOR's decision with the consent of the DISTRICT'S PROJECT MANAGER in matters relating to aesthetics, shall be final, if within the terms of the Contract Documents.

9.1.3 EOR shall work with the DISTRICT to

9.1.3.1 Establish on-site lines of authority and communications:

9.1.3.2 Schedule and conduct pre-construction meeting and progress meetings.

9.1.4 EOR shall also work with the DISTRICT to Establish procedures for:

9.1.4.1 Submittals

9.1.4.2 Reports and records

9.1.4.3 Recommendations

9.1.4.4 Coordination of drawings

9.1.4.5 Schedules

9.1.4.6 Resolution of conflicts

9.1.5 EOR shall also

9.1.5.1 Interpret Contract Specifications and Drawings

9.1.5.2 Transmit written interpretations to Contractor, and to other concerned parties.

9.1.5.3 Assist in Obtaining permits and approvals

9.1.5.4 Verify that Contractor and subcontractors have obtained inspections for Work and for temporary facilities.

9.1.5.5 Assist DISTRICT to control the use of Site:

9.2 VISITS TO SITE:

9.2.1 After written notice to proceed with the WORK, the EOR shall make visits to the site at intervals appropriate to the various stages of construction or as per EOR'S contract with DISTRICT to observe the progress and quality of the executed WORK and to determine, in general, if the WORK is proceeding in accordance with the Contract Documents. On the basis of his on-site observations, as an experienced and qualified design professional, he shall keep the DISTRICT informed of the progress of the WORK, shall endeavor to guard the DISTRICT against defects and deficiencies in the WORK of the Contractor.

9.3 PROJECT REPRESENTATION:

9.3.1 The Martin County School District or its authorized agents, inspectors or representatives acting within the scope of duties entrusted to them by the DISTRICT.

9.4 CLARIFICATIONS AND INTERPRETATIONS:

9.4.1 The EOR shall issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as the DISTRICT may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification of interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 (Change in Contract Price) and Article 12 (Change in Contract Time).

9.5 MEASUREMENTS:

9.5.1 MEASUREMENTS: All Work completed under the Contract shall be measured by the EOR'S or DISTRICT'S REPRESENTATIVE or PROJECT REPRESENTATIVE according to the United States Standard Measures. All linear surface measurements shall be made horizontally or vertically as required by the item measured.

9.6 REJECTING DEFECTIVE WORK

9.6.1 The EOR, DISTRICT'S REPRESENTATIVE or PROJECT REPRESENTATIVE shall have authority to disapprove or reject Work which is "defective" (which term is hereinafter used to describe Work that is unsatisfactory, faulty or defective, or does not conform to the requirements of the Contract Documents or does not meet the requirements of any inspection, test or approval referred to in the Contract Documents, or has been damaged prior to final acceptance). They shall also have authority to require special inspection or testing of the Work as they may individually or severally deem necessary, whether or not the Work is fabricated, installed or completed.

9.6.2 Mockups must be approved prior to work beginning. The mockup shall be the basis for the quality of work and the work's acceptance.

9.7 SHOP DRAWINGS, CHANGE ORDERS AND PAYMENTS:

9.7.1 In connection with EOR'S responsibility for Shop Drawings and samples, see Sections 6.11 (Shop Drawings and Samples).

9.7.2 In connection with EOR'S responsibilities as to Change Orders see Article 10, (Changes in the Work), Articles 11 (Change in Contract Price) and Article 12 (Change in Contract Time).

9.7.3 In connection with EOR'S responsibilities in respect of Applications for Payment, etc., see Article 14, (Payments to Contractor and Completion).

9.8 DETERMINATIONS FOR UNIT PRICES:



9.8.1 The DISTRICT PROJECT MANAGER and EOR shall determine the actual quantities and classifications of Unit Price WORK performed by CONTRACTOR. The DISTRICT PROJECT MANAGER and EOR shall review with CONTRACTOR EOR'S preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). The DISTRICT PROJECT MANAGER'S written decisions thereon shall be final and binding upon the DISTRICT and CONTRACTOR unless, within ten days after the date of any such decision, the CONTRACTOR delivers to the DISTRICT and to EOR written notice of intention to appeal from such a decision.

9.9 DECISIONS ON DISPUTES:

9.9.1 The DISTRICT PROJECT MANAGER with the input of the CONSULTANT shall be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the WORK thereunder. Claims, disputes and other matters relating to the acceptability of the WORK or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the WORK and claims under Articles 11 (Change in Contract Price) and Article 12 (Change in Contract Time) in respect of changes in the Contract Price or Contract Time shall be referred initially to EOR in writing with a request for a formal decision in accordance with this paragraph, which EOR with the consent of the District Project Director shall render in writing within a reasonable time. Written notice of each such claim, dispute and other matter shall be delivered by the claimant to The DISTRICT PROJECT MANAGER and EOR and the other party to the Contract promptly (but in no event later than ten (10) days) after the start of the occurrence or event giving rise thereto, and written supporting data shall be submitted to The DISTRICT PROJECT MANAGER and EOR within ten (10) days after such occurrence unless CONSULTANT with the consent of the District Project Director allows an additional period of time to ascertain more accurate data in support of such claim, dispute or other matter.

9.9.2 The DISTRICT PROJECT MANAGER and EOR shall submit any response to the claimant within ten (10) days after receipt of the claimant's last submittal (unless The DISTRICT PROJECT MANAGER and EOR allows additional time). EOR with the consent of the District Project Director shall render a formal decision in writing thirty days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. The DISTRICT PROJECT MANAGER'S written decision, on such claim, dispute or other matter shall be final and binding upon CONTRACTOR unless:

(i) an appeal from DISTRICT/ EOR's decision is taken within the time limits and in accordance with the procedures set forth pursuant to Article 16, (Dispute Resolution) or

(ii) a written notice of intention to appeal from The DISTRICT PROJECT MANAGER and EOR's written decision is delivered by CONTRACTOR to the DISTRICT PROJECT MANAGER and EOR within ten (10) days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within thirty (30) days of the date of such decision, unless otherwise agreed in writing by DISTRICT and CONTRACTOR.

9.9.3 The rendering of a decision by The DISTRICT PROJECT MANAGER pursuant to paragraphs 9.8.1, (Determinations for Unit Prices), 9.9.1 and 9.9.2 (Dispute Resolution) with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.11 Waiver of Claims) shall be a condition precedent to any exercise by CONTRACTOR of such rights or remedies as either may

otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant to Article 16.

9.10 INSPECTION AND TESTING:

9.10.1 EOR shall inspect work to assure performance in accord with requirements of Contract Documents as follows:

9.10.1.1 Administer special testing and inspections of suspect Work.

9.10.1.2 Reject Work, which does not comply with requirements of Contract Documents.

9.10.2 Coordinate Testing Laboratory Services:

9.10.2.1 Verify that required laboratory personnel are present.

9.10.2.2 Verify that tests are made in accordance with specified standards.

9.10.2.3 Review test reports for compliance with specified criteria.

9.10.2.4 Recommend and administer any required re-testing.

9.11 LIMITATIONS ON EOR:

9.11.1 Neither EOR'S authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by EOR either to exercise or not exercise such authority shall give rise to any duty or responsibility of EOR to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the WORK, or to any surety for any of them.

9.11.2 Whenever in the Contract Documents the term "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of the like effect or import are used to describe a requirement, direction, review or judgment of EOR as to the WORK, it is intended that such requirement, direction, review or judgment shall be solely to evaluate the WORK for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to EOR any duty or authority to supervise or direct the furnishing or performance of the WORK or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.11.3 or 9.11.4.

9.11.3 EOR shall not be responsible for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and EOR shall not be responsible to CONTRACTOR for CONTRACTOR'S failure to perform or furnish the WORK in accordance with the Contract Documents.

9.11.4 EOR shall not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the WORK.

ARTICLE 10 – CHANGES IN THE WORK

10.1 AUTHORIZED CHANGES IN THE WORK

10.1.1 Without invalidating the Contract and without notice to any surety, the DISTRICT may, at any time or from time to time, order additions, deletions or revisions in the WORK; these shall be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the WORK involved that shall be performed under the applicable conditions of the Contract Documents, except as otherwise specifically provided.



10.1.2. If the DISTRICT and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result of a Work Change Directive, a claim may be made therefore as provided in Articles 11 (Change in Contract Price) and Article 12 (Change in Contract Time).

10.2 UNAUTHORIZED CHANGES IN THE WORK

10.2.1 CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any WORK performed that is not required by the Contract Documents as amended, modified and supplemented as provided in Section 3.2, (References to Standards) except in the case of an emergency as provided in paragraph 6.10.11 (Emergencies) and except in the case of uncovering WORK as provided in paragraph 13.4.2, (Uncovering Work).

10.3 EXECUTION OF CHANGE ORDERS

10.3.1 The DISTRICT and CONTRACTOR shall execute appropriate Change Orders (or Written Amendments) covering:

10.3.1.1 Changes in the WORK, which are ordered by the DISTRICT pursuant to paragraph 10.1.1, (Changes in the Work) are required because of acceptance of *defective* WORK under paragraph 13.8 or correcting *defective* WORK under paragraph 13.9, or are agreed to by the parties.

10.3.1.2 Changes in the Contract Price or Contract time which the parties agree to.

10.3.1.3 Changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by EOR pursuant to paragraph 9.9.1; (Decisions on Disputes) provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provision of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the WORK and adhere to the progress schedule as provided in paragraph 6.24.1.

10.3.2. Surety. It is distinctly agreed and understood that any changes made in the Contract Documents for this WORK (whether such changes increase or decrease the amount thereof) or any change in the manner or time of payments or time of performance made by the DISTRICT to the CONTRACTOR shall in no way annul, release or affect the liability and surety on the Bonds given by the CONTRACTOR. If notice of any change affecting the general scope of the WORK or the provisions of the Contract Documents (including, but not limited to, Contract Price or contract Time) is required by the provisions of any bond to be given to a Surety, the giving of any such notice shall be CONTRACTOR'S responsibility, and the amount of each applicable Bond shall be adjusted accordingly.

10.3.3 Notwithstanding, anything to the contrary contained within the contract documents, all change orders involving additional cost or extensions of time, shall be governed by the ordinances of the DISTRICT.

ARTICLE 11 – CHANGE OF CONTRACT PRICE

11.1 GENERAL

11.1.1 The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the WORK. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.1.2 The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to EOR promptly (but in no event later than ten (10)

days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within thirty (30) days after such occurrence (unless EOR allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by DISTRICT and EOR in accordance with paragraph 9.9.1 if the DISTRICT and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price shall be valid if not submitted in accordance with this paragraph 11.1.2.

11.1.3 The value of any WORK covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.1.3.1 Where the WORK involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of Section 11.5 (Unit Price Work) inclusive).

11.1.3.2 By mutual acceptance of a lump sum (which shall include an allowance for overhead and profit in accordance with paragraph 11.3.1.2.a Contractor's Fee).

11.1.3.3 On the basis of the Cost of the WORK (determined as provided in Section 11.2, inclusive) plus a

CONTRACTOR'S Fee for overhead and profit (determined as provided in Section 11.3, Contractor's Fee, inclusive).

11.2 COST OF THE WORK:

11.2.1 General. The term Cost of the WORK means the sum of all costs necessary incurred and paid by CONTRACTOR in the proper performance of the WORK. Except as otherwise may be agreed to in writing by the DISTRICT, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.2.2: (Exclusions to Cost of the Work).

11.2.1.1 Labor. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the WORK under schedules of job classification agreed upon by the DISTRICT and CONTRACTOR. Payroll costs for employees not employed full time on the WORK shall be apportioned on the basis of their time spent on the WORK. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing WORK after regular working hours, on Saturday, Sunday or legal holidays shall be included in the above to the extent authorized by the DISTRICT.

11.2.1.2 Materials and Equipment. Cost of all materials and equipment furnished and incorporated in the WORK, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless the DISTRICT deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to the DISTRICT. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to the DISTRICT, and CONTRACTOR shall make provisions so that they may be obtained.

11.2.1.3 Subcontractor. Payments made by CONTRACTOR to the Subcontractors for WORK performed by



Subcontractors. If required by the DISTRICT, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to the DISTRICT who shall then determine, with the advice of the EOR, which bids shall be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the WORK Plus a Fee, the Subcontractor's Cost of the WORK shall be determined in the same manner as CONTRACTOR'S Cost of WORK. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.2.1.4 Costs of Special Consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the WORK.

11.2.1.5 Supplemental costs include the following:

a. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and tools not owned by the workers, which are consumed in the performance of WORK, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

b. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by the DISTRICT with the advice of EOR, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof--all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the WORK. For special equipment and machinery such as power driven pumps, concrete mixers, trucks, front end loaders, backhoes, and tractors, or other equipment, required for the economical performance of the authorized WORK, the CONTRACTOR shall receive payment based on the weekly rate divided by 40 to arrive at an hourly cost. The weekly rate shall be from the latest edition of the Rental Rate blue book for Construction Equipment, published by Equipment Guide Book Co., reduced by 25 percent. Equipment cost shall be calculated based upon the actual time the equipment is used in the WORK. If said WORK required the use of machinery not on the WORK or not to be used on the WORK, the cost of transportation, not exceeding a distance of one hundred (100) miles, of such machinery to and from the WORK shall be added to the fair rental rate; provided, however, that this shall not apply to machinery or equipment already required to be furnished under the terms of the Contract.

c. Sales, consumer, use or similar taxes related to the WORK and for which CONTRACTOR is liable, imposed by laws and regulations.

d. Royalty payments and fees for permits and licenses.

e. The site costs of utilities, fuel and sanitary facilities.

f. Cost of premiums for additional bonds and insurance required because of changes in the WORK.

11.2.2 Exclusions to Cost of the Work: The term Cost of the WORK shall not include any of the following:

11.2.2.1 Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR'S principal or a branch office for general administration of the WORK and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.2.1.1 or specifically covered by paragraph 11.2.1.4

-- all of which are to be considered administrative costs covered by the CONTRACTOR'S Fee.

11.2.2.2 Expenses of CONTRACTOR'S principal and branch offices other than CONTRACTOR'S office at the site.

11.2.2.3 Any part of CONTRACTOR'S capital expenses, including interest on CONTRACTOR'S capital employed for the WORK and charges against CONTRACTOR for delinquent payments.

11.2.2.4 Cost of premiums for all Bonds and for all Insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.2.1.5f above).

11.2.2.5 Costs due to the negligence or intentional acts of the CONTRACTOR, any Subcontractor, or anyone whose acts any of them may be liable, including but not limited to, the correction of defective WORK, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.2.2.6 Costs associated with fringe benefits that are greater than actual costs; i.e., where worker hours exceed a typical 8-hour day and 40-hour workweek.

11.2.2.7 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Section 11.2.

11.3 CONTRACTOR'S FEE:

11.3.1 The CONTRACTOR'S Fee for overhead and profits shall be determined as follows:

11.3.1.1 A mutually acceptable fixed fee; or if none can be agreed upon,

11.3.1.2 A fee based on the following percentages of the various portions of the Cost of the WORK:

a. For costs incurred under paragraphs 11.2.1.1 (Labor) and 11.2.1.2, (Materials and Equipment) the CONTRACTOR'S Fee shall be five (5%) percent;

b. For costs incurred under paragraph 11.2.1.3, (Subcontractors) the CONTRACTOR'S Fee shall be five percent; and if a subcontract is on the basis of Cost of the WORK Plus a Fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be five (5%) percent;

c. No fee shall be payable on the basis of costs itemized under paragraphs 11.2.1.4, (Cost of EORs) 11.2.1.5 (Supplemental Costs) and 11.2.2; (Exclusions)

d. The amount of credit to be allowed by CONTRACTOR to the DISTRICT for any such change which results in a net decrease in cost shall be the amount of the actual net decrease plus a deduction in CONTRACTOR'S Fee by an amount equal to ten percent of the net decrease; and

e. When both additions and credits are involved in any one change, the adjustment in CONTRACTOR'S Fee shall be

computed on the basis of the net change in accordance with paragraphs 11.3.1.2a through 11.3.1.2d, inclusive.

11.3.2 Whenever the cost of any WORK is to be determined pursuant to paragraph 11.2.1 (General) or 11.2.2, (Exclusions), CONTRACTOR shall submit in form acceptable to EOR an itemized cost breakdown together with supporting data.

11.4 CASH ALLOWANCES:

11.4.1 It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract



Documents and shall cause the WORK so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to the DISTRICT, CONTRACTOR agrees that:

11.4.1.1 The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.4.1.2 CONTRACTOR'S costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof shall be valid.

11.4.1.3 Prior to final payment, an appropriate Change order shall be issued as recommended by EOR to reflect actual amounts due CONTRACTOR on account of WORK covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.5 UNIT PRICE WORK:

11.5.1 Where the Contract Documents provide that all or part of the WORK is to be Unit Price WORK, initially the Contract Price shall be deemed to include for all Unit Price WORK an amount equal to the sum of the established unit prices for each separately identified item of Unit Price WORK times the estimated quantity of each item as indicated in the Contract. The estimated quantities of items of Unit Price WORK are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price WORK performed by CONTRACTOR shall be made by EOR DISTRICT in accordance with Paragraph 9.8, Determinations for Unit Prices.

11.5.2 Each unit price shall be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR'S overhead and profit for each separately identified item.

11.5.3 Where the quantity of any item of Unit Price WORK performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Contract and there is no corresponding adjustment with respect to any other item of WORK and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 Change of Contract Price, if the parties are unable to agree as to the amount of any such increase.

11.5.4 Where the quantity of any item of Unit Price WORK performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Contract and there is no corresponding adjustment with respect to any other item of WORK and if DISTRICT believes that CONTRACTOR has incurred reduced expense as a result thereof, DISTRICT may make a claim for a decrease in the Contract Price in accordance with Article 11 Change of Contract Price if the parties are unable to agree as to the amount of any such decrease.

11.6 OMITTED WORK:

11.6.1 The DISTRICT may at any time, by written order, without Notice to the Sureties, require omission of such contract WORK as it may find necessary or desirable. An order for omission of WORK shall be valid only by an executable change order. All WORK so ordered must be omitted by the CONTRACTOR. The amount by which the contract price shall be reduced shall be determined as follows:

11.6.1.1 By such applicable unit prices, or rates for

WORK of a similar nature or character as set forth in the contract; or,

11.6.1.2. By the appropriate lump sum price set forth in the Contract; or,

11.6.1.3. By the reasonable and fair estimated cost of such omitted WORK and profit percentage as determined by the CONTRACTOR and the EOR, and approved by the DISTRICT.

ARTICLE 12 – CHANGE OF CONTRACT TIME

12.1 GENERAL

12.1.1 The Contract Time may only be changed by a Change Order or Written Amendment. Any claim for an extension or shortening of the Contract time shall be based on written notice delivered by the party making the claim to the other party and to EOR promptly (but in no event later than ten days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within ten (10) days after such occurrence (unless EOR allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. Claims made beyond these time limits shall be null and void.

12.1.2 Requests for extension of time shall be fully documented and shall include copies of daily logs, letters, shipping orders, delivery tickets, and other supporting information. In case of a continuing cause of delay only one (1) claim is necessary. Normal working weeks are based on a five (5) day week. All claims for adjustment of the Contract Time shall be determined by the DISTRICT with input from the EOR. No claim for an adjustment in the Contract Time shall be valid if not submitted in accordance with the requirements of this paragraph 12.1.1.

12.1.3 All time limits stated in the Contract Documents are of the essence of the Contract.

12.1.4 Where CONTRACTOR is prevented from completing any part of the WORK within the Contract Times (or Milestones) that, in the sole judgment of the DISTRICT whose decision shall be binding upon CONTRACTOR are due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) shall be extended in an amount equal to the time lost due to such delay if a claim is made therefore as provided in paragraph 12.1.1.

12.1.5 Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by DISTRICT, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, (Related Work at Sight) fires, floods, epidemics, or acts of God.

12.1.6 The CONTRACTOR must mitigate any loss of time by performing but not be limited to just performing ancillary WORK as is applicable to the project.

12.1.7 Claims for delay due to inclement weather (i.e., beyond the 10 year mean average) shall be made by the 10th day of the month following the month of the delay.

12.1.8 Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.1.9 Where CONTRACTOR IS prevented from completing any part of the WORK within the Contract Times (or Milestones) due to delay beyond the control of both DISTRICT and CONTRACTOR, an extension of the Contract Times (or



Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall DISTRICT be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts of neglect by utility owners or other contractors performing other work as contemplated by Article 7, (Related work at Sight).

3,000,001 to 4,000,000	400.00
4,000,001 to 5,000,000	425.00
5,000,001 to 6,000,000	450.00
6,000,001 to 7,000,000	475.00
7,000,001 to 8,000,000	500.00
8,000,001 to 9,000,000	525.00
9,000,001 to 10,000,000	550.00
10,000,001 to 11,000,000	575.00
11,000,001 to 12,000,000	600.00
12,000,001 and over	625.00

12.2 LIQUIDATED DAMAGES.

12.2.1 The DISTRICT and CONTRACTOR recognize and acknowledge that time is of the essence of this Contract and that the DISTRICT shall suffer financial loss if the WORK is not completed within the times specified in paragraph 2.3 of the Supplementary Conditions and the Notice To Proceed, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. Each of the parties acknowledges that it has attempted to quantify the damages which would be suffered by DISTRICT in the event of the failure of CONTRACTOR to perform in a timely manner, but neither one has been capable of ascertaining such damages with a certainty. DISTRICT and CONTRACTOR also recognize and acknowledge the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by the DISTRICT if the WORK is not completed on time. Accordingly, instead of requiring any such proof, the DISTRICT and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay the DISTRICT:

Base Bid Liquidated Damages Per Day	(\$) Dollar Amt
\$1000 to \$20,000	100
20,001 to 75,000	500
75,001 to 150,000	200
150,000 to 350,000	750
350,001 to 750,000	800
750,001 to 1,000,000	1,000
1,000,001 to 2,000,000	1,200
2,000,001 to 3,000,000	1,500
3,000,001 to 4,000,000	1,600
4,000,001 to 5,000,000	1,700
5,000,001 to 6,000,000	1,800
6,000,001 to 7,000,000	1,900
7,000,001 to 8,000,000	2,000
8,000,001 to 9,000,000	2,100
9,000,001 to 10,000,000	2,200
10,000,001 to 11,000,000	2,300
11,000,001 to 12,000,000	2,400
12,000,001 and over	2,500

for each day that expires after the time specified in paragraph 2.3 of the Supplementary Conditions, and the NOTICE TO PROCEED for substantial completion until the WORK is substantially complete.

12.2.2 After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining WORK within the Contract Time or any proper extension thereof granted by the DISTRICT, CONTRACTOR shall pay DISTRICT

Base Bid Liquidated Damages Per Day	
\$1000 to \$20,000	\$25.00
20,001 to 75,000	50.00
75,001 to 150,000	125.00
150,000 to 350,000	187.50
350,001 to 750,000	200.00
750,001 to 1,000,000	250.00
1,000,001 to 2,000,000	300.00
2,000,001 to 3,000,000	370.00

for each day that expires after the time specified in paragraph 2.3 of the Supplementary Conditions and as stated in the NOTICE TO PROCEED.

12.2.3 This sum is not a penalty, being the liquidated damages the DISTRICT shall have sustained in event of such default by the Contractor. The DISTRICT reserves the right to additionally recover direct job site expenses incurred during the period of any delay. The Contractor shall be liable for liquidated damages even if the Contract is terminated by the DISTRICT for cause or if the Contractor abandons the Work. The liability of the Contractor and its surety or sureties for damages provided by this Article is joint and several.

12.3 REIMBURSEMENT OF CONSULTANT EXPENSES:

12.3.1 Should the completion of this Contract be delayed beyond the specified or adjusted time limit, CONTRACTOR shall reimburse the DISTRICT for all expenses of consulting and inspection incurred by the DISTRICT during the period between said specified or adjusted time and the actual date of final completion. All such expenses for consulting and inspection incurred by the DISTRICT shall be charged to CONTRACTOR and be deducted from payments due CONTRACTOR as provided by this Contract. Said expenses shall be further defined as EOR charges associated with the construction contract administration, including resident project representative costs.

ARTICLE 13 – TESTS AND INSPECTIONS, CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.1 NOTICE OF DEFECTS:

13.1.1 Prompt notice of all defects for which DISTRICT or EOR have actual knowledge shall be given to CONTRACTOR. All defective WORK, whether or not in place, may be rejected, corrected or accepted as provided in Article 13, Test and Inspections: Correction, Removal or Acceptance of Defective Work.

13.1.2 Unremedied defects identified for correction during the guarantee period but remaining after its expiration shall be considered as part of the obligations of the guarantee. Defects in material, workmanship or equipment, which are remedied as a result of obligations of the guarantee, shall subject the remedied portion of the WORK to an extended guarantee period of one year after the defect has been remedied. The Surety shall be bound with and for the Contractor in the Contractor's faithful observance of the guarantee.

13.2 ACCESS TO WORK:

13.2.1 EOR'S and EOR'S representatives, other representatives of the DISTRICT, testing agencies and governmental agencies with jurisdictional interests shall have access to the WORK at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

13.3 TESTS AND INSPECTIONS:

13.3.1 CONTRACTOR shall give EOR timely notice of readiness of the WORK for all required inspections, tests or approvals.



13.3.2 If Laws or Regulations of any public body having jurisdiction require any WORK (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish EOR the required certificates of inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the DISTRICT'S or EOR'S acceptance of a Supplier of materials or equipment proposed to be incorporated in the WORK, or of materials or equipment submitted for approval prior to CONTRACTOR'S purchase thereof for incorporation in the WORK.

13.3.3 All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to the DISTRICT (or by EOR if so specified).

13.3.4 If any WORK (including the WORK of others) that is to be inspected, tested or approved is covered without written concurrence of EOR, it must, if requested by EOR, be uncovered for observation. Such uncovering shall be at CONTRACTOR'S expense unless CONTRACTOR has given EOR timely notice of CONTRACTOR'S intention to cover the same and EOR has not acted with reasonable promptness in response to such notice.

13.3.5 Neither observations by EOR nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR'S obligation's to perform the WORK in accordance with the Contract Documents.

13.3.6 General: For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Five (5) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Consultant as a prerequisite for the acceptance of any material or equipment.

13.3.6.1 If, in the making of any test of any material or equipment, it is ascertained by the EOR that the material or equipment does not comply with the Contract Documents, the Contractor will be notified thereof and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the work and replace it with acceptable material, without cost to the DISTRICT.

13.3.6.2 Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with the recognized test codes.

13.3.7 Costs: All inspection and testing of materials furnished under this Contract will be provided by the Contractor, unless otherwise expressly specified.

13.3.7.1 Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the DISTRICT for compliance. The Contractor shall reimburse the DISTRICT for the expenditures incurred in making such tests of materials and equipment which are rejected for non-compliance.

13.3.8 Certificate of Manufacture: Contractor shall furnish Consultant authoritative evidence in the form of Certificate of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Contract Documents.

13.3.8.1 These certificates shall be notarized and shall include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product or on similar products of the manufacturer.

13.3.9 Start up Tests: As soon as conditions permit, the Contractor shall furnish all labor, materials, and instruments and

shall make start-up tests of equipment.

13.3.9.1 If the start-up tests disclose any equipment furnished under this Contract which does not comply with the requirements of the Contract Documents, the Contractor shall, prior to demonstration tests, make all changes, adjustments and replacements required. The furnishing Contractor shall assist in the start-up tests as applicable.

13.4 TESTING AND INSPECTIONS SPECIFIC RESPONSIBILITIES

13.4.1 The independent firm will perform tests, inspections and other services specified in individual specification sections and as may be required by Owner.

13.4.1.1 Laboratory: Authorized to operate at Project location.

13.4.1.2 Laboratory Staff: Maintain full time specialist on staff to review services.

13.4.1.3 Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

13.4.2 Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Architect/Engineer or Owner.

13.4.3 Reports will be submitted by independent firm to Architect/Engineer, Contractor, and authority having jurisdiction, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents. Submit final report indicating correction of Work previously reported as non-compliant.

13.4.4 Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

13.4.4.1 Notify Owner, Architect/Engineer and independent firm [24] hours prior to expected time for operations requiring services.

13.4.4.2 Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

13.4.5 Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

13.4.6 Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Architect/Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

13.4.7 Testing Agency Responsibilities:

13.4.7.1 Test samples of mixes submitted by Contractor.

13.4.7.2 Provide qualified personnel at site.

13.4.7.3 Cooperate with Owner, Architect/Engineer and Contractor in performance of services.

13.4.7.4 Perform specified sampling and testing of products in accordance with specified standards.

13.4.7.5 Ascertain compliance of materials and mixes with requirements of Contract Documents.

13.4.7.6 Promptly notify Owner, Architect/Engineer and



Contractor of observed irregularities or non-conformance of Work or products.

13.4.7.7 Perform additional tests required by Architect/Engineer.

13.4.8 Testing Agency Reports

After each test, promptly submit five (5) copies of report to Architect/Engineer, Contractor, and authority having jurisdiction. When requested by Architect/Engineer, provide interpretation of test results. Include the following:

13.4.8.1 Date issued.

13.4.8.2 Project title and number.

13.4.8.3 Name of inspector.

13.4.8.4 Date and time of sampling or inspection.

13.4.8.5 Identification of product and specifications section.

13.4.8.6 Location in Project.

13.4.8.7 Type of inspection or test.

13.4.8.8 Date of test.

13.4.8.9 Results of tests.

13.4.8.10 Conformance with Contract Documents

13.4.9 Limits On Testing Authority:

13.4.9.1 Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

13.4.9.2 Agency or laboratory may not approve or accept any portion of the Work.

13.4.9.3 Agency or laboratory may not assume duties of Contractor.

13.4.9.4 Agency or laboratory has no authority to stop the Work.

13.5 MANUFACTURERS' FIELD SERVICES

13.5.1 When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, as applicable, and to initiate instructions when necessary.

13.5.2 Submit qualifications of observer to Architect/Engineer [30] days in advance of required observations.

13.5.3 Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

13.6. UNCOVERING WORK:

13.6.1. If any WORK is covered contrary to the request of EOR, it must, if requested by EOR, be uncovered for EOR'S observation and replaced, at CONTRACTOR'S expense.

13.6.2. If EOR considers it necessary or advisable that covered WORK be observed by EOR or inspected or tested by others, CONTRACTOR, at EOR'S request shall uncover, expose or otherwise make available for observation, inspection or testing as EOR may require, that portion of the WORK in question, furnishing all necessary labor, material and equipment. If it is found that such WORK is *defective*, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and the DISTRICT shall be entitled to an appropriate decrease in the

Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such WORK is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and if the parties are unable to agree as to the amount or extent thereof. CONTRACTOR may make a claim therefor as provided in Article 11 Change of Contract Price and Article 12, Change of Contract Time.

13.7 DISTRICT MAY STOP THE WORK:

13.7.1 If the WORK is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the WORK in such a way that the completed WORK shall conform to the Contract Documents, the DISTRICT may order CONTRACTOR to stop the WORK, or any portion thereof, until the cause for such order has been eliminated; however, this right of the DISTRICT to stop the WORK shall not give rise to any duty on the part of the DISTRICT to exercise this right for the benefit of CONTRACTOR or any other party.

13.8 CORRECTION OR REMOVAL OF DEFECTIVE WORK:

13.8.1 If required by EOR, CONTRACTOR shall promptly, as directed, either correct all *defective* WORK, whether or not fabricated, installed or completed, or, if the WORK has been rejected by EOR, remove it from the site and replace it with non-*defective* WORK. CONTRACTOR shall bear all direct, indirect, and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

13.8.2 If the Contractor refuses to comply, the DISTRICT has the right to do either (or more) of the following:

13.8.3 The DISTRICT has the right to correct any work so performed by the CONTRACTOR and deduct the expenses for doing so from the final payment due the CONTRACTOR, or

13.8.4 The DISTRICT shall hold back final payment due CONTRACTOR until such time as the work is completed to the satisfaction of the DISTRICT'S PROJECT MANAGER and in compliance with the DISTRICT'S specifications. The DISTRICT'S PROJECT MANAGER shall have the sole discretion to determine if the work is satisfactory and in compliance with specifications.

13.8.5 The remedies contained herein are not exclusive and the OWNER reserves the right to pursue any and all other remedies it deems applicable.

13.9 ONE-YEAR CORRECTION PERIOD:

13.9.1 If within one year after the date of Acceptance of WORK or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any WORK is found to be *defective*, CONTRACTOR shall promptly, without cost to the DISTRICT and in accordance with the DISTRICT'S written instructions, either correct such *defective* WORK, or, if it has been rejected by the DISTRICT, remove it from the site and replace it with non-*defective* WORK.

13.9.2 If CONTRACTOR does not promptly comply with the terms of such instructions or in an emergency where delay would cause serious risk of loss or damage, the DISTRICT may have the *defective* WORK corrected or the rejected WORK removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) shall be paid by CONTRACTOR.

13.9.3 In special circumstances where a particular item of



equipment is placed in continuous service before Final Acceptance of all the WORK, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

13.9.4 Nothing herein shall be deemed a waiver of the statute of limitations as provided in Florida Law.

13.9.5 Where *defective* WORK (and damage to other WORK resulting therefrom) has been corrected, removed or replaced under this paragraph 13.7., the correction period hereunder with respect to such WORK shall be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

13.10 ACCEPTANCE OF DEFECTIVE WORK:

13.10.1 If, instead of requiring correction or removal and replacement of *defective* WORK, DISTRICT (and, prior to EOR's recommendation of final payment, also EOR) prefers to accept it, DISTRICT may do so. CONTRACTOR shall pay all claims, costs, losses and damages attributable to DISTRICT'S evaluation of and determination to accept such *defective* WORK (such costs to be approved by EOR as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals).

13.10.2 If any such acceptance occurs prior to CONSULTANT'S recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK; and the DISTRICT shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, the DISTRICT may make a claim therefor as provided in Article 11, Change of Contract Price. If the acceptance occurs after such recommendation, CONTRACTOR shall pay an appropriate amount to the DISTRICT.

13.11 DISTRICT MAY CORRECT DEFECTIVE WORK:

13.11.1 If CONTRACTOR fails within thirty days (30) after written notice of EOR to proceed to correct and to correct *defective* WORK or to remove and replace rejected WORK as required by CONSULTANT in accordance with paragraph 13.7.1, or if CONTRACTOR fails to perform the WORK in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, the DISTRICT may, after seven days written notice to CONTRACTOR, correct and remedy any such deficiency.

13.11.2 In exercising the rights and remedies under this paragraph the DISTRICT shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, the DISTRICT may exclude CONTRACTOR from all or part of the site, take possession of all or part of the WORK, and suspend CONTRACTOR'S services related thereto, take possession of CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and incorporate in the WORK all materials and equipment stored at the site or for which the DISTRICT has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow the DISTRICT, the DISTRICT'S representative, agents and employees such access to the site as may be necessary to enable the DISTRICT to exercise the rights and remedies under this paragraph.

13.11.3. All direct, indirect and consequential costs of the DISTRICT in exercising such rights and remedies shall be charged against CONTRACTOR by DISTRICT and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents with respect to the WORK; and the DISTRICT shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, the DISTRICT may make a claim therefor as provided in Article 11, Change of Contract Price. Such direct, indirect and consequential costs shall include but not be limited to

fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and/or replacement of WORK of others destroyed or damaged by correction, removal or replacement of CONTRACTOR'S *defective* WORK. Contractor shall also be responsible for restoring any other sites affected by such repairs or remedial work at no cost to DISTRICT. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the WORK attributable to the exercise by the DISTRICT of the DISTRICT'S rights and remedies hereunder.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.1 SCHEDULE OF VALUES

14.1.1 The schedule of values established as provided in paragraph 2.6., Finalizing Schedules, shall serve as the basis for progress payments and shall be incorporated into a form of Application for Payment acceptable to EOR.

14.2 UNIT PRICE BID SCHEDULE

14.2.1 Progress payments on account of Unit Price WORK shall be based on the number of units completed.

14.2.2 The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the DISTRICT, in accordance with the applicable method of measurement therefore contained herein.

14.2.3 The Contractor shall receive and accept the compensation provided in the Bid and the Contract as full payment for furnishing all materials, labor, tools and equipment, for performing all operations necessary to complete the work under the Contract, and also in full payment for all loss or damages arising from the nature of the work, or from any discrepancy between the actual quantities of work and quantities herein estimated by the EOR, or from the action of the elements or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the DISTRICT.

14.2.4 The prices stated in the Bid include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the work as shown on the Drawings and specified herein. The basis of payment for an item at the unit price shown in the bid shall be in accordance with the description of that item.

14.3 APPLICATION FOR PROGRESS PAYMENTS:

14.3.1 Unless otherwise prescribed by law, at the end of each month, the CONTRACTOR shall submit to the EOR for review, an Application for Progress Payment filled out and signed by the CONTRACTOR covering the WORK completed as of the date of the Application and accomplished by such supporting documentation as is required by the Contract Documents.

14.3.2 The Application for Progress Payment shall identify, as a subtotal, the amount of the CONTRACTOR'S Total Earnings to Date, plus the Value of Materials Stored which have not yet been incorporated in the WORK, less a deductive adjustment for materials stored which have been installed which were not previously incorporated in the WORK, but for which payment was allowed.

14.3.3 The Net Payment Due to the CONTRACTOR shall be the above- mentioned subtotal from which shall be deducted the amount of retainage specified in the Contract, and the total

amount of all previous approved Applications for Progress



Payment submitted by the CONTRACTOR. Retainage shall be calculated based upon the above-mentioned subtotal.

The above calculation in tabular form is as follows:

Total Earnings to Date	\$
Value of Materials Stored	\$
Less Value of Materials Stored for which payment was allowed and which have been installed	(\$)
Sub Total	\$
Less Retainage (based on sub total)	(\$)
Less total of all previous approved Applications for Progress Payment	(\$)
NET PAYMENT DUE	\$

5.3.4 The Value of Materials Stored shall be an amount equal to the specified percent of the value of same as set forth in the Contract or Schedule of Values. Said amount shall be based upon the value of all acceptable materials and equipment not incorporated in the WORK but delivered and suitably stored at the site or at another location agreed to in writing; provided, each such individual item has a value of more than \$5,000 and shall become a permanent part of the WORK and is planned for installation within the following thirty (30) days. The Application for Progress Payment shall also be accompanied by a Bill of Sale, paid invoice, or other documentation warranting that the DISTRICT has received the materials and equipment free and clear of all liens, charges, security interests, and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the DISTRICT'S interest therein, all of which shall be satisfactory to the DISTRICT.

14.3.5 List each Change Order executed prior to date of submission, at the end of the continuation sheets. List by Change Order Number, and description, as for an original component item of work.

14.3.6 As provided for in the "Application for Payment" form, the Contractor shall certify, for each current pay request, that all previous progress payments received from the DISTRICT, under this Contract, have been applied by the Contractor to discharge in full all obligations of the Contractor in connection with Work covered by prior Applications for Payment, and all materials and equipment incorporated into the Work are free and clear of all liens, claims, security interest and encumbrances. Contractor shall attach to each Application for Payment like affidavits by all subcontractors

14.4 CONTRACTOR'S WARRANTY OF TITLE:

14.4.1 The CONTRACTOR warrants and guarantees that title to all Work and equipment covered by an Application for Payment, whether incorporated in the Project or not, shall have passed to the DISTRICT prior to the making of the Application for Payment, free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens"); and that no work or equipment covered by an Application for Payment shall have been acquired by the CONTRACTOR or by any other person performing the Work at the site or furnishing equipment for the Project, subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the CONTRACTOR or such other person.

14.5 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT:

14.5.1 EOR shall, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to the DISTRICT, or return the Application to CONTRACTOR indicating in writing EOR'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make necessary corrections and resubmit the Application. Thirty days after receipt of the

Application for Payment by the DISTRICT with EOR'S recommendation, the amount recommended shall (subject to the provisions of the last sentence of paragraph 14.5.4) become due and when due shall be paid by the DISTRICT to CONTRACTOR.

14.5.2 EORS recommendation of any payment requested in the application for payment shall not prohibit the DISTRICT from withholding payment or prohibit the DISTRICT from paying additionally sums regarding other matters or issues between the parties.

14.5.3 EOR'S recommendation of final payment shall constitute an additional representation by EOR to the DISTRICT that the conditions precedent to CONTRACTOR'S being entitled to final payment as set forth in paragraph 14.10, Final Payment and Acceptance, have been fulfilled.

14.5.4. EOR may refuse to recommend the whole or any part of any payment if, in EOR'S opinion, it would be incorrect to make such representations to the DISTRICT. The EOR may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in EOR'S opinion to protect the DISTRICT from loss, including but not limited to:

14.5.4.1 The WORK is defective, or completed WORK has been damaged requiring correction or replacement.

14.5.4.2 The Contract Price has been reduced by a Written Amendment or Change Order.

14.5.4.3 The DISTRICT has been required to correct defective WORK or complete WORK in accordance with paragraph 13.9, or

14.5.4.4 Of EOR'S actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1.1 through 15.2.1.9 inclusive (District May Terminate).

14.5.5 The DISTRICT may refuse to make payment of the full amount recommended by the EOR because claims have been made against the DISTRICT on account of CONTRACTOR'S performance or furnishing of the WORK, or there are other items entitling the DISTRICT to credit against the amount recommended, but the DISTRICT must give CONTRACTOR written notice (with a copy to EOR) stating the reasons for such action.

14.5.6 The Work for which payment is requested cannot be verified,

14.5.7 Claims or Liens have been filed or there is reasonable evidence indicating the probable filing thereof,

14.5.8 Of unsatisfactory prosecution of the Work, including failure to clean up as required

14.5.9 Of persistent failure to cooperate with other Contractors on the Project and persistent failure to carry out the Work in accordance with the Contract Documents,

14.5.10 Of liquidated damages payable by the CONTRACTOR, or

14.5.11 Of any other violation of, or failure to comply with, the provisions of the Contract Documents

14.6 SUBSTANTIAL COMPLETION:

14.6.1 When the CONTRACTOR considers the entire WORK ready for its intended use, the CONTRACTOR shall notify the DISTRICT and the EOR in writing that the WORK is substantially complete and request that the EOR prepare a Certificate of Substantial Completion

14.6.2 For construction projects having an estimated cost of



less than \$10 million, the DISTRICT, the EOR and the CONTRACTOR shall make an inspection of the WORK within thirty (30) calendar days after the notice from the CONTRACTOR that the work is substantially complete to determine the status of completion.

14.6.3 For construction projects having an estimated cost of more than \$10 million, the DISTRICT, the EOR and the CONTRACTOR shall make an inspection of the WORK within thirty (30) calendar days unless otherwise extended by contract not to exceed sixty (60) calendar days after notice from the CONTRACTOR that the work is substantially complete to determine the status of completion. If the EOR does not consider the WORK substantially complete, the EOR shall notify the CONTRACTOR in writing giving the reasons therefore. If the EOR considers the WORK to be substantially complete, the EOR shall prepare and deliver to the DISTRICT for its execution and recordation the Certificate of Substantial Completion signed by the EOR and CONTRACTOR, which shall fix the Date of Substantial Completion.

14.6.4 The DISTRICT shall have the right to exclude CONTRACTOR from the WORK after the date of Substantial Completion, but the DISTRICT shall allow CONTRACTOR reasonable access to complete or correct items on the "punch list".

14.7 PARTIAL UTILIZATION:

14.7.1 The DISTRICT shall have the right to enter the premises for the purpose of doing work not covered by the Contract Documents. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the Work, or the restoration of any damaged Work except such as may be caused by agent or employees of the DISTRICT

14.7.2 Prior to Substantial Completion, the DISTRICT, with the approval of the EOR and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portion of the Work. Such use shall not constitute an acceptance of such portions of the Work.

14.7.3 Use by the DISTRICT of any finished part of the WORK, which has specifically been identified in the Contract Documents, or which the DISTRICT, EOR and CONTRACTOR agree constitutes a separately functioning and useable part of the WORK that can be used by the DISTRICT without significant interference with CONTRACTOR'S performance of the remainder of the WORK, may be accomplished prior to Substantial Completion of all WORK subject to the following:

14.7.4 The DISTRICT at any time may request CONTRACTOR in writing to permit the DISTRICT to use any such part of the WORK which the DISTRICT believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR shall certify to the DISTRICT and EOR that said part of the WORK is substantially complete and request CONSULTANT to issue a certificate of Substantial Completion for that part of the WORK. CONTRACTOR at any time may notify the DISTRICT and EOR in writing that CONTRACTOR considers any such part of the WORK ready for its intended use and substantially complete and request EOR to issue a certificate of Substantial Completion for that part of the WORK. Within a reasonable time after either such request, the DISTRICT, CONTRACTOR and EOR shall make an inspection of that part of WORK to determine its status of completion. If CONSULTANT does not consider that part of the WORK to be substantially complete, EOR shall notify the DISTRICT and CONTRACTOR in writing giving the reasons therefore. If EOR considers that part of the WORK to be substantially complete, the provisions of paragraphs 14.6.1 and 14.6.2 shall apply with respect to

certification of Substantial Completion of that part of the WORK

and the division of responsibility in respect thereof and access thereto.

14.7.5 The DISTRICT may at any time request CONTRACTOR in writing to permit the DISTRICT to take over operation of any such part of the WORK although it is not substantially complete. A copy of such request shall be sent to EOR and within a reasonable time thereafter the DISTRICT, CONTRACTOR and EOR shall make an inspection of that part of the WORK to determine its status of completion and shall prepare a list of items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to the DISTRICT and EOR that such part of the WORK is not ready for separate operation by the DISTRICT, EOR shall finalize the list of items to be completed or corrected and shall deliver such list to the DISTRICT and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final judgment between the DISTRICT and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the WORK which shall become binding upon the DISTRICT and CONTRACTOR at the time when the DISTRICT takes over such operation (unless they shall have otherwise agreed in writing and so informed EOR). During such operation and prior to Substantial Completion of such part of the WORK, the DISTRICT shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related WORK.

14.8. FINAL INSPECTION:

14.8.1 Upon written notice from CONTRACTOR that the entire WORK or an agreed portion thereof is complete, EOR shall make a final inspection with the DISTRICT and CONTRACTOR and shall notify CONTRACTOR in writing of all particulars in which this inspection reveals that the WORK is incomplete, defective, or not in accordance with the Contract Documents. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

14.9 FINAL APPLICATION FOR PAYMENT:

14.9.1 After CONTRACTOR has completed in writing all such corrections to the satisfaction of EOR and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 14.6, Substantial Completion) and other documents--all as required by the Contract Documents, and after EOR has indicated in writing that the WORK is acceptable and has been completed in conformance with the drawings and specifications and any approved changes thereto, CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required, (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to DISTRICT) of all Liens arising out of or filed in connection with the WORK.

14.10 FINAL PAYMENT AND ACCEPTANCE:

14.10.1 Upon receipt of written notice from the Contractor that the WORK has been completed in conformity with the Drawings and Specifications and any approved changes thereto, and receipt of the Final Application for Payment, Final Receipt and Release of Lien and accompanying documentation, the DISTRICT'S EOR shall promptly examine the WORK and, making such tests as he may deem proper and using all of the care and judgment normally exercised in the examination of completed WORK by a properly qualified and experienced Professional EOR, shall satisfy himself that the CONTRACTOR'S statement appears to be correct and the CONTRACTOR'S other obligations under the Contract Documents have been fulfilled. He shall then inform the DISTRICT in writing that he has examined the WORK



and that it appears, to the best of his knowledge and belief, to conform to the Contract Drawings, Specifications and any approved Change Orders, that the CONTRACTORS other obligations under the Contract Documents have been fulfilled, and that he therefore recommends acceptance of the WORK for ownership and Final Payment to the CONTRACTOR. However, it is agreed by the DISTRICT and the CONTRACTOR that such statement by the DISTRICT'S EOR does not in any way relieve the CONTRACTOR from his responsibility to deliver a fully completed job in a good and workmanlike condition, and does not render the EOR or the DISTRICT liable for any faulty WORK done or defective materials or equipment used by the CONTRACTOR.

14.10.2 The EOR shall then make a final estimate of the value of all WORK done and shall deduct all previous payments which have been made. The EOR shall report such estimate to the DISTRICT together with his recommendation as to the acceptance of the WORK or his findings as to any deficiencies therein. After receipt and acceptance by the DISTRICT of the properly executed Final Warranty of Title and after approval of the EOR'S estimate and recommendation to the DISTRICT, the DISTRICT shall make final payment to the CONTRACTOR of the Amount remaining after deducting all prior payments and all amounts to be kept or retained under the provisions of the Contract Documents, or as may be lawfully retained, including, but not limited to, Liquidated Damages, as applicable. Title passes and warranty begins at final acceptance.

14.10.3. All prior estimates are subject to correction in the final estimate. Thirty days after approval by the DISTRICT of the application for final payment, the amount recommended by EOR shall become due and shall be paid to Contractor.

14.11 WAIVER OF CLAIMS:

14.11.1 The making and acceptance of final payment shall constitute:

14.11.1.1 A waiver of all claims by DISTRICT against CONTRACTOR, except claims arising from unsettled Liens, from *defective* WORK appearing after final inspection pursuant to paragraph 14.8, Final Inspection, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR'S continuing obligations under the Contract Documents or the Public Construction Bond and Payment Bonds; and

14.11.1.2 a waiver of all claims by CONTRACTOR against DISTRICT other than those previously made in writing and still unsettled.

14.12 PUNCHLIST PROCEDURES:

For Contracts over \$10,000,000.00: Further to §218.735(7)(a)(ii) Florida Statutes, punchlist procedures to render the Work complete, satisfactory and acceptable are established as follows:

14.12.1 Within twenty (20) days of Substantial Completion of the construction services purchased as defined in the Contract, Contractor shall schedule a walkthrough with DISTRICT AND EOR ("Initial Walkthrough" a/k/a "IW"). The purpose of the IW is to develop a preliminary checklist ("Checklist") of items to be performed by the Contractor, based upon observations made jointly between the Contractor, EOR and DISTRICT during the IW. The IW is to occur within twenty (20) days of Substantial Completion of the Work as defined by the Contract, again predicated upon the Contractor's timely initiation of a request for the IW. At its option, DISTRICT may conduct the IW with its and EOR.

14.12.2 Contractor shall endeavor to address and complete as many items as possible noted on the Checklist either during the IW itself, or thereafter for a period of forty-five (45) days from the date of the IW.

14.12.3 No later than forty-five (45) days following the scheduled IW, Contractor shall again initiate and request a second walkthrough of the Project with DISTRICT. The purpose of this second walkthrough is to identify which items remain to be performed from the IW Checklist and to supplement that list as necessary (based, for example, upon work which may have been damaged as a result of the Contractor's performance of completion of items contained on the IW Checklist) and for the purpose of developing a joint Final Punchlist.

14.12.4 The intent of this section is for DISTRICT and the Contractor to cooperate to develop a Final Punchlist to be completed no later than forty-five (45) days from the date of reaching Substantial Completion of the construction services purchase as defined in the Contract.

14.12.5 In no event may the Contractor request payment of final retainage under §218.735(7)(d) Florida Statutes until the Contractor considers the Final Punch list to be 100% complete.

14.12.6 Contractor agrees to complete the Final Punchlist items within sixty (60) days of the date of its issuance by DISTRICT.

14.12.7 Contractor acknowledges and agrees that no item contained on the Final Punchlist shall be considered a warranty item until such time as (a) the Final Punchlist is 100% complete, and (b) DISTRICT has been able to operate or utilize the affected punchlist item for an additional period of fifteen (15) days.

14.12.8 Contractor acknowledges and agrees that DISTRICT may, at its option, during performance of the Work and prior to Substantial Completion, issue lists of identified non-conforming or corrective work for the Contractor to address. The intent of any such DISTRICT generated lists prior to Substantial Completion is to attempt to streamline the punchlist process upon achieving Substantial Completion, and to allow for the Contractor to address needed areas of corrective work as they may be observed by DISTRICT during performance of the Work.

14.12.9 Contractor acknowledges and agrees that in calculating 150% of the amount which may be withheld by DISTRICT as to any Final Punchlist item for which a good faith basis exists as to it being complete, as provided for by §218.735(7)(d) Florida Statutes, DISTRICT may include within such percentage calculation its total costs for completing such item of work, including its administrative costs as well as costs to address other services needed or areas of work which may be affected in order to achieve full completion of the Final Punchlist item. Such percentage shall in no event relate to the schedule of value associated with such Work activity, but rather total costs are based upon the value (i.e. cost) of completing such Work activity based upon market conditions at the time of Final Punchlist completion.

For Contracts between \$200,000.00 and \$10,000,000.00: Further to §218.735(7)(a)(ii) Florida Statutes, punchlist procedures to render the Work complete, satisfactory and acceptable are established as follows:

14.12.10 Within five (5) days of Substantial Completion of the construction services purchased as defined in the Contract, Contractor shall schedule a walkthrough with DISTRICT ("Initial Walkthrough" a/k/a "IW"). The purpose of the IW is to develop a preliminary checklist ("Checklist") of items to be performed by the Contractor, based upon observations made jointly between the Contractor and DISTRICT during the IW. The IW is to occur within ten (10) days of Substantial Completion of the Work as defined by the Contract, again predicated upon the Contractor's timely initiation of a request for the IW. At its option, DISTRICT may conduct the IW with its Field Inspector.



14.12.11 Contractor shall endeavor to address and complete as many items as possible noted on the Checklist either during the IW itself, or thereafter for a period of fifteen (15) days from the date of the IW.

14.12.12 No later than fifteen (15) days following the scheduled IW, Contractor shall again initiate and request a second walkthrough of the Project with DISTRICT. The purpose of this second walkthrough is to identify which items remain to be performed from the IW Checklist and to supplement that list as necessary (based, for example, upon work which may have been damaged as a result of the Contractor's performance of completion of items contained on the IW Checklist) and for the purpose of developing a joint Final Punchlist.

14.12.13 The intent of this section is for DISTRICT and the Contractor to cooperate to develop a Final Punchlist to be completed no later than thirty (30) days from the date of reaching Substantial Completion of the construction services purchase as defined in the Contract.

14.12.14 In no event may the Contractor request payment of final retainage under §218.735(7)(d) Florida Statutes until the Contractor considers the Final Punch list to be 100% complete.

14.12.15 Contractor agrees to complete the Final Punchlist items within forty-five (45) days of the date of its issuance by DISTRICT.

14.12.16 Contractor acknowledges and agrees that no item contained on the Final Punchlist shall be considered a warranty item until such time as (a) the Final Punchlist is 100% complete, and (b) DISTRICT has been able to operate or utilize the affected punchlist item for an additional period of fifteen (15) days.

14.12.17 Contractor acknowledges and agrees that DISTRICT may, at its option, during performance of the Work and prior to Substantial Completion, issue lists of identified non-conforming or corrective work for the Contractor to address. The intent of any such DISTRICT generated lists prior to Substantial Completion is to attempt to streamline the punchlist process upon achieving Substantial Completion, and to allow for the Contractor to address needed areas of corrective work as they may be observed by DISTRICT during performance of the Work.

14.12.18 Contractor acknowledges and agrees that in calculating 150% of the amount which may be withheld by DISTRICT as to any Final Punchlist item for which a good faith basis exists as to it being complete, as provided for by §218.735(7)(d) Florida Statutes, DISTRICT may include within such percentage calculation its total costs for completing such item of work, including its administrative costs as well as costs to address other services needed or areas of work which may be affected in order to achieve full completion of the Final Punchlist item. Such percentage shall in no event relate to the schedule of value associated with such Work activity, but rather total costs are based upon the value (i.e. cost) of completing such Work activity based upon market conditions at the time of Final Punchlist completion.

14.13 REDUCTION OF RETAINAGE PROCEDURES:

14.13.1 Contractor may request a reduction of retainage as provided for by §218.735(7)(8) Florida Statutes. The term "Fifty Percent Completion" as contained in §218.735(7)(8)(b) Florida Statutes shall be defined as follows, in lieu of any other definition:

14.13.2 "Fifty Percent Completion" of the Work is defined as that point in time where 50% of the overall value of Work items incorporated and which shall remain in place subsequent to final completion of the Work have been completed, based upon the schedule of values contained in the Contract. As such, and by way of example, the value of Contractors mobilization, general conditions, supervision or like items which do not involve

permanent incorporation of Work do not apply to the determination of "Fifty Percent Completion" of the Work for purposes of establishing entitlement to a reduction of retainage.

14.13.3 With regard to any contract for construction services, a local governmental entity may withhold from each progress payment made to the contractor an amount not exceeding 10 percent of the payment as retainage until 50-percent completion of such services.

14.13.4 After 50-percent completion of the construction services purchased pursuant to the contract, the local governmental entity must reduce to 5 percent the amount of retainage withheld from each subsequent progress payment made to the contractor. For purposes of this subsection, the term "50-percent completion" has the meaning set forth in the contract between the local governmental entity and the contractor or, if not defined in the contract, the point at which the local governmental entity has expended 50 percent of the total cost of the construction services purchased as identified in the contract together with all costs associated with existing change orders and other additions or modifications to the construction services provided for in the contract. However, notwithstanding this subsection, a municipality having a population of 25,000 or fewer, or a county having a population of 100,000 or fewer, may withhold retainage in an amount not exceeding 10 percent of each progress payment made to the contractor until final completion and acceptance of the project by the local governmental entity.

14.13.5 After 50-percent completion of the construction services purchased pursuant to the contract, the contractor may elect to withhold retainage from payments to its subcontractors at a rate higher than 5 percent. The specific amount to be withheld must be determined on a case-by-case basis and must be based on the contractor's assessment of the subcontractor's past performance, the likelihood that such performance will continue, and the contractor's ability to rely on other safeguards. The contractor shall notify the subcontractor, in writing, of its determination to withhold more than 5 percent of the progress payment and the reasons for making that determination, and the contractor may not request the release of such retained funds from the local governmental entity.

14.13.6 After 50-percent completion of the construction services purchased pursuant to the contract, the contractor may present to the local governmental entity a payment request for up to one-half of the retainage held by the local governmental entity. The local governmental entity shall promptly make payment to the contractor, unless the local governmental entity has grounds, pursuant to paragraph (f), for withholding the payment of retainage. If the local governmental entity makes payment of retainage to the contractor under this paragraph which is attributable to the labor, services, or materials supplied by one or more subcontractors or suppliers, the contractor shall timely remit payment of such retainage to those subcontractors and suppliers.

14.13.7 This section does not prohibit a local governmental entity from withholding retainage at a rate less than 10 percent of each progress payment, from incrementally reducing the rate of retainage pursuant to a schedule provided for in the contract, or from releasing at any point all or a portion of any retainage withheld by the local governmental entity which is attributable to the labor, services, or materials supplied by the contractor or by one or more subcontractors or suppliers. If a local governmental entity makes any payment of retainage to the contractor which is attributable to the labor, services, or materials supplied by one or more subcontractors or suppliers, the contractor shall timely remit payment of such retainage to those subcontractors and suppliers.

14.13.8 This section does not require the local governmental entity to pay or release any amounts that are the subject of a good faith dispute, the subject of a claim brought pursuant to s. [255.05](#), or otherwise the subject of a claim or demand by the local governmental entity or contractor.



14.13.9 The time limitations set forth in this section for payment of payment requests apply to any payment request for retainage made pursuant to this section.

14.13.10 Paragraphs 14.13.3 through 14.13.6 do not apply to construction services purchased by a local governmental entity which are paid for, in whole or in part,

with federal funds and are subject to federal grantor laws and regulations or requirements that are contrary to any provision of the Local Government Prompt Payment Act.

14.13.11 This subsection does not apply to any construction services purchased by a local governmental entity if the total cost of the construction services purchased as identified in the contract is \$200,000 or less.

14.13.12 All payments due under this section and not made within the time periods specified by this section shall bear interest at the rate of 1 percent per month, or the rate specified by contract, whichever is greater.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.1 DISTRICT MAY SUSPEND/STOP WORK:

15.1.1 The DISTRICT may, at any time and without cause, suspend the WORK or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and EOR which shall fix the date on which WORK shall be resumed. CONTRACTOR shall resume the WORK on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefore as provided in Articles 11 (Change of Contract Price) and 12, (Change of Contract Time).

15.1.2 THE DISTRICT MAY STOP WORK: The DISTRICT REPRESENTATIVE may stop the Work or any portion thereof when it has been determined that the Contractor is not complying with the Drawings or Specifications or the intent thereof. The Stop Work order may be verbal and the CONTRACTOR shall cease work immediately except for leaving the Work area in a safe and acceptable condition. A verbal Stop Work order shall be confirmed in writing. The CONTRACTOR shall not be allowed an increase in the contract price or an extension of the Contract time during the Stop Work period. A Start Work order may be verbal and shall be confirmed in writing.

15.2 DISTRICT MAY TERMINATE FOR CAUSE:

15.2.1 Upon the occurrence of any one or more of the following events:

15.2.1.1 If CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such timing relating to the bankruptcy or insolvency;

15.2.1.2 If a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.1.3 If CONTRACTOR makes a general assignment for the benefit of creditors;

15.2.1.4 If a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien

against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR'S creditors;

15.2.1.5. If CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

15.2.1.6 If CONTRACTOR fails to perform the WORK in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.6 as revised from time to time);

15.2.1.7 If CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.1.8 If CONTRACTOR disregards the authority of EOR; or

15.2.1.9 If CONTRACTOR otherwise violates any provisions of the Contract Documents;

15.2.1.10 In the event of termination, the DISTRICT may take possession of the premises and all materials, tools, and appliances, thereon and finish the Work by whatever method it may deem expedient. In such cases, the Contractor shall only be entitled to receive payment for Work satisfactorily completed prior to the termination date, subject to any setoffs due the DISTRICT in completing the Project and for reimbursement of damages incurred. The DISTRICT may take possession of and use any materials, plant, tools, equipment, and property of any kind furnished by Contractor to complete the Work. In such case CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the expense incurred by the DISTRICT to finish the Work (including additional managerial and administrative services, plus the DISTRICT'S direct, indirect and consequential losses), exceeds the unpaid balance on this Contract, the Contractor or the Surety shall pay the difference to the DISTRICT promptly on demand. The expense incurred by the DISTRICT as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Project Manager. The Contractor shall be responsible for both liquidated damages attributable to delay and for excess completion costs. The liability of the Contractor and its surety or sureties for such damages and costs is joint and several. The obligations of the Contractor and his surety with respect to the warranty and maintenance shall remain in full force and effect for the portion of the Work completed by the Contractor and shall not expire until the expiration of the prescribed time period measured from the final acceptance of the project in its entirety. These clauses shall survive the termination of this Contract. If the DISTRICT makes a determination pursuant to this Contract to hold the Contractor in default and terminate the Contract for cause and it is subsequently determined that any such determination was improper, unwarranted, or wrongful, then any such termination shall be deemed for all purposes as a termination without cause as described below. The Contractor agrees that it shall be entitled to no damages, allowances or expenses of any kind other than as provided in this Agreement in connection with such termination, and does expressly waive, in the event of termination, any and all claims for consequential damages, loss of bonding capability, destruction of business, unabsorbed home office overhead, lost profit and the like.

15.2.2 Where CONTRACTOR'S services have been so terminated by the DISTRICT, the termination shall not affect any rights or remedies of the DISTRICT against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by the DISTRICT shall not release CONTRACTOR from liability.

15.3 DISTRICT MAY TERMINATE WITHOUT CAUSE:

15.3.1 The DISTRICT may terminate this Contract without cause by giving seven (7) days prior written notice to the



Contractor, and in such event, the DISTRICT shall pay the CONTRACTOR for that portion of the Contract Sum, less the aggregate of previous payments, allocable to the WORK completed as of the Date of Termination, plus reasonable termination expenses. The DISTRICT also shall reimburse the CONTRACTOR for all costs necessarily incurred for organizing and carrying out the stoppage of the WORK and paid directly by the CONTRACTOR, not including overhead, general expenses or profit. The DISTRICT shall not be responsible to reimburse the CONTRACTOR for any continuing contractual commitments to subcontractors or material men or for penalties or damages for canceling such contractual commitments, (with the exception that the DISTRICT shall reimburse the CONTRACTOR for major materials or equipment purchased before termination if the CONTRACTOR can show proof of said purchases prior to notice of termination) inasmuch as the CONTRACTOR shall make all subcontracts and other commitments subject to this provision. In the event of termination by the DISTRICT, the DISTRICT may require the CONTRACTOR promptly to assign to it all or some subcontracts, construction, plant, materials, tools, equipment, appliances, rental agreements, and other commitments which the DISTRICT, in its sole discretion, chooses to take by assignment, and in such event the CONTRACTOR shall promptly execute and deliver to the DISTRICT written assignments of the same.

15.4 REMOVAL OF EQUIPMENT DUE TO TERMINATION:

15.4.1 Removal of Equipment: In the case of termination of this Contract before completion, for any cause whatever, the CONTRACTOR, if notified to do so by the DISTRICT'S PROJECT MANAGER, shall promptly remove any part or all of this equipment and supplies from the property of the DISTRICT. Should the CONTRACTOR not remove such equipment and supplies, the DISTRICT shall have the right to remove them at the expense of the CONTRACTOR. Equipment and supplies shall not be construed to include such items for which the CONTRACTOR has been paid in whole or in part.

15.5 CONTRACTOR MAY STOP WORK OR TERMINATE:

15.5.1 If, through no act or fault of CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the DISTRICT or under an order of court or other public authority, or EOR fails to act on any Application for Payment within thirty (30) days after it is submitted, or the DISTRICT fails for sixty (60) days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven (7) days written notice to the DISTRICT and EOR, terminate the Contract and the DISTRICT shall pay the CONTRACTOR for that portion of the Contract Sum, less the aggregate of previous payments, allocable to the WORK completed as of the Date of Termination plus reasonable termination expenses. The DISTRICT shall not be responsible to reimburse the CONTRACTOR for any continuing contractual commitments for canceling such contractual commitments inasmuch as the CONTRACTOR shall make all subcontracts and other commitments subject to this provision. The DISTRICT may require the CONTRACTOR promptly to assign to it all or some subcontracts, construction, plant, materials, tools, equipment, appliances, rental agreements, and any other commitments which the DISTRICT, in its sole discretion, chooses to take by assignment, and in such event the CONTRACTOR shall promptly execute and deliver to the DISTRICT written assignments of the same. In addition and in lieu of terminating the Contract, if EOR has failed to act on an Application for Payment or the DISTRICT has failed to make any payment as aforesaid, CONTRACTOR may upon seven days written notice to the DISTRICT and EOR stop the WORK until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 6.24, Continuing the Work, to carry on the WORK in accordance with the progress schedule and without delay during disputes and disagreements with the DISTRICT.

ARTICLE 16 – DISPUTE RESOLUTION

16.1 GOOD FAITH EFFORT:

16.1.1 Any disputes relating to interpretation of the terms of this Contract or a question of fact or arising under this Contract shall be resolved through good faith efforts upon the part of the CONTRACTOR and the DISTRICT or its Project Manager. At all times, the CONTRACTOR shall carry on the work and maintain its progress schedule in accordance with the requirements of the Contract and the determination of the DISTRICT or its representatives, pending a final resolution of the dispute, including, if necessary, any determination by a Court of competent jurisdiction. Any dispute which is not resolved by mutual agreement of CONTRACTOR and DISTRICT Project Manager shall be decided by the DISTRICT Superintendent or designee who shall reduce the decision to writing. The decision of the DISTRICT shall be final and conclusive unless determined by a court of competent jurisdiction to be fraudulent, capricious, arbitrary, so grossly erroneous as to necessarily imply bad faith, or not be supported by substantial evidence.

16.2 MEDIATION:

16.2.1 Prior to initiating any litigation concerning this Contract, the DISTRICT reserves the right to submit the disputed issue or issues to a mediator for non-binding mediation. The parties shall agree on a mediator chosen from a list of certified mediators available from the Clerk of Court for Martin County. The fee of the mediator shall be shared equally by the parties. To the extent allowed by law, the mediation process shall be confidential and the results of the mediation or any testimony or argument introduced at the mediation shall not be admissible as evidence in any subsequent proceeding concerning the disputed issue.

ARTICLE 17 – MISCELLANEOUS

17.1 GIVING NOTICE:

17.1.1 All notices, requests, consents, and other communications required or permitted under this Contract shall be in writing and shall be (as elected by the person giving such notice) hand delivered by messenger or courier service, telecommunicated, electronically communicated, or mailed by registered or certified mail (postage prepaid) return receipt requested, addressed to:

<u>As To DISTRICT:</u>	<u>With A Copy To:</u>	<u>CONTRACTOR:</u>
Director of Facilities	Director of Purchasing	Individual or to a member of the firm or to an officer of the corporation for whom it is intended
Martin County School District	Martin County School District	
1050 East 10 th St.	2845 S.E. Dixie Hwy, Bldg 7	
Stuart, Fl., 34996	Stuart, Fl., 34997	

17.2 COMPUTATION OF TIME:

17.2.1 When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.

17.3 NOTICE OF CLAIM:

17.3.1 Should DISTRICT or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.



The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

17.4 CUMULATIVE REMEDIES:

17.4.1 The duties and obligations imposed by these General Terms & Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by Sections 6, Contractor's Responsibilities, Section 13, Test and Inspections, Correction, Removal or Acceptance of Defective Work, Section 14, Payments to Contractor and Completion, and Section 15, Suspension of work and Termination and all of the rights and remedies available to the DISTRICT and EOR thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph shall be as effective as if repeated specifically in the Contract Documents in connection with each particular duty obligation, right and remedy to which they apply. All representations warranties and guarantees made in the Contract Documents shall survive final payment and termination or completion of the Contract.

17.5 ACCIDENT AND PREVENTION:

17.5.1 The safety provisions of applicable laws and building and construction codes shall be observed and the Contractor shall take or cause to be taken such additional safety and health measures as the Local Public Agency involved may determine to be reasonably necessary. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident Prevention in Construction" as published by the Associated General Contractors of America, Inc. to the extent that such provisions are not in conflict with applicable laws. The Contractor shall maintain an accurate record of all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from WORK, arising out of and in the course of employment on WORK under the Contract. The Contractor shall promptly furnish the Local Public Agency with reports concerning these matters.

17.6 FLORIDA PRODUCTS AND LABOR:

17.6.1 The CONTRACTOR'S attention is called to Section 255.04, Florida Statutes, which requires that on public building contracts, Florida products and labor shall be used wherever price and quality are equal.

17.6.2 255.099 Preference to State Residents.—

(1) Each contract for construction that **is funded by state funds** must contain a provision requiring the contractor to give preference to the employment of state residents in the performance of the work on the project if state residents have substantially equal qualifications to those of nonresidents. A contract for construction funded by local funds may contain such a provision.

(a) As used in this section, the term "substantially equal qualifications" means the qualifications of two or more persons among whom the employer cannot make a reasonable determination that the qualifications held by one person are better suited for the position than the qualifications held by the other person or persons.

(b) A contractor required to employ state residents must contact the Department of Economic Opportunity to post the contractor's employment needs in the state's job bank system.

(2) No contract shall be let to any person refusing to execute an agreement containing the provisions required by this section. However, in work involving the expenditure of federal aid funds,

this section may not be enforced in such a manner as to conflict with or be contrary to federal law prescribing a labor preference to honorably discharged soldiers, sailors, or marines, or prohibiting as unlawful any other preference or discrimination among the citizens of the United States.

17.6.3 255.0991 Contracts For Construction Services; Prohibited Local Government Preferences.—

(1) For purposes of this section, the term:

(a) "Competitive solicitation" has the same meaning as in s. 255.248.

(b) "State-appropriated funds" means all funds appropriated in the General Appropriations Act, excluding federal funds.

(2) For a competitive solicitation for construction services in which 50 percent or more of the cost will be paid from state-appropriated funds which have been appropriated at the time of the competitive solicitation, a state college, county, municipality, school district, or other political subdivision of the state **may not use a local ordinance** or regulation that provides a preference based upon:

(a) The contractor's maintaining an office or place of business within a particular local jurisdiction;

(b) The contractor's hiring employees or subcontractors from within a particular local jurisdiction; or

(c) The contractor's prior payment of local taxes, assessments, or duties within a particular local jurisdiction.

(3) For any competitive solicitation that meets the criteria in subsection (2), a state college, county, municipality, school district, or other political subdivision of the state shall disclose in the solicitation document that any applicable local ordinance or regulation does not include any preference that is prohibited by subsection (2).

(4) Except as provided in subsection (2), this section does not prevent a state college, county, municipality, school district, or other political subdivision of the state from awarding a contract to a contractor in accordance with applicable state laws or local ordinances or regulations.

17.6.4 255.20 Specification of State-Produced Lumber.

(3)(a) All county officials, boards of county commissioners, school boards, city councils, city commissioners, and all other public officers of state boards or commissions that are charged with the letting of contracts for public work, for the construction of public bridges, buildings, and other structures must specify in the contract lumber, timber, and other forest products produced and manufactured in this state, if wood is a component of the public work, and if such products are available and their price, fitness, and quality are equal.

(b) This subsection does not apply:

1. To plywood specified for monolithic concrete forms.

2. If the structural or service requirements for timber for a particular job cannot be supplied by native species.

3. If the construction is financed in whole or in part from federal funds with the requirement that there be no restrictions as to species or place of manufacture.

17.7 EMPLOYEES:

17.7.1 All labor described in these specifications or indicated on the Drawings and the WORK specified or indicated shall be executed in a thoroughly substantial and workmanlike manner by mechanics skilled in the applicable trades.

17.7.2 Any person employed on the WORK who fails, refuses or neglects to obey the instructions of the CONTRACTOR



in anything relating to this WORK or who appears to the DISTRICT to be disorderly, intoxicated, insubordinate, or incompetent, shall upon the order of the DISTRICT, be at once discharged and not again employed in any part of the WORK. Any interference with, or abuse or threatening conduct toward the DISTRICT, EOR or their inspectors by the CONTRACTOR or his employees or agents, shall be authority for the DISTRICT to annul the Contract and re-let the WORK. No intoxicating substance shall be allowed on the WORK site.

17.8 NON-DISCRIMINATION:

17.8.1 The CONTRACTOR shall not discriminate against employees or applicants for employment because of race, creed, color, religion, sex, age, handicapped status, disabilities, or national origin. The CONTRACTOR shall endeavor to ensure that applicants are employed and that employees are treated during employment, without regard to their race, creed, color, religion, sex, age, handicapped status, or national origin. Such action shall include but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause. These provisions apply to all subcontractors and it is the responsibility of the subcontractor compliance.

17.9 DRUG-FREE WORKPLACE:

17.9.1 The DISTRICT requires all prospective contractors to maintain a drug free work place and have their Drug Free Workplace policy posted in their offices and available for inspection by the DISTRICT.

17.10 PUBLIC ENTITY CRIMES:

17.10.1 Pursuant to F.S. 287.133, as amended: a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a Bid on a Contract to provide any goods or services to a public entity, may not submit a Bid on a Contract with a public entity for the construction or repair of a public building or public work, may not submit Bids on leases of real property to a public entity, may not be awarded or perform work as a Contractor, supplier, subcontractor, or EOR under a Contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in F.S. 287.017 for CATEGORY TWO or higher for a period of 36 months from the date of being placed on the convicted vendor list.

The DISTRICT shall not intentionally award publicly-funded contracts to any contractor who knowingly employs unauthorized alien workers, constituting a violation of the employment provisions contained in U.S.C. Section 1324a(e) [Section 274A9e) of the Immigration and Nationality Act (INA@)]. The DISTRICT shall consider the employment by any contractor of unauthorized aliens a violation of Section 274A(e) of the INA. Such a violation by the Recipient of the employment provisions contained in Section 274A(e) of the INA shall be grounds for unilateral cancellation of this Agreement by the DISTRICT.

17.11 ASSIGNMENT:

17.11.1 This Contract, nor any monies due hereunder, or any part thereof, shall not be assigned, or transferred, by CONTRACTOR, nor shall the DISTRICT be liable to any assignee or transferee, without the written consent of the DISTRICT, to the assignment, or transfer. The DISTRICT shall not release or discharge CONTRACTOR from any obligation hereunder. The DISTRICT shall not approve an assignment or transfer unless the Surety on the Contract Performance and Payment Bonds has informed the DISTRICT in writing that it consents to the assignment or transfer.

17.12 VENUE:

17.12.1 This Contract shall be interpreted as a whole unit and section headings are for convenience only. All interpretations shall be governed by the laws of the State of Florida. In the event it is necessary for either party to initiate legal action regarding this Contract, venue shall be exclusively in the Nineteenth Judicial Circuit for Martin County, Florida, for claims under state law and the Southern District of Florida for any claims which are justiciable in Federal court.

17.13 FUNDING OUT:

17.13.1 Florida School Laws prohibit the Board or its designee from creating obligations on anticipation of budgeted revenues from one fiscal year to another without year-to-year extension provisions in the contracts. It is necessary that fiscal funding out provisions be included in all bids in which the terms are for periods of longer than one year. Therefore, the following funding out provisions are an integral part of this Invitation to Bid and must be agreed to by all CONTRACTORS:

17.13.2 The Board or its designee may, during the contract period, terminate or discontinue the items covered in this bid for lack of appropriated funds upon the same terms and conditions.

17.13.3 Such prior written notice shall state that the lack of appropriated funds is the reason for termination, and

17.13.4 Board agrees not to replace the equipment or services being terminated with equipment and services with functions similar to those performed by the equipment covered in this bid from another awarded CONTRACTOR in the succeeding funding period.

17.14 DISTRICT PURCHASING CARD:

17.14.1 The School District has authorized the use of a Purchasing Card to expedite small dollar purchases for materials, supplies, and other items needed for daily operations. CONTRACTOR may be presented these credit cards by authorized School District personnel for the above mentioned purchases.

17.14.2 Additionally, The District reserves the right to use the Purchasing Card as an optional method to pay invoices for the project WORK submitted by the CONTRACTOR.

17.15 DEBARMENT:

17.15.1 The Board shall have the authority to debar a person / corporation for cause for consideration or award of future contracts. The debarment shall be for a period commensurate with the seriousness of the causes, generally not to exceed three (3) years. When the offense is shallful or blatant, a longer term of debarment may be imposed, up to an indefinite period.

17.16 REQUIREMENTS FOR PERSONNEL ENTERING DISTRICT PROPERTY:

17.16.1 Possession of firearms shall not be tolerated in or near school buildings. Nor shall violations of Federal or State Laws and any applicable District policy regarding Drug Free Workplace be tolerated. Violators shall be subject to immediate termination.

17.16.2 "Firearm" means any weapon (including a starter gun or antique firearm) which shall, is designed to, or may readily be converted to expel a projectile by the action of an explosive; the frame or receiver of any such weapon; any destructive device; or any machine gun.

17.16.3 No person who has a firearm in their vehicle may park their vehicle on District property. Furthermore, no person may possess or bring a firearm on District property.

17.16.4 If any employee of an independent awarded CONTRACTOR or subcontractor is found to have brought a



firearm on District property, said employee must be terminated from the Board project by the independent awarded CONTRACTOR or subcontractor. If the subcontractor fails to terminate said employee, the subcontractor's agreement with the independent awarded CONTRACTOR for the District project shall be terminated. If the independent awarded CONTRACTOR fails to terminate said employee or fails to terminate the agreement with the subcontractor, who fails to terminate said employee, the independent awarded CONTRACTOR's agreement with the District shall be terminated.

17.16.5 CONTRACTORS are advised that they are responsible to ensure that no employee, agent or representative of their company who has been convicted or who is currently under investigation for a crime against children in accordance with section 435.04, Florida Statutes shall enter any school site.

17.17 BACKGROUND INVESTIGATION:

17.17.1 As a part of the Bid evaluation process, the District may conduct a background investigation including a criminal record check of CONTRACTOR's officers and/or employees, by the Sheriff's Office. The CONTRACTOR's submission of a bid constitutes acknowledgement of and consent to such investigation. The District shall be the sole judge in determining the CONTRACTOR's qualifications.

17.18 PRODUCT RECALL:

17.18.1 In the event the awarded CONTRACTOR receives notice that a product delivered by the awarded CONTRACTOR to the District has been recalled, seized or embargoed, and/or has been determined to be misbranded, adulterated, or found to be unfit for human consumption by a packer, processor, subcontractor, retailer, manufacturer, or by any State or Federal regulatory agency, the awarded CONTRACTOR shall notify the District's Purchasing Department within two business days of receiving such notice. The District's acceptance or failure to reject the affected product as non-conforming shall not in any way impact, negate, or diminish the awarded CONTRACTOR's duty to notify the District's Purchasing Department that the affected product has been recalled, seized or embargoed, and/or has been determined to be misbranded, adulterated, or found to be unfit for human consumption. The form and content of such notice to the District shall include the name and description of the affected product; the approximate date the affected product was delivered to the District; the bid number; and relevant information relating to the proper handling of the affected product and/or proper disposition of the affected product by the District, if necessary to protect the health, welfare, and safety of District students or employees; and any health hazards known to the awarded CONTRACTOR which may be caused or created by the affected product.

17.18.2 The awarded CONTRACTOR shall, at the option of the Purchasing Department, either reimburse the purchase price or provide an equivalent replacement product at no additional cost to the District. Unless it was absolutely necessary for the District to dispose of the affected product, the awarded CONTRACTOR shall be responsible for removal and/or replacement of the affected product within the time specified by the District, without causing significant inconvenience to the District.

17.18.3 At the option of the District, the awarded CONTRACTOR may be required to reimburse storage, disposal and/or handling fees to be calculated from time of delivery and acceptance to actual removal or disposal. The awarded CONTRACTOR shall bear all costs associated with the removal and proper disposal of the affected product. The failure to reimburse the purchase price and storage and/or handling fees or to remove and/or replace the affected product with an equivalent replacement within the time specified by the District, without causing significant inconvenience to the District shall be considered a default.



SECTION VI SCOPE OF SERVICES

6.1 WORK OBJECTIVE

The School Board of Martin County, Florida, is seeking qualified, experienced, licensed General Contractors to enhance safety improvements and to perform the required work for the cafeteria and music buildings of the Martin County High School campus as follows:

- A. The scope involves installing a guard house and electronic access gates at the Willoughby entrance, adding concrete poles/bollards along front of main entrance and parking areas closest to the building, installing delayed egress panic bars on two (2) gates, one (1) double gate at "F" portables and roadway by Freshman and one (1) at "F" portables to the left of Administration, install gate and fence across road at the west fence line of the pool to Leisure Village, extend the fence to the ground to the left of Administration closing the gap, and install 8'-0" high anti-climbing fence for whole perimeter fencing (electronic gates on Kanner) the entire campus, from Kanner Highway to Willoughby Blvd.
- B. The scope of work required for Cafeteria and Music Buildings is the removal of a decorative stucco/foam banding on the exterior elevations of the Cafeteria and Music Buildings and repair work at the top of the brick wall. There are areas of the existing banding that have failed on these two buildings. The scope includes the replacement of the coping cap along the identified area on the Cafeteria Building where the banding exists. Also, the scope involves the replacement of the existing drip edge, galvanized gutters and downspouts on the Cafeteria and Music Buildings, which will be replaced in like kind, but with stainless steel material. Install primer and paint on exterior walls as indicated on the drawings. Refer to the Construction Documents for all information related to the project.
- C. Install Construction Fencing & Gates with Fabric Screen around Project Site at the guard house & electronic access gates install at the Willoughby entrance. Install Construction Fencing & Gates with Fabric Screen around Project Site at the Cafeteria and Music Buildings.
- D. The Technical Specifications for this project are prepared by Harvard Jolly Architecture, Inc., and contained in Section X.

6.2 GENERAL INFORMATION

- A. **Preproposal Meeting & Site Visit:** A non-mandatory Pre-proposal Meeting followed by a site visit will be held on **February 19, 2020 at 10:00 AM**, at the Martin County High School, 2801 South Kanner Highway, Stuart, FL 34994. Proposers are to sign the attendance sign-in sheet which shall act as proof of attendance. All prospective proposers are encouraged to attend. Attendance is highly recommended, but is not mandatory.
- B. **Questions Deadline:** The Purchasing Department will receive written requests for clarification and inquiries concerning the meaning or interpretation of this RFP. Questions shall be emailed to bids@martin.k12.fl.us with reference to the RFP number in the subject for faster recognition. Only questions answered by formal written Addenda issued by the MCSD Purchasing Department shall be binding. Oral and other interpretations or clarifications shall be without legal effect. The District will respond to written inquiries, if received by **no later than 2:00pm on February 26, 2020**. The District shall record its responses to inquiries and any supplemental instructions in the form of a written addendum. If addenda are issued, the District **shall make every attempt to issue such** addenda at least seven (7) calendar days before the date fixed for receiving the submittals.
- C. **Badge Policy:** This work is to take place on an active campus with active buildings around the area of work. All personnel working onsite with this project must have & wear MCSD badge at all times on the site. The Awarded Contractor must apply for the MCSD Badge and pay for all associated costs for each individual working on the project, and as specified in the General Notes of plan drawings.



- D. **Security Letter:** The submittal response **must** be accompanied by a notarized letter from your firm's Surety guaranteeing that if your firm is awarded a contract, the Surety will issue a letter of credit that attests to the bonding capacity (the maximum amount of surety credit a surety company) will provide to a contractor, contingent upon a top-notch organization, strong financial presentation, and experience. The Surety shall also guarantee your firm by issuing Performance and Payment bonds as required by the District. Failure to submit the Surety Guaranty letter with your submittal shall cause your submittal response to be rejected as non-responsive. The District shall be the sole judge in determining Bonding Capacity

6.3. BUSINESS OPERATIONS

- A. **Hours of Operation:** Unless otherwise directed by the Facilities Director; or his designee, the successful Contractor(s) shall adhere to **normal business hours, between the hours of 7:00 AM and 3:00 PM for deliverables.**
- B. **Working Hours:** All Work at the site shall be performed daily, including weekends from the hours of 7:00 am until 7:00 pm. No additional expenses shall be granted for work performed after hours. Contractor is not permitted to perform work on any District observed holiday, without the written consent of the District Project Manager. Contractor will be responsible for inspection costs for overtime work.
- C. **Inclement Weather Conditions:** Upon approval by the Facilities Director or designee, the Contractor may cease operations of services during inclement weather conditions.
- D. **Observed Holidays:** The District also schedules non-work days throughout the calendar year. The Facilities Director or designee will notify the awarded Contractor of any observed holidays and non-work days that may affect the work schedule. Contractor shall work around the District observed holidays and special events that may impact the project. Holidays and Special Event schedules will be provided during the pre-construction phase of the project. Schedules shall be provided indicating the start/completion dates of the overall construction project.

6.4. SCHEDULE OF VALUES

All work for this project, including but not limited to, all profit and overhead, incidentals, all labor, mobilization/demobilization, supervision, testing, machinery, equipment, tools, materials, coordination with utility companies, cleanup and other means of construction necessary to complete the described work in accordance with the specifications, and other contract documents.

6.5 INSPECTION AND DIRECTION

The work will be conducted under the general direction of the Facilities Department, and is subject to inspection by an appointed inspector to insure compliance with the terms of the bid. No inspector is authorized to change any provision of the specifications without written authorization from the Project Manager, nor shall the presence or absence of an inspector relieve the Contractor from any requirements of the bid. Appointments for the final inspection shall be made three (3) days in advance.

6.6 WARRANTY

The Contractor shall warranty their workmanship, including all work and materials for this project for a period of one (1) year from date of completion and final acceptance of the work; and shall remain in effect concurrent with the performance bond for the project. Should any defect in workmanship appear during the above stated warranty period, the successful Contractor shall repair or replace same at no cost to the District, immediately upon written notice from the Facilities Department Designee.

6.7 START OF WORK/COMPLETION TIME

It is hereby understood and mutually agreed by and between parties hereto that the time of completion is an essential condition of this contract. By submitting a response, successful proposer agrees to start the



work within 10 days of issuance of the Notice to Proceed. Awarded Contractor is to prosecute the work uninterrupted in such a manner, with sufficient labor, equipment and/or materials so as to insure its completion within the time proposed.

If the Contractor shall be delayed in the completion of its work by reason of unforeseeable causes beyond its control and without fault or negligence, including, but not restricted to, acts of God or neglect of any other Contractor, the period herein specified above specified for the completion of delivery shall be extended by such time as shall be approved by the Project Manager or designee.

6.8 PROPOSED PROJECT SCHEDULE

Calendar days from notice to proceed to substantial completion:	240 Days
Calendar days from substantial to full completion	60 Days



SECTION VII INSTRUCTIONS FOR PREPARING SUBMISSIONS

7.1 RULES FOR SUBMISSIONS

The submission must name all persons or entities interested in the submission as principals. The proposal must declare that it is made without collusion with any other person or entity submitting a proposal pursuant to the RFP. The interested firm or individual must submit One (1) one sided original, One (1) flashdrive-electronic copy (PDF format preferred), and four (4) copies) on 8½” by 11” paper, in an opaque, sealed envelope of the requested qualification data for evaluation.

It is the responsibility of the Proposer to ensure that the Proposal Package is complete and received at the proper time. Proposals, once opened, become the property of the District and shall not be returned to the Proposers. Upon opening, proposals become "public records" and shall be subject to public disclosure in accordance with Chapter 119, Florida Statutes. Submittals shall remain subject to acceptance for ninety (90) calendar days after the day of the RFP opening,

Please tab all support documents or attachments according to the order established in the following paragraph. The District reserves the right to deduct points or reject and not consider any proposal not organized and not containing all the information outlined.

7.2 PROPOSAL FORMAT

Proposers should prepare their proposals using the following format. Proposers shall label, tab and organize proposal submittal documents utilizing the following format as outlined below. All attachments as requested shall be inserted in the back of each corresponding section.

In preparing your proposal, proposer should assume that the District has no previous knowledge of their services or capabilities. Proposals should clearly describe the services, specifying where it meets, exceeds or does not comply with the general specifications.

7.3 LETTER OF TRANSMITTAL

The response format shall contain a letter of transmittal. The Letter of Transmittal will summarize in a brief and concise manner of the Contractor’s understanding of the RFP. An agent authorized to negotiate for the respondent must sign the letter of transmittal. The signature on Attachment G shall certify the veracity of the contents of the submittal and bind the firm to this response to the District’s Request for Proposal. The transmittal letter shall not exceed two (2) pages in length.

Tab 1 ~ Company Qualifications

Provide a statement indicating the respondent’s interest in, knowledge of, and resources necessary to provide the services described in this RFP. Firm shall provide a brief profile of their company, which should include their history, and corporate structure with organizational chart (including office and on site employees), ownership interest, and the length of company's existence. Firm must identify all of their offices, including the location of the main office that will be responsible for the actual production of the work. If submitting a joint venture, list the address of both entities and the distance in hours from the site. Describe the firm’s facilities, equipment and location and how key staff will service the District from those facilities. Joint ventures, if selected, will be expected to sign a form of contract making each venture jointly and severally liable for its actions and its co-venture's actions under this contract, or alternatively to provide a copy of an executed, formal joint-venture agreement that so binds each to the other.

All proposed subcontractor shall be identified, and the working relationship between the proposer and subcontractor shall be explained. Proposers may submit such additional information as to their qualifications, experience and expertise as they may feel necessary to establish their level of proficiency in this area.

The project shall be constructed by a firm with the primary qualifying agent licensed as a Contractor pursuant to and as defined by Florida Statute 489, and shall have been employed full time by the construction firm for at least one year prior to this project’s due date.



Firm shall include current licenses and certifications acquired for the type of work to be performed in the State of Florida, including MBE/MWBE certified by the Office of Supplier Diversity, as defined by the Florida Small and Minority Business Assistance Act of 1985, if applicable.

Tab 2 ~ Experience and Knowledge

Contractor must use trained personnel with adequate experience and skills to perform the work and provide a minimum of three (3) similar projects performed (of which two (2) projects are public education construction projects in Florida, and one project is with a Governmental entity) within the last (10) years. Title and brief description of each project shall include:

- A detailed description of the project
- Contractor's staff assigned to the project and their engagement of duties.
- Negotiated total price, contract time limit, and final construction cost and time
- Owner of the project, including the Project Manager, email, and telephone number of contact person
- The date the project was completed
- Include two (2) references and contact information of Past Performance and working relationships with the District or other Florida School Districts and Government entities.

Tab 3 ~ Operational Approach & Methodology:

Describe, in detail the specific approach and proposed plan for providing the services identified in this RFP, highlighting proven strategies and expertise. The proposer shall address the methodology, technical approach, techniques, and/or processes to be used in providing services. Sufficient detail should be included to explain how each task shall be accomplished and be sufficiently detailed for staff to determine the effectiveness of the proposal and the cost effectiveness' of the proposed approach. Describe methods to maintain schedules and ways to recover.

The plan should also include expected obligations and duties of the District upon which the proposed plan is contingent.

Tab 4 ~ Construction Schedule:

Provide a proposed construction schedule with major mile posts identified and descriptive, including but not limited to, start date, site work, substantial completion, and final completion including as-builts. In addition, identify expected obligations and duties of the District upon which the proposed schedule is contingent.

Include a timeline indicating major work tasks for the project and duration (number of days) for timely completion. Also include a preconstruction / kick off meeting with the District, and methods for assuring subcontractor's adherence to schedule should be highlighted. Explain coordination/development of schedule information from subcontractors. A comparison of the firm's project profile should indicate their ability to hold to original schedules and budgets.

Tab 5 ~ Cost Proposed:

The proposed fees shall include all overhead and expenses. Cost proposal shall be provided separating cost items, labor, permitting, etc.

Tab 6 ~ References:

Provide a minimum of three (3) references within the past five (5) years with scope and nature similar to this project. References must include the name of the contact person and agency, address, telephone and email address. A reference person must be someone who has direct knowledge of the proposer's work and performance. Identify any unique restraints or challenges associated with those projects and how they were addressed in order to deliver a successful project. Do not include firms from Tab 2.

Tab 7 ~ Insurance:

Provide proof of ability to obtain insurance coverages as detailed in Section VII. A certificate of insurance indicating that the firm has coverage in accordance with the requirements herein set forth may be furnished by the firm to the District along with their qualification data. A properly completed Accord Form



must be received 10 days after award. The awarded Contractor shall either cover any sub-contractor on its policy or require the sub-contractors to conform to all requirements for insurance contained herein and submit their certificates to the Purchasing Department prior to starting any work on this project.

Tab 8 ~ Submittal Information & Attachments:

- Florida registration with the Division of Corporations
- Attachment A, Proposer's Profile Statement
- Attachment B, Subcontractor List
- Attachment C, Non-Collusive Affidavit
- Attachment D, Conflict of Interest
- Attachment E, Drug Free Workplace Cert
- Attachment F, Public Entity Crimes
- Attachment G, Signature Page
- Security Guaranty Letter

Tab 9 ~ Optional Information: Provide any information pertinent to this project that will provide insight to the evaluators about the qualifications, fitness and abilities of the Respondent (please limit this information to two (2) pages).

Tab 10 ~ Addenda (if applicable): All addenda issued pursuant to this solicitation must be acknowledged, signed, and submitted as part of the proposal package.



SECTION VIII EVALUATION OF SUBMISSIONS

8.1 SELECTION COMMITTEE PROCESS

The District’s selection committee will evaluate proposals using the below criteria and will select the proposer which meets the best interests of the District. This criterion shall be utilized in the evaluation of the proposals. The District reserves the right to select the most qualified individuals/firms from review of the packages submitted and request authorization to negotiate an agreement with the highest ranked individual/firm; or to interview the most qualified Respondents prior to requesting authorization to negotiate an agreement with the highest ranked respondent. Individuals/firms will be notified in writing if they are selected for interview.

The District may require oral and visual presentations from those firms that are ranked or short-listed. Notices for interviews / presentations will contain explicit instructions concerning location, date, time and length of interviews. This shall be done at the committee sole discretion when it feels presentations are essential as part of the evaluation process and are in the best interests of the District. The District shall be the sole judge and final arbiter of its own best interests, the proposals, and the resulting negotiated agreement.

If unable to negotiate a satisfactory contract with the respondent(s) considered to be the most qualified at a price the determined to be fair, competitive, and reasonable, negotiations with that respondent(s) shall be formally terminated, and negotiations will begin with the next top ranked respondent(s) in order of their original ranking, competence and qualification; and will continue negotiations until an agreement is reached. After negotiations are concluded with the respondent(s), the results of the negotiations will be presented to the School Board with its recommendation for award of a contract. The District reserves the right to reject all proposals, to waive any irregularities, and to re-advertise and solicit for other proposals. The District’s decisions will be final.

8.2 EVALUATION CRITERIA

The District’s evaluation criteria will include, but not be limited to, consideration of the following:

EVALUATION CATEGORIES	100 POSSIBLE POINTS
Firm’s Qualifications	25 pts
Knowledge, & Experience	25 pts
Operational Plan: Task approach	20 pts
Proposed price for work to be accomplished	15 pts
Construction Schedule	10 pts
References	5 pts

8.3 CONSTRUCTION SERVICES AGREEMENT

An agreement shall be established with the most qualified firm for services at the negotiated price which the School Board’s Facilities Department & hired A & E firm determine(s) is fair, competitive, and reasonable. For any lump-sum service contract that exceeds the maximum amount established by F.S. 287.017 for Category Four, the School Board shall require the firm receiving the award to execute a **Truth-In-Negotiation Certificate** stating that wage rates and other factual unit costs supporting the compensation are accurate, complete, and current at the time of contracting. Any service contract under which such a certificate is required shall contain a provision that the original contract price and any additions thereto shall be adjusted to exclude any significant sums by which the School Board determines the contract price was increased due to inaccurate, incomplete, or non-current wage rates and other factual unit costs. All such contract adjustments shall be made within one (1) year following the end of the contract.



All work product, including but not limited to reports, plans, drawings, tracings, sketches, photographs, videos, illustrations, presentations, PowerPoint, specifications, models, maps, computer files, electronic data, and other documents (electronic or paper) prepared or created in the course of the performance of the services or obtained in the performance of the contract, as well as all data collected, together with summaries and charts derived therefrom, will be considered works made for hire and shall be the exclusive property of the District upon their creation without restriction or limitation on their use and will be made available, upon request, to the District at any time during the performance of the services.

Proposer will not copyright any material or work product developed under the contract. Any reuse of Proposer's prepared documents by the District, except for the specific purpose intended hereunder, will be at the District's sole risk and without liability or legal exposure to Proposer or its sub-proposers. The agreement shall be construed and interpreted, and the rights of the parties hereto determined, in accordance with Florida law without regard to conflicts of law provisions. The District and Proposer shall submit to the jurisdiction of Florida courts and federal courts located in Florida. The parties shall agree that proper venue for any suit concerning this Agreement shall be Martin County, Florida, or the Federal Southern District of Florida.

Proposer shall agree to waive all defenses to any suit filed in Florida based upon improper venue or *forum nonconveniens*. To encourage prompt and equitable resolution of any litigation, each party shall waive its rights to a trial by jury in any litigation related to the contract.

No award with respect hereto shall be deemed final and all such awards shall be deemed conditional, unless and until the parties shall have fully executed the agreement(s) contemplated herein, and a fully executed agreement has been returned to the proposer, or a purchase order has been issued by the district to the proposer. The district reserves the right to revoke any award made hereunder, without penalty, premium or obligation, at any time prior to the delivery of the fully executed agreement(s) or purchase order to the proposer, notwithstanding that an award may have been published. No proposer shall be entitled to rely on any announcement of an award, and the district shall in no way be estopped in the revocation of an award previously granted.



**SECTION IX
ATTACHMENTS**

- A. PROPOSER'S PROFILE STATEMENT**
- B. SUBCONTRACTOR LIST**
- C. NON-COLLUSIVE AFFIDAVIT**
- D. CONFLICT OF INTEREST**
- E. DRUG FREE WORKPLACE CERT**
- F. PUBLIC ENTITY CRIMES**
- G. SIGNATURE PAGE**



ATTACHMENT "A"
Return Completed with Proposal
PROPOSER'S PROFILE STATEMENT

PROPOSER shall furnish the following information. Failure to comply with this requirement shall render the proposal non-responsive and shall cause its rejection. Additional sheets shall be attached as required.

PROPOSER'S Name and Principal Address: _____

Contact Person's Name and Title: _____

PROPOSER'S Telephone, _____ Fax Number: _____

PROPOSER'S Email address: _____

PROPOSER'S License Number: _____
(Please attach certificate of status, competency, and/or state registration.)

Certification: MBE SFDB MWBE DVBE SBA Other
(Please attach certificate)

PROPOSER'S Federal Identification Number: _____

Number of years your organization has been in business _____

State the number of years your firm has been in business under your present business name _____

State the number of years your firm has been in business in the work specific to this RFP: _____

Names and titles of all officers, partners or individuals doing business under trade name:

The business is a: Sole Proprietorship Partnership Corporation

IF USING A FICTITIOUS NAME, SUBMIT EVIDENCE OF COMPLIANCE WITH FLORIDA FICTITIOUS NAME STATUTE. (ATTACH IN PROPOSER EXHIBIT SECTION)

Under what former name has your business operated? Include a description of the business. Failure to include such information shall be deemed to be intentional misrepresentation by the District and shall render the proposer RFQ submittals non-responsive.

At what address was that business located? _____

Have you ever failed to complete work awarded to you. If so, when, where and why?

Have you personally reviewed the proposed scope and do you have a complete plan for its performance?



Will you subcontract any part of this scope? If so, give details including a list of each sub-contractor(s) (Use Attachment "B", Subcontractor List) that will perform work and the work that will be performed by each subcontractor(s).

The foregoing list of subcontractor(s) may not be amended after award of the contract without the prior written approval of the Contract Administrator, whose approval shall not be reasonably withheld.

List and describe all successful Bond claims made to your surety (ies) during the last five (5) years. The list and descriptions should include claims against the bond of the Proposer and its predecessor organization(s).

Has the Proposer, its principals, officers or predecessor organization(s) been CONVICTED OF A Public Entity Crime, debarred or suspended from bidding by any government entity? If so, provide details.

Are you an Original provider sales representative distributor, broker, manufacturer other, of the commodities/services proposed upon? If other than the original provider, explain below.

The PROPOSER acknowledges and understands that the information contained in response to this Qualification Statement shall be relied upon by DISTRICT in awarding the contract and such information is warranted by PROPOSER to be true. The discovery of any omission or misstatement that materially affects the PROPOSER'S qualifications to perform under the contract shall cause the DISTRICT to reject the Proposal, and if after the award, to cancel and terminate the award and/or contract.

Print Name/Title

Signature



ATTACHMENT "B"
Return Completed with Proposal
SUBCONTRACTOR LIST

The undersigned Proposer hereby designates, as follows, all major subcontractors whom he proposes to utilize for the major areas of work for the project. The proposer is further notified that all subcontractors shall be properly licensed, bondable and shall be required to furnish the Owner with a certificate of insurance in accordance with the Contract General Conditions. Failure to furnish this information shall be grounds for rejection of the Proposer's proposal.

<u>Name, Address/ Phone#</u>	<u>License#</u>	<u>Specialty-Duties</u>	<u>Contract Amount \$</u>	<u>% of contract</u>
_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____



ATTACHMENT "C"
Return Completed with Proposal
NON-COLLUSIVE AFFIDAVIT

STATE OF _____

DISTRICT OF _____

_____ being first duly sworn, deposes and says that:

PROPOSER is the _____,
(Owner, Partner, Officer, Representative or Agent)

PROPOSER is fully informed respecting the preparation and contents of the attached Proposal and of all pertinent circumstances respecting such Proposal;

Such Proposal is genuine and is not a collusive or sham Proposal;

Neither the said PROPOSER nor any of its officers, partners, owners, agents, representative, employees or parties in interest, including this affidavit, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other PROPOSER, firm or person to submit a collusive or sham Proposal in connection with the Contract for which the attached Proposal has been submitted; or to refrain from bidding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion, or communications, or conference with any PROPOSER, firm, or person to fix the price or prices in the attached Proposal or any other PROPOSER, or to fix any overhead, profit, or cost element of the Proposal Price or the Proposal Price of any other PROPOSER, or to secure through any collusion conspiracy, connivance, or unlawful agreement any advantage against (Recipient), or any person interested in the proposed Contract;

The price of items quoted in the attached Proposal are fair and proper and are not tainted by collusion, conspiracy, connivance, or unlawful agreement on the part of the PROPOSER or any other of its agents, representatives, owners, employees or parties in interest, including this affidavit.

By _____

Subscribed and sworn to before me this _____ day of _____, 20_____.

SEAL

Notary Public (Signature)

My Commission Expires: _____



ATTACHMENT "D"
Return Completed with Proposal

DISCLOSURE OF POTENTIAL CONFLICT OF INTEREST AND CONFLICTING EMPLOYMENT OR CONTRACTUAL RELATIONSHIP

In accordance with Instructions to Proposer's, each Proposer must disclose, in its RFP, the names of any employees who are employed by Proposer who are also an employee of MCSB. Persons identified below may have obligations and restrictions applicable to them under Chapter 112, Florida Statutes.

Name of Proposer's Employee	MCSB Title or Position of Proposer's Employee	MCSB Department/ School of Proposer's Employee
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Check one of the following and sign:

- I hereby affirm that there are no known persons employed by Proposer who are also an employee of MCSB.
- I hereby affirm that all known persons who are employed by Proposer, who are also an employee of MCSB, have been identified above.

Signature

Company Name

Name, Title of Official

Business Address, City, State, Zip Code



ATTACHMENT "E"
Return Completed with Proposal
DRUG FREE WORKPLACE CERTIFICATION

IDENTICAL TIE RFQS: Preference shall be given to businesses with drug-free workplace programs. Whenever two or more RFQs which are equal with respect to price, quantity, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a RFQ received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie RFQs will be followed if none of the tied vendors have a drug-free workplace program (Florida Statutes Section 287.087). In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug free workplace, and available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are under RFP a copy of the statement specified in subsection (1).
4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under RFQ, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this firm complies fully with the above requirements.

Signature

(Print or Type Name)



ATTACHMENT "F"
Return Completed with Proposal
SWORN STATEMENT ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with any agency or political subdivision of any other state or with the United States, including, but not limited to, any contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of the public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.
3. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:
 - a. A predecessor or successor of a person convicted of a public entity crime; or
 - b. An entity under the control of any person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.
4. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.
5. Based on information and belief, the statement that I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

- Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989.
- The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.
- The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of



Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Attach a copy of the final order)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

(Signature)

STATE OF FLORIDA
COUNTY OF _____

Sworn to and subscribed before me on this ____ day of _____, 20____ by _____ who is personally known to me or who has presented the following type of identification: _____.

Signature of Notary Public, State of Florida

Notary seal (stamped in black ink)
OR
Printed, typed or stamped name of Notary and Commission Number



ATTACHMENT "G"
Return Completed with Proposal
SIGNATURE PAGE

The undersigned attests to his (her, their) authority to execute this submittal and to bind the firm(s) herein named to perform as per agreement. Further, by signature, the undersigned attests to the following:

1. The Proposer is financially solvent and sufficiently experienced and competent to perform all of the work required of the Proposer in the Contract;
2. The facts stated in the Proposer's response pursuant to this Request for Qualifications are true and correct in all respects;
3. The Proposer has read and complies with, and submits their proposal agreeing to all of the requirements, terms and conditions as set forth in the Request for Proposals.
4. Proposer certifies that he or she has not divulged, discussed, or compared his or her submittal with other proposers and has not colluded with any other proposer or parties to a submittal whatsoever. (Note: No premiums, rebates or gratuities permitted either with, prior to, or after any delivery of material. Any such violation shall result in one or more of the following: cancellation, return of materials (as applicable) and the removal of the Proposer from the District vendor list(s).
5. **Proposer understands that if a team is short listed and selected to make oral presentations to the selection committee and/or DISTRICT, only the team members evaluated in the written submissions may present at the oral presentations. Any changes to the team at the oral presentations shall result in that team's disqualification.**
6. The undersigned certifies that if the firm is selected by the District, the firm shall negotiate in good faith to establish an agreement.
7. Proposer understands that all information listed above may be checked by Martin District School District and Proposer authorizes all entities or persons listed in this proposal submittal to answer any and all questions. Proposer hereby indemnifies the Martin District School District and the persons and entities listed above and holds them harmless from any claim arising from such authorization or the exercise thereof, including the dissemination of information pursuant thereto.

Submitted on this _____ day of _____, 20_____.

Please check one: _____ Individual _____ Partnership _____ Non-incorporated Organization

Witness

Company

Witness

By

(if a corporation, affix seal)

Print Name & Title

Incorporated under the laws of the State of (if applicable) _____.



SECTION X
PROJECT MANUAL SPECIFICATIONS & DRAWINGS

**PROJECT MANUAL
SPECIFICATIONS**



OWNER:

**MARTIN COUNTY SCHOOL
DISTRICT**

**Martin County High School
Enhanced Security Project A1**
2801 S. Kanner Highway, Stuart, Florida 34994

HJ COMM. NO: 16025.14

DATE OF ISSUE: August 27, 2019

HARVARD JOLLY, INC.

2047 VISTA PARKWAY, SUITE 100
WEST PALM BEACH, FLORIDA 33411
561-478-4457

HARVARD • JOLLY
ARCHITECTURE

PROJECT MANUAL SPECIFICATIONS

Martin County School District

Martin County High School

Enhanced Security Project A1

2801 S. Kanner Highway, Stuart, Florida 34994

HJ PROJECT. NO: 16025.14

DATE OF ISSUE: August 27, 2019

ARCHITECT:

HARVARD JOLLY ARCHITECTURE

2047 Vista Parkway, Suite 100
West Palm Beach, Florida 33411
Phone: 561-478-4457

MECHANICAL/ELECTRICAL/PLUMBING/FIRE PROTECTION ENGINEERS:

JOHNSON, LEVINSON, RAGAN, DAVILA, INC.

1450 Centrepark Blvd., Suite 350
West Palm Beach, Florida 33401
Phone: 561-689-2303

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SECTION 01 25 13
PRODUCT SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Administrative and procedural requirements for consideration of request for substitution during the design and construction phases.
- B. Substitution Request Form.

1.2 REFERENCES

- A. Section 01 33 00 – Submittal Procedures.
- B. Section 01 42 00 – References.
- C. Section 01 45 00 – Quality Control.
- D. Section 01 78 00 – Closeout Submittals.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each substitution request on company letterhead with completed Form 01 25 00 A. Form is as indicated in Para. 3.02.
 - 1. During bidding phase, substitution requests shall be directed to Project Architect.
 - 2. During construction phase substitution requests shall be directed to Contractor/CM.
- B. Substitution Form shall identify project, Contractor/CM and Architect during bidding phase plus Subcontractor or supplier during construction phase indicating Specification Section and Paragraph number of specified material and pertinent drawing and detail numbers, as appropriate.
- C. Include complete information as required in the Substitution Form. Incomplete information will result in automatic rejection of the substitution request.
- D. Apply contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information are in accordance with the requirements of the work and contract documents.
- E. Schedule submittals to expedite the project, and deliver to Architect or Contractor/CM at business address. Coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from Architect or CM/Contractor.
 - 1. Identify variations from contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.
 - 2. Provide space for Contractor/CM and Architect review stamps.
 - 3. When revised for resubmission, identify all changes made since previous submission.
 - 4. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
 - 5. Submittals not requested will not be recognized or processed.

1.4 SUBSTITUTION REQUESTS

- A. Requests for substitutions shall be made not later than ten (10) calendar days prior to bid date by prospective bidders, or time set by Owner for receipt of GMP (Guaranteed Maximum Price) from CM. Requests received after the above dates may not be considered.

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Martin County High School
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PART 2 PRODUCTS

2.1 Not Used.

PART 3 EXECUTION

3.1 FORM EXECUTION

- A. Contractor/CM shall submit Product Substitution Request on Form 01 25 00A on following page with transmittal letter and self-addressed stamped envelope for Architect's use in returning response to substitution request.

3.2 SUBSTITUTION FORM 01 25 13A - PRODUCT SUBSTITUTION REQUEST

- A. Specified Product _____
- B. Sheet No./Specification Section and Paragraph _____
- C. Contractor/CM has reviewed and approved proposed substitution?
Yes _____ No _____
- D. Requested Product Substitution: _____

- E. Does Product Meet or Exceed Specified Product Requirements? Yes ___ No ___
(If answer is no, explain.) _____
- F. Does Product Substitution affect dimensions shown on Drawings? Yes ___ No ___
(If answer is no, explain.) _____
- G. Reason for Requested Substitution: _____

- H. Cost Difference between Product Specified and Product Proposed:
Add \$ _____ Subtract \$ _____
- I. Electrical Requirements equal to Specified Product: Yes ___ No ___ N/A ___
(If No or N/A, explain): _____

- J. Plumbing Requirements equal to Specified Product: Yes ___ No ___ N/A ___
(If No or N/A, explain): _____

- K. Mechanical Requirements equal to Specified Product: Yes ___ No ___ N/A ___
(If No or N/A, explain): _____

- L. Does the Product Substitution have any effect on other trades? Yes ___ No ___
(If yes, explain): _____

- M. Contractor/CM agrees to pay for changes in building design, including engineering and detailing costs, caused by requested product substitution. Yes ___ No ___
- N. Signature of Bidder/Contractor/CM shall indicate function, appearance and quality of proposed substitution is equivalent or superior to specified item.
- O. Contractor/CM assumes responsibility for delay or claims arising from review and evaluation of requested product substitution.

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P. Approval of proposed substitution shall have no effect on coordination and installation of work in accord with contract documents.

Submitted by: _____ For Use by the Architect and Owner:

Contractor/CM

_____ Received Too Late

Firm

_____ Not Accepted

_____ Approved As Noted

Submittal of Information in
Accord with this Section

_____ Approved For Bidding Only,
Final Approval Contingent Upon Address

Date

Architect Date

Owner Date

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Procedures for preparation and submittal of Applications for Payment.
- B. Unit pricing shall be in conformance with 2007 Edition of AIA A201 General Conditions of the Contract and as amended by Owner on July 13, 2009. Copy is included in Division 1, Section 00 72 00 – General Conditions.

1.2 RELATED SECTIONS

- A. Section 01 22 00 – Unit Prices.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 78 00 – Closeout Submittals.

1.3 FORMAT

- A. Payment format shall in accord with AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheets.
- B. Contractor/CM's AIA G702/703 equivalent forms including continuation sheets may be substituted for AIA Payment Forms if preapproved by Owner's Project Manager.

1.4 PREPARATION OF APPLICATIONS

- A. Present handwritten pre-application draft payment forms to Owner for review before submitting applications for payment.
- B. After revising draft payment forms, prepare and submit six typewritten copies or on electronic media printout Pay Application as preapproved by Owner.
- C. Execute certification by signature of authorized officer.
- D. Use data from Owner preapproved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- E. List each authorized Change Order as extension on AIA G703 - Continuation Sheet, listing Change Order number and dollar amount as for original item of Work.
- F. Prepare Application for Final Payment as specified in Section 01 78 00 – Closeout Submittals.

1.5 SUBMITTAL PROCEDURES

- A. Submit six copies of each Application for Payment.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Payment Period: Submit at monthly intervals not later than the fifteenth of the month unless otherwise stipulated in the Agreement.
- D. Submit Release of Liens waivers with each Application for Payment.

1.6 SUBSTANTIATING DATA

- A. When Architect or Owner requires substantiating information, submit data justifying dollar amounts.
- B. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- C. Include following data with application.
 - 1. Partial release of liens from major subcontractors and vendors.
 - 2. Affidavits attesting to off-site stored products.
 - 3. Construction progress schedule, revised and corrected to reflect project status at time of payment application.

1.7 PAYMENTS

- A. Payments may be made for materials stored off-site if preapproved by Owner's Project Manager and off-site facility is insured and bonded air conditioned warehouse, and only if project site doesn't allow storage or protection for equipment and supplies.
- B. Payments will normally be made to Contractor/CM by 10th of each month, if copies are preapproved by Owner's Project Manager and received by 25th of previous month, unless otherwise stipulated in Agreement.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Project management, coordination of construction activities, interface with Owner's staff for existing facilities and project conditions related to project for new and existing facilities.
- B. Meetings for field engineering and project coordination, preconstruction, construction procedures, pay application and progress meetings, pre installation and project closeout meetings.
- C. Site mobilization, materials and equipment storage, site cleanup and demobilization.

1.2 RELATED SECTIONS

- A. Section 01 25 13 – Product Substitution Procedures.
- B. Section 01 29 00 – Payment Procedures.
- C. Section 01 33 00 – Submittal Procedures.
- D. Section 01 35 53 – Security.
- D. Section 01 42 00 – References.
- E. Section 01 45 00 – Quality Control.
- F. Section 01 66 00 – Project Storage and Handling Requirements.
- G. Section 01 78 00 – Closeout Submittals.
- H. Section 01 91 00 – Commissioning.

1.3 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating Owner's occupancy of completed portions of project or existing building on site, and items to be furnished or installed by Owner.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements, supports and installation of mechanical and electrical work that is indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. In finished areas with exposed ceilings, piping and conduits shall either concealed or be run at right angles and be attached to underside of floor or deck above. Wiring shall not be exposed. Exposed ductwork shall be painted spiral duct.
- E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accord with Contract Documents, to minimize disruption of Owner's activities.

- G. Owner will not consider change orders for extra work required by Contractor due to his inadequate coordination.

1.4 FIELD ENGINEERING FOR PROJECT LAYOUT

- A. Employ Land Surveyor registered in State of Florida acceptable to Owner's Project Manager.
- B. Locate and protect survey control and reference points.
- C. Control datum for survey is that established by Owner's provided survey.
- D. Verify setbacks and easements; confirm drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- F. Submit copy of site drawing and certificate signed by Land Surveyor that elevations and locations of Work are in accord with Contract Documents.

1.5 FLOOR SLAB VERIFICATION SURVEY

- A. Separate from Field Engineering noted above, Contractor/CM shall provide topographic survey of building floor slabs on grade to indicate that finish floor elevations and slab locations are per contract documents, water management and building department requirements.
- B. Survey shall be submitted upon completion of slabs on grade. Remaining work shall not proceed until Owner's Project Manager has reviewed survey information and verified that floor slabs are constructed at proper elevation and locations.
- C. Survey shall be prepared, signed and sealed by Florida licensed surveyor, other than the surveyor noted in Para. 1.04 Field Engineering.
- D. Surveyor shall be selected from one of Owner's annual surveying vendors. List may be obtained from Owner's Project Manager.

1.6 PRECONSTRUCTION MEETING

- A. Owner's Project Manager will schedule pre construction conference after Notice to Proceed.
- B. Attendance Required: Owner, Architect, and Contractor/CM.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement, if not executed.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing the parties in Contract, and Architect.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Scheduling activities of Geotechnical Engineer.
 - 9. Issuance of Notice to Proceed.
- D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

1.7 SITE MOBILIZATION MEETING

- A. Owner will schedule meeting at Project site prior to Contractors start of work.

- B. Attendance Required: Owner, Architect, Special Consultants, and Contractor, Contractor's Superintendent, and major Subcontractors.
- C. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements and partial occupancy.
 - 3. Construction facilities and controls provided by Owner.
 - 4. Temporary utilities provided by Owner.
 - 5. Survey and building layout.
 - 6. Security and housekeeping procedures.
 - 7. Schedules.
 - 8. Application for payment procedures.
 - 9. Procedures for testing.
 - 10. Procedures for maintaining record documents.
 - 11. Requirements for start-up of equipment.
 - 12. Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

1.8 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of work at weekly intervals. Less frequent meetings may be requested for projects or work stages if requested in writing to the Owner's Project Manager.
- B. Make arrangements for meetings, prepare agenda with copies for participants, and preside meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner's Project Manager, Architect, as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review previous Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress schedule during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to work.
- E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

1.9 PREINSTALLATION MEETINGS

- A. When required in individual specification section, convene pre-installation meeting at site prior to commencing work of section.
- B. Require attendance of parties directly affecting, or affected by, work of specific section.
- C. Notify Owner and Architect five working days in advance of meeting date.

- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

PART 2 PRODUCTS

2.1 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Motors: Refer to Electrical Sections for specific motor types.
- B. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.
- C. Cord and Plug: Provide minimum 6' cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

PART 3 EXECUTION

3.1 EXISTING BUILDING PROJECT PROCEDURES

- A. Materials: As specified in Product sections; match existing Products and work for patching and extending work.
- B. Employ skilled and experienced installer to perform alteration work.
- C. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- D. Remove, cut and patch Work in manner to minimize damage and to provide means of restoring Products and finishes to original or specified condition.
- E. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes.
- F. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- G. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at natural line of division and submit recommendation to Architect for review.
- H. Where change of plane of 1/4" or more occurs, submit recommendation for providing a smooth transition to Architect for review.
- I. Patch or replace portions of existing surfaces, which are damaged, lifted, discolored, or showing other imperfections.
- J. Work that penetrates fire or smoke rated partitions or floors shall be repaired to provide original fire or smoke rating.
- K. Finish surfaces as specified in individual Product Specification Sections.

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PROJECT SCHEDULE

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Preparation of preliminary Construction Schedule, Contractor's/CM/GC final master Construction Schedule, hereinafter called the Construction Schedule, Short Interval Schedules (look ahead), and monthly updates.
- B. Scope of work and project completion are as indicated. Bidders shall include with their bid, a proposed project schedule indicating each item of work in CSI numbering format showing each work division in CPM (Critical Path Method) work sequencing. Schedule shall base critical path on Owner's providing pre purchase of long lead items, and assuming that those products and services are delivered to the Contractor/CM on time for meeting proposed project schedule.

1.2 SUBMITTALS

- A. Submit schedule in accord with Section 01 33 00 – Submittal Procedures.
- B. Preliminary Project Schedule:
 - 1. Purpose of preliminary schedule is to determine Bidder's intent as to how work can be prosecuted to allow project completion in specified time frame.
 - 2. Bidder's shall comply with "The Use of CPM in Construction – A Manual for General Contractors" published by Associated General Contractors of America, Inc. Schedules shall utilize nationally recognized scheduling format such as Primavera or Microsoft Project. Software version selected shall be compatible with Owner's Microsoft Word or Office software so that schedule can be reviewed and saved in Owner's computer system.
 - 3. Schedule shall be on 11" x17" paper indicating project activities, duration, start and finish dates of each activity, float or slack time, critical path, and total number of days for project.
 - 4. Include float or slack time in Schedule. Float is defined as amount of time between earliest start date and latest start date or days between earliest end date and latest end date.
 - 5. Construction schedule shall begin based on Owner's intent to issue Notice to Proceed Letter to Contractor/CM and be completed within "x" Calendar Days from NTP. Substantial Completion is "date", with "x" calendar days to Final Completion or "date".
 - 6. Preliminary Project Schedule shall be submitted with Bid Proposal. Failure to do so will be grounds for rejection of the Bid Proposal.

1.3 COORDINATION AND PROJECT CONDITIONS

- A. Bidders are responsible for verification of existing conditions to the extent that they are observable and can be inferred by visual inspection.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

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- C. Coordinate space requirements, supports and installation of mechanical and electrical work that is indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. In finished areas with exposed ceilings, piping and conduits shall either concealed or painted and be run at right angles, and attached to underside of floor or deck above. Wiring shall not be exposed. Exposed ductwork shall be painted.
- F. Coordinate scheduling to allow time for submittals, Owner's approval, Building Dept. review, permitting and inspections to ensure efficient and orderly sequence of installation of interdependent construction elements. Schedule shall provide for accommodating Owner's occupancy of other buildings on site, and items to be furnished or installed by Owner.
- G. Owner will not consider change orders for extra work required by Contractor due to his inadequate coordination.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Administrative and procedural requirements for processing of submittals during construction process. Submittals may include the following:
1. Proposed Products Lists.
 2. Proposed Vendor List.
 3. Product Data.
 4. Shop Drawings.
 5. Samples.
 6. Design Data.
 7. Field Test Reporting.
 8. Quality Control Reporting.
 9. Certificates.
 10. Manufacturer's Installation, Handling and Storage Instructions.
 11. Manufacturer's Field Reports.
 12. Erection Drawings.
 13. Closeout Documents
 14. Warranties.
 15. Scheduling of Work.
 16. Construction Progress Schedule.
 17. Submittals Schedule.
 18. Survey and Layout Data.
 19. Construction Progress Reporting.
 20. Periodic Work Observation.
 21. Photographic Documentation.
 22. Purchase Order Tracking.
 23. Operation and Maintenance Documentation.

1.2 RELATED SECTIONS

- A. Section 01 29 00 – Payment Procedures.
- B. Section 01 31 12 – Project Coordination.
- C. Section 01 42 00 – References.
- D. Section 01 45 00 – Quality Control.
- E. Section 01 66 00 – Product Storage and Handling Requirements.
- F. Section 01 78 00 – Closeout Submittals.

1.3 SUBMITTAL PROCEDURES

- A. Submittal Procedures shall be in conformance with AIA A201 General Conditions of the Contract and as amended by Owner on July 13, 2009. Copy is included in Division 1, Section 00 72 00 – General Conditions.
- B. Transmit each submittal with AIA Form G810-2001 or Owner's Standard Transmittal form.
- C. Sequentially number each transmittal forms. Revise submittals with original number and a sequential alphabetic suffix.

- D. Identify project, Contractor/CM, subcontractor or supplier pertinent drawing and detail number, and specification section number, as appropriate.
- E. Apply Contractor/CM's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information are in accord with requirements of the work and contract documents.
- F. Schedule submittals to expedite the project and deliver to Engineer and Contractor/CM at business address. Coordinate submission of related items.
- G. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor/CM.
- H. Identify variations from contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.
- I. Provide space for Contractor/CM and Engineer review stamps.
- J. When revised for resubmission, identify all changes made since previous submission.
- K. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- L. Submittals not requested will not be recognized or processed.

1.4 PROPOSED PRODUCTS LIST

- A. Within 15 work days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PRODUCT DATA

- A. Product Data for Review:
 - 1. Submit to Engineer for review for purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 - 2. After review, provide copies and distribute per Submittal Procedures article above and for record documents purposes described in Section 01 78 00 – Closeout Submittals.
- B. Product Data for Information:
 - 1. Submittal for Engineer's knowledge as contract administrator or for Owner.
- C. Product Data for Project Close-out:
 - 1. Submit for Owner's benefit during and after project completion.
- D. Submit number of copies required by Contractor/CM plus two copies for transmittal to Engineer and two copies for transmittal to Owner's Project Manager.
- E. Mark each copy to identify applicable products, models, options, and other data.
- G. Supplement manufacturers' standard data to provide information unique to project.
- H. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- I. After review, distribute in accord with Submittal Procedures article above and provide copies for record documents described in Section 01 78 00 - Closeout Documents.

1.6 CONSTRUCTION SUBMITTALS

- A. Submit one copy of Building Permit, Site Permits, Environmental Permits, or other permits required for construction of work.
- B. Submit Payment Applications to Engineer for review for purpose of checking conformance with information given and design concept expressed in Contract Documents.

- C. Shop Drawings: Provide following information:
1. Fabrication and installation Drawings and details.
 2. Template placement diagrams.
 3. Manufacturer's installation instructions.
 4. Product patterns and colors.
 5. Coordination Drawings.
 6. Schedules.
 7. Product mix formulae.
 8. Product design or engineering calculations.
 9. Other information as required by project.
 10. After review, produce copies and distribute per Submittal Procedures article above and for record documents purposes described in Section 01 78 00 – Closeout Submittals.
 11. Submit to Engineer for purpose of checking conformance with information given and design concept and Owner's Project Manager.
- D. Project Closeout Documents:
1. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
 2. Submit number of copies required by Contractor, plus one copy for Engineer and two copies for Owner.
 3. Submit to Engineer for Owner's benefit during and after project completion.
 - a. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
 - b. Submit one copy and one reproducible copy required by Contractor/CM, plus one copy for Engineer and two copies for Owner.
- E. Product Samples
1. Submit to Engineer for purpose of checking conformance with information given and design concept expressed in the documents.
 2. After review, Engineer shall submit color board to Owner's Project Manager per Submittal Procedures.
 3. Sample finishes and colors shall be from full range of manufactures' standard colors, textures, and patterns for Engineer's selection and preparation of color board for Owner's approval.
 4. After review and approval by Owner, provide duplicates and distribute per Submittal Procedures.
 5. Submit samples to illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 6. Include identification on each sample, with full project information.
 - a. Submit number of samples specified in specification, one of which Engineer shall retain.
 - b. Reviewed samples may be used in work, if indicated.
- F. Product Design Data and Test Reports:
1. Submit to Engineer as contract administrator and for Owner's Project Manager for purpose of checking conformance with information given and completed work on project.
- G. Certificates:
1. When specified, submit certification by manufacturer, installation/application subcontractor, or contractor to Engineer, in quantities specified for Product Data.
 2. Indicate material or Product conforms to or exceeds specified requirements.
 3. Submit supporting reference date, affidavits, and certifications as appropriate.
 4. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

H. Manufacturer's Instructions:

1. When specified, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.
2. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
3. Refer to Section 01 45 00 – Quality Control for quality assurance requirements.

J. Manufacturer's Field Reports:

1. Submit reports to Engineer and Owner's Project Manager.
2. Submit report within 30 days of observation to Engineer.
3. Submit for information for purpose of assessing conformance with information given and design concept expressed in Documents.

K. Erection Drawings:

1. Submit drawings to Engineer and Owner's Project Manager.
2. Submit for information for purpose of assessing conformance with information given and design concept expressed in Documents.
3. Data indicating inappropriate or unacceptable work is subject to rejection by Engineer or Owner.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01 35 53
SECURITY PROCEDURES

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Development of site security program, project entry control procedures, personnel screening and identification in compliance with Florida Statute FS1012.465 – Jessica Lunsford Act for vendors, and Contractor/CM's.

1.2 RELATED SECTIONS

- A. Section 01 31 00 – Project Management and Coordination.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 56 00 – Temporary Barriers and Enclosures.

1.3 JESSICA LUNSFORD ACT

- A. Contractor/CM, his subcontractors, vendors and suppliers who are to be permitted access to school grounds while students are present, or have direct contact with students or have access to or control of school funds shall obtain Level 2 background screening in accord with Florida Statute FS1012.465 – Jessica Lunsford Act.
 - 1. Level 2 screening excludes personnel working on school district property where students are present who have criminal records that include sexual offender, sexual misconduct with developmentally disabled or mental health patients, terrorism, murder, kidnapping, lewd, lascivious or indecent acts or exposure, incest, child abuse or neglect.
 - 2. Persons screened as noted above with other types of criminal history may be allowed on school grounds provided under following conditions:
 - a. Contractor/CM, subcontractors, vendors and suppliers shall be under continuous direct supervision of school district employee or Level 2 screened and cleared employee as noted above.
 - b. Contractor/CM, subcontractors, vendors and suppliers may be allowed on a student occupied site if area of construction is isolated from students by continuous six foot high chain link fence separating work area and school.
 - c. Persons with current Level 2 clearance who are subsequently arrested for disqualifying offenses shall be disqualified from access to school sites and shall immediately surrender their Photo ID Badge to their employer who shall be responsible for returning badge to Martin County School District's Department of Human Resources with 48 hours of arrest or notice of arrest or criminal offense.
 - d. Persons failing to notify their employer and Martin County School District's Department of Human Resources with 48 hours of arrest will be charged with 3rd degree felony, punishable by up to five years imprisonment and \$1,000 fine.
 - e. Employers of persons having been arrested for disqualifying offenses who subsequently allows said employee to continue working on school property may also be charged with 3rd degree felony, punishable by up to five years imprisonment and \$1,000 fine.
- B. Contractor/CM, his subcontractors, vendors and suppliers working on school board sites shall be fingerprinted and obtain work badges.
 - 1. Contractor/CM, his subcontractors, vendors and suppliers have worked and obtained in other school districts must be screened to obtain new badges.

2. Questions regarding fingerprinting or identification badge processing may be directed to District Personnel Department at (772)219-1200, Ext. 30296.
 3. Fingerprinting services are provided by private vendor through Florida Dept. of Education. DOE sponsored website will direct individuals to nearest fingerprinting location.
 4. Cost of fingerprinting is (Check with the School District) per person and shall be prepaid either by money order to (Check with the School District) or by credit card payment via Internet. Website is <http://www.flprints.com>. For information, telephone (877) 357-7456.
 5. Money orders shall be made out to 3M Cogent. Money order must be brought to appointment.
 6. Individuals shall register online prior to their appointment:
 - a. Navigate to https://www.cogentid.com/fl/index_fdoe.htm and select "register online".
 - b. For County select Martin County from pull-down box.
 - c. For CRI Literal select: FL931392Z Contractors & Vendors.
 - d. Fill out remaining information and submit.
 - e. Use Internet Explorer.
 7. Individuals being fingerprinted shall provide valid, government issued driver's license, identification card or passport.
 8. After fingerprinting and criminal background check is complete, individuals shall make appointment for photo ID's by making appointments at Martin County School District Personnel Department located in Building 20 at School District Administration Center, 500 E. Ocean Blvd., Stuart, FL 34994.
 9. Appointments for ID photo badges shall be made after completion of fingerprinting with Martin County School District Personnel Department by phone at (772) 219-1200, Ext. 30296
 10. Photo ID applicants shall have registration confirmation receipt with them when they arrive for appointment.
 11. Cost of Photo ID's is (Check with the School District). Payment may be made with company check, money order or personal check. Checks shall be made payable to Martin County School District.
- C. Non-Instructional Contractors with current Martin County School District ID Photo Badges shall update their badges to the State Uniform Badge required by Florida Statute 1012.467, effective July 1, 2014.
1. There is no cost for individuals with current Martin County School District ID Photo Badges to upgrade their badges.
 2. Badges from other individual School Districts are no longer accepted on school sites in Florida.
 3. New state wide badges are accepted in any School District regardless of where it was issued.
 4. Non-Instructional Contractors and their employees working on School sites shall apply for State-Wide Badges as noted above.
 5. Non-Instructional Contractors shall submit lists of their badged employees via email to Eileen Loreti at the Martin County School District Personnel Department at loretie@martin.k12.fl.us.

1.4 SECURITY PROGRAM

- A. Protect new work, existing facilities and grounds from damage, theft, vandalism, and unauthorized entry.
- B. Initiate security program in coordination with Owner's existing security system at time of project mobilization to ensure safety of students, faculty and visitors to the unaffected portions of the school facilities.

- C. No student contact is permitted between the Contractor's personnel and students. Any breach of this requirement will result in the immediate removal of the personnel from the job site upon direction by the Owner.
- D. Smoking is not allowed on School Board property. Any breach of this restriction will result in immediate removal of personnel from the site upon direction by Owner's Project Manager.
- E. Maintain security program throughout construction period until Owner's project acceptance.

1.5 ENTRY CONTROL

- A. Restrict entrance of persons and vehicles into Project site and existing facilities as indicated by Owner approved security plan.
 - 1. Allow entrance only to authorized persons with proper identification.
 - 2. Maintain log of workers and visitors, make available to Owner on request.
 - 3. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.

1.6 PERSONNEL IDENTIFICATION

- A. Contractor/CM on-site staff, subcontractors and vendors on site shall wear identification badges at all times on site.
- B. Identification badges shall be current at time of project and shall be reverified and reissued yearly if project extends past original badge expiration date.

1.7 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Provide list of personnel proposed to be used on project for fingerprinting and background checks (only required for existing school projects).
- C. Contractor/CM shall submit initial list of accredited persons and provide monthly updated lists to Owner.
- D. Provide security plan to Owner indicating how construction site is to be secured and separated from existing school and its operations including normal and emergency egress and exiting from the operational portion of school and for new additions and existing portion under construction.

PART 2 PRODUCTS

2.1 Not Used.

PART 3 EXECUTION

3.1 Not Used.

END OF SECTION

SECTION 01 42 00
REFERENCE STANDARDS

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- A. Reference and design standards referenced in Florida Building Code and Florida Fire Prevention Code, 6th Editions are applicable.
- B. Documents listed shall be standard references currently in effect at time of project building permitting.
- C. American Society of Testing Materials (ASTM):
 - 1. See individual product specification sections for applicable ASTM standards.
- D. American National Standards Institute (ANSI)/Underwriters Laboratories (UL):
 - 1. See individual product specification sections for applicable ANSI standards.
- E. Underwriters Laboratories (UL) – Fire Resistance Directory.
- F. Warnock-Hersey – Product Directory.
- G. Building Industry Consulting Services International (BICSI):
 - 1. BICSI-568-2001: Installing Commercial Building Telecommunications Cabling.
 - 2. BICSI Telecommunications Distribution Methods Manual (TDMM).
 - 3. BICSI Telecommunications Cabling Installation Manual (TCIM).
 - 4. BICSI Outside Plant Design Reference Manual, 5th Edition.
- H. FCC (Federal Communications Commission) Rules.
- I. National Electrical Code (NEC):
 - 1. NFPA 70 National Electrical Code, 2008 Edition.
- J. National Fire Protection Association (NFPA):
 - 1. NFPA 101: Life Safety Code - National Fire Protection Association (NFPA).
 - 2. NFPA 70: National Electrical Code - National Fire Protection Association (NFPA).
- K. Occupational Health and Safety (OSHA): State and Federal Requirements.
- L. Telecommunications Industry Association (TIA)/Electronics Industry Association (EIA):
 - 1. TIA/EIA-568-B.1 and addenda: Commercial Building Telecommunications Cabling Standard - Part 1: General Requirements.
 - 2. TIA/EIA-568-B.2 and addenda: Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair.
 - 3. TIA/EIA-568-B.2-1: Transmission Performance Specifications for 4-Pair 100 Ohm Category 6 Cabling.
 - 4. TIA/EIA-568-B.3 and addenda: Commercial Building Telecommunications Cabling Standard - Part 3: Optical Fiber Cabling and Components Standard.
 - 5. TIA/EIA-568-B.3-1: Additional Transmission Performance Specifications for 50/125 ohm Optical Fiber Cables.
 - 6. TIA/EIA-569-A and Addenda: Commercial Building Standard for Telecommunications Pathways and Spaces, CSA T530.
 - 7. TIA/EIA-606-A and Addenda: Administration Standard for Telecommunications Infrastructure of Commercial Buildings, CSA T528.
 - 8. ANSI-J-STD-607-A and Addenda: Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications, CSA T530.
 - 9. TIA/EIA-526-7 and Addenda: Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant.
 - 10. TIA/EIA-526-14A and Addenda: Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant.

11. TIA/EIA-758: Customer Owned Outside Plant Telecommunications Cabling Standard.
- M. International Electrical Code (IEC):
 1. TR3 61000-5-2 - Ed. 1.0 and amendments: Electromagnetic compatibility (EMC) - Part 5: Installation and mitigation guidelines – Section 2: Earthing and Cabling”.
 2. ISO/IEC 11801: 2000 Edition, 1.2 and amendments: Information Technology – Generic cabling for customer premises.
- N. International Standards Organization (ISO/IEC): 11801: 2000 Ed. 1.2 and amendments: Information technology - Generic cabling for customer premises.
- O. NACE (National Association of Corrosion Engineers) - Industrial Maintenance Painting.
- P. NPCA (National Paint and Coatings Association) - Guide to U.S. Government Paint Specifications.
- Q. PDCA (Painting and Decorating Contractors of America) - Painting - Architectural Specifications Manual.
- R. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.
 1. SSPC-SP 1 – Solvent Cleaning.
 2. SSPC-SP 2 – Hand Tool Cleaning.
 3. SSPC-SP 3 – Power Tool Cleaning.
 4. SSPC-SP 13 – Nace No 6 Surface Preparation for Concrete.
- S. WDMA (Window and Door Manufacturer’s Association) I.S. 1-A-2004.

1.2 DEFINITIONS

- A. Communication Definitions:
 1. ITS: Information Transport System: Copper cabling or optical fiber for transmission of information on School District property. Transmission includes data, video, voice, fire alarm, security, access control, and other low-voltage networks. Information Transport System is not limited to School District-owned cabling, but includes copper and optical fiber, and equipment owned by outside providers carrying School District’s information. Pathways are not limited by School District’s ownership, but include those owned by third parties. Information Transport System may be referred to as “the network” within project documents.
 2. ICP: Inside Cable Plant: Part of Information Transport System running within buildings. ICP elements include workstation outlet assembly, cabling to the workstation from network rooms, backbone cabling within building, backbone cabling running between physically contiguous buildings, network racks and hardware (routers, switches, hubs, firewalls, etc.), patch panels, punch blocks, fiber distribution panels, patch cords, and cross-connect cables/wires.
 3. OCP: Outside Cable Plant: Part of Information Transport System running between buildings, from building to definable exterior point, between definable exterior points, or from non-School District source to School District building or definable exterior point. OCP includes termination punch blocks, fiber distribution panels, interior splices for outside to inside optical fiber transition, and other initial device into which outside cable attaches. OCP does not include backbone cable running between physically contiguous buildings unless cabling enters OSP pathway element (e.g. OSP conduits, maintenance holes, etc.). OCP includes underground cabling and aerial cabling.
 4. Cable: An assembly of one or more insulated conductors or optical fibers, within an enveloping sheath.
 5. DP: Dead pairs: Unused copper pairs terminating within splice case, but without being splices to outgoing cable.

6. GP: Grounding electrode: Conductor (rod, pipe or plate or group of conductors) in direct contact with earth for purpose of providing low-impedance connection to earth.
 7. GEC: Grounding electrode conductor: Conductor used to connect grounding electrode to equipment grounding conductor, or to grounded conductor of circuit at service equipment, or at source of separately derived system.
 8. Handbox: Rectangular or square underground pathway element similar to small maintenance hole, which cannot be fully entered, that allows for pulling point or splice point in power, security or communications pathway.
 9. Handhole: A round underground pathway element similar to a handbox, which cannot be fully entered, that allows for a pulling point in a pathway.
 10. Identifier: An item of information that links a specific element of the Information Transport System infrastructure with its corresponding record.
 11. Infrastructure (Information Transport System): A collection of those Information Transport System components, excluding equipment, that together provides the basic support for the distribution of all information within a building or campus.
 12. Linkage: A connection between a record and an identifier or between records.
 13. Maintenance (man) holes: Underground pathway element large enough for person to fully enter work, used to provide access to underground cable to pull, splice, and maintain.
 14. Media (Information Transport System): Wire, cable, or conductors used for Information Transport System.
 15. OB: Outlet box: Metallic or nonmetallic box used to hold Information Transport System outlets/connectors or transition devices.
 16. Outlet (Connector) (Information Transport System): Connecting device in work area on which horizontal cable or outlet cable terminates.
 17. Pathway: Facility for the placement of Information Transport System cable.
 18. Record: Collection of detailed information related to specific element of Information Transport System infrastructure.
 19. Report: Presentation of collection of information from various records.
 20. Space (Information Transport System): Area used for housing installation and termination of Information Transport System equipment and cable, e.g., equipment rooms, network rooms, work areas, and maintenance holes/handboxes/handholes.
 21. Splice: Joining of conductors in splice closure, meant to be permanent.
 22. Splice box: Box, located in pathway run, intended to house cable splice.
 23. Splice closure: Device used to protect splice.
 24. Termination position: Discrete element of termination hardware where information Transport System conductors are terminated.
 25. Work Area (work station): Building space where occupants interact with Information Transport System terminal equipment.
- B. Painting Definitions:
1. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products for interpretation of terms used herein.

1.3 ABBREVIATIONS AND ACRONYMS

- A. Abbreviations noted in Florida Building Code, Chapter 2 are applicable.
- B. General Abbreviations:
1. AC: Above Counter/Air Conditioning.
 2. ACR: Attenuation-to-Crosstalk Ratio.
 3. ADA: Americans with Disabilities Act.

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4. AFF: Above finished floor.
5. AFG: Above finished grade.
6. ANSI: American National Standards Institute.
7. ARCH: Architect or Architectural.
8. ASTM: American Society for Testing and Materials (ASTM International).
9. AWG: American Wire Gauge.
10. BD: Building distributor (replacing main-cross connect and MDF as “building service” room identifiers).
11. BICSI®: Building Industry Consulting Service International, Inc.
12. BTU: British Thermal Unit.
13. CAT6: Category 6 cable.
14. CATV: Community Antenna Television (cable television).
15. CD: Campus distributor (replacing main-cross connect and MDF as “campus-wide service” room identifiers). Also, compact disk for storage of audio or video information.
16. CO: Communications Outlet.
17. COAX: Coaxial Cable.
18. CP: Communications Panel.
19. dB: Decibel.
20. EMS: Energy Management System or Emergency Management System.
21. EMT: Electrical metallic tubing.
22. ENT: Electrical nonmetallic tubing.
23. EDPM: Ethylene-polypropylene-diene membrane.
24. EF: Entrance Facility.
25. EIA: Electronic Industries Alliance.
26. ELFEXT: Equal Level Far-End Crosstalk.
27. EMC: Electromagnetic Compatibility.
28. EMI: Electromagnetic Interference.
29. ER: Equipment Room. Replacing “TR”
30. FMC: Flexible metallic conduit.
31. FCC: Federal Communications Commission.
32. FD: Floor distributor (replacing network room, intermediate and horizontal cross-connect, and telecommunications as “building service” room identifiers). Also, Floor Drain as part of building plumbing system.
33. FDDI: Fiber Distribution Data Interface.
34. FEXT: Far-End Crosstalk.
35. FO: Fiber Optic.
36. Freq: Frequency.
37. GE: Grounding equalizer (replacing TBBIBC).
38. Gnd: Ground.
39. HB: Handbox. Also, hose bibb for water supply part of plumbing system.
40. HC: Horizontal Cross-Connect (replaced by floor distributor “FD”).
41. HH: Handhole.
42. HVAC: Heating, Ventilation, and Air Conditioning.
43. Hz: Hertz.
44. IC: Intermediate Cross-Connect (replaced by building distributor “BD”).
45. IDC: Insulation Displacement Connectors.
46. IDF: Intermediate Distribution Frame (replaced by “BD” or “FD”).
47. IEEE: Institute of Electrical and Electronics Engineers.
48. IMC: Intermediate metal conduit.
49. IN: Inches.

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50. ISO: International Organization for Standardization.
51. ISP: Inside Cable Plant.
52. JB: Junction Box.
53. LBS: Pounds.
54. LED: Light Emitting Diode.
55. LFMC: Liquidtight flexible metal conduit.
56. LFNC: Liquidtight flexible nonmetallic conduit.
57. Mbps: Megabits per second.
58. MC: Main Cross-Connect (replaced by campus distributor “CD”).
59. MDF: Main Distribution Frame (replaced by “CD” or “BD”).
60. MER: Main Equipment Room.
61. MH: Maintenance Hole.
62. MHz: Megahertz.
63. NBR: Acrylonitrile-butadiene rubber.
64. NEC: National Electrical Code, NFPA 70.
65. NEMA: National Electrical Manufacturers Association.
66. NESC: National Electric Safety Code, C2-1997.
67. NFPA: National Fire Protection Association.
68. NIC: Not in Contract.
69. NR: Network Room.
70. #: Number.
71. OFCI: Owner Furnished Contractor Installed.
72. OFOI: Owner Furnished Owner Installed.
73. OSHA: Occupational Safety and Health Administration.
74. OCP: Outside Cable Plant.
75. OTDR: Optical Time Domain Reflectometer.
76. PR: Pair.
77. PVC: Polyvinyl Chloride.
78. RCDD®: Registered Communications Distribution Designer.
79. RFI: Radio Frequency Interference.
80. RGC or GRC: Rigid Galvanized Conduit.
81. RH: Relative Humidity.
82. RNC: Rigid nonmetallic conduit.
83. SCS: Structured Cabling System.
84. SS: Stainless Steel.
85. SM: Single Mode.
86. TIA/EIA: Telecommunications Industry Association/Electronic Industry Association.
87. TBB: Telecommunication Bonding Backbone.
88. TBBIBC: Telecommunication Bonding Backbone Interconnecting Bonding Conductor (replaced by grounding equalizer “GE”).
89. TE: Telephone Equipment (Wall Mounted Equipment Rack).
90. TEL: Telephone.
91. TGB: Telecommunications Grounding Buss bar.
92. TMGB: Telecommunications Main Grounding Buss bar.
93. TR: Telecommunications Room. (Replaced with Main-MDF or Intermediate-IDF Distribution Frame Locations).
94. TYP: Typical.
95. UL: Underwriters Laboratory.
96. UPS: Uninterruptible Power Supply.
97. UTP: Unshielded Twisted Pair.

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- 98. V: Volt.
- 99. WAO: Work Area Outlet.

1.4 UNITS OF MEASURE

- A. Weights and Measures shall be as identified by Weights and Measures Division, NIST, U. S. Department of Commerce, 100 Bureau Dr., Stop 2600, Gaithersburg, MD 20899-2600.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 45 00
QUALITY CONTROL

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Quality assurance procedures to control labor and product installation including tolerances, adherence to references and standards.
- B. Construction of mockups and field samples to set standard of quality for product installation.
- C. Independent inspecting and testing laboratory services for quality control and adherence to contract documents.
- D. Manufacturers' field services for quality control and adherence to contract documents.
- E. Work shall be in conformance with 2007 Edition of AIA A201 General Conditions of the Contract and as amended by Owner on July 13, 2009. Copy is included in Division 1, Section 00 72 00 – General Conditions.

1.2 RELATED SECTIONS

- A. Section 01 22 00 – Unit Prices.
- B. Section 01 29 00 – Payment Procedures.
- C. Section 01 31 00 – Project Management and Coordination.
- D. Section 01 33 00 – Submittal Procedures.
- E. Section 01 42 00 – References.
- F. Section 01 66 00 – Product Storage and Handling Requirements.
- G. Section 01 78 00 – Closeout Submittals.
- H. Section 01 91 00 – Commissioning.
- I. Section 23 05 93 – Testing, Adjusting and Balancing of HVAC.
- J. Section 23 08 00 – Commissioning of HVAC.

1.3 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and work to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements, supports and installation of mechanical and electrical work that is indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel or perpendicular with line of building. Conduits and piping shall be spaced neatly, consistently and uniformly when in groupings. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.

- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- G. Owner will not consider change orders for extra work required by Contractor/CM due to improper or untimely coordination.

1.4 FIELD ENGINEERING

- A. Employ a Land Surveyor registered in the State of Florida, acceptable to Architect and Owner for construction layout.
- B. Contractor/CM shall locate and protect survey control and reference points.
- C. Control datum for survey is that established by Owner provided survey.
- D. Verify setbacks and easements; confirm drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- F. Upon completion of project, surveyor noted above, shall prepare and submit copy of site drawing and certificate signed by Land Surveyor that elevations and locations of Work are in accord with Contract Documents.

1.5 QUALITY ASSURANCE

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with contract documents, request clarification from Architect before proceeding, and document any instructions or directions that may invalidate warranty.
- D. Comply with specified standards as a minimum quality for work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- H. Schedule work so no absorbent materials are installed and no concealed areas are closed up until building is dried-in and permanent doors and windows are installed to prevent development of mold or entrapment of mold or moisture inside concealed spaces or moisture absorption into interior materials.
- I. See Section 01 31 00 – Project Management and Coordination for services of Florida licensed land surveyor to verify locations and elevation of floor slabs after floor slab placement and before continuation of construction activities.

1.6 TOLERANCES:

- A. Monitor fabrication and installation tolerance control of products to produce acceptable work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with contract documents, most stringent tolerance shall prevail.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.7 REFERENCES AND STANDARDS:

- A. Comply with Section 01 42 00 – References for reference standards, definitions, abbreviations and acronyms applicable to project.
- B. Workmanship shall comply with requirements of standards specified by product or trade association, or other consensus standards of specified products, except when applicable code requirements are more stringent.
- C. Use current reference standard(s) in effect at time of contract execution.
- D. Obtain copies of standards where required by product specification sections.
- E. Contractual relationships, duties, nor responsibilities of parties in Contract nor those of Architect shall be altered from contract documents by mention or inference otherwise in reference documents.

1.8 MOCKUPS AND FIELD STANDARDS:

- A. Comply with Section 01 43 39 – Mockups general requirements and individual product sections for specific requirements. Construct mockups as indicated for review by Architect and Owner's Project Manager.
- B. Assemble and erect specified items with required attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be basis of work quality standard for work.
- D. Where Architect accepts mockups as quality standard of work required, maintain mockups until work is complete.
- E. Upon Architect's approval mockups and work samples may be incorporated in completed work. Otherwise, remove mock-up and clear area.

1.9 TESTING SERVICES:

- A. Owner will appoint and pay for services specified for independent firm to perform testing.
- B. Independent firm will perform tests and other specified services as outlined in individual specification sections and as required by Owner.
- C. Testing and quality control may occur on or off project site.
- D. Independent firm shall submit reports to Owner and Architect and Contractor/CM, indicating observations and results of tests and compliance or non-compliance with contract documents.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - a. Notify Owner, Architect and independent firm 24 hours prior to expected time for operations requiring services.
 - b. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
 - c. Testing does not relieve Contractor to perform work per contract requirements.
 - d. As directed by Architect, independent testing firm shall re-test as result of non-conformance with requirements. Contractor shall pay for re-testing cost by deducting testing charges from the Contract Sum/Price.

1.10 BUILDING INSPECTION SERVICES:

- A. Owner will employ in-house Building Official, or hire independent Building Official and Construction Inspectors as required to perform Document review and approval, and on-site building inspections in accord with Florida Building Code, Section 423 State Requirements for Educational Facilities and other applicable codes.
- B. Building Official and Inspectors will perform code interpretation, document review, project inspections, and other services specified and required in individual specification sections, and shall be paid by Owner.
- C. Inspections firm will conduct inspections and observations of work, indicate compliance or non-compliance with applicable codes and contract documents, and will submit reports to Architect, Contractor/CM and Owner.
- D. Cooperate with inspection firm; provide safe access and assistance by incidental labor as requested.
- E. Notify Owner and Architect and inspection firm 24 hours prior to expected time for operations requiring services.
- F. Inspection of work does not relieve Contractor of performing work in accord with contract requirements.

1.11 MANUFACTURERS' FIELD SERVICES:

- A. Where specified, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to the Architect 30 days in advance of required observations, the observer is subject to Owner's approval.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Comply with Section 01 33 00 – Submittal Procedures.

1.12 COMMISSIONING

- A. Comply with Section 01 91 00 – Commissioning for training of Owner's personnel in operation and maintenance of equipment identified in this Section.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 EXAMINATION:

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work, beginning new work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work.
- C. Examine and verify specific conditions described in individual specification sections. Immediately notify AE or Owner's Project Manager of conditions that would prevent meeting contractual requirements.
- D. Verify that utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION:

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance in manner approved by product manufacturer.
- C. Apply manufacturer's required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 CLEANING AND WASTE MANAGEMENT

- A. Comply with Section 01 74 00 – Cleaning and Waste Management.

END OF SECTION

SECTION 01 66 00
PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Packaging and transportation, delivery and receiving, product handling, storage, conditions and location, maintenance, protection, repair and replacement of products damaged while handling or in storage.

1.2 RELATED DOCUMENTS

- A. Section 01 31 00 – Project Management and Coordination.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 35 53 – Security Procedures.
- D. Section 01 45 00 – Quality Control.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 TRANSPORTATION AND HANDLING

- A. Packaging and Transportation:
 - 1. Supplier shall package finished products in boxes or crates to provide protection during shipment, handling and storage at site.
 - 2. Products shall be protected against exposure to outside storage against damage due to weather conditions.
 - 3. Protect products sensitive to damage against impact, abrasion, puncture and other damage during handling and transport to project.

3.2 DELIVERY AND RECEIVING

- A. Arrange deliveries of products in accord with project schedule to allow installation and project completion per approved project schedule.
- B. Prior to project commencement, Contractor's personnel shall meet with Owner's Project Manager and School staff for renovation and new construction to delineate areas for materials storage lay-down areas.
- C. Restrict access of persons to storage areas in accord with Section 01 35 33 – Security Procedures.
- D. Material deliveries to Owner occupied sites shall be coordinated with Owner's Project Manager to ensure availability of personnel and handling equipment for safe and secure unloading and storage of equipment.
- E. Deliver products in undamaged, dry condition, in original unopened containers or packaging with identifying labels intact and legible.
- F. Clearly mark partial deliveries of component parts of equipment to identify equipment and contents, to permit easy accumulation of parts, and to facilitate assembly.
- G. Upon delivery, Contractor/CM shall inspect shipments for following items:
 - 1. Products received match reviewed submittals and Contract Documents.

2. Correct quantities.
 3. Accessories and installation hardware are included.
 4. Containers and packages are intact and labels are legible.
 5. Products are adequately protected for conditions and are undamaged.
- H. Product Handling:
1. Provide equipment and personnel to handle products to prevent product damage.
 2. Handle products to avoid bending, flexing or overstressing.
 3. Lift large or heavy components by using designated lifting points in accord with manufacturers written directions.

3.3 STORAGE AND PROTECTION

- A. General Requirements:
1. Store products immediately upon delivery in accord with manufacturers written directions.
 2. Arrange for storage location to allow access, maintenance and inspection of products.
 3. Stored products shall not conflict with work conditions. construction is contiguous to or within existing school, Provide demising walls to physically separate new or renovation work from existing on-going school operations.
- B. Enclosed Storage:
1. Store products subject to damage by weather in weathertight enclosure.
 2. Maintain temperature and humidity within ranges stated in manufacturer's instructions.
 4. Provide temperature and humidity control within ranges stated in manufacturer's instructions.
 5. Store unpacked or loose products on shelves, in bins, or in neat groups of like items.
- C. Exterior Storage:
1. Provide platforms, blocking or skids to support fabricated products above ground, and sloped to allow drainage.
 2. Protect products to avoid soiling or staining.
 3. Provide product cover to prevent water or condensation on product while allowing ventilation.
 4. Store loose granular materials on clean, solid surfaces such as pavement or on rigid sheet materials to prevent mixing with foreign matter.
 5. Provide for surface drainage to prevent humidity, mold or algae growth.
- D. Maintenance of Storage:
1. Periodically inspect stored products on scheduled basis.
 2. Verify storage facilities and environmental conditions are in compliance with manufacturer's written requirements.
 3. Verify that product surfaces exposed to weather are undamaged, stolen, or have otherwise been adversely affected.
- E. Maintenance of Equipment Storage:
1. Stored mechanical and electrical equipment shall comply with manufacturer's written service instructions for each item, with notice of instructions attached to each item of equipment.
 2. Stored equipment shall be serviced on regular basis, maintaining log of services, and submitted to Architect in accord with Section 01 78 00 – Submittal Procedures as part of Project Record Documents.
- F. Storage of Owner's Salvaged Furnishings and Equipment:
1. Contractor/CM shall provide temporary storage facilities for items to be salvaged and reinstalled.

3.4 PROTECTION OF FINISHED WORK

- A. Protect finished surfaces, including doors, door jambs, soffits of openings used as passageways, through which equipment and materials are handled.
- B. Protect finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved.
- C. Keep finished surfaces clean, unmarked, and suitably protected until Owner's project acceptance.

3.5 REPAIRS AND REPLACEMENTS

- A. Promptly replace or repair damaged equipment or building surfaces caused by moving equipment at no additional cost to Owner.
- B. Additional time required to repair or replace damaged equipment or building surfaces shall not be grounds for Contract time extension or Contractor's additional expense, unless Owner specifically authorizes time extension or additional costs.

END OF SECTION

SECTION 01 74 00
CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Administrative and procedural requirements for waste management and cleaning during construction and final cleaning at Substantial Completion.
- B. Development and implementation of Waste Management Plan to indicate following procedures:
 - 1. Limiting amount of project waste through planning, scheduling, and project management.
 - 2. Recycling demolished structures and construction and waste materials, and reuse of recycled or salvaged materials whenever possible.
 - 3. Procedures to reduce construction noise, fumes, vibration, dust or other airborne contaminants.
 - 4. Adherence to Federal, State and local environmental and anti-pollution regulations and ordinances.
 - 5. Waste materials shall be suitably disposed off site in approved landfill sites.
 - 6. Development of contamination containment plan to include procedures for addressing volatile and hazardous materials or their waste products, cleaning materials and residue.
- C. Cleaning and Protection:
 - 1. Development of daily and periodic construction cleaning and protection of products stored on site or erected in project, and shall include sequence and frequency policy and schedule for project duration.
 - 2. Development of evacuation, fire and life safety plan, staff training procedures in handling and disposal of materials deleterious to human contact or exposure.
 - 3. Final cleaning leaving project ready for Owner's acceptance.

1.2 RELATED SECTIONS

- A. Section 01 31 00 – Project Management and Coordination.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 42 00 – References.
- D. Section 01 66 00 – Product Storage and Handling Requirements.
- E. Section 01 78 00 – Closeout Submittals.

1.3 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Submit MSDS sheets for products requiring special care or handling in storage, application or cleanup.
- C. Submit Waste Management and Cleaning Plans identifying and providing operational procedures for each item noted in Scope of Work.

1.4 COORDINATION

- A. Coordinate scheduling and implementation of Waste Management and Cleaning Plans with each trade on site.

- B. Ensure enforcement to promote efficient and orderly sequence of installation of interdependent construction elements, with intent to reduce waste maximize efficient and safe work environment.
- C. Coordinate periodic and final clean up of Work of each trade in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.

1.5 QUALITY ASSURANCE

- A. Monitor each trade, product suppliers, product deliveries, waste generation, site conditions, and workmanship, to minimize waste and maximize recycled materials and reuse of retained materials.

PART 2 PRODUCTS

NOT USED (See individual product specifications for cleaning products recommended by manufacture.)

PART 3 EXECUTION

NOT USED (See individual product specifications for written cleaning procedures and instructions recommended by manufacture.)

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Closeout procedures.
- B. Final cleaning.
- C. Adjusting.
- D. Project record documents.
- E. Operation and maintenance data.
- F. Spare parts and maintenance Products.
- G. Warranties and bonds.
- H. Maintenance service.
- I. Training.

1.2 RELATED SECTIONS

- A. Section 01 29 00 – Payment Procedures.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 91 00 – Commissioning.
- D. Section 27 60 00 – Integrated Audio System.

1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that contract documents were reviewed, work inspected, and that work is complete in accord with contract documents and ready for Owner's Project Manager and AE's review.
- B. Provide submittals to AE and Owner's Project Manager that are required by building and fire authorities.
 - 1. Submit final application for payment identifying total adjusted contract sum, previous payments, and sum remaining due.
 - 2. Owner may opt to occupy all or portions of completed facilities upon substantial completion of those portions of work.
 - 3. Contractor/CM shall provide punch list to AE identifying items remaining to be completed.
 - 4. AE shall inspect project to determine completion of punch list and project compliance with Contract Documents.

1.4 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances.
- C. Clean equipment and fixtures to sanitary condition with cleaning materials per manufacturer's written recommendations.
- D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.5 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.6 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of record documents, recording accurate field revisions to contract documents to include:
 - 1. Drawings/specifications and addenda.
 - 2. Change orders and other modifications to work.
 - 3. Reviewed shop drawings, product data, and samples.
 - 4. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling ready access and reference by Owner's Project Manager.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications shall be legibly marked and recorded for each product used indicating the following:
 - 1. Manufacturer's name, product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by addenda and modifications.
- F. Record drawings and shop drawings shall be legibly marked with each item recorded to indicate actual construction as follows:
 - 1. Measured depths of foundations in relation to finish first floor datum.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
 - 4. Field changes of dimension and details.
 - 5. Details not on original contract drawings.
- H. Upon project completion, transfer project record drawing information to Autocad (2010 or later format) files and provide four copies of CD's to Architect for review and transmitted to Owner, prior to claim for final Application for Payment.
 - 1. Contractor/CM shall also submit two hard copies of record drawings and project manual maintained during project to Owner's Project Manager.
 - 2. Owner will be responsible for making prints from CD's and for their distribution to Owner's user groups.

1.7 OPERATION AND MAINTENANCE DATA

- A. Submit documentation as noted in individual product specifications and as noted herein.

1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

- 1. Provide spare parts, maintenance, and extra products in quantities specified in specification.
- 2. Deliver to Owner; obtain receipt prior to final payment.

1.9 WARRANTIES

- A. Submit documentation as noted in individual product specifications and as noted herein.
- B. Provide duplicate notarized copies.
- C. Execute and assemble transferable warranty documents from subcontractors, suppliers, and manufacturers.
- D. Provide Table of Contents and assemble in D-side 3-ring white binders with typed title sheet of contents inside durable plastic front cover.
- E. Submit prior to final application for payment.
- F. For items of work delayed beyond date of substantial completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.10 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections for one-year from date of project substantial completion.
- B. Examine, clean, adjust, and lubricate system components as required for reliable operation.
- C. Include systematic examination, adjustment, and lubrication of components repairing or replacing parts as required with parts produced by the manufacturer of the original component.
- D. Owner shall approve in writing of transfers or reassignments of maintenance service tasks.

1.11 ASBESTOS CERTIFICATION

- A. Provide notarized letter from Contractor/CM certifying that “to the best of his/her knowledge no asbestos containing building materials were used as a building material in the project”, per FS 255.40.

1.12 PROJECT CLOSE-OUT PROCEDURES

- A. Items are to be submitted to the School District’s Construction Manager’s Office once the request for final payment has been submitted.
 - 1. ____ 4 Copies: AIA Application For Payment, Signed and Sealed, Noted as Final Payment.
 - 2. ____ Consent of Surety to make final payment.
 - 3. ____ Release of Lien from all Sub-Contractors or Laborers who have filled an Intent to Lien.
 - 4. ____ Warranty/Guarantee from Construction Manager for one-year from the date of Substantial Completion.
 - 5. ____ Warranty/Guarantee from each Sub-Contractor for one-year from the date of Substantial Completion.
 - 6. ____ Copy of the approval by the Architect-Engineer and the transmittal to the end user of manuals, shop drawings, as-builds, brochures, warranties, list of sub-contractors with phone numbers, addresses and contact persons.
 - 7. ____ Verification that all applicable district personnel have been trained in the operation of their new equipment (per system: HVAC, controls, etc.)

8. ____ Executed Roof Warranty in the name of the Martin County School District.
9. ____ 4 Copies: OEF Form 209, Certificate of Final Inspection.
10. ____ 4 Copies: Completed Punch-list.
11. ____ SREF 4.2(3)(e) Architect's Certificate of Specification of Asbestos Containing Materials.
12. ____ SREF 4.2(3)(e) Contract's Certificate of Asbestos Use.
13. ____ SREF 4.2(3)(d) Threshold inspector's statement that building complies with Threshold Plan.
14. ____ 4 Copies: OEF Form 110B, Certificate of Occupancy.
15. ____ OEF Form 564 for new construction or additions to existing schools only (Return to Director's Secretary)
16. ____ Inspection Log Book

PART 2 PRODUCTS

2.1 APPROVED PRODUCTS

- A. Use only cleaning and maintenance products approved for use in Florida Educational Facilities.

PART 3 EXECUTION

- 3.1 Not used.

END OF SECTION

SECTION 01 91 00
COMMISSIONING

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Administrative and procedural requirements for commissioning facilities and facility systems.
- B. Demonstration and training.
- C. Starting systems.
- D. Demonstration and instructions.

1.2 RELATED SECTIONS

- A. Section 01 31 00 – Project Coordination.
- B. Section 01 78 00 – Closeout Documents.
- C. Section 23 05 93 – Testing, Adjusting, and Balancing HVAC.
- D. Section 23 08 00 – Commissioning of HVAC.

1.3 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect and Owner seven days prior to startup of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.
- D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested. Execute startup under supervision of responsible Contractors' personnel in accordance with manufacturers' instructions.
- F. When specified in individual specification sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to startup, and to supervise placing equipment or system in operation.
- G. Submit written reports per section 01 78 00 - Execution and Closeout Documents that equipment or system is installed and functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B. Demonstration of equipment shall be performed by qualified manufacturers' representative who is knowledgeable about the Project and equipment.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

- G. Amount of time required for instruction in each piece of equipment and system is indicated in individual equipment and system specification sections.

1.5 TESTING, ADJUSTING, AND BALANCING

- A. Contractor/CM shall employ, and pay for commissioning services other than TAB firm to perform testing, adjusting and balancing of other systems as indicated or require for fully functional systems
- B. Independent TAB firm shall perform services specified in section 23 05 93 – Testing, Adjusting, and Balancing for HVAC system(s).
- C. The Contractor/CM shall submit reports to Architect indicating observations, results of tests and compliance or non-compliance with specified requirements and with requirements of contract documents.

PART 2 PRODUCTS

- 2.1 Not Used.

PART 3 EXECUTION

3.1 LIST OF EQUIPMENT TO BE COMMISSIONED:

- A. Communications System
- B. Fire Alarm System
- C. Intercom System
- D. Kitchen Equipment
- E. HVAC Equipment.
- F. Gymnasium Equipment including bleachers, scoreboards, basketball backstops, sound system, playcourt surface, equipment with floor inserts
- G. Lighting Systems
- H. Stage, Auditorium, Gym and Instructional Spaces Sound Reinforcement Systems
- I. Irrigation System
- J. Fire Protection System
- K. Movable Interior Partitions
- L. Emergency Generator

3.2 EQUIPMENT COMMISSIONING REQUIREMENTS

- A. Comply with individual specification sections for equipment start-up, operation and training.

END OF SECTION

SECTION 01 91 01
COMMISSIONING OF HVAC

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Independent commissioning of heating, ventilation, and air conditioning in accord with project documents and include:
 - 1. Evaluate proposed HVAC and electrical systems design and control system documents.
 - 2. Review and document HVAC and Electrical control interface systems interface.
 - 3. Coordinate start-up of HVAC and Electrical systems.
 - 4. Coordinate and review operation, training procedures, demonstration and instructions for HVAC equipment use by Owner.
 - 5. Review, evaluate, and document HVAC equipment operation and performance.
- B. Work with TAB contractor for testing, adjusting, and balancing to ensure HVAC system performance is maximized for operational efficiency.
- C. Coordinate HVAC Commissioning scheduling and activities with GC/CM.
- D. Commissioned Systems Include:
 - 1. HVAC components and equipment.
 - 2. HVAC interaction of cooling, heating, and comfort delivery systems.
 - 3. Building Automation System (BAS): control hardware and software, sequences of operation, and integration of factory controls with BAS.
 - 4. Plumbing: Domestic hot water systems.
 - 5. Lighting Control System with interface with daylighting.

1.2 RELATED SECTIONS

- A. Section 01 31 00 – Project Coordination.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 42 00 – References.
- D. Section 01 45 00 – Quality Control.
- E. Section 01 78 00 – Closeout Submittals.
- F. Section 01 91 00 – Commissioning
- G. Section 23 05 93 – Testing, Adjusting and Balancing For HVAC.

1.3 REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms.
- B. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE):
 - 1. ASHRAE Guideline 0-2005 with Amendments a, b, c & d - The Commissioning Process.
 - 2. ASHRAE Guideline 1.1-2007, The HVAC Commissioning Process.
 - 3. ASHRAE 110-95 – An Introduction to Laboratory Fume Hood Performance Testing.
- C. NEBB Whole Building Systems Commissioning of New Construction, 2009 (3rd Edition).
- D. American National Standards Institute/American Industrial Hygiene Association/American Society of Safety Engineers (ANSI/AIHA/ASSE):
 - 1. ANSI/AIHA/ASSE Z9.5-2012 – American National Standard for Laboratory Ventilation.

1.4 DEFINITIONS

A. Definition of terms used are as follows:

1. Acceptance Phase: Phase of construction after initial start-up and check-out when functional performance testing, operational training, and operating and maintenance documentation development and review occurs.
2. Basis of Design: Documentation of primary thought processes and assumptions for design decisions made to meet Owner's Project Requirements as reflected in construction documents (drawings and specifications). Basis of design describes intent of project, systems, components, conditions, and methods chosen to meet Owner's Project Requirements. Design professionals (Architect and Engineer) are responsible for interpretation of the basis of design.
3. Commissioning Provider: Independent entity, not otherwise associated with design team or Contractor/CM, who directs and coordinates day-to-day commissioning activities. Commissioning Provider does not have construction oversight or design role.
4. Commissioning Plan: Overall plan providing structure, schedule, and coordination planning for commissioning process.
5. Commissioning Team: Group responsible for accomplishing commissioning process.
6. Data Logging: Monitoring flows, currents, status, and pressures of equipment using stand-alone recording equipment, separate from control system. Additional monitoring may be provided through capabilities of control system.
7. Deferred Functional Performance Tests: Functional tests performed after date of substantial completion due to partial occupancy, equipment and seasonal testing requirements, design or other site conditions precluding testing of system or piece of equipment during normal commissioning sequence.
8. Owner's Project Requirements: Documents prepared by Owner providing explanation of concepts, criteria, and work scope critical to Owner's expectations.
9. Factory Testing: Testing of equipment at factory (or on-site) by factory personnel in Owner's representative and commissioning agent's presence.
10. Functional Performance Tests: Tests of dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is dynamic testing of systems (rather than just components) under full operation. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied modes, varying outside air temperatures, fire alarm modes, and power failure. Systems are run through control system's sequences of operation and components are verified to respond properly. Commissioning Provider develops Functional Performance Test procedures in sequential written form, coordinates, oversees and documents actual testing performed by GC/CM. Functional Performance Tests are performed after Test and Balance, pre-functional checklists and start-up is complete.
11. Indirect Indicators: Indicators of response or condition, such as reading from control system screen reporting damper to be 100% closed.
12. Manual Tests: Using hand-held instruments, immediate control system read-outs or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make observations).
13. Monitoring: Recording of parameters (flow, current, status, or pressure) of equipment operation using data loggers or trending capabilities of control systems.

14. Over-written Value: Writing over sensor value in control system to determine response of system (e.g., changing outside air temperature value from 50°F to 75°F to verify economizer operation). See “Simulated Signal.
15. Owner-contracted Tests: Tests paid by Owner outside GC/CM’s contract and for which Commissioning Provider does not oversee. Tests shall not be repeated during functional testing if properly documented.
16. Phased Commissioning: Commissioning completed in phases (by floors, for example) due to size of structure or other scheduling issues, to minimize total construction time.
17. Pre-functional Checklists: Lists of items to inspect and elementary component tests to conduct to verify proper installation of equipment, provided by GC/CM to Commissioning Authority who shall review and approve scope of tests. Pre-functional checklists are primarily static inspections and procedures to prepare equipment or system for initial operation (e.g., belt tension, oil levels, labels affixed, gauges in place, sensors calibrated). Some pre-functional checklist items may entail simple testing of function of components, piece of equipment or systems. Pre-functional refers to testing to be accomplished prior to formal functional testing of installed equipment. Pre-functional checklists augment and may be combined with manufacturer’s start-up checklist. GC/CM shall execute checklists.
18. Sampling: Functional Performance Testing of fraction of total number of identical or near identical pieces of equipment. Sampling population is at discretion of commissioning firm and is subject to modification based upon sampling results (i.e. will be expanded if initial results warrant).
19. Simulated Condition: Condition created for purpose of testing response of system (e.g., blowing hair dryer on space sensor to determine response of variable volume terminal unit).
20. Simulated Signal: Disconnecting sensor and using signal generator to send amperage, resistance or pressure to transducer and control system to simulate sensor value.
21. Start-up: Initial starting or activating of dynamic equipment, including executing pre-functional checklists.
22. Test, Adjust, and Balance: Process of measuring actual flows of air and hydronic systems, adjusting flows to required values, and documenting results.
23. Trending: Monitoring of equipment performance over time, using data logging equipment or building control system.

1.5 QUALITY ASSURANCE

- A. Supervision, coordination, and documentation of commissioning process shall be responsibility of Commissioning Provider.
- B. Commissioning Provider shall become familiar with Owner's Project Requirements, Basis of Design documentation, project documents, and shall assume responsibility for overall system commissioning effort.
- C. Acceptable Commissioning Firms:
 1. OCI Associates, Inc., 181 Melody Lane, Ft. Pierce, FL 34905; Tel: 772-465-1165; Fax: 772-466-1134; Website: www.ociasociates.com
 2. Johnson, Levinson, Ragan, Davila, Inc., 1450 Centrepark Blvd., Suite 350, West Palm Beach, FL 33401; Tel: 561-689-2303; Fax: 561-689-2302; Website: www.jlrdinc.com.
 3. TLC Engineering, 874 Dixon Blvd., Cocoa, FL 32922; Tel: 321-636-0274; Fax: 321-639-8986; Website: www.tlc-eng.com.

1.6 COORDINATION:

- A. Commissioning Provider will be hired by Owner. Commissioning Provider shall direct and coordinate activities of commissioning team.
- B. Commissioning team shall consist of Commissioning Provider, Owner, GC/CM, and associated subcontractors.
- C. Scheduling: Commissioning Provider shall schedule commissioning activities of and shall coordinate schedule with GC/CM. Commissioning Provider shall generally provide not less than two (2) weeks notice to GC/CM of commissioning activities, except where retesting is required or commissioning activities have been delayed by no fault of commissioning firm.

1.7 COMMISSIONING PROCESS:

- A. Commissioning Provider shall develop and coordinate execution of commissioning plan; observe and document installation, check-out, start-up, and equipment and system testing to establish that equipment and systems are functioning in accord with project requirements, and to assist in developing correct and complete documentation of construction effort.
- B. Commissioning Provider shall not be responsible for design concept, design criteria, compliance with codes, design, construction scheduling, cost estimating, construction management, or construction supervision.
- C. Commissioning Provider may assist design team with problem-solving, or GC/CM with correction of non-conformance items or deficiencies.
- D. Commissioning Provider is not responsible for providing tools required to start, check-out and perform functional tests of equipment and systems, except for specified testing with supplemental portable data-loggers, which shall be supplied and installed by Commissioning Provider.
- E. Work Required during Construction Phase:
 - 1. Ensure compliance with construction documents, and achieve following objectives:
 - 2. Review the engineer of records basis of design as well as the project design documents and make comments pertaining to the execution of commissioning.
 - 3. Develop commissioning plan and distribute to GC/CM, Owner and Engineer.
 - 4. Coordinate commissioning activities during construction with GC/CM and ensure that commissioning activities are included in master project schedule.
 - 5. Review submittals applicable to systems being commissioned, including GC/CM proposed detailed start-up procedures, concurrent with Engineer's reviews and provide review comments to Engineer and Owner.
 - 6. Commissioning provider's review shall be for compliance with commissioning needs, and to aid in development of functional testing procedures and only secondarily to review for compliance with equipment specifications. Design professional remains responsible for interpretation of compliance with contract requirements.
 - 7. Request and review additional information as required to perform assigned commissioning tasks, including review of operations and maintenance materials, and GC/CM's start-up and check-out procedures.
 - 8. Develop specific Functional Performance Test procedures and forms to document proper operation of equipment and system.
 - 9. Submit proposed functional tests to Engineer for review and general conformance to requirements of contract documents and provide copy of proposed functional performance test procedures to GC/CM who shall review proposed tests for feasibility, safety, equipment and warranty protection.

10. Required performance testing includes control system trending, stand-alone data logger monitoring, or manual logging of system operation to demonstrate proper operation. Functional Performance Test forms shall include following information:
 - a. Date.
 - b. Project name.
 - c. System and equipment or component name(s).
 - d. Equipment location and identification number.
 - e. Test identification number, and reference to pre-function checklist and start-up documentation identification numbers for each piece of equipment.
 - f. Participating parties.
 - g. Reference to specification describing specific sequence of operations or parameters being tested or verified.
 - h. Formulae used in calculations.
 - i. Required pre-test field measurements.
 - j. Instructions for setting up test.
 - k. Special cautions or alarm limits.
 - l. Specific step-by-step procedures to execute test, in clear, sequential, and repeatable format.
 - m. Acceptance criteria of proper performance with provisions for clearly indicating whether or not proper performance of each part of test was achieved.
 - n. Section for comments.
 - o. Signature and date block for Commissioning Provider and participating parties.
 11. Review GC/CM start-up and pre-functional testing reports and provide on-site observation of start-up and pre-functional testing as specified herein.
 12. Review proposed testing, adjusting, and balancing execution plan for completeness and requirements of commissioning process and provide comments to GC/CM, Engineer, and Owner.
 13. Perform site visits, monthly until pre-functional testing of equipment and systems begins, and then weekly throughout Project, to review component and system installations. Concurrently, schedule and conduct commissioning planning and coordination meetings to review construction progress and to assist in resolving discrepancies or issues relating to commissioning process.
- F. Acceptance Phase: Demonstrate that performance of equipment and systems installed during construction phase meets requirements of construction documents. Notify Owner and Engineer of deficiencies in results or procedures. Commissioning activity shall achieve following objectives:
1. Coordinate, witness, and approve functional tests of equipment and systems performed by GC/CM. Review functional test reports and analyze trend logs, data logger reports, and other monitoring data to evaluate equipment and system performance.
 2. Document performance of functional testing and provide comparison to required performance, as defined by project documents.
 3. Coordinate retesting as necessary until satisfactory performance is demonstrated.
 4. Maintain master deficiency and resolution log, separate testing record log, and provide written progress reports and test results with recommended corrective actions for observed deficiencies.
 5. Compile and submit commissioning report to Owner and Engineer documenting results of the Start-Up, Pre-Functional Performance Testing, and Functional Performance Testing.

6. Review GC/CM's proposed training of Owner's operating personnel, and provide comments to Engineer and Owner.
 7. Coordinate and attend GC/CM provided training sessions. Verify approved training has been properly completed.
- G. Warranty period: assist Owner in identifying defects in installed equipment or system operation to accomplish following objectives:
1. Review equipment warranties to ensure that Owner's responsibilities are clearly defined.
 2. Verify that warranty items have been corrected properly.
 3. Coordinate and supervise required seasonal or deferred testing and deficiency corrections, as specified or required by commissioning plan.
 4. Return to site, approximately 10 months into warranty period and review with Owner building operation and condition of outstanding issues related to original and seasonal commissioning.
 5. Assist Owner in reviewing failure and repair records of equipment during warranty period and in evaluation of GC/CM's corrective actions. Identify areas that may come under warranty or under original construction contract.
 6. Interview Owner and identify problems or concerns regarding operating building as originally intended and shall make suggestions for improvements.
 7. Assist the Owner in developing reports, documents, and requests for services to remedy outstanding problems.

PART 2 PRODUCTS

- 2.1 Not Used.

PART 3 EXECUTION

3.1 REPORTING:

- A. Provide final commissioning report to Owner with following reports:
1. Copies of periodic commissioning reports.
 2. Copies of Pre-Functional Performance Test reports.
 3. Copies of Functional Performance Test reports.
 4. Copies of the Training Report.

3.2 SYSTEMS TO BE COMMISSIONED:

- A. As defined previously herein under item 1.1, F.

3.3 START-UP, PREFUNCTIONAL CHECKLISTS, AND INITIAL CHECK-OUT:

- A. GC/CM shall be responsible for initial check-out and pre-functional testing of installed equipment and systems.
- B. Commissioning Provider shall monitor activities of parties responsible for executing required start-up, and pre-functional testing, as identified in commissioning plan.
- C. Commissioning Provider shall review GC/CM furnished documentation of start-up, initial check-out, and pre-functional test procedures for equipment and systems to ensure that there is written documentation that each manufacturer-recommended procedure has been completed.

- D. Observe first pre-functional test procedures for each type and size equipment to ensure that approved procedures are being followed.
 - 1. For lower-level components of equipment, (e.g., variable volume terminal units, sensors, controllers), observe sampling of pre-functional and start-up procedures.
 - 2. In no case, shall number of units witnessed be less than 20% of total number of identical or very similar units.

3.4 FUNCTIONAL PERFORMANCE TESTING:

- A. Functional Performance Testing of equipment or systems shall be conducted only after pre-functional testing and start-up has been satisfactorily completed. Schedule functional tests with GC/CM. Direct, witness, and document Functional Performance Testing of equipment and systems to be commissioned. GC/CM shall be responsible for execution of Functional Performance Tests.
- B. Functional Performance Testing shall demonstrate that each item of equipment and each system is operating according to requirements of construction documents as defined by A/E. Each item of equipment and system undergoing Functional Performance Testing shall be operated through all modes of operation where there is required system response. Verify each action required in sequences of operation has been accomplished according to requirements, or A/E shall revise sequences as deemed appropriate.
- C. Functional Performance Testing shall proceed from components to subsystems to systems. When proper performance of interacting individual systems has been achieved, interface or coordinated responses between systems shall be tested.
- D. Proper and accurate operation of control system shall be proven by functional testing and approved by Commissioning Provider before it may be used for testing, adjusting and balancing activities or to verify performance of other components or systems. If authorized by Commissioning Provider, portions of control system may be tested and approved before functional testing of the entire system is completed.
- E. Air and water balancing shall be completed and corrected as necessary before Functional Performance Testing of air-related or water-related equipment or systems.
- F. Test Methods:
 - 1. Functional Performance Testing and verification shall be achieved by manual testing (direct manipulation of equipment and observation of its response and performance) or by monitoring performance using control system's trend log capabilities.
 - 2. Functional Performance Test procedures shall specify which methods shall be used for each test. Determine which method is most appropriate for tests that do not have method specified.
 - 3. Commissioning Provider may substitute specified methods or require additional method to be executed, other than that specified, if required to demonstrate proper operation of equipment or system being tested.
 - 4. Develop Functional Performance Testing plans that define allowable sampling procedures and that specify procedures to be followed in case of observed discrepancies or failures in sample chosen for functional testing.
 - 5. AHU operation (leaving air temperature, VFD speed) shall be trend logged with VAV box and air valve flow rates, as well as space temperatures to demonstrate modulation of system components with changing loads, as well as occupied/non-occupied status and control strategies such as optimum static pressure reset and temperature set-up/set-back.

6. Sampling: Multiple identical pieces of non-life-safety or otherwise non-critical equipment may be functionally tested using sampling strategy, as defined in functional test procedures.
 - a. Significant application differences and significant sequence of operation differences in otherwise identical equipment invalidates their common identity.
 - b. Small size or capacity difference, alone, does not constitute difference.
 - c. The following equipment may be sample tested: Reheat coils, terminal boxes, occupancy sensors, and lighting controls.
7. If 10% or 3 or more identical pieces of equipment (size alone does not constitute a difference) fail to perform to requirements of project documents (mechanically or substantively) due to manufacturing defects or application error not allowing it to meet performance specifications, identical units may be considered unacceptable by Commissioning Provider. In such case, GC/CM shall provide Commissioning Provider with the following:
 - a. Within 1 week of notification from Commissioning Provider, GC/CM or manufacturer's representative shall examine other identical units making record of findings. Findings shall be provided to Commissioning Provider within 2 weeks of original notice.
 - b. Within 2 weeks of original notification, GC/CM shall provide signed and dated, written explanation of problem, cause of failures, and proposed solution, including full equipment submittals for corrective or replacement equipment, if appropriate. Proposed solutions shall meet requirements of original installation.
 - c. Commissioning Provider shall evaluate proposed solution and submit recommendation of approval or disapproval to Owner and Engineer.
 - d. When approved, 2 examples of proposed solution shall be installed by GC/CM and Commissioning Provider shall schedule and conduct functional testing of proposed solution. Upon completion of functional testing of proposed solution, Commissioning Provider shall recommend acceptance or disapproval of proposed solution to Owner.
 - e. Upon acceptance of proposed solution by Owner, GC/CM shall replace or repair identical items and extend warranty accordingly, if original equipment warranty had begun. Replacement/repair work shall proceed with reasonable speed beginning within 2 weeks of approval of proposed solution.
8. Ensure that each Functional Performance Test is performed under conditions that simulate actual operating conditions as closely as is practically possible.
9. Simulation of operating conditions (not by overwritten value) may be allowed, at Commissioning Provider's discretion. Simulation of conditions shall be accomplished by subjecting the equipment to actual operating conditions by artificial means whenever possible.
10. Where actually achieving simulated operating condition is impractical, as determined by Commissioning Provider or as identified in Functional Performance Test procedure, use of signal generators to create simulated signal may be used to test and calibrate transducers and DDC constants instead of using sensor to act as signal generator via simulated conditions or overwritten values. Signal generators or simulators shall be provided by GC/CM.
11. Overwriting sensor values to simulate conditions, such as overwriting outside air temperature reading in control system to be different than it really is, may be allowed if approved by Commissioning Provider. Simulation of operating conditions is preferable.

12. Altering setpoints: rather than overwriting sensor values, and when simulating conditions is difficult, altering setpoints shall be used to test sequences.
13. Indirect indicators: relying on indirect indicators for responses or performance may be allowed only after the Commissioning Provider has visually and directly verified that indirect readings represent actual conditions and responses over range of test parameters.

3.5 RETESTING OF EQUIPMENT AND/OR SYSTEMS:

- A. Prior to retesting of functional performance tests found to be deficient, submit data indicating that deficient items have been completed and corrected to Commissioning Provider.
- B. After review of submitted data, if corrective measures are acceptable, Commissioning Provider shall schedule and conduct recheck.
- C. If during retesting it becomes apparent that deficient items have not been completed and corrected as indicated in data provided by GC/CM, retesting shall be stopped. Costs for commissioning team to further supervise retesting of Functional Performance Test shall be the responsibility of GC/CM.

3.6 DOCUMENTATION, NONCONFORMANCE, AND APPROVAL OF TESTS:

- A. Documentation: Witness and document results of functional tests using specific procedural forms developed for that purpose. Deficiencies or nonconformance issues shall be noted and reported with test results. Include completed test forms in final commissioning report.
- B. As Functional Performance Testing progresses and deficiencies are identified, discuss issues and attempt to resolve discrepancies with GC/CM.
- C. Approval: Note each satisfactorily demonstrated function on functional test form. Formal approval of functional tests shall be made after review of test reports by Commissioning Provider and Owner. Recommend acceptance of each test to the Owner using standard form. Owner shall give final approval on each test using same form, providing signed copy to Commissioning Provider and GC/CM.

3.7 DEFERRED TESTING:

- A. Deferred testing: If required pre-functional or functional test cannot be completed as scheduled, execution of checklists and functional testing may be delayed upon approval of Commissioning Provider and Owner. Deferred tests shall be conducted in same manner as seasonal tests as soon as possible.
- B. Schedule and coordinate any required seasonal testing, tests delayed until weather or other conditions are suitable for demonstration of equipment or system's performance. Seasonal testing shall be executed, documented, and deficiencies corrected as specified herein for functional testing. Adjustments or corrections to operations and maintenance manuals and record documents due to test results of shall be made before seasonal testing process is considered complete. Schedule deferred testing with GC/CM and Owner.

3.8 OPERATION AND MAINTENANCE MANUALS:

- A. Prior to beginning specified training programs, review draft operations and maintenance manuals, equipment documentation, and as-installed drawings for systems that were commissioned and verify compliance with documents. Communicate deficiencies in documents to Owner and Contractor. When identified deficiencies have been corrected, recommend approval and acceptance of operations and maintenance manuals to Owner. Review equipment warranties and verify that requirements needed to keep warranty valid are clearly identified.
- B. Ensure that Owner's Project Requirements, basis of design, are included in the first section of operations and maintenance manuals. Narrative sections shall be updated by responsible parties to record status.

END OF SECTION

SECTION 02 41 13
SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, materials, services, and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - 1. Required demolition of designated existing elements
 - 2. Salvage of designated items

1.3 REFERENCES

- A. Comply with NFPA 1 – Chapter 29 and NFPA 241 Standard for Safeguarding Construction Alteration and Demolition Operation 2000 Edition
- B. Florida Building Code – FBC

1.4 NOTIFICATION OF OWNERS OF UTILITY LINES AND EQUIPMENT

- A. Notify the Owner or local authority owning any conduits, wires, pipes, or equipment affected by demolition work.
- B. Arrange for removal or relocation of affected items and pay fees or costs in conjunction with removal or relocation, except as otherwise noted.

1.5 PROTECTION

- A. Prior to starting any work on site, provide a safety plan as outlined in Section 423 FBC to the Building Department for approval.
- B. Coordinate the implementation of the safety plan with the Building Department, Campus Police, School Representative, and Program Management.
- C. Prior to starting demolition operations, provide necessary protection of existing spaces and items to remain.
- D. Owner may be continuously occupying areas of the building immediately adjacent to areas of selective demolition. If Owner continues to occupy the facility comply with the following:
 - 1. Conduct demolition work in a manner that will minimize need for disruption of the Owners normal operations.
 - 2. Provide protective measures as required to provide free and safe passage of Owner's personnel and public to and from occupied portions of the facilities.
 - 3. Provide minimum of 72 hours advance notice to Owner of demolition activities that will impact Owners normal operations.
 - a. Obtain specific approval from Owner for impact.
- E. Owner assumes no responsibility for actual condition of items to be demolished.
 - 1. Owner will maintain conditions at time of commencement of contract insofar as practical.

- F. Protect any exposed existing finish work that is to remain during demolition operations.
- G. Erect and maintain dust proof partitions, closures, and ventilator system as required preventing the spread of dust or fumes to occupied portions of the building.
 - 1. Take whatever precautions necessary to minimize impact on occupied areas.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for demolition of structures, safety of adjacent structures, dust control, runoff, and erosion control, and disposal of demolished materials.
- B. Obtain required permits from authorities having jurisdiction.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, and hydrants, without permits.
- E. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.
 - 1. Contact the Architect and Owner immediately.
- F. Test soils around buried tanks for contamination.
- G. No demolition will occur during school hours without the written permission of the Owner.

1.7 EXPLOSIVES

- A. The use of explosives is strictly prohibited.

PART 2 PRODUCTS - (Not applicable)

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify the proper disconnection and capping of all abandoned utilities.
- B. Verify that required barricades and other protective measures are in place.
- C. Provide necessary shoring, bracing, and other precautions required for proper support of existing structure during cutting and demolition operations.
- D. Photograph existing conditions of structure, surfaces, equipment and surrounding spaces that could be misconstrued as damage resulting from selective demolition work; submit photographs and written report of existing damage to Architect prior to starting work.
 - 1. Contractor shall repair damage caused to existing facilities at no cost to Owner unless they can provide documentation is indicating pre-existing damage.

3.2 DEMOLITION OPERATIONS

- A. Cut and remove elements and equipment as designated on Drawings.
 - 1. Remove elements in their entirety unless otherwise indicated.
- B. Execute demolition in a careful and orderly manner with least possible disturbance or damage to adjoining surfaces and structure.
- C. Exercise extreme caution in cutting and demolition of portions of existing structure.
 - 1. Obtain approval of Architect prior to cutting or removing structural members for any reason.
- D. Avoid excessive vibrations in demolition procedures that may transmit through existing structure and finish materials.

- E. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning assessment, removal, handling, and protection against exposure or environmental pollution and immediately contact the District's ECO.

3.3 DISPOSAL

- A. Materials, equipment, and debris resulting from demolition operations shall become property of Contractor.
 - 1. Remove demolition debris at least once each day in accordance with applicable City, State, and Federal Laws.
- B. Cover debris in trucks with approved netting to prevent spillage during transportation.
- C. Do not store except in approved containers or burn materials on site.
 - 1. Remove combustible waste materials in a manner approved by local Fire Department.
 - 2. Remove, handle, and dispose of any hazardous waste and debris in accordance with applicable City, State, and Federal Laws.
- D. Transport demolition debris to off-site disposal area and legally dispose of debris.
- E. Use street routes specifically designated by City for hauling debris.
- F. When possible dispose of material to recycling centers.

3.4 CLEANING AND REPAIR

- A. Leave building broom clean and free of debris, ready to receive new work.
- B. Repair demolition performed in excess of that required.
 - 1. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition.

END OF SECTION

SECTION 03 30 00
CAST IN PLACE CONCRETE

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Cast-in-place concrete building members, floors, shear walls, elevator shaft walls, foundation walls, footings, and supported slabs.
- B. Curing agents, admixtures, bonding agents, expansion joint fillers and leveling compounds.
- C. Floor slabs and sidewalks on grade, floor slabs over metal decking with fibrous concrete reinforcement.
- D. Control, expansion and contraction joint devices associated with concrete work, including joint sealants.
- E. Equipment pads, light pole bases, thrust blocks, curbs, gutters, drainage structures and manholes.
- F. Concrete surface protective materials as required.

1.2 RELATED DOCUMENTS

- A. Section 01 31 00 – Project Coordination.
- B. Section 01 33 00 – Submittal Procedures.
- C. Section 01 42 00 – References.
- D. Section 01 45 00 – Quality Control.
- E. Section 01 78 00 – Closeout Submittals.
- G. Section 03 24 00 – Fibrous Reinforcing.
- H. Section 03 35 19 – Colored Concrete Finishing.
- I. Section 07 90 00 – Joint Protection.
- J. Section 07 92 00 – Joint Sealants.
- K. Section 07 95 13 – Expansion Joint Cover Assemblies.

1.3 REFERENCE STANDARDS

- A. American concrete Institute (ACI):
 - 1. ACI 301-10: Structural Concrete for Buildings.
 - 2. ACI 302.1R-04: Guide for Concrete Floor and Slab Construction.
 - 3. ACI 304R-00: Guide for Measuring, Mixing, Transporting and Placing Concrete.
 - 4. ACI 305R-10: Guide to Hot Weather Concreting.
 - 5. ACI 306R-10: Guide to Cold Weather Concreting.
 - 6. ACI 308R-01: Guide to Curing Concrete.
 - 7. ACI 347-04: Guide to Formwork for Concrete.
 - 8. ACI 318-11: Building Code Requirements for Structural Concrete.
 - 9. ACI 544.1R-96(2009): Report of Fiber Reinforced Concrete.
 - 10. ACI 544.2R-88(2009): Measurement of Properties of Fiber Reinforced Concrete.
- B. American Society of Testing Materials (ASTM):
 - 1. ASTM A494-13: Standard Specification for Castings, Nickel and Nickel Alloy.
 - 2. ASTM A615-14: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - 3. ASTM B221-13: Aluminum and Aluminum Alloy Extruded Bars, Wire, Shapes and Tubes.
 - 4. ASTM C31-12: Standard Practice for Making and Curing Concrete Specimens in the Field.

5. ASTM C33-13: Standard Specification for Concrete Aggregates.
 6. ASTM C39-14a: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 7. ASTM C94-14: Standard Specification for Ready-Mixed Concrete.
 8. ASTM C143-12: Standard Test Method for Slump of Hydraulic-Cement Concrete.
 9. ASTM C150-12: Standard Specification for Portland Cement.
 10. ASTM C172-14: Standard Practice for Sampling Freshly Mixed Concrete.
 11. ASTM C231-10: Standard Test Method for Air Content of Freshly Mixed Concrete.
 12. ASTM C260-10a: Standard Test Method for Air Entraining Admixtures for Concrete.
 13. ASTM C330-14: Standard Specification for Light Weight Aggregates for Structural Concrete.
 14. ASTM C494-13: Standard Specification for Chemical Admixtures for Concrete.
 15. ASTM C618-12a: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Concrete.
 16. ASTM C948-81 (2009): Standard Test Method for Dry and Wet Bulk Density, Water Absorption and Apparent Porosity of Thin Sections of Glass-Fiber-Reinforced Concrete.
 17. ASTM D994-11: Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
 18. ASTM C1017-13: Standard Specification for Chemical Admixtures for Producing Flowing Concrete.
 19. ASTM C1116-10a: Standard Specification for Fiber-Reinforced Concrete.
 20. ASTM D1751-04 (2013) e1: Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
 21. ASTM D1752-04a (2013): Standard Specification for Preformed Sponge Rubber, Cork, and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
 22. ASTM E1155-96 (2008): Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers.
 23. ASTM D1745-11: Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slab.
- C. Florida Building Code, 2010 Edition.
- D. Florida Department of Transportation – Standard Specifications for Road and Bridge Construction
- E. American Society of Civil Engineers (ASCE):
1. ASCE 7-10: Minimum Design Loads for Buildings and other Structures.
 2. ASCE 9-91: Standard Practice for the Construction and Inspection of Composite Slabs.

1.4 DESIGN REQUIREMENTS

- A. Design shall be in accord with 2010 Florida Building Code, ACI 318-11 and ACI 301-10.

1.5 SUBMITTALS

- A. Submit product data in accord with Section 01 33 00 – Submittal Procedures.
- B. Comply with Section 01 78 00 – Closeout Submittals.
- C. Submit manufacturer's printed product data and installation instructions. Indicate installation procedures and interface required with adjacent work.

- D. Concrete supplier shall certify amount of fibrous concrete reinforcement material in each batch of concrete delivered to project site. Certificate shall have copies of batch delivery tickets; indicating trade name, manufacturer's name, and weight per cubic yard of fibrous concrete reinforcement material in batch.
- E. Submit fiber manufacturer's facility's Certificate of Registration, providing ISO 9002 compliance.
- F. Submit admixture product specifications and letter attesting chloride ion content in admixture do not exceed 0.05%.

1.6 QUALITY ASSURANCE

- A. Comply with Section 01 43 39 – Mockups.
- B. Comply with Section 01 45 00 – Quality Control.
- C. Perform work per ACI 301-10 – Standards and Specifications.
- D. Mix and deliver ready mixed concrete per ASTM C94-14.
- E. Acquire cement, reinforcing and aggregate from same source throughout work.
- F. Perform work per ACI 305R-10 for work in hot weather and ACI 306R-10 for work in cold weather.
- H. Preinstallation Conference:
 - 1. Conduct project meeting at least with 15 days prior to start of concrete placement with Owner's Project Manager, Contractor's Superintendent, Materials Testing Lab, Concrete Supplier, Architect and Structural Engineer.
 - 2. Meeting attendees shall review proposed mix designs, proposed concrete placement methods, materials testing, scheduling and procedures to be employed for project.
 - 3. Meeting Minutes shall be recorded, typed and printed for distribution to attendees within three working days from date of meeting.
- I. Concrete Mix Design:
 - 1. Submit manufacturer's product specifications with applicable installation of concrete admixtures, bonding agents, waterstops, joint systems, chemical floor hardeners, and dry slake products.
 - 2. Submit concrete mix reports for each concrete strength and type proposed for work.
 - 3. Submit lab test reports for concrete materials and mix designs.
 - 4. Mix design adjustments may be considered by Architect when materials, job conditions, weather, test results or other conditions warrant.
 - 5. Slump limits:
 - a. Ramps, slabs and sloping surfaces: 3" (76 mm).
 - b. Slabs: 4" (101mm).
 - c. Reinforced foundation systems: 1-3" 25-76 mm).
 - d. Concrete with high range, water reducing admixtures (superplasticizers): 8" after adding admixture to site-verified 3" (76 mm) maximum slump concrete.
 - 6. Maintain copies of mix designs on site for review.
- J. Concrete Materials Tests:
 - 1. Normal Weight Concrete: ASTM C33-13.
 - 2. Light Weight Concrete: ASTM C330-14.
 - 3. Portland Cement: ASTM C33-13.
 - 4. Submit written reports for each material tested prior to start of work identifying project, contractor, testing lab, material suppliers, specified values and tested results.
- I. Concrete Testing:
 - 1. Coordinate with testing lab selected by Owner in performing field quality control testing.

2. Sampling Fresh Concrete: ASTM C172-14 except as modified for slump complying with ASTM C94-14.
 3. Slump: ASTM C143-12, one test per load at point of discharge.
 3. Air Content: ASTM C231-10, pressure method; one for alternating concrete loads at point of discharge.
 4. Compressive Tests: ASTM C31-12; one set of four standard cylinders for each 100 yds³ (76 m³) or fraction thereof of each mixed design placed per day at point of discharge.
 - a. Tests shall occur at 7 days (one cylinder), 14 days (one cylinder), 28 days (one cylinder).
 - b. Remaining cylinder shall be tested at 28 days if first 28 day test fails design strength.
 - c. Test concrete temperature hourly when air temperature exceeds 80°F (26.7° C) or falls below 40°F (4.4° C).
 5. Placed concrete failing design specifications may be retested to verify in-situ strength. Cost of tests failing design specifications shall be borne by Contractor.
 6. Copies of test results shall be maintained on site for review.
- J. Concrete Strength (fc, psi)
1. Sidewalks and playcourts: 2,500 psi (175.8 kg/cm²).
 2. Building Slabs on grade and Footings: 3,000 psi (211kg/cm²).
 3. Building Slabs with stained and polished finish: 3500 psi (246 kg/cm²).
 3. Columns and beams: 4,000 psi (281 kg/cm²).
 4. Weight Room Floors (and other floors with high impact loads): 5,000 psi (31.5 kg/cm²).
- K. Maximum Water Cement Ratio
- | Compressive Strength (fc, psi) | Non air entrained | Air entrained |
|--------------------------------------|-------------------|---------------|
| 1. 2,500 (175.8 kg/cm ²) | | |
| 2. 3,000 (211 kg/cm ²) | 0.58 | 0.46 |
| 3. 4,000 (281 kg/cm ²) | 0.50 | 0.44 |
| 4. 5,000 (351.5 kg/cm ²) | 0.42 | 0.42 |
5. Super plasticizers, fly ash, and water reducers shall be used to obtain required slump while maintaining maximum water-cement ratio.

1.7 MOCKUPS

- A. Comply with Section 01 43 39 – Mockups.
- B. Construct field samples for decorative concrete walls, panels, stained and polished concrete floor surfaces for each color or pattern indicated to receive special treatment or finish.
- C. Sample Panels:
 1. Colored concrete floor finishes and cast in place decorative concrete.
 3. Sufficient size to indicate special treatment or finishes required.
 4. Obtain Owner’s acceptance of resultant surface finishes prior to installing special treatments or finishes.
 5. Accepted sample panel is considered basis of quality for the finished work. Keep sample panel exposed to view for duration of concrete work
 5. Locate sample panels where directed Owner’s Project Manager.
 6. Colored concrete finish mock-ups may not remain as part of Work, and shall be located in area to receive secondary finish such as carpet or vct.
 7. Approved decorative concrete walls and panels may remain as part of finished work.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cement: ASTM C150-12, Type 1 – Normal, Portland type.
- B. Fine and course aggregate: ASTM C33-13.
- C. Lightweight Aggregate: ASTM C330-14.
- D. Water: Potable.

2.2 CONCRETE REINFORCEMENT

- A. Fibrous reinforcing quantities and materials shall be in accord with Section 03 24 00 – Fibrous Reinforcing.
- B. Reinforcing Steel: ASTM A615-14, Grade 60, Deformed Steel Bars for Concrete Reinforcement.

2.3 CURING COMPOUND APPROVED PRODUCTS

- A. ASTM C309-11, Type 1, Class B with 18% minimum solids content:
 - 1. Safe Cure and Seal (J-18), Dayton Superior Specialty Chemical Corp., 4226 Kansas Ave., Kansas City, KS 66016; Tel: 913-233-1750; Fax 913-279-4806; Web Site: www.daytonsuperiorchemical.com.
 - 2. Diamond Clear VOX, Euclid Chemical Co. 19218 Redwood Rd., Cleveland, 44110; Tel: 216-531-9222, 1-800-321-7628; Fax: 216-531-9596; web site: www.euclid.com.
 - 3. Kure-N-Seal, BASF Construction Chemicals-Building Systems, 889 Valley Park Drive, Shakopee, MN 55379; Tel: 952-496-6000; Fax: 952-496-6062; web site: www.buildingsystems.basf.com.
 - 4. L & M Cure R, L & M construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152; Tel: 402-453-6600; Fax: 402-453-0244; Web Site: www.lmcc.com

2.4 JOINT DEVICES AND FILLER MATERIALS

- A. Joint Filler: ASTM D 1751-04: Asphalt impregnated fiberboard.
- B. Joint Filler: ASTM D 1752-04a: Closed cell polyvinyl chloride foam, resiliency recovery of 95% if not compressed more than 50% or original thickness.
- C. Construction Joint Devices: Integral galvanized steel; formed to tongue and groove profile, with removable top strip exposing sealant trough, ribbed steel spikes with tongue to fit top screed edge.
- D. Expansion and Contraction Joint Devices: See Section 07 95 13 – Expansion Joint Devices.
- E. Sealant and Primer: Type as specified in Section 07 92 00 – Joint Sealants.
- F. Sealant: Cold applied.

2.5 ACCESSORIES

- A. Bonding Agent: Polymer resin emulsion, Polyvinyl acetate, Latex emulsion, Two component modified epoxy resin, Non-solvent two component polysulfide epoxy, Mineral filled polysulfide polymer epoxy, Mineral filled polysulfide polymer epoxy resin or Versamid cured epoxy.
 - 1. Adbond (J40), Dayton Superior Specialty Chemical Corp., 4226 Kansas Ave., Kansas City, KS 66016; Tel: 913-233-1750; Fax 913-279-4806; Web Site: www.daytonsuperiorchemical.com.

2. Euroweld, Euclid Chemical Co., 19218 Redwood Rd., Cleveland, 44110; Tel: 216-531-9222, 1-800-321-7628; Fax: 216-531-9596; web site: www.euclid.com.
 3. Everbond, L & M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152; Tel: 402-453-6600; Fax: 402-453-0244; Web Site: www.lmcc.com.
 4. Intralock, W. R. Meadows, Inc., P.O. Box 338; Hamshire, IL 60140-0338; Tel: 847-214-2100; Toll Free Tel: 800-342-5976; Fax: 847-683-4544; Web Site: wrmeadows.com.
- B. Bond Breaker:
1. Debond From Coating, L & M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152; Tel: 402-453-6600; Fax: 402-453-0244; Web Site: www.lmcc.com.
 2. Euco Super Slip, Euclid Chemical Co., 19218 Redwood Rd., Cleveland, 44110; Tel: (216)531-9222, 1-800-321-7628; Fax: (216) 531-9596; web site: www.euclid.com.
 3. Cast-Off, BASF Construction Chemicals-Building Systems, 889 Valley Park Drive, Shakopee, MN 55379; Tel: 952-496-6000; Fax: 952-496-6062; web site: www.buildingsystems.basf.com.
- C. Concrete Patching Compound: Single component cement based, polymer modified patching mortar with low slump properties.
1. ThoRoc SD2 & ThoRoc Polymer Liquid, BASF Construction Chemicals-Building Systems, 889 Valley Park Drive, Shakopee, MN 55379; Tel: 952-496-6000; Fax: 952-496-6062; web site: www.buildingsystems.basf.com.
 2. Intralok, W R Meadows, Inc., P.O. Box 338; Hamshire, IL 60140-0338; Tel: 847-214-2100; Toll Free Tel: 800-342-5976; Fax: 847-683-4544; Web Site: wrmeadows.com.
 3. Perma Patch V/O, Dayton Superior Specialty Chemical Corp., 4226 Kansas Ave., Kansas City, KS 66016; Tel: 913-233-1750; Fax 913-279-4806; Web Site: www.daytonsuperiorchemical.com.
- D. Leveling Concrete Underlayment: One-component, cement based trowel grade. Compressive strength: 4250 psi (298.8 kg/cm²) at 28 days; Flexural strength: 1000 psi (70.3 kg/cm²) at 28 days; Tensile Strength: 650 psi (45.7 kg/cm²) at 28 days.
1. Durathin, L & M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152; Tel: 402-453-6600; Fax: 402-453-0244; Web Site: www.lmcc.com.
 2. Sonoskim, BASF Construction Chemicals-Building Systems, 889 Valley Park Drive, Shakopee, MN 55379; Tel: 952-496-6000; Fax: 952-496-6062; web site: www.buildingsystems.basf.com.
 3. Duracrete, L & M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152; Tel: 402-453-6600; Fax: 402-453-0244; Web Site: www.lmcc.com
- E. Chemical Hardener and Dustproofers: Sealer, densifier and hardener complying with ACI 302 Class 1 thru 4 concrete floors, VOC compliant color less solution, 100% active sodium silicate chemicals with non-acid penetrant.
1. Chem Hard, L & M Construction Chemicals, Inc., 14851 Calhoun Rd., Omaha, NE 68152; Tel: 402-453-6600; Fax: 402-453-0244; Web Site: www.lmcc.com.
 2. Lapidolith, BASF Construction Chemicals-Building Systems, 889 Valley Park Drive, Shakopee, MN 55379; Tel: 952-496-6000; Fax: 952-496-6062; web site: www.buildingsystems.basf.com.
- F. Vapor Retarder: ASTM E 1745, Class A, inert 10 mm polyethylene sheet with minimum perm rating of 0.1.
1. Moistop Ultra 15, Fortifiber Corp., 419 West Plumb Lane, Reno, NV 89509; Tel: 800-773-4777, 775-333-6400; Fax: 775-333-6411; Web Site: www.fortifiber.com.
 2. Vapor Block 15, Raven Industries, Inc. P.O. Box 5107, Sioux Fall, SD 57117-5107; Tel: 800-635-3456, 605-335-0174; Fax: 605-331-0333; Web Site: vaporblock.com.

3. Perminator 15 mil, W. R. Meadows, Inc., P.O. Box 338; Hamshire, IL 60140-0338; Tel: 847-214-2100; Toll Free Tel: 800-342-5976; Fax: 847-683-4544; Web Site: www.wrmeadows.com Griffilyn Industries, Inc.
- E. Non-Shrink Grout: Premixed compound of non-metallic aggregate, cement water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.
- G. Temporary Flooring Protection: Ram Board 46 mil thick heavy duty flex-fiber reinforced reusable paper manufactured by Ram Board, Inc., 716 South Flower St., Burbank, CA 91502; Tel: 818-848-0400; Fax: 818-0099; Website: www.ramboard.com

2.6 CONCRETE ADMIXTURES

- A. Air Entrainment: ASTM C260-10a (Not to Exceed 3%).
 1. AEA-92 and Air Mix 200, Euclid Chemical Co., 19218 Redwood Rd., Cleveland, 44110; Tel: (216)531-9222, 1-800-321-7628; Fax: (216) 531-9596; web site: www.euclid.com.
 2. MB-VR or MB-AE, BASF Construction Chemicals-Building Systems, 889 Valley Park Drive, Shakopee, MN 55379; Tel: 952-496-6000; Fax: 952-496-6062; web site: www.buildingsystems.basf.com.
 3. Sika AER, Sika Corp., 201 Polito Rd., Lyndhurst, NJ 07071; Tel: (201) 933-8800; Fax: (201) 933-6225; web site: www.sikaconstruction.com
- B. Water Reducing: ASTM C494-13, Type A, water reducing, and containing not more than 0.05% chloride ions:
 1. Eucon WR-75 or Eucon WR-91, Euclid Chemical Co., 19218 Redwood Rd., Cleveland, 44110; Tel: (216)531-9222, 1-800-321-7628; Fax: (216) 531-9596; web site: www.euclid.com
 2. Pozzolith 322N, Master Builders, Inc., 23700 Chagrin Blvd., Cleveland, OH 44122; Tel: 800 628-9990; Fax: 905 792-0651; web site: www.masterbuilders.com
 3. Plastocrete 160, Sika Corp., 201 Polito Rd., Lyndhurst, NJ 07071; Tel: (201) 933-8800; Fax: (201) 933-6225; web site: www.sikaconstruction.com
- C. High Range Water Reducing (Superplasticizer): ASTM C494-13, Type F or Type G and containing not more than 0.05% chloride ions:
 1. Eucon 37, Euclid Chemical Co., 19218 Redwood Rd., Cleveland, 44110; Tel: (216)531-9222, 1-800-321-7628; Fax: (216) 531-9596; web site: www.euclid.com.
 2. Rheobuild 1000, Master Builders, Inc. 23700 Chagrin Blvd., Cleveland, OH 44122; Tel: 800 628-9990; Fax: 905 792-0651; web site: www.masterbuilders.com.
 3. Sika Viscocrete 2100, Sika Corp., 201 Polito Rd., Lyndhurst, NJ 07071; Tel: (201) 933-8800; Fax: (201) 933-6225; web site: www.sikaconstruction.com.
- D. Accelerant: ASTM C494-13, Type C or E, and containing not more than 0.05% chloride ions:
 1. Accelguard 80, Euclid Chemical Co., 19218 Redwood Rd., Cleveland, 44110; Tel: (216)531-9222, 1-800-321-7628; Fax: (216) 531-9596; web site: www.euclid.com.
 2. Pozzutec 20+, BASF Construction Chemicals-Building Systems, 889 Valley Park Drive, Shakopee, MN 55379; Tel: 952-496-6000; Fax: 952-496-6062; web site: www.buildingsystems.basf.com.
- E. Retardant: ASTM C494-13, Type D, and, and containing not more than 0.05% chloride ions:
 1. Eucon Retarder 75, Euclid Chemical Co., 19218 Redwood Rd., Cleveland, 44110; Tel: (216)531-9222, 1-800-321-7628; Fax: (216) 531-9596; web site: www.euclid.com.
 2. Pozzolith100XR Retarder, BASF Construction Chemicals-Building Systems, 889 Valley Park Drive, Shakopee, MN 55379; Tel: 952-496-6000; Fax: 952-496-6062; web site: www.buildingsystems.basf.com.

3. Plastiment, Sika Corp. 201 Polito Rd., Lyndhurst, NJ 07071; Tel: (201) 933-8800; Fax: (201) 933-6225; web site: www.sikaconstruction.com
- F. Fly Ash: ASTM C618-12a, Type C may be substituted for up to 20% of Portland cement in concrete mixes unless noted otherwise.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify site conditions per Section 01 45 00 – Quality Control.
- B. Verify positioning and locations of reinforcement, anchors, seats, plates, conduit, and other items to be cast into concrete.

3.2 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent per manufacturer's written instructions.
- B. Where new concrete is indicated to be doweled into existing work, drill holes in existing concrete; insert steel dowels and pack solid with non-shrink grout.
- C. Coordinate placement of joint devices with erection of concrete formwork and placement of accessories.
- D. Remove foreign matter and water from forms and structural excavations.
- E. Inspect and test soil at bottoms of excavations and slabs for specified compaction.
- F. Place expansion and construction joints, and keyways to provide straight, parallel and uniform to preclude degradation of strength and appearance of concrete.
 1. Set and secure continuous pre-molded joint filler for joints abutting walls, adjacent precast or previously placed material surfaces in the same or different plains.
 2. Locate expansion joints 30' (9212mm) maximum on center for walks and curbs unless indicated otherwise.
 3. Joint fillers shall be full width and depth of material being placed with top surface even and uniform with top profile of concrete.
 4. Avoid construction joints in hallways and corridors running parallel to long dimension.
- G. Set formwork anchorage devices and other embedded items required for other trades that is attached to or supported by concrete per written directions of embed supplier.

3.3 FORMWORK

- A. Coat contact form surfaces with low VOC, form coating compound prior to placement of reinforcing.
- B. Do not allow excess form-coating material to accumulate in forms or come into contact with existing concrete surfaces against which fresh concrete will be placed. Apply per manufacturer's written installation instructions.
- C. Do not use steel forms.
- D. Foundations shall be formed to sizes and shapes indicated. Earth forms are not allowed, unless approved by Architect.

3.4 CONCRETE PLACEMENT

- A. Notify Building Official, Architect and Owner's Project Manager minimum 24 hours prior to commencement of concrete placement.

- B. Ensure that formwork, reinforcement and embedded items are correctly located.
- C. Verify requirements for concrete cover over reinforcement.
- D. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.
- E. Comply with ACI 304R-00: Guide for Measuring, Mixing, Transporting, and Placing Concrete, and as specified.
- F. Hot weather placement.
 - 1. When air temperature is 85-90° F (30-32° C), reduce normal mixing and delivery time from 90 minutes to 75 minutes; when air temperature is above 90° F (32° C), reduce mixing and delivery time to 60 minutes.
 - 2. Water may be added if slump does not comply with mix design and water is placed before tests samples are taken.
 - 3. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90° F (32° C).
 - 4. Ice may be used to chill water to control temperature provided total allowable mixing water is not exceeded.
 - 5. Fog spray forms reinforcing steel and subgrade just prior to concrete placement.
- G. Deposit and consolidate concrete in continuous operation in lifts not exceeding 24" (608 mm) within forms or between construction joints until placement is complete, avoiding cold joints and aggregate segregation.
- H. Consolidate placed concrete by mechanical vibration, supplemented by hand-spading, rodding, or tamping. Mechanical vibration shall comply with ACI 309R-96.
- I. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
- J. Install vapor retarder under all slabs on grade. Lap joints minimum 6" (152 mm) and seal watertight by taping edges and ends.
- K. Repair vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lay over damaged areas minimum 6" (152 mm) and seal watertight.
- L. Separate slabs on grade from vertical surfaces with joint filler.
 - 1. Place joint filler in floor slab to required elevations and to resist movement by wet concrete.
 - 2. Extend joint filler from bottom of slab to within ¼" (61 mm) of finished slab surface and apply sealants in accord with Section 07 90 00 – Joint Protection for installation of preformed joint seals, joint sealants and expansion controls.
 - 3. Install joint devices in accord with manufacturer's instructions and in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
 - 4. Install joint device anchors maintaining correct position to allow joint cover to be flush with floor and wall finish.
 - 5. Install joint covers in one-piece length, when adjacent construction activity is complete in accord with Section 07 90 00 – Joint Protection.
- M. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- N. Place concrete continuously between predetermined expansion, control, and construction joints.
- O. Do not interrupt concrete placement or permit cold joints to occur.
- P. Place floor slabs in checkerboard or saw cut pattern indicated.
- Q. Saw cut joints:

1. Within 24 hours after placing horizontal concrete, saw cut construction joints in patterns indicated, or if not indicated, provide saw cuts in grid not exceeding 20' (6100 mm) on center using $\frac{3}{16}$ " (46 mm) thick blade, cut to $\frac{1}{4}$ depth of slab thickness.
 2. Concrete curbs and gutters shall be cut in not more than 6' (1830 mm) sections.
 3. Where stained and polished concrete finish is indicated, follow joint lines of patterns indicated.
- R. Protect concrete exposed concrete surfaces from damage. Replace damaged concrete (See Section 03 35 19 – Colored Concrete Finishing).

3.5 FINISHING FORMED SURFACES

- A. Provide smooth rubbed finish on scheduled concrete surfaces that have received smooth formed finish not later than 1 day after form removal.
- B. Moisten concrete surface and rub with carborundum brick or other abrasive until producing uniform color and texture.
- C. Do not apply cement grout other than that created by rubbing process.
- D. Tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces shall be struct smooth and finished with a texture matching the adjacent formed surface, unless otherwise indicated.

3.6 MONOLITIC SLAB FINISHES

- A. Finishes on slabs on grade for random traffic floors shall comply with ASTM E1155.
 1. Floor finish for slabs on grade with floor coverings (VCT, carpet, ceramic or quarry tile):
 - a. Specified Overall Value: $F_F 38/F_L 25$.
 - b. Minimum Local Value: $F_F 19/F_L 13$.
 2. Floor finish for slabs on grade with stained and polished finish:
 - a. Specified Overall Value: $F_F 50/F_L 33$.
 - b. Minimum Local Value: $F_F 25/F_L 17$.
 3. Use motorized steel trowel to finish interior exposed slab surfaces or surfaces to be covered with VCT, carpet, ceramic or quarry tile, wood, paint, or other flooring finish.
- B. Nonslip Heavy Broom Finish: Apply nonslip heavy broom finish to exterior concrete ramp surfaces and H/C curb cuts with fiber bristle broom, perpendicular to traffic direction.
- C. Broom finish sidewalk, exposed stair treads and other exterior surfaces, not otherwise noted with light broom finish, perpendicular to traffic direction.
- D. Wood float surfaces that will receive quarry and ceramic tile with full bed setting system.
- E. In areas with floors sloping to drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:50 ratio.

3.7 MISCELLANEOUS CONCRETE

- A. Fill in holes and openings left in concrete for passage of work by other trades, after work of other trades is complete with same materials and finish of adjacent concrete.
- B. Provide monolithic finish to interior curbs, equipment bases and foundations to match adjacent concrete. Chamfer exposed edges $\frac{3}{4}$ " (19.3 mm).
- C. Set anchor bolts for equipment bases and foundations per diagrams and templates furnished by equipment manufacturers.

3.8 SEPARATE FLOOR TOPPINGS

- A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.
- B. Place required dividers, edge strips, reinforcing, and other items to be cast in concrete.
- C. Apply bonding agent to substrate in accord with manufacturer's written instructions.
- D. Place concrete floor toppings where indicated to required lines and levels. Place topping in checkerboard panels with dimensions not exceeding 20' (6080 mm).
- E. Screen toppings level, maintaining surface flatness per Para. 3.06.

3.9 OTHER CONCRETE FINISHES

- A. Formed concrete surfaces left exposed including concrete walls, columns, beams, and joists with smooth rubbed finish.

3.10 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period required for hydration of cement and hardening of concrete to design standards indicated.
- C. Cure floor surfaces in accord with ACI 308R-01.
- D. Apply curing compound in accord with manufacturer's written application instructions.

3.11 SHORES AND SUPPORTS

- A. Comply with ACI 347-04 for shoring and reshoring and Structural Engineer's Threshold Inspection Reporting requirements if building is designated Threshold Building per FBC Para. 109.3.6.
- B. Provide free access to Work and cooperate with Owner's Threshold Building Inspector and Materials Testing Company.
- C. Extend shoring from first floor to roof for cast-in-place structures and re-shoring.
- D. Remove shores and re-shore in planned sequence to avoid damage to partially cured concrete. Locate and provide re-shoring to support work without excessive deflection.
- E. Maintain re-shoring in place 14 days after placing upper tier or longer if required until concrete has attained design strength and heavy construction loads have been removed.

3.12 REMOVING FORMS

- A. Form work not supporting weight of concrete including sides of beams, walls and columns may be removed after 24 hours from time of placement, providing concrete is sufficiently hard to not be damaged by form removal, and concrete curing and protection operations are maintained.
- B. Form work supporting weight of concrete including beam soffits, joists, slabs, and other structural elements may not be removed within 14 days of placement or until concrete reaches 75 percent of design strength at 28 days.
- C. Form-facing material may be removed 4 days after placement only after shores and other vertical supports have been arranged to permit removal of form-facing material without loosening shores or supports.

3.13 REUSING FORMS

- A. Clean and repair surfaces of forms to be reused. Split, frayed, delaminated, or otherwise damaged forms, shall be replaced. Apply new form-coating compound on new formwork.
- B. Before reusing undamaged forms, thoroughly clean surfaces, remove fins, laitance, and tighten forms to close joints.
- C. Align and secure joints to provide straight and uniform joints and provide smooth interior form surfaces.

3.14 PATCHING

- A. Repair and patch defective concrete surfaces with cement mortar immediately after removing forms in accord with ACI 301-10.
- B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing #16 mesh sieve, using only enough water as required for handling and placing.
- C. Remove honeycombs, rock pockets, voids over 1/4" (61mm) wide or deep and holes left by tie rods and bolts down to solid concrete.
- D. Thoroughly clean void, dampen with water, apply bonding agent and place mortar before bonding agent has dried.
- E. For exposed surfaces, blend white Portland cement and standard Portland cement so that patching mortar matches surrounding concrete color.
- F. Compact mortar in place and strike off slightly higher than surrounding surface.
- G. Cure patched areas for 72 hours.

3.15 DEFECTIVE CONCRETE

- A. Concrete not conforming to required lines, details, dimensions, tolerances, strength, or specified requirements shall either be repaired to the same structural condition and finish as accepted work or be removed and replaced at no additional cost to Owner.
- B. Repairs for non-conforming concrete shall be submitted to Architect for review and acceptance before repairs are undertaken.
- C. If Architect deems repairs will be insufficient to render material structurally sound, concrete work shall be removed and replaced at no additional cost to Owner.
- D. Patching, filling, touch-up repairs shall not be made prior to inspection and approval of Architect. Unauthorized work will be deemed non-conforming and shall be replaced at no additional cost to Owner.

END OF SECTION

SECTION 03 45 00
PRECAST ARCHITECTURAL CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Section Includes:
 - 1. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - a. Architectural precast concrete units.

1.3 REFERENCES

- A. ACI 117 – Standard Tolerances for Concrete Construction and Materials.
- B. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- C. ACI 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- D. Concrete Reinforcing Steel Institute, "Manual of Standard Practice.
- E. ACI 308 – Standard Practice for Curing Concrete.
- F. ACI 315 – Details and Detailing of Concrete Reinforcement.
- G. ACI347R – Guide to Formwork for Concrete.
- H. ASTM A185 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- I. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- J. ASTM A780/A780M – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- K. ASTM C33/C33M – Standard Specification for Concrete Aggregates.
- L. ASTM C144 – Standard Specification for Aggregate for Masonry Mortar.
- M. ASTM C150/C150M – Standard Specification for Portland Cement.
- N. ASTM C260 – Specification for Air-Entraining Admixtures for Concrete.
- O. ASTM C404 – Standard Specification for Aggregates for Masonry Grout.
- P. ASTM C494 – Specification for Chemical Admixtures for Concrete.
- Q. ASTM C642 – Standard Test Method for Density, Absorption, and Voids in Hardened Concrete.
- R. ASTM C1218/C1218M – Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
- S. ASTM F593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- T. ASTM F594 – Standard Specification for Stainless Steel Nuts.
- U. FBC – Florida Building Code.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each precast concrete mixture. Include compressive strength and water-absorption tests.
- C. Shop Drawings:
 - 1. Detail fabrication and installation of architectural precast concrete units.
 - 2. Indicate locations, plans, elevations, dimensions, shapes, and cross sections of each unit.
 - 3. Indicate joints, reveals, drips, chamfers, and extent and location of each surface finish and details at building corners.
 - 4. Indicate type, size, and length of welded connections by AWS standard symbols. Detail loose and cast-in hardware, connections and anchorage.
 - 5. Indicate relationship of architectural precast concrete units to adjacent materials.
- D. Samples: Design reference samples for initial verification of design intent, for each type of finish indicated on exposed surfaces of architectural precast concrete units, in sets of three, representative of finish, color, and texture variations expected; approximately 12 by 12 by 2 inches.
 - 1. When other faces of precast concrete unit are exposed, include Samples illustrating workmanship, color, and texture of backup concrete as well as facing concrete.
 - 2. Grout Samples: Color charts consisting of actual sections of grout showing manufacturer's full range of colors.
- E. Delegated-Design Submittal: Submit design calculations, analysis data and shop drawings indicating compliance with dedicated design requirements signed and sealed by the qualified Florida registered professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include a list of completed projects with project name, addresses, names of architects and owners, and other information specified.
- B. Material Certificates: Cementitious materials.
- C. Material Test Reports: For aggregates.

1.6 MOCKUPS

- A. Before casting architectural concrete, build mockups to verify selections made under sample submittals and to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship. Build mockups to comply with the following requirements, using materials indicated for the completed work.
- B. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
- C. Demonstrate curing, cleaning, and protecting of cast-in-place architectural concrete, finishes, and contraction joints, as applicable.
- D. In presence of Architect, damage part of the exposed-face surface for each finish, color, and texture, and demonstrate materials and techniques proposed for repair of tie holes and surface blemishes to match adjacent undamaged surfaces.
- E. Obtain Architect's approval of mockups before casting architectural concrete.
- F. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A precast concrete erector qualified and designated by PCI's Certificate of Compliance to erect Category A (Architectural Systems) for non-load bearing members.
- B. Fabricator Qualifications: A firm that assumes responsibility for engineering architectural precast concrete units to comply with performance requirements. This responsibility includes preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver architectural precast concrete units in such quantities and at such times to limit unloading units temporarily on the ground or other rehandling.
- B. Support units during shipment on nonstaining shock-absorbing material.
- C. Store units with adequate dunnage and bracing and protect units to prevent contact with soil, to prevent staining, and to prevent cracking, distortion, warping or other physical damage.
- D. Place stored units so identification marks are clearly visible, and units can be inspected.
- E. Handle and transport units in a manner that avoids excessive stresses that cause cracking or damage.
- F. Lift and support units only at designated points indicated on Shop Drawings.

1.9 FIELD CONDITIONS

- A. Furnish loose connection hardware and anchorage items to be embedded in or attached to other construction without delaying the Work. Provide locations, setting diagrams, templates, instructions, and directions, as required, for installation.

1.10 PERFORMANCE REQUIREMENTS

- A. Design Standards: Comply with ACI 318 (ACI 318M) and design recommendations of PCI MNL 120, "PCI Design Handbook - Precast and Prestressed Concrete," applicable to types of architectural precast concrete units indicated.
- B. Delegated-Design: Provide design services, calculations and shop drawings for delegated design requirements complying with code requirements, performance requirements and design criteria signed and sealed by an engineer registered in the State of Florida.

PART 2 - PRODUCTS

2.1 PRECAST ELEMENTS

- A. Provide precast bollard elements as indicated on the drawings.

2.2 MOLD MATERIALS

- A. Molds: Rigid, dimensionally stable, non-absorptive material, warp and buckle free, that provides continuous and true precast concrete surfaces within fabrication tolerances indicated; nonreactive with concrete and suitable for producing required finishes.
- B. Mold-Release Agent: Commercially produced form-release agent that does not bond with, stain or adversely affect precast concrete surfaces and does not impair subsequent surface or joint treatments of precast concrete.

2.3 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A185/A185M, fabricated from galvanized-steel wire into flat sheets.

2.4 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or Type III, unless otherwise indicated.
 - 1. For surfaces exposed to view in finished structure, use gray or white cement as selected by the architect, of same type, brand, and mill source.
- B. Normal-Weight Aggregates: Except as modified by PCI MNL 117, ASTM C33/C33M, with coarse aggregates complying with Class 5S. Stockpile fine and coarse aggregates for each type of exposed finish from a single source (pit or quarry) for Project.
 - 1. Face-Mixture-Fine Aggregates: Selected, natural or manufactured sand compatible with coarse aggregate; to match approved finish sample.
- C. Water: Potable; free from deleterious material that may affect color stability, setting, or strength of concrete and complying with chemical limits of PCI MNL 117.
- D. Air-Entraining Admixture: ASTM C260, certified by manufacturer to be compatible with other required admixtures.
- E. Coloring Admixture: ASTM C 979/C 979M, synthetic or natural mineral-oxide pigments or colored water-reducing admixtures, temperature stable, and nonfading.

2.5 CONCRETE MIXTURES

- A. Prepare design mixtures for each type of precast concrete required.
 - 1. Use a single design mixture for units with more than one major face or edge exposed.
 - 2. Where only one face of unit is exposed use either a single design mixture or separate mixtures for face and backup.
- B. Design mixtures may be prepared by a qualified independent testing agency or by qualified precast plant personnel at architectural precast concrete fabricator's option.
- C. Normal-Weight Concrete Mixtures: Proportion by either laboratory trial batch or field test data methods according to ACI 211.1, with materials to be used on Project, to provide normal-weight concrete with the following properties:
 - 1. Compressive Strength (28 Days): 5000 psi minimum.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
- D. Water Absorption: 6 percent by weight or 14 percent by volume, tested according to ASTM C 642, except for boiling requirement.

2.6 CONCRETE ADMIXTURES

- A. Content of admixtures will be required from the admixture manufacturer prior to mix design review by the Architect.
- B. Prohibited Admixtures: Calcium chloride or admixtures containing more than 0.05 percent chloride ions are not permitted.

2.7 MOLD FABRICATION

- A. Molds: Accurately construct molds, mortar tight, of sufficient strength to withstand pressures due to concrete-placement operations and temperature changes and for prestressing and detensioning operations. Coat contact surfaces of molds with release agent before reinforcement is placed. Avoid contamination of reinforcement and prestressing tendons by release agent.

2.8 ACCESSORIES

- A. Masonry and concrete penetrating water repellents:
 - 1. Silane, Penetrating Water Repellent: Clear, containing 20 percent or more solids of alkyltrialkoxysilanes; with alcohol, mineral spirits or other proprietary solvent carrier; and with 600 g/L or less of VOCs as manufactured by Prosoco.

2.9 FABRICATION

- A. Fabricate precast elements to shapes, configurations and sizes as indicated on drawings
- B. Cast-in Anchors, Inserts, and Other Anchorage Hardware: Fabricate anchorage hardware with sufficient anchorage and embedment to comply with design requirements. Accurately position for attachment of loose hardware, and secure in place during precasting operations. Locate anchorage hardware where it does not affect position of main reinforcement or concrete placement.
- C. Reinforcement: Comply with recommendations in PCI MNL 117 for fabricating, placing, and supporting reinforcement.
- D. Reinforce architectural precast concrete units to resist handling, transportation, and erection stresses and specified in-place loads.
- E. Comply with requirements in PCI MNL 117 and requirements in this Section for measuring, mixing, transporting, and placing concrete. After concrete batching, no additional water may be added.
- F. Place face mixture to a minimum thickness after consolidation of the greater of 1 inch or 1.5 times the maximum aggregate size, but not less than the minimum reinforcing cover specified.
- G. Place concrete in a continuous operation to prevent cold joints or planes of weakness from forming in precast concrete units.
 - 1. Place backup concrete mixture to ensure bond with face-mixture concrete.
- H. Thoroughly consolidate placed concrete by internal and external vibration without dislocating or damaging reinforcement and built-in items, and minimize pour lines, honeycombing, or entrapped air voids on surfaces. Use equipment and procedures complying with PCI MNL 117.
- I. Comply with PCI MNL 117 for hot- and cold-weather concrete placement.
- J. Identify pickup points of architectural precast concrete units and orientation in structure with permanent markings, complying with markings indicated on Shop Drawings. Imprint or permanently mark casting date on each architectural precast concrete unit on a surface that does not show in finished structure.
- K. Cure concrete, according to requirements in PCI MNL 117, by moisture retention without heat or by accelerated heat curing using low-pressure live steam or radiant heat and moisture. Cure units until compressive strength is high enough to ensure that stripping does not have an effect on performance or appearance of final product.
- L. Discard and replace architectural precast concrete units that do not comply with requirements, including structural, manufacturing tolerance, and appearance, unless repairs meet requirements in PCI MNL 117 and Architect's approval.

2.10 FABRICATION TOLERANCES

- A. Erect precast units level, plumb, square and in alignment without exceeding the noncumulative erection tolerances of PCI MNL 117, Appendix I.
- B. Fabricate architectural precast concrete units to shapes, lines, and dimensions indicated so each finished unit complies with the following product tolerances:
 - 1. Overall Length and Width Tolerance of Units: Measured at 10 feet or under, plus or minus 1/8 inch.

2.11 FINISHES

- A. Exposed faces shall be free of joint marks, grain, and other obvious defects. Corners, including false joints shall be uniform, straight, and sharp. Finish exposed-face surfaces of architectural precast concrete units as selected by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting structural frame or foundation and conditions for compliance with requirements for installation tolerances, bearing surface tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install clips, hangers, bearing pads, and other accessories required for connecting architectural precast concrete units to supporting members and backup materials.
- B. Erect architectural precast concrete level, plumb, and square within specified allowable tolerances. Provide temporary supports and bracing as required to maintain position, stability, and alignment of units until permanent connections are completed.
- C. Connect architectural precast concrete units in position by bolting, welding, grouting, or as otherwise indicated on Shop Drawings. Remove temporary shims, wedges, and spacers as soon as practical after connecting and grouting are completed.
- D. Water Repellant: Apply water repellant as per manufacturer's recommendations.

3.3 ERECTION TOLERANCES

- A. Erect architectural precast concrete units level, plumb, square, and in alignment without exceeding the noncumulative erection tolerances of PCI MNL 117, Appendix I.
- B. Erect architectural precast concrete units level, plumb, square, and in alignment, without exceeding a tolerance 1/4" in 10'-0".

3.4 REPAIRS

- A. Repair architectural precast concrete units if permitted by Architect. Architect reserves the right to reject repaired units that do not comply with requirements.

- B. Mix patching materials and repair units so cured patches blend with color, texture, and uniformity of adjacent exposed surfaces and show no apparent line of demarcation between original and repaired work, when viewed in typical daylight illumination from a distance of 20 feet.
- C. Prepare and repair damaged galvanized coatings with galvanizing repair paint according to ASTM A 780/A 780M.
- D. Wire brush, clean, and paint damaged prime-painted components with same type of shop primer.
- E. Remove and replace damaged architectural precast concrete units when repairs do not comply with requirements.

3.5 CLEANING

- A. Clean surfaces of precast concrete units exposed to view.
- B. Clean mortar, plaster, fireproofing, weld slag, and other deleterious material from concrete surfaces and adjacent materials immediately.
- C. Clean exposed surfaces of precast concrete units after erection and completion of joint treatment to remove weld marks, other markings, dirt, and stains.
 - 1. Perform cleaning procedures, if necessary, according to precast concrete fabricator's recommendations. Protect other work from staining or damage due to cleaning operations.
 - 2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes or damage adjacent materials.

END OF SECTION

SECTION 08 11 13
METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - 1. Hollow steel doors and steel frames, frame components including sidelites, transom frames, borrowed lites, and louvers as indicated.
 - 2. Attachments including screws, bolts, expansion shields and related prep work.
 - 3. Door Hardware.

1.3 RELATED WORK

- A. Section 01 25 13 – Product Substitution Procedures
- B. Section 01 31 00 – Project Coordination
- C. Section 01 33 00 – Submittal Procedures
- D. Section 01 42 00 – References
- E. Section 01 45 00 – Quality Control
- F. Section 01 66 00 – Product Storage and Handling
- G. Section 01 74 00 – Cleaning and Waste Management
- H. Section 01 78 00 – Closeout Submittals
- I. Section 04 05 16 – Masonry Grouting
- J. Section 04 22 00 – Concrete Unit Masonry
- K. Section 08 14 29 – Prefinished Wood Doors
- L. Section 08 71 00 – Door Hardware
- M. Section 08 81 00 – Glazing
- N. Section 09 22 13 – Metal Furring
- O. Section 09 29 00 – Gypsum Board
- P. Section 09 91 00 – Painting

1.4 REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, abbreviations, definitions and acronyms.
- B. ASCE 7-10 – Minimum Design Loads for Buildings and other Structures.
- C. American Society of Testing Materials (ASTM):
 - 1. ASTM A568A/568M-14: Standard Specification for Steel Sheet, Carbon, Structural, and High Strength, Low-Alloy, Hot-Rolled and Cold Rolled, General Requirements for
 - 2. ASTM A653/A653M-13: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM A1008/A1008M-15: Standard Specification for Steel, Sheet, Cold Rolled Carbon Structural High Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
4. ASTM E-90-09 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- D. DHI (Door Hardware Institute) - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- E. National Fire Protection Association (NFPA):
 1. NFPA 80 - Fire Doors and Windows.
 2. NFPA 252 - Fire Tests for Door Assemblies.
- F. Florida Building Code, 5th Edition.
- G. Florida Fire Prevention Code, 5th Edition.
- H. American National Standards Institute (ANSI):
 1. ANSI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Painted Steel Surfaces for Steel Doors and Frames.
 2. ANSI A250.8 - SDI-100 – Recommended Specifications for Standard Steel Doors and Frames.
 3. ANSI A250.10 – Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
 4. ANSI A115.IG – Installation Guide for Doors and Hardware.
 5. ANSI A250.11 – Recommended Erection Instructions for Steel Frames.
- I. Underwriter’s Laboratory (UL):
 1. UL 10B - Fire Tests for Door Assemblies.
 2. UL 10C – Positive Pressure Fire Test of Door Assemblies.

1.5 QUALITY ASSURANCE

- A. Comply with Section 01 45 00 – Quality Control.
- B. Conform to requirements of ANSI A250.8 SDI-100 – Recommended Specifications for Standard Steel Doors and Frames, or as amended herein if more restrictive.
- C. Manufacturer: Company specializing in manufacturing the products specified with minimum of three years continuous documented experience manufacturing products indicated.
- D. Product Approval: Door / Frame Assemblies shall meet current Florida Building Code Product Approval System or Miami-Dade Code Compliance Office requirements for High Velocity Hurricane Zone (HVHZ) or Notice of Approval (NOA) product approval.

1.6 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Submit Product Approvals for Door / Frame Assemblies certifying compliance with current Florida Building Code Product Approval System or Miami-Dade Code Compliance Office requirements for High Velocity Hurricane Zone (HVHZ) or Notice of Approval (NOA) product approval.
- C. Submit shop drawings, product data, manufacturer's literature and installation instructions. Include details of each frame type, elevations of door design types, conditions at openings details of construction, location and installation requirements of finish hardware and reinforcements and details of joints and connections.
- D. Indicate door and frame configuration, anchor spacing, anchor types, location of cutouts for hardware and glazing, and internal reinforcement.

- E. Performance Requirements: Provide hollow metal doors and frame assemblies that comply with performance requirements as demonstrated by testing manufacturer's assemblies in accordance with ASCE 7-10.
- F. Submit manufacturer's written installation instructions.
- G. Manufacturer shall certify and submit documentation that product complies with large and small missile impact criteria and have been tested and approved in compliance with Florida Product Approval or Miami Dade NOA and applicable requirements and submit documentation

1.7 DELIVERY, STORAGE, AND PROTECTION:

- A. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
- B. Deliver doors and frames marked to identify each door, frame and opening in which they are located per numbers indicated.
- C. Store doors and frame in dry area on end with minimum ¼” spacers between units to allow ventilation.
- D. Frames shall be shipped and stored with temporary stiffeners and spacers in place to prevent distortion.
- E. Doors and frames shall be kept covered with water resistant, breathable fabric to prevent moisture intrusion on surfaces and allow ventilation.
- H. Replace doors and frames damaged during delivery, storage or construction.

1.8 WARRANTY:

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Provide manufacturer's five-year warranty in which manufacturer agrees to repair or replace metal doors and frames that become corroded or rust within warranty period.
- C. Warranty shall include installation and finishing that is required due to repair or replacement of doors and frames.

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURERS

- A. CECO DOOR, Division of Assa Abloy, 9159 Telecom Dr., Milan, TN 38353; Tel: 731-686-8345; Fax: 731-686-4211; Website: www.cecodoor.com.
- B. STEELCRAFT, 9017 Blue Ash Rd., Cincinnati, OH 45242; Tel: 800-243-9780; Fax: 513-745-6657; Website: www.steelcraft.com.
- C. Curries Manufacturing, Inc., 1502 12th St. NW, Mason City, IA 50401; Tel: 641-423-1334; Fax: 641-424-8305; Website: www.curries.com.
- D. Windsor Republic Doors, 155 Republic Dr., McKenzie, TN 38201; Tel: 800-733-3667; Website: www.republicdoor.com.
- E. Other manufacturers shall comply with Section 01 25 13 – Product Substitution Procedures.

2.2 DOORS AND FRAMES

- A. Material: Electro-Zinc coat bonderized conforming to ASTM A653/A653M-13.
 - 1. Exterior doors and frames: Factory applied G-90 (275 g/m²) electro plated zinc finish.
 - 2. Interior doors and frames: Factory applied G-60 (182 g/m²) electro plated zinc finish.

- B. Core: 20-gage cold rolled sheet steel vertical stiffeners in a "Z" configuration, spaced not more than 6" o.c. (16mm) and spot welded to face sheet. Vertical stiffeners extend full length of door cavity, except in areas of reinforcement. Fill core between stiffeners with rigid polyurethane chemically bonded to interior surfaces with minimum value of R10.
- C. Door Face: 16-gage.
- D. Door Reinforcement:
 - 1. Hinge reinforcement shall be minimum 10 ga. plate, 1.5" (318 mm) by full height of door.
 - 2. Tops and bottom reinforcement shall be minimum 16 ga. full width of door welded to both face sheets.
- E. Frame Gage: 16-gage for interior frames, 14-gage for exterior frames.
- F. Fire Rated: Provide fire rated assembly where scheduled or required by Code. Installations shall be in accord with NFPA 80.
- G. Insulated Doors: "U" value of 0.10 for polyurethane core for exterior metal doors.
- H. Fire Rated Doors:
 - 1. Test Doors in accord with UL 10B, UL 10C and NFPA 252.
 - 2. Doors shall have UL labels, applied by authorized agent, in accord with independent testing agency.
 - 3. Stairwell doors shall have 250°F (121°C) temperature rise rating with fire rating label on doors.

2.3 VISION LITES

- A. Provide manufacturer's standard vision lites of minimum 16 gauge cold-rolled steel, factory primed of shapes and sizes where shown on drawings. Corners shall be mitered
- B. Vision lites for fire rated applications shall be fire rated to comply with door rating.
 - 1. At light opening cut outs, provide 18 gage bonderized zinc coated steel channel type stops tightly fitted to opening, with square and true butt joints.
 - a. Drill and dimple countersink stops for fastenings. Provide zinc plated No. 6 oval head screws into opening frames at not over 12 inches o.c.
 - b. Exterior stops shall be integral with opening frame, integral with door welded in place.
 - 2. At exterior doors caulk perimeter seam between closure channel and door face sheet with grade exterior sealant prior to finish painting.
 - 3. All light openings shall be cut, reinforced and stops applied in the shop. No field cutting of the doors.
- C. Finish shall be zinc coat with baked enamel color selected by architect from manufacturer's standard colors.
- D. Exterior frames shall be A60 galvanized or hot dipped galvanized.

2.4 LOUVERS

- A. Frames shall be cold rolled 18 gauge frame steel with mitered welded corners.
- B. Louver blades shall be cold rolled 18 gauge steel inverted blade, sight proof with minimum 60 percent free air flow area.
- C. Frames to have countersunk holes and tamper proof fasteners.
- D. Louvers for fire rated applications shall be fire rated to comply with door rating and with a fusible link design conforming to UL or FM where required.
- E. Finish shall be zinc coat with baked enamel color selected by architect from manufacturer's standard colors.

- F. Exterior frames shall be A60 galvanized or hot dipped galvanized.

2.5 ACCESSORIES

- A. Door Silencers: Except on weather-stripped frames, drill stops to receive three silencers on strike jambs of single frames and two silencers on heads of double frames.
- B. Jamb Anchors: Provide minimum four anchors on both hinge and latch jambs. Provide 14-gage galvanized sheet steel, angle anchors welded for each jamb which extend to floor, punched for minimum of two 0.25" (6.4 mm) diameter bolts.
- C. Spreader: Provide frames with temporary steel spreader bars tack welded to jamb bottoms to maintain full rigidity and proper alignment during installation.
- D. Astragals: Provide steel astragals (removable) as scheduled or indicated.

2.6 PROTECTIVE COATINGS

- A. Frames: Provide with full immersion dip coat of rust-inhibitive metal primer for complete coverage including hidden surfaces.
- B. Doors: Provide full coverage electrostatic spray coat of rust-inhibitive metal primer.
- C. Dry frames and doors in baking oven process.
- D. AwlGrip Max Cor CF Primer manufactured by AkzoNobel Corp., 2270 Morris Ave., Union, NJ 07083; Tel: 908-686-1300; Fax: 908-964-2219; Website: www.akzonobel.com/us

2.7 GROUTING OF EXTERIOR FRAMES

- A. Paint inside (concealed) faces of door frames in exterior masonry or concrete walls, using fibered asphalt emulsion coating. Apply over shop primer approximately 1/8" thick and allow to dry before handling.
- B. Fill jambs and heads of hollow metal door and window frames solid with grout.

2.8 FABRICATION:

- A. Door Fabrication: Fully welded seamless construction. No metal tabs will be accepted.
- B. Frame Fabrication: Fully welded mitered corners ground smooth. Interior intersection of jambs shall be fully welded. Integral stops minimum 0.675" (16 mm) depth and minimum 2.5" (63.5 mm) width. Punch frames to receive silencers three on strike jamb of single leaf jambs. Provide 26-gage sheet metal grout guards at hinges, lock, bolts, door closer, foot, and silencer locations.
- D. Frame Reinforcement: Hinge reinforcing steel plate 0.1875" (4.8 mm) thick x 1.5"(43 mm) wide x 10" (254 mm) long and secured by a minimum of six spot-welds. Door closer foot shall be 10-gage steel reinforcing plate, 14" (356 mm) long x stop width anchored by minimum of 8 spot welds in hinge corner of head section of jamb.
- E. Hardware Location: Locate door hardware in accord with "Recommended Locations for Builder's Hardware" published by National Builder's Hardware Association.

PART 3 EXECUTION

3.1 INSTALLATION:

- A. Examine new and existing adjacent framing and rough opening preparation for conditions, which would prevent quality installation of doors and frames.

- B. Immediately notify Contractor/CM of conditions precluding successful installation. Proceeding with installation indicates installer's acceptance of conditions.
- C. Install frames in accord with NAAMM CHM-1-74 and ASCE 7-10.
- D. Install doors in accord with SDI-100, DHI and ASCE 7-10.
- E. Coordinate with masonry wall construction for anchor placement.
- F. Install roll-formed-steel reinforcement channels between two abutting frames. Anchor to structure and floor.
- G. Fully grout interior and exterior hollow metal frames with non-shrink grout.

3.2 PAINTING

- A. Comply with Section 09 91 00 – Painting for door and frame finishes.
- B. Exterior Door Frames: Air spray Max Cor DF AwlGrip, two component, anti-corrosive, chromate free epoxy primer on inside of door frame profiles of exterior doors prior to installation in accord with manufacturer's printed installation instructions.

3.3 TOLERANCES:

- A. Maximum Diagonal Distortion: 0.06375" (7.8 mm) measured with straight edge, corner to corner.
- B. Clearance between door and frame head and jambs shall be uniform 0.125" (15.6 mm).
- C. Clearance between meeting edges of pairs of doors shall be 0.1875" (23.4 mm) +/- 0.6375" (7.8 mm). For fire rated applications, clearance between meeting stiles shall be 0.125" (15.6 mm) +/- 0.06375" (7.8 mm).
- D. Bottom of door clearance shall be 0.50" (12.7 mm) minimum and 0.75" (19 mm) maximum floor clearance.
- E. Clearance between face of door and door stop shall be minimum 0.0625" (7.8 mm) to maximum 0.125" (15.6 mm).

3.4 ADJUSTING AND CLEANING:

- A. Adjust for smooth and balanced door movement.
- B. Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - 1. Hardware for wood and hollow steel doors.
 - 2. Lock Cylinders for gates, folding partitions, wire cages and doors.
 - 3. Thresholds.
 - 4. Gaskets.
 - 5. Screws, bolts, expansion shields and related prep work.
 - 6. Hardware layout templates.
 - 7. Keys key cabinet and Knox Box.

1.3 RELATED WORK

- A. Section 01 25 13 – Product Substitution Procedures.
- B. Section 01 31 00 – Project Coordination.
- C. Section 01 33 00 – Submittal Procedures.
- D. Section 01 42 00 – References.
- E. Section 01 45 00 – Quality Control.
- F. Section 01 74 00 – Cleaning and Waste Management.
- G. Section 01 78 00 – Closeout Submittals.
- H. Section 08 11 13 – Hollow Metal Doors and Frames.
- I. Section 08 14 29 – Prefinished Wood Doors.
- J. Section 08 41 00 – Entrances and Storefronts.

1.4 REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, abbreviations, definitions and acronyms.
- B. ANSI A117.1 – Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- C. ANSI/NFPA 80 – Fire Doors and Windows.
- D. AWI – Architectural Woodwork Institute.
- E. BHMA – Builders' Hardware Manufacturers Association.
- F. DHI – Door and Hardware Institute.
- G. Florida Fire Prevention Code.
- H. NAAMM – National Association of Architectural Metal Manufacturers.
- I. NFPA 101 – Life Safety Code, 2008 Edition.
- J. SDI – Steel Door Institute.

K. Florida Building Code (FBC), 6th Edition.

1.5 COORDINATION

A. Coordinate hardware installation with other affected trades in accord with Section 01 31 00 – Project Coordination.

1.6 QUALITY ASSURANCE

- A. Manufacturers: Company shall specialize in manufacturing door hardware with five years continuous experience.
- B. Hardware Supplier: Company shall specialize in supplying institutional door hardware with five years continuous documented experience, approved by manufacturer.
- C. Hardware Supplier Personnel: Employ Architectural Hardware Consultant (AHC) on project.

1.7 REGULATORY REQUIREMENTS

- A. Conform to Florida Building Code for requirements applicable to fire rated doors, frames, and accessibility for physically disabled.
- B. Conform to Florida Fire Prevention Code and applicable sections of NFPA 101.

1.8 CERTIFICATIONS

- A. Architectural Hardware Consultant shall inspect complete installation and certify that hardware and installation has been furnished and installed in accord with manufacturer's printed instructions and as specified.
- B. Provide two copies of certifications to Architect.

1.9 SUBMITTALS

- A. Submit schedules, samples, parts lists, templates, installation instructions and product data per Section 01 33 00 – Submittals.
- B. Submittals shall identify each door and each set number following numbering system noted on Drawings.
- C. Manufacturing order shall not be placed until hardware schedule has been submitted and reviewed by Architect.
- D. Furnish templates to facilitate work schedule.
- E. Indicate locations and mounting heights of each type of hardware.
- F. Submit samples of hinge, latch set, exit device, door closer, thresholds, illustrating style, color and finish.
- G. Project samples may be incorporated in Work.
- H. Submit manufacturer, supplier, fabricator and installer's qualifications in accord with Section 01 33 00 – Submittal Procedures.

1.10 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data in accord with Section 01 78 00 – Closeout Submittals.
- B. Include data on operating hardware, and inspection procedures related to preventative maintenance.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products in original packaging to site in accord with Section 01 66 00 – Project Storage and Handling Requirements.
- B. Hardware Packaging
 - 1. Items shall be individually labeled and identified with door opening code and hardware group to match hardware schedule.
 - 2. Each item shall identify door location by number identified on Door Schedule.
- C. Hardware manufacturers shall deliver via security shipping following items to District Maintenance Dept., 2485 SE Dixie Hwy., Stuart, FL 34996:
 - 1. Two copies of factory key biting schedule.
 - 2. Permanent building keys and construction key voiding devices.
- D. Protect hardware from theft by cataloging and storing in secured area.

1.12 WARRANTY

- A. Provide five-year warranty period in accord with Section 01 78 00 - Closeout Submittals for locksets, latch sets, exit devices hinges and items listed in the hardware schedule excluding overhead door closers.
- B. Provide ten-year warranty period in accord with Section 01 78 00 - Closeout Submittals for overhead door closers.

1.13 MAINTENANCE MATERIALS

- A. Provide special wrenches and tools applicable to different or special hardware component.
- B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturers not listed may submit requests for substitution except as noted in accord with Section 01 25 13 – Product Substitution Procedures.
- B. Obtain each kind of hardware from one manufacturer.
- C. Acceptable products and manufacturers are listed below:
 - 1. Hinges: Ives, Hager, Stanley, Bommer.
 - 2. Locks and Latches: Best Access (No Substitution Permitted).
 - 3. Cylinders, Keys, Keying: Corbin/Russwin (No Substitution Permitted).
 - 4. Exit Devices: Von Duprin (No Substitution Permitted).
 - 5. Removable Mullions: Von Duprin (No Substitution Permitted).
 - 6. Door Closers: LCN (No Substitution Permitted).
 - 7. Overhead Stops/holders: Glen Johnson, Rixon.
 - 8. Wall/Floor Stops/Flush Bolts: Ives, Rockwood, Glen Johnson.
 - 9. Kick Plates: Ives, Rockwood, Quality.
 - 10. Thresholds/Weatherstripping: National Guard, Zero, Pemko.
 - 11. Silencers: Ives, Rockwood, Quality, Glen Johnson.
 - 12. Push/Pulls: Quality, Rockwood.
 - 13. Key Cabinet: Lund, Key Control, Telkey.

2.2 HARDWARE FINISH

- A. Hardware shall have the following finishes:
 - 1. Exterior Hinges: Stainless Steel (32D).
 - 2. Interior Hinges/Locks/Exit Devices/Overhead Holders: Satin Chrome (26D).
 - 3. Door Closers: Aluminum.
 - 4. Flat Goods: Stainless Steel (32D) or Satin Chrome (26D).
 - 5. Thresholds: Mill Finish Aluminum.

2.3 HINGES AND PIVOTS

- A. Exterior butts shall be stainless steel (32D). Butts on all out-swinging doors shall be furnished with non-removable pins (NRP). Size: 4½" wide x 4½" high, for exterior doors up to 42" wide and heavy weight 4½" wide x 4½" high hinges for doors over 42" wide.
- B. Interior butts shall be steel, standard weight 4½" wide x 4½" high hinges doors up to 42" wide and heavy weight 4½" wide x 4½" high hinges for doors over 42" wide.
- C. Doors less than 5'-0" high shall have two (2) butts. Furnish one (1) additional butt for each 2'-6" of height or fraction thereof.

2.4 KEYING

- A. Pre-Order Meeting: Hardware supplier shall meet with District's Maintenance Lock Dept. Representative to establish keying order before lock order is placed.
- B. Locks shall be construction master keyed using split key method keyed to School District's restricted keyway.
- C. Hardware supplier shall meet with District's Maintenance Lock Dept. Representative will establish final count of locks and cylinders, and transmit release order to Best Access Systems Lock Company for production in amounts established with Hardware Supplier.
- D. Construction keys in following quantities:
 - 1. 12 master keys
- E. Supply permanent keys in following quantities:
 - 1. Six keys for each lock with maximum of 12 keys of keyed alike sets.
 - 2. Five master keys for each building or area grouping. Key groups include:
 - a. Auditorium/Multipurpose/Stage (including adjacent support spaces).
 - b. Food Service (including Kitchen and adjacent support spaces).
 - c. Media Center (including adjacent support spaces).
 - d. Administrative Offices (including adjacent support spaces).
 - e. Classrooms, Resource Rooms and Labs (including adjacent storage area) subdivided into subgroups by floor level or building(s).
 - f. Mechanical/Electrical Rooms.
 - g. Custodial/Receiving Areas.
 - 3. Grand master keys shall be supplied based on size of facility as follows:
 - a. Five (5) Grandmaster keys for Elementary Schools and Ancillary Projects.
 - b. Ten (10) Grandmaster Keys for Middle Schools.
 - c. Twenty (20) Grandmaster keys for High Schools.
 - 4. Keys shall be stamped "DO NOT DUPLICATE".
- F. Key Function
 - 1. Supply locksets with following key functions:

Location	Function
a. Passage	N

- | | |
|-----------------------------|-----|
| b. Privacy | L |
| c. Classroom/Office | R |
| d. Storage/Mechanical Rm | D |
| e. Electronic Lever Lockset | DEL |

2.5 KEY CABINETS

- A. Key Cabinet: Lund 1203 with pin tumbler lock.
- B. Cabinet Size: Size for project keys plus 10% spare capacity.
 - 1. Horizontal metal strips for key hook labeling with clear plastic strip cover over labels.
 - 2. Finish: Baked enamel finish, gray color.
- C. Attach key legend in key cabinet with 5-way cross-reference system indicating keyset number, FISH Room number, key code number, hook number and key description.

2.6 KEY VAULT

- A. Recessed Key Vault: Knox Company, Series 4400 Know-Vault, Model 4400-R.
- B. Key Vault shall be keyed to Owner's key system and will be Owner provided.
- C. Manufacturer: Knox Company. Key box shall meet criteria of fire department having jurisdiction at project location.

2.7 CLOSER/MAGNETIC HOLD OPEN SYSTEM

- A. LCN, Series No: 4041.
- B. Furnish closer/electromagnet compete with required accessories necessary for complete working system.
- C. Furnish two-year warranty.

2.8 LOCKSETS

- A. Lever Lock: Best Access Lock Company, heavy duty cylindrical type, Best 93K Series, Lever Design 15D.
- B. Electronic Lever Lock: Best Access Lock Company, heavy duty cylindrical type, Best 93KW7DEU, Lever Design 15D.

2.9 EXIT DEVICES

- A. Von Duprin 98 Series in types and functions listed.
- B. Devices shall be listed under "Panic Hardware" in accident equipment list of Underwriter Laboratories. Fire ratings shall be attached where indicated per UL requirements.
- C. Exit devices shall be tested per ANSI/BHMA A156.3 by BHMA certified testing laboratory. Provide written certification of 1,000,000 cycle testing per Section 01 33 00 – Submittals.
- D. Supply locksets with following key functions:

Location	Function
1. Non Fire Rated	19R NLP, 19R DT, or 19R BE with 560 strike as required.
2. Fire Rated	F19R SE or F19R BE with 570 strike as required.
3. Non Fire Rated (Pairs)	19R NLP, 19R DT, or 19R BE with 570 strike as required.

- 4. Fire Rated (Pairs) F19R SE or F19R BE with 570 strike and F4023 mullion as required.
- 5. Fire Rated (Electronic) ELX981-F X 992L X 06 X 26D.
- 6. Non-fire Rated (Electronic) SD ELL X 98NL X 990NL X 06 X 26D.
- 7. Power Supply PS873B X 4TD
- E. Electrical Power Transfer: EPT-10 X SP28.
- F. Surface strikes shall be roller type with plate underneath to prevent movement and dead-latching feature to prevent latchbolt tampering.

2.10 DOOR CLOSERS

- A. Door closers shall be LCN 4040/4041 Series with non-ferrous covers, forged steel arms, separate valves for adjusting backcheck closing and latching cycles and adjustable spring to provide up to 50% increase in spring power.
- B. Furnish closers with parallel arm mounted on door openings into egress spaces, mounted to permit 180 degree door swing where wall conditions permit, and have non-hold open arms unless otherwise noted.
- C. Door closer cylinders shall be high strength cast iron construction.
- D. Door closers shall be tested in accord with ANSI/BHMA A156.4 by BHMA certified testing laboratory and attest in writing that closers have successfully completed one million cycles.
- E. Door closers shall utilize temperature stable fluid capable of withstanding temperature ranges of 120° F (49°C) to -30° F (-34°C), without requiring seasonal adjustment of closer speed to properly close door.
- F. Closers for fire rated doors shall be provided with temperature stabilizing fluid complying with UCB 7-2 (1997) and UL 10C.
- G. Door closers shall incorporate tamper resistant non-critical screw valves of V-slot design to reduce clogging from particles within closer.
- H. Closers shall have separate and independent screw valve adjustments for latch speed, general speed, and hydraulic backcheck.
- I. Backcheck shall be located to effectively slow swing of door at minimum of 10 degrees in advance of dead stop location to protect door frame and hardware from damage.

2.11 DOOR TRIM

- A. Push/pull plates, armor plates, and kick plates shall be .050 gage stainless steel with US32D finish.
- B. Plates shall be two (2") less than door width with beveled edges, sized as follows:
 - 1. Push and pull plates shall be 4" wide x 16" high mounted 42" from door bottom.
 - 2. Armor plates shall be 36" high less than door width mounted 2" from door bottom.
 - 3. Kick plates 10" high x 2" less than door width mounted 2" from door bottom.

2.12 DOOR STOPS

- A. Door stops shall be furnished for doors to prevent door and hardware damage. Wall bumpers are preferred. Provide floor stops where wall bumpers are not practical. Where neither wall nor floor stops are practical, use surface mounted overhead stops as follows:
 - 1. Wall Stops: Ives WS407CVX Series.
 - 2. Floor Stops: Ives FS436 or FS438.
 - 3. Overhead Stops: Glynn Johnson 450 Series (Interior) and 900 Series (Exterior).

2.13 THRESHOLDS, WEATHERSTRIPPING, AND SEALS

- A. Thresholds and weatherstripping shall be as listed in Hardware Schedule.

2.14 DOOR SILENCERS

- A. Door Silencers: Ives SR64 Two (2) per door pair and three (3) per single door frame.

2.15 AUTOMATIC FLUSH BOLTS, SURFACE BOLTS, AND COORDINATORS

A. Door Bolts:

1. Manufacturer; H. B. Ives.
 - a. Non Fire-rated: 454-f26D 8".
 - b. Fire-rated: 456-B26D.
2. Manufacturer: Glynn Johnson:
 - a. Non Fire-rated: 1631 or 1632.
 - b. Fire-rated: FB7 or FB8.
3. Manufacturer; DCI.
 - a. Non Fire-rated: 1008-US26D.
 - b. Fire-rated: 842-US26D.

B. Coordinators:

1. Manufacturer: Monarch, B-1277 with B-1278 opening bar.
2. Manufacturer: H. B. Ives, 469-B26D with 478 carry bar.
3. Manufacturer: DCI, 500 with carry bar.

2.16 OVERHEAD RAIN DRIP

- A. Rain Drip: Pemko 346PW at exterior HM Steel door locations or as scheduled herein.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- B. Beginning of installation shall indicate installer's acceptance of existing conditions.

3.2 INSTALLATION

- A. Install hardware in accord with manufacturer's instructions and requirements of DHI.
- B. Use templates provided by hardware item manufacturer.
- C. Mounting heights for hardware from finished floor to center line of hardware item:
1. Locksets: 38".
 2. Push/Pulls: 42".
 3. Dead Locks: 48".
 4. Exit Devices: 40".
- D. Conform to of Florida Bldg. Code: Accessibility, 6th Edition.
- E. Set door thresholds in full bed of butyl rubber.

3.3 ADJUST AND CLEAN

- A. Adjust and check operation of each item of hardware and door, to ensure proper function of every item.
- B. Replace items that cannot be adjusted to operate freely and smoothly.
- C. Final adjustment shall be made after ventilating systems are in operation.
- D. Clean hardware and adjacent surfaces after hardware installation.
- E. Instruct Owner's personnel in adjustment and maintenance of hardware and hardware finishes.

3.4 PROTECTION

- A. Protect installed hardware from damage.
- B. Replace damaged hardware.

3.5 HARDWARE SCHEDULE

- A. Hardware Schedule is included in Architectural Drawings.
- B. Index of Manufacturers:
 - 1. Corbin/Russwin: NGP.
 - 2. Glynn-Johnson: BLY.
 - 3. Hager: HAG.
 - 4. Ives: IVE.
 - 5. LCN Closers: LCN.
 - 6. Best: BES.
 - 7. Von Durprin: VON.
 - 8. Pemko: PEM
 - 9. B/O: Supplied by other trades.

END OF SECTION

SECTION 13 34 23
PRE-FABRICATED CONTROL BOOTHS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Section Includes:
 - 1. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - a. Pre-fabricated steel control booths.

1.3 REFERENCES

- A. ASTM A36/A36M – Standard Specification for Carbon Structural Steel.
- B. ASTM A123/A123M – Standard Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products.
- C. ASTM A153/A153M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. ASTM A385 – Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip).
- E. ASTM A500/A500M – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- F. ASTM A513 – Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing
- G. ASTM A572/A572M – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
- H. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- I. ASTM C1036 – Standard Specification for Flat Glass
- J. ASTM A786/A786 – Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates
- K. ASTM C1048 – Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
- L. ASTM D3451 – Standard Guide for Testing Coating Powders and Powder Coatings
- M. ASTM F593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- N. ASTM F1941 – Standard Specification for Electrodeposited Coatings on Mechanical Fasteners, Inch and Metric.
- O. AWS – Standard Symbols for Welding, Brazing, Nondestructive Examination.
- P. AWS – Structural Welding Code.
- Q. SSPC – Steel Structure Painting Council - Steel Structures Painting Council.
- R. FBC – Florida Building Code.

1.4 ACTION SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for control booths.
- B. Shop Drawings: Include plans, elevations, sections, details, accessories, and fastening and anchorage details, including mechanical fasteners.
 - 1. Anchor-Bolt Plans: Submit anchor-bolt plans and templates. Include location, diameter, and projection of anchor bolts required to attach control booths to foundation. Indicate post reactions at each location.
- C. Samples for Verification: For each type of exposed finish in manufacturer's standard sample sizes.
- D. Delegated-Design Submittal: Submit design calculations, analysis data and shop drawings indicating compliance with dedicated design requirements signed and sealed by the qualified Florida registered professional engineer responsible for their preparation.
- E. Approvals: Manufacturer submit documentation that product complies with large missile impact criteria and has been tested and approved in compliance with Florida Product Approval or Miami Dade NOA and applicable requirements.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For control booths to include in maintenance manuals.

1.7 FIELD CONDITIONS

- A. Cast-in Anchorage: Coordinate installation of anchorages for control booths. Furnish sleeves, concrete inserts, anchor bolts, and items with integral anchors that are to be embedded in concrete bases. Include setting drawings, templates, and directions for installing anchorages. Deliver such items to Project site in time for installation.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair finish or replace control booths that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five (5) years from date of Substantial Completion.

1.9 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Control booths shall withstand the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7 and as follows:
 - 1. Loads: As indicated on drawings.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

- D. Safety Glazing Products: Category II materials complying with testing requirements in 16 CFR 1201.
 - 1. Subject to compliance with requirements, obtain safety glazing products permanently marked with certification label of manufacturer acceptable to authorities having jurisdiction.
- E. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.
- F. Delegated-Design: Provide delegated design services including calculations and shop drawings for load bearing items to comply with performance requirements, applicable code requirements and design criteria signed and sealed by an engineer registered in the State of Florida.
- G. Approvals: Manufacturer shall certify that product complies with large missile impact criteria and has been tested and approved in compliance with Florida Product Approval or Miami Dade NOA and applicable requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer shall be one of the following however products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product and acceptance is provided by the Architect in writing prior to bidding.
 - 1. PortaFab Modular Building Systems
 - 2. Panel Built Incorporated
 - 3. Guardian Booth

2.2 PRE-FABRICATED STEEL CONTROL BOOTHS

- A. General: Fabricate control booths from an integrated set of mutually dependent components to form a completed assembly, ready for installation on Project site.
- B. Size: As indicated on drawings.
- C. Structural Framework: Fabricated from 2-by-4 galvanized steel structural or mechanical tubing. Connect framework by welding.
- D. Doors: Swinging door on one side.
 - 1. Door: Hollow metal door and frame, door; 1-3/4 inches thick; tubular-frame design fabricated from galvanized steel; with top half of door glazed. Equip door with deadlock, lock support, guide hardware, and full weather stripping.
 - a. Glazing: Fixed unit with tinted insulated tempered float glass.
 - b. Deadlock: Mortised, laminated-hook bolt type with removable cylinder capable of being master keyed.
- E. Windows: Extruded-aluminum sash frames glazed with tinted insulated tempered float glass.
 - 1. Frame Finish: Manufacturer's standard clear anodic.
- F. Wall Panel Assembly: Assembly consisting of exterior face panel fabricated from 14-gauge nominal-thickness, galvanized-steel sheet; and interior face panel fabricated from 18-gauge nominal-thickness, galvanized-steel sheet; with 4" thick, polystyrene board insulation in cavity between exterior and interior face panels.
- G. Base/Floor Assembly: 4-inch high assembly consisting of perimeter frame welded to structural framework of booth. Fabricate frame from 2-by-4-inch galvanized-steel structural tubing; 0.108-inch nominal-thickness, minimum. Include anchor clips fabricated from 1/4-inch thick galvanized-steel plate, predrilled and welded to exterior of integral floor frame.

1. Subfloor and Finished Floor: Assembly consisting of 0.079-inch nominal-thickness, 4-way diamond galvanized-steel sheet finished floor with rigid 4" thick polystyrene board insulation core; and 2 x 4 galvanized steel tube frame.
- H. Flat Roof/Ceiling Assembly: Assembly consisting of exterior roof panels, interior ceiling panels, and insulation between exterior and interior panels; sloped to drain at booth perimeter.
 1. Exterior Roof Panel: Fabricated from 12-gauge nominal-thickness, galvanized-steel sheet; with EPDM membrane, continuously welded seams.
 2. Interior Ceiling Panel: Fabricated from 12-gauge nominal-thickness, galvanized-steel sheet; with 4" thick polystyrene board insulation in cavity between ceiling and roof and 2 x 4 galvanized steel tube frame.
 3. Canopy Fascia: Fabricated galvanized-steel sheet, of manufacturer's standard design.
 - a. Height: 6 inches.
 - b. Overhang: 3 inches face of walls below.
- I. Work Counters: Full width of control booth, reinforced; with 16-inch wide storage drawer below each counter and an access opening for electrical cords at each rear corner of counter.
 1. Material: 14-gauge galvanized steel.
 2. Depth: 18 inches.
- J. Electrical Power Service: 125-A, 120/240-V ac, single-phase, three-wire load center, with no fewer than four open circuits; located under one end of work counter. Run copper wiring in 1/2-inch EMT conduit.
 1. Provide one (1) 120-V ground-fault circuit interrupter (GFCI) power receptacle.
- K. Lighting Fixtures: One (1) ceiling-mounted LED lighting fixture, with acrylic lens. Provide single-pole switch mounted adjacent to door to control lighting fixture.
- L. Cooling/Heating Unit: Wall-mounted, thermostatically controlled heat pump air conditioner with cooling capacity of not less than 13,500 Btu/h. Enclose in enameled-steel cabinet.
- M. Anchorage: Cast-in-place anchor bolts fabricated from non-ferrous or corrosion-resistant materials, with allowable load or strength design greater than or equal to the design load as determined by testing conducted by a qualified testing agency.

2.3 MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, commercial quality, G90 (Z275) coating designation; mill phosphatized.
- B. Galvanized, Rolled Steel Tread Plate: ASTM A 786/A 786M, rolled from steel plate complying with ASTM A 572/A 572M, Grade 55 (380); hot-dip galvanized according to ASTM A 123/A 123M.
- C. Steel Structural Tubing: ASTM A 500/A 500M, Grade B.
- D. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- E. Steel Mechanical Tubing: ASTM A 513, welded-steel mechanical tubing.
- F. Zinc-Coated (Galvanized) Steel: Hot-dip galvanized according to ASTM A 123/A 123M.
- G. Tinted Insulating Glass: ASTM E 2190. Factory-assembled units consisting of two lites of 2.5-mm-thick clear float glass, ASTM C 1036, Type I, Class 2, Quality q3, and dehydrated air space, with a total overall unit thickness of 1 inch and with manufacturer's standard dual seal.

2.4 FABRICATION

- A. Factory fabricate control booths completely.
- B. Factory preglaze windows and doors.
- C. Factory prewire control booths, ready for connection to service at Project site.
- D. Fabricate control booths with forklift pockets in base of booth.

- E. Accessible Control Booths: Where indicated to be accessible, fabricate control booths as follows:
 - 1. Provide service windows located no higher than 34 inches above exterior grade.
 - 2. Provide door opening with minimum 32-inch clear width.
 - 3. Provide minimum 60-inch clear turning spacing within the booth.
 - 4. Provide minimum 27-inch clearance beneath interior work surfaces. Locate work surfaces 28 inches minimum and 34 inches maximum above the floor.
 - 5. Locate controls and operable parts no lower than 15 inches and no higher than 48 inches above the floor where reach is unobstructed. Where side reach is obstructed, locate controls and operable parts no lower than 15 inches and no higher than 46 inches above the floor.

2.5 FINISH

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Surfaces shall be free of scratches and other serious surface blemishers and chemically clean.
- B. Exterior Galvanizing: Exterior components shall be hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- C. Preparation for shop Priming Galvanized Items: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process and applicable.
- D. Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
 - 1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, including concrete bases; accurate placement, pattern, and orientation of anchor bolts; critical dimensions; and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical and communication systems to verify actual locations of connections before control booth installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install control booths according to manufacturer's written instructions.
- B. Accessible Control Booths: Install with interior floor surface at same elevation as adjacent paved surfaces.
- C. Set control booths plumb and aligned. Level baseplates true to plane with full bearing on concrete bases.
- D. Fasten control booths securely to concrete base with anchorage indicated.

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- E. Connect to electrical power service and data systems.
- F. Perform startup checks of air conditioning units according to manufacturer's written instructions.

3.3 ADJUSTING

- A. Adjust doors, operable windows, and hardware to operate smoothly, easily, properly, and without binding. Confirm that locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.
- C. After completing installation, inspect exposed finishes and repair damaged finishes.

END OF SECTION

SECTION 26 01 00
OPERATION AND MAINTENANCE MANUALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. O & M Manuals contain copies of all warranties, operation and maintenance instructions, and other pertinent information relative to the project that is used throughout the life of the facility. This section contains additional requirements for the preparation of Electrical and Systems Operation and Maintenance Manuals.

1.3 OPERATION AND MAINTENANCE MANUALS

- A. General: Refer to Section 01 77 00 Closeout Procedures.
- B. O & M Data:
1. Manufacturers' operation and maintenance data is required for all items as called for in the specifications. O & M Manuals shall include manufacturer's name, model number(s), characteristics, manufacturer's agent, service agent, supplier, where and/or what item(s) are used for and description (i.e. surge suppression - switchboard MDPA).
 2. Include troubleshooting instructions, list of special tools required, theory of operation, manufacturer's care and cleaning, preventative maintenance instructions, wiring diagrams, and point-to-point schematics.
- C. O & M Manuals to include, but are not limited to:
1. Completed forms and information contained in Division 01 General Requirements, Section 01 77 00 and this section of the specifications. Reinforced separation sheets tabbed with the appropriate specification reference number and typed index for each section in the Systems Schedule
 - a. Project Information Sheet (Exhibit A)
 - b. O & M Cover Examples (Exhibit B)
 - c. Spare Parts/Maintenance Stock Certification (Exhibit D)
 - d. Check Out Memo
 - e. Conductor Insulation Resistance Test Memo
 - f. Ground Test Information
 - g. Voltage and Amperage Readings (Tabulated Data)
 - h. Progress and Record Drawing Certification
 2. Shop Drawings: Shop drawings shall be a copy of the final and accepted shop drawing submitted in accordance with Division 01 requirements.

3. Product Data: Product data and/or catalog sheets shall be a copy of the final and accepted submittal submitted in accordance with Division 01 requirements. These shall be inserted in binder in proper order.
4. Warranties/Guarantees: Provide copies of warranties/guarantees in respective location in O & M binder, (Power and Lighting) (Systems). Original warranties/guarantees are to be incorporated as noted in Division 01 General Requirements.
5. Copies of electrical panel schedules and electrical panel directories included with the corresponding specification section.
6. Wiring diagrams, schematic, etc. inserted in proper order, for:
 - a. Time clocks.
 - b. Photocells.
 - c. Control devices, motor controls.
 - d. UPS systems.
 - e. Transformers.
 - f. Panelboards.
 - g. Distribution panelboards.
 - h. Switchboards.
 - i. Each and every part of Divisions 27 and 28 sections of these Specifications
7. Division 26
 - a. Section 26 05 19 – Building Wire and Cable
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - b. Section 26 05 26 – Grounding and Bonding
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - ii. Test results on each ground rod.
 - iii. Ground Test Information Form
 - c. Section 26 05 29 – Hangers and Supports
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - d. Section 26 05 33 - Conduit
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - e. Section 26 05 34 – Outlet Boxes
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - f. Section 26 05 35 – Pull and Junction Boxes
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - g. Section 26 05 37 – Surface Raceways
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - h. Section 26 05 38 – Floor Boxes
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - ii. Equipment supplier list for section's equipment.
 - iii. Installation/removal instructions.
 - iv. Parts list.
 - i. Section 26 05 43 – Underground Ducts and Raceways for Electrical Systems
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - j. Section 26 05 53 – Identification for Electrical Systems
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - ii. Equipment supplier list for each section's equipment.
 - k. Section 26 05 73 – Power System Study
 - i. Copy of complete Study
 - l. Section 26 22 13 - Dry Type Transformers

- i. Product data and/or catalog sheets on equipment applicable to this project.
 - ii. Equipment supplier list for section's equipment.
 - iii. Recommended periodic testing procedures.
 - iv. Parts list.
 - v. Any special manufacturer suggested O & M information.
 - vi. Installation/removal instructions.
 - vii. Check-Out Memo Form
 - m. Section 26 24 16 - Panelboards
 - i. Product data and/or catalog sheets on equipment applicable to this project.
 - ii. Equipment supplier list for section's equipment.
 - iii. Internal wiring diagrams.
 - iv. Bus diagrams.
 - v. Operation and maintenance requirements, instructions, and recommended testing.
 - vi. Parts list.
 - vii. Copy of directory.
 - viii. Voltage and Amperage Readings Tabulated Data Form
 - ix. Check-Out Memo Form
 - n. Section 26 27 16 – Cabinets and Enclosures
 - i. Product data and/or catalog sheets on products applicable to this project.
 - ii. Equipment supplier list for section's equipment.
 - o. Section 26 27 26 – Wiring Devices
 - i. Product data and/or catalog sheets on all products applicable to this project.
 - ii. Equipment supplier list for section's equipment.
 - iii. Ground fault wiring devices; in addition to above provide:
 - a) Wiring diagram.
 - p. Section 26 28 19 – Enclosed Disconnect Switches
 - i. Product data and/or catalog sheets on equipment applicable to this project.
 - ii. Equipment supplier list for section's equipment.
 - q. Section 26 43 00 – Surge Protective Devices
 - i. Product data and/or catalog sheets on all equipment applicable to this project.
 - ii. Equipment supplier list.
 - iii. Parts list.
 - iv. Recommended testing and replacement procedures.
- 8. Division 27
 - a. Section 27 41 00 – Audio Video Systems
 - i. For each system; name, address, phone, cell, fax, email:
 - a) Installer
 - b) Authorized representative
 - c) Equipment supplier
 - ii. Product data and/or catalog sheets on equipment applicable to this project.
 - iii. Parts list.
 - iv. Wiring diagrams of panels.
 - v. Shop drawings as submitted and accepted in submittal process.
- 9. Division 28
 - a. Section 28 13 10 – Access Control System
 - i. For each system; name, address, phone, cell, fax, email:

- a) Installer
- b) Authorized representative
- ii. Product data and/or catalog sheets on equipment applicable to this project.
- iii. Parts list.
- iv. Wiring diagrams of panels.
- v. Shop drawings as submitted and accepted in submittal process.
- b. Section 28 16 00 – Intrusion Detection System
 - i. For each system; name, address, phone, cell, fax, email:
 - a) Installer
 - b) Authorized representative
 - ii. Product data and/or catalog sheets on equipment applicable to this project.
 - iii. Parts list.
 - iv. Wiring diagrams of panels.
 - v. Shop drawings as submitted and accepted in submittal process.

1.4 PROCESSING SUBMITTALS

- A. Refer to Division 01 General Requirements.

1.5 DELAYS

- A. Contractor is responsible for delays in job project accruing directly or indirectly from late submissions or resubmissions of shop drawings, or product data.

1.6 RESUBMITTALS

- A. The A/E shall be reimbursed cost to review resubmittals subsequent to the second submittal.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

EXHIBIT A

PROJECT INFORMATION SHEET

School: _____

Project Name: _____

Project Number: _____

Substantial Completion Date: _____

Certificate of final Completion Date: _____

	Name & Address	Phone/Fax	Contact
Martin County School District Authorized Construction Representative			
Architect	Harvard Jolly		
Mechanical Engineer	JLRD, Inc. 1450 Centrepark Blvd., Suite 350 West Palm Beach, Florida 33401	P: 561-689-2303 F: 561-689-2302	
Electrical Engineer	JLRD, Inc. 1450 Centrepark Blvd., Suite 350 West Palm Beach, Florida 33401	P: 561-689-2303 F: 561-689-2302	
Civil Engineer			
Structural Engineer			
Food Service Consultant			
Other Consultant(s)			

Brief Description of Project Scope:

EXHIBIT B

MANUAL COVER (face)

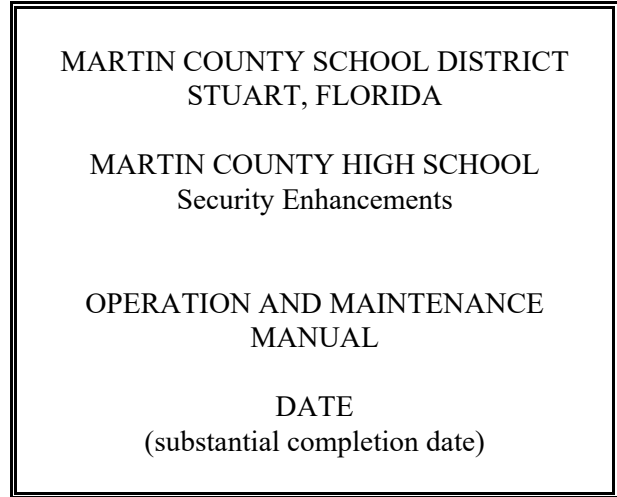
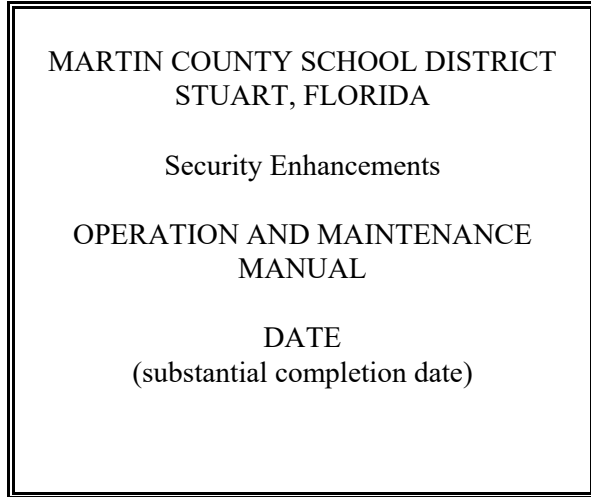


EXHIBIT C

MANUAL COVER (spine)

MCS
D

MARTIN COUNTY
HS
Security
Enhancements

E
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I
C
A
L

OPERATION &
MAINTENANCE
MANUAL

MCS
D

MARTIN COUNTY
HS
Security
Enhancements

S
Y
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OPERATION &
MAINTENANCE
MANUAL

EXHIBIT D

SPARE PARTS / MAINTENANCE STOCK CERTIFICATION

This form verifies that the parts/stock listed below has been delivered to and received by Martin County School District Maintenance. Original shall be included in the Closeout Documentation Manual. Copies shall also be included in the O & M Manual.

Project Name: _____

Type/Name of Spare Parts/Attic Stock: _____

Specification Reference: _____

Quantity of Spare Parts/Attic Stock: _____

Signature below by the Contractor and Subcontractor signifies that the spare parts/maintenance stock, required by the Contract Documents, have been delivered to the Owner.

Contractor/CM

Authorized Signature, Title

Date: _____

Subcontractor

Authorized Signature, Title

Date: _____

Signature by the Owner acknowledges receipt of the same spare parts/maintenance stock.

Martin County School District - Department

Authorized Signature, Title

Date: _____

CHECK OUT MEMO

Check Out Memo shall be completed and a copy provided to the Owner at the Owner's Performance Verification and Demonstration meeting. A copy shall also be included in the specification section of each O & M Manual for the equipment checked.

Project Name _____

Type of Equipment Checked _____

Equipment Number _____

Name of Manufacturer of Equipment _____

Signature below by the manufacturer's authorized representative signifies that the equipment has been satisfactorily tested and checked out on the job by the manufacturer.

1. The attached Test and Data and Performance Verification information was used to evaluate the equipment installation and operation.
2. The equipment is properly installed, has been tested by the manufacturer's authorized representative, and is operating satisfactorily in accordance with all requirements, except for items noted below.*
3. Written operating and maintenance information has been presented and reviewed in detail with the Contractor.
4. Sufficient copies of all applicable operating and maintenance information, parts lists, lubrication checklists, and warranties have been furnished to the Contractor for insertion in the Operation and Maintenance Manuals.

CHECKED BY:

MANUFACTURER'S REPRESENTATIVE – PRINT NAME

ADDRESS

TELEPHONE, FAX, E-MAIL

MANUFACTURER'S REPRESENTATIVE – SIGNATURE AND TITLE

DATE CHECKED

WITNESSED BY:

CONTRACTOR'S REPRESENTATIVE – SIGNATURE AND TITLE
*EXCEPTIONS NOTED AT TIME OF CHECK-OUT (USE ADDITIONAL PAGE IF NECESSARY)

CONDUCTOR INSULATION RESISTANCE TEST MEMO

PROJECT NAME _____

CONDUCTOR FROM _____ TO

SIZE _____

INSULATION TYPE

INSULATION VOLTAGE
RATING _____

DATE _____ TIME _____

WEATHER
CONDITIONS _____

TEST VOLTAGE (DC) _____

RANGE _____

MEGGER INSTRUMENT/SERIAL
NUMBER _____

TESTING METHODOLOGY

INSULATION RESISTANCE MEASUREMENT (ACCEPTABLE MEASUREMENT NOT TO BE
LESS THAN (1) MEGOHM):

PHASE A TO GROUND	_____
PHASE B TO GROUND	_____
PHASE C TO GROUND	_____
NEUTRAL TO GROUND	_____
ISOLATED GROUND TO GROUND	_____

Martin County School District
Martin County High School
Enhanced Security Project A1

CONTRACTOR'S REPRESENTATIVE _____

DATE _____

OWNER'S REPRESENTATIVE: _____

DATE: _____

ENGINEER'S REPRESENTATIVE: _____

DATE: _____

GROUND TEST INFORMATION

PROJECT NAME: _____

GROUND TYPE: _____

TEST BY: _____

DATE OF TEST: _____

GROUND LOCATION: _____

GROUND TYPE (Rod, Water pipe, etc.):

PRIOR TO CONNECTION TO SYSTEM

GROUND _____ (OHMS)

AFTER CONNECTION TO SYSTEM

GROUND _____ (OHMS)

WEATHER CONDITIONS (Wet/Dry) _____

SOIL CONDITIONS (Wet/Dry) _____

CONTRACTOR'S REPRESENTATIVE _____

DATE _____

ENGINEER'S REPRESENTATIVE _____

DATE _____

OWNER'S REPRESENTATIVE _____

DATE _____

VOLTAGE AND AMPERAGE READINGS (TABULATED DATA)

PROJECT NAME _____

SWITCHGEAR/PANELBOARD _____

FULL LOAD AMPERAGE READINGS:

DATE _____

TIME _____

PHASE A _____

B _____

C _____

N _____

GROUND _____

FULL LOAD VOLTAGE READINGS:

DATE _____

TIME _____

PHASE A TO N _____ A TO B _____

B TO N _____ A TO C _____

C TO N _____ B TO C _____

VOLTAGE AT THE END OF THE LONGEST BRANCH

TYPE OF LOAD _____

NO LOAD VOLTAGE READINGS:

DATE _____

TIME _____

PHASE A TO N _____ A TO B _____

B TO N _____ A TO C _____

C TO N _____ B TO C _____

ENGINEER'S REPRESENTATIVE

DATE _____

OWNER'S AUTHORIZED REPRESENTATIVE

DATE _____

CONTRACTOR'S REPRESENTATIVE

DATE _____

Martin County School District
Martin County High School
Enhanced Security Project A1

PROGRESS AND RECORD DRAWING CERTIFICATION

NAME OF PROJECT: _____

DIVISION NUMBER AND NAME:

This is to certify that the attached marked-up design prints were marked as the items were installed at the site during construction, and that these prints represent as accurate "As-Builts" record of the work as actually installed. One copy will be turned over to the Owner at the instruction in Operation Conference. The duplicate copy is for the Engineer's files.

General Contractor

By: Authorized Signature and Title

Date

Subcontractor

By: Authorized Signature and Title

Date

SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 01, General Requirements, are included as a part of this Section as though bound herein.
- B. The requirements in this section of the specification are in addition to all requirements in sections referenced above.

1.2 SUMMARY

- A. This section includes Basic Electrical Requirements specifically applicable to Division 26 Sections, in addition to Division 01 - General Requirements - and any supplemental requirements/conditions.

1.3 DESCRIPTION OF WORK

- A. The work required under this Division shall include all materials, labor and auxiliaries required to install a complete and properly operating electrical system.
- B. The Contractor shall furnish, perform, or provide all labor including planning, purchasing, transporting, storing, installing, testing, cutting and patching, trenching, excavating, backfilling, coordination, field verification, equipment (installation and safety), supplies, and materials necessary for the correct installation of complete electrical systems (as described or implied by these specifications and the applicable drawings) in strict accordance with applicable codes, which may not be repeated in these specifications, but are expected to be common knowledge of qualified Bidders.
- C. The Division 26 Contract Documents refer to work required in addition to (or above) the minimum requirements of the NEC 2014. Edition and applicable local codes. All work shall comply with all applicable codes as a minimum and with the additional requirements called for in these Contract Documents.
- D. Only trained and licensed personnel shall be used by the Contractor to perform work. The Contractor shall not perform work, which violates applicable Codes, even if called for in the Contract Documents. The Contractor's Bid shall include work necessary to completely install the electrical systems indicated by the Contract Documents in accordance with applicable Codes.
- E. Refer to other Division 26 Sections for additional work requirements.
- F. Coordinate and verify power and telephone company service requirements prior to bid. Bid to include all work required for complete and properly operating systems.
- G. Connections of all items using electric power shall be included under this division of the specifications, including necessary wire, conduit, circuit protection, disconnects and accessories. Securing of roughing-in drawings and connection information for equipment involved shall also be included under this division. See other divisions for specifications for electrically operated equipment.

- H. The Contractor shall provide and install panic hardware on all electrical room doors where the electrical room houses equipment rated 1200 amps or more per NEC 110.26. All electrical room doors shall open in the direction of egress.

1.4 WORK SEQUENCE

- A. Install work in stages and/or phases to accommodate Owner's occupancy requirements. Coordinate electrical schedule and operations with Owner and Architect/Engineer.

1.5 CODES, FEES, AND STANDARDS

- A. Obtain permits and request inspections from authority having jurisdiction and applicable utility companies.
- B. Pay for all required licenses, fees, and inspections.
- C. Contact the Utility Companies to determine if fees, charges or costs are required by the Utility Company for permanent power and for temporary power, installations and hook-ups. These fees, charges or costs shall be included in Contractor's bid.
- D. Material shall be new and free of defects with UL listing or be listed with an approved, nationally recognized Electrical Testing Agency if and only if UL Listing is not available for material.

1.6 PROJECT/SITE CONDITIONS

- A. Install Work in locations shown or described in the Contract Documents, unless prevented by Project conditions.
- B. The Contractor shall install all equipment so that all Code required and Manufacturer recommended servicing clearances are maintained. Contractor shall be responsible for the proper arrangement and installation of all equipment within any designated space. Should the Contractor determine that a departure from the Contract Documents is necessary, he shall submit to the A/E, for approval, detailed drawings of his proposed changes with his written reasons for the changes. No changes shall be implemented by the Contractor without the issuance of the required drawings, clarifications, and/or change orders.
- C. The Contractor shall verify finish dimensions at the project site in preference to using dimensions noted on Contract Documents.

1.7 CONTRACT DOCUMENTS

- A. These specifications and applicable drawings shall be considered supplementary, one to the other and are considered Contract Documents. All workmanship, methods, and/or material described or implied by one and not described or implied by the other shall be furnished, performed, or otherwise provided just as if it had appeared in both sets of documents.
- B. Where a discrepancy or conflict is found between these specifications and any applicable drawing, the Contractor shall notify the A/E in written form. In the event that a discrepancy exists between specifications and any applicable drawing, the most stringent requirement shall govern unless the discrepancy conflicts with applicable codes wherein the code shall govern. The most stringent requirement shall be that work, product, etc which is the most expensive and costly to implement.

- C. The drawings are diagrammatic and are not intended to include every detail of construction, materials, methods, and equipment. They indicate the result to be achieved by an assemblage of various systems. Coordinate equipment locations with Architectural and Structural drawings. Layout equipment before installation so that all trades may install equipment in spaces available. Coordinate installation in a neat and workmanlike manner.
- D. Wiring arrangements for equipment shown on the drawings are intended to be diagrammatic and do not show all required conductors and functional connections. All wiring and appurtenances required for the proper operation of all equipment to be connected shall be provided.
- E. Specifications require the Contractor to provide shop drawings which shall indicate the fabrication, assembly, installation, and erection of a particular system's components. Drawings that are part of the Contract Documents shall not be considered a substitute for required shop drawings, field installation drawings, Code requirements, or applicable standards.
- F. Locations indicated for outlets, switches, and equipment are approximate and shall be verified by instructions in specifications and notes on the drawings. Where instructions or notes are insufficient to locate the item, notify the A/E.
- G. The Contractor shall take finish dimensions at the project site in preference to scaling dimensions on the drawings.
- H. Where the requirements of another Division, section, or part of these specifications exceed the requirements of this Division those requirements shall govern.

1.8 MATERIALS AND EQUIPMENT

- A. Material shall be new (except where specifically noted, shown or specified as "Reused") and/or denoted as existing) and shall be UL listed and bear UL label. Where no UL label listing is available for a particular product, material shall be listed with an approved, nationally recognized Electrical Testing Agency. Where no labeling or listing service is available for certain types of equipment, test data shall be submitted to prove to the Engineer that equipment meets or exceeds available standards.
- B. Where Contract Documents list design selection or manufacturer, type, this model shall set the standard of quality and performance required. Where no brand name is specified, the source and quality shall be subject to A/E's review and acceptance. Where Contract Documents list accepted substitutions, these items shall comply with requirements in Division 01.
- C. When a product is specified to be in accordance with a trade association or government standard and at the request of A/E the Contractor shall furnish a certificate that the product complies with the referenced standard and supporting test data to substantiate compliance.
- D. Where multiple items of the same equipment or materials are required, they shall be the product of a single Manufacturer.
- E. Where the Contract Documents require materials and/or equipment installed, pulled, or otherwise worked on, the materials and/or equipment shall be furnished and installed by the Contractor responsible for Division 26 methods and materials unless specifically noted otherwise.
- F. Where the contract documents refer to the terms "furnish," "install," or "provide," or any combination of these terms) the materials and/or equipment shall be supplied and delivered to the project including all labor, unloading, unpacking, assembly, erection, anchoring, protecting supplies and materials necessary for the correct installation of complete system unless specifically noted otherwise.
- G. Before the Contractor orders equipment, the physical size of specified equipment shall be checked to fit spaces allotted on the drawings, with NEC working clearances provided. Internal access for proposed equipment substitutions shall be provided.

- H. Electrical equipment shall be protected from the weather, during shipment, storage, and construction per manufacturer's recommendations for storage and protection. Should any apparatus be subjected to possible damage by water, it shall be thoroughly dried and put through a dielectric test, at the expense of the Contractor, to ascertain the suitability of the apparatus, or it shall be replaced without additional cost to the Owner. No additional time will be allowed and the project completion date shall be maintained.
- I. Inspect all electrical equipment and materials prior to installation. Damaged equipment and materials shall not be installed or placed in service. Replace or repair and test damaged equipment in compliance with industry standards at no additional cost to the Owner. Equipment required for the test shall be provided by the Contractor.
- J. Material and equipment shall be provided complete and shall function up to the specified capacity/function. Should any material and/or equipment as a part or as a whole fail to meet performance requirements, replacements shall be made to bring performance up to specified requirements. Damages to finish by such replacements, alterations, or repairs shall be restored to prior conditions, at no additional cost to the Owner.
- K. Where tamperproof screws are specified or required, Phillips head or Allen head devices shall not be accepted. For each type used, provide Owner with three tools. Owner will designate the specific hardware design to correspond with existing devices elsewhere in the building, to limit special tool requirements.
- L. Where the Contract Documents denote equipment and/or material to be 'new' and/or 'existing' and also provide no denotation for other equipment as to it being 'new' and/or 'existing,' this is not to infer that the non-denoted equipment is either new or existing, or opposite of the equipment that is denoted. The use of the terms 'new' or 'existing' is meant to clarify denoted equipment/materials for that item only, and the lack of the terms 'new' or 'existing' in relation to identifiers/notes/denotations on the drawings is not to infer that this non-denoted equipment or materials is new or existing.

1.9 MISCELLANEOUS CIRCUITS REQUIRED

- A. Provide 120 volt, 20 amp circuit to post indicator valves (whether shown on drawings or not). Connect to spare 20 amp, 1 pole circuit breaker in nearest 120 volt panel. Re-label circuit breaker accordingly. Provide locking device on breaker. Coordinate location with civil engineer (and drawings/specifications) or fire protection engineer (and drawings/specifications) prior to bid and provide all electrical. Coordinate final location and electrical requirements with valve installer after bid and provide all electrical. Nearest panel to be nearest emergency panel, when building has emergency generator system.
- B. Provide 120 volt, 20 amp circuit to fire protection system panel and bell (whether shown on drawings or not). Connect to spare 20 amp, 1 pole circuit breaker in nearest 120 volt panel. Re-label circuit breaker accordingly. Provide locking device on breaker. Coordinate location with civil engineer (and drawings/specifications) or fire protection engineer (and drawings/specifications) prior to bid and provide all electrical. Coordinate final location and electrical requirements with panel installer after bid and provide all electrical. Nearest panel to be nearest emergency panel, when building has emergency generator system.

- C. Provide 120 volt, 20 amp circuit to intercom system panel (whether shown on drawings or not). Connect to spare 20 amp, 1 pole circuit breaker in nearest 120 volt panel. Re-label circuit breaker accordingly. Provide locking device on breaker. Coordinate location with intercom system engineer (and drawings/specifications) prior to bid and provide all electrical. Coordinate final location and electrical requirements with panel installer after bid and provide all electrical. Nearest panel to be nearest emergency panel, when building has emergency generator system.
- D. Provide 120 volt, 20 amp circuit to all fire alarm panels, remote panels, etc (whether shown on drawings or not). Connect to spare 20 amp, 1 pole circuit breaker in nearest 120 volt panel. Re-label circuit breaker accordingly. Provide locking device on breaker. Coordinate location with fire alarm system engineer (and drawings/specifications) prior to bid and provide all electrical. Coordinate final location and electrical requirements with panel installer after bid and provide all electrical. Nearest panel to be nearest emergency panel, when building has emergency generator system.
- E. Provide 120 volt, 20 amp circuit to fire and smoke dampers (whether shown on drawings or not). Connect to spare 20 amp, 1 pole circuit breaker in nearest 120 volt panel. Re-label circuit breaker accordingly. Provide locking device on breaker. Coordinate location with fire protection engineer (and drawings/specifications) prior to bid and provide all electrical. Coordinate final location and electrical requirements with damper installer after bid and provide all electrical. Nearest panel to be nearest emergency panel, when building has emergency generator system.
- F. Provide 120 volt, 20 amp circuit to building control panels for HVAC system (whether shown on drawings or not). Connect to spare 20 amp, 1 pole circuit breaker in nearest 120 volt panel. Re-label circuit breaker accordingly. Provide locking device on breaker. Coordinate location with fire protection engineer (and drawings/specifications) prior to bid and provide all electrical. Coordinate final location and electrical requirements with damper installer after bid and provide all electrical.

1.10 SUPERVISION OF THE WORK

- A. Reference the General Conditions for additional requirements.
- B. The Contractor shall provide experienced, qualified, and responsible supervision for work. A competent foreman shall be in charge of the work in progress at all times. If, in the judgment of the A/E, the foreman is not performing his duties satisfactorily, the Contractor shall immediately replace him upon receipt of a letter of request from the A/E. Once a satisfactory foreman has been assigned to the work, he shall not be withdrawn by the Contractor without the written consent of the A/E.
- C. Provide field superintendent who has had a minimum of four (4) years previous successful experience on projects of comparable size and complexity. Superintendent shall be on the site at all times during construction and must have an active Journeyman's Electrical License.
- D. Superintendent shall be employed by a Florida Registered Electrical Contractor (ER) or Florida Certified Electrical Contractor (EC).

1.11 COORDINATION

- A. Provide all required coordination and supervision where work connects to or is affected by work of others, and comply with all requirements affecting this Division. Work required under other divisions, specifications or drawings to be performed by this Division shall be coordinated with the Contractor and such work performed at no additional cost to Owner including but not limited to electrical work required for:
 - 1. Door Hardware

2. Roll-up doors
 3. Fire shutters
 4. Roll-up grilles
 5. Elevators
 6. Mechanical Division of the Specifications
 7. Landscape Architect drawings
 8. Kitchen Equipment
 9. Millwork design drawings and shop drawings
- B. Contractor shall obtain set of contract documents from Owner for all areas of work noted above and include all electrical work in bid whether included in Divisions 26, 27 or 28 Contract Documents or not.
- C. Installation studies shall be made to coordinate the electrical work with other trades. Work shall be preplanned. Unresolved conflicts shall be referred to the A/E prior to installation of the equipment.
- D. For locations where several elements of electrical or combined mechanical and electrical work must be sequenced and positioned with precision in order to fit into the available space, prepare coordination drawings at 1/4" scale showing the actual physical dimension required for the installation to assure proper integration of equipment with building systems and NEC required clearances. Coordination drawings shall be provided for all areas determined by the A/E.
- E. Secure accepted shop drawings from all required disciplines and verify final electrical characteristics before roughing power feeds to any equipment. When electrical data on accepted shop drawings differs from that shown or called for in Construction Documents, make adjustments to the wiring, disconnects, and branch circuit protection to match that required for the equipment installed.
- F. Damage from interference caused by inadequate coordination shall be corrected at no additional cost to the Owner and the contract time for completion will not be extended.
- G. The Contractor shall maintain an up-to-date set of Contract Documents and Specifications of all trades on the project site, including Architectural, Structural, Mechanical, Electrical and, where provided Interior Design Drawings.
- H. It is the responsibility of this Contractor to coordinate the exact required location of floor outlets, floor ducts, floor stub-ups, etc. with Owner and Architect (and receive their written approval) prior to rough-in. Locations indicated in Contract Documents are approximate.
- I. The Contract Documents describe specific sizes of switches, breakers, fuses, conduits, conductors, motor starters and other items of wiring equipment. These sizes are based on specific items of power consuming equipment (heaters, lights, motors for fans, compressors, pumps, etc.). The Contractor shall coordinate the requirements of each load with each load's respective circuitry shown and with each load's requirements as noted on its nameplate data and manufacturer's published electrical criteria. The Contractor shall adjust circuit breaker, fuse, conduit, and conductor sizes to meet the actual requirements of the equipment being provided and installed and change from single point to multiple points of connection (or vice versa) to meet equipment requirements. Changes due to these coordination efforts shall be made at no additional cost to the Owner.

1.12 PROVISION FOR OPENINGS

- A. Locate openings required for work. Provide sleeves, guards or other accepted methods to allow passage of items installed.

- B. Coordinate with roofing Contractor on installation of electrical items which pierce roof. Roof penetrations shall not void warranty. The use of pitch pockets is not acceptable.
- C. Where work pierces waterproofing, it shall maintain the integrity of the waterproofing. Coordinate roofing materials which pierce roof for compatibility with membrane or other roof types with Contractor prior to installation.

1.13 CONCRETE PADS

- A. Furnish and install reinforced concrete housekeeping pads for transformers, switchgear, motor control centers, and other free-standing equipment. Unless otherwise noted, pads shall be four (4) inches high and shall exceed dimensions of equipment being set on them, including future sections, by six (6) inches each side, except when equipment is flush against a wall where the side against the wall shall be flush with the equipment. Pads shall be reinforced with W1.4 x 1.4 6 x 6 welded wire mesh. Chamfer top edges 1/2". Trowel all surfaces smooth. Provide 3000 psi concrete.
- B. Contractor to provide/install concrete pad for exterior pad mount transformers as required by Power Company.

1.14 SURFACE MOUNTED EQUIPMENT

- A. Surface mounted fixtures, outlets, cabinets, conduit, panels, etc. shall have finish as directed by Engineer.

1.15 CUTTING AND PATCHING

- A. New Construction:
 - 1. Reference Division 01 - General Requirements.
 - 2. Cutting of work in place shall be cut, drilled, patched and refinished by trade responsible for initial installation.
 - 3. The Contractor shall be responsible for backfilling and matching new grades with adjacent undisturbed surface.

1.16 TRENCHING

- A. Trench excavation in excess of 5 feet deep shall comply with OSHA Standard 29 CFRs. 1926. 650 Subpart P.

1.17 INSTALLATION

- A. Erect equipment to minimize interferences and delays in execution of the work.
- B. Take care in erection and installation of equipment and materials to avoid marring finishes or surfaces. Any damage shall be repaired or replaced as determined by the A/E at no additional cost to the Owner.
- C. Equipment requiring electrical service shall not be energized or placed in service until A/E is notified and is present or have waived their right to be present in writing. Where equipment to be placed in service involves service or connection from another Contractor or the Owner, the Contractor shall notify the Owner in writing when the equipment will be ready. The Owner shall be notified as far in advance as possible of the date the various items of equipment will be complete.

- D. Equipment supports shall be secured and supported from structural members except as field accepted by the A/E in writing.
- E. Plywood material shall not be used as a backboard for mounting panel boards, disconnects, motor starters, and dry type transformers. Provide "cast in place" type inserts or install expansion type anchor bolts. Electrical equipment shall not be mounted directly to dry wall for support without additional channels as anchors. Channels shall be anchored to the floor and structure above. Panelboards and terminal cabinets shall be provided with structural framing located within drywall partitions.
- F. The Contractor shall keep the construction site clean of waste materials and rubbish. Upon completion of the work, the Contractor shall remove from the site all debris, waste, unused materials, equipment, etc.
- G. Inserts, pipe sleeves, supports, and anchorage of electrical equipment shall be provided. Where items are to be set or embedded in concrete or masonry, the items shall be furnished and a layout made prior to the setting or embedment thereof, so as to cause no delay.

1.18 PROGRESS AND RECORD DRAWINGS

- A. Keep two sets of blueline prints on the job, and neatly mark up design drawings each day as components are installed. Different colored pencils shall be used to differentiate each system of electrical work. Cost of prints and this labor task shall be included under this Division. All items on Progress Drawings shall be shown in actual location installed. Change the equipment schedules to agree with items actually furnished.
- B. Prior to request for substantial completion observation, furnish a set of neatly marked prints showing "as-installed" (as-built) condition of all electrical installed under this Division of the specifications. Marked up prints are to reflect all changes in work including change orders, field directives, addenda from bid set of Contract Documents, request for information responses, etc. Marked up set of prints are to show:
 - 1. All raceways 1-1/2" and above, exactly as installed.
 - 2. All site raceways exactly as installed.
 - 3. Any combining of circuits (which is only allowed by specific permission) or change in homerun outlet box shall be made on as-builts.
 - 4. Any circuit number changes on plan shall be indicated on as-builts.
 - 5. Any panelboard schedule changes shall be indicated on as-builts.
- C. Marked up prints as noted above are to be submitted to A/E for acceptance. Contractor shall review submitted "as-builts" with Engineer in the field. Contractor shall verify every aspect for accuracy.
- D. After acceptance of marked up prints by A/E with all changes, additions, etc. included on accepted marked up prints, submit prior to request for final payment and/or request for final observation.
- E. Where the Contractor has failed to produce representative "as-built" drawings in accordance with requirements specified herein, the Contractor shall reimburse Engineer all costs to produce a set of "as-built" drawings to the Architect/Owner satisfaction.

1.19 "OBSERVATION OF WORK" REPORT

- A. Reference the General Conditions.

- B. Items noted by A/E or his representative during construction and before final acceptance which do not comply with the Contract Documents will be listed in a "Observation of Work" report which will be sent to the Contractor for immediate action. The Contractor shall correct all deficiencies in a prompt concise manner. After completion of the outstanding items, provide a written confirmation report for each item. The report shall indicate each item noted, and method of correction. Enter the date on which the item was corrected, and return the signed reports so items can be rechecked. Failure to correct the deficiencies in a prompt concise manner or failure to return the signed reports shall be cause for disallowing request for payments.
- C. Items noted after acceptance during one-year guarantee period shall be checked by the Contractor in the same manner as above. The signed reports are to be returned by him when the items have been corrected.

1.20 TRAINING OF OWNERS OPERATORS: (Refer to Appendix A)

- A. The owners shall be given comprehensive training in the understanding of the systems and operation and maintenance of each major piece of equipment
- B. The contractor shall be responsible for scheduling the training which shall start with classroom sessions followed by hands on training on each piece of equipment. Hands on training shall include start-up, operation in all modes possible, shut-down and any emergency procedures.
- C. The manufacturer's representative shall provide the instructions on each major piece of equipment. These sessions shall use the printed installation, operation and maintenance instruction material included in the O&M manuals and shall emphasize safe and proper operating requirements and preventative maintenance.

1.21 SYSTEMS WARRANTY

- A. Reference the General Conditions.
- B. The work shall include a one-year warranty. This warranty shall be by the Contractor to the Owner for any defective workmanship or material which has been furnished at no cost to the Owner for a period of one year from the date of substantial completion of System. Warranty shall not include light bulbs in service after one month from date of substantial completion of the System. Explain the provisions of warranty to the Owner at the "Demonstration of Completed System" meeting to be scheduled with the Owner upon project completion.
- C. Where items of equipment or materials carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material.
- D. Where extended Warranty or Guarantees are called for herein, furnish three copies to be inserted in Operation and Maintenance Manuals.
- E. All preventative maintenance and normal service will be performed by the Owner's maintenance personnel after final acceptance of the work which shall not alter the Contractor's warranty.

1.22 WASTE MATERIALS DISPOSAL

- A. Contractor shall include in his bid the transport and disposal or recycling of all waste materials generated by this project in accordance with all rules, regulations and guidelines applicable. Contractor shall comply fully with Florida statute 403.7186 regarding mercury containing devices and lamps. Lamps, ballasts and other materials shall be transported and disposed of in accordance with all DEP and EPA guidelines applicable at time of disposal. Contractor shall provide owner with written certification of accepted disposal.

1.23 SUBSTANTIAL COMPLETION

- A. The Contractor shall be fully responsible for contacting all applicable parties to schedule required observations of the work by Engineer.
- B. Work shall be complete as required by authorities having jurisdiction and the general conditions of the contract prior to request for substantial completion observation. Work must be deemed substantially complete by A/E to fulfill requirements.

1.24 PROHIBITION OF ASBESTOS AND PCB

- A. The use of any process involving asbestos or PCB, and the installation of any product, insulation, compound of material containing or incorporating asbestos or PCB, is prohibited. The requirements of this specification for complete and operating electrical systems shall be met without the use of asbestos or PCB.
- B. Prior to the Final Review field visit, the Contractor shall certify in writing that the equipment and materials installed in this Project under this Division 26 contain no asbestos or PCB's. Additionally, all manufacturers shall provide a statement with their submittal that indicates that their product contains no asbestos or PCB's. This statement shall be signed and dated by a duly authorized agent of the manufacturer.

PART 2 PRODUCTS

(Not Applicable)

PART 3 EXECUTION

(Not Applicable)

END OF SECTION

APPENDIX A

Training Schedule							
Div.	Training Description	Subcontractor	Demo Date	Time	Hours	Comments	Personnel to attend training
	Premise Distribution System IT Network/Data				4 hours	Familiarize the owner with the locations of all TR's, cable and jack labeling and numbering systems, data and voice connections.	
	Electrical Systems				2-4 hour	Complete overview of all electrical systems. See specifications for list of essential features to be demonstrated, include generator.	
	Audio Video Systems				2-4 hour	Demo system operation and provide a 2 hour video taped instruction with manufacture's training personnel to school personnel upon all aspects of the CATV system from the head-end to the user TV.	
	Access Control System				4 hours	Demonstrate to owner selected personnel proper operation and maintenance of all related equipment.	
	Intrusion Detection				2-4 hour	Demonstrate to owner selected personnel proper operation and maintenance of all related equipment.	

SECTION 26 05 03
EQUIPMENT WIRING SYSTEMS

PART 1 – GENERAL

1.1 DESCRIPTION OF SYSTEM

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:
 - 1. Electrical connections to equipment specified under other sections.

1.2 RELATED SECTIONS

- A. Summary of Work
- B. Conduit.
- C. Building Wire and Cable.
- D. Boxes.
- E. Electric Doors

1.3 REFERENCES

- A. NEMA WD 1 - General Requirements for Wiring Devices
- B. NEMA WD 6 - Wiring Devices-Dimensional Requirements
- C. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Submit under provisions of the General Requirements of the Contract Documents and Section Submittals.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.6 COORDINATION

- A. Obtain and review shop drawings, product data, and manufacturer's instructions for equipment furnished under other sections.
- B. Determine connection locations and requirements.
- C. Sequence rough-in of electrical connections to coordinate with installation schedule for equipment.
- D. Sequence electrical connections to coordinate with start-up schedule for equipment.

PART 2 – PRODUCTS

2.1 CORDS AND CAPS

- A. Attachment Plug Construction: Conform to NEMA WD 1.
- B. Configuration: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
- C. Cord Construction: ANSI/NFPA 70, Type SO multi-conductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
- D. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify conditions under provisions of Section Investigation of Existing Electrical Systems.
- B. Verify that equipment is ready for electrical connection, wiring, and energization.

3.2 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations (including inside of coolers/freezers).
- C. Make wiring connections using wire and cable with insulation suitable for temperatures encountered in heat producing equipment and in cooler/freezers.
- D. Provide receptacle outlet where connection with attachment plug is required. Provide cord and cap where field-supplied attachment plug is required.
- E. Provide suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- F. Install disconnect switches, controllers, control stations, and control devices as required.
- G. Modify equipment control wiring with terminal block jumpers as required.
- H. Provide interconnecting conduit and wiring between devices and equipment where required.
- I. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

3.3 EQUIPMENT CONNECTION SCHEDULE

- A. By local authority and as required for a complete and operating service.
- B. Electric Door(s) and Gate(s):
 - 1. Electrical Connection: liquid tight flexible conduit with local field installed disconnect switch and field installed control switch.
 - 2. Voltage: 120 volts, 1 phase, 60 Hz, 3/4" c or as indicated on drawings.
 - 3. Load rating: 1/2 hp, 3/4" c or as indicated on drawings
 - 4. Provide local disconnecting means.

END OF SECTION

SECTION 26 05 07
SUBMITTALS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Requirements for submittals specifically applicable to Division 26, 27, 28 Sections.
- B. See Section Substitutions for additional requirements when submittal consists of accepted substitution equipment.

1.3 SUBMITTAL OF "ACCEPTED SUBSTITUTE" EQUIPMENT/PRODUCT

- A. Representation: In submitting item, equipment, product, etc. that has been listed on contract drawings, in contract documents or in an addenda, Contractor represents that he:
 - 1. Has investigated substituted item and has determined that it is equal or superior to specified product in all aspects and that use of substituted item will not require any additional time to the Contract.
 - 2. Will coordinate installation of accepted substitution into work, making changes as may be required to complete work in all aspects.
 - 3. Waives all claims for additional costs related to substitution which may subsequently become apparent.
 - 4. Will provide the same warranties for the substitution as for the product specified.
 - 5. Will absorb all costs incurred by the substitution when affecting other trades including but not limited to electrical, structural, architectural, etc.
 - 6. Will absorb any cost incurred by the Engineer in review of the substituted product if the acceptance of the substituted item creates the need for system modification and/or redesign, or if the substituting contractor exhibits negligence in his substituting procedure thus submitting inferior, misapplied or miss-sized equipment. In the event of additional engineering costs, the billing structure shall be agreed upon prior to review by all involved parties.
- B. Substitutions that cannot meet space requirements or other requirements of these Specifications, whether accepted or not, shall be replaced at the Contractor's expense with no additional time added to the Contract.

1.4 SUBMITTALS

- A. Submittals shall consist of a minimum of one view type 3-ring binder, white, sized to hold 8-1/2" x 11" sheets for "ELECTRICAL SUBMITTALS" (Power and Lighting).
 - 1. Binder is to be adequately sized to comfortably hold required submittals. Minimum spline size to be 1", maximum spline size to be 3" (provide additional binders if 3" size is not sufficient to properly hold submittals).

2. Binder cover and spline to have outer clear vinyl pockets. Provide correct designation of project in each pocket; see Binder Examples for Submittals included at end of this Section. Description sheet is to be white with black letters, minimum of 11" high and full width of pocket. Description is to describe project and match project drawing/project manual description. Description to include submittal type, i.e., "ELECTRICAL SUBMITTALS" for Power and Lighting.
- B. Submittals Binders to include:
1. First sheet shall be prepared and filled out by Contractor and shall list project addresses, telephones, etc.; see "PROJECT ADDRESSES" Form included at end of this section.
 2. Second sheet in binder shall be a photocopy of the Electrical Index pages in Specifications.
 3. Provide reinforced separation sheets tabbed with the appropriate specification reference number and typed index for each section in the Systems Schedule.
 4. Submittals consisting of marked catalog sheets or shop drawings shall be inserted in the binder in proper order. Submittal data shall be presented in a clear and thorough manner. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Markings shall be made with arrows or circles (highlighting is not acceptable).
 5. Shop Drawings: Drawings to include identification of project and names of Architect, Engineer, General Contractor, subcontractor and supplier, data, number sequentially and indicate the following:
 - a) Fabrication and erection dimensions.
 - b) Arrangements and sectional views.
 - c) Necessary details, including complete information for making connections with other work.
 - d) Kinds of materials and finishes.
 - e) Descriptive names of equipment.
 - f) Modifications and options to standard equipment required by the work.
 - g) Leave blank area, size approximately 4 by 2 1/2 inches, near title block (for A/E's stamp imprint).
 - h) In order to facilitate review of drawings, insofar as practicable, they shall be noted, indicating by cross reference the contract drawings, note, and specification paragraph numbers where items occur in the Contract Documents.
 - i) Conduit/raceway rough-in drawings.
 - j) Items requiring shop drawings include (but not limited to):
 1. Manual transfer switch
 2. Special built light fixtures
 3. Each section of fire alarm, television, etc.
 4. UPS systems
 5. Emergency generator systems
 6. Special and/or modified equipment
 7. Main switchboard(s)
 8. UL listed fire and smoke stopping assemblies for each applicable penetration
 - k) See specific sections of Specifications for further requirements.
 6. Product Data: Technical data is required for all items as called for in the Specifications regardless if item furnished is as specified.

- a) Submit technical data verifying that the item submitted complies with the requirements of the Specifications. Technical data shall include manufacturer's name and model number, dimensions, weights, electrical characteristics, and clearances required. Indicate all optional equipment and changes from the standard item as called for in the Specifications. Furnish drawings, or diagrams, dimensioned and in correct scale, covering equipment, showing arrangement of components and overall coordination.
- b) In order to facilitate review of product data, insofar as practicable, they shall be noted, indicating by cross reference the contract drawings, note, and/or specification paragraph numbers where and/or what item(s) are used for and where item(s) occur in the contract documents.
- c) See specific sections of Specifications for further requirements.

1.5 PROCESSING SUBMITTALS

- A. Submit under provisions of the General Requirements of the Contract and this section of the Specifications, whichever is the most strict.
- B. Quantity of submittals with marking on each copy shall be submitted under provisions of General Requirements of the Contract, Division 01, and this and other sections of the Specifications. Original submittal must contain 3-ring binders with:
 - 1. Project Addresses
 - 2. Index
 - 3. Separation Sheets
 - 4. Basic Materials
 - 5. Panelboards
 - 6. Light Fixtures
 - 7. Long Lead Items
 - 8. Systems Product Data
- C. Remainder of submittals are to be submitted no later than 60 days after award of contract or 60 days prior to Request for Substantial Completion whichever is earlier.
- D. The Contractor shall review all submittals before submitting to the A/E. No request for payment will be considered until the submittals have been reviewed and submitted for approval.
- E. Product Data: For standard manufactured materials, products and items, submit one (1) copy or sets of data (per binder). If submittal is rejected, resubmittal shall contain same quantity of new data.
- F. Shop Drawings: For custom fabricated items and systems shop drawings, initially submit a transparency (suitable for reproduction) together with two (2) prints made therefrom. When submittal is acceptable, furnish one (1) print per binder made from the accepted transparency.
- G. Shop Drawing Review Notation.

<u>Action</u>	<u>Description</u>
1. No Exception Noted	No exceptions taken. Resubmittal not required.
2. Rejected	Not in compliance with Contract Documents. Resubmit.
3. Submit Specific Item	Resubmit item as specified.
4. Make Corrections Noted	Make corrections noted, resubmittal not required.
5. Revise and Resubmit	Make corrections noted, resubmittal is required
6. Review not Required	Not required for review. No action taken. Copy retained for reference.

- H. Acceptance: When returned to Contractor, submittals will be marked with A/E's stamp. If box marked "Rejected" "Revise and Resubmit" or "Submit Specific Item" is checked, submittal is not accepted and Contractor is to correct and resubmit as noted, otherwise submittal is accepted and Contractor is to comply with notation making necessary corrections on submittal. Review comments will generally not be on each individual submittal sheet, and will be on a separate sheet attached to shop drawing transmittal, submittal as a whole or each submittal section.
- I. Note that the acceptance of shop drawings or other information submitted in accordance with the requirements specified above, does not assure that the Engineer, Architect, or any other Owner's Representative, attests to the dimensional accuracy or dimensional suitability of the material or equipment involved, the ability of the material or equipment involved or the Mechanical/Electrical performance of equipment. Acceptance of shop drawings does not invalidate the plans and Specifications if in conflict, unless a letter requesting such change is submitted and accepted on the Engineer's letterhead.

1.6 DELAYS

- A. Contractor is responsible for delays in job progress accruing directly or indirectly from late submissions or resubmissions of shop drawings, or product data.

1.7 RE-SUBMITTALS

- A. The A/E shall be reimbursed for all costs to review resubmittals subsequent to the second submission for the same product. Cost will be billed to Contractor at Engineer's standard hourly rate.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

Martin County School District
Martin County High School
Enhanced Security Project A1

PROJECT ADDRESSES

OWNER:

ARCHITECT:

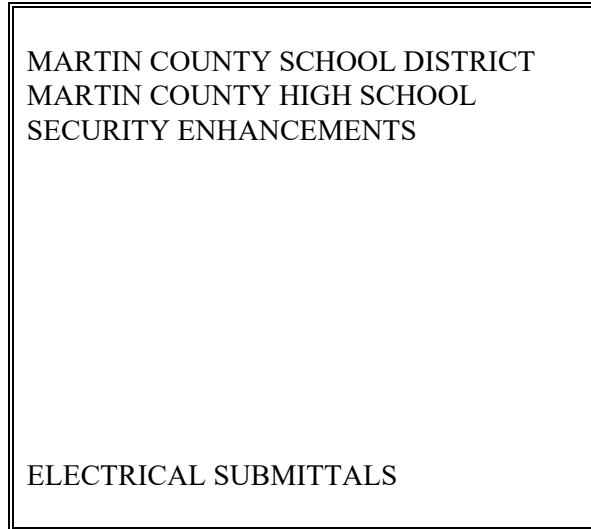
ENGINEER:

JLRD, Inc.
1450 Centrepark Blvd., Suite 350
West Palm Beach, Florida 33401
Telephone No.: (561) 689-2303
Fax No.: (561) 689-2302

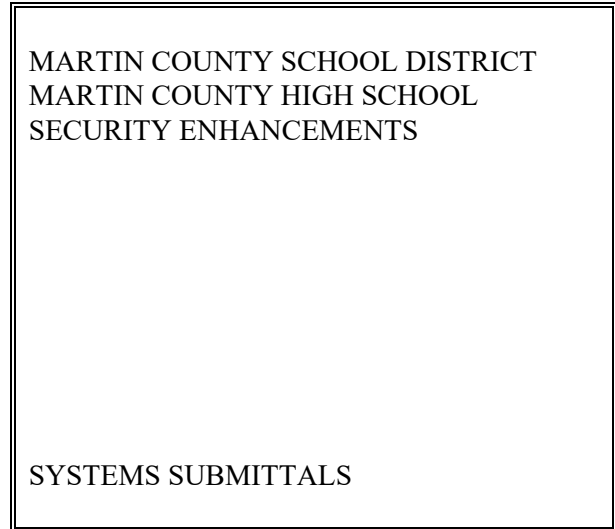
GENERAL CONTRACTOR:

SUBCONTRACTOR:

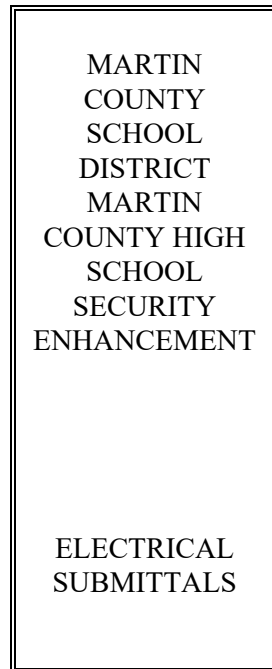
BINDER EXAMPLES FOR SUBMITTALS
Insert In Vinyl Pockets (Front & Spline) 3-Ring Binder



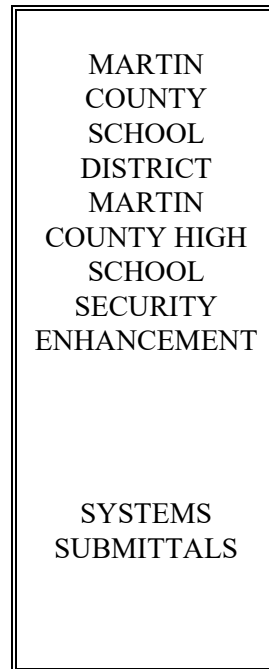
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(Size To 11")

SECTION 26 05 08
SUBSTITUTIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies general, administrative and procedural requirements for substitutions for Divisions 26, 27 28 above and beyond the requirements of Division 1 General Requirements and any Supplemental requirements/conditions.
- B. Request for substitutions must be submitted no later than 10 days prior to bid due date.
- C. Request for substitution will not be considered after bid due date.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Products, materials, equipment, finishes, and methods of construction are considered substitutions if they meet any one of the following conditions:
 - 1. Does not meet all the requirements of these specifications under Part 1 - General or Part 2 - Products for any section included in Divisions 26, 27 28.
 - 2. Is a different design which accomplishes the same result as that design specified in Division 26 Sections.
 - 3. Is of similar or different design that:
 - a) Requires more space.
 - b) Requires more power.
 - c) Requires changes in other elements of the work such as (but not limited to) architectural, mechanical, structural, or other electrical work.
 - d) Affects the construction schedule.
 - 4. Is listed in these specifications on the Contract Documents or in any addenda as an accepted substitution.

1.4 REQUEST FOR SUBSTITUTION SUBMITTALS (10 Days Prior to Bid Due Date)

- A. A separate request for substitutions shall be submitted for each product, material, etc. that is defined as a substitution.
- B. Submittal must consist of written request for substitution with data as required below. Request must be very specific as to what specified item, request for substitution is submitted for.
- C. Each request for substitution submittal for each product, etc. shall include:
 - 1. Name of material or equipment for which it is to be substituted.
 - 2. Drawings, product data, performance data and/or other information necessary for the engineer to determine that the equipment meets all specifications and requirements.

3. Proof that pole lighting fixture and pole meet applicable wind loading requirements. Pole lighting fixtures must be submitted showing proof that they comply with the applicable wind loading requirements for location of this project.
4. Compliance Statement. Each request shall include the following compliance statement typed on letterhead of submitting company:
 - a) Submittal complies with all aspects/requirements of Contract Documents. (Yes or No). If no, state deviance.
 - b) Submittal complies with all applicable codes. (Yes or No). If no, state deviance.
 - c) Submittal complies with all other elements of the work and does not require any other changes. (Yes or No). If No, state required change.
 - d) Meets or exceeds the performance of specified product. (Yes or No). If no, state required change.

1.5 REQUEST FOR SUBSTITUTION SUBMITTALS (AFTER BID)

- A. Substitution requests submitted after bid will not be reviewed.
- B. Submittals for items noted as an Accepted Substitution on Contract Drawings, these specifications, or listed in addenda, shall be submitted as required in Section Submittals.

1.6 CONSIDERATION AND ACCEPTANCE

- A. Request for substitutions will not be considered if:
 1. Submittal does not comply with all requirements as noted above or contain all information required above.
 2. If submittal does not contain Compliance Statement, fully filled out.
 3. If Compliance Statement contains a 'no' or 'N'.
 4. Submittals are submitted beyond time limitations noted above.
- B. Samples.
 1. Sample may be required to be submitted, if deemed necessary by the A/E to determine if the substitution meets specifications.
 2. Where required by A/E on an individual basis, samples may be required after written notice of acceptance and approval has been made of each substitution.
 3. The A/E reserves the right to reject sample and consequently the substitution should the sample not meet the requirement of the contract documents.
- C. Substitutions will be considered on basis of design, concept of the Work, and overall conformance with information given in Contract Documents, including but not limited to:
 1. Design criteria, which shall be equal or superior to the specified item.
 2. Finishes, which shall be identical or superior to finishes of specified product.
 3. Lenses or louvers, which shall be identical size, thickness and type material specified.
 4. Physical size and dimension which are identical or within design criteria limitations as determined by the Engineer.
 5. Photometric data, which shall be identical or superior in quantity and quality.
 6. Trim detail and mechanical qualities, which shall be identical or within design criteria limitations as determined by the Engineer.
- D. The Engineer's decision on acceptance or rejection of substitutions will be final.
- E. Substitution requests, if accepted will be included in addenda.

- F. Approval of a substituted item or listing a substituted item as an accepted substitution, does not modify or act as a waiver in any way, the requirements of the contract documents. See Section Submittals for additional requirements on accepted substitution submittals, equipment, etc.
- G. The naming of any manufacturer as an accepted substitution does not imply automatic approval as a substitution. It is the sole responsibility of the Contractor to ensure that any price quotations received and submittals made are for systems that meet or exceed these specifications.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

SECTION 26 05 09
REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Reference Standards and Regulatory Requirements applicable to Divisions 26, 27 28 sections.

1.3 REFERENCES

- A. The following references may be referenced within these specifications:
 - AASHTO American Association of State Highway and Transportation Officials
 - ADA Americans with Disabilities Act
 - AHERA Asbestos Hazard Emergency Response Act
 - AIA American Institute of Architects
 - ANSI American National Standards Institute
 - ASCE American Society of Civil Engineers
 - ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers
 - ASME ASME International
 - American Society of Mechanical Engineers International
 - ASTM ASTM International
 - American Society for Testing and Materials International
 - BOR Board of Regents
 - BICSI BICSI, Inc.
 - BOCC Board of County Commissioners St Johns County
 - CRSI Concrete Reinforcing Steel Institute
 - DCA-ADAIA Department of Community Affairs - Florida Americans with Disabilities Accessibility Implementation Act
 - DCA-ADAAG Department of Community Affairs - Florida Americans with Disabilities Act Accessibility Guidelines
 - DCA-ARM Department of Community Affairs - Accessibility Requirements Manual
 - DER Rule 17-761 Department of Environmental Regulation, Chapter 17-761 on Underground Storage Tank Systems
 - DER Rule 17-762 Department of Environmental Regulation, Chapter 17-762 on Above Ground Storage Tank Systems.
 - DMS/DOC Department of Management Services
 - Division of Communications
 - DOCA or DCA State of Florida Department of Community Affairs
 - EIA/TIA Electronics Industries Alliance/Telecommunications Industry Association
 - EJCDC Engineers Joint Contract Documents Committee
 - American Consulting Engineers Council
 - FAC Florida Administrative Code

FBC	Florida Building Code
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FFPC	Florida Fire Prevention Code
FGC	Florida Building Code (Fuel Gas)
FLA	State of Florida
FMC	Florida Building Code (Mechanical)
FMG	FM Global (formerly Factory Mutual System)
FPC	Florida Building Code (Plumbing)
FS	Florida Statutes
HL	Hospital Licensure
ICC	International Code Council
IEEE	Institute of Electrical and Electronics Engineers, Inc
IES	Illumination Engineering Society of North America
ICPEA	International Power Cable Engineer's Association
IMCFMR	Intermediate Care Facilities for the Mentally Retarded
LPCR	Local Power Company Requirements
LPI	Lightning Protection Institute
LTCR	Local Telephone Company Requirements
NEC	National Electrical Code
NECPA	National Energy Conservation Policy Act
NESC	National Electrical Safety Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NHRF	Nursing Homes and Related Facilities
OEF	Office of Educational Facilities
OSHA	Occupational Safety and Health Act
SBE	State Board of Education
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
UFSRS	Uniform Fire Safety Rules and Standards of Insurance Division of State Fire Marshal
UL	Underwriters Laboratories, Inc.
FBC	Florida Building Code Section 423 State Requirements for Educational Facilities
FAC	Florida Administrative Codes, Chapter 33-8, Rules of the Department of Corrections, County and Municipal Detention Facilities.

1.4 REGULATORY REQUIREMENTS

- A. Conform to all the applicable requirements of the following codes, standards, guidelines, etc.. If there should be conflicting requirements between these codes, standards, guidelines, etc., the more or most stringent requirement shall apply that does not violate any codes or laws.
1. Standards and Miscellaneous Codes/Requirements (Comply with latest edition or notice available unless otherwise adopted by Authority Having Jurisdiction):
 - a) Americans with Disabilities Act of 1990, as amended
 - b) ADA Standards for Accessible Design, 2010
 - c) American National Standards Institute
 - d) American Society of Heating, Refrigerating and Air Conditioning Engineers

Martin County School District
Martin County High School
Enhanced Security Project A1

- e) American Society of Mechanical Engineers
- f) American Society for Testing and Materials
- g) Concrete Reinforcing Steel Institute
- h) Department of Community Affairs
- i) Electronics Industries Association/Telecommunications Industry Association
- j) Florida Building Code, 2017
- k) Florida Fire Prevention Code, 2016
- l) Institute of Electrical and Electronics Engineers
- m) Illumination Engineering Society
- n) Local Power Company Requirements
- o) Lightning Protection Institute
- p) Local Telephone Company Requirements
- q) National Electrical Code, 2014
- r) National Energy Conservation Policy Act
- s) National Electrical Safety Code
- t) National Electrical Manufacturers Association
- u) NFPA 1 Fire Code, 2016
- v) NFPA 101 Life Safety Code, 2016
- w) Occupational Safety and Health Act
- x) Safety Code for Elevators and Escalators
A17.1a, 2008 and A17.1b, 2009 Addenda
- y) Safety Code for Existing Elevators and Escalators
A17.3, 1996
- z) Sheet Metal and Air Conditioning Contractors
- aa) Underwriters Laboratories, Inc.
- bb) Applicable Federal, State, Local Codes, Laws and Ordinances, Florida Statutes
and Referenced Codes/Standards

PART 2 – PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

SECTION 26 05 19
BUILDING WIRE AND CABLE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide all equipment, labor, material, accessories, and mounting hardware to properly install all conductors and cables rated 600 volts and less for a complete and operating system for the following:
 - 1. Building wire and cable.
 - 2. Wiring connectors and connections.
- B. All sizes shall be given in American Wire Gauge (AWG) or in thousand circular mils (MCM/KCMIL).

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.
- B. ANSI/Fed. Spec J-C 30B – Metal Clad Cables, Interlocking Galvanized Steel Tape Armor.

1.4 SUBMITTALS

- A. Product Data: Submit catalog cut sheet showing, type and UL listing of each type of conductor, connector and termination.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.7 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.

- C. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.8 COORDINATION

- A. Determine required separation between cable and other work.
- B. Determine cable routing to avoid interference with other work.

PART 2 – PRODUCTS

2.1 BUILDING WIRE AND CABLE

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI/NFPA 70, Type THHN/THWN and XHHW.

PART 3 – EXECUTION

3.1 GENERAL

- A. Install products in accordance with manufacturer's instructions.
- B. Conductors #10 AWG or #12 AWG shall be 600 volt type THWN/THHN unless noted otherwise, rated 90 degrees C dry, 75 degrees C wet.
- C. Conductors #8 AWG and larger shall be type THWN-2/THHN unless noted otherwise, rated 90 degrees C wet or dry.
- D. Use solid conductor for feeders and branch circuits 14 AWG and smaller (except for control circuits).
- E. Use conductor not smaller than 12 AWG for power and lighting circuits.
- F. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- G. All conductors shall be installed in raceway.
- H. Conductor sizes indicated on circuit homeruns or in schedules shall be installed over the entire length of the circuit unless noted otherwise on the drawings or in these specifications.
- I. Before installing raceways and pulling wire to any mechanical equipment, verify electrical characteristics with final submittal on equipment to assure proper number and AWG of conductors. (As for multiple speed motors, different motor starter arrangements, etc.).
- J. Coordinate all wire sizes with lug sizes on equipment, devices, etc. Provide/install lugs as required to match wire size.
- K. Where oversized conductors are called for (due to voltage drop, etc.) provide/install lugs as required to match conductors, or provide/install splice box, and splice to reduce conductor size to match lug size.

3.2 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire has been completed.

3.3 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.4 WIRING METHODS

- A. Use only building wire, type (THHN/THWN for #10 and #12 and THHN/THWN-2 for #8 and larger) insulation, in raceway or cable (AC or MC) unless noted otherwise.
- B. Wiring in vicinity of heat producing equipment: Use only XHHW insulation, in raceway.
- C. Conductors installed within fluorescent fixture channels shall be Type THHN or XHHW, rated 90 degrees C dry. Conductors for all other light fixtures shall have temperature ratings as required to meet the UL listing of the fixture; however, in no case shall the temperature rating be less than 90 degrees Centigrade. Remove incorrect insulation types in new work.
- D. Pre-manufactured cable systems for power distribution are not allowed.
- E. MC Type cable is not allowed.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Identify wire and cable under provisions of Section Identification for Electrical Systems.
- B. Identify each conductor with its circuit number or other designation indicated on Drawings.
- C. Identify neutrals with its associated circuit number(s).

3.6 FIELD QUALITY CONTROL

- A. Perform field inspection and testing under provisions of the General Requirements of the Contract Documents and Section Tests and Performance Verification of Electrical Systems.
- B. Inspect wire for physical damage and proper connection.
- C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- D. Verify continuity of each branch circuit conductor.

3.7 PULLING

- A. No wire shall be pulled until the conduit system is complete from pull point to pull point and major equipment terminating conduits have been fixed in position.
- B. Mechanical pulling devices shall not be used on conductors sized #8 and smaller. Pulling means which might damage the raceway shall not be used.
- C. Use only powdered soapstone or other pulling lubricant acceptable to the A/E. Compound or lubricant shall not cause the conductor or insulation to deteriorate.
- D. All conductors to be installed in a common raceway shall be pulled together. The manufacturer's recommended pulling tensions shall not be exceeded.
- E. Bending radius of insulated wire or cable shall not be less than the minimum recommended by the manufacturer.
- F. Where communications type conductors are installed, special requirements shall apply as outlined under that specific system detail specifications.

3.8 CONTROL AND SIGNAL CIRCUITS

- A. For control and signal circuits above 50 VAC, conductors shall be #14 AWG minimum size, Type XHHW or THWN-THHN as permitted by NFPA 70, within voltage drop limits, increased to #12 AWG as necessary for proper operation.
- B. For control and signal circuits 50 VAC and below, conductors, at the Contractor's option, may be #16 AWG, 300 volt rated, PVC insulated, except where specifically noted otherwise in the contract documents.
- C. Conductor insulation for Fire Alarm Systems shall be as accepted by Code Inspection Authority only. Wire acceptance by the A/E shall not supersede this final Acceptance for conditions of this specific project.
- D. Install circuit conductors in conduit.
- E. Circuit conductors to be stranded.

3.9 COLOR CODING

- A. All power feeders and branch circuits No. 6 and smaller shall be wired with color-coded wire with the same color used for a system throughout the building. Power feeders above No. 6 shall either be fully color-coded or shall have black insulation and be similarly color-coded with tape or paint in all junction boxes and panels. Tape or paint shall completely cover the full length of conductor insulation within the box or panel.
- B. Unless otherwise accepted or required by A/E to match existing, color-code shall be as follows: Neutrals to be white for 120/208V system, natural grey for 277/480V system; ground wire green, bare. 120/208V, Phase A - black; Phase B - red; Phase C - blue. 480/277V, Phase A brown; Phase B - orange; Phase C - yellow. All switchlegs, other voltage system wiring, control and interlock wiring shall be color-coded other than those above.

3.10 TAPS/SPLICES/CONNECTORS/TERMINATIONS

- A. Clean conductor surfaces before installing lugs and connectors.
- B. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- C. Power and lighting conductors shall be continuous and unspliced where located within conduit. Splices shall occur within troughs, wireways, outlet boxes, or equipment enclosures where sufficient additional room is provided for all splices. No splices shall be made in in-ground pull boxes (without written acceptance of engineer).
- D. Splices in lighting and power outlet boxes, wireway, and troughs shall be kept to a minimum, pull conductors through to equipment, terminal cabinets, and devices.
- E. No splices shall be made in junction box, and outlet boxes (wire No. 8 and larger) without written acceptance of Engineer.
- F. No splices shall be made in communications outlet boxes, pull boxes or wireways (i.e., fire alarm, computer, telephone, intercom, sound system, etc.) without written acceptance of Engineer. Pull cables through to equipment cabinets, terminal cabinets and devices.

- G. Allow adequate conductor lengths in all junction boxes, pull boxes and terminal cabinets. All termination of conductors in which conductor is in tension will be rejected and shall be replaced with conductors of adequate length. This requirement shall include the providing by the Contractor of sleeve type vertical cable supports in vertical raceway installations provided in pullboxes at proper vertical spacings.
- H. A calibrated torque wrench shall be used for all bolt tightening.
- I. Interior Locations:
 - 1. All (non-electronic systems) copper taps and splices in No. 8 or smaller shall be fastened together by means of "spring type" connectors. All taps and splices in wire larger than No. 8 shall be made with compression type connectors and taped to provide insulation equal to wire.
- J. Exterior Locations:
 - 1. Make splices, taps and terminations above grade in splice or termination cabinets. Do not splice any cable in ground or below finished grade.
 - 2. All taps and splices shall be made with compression type connectors and covered with Raychem heavywall cable sleeves (type CRSM-CT, WCSM or MCK) with type "S" sealant coating with sleeve kits as per manufacturer's installation instructions or be terminated/connected to terminal strips in above grade terminal boxes suitable for use.
 - 3. Provide and install above grade termination cabinets sized to meet applicable codes and standards, where required for splicing.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide all labor, materials, and equipment necessary to properly install a grounding system conductor in all new branch wiring and feeder installations, which shall be in full compliance with all applicable Codes as accepted by the Authorities having jurisdiction. The secondary distribution system shall include a grounding conductor in all raceways in addition to the return path of the metallic conduit.
- B. In general, all electrical equipment (metallic conduit, motor frames, panelboards, etc.) shall be bonded together with a green insulated or bare copper system grounding conductor in accordance with specific rules of Article 250 of the NEC and State codes. Bonding conductor through the raceway system shall be continuous from main switch ground bus to panel ground bar of each panelboard, and from panel grounding bar of each panelboard to branch circuit equipment and devices.
- C. All raceways shall have an insulated copper system ground conductor throughout the entire length of circuit installed with-in conduit in strict accordance with NEC. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings. Grounding conductors that run with feeders in PVC conduit outside of building(s) shall be bare only.
- D. Provide and install all grounding and bonding as required by the National Electrical Code (NEC) including but not limited to Article 250 of the NEC.
- E. Section Includes
 - 1. Grounding electrodes and conductors
 - 2. Equipment grounding conductors
 - 3. Bonding
 - 4. Counterpoise system
 - 5. Ground ring

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Refer to Division 01 requirements.
- B. Submit catalog cut sheet/product data on:
 - 1. Ground rods and couplings
 - 2. Mechanical connectors

3. Ground wells
 4. Ground bus bars and associated components
 5. Ground ring conductor
 6. Counterpoise conductor
 7. Exothermic welding materials and molds
 8. Testing equipment and procedures.
- C. Product data shall prove compliance with Specifications. National Electrical Code, manufacturer's specifications and written installation data.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit record documents to accurately record actual locations of grounding electrodes.
- B. Submit test results of each ground rod. See Section Tests and Performance Verification of Electrical Systems.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 – PRODUCTS

2.1 ROD ELECTRODE

- A. Material: Copper-clad steel.
- B. Diameter: 5/8 inch.
- C. Length: 30 feet (minimum). Increase lengths as required to meet and achieve specified resistance.

2.2 MECHANICAL CONNECTORS

- A. All grounding connectors shall be in accordance with UL 467 and UL listed for use with rods, conductors, reinforcing bars, etc., as appropriate.
- B. Connectors and devices used in the grounding systems shall be fabricated of copper or bronze materials, and properly applied for their intended use. Specified items of designated manufacturers indicate required criteria and equal products may be provided if approved. All connectors and devices shall be compatible with the surfaces being bonded and shall not cause galvanic corrosion by dissimilar metals. Materials in items not listed herein shall be of equal quality to the following specified items:
 1. Lugs: Substantial construction, of cast copper or cast bronze, with "ground" (micro-flat) surfaces, twin clamp, two-hole tongue, equal to Burndy QQA Series or T&B equal. Lightweight and "competitive" devices shall be rejected.
 2. Grounding and Bonding Bushings: Malleable iron, Thomas and Betts (T&B), or equal.
 3. Piping Clamps: Burndy GAR-TC Series with two hole compression terminal or T&B equal.
 4. Grounding Screw and Pigtail: Raco No. 983 or equal.
 5. Building Structural Steel, Existing: Thompson 701 Series heavy duty bronze "C" clamp with two-bolt vise-grip cable clamp.

- C. Mechanical lugs or wire terminals shall be used to bond ground wires together or to junction boxes and panel cabinets and shall be manufactured by Anderson, Buchanan, Thomas and Betts Co., or Burndy.

2.3 WIRE

- A. Material: Stranded copper.
- B. Size: Size to meet NFPA 70 requirements as a minimum. Increase size if called for on drawings, in these specifications, or as required for voltage drop.
- C. Insulated THWN (or bare as noted elsewhere).

2.4 GROUNDING WELL COMPONENTS

- A. Grass Non-Traffic Areas:
 - 1. Well: Minimum 18-inch (600 mm) long sleeve with minimum 12-inch diameter.
 - 2. Well Cover: High-density plastic, composolite, or cast iron with legend "GROUND" embossed on cover.
 - 3. Material: Structural Plastic, composolite, or concrete.
 - 4. Manufacturer: Carson 2200 Series or equal by Quazite.
 - 5. Increase depth, diameter or size as required to provide proper access at installed location.
- B. Paving and Low Traffic Areas:
 - 1. Well: Minimum 12 inch long by 12 inch wide by 18 inches deep with open bottom.
 - 2. Well Cover: Traffic rated for use with "GROUND" embossed on cover.
 - 3. Material: Composolite.
 - 4. Manufacturer: Quazite.
 - 5. Increase depth, diameter or size as required to provide proper access at installed location.

2.5 GROUNDING BARS/GROUND BUS (INCLUDING 'SYSTEMS' GROUND BUS/BARS AND GROUND BUS BARS)

- A. Ground bars shall be copper of the size and description as shown on the drawings. If not sized on drawings, bus bar shall be minimum 1/4" x 2" bus grade copper, spaced from wall on insulating 2" polyester molded insulator standoff/supports, and be 12" or greater minimum overall length, allowing 2" length per lug connected thereto. Increase overall length as required to facilitate all lugs required while maintaining 2" spacing. Size of bus bar used in main electrical room shall be similar except minimum of 4" high and 24" long.
- B. Provide bolt-tapping lug with two hex head mounting bolts for each terminating ground conductor, sized to match conductors. Mount on bus bar at 2 inches on center spacing. Lugs to be manufactured by Burndy or T&B.
- C. Standoff supports to be 2" polyester as manufactured by Glastic #2015-4C.

PART 3 – EXECUTION

3.1 GENERAL

- A. Install products in accordance with manufacturer's instructions.
- B. Install grounding electrodes conductor, bonding conductors, ground rods, etc. with all required accessories.

- C. Grounding shall meet (or exceed as required to meet these specifications) all the requirements of the NEC, the NFPA, and applicable standards of IEEE.
- D. Where there is a conflict between these specifications and the above applicable codes/standards, or between this section of these specifications and other sections, then the most stringent or excessive requirement shall govern. Where there is an omission of a code/standard requirement in these specifications then the code/standard requirements shall be complied with.
- E. Requirement in these specifications to comply with a specific code/standard article, etc. is not to be construed as deleting of requirements of other applicable codes/standards and their articles, etc.

3.2 GROUNDING ELECTRODES

- A. All connections shall be exothermic welded unless otherwise noted herein. All connections above grade and in accessible locations may be by exothermic welding or by braising or clamping with devices UL listed as suitable for use except in locations where exothermic welding is specifically specified in these specifications or called for on drawings.
- B. Each rod shall be die stamped with identification of manufacturer and rod length.
- C. Install rod electrodes at locations indicated and/or as called for in these specifications.
- D. Ground Resistance:
 - 1. Main Electrical Service (to each building) and Generator Locations:
 - a. Grounding resistance measured at each main service electrode system and at each generator electrode system shall not exceed 5 ohms.
 - 2. Other Locations:
 - a. Resistance to ground of all non-current carrying metal parts shall not exceed 25 ohms measured at motors, panels, busses, cabinets, equipment racks, light poles, transformers, and other equipment.
 - b. Lightning Protection system ground locations shall not exceed 25 ohms for the Franklin System measured at ground electrode.
 - 3. Resistance called for above shall be maximum resistance of each ground electrode prior to connection to grounding electrode conductor. Where ground electrode system being measured consists of two (2) or more ground rod electrodes then the resistance specified above shall be the maximum resistance with two (2) or more rods connected together but not connected to the grounding electrode conductor.
- E. Install additional rod electrodes as required to achieve specified resistance to ground (specified ground resistance is for each ground rod location prior to connection to ground electrode conductor). Depending on soil condition, etc. of ground rod locations, it has been found that the ground rod lengths required to achieve the specified resistance may range from the minimum specified length to up to 80 feet or more in length.
- F. Provide grounding well with cover at each rod location. Install grounding well top flush with finished grade.
- G. Verify that final backfill and compaction has been completed before driving rod electrodes.
- H. Install ground rods not less than 1 foot below grade level and not less than 2 feet from structure foundation.

3.3 GROUNDING ELECTRODE CONDUCTOR

- A. Conductor shall be sized to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC 250.

3.4 EQUIPMENT GROUNDING CONDUCTOR

- A. Grounding conductors shall be provided with every circuit to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC 250.
- B. At every voltage level, new portions of the electrical power distribution system shall be grounded with a dedicated copper conductor, which extends from termination back to power source in supply panelboard.
- C. Provide separate, insulated (bare if with feeder in PVC conduit outside of building(s)) conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- D. Except as otherwise indicated, each feeder raceway on the load side of the service entrance shall contain a ground conductor sized as indicated and where not shown shall be sized to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC 250. Conductor shall be connected to the equipment grounding bus in switchboards and panelboards, to the Grounding Bus in all motor control centers, and as specified, to lighting fixtures, motors and other types of equipment and outlets. The ground shall be in addition to the metallic raceway and shall be properly connected thereto, using a lug device located within each item enclosure at the point of electric power connections to permit convenient inspection.
- E. Provide green insulated ground wire for all grounding type receptacles and for equipment of all voltages. In addition to grounding strap connection to metallic outlet boxes, a supplemental grounding wire and screw equal to Raco No. 983 shall be provided to connect receptacle ground terminal to the box.
- F. All plugstrips and metallic surface raceway shall contain a green insulation ground conductor from supply panel ground bus connected to grounding screw on each receptacle in strip and to strip channel. Conductor shall be continuous.
- G. Where integral grounding conductor is specified elsewhere in bus duct construction, provide equivalent capacity conductor from supply switchboard or panelboard grounding bus to the bus duct grounding conductor. Bond integral conductor to bus duct enclosure at each tap and each termination.
- H. All motors, all heating coil assemblies, and all building equipment requiring flexible connections shall have a green grounding conductor properly connected to the frames and extending continuously inside conduit with circuit conductors to the supply source bus with accepted connectors regardless of conduit size or type. This shall include Food Service equipment, Laundry equipment, and all other "Equipment by Owner" to which an electric conduit is provided under this Division.

3.5 MAIN ELECTRICAL SERVICE

- A. Complete installation shall meet and exceed the requirements of the NEC 250.
- B. Artificial electrodes shall be provided for the main service in sufficient number and configuration to secure resistance specified.
- C. Provide and bond to all of the following:
 - 1. Ground rods.
 - 2. Metal water pipe (interior and exterior to building).
 - 3. Building metal frame, structural steel and/or reinforced structural concrete.
 - 4. All piping entering or leaving all buildings (including chilled water piping).
 - 5. Encased electrodes.
 - 6. Ground ring.

7. Site distribution counterpoise ground system.
 8. Lightning protection system.
- D. A main ground, bare copper conductor, sized per applicable table in NEC 250, but in no case less than #2/0, shall be run in conduit from the main switchgear of each building to the building steel in respective building. This ground conductor shall also be run individually from the main switchgear and be bonded to the main water service ahead of any union in pipe and must be metal pipe of length and location as acceptable by authorities having jurisdiction. Provide properly sized bonding shunt around water meter and/or dielectric unions in the water pipe. Also required is the same size ground wire to ground rod electrode as called for below:
1. Three 30 ft. ground rods in a delta configuration at no less than 30 ft. spacing driven to a minimum depth of 30 ft. plus 1 below grade. If three 30 ft rods in a delta configuration does not provide specified resistance change rod lengths from minimum specified to 40 or more feet as required to provide specified resistance. Adjust rod spacing as required to provide spacing equal to or greater than the driven depth of the deepest ground rod.
 2. Bond ground rod electrodes together with a bare copper ground conductor that matches size required by applicable table in NEC 250, but in no case less than #2/0.
 3. Provide additional rod electrodes as required to achieve specified ground resistance.
- E. Ground/bond neutral per NEC 250.
- F. A main ground, bare copper conductor, sized per applicable table in NEC 250, but in no case less than #2/0, shall be run in conduit from the main switchgear of each building to a concrete encased electrode per NEC 250.52(A)(3).
- G. Bond grounding electrodes to site counterpoise grounding system and lightning protection system where provided.
- H. Provide and install ground bus bar on wall near main service disconnect/switchboard. Connect to ground bar in disconnect/switchboard bonded to switchboard/disconnect enclosure/neutral with copper grounding conductor sized per applicable table in NEC 250.

3.6 TRANSFORMER GROUNDING

- A. Ground all transformers and enclosures of 120/208V and 277/480V "separately derived systems" as specified herein.
1. Ground per NEC 250 and these specifications.
 2. Bond neutral to transformer frame/enclosure and the equipment grounding conductors of the derived system with copper ground conductor sized per applicable table in NEC 250.
 3. Connect transformer neutral/ground to grounding electrode per NEC 250 with grounding electrode conductor sized per applicable table in NEC 250.
 4. In addition to connection to grounding electrode conductor called for above (i.e. per NEC 250) provide, install and connect supplemental grounding electrode as follows:
 - a. Where grounding required per NEC 250 is to building steel/structure, supplement this grounding with connection to nearest available effectively grounded metal water pipe.
 - b. Where grounding connection required per NEC 250 is to grounded metal water pipe, supplement this grounding with connection to building steel/structure in addition to any other available electrodes specified in NEC 250.
 - c. Where supplemental grounding electrodes required above is a ground rod electrode, provide, install and connect two or more 30 ft. ground rod electrodes at no less than 30 ft. spacing, driven vertical to a minimum depth of 30 ft. plus 1 below grade.

5. Where neither building steel nor water pipe grounding electrodes are available (i.e. exterior locations with no available water pipe electrode) provide two (2) ground connections: each to two (2) or more 30 ft. ground rod electrodes at no less than 30 ft. spacing, driven vertical to a minimum depth of 30 ft. plus 1 below grade.
 6. Where transformer is mounted exterior to building one (1) of the two (2) ground electrodes required shall be ground rod electrode as called for in 5 above. This ground rod electrode shall also be connected to counterpoise system (wherever counterpoise system is available).
 7. Ground to water system service pipe as required by NEC 250.
- B. Provide additional ground electrodes as required to achieve specified ground resistance.
 - C. Where two or more ground electrodes are used at any one required ground location, they shall be bonded together with a copper ground conductor, sized to meet applicable table in NEC 250, but in no case less than #2/0.
 - D. Complete installation shall exceed the minimum requirements of NEC 250.
 - E. Equipment ground conductors shall be provided in addition to above grounding. See 'EQUIPMENT GROUNDING CONDUCTOR'.
 - F. Provide and install ground bus bar on wall near transformer (or in associated electrical room for exterior mounted transformers). Connect to ground lug in transformer bonded to transformer enclosure/neutral with copper ground conductor sized per applicable table in NEC 250.
 - G. Multiple separately derived systems may be grounded as allowed in NEC 250-30 (A) (4).

3.7 GENERATOR GROUNDING

- A. Separately derived systems (i.e. systems where generator neutral is not solidly interconnected to service supplied system neutral such as 4-pole switched neutral transfer switch systems).
 1. Ground per NEC 250 and these specifications.
 2. Bond neutral to transformer frame/enclosure and the equipment grounding conductors of the derived system with copper ground conductor sized per applicable table in NEC 250.
 3. Connect generator neutral/ground to grounding electrodes per NEC 250 with grounding electrode conductor sized per applicable table in NEC 250.
 4. In addition to connection to grounding electrode conductor called for above (i.e. per NEC 250) provide, install and connect supplemental grounding electrode as follows:
 - a. Where grounding required per NEC 250 is to building steel/structure, supplement this grounding with connection to nearest available effectively grounded metal water pipe.
 - b. Where grounding connection required per NEC 250 is to grounded metal water pipe, supplement this grounding with connection with connection to other electrodes specified in NEC 250.
 - c. Where supplemental grounding electrodes required above is a ground rod electrode, provide, install and connect two or more 30' ground rod electrodes at no less than 30' spacing, driven vertical to a minimum depth of 30' plus 1' below grade.
 5. Where neither building steel nor water pipe grounding electrodes are available (i.e. exterior locations with no available water pipe electrode) provide two ground connections: each to two or more 30' ground rod electrodes at no less than 30' spacing, driven vertical to a minimum depth of 30' plus 1' below grade.
 6. Where generator is mounted exterior to building one of the two ground electrodes required shall be ground rod electrode as called for in paragraph 5. above. This ground rod electrode shall also be connected to counterpoise system.
- B. Non separately derived systems (i.e. systems where generator neutral is solidly interconnected to service supplied system neutral such as 3-pole non-switched neutral transfer switch systems).

1. Ground per NEC 250 and these specifications.
 2. Do not bond neutral to transformer frame/enclosure or the equipment grounding conductors of the derived system.
 3. Connect generator frame/enclosures ground to grounding electrode per NEC 250 with grounding electrode conductor sized per applicable table in NEC 250.
 4. In addition to connection to grounding electrode conductor called for above (i.e. per NEC 250) provide, install and connect supplemental grounding electrode as follows:
 - a. Where grounding required per NEC 250 is to building steel/structure, supplement this grounding with connection to nearest available effectively grounded metal water pipe.
 - b. Where grounding connection required per NEC 250 is to grounded metal water pipe, supplement this grounding with connection to other electrodes specified in NEC 250.
 - c. Where supplemental grounding electrodes required above is a ground rod electrode, provide, install and connect two or more 30' ground rod electrodes at no less than 30' spacing, driven vertical to a minimum depth of 30' plus 1' below grade.
 5. Where neither building steel nor water pipe grounding electrodes are available (i.e. exterior locations with no available water pipe electrode) provide two ground connections: each to two or more 30' ground rod electrodes at no less than 30' spacing, driven vertical to a minimum depth of 30' plus 1' below grade.
 6. Where generator is mounted exterior to building one of the two ground electrodes required shall be ground rod electrode as called for in paragraph 5. above. This ground rod electrode shall also be connected to counterpoise system.
- C. Provide additional ground electrodes as required to achieve specified ground resistance.
- D. Where two or more ground electrodes are used at any one required ground location, they shall be bonded together with a copper ground conductor, sized to meet applicable table in NEC 250, but in no case less than #2/0.
- E. Complete installation shall exceed the minimum requirements of NEC 250.
- F. Equipment ground conductors shall be provided in addition to above grounding. See "Equipment Grounding Conductors."

3.8 LIGHTNING PROTECTION SYSTEMS

- A. Ground per applicable section on lightning protection system, NFPA 780, and as specified herein. The most stringent requirements shall govern.
- B. Bond lightning protection system grounds to electrical service system ground, all piping entering or leaving all buildings, and counterpoise system ground where provided.
- C. See Section Lightning Protection System.

3.9 EXTERIOR GRADE (OR FREE STANDING ABOVE GROUND) MOUNTED EQUIPMENT

- A. General:
 1. All equipment (including chillers, pumps, disconnects, starters, control panels, panels, etc.) mounted exterior to building shall have their enclosures grounded directly to a grounding electrode at the equipment location in addition to the building equipment ground connection.

2. Bond each equipment enclosure, metal rack support, mounting channels, etc. to ground electrode system at each rack with an insulated copper ground conductor sized to match the grounding electrode conductor required by applicable table in NEC 250 based on equipment feeder size, but in no case shall conductor be smaller than #6 copper or larger than #2 copper. This connection is in addition to grounding electrode connections required for services.
- B. Main electrical service rack mounted equipment.
 1. Ground per "MAIN ELECTRICAL SERVICE".
 2. Bond all metal parts as noted above.
- C. Electrical sub service rack mounted equipment.
 1. Ground per "MAIN ELECTRICAL SERVICE", except do not bond neutral to ground.
 2. Bond all metal parts as noted above.
- D. Electrical equipment connection rack mounted equipment.
 1. Bond all metal parts as noted above.
- E. Grounding electrodes (ground electrodes system) shall be:
 1. Located at each rack location.
 2. For service equipment: Ground electrode required per "MAIN ELECTRICAL SERVICE".
 3. For equipment connection equipment: Two or more 30 ft. ground rods at no less than 30 ft. spacing, driven vertical to a minimum depth of 1 ft below grade. Bond the two or more ground rods together with a size to meet applicable table in NEC 250, but no less than a #2 copper ground conductor. Provide additional rod electrodes as required to achieve specified ground resistance.
- F. Complete installation shall exceed the minimum requirements of NEC 250 and, when applicable, NFPA 780.

3.10 ROOF MOUNTED EQUIPMENT

- A. Bond all roof mounted electrical equipment to lightning protection system (when provided) per NFPA 780.
- B. Where lightning protection system is not provided, ground/bond all roof mounted electrical equipment to building steel and to two (2) or more 30 ft. ground rods at no less than 30 ft. spacing driven vertically to a minimum depth of 30 ft. plus 1 below grade.
 1. Bond the two or more ground rods together with a Class I or Class II as required per NFPA 780 lightning protection main copper conductor.
 2. Provide additional rod electrodes as required to achieve specified ground resistance.
 3. Complete installation shall exceed the minimum requirements of NFPA 780.

3.11 LIGHTING FIXTURES

- A. All new fixtures in building interior, and exterior fixtures shall be provided with green grounding conductor, solidly connected to unit. Individual fixture grounds shall be with lug to fixture body, generally located at point of electrical connection to the fixture unit.
- B. All suspended fixtures and those supplied through flexible metallic conduit shall have green ground conductor from outlet box to fixture. Cord connected fixtures shall contain a separate green ground conductor.
- C. Pole Light Fixtures:
 1. Metal Pole Light Fixtures:

- a. Freestanding pole mounted lighting fixtures shall each have a Class I or Class II lightning protection main copper down conductor connected to grounding electrodes at base of pole.
- b. Conductor shall be bonded to metal pole via UL Listed ground clamp suitable for use. Locate ground lug opposite to handhole (or adjacent if visible through handhole).
2. Concrete or Non-Metallic Pole:
 - a. Freestanding pole mounted lighting fixtures shall each have a Class I or Class II lightning protection main copper down conductor connected to grounding electrodes at base of pole.
 - b. Conductor shall be extended from grounding electrode to top of pole and terminate at the top of pole in a Class I or Class II copper lightning protection air terminal.
 - c. Each metal part of light fixture assembly, bracket, ballast cabinet, disconnect, transformer, etc. that is mounted to pole shall be bonded to down conductor.
3. Fixtures located on elevated roadway ramps shall be specially provided with a connection to lightning counterpoise grounding system, properly installed.
4. Grounding electrode(s) at each pole shall be connected (bonded) to site distribution counterpoise system.
5. Grounding Electrodes:
 - a. Two or more 10 ft. ground rods at no less than 10 ft. spacing shall be driven vertically to a minimum depth of 10 ft. plus 1 below grade.
 - b. Bond the two or more ground rod electrodes together with a Class I or Class II lightning protection main copper conductor.
 - c. Provide additional rod electrodes as required to achieve specified ground resistance.
 - d. The two (2) or more grounding rod electrodes shall be installed at each light pole.
6. Installation shall exceed minimum requirements of NFPA 780.

3.12 PULLBOX, MANHOLE, HANDHOLE GROUNDING.

- A. One 30 ft. ground rod electrode shall be driven vertically to a minimum depth of 30 ft. plus 1 ft. below grade in each manhole, handhole or pullbox (in ground).
- B. The complete installation shall exceed the minimum requirements of the NEC.
- C. Provide additional ground rod electrodes as required to provide resistance called for herein.
- D. Where more than one ground rod electrode is required bond the two or more ground rod electrodes together with a copper ground conductor.
- E. Bond to counterpoise system (whenever counterpoise system is provided.)
- F. Bond grounding electrode to all exposed metal parts of manhole, handhole, and pullbox (including metal cover) with #6 copper ground conductor. Connect to ground rod electrode with exothermic weld. Connect to metal cover with exothermic weld. Connect to other metal parts with exothermic weld or UL accepted grounding clamp. Provide 3 ft. or more slack ground cable on cover connection as required to facilitate removal of cover.

3.13 HAZARDOUS LOCATIONS

- A. Ground in hazardous locations shall be done in accordance with applicable portions of NEC 500, 501, 502, 503, 511 and 514.

3.14 GROUND RING

- A. Provide complete underground building perimeter ground ring system, completely encircling each building.
- B. Conductor shall be minimum of Class II lightning protection copper conductor (bare).
- C. Install at not less than 2-1/2 feet depth into earth.
- D. Install ground rods (minimum 30 feet long) at 150 foot intervals along ground ring conductor.
- E. Bond ground ring to building steel every 150 feet of building perimeter, bond to any and all electrical and piping systems that cross the ground ring system, bond to lightning protection down conductors and to any lightning or other earth grounding electrodes that may be present on the premises.
- F. Bond to building service and counterpoise ground systems.

3.15 MISCELLANEOUS GROUNDING CONNECTIONS

- A. Provide bonding to meet regulatory requirements.
- B. Required connections to building steel shall be with UL accepted non-reversible crimp type ground lugs exothermically welded to bus bar that is either exothermically welded to steel or bolted to steel in locations where weld will affect the structural properties of the steel. Required connections to existing building structural steel purlins/I beams shall be with heavy duty bronze "C" clamp with two bolt vise-grip cable clamp.
- C. Grounding conductors shall: be so installed as to permit shortest and most direct path from equipment to ground; be installed in conduit; be bonded to conduit at both ends when conduit is metal; have connections accessible for inspection; and made with accepted solderless connectors brazed (or bolted) to the equipment or to be grounded; in NO case be a current carrying conductor; have a green jacket unless it is bare copper; be run in conduit with power and branch circuit conductors. The main grounding electrode conductor shall be exothermically welded to ground rods, water pipe, and building steel.
- D. All surfaces to which grounding connections are made shall be thoroughly cleaned to maximum conductive condition immediately before connections are made thereto. Metal rustproofing shall be removed at grounding contact surfaces, for 0 ohms by digital Vm. Exposed bare metal at the termination point shall be painted.
- E. All ground connections that are buried or in otherwise inaccessible locations, shall be welded exothermically. The weld shall provide a connection which shall not corrode or loosen and which shall be equal or larger in size than the conductors joined together. The connection shall have the same current carrying capacity as the largest conductor.
- F. Install ground bushings on all metal conduits entering enclosures where the continuity of grounding is broken between the conduit and enclosure (i.e. metal conduit stub-up into a motor control center enclosure or at ground bus bar). Provide an appropriately sized bond jumper from the ground bushing to the respective equipment ground bus or ground bus bar.
- G. Install ground bushings on all metal conduits where the continuity of grounding is broken between the conduit and the electrical distribution system (i.e. metal conduit stub-up from wall outlet box to ceiling space. Provide an appropriately sized bond jumper from the ground bushing to the respective equipment ground bus or ground bus bar.
- H. Each feeder metallic conduit shall be bonded at all discontinuities, including at switchboards and all subdistribution and branch circuit panels with conductors in accordance with applicable table in NEC 250 for parallel return with respective interior grounding conductor.
- I. Grounding provisions shall include double locknuts on all heavywall conduits.

- J. Bond all metal parts of pole light fixtures to ground rod at base.
- K. Install grounding bus in all existing panelboards of remodeled areas, for connection of new grounding conductors, connected to an accepted ground point.
- L. Bond together reinforcing steel and metal accessories in pool and fountain structures and bond to electrical system per NEC.
- M. Where reinforced concrete is utilized for building grounding system, proper reinforced bonding shall be provided to secure low resistance to earth with "thermite" type devices, and #10AWG wire ties shall be provided to not less than ten (10) full length rebars which contact the connected rebar (by Division 26 contractor). Provide size and length of rod to meet NEC requirements.

3.16 GROUNDING BAR/GROUND BUS (INCLUDING 'SYSTEMS' GROUND BUS/BAR ON GROUND BUS/BAR) INSTALLATION

- A. Where indicated on the drawings provide and install grounding bar/ground bus (bus bar). These bus installations are intended to provide a low-impedance "earthing" path for surge voltages, which are electrically "clamped" and shunted to earth by variable-impedance surge protective devices. Metal sheaths of underground cables are also to be grounded thereto at points of building entrance.
- B. Mount bolt tapping lugs with hex head bolts to bus bar at 2" oc spacing, one for each ground conductor.
- C. Mount bus bar to wall using 2" polyester molded insulator stand-off.
- D. Extend a #2/0 (minimum size) or larger THWN insulated copper ground conductor (if larger size is called for on drawings or required by NEC for service ground, etc.) in PVC conduit to accepted service ground installation or ground bus/bar in main service equipment enclosure.
- E. Extend #6 insulated copper ground wire from respective bus/bar to each 'local' ground bus/bar in each cabinet for Division 28 systems.
- F. 'SYSTEMS' grounding bus/bar must be connected with #2/0 insulated copper conductor to grounding electrodes system as defined in NEC "Article 800.100 (B)".

3.17 COUNTERPOISE SYSTEM

- A. Install counterpoise and ground over all sections of underground ductbanks, conduits, or cables outside (exterior) to building.
- B. No. 2 bare stranded copper counterpoise shall be run six (6) inches above all underground duct banks, conduits and cables outside (exterior) to building.
- C. Provide one (1) counterpoise conductor for ductbanks (or conduit groupings) 12 inches wide or less. Provide two (2) counterpoise conductors above outside edge of ductbank (or conduit groupings) over 12 inches wide.
- D. Counterpoise shall run to building and be grounded at each building to the main building electrical service ground rod electrode (exterior to building). Counterpoise shall be bonded to ground rod at all light poles, pullboxes, manholes, handholes and at each building. Provide and install appropriate ground rod every 150 ft. length of counterpoise conductor (see "GROUNDING ELECTRODES"). Counterpoise conductor shall not be run into interior of building. Route counterpoise underground around exterior perimeter of building to main service ground rod installation.

3.18 COMMUNICATIONS SYSTEMS

- A. Provide and install all grounding as required by NEC Article 800 and where available on project: Articles 810 (Radio and Television Equipment); 820 (Community Antenna Television and Radio Distribution Systems); and 830 (Network-Powered Broadband Communications Systems).
- B. Provide and install grounding electrode at point of entry of communication cables and bond to service entrance grounding electrodes per NEC 800. Install ground bus bar at point of entry of communications cable and connect electrode to ground bus. Connect communications cable metal sheath and surge protection devices to ground bar.

3.19 TESTING AND REPORTS

- A. Raceway Continuity: Metallic raceway system as a component of the facilities ground system shall be tested for electrical continuity. Resistance to ground throughout the system shall not exceed specified limits.
- B. Ground resistance measurements shall be made on each system utilized in the project. The ground resistance measurements shall include building structural steel, driven grounding system, water pipe grounding system and other accepted systems as may be applicable. Ground resistance measurements shall be made in normally dry weather, not less than 24 hours after rainfall, and with the ground under test isolated from other grounds and equipment. Resistances measured shall not exceed specified limits.
- C. Upon completion of testing, the testing conditions and results shall be certified by the Contractor and submitted to the Architect/Engineer as called for in Section Tests and Performance Verification of Electrical Systems.

3.20 INTERFACE WITH OTHER PRODUCTS

- A. Interface with site grounding system.
- B. Interface with lightning protection system installed under Section Lightning Protection System.
- C. Interface with communications system installed under Division 27 sections.

3.21 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.

END OF SECTION

SECTION 26 05 29
HANGERS AND SUPPORTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Furnish and install all supports, hangers and inserts required to mount fixtures, conduit, cables, pullboxes and other equipment furnished under this Division.
- B. Section Includes:
 - 1. Conduit and equipment supports.
 - 2. Anchors and fasteners.

1.3 REFERENCES

- A. NECA - National Electrical Contractors Association.
- B. ANSI/NFPA 70 - National Electrical Code.

1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 – PRODUCTS

2.1 PRODUCT REQUIREMENTS

- A. Materials and Finishes: Provide corrosion resistance.
- B. Exterior locations: Provide stainless steel hangers, anchors, etc. Strut may be PVC Coated or Stainless Steel.
- C. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
- C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- D. Do not use spring steel clips and clamps.

- E. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- F. Obtain permission from Architect/Engineer before drilling or cutting structural members.
- G. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- H. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- I. In wet and damp locations use steel channel supports to stand cabinets and panelboards one inch (25 mm) off wall.
- J. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- K. All items shall be supported from the structural portion of the building.
- L. This Contractor shall lay out and install his work in advance of the laying of floors or walls, and shall furnish and install all sleeves that may be required for openings through floors, wall, etc. Where plans call for conduit to be run exposed, this Contractor shall furnish and install all inserts and clamps for the supporting of conduit. If this Contractor does not properly install all sleeves and inserts required, he will be required to do the necessary cutting and patching, later at his own expense, to the satisfaction of the Architect.
- M. All conduits shall be securely fastened in place per NEC, and hangers, supports or fastenings shall be provided at each elbow and at the end of each straight run terminating at a box or cabinet. The use of perforated iron for supporting conduits will not be permitted. The required strength of the supporting equipment and size and type of anchors shall be based on the combined weight of conduit, hanger and cables. Horizontal and vertical conduit runs may be supported by one-hole malleable straps, clamp-backs, or other accepted devices with suitable bolts, expansion shields (where needed) or beam-clamps for mounting to building structure or special brackets.
- N. Where two or more conduits are run parallel or in a similar direction, they shall be grouped together and supported by means of Kindorf type trapeze hanger system (racking) consisting of concrete inserts, threaded solid rods, washers, nuts and galvanized "L" angle iron, or Unistrut cross members. These conduits shall be individually fastened to the cross member of every other trapeze hanger with galvanized cast one hole straps, clamp backs, bolted with proper size cadmium machine bolts, washers and nuts. If adjustable trapeze hangers are used to support groups of parallel conduits, U-bolt type clamps shall be used at the end of a conduit run and at each elbow. J-bolts, or accepted clamps, shall be installed on each third intermediate trapeze hanger to fasten each conduit.
- O. Hanger assemblies shall be protected after fabrication by galvanizing. Hangers for PVC coated conduit shall be PVC coated galvanized conduit or stainless steel.
- P. On concrete or brick construction, insert anchors shall be installed with round head machine screws. In wood construction, round head screws shall be used. An electric or hand drill shall be used for drilling holes for all inserts in brick, concrete or similar construction. In brick, inserts shall be near center of brick, not near edge or in joint. Where steel members occur, same shall be drilled and tapped, and round head machine screws shall be used. All screws, bolts, washers, etc., used for supporting conduit or outlets shall be fabricated from rust-resisting metal, or accepted substitution. Fasteners similar to "TAP-CON" self tapping power driven type are acceptable. Plastic anchors are not acceptable.
- Q. Conduit supporting devices such as spring type conduit clips manufactured by Caddy Corporation may not be used.

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- R. Threaded rod hangers shall be galvanized continuous thread type, minimum 3/8" diameter.
- S. Concrete/insert anchors, threaded rods, or similar fasteners installed on side or bottom of pre-stressed beams are not acceptable.

END OF SECTION

SECTION 26 05 33
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Raceways, boxes, enclosures, handholes, sleeves, and accessories required for fully functional electrical and communication systems pathways.

1.2 RELATED SECTIONS

- A. Section 01 25 13 - Product Substitution Procedures
- B. Section 01 31 00 - Project Coordination
- C. Section 01 33 00 - Submittal Procedures
- D. Section 01 35 53 – Security Procedures
- E. Section 01 42 00 – References
- F. Section 01 45 00 - Quality Control
- G. Section 01 66 00 – Product Storage and Handling Requirements
- H. Section 01 78 00 - Closeout Submittals
- I. Section 07 84 00 - Fire Stopping
- J. Section 07 92 00 - Joint Sealants
- K. Section 26 05 00 - Common Work Results for Electrical
- L. Section 26 05 29 – Hangers and Supports for Electrical Systems
- M. Section 26 05 43 – Underground Ducts and Raceways for Electrical Systems
- N. Section 26 05 53 – Identification for Electrical Systems
- O. Section 26 20 00 – Low Voltage Electrical Transmission
- P. Section 28 05 13 – Conductors and Cables for Electronic Safety and Security

1.3 REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms.
- B. American National Standards Institute (ANSI):
 - 1. ANSI C80.1-2005: Electrical Rigid Steel Conduit.
 - 2. ANSI C80.3-2005: Electrical Metallic Tubing (EMT).
- C. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code, 2014 Edition.
- D. Underwriters Laboratories (UL):
 - 1. UL 5-2011: Standard for Surface Mounted Raceways and Fittings.
 - 2. UL 5A-2015: Nonmetallic Surface Raceways and Fittings.
 - 3. UL 6-2007: Electrical Rigid Metal Conduit.
 - 4. UL 651-11: Standard for Schedule 40, 80, Type E, B and A rigid PVC Conduit and Fittings.
 - 5. UL 797-2007: Electrical Metallic Tubing – Steel.
- E. National Electrical Contractors Association (NECA):
 - 1. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2010.
 - 2. NEC 101-2006: Standard for Installing Steel Conduits (Rigid, IMC, EMT).

- F. National Electrical Manufacturers Association (NEMA):
 - 1. NEMA FB1-2012: Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Conduit.
 - 2. NEMA TC 2-2013: Electrical Polyvinyl Chloride (EMT) Conduit.
 - 3. NEMA TC 3-2013: Polyvinyl Chloride Fittings for Use with PVC Conduit and Tubing..

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit data for metallic conduit, metallic tubing, nonmetallic conduit, flexible nonmetallic conduit, nonmetallic tubing, fittings, and conduit bodies.
- C. Comply with Section 01 78 00 – Closeout Submittals. Project Record Documents shall accurately record routing of conduits 2” (52mm) or larger.

1.5 QUALITY ASSURANCE

- A. Comply with Section 01 45 00 - Quality Control.
- B. Conform to requirements of NFPA 70 - National Electrical Code; National Fire Protection Association; 2014 Edition.
- C. Florida Building Code, 5th Edition.
- D. Products shall be listed and classified by Underwriters Laboratories, Inc. and be suitable for purpose specified and indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
- B. Upon receipt of materials on site, promptly inspect for damage.
- C. Store materials in lockable trailer or other similar lockable storage facility on site. Payment will not be allowed for products either unprotected on site or stored off-site.
- D. Protect PVC conduit from sunlight and UV degradation.

PART 2 PRODUCTS

2.1 ALLOWABLE CONDUIT TYPES PER LOCATION

- A. Conduit Size: Comply with NFPA 70.
 - 1. Minimum Size: 0.75” (19.1mm) unless otherwise specified or indicated for electrical pathways and 1” (25.4mm) for communication pathways.
- B. Underground Installations:
 - 1. Beyond 5’ (1.5m) from structures foundation walls: Use rigid steel conduit, thickwall non-metallic conduit, or thinwall non-metallic conduit.
 - 2. Within 5’ (1.5m) of foundation wall: Use rigid steel conduit.
 - 3. Within or under slab on grade: Use rigid steel conduit or thickwall non-metallic conduit.
 - 4. Minimum Size: 4” (101.6mm).
- C. Outdoor Locations Above Grade: Use rigid steel conduit or intermediate metal conduit.

- D. In Slab Above Grade:
 - 1. Use rigid steel conduit or thickwall nonmetallic conduit.
 - 2. Maximum Size Conduit in Slab: 1" (25.4mm).
- E. Wet and Damp Locations: Use rigid steel conduit or thickwall nonmetallic conduit.
- F. Dry Location:
 - 1. Concealed: Use rigid steel conduit, intermediate metal conduit, electrical metallic tubing, or thickwall nonmetallic conduit.
 - 2. Exposed: Use rigid steel conduit, intermediate metal conduit, electrical metallic tubing, or thickwall nonmetallic conduit.

2.2 METAL CONDUIT AND TUBING

- A. Approved Manufacturers:
 - 1. AFC Cable Systems, 272 Duchaine Blvd., New Bedford, MA 02745-1214; Tel: 508-998-1131; Fax: 508-998-1447; website: www.afcweb.com.
 - 2. Allied Tube and Conduit, 16100 South Lathrop Ave., Harvey, IL 60426; Tel: 800-882-5543; Fax: 954-574-0714; website: www.alliedtube.com.
 - 3. Anamet Electrical Inc., 1000 Broadway Ave. East, P.O. Box 39, Mattoon, IL 61938; Tel: 900-801-8845; Fax: 800-677-2706; website: www.anacondasealtite.com.
 - 4. O-Z/Gedney, 9377 W. Higgins Rd., Rosemont, IL 60018; Tel: 847-268-6000; Fax: 847-268-6018; website: www.o-zgedney.com.
 - 5. Wheatland Tube Co., Division of John Maneely Co., 700 South Dock St.' Sharon, PA 16146; Tel: 800-257-8182; Fax: 724-346-7260; website: www.wheatland.com.
 - 6. Other manufacturers shall request material approvals in accord with Section 01 25 13 – Product Substitution Procedures.
- B. Rigid Steel Conduit: ANSI C80.1-2005.
- C. Electrical Metallic Tubing (EMT): ANSI C80.3-2005.
- D. Intermediate Metal Conduit (IMC): Rigid steel.
- E. Fittings and Conduit Bodies: NEMA FB 1-2012; fittings shall match conduit.

2.3 NONMETALLIC CONDUIT AND TUBING

- A. Approved Manufacturers:
 - 1. AFC Cable Systems, 272 Duchaine Blvd., New Bedford, MA 02745-1214; Tel: 508-998-1131; Fax: 508-998-1447; Website: www.afcweb.com.
 - 2. Allied Tube and Conduit, 16100 South Lathrop Ave., Harvey, IL 60426; Tel: 800-882-5543; Fax: 954-574-0714; Website: www.alliedtube.com.
 - 3. CANTEX, Inc., 301 Commerce St., Suite 2700, Ft. Worth, TX 76102; [Tel:817-215-7000](tel:817-215-7000); Fax: 817-215-7001; Website: www.CANTEXinc.com.
 - 4. RACO, a Hubbell Company, 3902 West Sample St., P.O. Box 4002, South Bend, IN 46634-4002; Tel: 219-283-4300; Fax: 800-722-6462; Website: www.hubbell-raco.com.
 - 5. Thomas & Betts Corp., 8155 T & B Blvd., Memphis, TN 38125; Tel: 901-252-8000; Fax: 901-252-1345; Website: tnb.com.
 - 6. Other manufacturers shall request material approvals in accord with Section 01 25 13 – Product Substitution Procedures.
- B. Description: NEMA TC 2-2013; Schedule 40 PVC.
- C. Fittings and Conduit Bodies: NEMA TC 3-2013; fittings shall match conduit.

2.4 NONMETALLIC TUBING (INTERIOR USE ONLY)

- A. Approved Manufacturer: IPEX, Inc; 3 Place du Commerce, Suite 101, Ile-des-Soeurs, Verdun, Quebec, Canada H3E 1K7; Tel: 514-769-2200; Fax: 514-7569-1672; Website: www.ipexinc.com.
 - 1. Product Kwikpath.
- B. Description: 1.25" (3.18mm) minimal size, riser or plenum rated as required.
- C. Fittings: As required and provided by manufacturer. Fittings shall be by same manufacturer as tubing.
- D. Other manufacturers shall request material approvals in accord with Section 01 25 13 – Product Substitution Procedures.

2.5 BOXES, ENCLOSURES AND CABINETS

- A. Approved Manufacturers:
 - 1. EGS/Appleton Electric., 9377 West Higgins Rd., Rosemount, IL 60018; Tel: 800-621-1506; Fax: 800-356-4714; Website: www.appletonelec.com.
 - 2. Hoffman Enclosures, Inc., 2100 Hoffman Way, Anoka, MN 55303; Tel: 763-421-2240; Fax: 763-422-2178; Website: www.hoffmanonline.com.
 - 3. Killark Electric, a Hubbell Company; 3940 Martin Luther King Druve; St. Louis, MO 63115; Tel: 314-531-0460; Fax: 314-531-7164; Website: www.killark.com.
 - 4. Other manufacturers shall request material approvals in accord with Section 01 25 13 – Product Substitution Procedures.

2.6 HANDHOLES AND BOXES

- A. Approved Manufacturers:
 - 1. Armorcast Products Company, 13230 Saticoy St., North Hollywood, CA 91605; Tel: 818-982-3600; Fax: 818-918-7742; Website: www.armoncastprod.com.
 - 2. Carlson Industries, LLC, 1160 Nicole Ct., Glendora, CA 91740; Tel: 800-735-5566; Fax: 800-827-1777; Website: carsonind.com.
 - 3. Nordic Fiberglass, Inc., P.O. Box 27, Warren, MN 56762; Tel: 218-745-5095; Fax: 218-745-4990; Website: nordicfiberglass.com.
 - 4. Other manufacturers shall request material approvals in accord with Section 01 25 13 – Product Substitution Procedures.

2.7 NONMETALLIC TUBING (EXTERIOR USE)

- A. See Section 33 81 26 - Communications Underground Ducts, Manholes, and Handholes.

2.8 SLEEVES

- A. Manufacturer: Specified Technologies, Inc., 200 Evans Way, Sommerville, NJ 08876; Tel: 800-992-1180, 908-526-8000; Fax: 909-526-9623; Website: www.sticfirestop.com.
 - 1. Product: EZ Path firestop fittings, EZDP133K.
- B. Other manufacturers shall request material approvals in accord with Section 01 25 13 – Product Substitution Procedures.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated. Immediately notify Contractor/CM of field variances from measurements indicated.
- B. Verify with Contractor/CM routing and termination locations of conduit prior to rough-in.

3.2 INSTALLATION

- A. Install conduit securely, in neat and workmanlike manner, as specified in NECA 1-2010.
- B. Install steel conduit per NECA 101-2006.
- C. Install nonmetallic conduit in accord with manufacturer's written instructions.
- D. Arrange supports to prevent misalignment during wiring installation.
- E. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- F. Fasten conduit supports to building structure and surfaces.
- G. Do not attach conduit to ceiling support wires.
- H. Arrange conduit to maintain headroom and present neat appearance.
- I. Route exposed conduit level, parallel and perpendicular to walls.
- J. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- K. Route conduit in and under slab from point-to-point.
- L. Maintain adequate clearance between conduit and piping.
- M. Maintain 12" (304.8mm) clearance between conduit and surfaces with temperatures exceeding 104° F (40° C).
- N. Cut conduit square using saw or pipecutter; de-burr cut ends.
- O. Bring conduit to shoulder of fittings; fasten securely.
- P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- Q. Innerduct containing backbone cabling shall end with two feet of cable tray in network rooms. Innerduct may be shortened as needed to accommodate service loops.
- R. Secure innerducts to wall of network rooms to prevent horizontal movement of cable (D-rings are acceptable). Secure cables to the wall in non-deforming manner to prevent vertical movement of cable.
- S. Install no more than equivalent of two 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2" (52.1 mm) size.
- T. "Dog legs" within stud space shall be avoided. Conduits shall not run horizontally through studs before stubbing out of wall.

- U. Conduits from work area outlets shall turn at right angles into area served by WAO box from adjoining hallway.
- V. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- W. Provide suitable fittings to accommodate expansion and deflection where conduit crosses expansion joints.
- X. Provide suitable pull string in each empty conduit except sleeves and ripples.
- Y. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- Z. Ground and bond conduit under provisions of Section 27 05 26 - Grounding and Bonding for Communications Systems.
- AA. Firestop conduit in accord with Section 07 84 00 – Firestopping. Conduits in fire-rated penetrations shall be fire-stopped as soon as conduit is installed. Firestopping may be delayed if, during new construction, partitions and floors are not completed to point of forming final fire barriers. Installed shall consult with Contractor or local AHJ to determine if temporary fire-stopping is required.
- AB. Identify conduit under provisions of Section 26 05 53 – Identification for Electrical Systems.

3.3 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00 – Firestopping.
- B. Route conduit through wall openings in neat and cleanly cut or drilled penetrations for conduits. Roof penetrations are not permitted.

END OF SECTION

SECTION 26 05 34
OUTLET BOXES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide and install all outlet boxes (flush or surface) complete with all accessories as required to facilitate installation of electrical system and as required by the NEC.
- B. Section includes: Wall and ceiling outlet boxes (and/or small junction/pullboxes).

1.3 REFERENCES

- A. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- B. ANSI/NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- C. ANSI/NFPA 70 - National Electrical Code.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.4 SUBMITTALS

- A. Submit catalog cut sheet/product data on:
 - 1. Surface cast boxes.
- B. For pullboxes and junction boxes not covered in Section Pull and Junction Boxes for Electrical Systems, submit product data showing dimensions, covers, and construction.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.6 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Verify locations of outlets in offices and work areas prior to rough-in.
- C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose.

PART 2 PRODUCTS

2.1 GENERAL

- A. All boxes and fittings shall be labeled by Underwriters Laboratories.

- B. Provide box accessories as required for each installation, including mounting brackets, wallboard hangers, extension rings, outlet boxes, and corrosion-resistant knockout closures compatible with outlet boxes being used and meeting requirements of individual wiring situations.
- C. All boxes shall be of the size and shape required by NFPA 70 for their respective locations.
- D. Boxes shall be of such form and dimensions as to be adapted to the specific use and location, type of device or fixtures to be used, and number and size of conductors and arrangement, size and number of conduits connecting thereto.
- E. Handy boxes shall not be used.
- F. Where a box is used as the sole support for a ceiling paddle fan, the box must be listed for this purpose and the weight of the fan.
- G. 4" x 4" boxes and 4 11/16" x 4 11/16" boxes used as junction boxes shall be one piece.

2.2 SHEET METAL OUTLET BOXES: ANSI/NEMA OS 1, GALVANIZED STEEL

- A. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch (13 mm) male fixture studs where required.
- B. Concrete Ceiling Boxes: Concrete type.
- C. Interior flush outlet boxes shall be galvanized steel constructed with stamped knockouts in back and sides, and threaded holes with screws for securing box coverplates or wiring devices. T & B, Steel City, Raco or accepted substitution.
- D. Ceiling outlet boxes shall be 4" octagonal or 4" square X 1 1/2" deep or larger as required for number and size of conductors and arrangement, size and number of conduits terminating at them.
- E. Switch, wall receptacle, telephone and other recessed wall outlet boxes in drywall shall be 4" square X 1 1/2" deep. For recessing in exposed masonry, provide one piece 4" square x 1 1/2" deep wall boxes with appropriate 4" square cut tile wall covers Steel City series #52-C-49/52-C-52 or accepted substitution. For recessing in furred-out block walls, provide 4" square box with required extension for block depth and required extension for drywall depth.

2.3 CAST BOXES: NEMA FB 1

- A. Interior surface outlet boxes and conduit bodies installed from 0" AFF to 90" AFF (including fire alarm device backbox) shall be the heavy cast aluminum or iron with external threaded hubs for power devices and threaded parts for low voltage devices - Appleton, Crouse Hinds or accepted substitution. Trim rings shall also be of one-piece construction.
- B. Weatherproof outlet boxes shall be constructed of corrosion-resistant cast metal suited to each application and having threaded conduit hubs, cast metal faceplate with spring-hinged waterproof cap suitable configured, gasket, and corrosion-proof fasteners.
- C. Boxes to be Type FD unless otherwise noted on drawings.
- D. Freestanding cast boxes are to be type FSY (with flange). Other cast zinc boxes are not acceptable.

PART 3 EXECUTION

3.1 GENERAL

- A. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.

- C. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.
- D. Install boxes to preserve fire resistance rating of partitions and other elements.
- E. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.
- F. Use flush mounting outlet boxes in finished areas.
- G. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls.
- H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- I. Use stamped steel bridges to fasten flush mounting outlet box between studs.
- J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- K. Support all outlet boxes from structure with minimum of one (1) 3/8" all-thread rod hangers. Boxes larger than 25 square inches shall be supported with two (2) all-thread rod hangers, minimum.
- L. Do not fasten boxes to ceiling support wires.
- M. Support boxes independently of conduit.
- N. Use gang box where more than one device is mounted together. Do not use sectional box.
- O. Use gang box with plaster ring for single device outlets.
- P. Use cast outlet box in exterior locations and wet locations.
- Q. Comply with applicable portions of the National Electrical Contractor's Association's (NECA) "Standard of Installation".
- R. Install outlets in the locations shown on the drawings; however, the Owner shall have the right to make, prior to rough-in, slight changes in locations to reflect room furniture layouts.
- S. The Contractor shall coordinate his work with that of the General Contractor so that each electrical box is the type suitable for the wall or ceiling construction provided and suitable fireproofing is inbuilt into fire rated walls.
- T. The Contractor shall relocate electrical boxes as required so that electrical devices, once installed, will be symmetrically located with respect to the room layout.
- U. All boxes shall be installed in a flush rigid manner with box lines at perpendicular and parallel angles to finished surfaces. Boxes shall be supported by appropriate hardware selected for the type of surface from which the box shall be supported. For example, provide metal screws for metal, wood screws for wood, and expansion devices for masonry or concrete.
- V. For locations exposed to weather or moisture (interior or exterior), provide weatherproof boxes and accessories.
- W. As a minimum, provide pull boxes in all raceways over 150 feet long. The pull box shall be located near the midpoint of the raceway length.
- X. Provide knockout closures to cap unused knockout holes where blanks have been removed, and plugs for unused threaded hubs.
- Y. Provide conduit locknuts and bushings of the type and size to suit each respective use and installation.
- Z. Boxes and conduit bodies shall be located so that all electrical wiring is accessible.
- AA. Avoid using round boxes where conduit must enter box through side of box, which would result in a difficult and insecure connection with a locknut or bushing on the rounded surface.

- BB. All flush outlets shall be mounted so that covers and plates will finish flush with finished surfaces without the use of shims, mats or other devices not submitted or accepted for the purpose. Add-a-Depth rings or switch box extension rings (Steel City #SBEX) are not acceptable. Plates shall not support wiring devices. Gang switches with common plate where two or more are indicated in the same location. Wall-mounted devices of different systems (switches, thermostats, etc.) shall be coordinated for symmetry when located near each other on the same wall. Outlets on each side of walls shall have separate boxes. Through-wall type boxes shall not be permitted. Back-to-back mounting shall not be permitted. Trim rings shall be extended to within 1/8" of finish wall surface.
- CC. Outlet boxes mounted in metal stud walls, are to be supported to studs with two (2) screws inside of outlet box to a horizontal stud brace between vertical studs or one side of outlet box supported to stud with opposite side mounted to section of stud or device to prevent movement of outlet box after wall finished.
- DD. All outlet boxes that do not receive devices in this contract are to have blank plates installed matching wiring device plates.
- EE. Mount Height.
1. Height of wall outlets to bottom above finished floors shall be as follows, unless specifically noted otherwise, or unless otherwise required by applicable codes including ADA. Verify with the Architectural plans and shop drawings for installing.

Switches	4'-0" AFF to top
Receptacles	1'-4" AFF to bottom
Lighting Panels	6'-6" AFF to centerline of highest breaker/fuse
Phone outlets	1'-4" AFF to bottom
Intercom Call-in button/handsets	4'-0" AFF to top
Fire Alarm Pull Stations	4'-0" AFF to top
Fire Alarm Strobe Lights	80" AFF to bottom
Thermostats	4'-0" AFF to top
Space Sensors	4'-0" AFF to top
 2. Bottoms of outlets above counter tops or base cabinets shall be minimum 2" above counter top or backsplash, whichever is highest. Outlets may be raised so that bottom rests on top of concrete block course, but all outlets above counters in same area shall be at same height. It is the responsibility of this Division to secure cabinet drawings and coordinate outlet locations in relation to all cabinets as shown on Architectural plans, prior to rough-in, regardless of height shown on Division 26 Drawings.
 3. Height of wall-mounted fixtures shall be as shown on the drawings or as required by Architectural plans and conditions. Fixture outlet boxes shall be equipped with fixture studs when supporting fixtures.
- FF. Special Purpose Outlets.
1. Locate special purpose outlets as indicated on the drawings for the equipment served. Location and type of outlets shall be coordinated with appropriate trades involved. The securing of complete information for proper electrical roughing-in shall be included as work required under this section of specifications. Provide plug for each outlet.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate installation of outlet box for products furnished under all Sections of these specifications.

- B. Coordinate locations and sizes of required access doors with applicable sections in these specifications.
- C. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- D. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.
- E. Position outlet boxes to locate luminaires as shown on reflected ceiling plan.

3.3 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closure in unused box opening.

END OF SECTION

SECTION 26 05 35
PULL AND JUNCTION BOXES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide and install pull and junction boxes as shown on drawings or as required by the National Electrical Code (NEC).
- B. Provide and install pull and junction boxes wherever required for a complete and operating distribution system whether shown on drawings or not.
- C. Where outlet boxes are used for pull and/or junction boxes, they shall meet the requirements of the outlet box section of these specifications.

1.3 REFERENCES

- A. ANSI/NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- B. ANSI/NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- C. ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
- D. ANSI/NFPA 70 - National Electrical Code.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.4 SUBMITTALS

- A. Submit actual shop drawings on all pull boxes showing.
 - 1. Covers.
 - 2. Dimensions - inside and out.
 - 3. Rating of concrete or gauge of metal.
 - 4. Manufacturer.

1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations and mounting heights of pull and junction boxes.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.7 PROJECT CONDITIONS

- A. Verify field measurements are as shown on Drawings.
- B. Verify locations of pull and junction boxes prior to rough-in.
- C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose and to maintain required access.

PART 2 PRODUCTS

2.1 GENERAL

- A. Dimensions of pull and junction boxes shall meet dimensions shown on drawings or dimensions required by NEC, whichever is largest.
- B. Pull and junction boxes shall meet all requirements of UL and NEC.
- C. Small pull boxes (i.e. 4" x 4") shall meet the requirements of these specifications for outlet boxes as a minimum.
- D. All boxes (above ground) of 100 cubic inches or more shall be constructed of 14 gauge steel with hot dip galvanized coating.

2.2 SHEET METAL BOXES:

- A. NEMA OS 1, galvanized steel(interior locations only).
- B. Boxes to be fully weatherproof and watertight stainless steel NEMA 4SS where installed outside.

2.3 IN-GROUND PULL BOXES:

- A. Material: Precast concrete, or composolite.
- B. Bottom: Open with 6" of gravel for drainage.
- C. Cover: Meet Florida Dept. of Transportation requirements for installed location. (Pedestrian, heavy traffic, light traffic).
- D. Solid sides constructed to facilitate conduit entries.

PART 3 EXECUTION

3.1 GENERAL

- A. Install per NEC
- B. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- C. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.
- F. Install boxes to preserve fire resistance rating of partitions and other elements.
- G. Align adjacent wall-mounted boxes with each other.
- H. Use flush mounting boxes in finished areas.

- I. Do not install flush mounting boxes back-to-back in walls; provide minimum 6 inch (150 mm) separation. Provide minimum 24 inches (600 mm) separation in acoustic rated walls.
- J. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- K. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- L. Pull and junction boxes larger than 25 square inches shall be supported with two (2) 3/8" all-thread rod hangers minimum.
- M. Do not fasten boxes to ceiling support wires.
- N. Support boxes independently of conduit.
- O. Large Pull Boxes: Boxes larger than 100 cubic inches (1600 cubic centimeters) in volume or 12 inches (300 mm) in any dimension.
 - 1. Interior Dry Locations: Per NEC, with screw covers.
 - 2. Other Locations: Use hinged enclosure under provisions of Section Cabinets and Enclosures.
- P. Outdoor Locations: All boxes installed outdoors to be NEMA 4 Stainless Steel, fully weatherproof and watertight.

3.2 IN GROUND PULL BOXES

- A. Provide and install ground rod in each pull box. Connect #2 copper ground wires (counterpoise) to ground rod, run out pullbox 6" over conduits to next pull box; tie to respective building electrical ground rod at each building.
- B. Install pull boxes flush with finished grade. Provide extensions as required.
- C. Bond metallic covers, if provided, to ground rod via exothermic welds.
- D. Label cover with respective system.

3.3 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations and sizes of required access doors with applicable sections in these specifications.
- B. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

3.4 ADJUSTING

- A. Install knockout closure in unused box opening.

END OF SECTION

SECTION 26 05 37
SURFACE RACEWAYS

PART 1 – GENERAL

1.1 DESCRIPTION OF SYSTEM

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:
 - 1. Wireways.

1.2 REFERENCES

- A. NECA (National Electrical Contractor's Association) Standard of Installation.

1.3 SUBMITTALS

- A. Submit under provisions of the General Requirements of the Contract Documents and Section Submittals.
- B. Submit Product Data: Provide dimensions, knockout sizes and locations, materials, fabrication details, finishes, and accessories.
- C. Submit Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with NECA Standard of Installation.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this Section with minimum five years experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 – PRODUCTS

2.1 WIREWAY

- A. Manufacturers:
 - 1. Hoffman.
 - 2. Square "D"

- 3. Electrical Enclosures
- 4. Substitutions: Under provisions of Section Substitutions.
- B. Description: General purpose, Oiltight and dusttight or Raintight type wireway as indicated on drawings. If not indicated provide type required to meet applicable codes.
- C. Knockouts: Manufacturer's standard.
- D. Size: As indicated on Drawings, or larger as required by the NEC
- E. Cover: Hinged cover with full gasketing for raintight and oiltight types.
- F. Connector: Slip-in for general purpose and raintight types and flanged for oiltight types.
- G. Fittings: Lay-in type with removable top, bottom, and side; captive screws for general purpose, and drip shield for raintight type, and removable top for oiltight type.
- H. Finish: Rust inhibiting primer coating with gray enamel finish.

PART 3- EXECUTION

3.1 INSTALLATION

- A. Install Products in accordance with manufacturer's instructions.
- B. Use flat-head screws, clips, and straps to fasten raceway channel to surfaces. Mount plumb and level.
- C. Use suitable insulating bushings and inserts at connections to outlets and corner fittings.
- D. Wireway Supports: Provide steel channel as specified in Section Supporting Devices.
- E. Close ends of wireway and unused conduit openings.
- F. Ground and bond raceway and wireway under provisions of Section Grounding and Bonding.
- G. Install only in locations deemed accessible by the NEC and local authority. Provide all access panels, etc., as required to maintain required access.

END OF SECTION

SECTION 26 05 43
UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Underground ducts, raceways, pullboxes, handholes, and accessories required for complete functioning underground electrical and communications distribution system.

1.2 REFERENCE STANDARDS

- A. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms.
- B. American Society of Testing materials (ASTM):
 - 1. ASTM D1557-09: Standard Test Method for Laboratory Compaction characteristics of Soil Using Modified Effort (56,000ft-lbs/ft³ (2700Kn-m/m³)).
 - 2. ASTM C136-06: Standard Test Method for Sieve Analysis of Fine and Course Aggregates.
 - 3. ASTM C33-11a: Standard Specification for Concrete Aggregates.
 - 4. ASTM C39-12a: Standard Test Method for Compressive Strength of Cylindrical Concrete.
- C. National Electrical Contractors Association (NECA):
 - 1. ANSI/NECA 1-2010: Standard Practice in Good Workmanship in Electrical Construction.
- D. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code, 2008 Edition.
- E. National Electrical Manufacturers Association (NEMA):
 - 1. ANSI/NEMA TC2-2013: Electrical Polyvinyl Chloride (PVC) Conduit.
 - 2. ANSI/NEMA TC3-2004: Electrical Polyvinyl Chloride (PVC) Fittings.
- F. Occupational Safety and Health Administration (OSHA): Part 1926 – Safety and Health Regulations for Construction.
- G. Florida Building Code and Trench Safety Act, 2010 Edition.

1.3 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit manufacturer's descriptive literature for each type of conduit, ductbank, man and hand holes, supports, components and accessories specified or indicated.
- C. Shop Drawings:
 - 1. Submit duct bank layouts for communications and electrical conduits, man and hand hole, conduit types, sizes and location, with dimensions, and support points.
 - 2. Drawings shall indicate floor plans and sections, drawn to scale and shall include:
 - a. Relationships between underground ducts, components and adjacent structural, electrical, and communications interface elements.
 - b. Vertical and horizontal offsets and transitions.
 - c. Details of hand and manhole access to ductbanks.
 - d. Vertical elevations of ductbanks from grade, floor slab and adjacent structures.
 - 3. Provide manufacturer's catalog data for ductbank, man and handholes, and accessories required for complete installation.
- D. Submit manufacturer's printed installation instructions for installation, including product storage, protection and handling requirements.

- E. Comply with Section 01 78 00 – Closeout Submittals: If variations from approved shop drawings occur during installation of ductbank system, submit Project Record Documents indicating final locations.

1.4 PROJECT COORDINATION

- A. Comply with Section 01 31 00 – Project Coordination.
- B. Contractor/CM shall coordinate pre-installation meeting with site work, communications and electrical installers to plan, layout and install underground conduits, ductbanks and man and handholes to avoid conflicts and interference with other trades.
- C. Underground Utility Locating:
 - 1. Provide Owner approved utility locating company to trace utilities to identifiable points.
 - 2. Make visual inspection of site and locate existing underground utilities including electrical, gas, domestic water, chilled water, sewer, storm drainage, electrical, and telecommunications conduits, conductors, hand and pull hole locations.
 - 3. Clearly mark underground utilities prior to excavation.
 - 4. Immediately notify Contractor/CM if unmarked utilities are discovered. Stop work in area until utility can be identified. Notify Owner's Project Manager.
- D. See Section 01 35 53 – Security Procedures for separation of work areas on existing operational facilities from of work site.
- E. Worksite will have restricted access and may preclude use of heavy equipment, including backhoes, concrete trucks, utility and other construction vehicles. Contractor/CM shall coordinate with Owner's Project Manager for specific restrictions and coordination with facility's on-going operations based on location of work.
- F. During construction of underground ducts, Owner's Project Manager shall determine if closures of roads or spaces are possible at proposed dates and times. Coordinate work with Contractor/CM, and regulatory authority having jurisdiction for interface connections or activities.
- G. Information from Owner on underground utility placement does not waive Contractor/ CM's responsibility from confirming presence and location of underground utilities in work area.
- H. Contractor/CM shall provide necessary equipment to safely excavate and construct underground duct pathways. Comply with federal, state, and local regulations regarding work. Personal protective equipment, if required, shall be Contractor/CM's responsibility.
- I. Comply with Florida Trench Safety Act, OSHA, and other applicable workplace regulatory requirements.

1.5 PROJECT REQUIREMENTS

- A. During relocation of underground electrical and communications elements, services provided by or through system elements shall be minimally impacted. Service outages at occupied sites shall be minimized by scheduling work during off-hours to greatest extent possible. Service outages shall be coordinated with facility user and pre-approved by Owner's Project Manager.
- B. Pathway routing shall avoid established trees. Small ornamental trees that interfere with work can may be moved or replaced if preapproved by Owner's Project Manager. Planting beds and shrubs may be disrupted as needed, provided they are restored to original condition.
- C. Walkways and roadway may be crossed if required, provided they are restored to original condition.
- D. Where possible, new conduits installed along same pathway as existing pathway shall be installed as part of existing ductbank. Contractor/CM may expose existing ductbank and use its vertical side to frame space for new conduits.

- E. Communications and data systems (fire alarm, intercom, telephones, sensors, cameras, etc.) may require dedicated cabling to specific, non-standard locations. See Div. 27 specifications for additional requirements. Devices shall be designed as required and may run independent of other pathways and requirements. Owner’s Project Manager shall preapprove pathway designs involving data, communications, security or life-safety cabling.
- F. Underground Pathways
1. Underground conduit structures are pathways used for placing building’s electrical supply network between access points such as from electrical utility demark location to transformer, pull boxes and handholes, to site main electrical distribution room and between buildings.
 2. Cable pathways shall be underground, where possible. Underground pathways shall be concrete-encased conduit.
 3. Diameter of ducts shall be minimum of one-half trade size larger in diameter than diameter of largest anticipated cable.
 4. Clearances between utilities:

Underground Clearances as Required by the NESC	
Structure	Minimum Clearance
Communications or other low voltage	3” (75 mm) concrete encased conduit 4” (100 mm) masonry 12” (300 mm) of compacted earth
Pipes (e.g. gas, water, oil)	6” (150 mm) when crossing 12” (300 mm) when parallel
Telecommunications conduit terminated on same pole as electrical	Preferably 180 degrees but not less than 90 degrees
NOTE: Check with authority having jurisdiction for applicable codes. See NESC for other clearances	

5. Underground pathways shall be designed for minimal depth of 30” (76.2cm) to top of pathway elements. Deviations shall be pre-approved by Owner’s Project Manager Authority Having Jurisdiction (AHJ).
6. Conduits may gradually slope up to under 30” (76.2cm) depth to enter handholes or pull boxes.
7. Underground conduit elevations shall slope to allow drainage. Drain slope towards pull boxes or manholes at one percent grade.
8. Provide 12” (30.4cm) fine aggregate compacted bed under ductbank and pull box locations.
9. Conduit layout in ductbanks shall facilitate orderly cable racking within pull boxes to ensure minimal change in formation cable.
 - a. Main conduit formations shall enter end walls of pull boxes approximately halfway between floor and top.
 - b. Splay ductbank entrances at end walls rather than center placement.
 - c. If total number of conduits being placed is significantly less than capacity of terminating pull box or cable entrance, conduits shall enter at lower level with upper space reserved for future conduits.

- d. Conduit entrance into pull boxes shall be sized for ultimate number of conduits to preclude future wall breakouts.
 10. Curved duct bank sections shall be minimized. Where required, ducts shall be pre-manufactured with minimum 15' (4.56m) radii.
 11. Ductbank configuration may vary, depending on spaces into which conduits end.
 12. Buildings shall have minimum of four conduits accessing entrance facility. Two conduits shall be 4" (101 mm) inner diameter. Remaining two may be multi-cell conduits with minimum three factory-manufactured inner conduits.
 13. Compacted backfill shall be fine aggregate grading in accord with ASTM C136-06 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates).
 14. Backfill material may be material removed from original excavation, provided backfill materials meet ASTM C136-06.
 15. Match sod of same type grass as surrounding area.
 16. Compact first 6" (152mm) of backfill to 95% density per ASTM D1557-09, Method A.
 17. Compact second 6" (152mm) of backfill to 85% density per ASTM D1557-09, Method A.
 18. Horizontal conduits shall end flush with interior surface of pull boxes. Vertical conduit risers ending in electrical rooms shall extend 12" (305mm) above concrete curb located at electrical switchgear. Cut conduits square and level to floor. Bushings shall be installed on conduit ends.
 19. Provide compression-type duct plugs.
 20. Install warning tape 24" (60.8cm) above ductbank.
 22. Provide #10 copper, green insulated tracer wire.
 23. Install 0.375" (86.5mm) diam. pull strings in conduits.
- J. Non-encasement
1. In special circumstances, if preapproved by Owner's Project Manager or where indicated, CM/Contractor may install conduits without concrete ductbank.
 2. Typical installations may include parking lift gates, information kiosks, playfield ticket booths, concession stands or other non-critical locations.

1.6 DELIVERY, STORAGE, AND PROTECTION

- A. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
- B. Store materials under cover and elevated above grade. Prevent water, dirt, and debris from entering conduits and tubing.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Approved Conduit Manufacturers:
 1. IPEX, Inc.: 3 Place du Commerce, Suite 101, Ile-des-Soeurs, Verdun, Quebec, Canada H3E 1H7; Tel: 514-769-2200; Fax: 514-769-1672; Website: www.ipexinc.com.
 - a. Product: TerraCon PVC raceway for directional boring and open trenching
 2. Thomas and Betts, Inc., subsidiary of ABB Low Voltage Products Division; 8155 T & B Boulevard, Memphis, TN 38125; Tel: 800-816-7809; Website: www.carlon.com.
 - a. Product: Carlon® Bore-Gard® and Boreable Multi-Gard Raceway for directional boring and open trenching.
 3. Other manufacturers shall submit requests for product approvals in accord with Section 01 25 13 – Product Substitution Procedures.
- B. Conduit:

1. PVC SCH 40 Pipe.
 - a. Manufactured to NEMA TC2 (Electrical Polyvinyl Chloride (PVC) Tubing and Conduit) specifications.
 - b. Bell ends
 - c. Adhesive as recommended by conduit manufacturer for type of conduit providing permanent and watertight seal.
 2. PVC SCH 40 Fittings.
 - a. Manufactured to NEMA TC3 (PVC Fittings for Use with Rigid PVC Conduit and Tubing) specifications.
 - b. Adhesive as recommended by conduit manufacturer for type of fitting providing permanent and watertight seal.
 3. PVC SCH 40 Pre-Manufactured Sweeps.
 - a. 6' (1.83m) radius, minimum up to and including 90 degree sweeps.
 - b. Sweeps greater than 90 degrees are not allowed.
 4. PVC type EB-35.
 - b. For use in encased concrete.
 - c. Manufactured to NEMA TC8 (PVC Plastic Utilities Duct for Underground Installations) specifications.
 - d. Bell ends.
 - e. Adhesive as recommended by conduit manufacturer for type of fitting providing permanent and watertight seal.
 5. PVC type EB-35 Fittings.
 - a. For use in encased concrete.
 - b. Manufactured to NEMA TC9 (Fittings for PVC Plastic Utilities Duct for Underground) specifications.
 - c. Adhesive as recommended by conduit manufacturer for type of fitting providing permanent and watertight sea.
- C. Conduit Spacers
1. Approved Manufacturer: Underground Devices, Inc., 3304 Commercial Ave., Northbrook, IL 60062; Tel: 847-205-9000; Fax: 847-205-9004; Website: www.udevices.com.
 - a. Product: Underground Devices, Inc. WUNPEECE Spacer Type-4W20-2.
 2. Other manufacturers shall submit requests for product approvals in accord with Section 01 25 13 – Product Substitution Procedures.
- D. Conduit Plugs (compression-type plug).
1. Approved Manufacturer: Condux International Inc., 145 Kingswood Dr., PO Box 247, Mankato, MN 56002-0247; Tel: 800-533-2077; 507-387-6576; Fax: 501-387-1442; Website: www.condux.com.
 - a. Product: 4" (103mm) Nonmetallic Eye Nut Plug-08067840.
 2. Other manufacturers shall submit requests for product approvals in accord with Section 01 25 13 – Product Substitution Procedures.
 3. Universal or “push-in” type plugs (e.g. Condux, Universal Plug-08047601) are not acceptable.
- E. Conduit Seals.
1. Approved Manufacturers:
 - a. Tyco Electronics Corp., 8000 Purfoy Rd., Fuquay, NC 27526-9349; Tel: 919-557-8900; Fax: 919-557-8498; Website: www.tycoelectronics.com.
 - 1) Expandable sealing bags: Tyco T-DUX (based on conduit size)..
 - b. 3M Communication Markets Division, 6801 River Place Blvd., Austin, TX 78726-9000; Tel: 800-426-8688; Website: www.3M.com/Telecom.

- 1) Expanding foam: 3M Part #4416 Duct Sealant Kit.
3. Other manufacturers shall submit requests for product approvals in accord with Section 01 25 13 – Product Substitution Procedures.
4. Expanding foam insulation products (e.g. Great Stuff) are not acceptable.
- E. Innerduct Conduits.
 1. Approved Manufacturer:
 - a. Thomas and Betts, Inc., subsidiary of ABB Low Voltage Products Division; 8155 T & B Boulevard, Memphis, TN 38125; Tel: 800-816-7809; Website: www.carlon.com.
 - 1) Products:
 - a) Carlon, Ribbed Wall High Density Polyethylene, 1.25” (3.18mm) OD, orange.
 - b) Carlon, Corrugated High Density Polyethylene, 1.25” (3.18mm) OD, orange.
 - b. Endot Industries, Inc., 60 Green Pond Rd., Rockaway, NJ 07866; Tel: 800-443-6368; Fax: 973-625-4087; Website: www.endot.com.
 - 1) Products:
 - a) ENDOCOR corrugated, 1.25” (3.18mm) OD, orange.
 - c. Other manufacturers shall submit requests for product approvals in accord with Section 01 25 13 – Product Substitution Procedures.
 - F. Pull Tape.
 1. Approved Manufacturer:
 - a. Neptco, 30 Hamlet St., Pawtucket, RI 02861; Tel: 401-722-5500, 800-354-5445; Fax: 401-722-6328; Website: www.neptco.com.
 - 1) Product: RP1800P, 3/8” (86.5mm) width, 1800 lbs. (818kg) strength.
 - b. Ideal Industries, Inc., Sycamore, IL 60178; Tel: 815-895-5181, 800-435-0705; Website: www.idealindustries.com.
 - 1) Product: 3-in-1 Premise MULETAPE®, Cat. No. 31-315, 1,800 lb (818kg) pull strength.
 - c. Other manufacturers shall submit requests for product approvals in accord with Section 01 25 13 – Product Substitution Procedures.
 - G. Warning Tape.
 1. Manufacturer: Empire Level Mfg. Corp., 929 Empire Dr., Mukwonago, WI 53149; Tel: 800-558-0722; Fax: 262-368-2127; Website: www.empirelevel.com.
 - a. Product: Thortec premium reinforced detectable underground orange warning tape, marked “Optic Fiber” or “Communications”.
 - b. Other manufacturers shall submit requests for product approvals in accord with Section 01 25 13 – Product Substitution Procedures.
 - H. Tracer Wire: Green, #10 copper conductor insulated wire.
 - I. Concrete: 0.375” (86.5mm) maximum size aggregate, nominal compressive strength, 3,000 psi (20.68Mpa) at 28 days.
 - J. Steel Reinforcing: #5 deformed bars, 40,000 lbs. (18,180kgs) tensile strength.
 - K. Sand for backfill: clean, material passing #4 U.S. sieve, conforming to ASTM C33-11a - Standard Specification for Concrete Aggregates.
 - L. Manufacturers not listed shall comply with Section 01 25 13 Product Substitution Procedures.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Pathway routing shall avoid established trees. Small ornamental trees that interfere with work can may be moved or replaced if preapproved by Owner’s Project Manager. Planting beds and shrubs may be disrupted as needed, provided they are restored to original condition.
- B. Walkways and roadway may be crossed if required, provided they are restored to original condition.
- C. Where possible, new conduits installed along same pathway as existing pathway shall be installed as part of existing ductbank. Contractor/CM may expose existing ductbank and use its vertical side to frame space for new conduits.
- D. Communications and data systems (fire alarm, intercom, telephones, sensors, cameras, etc.) may require dedicated cabling to specific, non-standard locations. See other Div. 27 Specifications for additional requirements. Devices shall be designed as required and may run independent of other pathways and requirements. Owner’s Project Manager shall preapprove pathway designs involving data, communications, security or life-safety cabling.
- E. Cable pathways shall be underground, where possible. Underground pathways shall be concrete-encased conduit.
- F. Clearances between utilities:

Underground Clearances as Required by NESC	
Structure	Minimum Clearance
Communications or other low voltage	3” (75 mm) concrete encased conduit 4” (100 mm) masonry 12” (300 mm) of compacted earth
Pipes (e.g. gas, water, oil)	6” (150 mm) when crossing 12” (300 mm) when parallel
Telecommunications conduit terminated on same pole as electrical	Preferably 180 degrees but not less than 90 degrees
Underground pathways minimal depth elements.	30” (76.2cm) to top of pathway

- G. Conduits shall slope at 1% grade for drainage between pull boxes and handholes.
- H. Provide 12” (30.4cm) fine aggregate compacted bed under ductbank and pull box locations.
- I. Conduit Layout:
 - 1. Layout in ductbanks shall facilitate orderly cable racking within pull boxes to ensure minimal change in formation cable.
 - 2. Main conduit formations shall enter end walls of pull boxes approximately halfway between floor and top.
 - 3. Splay ductbank entrances at end walls rather than center placement.

4. If total number of conduits being placed is significantly less than capacity of terminating pull box or cable entrance, conduits shall enter at lower level with upper space reserved for future conduits.
 5. Conduit entrance into pull boxes shall be sized for ultimate number of conduits to preclude future wall breakouts.
 6. Duct bank change in directions shall be provided with pull hole boxes.
 7. Ductbank configuration may vary, depending on spaces into which conduits end.
 12. Buildings shall have minimum of four conduits accessing entrance facility. Two conduits shall be 4" (101 mm) inner diameter. Remaining two may be multi-cell conduits with minimum three factory-manufactured inner conduits.
 13. Compacted backfill shall be fine aggregate grading in accord with ASTM C136-06 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates).
 14. Backfill material may be material removed from original excavation, provided backfill materials meet ASTM C136-06.
 15. Match sod of same type grass as surrounding area.
 16. Compact first six inches of backfill to 95% density per ASTM D1557-09, Method A.
 17. Compact second six inches of backfill to 85% density per ASTM D1557-09, Method A.
 18. Horizontal conduits shall end flush with interior surface of pull boxes. Vertical conduit risers ending in electrical rooms shall extend 12" (304mm) above concrete curb located at electrical switchgear. Cut conduits square and level to floor. Bushings shall be installed on conduit ends.
 19. Provide compression-type duct plugs.
 20. Install warning tape 24" (60.8cm) above duct bank.
 22. Provide #10 copper, green insulated tracer wire.
 23. Install 0.375" (86.5mm) diam. pull strings in conduits.
- K. Non-encasement
1. In special circumstances, if preapproved by Owner's Project Manager or where indicated, CM/Contractor may install conduits without concrete ductbank.
 2. Typical installations may include parking lift gates, information kiosks, playfield ticket booths, concession stands or other non-critical locations.
- L. Digging and Trenching
1. Underground pathways shall be minimum depth of 30" (76.2 cm) to top of pathway elements.
 2. Excavating and trenching shall be in accord with codes and requirements established by applicable local, state, and federal agencies and departments.
 3. Trenching and digging shall be in neat and workmanlike manner.
 4. Sawcut paved areas encountered during excavations. Cuts shall be neat and straight.
 5. Remove excavated soil, rubble, debris, or other materials encountered during excavation. Excavated material to be reused may be stored on site with pre-approval of Owner's Project Manager at designated location(s).
 6. Excess material shall be properly removed from site per local disposal requirements.
 7. Excavated material from ductbank trenches may be left near trenching to be used as backfill, if acceptable.
 8. Only remove material necessary to safely and properly install ductbanks.
 9. Contact CM/Contractor and Owner's Project Manager immediately if trench or hole bottom is wet, unstable, or otherwise unable to support proposed infrastructure.
 10. Provide pumps, as necessary, to keep water out of excavation. Direct effluent towards nearest storm drain only if effluent is free from dirt and debris. Otherwise, effluent shall be diverted to an area free from vehicular and pedestrian traffic and other construction areas.

11. Contractor/CM shall immediately notify Owner's Project Manager of rock that cannot be excavated by $\frac{3}{4}$ yard³ (0.51 m³) power shovel or broken sufficiently by air hammer to clear space required for infrastructure installation.
- B. Backfill:
1. Notify Owner's Project Manager and Authority Having Jurisdiction (AHJ) prior to backfilling which will conceal installed pathway elements. Document pathway depths and locations.
 2. Backfill in stages, when necessary to complete trenching and ductbank installation.
 3. Use pre-excavation photographs or video recording of previous conditions to restore existing conditions, including brick walkway placement and pattern.
 4. Restore brick walkways in same pattern and arrangement as originally installed.
 5. Provide and install level layer of compacted fine aggregate over each encased ductbank.
 6. First 12" (304mm) of aggregate bed shall be compacted to not less than 95% density per ASTM D1557-09, method A. Remaining fine aggregate fill to grade shall be compacted to not less than 85% density per ASTM D1557-09, method A.
 7. Remove remainder of excavated material from site.
 8. Remove erosion control devices no longer needed, not including those in and around seeded areas.
 9. Compacted backfill shall be fine aggregate grading in accord with ASTM C136-06 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates).
 10. Backfill material may be material removed from original excavation, provided backfill materials meets requirements of ASTM C136-06.
- C. Protection:
1. Protect property from damage during construction. Restore, repair, rebuild, or replace damaged items adjacent property, existing fences, trees and shrubs, roadways and curbs, sidewalks, and surface utilities damaged during construction.
 2. Provide traffic control elements to include barriers, tapes, barricades, signage, planking, decking and ramps to protect against unauthorized pedestrian or vehicular access to construction areas.
 3. Provide temporary walkways to divert pedestrian traffic safely around construction area.
 4. CM/Contractor shall request pre-approval from Owner's Project Manager for temporary driveway or walkway locations. Protect, support, and maintain existing utilities in work area when encountered during excavation.
 5. Install erosion control measures as needed to minimize erosion and to prevent soil run-off from construction area.
 6. Provide and install bracing, shoring, and sheathing as necessary to protect facility staff, construction personnel and surrounding conditions. Adhere to local, state, and federal requirements for Trench Safety.
 7. Hand remove and stack paving bricks and pavers and curbing on pallets in construction pathway.
 8. Provide detailed photographic or video survey of pathways and areas to be disturbed prior to construction. Deliver set of photographs or video on flash drive to Owner's Project Manager prior to construction.
 9. Workers shall use appropriate personal protective equipment to work safely within trenches and excavated areas. Provide appropriate safety equipment as needed to extract disabled workers or as otherwise needed to provide safe work environment and to provide immediate support in emergency situations.
- D. Coordination and Scheduling:
1. Secure necessary construction permits, as required.

2. Coordinate construction schedules and work sequencing on site with facility operations and Owner's Project Manager.
 3. Installer shall coordinate construction schedules with CM/Contractor.
 4. Locate and stake pathways and spaces where work is to be installed. Confirm locations with Owner's Project Manager and A/E. CM/Contractor shall notify Owner's Project Manager of discrepancies in site plan and existing conditions.
- E. Conduit/Duct Pathways Installation:
1. Pathway elements shall be labeled in accord with Section 26 05 53 – Identification for Electrical Systems.
 2. Trench walls shall not be used as vertical forms for pouring concrete. Sides of trenches shall be formed to maintain straight and neat cross-section for ductbanks to be encased by concrete. Remove forms after concrete sets.
 3. When penetrating existing pull boxes or building walls, core-drill, or shall saw cut openings for access. Confirm with manufacturer or structural engineer that proposed method to access structure and final configuration of conduits shall not compromise structural integrity of structure.
 4. Provide and install framing to prevent penetration of concrete into interior space of structure. Remove framing when concrete has set and after backfilling is complete.
 5. Install horizontal conduits ending in structures flush with interior surface of wall.
 6. Install vertical conduits endings in entrance facilities such that they extend minimum of 4" (101mm) above floor. Cut conduits square with conduit and not necessarily level to floor. Provide and install bushings on conduit ends.
 7. Provide and install conduit spacers beneath each conduit three times per 20 linear ft. of conduit. Spacers shall be evenly distributed over each 20 segment (e.g. one at each 20 ft. joint and two evenly spaced over middle). Each horizontal row of spacers shall be installed with 6" (152 mm) minimum horizontal distance from other row of spacers to eliminate weak vertical shear planes.
 8. Provide and install steel reinforcing bars, vertically and horizontally, to form box framing conduits. Coated wire shall be used to support rebar cage. Vertical and horizontal bars shall be tied to prevent movement and provide separation from conduits during concrete pouring. Vertical and horizontal bars shall be one piece U-shaped bars prefabricated to extend around ducts to be located 3" (75mm) outside conduits. Provide 3" (75mm) cover to face of rebar.
 9. Provide and install reinforcing bars as detailed. Rebar shall be secured to each other. Longitudinal bars shall overlap 12" (304mm), unless welded together, and shall be secured to vertical and horizontal bars to prevent movement or cage.
 10. When abutting manholes or building walls, provide dowel holes in each structure to enable longitudinal reinforcing rods to penetrate structure far enough to prevent vertical and horizontal shearing of ductbanks from structure. Do not penetrate walls with holes. Provide and install additional reinforcing rods to secure anchorage to manhole or wall openings.
- G. Concrete Encasement
1. When encasing ductbanks, provide and install concrete around conduits providing 3" (7.6 cm) of concrete around sides of conduit ductbank for areas indicated for complete encasement.
 2. Shape top of concrete ductbank to slope water to edges.
 3. Conduit encased in concrete shall have bell ends, joined with adhesive providing permanent and watertight seal.

4. Pathways including service entrance and inter-building pathways shall be encased in concrete. Concrete shall have maximum 0.375" (86.5mm) aggregate with nominal compressive strength of 3000 psi (20.68Mpa).
 5. Separate rebar cage from conduits with 3" (7.6cm) concrete and provide 3" cover from rebar to top, sides and bottom of encasement.
 6. Provide steel reinforcing bars, vertically and horizontally, to form vertical box framing conduits as indicated.
- H. Final Installation of New Pathway
1. Clean conduits by pulling cylindrical brushes until dirt is removed. Blow conduits dry.
 2. Install pull strings into conduits.
 3. Install tracer wire in one conduits of new pathway. In pull boxes, hand boxes, and entrance facilities, tracer wire shall be bonded to ground. Wire shall be clearly labeled in accord with Section 26 05 53 – Identification for Electrical Systems.
 4. In pull boxes and handholes, tracer wire shall loop up to be reachable without entering hole. Wire shall be securely anchored along neck, ceiling and wall.
 5. Install duct plugs at both ends of conduits.
- I. Restoration
1. Restoration of disturbed landscaping shall be to preconstruction conditions per photographic or video records.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide and install all equipment, labor and material for a complete identification system, including but not limited to:
 - 1. Nameplates and labels.
 - 2. Wire and cable markers.
 - 3. Conduit markers.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.
- B. Americans with Disabilities Act – 1990 including Amendments

1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 – PRODUCTS

2.1 NAMEPLATES

- A. Nameplates shall be laminated phenolic plastic, chamfer edges.
 - 1. For 120/208 Volt System:
 - a. Black front and back with white core, with lettering etched through the outer covering. White engraved letters on black background.
 - 2. For 277/480 Volt System:
 - a. Orange with white letters.
 - 3. Emergency Power:
 - a. Red front and back, white core, lettering etched through outer covering, white engraved letters on red background.
- B. Nameplates for emergency power shall be laminated phenolic plastic. Red front and back, with white core, with lettering etched through outer covering, white engraved letters on red background.
- C. Letter Size:
 - 1. 1/8 inch letters for identifying individual equipment and loads.
 - 2. 1/4 inch letters for identifying grouped equipment and loads.

- D. Nameplates shall adequately describe the function of the particular equipment involved. Where nameplates are detailed on the drawings, inscription and size of letters shall be as shown and shop drawing submitted for acceptance. Nameplates for panelboards, switchboards, motor control centers, disconnects and enclosed breakers shall include the panel designation, voltage and phase of the supply. For example, "Panel A, 120/208V, 3-phase, 4-wire". In addition, provide phenolic label in panel to describe where the panel is fed from and location. For example, "Fed From MDP-1:3:5 Electrical Room #E101 Level 1". Nameplates for equipment listed below shall describe particular equipment name and associated panel/ckt (if applicable). The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and P.B. station nameplates for that machine.
- E. The following items shall be equipped with nameplates:
 - 1. All motors, motor starters, motor-control centers, pushbutton stations, control panels, time switches, disconnect switches, transformers, panelboards, circuit breakers (i.e., all 2 pole, 3 pole C.B's.), contactors or relays in separate enclosures, power receptacles where the nominal voltage between any pair of contacts is greater than 150V, wall switches controlling outlets that are not located within sight of the controlling switch, high voltage boxes and cabinets, large electrical, and electrical systems (Divisions 27, 28 sections), junction and pull boxes (larger than 4-11/16"), terminal cabinets, terminal boards, and equipment racks. Nameplates shall also describe the associated panel and circuit number (if applicable).
- F. All Electrical system panels, transfer switches, motor control centers, disconnect switches, motor controllers, etc. shall be labeled as per branch, *i.e.*: "Panel ABC Emergency-Life Safety Branch" (similar for emergency legally required standby branch, or emergency optional standby branch).

2.2 WIRE MARKERS

- A. Description: Cloth, tape, split sleeve, or tubing type wire markers.
- B. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
- C. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings including neutral conductor.
 - 2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on shop drawings.

2.3 CONDUIT/JUNCTION BOX COLOR CODE

- A. All conduit system junction boxes (except those subject to view in public areas) shall match existing. If none exists, the paint shall be color coded as listed below:

<u>COLOR CODE FOR JUNCTION BOXES</u>	<u>COLOR</u>
System Emergency 277/480 volt	Red
System Emergency 120/208	Pink
Fire Alarm	Orange
Normal Power 277/480 volt	Brown
Normal Power 120/208 volt	Black
Fiber Optics	Purple
Sound System	Yellow
Intercom	Blue
Computer/Data	Gold

TV	White
BAS	White
Security/CCTV	Green
Telephone	Dark Green
Grounding	Fluorescent Green

- B. Conduits (not subject to public view) longer than 20 feet shall be painted with above color paint band 20 ft. on center. Paint band shall be 4" in length, applied around entire conduit. Where conduits are parallel and on conduit racking, the paint bands shall be evenly aligned. Paint shall be neatly applied and uniformed. Paint boxes and raceways prior to installation or tape conduits and surrounding surfaces to avoid overspray. Paint overspray shall be removed.
- C. Junction boxes and conduit located in public areas (i.e. areas that can be seen by the public) shall be painted to match surface attached to. Provide written request to A/E for interpretation of those public areas, which may be in question.

2.4 CONDUIT/JUNCTION BOX MARKER

- A. All new and existing junction boxes/cover plates for power, lighting and systems (except those installed in public areas) shall adequately describe its associated panel and circuit reference number(s) within, (i.e. ELRW-2, 4, 6) or systems within (i.e. fire alarm, intercom, etc.). Identification shall be neatly written by means of black permanent marker. (Paint 1/2 cover plate with appropriate color above and 1/2 with associated panel/circuit or system as described above.) Junction box cover plates located in public areas shall be identified with small phenolic labels securely attached. Label colors to be determined by A/E. Large pull/junction boxes (8" x 8" or larger) shall be color identified by painting the corners of box cover plate with specified colors at 45° angles and phenolic labels as specified herein.
- B. Identify conduit not installed in public areas with corresponding panel/circuit numbers or corresponding system type as described above. Spacing: 20 ft. on center adjacent to color identification bands.

2.5 UNDERGROUND WARNING TAPE

- A. Description: Minimum 6 inch wide plastic tape, detectable type, with suitable warning legend describing buried lines. Systems conduits shall have orange colored tape and power/lighting conduits shall have red colored tape.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

3.2 APPLICATION

- A. Install nameplate parallel to equipment lines.
- B. Secure nameplate to equipment front using stainless steel pop rivets.
- C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.
- D. Nameplates installed inside on dead front cover shall be self adhesive tape. (Do not drill or install screws in dead front.)

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- E. Identify new conduit, junction boxes, and outlet boxes using field painting.
- F. Identify new underground conduits using underground warning tape. Install a minimum of one tape per trench at 6 inches below finished grade. For trenches exceeding 24 inches in width, provide one tape per 24 inches of trench width spaced evenly over trench width.
- G. Install wire markers at all new connections and terminations and existing connections and terminations, modified or altered.

END OF SECTION

SECTION 26 22 13
DRY TYPE TRANSFORMERS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for energy efficient dry type transformers per TP-1 and DOE 2016.

1.3 REFERENCES

- A. NEMA TP-1
- B. UL 1561
- C. CSA C22.2
- D. NECA National Electrical Contractors Association
- E. NEMA ST 1 - Specialty Transformers
- F. NEMA ST 20 - Dry Type Transformers for General Applications.
- G. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Submit Product Data: Provide outline and support point dimensions of enclosures and accessories, unit weight, voltage, kVA, and impedance ratings and characteristics, tap configurations, insulation system type, and rated temperature rise.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with NECA Standard of Installation.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this Section with minimum five years experience.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by UL as suitable for purpose specified and shown.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store, protect, and handle products to site.
- B. Deliver transformers individually wrapped for protection and mounted on shipping skids.
- C. Accept transformers on site. Inspect for damage.
- D. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- E. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to transformer internal components, enclosure, and finish.

PART 2 PRODUCTS

2.1 TWO-WINDING TRANSFORMERS

- A. Manufacturers:
 - 1. Square D (Basis of Design)
 - 2. G.E.
 - 3. Eaton
 - 4. Siemens
- B. Description: NEMA ST 20, factory-assembled, air cooled dry type transformers, ratings as indicated.
- C. Insulation system and average winding temperature rise for rated kVA as follows:
 - 1. 1-15 kVA: Class 185 with 115 degrees C rise.
 - 2. 16-500 kVA: Class 220 with 115 degrees C rise.
- D. Case temperature: Do not exceed 35 degrees C rise above ambient at warmest point.
- E. Winding Taps:
 - 1. Transformers Less than 15 kVA: Two 5 percent below rated voltage, full capacity taps on primary winding.
 - 2. Transformers 15 kVA and Larger: NEMA ST 20.
- F. Sound Levels: NEMA ST 20.
- G. Basic Impulse Level: 10 kV.
- H. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap.
- I. Mounting: Suitable for wall, floor, or trapeze mounting, except transformers larger than 75 KVA, suitable for floor or trapeze mounting.
- J. Coil Conductors: Continuous windings with terminations brazed or welded.
- K. Transformer windings shall be continuous wound copper (98% conductivity) construction.
- L. Enclosure: NEMA ST 20; Type 1 or Type 3R ventilated as indicated. Provide lifting eyes or brackets.
- M. Isolate core and coil from enclosure using vibration-absorbing mounts.
- N. Nameplate: Include transformer connection data.

2.2 SOURCE QUALITY CONTROL

- A. Provide testing of transformers under provisions of Section Hangers and Supports.
- B. Provide production testing of each unit in accordance with NEMA ST20.

2.3 K RATED TRANSFORMERS

- A. Provide double size neutral terminals for additional neutral cables.
- B. For K rating of transformers, refer to Power Riser Diagram in the Contract Documents. If not listed, provide K-13 rating.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify site condition.
- B. Verify that surfaces are suitable for installing transformer supports.

3.2 PREPARATION

- A. Provide concrete pad sized minimum of 3" larger on all sides of the transformer.

3.3 INSTALLATION

- A. Install Products in accordance with manufacturer's instructions.
- B. Set transformer plumb and level.
- C. Use flexible conduit, under the provisions of Section Conduit, 1 ft (0.6 M) minimum length, for connections to transformer case. Make conduit connections to side panel of enclosure.
- D. Mount transformers on vibration isolating pads suitable for isolating the transformer noise from the building structure.
- E. Provide grounding and bonding in accordance with Section Grounding and Bonding.
- F. Ground per NEC 250-26 and all applicable codes per authority having jurisdiction.

3.4 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed.
- B. Check for damage and tight connections prior to energizing transformer.
- C. Measure primary and secondary voltages and make appropriate tap adjustments.

END OF SECTION

SECTION 26 24 16
PANELBOARDS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 1, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide all labor, materials, and equipment necessary to properly and completely install panelboards as scheduled on the drawings and as required by this section.

1.3 REFERENCES

- A. NECA (National Electrical Contractors Association) "Standard of Installation."
- B. NEMA AB 1 - Molded Case Circuit Breakers.
- C. NEMA PB 1 - Panelboards.
- D. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- E. NFPA 70 - National Electrical Code.
- F. UL 67 – Panelboards
- G. UL 50 Enclosures for Electrical Equipment
- H. UL 489 Molded Case Circuit Breakers and Circuit Breaker Enclosures
- I. Federal Specification W-P-115C – Type I Class I
- J. Federal Specification W-C-375 B/GEN – Circuit Breakers, Molded Case, Branch Circuit and Service.

1.4 SUBMITTALS

- A. Product data shall be submitted on:
 - 1. Panel
 - 2. Cabinet
 - 3. Bus
 - 4. Construction
 - 5. Dimensions
- B. Shop drawing shall be submitted for each and every panel for this project, each and every panel drawing shall clearly indicate the following information:
 - 1. UL Label
 - 2. Each circuit breaker amperage rating, circuit number and position/location in panel
 - 3. Electrical characteristics of panel
 - 4. Mains rating
 - 5. Main device rating
 - 6. Mounting
 - 7. Dimension, width, depth, height

8. Bus material
9. Interrupting capacity of minimum rated breaker
10. Panel type
11. Series AIC rating with upstream breakers.
12. Definitive statement that end walls are blank
13. Identify that panel include a lockable cover.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit record documents to record actual locations of Products; indicate actual branch circuit arrangement.

1.6 OPERATION AND MAINTENANCE DATA

- A. Submit Maintenance Data: Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with NECA Standard of Installation.
- B. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum ten years experience.

1.8 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish products listed and classified by UL as suitable for purpose specified and indicated.

1.9 FIELD MEASUREMENTS

- A. Verify that field measurements are as instructed by manufacturer.

1.10 MAINTENANCE MATERIALS

- A. Provide two of each panelboard key.

1.11 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Handle panelboards and enclosures carefully to prevent damage.
- B. Store equipment indoors and protect from weather.
- C. Deliver tubs and internal assemblies sufficiently in advance of installation period as necessary to prevent delay of work. This time, shall be established by a CPM provided by the Contractor, and accepted by the supervising authorities.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of design: Square "D"
- B. G.E.
- C. Eaton
- D. Siemens
- E. Manufacturers (including accepted substitutions) must provide equipment equal to or superior than the basis of design used on this project.
 - 1. Panels or circuit breakers with an AIC rating less than that shown on the drawings will not be approved.
 - 2. Where basis of design panelboard can accept a certain type, frame, and/or AIC rated breaker, then the accepted substitution manufacturer must also be able to accept all equal breaker type, frame, and/or AIC rating.

2.2 GENERAL

- A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB1, circuit breaker type, dead front. UL 67.
- B. Panelboard Bus: Copper ratings as indicated. Provide copper ground bus in each panelboard. Provide isolated full size neutral bus where neutral is applicable. Provide non-linear load panelboards as specified on drawings. Non-linear panelboards shall have 200 percent rated neutral busbar.
- C. Short Circuit Rating:
 - 1. Minimum integrated short circuit rating: 10,000 amperes rms symmetrical for 240 volt panelboards; 14,000 amperes rms symmetrical for 480 volt panelboards. Bus shall be braced for minimum capacity equal to or greater than the lowest breaker symmetrical interrupting capacity. Minimum short circuit rating shall be increased to meet the following requirements:
 - a. Individual CB AIC Rating shown on panel schedules indicate lowest AIC rating allowed for individual circuit breaker in panel.
 - b. Panel Series AIC rating shown is the required rating of panel and its circuit breakers based on series rating of individual panel circuit breakers with panel main circuit breaker or upstream feeder breaker.
 - c. Circuit breaker types are not shown or called for. The contractor must provide breakers in panel or feeder breakers in upstream breakers to comply with the required AIC ratings given including providing current limiting breakers where required to achieve all ratings given.
 - 2. Short Circuit Rating Label:
 - a. Panelboards shall be labeled with a UL short-circuit rating.
 - b. When series ratings are applied with integral or remote upstream devices, a label or manual shall be provided. It shall state the conditions of the UL series ratings including:
 - i. Size and type of upstream device
 - ii. Branch devices that can be used
 - iii. UL series short-circuit rating

D. Enclosure:

1. Enclosures shall be at least 20 inches wide made from galvanized steel. Provide minimum gutter space in accordance with the National Electrical Code. Where feeder cables supplying the mains of a panel are carried through its box to supply other electrical equipment, the box shall be sized to include the additional required wiring space. At least four interior mounting studs with adjustable nuts shall be provided.
2. Enclosures shall be provided with blank ends
3. Where indicated on the drawings, branch circuit panelboards shall be column width type.
4. Regulatory requirements:
 - a. NEMA PB 1, Type 1, Type 3R, or Type 4X as indicated on drawings. Use only type 3R or Type 4X for units to be installed outdoors. Use only Type 4X in interior wet locations and designated wash-down areas. For the purposes of this specification, a wash-down area is defined as any area that is directly washed or rinsed with any form of water hose.
5. Cabinet box: 6 inches (153 mm) deep; width: 20 inches (508 mm) minimum. Constructed of code gauge steel, galvanized or bonderized to prevent rust.

E. Cabinet Front: Flush or surface (as indicated on drawings) cabinet front with concealed trim clamps, concealed hinge, and flush lock all keyed alike. Finish in manufacturer's standard baked enamel finish for interior panels. Exterior panels to be painted with rust inhibit primer painted over on all surfaces with epoxy paint.

F. Panels and breakers shall be rated for voltage and class of service to which applied.

G. Spaces:

1. Space provisions or spaces for future breakers shall be located at the bottom of the panel and be fully bussed complete with all necessary mounting hardware less the breaker.

H. Provide lugs as required for conductors being connected to panelboard lugs, circuit breakers, etc.

2.3 MAINS

- A. Provide main lug only (MLO) or main circuit breaker (MCB) as noted on drawings either by riser diagram or by schedule. Where conflict exists, provide MCB.
- B. Regardless of what is shown on drawings provide the following minimum requirements.
 1. Main circuit breaker on each panel serving building main if required by applicable codes.
 2. Main circuit breaker on each panel fed directly from a transformer (unless disconnect with overcurrent devices is installed in feeder between transformer and panel).
- C. Provide lugs as required for conductors being connected to panelboard lugs, circuit breakers, etc.
- D. Main circuit breaker is not to be mounted as branch breaker or subfeed breaker.

2.4 CIRCUIT BREAKERS

A. General

1. Molded Case Circuit Breakers: NEMA AB 1, plug-in type for 250V or less, bolt-on type for over 250V, thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.

2. Current Limiting Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.
- B. Main Breakers:
1. Main breakers shall be individually mounted separate from branch breakers.
 2. Covered by a metal plate, except for operating handle.
 3. Connection from the load's side to the panel bus shall be bus bar. Insulated wire not permitted.
- C. Branch Breakers:
1. Thermal-magnetic molded case, with inverse time-current overload and instantaneous magnetic tripping, unless otherwise shown. Breakers shall be calibrated for 40 degrees C or shall be ambient compensating.
 2. Quick-make, quick-break, with tripped indication clearly shown by breaker handle taking a position between ON and OFF.
 3. Multi-pole breakers shall have common internal trip. No handle ties between single pole breakers are acceptable for this Project.
 4. Multi-wire branch circuit breakers shall have multi-pole breakers as required by the NEC. Handle ties between breaker handles are not acceptable.
 5. Single pole 15 and 20 ampere circuit breakers shall be rated for switching duty and shall be labeled as "SWD".
 6. AIC rating shall be as called for under "2.2 GENERAL".
 7. Breakers feeding heating and air-conditioning equipment shall be rated HACR type breaker.
 8. Breakers feeding High Intensity Discharge lamps systems shall be HID rated.
- D. All breakers are to have lugs sized to match conductors called for on drawings.

2.5 SERVICE ENTRANCE EQUIPMENT

- A. Panelboards used as service entrance equipment shall be listed and labeled by UL for use as service equipment.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install panelboards in accordance with NEMA PB 1.1. Install all panelboards and panelboard enclosures in accordance with the manufacturer's written instructions, NECA's "Standard of Installation", the applicable requirements of the National Electrical Code, and recognized industry practices.
- B. Install panelboards plumb. Install recessed panelboards flush with wall finishes. Provide supports in accordance with Section Hangers and Supports for Electrical Systems.
- C. Height: 6 ft (2 M) to top of panelboard; install panelboards taller than 6 ft (2 M) with bottom no more than 4 inches (10 cm) above housekeeping curb.
- D. Provide filler plates for unused spaces in panelboards.

- E. Provide typed circuit directory for each branch circuit panelboard. Mount a typewritten directory showing the actual circuit numbers, type of load and room names on inside of door. Room names shall be actual names or numbers used, not necessarily shown on the drawings. Progress Drawings shall show same arrangements as the Directory. Revise directory to reflect circuiting changes required to balance phase loads.
- F. Provide engraved plastic nameplates under the provisions of Section Identification for Electrical Systems.
- G. Provide spare conduits out of each recessed panelboard to an accessible location above ceiling. Minimum spare conduits: 4 empty 1 inch. Identify each as SPARE.
- H. Proper working clearances shall be maintained at every panelboard location. The working space in front of a panelboard shall be as a minimum, 30 inches wide extending 3 feet, 3.5 feet, or 4 feet (per NEC Article 110-26) out perpendicular to the panelboard.
- I. All enclosures shall be firmly anchored to walls and supporting structures (where used) using appropriate hardware. Provide supporting (Unistrut type) channels on walls constructed of gypsum board or where otherwise necessary to provide a mechanically secure and permanent installation. Enclosures shall be installed so that the top is 6'-6" above finished floor. Where the size of the enclosure is such that the top cannot be installed at 6'-6", the top of the enclosure shall be kept as low as possible.
- J. Clean the interior of each panelboard before installing conductors. At all times, keep the interior trim and exterior surfaces of the panelboard free of rust and debris. Repaint finishes if necessary.
- K. Coordinate all raceways and conductors with their respective panelboards so that all connections and conductors routing present an orderly appearance. Conductors in the panelboards shall be laced and arranged in orderly manner.
- L. Collect all keys upon delivery of panelboard. Store keys on one ring to be kept by project superintendent. Forward key ring with keys to Owner upon substantial completion.

3.2 IDENTIFICATION

- A. Refer to Section Identification for Electrical Systems for products and content.
- B. Provide
- C. Nameplate shall state panel name, voltage and name of panel that feeds this respective panel, UL short-circuit rating.

3.3 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed.
- B. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.
- C. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.
- D. Feeder conductors shall be checked by accepted means to establish the absence of shorts to ground; insulation value etc. and the result recorded and submitted to the Engineer.
- E. All circuits shall be operated to establish a good working order and checked for shorts.
- F. All panel directory circuit numbers shall be checked to verify accuracy of the number.
- G. Where and when requested by engineer provide:

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1. Inspection of equipment by authorized equipment manufacturer technician complete with submittal of statement of findings by technician, and providing any adjustments deemed necessary for a complete and operating system.
2. Ground, voltage, and/or load readings complete with submittal on legible form with applicable data.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 01, General Requirements, are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:
 - 1. Wall switches.
 - 2. Wall dimmers.
 - 3. Receptacles.
 - 4. Device plates and decorative box covers.

1.3 REFERENCES

- A. NEMA WD 1 - General Purpose Wiring Devices.
- B. NEMA WD 5 - Wiring Devices, Special Purpose
- C. NEMA WD 6 - Wiring Device Configurations.

1.4 SUBMITTALS

- A. Submit Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
 - 1. Submit product data on all types of wiring devices including plates and engraving.
- B. Submit Manufacturer's Instructions:
 - 1. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.
 - 2. Include instructions for storage, handling, protection, examination, preparation, operation and installation of product.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.7 EXTRA MATERIALS

- A. Provide a minimum of two (2) screw drivers of each type of tamper proof screw used on project.
- B. Turn over to owner. Submit receipt in O&M manual.

PART 2 PRODUCTS

2.1 GENERAL

- A. All devices shall be Specification Grade as minimum.
- B. General purpose wiring devices shall meet NEMA standard WD-1, Wiring Devices, General Purpose. Special purpose devices shall conform to the requirements of NEMA standard WD-5, Wiring Devices, Special Purpose.
- C. All wiring devices shall bear UL labels.
- D. All devices of one type (i.e. all snap switches, all duplex receptacles, etc.) shall be by the same Manufacturer. "Hazardous Location" and special purpose devices as may not be available from the same manufacturer shall constitute the only exception to this requirement of single source.
- E. Corrosion resistant devices shall be as specified for normal usages, and fabricated of yellow color melamine plastic. Where "Weatherproof" type is indicated for exterior or wet locations, provide matching self-closing cover, with gasketed seals at plate/wall junctions and for cover.
- F. Provide factory packaged wiring devices having high impact strength molded plastic bodies.
- G. Except where specifically required in these specifications use of interchangeable type or combination switch-receptacle-pilot devices is not acceptable and shall be removed.

2.2 WALL SWITCHES

- A. Manufacturers:
 - 1. Legrand
 - 2. Leviton
 - 3. Hubbell
- B. General:
 - 1. Snap switches for general use shall be maintained contact types, and shall be single-pole, double-pole, three-way, or four-way as required for the specific switching arrangements shown on the drawings. They shall be quiet tumbler operation types, having silver alloy contacts, and meeting all NEMA performance standards. Color to match plates unless specifically noted otherwise in specifications and/or on drawings.
 - 2. Switches shall be toggle or key-operated types, as indicated on the drawings. All key-operated switches shall be keyed alike.
 - 3. Where switches are denoted as having pilot lights, pilot lights shall glow when the switches are "ON". Provide pilot light switch with lamp and miniature step-down transformer. The pilot light shall have a red lens, and the lamp shall be long-life type.
 - 4. Jewels for use with switches controlling motors shall be green, and jewels for other purposes shall be amber. All units shall be front relampable.
 - 5. Snap switches installed in hazardous locations shall be UL listed for the type of location (class and division).
 - 6. Voltage and ampere rating of switches shall be marked on switch, and shall conform to voltage of system to which applied.

- C. Description: NEMA WD 1, heavy-duty, AC only general-use snap switch.
- D. Voltage Rating: 120-277 volts, AC.
- E. Current Rating: 20 amperes minimum.
- F. Ratings: Match branch circuit and load characteristics.

2.3 WALL DIMMERS

- A. Manufacturers:
 - 1. Legrand
 - 2. Leviton
 - 3. Hubbell
- B. Description: NEMA WD 1, semiconductor dimmer for incandescent lamps, type as indicated on Drawings.
- C. Device Body: Plastic with rotary knob or linear slide as called for on drawings.
- D. Voltage: 120 volts or as required to match application.
- E. Power Rating: Match load shown on Drawings; 600 Watts minimum.
- F. Accessory Wall Switch: Match dimmer appearance.
 - 1. Same manufacturer and style as dimmer switch.

2.4 RECEPTACLES

- A. General:
 - 1. All receptacles shall be of standard NEMA configuration, as indicated on the drawings, and shall comply with the respective ANSI C73 series standard for the NEMA configuration. Color to match plates unless specifically noted otherwise in specifications and/or on drawings.
 - 2. Duplex receptacles shall have integral UL listed self-grounding clips. Similar, single receptacles shall be provided for plug-in connections of Industrial Fluorescent light fixtures on the same switching circuit. Receptacle faces to be impact resistant nylon.
 - 3. Weatherproof duplex receptacles shall be provided in all exterior locations, and shall be Ground Fault Circuit Interrupting (GFCI) types, with weatherproof cover plates allowing use of receptacle with cover in closed position.
 - 4. Special purpose receptacles for specific equipment shall be grounding types, having the number of poles, voltage and ampere ratings, and NEMA configurations required by the equipment. For each special purpose receptacle, provide an identical mating plug equipped with cord grip, secured to cord.
 - 5. Duplex receptacles shall have back and side wired screw pressure terminals.
- B. Description: NEMA WD 1; heavy-duty general use receptacle.
- C. Configuration: NEMA WD 6; heavy-duty, general use type as specified and indicated.
- D. Convenience Receptacle: Type 5-20.
- E. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.
- F. Manufacturers:
 - 1. Legrand
 - 2. Leviton
 - 3. Hubbell

2.5 COVER PLATES

- A. All wiring devices shall be provided with standard size one-piece cover plates of suitable configuration for the number and type of devices to be covered.
- B. Metallic cover plates shall be used in interior spaces, except as noted below, and shall be fabricated of corrosion-resistant #302 stainless steel, having a nominal thickness of .04", and a brushed finish. Screws securing the plates shall have flush (when installed) heads with finish to match plates. Metallic cover plates shall meet all requirements of the National Electrical Code and Federal Specifications.
- C. Cover plates for switches located in corrosive atmospheres (where vapor-proof is not indicated) shall be equal to Hubbell #17CM81/#17CM82/#17CM83/#17CM84 one piece neoprene with matching press switch.
- D. Cover plates for exterior receptacles shall be gasketed covers with hinge allowing plug and cord to be plugged in and activated with cover closed.
- E. Cover plate engraving, where required, shall be accomplished by cover plate manufacturer in accordance with instructions given on the drawings. Metallic plates in ivory, beige, gray, and white shall be engraved with black fill. Red, brown, and black plates shall be engraved with white fill.

2.6 COLOR

- A. Devices connected to normal power and located in finished interior spaces shall be of color selected by Architect from the following list of standard colors: ivory, beige, gray, white, brown, and black.
- B. Cover plates for devices connected to normal power and located in finished interior spaces shall be of color selected by Architect from the above list of standard colors or #302 SS.
- C. All devices and coverplates in paneled walls shall have finish to match paneling.
- D. Receptacles and switches connected to the emergency branch of the power system shall be 'RED'. Cover plates for such devices shall be stainless steel and engraved with "STANDBY POWER".
- E. Receptacles connected to the computer power distribution branch shall be 'GREY' in color, with trim plate to match other normal power receptacles.
- F. Contractor shall modify any given catalog numbers as required to procure devices and plates of the proper color.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify conditions under provisions of Division 01 - General Requirements and any other applicable supplemental requirements/conditions.
- B. Verify outlet boxes are installed at proper height.
- C. Verify wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify floor boxes are adjusted properly.
- E. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean debris from outlet boxes.

3.3 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install devices plumb and level.
- C. Install switches with OFF position down.
- D. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
- E. Do not share neutral conductor on load side of dimmers.
- F. Install receptacles with grounding pole on bottom.
- G. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- H. Electrical boxes shall be cleaned and completely free of any debris, dust, etc. prior to the installation of wiring devices.
- I. Where 2 or more switches or receptacles are to be installed adjacent to one another, provide a multi-gang box and combination multi-gang coverplate. Provide proper NEC barriers in boxes which serve devices for both the Normal and Emergency Systems.
- J. Provide device coverplates for every device installed. Cover plates shall be installed so that they appear straight with no gaps between plate edges and the wall. Maintain vertical and horizontal to within 1/16 of an inch.
- K. In finished areas, provide same type of plate for all surface mounted devices as for recessed mounted devices.
- L. In any room, where new and existing construction is present, all receptacles, switches, and coverplates which are existing to remain shall be changed, as required to match new work.
- M. Wiring devices shall not be installed in exposed masonry until cleaning of masonry with acids has been completed.
- N. All receptacles and switches shall be grounded by means of a ground wire from device ground screw to outlet box screw and branch circuit ground conductor. Strap alone will not constitute an acceptable ground.
- O. All wiring devices, relays, contactors, pushbuttons, selector switches, pilot lights, etc. shall be installed in approved enclosures rated for the appropriate NEMA classified environment.
- P. All devices shall be installed so that only one wire is connected to each terminal.
- Q. Once construction is substantially completed, replace all damaged, burned, or scorched wiring devices.
- R. Receptacles shown to be floor mounted shall be installed in floor boxes (with coverplates) which are approved for this use.
- S. Connect wiring devices by wrapping conductor around screw terminal.
- T. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
- U. Install protective rings and split nozzle on active flush cover service fittings.
- V. Install local room area wall switches at door locations on the lock side of the door, approximately four inches from the jamb. Where locations shown on the drawings are in question, provide written request for information to A/E prior to rough-in.

3.4 NEUTRAL CONDUCTOR CONNECTIONS

- A. At each receptacle "in" and "out" phase and neutral conductors shall have an additional conductor for connection to device. The practice of "looping" conductors through receptacle boxes shall not be acceptable.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations of outlet boxes provided under other Sections of these specs to obtain mounting heights specified and indicated on Drawings.

3.6 FIELD QUALITY CONTROL

- A. Inspect each wiring device for defects.
- B. Operate each wall switch with circuit energized and verify proper operation.
- C. Verify that each receptacle device is energized.
- D. Test each receptacle device for proper polarity.
- E. Test each GFCI receptacle device for proper operation.

3.7 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

END OF SECTION

SECTION 26 43 00
SURGE PROTECTIVE DEVICES

PART 1- GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for surge protective devices.

1.3 REFERENCES

- A. The latest edition of the following references shall apply to the work of this section:
 1. ANSI/IEEE C62.33 Standard Test Specifications for Varistor Surge Protective Devices
 2. ANSI/IEEE C62.41 IEEE Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits
 3. ANSI/IEEE C62.45 IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits
 4. NFPA 70 National Electrical Code
 5. NFPA 780 Standard for Installation of Lightning Protection Systems
 6. UL 96A Standard for Lightning Protection Components
 7. UL 1363 Standard for Safety Relocatable Power Taps
 8. UL 1449, 4th Edition Standard for Safety for Surge Protective Devices

1.4 REGULATORY REQUIREMENTS

- A. Equipment Certification: Surge protective devices shall be listed by Underwriters Laboratories shall bear the UL seal and be marked in accordance with referenced standard. Surge protective devices shall be UL listed and labeled for intended use.
- B. Surge protective devices shall be installed and located in accordance with requirements of all applicable National Fire Protection Association (NFPA) codes (including NFPA 70 and NFPA 780).
- C. Comply with all standards and guides as listed under "References" above.

1.5 DESIGN REQUIREMENTS

- A. Provide and install all materials, labor and auxiliaries required to furnish and install complete surge suppression for the protection of building electrical and electronics systems from the effects of line induced transient voltage surge and lightning discharge as indicated on Drawings or specified in this Section for systems with voltages between 120 VAC and 480VAC (single phase or three phase).
- B. Equipment specified covers Surge Protective Devices (SPD).
- C. Provide surge protective devices for the following equipment:
 1. On each main electrical service panel at each building.

2. On distribution and branch panels as called for on Drawings or in these Specifications.
3. All electronic communications equipment installed under Divisions 27 and 28 including, but not limited to, fire alarm, intercom, security, television, premise distribution, and sound systems.
4. Site lighting pole light circuits.
5. Additional locations as required by NFPA 780.
6. At point of use locations (receptacles, plug-in units) as required.
7. On all automatic transfer switches (ATS).
8. On input to each UPS system.

1.6 SUBMITTALS

- A. Submit under provisions of the General Requirements of the Contract Documents and Section Submittals.
- B. Submit Product Data for each type of surge protective device:
 1. Dimensions.
 2. Means of mounting.
 3. Compliance with UL Standards referenced.
 4. Compliance with IEEE Standards referenced.
 5. Design type (Hybrid, MOV).
 6. Internal fusing.
 7. Recommended overcurrent protection.
 8. Size of wire leads.
 9. Visual failure indicator.
 10. Warranty.
 11. Performance data showing compliance with performance as specified herein.

1.7 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance (O & M) data as called for in Section 26 01 00 Operation and Maintenance Manuals.
- B. O & M data to include:
 1. All accepted shop drawings, product data, and/or cut sheets.
 2. Installation, connection, and maintenance information on each type of surge suppression.
 3. Procedure and/or time table for recommended periodic inspection of devices to determine continued usefulness.

1.8 QUALITY ASSURANCE

- A. All surge protective devices shall be manufactured by a company normally engaged in the design, development, and manufacture of such devices for electrical and electronics systems equipment.
- B. The surge protective device manufacturer shall offer technical assistance through support by a factory representative and local stocking distributor. Factory representatives are to accept installation prior to Substantial Completion.

1.9 COORDINATION/PROJECT CONDITIONS

- A. Verify proper grounding is in place.
- B. Verify proper clearances, space, etc. is available for surge protective devices.
- C. Coordinate so that proper overcurrent device, as recommended by manufacturer, is installed to feed each surge protective device.

1.10 WARRANTY

- A. All surge protective devices shall be warranted to be free from defects in materials and workmanship for a period of ten years.
- B. Any surge protective device which shows evidence of failure or incorrect operation during the warranty period shall be repaired or replaced by the manufacturer and installer at no cost to the Owner.

1.11 DEFINITIONS/ABBREVIATIONS

- A. VPR: UL Voltage Protection Rating
- B. MCOV: Maximum Continuous Operating Voltage
- C. SCCR: Short Circuit Current Rating
- D. IN: Inominal

PART 2 – PRODUCTS

2.1 GENERAL

- A. Surge protective devices shall be designed for the specific type and voltage of electrical service and shall provide clamping action for both normal (L-N) and common (N-G) mode protection.
- B. Surge protective devices shall be of a hybrid design, and include circuitry with tight, wave-tracking clamping characteristics.
- C. Surge protective devices shall be designed to withstand a maximum continuous operating voltage of not less than 115 percent of nominal RMS line voltage.
- D. Surge protective devices shall contain internal safety fusing to disconnect the surge protective device from the electrical source if the surge protective device fails, in order to prevent catastrophic failure modes.
- E. Surge protective devices shall be fail safe, shall allow no follow-through current, shall have repeated surge capability, shall be solid state, shall be self-restoring, and shall be fully automatic.
- F. Surge protective devices shall be UL 1449 listed under UL Category Code VZCA and shall be accepted for the location in which they are installed.

2.2 SERVICE ENTRANCE SURGE PROTECTIVE DEVICES

- A. General: Provide service entrance surge protective devices on each main electrical service panel at each building and/or structure. Surge protective devices shall meet or exceed the following (in addition to requirements under ‘General’ above):

1. Surge protective devices shall be tested per UL 1449 requirements to determine voltage protection rating (VPR).
 2. Surge protective devices shall be sequential surge tested as per IEEE C62.45, and shall withstand 1000 test cycles at 10 kA, Cat. C3 test criteria.
 3. Enclosure:
 - a) UL listed
 - b) Fire retardant
 - c) NEMA 1 or 3R as required for each location.
 - d) Flush, Switchboard and/or Surface mounted as required for each location.
- B. Modular Design:
1. Replaceable module design. The panel mounted surge protective device shall be designed with replaceable modules for purposes of in-service replacement.
 2. The surge protective device shall be designed with redundant back-up surge protection in the event of a module failure.
 3. Module status indicators shall be provided to indicate individual module status. When a module has failed, the module LED status indicator shall indicate said failure.
 4. Unit status indicators shall be provided to indicate the status of the complete surge protective device. The LED status indicators shall be located on the hinged front cover to redundantly indicate module or unit failure.
 5. Minimum Surge Capacity:
 - a) 240,000 amps. per phase.
 6. Voltage Protection Ratings (VPR) and Maximum Continuous Operating Voltage. Comply with the following maximum voltages for UL 1449 testing requirements:

240 kA Unit	L-L	L-N	L-G	N-G	MCO V	In
120/208 V, 3ph, 4W, wye					150V	
UL 1449	1200V	700V	700V	700V		20 kA
277/480 V, 3ph, 4W, wye					320V	
UL 1449	2000V	1200V	1200V	1200V		20 kA
 7. Short Circuit Current Rating:
 - a) 100,000 amps.
 8. Manufacturers
 - a) 240 kA Units
 1. LEA International PV400 Series for applied voltage in enclosure as required on Drawings, as specified above, and/or as required by applicable codes.
 2. Advanced Protection Technologies TE/xxXAS/25 Series for applied voltage in enclosure as required on Drawings, as specified above, and/or as required by applicable codes.
 3. Atlantic Scientific ZoneMaster 240 All Mode Series for applied voltage in enclosure as required on Drawings, as specified above, and/or as required by applicable codes.

2.3 SECOND LEVEL SURGE PROTECTIVE DEVICES AND UPS/ATS SYSTEMS.

A. General. Provide second level surge protective devices on each second level of the distribution system (including sub panels) and on all major electronic equipment including UPS Systems and ATS Systems. Surge protective devices shall meet or exceed the following (in addition to requirements under ‘General’ above):

1. Surge protective devices shall be tested as per UL 1449 requirements to determine voltage protection ratings (VPR – 3 kA).
2. Surge protective devices shall be sequential surge tested as per IEEE C62.45, and shall withstand 1000 test cycles at 3 kA, Cat. B3 test criteria.
3. Enclosure:
 - a) UL listed.
 - b) Fire retardant.
 - c) NEMA 1 or 3R as required for each location.
 - d) Flush, Switchboard and/or Surface mounted as required for each location.

B. Non-Modular Design:

1. Status indicators shall be provided to indicate individual module status. When a module has failed, the module LED status indicator shall indicate said failure. The LED status indicators shall be located on the front cover to redundantly indicate module or unit failure.
2. Minimum Surge Capacity:
 - a) 100 kA per phase.
3. Voltage protection rating (VPR) and maximum continuous operating voltage. Comply with the following maximum voltages for UL 1449 testing requirements:

100 kA Unit	L-L	L-N	L-G	N-G	MCO V	In
120/208 V, 3ph, 4W, wye					150V	
UL 1449	1000 V	700V	700V	600V		20 kA
277/480 V, 3ph, 4W, wye					320V	
UL 1449	2000 V	1200V	1200V	1200V		20 kA

4. Short Circuit Current Rating: 100,000 amps.
5. Manufacturers:
 - a) 100 kA Units:
 1. Advanced Protection Technologies Series TE/***XDS/10 for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.
 2. LEA International SP100 Plus Series for applied voltage in enclosure as required on Drawings, as specified above, and/or as required by applicable codes.
 3. Atlantic Scientific Zone Sentinel Series for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.

2.4 EXTERIOR LIGHTING POLES CIRCUITS

- A. Provide surge arrester in pole handhole.
- B. Surge arrester shall be UL listed as a Type 1 surge arrester.

2.5 SERVICE SURGE ARRESTER

- A. Service surge arrester shall be UL listed as Type 1 surge arrester and as required to comply with Local Authority Having Jurisdiction and UL 96A requirements.
- B. This suppressor shall be connected on the line side of service to each building and where required to meet UL 96A.
- C. 50 kA per phase rating.
- D. Minimum short circuit current rating: 200,000 amps
- E. Enclosure:
 - 1. NEMA 4X polycarbonate
- F. Manufacturers:
 - 1. Advanced Protection Technologies SPDEE Series for applied voltage
 - 2. Atlantic Scientific Zone Defender Curve Series for applied voltage

2.6 POINT OF USE LOCATION (120 VOLT)

- A. UL 1449 listed.
- B. 20 Amp, 120V rated. All components must be 20 Amp rated.
- C. Surge protection devices shall be tested per IEEE C62.41 for Categories A and B.
- D. Normal mode (L - N), and common mode (L+N-G) protection.
- E. Internal fusing.
- F. Hybrid design.
- G. Indicators for normal operation and failure indication.
- H. Enclosure:
 - 1. Fire retardant high impact, phenolic or plastic housing or metal enclosure.
- I. Clamping voltage UL 1449, Line to Neutral, Category B impulse at (3 kA, 8 x 20 μ s): 350V @ 120V.
- J. Maximum Surge Capacity: 26,000 Amps.
- K. Maximum continuous operating voltage: 115 percent of line voltage.
- L. Provide hardwire connection or add 20-amp receptacle device to hardwired devices to match equipment being protected and maintain UL Listing. Device shall be a feed-through design. Parallel connected devices are not acceptable.
- M. Manufacturers:
 - 1. Leviton 51020-WM

2.7 POWER PLUG-IN UNITS

- A. UL 1449 Listed.
- B. 15 Amp, 120V rated. All components must be 15 Amp rated.
- C. Surge protection devices shall be tested per IEEE, C62.41 for Categories A and B.
- D. Normal mode (L - N), and common mode (L+N-G) protection.
- E. Internal fusing. Resettable circuit breaker.

- F. Hybrid design.
- G. Operational indicator lamp.
- H. Enclosure:
 - 1. Fire retardant high impact, phenolic or plastic housing or metal enclosure.
- I. Clamping voltage UL 1449, Line to Neutral, Category B impulse at (3 kA, 8 x 20 μ s): 350V @ 120V.
- J. Maximum Surge Capacity: 13,000 Amps.
- K. Maximum continuous operating voltage: 115 percent of line voltage.
- L. Manufacturers:
 - 1. Control Concepts SP Series
 - 2. Leviton
 - 3. Wiremold

PART 3 – EXECUTION

3.1 GENERAL

- A. Provide, install and connect surge protective devices at first piece of electrical equipment (panel, switchboard, ATS, etc.) that the electrical service encounters as it enters the facility.
- B. Provide, install and connect surge protective devices at each branch panel as noted on drawings.
- C. Provide, install and connect surge protective devices at each Automatic Transfer Switch (ATS) and Uninterruptible Power Supply (UPS) in project whether shown on Drawings or not.
- D. Provide, install and connect surge protective devices in pole near hand hole of all exterior lighting poles whether shown on Drawings or not.
- E. Provide, install, and connect surge protective devices at location where Divisions 27 and 28 equipment is connected to line voltage (120V). Provide cords and receptacles as required to connect surge protective devices to equipment being protected and maintain UL listing.
- F. Provide surge protective devices at panel feeding exterior site lighting circuits for each panel feeding site lighting.

3.2 INSTALLATION OF SURGE PROTECTIVE DEVICES

- A. Surge protective devices for other than Divisions 27 and 28 equipment shall be installed as close as practical to the electric panel or electronic equipment to be protected, consistent with available space.
- B. Surge protective devices for Divisions 27 and 28 equipment power source shall be coordinated with the individual specification section contractor. Locate in terminal cabinet with surge protective devices and bond together.
- C. Surge protective devices shall be close nipped to the device being protected in a position near the neutral bus which will minimize lead length between surge protective devices and the buses or control breaker to which the surge protective device connects. Suppressor leads shall not extend beyond the surge protective device manufacturer's recommended maximum lead length without specific acceptance of the Engineer.
- D. Location shown on Drawings is diagrammatic only. Provide flush mount trim for surge protective device units at flush mounted panelboards. Provide NEMA 4X enclosures for TVSS units in exterior locations.

- E. Surge protective devices shall be installed in a neat, workmanlike manner. Lead dress shall be as short and as straight as possible and be consistent with recommended industry practices for the system on which these devices are installed.
- F. Supplementary grounding and bonding connections required between the bonding bus or ground plane for each equipment cluster and other locations as indicated herein shall be accomplished using #6 AWG core copper conductor and accepted connections unless otherwise noted. Referenced to a common earth ground.
- G. Surge protective devices shall be installed in a manner that allows simple replacement within short periods of downtime.
- H. Surge protective devices other than point of use type and those for exterior lighting poles shall be installed with a means of disconnecting the suppressor at the panel. At the main service entrance location, provide a dedicated 30 amp, 3 phase CB, 100,000 AIC for the surge protective device. At the distribution secondary and/or subpanels location, provide dedicated 20 amp or 30 amp, 3 phase CB, for the surge protective device. Label disconnect or CB "Surge Protector." Fused disconnects may be substituted for the CB, with the acceptance of the Engineer. Contractor to change rating of CBs noted above as required to properly provide system as recommended by manufacturer.

END OF SECTION

SECTION 27 05 00
COMMON WORK RESULTS FOR COMMUNICATIONS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Common work results for communications systems including general project requirements, other related specification sections, communications references, standards, definitions, abbreviations and acronyms, quality control requirements, communication submittals to include shop drawings, product and material data sheets, project record documentation, testing, certification, and other items required, for complete functioning communications system.

1.2 REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations, and acronyms.
- B. Florida Building Code, 2010 Edition.
- C. NFPA 70 (National Electrical Code, 2014 Edition).
- D. Telecommunications Standards:
 - 1. ANSI/TIA/EIA standards and BICSI methodologies (TDMM and CO-OSP). Reference to term “telecommunications network”, is hereinafter referred to as Information Transport System Installation (ITSI).
 - 2. Methodologies refers to BICSI manuals for telecommunications design and CO-OSP.
- E. American Standards for Testing Materials (ASTM).
- F. Underwriters Laboratories (UL).

1.3 REFERENCES, DEFINITIONS, AND ACRONYMS

- A. See Section 01 42 00 – References for additional reference standards, abbreviations, definitions, and acronyms.
- B. See BICSI Dictionary, 3rd Edition for additional word meanings for communications work.
- C. Structured Cabling System Description:
 - 1. Information Transport System includes copper and optical fiber, and equipment owned by outside providers carrying Owner information. Pathways are not limited to Owner’s system, but may include those owned by third parties. Information Transport System may be referred to as “the network.” Elements of Information Transport System to be handled uniquely within overall Information Transport System will be specifically addressed (e.g. fire alarm cabling). This term replaces telecommunication network in building codes, standards, or methodologies.
 - 2. Inside Cable Plant: Part of Information Transport System running within building. Inside Cable Plant elements includes workstation outlet assembly, cabling to workstation from network rooms, backbone cabling within buildings, backbone cabling running between physically contiguous buildings network racks and hardware (routers, switches, hubs, firewalls, etc.), patch panels, punch blocks fiber distribution panels patch cords, and cross-connect cables/wires. Inside Cable Plant will be referred to as “ISP.”

3. Outside Cable Plant: That part of Information Transport System running between buildings, from building to a definable exterior point, between definable exterior points, or from a non-Owner source to Owner's building or definable exterior point, including termination punch blocks, fiber distribution panels, interior splices for outside to inside optical fiber transition, and other initial device into which outside cable attaches. The Outside Cable Plant does not include backbone cable running between physically contiguous buildings unless cabling enters OSP pathway element (e. g. OSP conduits, maintenance holes, etc.). Outside Cable Plant includes underground cabling and aerial cabling. Outside Cable Plant may be referred to as "OSP."
- C. Specific Communication System Elements:
1. Alien Crosstalk: Emissions from one or more adjacent cables affecting wire pairs in other cables.
 2. Attenuation: Decrease in magnitude or signal power loss propagated between two points.
 3. Cable: Assembly of one or more insulated conductors or optical fibers, within enveloping sheath.
 4. Campus: Includes buildings owned or leased by Owner with direct physical cable connection to contiguous campus through Owner's owned or leased conduits, including pathways.
 5. Dead pairs: Unused copper pairs terminating within splice case, but without being spliced to outgoing cable.
 6. Conductor, usually a rod, pipe or plate (or group of conductors) in direct contact with earth for purpose of providing low-impedance connection to the earth.
 7. Grounding electrode conductor: Conductor used to connect grounding electrode to equipment grounding conductor, or to grounded conductor of circuit at service equipment, or at the source of separately derived system.
 8. Handbox: Rectangular or square underground pathway element similar to small maintenance hole, which cannot be fully entered, that allows for pulling point or splice point in pathway.
 9. Handhole: Round underground pathway element similar to handbox, which cannot be fully entered, that allows for pulling point in pathway.
 10. Identifier: Information that links specific element of Information Transport System infrastructure with its corresponding record.
 11. Infrastructure (Information Transport System): Collection of Information Transport System components, excluding equipment that together provides basic support for distribution of information within or between buildings.
 12. Linkage: Connection between record and identifier or between records.
 13. Maintenance holes: Underground pathway element large enough for person to fully enter work, used to provide access to underground cable to pull, splice, and maintain. Formerly known as manhole.
 14. Media (Information Transport System): Wire, cable, or conductors used for Information Transport System.
 15. Outlet box: Metallic or nonmetallic box used to hold Information Transport System outlets/connectors or transition devices.
 16. Outlet/connector (Information Transport System): Connecting device in work area on which horizontal cable or outlet cable terminates.
 17. Pathway: Facility for placement of Information Transport System cable.
 18. Record: Collection of detailed information related to specific element of Information Transport System infrastructure.
 19. Report: Presentation of collection of information from various records.

20. Space (Information Transport System): An area used for housing installation and termination of Information Transport System equipment and cable, e.g., equipment rooms, network rooms, work areas, and maintenance holes/handboxes/handholes.
 21. Splice: Joining of conductors in splice closure, meant to be permanent.
 22. Splice box: Box, located in pathway run, intended to house cable splice.
 23. Splice closure: Device used to protect splice.
 24. Termination position: Discrete element of termination hardware where information Transport System conductors are terminated.
 25. Wire Map: Method used to identify wiring errors.
 26. Work area (work station): Building space where the occupants interact with Information Transport System terminal equipment.
- D. Communications System Acronyms:
1. ACR: Attenuation-to-Crosstalk Ratio.
 2. ADA: Americans with Disabilities Act.
 3. AFF: Above finished floor.
 4. ANSI: American National Standards Institute.
 5. ASTM: American Society for Testing and Materials (ASTM International)
 6. AWG: American Wire Gauge
 7. BICSI®: Building Industry Consulting Service International.
 8. dB: Decibel.
 9. EIA: Electronic Industries Alliance.
 10. ELFEXT: Equal Level Far-End Crosstalk.
 11. EMC: Electromagnetic Compatibility.
 12. EMI: Electromagnetic Interference.
 13. FCC: Federal Communications Commission.
 14. FEXT: Far-End Crosstalk.
 15. FOTP: Fiber Optic Test Procedure.
 16. Freq: Frequency.
 17. GE: Grounding equalizer (replacing TBBIBC).
 18. Gnd: Ground.
 19. HB: Handbox.
 20. HH: Handhole.
 21. HVAC: Heating, Ventilation, and Air Conditioning.
 22. Hz: (Hertz) or MHz (Megahertz).
 23. IDC: Insulation Displacement Connectors.
 24. IEEE: Institute of Electrical and Electronics Engineers.
 25. ISO: International Organization for Standardization.
 26. ISP: Inside Cable Plant.
 27. IDF: Intermediate Distribution Frame: Location of building distribution equipment room(s).
 28. MDF: Main Distribution Frame: Location of campus wide central equipment room).
 29. Martin County School District (MCSD): Owner.
 30. Mbps: Megabits per second.
 31. MDF. Main Distribution Frame also referred to as Main Equipment Room.
 32. MH: Maintenance Hole.
 33. MM: Multimode fiber optic cable.
 34. NEC: National Electrical Code, NFPA 70.
 35. NESC: National Electric Safety Code, C2-1997.
 36. NEXT: Near End Cross Talk.

37. NFPA: National Fire Protection Association.
38. OSHA: Occupational Safety and Health Administration.
39. OSP: Outside Cable Plant.
40. OTDR: Optical Time Domain Reflectometer.
41. PSACR: Power Sum Attenuation to Crosstalk Ratio.
42. PSELFEXT: Power Sum Equal Level Far End Cross Talk.
43. PSFEXT: Power Sum Far End Crosstalk.
44. PSNEXT: Power Sum Near End Crosstalk.
45. PR: Pair.
46. RCDD®: Registered Communications Distribution Designer.
47. RFI: Radio Frequency Interference.
48. RH: Relative Humidity.
49. SM: Single Mode Fiber Optic Cable.
50. TBB: Telecommunication Bonding Backbone.
51. TBBIBC: Telecommunication Bonding Backbone Interconnecting Bonding Conductor.
52. TE: Telephone Equipment (Wall Mounted Equipment Rack).
53. TGB: Telecommunications Grounding Bussbar.
54. TIA: Telecommunications Industry Association.
55. TMGB: Telecommunications Main Grounding Bussbar.
56. TR: Telecommunications Room (MDF or IDF).
57. UL: Underwriters Laboratory.
58. UPS: Uninterruptible Power Supply.
59. WAO: Work Area Outlet.

E. ABBREVIATIONS

1. dB: Decibel: sound level or channel attenuation.
2. “, in, inch(es), ft, foot: us length.
3. mm, cm, m or km: metric length
4. W: Ohm(s): wire resistance.
5. μ : wavelength (nm) Nanometer.

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 Submittal Procedures.
- B. Comply with Section 01 35 33 – Security Procedures for submittal of installer’s personnel information for security badging requirements.
- C. Project Record Documents
 1. Submit one (1) mylar reproducible set of Project Record Drawings and one electronic set of Project Record Drawings in AutoCAD Release 10 or later edition “DWG” rewritable file extension format.
 2. Submit complete updated hard copy of project record drawings and specifications maintained on project site during construction.
 3. See specific communication sections for additional requirements.
- D. Operation & Maintenance Manuals:
 1. Prior to the Substantial Completion Inspection, complete Operation & Maintenance (O&M) Manuals.
 2. Submit O&M Manuals to Owner at Substantial Completion Inspection.
 3. Instruction manuals shall contain sufficient information to permit Owner’s personnel to operate system without assistance from Contractor.
 4. Provide O&M Manuals covering equipment and materials furnished.

5. O&M Manuals shall contain information necessary for operation, maintenance, parts procurement, and parts replacement for SCS.
6. Information shall include detailed documentation for firmware configuration.
7. Provide 8-1/2" x 11" loose leaf 3-ring binders with clear vinyl overlay designed to receive identification inserts with identification on front cover and back splines as follows:
 - a. Operating & Maintenance Manual, Project Name, and Contractor.
 - b. On front page, enclosed in 3-ring clear plastic sheet protector, provide the following:
 - (1). Project Name.
 - (2) Contractor Name.
 - (3) Contractor's Project Manager.
 - (4) Contractor's Project Number.
 - (5) Owner's Project Number or Purchase Order Number.
 - c. Contact list with name, address, contact person, phone number, and fax number for each of the following:
 - d. Structured Cabling System Contractor.
 - e. Conduit subcontractor.
8. Manufacturers of Equipment and local supply source(s) for repair parts.
9. Index: On the second page, enclosed in a 3-ring clear plastic sheet protector, provide index indicating section numbers and titles.
10. Sections shall be separated with tabbed section divider with number and title (typed) as follows:
 - a. Section 1 – Cuts Sheets: Manufacturer's original data/cut sheets for each system component.
 - b. Section 2 – Equipment List: Typed list of each item of equipment with brief description, serial number, and part number, enclosed in 3-ring clear plastic sheet protector.
 - c. Section 3 – Factory Manuals: Manufacturer's printed Installation and Operating Manuals for each item of LAN equipment. Provide 3-ring zip-lock pockets for each manual not factory 3-ring punched. Do not include manuals loose or inserted in binder pockets.
 - d. Section 4 - Warranties: Copy of Contractor's warranty and Manufacturer's printed warranty for each item of equipment. Enclose in 3-ring clear plastic sheet protector.
 - e. Section 5 – Transmittal of Loose Items: Copy of transmittal to Owner's Project Manager for loose items such as patch cords, wire management rings, spare parts, with receipts signed-off by Owner's Project Manager. Enclose in 3-ring clear plastic sheet protector.
 - f. Section 6 - Documentation of Training: Documentation of training signed-off by Owner's Project Manager (insert in manuals at Final Completion inspection). Enclose in 3-ring clear plastic sheet protector.
 - g. Section 7 - Cable Tests: Executive summary of test results for Category 6, fiber optic, ITV, and voice backbone cabling.

1.5 QUALITY ASSURANCE

- A. Comply with Section 01 45 00 – Quality Control.
- B. Telecommunications installer shall have RCDD (Registered Communications Distribution Designer) on staff with minimum of 3 years of experience with specified manufacturers' hardware and cabling.

- C. Telecommunications installers shall have experience with installation of specified manufacturers' hardware and cabling.
- D. Telecommunications installers shall use BICSI registered installers. Seventy-five percent or more of installers shall be BICSI Installer Level II. Up to twenty-five percent of installers may be BICSI Installer Level I. Workers not involved in installing cable elements (e.g. laborers delivering/moving materials, installing grounding by electrician, or workers installing pathway elements) do not have to be registered.
- E. Team leads shall be BICSI registered technicians. Provide statements in bid documents of experience for proposed team leads. Statements shall include industry-specific training and certifications with dates verifying active status on registrations/certifications, project experience, experience with Category 6 and shielded cabling, and experience as a team lead.
- F. Only installers trained and certified by manufacturer shall be allowed to install copper products. Installers shall possess highest levels of certification available by manufacturer for specific structured cable solution being installed.
- G. Only installers trained and certified by fire stop manufacturer shall be allowed to install fire stop products. See Section 07 84 00 – Fire Stopping.
- H. Only installers trained and certified for cable testing and wiring by manufacturer shall be allowed to terminate and test optical fiber. Other installers specified above may pull or place optical fiber cable under supervision of installer trained and certified by manufacturer. Submit proof of registration/certification of proposed installers to include narrative on levels of registration/certification of installers.
- I. Owner reserves right to reject unregistered or uncertified installers performing work for which they are not certified. Installer shall be responsible for loss of work, delays in schedules, or extra cost from use of unregistered/uncertified workers. Additional cost and effort to maintain installation schedule shall be communications system installer's responsibility.
- J. Provide required documentation for new workers after submittal of initial documentation on installers. Owner may periodically check installer identification and registrations/certifications during installation.

1.6 PROJECT CONDITIONS

- A. Security and Work Coordination:
 - 1. SCS construction area shall be protected and secured from unauthorized access.
 - 3. Workplace safety and security is SCS installer's responsibility.
 - 4. Contact Contractor/CM or Owner's Project Manager, if project has no Contractor/CM, of conditions preventing safe, timely or complete installation of telecommunications systems.
 - 5. Failure to provide notification to Contractor/CM or Owner's Project Manager shall be deemed acceptance of working conditions.
 - 6. Comply with Section 01 31 00 – Project Coordination. Access to project including SCS installer's approved parking and "lay-down areas", access to buildings, maintenance holes, handholes, handboxes, utility poles, underground spaces, and pathways shall be coordinated with Owner's Project Manager.
 - 7. Contractor/CM or SCS installer, if project has no Contractor/CM, shall provide traffic control and signage to maintain safe working environment.

8. Work area access, road closures, parking spaces closures, and work outside of Owner's normal operating hours shall be coordinated with Owner's Project Manager.
 9. Owner's continued occupation of existing facilities shall not be interrupted by SCS installer's work activities.
 10. Active cable plant associated with specific work and active cable plant beyond construction area shall not be disrupted.
 11. Unusual circumstances (e.g. voice cutovers) may occur if prior written notification and approval is granted by Owner's Project Representative. Disruptions, if needed, shall be at Owner's convenience and approved schedule.
- B. Owner shall not be responsible for delays or additional compensation due to SCS installer's unsafe working practices or unacceptable work.

1.7 WARRANTY

- A. Communications Installer shall provide warranties or guarantees in accord with Section 01 78 00 – Closeout Submittals and as noted herein.
- B. Communications CAT 6 and fiber optic cabling shall adhere to warranty requirements of Siemens System 6 or Ortronics NetClear GT2 warranty which may not be manufactured by either systems manufacturer, but shall be inclusive with manufacturer's and installer's warranties for complete and functional communications system.
- C. Manufacturer and authorized communications installer shall provide twenty (20) year warranty for category 6 structured cabling system for end-to-end channel model installation covering applications assurance, margin compliance claimed by manufacturer over category 6 channel specifications for transmission parameters across entire frequency range of 1-250 MHz in accord with manufacturers catalogs and literature, cable, connecting hardware and labor cost for repair or replacement.
- D. Manufacturer shall provide 20-year Channel Performance Warranty for complete communications system. System shall be either Siemon Systems 6 solution or Ortronics NetClear GT2 solution.
 1. Manufacturer's shall warranty worst-case performance data for installed cabling system, and performance data indicated in warranty documents/certificate.
 2. Twenty (20) year warranty for Cat 6 structured cabling system shall provide for end to end channel model installation which covers applications assurance, cable, connecting hardware, and labor cost for repair or replacement.
 3. Warranty shall indicate compliance with Margin claimed by manufacturer's over Cat 6 channel specifications on transmission parameters across entire frequency range of 1-250 MHz as indicated in manufacturer's catalogs and product literature.
- E. SCS installer shall provide 3 year warranty for communications system installation to include materials and labor warranty for replacement of defective installation or equipment including cables, jacks, patch cords, patch panels, devices and cabling.
- F. Date of warranty period shall begin from date of project's substantial completion and acceptance by Owner.

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PART 2 PRODUCTS - NOT USED

PART 3 PRODUCTS - NOT USED

END OF SECTION

SECTION 27 05 26
GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Grounding and bonding for TMGB at entrance to main electrical room, and TGB for other network rooms, ISP, conductors, connections and required hardware.
- B. Protection, grounding, and bonding shall be provided in new construction and in existing buildings where completely new communications system work is to be installed, or in existing buildings where expansion of existing communications system is required to interface with existing communication systems.
- C. Upgrading of existing communication systems to current codes, including installation of lightning protection, grounding bussbars, and bonding backbones.
- D. Coordination of interface connections with electrical contractor for proper pathway and termination locations, busbar locations and connection to main electrical service ground and electrical distribution panels.

1.2 REFERENCES

- A. Telecommunications Definitions (See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms).
 - 1. BCT (Bonding Conductor for Telecommunications): conductor that interconnects telecommunications bonding infrastructure to building's service equipment (power) ground.
 - 2. Bonding: Joining of metallic parts to form electrically conductive path.
 - 3. GE (Grounding Equalizer): conductor interconnecting elements of telecommunications grounding infrastructure.
 - 4. Ground: Conducting connection between electrical circuit or equipment and earth or to some conducting body that serves in lieu of earth.
 - 5. RBC (Rack Bonding Conductor): Bonding conductor connecting equipment rack directly to TMGB or TMB.
 - 6. RGB (Rack Grounding Busbar): Busbar vertically mounted on equipment rack.
 - 7. TBB (Telecommunications Bonding Backbone): Conductor connecting telecommunications main grounding busbar (TMGB) to
 - 8. TGB (Telecommunications Grounding Busbar): common point of connection for telecommunications system and equipment bonding to ground, and located in Telecommunications Room or Equipment Room.
 - 9. TMGB (Telecommunications Main Grounding Busbar): Busbar placed in convenient and accessible location and bonded by bonding conductor for telecommunications and to building service (power) ground.
 - 10. UBC (Unit Bonding Conductor): Conductor interconnecting Rack Bonding Busbar to telecommunications equipment.
- B. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.
- C. Soares Book on Grounding.
- D. IEEE Standard 1100 – IEEE Recommended Practice for Powering and Grounding Electronic Equipment (Emerald Book).

- E. Building Industry Consulting Services International (ANSI/NECA/BICSI):
 1. BICSI-607 – Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings.
 2. BICSI-607A – Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises.

1.3 QUALITY ASSURANCE

- A. Comply with Section 01 45 00 – Quality Control.
- B. Network equipment grounding shall be installed per ANIS-J-STD-607-A standard.
- C. Voltage drop over grounding conductors shall not exceed 40 volts. Installer shall provide sizing calculations based on grounding electrode conductor to AE for review.
- D. Protectors, grounding and bonding hardware shall be products of same manufacturer.
- E. Grounding conductors shall be sized for maximum current possible for electrical grounding electrode conductor to pass through telecommunications grounding system.
- F. Sizing of Telecommunications Bonding Backbone (TBB) and Grounding Equalizer (GE):
 1. TBB and GE shall be copper conductors (#6 AWG minimum size).
 2. TBB and GE shall be sized at 2 kcmil per linear foot of conductivity length up to maximum of 3/0 AWG and may be insulated.
 3. If insulated, TBB and GE shall meet fire ratings of its pathway and shall be listed for space in which it is located.
 4. TBB and GE sizing noted in attached Schedule is not intended to account for reduction or control of electromagnetic interference.
 5. Bonding and Grounding Conductor Sizing Schedule:

TBB OR GE LENGTH Meters (Ft)	TBB/GE Size (AWG)
< 4 (13)	6 (13mm ²)
4-6 (14-20)	4 (21mm ²)
6-8 (21-26)	3 (27mm ²)
8-10 (27-33)	2 (34mm ²)
10-13 (34-41)	1 (42mm ²)
13-16 (42-52)	1/0 (54mm ²)
16-20 (53-66)	2/0 (67mm ²)
>20 (66)	3/0 (85mm ²)

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit manufacturer’s descriptive literature for each system component specified with specific product number clearly identified.
- C. Shop Drawings:
 1. Provide scaled drawings of floor plans (not less than 1/16”=1’-0”) indicating proposed location and size, dimensions, type of connection (e.g., mechanical, exothermic weld of each bonding busbar (e.g., TMGB and TGB), conductor (e.g., BCT, GE and TBB), connections (e.g., lugs), and splice points.
 2. Provide scaled plan and elevation drawings of Telecommunication Rooms (not less than 1/4”=1’-0”) indicating proposed locations busbars (e.g., TMGB, TGB, UBC and RGB).
 3. Provide separate drawing for proposed bonding and grounding layouts and details.

- D. Comply with Section 01 78 00 – Closeout Submittals for project closeout documents.
- E. Project Record Documents:
 - 1. Provide scaled drawings of floor plans (not less than 1/16"=1'-0") indicating actual location and size, dimensions, type of connection (e.g., mechanical, exothermic weld of each bonding busbar (e.g., TMGB and TGB), conductor (e.g., BCT, GE and TBB), connections (e.g., lugs), and splice points.
 - 2. Provide scaled plan and elevation drawings of Telecommunication Rooms (not less than 1/4"=1'-0") indicating actual locations busbars (e.g., TMGB, TGB, UBC and RGB).
 - 3. Provide separate drawing for actual bonding and grounding layouts and details.
- F. Operation and Maintenance (O&M) Manuals:
 - 1. Manufacturer's specification sheets (cutsheets), operation and maintenance manuals for each product and system maintenance.
- G. Certification: Provide letter to Owner's Project Manager from Contractor/CM installer's RCDD that grounding system was installed in accord with contract documents, acknowledging that telecommunications grounding system has been successfully tested and is fully functional for intended purpose. One letter from RCDD may be submitted to include attesting requirements from other Div 27 Sections.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Approved Manufacturer's.
 - 1. Ortronics Corporation, 125 Eugene O'Neill Dr., New London, CT 06320; Tel: 1 887 599-5393; Fax: 1 888 282-0043; Website; www.ortronics.com.
 - 2. Erico International Corp., 34600 Solon Rd., Solon, OH 44139. Tel: 440-248-0100; Fax: 440- 248-0723; Website: www.erico.com.
 - 3. Chatsworth Products Inc., 701 Industrial Dr., New Bern, NC 28562. Tel: 252-514-2779; Fax: 252-514-2977; Website: www.chatsworth.com.
 - 4. Thermoweld/Continental Industries, 4102 South 74th East Ave., Tulsa, OK 74145-4707. Tel: 918-627-5210; Fax: 918-622-1275; Website: www.conind.com.
 - 5. Harger Group, 301 Ziegler Dr. Grayslake, IL 60030; Tel: 800-842-7437; Fax: 847-548-8755; Website: www.harger.com.
 - 6. Panduit Corp., 18900 Panduit Dr., Tinley Park, IL 60478; Tel: 708-532-1800; Fax: 708-532-1811; Website: www.panduit.com.
- B. Other manufacturers shall comply with Section 01 25 13 - Product Substitution Procedures for product approval.

2.2. TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB):

- A. Manufacturers:
 - 1. Harger BICSI pattern 4" x 12" TMGB kit (#GBI1412JKT); 2" x 12" MGB kit (#GBI14210GKT).
 - 2. Chatsworth BICSI pattern 4" x 12" TMGB kit, TMGB (40158-012): Chatsworth BICSI pattern 2" x 12" MGB kit, TGB (40156-012).
 - 2, Rack-mount bussbar:
 - a. Ortronics Grounding Strip (OR-808004551)
 - b. Chatsworth Horizontal Rack Busbar, 19" (10610-019).

2.3 TELECOMMUNICATIONS GROUNDING BUSBAR (TGB)

A. Manufacturers:

1. Harger BICSI pattern: 2" x 12" MGB kit (#GBI14210GKT).
2. Chatsworth BICSI pattern: 2" x 12" MGB kit, TGB (40156-012).

2.4 BONDING CONDUCTORS FOR TELECOMMUNICATIONS (BCT)

A. Bonding Conductor:

1. Bare copper conductor, stranded.
2. Insulated copper conductors, insulated, green, stranded or solid.
3. Equal in size to largest Telecommunications Bonding Backbone (TBB).

B. Approved Manufacturers:

1. Harger Group.
2. Panduit Corp.

2.5 TELECOMMUNICATIONS BONDING BUSBAR (TBB)

A. TBB:

1. Bare copper or insulated conductor.
2. Conductor shall be listed for application when insulated.
3. Conductor shall be sized at 2 kcmil per linear foot of conductor length up to maximum wire size of 3/0 AWG.

2.6 GROUNDING EQUILIZER (GE)

A. GE:

1. Bare copper or insulated conductor.
2. Conductor shall be listed for application when insulated.
3. Conductor shall be same size as largest TBB.

B. Approved Manufacturers:

1. Harger Group.
2. Panduit Corp.

2.7 RACK BONDING CONDUCTOR (RBC)

A. RBC:

1. Bare copper or insulated conductor.
2. Conductor shall be listed for application when insulated.
3. Conductor shall be minimum of same size as largest TBB.

B. Approved Manufacturers:

1. Harger Group.
2. Panduit Corp.

2.8 RACK BONDING BUSBAR (RBB)

A. RBB:

1. Busbar shall be wrought copper and tin plated grounding strip for use in 2-post and 4-post Communications Racks.
2. Busbar shall support multiple unit bonding conductors and shall be UL listed.

B. Manufacturers:

1. Harger Rack Grounding Busbar Kit #RGBVKIT14583672A.
2. Panduit Rack Grounding Busbar Strip Kit #RGS134-1Y.

2.9 GENERAL BONDING CONDUCTORS OR JUMPERS

- A. Provide and install general bonding conductors and jumpers as indicated.
- B. Provide conductors and jumpers connecting equipment located in same rooms as TMGB/TMB, conductors and jumpers shall be in green insulated jacket. Jacket shall include markings that indicate conductor size (minimum o #6 AWG), manufacturer, and UL listing.
- C. Approved Manufacturers:
 - 1. Harger Group.
 - 2. Panduit Corp.

2.10 BONDING ACCESSORIES

- A. Exothermic weld connectors, UL listed:
 - 1. Approved Manufacturers:
 - a. Erico International; Cadweld products.
 - b. Continental Industries; Thermoweld products.
- B. Grounding Lugs:
 - 1. Two-lug connectors, UL-listed, irreversible compression.
 - 2. Single-lug connectors, UL-listed, irreversible compression.
 - 3. Approved Manufacturers:
 - a. Enrico International Corp.
 - b. Harger Group
 - c. Panduit Corp.
- C. Stand-off Insulators:
 - 1. Round or hexagon glass reinforced thermoset polyester insulators sized for voltage rating.
 - 2. Approved Manufacturers:
 - a. Harger Group.
 - b. Chatsworth Products, Inc.
- D. Other materials as required for complete and functioning grounding system.

PART 3 EXECUTION

3.1 GENERAL

- A. Install pre-painted plywood panel on interior room walls of Telecommunications Rooms with sufficient anchorage to walls to support items attached to walls.
- B. Locate TMGB and TGBs per approved shop drawings and shall be easily accessible to telecommunications staff.
- C. Follow manufacturer's printed installation instructions. If manufacturer and contract documents are in conflict, most stringent shall apply. If manufacturer's printed instructions are conflicting, immediately report discrepancies to A/E in timely manner to maintain project schedule.

3.2 TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB)

- A. TMGB Installation:
 - 1. Position TMGB to be protected from physical damage.
 - 2. Install TMGB with stand-off insulators.
 - 3. If building TMGB is located in another room, install TGB with stand-off insulators.

4. TMGB shall be bonded to grounding conductor with exothermic weld.
5. Bond entrance facility bussbar to appropriately sized TBB with exothermic weld.
6. Neatly install conductor from entrance facility bussbar at right angles along walls or ceiling surfaces to structural steel within same room or room in close proximity to electrical service panel within room, or metallic cold water pipes within room.
7. Conductors attached to structural steel shall be connected with exothermic welds.
8. Metallic raceways for telecommunications cabling in space where TMGB is located shall be bonded to the TMGB.
9. Insulate TMGB 2" from wall.
10. For outside plant cables entering building with cable shield isolation gap, bond cable shield (on building side of gap) to TMGB. Outside plant protectors shall be bonded to TMGB with #6 AWG copper conductors.
11. Connections to busbar shall be made with 2-hole lugs.
12. Connections shall be made by cleaning area of connection on busbar and 2-hole lugs and then applying thin coating of anti-oxidant compound.

3.3 COMMUNICATIONS GROUNDING BUSBAR (TGB)

A. TGB Installation:

1. Provide and install necessary grounding hardware to properly ground equipment in network room per codes, standards and methodologies noted. Self-tapping screws, or any other type of screws, shall not be used to form bonds or attach grounding hardware.
2. Within each network room, provide and install insulated (green), stranded #6 copper ground wire from network room bussbar to following items:
 - a. Racks
 - b. Ladder rack
 - c. BETs
 - d. Electrical service panels- Provide and install two-lug connectors or exothermic bonds to bussbar.
 - e. Metallic, cold water pipes- Verify identification of water pipe with Owner's Project Manager prior to bonding to it. Provide and install two-lug connectors or exothermic bonds to bussbar and provide and install appropriate grounding connectors for water pipes, if present.
 - f. Metallic raceways for telecommunications cabling in space where TMGB is located shall be bonded to the TMGB.
 - g. Insulate TMGB 2" from wall.
 - h. Connections shall be made by cleaning area of connection on busbar and 2-hole lugs and then applying thin coating of anti-oxidant compound
3. Do not bend grounding conductor wires into tight angles. Changes in direction shall be of the highest radius possible.

3.4 MAIN DISTRIBUTION FRAME ENCLOSURES (MDF)

A. MDF Installation:

1. Install pre-painted plywood panel on interior room walls with sufficient anchorage to walls to support items attached to walls.
2. Install grounding bussbar in enclosure housing networking or other active equipment. Install bussbar at location indicated and approved by Owner's Project Manager. Bussbar may be rack-mount bussbar attached to rails or backboard.
3. Provide and install necessary grounding hardware to properly ground equipment in network room per applicable codes, standards and methodologies noted. Self-tapping screws, or any other type of screws, shall not be used to form bonds or attach grounding hardware.

4. Connect enclosure to TBB with not more than 30 feet of insulated (green), stranded #6 copper ground wire.
5. Do not bend grounding conductor wires into tight angles. Changes in direction shall be of highest radius possible.

3.5 BONDING CONDUCTOR FOR TELECOMMUNICATIONS (BCT)

- A. Route BCT in conduit from telecommunications service entrance room to main electrical service ground connection.
 1. See Section 27 05 53 – Identification for Communication Systems.
 2. Label conduit at telecommunications service entrance with tag or adhesive label that states “Building Conductor for Telecommunications (BCT) to Main Electrical Service Ground Connection”.
 3. Label conduit at main electrical service ground c with tag or adhesive label that states “Building Conductor for Telecommunications (BCT) to Telecommunications Main Grounding Busbar”.
 4. BCT shall not be run in metallic conduit nor completely encircled with metallic clamps.

3.6 TELECOMMUNICATIONS BONDING BACKBONE (TBB)

- A. TBB when located along same route as cable tray, TBB shall be located on outer side of cable tray to minimize contact with communications cabling.
- B. TBB cabling sizes shall be per Paragraph 1.04.F.5.

3.7 BONDING CONDUCTORS OR JUMPERS

- A. Bonding conductors or jumpers shall be utilized in each telecommunications room between TMGB/TGB and following components:
 1. Communications building entrance protectors.
 2. Electrical panel board (if in same room as TMGB/TGB).
 3. Building steel frame (if available in same room as TMGB/TGB).
 4. Telecommunications ladder rack and cable tray:
 - a. Bonding jumpers may be utilized to ground adjacent pieces of ladder rack and cable tray together, reducing need for single conductor back to TMGB/TGB.
 - b. Where ladder racks or cable trays are painted, paint shall be removed at connection points prior to making connections.
 5. Telecommunications equipment racks and cabinets:
 - a. Cabinets and racks shall be bonded to TMGB/TGB directly with #6 AWG Rack Bonding Conductor (RBC) from Rack Grounding Busbar (RGB).
 - b. Where ladder racks or cable trays are painted, paint shall be removed at connection points prior to making connections.

3.8 GROUNDING LUGS

- A. Wires shall be inserted to full dept of lugs.
- B. Space between wire insulation and body of compression lugs shall be not greater than 0.25” ((63mm).
- C. Lugs shall be sized to match wire size per lug manufacturer’s printed recommendations.
- D. Lugs shall have manufacturer’s embossed coding system imprinted on lugs.
- E. Connectors may not be modified. Daisy chaining and stacking (piggy backing) of gruond lugs is prohibited.

F. Bolts, nuts, washers for securing connections shall match hole diameters.

3.9 TESTING

A. Comply with Section 27 18 00 - Communications Testing.

B. Telecommunication Grounding System Test Notification:

1. Grounding connections shall be tested for continuity and resistance after installation but prior to project substantial completion.
2. A/E, District Instructional Technology Department, and Owner's Project Manager shall be given forty-eight (48) hours notice prior to start of testing.

C. Telecommunication Grounding System Testing:

1. Testing shall be performed for impedance of bonds of grounding system, including cable armor bonding to ground. Impedance of two-point bonding test across any bond shall not exceed 0.1 ohm. Remediate bond(s) over limit or which contribute to total impedance exceeding 0.1 ohm from any point in network room to bussbar in that room.
2. Bonds installed shall be tested for impedance with earth ground resistance test in its two-point setup (LEM Handy GEO tester, or approved testor). Place QA label (with date and inspector) in proximity to each bond tested.
3. Test grounding conductors, once installed, for current. Measure AC and bi-directional DC current. Report AC current over 1 Amp. Report any DC current, in either direction, over 500 miliamps.

END OF SECTION

SECTION 27 05 28
PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Surface metallic raceways, surface nonmetallic raceways, fittings, device and cover brackets, communication systems utility columns, outlet boxes, Poke-thrus, floor boxes, pull and junction boxes for communications systems.

1.2 REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms.
- B. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.
- C. National Electrical Manufacturers Association (NEMA):
 - 1. NEMA WD 6 - Wiring Devices - Dimensional Requirements, 2002 Edition.
 - 2. NEMA VE 1 - Metallic Cable Tray System; National Electrical Manufacturers Association; 2002 Edition.
- D. Telecommunications/Electronics Industry Association (TIA/EIA): TIA/EIA-569 - Commercial Building Standard for Telecommunications Pathways and Spaces; Rev. A, 1998, and relevant Addenda (ANSI/TIA/EIA-569).
- E. Underwriters Laboratories (UL): UL 5 - Surface Metal Raceways and Fittings; Underwriters Laboratories Inc; 1996.
- F. National Electrical Contractors Association (NECA): NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2000.
- G. National Electrical Manufacturers Association (NEMA):
 - 1. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2003.
 - 2. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; National Electrical Manufacturers Association; 2003.

1.3 QUALITY ASSURANCE

- A. Comply with Section 01 45 00 Quality Control. Comply with Reference Standards indicated.
- B. Provide products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and indicated.

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit manufacturer’s descriptive literature for each system component specified in this section.

- C. Shop Drawings:
 - 1. Submit raceway layouts, each system component required for complete system, raceway lengths, device types, locations and identify circuits.
 - 2. Indicate cable tray type, dimensions, support points, and finishes.
 - 3. Indicate box, outlets, systems furniture and service pole locations.
 - 4. Provide manufacturer's catalog data for fastening systems.
- D. Comply with Section 01 78 00 – Closeout Submittals: If variations from approved shop drawings occur during installation of raceway system, submit final as-built drawings indicating such variations.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
- B. Store products in manufacturer's unopened packaging until installation.
- C. Maintain storage area conditions for products in accord with manufacturer's written instructions.

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURES

- A. Approved manufacturers are listed herein. Other manufacturers may submit for approval per Section 01 25 13 – Product Substitution Procedures.

2.2 SURFACE METALLIC RACEWAYS

- A. Surface Metallic Raceways:
 - 1. Acceptable product: Wiremold 4000 System by The Wiremold Company, 60 Woodlawn St., West Hartford, CT 06110. Tel: 800-621-0049, 860-233-6251; Fax: 860-232-2062; Website: www.wiremold.com.
 - 2. Product description: Two-piece system of galvanized steel, nominal 0.040" (1.27 mm) metal thickness, having total assembled cross-section dimension 4.75" (120 mm) high by 1.75" (44 mm) deep, having cross-section area 7.5 square inches (48.38 sq cm), consisting of base, snap-on cover, and removable longitudinal barrier, dividing raceway interior into two equal spaces.
 - 3. Surface-mount locations shall use shallow, wall-mount boxes with outlets on the sides of box.
 - 4. Finish: ScuffCoat grey or ivory color as selected.
- B. Fittings:
 - 1. Factory-formed units to complete indicated configuration of raceway systems, including external corner units, internal corner units, flat units, blank end units, and elbows.
 - 2. Couplings: one per raceway unit.
 - 3. Wire clips: One per two foot intervals (61 cm) of indicated raceway configuration.
 - 3. Replacement longitudinal barrier: One section per 8 linear feet (2.44 m) of indicated raceway configuration.
 - 4. Material: Same material and metal thickness as linear raceway components.
 - 5. Finish: Matching linear raceway components.
- C. Device Brackets and Plates:

1. Factory-formed brackets and plates allowing installation of indicated power, data, and communications devices, both single-gang and two-gang, either vertically or horizontally in raceways.
2. Finish: Color matching linear raceway components.

2.3 SURFACE NONMETALLIC RACEWAY SYSTEMS

A. Surface Nonmetallic Multi-channel Raceway System

1. Approved Product: Wiremold Access 5000 System by The Wiremold Company, 60 Woodlawn St., West Hartford, CT 06110. Tel: 800-621-0049, 860-233-6251; Fax: 860-232-2062; Website: www.wiremold.com.
2. Corner Units:
 - a. Supply factory-formed cover and trim cover units for internal and external corners of indicated raceway layouts:
 - b. Finish corner units to match linear cover and trim cover units.
3. Fittings:
 - a. Provide factory-formed fittings in rigid PVC compound with base to eliminate mitering for indicated configurations and service requirements.

B. Finish: White.

C. Surface Nonmetallic Single Channel Raceway System

1. Approved Product: Wiremold Eclipse PN03, PN05, PN10 Series by The Wiremold Company, 60 Woodlawn St., West Hartford, CT 06110. Tel: 800-621-0049, 860-233-6251; Fax: 860-232-2062; Website: www.wiremold.com.
2. Surface mount boxes:
 - a. Wiremold Large Data Box, four port, PDB4TJ.
3. Corner Units:
 - a. Supply factory-formed cover and trim cover units for internal and external corners of indicated raceway layouts:
 - b. Finish corner units to match linear cover and trim cover units.
4. Fittings:
 - a. Supply factory-formed fittings specified in manufacturer's product data for indicated configurations and service requirements.
 - b. Finish: White.

2.4 INDOOR SERVICE POLES AND COMPONENTS

- A. Approved Product: Wiremold Tele-Power Pole Multi Outlet Assembly by The Wiremold Company, 60 Woodlawn St., West Hartford, CT 06110. Tel: 800-621-0049, 860-233-6251; Fax: 860-232-2062; Website: www.wiremold.com.
- B. Main Body: Aluminum with clear anodized finish in single unit lengths as required.
- C. Cover Plates: Match pole finish.
- D. Convenience Receptacle Configuration: NEMA WD 6; Type 5-15. Furnish 4 per column.
- E. Foot: Suitable for floor finish as indicated.
- F. Provide concealed top clamp to fasten pole to inverted "T" grid ceiling suspensions member.
- G. Accessories:
 1. Trim plates for closing ceiling opening to match poles.
 2. Flexible cable assembly with connector for branch circuit connections.

- H. Fabrication:
 - 1. Provide full-sized opening at top of pole.

2.5 BOXES

- A. Manufacture: The Wiremold Company: 60 Woodlawn St., West Hartford, CT 06110. Tel: 800-621-0049, 860-233-6251; Fax: 860-232-2062; Website: www.wiremold.com.
- B. Outlet Boxes.
 - 1. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 2. Nonmetallic Outlet Boxes: NEMA OS 2.
- C. Poke Thrus.
 - 1. Two 20A duplex receptacles and up to four communications devices:
 - a. Wiremold RC4 Flush Poke-Thru
 - 2. One 20A duplex receptacle and up to two communication devices
 - a. Wiremold RC7 Flush Poke-Thru
 - 3. No other products are acceptable.
- D. Floor Boxes.
 - 1. Wiremold AC Series Raised Floor Boxes.
 - 2. Wiremold 880 Floor Boxes for Wood Floors.
- E. Pull Boxes and Junction Boxes.
 - 1. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Verification of Conditions: Verify that substrates are prepared and ready to receive products specified.

3.2 SURFACE RACEWAY INSTALLATION

- A. Raceway shall be mounted in unobtrusive manner. Horizontal raceway shall be used at baseboard elevation, under or over chair rails, or along ceiling.
- B. Where possible, raceway shall extend vertically up or down from WAO. Installer shall discuss placement of raceway prior to installation with Owner's Project Manager.
- C. Secure surface-mount raceway with screws. Do not use adhesive attachments.

3.3 COMMUNICATION SYSTEM FURNITURE POLES

- A. Install utility columns plumb and fasten support to structure.
- B. Use pre-manufactured knock-outs for work area outlets. WAOs shall be installed flush or with minimal profile. Surface-mount boxes shall not be used on utility poles.
- C. Neatly cut openings in ceiling panels and install trim plates.

3.4 BOX INSTALLATION

- A. Install boxes securely, in neat and workmanlike manner, per NECA 1.
- B. Install in locations indicated, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70.

- C. Set wall mounted boxes at elevations to accommodate mounting heights at 18" (45.72cm) above finished floor, unless otherwise noted.
- D. Set wall mounting boxes for wall phones at 46" (1.17m) to center of box, if installed over counter or other low obstruction.
- E. Set wall mounting boxes for wall phones at 48" (1.21m) to center of box, if unobstructed access is available.
- F. Boxes indicated on Drawings are approximate locations unless dimensioned.
- G. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- H. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6" (15.24 cm) from ceiling access panel or from removable recessed luminaire.
- I. Install boxes to preserve fire resistance rating of building elements, using materials and methods specified in Section 07 84 00.
- J. Work area outlet boxes on opposite sides of a fire-rated wall shall not share the same stud space.
- K. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- L. Use flush mounting outlet box in finished areas.
- M. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- N. Do not install flush mounting box back-to-back in walls; provide minimum 6 inches (mm) separation. Provide minimum 24" (60cm) separation in acoustic rated walls.
- O. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- P. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- Q. Do not fasten boxes to ceiling support wires.
- R. Support boxes independently of conduit.
- S. Use gang box where more than one device is mounted together. Do not use sectional box.
- T. Do not install work area outlets in standard AC outlet shaped openings within floor boxes.
- U. Set floor boxes level.
- V. Large Pull Boxes: Use enclosure with removable cover in interior dry locations, surface-mounted cast metal box in other locations. Hinged lids may be used, if provided with a means to fasten securely open.

3.5 ADJUSTING

- A. Adjust floor boxes and poke-thrus flush with finish flooring material.

3.6 CLEANING

- A. Remove dust, debris, and other material from product installation.
- B. Clean exposed surfaces and restore finishes.

END OF SECTION

SECTION 27 05 29
HANGERS AND SUPPORTS FOR COMMUNICATIONS SYSTEMS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Hangers and supports, wire baskets, cable trays and accessories for communications systems.

1.2 REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms.
- B. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.
- C. National Electrical Manufacturers Association (NEMA):
1. NEMA WD 6 - Wiring Devices - Dimensional Requirements, 2002 Edition.
 2. NEMA VE 1 - Metallic Cable Tray System; National Electrical Manufacturers Association; 2002 Edition.
- D. Telecommunications/Electronics Industry Association (TIA/EIA): TIA/EIA-569 - Commercial Building Standard for Telecommunications Pathways and Spaces; Rev. A, 1998, and relevant Addenda (ANSI/TIA/EIA-569).
- E. Underwriters Laboratories (UL): UL 5 - Surface Metal Raceways and Fittings; Underwriters Laboratories Inc; 1996.
- F. National Electrical Contractors Association (NECA): NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2000.
- G. National Electrical Manufacturers Association (NEMA):
1. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2003.
 2. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; National Electrical Manufacturers Association; 2003.

1.3 QUALITY ASSURANCE

- A. Comply with Section 01 45 00 Quality Control.
- B. Provide products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and indicated.

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Product Data: Submit manufacturer's descriptive literature for each system component specified in this section.
- C. Shop Drawings:
1. Submit raceway layouts, each system component required for complete system, raceway lengths, device types, locations and identify circuits.
 2. Indicate cable tray type, dimensions, support points, and finishes.
 3. Indicate box, outlets, systems furniture and service pole locations.
 4. Provide manufacturer's catalog data for fastening systems.

- D. Comply with Section 01 78 00 – Closeout Submittals: If variations from approved shop drawings occur during installation of raceway system, submit final as-built drawings indicating such variations.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
- B. Store products in manufacturer’s unopened packaging until installation.
- C. Maintain storage area conditions for products in accord with manufacturer’s written instructions.

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURES

- A. Approved manufacturers are listed herein. Other manufacturers may submit for approval per Section 01 25 13 – Product Substitution Procedures.

2.2 WIRE BASKET CABLE TRAY

- A. Approved Products:
 - 1. FieldMate Wire Basket Cable Tray by The Wiremold Company: 60 Woodlawn St., West Hartford, CT 06110. Tel: 800-621-0049, 860-233-6251; Fax: 860-232-2062; Website: www.wiremold.com.
 - 2. Cablofil, Inc: www.cablofil.com: Wire Cable Tray.
 - 3. Copper B-Line, Inc: www.b-line.com:
 - a. Cent-R-Rail Systems.
 - b. Cable Tray Systems.
 - c. Wire Basket Cable Support.
 - 4. GS Metals Corp: www.flextray.com: FLEXTRAY Cable Management System.
 - 5. Cable Management Solutions, Inc.
 - a. Floor and Overhead Snake Tray.
 - b. Snake Canyon.
 - c. Wall Snake.
 - d. Ladder Snake
- B. Accessories:
 - 1. Provide manufacturer’s standard clamps, hangers, brackets, splice plates, reducer plates, blind ends, barrier strips, and connectors.
 - 2. Provide bushings or rubber edge trim as needed. Products shall be free of sharp edges or points that may damage cables.
 - 3. Provide manufacturer’s standard clamps, hangers, brackets, splice plates, reducer plates, blind ends, barrier strips, and connectors.

2.3 HANGARS AND SUPPORTS

- A. Approved Cable Support Manufacturer: ERICO International Corporation, 34600 Solon Rd., Solon, OH 44139. Tel: 440-248-0100; Fax: 440-349-2996; Website: www.erico.com.
 - 1. CableCat Adjustable Cable Support (CAT425 series slings).
 - 2. CableCat Cable Support (CAT64 series).
- B. Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.

C. Anchors and Fasteners:

1. Obtain permission from Owner's Project Manager before using powder-actuated anchors.
2. Concrete Structural Elements: Use precast inserts, expansion anchors, powder-actuated anchors, or preset inserts.
3. Steel Structural Elements: Use beam clamps, steel spring clips, steel ramset fasteners, or welded fasteners.
4. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
5. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
6. Solid Masonry Walls: Use expansion anchors or preset inserts.
7. Sheet Metal: Use sheet metal screws.
8. Wood Elements: Use wood screws.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Verification of Conditions: Verify that substrates are prepared and ready to receive products specified.
- B. Install hangers, supports and components in accord with Drawings, Shop Drawings and manufacturer's printed installation instructions.

3.2 CABLE TRAY SYSTEM

- A. Install cable tray securely, in neat and workmanlike manner, per NECA 1.
- B. Cut cable tray using manufacturer's equipment, if available from manufacturer. Smooth rough or jagged edges and points.
- C. Arrange supports to prevent misalignment during wiring installation.
- D. Fasten support to building structure and surfaces.
- E. Cable tray elements shall be supported with manufacturer's hardware to provide minimal profile. Suspension shoes and brackets shall be used in place of trapeze struts. Sharp corners and threaded rod shall not extend below the basket.
- F. Install cable trays maintaining following minimum clearance:
 1. 12" (304mm) of unobstructed clearance above cable tray's highest plane
 2. 6" (152mm) from source of EMI.
 3. 12" (304mm) from heat source exceeding 104° F (40° C).
- G. If cables rise to ceiling space of floor above network room greater than 12' (3.4m), install cable tray to relieve vertical weight from cables on each floor. Secure cables with Velcro-type straps as needed to relieve vertical weight strain.
- H. Continuous support elements shall be bonded from ground to TMGB/TGB with grounding wire. Sections may be bolted together or tied together with grounding jumpers, if support structure is approved by manufacturer as a grounding conductor.
- I. Provide pull strings in cable trays.
- J. Provide fittings or gaps with bonding jumpers to accommodate expansion and deflection where cable tray crosses expansion joints.

- K. Cable tray shall not penetrate fire-rated barriers. Cable tray shall end within 18” (45.6cm) of fire-rated barriers. Cables shall use firestop assemblies or sleeves to penetrate fire-rated barriers.
- M. Cable tray shall be installed only in main corridors and hallways. Cable tray shall not be installed in Communications Rooms, if room enclosure is fire or smoke rated.
- N. Cable tray shall be single tiered wire basket installed to allow 12” (30.4cm) of open space above and to one side of tray. Cable tray shall be 2” (5.1 cm) deep wire basket tray with appropriate width dimensions as required by volume of cable planned for installation at time of construction, and account for 20 per cent future growth.
- O. Cable tray shall not be filled more than 50% capacity. Cable tray shall extend up to communications room wall to provide access to racks and walls in “T” design. Small rooms may use single, straight cable tray in line with rack, provided it extends parallel to face of rack.
- P. Use at least 2- 4” (101mm) conduits in lieu of cable tray where installation passes through rated walls. Additional conduits may be required as cable volume dictates. Determination of conduits requirements shall be coordinated with Owner’s Project Manager.
- Q. Install cable tray products within network rooms for vertical strain relief as needed while maintaining 50% additional capacity within support structure. Secure cables with Velcro-type straps at minimum of 36” (91.5cm), or as recommended by manufacturer to relieve vertical weight strain.
- R. Use appropriate hardware and parts to attach tray to permanent building structure (concrete columns or deck, structural steel, or other immovable structures capable of supporting cable tray). Parts shall be specifically designed and where possible UL-listed for final installed configuration.

3.3 HANGARS AND SUPPORT DEVICES

- A. Attachment Devices.
 - 1. Obtain Owner’s project Manager’s permission before using powder-actuated anchors.
 - 2. Concrete Structural Elements: Use precast inserts, expansion anchors, powder-actuated anchors, or preset inserts.
 - 3. Steel Structural Elements: Use beam clamps, steel spring clips, steel ramset fasteners, or welded fasteners.
 - 4. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
 - 5. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
 - 6. Solid Masonry Walls: Use expansion anchors or preset inserts.
 - 7. Sheet Metal: Use sheet metal screws.
 - 8. Wood Elements: Use stainless steel wood screws.
- B. Install cable supports above concealed ceilings using rigid support to structural element or by attaching directly to structural element.
- C. Install hangers and supports as required to adequately and securely support electrical system components, in neat and workmanlike manner, per NECA 1.
 - 1. Do not fasten support to pipes, ducts, mechanical equipment, or conduit.
 - 2. Installer may use existing threaded rods for other utilities, if pre-approved by Owner’s Project Manager and is capable of supporting additional load and maintaining clearances.
 - 3. Do not drill or cut structural members.

4. Installation of hangars and supports to suspended ceiling grid support system in not allowed.
 - D. J-hooks or sling-type supports may be installed with suspended ceiling grid wire with manufacturer clamps, provided:
 1. Wire is painted orange prior to installation, to differentiate from ceiling grid support wires.
 2. Wire is not used to support ceiling grid, as required by the NEC.
 - E. Weld support members or use hexagon-head bolted fasteners to present neat appearance with adequate strength and rigidity. Use spring lock washers under nuts.
 - F. Support Category 5e cables with J-hook type or sling-type supports in concealed ceiling spaces.
 - G. Support Category 6 cables with Cat 6 rated "J" hooks with wide base if supporting more than eight cables.
 - H. J-hook and sling-type supports shall be installed every 4-5' (1.2-1.5m) on center for runs exceeding 30' (9.12m). Runs from main or secondary corridors into classrooms and offices do not require support.
 - I. Close J-hook supports with manufacturer provided bars and not with cable ties. Do not use cable ties to strap cable to J-hook supports. Install cables under such strain as to require tying to supports.
- 3.4 CLEANING
- A. Clean cable trays and supports of dust and debris.
 - B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 27 05 53
IDENTIFICATION FOR COMMUNICATIONS SYSTEMS

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Identification and labeling of system communication components including locations of each element of system and labeling of each component.
- B. Cables and terminations shall be identified in accord with TIA/EIA 606 for labeling and numbering with cables terminated in alpha-numeric sequence at both origination and termination locations.

1.2 REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, abbreviations, definitions and acronyms.
- B. National Electric Code (NEC) 2011 Edition.
- C. Telecommunications Industry Association (TIA)/Electronics Industry Association (EIA):
 - 1. TIA/EIA-606-A – Administrative Standard for Commercial Telecommunications Infrastructure.
 - 2. TIA-942 – Telecommunications Infrastructure Standard for Data Centers.
- D. Building Industry Consulting Services International (BICSI):
 - 1. Telecommunications Distribution Methods Manual (TDMM).
 - 2. Information Transport Systems Installation Methods Manual (ITSIMM).
- E. NFPA 70E, 2004 Edition – Standard for Electrical Safety in the Workplace.

1.3 QUALITY ASSURANCE

- A. Labeling shall be hand held thermal transfer printer producing printed, crisp, clear, non-smearing, and legible labels.
- B. Labels shall be durable for life of telecommunications system.
- C. Telecommunication system warranty shall include 20 year labeling replacement due to illegible or detached labels.

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Product Submittals:
 - 1. Provide manufacturer's product information cut sheets and specifications with specific product number identified or filled out.
 - 2. Provide labeling lists for outlets, horizontal cables, and backbone cabling in Microsoft Excel format for planned identification labels in accord with TIA/EIA 606-A – Labeling Standards.
 - 3. Labeling lists shall be approved by Owner's Project Manager prior to start of communications installation.
- C. Shop Drawings:
 - 1. Provide scaled drawings of floor plans indicating outlets with proposed identification label for each outlet. Each cable shall be terminated in alpha-numeric sequence at termination locations.

2. Provide riser diagrams for each Communications Room identified by FISH Room Number and backbone cable(s) by both room number and cable number.
 3. Provide enlarged scaled drawings of each Communications Room indicating Rack Row and Number(s), with patch panel locations and number(s).
 4. See Part 3 – Execution for additional instructions for labeling of racks and patch panels.
- D. Project Record Documents:
1. See Section 01 78 00 – Closeout Submittals. See other specification sections for specific record document requirements for those sections.
 2. Field deviations, changes and additions of telecommunications system from reviewed Shop Drawings shall be recorded on project field documents during construction and submitted to AE for review and compilation of final Record Documents (drawings, project manual, and cable manifest) which shall be submittal to Owner as part of final project closeout.
 3. Cable manifest (spreadsheet in Microsoft Excel format) shall identify source, destination, pair/strand count, and labeling scheme used for each horizontal and backbone cable.
 4. Project Record Documents shall only include Division 27 work scope, and shall be submitted on one USB Flash Drive. See Section 01 78 00 – Closeout Submittals for required number of copies.

1.5 PROJECT REQUIREMENTS

- A. OSP conduits shall provide access to MER and shall be labeled with same number at access point nearest property line and in MER.
- B. Voice patch panels shall be labeled to indicate what ER is served.
- C. Grounding and bonding system shall be labeled in accord with TIA/EIA-606.
- D. In MDF and IDF rooms, copper patch panels shall be labeled in alphabetic order beginning with 'A' on top most patch panel and continuing down rack. Each port in patch panel shall be labeled with room number where cable is terminated in WAO.
- E. Fiber Patch Panels
 1. MDF and IDF rooms shall have separate fiber enclosures for Single Mode and Multimode optical fiber cable. Each enclosure shall be labeled as such.
 2. Fiber panels housed in enclosures shall have fiber labeled MM (multimode) or SM (single mode) from MDF to IDF rooms or to other locations, using FISH number of room being fed by each fiber.
 3. Provide one fiber enclosure housing in MDF or IDF for both MM and SM optical fiber cable. Panels in each enclosure shall be labeled either MM or SM depending on type of optical fiber cable terminated in panel.
- F. WAO's shall be labeled as follows:
 1. Top of faceplate shall be labeled with Building and Room designation in accord with FISH numbering system where horizontal cable is terminated. FISH numbering system is indicated on Drawings.
 2. MDF space would be labeled 01-101 to indicate Building #1 and IDF Room Space Number is 101 per Architectural Finish Schedule and Floor Plans. IDF Room 01-122 would indicate cable is terminated in satellite (floor) communications equipment room, IDF Room #122 in Building 01 on same floor. Second Floor IDF Room in Building would be #01-222.
 3. Face plate labeling shall be permanent machine labeling typed in 12 pt. or larger Ariel font format.

- G. Wireless access points shall be terminated in separate patch panel from other horizontal cables and shall be designated as “Wireless AP”. At wireless access point, labeling shall be same as described below:
 - 1. Permanent machine labeling shall be typed in 12 pt. or larger Ariel font format and imprinted on items specified and shall be labeled for on-site record.
 - 2. Hand written labels are not allowed.
- H. Project records shall be provided to Owner at project completion as part of closeout submittals identifying location and nomenclature of each item.
 - 1. Documentation shall be on hard copy and on Flash Drive(s). Written documents shall be in Word format and include manufacturer’s written product information.
 - 2. Project record drawings shall be provided on Flash Drives to Owner in AutoCAD format, and shall be AutoCAD Release 10 or later edition.
- I. Comply with Section 01 78 00 - Closeout Submittals.

PART 2 PRODUCTS

2.1 HANDHELD LABELERS

- A. Provide labels for ISP Cable, OSP (horizontal) cables, racks, grounding busbars and as indicated.
- B. Size labels according to cable diameter and readability.
- C. Labels shall be machine made, thermal transfer type, and self-adhesive.
- D. Approved Manufacturers and Products:
 - 1. BMP41 as manufactured by Brady Worldwide, Inc., 6555 W. Hope Rd., Milwaukee, WI 53223, PO Box 2131, Milwaukee, WI 53201; Tel: 800-541-1686 Fax: 800-292-2289; Website: www.bradycorp.com.
 - 2. Rhino 5200 as manufactured by Dymo, a Div. of NewellRubbermaid, 3 Glenlake Parkway, Atlanta, GA 30328; Tel: 800-241-4324; Website: www.dymo.com.
 - 3. Spirit HD2100 as manufactured by HellermannTyton North America, 7930 N. Faulkner Rd., Milwaukee, WI 53224-9517; Tel: 800-537-1512; Fax: 800-848-9866; Website: www.hellermanntyton.us.
 - 4. PanTher LS8EQ as manufactured by Panduit . Website: www.panduit.com.

2.2 FACEPLATE, PATCH PANEL, AND WALL BLOCK LABELS

- A. Faceplates, patch panels, and wall blocks shall have integral slot for insertion of device identification labels.
- B. Where device does not have integral label insert, submit proposed labeling method.

2.3 GROUNDING AND BONDING CONDUCTORS

- A. Warning Marker: non-metallic, machine made, preprinted as wrap-around marker (flag marker is not acceptable) as manufactured by Panduit, LTYK Grounding and Bonding Label Kit.
- B. Identification Labels:
 - 1. Labels shall be self-laminating, machine made, and thermally printed.
 - 2. Label size varies with conductor size:
 - a. 18-14AWG: 1” (2.54cm) x 0.75” (1.90cm) label.
 - b. 12-10AWG: 1” (2.54cm) x 1.25” (3.18cm) label.

- c. 8-4AWG: 1" (2.54cm) x 2.25" (5.62cm) label.
 - d. 2-1AWG: 1" (2.54cm) x 4" (10.1cm) label.
 - e. 1/0-250kcmil: 1" (2.54cm) x 6.5" (16.21cm) label.
3. Labels shall be Panduit S100X***VAC or S100X***VAT, where *** denotes second dimension based on wire size.
 4. Equivalent identification labels manufactured by Brady Worldwide, Inc. or Hellermann Tyton, Inc. are acceptable.

PART 3 EXECUTION

3.1 GENERAL

- A. Comply with TIA/EIA-606-A – Administrative Standard for Commercial Telecommunications Infrastructure identification of communication devices, wiring, and system components.
- B. Labels shall be physically accessible and easily read.
- C. Communications rooms where cabling is terminated or originated are referred to in documents as MDF and IDF Rooms on floor plans and room finish schedules.
- D. Space numbers indicated on Dwg's are Owner's FISH (Florida Inventory of School Houses) numbers and shall be used to denote cable origination and termination points. FISH numbers have five digits (two digits for the building number followed by dash and three digits for space number). First floor spaces begin with 100, second floor spaces are 200 series and third floor spaces are 300 series.
- E. Sites will generally have one MDF room per site and each building will generally have one IDF room on each floor level unless the rooms on same floor exceed total cable run greater than 300' (90m) from IDF room.
- F. Typical space number for MDF would be 02-114 (Bldg. 02, Space 114 on the first floor). IDF space would be 02-211 (Bldg. 02, space 211 on the second floor).

3.2 LABELING

- A. Equipment Racks:
 1. Equipment racks shall be labeled with 0.375" (95.6mm) high text in Ariel font.
 2. Racks shall be numbered facing racks from left to right, from front (nearest access door) to back of space.
 3. Labels shall include Telecommunications Room (IDF/MDF).number followed by dash and rack number: Example: Rack 114-01, 114-02, 114-03, etc.
 4. Labels shall be placed at top and bottom of front and rear of each equipment rack.
- B. Patch Panels:
 1. Label shall be at center of patch panel with identification as PP# (example: A-Z, top to bottom, skipping I and O).
 2. Each rack starts over with new rack number and patch panel alpha labeling scheme to bottom, skipping I and O).
 3. Patch panels serving wireless access points, add "WAP" as suffix.
- C. Terminations for Patch Panels and 110-blocks.
 1. Utilize available inserts: print with inkjet or laser printer, including full labeling scheme.

2. Example of Patch Panel and 110-block description: 114-1-A01, where 114 is room number, "01" is Rack #1, "A" is patch panel "A", and "01" is patch panel position (add "WAP" suffix for outlets to wireless access points).
- D. Inside Plant (ISP) Horizontal Cabling:
1. Label within 6" (152mm) at both cable termination ends.
 2. Example of ISP description: 114-01-A01, where 114 is Telecommunications Room number, "01" is Rack #1, "A" is patch panel "A", and "01" is patch panel position (add "WAP" suffix for outlets to wireless access points).
 3. For cables routed through junction boxes and pull boxes, group cables together by destination (room) via velcro-strap, and flag (identify) that destination near velcro strap.
- E. Outside Plant (OSP) Horizontal Cabling:
1. Label transition point (if utilized) as "COMMUNICATIONS OSP TRANSITION POINT".
 2. Label cables at transition point within 6" (152mm) at both termination ends.
 3. Example of OSP description: 114-01-A01, where 114 is Telecommunications Room number, "01" is Rack #1, "A" is patch panel "A", and "01" is patch panel position (add "WAP" suffix for outlets to wireless access points).
- F. Faceplates:
1. Communications outlet faceplates shall be permanently marked with machine generated labels, complying with EIA/TIA 606, matching numbering plan on approved Shop Drawings.
 2. Utilize faceplate label inserts if available. If faceplate has no insert, attach directly to faceplate with adhesive label.
 2. Labels shall be mounted level and plumb with square edges and alignment with other faceplates.
 3. Example of faceplate description: 114-01-A01, where 114 is Telecommunications Room number, "01" is Rack #1, "A" is patch panel "A", and "01" is patch panel position (add "WAP" suffix for outlets to wireless access points).
- G. Copper Backbone (between Telecommunications Rooms):
1. Locate label within 6" (152mm) at both cable termination ends starting with nearest end identification with a slash mark followed by farthest end identification.
 2. Example of cable label description: 114-01:24:12/138-01:12:6, where the cable origination is located in Telecommunications Room number 114, "01" is Rack #1, "24" is panel in equipment rack, and 12 is port in panel 24. The cable termination is located in Telecommunications Room number 138, "01" is Rack #1, "12" is panel in equipment rack, and 6 is port in panel 12. Cable designation in Telecommunications Room number 138 is reversed (138-01:12:6/114-01:24:12).
- H. Fiber Backbone (between Telecom Rooms):
1. Locate label within 6" (152mm) at both cable termination ends starting with nearest end identification with a slash mark followed by farthest end identification

3.3 PATHWAYS

A. Conduit

1. Label exterior conduit as "COMMUNICATIONS" (unless otherwise noted) with text readable from standing position on finished floor.
2. For wall stub-up locations, for future use, label end of stub-up conduit in Telecommunications (MDF and IDF) Rooms only.

3. For overhead conduits, label both ends in Telecommunications (MDF and IDF) Rooms.
 4. For long runs of conduit that stub-up into Telecommunications (MDF and IDF) Rooms, label end of conduits in Telecommunications (MDF and IDF) Rooms with destination room name and number or locations without space numbers such as Elevators.
 5. Sleeves passing through single wall or floor do not have to be labeled, unless walls are fire rated.
- B. Junction Boxes and Pull Boxes:
1. Label exterior of junction boxes and pull boxes as “COMMUNICATIONS” with text readable from standing position on finished floor.
- C. Firestop Locations:
1. Communications firestop locations identified on Drawings shall be labeled on both sides of walls or floors. Comply with Section 07 84 00 – Firestopping.
- 3.4 GROUNDING
- A. Label TMGB (Telecommunications Main Grounding Bus Bar) as 114-TMGB, where 114 indicates room number where TMGB is located. The first digit of room number indicates first floor.
- B. Label TGB (Telecommunications Grounding Bus Bar) as 138-TGB, where 138 indicates room number where TGB is located. First digit of room number indicates first floor.
- C. Label grounding conductors within 12” (304mm) of both ends with warning marker and identification label.
1. Identification label shall include source and destination of grounding conductor.

END OF SECTION

SECTION 27 11 19
COMMUNICATIONS TERMINATION BLOCKS AND PATCH PANELS

PART 1 GENERAL

1.1. SCOPE OF WORK

- A. Supply and installation of terminal blocks, patch panels, and accessories in equipment rooms to provide fully functional communications system.

1.2. REFERENCES

- A. See Sections 01 42 00 – References and 27 05 00 - Common Work Results for Communications for additional reference standards, abbreviations, definitions and acronyms.
B. NFPA (National Fire Protection Association): NEC 70, 2011 Edition.

1.3. QUALITY ASSURANCE

- A. Comply with Section 01 45 00 – Quality Control.
- B. Horizontal Copper Rack Terminations
1. Horizontal cables for new construction shall be terminated in T568B pin/pair configuration. Terminate (punch down) four wiring pairs per jack port.
 2. Horizontal cables for existing buildings shall conform to existing termination scheme which may be either T568A or T568B.
 3. Cables shall be neatly dressed to respective patch panel and within rack cable management using Velcro cable ties and/or rack cable management loops. Cables shall not be bundled outside of rack, but shall be loose and random in cable tray.
- C. Fiber Rack Terminations
1. Terminate fiber on rack mounted patch panel. Fiber-optic connecting hardware shall support individually terminated fibers onto connectors. Adapter panels shall be limited to single type of fiber (multimode or single mode).
 2. Terminate fiber in appropriately sized, rack mountable enclosures.
 3. Enclosures shall be lockable (if room access is not controlled) and shall be sealed design to prevent accumulation of dust, dirt and moisture in panel.
 4. Optical patch panels shall meet ANSI EIA/TIA-568-A wiring standard for connecting hardware.
 5. Termination panels shall be mounted in top of rack or cabinet.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Approved Manufacturer's.
1. The Siemon Company, Siemon Business Park, 101 Siemon Company Dr., Watertown, CT 06795-0400; Tel: 860-945-4200; Fax: 860-945-4225; Website: www.siemon.com.
- B. Other manufacturers not listed shall comply with Section 01 25 13 - Product Substitution Procedures.
- C. Category 6A Copper Patch Panels
1. Manufacturer: Siemon Company.
 - a. Model #HD6-24, with 4-6 port modules, Cat 6 UPT HD patch panel, 1 RU.
 - b. Model #HD6-48, with 8-6 port modules, Cat 6 UPT HD patch panel, 1 RU.

D. Fiber Terminations

1. Manufacturer: Siemon Company:
 - a. Fiber housing, FCP3-DWR, 8 adapter plates, (RIC-F-SC6-01).

E. Patch Cords

1. Manufacturer: Siemon Company:
 - a. Model # MC6-7-06, MapPIT G2, Cat 6, UTP, double ended stranded modular cord with color matching boot, T568A/B, CMG.

- F. Additional materials needed to properly terminate and secure cables, including but not limited to panel and plate connectors, grounding kits, strain-relief hardware, break-out kits, blank panels and plates.

PART 3 EXECUTION

3.1 INSTALLATION

A. Horizontal Cable Rack Terminations.

1. Horizontal cable shall be installed per manufacturer printed instructions to ensure manufacturer certified solution.
2. Provide and install modular patch panels as indicated on Drawings.
3. Terminate horizontal cables in T568A pin/pair configuration. All four pairs shall be terminated.
4. Neatly dress cables to respective patch panel and within rack cable management using Velcro cable ties and rack cable management loops. Cables shall not be bundled outside of rack, but shall be loose and random in cable tray.
5. Provide identification labels for each cable in accord with Section 27 05 53 – Identification for Communications Systems.

B. Optical Fiber Rack Terminations

1. Provide and install rack-mounted optical fiber housings where indicated.
2. Terminate fibers using dual SC connector panels and plates, and fiber connectors.
3. Place fiber slack neatly in fiber housing.
4. Secure cable strength members to cable strain relief brackets or attachment points within fiber housing.
5. Install blank panels and plates to fill empty locations within fiber housings.
5. Install additional materials to properly terminate and secure inter-building and intra-building optical fiber cables, including panel and plate connectors, grounding kits, strain-relief hardware, break-out kits, blank panels and plates.
6. Provide identification labels for adaptors.

C. Wall Termination Fields

1. Wall field terminations shall be installed per manufacturer's written instructions to ensure manufacturer certified solution.
2. Install 110 blocks and protectors as indicated. Wall-mounted hardware, including cable management, shall be at or below 5'-6" (1.69m) from finished floor.
3. Cable management troughs shall be installed for cross-connect wires to be installed within troughs. Wire management may be adjusted during installation, if approved by Owner's Project Manager.
4. Locate cable management as needed to accommodate conditions. Cable management shall remain continuous for cross-connects between protectors and 110 blocks.
5. Provide 6" (152mm) clear space above and below top and bottom of connecting hardware for cable handling.

6. Service loops shall be secured to wall as needed and in unobtrusive manner. Service loops shall not block access to other cables, utilities, or other accessed structures (e.g. shut-off valves, meters, etc.). Service loops shall not rest horizontally on cable trays.
7. Wall fields shall be designed to minimize need to work behind equipment racks. Bussbars and BETs shall be located behind equipment racks and 110 blocks shall be accessible.
8. Wall field elements and pathways within spaces shall maintain minimum 3 ft (92.3 cm) separation from electrical service panels.

3.2 LABELING

- A. Terminal blocks, patch cords and patch panels shall be labeled in accord with Section 27 05 53 – Identification for Communications Systems.

END OF SECTION

SECTION 27 15 00
COMMUNICATIONS CABLING

PART 1 GENERAL

1.1. SCOPE OF WORK

- A. Single copper and multi-pair copper, fiber optical channel solution, riser or plenum rated cabling as required for horizontal cable and backbone fiber and copper distribution cable required for complete and fully functional communications system.

1.2 QUALITY ASSURANCE

- A. Comply with NFPA 70 - National Electrical Code; National Fire Protection Association; 2011 Edition.
- B. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms.
- C. See Section 01 45 00 – Quality Control for additional requirements.
- D. Only cable manufacturers who comply with Siemon warranty requirements will be allowed to bid this work.
- E. Project shall utilize Siemon System 6 solution. Installer and manufacturer shall provide warranty for single channel solution for complete and fully functional communications system.
- F. Cabling indicated shall be rated for plenum or riser locations, and as indicated for given environment.

1.3 SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures and Section 01 78 00 – Closeout Submittals.
- B. Product Data: Submit data for each specified product in accord with Section 01 33 00 – Submittal Procedures, and Section 27 05 00 – Common Work Results for Communications Systems.

1.4 WARRANTY

- A. Manufacturer and SCS installer shall warranty Cat 6 structured cabling system for end to end channel model installation covering applications assurance, cable, connecting hardware and labor cost for repair and replacement for twenty (20) years from date of project's substantial completion.
- B. See Sections 01 78 00 – Closeout Submittals and 27 05 00 – Common Work Results for Communications for additional warranty requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
- B. Protect products from damage during delivery, storage and installation. Replace damaged products at no added cost to Owner.

PART 2 PRODUCTS

2.1 CABLE MANUFACTURERS

A. Approved Cable Manufacturer's:

1. The Siemon Company, Siemon Business Park, 101 Siemon Company Dr., Watertown, CT 06795-0400; Tel: 860-945-4200; Fax: 860-945-4225; Website: www.siemon.com.
2. Berk-Tek, A Nexans Company, 132 White Rd., New Holland, PA 17557; Tel: 800-237-5835, 717-354-6200; Fax: 717-354-7944; Website: berktek.com.
3. General Cable Corporation, 4 Tesseneer Dr., Highland Heights, KY 41076; Tel: 859 572-8000; Fax: 859-572-8458; Website: www.generalcable.com.
4. Hitachi Cable America, Inc., 900 Holt Ave., Manchester, NH 03109; Tel: 603-669-4347, 800-772-0116; Fax: 603-669-6629; Website: hitachi-cable.com.
5. Superior Essex Cable, 6120 Powers Ferry Rd., Suite 150, Atlanta, GA 30339; Tel: 800-551-8948, 770-657-6000; Fax: 777-657-6154; Website: www.superioressex.com.

B. Other manufacturers not listed shall comply with Section 01 25 13 - Product Substitution Procedures.

2.2 COPPER HORIZONTAL CABLING

A. Unshielded twisted pair, 4-pair 100 ohm, Category 6, plenum and/or non-plenum, blue:

1. Siemon Company, Premium 6™, UTP, 4-pair cable.
 - a. Plenum: Part #9C6P4-E3-06-RXA (blue).
 - b. Riser: Part #9C6R4-E3-06-RXA (blue).
2. Berk-Tek, A Nexans Company, LANmark 1000 Enhanced Series 4-pair cable:
 - a. Plenum: Part #10032093 (blue).
 - b. Riser: Part #10032455 (blue).
3. Hitachi Cable America, Inc., Premium 4-pair cable.
 - a. Plenum: Part #: 30183-8 (blue).
 - b. Riser: Part #: 30212-8 (blue).

B. Category 6 Cabling Channel Performance shall meet following performance specifications for Data/Voice Drops:

Frequency	10 MHz	100 MHz	200 MHz	250 MHz	Units
Insertion Loss	6.3	21.3	31.5	35.6	Db
NEXT	56.6	39.9	34.8	33.1	Db
PSNEXT	54.0	37.1	31.9	30.2	Db
ELFEXT	43.3	23.3	17.2	15.3	Db
PSELFEXT	40.3	20.3	14.2	12.3	Db
Return Loss	19	12	9	8	Db
Delay	<555	N/A	N/A	N/A	N/Sec
Delay Skew	<50	N/A	N/A	N/A	N/Sec

2.3 COPPER BACKBONE CABLING

A. 25 Pair Copper backbone (Riser/Tie) telephone cabling shall be provided between MDF and IDF locations, continuous runs with no splices with ground shields at each end.

1. Building Interior Locations:
 - a. General Cable Corporation: CMR Category 3, 25 Pair, Part #2133033.
 - b. Hitachi Cable America, Inc.: Part #39228-50.
2. Outside Plant (direct burial) Locations:
 - a. General Cable Corporation: Part #PE89 Type, Category 3, 25 Pair, Part #7525785.
 - b. Superior Essex Cable: Caspic®-FSF RDUP PE-89, Cat 3, 25 Pair, Part # 09-97-92.

B. Category 3 Cabling Electrical Characteristics:

Frequency	Ins. Loss	Next Loss	ACR	Structural Return Loss	Units
1	2.6	41.3	38.7	12.0	dB/100m
4	5.6	32.3	26.7	12.0	dB/100m
8	8.5	27.8	19.3	12.0	dB/100m
10	9.7	26.3	16.6	12.0	dB/100m
16	13.1	23.2	10.1	10.0	dB/100m

C. Multi-Pair Cable Specifications:

1. Gage: 24 AWG.
2. DC Resistance: 27.3W/1000' (8.96W/100m), maximum.
3. Mutual Capacitance (at 1kHz).
4. Impedance: 100W (25 pair).
5. Buried/Underground Attenuation (db/1,000' [305m]) at 1.0 MHz: 6.4 (25 pair), maximum.
6. Aerial Cable Attenuation (db/1,000' [305m]) at 1.0 MHz: 6.7 (25 pair), maximum.

2.4 OPTICAL FIBER (Single Mode) CABLING

A. Single Mode Fiber Construction:

1. Number of fibers: 12 stand from MDF to IDF rooms.
2. Core/Cladding: 8.3/125 microns.
3. Buffering: 900 microns.
4. Fiber shall be optimized for VCSEL system. Fiber shall exceed TIA/EIA 568-B.3 and 10Gigabit Standards.
5. Sheath construction: Non-metallic.

B. Minimal Optical Specifications:

Fiber Type	SM 8.3/125
Wavelength	1310/1550
Maximum Attenuation (Db/Km)	.5/.5
Minimum Bandwidth (MHz.Km)	Unlimited
Gigabit Ethernet Min. Distance (m)	5000/NA

C. Singlemode Fiber Cable:

1. Siemon Company, 8.3/125 Micron, XGLO fiber.
 - a. 12 Strand: Part #-9F8LJ1-12D.
 - b. Riser: 4 Strand, Part #9C6R4-E3-06-RXA (blue).
 - c. Plenum: 4 Strand, Part #9C6P4-E3-06-RXA (blue).

2. Berk-Tek, A Nexans Company, LANmark 1000 Enhanced Series 4-pair cable:
 - a. Plenum: Part #10032093 (blue).
 - b. Riser: Part #10032455 (blue).
3. Hitachi Cable America, Inc., Premium 4-pair cable.
 - a. Plenum: Part #: 30183-8 (blue).
 - b. Riser: Part #: 30212-8 (blue).

2.5 OPTICAL FIBER (Multimode) CABLING

A. Multimode Fiber Construction:

1. Number of fibers: 12 stand from MDF to IDF rooms, and 4 strand from IDF rooms to D2FO (communications outlet) locations.
2. Core/Cladding: 50/125 microns.
3. Buffering: 900 microns.
4. Fiber shall be optimized for VCSEL system. Fiber shall exceed TIA/EIA 492.AAAC, and IEEE 802.3 10Gigabit Standards.
5. Sheath construction: Non-metallic.

B. Minimal Multimode Fiber Specifications:

Fiber Type	SM 50/125
Wavelength	850/1300
Maximum Attenuation (Db/Km)	3.5/1
Minimum Bandwidth (MHz.Km)	1500/500
Gigabit Ethernet Min. Distance (m)	900/600

C. Multimode Fiber Cable:

1. Siemon Company:
 - a. 12 Strand (50/125, Multimode) Fiber, Indoor/Outdoor, XGLO 10G300, OM2, Part # 9F5LJ1-12D.
 - b. 4 Strand (50/125, Multimode) Fiber, Riser Rated, OM3. Indoor cable, XLGO 10G300, Part # 9BB5R004C-T312A.
2. Berk-Tek/Ortronics:
 - a. 12 Strand (50/125, Multimode) Fiber, GIGAlite-10, OM2, Indoor/Outdoor, Part #OPD012-EB3010/25.
 - b. 6 Strand (50/125, Multimode), GIGAlite-10, riser rated, OM3, Premises Distribution cable, Part #PDR006-EB3010/25.
3. Hitachi Cable America:
 - a. 12 Strand (50/125, Multimode) Fiber, riser rated, OM2, 10 Gigabit, Part #60710-12.
 - b. 4 Strand (50/125, Multimode) Fiber, riser rated, OM3, 10 Gigabit, Part #60104-4.

PART 3 EXECUTION

3.1 PROJECT COORDINATION

- A. Comply with Section 01 31 00 – Project Coordination. Contractor/CM shall coordinate and conduct meeting with cabling installer and affected trades to plan, organize and facilitate timely and orderly work to minimize project delay and work interference between trades.
- B. Existing facility operations shall not be interrupted by communications installer’s work activities. Active cable plant associated with specific work activities beyond construction area shall not be disrupted.

- C. Circumstances (e.g. voice cutovers) that require service disruptions in existing facilities shall be scheduled with as much notice as possible. Service disruptions, if needed, shall be coordinated by Owner's Project Manager.

3.2 CABLING INSTALLATION

- A. Work shall be installed per manufacturer's printed instructions to ensure certified channel solution.
- B. Install plenum or non-plenum cable types, where indicated based on environmental conditions.
- C. Install horizontal cable in star topology with WAO's connected by cable directly to floor distributor.
- D. Horizontal cabling shall be terminated in IDF room on same floor as WAO's. Exceptions may be made, if approved in advance, by Owner's Project Manager.
- E. Cables routed through floors (poke-thrus, conduits, floor boxes, etc.) to utilize ceiling space on the level below may be routed to network room on adjacent floor (approved deviation from BICSI methodologies).
- F. Install cables, WAO's, and network room equipment installation in accord with methodologies contained in latest BICSI Telecommunications Distribution Methods Manual and Information Transport Systems Installation 5th Addition unless noted otherwise for cable attachments, firestopping, cable routing, equipment rack grounding & bonding, pulling tensions, and EMI protection methods.
- G. Cables placement in conduit shall not exceed fill capacities per ANSI/EIA/TIA-569.
- H. Upon entering floor distributor, separate cabling according to service application (voice, data, life safety and security), and extend around interior perimeter of room via specified cabling tray, and then routed to floor at furthest point of appropriate service backboard for voice, data, video systems.
- I. Smaller network rooms with cable tray extending directly from wall penetration to rack need not encircle room. Provide 5' (1.524m) cable service slack. Added cables shall follow established path.
- J. Provide 12" (305 mm) of cable slack in in-wall, surface-mounted, and raceway boxes, provided manufacturer's bend radius is not exceeded. Some of slack may be pulled back into junction boxes, raceways, cable trays, or concealed ceiling space. Slack beyond outlet box shall be easily pulled out of box and shall not be secured with cable ties or otherwise secured beyond box.
- K. Each type of material (fiber optic cable, equipment rack components and termination hardware) shall be selected and installed to be compatible with manufacturer's warranty.
- L. Cables shall be one continuous piece without splices.
- M. Cables may be installed within existing conduits, wire-ways or spaces if approved by Owner's Project Manager, where cables do not exceed conduit or junction box capacity. Cabling components and faceplates shall be new.
- N. Voice and data cables shall be color coded throughout building.
 - 1. Standard voice cables: white.
 - 2. Standard data cables: blue.

3. Security and life safety cables: red or placed in red conduit.
- O. Install pull strings with horizontal cables as cables are pulled.
- P. Specify placement of horizontal cables in cable trays in random overlapping fashion. Cable ties in cable tray shall not be used, except as needed to maintain bend radii when changing directions. Plastic cable ties shall not be used.
- Q. Install horizontal cable free of surface damage, kinks, twists, and with NO visible anomalies.
- R. Cables shall be labeled and documented as specified in Section 27 05 53 – Identification of Communications Systems.
- S. Copper horizontal cable lengths:
 1. Horizontal cables from IDF room to WAO's, shall not exceed 295' (90 m).
 2. Horizontal cables used for patch cords and cross-connect jumpers in MDF and IDF rooms, shall not exceed 16' (4.88 m).
 3. Provide 33' (10.6 m) allowance for combined length of patch cords and cables used to connect equipment at WAO and in MDF and IDF rooms.
 4. Total length for components shall not exceed 328' (100 m).
- T. Each horizontal data cable provided to individual WAO shall consist of 4-pair 100 ohm, Category 6, UTP cable.
- U. Coordinate with other trades to complete work above ceilings and below raised floors prior to ceiling tile and floor panel installation.
- T. Cabling shall not be exposed, except when in cable tray or within IDF and MDF rooms. Raceway shall be used in corridors to individual spaces where conduit shall run perpendicular into spaces and to WAO locations.

END OF SECTION

SECTION 27 15 43
COMMUNICATIONS FACEPLATES AND CONNECTORS

PART 1 GENERAL

1.1. SCOPE OF WORK

- A. Wall outlet faceplates for single and multiple gang wall plates for wall and ceiling locations indicated to provide complete and functioning communications system.

1.2. REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms.
- B. National Fire Protection Association (NFPA): NFPA 70, National Electrical Code, 2011 Edition.

1.3. DESIGN REQUIREMENTS

A. Wall Outlets:

- 1. Communication outlets containing copper services shall be equipped with 8-position modular jacks (RJ45 type).
- 2. Communication outlets containing fiber services shall be equipped with SC type connections for multi mode or single mode cabling terminations.
- 3. Outlet/connector box shall provide space for fiber cable connection with minimum 1.18” (30mm) bend radius and 3.28’ (1m) cable coils for termination.
- 4. Outlet boxes where indicated shall be sized to accommodate both copper and fiber cabling.
- 5. Outlets shall consist of single and multiple outlets with corresponding sized wall plates as indicated. Provide blank module inserts for unused modules. Module types shall be as indicated.

B. Floor Outlets:

- 1. Multi-service floor outlets shall have single gang wall plate for communications inside floor box with blank module inserts for unused module locations.

C. Modular furniture outlets shall have modular furniture faceplate capable of housing four 8-position modular connectors, with blank module inserts for unused module locations.

D. Surface mounted boxes and raceway outlets, power pole outlets and faceplates are only allowed for use in retrofitting existing facilities.

E. Four pair wiring assignments for modular jacks shall be per T568B wiring pin assignments and as indicated.

F. See Section 27 05 53 – Identifications for Communications Systems for outlet labeling.

1.4. QUALITY ASSURANCE

A. Provide single channel solution for project with Siemens System 6 solution.

B. Systems installer shall be certified and trained by manufacturer to install listed products.

C. Installer shall maintain Registered Communications Distribution Designer on staff to supervise and direct installation.

1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's data sheets for specified products in accord with Sections 01 33 00 – Submittal Procedures.
- B. Shop Drawings:
 - 1. Provide scaled drawings (not less than 1/8" = 1'-0") indicating location and type/part number of faceplates to be used. Information may be included with submittal for drawing requirements required in Section 27 05 53 – Identification of Communications Systems.
 - 2. Drawings shall show locations, mounting heights, typical installation details for data outlets in each space.
 - 3. Faceplates, connector modules, blank plates, specific outlet designator, wire and outlet type shall be identified and follow same nomenclature noted in Communications System Drawings.
- C. Comply with Section 01 78 00 – Submittal Procedures for Project Record Drawings, Warranties and other closeout documents.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
- B. Protect products from damage during delivery, storage and installation. Replace damaged products at no added cost to Owner.

1.8 WARRANTY

- A. Structured Cabling System (SCS) shall be provided by manufacturer for channel configuration including cable, jacks, patch cords, patch panels specifically approved for channel configuration with manufacturer's components.

PART 2 PRODUCTS

2.1 FACEPLATES

- A. Modular Faceplates:
 - 1. Siemon:
 - a. MAX Modular Faceplate, stainless steel, 4-port (MX-FP-S-06-L, single gang.
 - b. Blank Insert, MX-BL-02, as needed.
 - c. Outlet Type Designator: Siemon CT-FP-LBL-104 (10-8.5" x 11") label sheets with 100 color coded strips.
 - d. Blank Snap In Tabs: Model # CT-ICON-XX (color as required).
- B. Wall Phone Faceplate:
 - 1. Siemon Max Series Stainless Steel (Keystone Max Module included), Part # MS-WP-Z6.
- C. Surface Mount Boxes:
 - 1. Siemon: CT4-BOX-02, single gang.
- D. Raceway faceplates and adapters:
 - 1. Wiremold 4000 or 5000 series - Device Mounting Bracket with applicable hardware.
 - 2. Raceway parts as required by same manufacturer.

2.2 CONNECTOR MODULES

- A. Angled Cat 6 Modules:
 - 1. Siemon: MAX 6 Model # MX6-04, gray, with dust covers.

- a. Blank Inserts: Model # MX-BL-02.
- B. Cat 6 UTP Outlets:
 - 1. Siemon Model # MX6-F04, gray color.
 - 2. Ortronics: CAT6 Clarity6 TracJack module, fog white, Model # OR-TJ600-88 (Wiremold Gray), 180 degree exit.

PART 3 EXECUTION

3.1 PROJECT COORDINATION

- A. Facility operations shall not be interrupted by communications installer's work activities. Active cable plant associated with specific work activities beyond construction area shall not be disrupted.
- B. Circumstances (e.g. voice cutovers) that require service disruptions in existing facilities shall be scheduled with as much notice as possible. Service disruptions, if needed, shall be coordinated by Owner's Project Manager.
- C. Work area outlets shall comply with ADA requirements for placement. Utility rooms and mechanical spaces are not required to follow ADA guidelines and locations shall be placed as indicated or as relocated in consultation with AE and Owner's Project Manager.

3.2 FACEPLATE AND CONNECTOR INSTALLATION

- A. Outlets shall be terminated in T568A pin/hair configuration. All four pairs shall be terminated.
- B. Project in new facilities shall not use surface-mount boxes. In existing facilities surface-mounted boxes may be used if boxes are shallow, wall-mounted boxes with outlets on side, not on face, of box.
- C. Install outlet modules where indicated. Immediately notify Contractor/CM of conditions preventing outlet box installation where indicated. Contact Owner's Project Manager if project has no Contractor/CM.
- D. Terminate outlets in T568A pin/pair configuration. All four pairs shall be terminated.
- E. Provide and install blank modules in faceplates, as required.
- F. Wall phone installations.
 - 1. Install 4-conductor plate, connecting blue conductor to red terminal, blue and white conductor to green terminal. Wrap remaining conductors around cable jacket. Do not trim these conductors back to jacket.
 - 2. Owner acknowledges this is deviation from ANSI/TIA/EIA and BICSI requirements and acknowledges this installation is not within parameters of approved manufacturers' solutions for voice cabling.
- G. Cover outlet openings and shutters with masking tape, if other construction is taking place in area. Tape shall be applied with sufficient pressure to ensure up to 60 days of adhesion. Tape shall not wrap around edges of faceplate or surface-mount box.
- H. Install outlets in neat and professional manner per industry standards.
- I. Install outlets where indicated.
- J. Label outlets as indicated and in accord with Section 27 05 53 – Identification for Communications Systems.

- K. WAO's shall be installed per manufacturer printed installation instructions to ensure certified channel solution.

END OF SECTION

SECTION 27 16 19
COMMUNICATIONS PATCH CORDS, STATION CORDS, AND CROSS CONNECT WIRE

PART 1 GENERAL

1.1. SCOPE OF WORK

- A. Stations cords, patch cords and connectors for communications cabling for communications system in sizes, types and locations indicated.

1.2. REFERENCES

- A. See Section 01 42 00 – References for additional reference standards, definitions, abbreviations and acronyms.
- B. National Fire Protection Association (NFPA): NFPA 70, National Electrical Code, 2011 Edition.

1.3. DESIGN REQUIREMENTS

- A. Provide single channel solution for project with either Siemens System 6 solution or Ortronics NetClear GT2 solution.
- B. Wall Outlets:
 - 1. Communication outlets containing copper services shall be equipped with 8-position modular jacks (RJ45 type).
 - 2. Communication outlets containing fiber services shall be equipped with SC type connections for multi mode or single mode cabling terminations.
 - 3. Outlet/connector box shall provide space for fiber cable connection with minimum 1.18” (30mm) bend radius and 3.28’ (1m) cable coils for termination.
 - 4. Outlet boxes where indicated shall be sized to accommodate both copper and fiber cabling.
 - 5. Outlets shall consist of single and multiple outlets with corresponding sized wall plates as indicated. Provide blank module inserts for unused modules. Module types shall be as indicated on T-Drawings.
- C. Floor Outlets: Multi-service floor outlets shall have single gang wall plate for communications inside floor box with blank module inserts for unused module locations.
- D. Modular furniture outlets shall have modular furniture faceplate capable of housing four 8-position modular connectors, with blank module inserts for unused module locations.
- E. Surface mounting boxes and raceway outlets, power pole outlets and faceplates are only allowed for use in retrofitting existing facilities.
- F. Four pair wiring assignments for modular jacks shall be per T568B wiring pin assignments and as indicated.
- G. See Section 27 05 53 – Identifications for Communications Systems for outlet labeling.

1.4. QUALITY ASSURANCE

- A. Comply with Section 01 45 00 – Quality Control.
- B. Systems installer shall be certified and trained by manufacturer to install listed products.
- C. Installer shall maintain Registered Communications Distribution Designer on staff to supervise and direct installation.

1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's data sheets for specified products in accord with Sections 01 33 00 – Submittal Procedures.
- B. Shop Drawings:
 - 1. Provide scaled drawings (not less than 1/8" = 1'-0") indicating location and type/part number of faceplates to be used. Information may be included with submittal for drawing requirements required in Section 27 05 53 – Identification of Communications Systems.
 - 2. Drawings shall show locations, mounting heights, typical installation details for data outlets in each space.
 - 3. Connector modules, specific outlet designator, wire and outlet type shall be identified and follow same nomenclature noted in Communications Symbol Legend on T-Drawings.
- C. Comply with Section 01 78 00 – Submittal Procedures for Project Record Drawings, Warranties and other closeout documents.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Comply with Section 01 66 00 – Product Storage and Handling Requirements.
- B. Protect products from damage during delivery, storage and installation. Replace damaged products at no added cost to Owner.

1.8 WARRANTY

- A. Structured Cabling System (SCS) shall be provide by manufacturer for channel configuration including cable, jacks, patch cords, patch panels specifically approved for channel configuration with manufacturer's components

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURES

- A. The Siemon Company, Siemon Business Park, 101 Siemon Company Dr., Watertown, CT 06795-0400; Tel: 860-945-4200; Fax: 860-945-4225; Website: www.siemon.com.
- B. Other manufacturers shall be approved and products installed shall be warranted by Siemon in accord with Section 27 05 00 – Common Work Results for Communications.

2.2 MODULAR WORK STATION CORDS

- A. Data work station cords and patch cords shall be black, double ended, 4-pair, UTP, T568A/B, clear boot, with round, 24 AWG copper, stranded conductors insulated with high density polyethylene and jacketed with flame retardant PVC.
- B. Cords shall be component part of CAT 6 channel solution.
- C. Work Station Cords:
 - 1. Siemon: Part #MC6-07-01 Work Station Cords.

2.3 DATA PATCH CORDS

- A. Provide one modular patch cord for each copper Cat 6 data Channel used at patch panels in MDF and IDF locations indicated.
 - 1. Siemon: Part #MC6-10-01

2.4 FIBER OPTIC CONNECTORS

- A. Fiber Optic Adaptor shall be Multimode SC, Angled adaptor, one piece construction.

- B. Adapter shall maintain 0.5" (12.7mm) center spacing when mounted in optical fiber communications outlet. Multimode adapters shall be gray color.
- C. Manufacturer:
 - 1. Siemon Anaerobic SC Type; Part #FC2-SC-MM-B80.

2.5 CROSS CONNECT WIRE

- A. Connector Modules:
 - 1. Siemon: CAT6 MAX 6.

PART 3 EXECUTION

3.1 PROJECT COORDINATION

- A. Facility operations shall not be interrupted by communications installer's work activities. Active cable plant associated with specific work activities beyond construction area shall not be disrupted.
- B. Circumstances (e.g. voice cutovers) that require service disruptions in existing facilities shall be scheduled with as much notice as possible. Service disruptions, if needed, shall be coordinated by Owner's Project Manager.
- C. Work area outlets shall comply with ADA requirements for placement. Utility rooms and mechanical spaces are not required to follow ADA guidelines and locations shall be placed as indicated or as relocated in consultation with AE and Owner's Project Manager.

3.2 FACEPLATE AND CONNECTOR INSTALLATION

- A. Outlets shall be terminated in T568A pin/hair configuration. All four pairs shall be terminated.
- B. Project in new facilities shall not use surface-mount boxes. In existing facilities surface-mounted boxes may be used if boxes are shallow, wall-mounted boxes with outlets on side, not on face, of box.
- C. Install outlet modules where indicated. Immediately notify Contractor/CM of conditions preventing outlet box installation where indicated. Contact Owner's Project Manager if project has no Contractor/CM.
- D. Terminate outlets in T568A pin/pair configuration. All four pairs shall be terminated.
- E. Provide and install blank modules in faceplates, as required.
- F. Wall phone installations.
 - 1. Install 4-conductor plate, connecting blue conductor to red terminal, blue and white conductor to green terminal. Wrap remaining conductors around cable jacket. Do not trim these conductors back to jacket.
 - 2. Owner acknowledges this is deviation from ANSI/TIA/EIA and BICSI requirements and acknowledges this installation is not within parameters of approved manufacturers' solutions for voice cabling.
- G. Cover outlet openings and shutters with masking tape, if other construction is taking place in area. Tape shall be applied with sufficient pressure to ensure up to 60 days of adhesion. Tape shall not wrap around edges of faceplate or surface-mount box.
- H. Install outlets in neat and professional manner per industry standards.
- I. Install outlets where indicated.

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- J. Label outlets as indicated and in accord with Section 27 05 53 – Identification for Communications Systems.
- K. WAO's shall be installed per manufacturers written instructions to ensure certified channel solution.

END OF SECTION

SECTION 27 18 00
COMMUNICATIONS TESTING

PART 1 GENERAL

1.1. SCOPE OF WORK

- A. System validation testing for voice and data communications cabling and connecting hardware for verification that structured cabling system has been installed properly and performs as specified.
- B. Communications system validation testing shall in accord with ANSI/TIA 568.B.1, for Category 6 Structured Cabling System (SCS).

1.2. QUALITY ASSURANCE

- A. Comply with Section 01 45 00 – Quality Control.
- B. Installed voice and data communications systems to verify that cable has been installed and functions properly.
- C. Perform validation testing on horizontal and backbone cabling testing in accord with ANSI/TIA/EIA-568-B.1 and CAT6 addendum for copper cabling.
- D. Third Party Testing: Owner may elect to employ independent testing and certification firm to provide testing of all or part of Structured Cabling System.
- E. SCS installer shall set wiring tester for channel configuration for DATA which includes patch cord, patch panel, UTP Cable, work-area jack and work area cord, with permanent link configuration for VOICE.
- F. SCS installer's RCDD shall sign off on copper and fiber optic cable test results, indicating that cable testing procedures and cables testing are in compliance with contract documents and referenced standards.

1.3. SUBMITTALS

- A. Comply with Section 01 33 00 – Submittal Procedures.
- B. Comply with Section 01 78 00 – Closeout Submittals.
- C. Provide list of test equipment proposed for certification testing for review prior to testing.
- D. Provide names of personnel performing testing. Personnel shall have attended training program in operation of specified manufacturer's equipment and shall provide certificates demonstrating successful completion of training.
- E. Test Results:
 - 1. Provide Owner's Project Manager with printed and electronic forms of test results as noted in Part 3 Execution.
 - 2. Test results shall be unedited and as presented by tester's software. Provide software from tester's manufacturer with test results to enable viewing of test results in native format.

1.6 PROJECT CONDITIONS

- A. Owner reserves right to be present during testing.

- B. For additions and renovations to existing occupied facilities, testing of existing and active connections is likely to be restricted until after normal working hours. Owner's Project Manager will determine if testing can occur during normal business hours.
- C. Testing shall occur only after channel is installed. If channel components are moved or re-positioned after testing, retest cables, faceplates, and other components in final position.

1.7 WARRANTY

- A. Warranty: Comply with Section 27 05 00 – Common Work Results for Communications, Para. 1.09.
- B. Manufacturer shall provide 20-year Channel Performance Warranty for complete communications system.
 - 1. System shall be Siemon Systems 6 solution.
 - 2. Manufacturer's shall warranty worst-case performance data for installed cabling system, and performance data indicated in warranty documents/certificate.
 - 3. Twenty (20) year warranty for Cat 6 structured cabling system shall provide for end to end channel model installation which covers applications assurance, cable, connecting hardware, and labor cost for repair or replacement.
 - 4. Warranty shall indicate compliance with Margin claimed by manufacturer's over Cat 6 channel specifications on transmission parameters across entire frequency range of 1-250 MHz as indicated in manufacturer's catalogs and product literature.
- C. SCS installer shall provide 3 year warranty for communications system installation to include materials and labor warranty for replacement of defective installation or equipment including cables, jacks, patch cords, patch panels, devices and cabling.
- D. Date of warranty period shall begin from date of project's substantial completion.

PART 2 PRODUCTS

2.1 APPROVED TESTING EQUIPMENT

- A. Approved Copper Cable Testing Equipment Manufacturer's:
 - 1. Agilent Technologies, Inc., Electronic Test & Measurement Div., P.O. Box 4026, Englewood, CO 80155-4026; Tel: 800-829-4444; Fax: 800-829-4433; Website: www.agilent.com.
 - 2. Fluke Networks, Inc., 6920 Seaway Blvd., Everett, WA 98203; Tel: 425-446-4519; Website: www.flukenetworks.com.
 - 3. IDEAL Industries, Inc., Becker Place, Sycamore, IL 60178; Tel: 800-435-0705; Fax: 800-533-4484; Website: www.idealindustries.com.
 - 4. JDS Uniphase Corp., Wavetek Div., 430 N. McCarthy Blvd., Milpitas, CA 95035; Tel: 408-546-5000; Fax: 408-546-4300; Website: www.jdsu.com.
- B. Approved Fiber Optic Cable Testing Equipment Manufacturer's:
 - 1. Agilent Technologies, Inc., Electronic Test & Measurement Div., P.O. Box 4026, Englewood, CO 80155-4026; Tel: 800-829-4444; Fax: 800-829-4433; Website: www.agilent.com.
 - 2. Fluke Networks, Inc., 6920 Seaway Blvd., Everett, WA 98203; Tel: 425-446-4519; Website: www.flukenetworks.com.
 - 3. IDEAL Industries, Inc., Becker Place, Sycamore, IL 60178; Tel: 800-435-0705; Fax: 800-533-4484; Website: www.idealindustries.com.

4. Anritsu Company, Inc., GN NETTEST Div., 1155 East Collins Blvd., Suite 100, Richardson, TX 75081; [Tel:972-644-1777](tel:972-644-1777); Fax: 972-671-1877; Website: anritsu.com.
 5. AFL Global, Inc., Noyes Test and Inspection Div., 170 Ridgeview Center Dr., Duncan, SC 29334; Tel: 800-235-3423; Fax: 864-433-0333; Website: www.aflglobal.com.
 6. Tektronix, Inc., 14200 SW Karl Braun Dr., P.O. Box 500, Beaverton, OR 97077; Website: www.tek.com.
 7. JDS Uniphase Corp., Wavetek Div., 430 N. McCarthy Blvd., Milpitas, CA 95035; Tel: 408-546-5000; Fax: 408-546-4300; Website: www.jdsu.com.
- C. Other test equipment manufacturers shall submit requests for product substitution in accord with Section 01 25 13 – Product Substitution Procedures.

PART 3 EXECUTION

3.1 GENERAL

- A. Owner reserves right to be present during testing.
- B. Provide required test equipment and personnel necessary to support certification and validation tests indicated and in accord with Section 01 45 00 – Quality Control.
- C. Fail, fail*, Pass*, or Warning test result yields Fail result for channel or permanent link under test. To achieve overall Pass condition, result of each individual test shall be Pass. Test results shall come from tester with permanently enabled marginal reporting feature.
- D. Test result shall indicate compliance with margin claimed by manufacturer over Cat 6 channel specifications for frequency range of 1-250 MHz as indicated in manufacturer’s catalogs and product literature.

3.2 CATEGORY 6 COPPER CABLE TESTING

- A. Category 6 field testing shall be performed with approved Level III balanced twisted-pair field test device.
- B. Installed category 6 channels shall comply with ANSI/TIA/EIA standards for Category 6. Use cable manufacturer’s test standards if more stringent.
- C. Category 6 balanced twisted-pair horizontal and backbone cables shall not exceed 90 m (295 ft) for basic link, and 100 m (328 ft) for channel shall be tested per ANSI/TIA/EIA-568-B.2. Test parameters include wire map plus ScTP shield continuity (when present), length, NEXT loss (pair-to-pair), NEXT loss (power sum), ELFEXT (pair-to-pair), ELFEXT loss (power sum), return loss, insertion loss, propagation delay, and delay skew.
- D. Copper riser cabling for VOICE shall be tested for length, continuity, polarity, checks and wire map.

3.3 COPPER TEST EQUIPMENT

- A. Balanced twisted-pair field testers shall be factory calibrated each calendar year by field test equipment manufacturer as stipulated by manuals provided with field test unit. Calibration certificate shall be provided to Owner’s Project Manager for review prior to start of testing.
- B. Set testers to correct cable, by manufacturer and name, to ensure correct parameters are used during testing. Test settings selected from options provided in field testers shall be compatible with installed cable under test.
- C. Level III balanced twisted-pair field test device. Scanners shall be in good working order and have current calibration stickers from manufacturer-approved calibration facility.

- D. Balanced twisted-pair field testers shall be factory calibrated each calendar year by field test equipment manufacturer as stipulated by manuals provided with field test unit.
- E. Set tester manufacturer's cable and name, to ensure using correct parameters during testing. Test settings selected from options provided in field testers shall be compatible with installed cable under test.

3.4 CATEGORY 6 TESTING

- A. Category 6 testing shall be performed with approved Level III balanced twisted-pair field test device. Scanners shall be in good working order with current calibration stickers from manufacturer's approved calibration facility.
- B. Installed Category 6 channels shall comply with ANSI/TIA/EIA standards or use cable manufacturers test standards to certify total solution installed, if more stringent.
- C. Category 6 balanced twisted-pair horizontal and backbone cables shall not exceed 90 m (295 ft) for basic link, and 100 m (328 ft) for channel shall be 100 percent tested in accord to ANSI/TIA/EIA-568-B.2.
- D. Provide test results indicating CAT 6 cable tests in text files on flash drive(s), and two print copies in 3-ring binders. Provide text files for each building. Each test page shall be separated by standard page break (one test per page).

- E. Cat 6 Channel Performance Testing Requirements shall meet or exceed following:

Frequency	10 MHZ	100 MHZ	200 MHZ	250 MHZ	UNITS
Insertion Loss	6.3	21.3	31.5	35.6	DB
NEXT	56.6	39.9	34.8	33.1	DB
PSNEXT	54.0	37.1	31.9	30.2	DB
ELFEXT	43.3	23.3	17.2	15.3	DB
PSELFEXT	40.3	20.3	14.2	12.3	DB
Return Loss	19.0	12.0	9.0	8.0	DB
Delay	<555	N/A	N/A	N/A	NSec
Delay Skew	<50	N/A	N/A	N/A	NSec

- F. Calculations shall be derived from tests and provide results for following:
 1. Continuity.
 2. Polarity checks.
 3. Wire map.
 4. Attenuation.
 5. PSNEXT.
 6. PSFEXT.
 7. ELFEXT.
 8. PSELFEXT.
 9. ACR.
 10. Installed length of CAT 6 cable.
- G. Correct cable NVP shall be entered into test equipment to ensure proper length and attenuation readings. Cables not in accord with EIA/TIA 568B, Category 6 tests shall be identified to AE and RCDD for corrective action. Cable replacement shall be at no additional cost to Owner.
- H. Data jacks in each outlet shall be tested for CAT 6 compliance in channel configuration to verify integrity of conductors and correctness of termination sequence indicated.

- I Prior to testing UTP runs, test equipments shall be calibrated per manufacturer’s printed guidelines. Correct cable NVP shall be entered into test equipment to ensure proper length and attenuation readings.

3.5 FIBER OPTIC TEST EQUIPMENT

- A. Optical fiber test equipment shall be factory calibrated (with date of last calibration) as recommended by field test equipment manufacturer. Manufacturer’s calibration certificates shall indicate equipment name and serial number, and shall be provided for review prior to start of testing.

3.6 OPTICAL FIBER CABLING TESTING

- A. Optical fiber horizontal and backbone cabling shall be verified in accord with ANIA/TIA/EIA-568-B.1 with Addendum for fiber optic cabling testing.
- B. Each strand in fiber optic cables shall be tested for correctness of termination, overall transmission loss, and defects using approved Optical Time Domain Reflectometer (OTDR) and power meter.
- C. Tests shall be performed for reach stand of fiber in two-way averaging measurement of fiber. Engineer of record shall be notified at least one week prior to testing to allow his observation of testing optical fiber strands for insertion loss and length and bi-directional OTDR tests on OSP optical fiber strands.
- D. Test for insertion loss at 850 nm and 1300 nm per TIA/EIA-526-14 method B, one jumper reference. System loss measurements (both calculated and measured) shall be provided for 50/125mm multimode cabling in at least one direction.
- E. Test for insertion loss at 1310 and 1550 for single mode cabling in at least one direction using Method A.1 (1-jumper) test procedure as specified in ANSI/TIA/EIA-526-7.
- F. Acceptable losses shall calculate allowable attenuated loss based on final installed length, attenuation coefficient, and connector loss per attached chart.
- G. Fiber Optic links compliance tests with following loss budget for link types:

Fiber Insertion Loss			
Link Type	Loss (dB)	Wavelength (nm)	Length (m)
Horizontal, MM	≤2.0	850 or 1300	≤90
Backbone, MM	≤3.5/km + 0.75/conn +0.3/spl	850	≤2000
	≤1.5/km + 0.75/conn +0.3/spl	1300	≤2000
Backbone, SM	≤1.0/km + 0.75/conn +0.3/spl	1310	≤3000
	≤1.0/km + 0.75/conn +0.3/spl	1550	≤3000
Centralized, MM	≤3.3	850 or 1300	≤90

H. Channel attenuation for Gigabit Ethernet shall be per IEEE 802.3z as noted below:

Maximum Channel Attenuation (dB)			
Fiber Type	50/125μ		
1000BASE-SX	3.2		
1000BASE-LX	4		

I. Test Reports:

1. Certification report shall be provided listing both calculated and measured loss for each fiber optic strand and submitted with test results as noted above. Cable lengths shall be verified with OTDR or Light Source/Power Meter with length testing capacity.
2. Provide printed and electronic forms of tests results. Test results shall be unedited and as presented by tester's software. Supplemental summaries may be provided to Owner's Project Manager. Provide Fiber performance calculation worksheets and fiber link attenuation records as illustrated in Section 21 (Figures 21.14 and 21.15) of BICSI Telecommunications Cabling Installation Workbook, Technician, 2nd Edition.
3. Test reports shall indicate fiber wavelength, fiber and cable manufacturer's part numbers, type, attenuation, bandwidths specifications, and measurement direction.

J. Test optical fiber strands for insertion loss and length. Perform bi-directional OTDR tests on OSP optical fiber strands. OTDR trace(s) shall be in project closeout submittals.

K. Calculate allowable attenuated loss based on final installed length, attenuation coefficient, and connector loss.

L. Immediately remediate strands testing above calculated limits.

M. Owner reserves right to have third party testing to confirm test results. Remediate, at Contractor's expense, strands exceeding calculated limits by third party testing.

3.7 COMMUNICATIONS AND GROUNDING SYSTEM TESTING

A. See Section 27 05 26 – Grounding and Bonding for Communications Systems.

B. Testing shall be performed for impedance of bonds of grounding system, including cable armor bonding to ground. Impedance of two-point bonding test across any bond shall not exceed 0.1 ohm. Remediate bond(s) over limit or which contribute to total impedance exceeding 0.1 ohm from any point in network room to bussbar in that room.

C. Bonds installed shall be tested for impedance with earth ground resistance test in its two-point setup (LEM Handy GEO tester, or approved testor). Place QA label (with date and inspector) in proximity to each bond tested.

D. Test grounding conductors, once installed, for current. Measure AC and bi-directional DC current. Report AC current over 1 Amp. Report any DC current, in either direction, over 500 miliamps.

END OF SECTION

SECTION 28 13 10
ACCESS CONTROL SYSTEM

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 01, General Requirements, are included as a part of this Section as though bound herein.

1.2 PERFORMANCE REQUIREMENTS

- A. Purpose:
1. Provide electronic card access control system for all new construction and renovation projects.
 2. Electronic card access shall be located at designated perimeter doors leading to each of the program areas with electric re-strike rim exit device, controlled by card access system.
 3. Electronic card access control system shall include all necessary components, wiring for power and control to sensors, card access controls, door hardware devices, uninterruptible power supply system (UPS) and capable of interfacing with existing AMAG software for a complete operable and fully integrated system that is capable of control through the internet.
 4. Raceway system shall consist of conduit, J-hooks, sleeves, boxes and wiring for an automatic card access system.
 5. Electronic card access system shall be independent from Section Intrusion Detection System and shall be an internet-based control system, connected to SJCSO main security control center.
 6. The system shall shunt the alarm system to allow passage through the doors when access card is swiped then rearm the alarm system when the door closes. On egress a passive infrared sensor shall shunt the alarm and unlock the door allowing for passage out of the building then resetting the alarm when the door closes.
- B. The System shall include but not be limited to:
1. Main Cabinet shall be surface mounted steel construction, AMAG Panel Model # 2100 installed on a plywood backboard. Main cabinet shall be installed in the MDF Room, including all required power supplies, batteries, integral charger and the software for a complete fully operational system.
 - a. Backboard: Plywood, 1/2 inch thick, AC Grade, covered with two coats of UL Classified, fire retardant intumescent paint, light gray color, painted front, rear, and all four sides.
 - b. Backboard shall be clearly labeled with the name of the backboard manufacturer, UL classification of the Fire Retardant Coating with the NFPA 255 Coating Flame Index and the APA Grade of the plywood. Backboard shall be securely fastened to the wall in order to support any and all attached equipment.
 2. Each cabinet shall feed a minimum of eight controlled devices (readers).
 3. Surge suppression for the 120 VAC power supply.
 4. Card readers.
 5. The distribution cabinet must be within 300 feet of the controlled devices.

6. Raceway shall not exceed 400 feet without a pull box.
 7. Grounding.
 8. Raceway, fittings, wire and wire fittings.
 9. A 2 inch raceway from the main cabinet to the next building and floor distribution cabinet.
 10. Wire and cable labeling.
 11. Programming Software that is capable of interfacing with AMAG system.
 12. Electrical power required to comply with all functions and operations required for the system.
- C. Access Card Locations: Provide a card reader/controlled device at the following locations:
1. All designated perimeter doors at the discretion of SJCSO Site Security and/or Electrical Engineer.
 2. Other doors may be installed to include;
 - a. Principal's Office
 - b. Bookkeeper's Office
 - c. AV Storage
 - d. CCTV Studio Area
 - e. Custodial Receiving
 - f. MDF Room
 - g. Other areas as defined in the plans specific review process

1.3 QUALITY ASSURANCE

- A. Installer Qualifications:
1. The Contractor shall use personnel who are manufacturer-certified, thoroughly trained and experienced with the specified requirements and methods needed for the proper performance of the work.
- B. Manufacturer Qualifications:
1. Manufacturer shall have completed a minimum of five projects of equal scope to systems described herein and shall have been in the business of supplying and installing specified type of systems for a minimum of five years.
- C. Fabricator Qualifications Mockups:
1. Fabricator shall have completed a minimum of five projects of equal scope to systems described herein and shall have been in the business of supplying and installing specified type of systems for a minimum of five years.

1.4 SUBMITTALS

- A. Shop Drawings:
1. Shop Drawings shall be prepared in latest version of AutoCAD 2006 or later format with electronic copies submitted along with full sized Shop Drawings.
 2. Shop Drawings shall indicate typical wire connections and cable types, keypad locations, and all main and remote panels. Provide wiring schematics including point-to-point, terminal strips, connections to batteries, and power supplies, including the estimated anticipated wiring lengths required for all connection points (i.e., zone and system communications bus runs) within the system. Indicate interfaces to equipment furnished by others.

3. Submit dimensioned Shop Drawings indicating mechanical layout of all card access equipment, including cabinets and interconnecting conduit for the main panel, typical remote panel, keypad and indicator locations, identifying all parts by manufacturer and part number.
 4. Shop Drawings shall be accompanied by engineering documentation including:
 - a. Floor Plans indicating all components, raceways, and terminal boxes and cabling.
 - b. Riser diagram indicating all connections in a manner following the floor plan layout.
 - c. Cabling diagram indicating the Contractor's designed routing and number of cables in specific raceways or conduits, from the main panel connecting to other sub-panels, modules or devices. Diagram shall include length, in wire feet, and capacitance calculation charts for all cables.
- B. Warranty Requirements:
1. Contractor shall warranty that all materials furnished shall be free from defects of material for a period of one year excluding specific items of work that require a warranty of a greater period that may be set forth in this Specification. Contractor shall warranty that workmanship for a period of one year from date of Final Completion, excluding specific items of work that require a warranty of a greater period that may be set forth in this Specification. Immediately upon receipt of written notice from the Owner, the Contractor shall repair or replace at no expense to the Owner, any defective material or work that may be discovered before final acceptance of work or within the warranty period; any material or work damaged thereby; and adjacent material or work that may be displaced in repair or replacement. Examination of or failure to examine work by the Owner shall not relieve Contractor from these obligations.

PART 2 PRODUCTS

2.1 MATERIALS, PRODUCTS, EQUIPMENT, MANUFACTURED UNITS

- A. Raceways
1. General:
 - a. Provide raceways (conduits, wireways, pull boxes, J-hooks, outlet boxes, etc.) in compliance with the requirements of the card access manufacturer, Section Conduit for Electrical Systems, and Section Outlet Boxes.
 2. Conduit:
 - a. Provide conduit sized and based on fill in accordance with the NEC. Minimum size of conduit is to be 1 inch.
 - b. Provide pull cords in all raceway installed without cable.
 3. J-Hooks:
 - a. Provide J-hooks in accordance with the NEC, EIA/TIA requirements for structured cabling systems. All cable supports shall be UL listed.
 - i. Design Selection: Enrico Caddy or J-Hook
 4. Boxes:
 - a. Provide boxes sized as required by the system manufacturer and the NEC for cables and/or devices installed.
- B. Conduit and Boxes
1. Provide and install the building and floor distribution cabinets for each building according to the following criteria:
 - a. There must be one of these main cabinets within 300 feet of a door access reader.

- b. Each cabinet shall feed a minimum of eight controlled devices (access readers) and the cabinet can be located on any floor in an MDF or IDF room. It does not have to be located on the same floor as the controlled devices.
 - c. The main cabinet can serve as the distribution cabinet for its area of eight door access readers.
 - d. Minimum conduit size shall be 1 inch. No conduit shall be installed more than 150 feet without a pull box.
 2. Provide 1 inch conduits if needed from the distribution cabinets and distribute to feed the junction and mounting boxes for each device.
 - a. If a separate 120V feed is needed at any device, a separate conduit will be needed.
 - b. Each separate 1 inch feed will supply no more than one Controlled Device/Card Reader Feed locations however if multiple devices are being installed in the same area, conduit sizes will need to be increased.
 3. Provide and extend conduit to feed 2 inch x 4 inch x 2 1/8 inch flush mounted boxes with single gang mud ring and weatherproof covers; mounted with the opening vertical, at all designated card reader locations.
 - a. Locate to the strike side of single doors, and as designated for double doors, and gates.
 - b. Center 42 inches above finished floor/grade.
 - c. Exact location to be determined during plan review.
 4. Provide a 2 inch x 4 inch x 2 1/8 inch card access feed junction box with cover at the interior side of all designated card access door locations.
 - a. If the area location has removable ceiling tiles, the box shall be located above the tile.
 - b. If the location has a structure of fixed ceiling material, then flush-mount the box with a square to round mud ring and cover
 - c. Both boxes from a) and b) above shall be connected. Also if door is a double door an additional single gang box will be installed, connected and centered on the top of the door frame.
 5. Provide a 1 inch conduit from the AMAG control box to the closet network switch if conduit is determined to be needed.
 6. Cable:
 - a. Provide at each card reader location, a single home run cable to the locations to be identified in the drawings. The cable for the Card Access System shall be Belden # 658AFS or manufacturer recommended equivalent.
 - b. Provide between Access Control Panel and Access Control Terminal Cabinet one (1) Belden # 9502 cable or manufacturer recommended equivalent.
 - c. Card Access system cables installed in interior, exterior and/or underground raceways shall comply with the applicable section of the NEC.
 7. Power Feeds:
 - a. Provide a double duplex, dedicated 120-volt clean power receptacle adjacent to the lower portion of the main terminal cabinet and each distribution cabinet.
 8. Surge Suppression:
 - a. Provide surge suppression equipment listed by Underwriters' Laboratories, bearing the UL seal and marked accordingly. Surge suppression equipment is to be UL listed and labeled for the intended use.

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Training of the School's administrative and maintenance personnel is required in cooperation with the District's Representative.
 - 1. Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections, and to assist in field testing.
 - 2. Report results in writing.
- B. Startup Service:
 - 1. Engage a factory-authorized service representative to perform startup service in accordance with the manufacturer's requirements.
 - a. Complete installation and startup checks according to manufacturer's written instructions.
 - b. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - c. Report results in writing.
- C. Adjusting
 - 1. When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to three visits to site during other-than-normal occupancy hours for this purpose. These visits are not considered as "warranty calls."

3.2 ERECTION TOLERANCES

- A. Install system in accordance with NECA "Standard of Installation" and Divisions 26, 27, and 28.
- B. Permanently label all conduits as to plan room number destination, at all terminal cabinets.
- C. Install 200 lb strength pull string throughout the conduit system.
- D. The Card Access System shall be independent and shall not interconnect with or be used by any other system.
- E. Mount all junction boxes located above the ceiling with the opening facing down unless mounted to the wall above the ceiling, and with a reasonable immediate access pathway provided.
 - 1. Note: The requiring of removing of a light fixture or other similar ceiling equipment is not a reasonable access pathway.
- F. All conduit runs shall be as direct as possible in order to save on wiring costs and to reduce poor performance due to cable loss.
- G. Refer to Section Door Hardware for Card Access Door preparation.
- H. The Contractor shall be advised that the circuit routing for the card access system may not be shown on the project drawings and that he is responsible to install all raceways, wiring and cabling for a complete and fully functional system.
- I. General:
 - 1. The Contractor shall provide and install the card access system (including raceways, pull and back boxes, and wire) in accordance with the Card Access System manufacturer's requirements.

2. The Contractor shall size and route raceways to accommodate the proper installation of the system cabling. T-tapped cabling is not acceptable.
3. Where raceway and/or conduit is not accessible after completion of the project, conduit shall be routed from device to device or fire rated access panels shall be installed to provide access to junction and pull boxes.
4. Device to device wiring is only to be acceptable where the wiring scheme of the system, as recommended by the manufacturer, requires cable to pass from device to device.
5. Termination of devices is to be in accordance with manufacturer's requirements.
6. Install Card Access System wiring with at least 12 inches of separation from line voltage power wiring on parallel runs. Wiring crossing power circuits shall be at right angles. For metal enclosed electric light or power or Class 1 circuits, separation may be reduced as described in the National Electrical Code. Increase separation if so required to comply with EIA/TIA referenced standards.
7. Each Card Access System outlet shall have splice-free cables homerun to the respective control panel in the associated Main/Intermediate Distribution Frame (MDF/IDF) at the communication equipment room (CER), communication closet (CC), or communication panel (CP) as indicated on the drawings. Each cable shall be tagged at each end.
8. Provide a minimum of three-hundred (300) access cards in addition to the original compliment required by the owner.

3.3 DEMONSTRATION

- A. Training of the School's Administrative and Maintenance Personnel is required in cooperation with the District's Representative:
- B. Engage a factory-authorized service representative to train school administrative and maintenance personnel to adjust, operate, and maintain Card Access System. Refer to Division 01 Section Closeout Procedures for information regarding Demonstration and Training.

END OF SECTION

SECTION 28 16 00
INTRUSION DETECTION SYSTEM

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 01, General Requirements, are included as a part of this Section as though bound herein.

1.2 GENERAL

- A. The work described herein and on the drawings consists of all labor, materials, equipment, and services necessary and required to provide and test an Intrusion Detection System. Any material not specifically mentioned in this specification or not shown on the drawings but required for proper performance and operation shall be provided.
- B. The drawings and specifications herein comply to the best of the Engineer's knowledge with all applicable codes at the time of design. However, it is this Contractor's responsibility to coordinate/verify (prior to bid) the requirements of the Authority Having Jurisdiction over this project and bring any discrepancies to the Engineer's attention at least seven (7) days prior to bid. No changes in contract cost will be acceptable, after the bid, for work and/or equipment required to comply with the Authority Having Jurisdiction.

1.3 DESCRIPTION OF SYSTEM

- A. The Contractor shall furnish and install a complete and operating Intrusion Detection System. The system shall include but not be limited to:
 - 1. Door Contacts
 - 2. Motion Detectors
 - 3. Acoustic Glassbreak Sensors
 - 4. LCD Key Pads
 - 5. I/O Modules
 - 6. Auto Dialer
 - 7. Connection to Telephone System
 - 8. Programming
 - 9. Control Panels
 - 10. Power Supplies
 - 11. Battery Backup
 - 12. Raceway/Outlet System, Wire, Cable, Etc., complete with all basic materials
 - 13. Wire and cable Labeling
 - 14. Terminal Blocks
 - 15. Terminal Cabinets
 - 16. Terminations
 - 17. Grounding
 - 18. Surge Suppression
 - 19. Firestopping
 - 20. Sensors

21. Programming

- B. The Intrusion Detection System is to include all equipment, materials, and labor as required to provide, install and test a complete system as described herein.
- C. Furnish and install a complete solid state microprocessor based security system. Each control panel shall be addressable and support up to 192 addressable devices. Activation shall cause a digital dialer to send in an alarm to the central monitoring station. The input power shall be 120 volts, AC. The control panel shall be supervised on the input power line with automatic switch over to battery backup. Provide battery backup sized for minimum 12 hours of continuous operation. Provide unit that will monitor input power and send "loss of AC power alarm" to central station after time delay. Panel shall be capable of remote programming (Upload and Download).
- D. At least one keypad shall be provided for each panel whether shown on the drawings or not.
- E. End of the line resistors (EL) shall be located in the control panel. All zone loops will be equipped with an EL. All field devices shall be home-run to the control panel(s).
- F. Surge suppression required. This Contractor shall provide surge suppression in conformance with Section Surge Suppression Equipment of the specification.
- G. All equipment will become the property of the Owner.
- H. The system supplier shall provide, at no cost to the owner a central station monitoring service, and be available 24 hours per day and 365 days per year until the date of Final Completion at which time the Owner will take over monitoring of the system.
- I. The system shall be wired so that after system is turned "on," exit from the building and entry to the building can be done through designated doors. There shall be a warning tone generated on the key pad during in/out time delay. The system shall have adjustable in/out time delay from 5 to 45 seconds.
- J. Provide system complete with minimum 100 event memory logger.
- K. Wiring/conduit connections/routing, etc. is not shown on drawings. Provide and install all wire, conduit, boxes, electrical basic materials, etc., as required for a complete and operating system.
- L. System cables to be installed in conduit.
- M. System devices to be individually annunciated at system control panel.

1.4 STANDARDS, CODES, REFERENCES AND REGULATORY REQUIREMENTS

- A. Reference Section Reference Standards and Regulatory Requirements
- B. The equipment and installation shall comply with the current or applicable provisions of the following Standards:
 - 1. All requirements of EIA/TIA.
 - 2. All requirements to Federal Communications Commission.
 - 3. National Fire Protection Association Standards:
 - 4. NFPA 70 - National Electrical Code
 - 5. NFPA 72 - National Fire Alarm Code
 - 6. NFPA 101 – Life Safety Code
 - 7. UL 13 - Power Limited Circuit Cables
 - 8. UL 444 - Communications Cables
 - 9. UL 1449 3RD Edition Standard for Safety for Surge Protective Devices
 - 10. UL Standard 681, latest edition - Burglar Alarm Systems, Installations, Classification and Certification of
 - 11. UL Standard 609, latest edition - Burglar Alarm Units and Systems, Local

- C. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.
- D. Surge Suppression:
 - 1. Equipment Certification: When available by any one manufacturer, all surge suppression equipment shall be listed by Underwriters' Laboratories, shall bear the UL seal and be marked in accordance with referenced standard. Such surge suppression equipment shall be UL listed and labeled for intended use.
- E. Comply with all standards and guides as listed under "References" above.

1.5 RELATED SECTIONS/DIVISIONS/DOCUMENTS

- A. All applicable sections of Division 00 and Division 01.
- B. All applicable sections of Division 26
- C. Section Surge Suppression (120V AC to 480V AC).

1.6 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum ten (10) years experience and with service facilities within 50 miles of Project.
- B. Supplier: Authorized distributor of control equipment manufacturer.
- C. Installer: The intrusion detection system installer shall be an authorized dealer of the equipment manufacturer. Installer shall carry spare parts and a service organization to provide emergency service. Service and installation modification capability shall be available locally. At the request of the Design Professional, installer shall provide proof that:
 - 1. Contractor is an authorized dealer of the equipment manufacturer.
 - 2. Contractor has installed at least four systems within the last year and they are working satisfactorily.
 - 3. Contractor has a service organization to provide emergency service.

1.7 SUBMITTALS

- A. Submit in accordance with Sections Common Work Results and Submittals.
- B. In addition to requirements of Common Work Results and Submittals, the Contractor shall submit:
 - 1. Shop Drawings:
 - a. Indicate system wiring diagram showing each device and wiring connection required.
 - b. Submit riser diagram and layout shop drawing with terminal to terminal wiring diagrams of all units.
 - c. 1/8" plans of all buildings showing each device and circuitry.
 - d. Site plan showing distribution between buildings.
 - 2. Submit Product Data: Provide electrical characteristics and connection requirements. Submit for acceptance the following product data specifications on:
 - a. Control Unit
 - b. Power Supplies
 - c. Batteries
 - d. Door Contacts
 - e. Motion Detectors
 - f. Acoustic Glassbreak Sensors

- g. I/O Modules
 - h. Telephone Dialer
 - i. LCD Key Pads
 - j. Wiring
 - k. Surge Suppression Equipment
3. Submit Test Reports: Indicate satisfactory completion of required tests and inspections. Submit manufacturer's inspection report.
 4. Submit Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

1.8 PROJECT RECORD DOCUMENTS

- A. Submit record documents to record actual locations of initiating devices, signaling appliances, end-of-line devices, wire and conduit.

1.9 OPERATION AND MAINTENANCE DATA

- A. Submit Operation Data: Operating instructions.
- B. Submit Maintenance Data: Maintenance and repair procedures.

1.10 WARRANTY

- A. Provide a manufacturer's warranty on control panel for two (2) years and three (3) years from date of Final Completion.

PART 2 – PRODUCTS

2.1 GENERAL EQUIPMENT AND MATERIAL REQUIREMENTS

- A. All equipment shall be new and unused. All components and systems shall be designed for uninterrupted duty. All equipment, materials, accessories, devices, and other facilities covered by this specification or noted on the contract drawings shall be the best suited for the intended use and shall be provided by a single manufacturer.
- B. Provide all components, equipment, parts, accessories and associated quantities required for complete installations. All components may not be specified herein.
- C. All devices/components/products shall be suitable for use intended.
- D. Materials shall be a product of one manufacturer, installed as a complete system.
- E. Wiring shall be color coded, copper of size as required by accepted system manufacturer.
- F. Automatic telephone dialer shall be provided for connection to monitoring services agency via telephone wires. Dialer shall contain batteries for emergency operation.
- G. All electrical components shall have built-in surge protection.
- H. System shall be GE Interlogix NetworX 8E Pinpoint System.
- I. Provide applicable back box, enclosures, etc. for each device as required to facilitate installation in location shown on drawings.
- J. Provide a suitable computer, as required, for the operation of the intrusion detection system until Final Completion at which time operating system will be loaded onto the owner's server for his use.

2.2 RACEWAYS

- A. General:
 - 1. All raceways (conduit, wireways, pullboxes, outlet boxes, etc.) shall comply with applicable requirements of sections within these specifications.
 - 2. All raceways (conduit, wireways, pull boxes, outlet boxes, etc.) shall comply with all requirements of the manufacturer of the Intrusion Detection System.
- B. Conduit: Comply with Section Conduit except as noted below:
 - 1. Pull Cords: Install pull cords in all raceway runs that are installed without cable.
 - 2. Size: Minimum size shall be 3/4" conduit.
- C. Boxes:
 - 1. All outlet boxes, junction boxes, pull boxes, etc. shall comply with applicable section of these specifications.
 - 2. Boxes shall be sized as required by the system manufacturer and NEC for cables and/or device installed.

2.3 TERMINATION CABINETS

- A. Terminal cabinets are to comply with applicable sections of these specifications.

2.4 "SYSTEMS" AND "LOCAL" GROUND BUS

- A. Bus to comply with applicable sections of these specifications.

2.5 WIRE/CABLE

- A. Provide wire/cable as recommended by manufacturer for proper operation of system and as required to comply with all sections of these specifications.

2.6 ALARM CONTROL PANEL

- A. Control Panel: Modular construction with surface wall-mounted enclosure.
- B. Power Supply: Adequate to serve control panel modules, and alarm signaling devices. Include battery-operated emergency power supply with capacity for operating system in standby mode for 24 hours.
- C. System Supervision: Provide electrically-supervised system, with supervised alarm initiating and alarm signaling circuits. Component or power supply failure places system in alarm mode.
- D. Initiating Circuits: Supervised addressable loop with alarm and trouble indication.
- E. Signal Circuits: Supervised signal module, sufficient for signal devices connected to system; occurrence of single ground or open condition places circuit in trouble mode and does not disable that circuit from transmitting alarm. Use supervised fire zone.
- F. Remote Station Signal Transmitter: Electrically supervised, capable of transmitting alarm and trouble signals over telephone lines to central station receiver.
- G. Local Alarm: Sound alarm if telephone tie is cut.
- H. Surge Protection: Provide on power supply and all circuits entering/leaving building housing main control panel.
- I. Entry and Exit Time Delays: Programmable (time).

- J. Trouble Sequence of Operation: Upon trouble signal, trouble alarm light is to be activated.
- K. Alarm Sequence of Operation: Actuation of intrusion detecting device places system in alarm mode, which causes the following operations:
 - 1. Sound and display local alarm signaling devices with non-coded signal.
 - 2. Transmit non-coded signal to remote station equipment.
 - 3. Indicate location of actuated building on control panel and each key pad.
- L. Alarm Reset: Key-accessible reset function resets alarm system out of alarm if alarm initiating circuits have cleared.
- M. Control Panel, provided in a “commercial can”, shall be GE Interlogix NetworX Model NX-8E with NX-2192E Point ID Interface Card.
- N. Power Supplies shall be GE Interlogix NetworX Model NX-320E Smart Power Supply and Bus Extender

2.7 I/O MODULES

- A. Single input addressable module shall be GE Interlogix NetworX Model SI-ID
- B. 4 input/4output module shall be GE Interlogix NetworX Model 4140-ID

2.8 KEYPAD

- A. The system arming shall be accomplished with an intelligent keypad interface with the capacity for 99 users.
- B. The system shall have a lockout feature after an invalid code has been entered twice.
- C. The keypad shall indicate status and wait state for arming and disarming, have a duress code and shall provide audible indication during the delayed entry or exit period.
- D. Keypad shall be GE Interlogix NetworX Model NX-148 LCD Keypad

2.9 DOOR CONTACTS

- A. Recessed mounting.
- B. Self-locking magnetic contact suitable for use in metal doors.
- C. Provide single input addressable module for each door contact.

2.10 MOTION DETECTOR

- A. Passive infrared motion detector (PIR).
- B. Adaptive Signal Processing – 3D signal processing with gliding focus mirror optics analyzes size, speed, shape and adaptive alarm threshold.
- C. Coverage: Four 50 foot curtains. Adaptable pattern with supplied inserts.
- D. Housing material: Flame retardant ABS
- E. Operating Voltage: 8 to 27V (as supplied by NX-2192)
- F. Current draw: 250 μ A typical avg. 3mA with LED momentarily on
- G. Environmental Limits:
 - 1. Operating temperature: 0° to 131°F (-18° to 55°C)
 - 2. Relative humidity: 10% to 90% noncondensing
- H. Dimensions: 2.9"W x 2.2"D x 5.1"H
- I. Motion detectors shall be addressable and shall be GE Interlogix NetworX Model AP750-ID

2.11 ACOUSTIC GLASSBREAK SENSOR

- A. Shatterpro's Pattern Recognition Technology™ for superior detection and false alarm immunity.
- B. Protects all glass types up to a standard thickness of 1/4" (0.64cm) including plate, wired, tempered and laminated glass. Senses through light blinds and unlined drapes.
- C. Sensor shall have a detection radius of 20 feet.
- D. Housing material: Flame retardant ABS
- E. Operating Voltage: 8 to 27V (as supplied by NX-2192)
- F. Current draw: 250 μ A typical avg. 3mA with LED momentarily on
- G. Microphone: Omni-directional electret
- H. Environmental Limits:
 - 1. Operating temperature: 14° to 120°F (-10° to 50°C)
 - 2. Relative humidity: 10% to 90% noncondensing
- I. Dimensions: 3.13"W x 1.7"D x 4.2"H
- J. Acoustic glass break sensors shall be addressable and shall be GE Interlogix NetworX Model 5845-ID

2.12 SIGNAL DEVICES

- A. Alarm Bells: NFPA 72G, electric 8 inch motor bell with operating mechanism behind dome. Sound Rating: 92 dBA at 10 feet (3 M). Unit to be rated for exterior wet locations.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions. Provide all interconnections, etc. required.
- B. Use 16 AWG minimum size conductors for detection and signal circuit conductors. Install all wiring in conduit. Increase size in conductors as required to keep voltage drop to levels acceptable to manufacturer.
- C. Make conduit and wiring connections to door hardware devices.
- D. Install all conduit concealed.
- E. Install recessed magnetic switch on doors on plans that are indicated to receive door contacts.
- F. Install motion detectors at locations indicated on drawings.
- G. Install glassbreak sensors at locations indicated on drawings.
- H. Install key pads at locations indicated on drawings.
- I. Install alarm bells at locations indicated on drawings.
- J. Install main control panel as indicated on plans in Systems Room.
- K. Where location of a required device is not shown on drawings install as directed by owner.
- L. Wire each device to control panel and connect/program system to comply with the zoning specified herein or on drawings.
- M. All system cables and power wiring shall be kept physically isolated from each other at all points. Lace and form wires from components to terminals and fasten securely.

- N. Wires and cables in equipment cabinets and service cabinets shall terminate on terminal strips or on connectors provided with equipment. All terminals must be permanently marked with room numbers. Cable splicing is not acceptable. Contractor shall coordinate exact location of all components of the system and their function with Owner/Architect prior to any rough-in of installation.
- O. Coordinate with Owner for names, and instructions to be recorded on dialer.
- P. Upon completion of installation of the system, it shall be checked by factory authorized representatives with result of the checkout reported in writing. The written report shall precede or accompany contractor's request for acceptance inspection.
- Q. All door contact and motion detector wiring will be home run, pinpoint enunciated, to the security system panel in the building.
- R. Four conductor wire shall be used throughout for door contacts, etc. All wiring shall meet or exceed the requirements of the system manufacturer.
- S. All wiring shall be run in conduit.
- T. Install equipment, cables, and contacts as required to comply with all applicable requirements of the references and/or regulatory requirements called for under PART 1 of this section of specifications, as a minimum installation requirement. Exceed this minimum requirement when called for herein.
- U. Install all electrical basic materials per applicable sections of these specifications.
- V. Install system equipment panels in locations shown; arrange to provide adequate ventilation and access.
- W. Properly ground system per applicable sections of these specifications.
- X. Support raceways, backboards, and cabinets under the provisions of Section Supporting Devices, and/or as required by manufacturer's instructions.
- Y. Install raceways to conform to applicable sections of these specifications.
- Z. Install system wiring and/or raceways away from any surface that may become hot, including and not limited to, hot water piping and heating ducts.
- AA. Install system wiring with at least 12 inches of separation from line voltage power wiring on parallel runs. Wiring crossing power circuits shall be at right angles. For metal enclosed electric light or power or Class 1 circuits, separation may be reduced to six (6) inches. Increase separation if so required to comply with EIA/TIA referenced standards.
- BB. All raceways shall meet requirement for raceway per applicable requirement of sections within Division 26 of these specifications.
- CC. Raceway shall not be shared by power or any other electrical wiring that is not part of the low voltage Intrusion Detection System.
- DD. Bend raceway with minimum inside radius of 6 times the internal diameter. Increase bend radius to 10 times for raceway larger than 2 inch size. Provide proper bend for all changes of direction. Pull and splice boxes shall not be used in lieu of a bend.
- EE. Install raceways so no more than two 90° bends are in any raceway section without pullbox. Install additional pullboxes as required to maintain maximum of two 90° bends between pullboxes and/or termination points.
- FF. Label all raceway at both ends to indicate destination and Intrusion Detection System source room. Also indicate length of raceway and this labeling/identification shall be fully documented in as-built (record) drawings.
- GG. Install polyethylene pulling string in each empty conduit over 10 feet in length or containing a bend.
- HH. Fire Stop:
 - 1. Where conduit penetrates a fire rated wall, floor, etc., firestopping shall be provided.

2. Provide permanent firestopping seals after cable installers have pulled risers and distribution cables.
 3. Meet all requirements for UL assembly involved. Provide firestopping UL listed for assembly, conduit, and/or cable involved.
- II. Pullboxes, Junction Boxes, Outlet Boxes:
1. Install per applicable sections of these specifications and all applicable codes/standards.
 2. Boxes shall be placed above accessible ceilings and in an exposed manner and location, and readily accessible. Boxes shall not be placed in a fixed false ceiling space unless immediately above a suitably marked and rated hinged access panel.
 3. A pull box shall be placed in a conduit run where:
 - a. the length is over 100 feet
 - b. there are more than two 90° bends, or
 - c. if there is a reverse bend in the run
 4. Boxes shall be placed in a straight section of conduit and not used in lieu of a bend. The corresponding conduit ends should be aligned with each other. Conduit fittings shall not be used in place of pull boxes.
 5. Outlet boxes shall be installed at devices requiring outlet box per applicable codes/standards.
 6. Provide bushed nipple at devices receiving cable without raceway/conduit.
 7. Every pullbox shall have a hinged cover. Install appropriate access panel to allow cover to open.
 8. Size:
 - a. Where a pullbox is required with raceway(s) smaller than 1-1/4 trade size, an outlet box may be used as a pullbox.
 - b. Where a pullbox is used with raceway(s) of 1-1/4 trade size or larger, the pull box shall:
 - i. Straight Pull-Through:
 - a) have a length of at least 8 times the trade size diameter of the largest raceway
 - ii. Angle and U-Pulls:
 - a) have a distance between each raceway entry inside the box and the opposite wall of the box of at least 6 times the trade size diameter of the largest raceway, this distance being increased by the sum of the trade size diameters of the other raceways on the same wall of the box; and
 - b) have a distance between the nearest edges of each raceway entry enclosing the same conductor of at least:
 - 1) six times the trade size diameter of the raceway; or
 - 2) six times the trade size diameter of the larger raceway if they are of different sizes.
 - iii. Raceway entering the wall of a pullbox opposite to a removable cover:
 - a) have a distance from the wall to the cover of not less than the trade size diameter of the largest raceway plus 6 times the diameter of the largest conductor.
 9. No box shall be smaller than that required by NEC 314.28 (A), (1) and (2).
 10. Grounding:
 - a. Provide and install complete grounding system as required to comply with all sections of these specifications and applicable codes.

- b. Connect Terminal Cabinet rack to "systems" ground bus with #6 green insulated copper ground wire.
 - c. Connect metal conduit (via grounding bushing) to "systems" ground bus.
 - d. Connect cable shields to "systems" ground busbar.
 - e. Connect surge suppression equipment to "systems" ground busbar.
11. Surge Suppression:
- a. General
 - i. Provide and install surge suppression devices as specified for each system circuit conductor, at both ends at each terminal block terminating conductors between buildings.
 - ii. Provide and install surge suppression devices as specified in Section Surge Suppression Equipment for 120 volt source to all equipment. Install on line side of each control panel.
 - iii. Extreme care shall be taken by contractor to assure a properly surge protected system.
 - iv. Surge protection equipment must be selected by contractor to match the equipment being protected including wire sizes, operating volts, amps, and circuit impedance.
 - v. Installation of surge protection equipment and it's grounding must be per manufacturer's recommendations to assure short and proper ground paths.
 - b. Equipment Selection
 - i. Contractor to coordinate with suppliers and installers of all equipment being protected and provide surge suppression equipment which meets these specifications on respective equipment, wires, etc.
 - c. Equipment Installation
 - i. Install surge suppression equipment per manufacturer's recommendation at each wire terminal as noted under Part 1.
 - ii. Install in surge suppression equipment terminal cabinets, etc. as required to facilitate installation of surge protection equipment and terminal points. Increase size of terminal cabinets (from that shown on drawings) to size required to facilitate installation of surge suppression equipment and terminal blocks.
 - iii. Locate surge suppression equipment in terminal cabinet nearest each equipment cabinet.
 - iv. Coordinate with Section Surge Suppression Equipment Contractor to assure that surge suppression for 120VAC power circuit and surge suppression required by this section are all installed in same terminal cabinet and bonded together.
12. Ground Installation
- a. Ground Bus Connections.
 - i. Provide "local" ground bus in each terminal cabinet housing surge protection equipment (with lugs, etc. as required).
 - ii. Bond "local" ground bus to terminal cabinet with minimum #6 copper wire.
 - iii. Connect terminal cabinet "local" ground bus to "systems" ground bus installed per Section Grounding and Bonding with minimum #6 copper insulated wire (unless otherwise noted) in conduit.
 - b. Note that "systems" ground bar is also to be used for power transformation ground (480V to 208V) where applicable.
 - c. Surge suppression equipment grounding.
 - i. Connect each surge suppressor to local ground bus in terminal cabinet with wire

- ii. sized as recommended by manufacturer. Where "M" block type terminations/surge suppressors are used, bond ground rail to local ground bar with wire as recommended by manufacturer.
- ii. Coordinate with Section Surge Suppression Equipment contractor to assure that 120VAC power source/supply surge suppressor is also grounded to same local ground bus as surge suppressors provided in this section.
- d. Conductors.
 - i. Conductors shall meet requirements of Section Building Wire and Cable.
 - ii. Bends in excess of 90 degrees in any grounding conductor shall not be permitted. A radius of 6 inches or greater shall be maintained on all bends.
 - iii. Do not bundle unprotected conductors with protected conductors.
 - iv. Conductors shall be kept as short as possible.
 - v. Conductors shall be secured at 12" intervals with an accepted copper clamp.
 - vi. Grounding conductors shall be properly connected to the building service ground by accepted clamps.
- e. Grounding Connectors
 - i. Connectors, splicers, and other fittings used to interconnect grounding conductors, bond to equipment or grounding bars, shall be accepted by NEC or UL for the purpose.
 - ii. All connectors and fittings shall be of the Nicopress crimp or compression set screw type.
 - iii. Special treatment to fittings, lugs, or other connectors of dissimilar material shall be applied to prevent electro-galvanic action.

3.2 FIELD QUALITY CONTROL

- A. Field inspection and testing to be performed.
- B. Test in accordance with NFPA 72.

3.3 MANUFACTURER'S FIELD SERVICES

- A. Prepare and start systems.
- B. Include services of technician to supervise installation, adjustments, final connections, system testing, and Owner training.

3.4 DEMONSTRATION

- A. Provide systems demonstration.
- B. Demonstrate normal and abnormal modes of operation, and required responses to each.
- C. Be prepared to demonstrate to Design Professional compliance of these specifications by all major items or pieces of equipment, as well as compliance with specifications for entire system at time of turnover. The Contractor shall demonstrate the operation of the system to the Owner during the final inspection.
- D. Provide a technician to instruct Owner's personnel in operation and maintenance procedures of system. Instruction scheduled at Owner's convenience. Provide a minimum of two four-hour training courses to the Owner's personnel at times designated by the Owner.
- E. All systems shall be inspected in a fully operational state by a representative of the Department of Risk Management before acceptance by Owner.

3.5 AS-BUILT DRAWINGS

- A. Prior to acceptance inspection, the Contractor shall furnish complete as-built drawings of the security system. Compile in book form complete as-built drawings and service manuals with schematics of all components used in the system. As-built drawings to include layout diagrams with appropriate later connection information. Complete cable routings and exact locations of all devices incorporated into the system.

END OF SECTION

SECTION 32 00 00
SELECTIVE TREE AND SHRUB REMOVAL AND CLEARING

PART 1 – GENERAL

- 1.1 SCOPE: Work shall include performing all clearing of site as necessary to complete work indicated on drawings and specified under this section. The work shall consist of furnishing all labor, supplies, equipment and materials necessary to complete the planning of all trees, palms, shrubs and ground covers in the locations shown on the drawings, and all other work associated with and incidental to the landscape planting work as shown on the drawings and specified under this section.
- A. All plant materials and references in this section are not necessarily required on this project; however, when indicated or required by drawings and/or specifications set forth in this section, they shall be applicable.
 - B. All plant material shall be of the specific size and quality indicated on the drawings; shall be installed, maintained and watered in strict accordance with sound nursery practices.
 - C. The Architect reserves the right to adjust the number and location of designated types and species to be used.
 - D. The Contractor shall remove all existing plant material necessary to implement the construction plans.
 - E. The Contractor shall provide for the contract growing of all plant materials that cannot be guaranteed to be available from standard nursery operations at the time of the planting.
- 1.2 WORK INCLUDED: Without restricting the volume or generality of the above “Scope” work to be performed under this section shall include, but is not limited to, the following:
- A. Removal of all shrubs, stumps, vegetation, trash, etc. as described below.
 - B. Removal of all trees as described below.
 - C. Disposal of shrubs, stumps, vegetation, trash, timber, branches, etc. as specified.
 - D. Contractor shall accept site as he finds it and it shall be his responsibility to remove all trash, rubbish and debris as required.
 - E. The Contractor shall prune all existing shrub materials (including all Brazilian Pepper) that are overhanging the property line, back to the property line.
- 1.3 WORK NOT INCLUDED: If required, the following items of work are specified in other sections:
- A. Earthwork.

1.4 BIDDING:

- A. Each bidder submitting a proposal for this contract shall be responsible to inspect the site to acquaint himself with the nature of conditions which will be encountered during construction. Bidder shall make himself aware of all existing and/or proposed utilities in area of work.

1.5 SUPERVISION:

- A. The Contractor shall provide a competent superintendent and any necessary assistants on the project when work is in progress. The superintendent shall not be changed during the project without the consent of the Owner's representative unless the superintendent ceases his status as an employee of the Contractor. The superintendent shall represent the Contractor in the Contractor's absence, and all directions given to him by the Owner's representative shall be binding as if they were given to the Contractor. The Contractor's superintendent shall supervise the Contractor's employees on the job site and be responsible for their actions and conduct on the job site.

1.6 PROTECTION OF WORK AND PROPERTY:

- A. The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the Owner's property from injury or loss arising in connection with his work. The Contractor shall be responsible for contacting the necessary entities to determine the locations of all underground utilities on the site. The Contractor shall take care to avoid damage to any existing buildings, equipment, piping, pipe coverings, electrical systems, sewers, sidewalks, landscaping, grounds, aboveground or underground installations or structures of any kind, and shall be responsible for any damage that occurs as a result of his work. Contractor shall adequately protect his work and all adjacent property as provided and required by law.

PART 2 – PRODUCTS

2.1 HERBICIDES:

- A. Post-emergence Herbicide: The post-emergence herbicide shall be a foliar applied herbicide which will control a broad range of annual and perennial grass and broad-leafed weeds plus applicable woody brush and tree species. Herbicide shall kill the entire weeds species, including the below the ground root or rhizome system. The herbicide shall have no residual soil activity. All herbicide is to be applied according to the manufacturer's recommendations.
- B. Pre-emergence Herbicide: The pre-emergence herbicide shall be a selective pre-emergence herbicide used for the control of annual grasses and broad-leafed weeds in ornamental planting beds. Herbicide shall control weeds by killing the young weed seedlings as they come into contact with the herbicide during germination. The herbicide shall be in granular form.

2.2 WATER:

- A. All water is to be supplied and applied by the Contractor.

PART 3 – EXECUTION

3.1 REMOVAL OF SHRUBS, STUMPS, VEGETATION, TRASH, ETC:

- A. Remove all shrubs, vegetation, trash, etc. in all areas indicated on the drawings.

3.2 REMOVAL OF TREES:

- A. Where indicated on the drawings, remove all trees. Tree removal shall be complete, including stumps and root systems below grade. The Contractor shall remove all existing vegetation necessary to implement the project construction plans. Planting material intended to remain shall be protected as specified below. Plant material required to be relocated by the Contractor shall be relocated as specified below.

3.3 DISPOSAL:

- A. All accumulation of shrubs, stumps, vegetation, trash, timber, branches, etc. resulting from work under this section shall be removed to approved disposal areas off site or burned. Disposal by burning is not acceptable.

3.4 PROTECTION OF EXISTING VEGETATION INDICATED TO REMAIN:

- A. Protect individual trees indicated to remain by the installation of 5' long, 2" x 4" stakes (install with 3' remaining above ground) no more than 10' o.c. around the dripline of all trees designated to be preserved. Place 1" x 4" or 2" x 4" rails between all stakes at approximate 3' height. Barricades shall be installed prior to beginning any other construction work on the site and shall be maintained until the sod installation begins. Barricades shall be constructed in a workmanlike manner. All barricades shall be sturdy. There shall be no exposed nail points.
- B. No construction activity of any type, including parking or storage of materials, is to take place within any tree protection barricaded areas on the site. All barricades shall be removed by the Contractor prior to final acceptance of the work.

END OF SECTION

SECTION 321313
CONCRETE SIDEWALKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Section Includes
 - 1. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - a. Sidewalks.

1.3 REFERENCES

- A. ACI 117 – Standard Tolerances for Concrete Construction and Materials.
- B. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- C. ACI 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- D. Concrete Reinforcing Steel Institute, "Manual of Standard Practice.
- E. ACI 308 – Standard Practice for Curing Concrete.
- F. ACI347R – Guide to Formwork for Concrete.
- G. ASTM A185 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- H. ASTM C33/C33M – Standard Specification for Concrete Aggregates.
- I. ASTM C150/C150M – Standard Specification for Portland Cement.
- J. ASTM C494 – Specification for Chemical Admixtures for Concrete.
- K. FBC – Florida Building Code.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete sidewalk mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.5 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For the following, from manufacturer:
 - 1. Cementitious materials.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Fiber reinforcement.
 - 4. Admixtures.
 - 5. Curing compounds.
 - 6. Joint fillers.

1.6 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

1.7 FIELD CONDITIONS

- A. Hot-Weather Concrete Placement: Comply with ACI 301 (ACI 301M) and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301/ 301M unless otherwise indicated.

2.2 FORMS

- A. Form Materials: Plywood or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, fabricated from galvanized-steel wire into flat sheets.

2.4 CONCRETE MATERIALS

- A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C 150/C 150M
- B. Normal-Weight Aggregates: ASTM C 33/C 33M, uniformly graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Air-Entraining Admixture: ASTM C 260/C 260M.

- D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- E. Water: Potable and complying with ASTM C 94/C 94M.

2.5 FIBER REINFORCEMENT

- A. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III.

2.6 CURING MATERIALS

- A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- B. Water: Potable.

2.7 RELATED MATERIALS

- A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber in preformed strips.

2.8 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
 - 1. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.
- B. Cementitious Materials:
 - 1. Fly Ash or Pozzolan: 25 percent.
 - 2. Slag Cement: 50 percent.
 - 3. Combined Fly Ash or Pozzolan, and Slag Cement: 50 percent, with fly ash or pozzolan not exceeding 25 percent.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
 - 1. Air Content: 2-1/2 percent plus or minus 1-1/2 percent for 1-1/2-inch nominal maximum aggregate size.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing admixture in concrete as required for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

- F. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd. (0.60 kg/cu. m).
- G. Concrete Mixtures: Normal-weight concrete.
 - 1. Compressive Strength (28 Days): 3500 psi.
 - 2. Maximum W/C Ratio at Point of Placement: 0.45.
 - 3. Slump Limit: 5 inches

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M. Furnish batch certificates for each batch discharged and used in the Work.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete sidewalks to identify soft pockets and areas of excess yielding.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
 - 1. When joining existing sidewalks, place transverse joints to align with previously placed joints unless otherwise indicated.
- B. Construction Joints: Set construction joints at locations where sidewalk operations are stopped for more than one-half hour.
 - 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of sidewalk strips unless otherwise indicated.
 - 2. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
 - 1. Locate expansion joints at intervals of 50 feet on center unless otherwise indicated.
 - 2. Extend joint fillers full width and depth of joint.
 - 3. Place top of joint filler flush with finished concrete surface.
 - 4. Furnish joint fillers in one-piece lengths.
- D. Contraction Joints: Form weakened-plane contraction joints at 10'-0" on center, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness with either method, as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 3/8-inch radius. Repeat grooving of contraction joints after applying surface finishes.
 - a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
 - a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.
- E. Edging: After initial floating, tool edges of sidewalk, gutters, curbs, and joints in concrete with an edging tool to a 3/8-inch radius. Repeat tooling of edges after applying surface finishes.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation.
- B. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- C. Comply with ACI 301 (ACI 301M) requirements for measuring, mixing, transporting, and placing concrete.
- D. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- E. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- F. Consolidate concrete according to ACI 301 (ACI 301M) by hand spading, rodding, or tamping.

- G. Screed sidewalk surface with a straightedge and strike off.
- H. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- I. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.

3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

3.8 DETECTABLE WARNING INSTALLATION

- A. Stamped Detectable Warnings: Install stamped detectable warnings as part of a continuous concrete paving placement and according to stamp-mat manufacturer's written instructions.
 - 1. Before using stamp mats, verify that the vent holes are unobstructed.
 - 2. Apply liquid release agent to the concrete surface and the stamp mat.
 - 3. Stamping: While initially finished concrete is plastic, accurately align and place stamp mats in sequence. Uniformly load, gently vibrate, and press mats into concrete to produce imprint pattern on concrete surface. Load and tamp mats directly perpendicular to the stamp-mat surface to prevent distortion in shape of domes. Press and tamp until mortar begins to come through all of the vent holes. Gently remove stamp mats.
 - 4. Remove residual release agent according to manufacturer's written instructions, but no fewer than three days after stamping concrete. High-pressure-wash surface and joint patterns, taking care not to damage stamped concrete. Control, collect, and legally dispose of runoff.

3.9 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing or moisture-retaining-cover curing or a combination of these as follows:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.

3.10 SIDEWALK TOLERANCES

- A. Comply with tolerances in ACI 117 (ACI 117M) and as follows:

1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Joint Spacing: 3 inches.
4. Contraction Joint Depth: Plus 1/4 inch, no minus.

3.11 REPAIR AND PROTECTION

- A. Remove and replace concrete sidewalk that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Protect concrete sidewalk from damage. Exclude traffic from sidewalk for at least 14 days after placement. When construction traffic is permitted, maintain sidewalk as clean as possible by removing surface stains and spillage of materials as they occur.
- C. Maintain concrete sidewalk free of stains, discoloration, dirt, and other foreign material. Sweep sidewalk not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 32 31 13
CHAIN LINK GATES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Section Includes:
 - 1. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - a. Chain-link swing gates.
 - b. Chain link horizontal sliding gates
 - c. Chain link vertical gates
 - d. Foundations: Concrete.

1.3 REFERENCES

- A. ASTM A392 – Standard Specification for Zinc-Coated Steel Chain Link Fence Fabric.
- B. ASTM F567 – Standard Practice for Installation of Chain Link Fence.
- C. ASTM F626 – Standard Specification for Fence Fittings.
- D. ASTM F668 – Standard Specification for Poly Vinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric.
- E. ASTM F1043 – Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework.
- F. ASTM F1083 – Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
- G. ASTM F2200 – Standard Specification for Automated Vehicular Gate Construction
- H. CLFMA – Standard Guide for Metallic-coated Steel Chain Link Fence & Fabric.
- I. CLFMA – Chain Link Fence Wind Load Guide for the Selection of Line Post and Line Post Spacing.
- J. FBC – Florida Building Code.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link gates.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, operational clearances, gates, posts, rails, tension wires, attachments, heights and finish.
- C. Samples for Verification: Prepared on Samples of size indicated below:
 - 1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

- D. Delegated-Design Submittal: For fences and gate framework and footings indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified Florida professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified professional engineer, testing agency, and factory-authorized service representative.
- B. Product Certificates: For each type of chain-link gate, from manufacturer.
- C. Product Test Reports: For framing strength according to ASTM F 1043.
- D. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Provide products from a firm that makes the indicated products as a regular production item and with not less than five (5) years experience.
- B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation of specified materials and assemblies with not less than three (3) years experience.
- C. Field Measurements: Field verify all dimensions prior to fabrication.
- D. Standards: Conform to requirements of Chain Link Fence Manufacturers Institute (CLFMI) Product Manual, latest edition, and as otherwise shown or specified.
- E. Manufacturer: Minimum ten (10) years experience in the successful manufacturer of required products designed for the intended use. Shall be a member of C.L.F.M.I.

1.7 PRE-INSTALLATION MEETING

- A. The Contractor shall conduct a pre-installation meeting at the project site a minimum of 30 days prior to any work being installed as indicated in this section and other related sections that require coordination with this section.
- B. Review coordination of interlocked equipment specified in this Section and elsewhere.
- C. Review required testing, inspecting, and certifying procedures.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify layout information for chain-link gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which Manufacturer and Installer agrees to repair or replace components of chain-link gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 2. Warranty Period: Ten (10) years from date of Substantial Completion.

1.10 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Chain-link gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to Florida Building Code and ASCE/SEI 7.
- B. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 or ASTM F 1083 based on the following:
 - 1. Minimum Post Size: Determine according to ASTM F 1043 for framework up to 12 feet high and post spacing not to exceed 10 feet.
 - 2. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified and on the following:
 - a. Refer to structural drawings for wind load.
 - b. Material Group: IA, ASTM F 1043, Schedule 40 steel pipe.
- C. Delegated-Design: Provide delegated design services including calculations and shop drawings for fences and gate framework and footings indicated to comply with performance requirements, applicable code requirements and design criteria signed and sealed by an engineer registered in the State of Florida.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. Manufacturer shall be one of the following however products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product and acceptance is provided by the Architect in writing prior to bidding.
 - 1. Ameristar
 - 2. Master – Halco
 - 3. Stephens Pipe & Steel
 - 4. Merchant Metals
 - 5. Ideal Aluminum

2.2 GATE GENERAL

- A. Provide gates and concrete footing at locations indicated on the drawings.
- B. Note that all listed diameters are nominal outside diameters per standard steel pipe schedules
- C. Location: Locations of gates as indicated on the drawings and as verified by the Architect.

2.3 CHAIN-LINK GATE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Fences shall have no jagged or sharp projections. Comply with CLFMI Product Manual, ASTM F 668, and with requirements indicated below:
- B. Steel Wire Fabric: Wire with a diameter of 0.148 inch; (9-gauge) core wire thickness.
 - 1. Mesh: 2-inches diamond mesh interwoven wire.
 - 2. Vinyl-Coated Fabric: ASTM A668, Class 1 over zinc-coated steel wire with minimum 1.2 oz zinc per sq. ft. of surface.

3. Selvage: Knuckled end closed at both top and bottom selvages for all fences does not limit the height of fencing that is prohibited from having sharp projections. A twisted top creates sharp projections. Fence material shall have no jagged or sharp projections.
 - a. Coat selvage ends of fabric that is metallic coated before the weaving process with manufacturer's standard clear protective coating.

2.4 GATE POSTS

- A. Post for gates, design gateposts for proper resistance to forces encountered by normal use and increase size to accommodate.
 1. Under 6' wide = 2.875" OD steel pipe, 5.79 lbs./lineal ft.
 2. Over 6' to 12' wide = 4" OD steel pipe, 9.11 lbs./lineal ft.
 3. Over 12' to 18' wide = 6 5/8" OD steel pipe, 18.97 lbs./lineal ft.
 4. Over 18' = 8 5/8" OD steel pipe, 28.55 lbs./lineal ft.

2.5 SWING GATES

- A. General: Comply with ASTM F 900 for gate posts and single or double swing gate types.
- B. Gate Size: As indicated on drawings.
- C. Pipe and Tubing:
 1. Gate Frames and Bracing: Round tubular steel. Minimum 1-5/8 inch diameter and increase size to accommodate forces and loads
- D. Frame Corner Construction: Welded.

2.6 SWING GATE HARDWARE

- A. Hinges: Heavy duty pressed steel, to allow 180-degree outward swing.
 1. Provide min. 3 hinges per leaf.
 2. Use semi-automatic catch to secure traffic gates in the open position
 3. Manufacturer is as indicated however equal or better performing products of other manufacturers will be considered for acceptance by the Architect.
 - a. "Bull Dog" hinges as manufactured by Hoover Fence Company,
 - b. Cast iron hinges are not acceptable.

2.7 HORIZONTAL-SLIDE GATES

- A. General: ASTM F 1184 for gate posts and single and double sliding gate types.as indicated on drawings.
 1. Classification: Type II Cantilever Slide, Class 1 with external roller assemblies.
- B. Gate Size: As indicated on the drawings.
- C. Pipe and Tubing:
 1. Gate Frames and Bracing: Round tubular steel. Minimum 2-inch diameter and increase size to accommodate forces and loads.
- D. Frame Corner Construction: Welded.

2.8 HORIZONTAL-SLIDE GATE HARDWARE

- A. Hangers, Roller Assemblies, and Stops: Fabricated from galvanized steel.

2.9 VERTICAL PIVOT GATE

A. Materials:

1. Aluminum Assembly Framing:
 - a. Plate, Shapes and Bar: ASTM B221, alloy 6061-T6 or 6063-T6.
 - b. Extrusions: Alloy and temper 6063-T6 except formed elbows shall be 6063-T4:
 - c. Round Aluminum Pipe: Standard weight extruded structural aluminum pipe, alloy 6063-T6, mill finish, complying with ASTM B429.
 - d. Provide lock washer or other locking device at all bolted connections.
2. Steel Assembly Framing:
 - a. High strength steel pipe triple coated in accordance with ASTM F1043 Group IC; SS40 as manufactured by Allied Tube & Conduit.
 - 1) External coatings per ASTM F1043 Type B; internal coatings per ASTM F1043 Type D.
 - 2) Post welding treatments: All welded joints to be coated ZRC or equivalent zinc rich coating.
 - b. Steel Tubes: ASTM A500 Cold-Formed Welded Pipe and Structural Tubing Hot-Dipped, Zinc-Coated.
 - c. Steel Shapes plates and bars: ASTM A36.
3. Threaded Fasteners:
 - a. All exterior screws, bolts, nut and washers shall be 300 Series non-magnetic Stainless steel
 - b. Provide lock washers or other locking devices such as deformed thread lock or nylon locking nuts at all bolted connections
4. Infill panels: Refer to Section ____.

B. Fabrication:

1. Fabricate frames of gates from aluminum tubing. Assemble gate frames by welding at corners. Infill gate frames with chain link fabric.
2. Configuration: Size and space members in compliance with applicable codes and project specifications. All gate framing members shall be unspliced single pipe or tube length.
3. Bracing:
 - a. Provide diagonal welded pipe gate trusses to prevent sag.
 - b. Cable Wind Bracing: Required for gates between 16' or more in length and up to 20' in length. Provide 3/16 aircraft coated cable anchored to the operator and at 2/3 the length of the gate.
 - c. Masted Wind Bracing: Required for gates over 20' or more in length or more than 7' in height, and/or code requirement beyond 75 mph winds.
 - 1) Provide continuous tube elements which attach to the operator and extend a minimum of 2/3 the length of the gate. Wind bracing is also secured to the bottom of the gate with strut plates.
4. Fully assemble gate leaves in the manufacturer's shop with no joints splices or bolted sections. Open tube ends or sections are not acceptable.
5. Welding: Make exposed joints butt tight, flush, and hairline. Continuously seal joined members by continuous welds.

C. Fabricated frame and infill fabrics: PVC Coating.

- D. Provide components required for receiving yoke anchorage of gate ends. Fabricate anchors and related components of material and finish matching gate frame

2.10 FITTINGS

- A. General: Comply with ASTM F 626, cast iron is not acceptable.
- B. Post Caps: Provide line post caps with loop to receive tension wire or top rail.
- C. Tension and Brace Bands: Pressed steel.
- D. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- E. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.
- F. Stretcher Bars: 3/16" x 3/4" hot dipped galvanized steel, coated. One stretcher bar for each gate and end post & two bars for each corner and pull post.
- G. Tie Wires and Clips: According to ASTM F 626.
 - 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
 - a. Hot-Dip Galvanized Steel: 0.148-inch (9 gauge) diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.
- H. Bottom Tension Wire: 6-gauge spring coil tension wire.
- I. All line posts shall have steel ties.

2.11 FASTENERS

- A. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

2.12 ACCESSORIES

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded, provide type as recommended by producer of metal to be welded and as required for strength and compatibility in fabricated items.
- B. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Division 3 Section "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi, 3-inch slump, and 1-inch maximum aggregate size.
- C. Non-shrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.
 - 1. Erosion-Resistant Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic- controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M, formulated for 30-mil thickness per coat.
- E. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight and complying with DOD-P-21035 or SSPC-Paint 20.

2.13 FINISH

- A. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. zinc.
 - 1. Polymer coating over metallic coating.
- B. Zinc-Coated Steel: Schedule 40, comply with ASTM F 1043 and ASTM F 1083.
- C. Vinyl coat shall be provided on all components in the gate system and shall be Class 26, thermally fused and bonded. Polymer coating over metallic coating complying with ASTM F 934.
 - 1. Color: Black

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of gates and terminal posts.

3.3 POST INSTALLATION

- A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacing's indicated, in firm, undisturbed soil.
- B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Place top 4 inches below grad to allow covering with inches below grade to allow covering with surface material. Slope top surface of concrete to drain water away from post.
- C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.5 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain chain-link gates.

END OF SECTION

SECTION 32 31 15
GATE OPERATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Section Includes:
 - 1. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 - a. Swing, gate operators.
 - b. Horizontal-slide, gate operators.

1.3 ACTION SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - 1. Gate operators, including operating instructions and motor characteristics.
- B. Shop Drawings: Gate Operator: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of gate operator.
- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For gate operators to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Emergency Access Requirements: According to requirements of authorities having jurisdiction for gates with automatic gate operators serving as a required means of access.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to comply with performance requirements.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - c. Faulty operation of gate operators and controls.
 - 2. Operator Warranty Period: Five (5) years from date of Substantial Completion.
 - 3. Access Control Warranty Period: Two (2) years from date of Substantial Completion.

1.9 PERFORMANCE REQUIREMENTS

- A. Lightning Protection System: Maximum resistance-to-ground value of 25 ohms at each grounding location along fence under normal dry conditions.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Manufacturer and basis of design shall be the following however products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product and acceptance is provided by the architect in writing prior to bidding.
 - 1. Lift Master
- B. The following manufacturers are acceptable provided they equal or exceed the material requirements and functional qualities of the basis of design product.
 - 1. Aleko Products
 - 2. Apollo Gate Operators

2.2 GATE OPERATORS GENERAL

- A. Operators: Factory-assembled, automatic, gate-operating system designed for gate size, type, weight, and frequency of use. Control system shall have characteristics suitable for Project conditions, with control stations, safety devices, and weatherproof enclosures.
 - 1. Operator design shall allow for removal of cover or motor without disturbing limit-switch adjustment and without affecting auxiliary emergency operation.
 - 2. Electronic components shall have built-in troubleshooting diagnostic feature.
 - 3. Unit shall be designed and wired for both right-hand/left-hand opening, permitting universal installation.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. UL Standard: Manufacture and label gate operators according to UL 325.

2.3 SWING GATE OPERATORS

- A. Basis of Design: “Model 500DC”.
- B. Gate Operators: Single Actuator Arm, Full length commercial housing corrosion resistant aluminum with Molecular bonded self-lubricating drive screw.
 - 1. LA500CONTUL Control Box for single or master/second application.
 - 2. Compliance: UL Listed. Compliant to the UL 325, UL 991 and CSA C22.2 No. 247 standards.
 - a. Model is intended for use in Class I, II, III, and IV vehicular swing gate applications.
 - 3. Monitored Safety Inputs: 3 inputs per board (main board and expansion board) totaling 6 inputs with any combination of up to:
 - a. Main Board:
 - 1) 1 Monitored Close Photo Eye input
 - 2) 1 Monitored Open Photo Eye input
 - 3) 1 Monitored Open Safety Edge or Open Photo Eye input
 - b. Expansion Board
 - 1) 2 Monitored Safety Edge or Photo Eye inputs (selectable for Open or Close).
 - 2) 1 Monitored Photo Eye input (selectable for Open or Close).
 - c. 8 Monitored edges available when Transceiver is added.
 - 4. Electrical Power Requirements:
 - a. 230V AC, single phase.
 - 5. Motor: 24V DC, with soft start/stop operation.
 - a. Duty cycle: Continuous duty.
 - 6. Recommended Cycles per Day: 300.
 - 7. Gate Travel Speed: 90-degree opening in 15 to 18 seconds.
 - 8. Wormgear Reduction: Precision machined metal gears contained in lubrication housing.
 - 9. Battery Backup: Power Management system draws 14.8 mA when gate is idle. Provides 500 cycles on Battery Backup with two 7 Ah batteries with remote controls programmed.
 - 10. Standby Time: Provides up to 24 days of standby power in the event of a power loss (excluding accessories).
 - 11. Accessory Electrical Power Requirements: 24V DC 500 mA output, switched and unswitched power.
 - 12. Chassis: Commercial-duty die cast aluminum housing.
 - 13. Inherent Reversing Sensor: Detects obstructions or increased loads. Reverses gate when closing or stops/reverses the gate when opening.
 - 14. Electronic Limits: Maintains accurate limit position throughout travel, even after using the manual release handle.
 - 15. LED Diagnostic Display: Simplifies installation and troubleshooting.
 - 16. Colored Terminal Blocks: Provides easy identification of safety and fire department inputs.
 - 17. Programmable Auxiliary Relays: 2 programmable relays with 6 settings each
 - a. Pre-warning or gate-in-motion sounder.
 - b. Switch on/off devices at open or Close Limits or while gate is in motion.
 - c. Tamper detection if gate is pushed off Close Limit.
 - d. Cycle quantity feedback.
 - e. Red/Green light to control gate traffic.
 - 18. Quick Close, Anti-Tailgate: Quickly secures property, preventing unauthorized access.

19. Sequenced Access Management: Capable of sequentially controlling the operator in tandem with barrier gate.
20. Plug-in Loop Detector Inputs: Programmed inputs for shadow, interrupt and exit.
21. Alarm Reset Button: Instantly resets the built-in safety alarm siren.
22. Fire Department Compliant: Selectable settings allow gate to auto open on power failure or battery depletion.
23. Surge Suppression: Industrial strength on high and low voltage outputs. Protects against lightning strikes at a 50-foot radius.
24. Emergency Release: Simple-to-use keyed release handle allows gate to be operated manually and maintain limit position once re-engaged.
25. Chassis: Commercial-duty die cast aluminum housing.
26. Operating Temperature Range: -4 degrees F to 140 degrees F.
27. MyQ Enabled Accessories:
 - a. LiftMaster 828LM Internet Gateway: Allows remote monitoring from Internet-enabled computer or smartphone.
28. Accessories: Safety Monitoring Devices:
 - a. Monitored Photo Eyes and Wireless Edge Kits.
 - 1) LiftMaster LMRRUL Reflective Photo Eyes.
 - b. Wired Monitored Edges (all require use of LMWEKITU)
 - 1) LiftMaster S Small Profile Monitored Edge

2.4 HORIZONTAL SLIDING GATE OPERATORS

- A. Basis of Design: "Model CSL24UL".
- B. Gate Operators:
 1. Compliance: UL Listed. Compliant to the UL 325, UL 991, and CSA C22.2 No. 247 standards.
 - a. This model is intended for use in Class I, II, III, and IV vehicular slide gate applications.
 2. Monitored Safety Inputs: 3 inputs per board (main board and expansion board) totaling 6 inputs with any combination of up to:
 - a. Main Board:
 - 1) 1 Monitored Close Photo Eye input
 - 2) 1 Monitored Open Photo Eye input
 - 3) 1 Monitored Open Safety Edge or Open Photo Eye input
 - b. Expansion Board
 - 1) 2 Monitored Safety Edge or Photo Eye inputs (selectable for Open or Close).
 - 2) 1 Monitored Photo Eye input (selectable for Open or Close).
 - c. 8 Monitored edges available when Transceiver is added.
 3. Electrical Power Requirements:
 - a. 230V AC, single phase.
 4. Motor: 24V DC, with soft start/stop operation.
 - a. Duty cycle: Continuous duty.
 5. Capacity: 50-foot gate at 1,500 pounds.
 6. Recommended Cycles per Day: Continuous duty.
 7. Gate Travel Speed: 12 inches per second.
 8. Warranty: 5 years for commercial applications, 7 years for single-home applications.
 9. Wormgear Reduction: Commercial oil bath gearbox with 10:1 wormgear reduction running in synthetic oil bath.

10. Battery Backup: Power Management system draws 14.8 mA when gate is idle with remote controls programmed. Provides 208 cycles on Battery Backup with two 7 Ah batteries or 1179 cycles with two 33 Ah batteries.
11. Standby Time: Provides up to 24 days of standby power in the event of a power loss with two 7 Ah batteries or 105 days with two 33 Ah batteries (excluding accessories).
12. Solar Capable: See daily solar cycle chart.
13. Accessory Electrical Power Requirements: 24V DC 500 mA output, switched and unswitched power.
14. Chassis: Constructed with 1/4 inch (6mm) gold zinc-plated steel for rust prevention.
15. Cover: High-density, UV-resistant polycarbonate two-piece cover.
16. Internet Connectivity: MyQ Technology
 - a. 902 to 928 MHz
 - b. 50-channel FHSS (Frequency Hopping Spread Spectrum).
 - c. LiftMaster 828LM Internet Gateway enables monitoring and control of gate operators via internet-enabled smartphone, tablet or computer.
 - d. Provides two-way communication between gate operator and MyQ accessories to enable remote open, close and monitoring of gate.
17. Receiver:
 - a. Security+ 2.0 3-channel on-board receiver, holds up to 50 remote controls (unlimited with use of 811LM/813LM), HomeLink compatible
 - b. Transmits 310 MHz, 315 MHz, 390 MHz.
18. Inherent Reversing Sensor: Detects obstructions or increased loads. Reverses gate when closing or stops/reverses the gate when opening.
19. Electronic Limits: Maintains accurate limit position throughout travel, even after using the manual disconnect.
20. PosiLock: Automatically powers the operator and returns a gate to the closed position when gate is pushed off of its closed limits.
21. LED Diagnostic Display: Simplifies installation and troubleshooting.
22. Colored Terminal Blocks: Provides easy identification of safety and fire department inputs.
23. Programmable Auxiliary Relays: 2 programmable relays with 6 settings each.
 - a. Pre-warning or gate-in-motion sounder.
 - b. Switch on/off devices at open or Close Limits or while gate is in motion.
 - c. Tamper detection if gate is pushed off Close Limit.
 - d. Cycle quantity feedback.
 - e. Red/Green light to control gate traffic.
24. Quick Close, Anti-Tailgate: Quickly secures property, preventing unauthorized access.
25. Sequenced Access Management: Capable of sequentially controlling the operator in tandem with barrier gate.
26. Plug-in Loop Detector Inputs: Programmed inputs for shadow, interrupt and exit.
27. Alarm Reset Button: Instantly resets the built-in safety alarm siren.
28. Fire Department Compliant: Selectable settings allow gate to auto open on power failure or battery depletion.
29. Surge Suppression: Industrial strength on high and low voltage outputs. Protects against lightning strikes at a 50-foot (15240 mm) radius.
30. Keyed Manual Disconnect: Simple-to-use disconnect allows gate to be operated manually and maintain limit position once re-engaged.
31. Operating Temperature Range: -4 degrees F to 140 degrees F.
32. MyQ enabled Accessories:

- a. LiftMaster 828LM Internet Gateway: Allows remote monitoring from internet-enabled computer or smartphone.
- 33. Accessories: Safety Monitoring Devices:
 - a. Monitored Photo Eyes and Wireless Edge Kits.
 - 1) LiftMaster LMRRUL Reflective Photo Eyes.
 - b. Wired Monitored Edges (all require use of LMWEKITU)
 - 1) LiftMaster S50 Small Profile Monitored Edge
- 34. Accessories: Provide the accessories listed below.
 - a. LiftMaster LOOPDETLM Plug-in Loop Detector

2.5 ACCESS CONTROL SYSTEMS (PROVIDE FOR EACH GATE)

- A. Basis of Design: “Model KPR2000”
- B. Single Entry Access Keypad and Proximity Reader:
 - 1. Performance:
 - a. Operating Voltage: 12V to 24V DC.
 - b. Current Draw: 25 mA idle; 60 mA peak.
 - c. Proximity Card Reader: HID 26-bit and 30-bit Wiegand format.
 - d. Industry standard 125 kHz.
 - e. Read Range – Proximity: 1 to 2-1/2 inches.
 - f. Weatherization: Meets or exceeds IP68.
 - g. Operating Temperature: -4 degrees F to 140 degrees F.
 - h. Operating Humidity: 10% to 90% non-condensing.
 - 2. Construction: Zinc-alloy enclosure.
 - 3. Dimensions: Surface mount, 5 inches H x 3-1/5 inches W x 1-1/10 inches D).
 - 4. Standard Features:
 - a. Stand-alone controller and pass-through mode.
 - b. Selectable ASCII keypad mode, or 26-bit card keypad mode.
 - c. Controls access for up to 2,000 users (card only, card or PIN, card and PIN).
 - d. Integrated alarm buzzer.
 - e. Additional alarm output (20A).
 - f. Rugged vandal-resistant backlit metal enclosure.
 - g. One programmable relay output (2A, form A).
 - h. Timed or latch mode to hold door/gate open (1 to 99 second timer).
 - i. Supports second keypad configuration for in and out same door or gate.
 - j. Block enrollment capability.
 - k. Program cards included for rapid programming.
 - l. Anti-tamper alarm (1 to 3 minute timer).
 - 5. Accessories:
 - a. Low-Profile Access Pedestal (LiftMaster Model PED42).
 - b. Trim Plate Kit (LiftMaster Model 142A0271) Decorative trim piece for face plate. Powder coated finish-black
 - c. 12V DC, 2A Power Supply (LiftMaster Model PS12D2A).
 - d. HID 26-Bit Proximity Card, or Key Fob, 100 required.

2.6 TELEPHONE ENTRY CONTROL SYSTEMS (ONE SYSTEM TO BE USED FOR THE TWO GATES)

- A. Basis of Design: Model EL”
- B. Light Commercial Telephone Entry Control System:

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Martin County High School
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1. Base Unit Includes E-Z Scan:
 - a. Wiegand Input Module: Allows addition of card readers, remote keypads and Passport receiver.
2. Memory Chip Capacity: 2,000 users; programmable as directory codes, access codes and cards.
3. Standard Features:
 - a. Remote Access Diagnostics: Unit will record the following alarms: Forced door/gate, door/gate ajar, unit over/under voltage.
 - b. Voice Prompts: Push-button provides ADA-compliant voice prompts for end users.
 - c. Line Noise Tolerance: Enhanced telephone connection to unit via modem.
 - d. Legacy Database Conversion: Versa XS 4.0 software allows transfer of information from existing Sentex system to new Sentex system.
 - e. Programming: Versa XS 4.0 software allows control programming through modem, unit keypad or direct laptop connection.
 - f. Controllable System Relays: 4 independent relays can be set to activate doors/gates; can function as strike, control, shunt, alarm or CCTV relays. Activation time between 1 and 300 seconds.
 - g. Call Forwarding: System will dial a pre-programmed telephone number when the tenant is not at the monitored location. Access can be granted or denied from remote location. Call forwarding can be programmed manually as needed or time-activated to occur at scheduled intervals.
 - h. Call Waiting: Resident can answer an access call from a visitor while in the middle of another outside call. Resident can answer an outside call if on an access call.
 - i. Illuminated keypad.
 - j. Non-Volatile Memory: In event of power failure, database information is retained in memory allowing immediate start-up and operation when power is restored.
 - k. Separate Call Button: Initiates phone call to resident.
 - l. Distinctive Ringing: Unique double ring on resident's telephone to distinguish between a standard call and an access request call.
 - m. Entry Codes: Codes can be time-restricted or established as one-time-use only.
 - n. Holiday Programming: Maximum of 16 holidays can be defined to override the pre-defined lock/unlock schedules.
 - o. Time Zones: Software manages up to 62 separate time zones with 3 segments each for access/no access schedules.
 - p. Anti-Passback: Waits for pre-programmed period of time before code or card can be reused.
 - q. Transaction Monitoring: Maximum of 4,000 transactions (date, time, unit ID and transaction) stored in unit are retrievable for record of on-site activities.
 - r. Battery backed clock/calendar including daylight savings and leap years.
 - s. Automatic Gate/Door Unlock Schedule: Main or auxiliary access points can be programmed to open at pre-defined times.
 - t. Security Lockout: Locks out all users for a programmable period of time if several invalid code attempts are made.
 - u. Alarm Calling: System dials pre-defined telephone number to notify security personnel of the alarm condition if door/gate is forced open or held open too long.
 - v. Remote Updates: Software updates accomplished through remote computer and modem connection.

- w. Do Not Disturb: Assignable on tenant-by-tenant basis when programmed manually through touch-tone telephone or by a pre-programmed schedule.
 - x. Lightning Protection: Installer shall provide external surge suppressors in addition to surge protection inherent in the entry system.
 - y. Auto Sensor Input: Programmable to automatically dial the residence when a vehicle approaches the property.
- 4. Exit Reader: Provides reader for true anti-passback operation.
 - 5. Camera: Integrates camera into system to provide live video directly to television or monitor screen.
 - a. Color low-lux camera compatible with DVRs.
 - 6. Commercial Receiver and Remote Access Control: LiftMaster PPWR Passport Credential Radio Control Receiver.
 - a. Receiver: LiftMaster PPWR Passport Receiver with Security+ 2.0.
 - b. Standard Receiver Features:
 - c. Security+ 2.0 Technology provides enhanced radio range.
 - d. Compatible with HomeLink wireless control system.
 - e. Supports standard 26-bit, 31-bit, 34-bit even and odd, 50-bit and Sentex 30-bit proximity card formats.
 - f. Designed for outdoor environments.
 - g. Duplicate memory module included that may be removed for programming additional receivers or for safe storage.
 - h. 12,000 remote capacity.
 - i. 9-inch (229 mm) antenna.
 - j. Standard Wiegand output interface.
 - 7. Power: 12V to 24V DC.
 - 8. Enclosure: Surface-mount, vandal-resistant plastic and weather-resistant enclosure. 6 inches H x 4-1/8 inches W x 1-7/8 inches D.
 - a. Operating Temperature: -40 degrees F to 149 degrees F.
 - 9. Power: 12V AC at 0.75A max.
 - 10. Enclosure: Vandal-resistant.
 - a. Color: Gray.
 - 11. Mount: LiftMaster PED42 Pedestal; 42 inches pad mount, 2 inches H x 2 inches W square black powder-coated pedestal.

2.7 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

2.8 GROUNDING MATERIALS

- A. Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Connectors and Grounding Rods: Listed and labeled for complying with UL 467.
 - 1. Connectors for Below-Grade Use: Exothermic welded type.

2. Grounding Rods: Copper-clad steel, 5/8 by 96 inches.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 GATE-OPERATOR INSTALLATION

- A. Install gate operators according to manufacturer's written instructions, aligned and true to fence line and grade.
- B. Excavation: Hand-excavate holes for posts, pedestals, and equipment bases/pads, in firm, undisturbed soil to dimensions and depths and at locations according to gate-operator component manufacturer's written instructions and as indicated.
- C. Vehicle Loop Detector System: Cut grooves in pavement, bury, and seal wire loop according to manufacturer's written instructions. Connect to equipment operated by detector.
- D. Ground electric-powered motors, controls, and other devices according to NFPA 70 and manufacturer's written instructions.

3.3 ACCESS CONTROL AND TELEPHONE CONTROL SYSTEM INSTALLATION

- A. Install in accordance with manufacturer's instructions including but not limited to the following:
 1. Mount directly to concrete pad, firmly secured, plumb and level.
 2. Mount to mounting pedestal; provide base plate.
 3. Wire in accordance with National Electric Code.
 4. Enclose all splices in easily accessible junction boxes or on terminal boards.
 5. Tag and identify all cable runs in all junction boxes.
- B. Test system and adjust to assure components and accessories are properly connected and in working order.
- C. Wiring shall be in accordance with national electric codes and manufacturer's instructions. Make conduit and wiring connections to existing gate and door hardware devices as required.

3.4 GROUNDING AND BONDING

- A. Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Fence and Gate Grounding:
 1. Ground for fence and fence posts shall be a separate system from ground for gate and gate posts.
 2. Install ground rods and connections at gate locations.
 3. Ground fence on each side of gates.
 - a. Bond metal gates to gate posts.
- C. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.
 1. Make grounding connections to each barbed wire strand with wire-to-wire connectors designed for this purpose.
 2. Make grounding connections to each barbed tape coil with connectors designed for this purpose.

- D. Connections:
 - 1. Make connections with clean, bare metal at points of contact.
 - 2. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 3. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
 - 4. Make above-grade ground connections with mechanical fasteners.
 - 5. Make below-grade ground connections with exothermic welds.
 - 6. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- E. Bonding to Lightning Protection System: Ground fence and bond fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor according to NFPA 780.

3.5 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Automatic Gate Operator: Energize circuits to electrical equipment and devices, start units, and verify proper motor rotation and unit operation.
 - 1. Hydraulic Operator: Purge operating system, adjust pressure and fluid levels, and check for leaks.
 - 2. Test and adjust operators, controls, alarms, and safety devices. Replace damaged and malfunctioning controls and equipment.
 - 3. Lubricate operator and related components.
- C. Lubricate hardware and other moving parts.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION

MARTIN COUNTY HIGH SCHOOL ENHANCED SECURITY PROJECT A1

MARTIN COUNTY SCHOOL DISTRICT 100% CONSTRUCTION DOCUMENTS

ARCHITECTURAL DESIGN CONSULTANT:

HARVARD JOLLY ARCHITECTURE

2047 VISTA PARKWAY, SUITE 100
WEST PALM BEACH, FL 33411
PHONE: 561-478-4457

MECHANICAL, PLUMBING & ELECTRICAL ENGINEER:

JLRD INC. ENGINEERS

1450 CENTREPARK BLVD - SUITE 350
WEST PALM BEACH, FLORIDA 33401
PHONE: 561- 689-2303

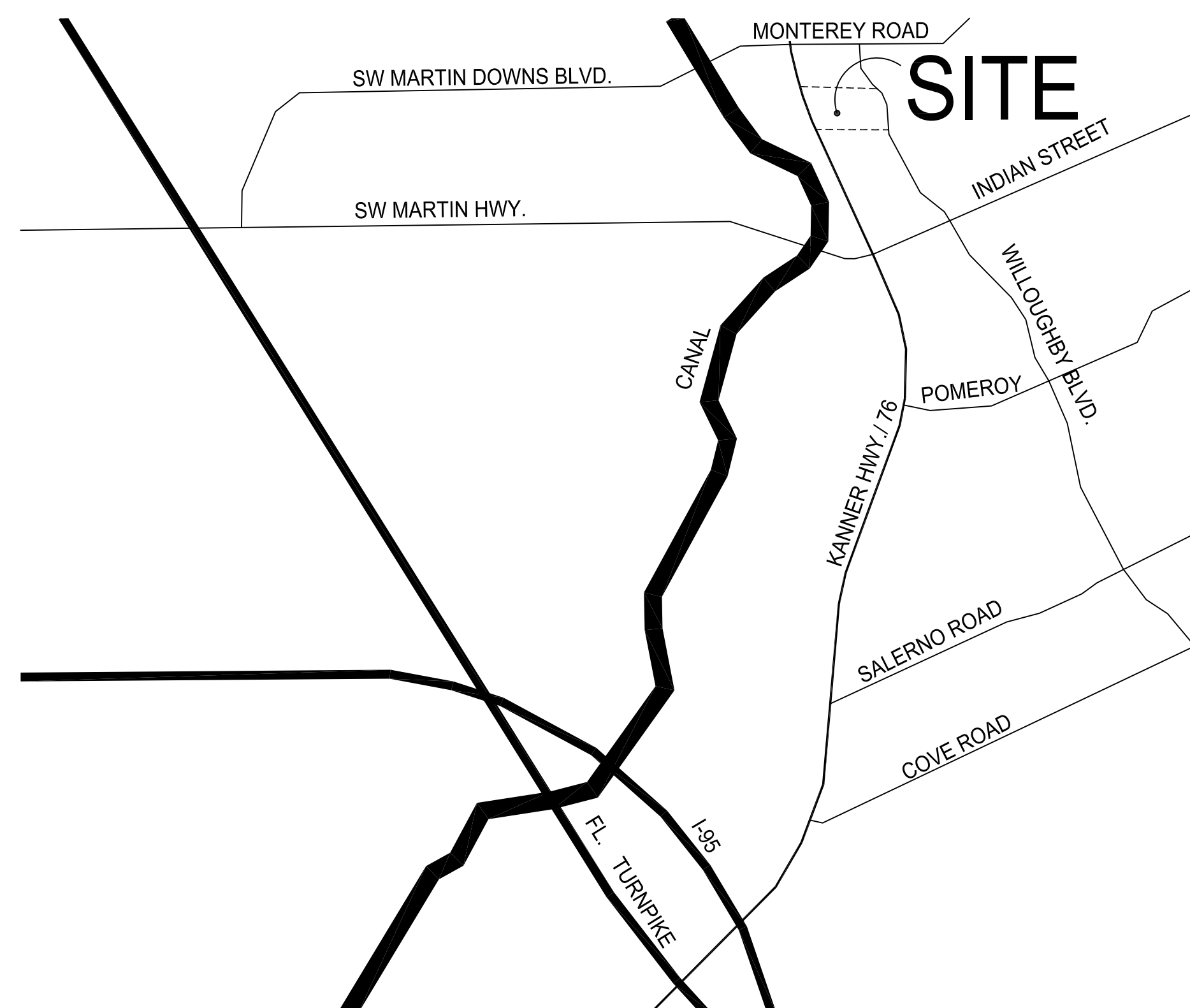
BOARD MEMBERS:

**CHRISTIA LI ROBERTS
MICHAEL DITERLIZZI
MARSHA POWERS
VICTORIA DEFENTHALER
TONY ANDERSON**

LAURIE J GAYLORD

**CHAIR
VICE CHAIR
MEMBER
MEMBER
MEMBER**

SUPERINTENDENT



LOCATION MAP ⊕

SHEET NO.	TITLE	ORIGINAL DATE	REVISION NO.	LATEST REVISION DATE
ARCHITECTURAL				
G-001	COVER SHEET & INDEX	08/27/19		
AD-101	DEMOLITION SITE PLAN	08/27/19		
AD-102	PARTIAL DEMOLITION PLAN	08/27/19		
AD-103	PARTIAL DEMOLITION PLAN	08/27/19		
AD-104	PARTIAL DEMOLITION PLAN	08/27/19		
AD-105	PARTIAL DEMOLITION PLAN	08/27/19		
AS-101	PROPOSED SITE PLAN	08/27/19		
AS-102	PARTIAL SITE PLAN	08/27/19		
AS-103	PARTIAL SITE PLAN	08/27/19		
AS-104	PARTIAL SITE PLAN	08/27/19		
AS-105	PARTIAL SITE PLAN	08/27/19		
AS-201	SITE PLAN ENLARGEMENT	08/27/19		
AS-202	SITE PLAN ENLARGEMENT	08/27/19		
AS-203	SITE PLAN ENLARGEMENT	08/27/19		
AS-301	SITE DETAILS	08/27/19		
ELECTRICAL				
E-001	ELECTRICAL NOTES AND LEGENDS	08/27/19		
E-101	ELECTRICAL SECURITY PLAN - OVERALL	08/27/19		
E-201	ENLARGED ELECTRICAL PLAN	08/27/19		
E-202	ENLARGED ELECTRICAL PLAN	08/27/19		
E-203	ENLARGED ELECTRICAL PLAN	08/27/19		
E-204	ENLARGED ELECTRICAL PLAN	08/27/19		
E-205	ENLARGED ELECTRICAL PLAN	08/27/19		
E-301	ELECTRICAL SCHEDULES AND DETAILS	08/27/19		

Comm. No: 16025.14
Date: 08/27/2019
Drawn: MCH

Revisions		
No.	Date	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.

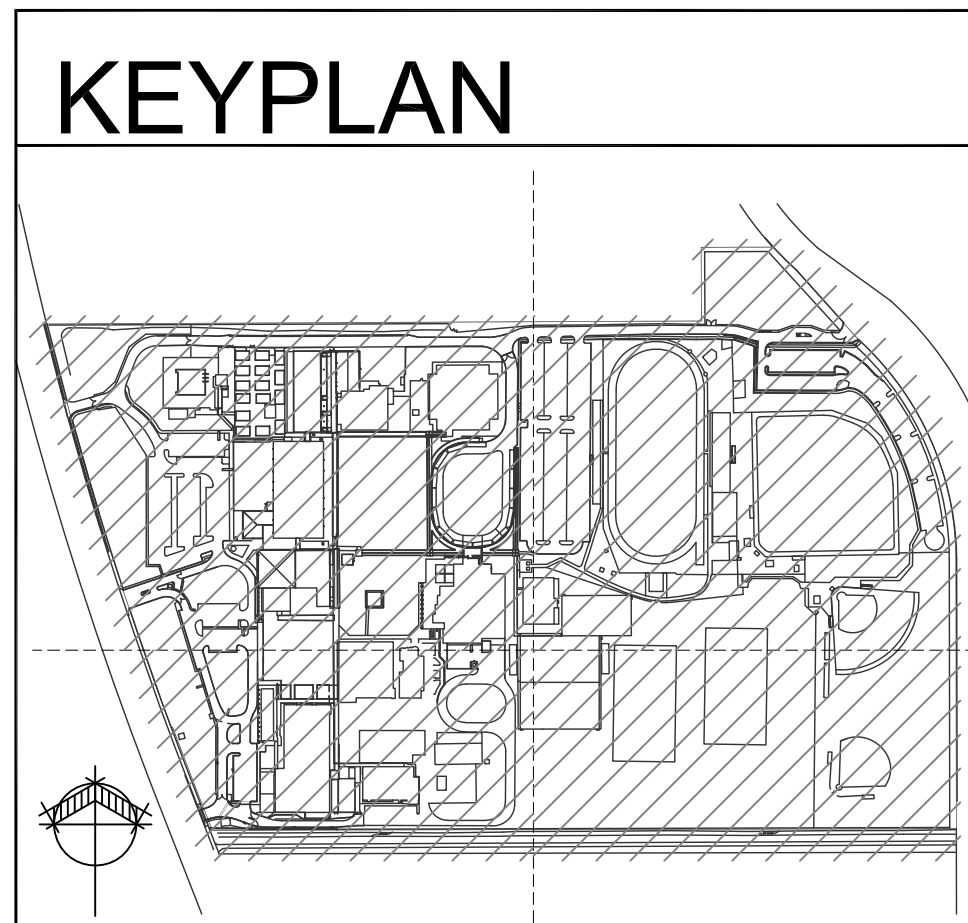
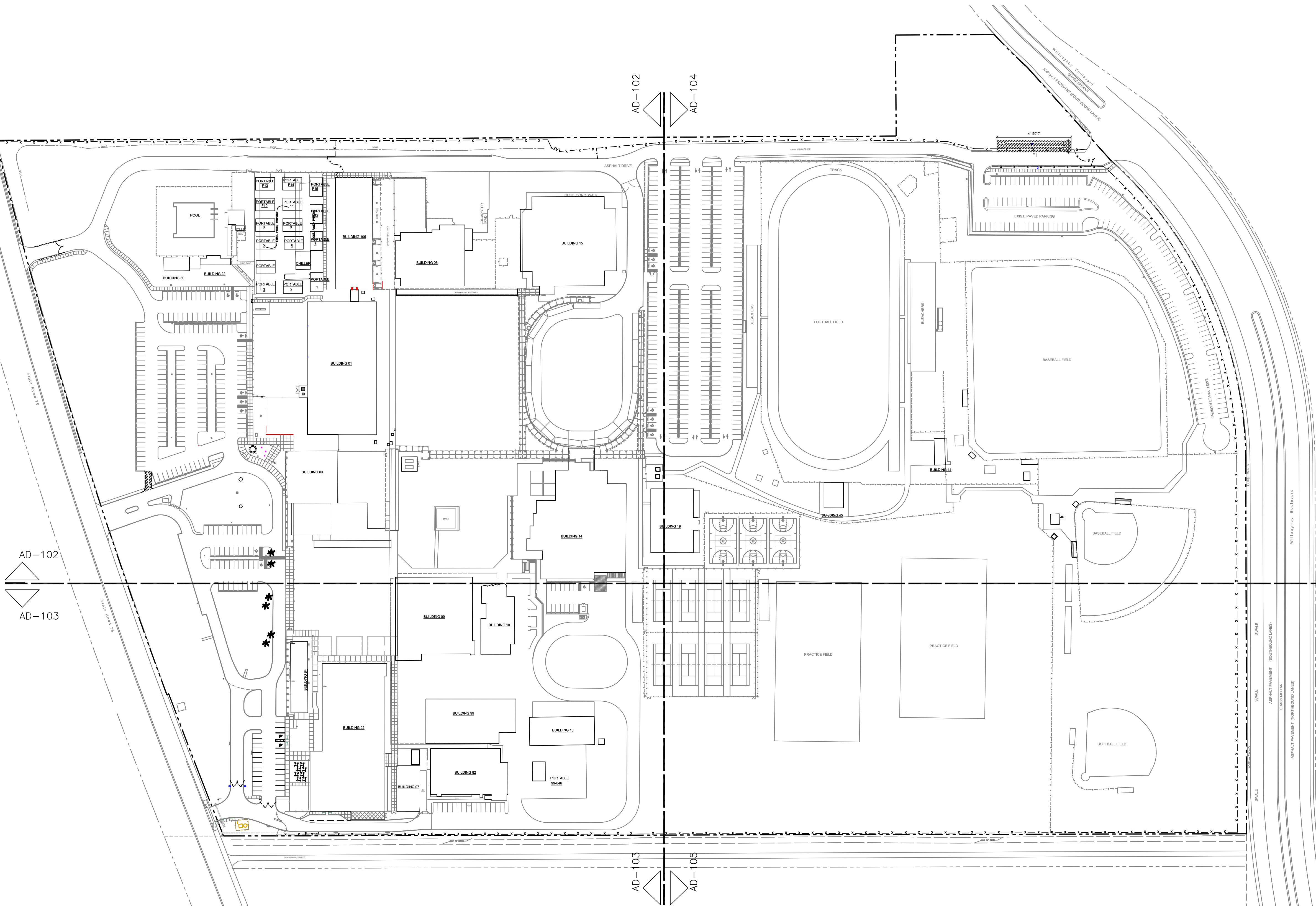
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COVER SHEET

G-001

GENERAL NOTES

- PRIOR TO BIDDING THE CONTRACTOR AND SUBCONTRACTORS SHALL VISIT THE FACILITY AND THOROUGHLY FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS. NO CLAIMS FOR ADDITIONAL WORK DUE TO UNFORESEEN CONDITIONS WILL BE CONSIDERED. THIS INCLUDES ALL SITE WORK, EQUIPMENT AND INFRASTRUCTURE AS REQUIRED TO PREPARE FOR NEW CONSTRUCTION.
- SCHEDULE DEMOLITION WORK WITHIN FACILITY ADMINISTRATION AND DISTRICT MANAGEMENT TO MINIMIZE DISRUPTION OF SERVICES. PROVIDE PHASED SEQUENCE OF WORK NOT TO DISTURB FULL ACCESS TO THE OCCUPIED FACILITY TO REMAIN. FINAL LOGISTICS TO BE REVIEWED WITH DISTRICT FOR COORDINATION WITH ON SITE SERVICES.
- SPECIFIC DEMOLITION NOTES ARE NOT TO BE CONSIDERED ALL INCLUSIVE OR COMPLETE IN THEMSELVES. CONTRACTOR SHALL PROVIDE ALL DEMOLITION INCIDENTAL TO OR REQUIRED FOR NEW AND RENOVATED CONSTRUCTION WHETHER SPECIFICALLY NOTED, INCLUDING BUT NOT LIMITED TO, REMOVAL OF EXISTING PAVEMENT, SIDEWALKS, FENCING, GATES, POSTS, PLANTING MATERIALS, ETC.
- CONSTRUCTION LIMITS - SOME ITEMS OF DEMOLITION MAY REQUIRE ACCESS IN AREAS OUTSIDE OF THE CONSTRUCTION LIMITS. PROPER COORDINATION AND NOTIFICATION OF THE OWNER SHALL BE REQUIRED PRIOR TO PERFORMING SUCH WORK.
- DEMOLITION WORK - CARRY OUT DEMOLITION WORK TO CAUSE AS LITTLE INCONVENIENCE TO ADJACENT OCCUPIED BUILDING AREAS AS POSSIBLE. DEMOLISH IN AN ORDERLY AND CAREFUL MANNER AS REQUIRED TO ACCOMMODATE NEW WORK. PERFORM DEMOLITION IN ACCORDANCE WITH APPLICABLE AUTHORITIES HAVING JURISDICTION. TAKE CARE TO PREVENT DAMAGE AND EXCESSIVE NOISE OR VIBRATION SO AS TO NOT DISTURB ADJACENT AREAS. ANY OPERATION THAT MAY CAUSE DISTURBANCE TO THE OWNER SHALL BE COORDINATED WITH THE OWNER A MINIMUM OF ONE (1) WEEK IN ADVANCE. SEE CONSULTANT DRAWINGS FOR ADDITIONAL DEMOLITION INFORMATION.
- PROTECTION - EXERCISE CARE DURING WORK TO PROTECT INTERIOR AND EXTERIOR EXISTING CONSTRUCTION TO REMAIN. REPAIR TO EXISTING CONSTRUCTION DUE TO DAMAGE SHALL BE DONE AT NO COST TO THE OWNER.
- THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY HAZARDOUS OR TOXIC MATERIALS DISCOVERED TO ARCHITECT, OWNER AND AUTHORITIES HAVING JURISDICTION.
- WHERE EXISTING SERVICES SUCH AS PLUMBING, ELECTRICAL, GAS, ETC. ARE AFFECTED BY DEMOLITION WORK THE SERVICES SHALL BE REMOVED TO A POINT WHERE THEY CAN BE CAPPED AND TERMINATED UNLESS OTHERWISE SHOWN ON THE DRAWINGS OF THE SPECIFIC DISCIPLINE AFFECTED.
- CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF WORK OF OTHER TRADES SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER. REFER TO OTHER DISCIPLINE DRAWINGS FOR ADDITIONAL INFORMATION.
- ALL MATERIALS REMOVED UNDER THIS CONTRACT, WHICH ARE NOT TO BE SALVAGED OR REUSED, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE PROMPTLY REMOVED FROM THE SITE. TO CONVEY MATERIALS, USE MOVEABLE, COVERED, DEBRIS BOXES, DO NOT STORE/PERMIT DEBRIS TO ACCUMULATE ON SITE.
- ANY MATERIALS SPECIFIED TO BE REUSED BY THE OWNER SHALL BE CAREFULLY REMOVED, PROTECTED AND STORED AT THE OWNER'S DIRECTION.
- AFTER THE DEMOLITION OF MATERIALS, THE RESULTING EXPOSED SURFACES SHALL BE SMOOTH AND FLUSH WITH THE EXISTING CONDITIONS. PATCH, REPAIR AND REPLACE SURFACES AS REQUIRED.
- BUILDING EXIT ACCESS AND ALL LIFE SAFETY DEVICES SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE AREAS DESIGNATED AS OCCUPIED DURING THE CONSTRUCTION PERIOD.
- SEQUENCE FOR FENCE REMOVAL AND REPLACEMENT TO BE COORDINATED WITH DISTRICT IN ORDER TO MAINTAIN SECURITY OF THE SITE AT ALL TIMES.
- PROVIDE TEMPORARY SIGNAGE TO SEPARATE SITE ACCESS FROM OCCUPIED FACILITY AND CONSTRUCTION PERSONNEL. SIGNAGE TO BE CLEARLY VISIBLE FROM ACCESS POINTS ON CAMPUS.
- PROVIDE FOR CONSTRUCTION FENCE TO SECURELY SEPARATE OCCUPIED FACILITY FROM BALANCE OF THE CAMPUS. GENERAL CONTRACTOR TO PROVIDE STAGING PLAN FOR APPROVAL BY THE DISTRICT.
- PROTECT EXISTING TREES WITH TRUNK DIAMETER OF 6" AND LARGER, INCLUDING ROOTS, WHETHER THEY ARE IDENTIFIED AS EXISTING TO REMAIN OR NOT.
- CONTRACTOR IS RESPONSIBLE FOR THE REPAIR OF ANY EXISTING LAWN AREAS DISTURBED DURING THE CONSTRUCTION PROCESS.
- CONTRACTOR SHALL PROVIDE A SECURE DOUBLE BARRIER WITH A DISTANCE OF TEN FEET (10'-0") BETWEEN THE BARRIERS WHEN HEAVY MACHINERY IS BEING USED ON SITE WHEN SCHOOL IS OCCUPIED.
- THE SCOPE OF WORK IS TO TAKE PLACE ON AN OCCUPIED AND ACTIVE CAMPUS. ALL PERSONNEL WORKING ON-SITE WITH THIS PROJECT MUST HAVE, WEAR AND DISPLAY A MARTIN COUNTY SCHOOL DISTRICT BADGE. CONTRACTOR/VENDOR MUST APPLY AT THE DISTRICT AND PAY FOR ALL BADGE ASSOCIATED COSTS.
- CONSTRUCTION PERSONNEL SHALL BE CONFINED TO THE LIMITS OF CONSTRUCTION AREA.
- THE CONTRACTOR SHALL NOTIFY SUNSHINE STATE ONE (1-800-432-4770) A MINIMUM OF 48 HOURS IN ADVANCE OF COMMENCING WORK TO HAVE AREA SCANNED FOR UNDERGROUND PIPING.
- CONTRACTOR TO COORDINATE AREAS OF PAVEMENT/CONCRETE TRENCHING WITH ELECTRICAL DRAWINGS AND MINIMIZE IMPACT AND DISRUPTION TO SCHOOL PERSONNEL. COORDINATE PARKING LOT/DRIVE LANES/SIDEWALK CLOSURES WITH DISTRICT AND SCHOOL STAFF A MINIMUM OF 72 HOURS PRIOR TO DISRUPTION.



01 OVERALL DEMOLITION SITE PLAN
SCALE: 1" = 100'-0"

Martin County School District
 Martin County High School Enhanced Security A1
 2801 South Kanner Highway
 Stuart, Florida 34994
 100% Construction Documents

Comm. No: 16025.14
 Date: 08/27/2019
 Drawn: MCH

Revisions		
No.	Date	Note

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OVERALL DEMOLITION SITE PLAN

AD-101

LEGEND	
	EXISTING PROPERTY LINE
	EXISTING CHAINLINK FENCE
	EXISTING ALUMINUM PICKET FENCE
	NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
	NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK

Comm. No: 16025.14
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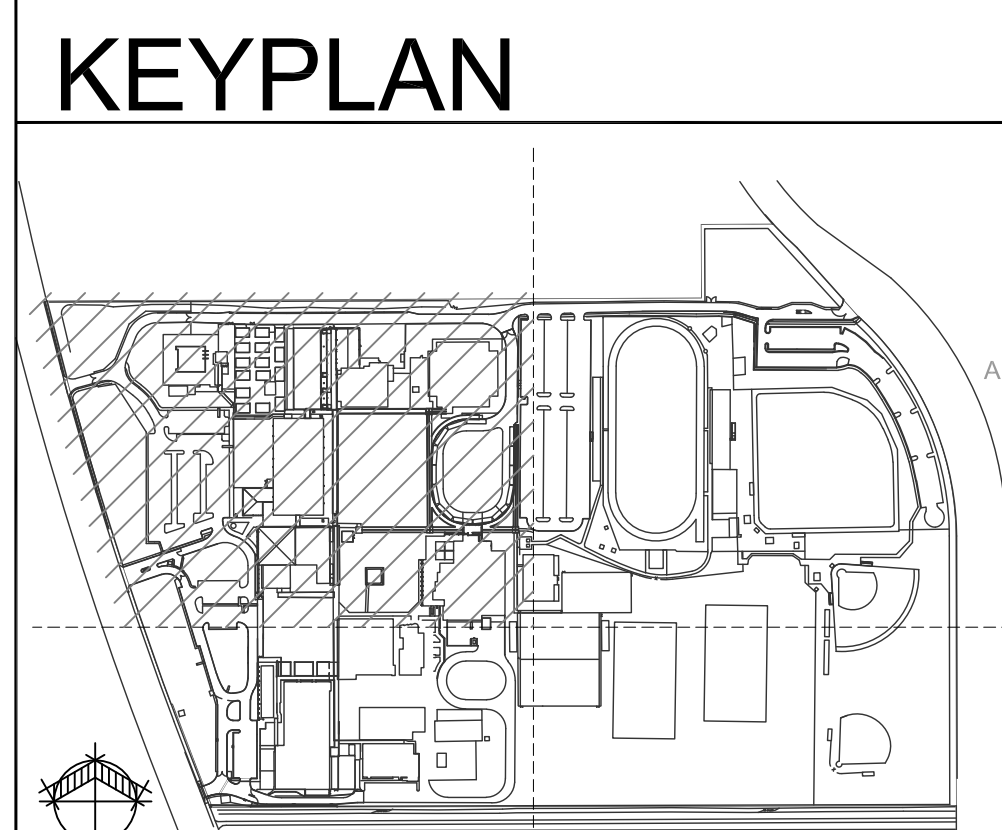
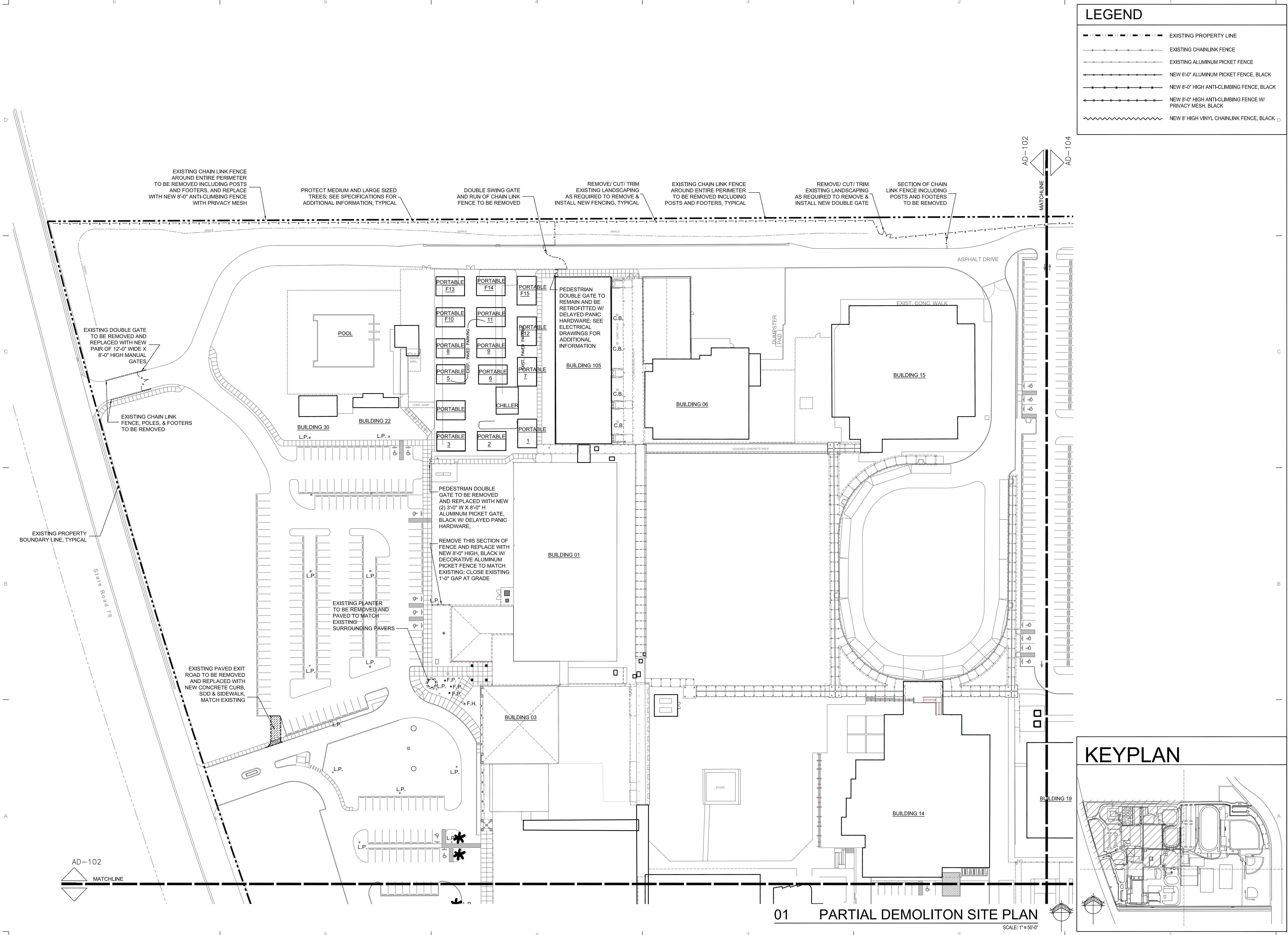
Revisions		
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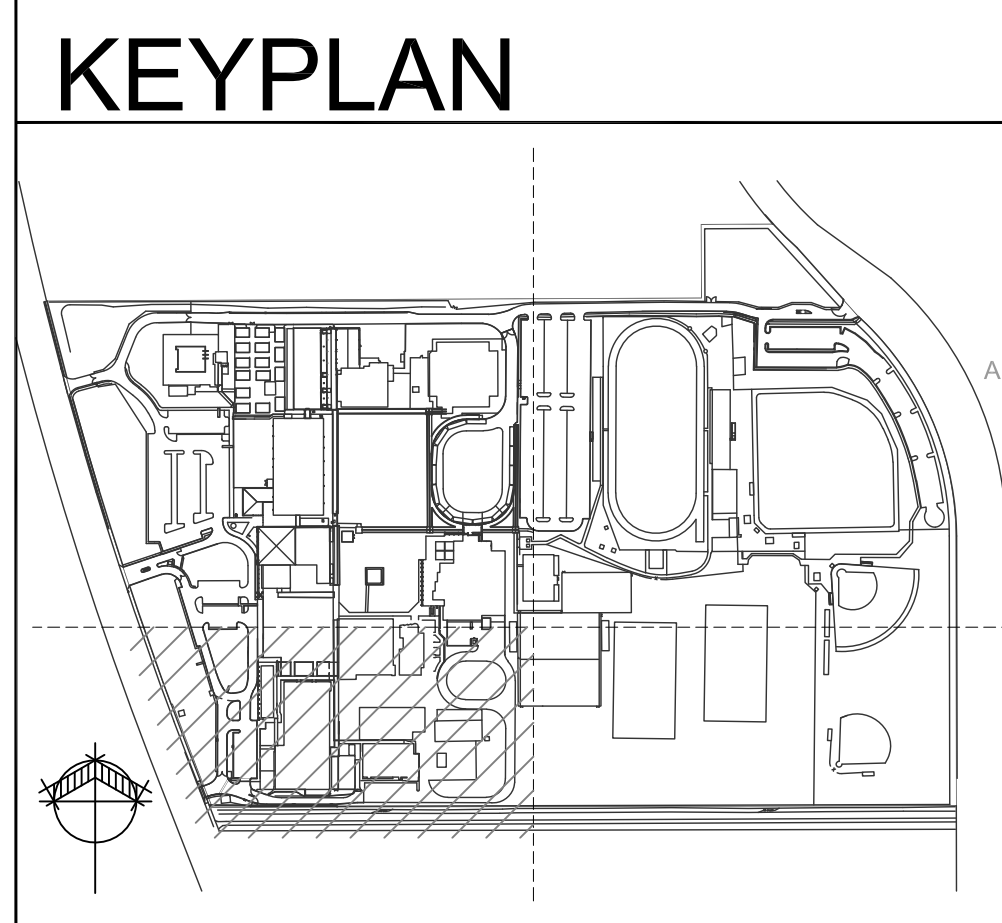
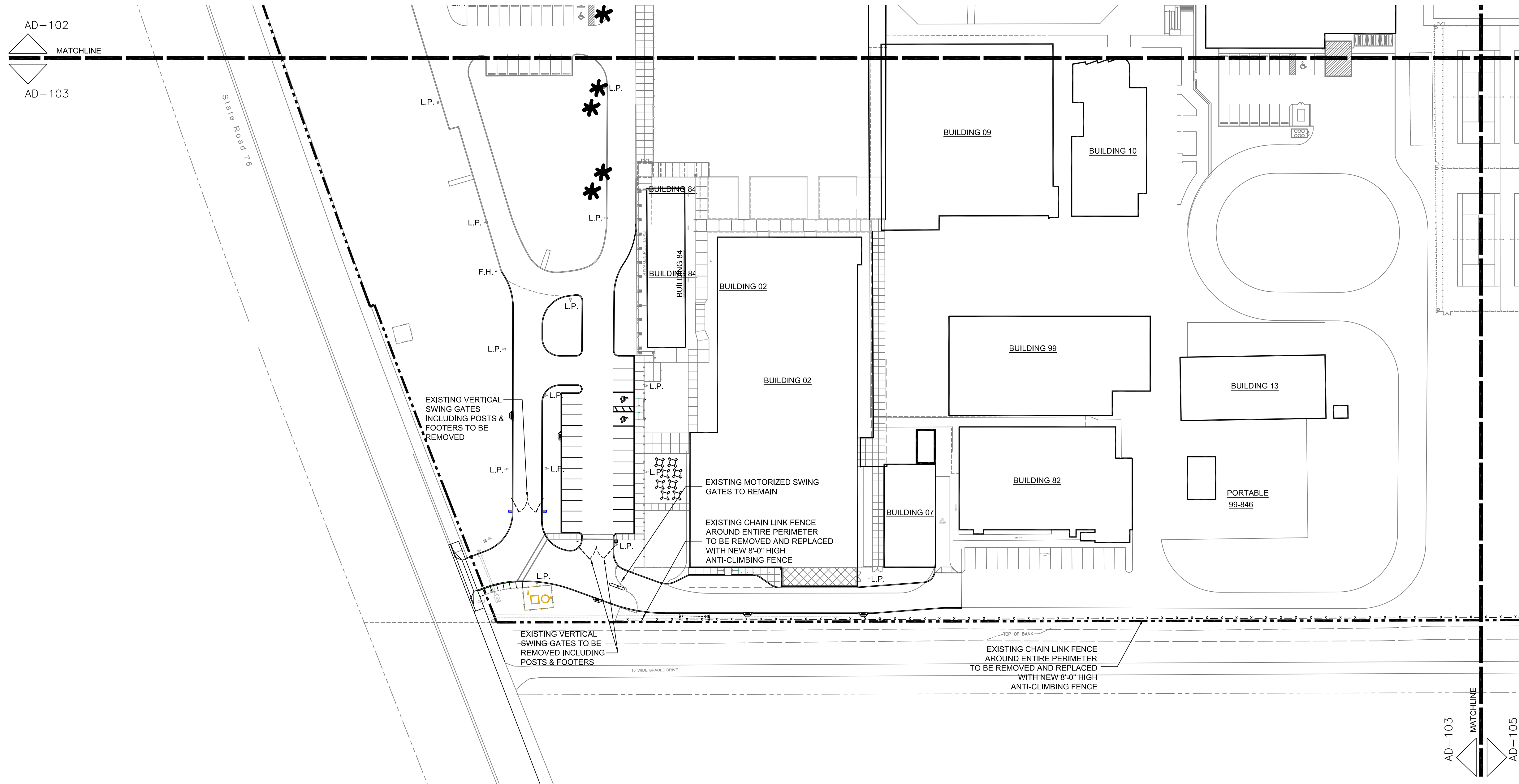
PARTIAL DEMOLITION SITE PLAN

AD-102



01 PARTIAL DEMOLITION SITE PLAN
 SCALE: 1" = 50'-0"

LEGEND	
	EXISTING PROPERTY LINE
	EXISTING CHAINLINK FENCE
	EXISTING ALUMINUM PICKET FENCE
	NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
	NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK



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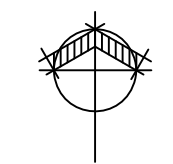
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PARTIAL DEMOLITION PLAN

AD-103

01 PARTIAL DEMOLITION SITE PLAN

SCALE: 1" = 50'-0"



LEGEND	
	EXISTING PROPERTY LINE
	EXISTING CHAINLINK FENCE
	EXISTING ALUMINUM PICKET FENCE
	NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
	NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK

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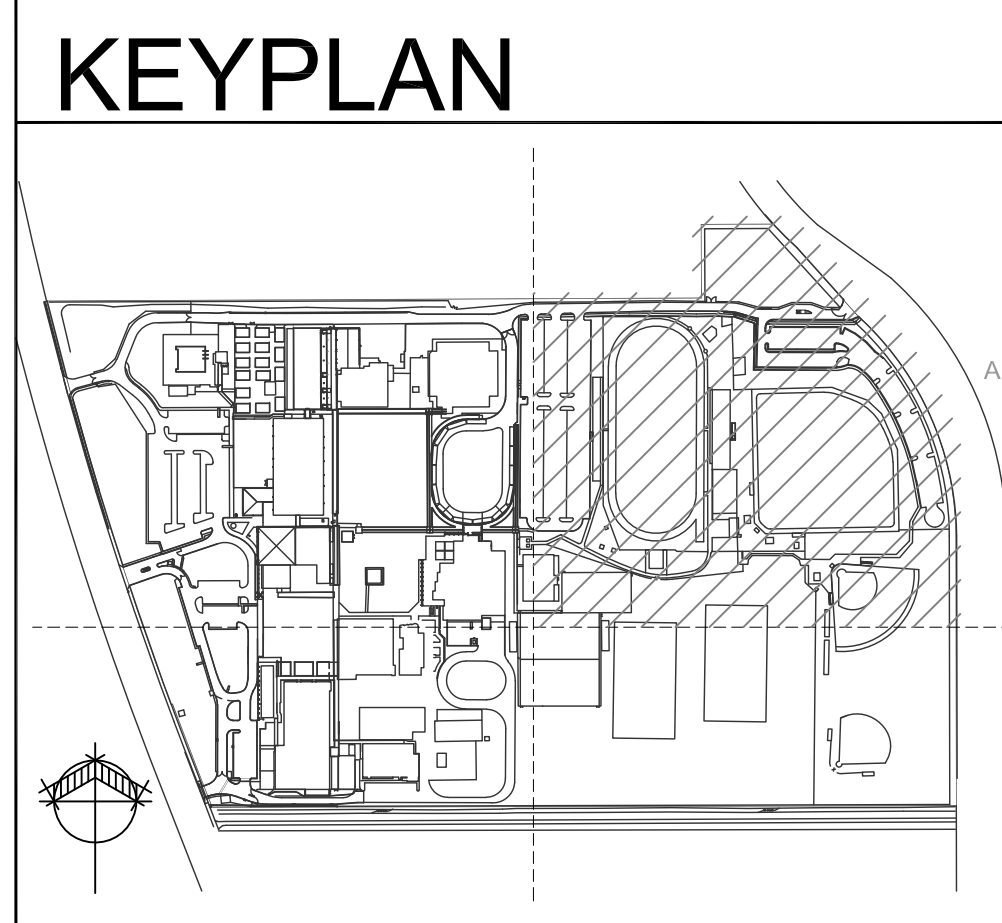
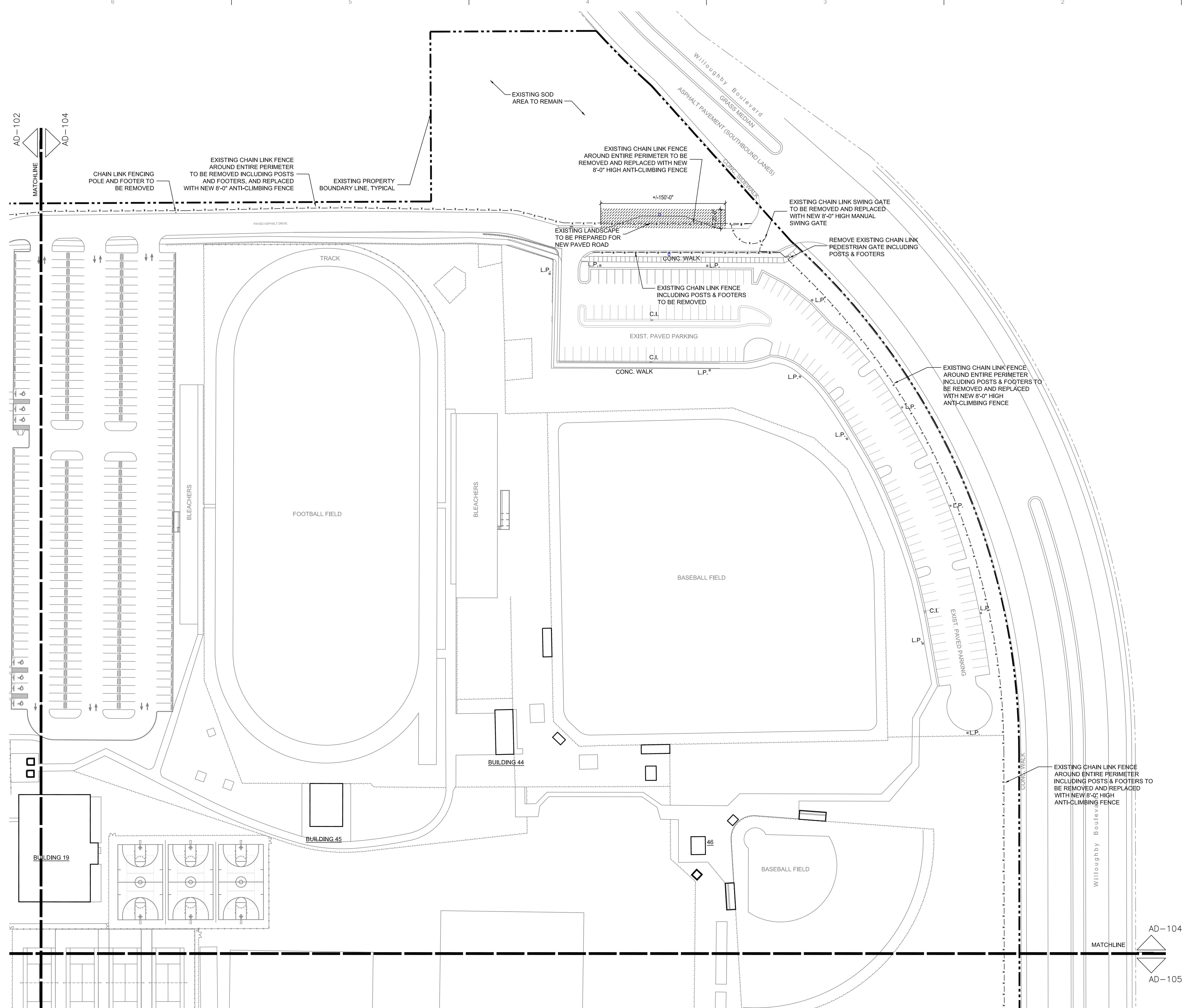
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PARTIAL DEMOLITION SITE PLAN

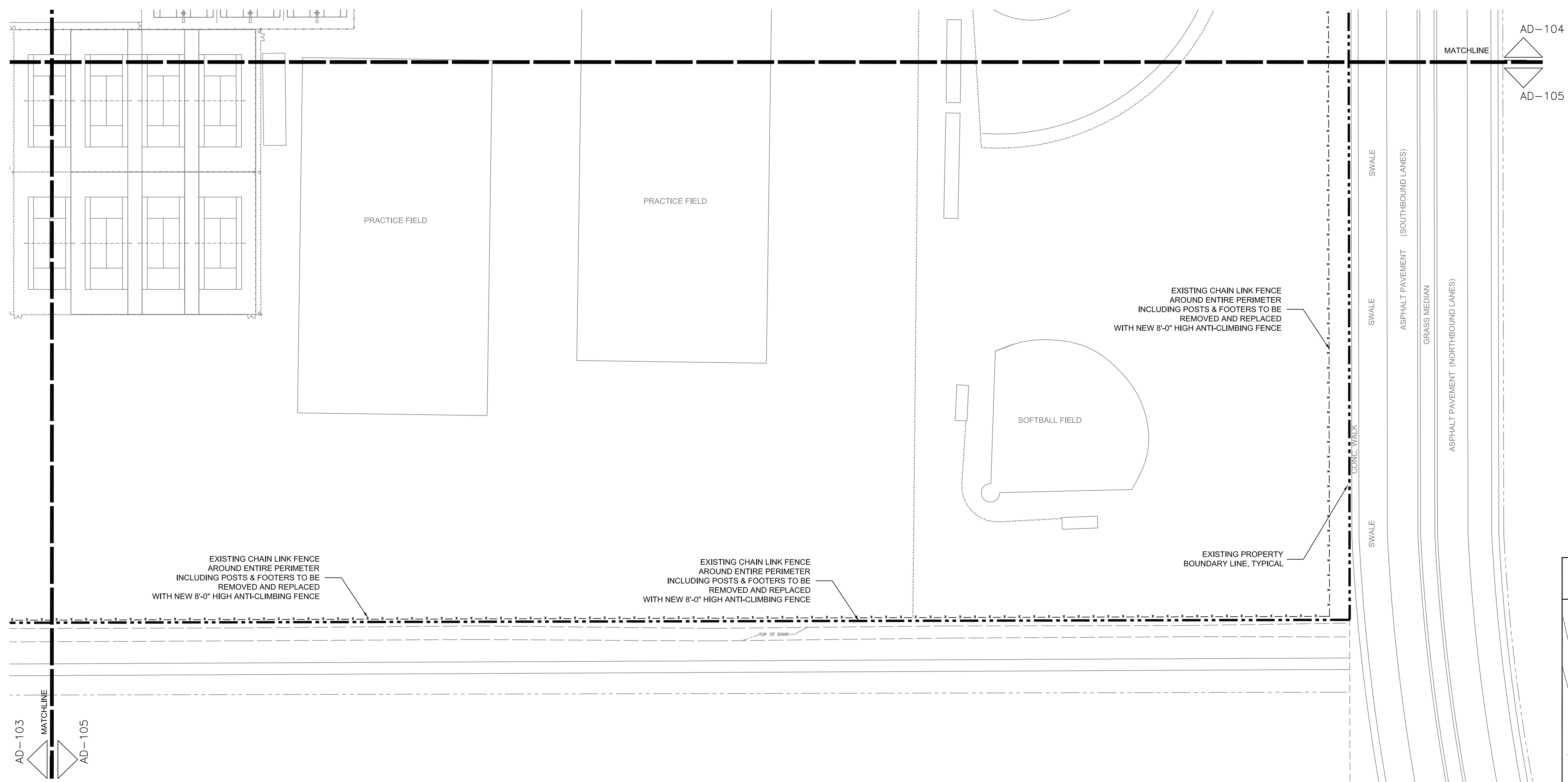
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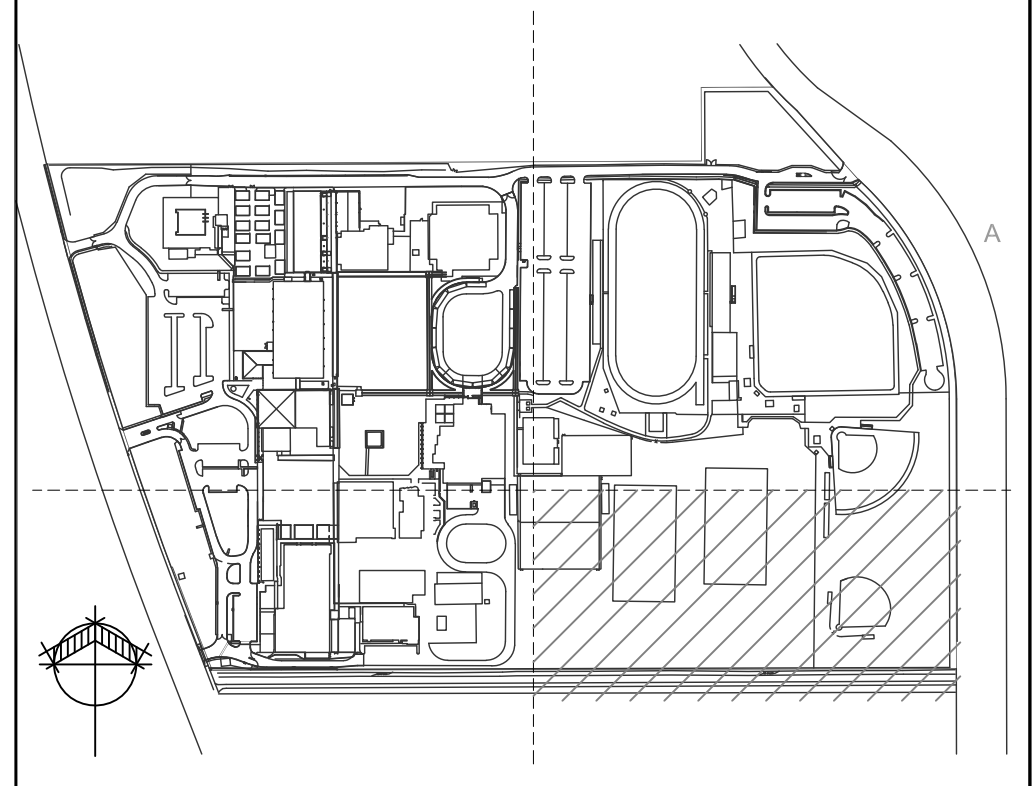
01 PARTIAL DEMOLITION SITE PLAN
 SCALE: 1" = 50'-0"

LEGEND

- EXISTING PROPERTY LINE
- - - - - EXISTING CHAINLINK FENCE
- - - - - EXISTING ALUMINUM PICKET FENCE
- - - - - NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
- - - - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
- - - - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
- ~ ~ ~ ~ ~ NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK



KEYPLAN



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PARTIAL DEMOLITION SITE PLAN

AD-105

LEGEND

- EXISTING PROPERTY LINE
- - - - - EXISTING CHAINLINK FENCE
- - - - - EXISTING ALUMINUM PICKET FENCE
- - - - - NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
- - - - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
- - - - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
- - - - - NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK

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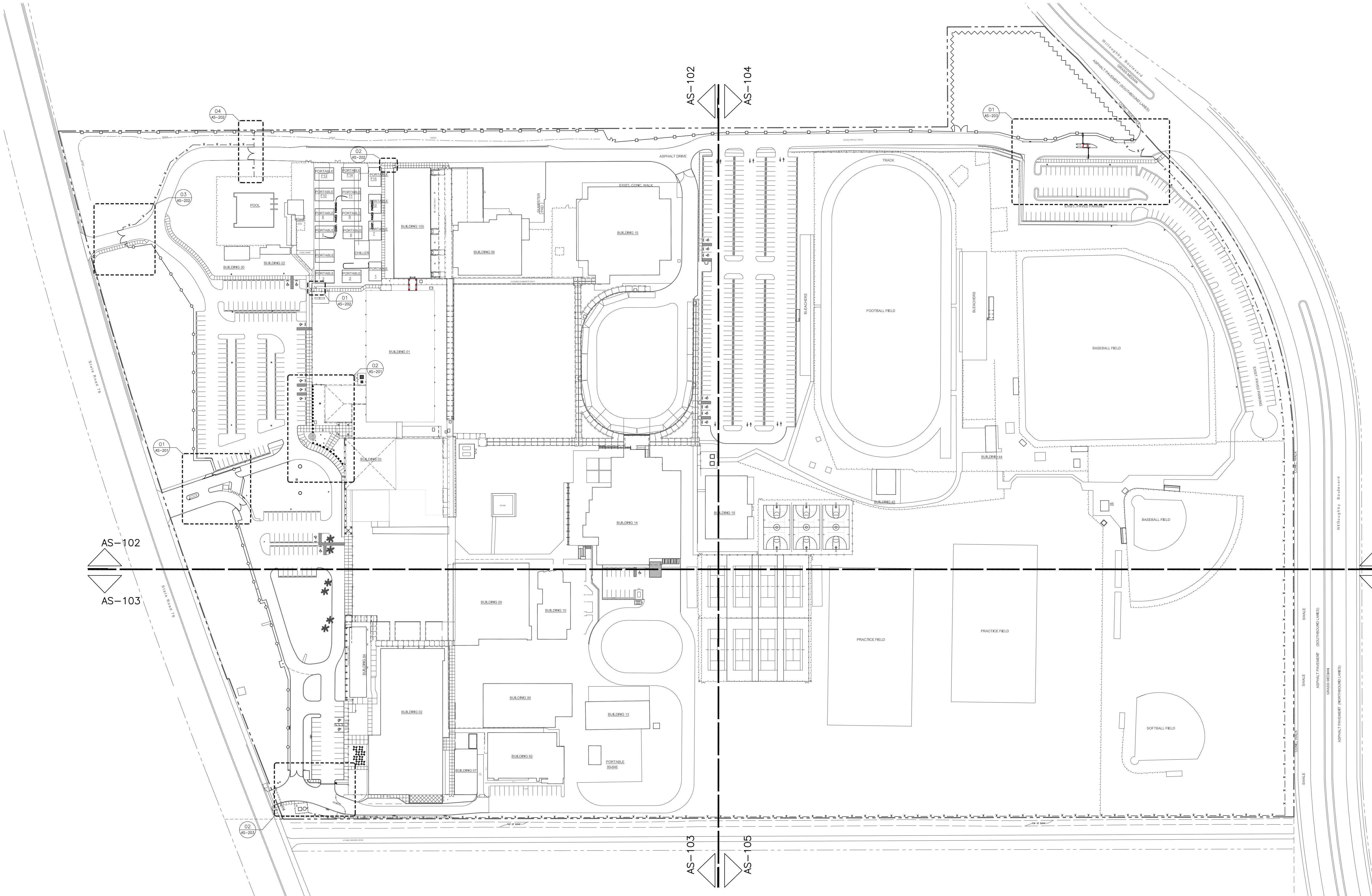
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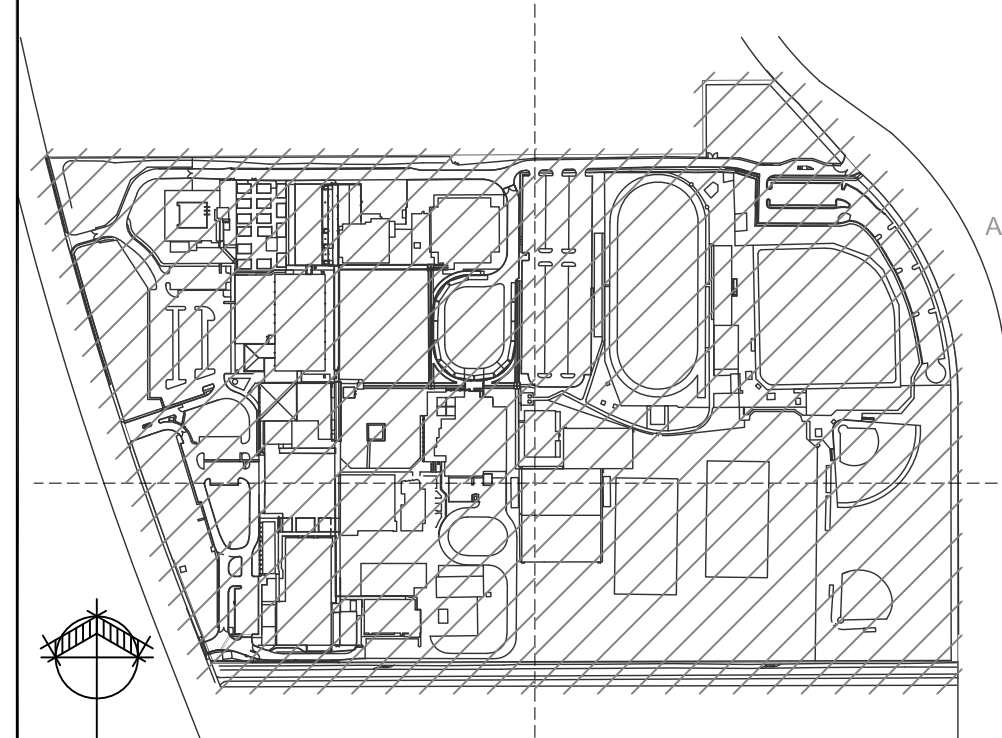
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OVERALL PROPOSED SITE PLAN

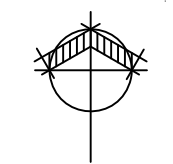
AS-101



KEYPLAN



01 OVERALL PROPOSED SITE PLAN
 SCALE: 1" = 100'-0"



LEGEND	
	EXISTING PROPERTY LINE
	EXISTING CHAINLINK FENCE
	EXISTING ALUMINUM PICKET FENCE
	NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
	NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK

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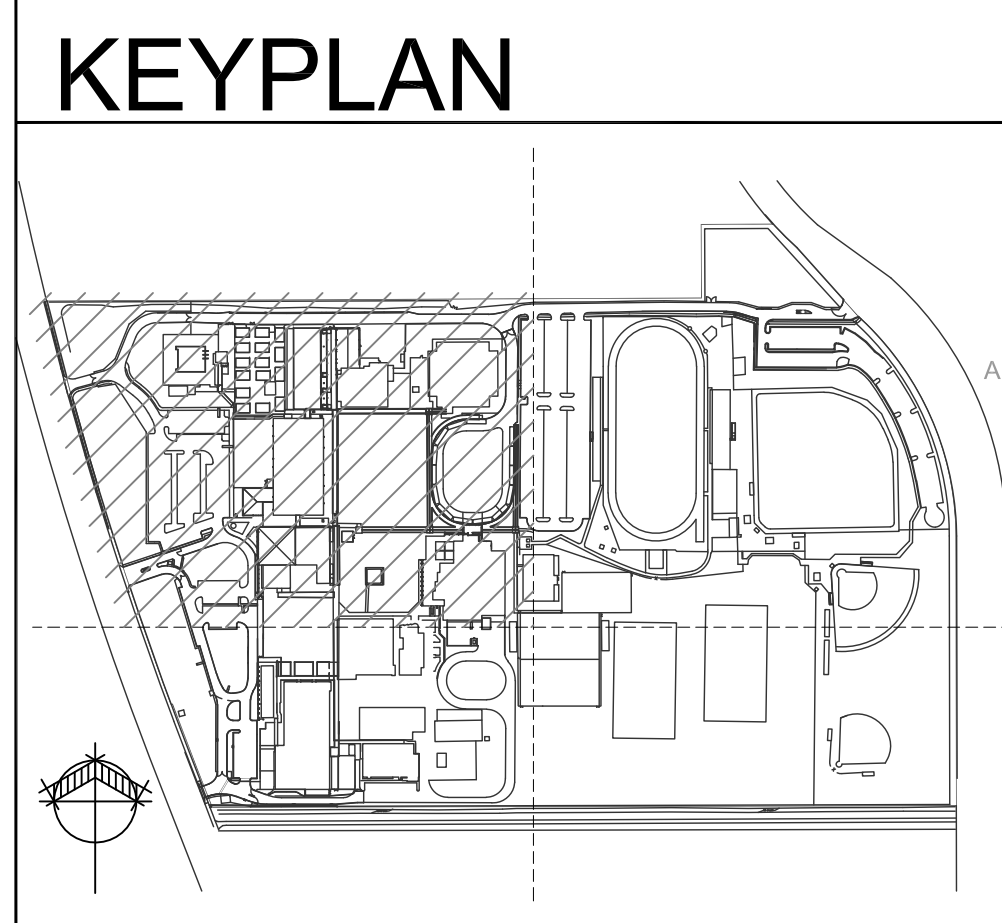
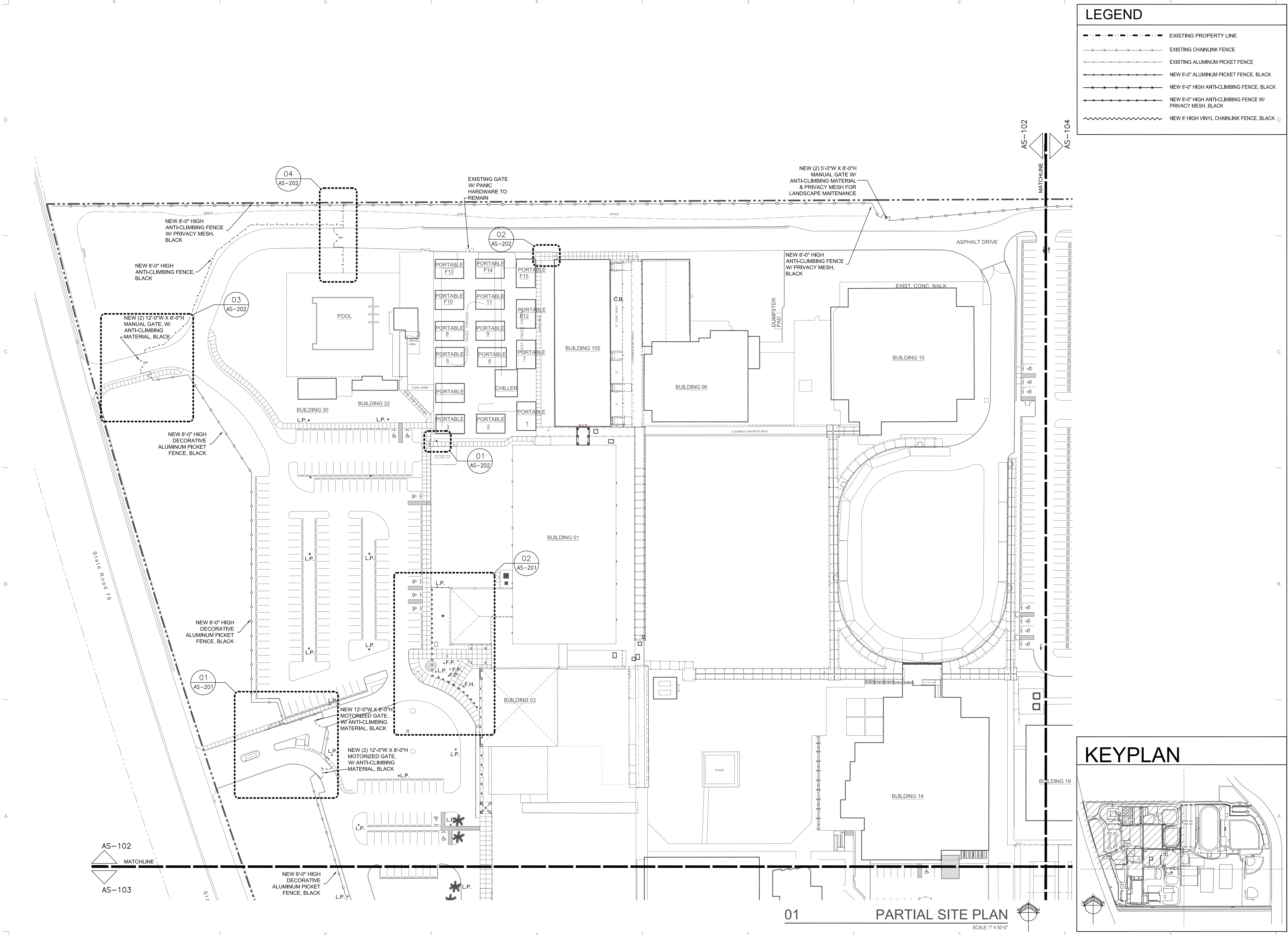
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PARTIAL SITE PLAN

AS-102



01 PARTIAL SITE PLAN
 SCALE: 1" = 50'-0"

LEGEND

- EXISTING PROPERTY LINE
- - - EXISTING CHAINLINK FENCE
- - - EXISTING ALUMINUM PICKET FENCE
- - - NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
- - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
- - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
- - - NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK

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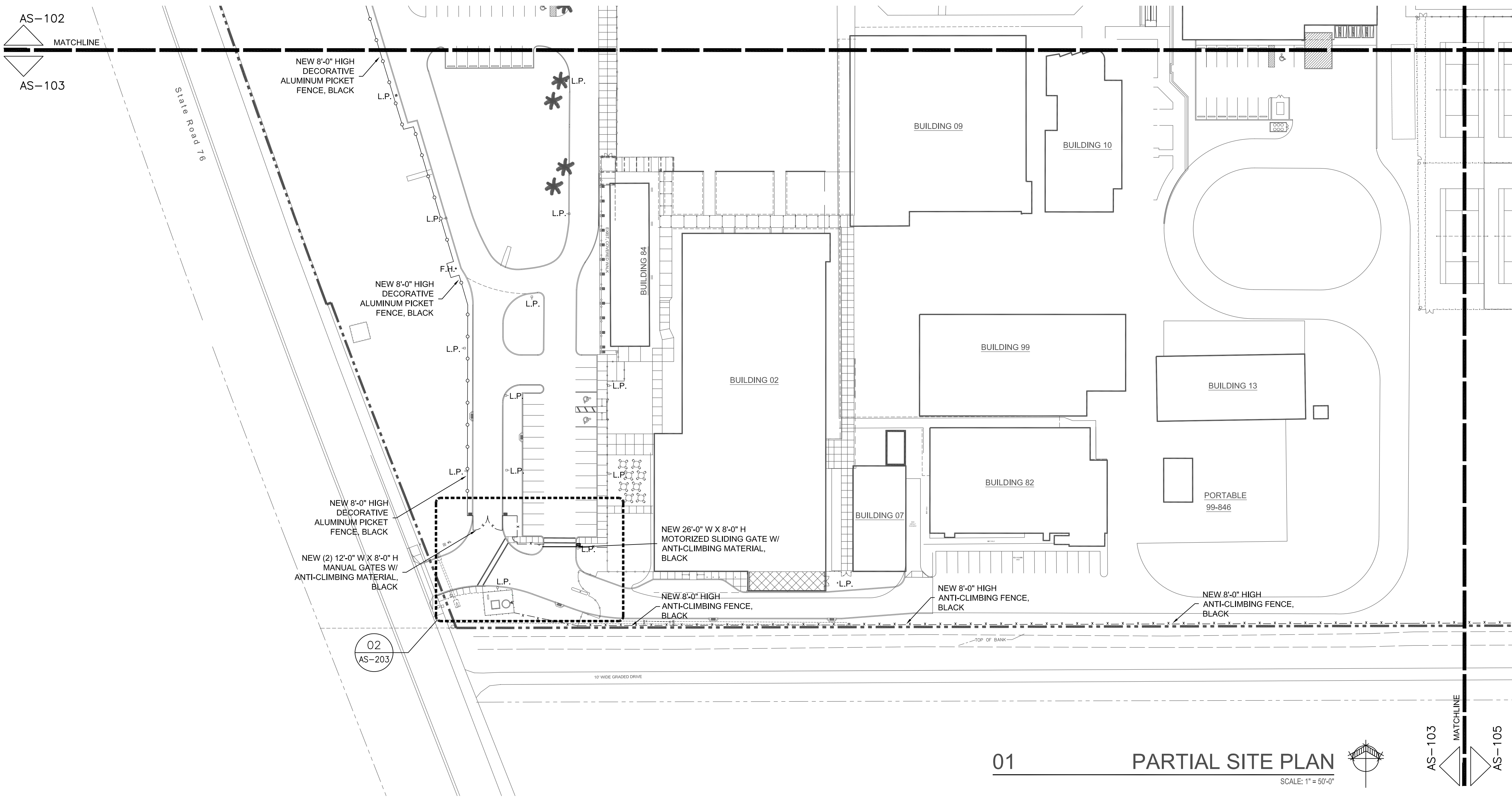
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No.	Date	Note

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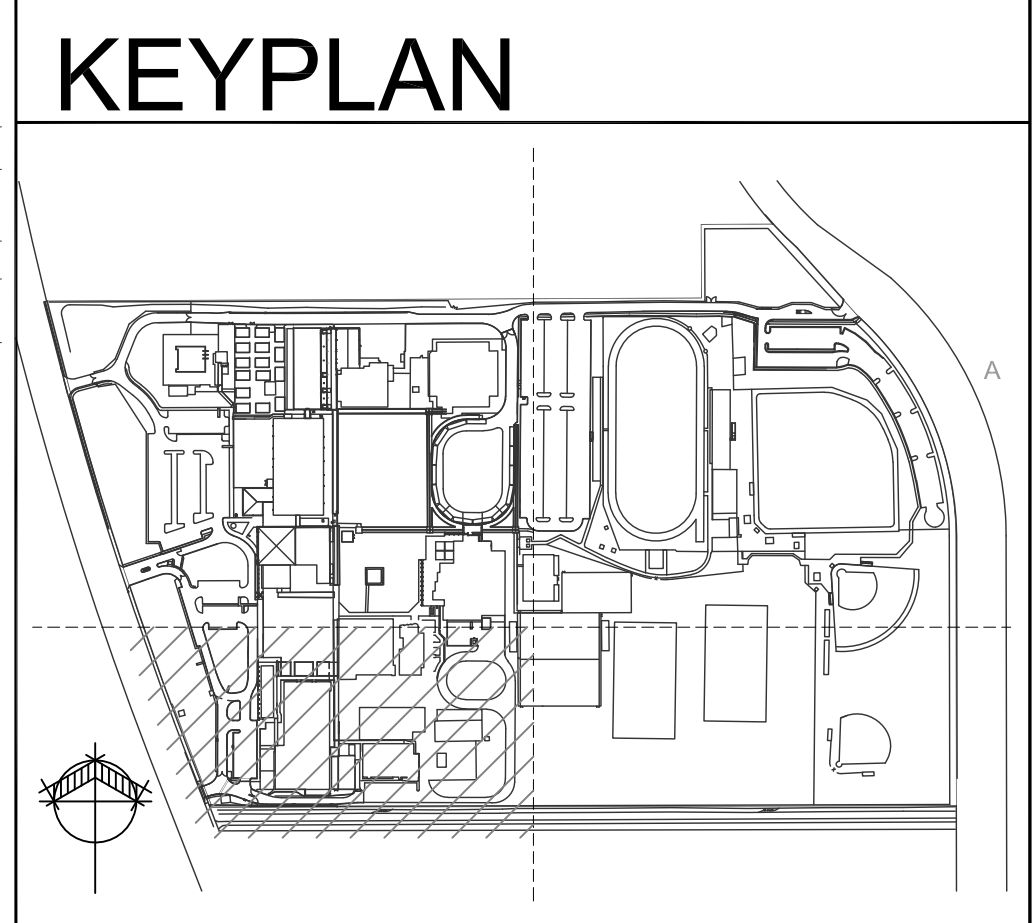
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PARTIAL SITE PLAN

AS-103

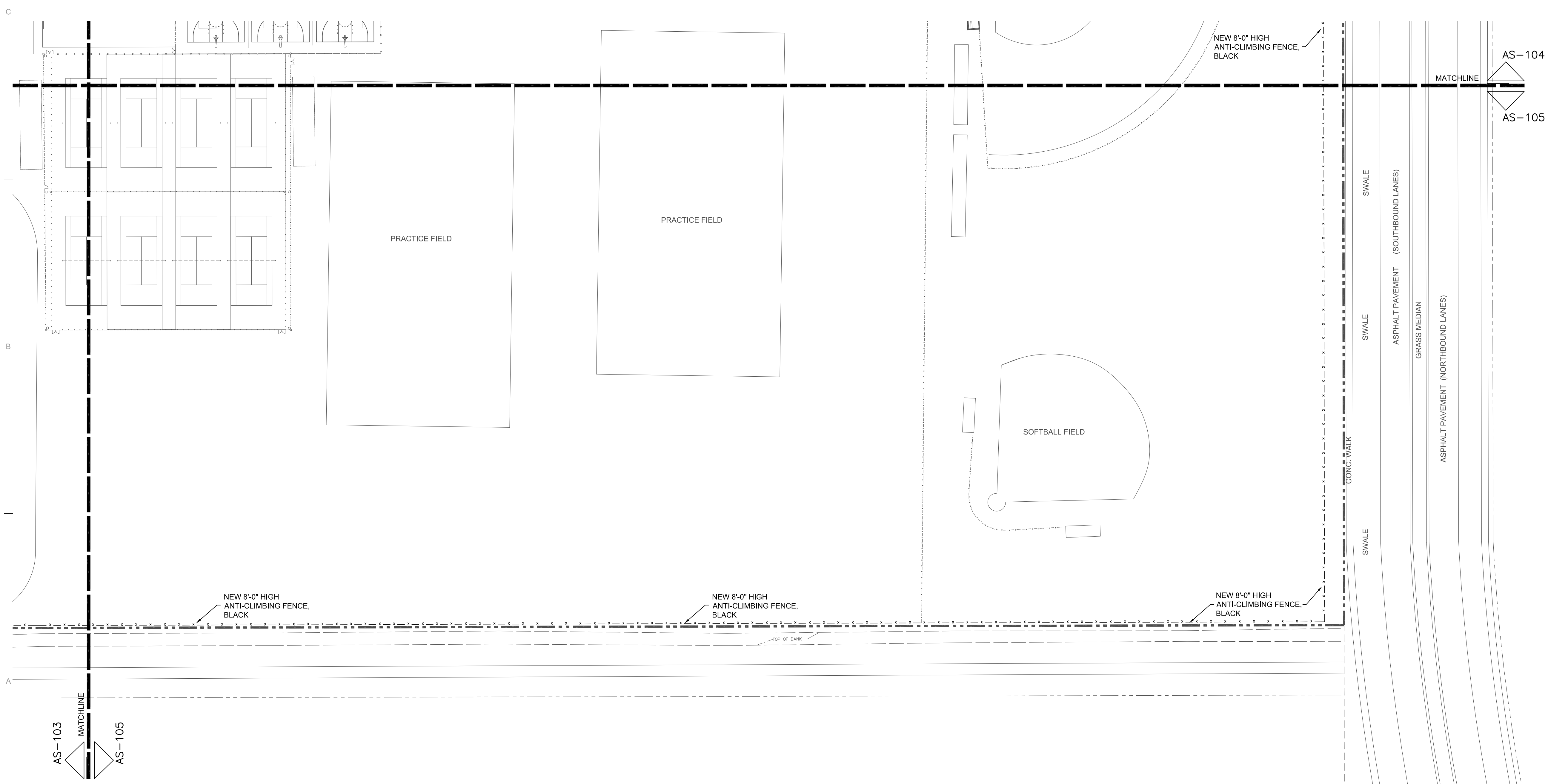


01 PARTIAL SITE PLAN
 SCALE: 1" = 50'-0"

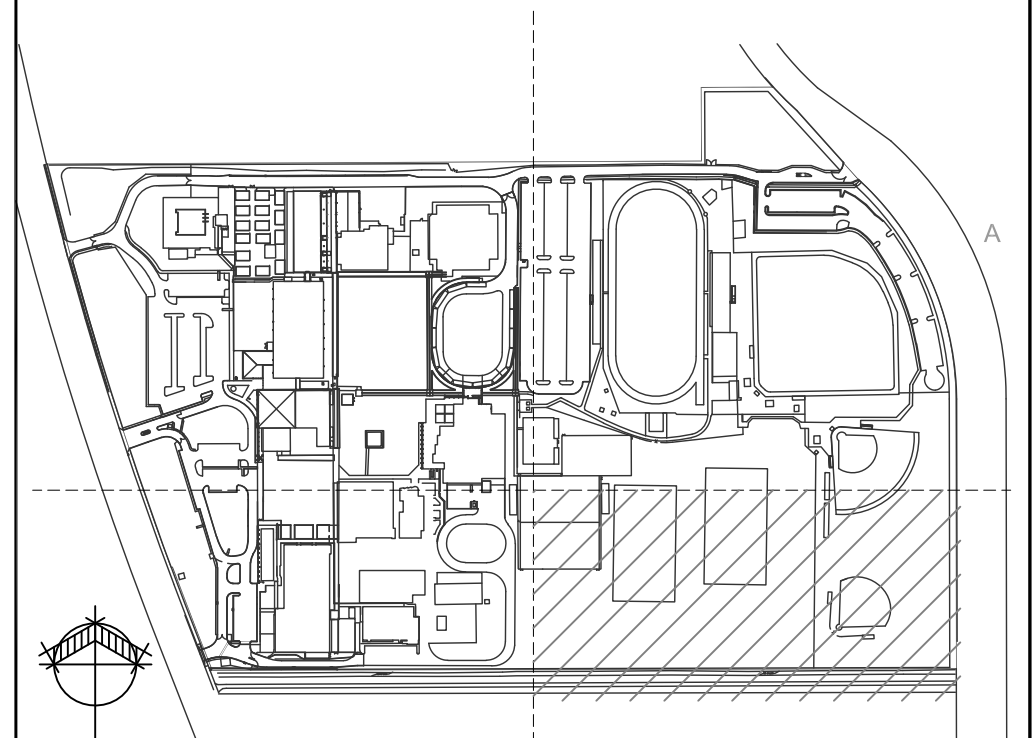


LEGEND

- EXISTING PROPERTY LINE
- - - EXISTING CHAINLINK FENCE
- - - EXISTING ALUMINUM PICKET FENCE
- - - NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
- - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
- - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
- - - NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK



KEYPLAN



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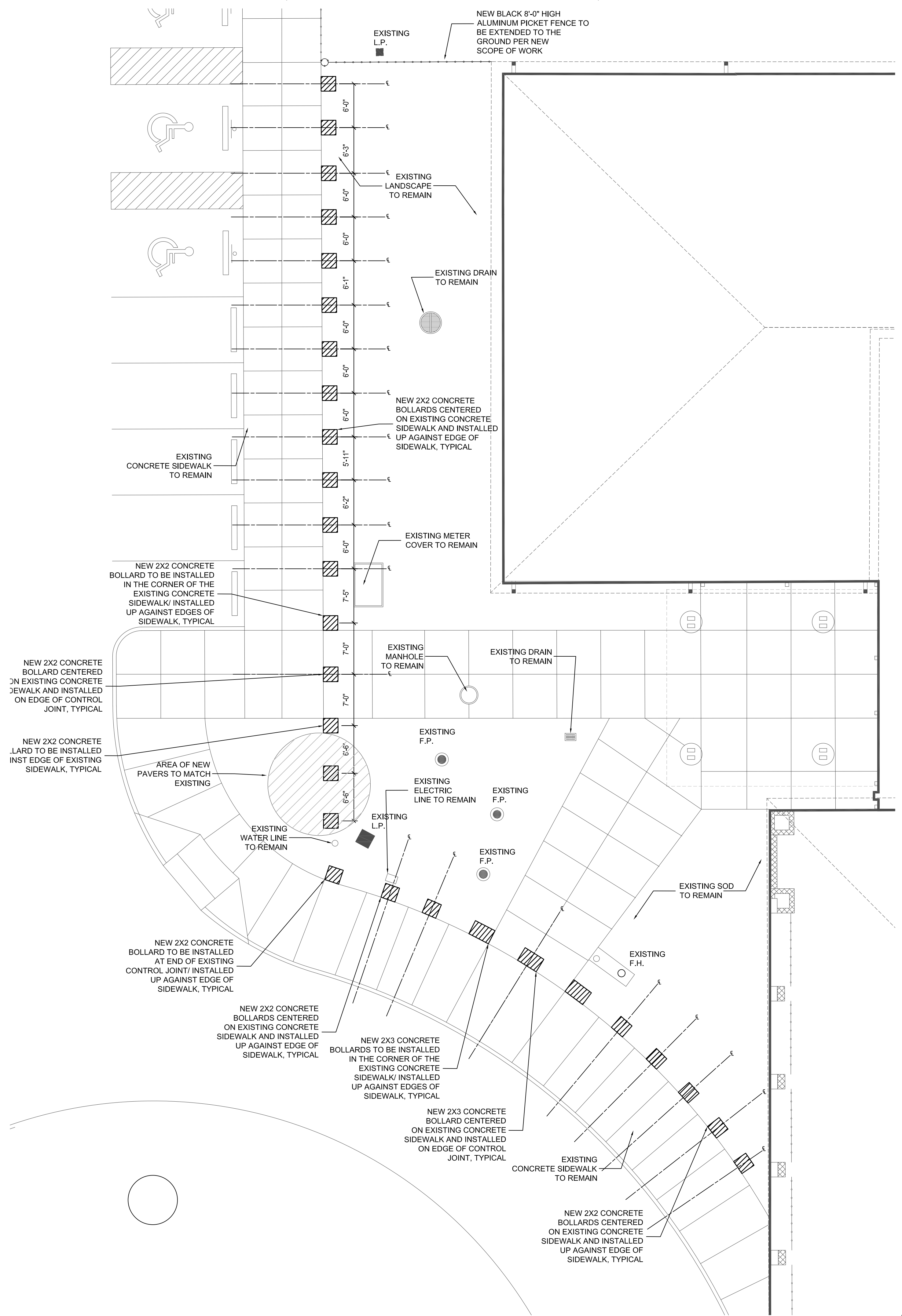
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No.	Date	Note

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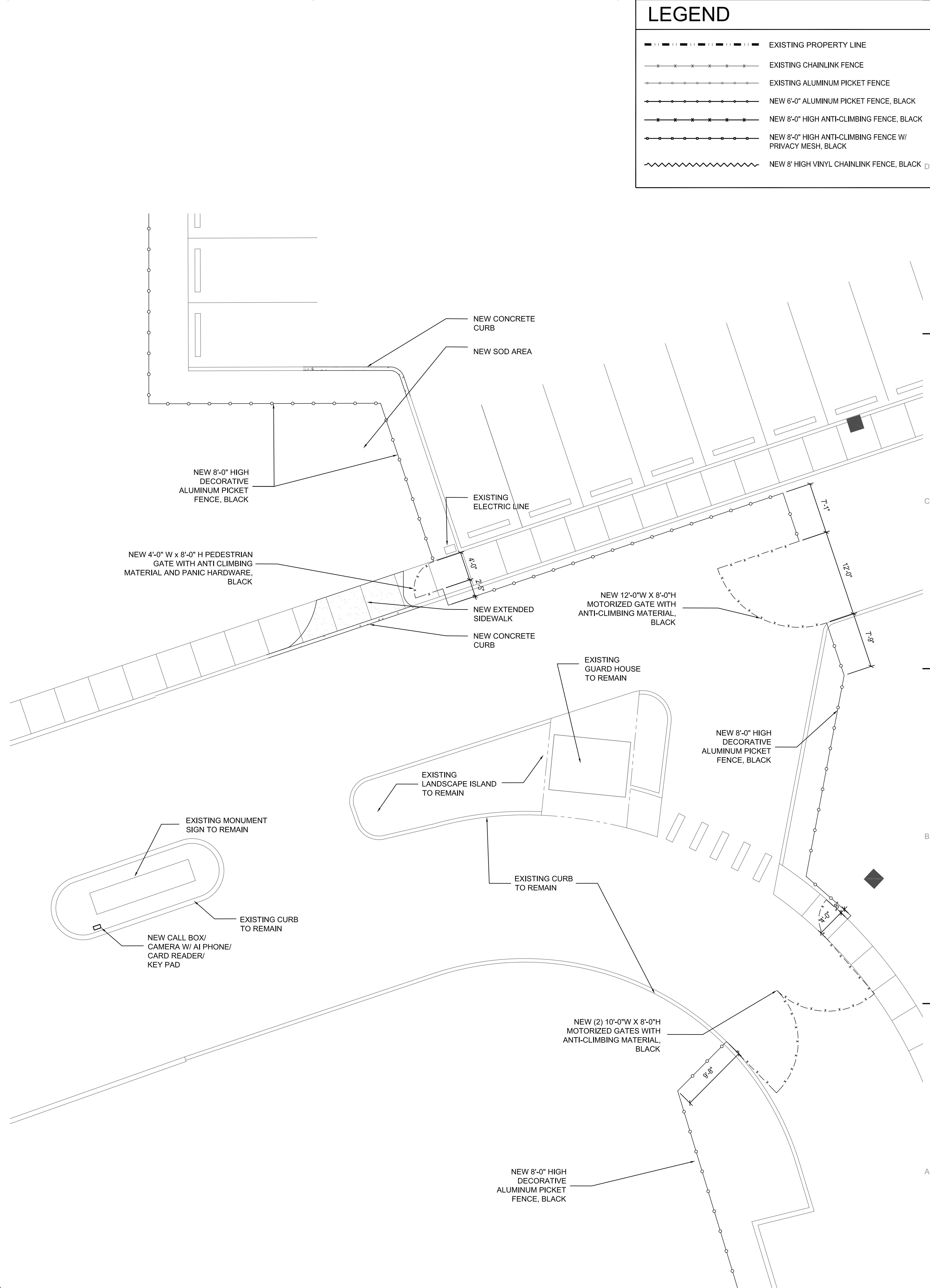
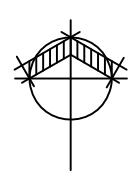
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PARTIAL SITE PLAN

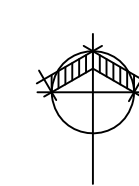
AS-105



02 SITE PLAN ENLARGEMENT
SCALE: 1/8" = 1'-0"



01 SITE PLAN ENLARGEMENT
SCALE: 1/8" = 1'-0"



LEGEND

- EXISTING PROPERTY LINE
- - - EXISTING CHAINLINK FENCE
- - - EXISTING ALUMINUM PICKET FENCE
- - - NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
- - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
- - - NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
- - - NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK

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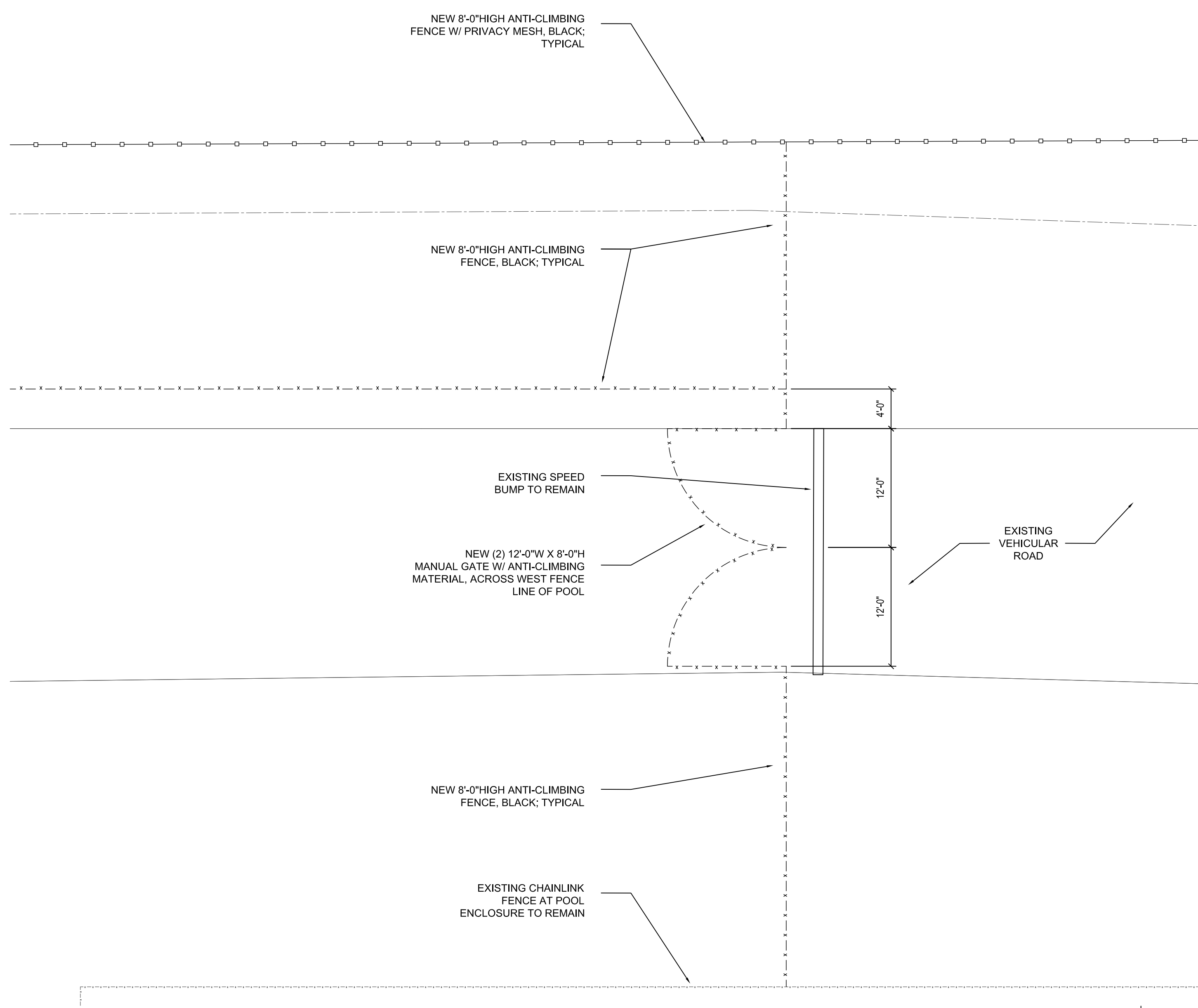
Revisions		
No.	Date	Note

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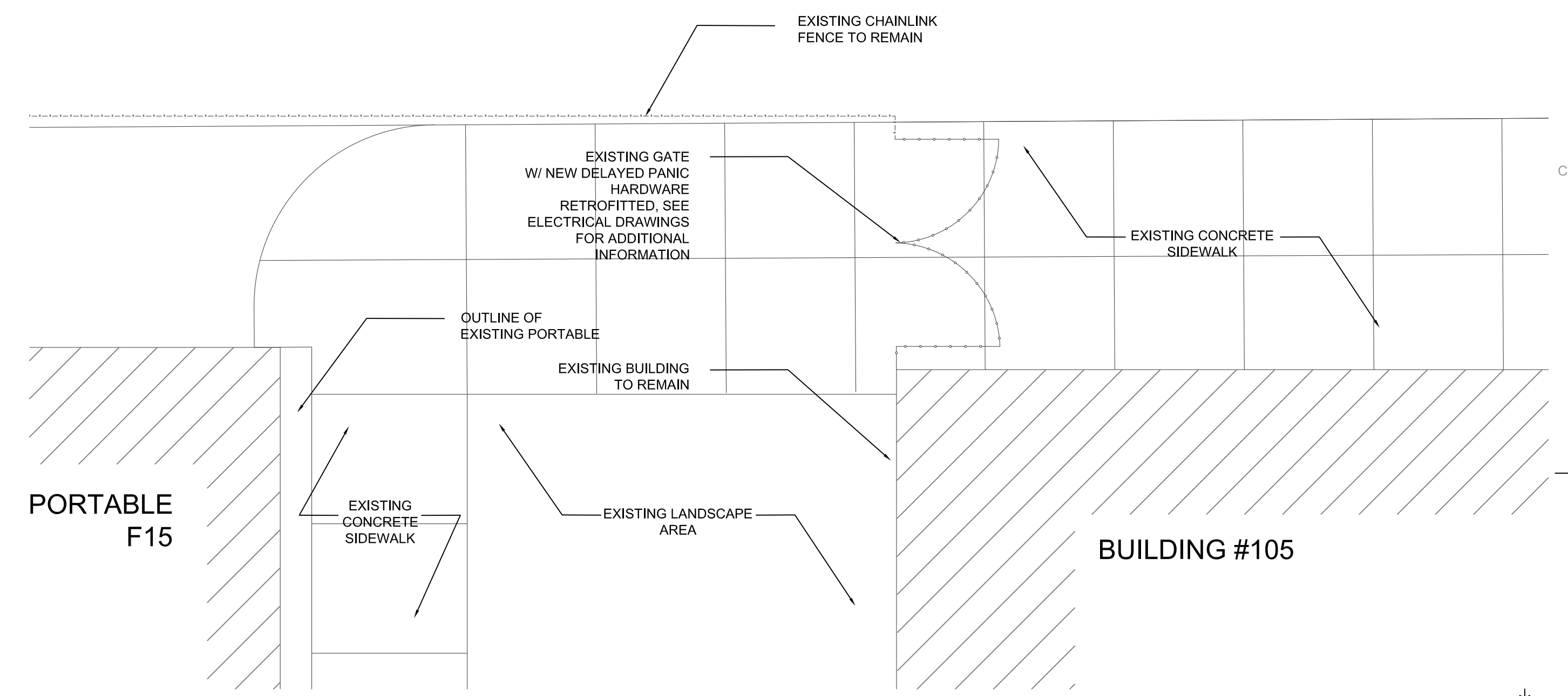
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ENLARGED
SITE PLANS

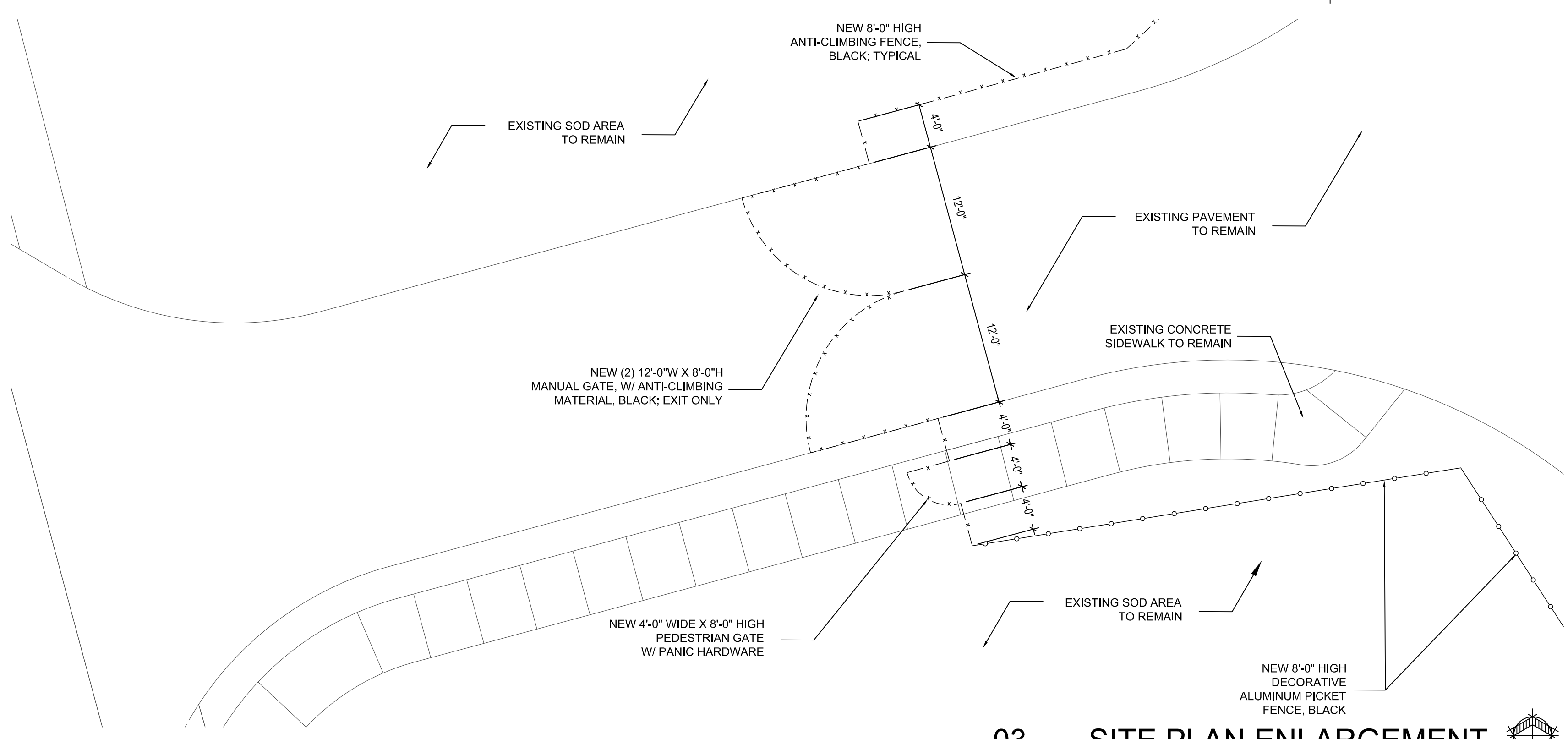
LEGEND	
	EXISTING PROPERTY LINE
	EXISTING CHAINLINK FENCE
	EXISTING ALUMINUM PICKET FENCE
	NEW 6'-0" ALUMINUM PICKET FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE, BLACK
	NEW 8'-0" HIGH ANTI-CLIMBING FENCE W/ PRIVACY MESH, BLACK
	NEW 8' HIGH VINYL CHAINLINK FENCE, BLACK



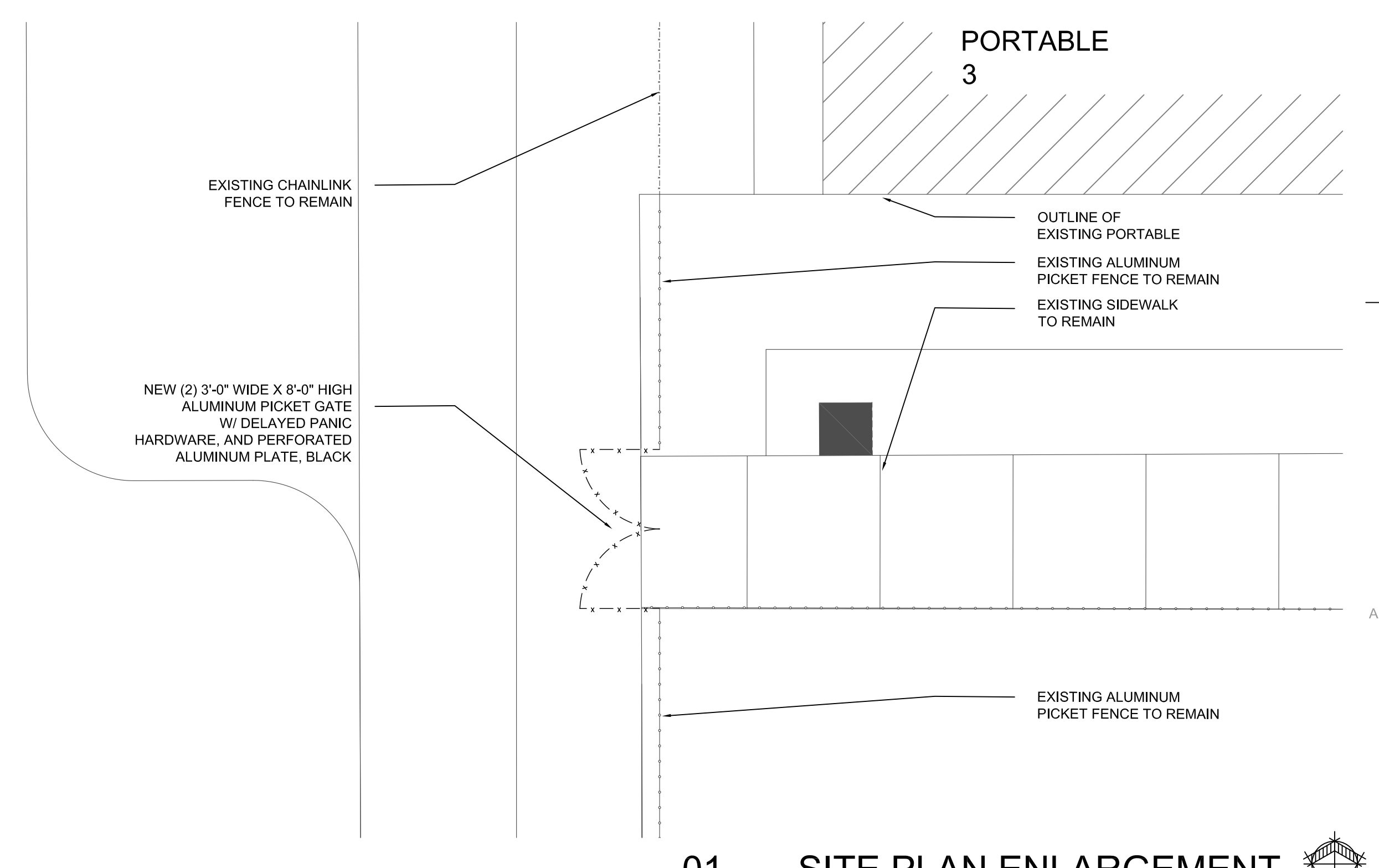
04 SITE PLAN ENLARGEMENT
 SCALE: 1/8" = 1'-0"



02 SITE PLAN ENLARGEMENT
 SCALE: 1/4" = 1'-0"



03 SITE PLAN ENLARGEMENT
 SCALE: 1/8" = 1'-0"



01 SITE PLAN ENLARGEMENT
 SCALE: 1/4" = 1'-0"

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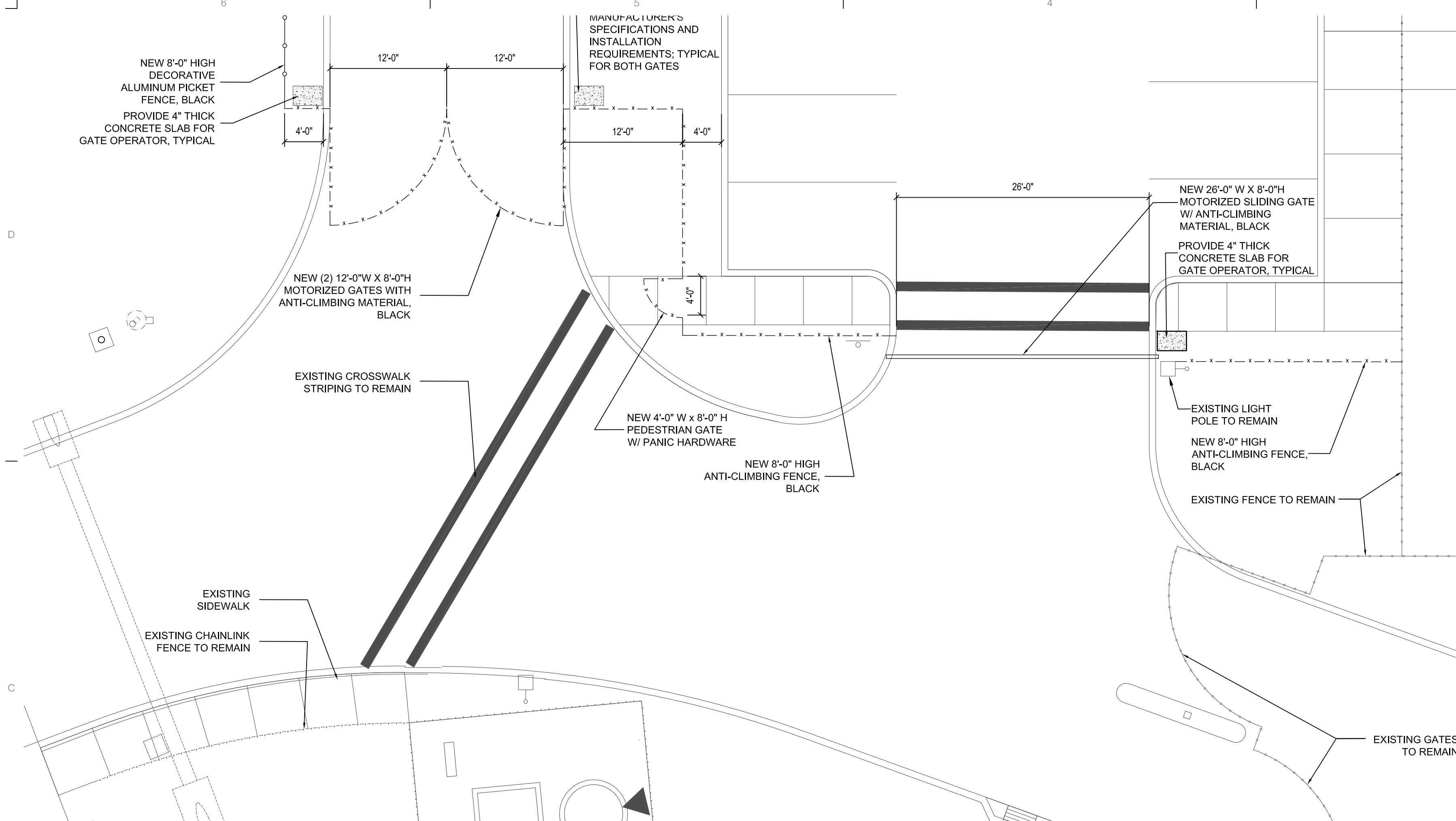
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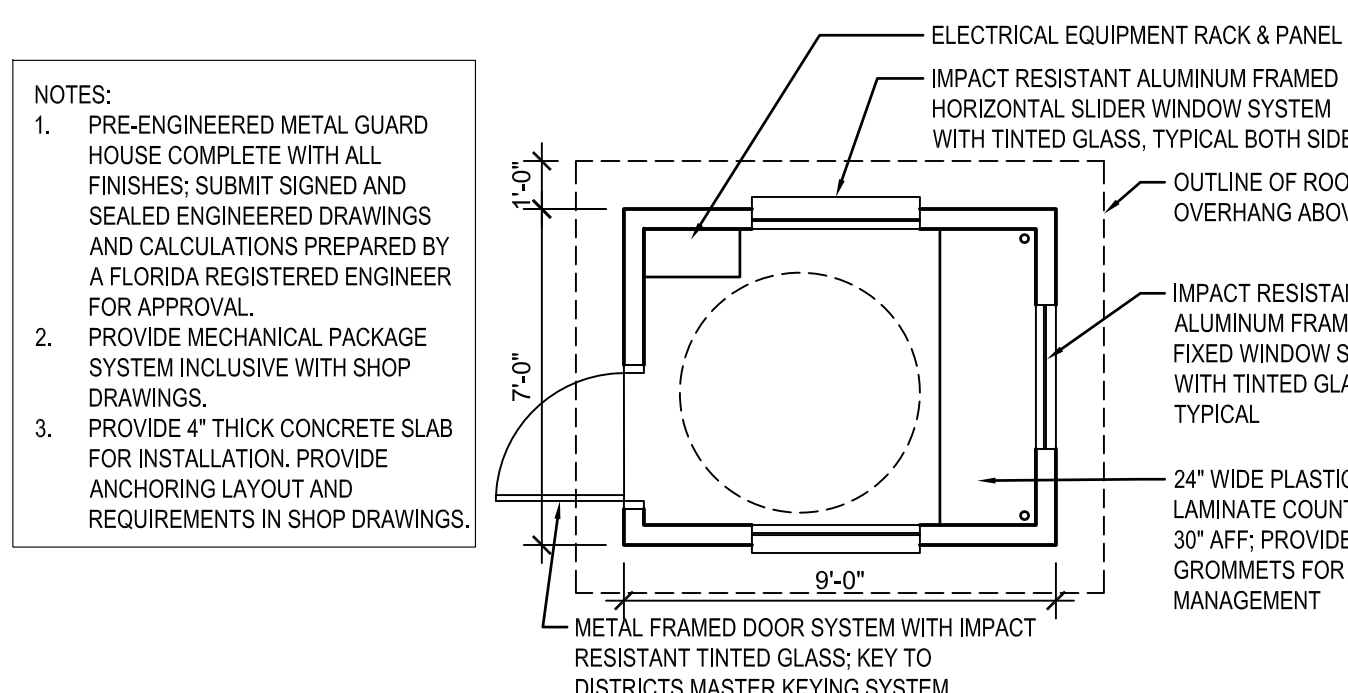
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ENLARGED SITE PLANS

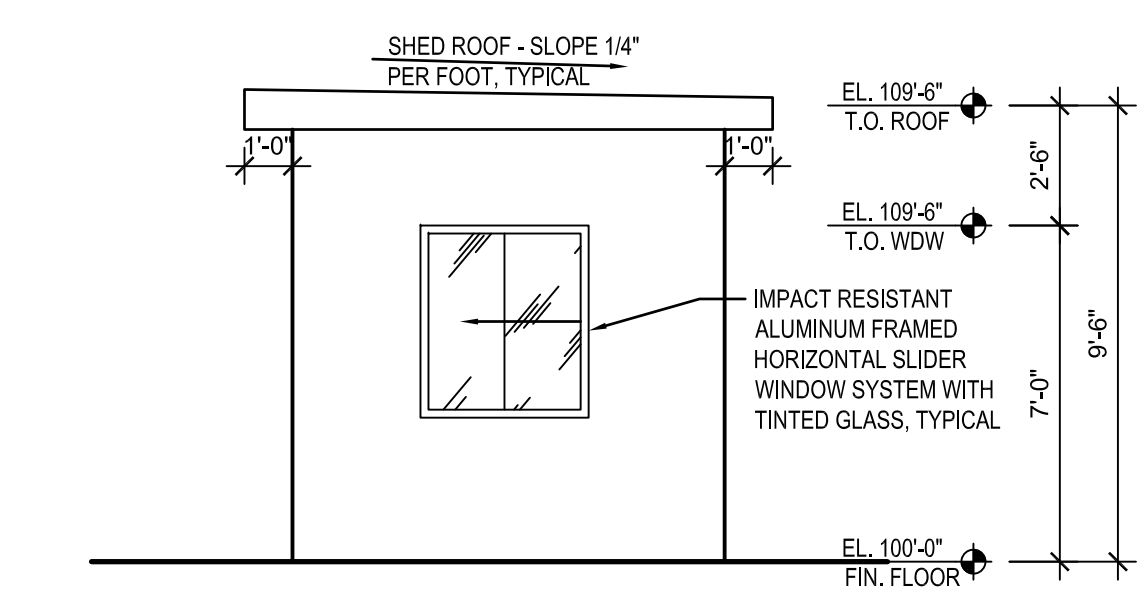
AS-202



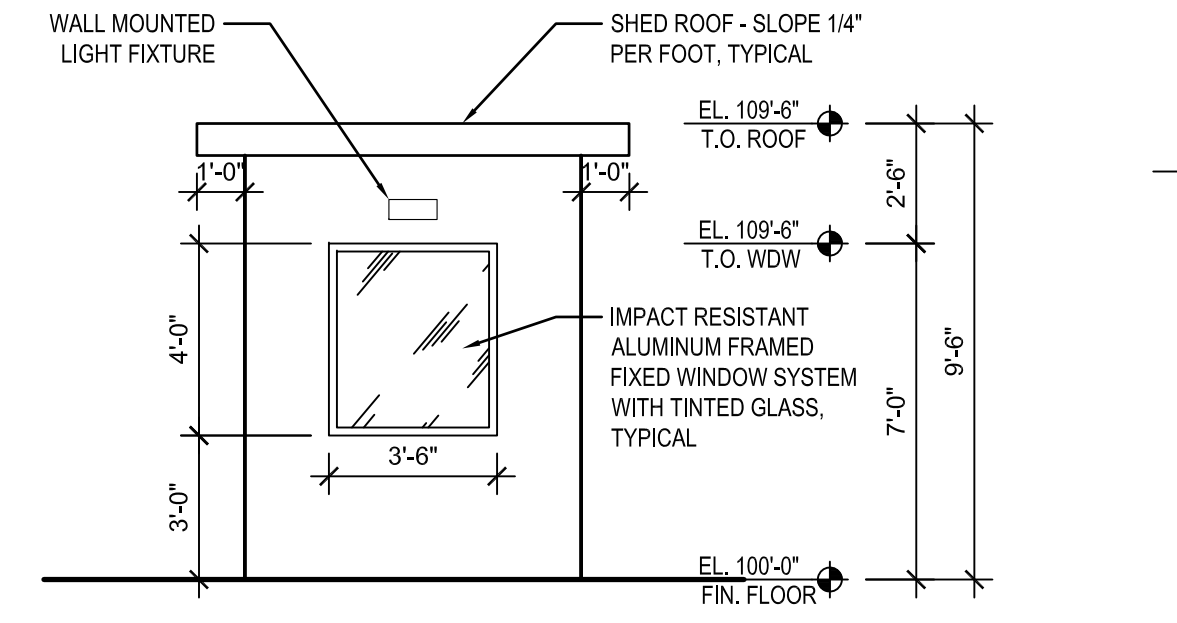
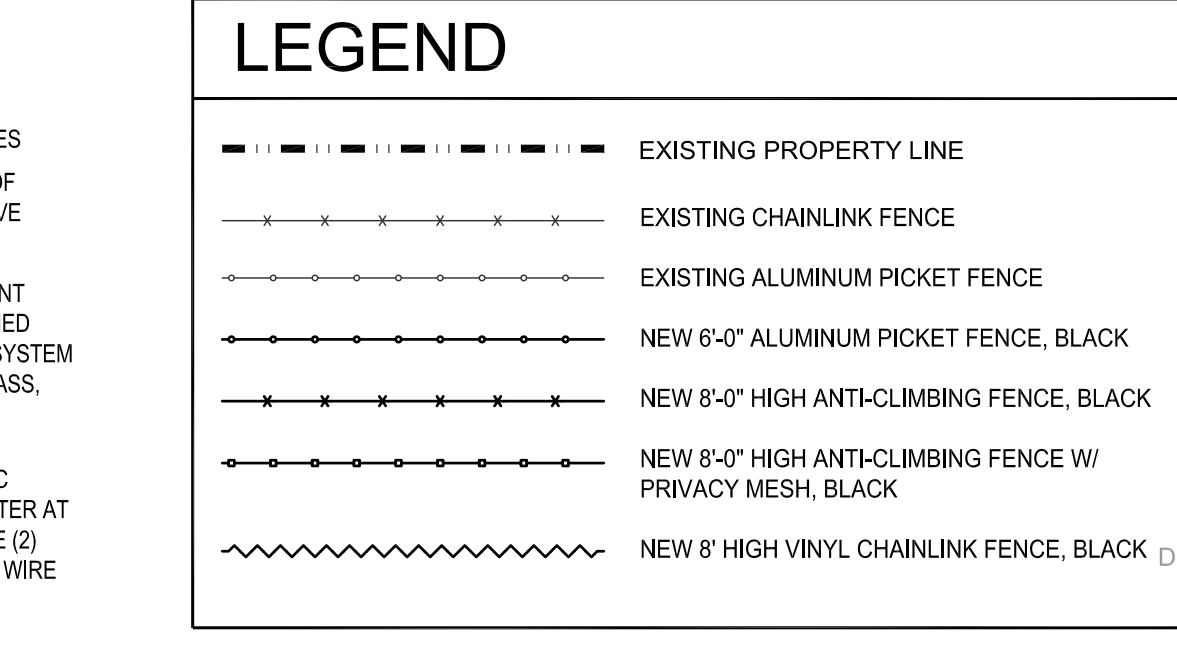
02 SITE PLAN ENLARGEMENT
SCALE: 1/8" = 1'-0"



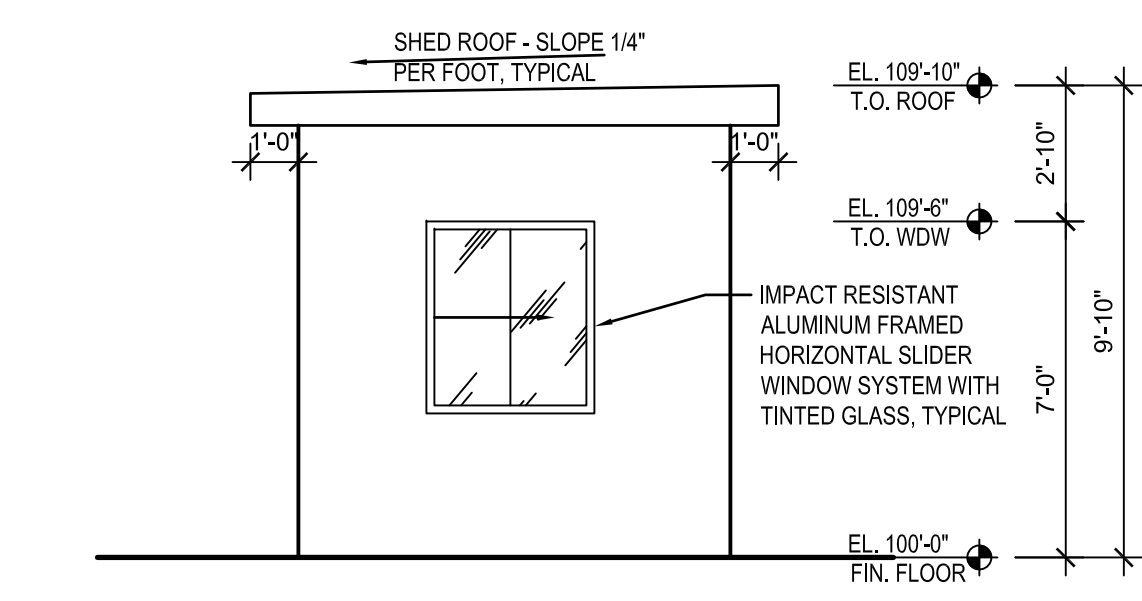
03 GUARD HOUSE PLAN
SCALE: 1/4" = 1'-0"



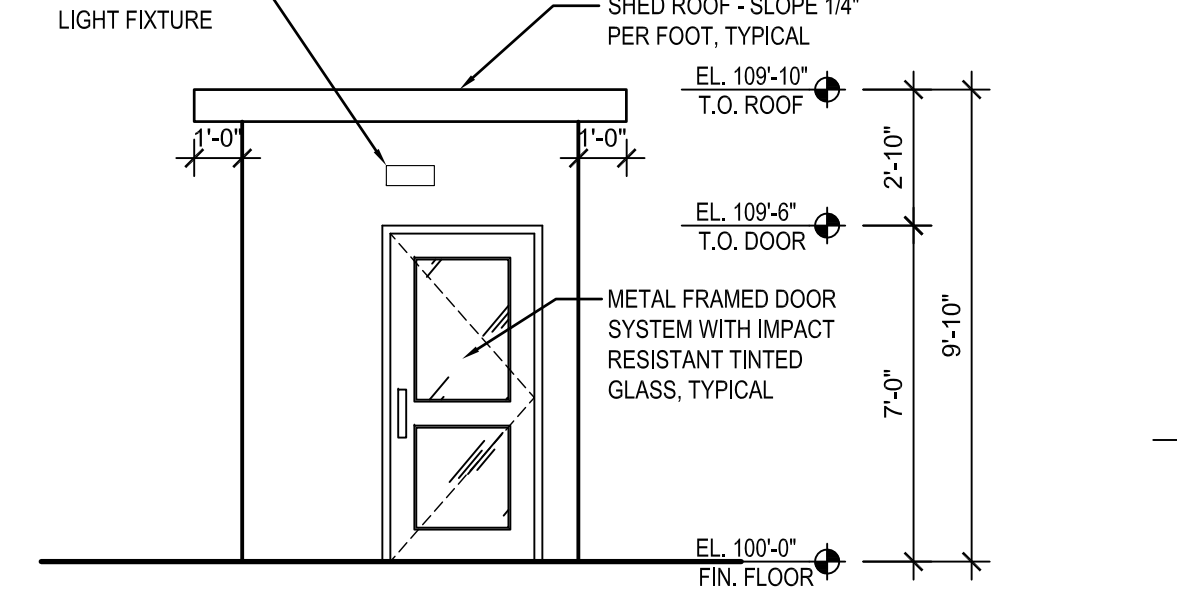
04 SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



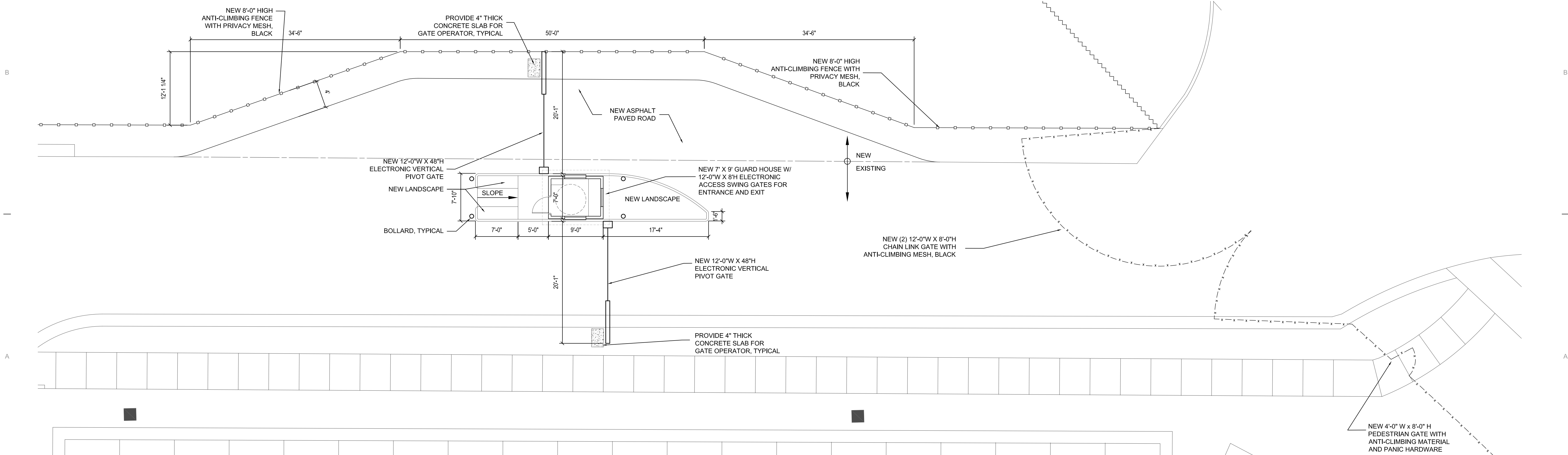
06 EAST ELEVATION
SCALE: 1/4" = 1'-0"



05 NORTH ELEVATION
SCALE: 1/4" = 1'-0"



07 WEST ELEVATION
SCALE: 1/4" = 1'-0"



01 SITE PLAN ENLARGEMENT
SCALE: 1/8" = 1'-0"

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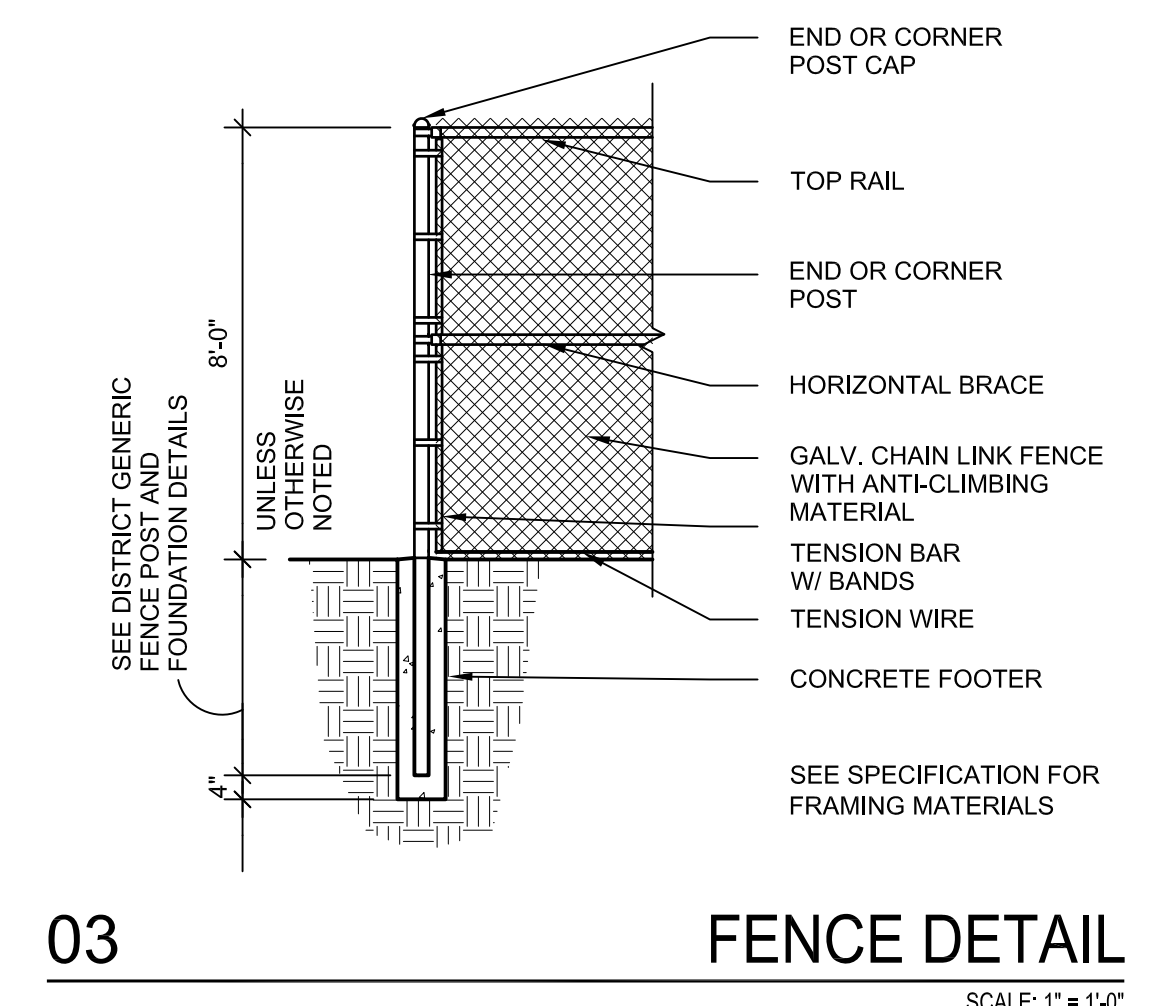
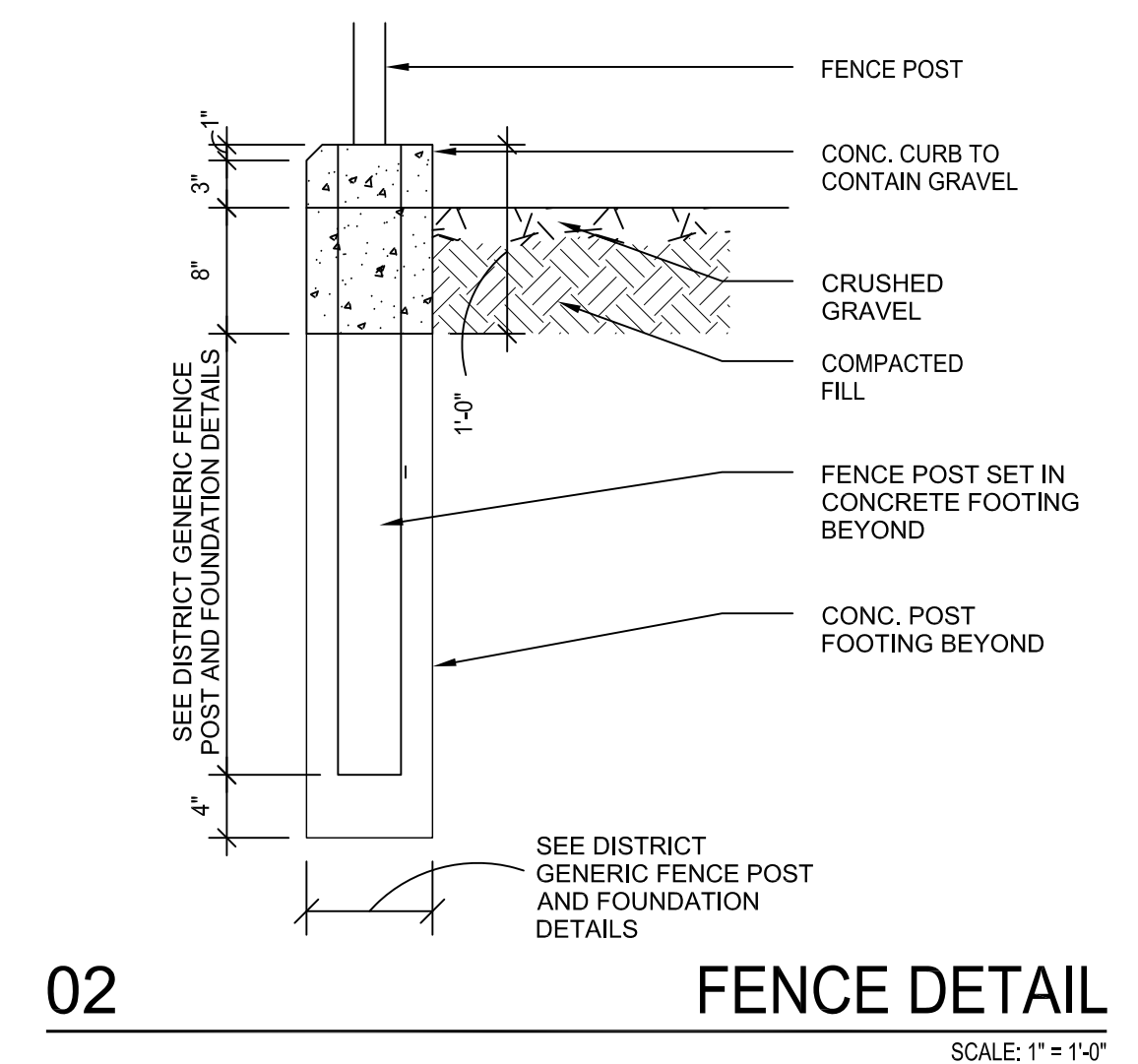
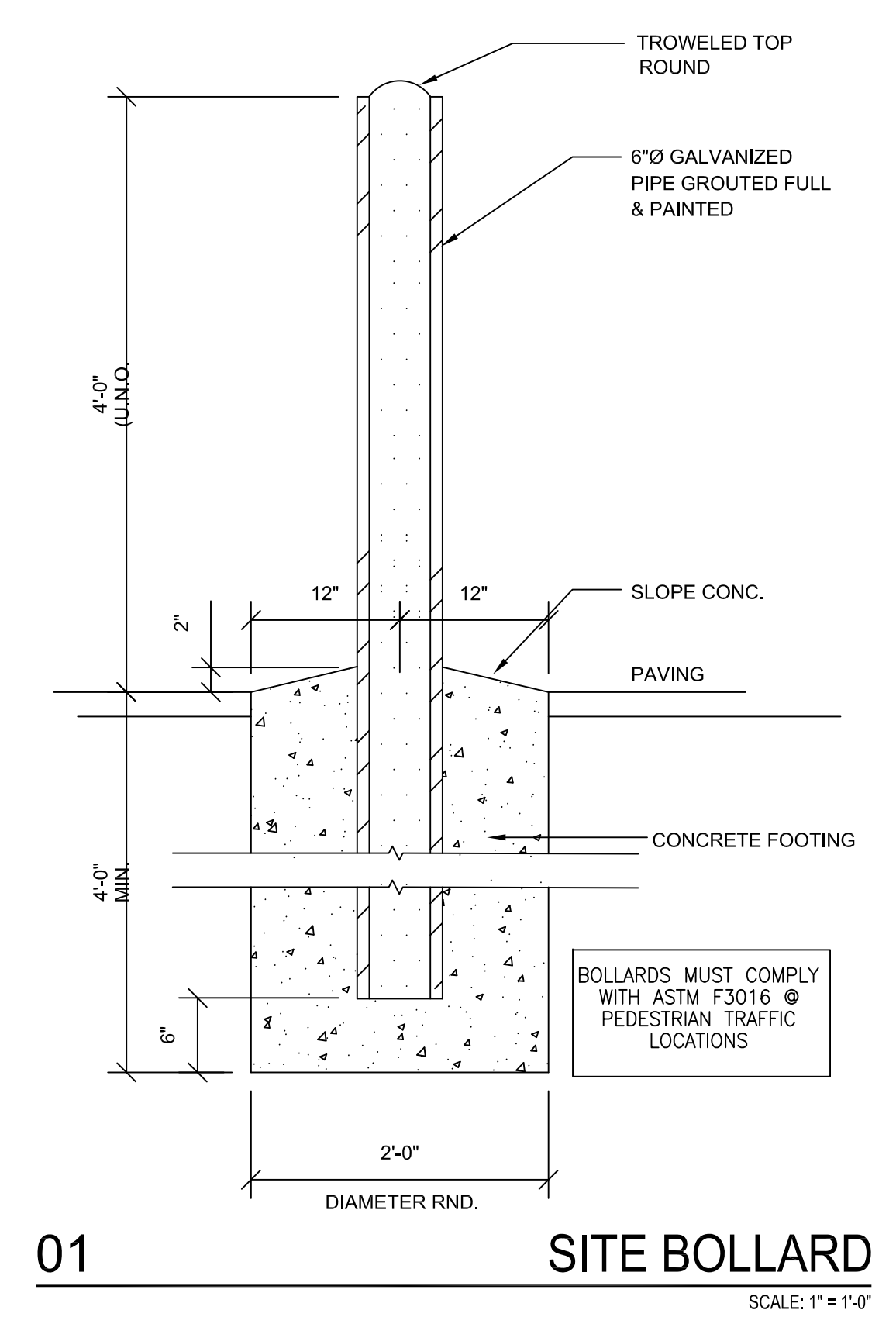
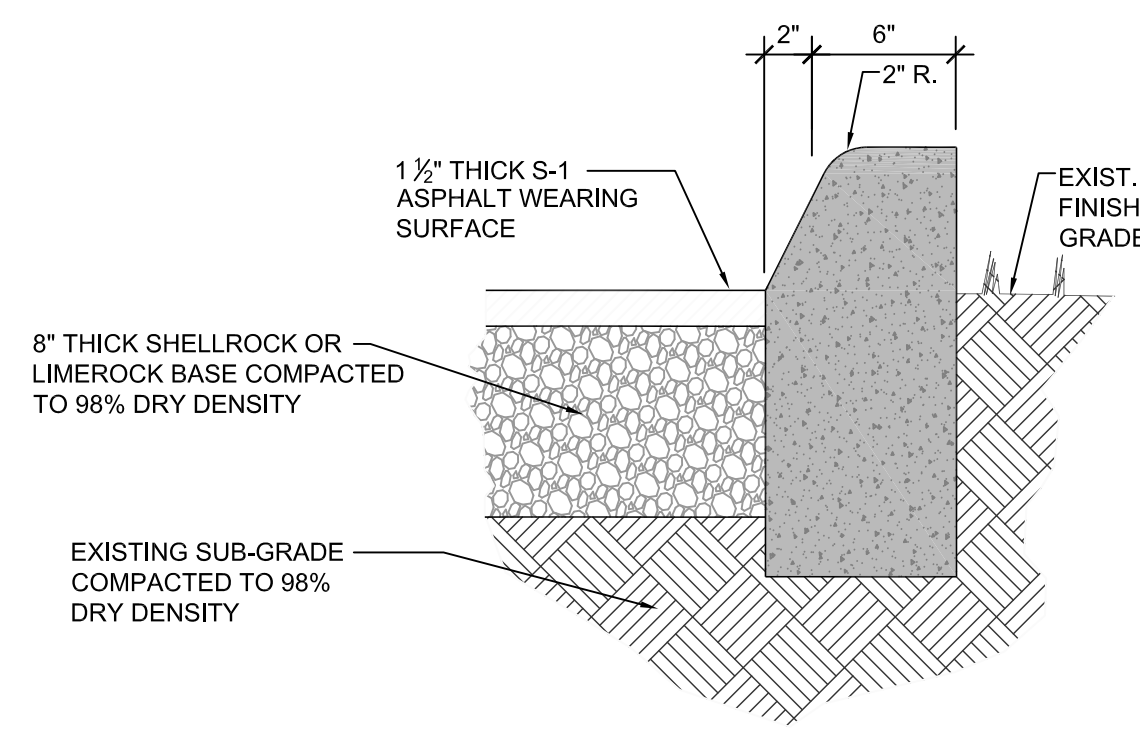
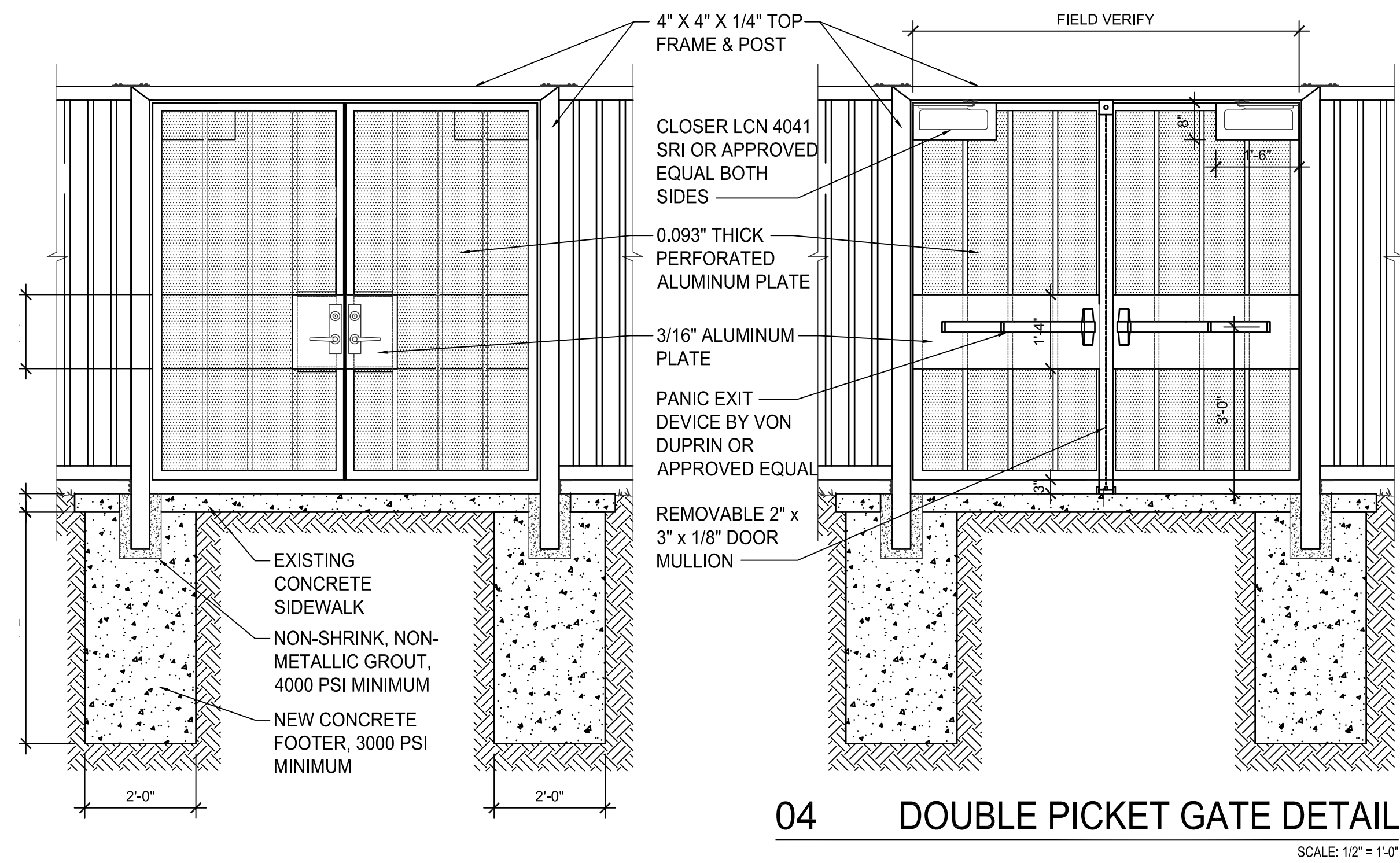
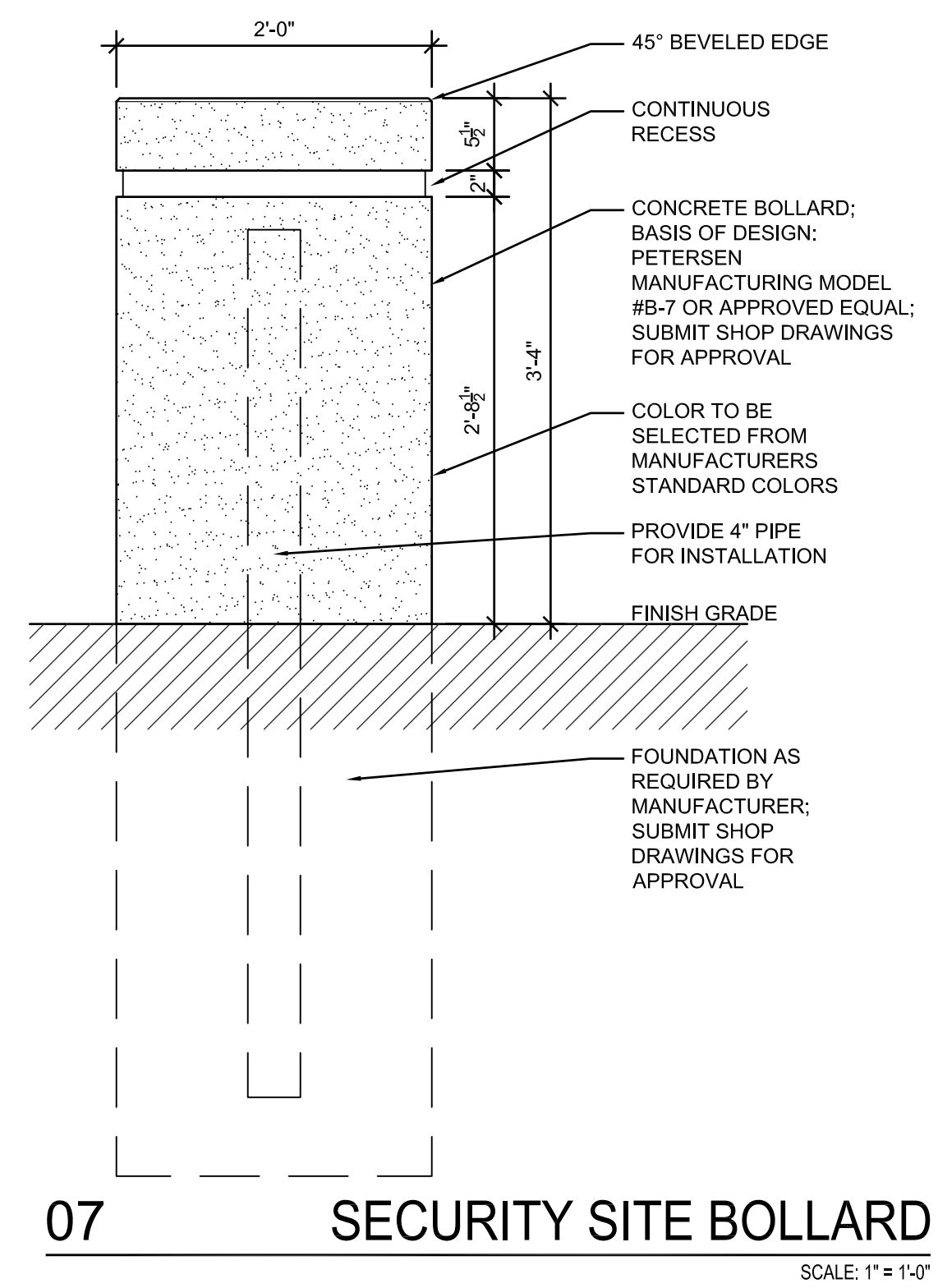
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ENLARGED SITE PLANS

AS-203



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SITE DETAILS

AS-301

HARVARD • JOLLY
ARCHITECTURE
2047 Vista Parkway, Suite 100 West Palm Beach, FL 33411
www.harvardjolly.com | 561-478-4457 | AAC000119

ELECTRICAL SYMBOL LEGEND

	GROUND TYPE SINGLE RECEPTACLE 120V-20A. +18" AFF UNLESS NOTED OTHERWISE		EQUIPMENT SCHEDULE NOTATION
	GROUND TYPE DUPLEX RECEPTACLE 120V-20A. +18" AFF UNLESS NOTED OTHERWISE		T.V. ANTENNA OUTLET
	GROUND TYPE DUPLEX RECEPTACLE 120V-20A. MOUNT ABOVE COUNTER OR AT HEIGHT NOTED.		T.V. ORIGINATION OUTLET
	RECEPTACLE 120V-20A. MOUNT 18" AFF UNLESS OTHERWISE NOTED.		JUNCTION PULL BOX
	TAMPER RESISTANT GROUND TYPE DUPLEX RECEPTACLE 120V-20A. MOUNT 18" AFF UNLESS OTHERWISE NOTED.		SECURITY JUNCTION BOX
	GROUND TYPE DOUBLE DUPLEX RECEPTACLE 120V-20A. MOUNT IN TWO GANG OUTLET BOX 18" AFF UNLESS OTHERWISE NOTED.		VIDEO JUNCTION BOX
	TAMPER RESISTANT GROUND TYPE DOUBLE DUPLEX RECEPTACLE 120V-20A. MOUNT IN TWO GANG OUTLET BOX 18" AFF UNLESS OTHERWISE NOTED.		CARD ACCESS JUNCTION BOX
	GROUND TYPE DUPLEX RECEPTACLE 120V-20A. MOUNT IN FLUSH FLOOR BOX.		COMMUNICATIONS OUTLET
	120V SPECIAL PURPOSE OUTLET (SUFFIX INDICATES AMPS)		BELL
	3 WIRE 10 OR 4 WIRE 30 SPECIAL PURPOSE OUTLET (SUFFIX INDICATES AMPS)		TELEPHONE OUTLET
	TRANSFORMER - SEE SCHEDULE FOR RATING		FIRE ALARM HORN/STROBE
	DISCONNECT SWITCH SEE SCHEDULE FOR RATING		FIRE ALARM STROBE LIGHT ONLY
	120/208V PANELBOARD		FIRE ALARM PULL STATION
	277/480V PANELBOARD		COMBINATION FIXED TEMPERATURE AND RATE OF RISE HEAT DETECTOR
	CELL BOOSTER ACCESS POINT		CEILING MTD SMOKE DETECTOR (PHOTO ELECTRIC TYPE)
	CELL BOOSTER ANTENNA		DUCT MOUNTED SMOKE DETECTOR (PHOTO ELECTRIC TYPE)
	PATCH PANEL - (DEDICATED FOR CCTV)		SMOKE DETECTOR REMOTE INDICATOR/RESET
	NVR NETWORK VIDEO RECORDER		MAGNETIC DOOR HOLDER
	POE POWER OVER ETHERNET		POST INDICATING VALVE SWITCH
	SECURITY JUNCTION BOX		TAMPER SWITCH
	CARD / PROXIMITY READER TERMINAL		PRESSURE SWITCH
	AIPHONE VIDEO / AUDIBLE CALL STATION IX-DA SERIES (OUTDOOR RATED)		FLOW SWITCH
	KEYPAD STATION (OUTDOOR RATED)		CLOCK
	KNOX BOX		MICROPHONE OUTLET - WALL MOUNTED
	INTRUSION DETECTION SYSTEM		PUBLIC ADDRESS/INTERCOM SPEAKER-CEILING
			PUBLIC ADDRESS/INTERCOM SPEAKER-WALL
			PUSH BUTTON STATION (ONE OR MORE BUTTONS) "P" INDICATES PRIVACY TYPE "K" INDICATES KEY-OPERATED
			CAMERA - 360° VIEW
			CAMERA - SINGLE HEAD VIEW
			CAMERA - DOUBLE HEAD VIEW
			CAMERA - TRIPLE HEAD VIEW
			CAMERA - FOUR HEAD VIEW

GENERAL ELECTRICAL NOTES

- ALL ELECTRICAL WORK SHALL COMPLY WITH NATIONAL ELECTRICAL CODE, THE NATIONAL FIRE CODES, THE AMERICANS WITH DISABILITIES ACT, AND THE FLORIDA BUILDING CODE.
- THE CONTRACTOR SHALL THOROUGHLY REVIEW THE PROJECT TO ENSURE THAT ALL WORK SHALL MEET OR EXCEED THE ABOVE REQUIREMENTS. ANY ALLEGED DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO BID.
- THE CONTRACTOR IS DIRECTED TO OBTAIN COPIES OF ALL RELATED PLANS, SPECIFICATIONS, SHOP DRAWINGS AND ADDENDUM TO COORDINATE THE RELATED WORK AND SCHEDULING.
- THE CONTRACTOR IS REMINDED THAT ELECTRICAL SERVICE TO AND FOR MECHANICAL AND OTHER EQUIPMENT ARE BASED ON EQUIPMENT DESIGN DATA. THE VALUES MAY DIFFER DEPENDING UPON THE ACTUAL EQUIPMENT TO BE FURNISHED. ANY MODIFICATION TO THE ELECTRICAL, BASED UPON ACTUAL EQUIPMENT SELECTION, SHALL RESULT IN NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL THOROUGHLY REVIEW THE ARCHITECTURAL AND MECHANICAL PLANS TO ASSURE THAT ELECTRICAL SERVICE FOR ALL ITEMS AND/OR EQUIPMENT REQUIRING ELECTRICAL SERVICE IS INCLUDED. ANY ITEM AND/OR EQUIPMENT NOT PROVIDED WITH ELECTRICAL SERVICE, REQUIRING ELECTRICAL SERVICE, SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION.
- MECHANICAL AND ELECTRICAL EQUIPMENT HAVE BEEN LOCATED AND ARRANGED TO MINIMIZE THE INTERFERENCES OF EQUIPMENT AND STRUCTURE. THE CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE WORK TO BE PERFORMED BY OTHER TRADES AND THE PHYSICAL CHARACTERISTICS OF THE STRUCTURE IN ORDER TO SCHEDULE AND INSTALL EQUIPMENT AND TO MINIMIZE POSSIBLE INTERFERENCE. FAILURE TO PROPERLY COMMUNICATE AND SCHEDULE WORK WITH OTHER TRADES RESULTING IN ADDITIONAL WORK AND MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE MODIFICATIONS REQUIRED TO RESOLVE THE CONFLICT SHALL BE DECIDED BY THE ENGINEER.
- ALL PANELBOARDS SHALL BE PROVIDED WITH A TYPED SCHEDULE SHOWING CIRCUIT NUMBERS AND A COMPLETE DESCRIPTION OF EACH CIRCUIT.
- MINIMUM TRADE SIZE CONDUIT PERMITTED SHALL BE 1/2 INCH UNLESS NOTED OTHERWISE.
- ALL CONDUCTOR METAL SHALL BE COPPER WITH 600 VOLT INSULATION TYPE THHN. (MINIMUM SIZE SHALL BE #12AWG.) CONTRACTOR SHALL ADJUST WIRE AND CONDUIT SIZES IF OTHER INSULATION TYPES ARE USED.
- ALL LIGHT SWITCHES AND DUPLEX RECEPTACLES SHALL BE RATED FOR 20 AMPERE AT 125/277 VOLTS A/C. WRING DEVICES SHALL BE MANUFACTURED BY HUBBELL OR APPROVED EQUAL. PROVIDE BARRIERS AT 277V SWITCHES WHERE REQUIRED BY N.E.C. ARTICLE 404-8(b).
- ALL ELECTRICAL WIRING DEVICES INDICATED TO BE INSTALLED IN MASONRY WALLS OR FLOORS SHALL BE FLUSH MOUNTED, INCLUDING BRANCH CIRCUIT PANELBOARDS, UNLESS OTHERWISE NOTED. THE CONDUITS TO ASSOCIATED ELECTRICAL EQUIPMENT SHALL BE CONCEALED IN WALLS OR FLOOR.
- ALL CONDUIT RUNS SHALL BE CONCEALED UNLESS SPECIFICALLY NOTED OTHERWISE.
- THE FIXTURE SCHEDULE IS FOR REFERENCE ONLY. MODEL NUMBERS LISTED MAY NOT INCLUDE ALL REQUIRED OPTIONS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. EQUAL FIXTURES OF OTHER MANUFACTURERS MAY BE SUBSTITUTED AS EQUAL. ALL SUBSTITUTIONS ARE SUBJECT TO APPROVAL AS EQUAL BY THE ENGINEER.
- ALL EXIT LIGHTS SHALL BE PROVIDED WITH UNIVERSAL MOUNTING BRACKETS. THE CONTRACTOR SHALL VERIFY ALL DIRECTIONAL ARROWS PRIOR TO ORDERING FIXTURES.
- THE CONTRACTOR SHALL FURNISH THE AIR CONDITIONING SUBCONTRACTOR AND THE CEILING SUBCONTRACTOR COPIES OF APPROVED LIGHT FIXTURE SHOP DRAWINGS.
- ALL RECESSED LIGHTING FIXTURES IN FIRE RATED CEILINGS SHALL BE TENTED TO COMPLY WITH THE APPLICABLE CEILING RATING. THE CONTRACTOR SHALL VERIFY REQUIREMENTS.
- THE CONTRACTOR SHALL COORDINATE WITH THE MECHANICAL SUBCONTRACTOR TO ENSURE THAT ALL NECESSARY CONDUITS FOR AIR CONDITIONING CONTROLS ARE INCLUDED. IT IS THE ELECTRICAL SUBCONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL EQUIPMENT IS WIRED PROPERLY AND ALL CONTROLS ARE OPERATIONAL. THE ELECTRICAL SUBCONTRACTOR SHALL FURNISH ALL MATERIALS NOT SUPPLIED BY THE MECHANICAL SUBCONTRACTOR.
- COMMUNICATION CONDUITS ARE TO BE LONG RADIUS TYPE AND SHALL CONTAIN PULL WIRES. PROVIDE PLATES FOR ALL OUTLETS.
- ALL SPECIAL PURPOSE OUTLETS SHALL BE PROVIDED TO MATCH EQUIPMENT TO BE SUPPLIED.
- THE PLANS INDICATE THE DESIRED ARRANGEMENT AND GENERAL LOCATIONS OF LIGHT FIXTURES. THE ARCHITECTURAL PLANS INDICATE ADDITIONAL DATA AS TO THE FINAL FIXTURE PLACEMENT.
- ALL PANELBOARDS, SWITCHES AND CIRCUIT BREAKERS SHALL BE ITE, SQUARE D, GE, OR CUTLER HAMMER.
- ALL CONDUITS SHALL HAVE A SEPARATE GREEN GROUND CONDUCTOR INSTALLED FOR GROUNDING.
- ANY EXISTING UTILITIES LOCATED IN THE AREA OF CONSTRUCTION WHICH REQUIRE RELOCATION BY THE OWNER SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE A MINIMUM OF TEN DAYS IN ADVANCE.
- ALL DISCONNECT SWITCHES SHALL BE THE HEAVY DUTY TYPE WITH BUSSMAN TIME DELAY, DUAL ELEMENT AND CURRENT LIMITING FUSES.
- THE CONTRACTOR SHALL CHECK THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND/OR DIMENSIONS FOR INSTALLATION OF ALL ELECTRICAL ITEMS. ALL QUESTIONABLE LOCATIONS SHALL BE APPROVED BY OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
- ALL EMPTY CONDUITS SHALL CONTAIN JET LINE #232 POLYOFIN 200 LB. TEST.
- ALL WORK SHOWN ON THE ELECTRICAL PLANS SHALL BE PERFORMED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.
- ALL EXIT FIXTURES SHALL BE CONNECTED TO THE BUILDING EMERGENCY PANEL UNSWITCHED.
- ALL SURGE PROTECTED OUTLETS SHALL BE EQUAL TO HUBBELL #5352 IS.
- EQUIPMENT INSTALLED WITHIN CONCEALED SPACES SHALL HAVE REASONABLE ACCESS PANELS PROVIDED NEARBY FOR INSPECTION, TESTING AND SERVICE CONSIDERATIONS.
- ALL SECURITY SYSTEM WIRING AND DEVICE INSTALLATIONS SHALL BE DONE BY THE PALM BEACH COUNTY SCHOOL DISTRICT.
- THE FIRE ALARM MANUFACTURER SHALL PROVIDE CERTIFIED TECHNICIAN TO SUPERVISE THE INSTALLATION, FINAL CONNECTIONS AND TESTING OF THE FIRE ALARM SYSTEM. AT THE COMPLETION OF THE PROJECT, THE MANUFACTURER SHALL INSPECT THE SYSTEM AND CERTIFY THAT IT IS INSTALLED IN ACCORDANCE WITH NFPA 72. ALL FIRE ALARM COMPONENTS SHALL COMPLY WITH ADA REQUIREMENTS.
- REFER TO SPECIFICATIONS FOR MORE INFORMATION.
- THE CONTRACTOR SHALL VERIFY CEILING TYPES AND INSTALLATION REQUIREMENTS PRIOR TO ORDERING LIGHT FIXTURES.

DRAWING INDEX	
SHEET NO.	DESCRIPTION
E-001	ELECTRICAL NOTES AND LEGEND
E-101	ELECTRICAL SECURITY PLAN - OVERALL
E-201	ENLARGED ELECTRICAL PLAN
E-202	ENLARGED ELECTRICAL PLAN
E-203	ENLARGED ELECTRICAL PLAN
E-204	ENLARGED ELECTRICAL PLAN
E-205	ENLARGED ELECTRICAL PLAN
E-301	ELECTRICAL SCHEDULES AND DETAILS

HARVARD JOLLY ARCHITECTURE



Martin County School District
Martin County High School Enhanced Security A1
 2801 South Kanner Highway
 Stuart, Florida 34994
 100% Construction Documents

Comm. No: 16025.14
 Date: 08/27/2019
 Drawn: MCH

Revisions		
No.	Date	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.

Certification Number 6059
 Charles C. Gableman, P.E. 51936

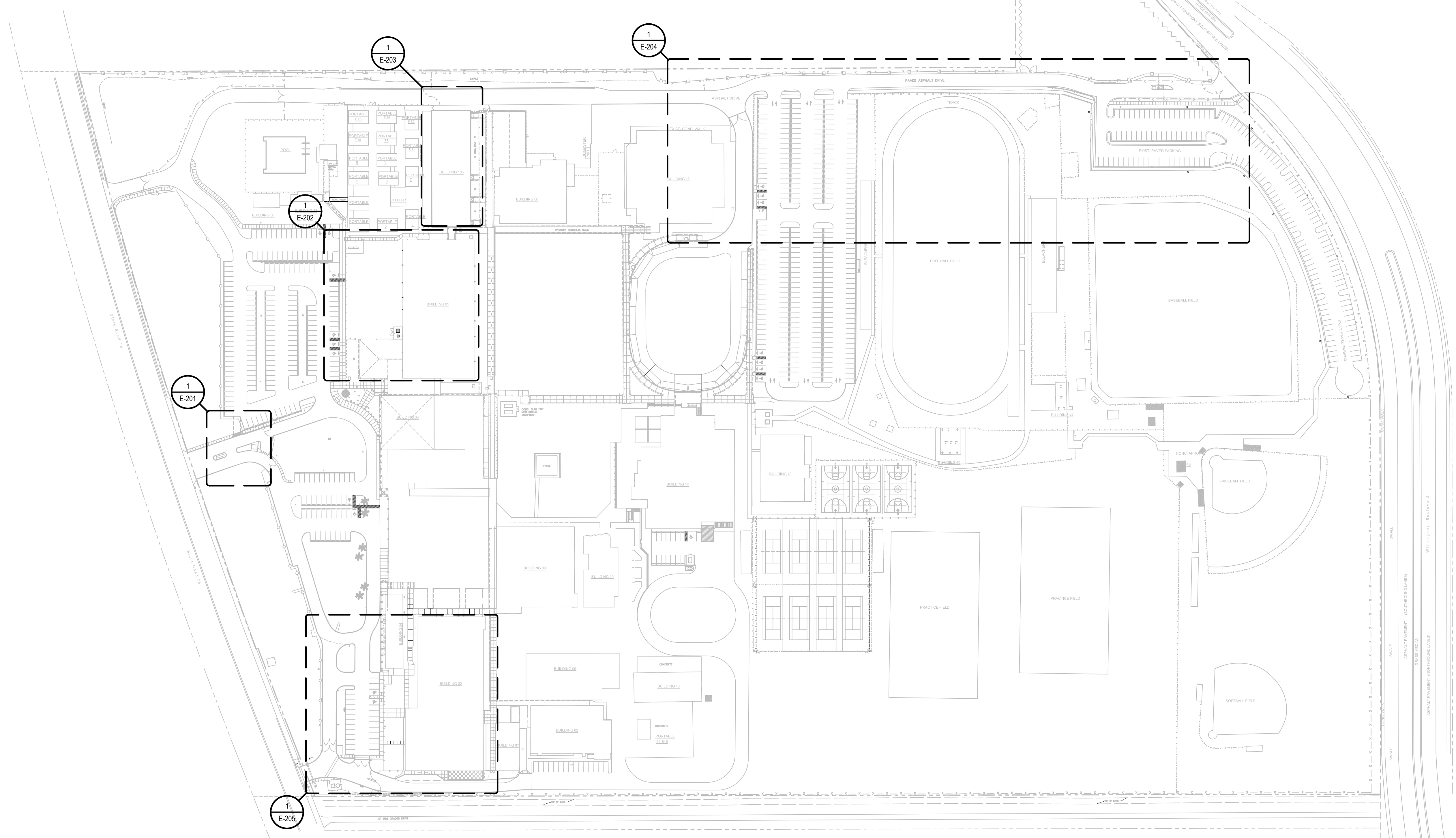
ELECTRICAL NOTES AND LEGEND

E-001

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A B C D



1 E-101 ELECTRICAL SECURITY PLAN - OVERALL SCALE: 1"=100'-0" NORTH

Martin County School District
Martin County High School Enhanced Security A1
2801 South Kanner Highway
Stuart, Florida 34994
100% Construction Documents

Comm. No: 16025.14
Date: 08/27/2019
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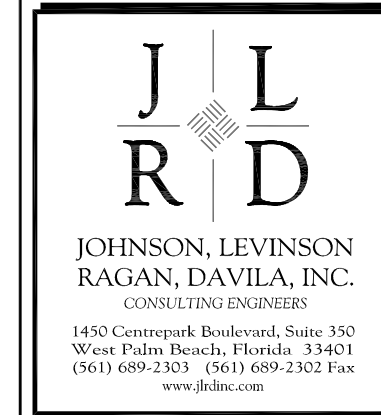
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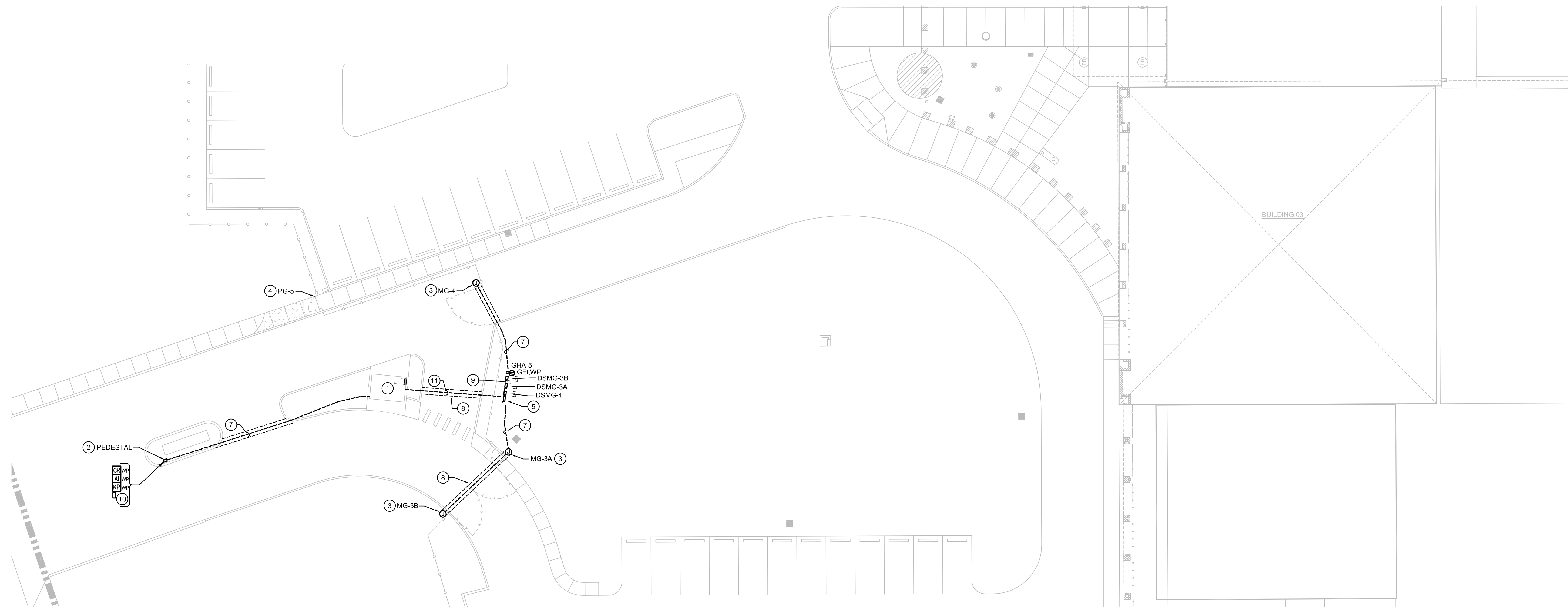
ELECTRICAL SECURITY PLAN - OVERALL

E-101



HARVARD JOLLY ARCHITECTURE
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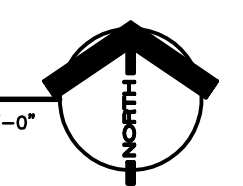
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1
E-201

ENLARGED ELECTRICAL PLAN - GATES 3A, 3B, AND 4

SCALE: 1/16"=1'-0"



PLAN NOTES:

- 1 EXISTING GUARD HOUSE 'A'. LOCATION OF PANEL 'GHA'.
- 2 PEDESTAL WITH CAMERA, INTERCOM, AND ACCESS CONTROL, PROXIMITY CARD, AND KEYPAD. PROVIDE KNOX BOX AS REQUIRED BY MARTIN COUNTY FIRE RESCUE.
- 3 GATE MOTOR. SEE DISCONNECT SCHEDULE ON SHEET E-301.
- 4 PEDESTRIAN GATE WITH PANIC HARDWARE. NO ELECTRICAL POWER OR SYSTEMS, SHOWN FOR REFERENCE ONLY.
- 5 ENCLOSURE, IF REQUIRED.
- 6 PROVIDE AND INSTALL NEW BREAKER. BREAKER TO MATCH EXISTING TYPE.
- 7 ROUTE UNDERGROUND CONDUITS FROM GATE ENTRY TO EXISTING GUARD HOUSE 'A' AS FOLLOWS:
1-1" GATE MOTOR CONTROL.
1-1" GATE MOTOR POWER.
1-1" ACCESS CONTROL (KEYPAD, PROXIMITY READER).
1-1" AIPHONE (VOICE/VIDEO).
1-1" SPARE.
- 8 TRENCHING OF ROADWAY REQUIRED.
- 9 PROVIDE STRUT RACKS FOR EXTERIOR MOUNTED EQUIPMENT, CONTAINING DISCONNECT SWITCH AND MAINTENANCE RECEPTACLE, WIRED TO CIRCUIT INDICATED. SEE DETAIL 2/E-301.
- 10 PROVIDE AND INSTALL KNOX-BOX (3200 SERIES) WITH INTEGRAL MULTIPURPOSE ELECTRICAL SWITCH WITH ENCLOSURE, 1/4" PLATE STEEL HOUSING, 1/2" THICK DOOR WITH INTERIOR GASKET SEAL. BOTH KNOX AND LOCK SHALL HAVE 1/8" STEEL DUST COVER WITH TAMPER SEAL MOUNTING CAPABILITY. FINISH COLOR SHALL BE ALUMINUM. VERIFY EXACT MOUNTING HEIGHT AND LOCATION WITH MARTIN COUNTY FIRE RESCUE PRIOR TO ROUGH-IN.
- 11 ROUTE UNDERGROUND CONDUITS FROM GATE ENTRY TO EXISTING GUARD HOUSE 'A' AS FOLLOWS:
2-1" GATE MOTOR CONTROL.
2-1" GATE MOTOR POWER.
2-1" ACCESS CONTROL (KEYPAD, PROXIMITY READER).
2-1" AIPHONE (VOICE/VIDEO).
2-1" SPARE.

LOCATION		EXISTING GUARD HOUSE		PANELBOARD SCHEDULE										EXISTING PANEL		GHA		
BUS KW		A	B	LOAD	POLES	TRIP	CIRC.	BUS	A	B	CIRC.	TRIP	POLES	LOAD	A	B	BUS KW	
-	-	-	-	EXISTING A/C	2	30	1	-	-	-	2	20	1	EXISTING LIGHTS	-	-	-	-
-	-	-	-	RECEPTACLE	1	20	5	-	-	-	6	-	-	SPACE	-	-	-	-
0.2	-	-	-	DSMG-4, VEHICLE GATE	1	20	7	-	-	-	8	-	-	SPACE	-	-	-	-
-	-	-	-	DSMG-3A, 3B, VEHICLE GATE	1	20	9	-	-	-	10	-	-	SPACE	-	-	-	-
-	-	-	-	SPARE	1	20	11	-	-	-	12	-	-	SPACE	-	-	-	-
RATED VOLTAGE: 120/240				1 PHASE, 3 WIRE				FEED IS TO BE				BOTTOM: () TOP FROM: BUILDING 3						
RATING IS TO BE () 125 () 225 () 400 AMPS				GROUND BAR IS REQUIRED														
() MAIN BREAKER AMPS				NEUTRAL BUS IS TO BE () FULL () DOUBLE SIZE														
BRANCH POLES= () 12 () 24 () 30 () 84				HINGED DOOR WITH KEYED LATCH () JIS () JIS NOT REQUIRED														
PANELBOARD IS TO BE () FUSED () BOLT IN CIRCUIT BREAKER TYPE				HARD WIRED SURGE PROTECTION () JIS () JIS NOT REQUIRED														
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT CURRENT I _{sc} = 10,000 AMPS, SYM RMS																		

Comm. No: 16025.14
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Revisions		
No.	Date	Note

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Certification Number 6059
Charles C. Gableman, P.E. 51936

ENLARGED ELECTRICAL PLAN

E-201

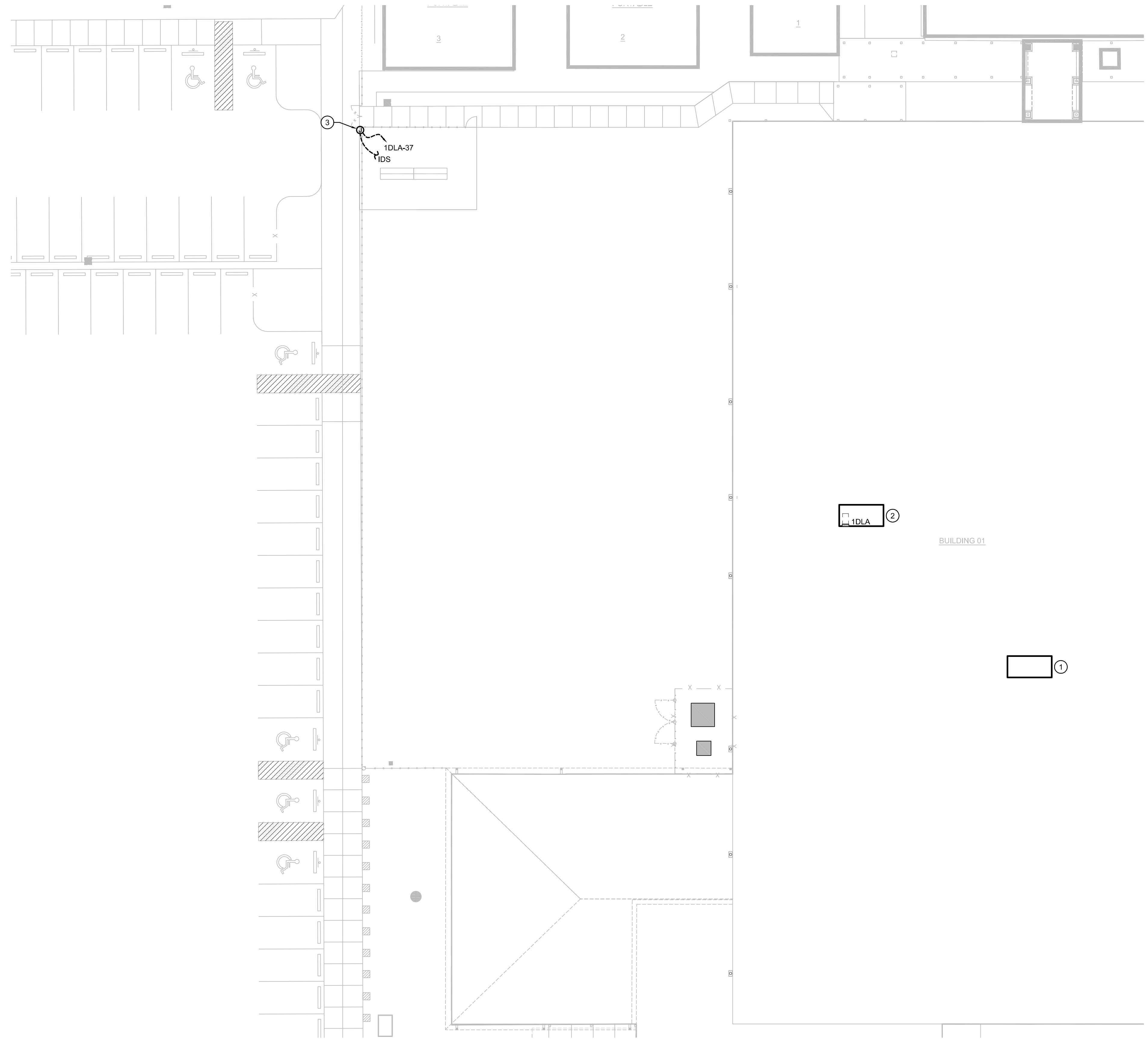
LOCATION: BLDG 1 - IDF 01-144

PANELBOARD SCHEDULE

EXISTING PANEL 1DLA

BUS AMPS			LOAD	POLES	TRIP	CIRC.	BUS			CIRC.	TRIP	POLES	LOAD	BUS AMPS		
A	B	C					A	B	C					A	B	C
			EXIST RECEPTACLES-RM 154	1	20	1	2	20	1	20	1	EXIST RECEPTACLES-RM 160				
			EXIST RECEPTACLES-RM 154	1	20	3	4	20	1	20	1	EXIST RECEPTACLES-RM 160				
			EXIST RECEPTACLES-RM 148	1	20	5	6	20	1	20	1	EXIST RECEPTACLES-RM 166				
			EXIST RECEPTACLES-RM 148	1	20	7	8	20	1	20	1	EXIST RECEPTACLES-RM 166				
			EXIST RECEPTACLES-RM 139	1	20	9	10	20	1	20	1	EXIST RECEPTACLES-RM 171				
			EXIST RECEPTACLES-RM 139	1	20	11	12	20	1	20	1	EXIST RECEPTACLES-RM 171				
			EXIST RECEPTACLES-RM 133	1	20	13	14	20	1	20	1	EXIST RECEPTACLES-RM 177				
			EXIST RECEPTACLES-RM 133	1	20	15	16	20	1	20	1	EXIST RECEPTACLES-RM 177				
			EXIST RECEPTACLES-RM 131,132	1	20	17	18	20	1	20	1	EXIST RECEPTACLES-RM 185				
			EXIST RECEPTACLES-RM 126	1	20	19	20	20	1	20	1	EXIST RECEPTACLES-RM 185				
			EXIST RECEPTACLES-RM 126	1	20	21	22	20	1	20	1	EXIST RECEPTACLES-RM 191				
			EXIST RECEPTACLES-RM 101,107...	1	20	23	24	20	1	20	1	EXIST RECEPTACLES-RM 191				
			EXIST RECEPTACLES-RM 102	1	20	25	26	20	1	20	1	EXIST RECEPTACLES-RM 129				
			EXIST RECEPTACLES-RM 102,111	1	20	27	28	20	1	20	1	EXIST RECEPTACLES-RM 130				
			EXIST RECEPTACLES-RM 104,113	1	20	29	30	20	1	20	1	EXIST RECEPTACLES-RM 183				
			EXIST RECEPTACLES-RM 115	1	20	31	32	20	1	20	1	EXIST RECEPTACLES-RM 183				
			EXIST RECEPTACLES-RM 116,117,118	1	20	33	34	20	1	20	1	EXIST RECEPTACLES-RM 181				
			EXIST RECEPTACLES-RM 119	1	20	35	36	20	1	20	1	EXIST RECEPTACLES-RM 181				
0.2			PANIC GATE 'PG-3' ④	1	20	37	38	20	1	20	1	EXIST RECEPTACLES-RM 180				
			SPARE	1	20	39	40	20	1	20	1	EXIST RECEPTACLES-RM 180,183				
			SPARE	1	20	41	42	20	1	20	1	EXIST RECEPTACLES-RM 170				
			EXIST REC. F/A CNTRL RM 144	1	20	43	44	20	1	20	1	EXIST RECEPTACLES-RM 158				
			EXIST REC. F/A CNTRL RM 144	1	20	45	46	20	1	20	1	EXIST RECEPTACLES-RM 159				
			EXIST REC. F/A CNTRL RM 144	1	20	47	48	20	1	20	1	EXIST RECEPTACLES-RM 194,195				
			EXIST RECEPTACLE-RM 144	1	20	49	50	20	1	20	1	EXIST RECEPTACLES-RM 159				
			EXIST RECEPTACLE-RM 144	1	20	51	52	20	1	20	1	EXIST RECEPTACLES-RM 158				
			EXIST RECEPTACLE-RM 144	1	20	53	54	20	1	20	1	SPARE				
			EXIST RECEPTACLE-RM 144	1	20	55	56	20	1	20	1	SPARE				
			EXIST RECEPTACLE-RM 144	1	30	57	58	20	1	20	1	SPARE				
			SPARE	1	30	59	60	20	1	20	1	SPARE				
			SPARE	1	30	61	62	20	1	20	1	SPARE				
			EXIST RECEPTACLES IT-RM 144	1	30	63	64	20	1	20	1	SPARE				
			SPARE	1	30	65	66	20	1	20	1	EXIST RECEPTACLES-RM 129				
			EXIST RECEPTACLES IT-RM 144	1	30	67	68	20	1	20	1	EXIST RECEPTACLES-RM 130				
			SPARE	1	20	69	70	20	1	20	1	SPARE				
			SPARE	1	20	71	72	20	1	20	1	SPARE				
			SPARE	1	20	73	74	20	1	20	1	SPARE				
			SPARE	1	20	75	76	20	1	20	1	SPARE				
			SPARE	1	20	77	78	20	1	20	1	SPARE				
			SPARE	1	20	79	80									
			SPARE	2	40	81	82	30	3	20	3	EXIST SPD-2-RM 144				
						83	84									

RATED VOLTAGE: 120/208	1 PHASE, 3 WIRE	FEED IS TO BE () BOTTOM: () TOP FROM: BUILDING 1
RATING IS TO BE () 125 () 250 () 400 AMPS		GROUND BAR IS REQUIRED ()
MAIN BREAKER 250 AMPS () MAIN LUGS ONLY		NEUTRAL BUS IS TO BE () FULL () DOUBLE SIZE
BRANCH POLES= () 12 () 24 () 30 () 84		HINGED DOOR WITH KEYPED LATCH () IS () IS NOT REQUIRED
PANELBOARD IS TO BE () FUSED () BOLT IN CIRCUIT BREAKER TYPE		HARD WIRED SURGE PROTECTION () IS () IS NOT REQUIRED
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT CURRENT I _{sc} =10,000 AMPS, SYM RMS		



1 ENLARGED ELECTRICAL PLAN - PANIC GATE #3

SCALE: 1/16"=1'-0"

- PLAN NOTES:**
- APPROXIMATE LOCATION OF EXISTING ELECTRICAL ROOM. SHOWN FOR REFERENCE.
 - APPROXIMATE LOCATION OF EXISTING IDF ROOM. PANEL '1DLA' AND IDS CABINET LOCATED INSIDE.
 - PANIC GATE 'PG-3'. ROUTE BRANCH CIRCUIT (2#10, 1#10G - 3/4" C) AND 3/4" IDS CONDUIT WITH PULL STRING TO IDF ROOM.
 - EXISTING SPARE CIRCUIT BREAKER TO BE USED FOR PROPOSED LOAD. UPDATE PANELBOARD SCHEDULE ACCORDINGLY.

HARVARD JOLLY ARCHITECTURE

2047 Viera Parkway, Suite 100 West Palm Beach, FL 33411 | 561-478-4457 | www.harvardjolly.com | AAC000119

JLR D

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Martin County High School Enhanced Security A1
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Certification Number 6059
Charles C. Gableman, P.E. 51936

ENLARGED ELECTRICAL PLAN

E-202

LOCATION: BLDG 105 - MECHANICAL RM 900 **PANELBOARD SCHEDULE** EXISTING PANEL **P1A**

BUS AMPS			LOAD	POLES	TRIP	CIRC.	BUS			CIRC.	TRIP	POLES	LOAD	BUS AMPS		
A	B	C					A	B	C					A	B	C
			EXIST RECEIPT RM 102,104	1	20	1	●			2	20	1	EXIST CHILLER PAD RECEIPT			
			EXIST RECEIPT RM 116,117	1	20	3	●			4	20	1	EXIST HAND DRYER MEN 109			
			EXIST RECEIPT RM 120,121	1	20	5	●			6	20	1	EXIST HAND DRYER MEN 109			
			EXIST RECEIPT ELEV EQUIP_MOP125	1	20	7	●			8	20	1	EXIST HAND DRYER LADIES 108			
			EXIST CIRC PUMP CP-1 RM 106	1	20	9	●			10	20	1	EXIST HAND DRYER LADIES 108			
			EXIST DISPLAY CASE HALLWAY	1	20	11	●			12	20	1	EXIST HAND DRYER MEN 109			
				1	20	13	●			14	20	1	EXIST HAND DRYER LADIES 108			
			SPARE	1	20	15	●			16	20	1	EXIST HAND DRYER MEN 109			
			EXIST CORR-100	1	20	17	●			18	20	1	EXIST HAND DRYER LADIES 119			
			SPARE	1	20	19	●			20	20	1	EXIST RECEIPT MECH			
			SPARE	1	20	21	●			22	20	1	PANIC GATE 'PG-2' ④		0.2	
			SPARE	1	20	23	●			24			SPACE			
			SPARE	1	20	25	●			26			SPACE			
			SPARE	1	20	27	●			28			SPACE			
			SPARE	1	20	29	●			30			SPACE			
			EXIST PANEL SC	1	20	31	●			32			SPACE			
						33	●			34			SPACE			
						35	●			36			SPACE			
						37	●			38			SPACE			
						39	●			40			SPACE			
						41	●			42			SPACE			
			DO NOT USE			43	●			44						
			DO NOT USE			45	●			46			EXIST SURGE			
			DO NOT USE			47	●			48						
			DO NOT USE			49	●			50			DO NOT USE			
			DO NOT USE			51	●			52			DO NOT USE			
			DO NOT USE			53	●			54			DO NOT USE			

RATED VOLTAGE: 120/208 1 PHASE, 3 WIRE FEED IS TO BE (●) BOTTOM: () TOP FROM: BUILDING 105

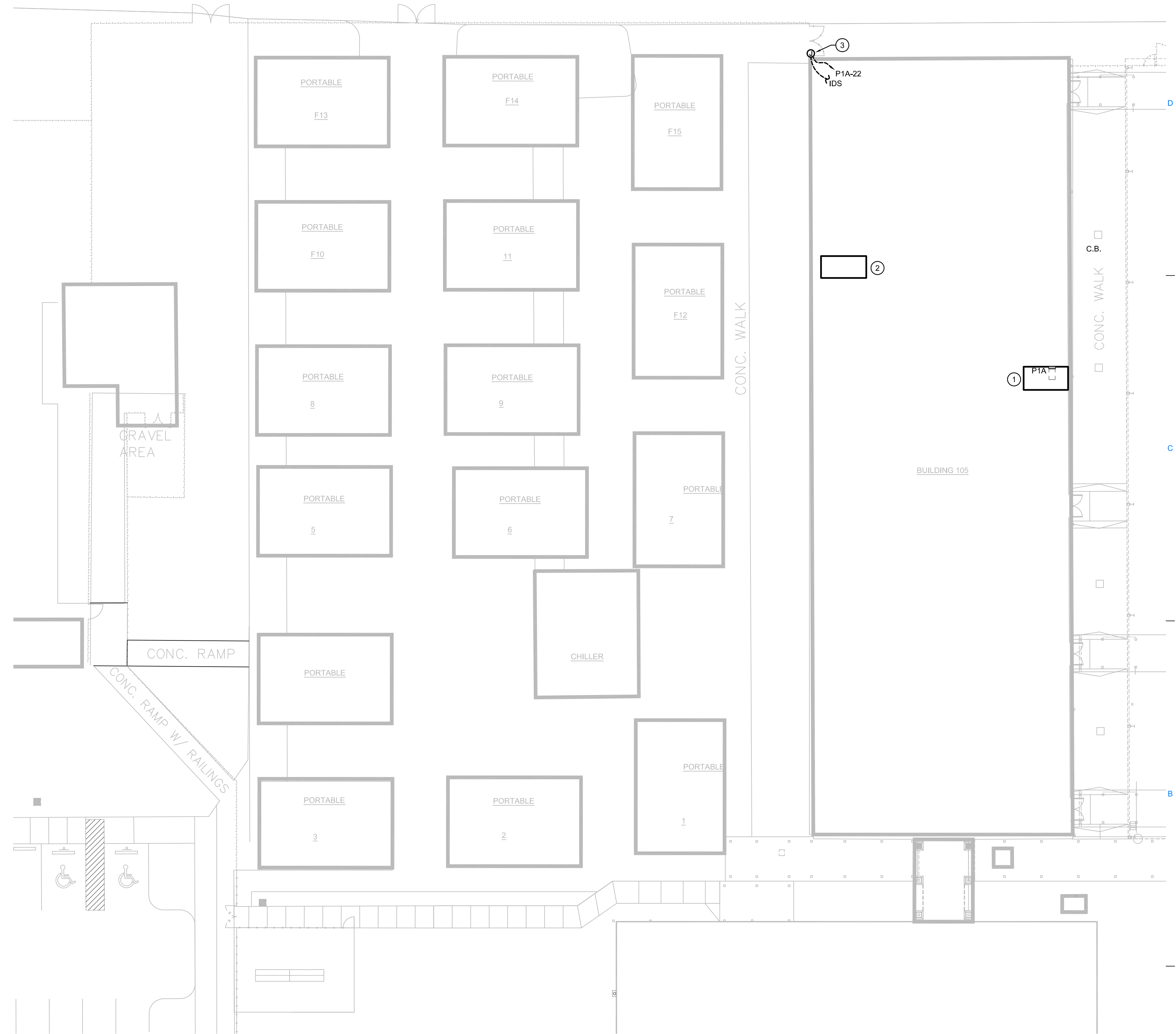
RATING IS TO BE () 125 (●) 225 () 400 AMPS GROUND BAR IS REQUIRED

() MAIN BREAKER AMPS (●) MAIN LUGS ONLY NEUTRAL BUS IS TO BE () FULL () DOUBLE SIZE

BRANCH POLES= () 1/2 () 2/4 () 3/0 (●) 4/2 HINGED DOOR WITH KEYPED LATCH () IS () IS NOT REQUIRED

PANELBOARD IS TO BE () FUSED (●) BOLT IN CIRCUIT BREAKER TYPE HARD WIRED SURGE PROTECTION () IS () IS NOT REQUIRED

ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT CURRENT I_{sc} = 10,000 AMPS, SYM RMS



1 ENLARGED ELECTRICAL PLAN - PANIC GATE #2

SCALE: 1/16"=1'-0"

- PLAN NOTES:**
- APPROXIMATE LOCATION OF EXISTING MECHANICAL ROOM 900. PANEL P1A AND IDS LOCATED INSIDE.
 - APPROXIMATE LOCATION OF EXISTING IDF ROOM.
 - PANIC GATE 'PG-2'. ROUTE BRANCH CIRCUIT (2#10, 1#10G - 3/4" C) AND 3/4" IDS CONDUIT WITH PULL STRING TO IDF ROOM.
 - EXISTING SPARE CIRCUIT BREAKER TO BE USED FOR PROPOSED LOAD. UPDATE PANELBOARD SCHEDULE ACCORDINGLY.

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Martin County School District
 Martin County High School Enhanced Security A1
 2801 South Kanner Highway
 Stuart, Florida 34994
 100% Construction Documents

Comm. No: 16025.14
 Date: 08/27/2019
 Drawn: MCH

Revisions		
No.	Date	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.

Certification Number 6059
 Charles C. Gableman, P.E. 51916
ENLARGED ELECTRICAL PLAN
E-203

PULL BOXES TYPICAL. EACH SHALL BE LABELED ELECTRICAL OR TELECOM ACCORDINGLY

ASPHALT DRIVE

4#1/0, 1#4G IN 2" (POWER). EMPTY 2" C WITH PULL STRING FOR ROUTING OF FIBER BY OWNER (DATA).

LOCATION OF DISTRIBUTION PANEL IN EXISTING GYM ELECTRICAL ROOM. ROOM IS APPROXIMATELY 1100' AWAY FROM NEW GUARD HOUSE LOCATION.

LOCATION: BLDG 15 - ELECTRICAL RM

PANELBOARD SCHEDULE										EXISTING PANEL						
BUS AMPS			LOAD	POLES	TRIP	CIRC	BUS			CIRC	TRIP	POLES	LOAD	BUS AMPS		
A	B	C					A	B	C					A	B	C
-	-	-	EXISTING SPARE	3	400	3	1	2	3	60	3	EXISTING ELEVATOR	-	-	-	
-	-	-	EXISTING PANEL 'AHS'	3	400	9	4	5	6	225	3	EXISTING PANEL 'HA'	-	-	-	
-	-	-	EXISTING PANEL 'AHH'	3	400	15	7	8	9	50	3	PANEL 'EG'	-	-	-	
-	-	-	EXISTING PANEL 'DA'	3	500	21	10	11	12	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	23	13	14	15	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	25	16	17	18	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	27	19	20	21	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	29	22	23	24	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	31	25	26	27	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	33	28	29	30	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	35	31	32	33	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	37	34	35	36	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	39	37	38	39	-	-	SPACE	-	-	-	
-	-	-	SPACE	-	-	41	40	41	42	-	-	SPACE	-	-	-	

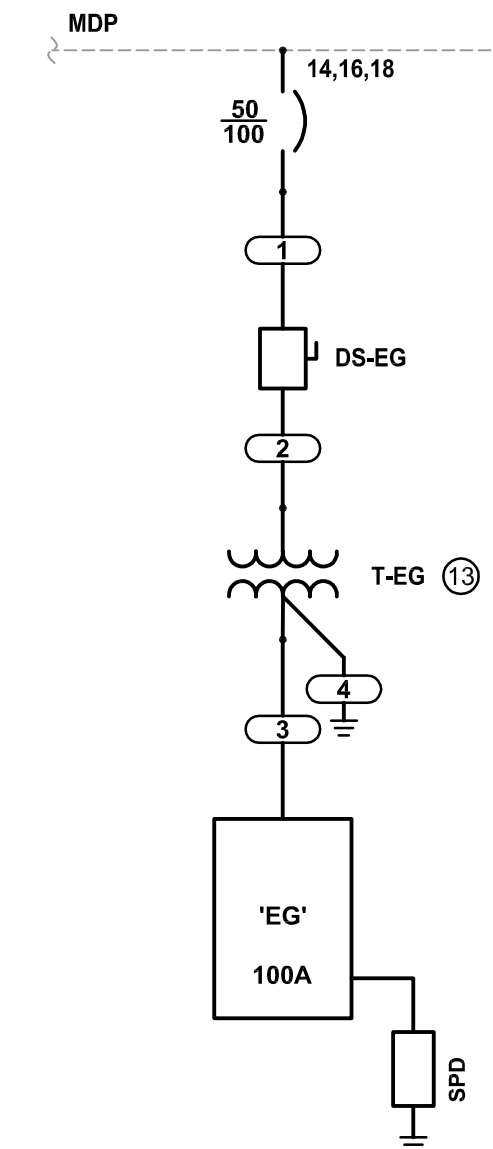
RATED VOLTAGE: 277/480 3 PHASE 4 WIRE FEED IS TO BE () BOTTOM: () TOP FROM: UTILITY
 RATING IS TO BE () 150 () 225 () 1200 AMPS GROUND BAR IS REQUIRED
 () MAIN BREAKER 1200 AMPS () MAIN LUGS ONLY NEUTRAL BUS IS TO BE () FULL () DOUBLE SIZE
 BRANCH POLES= () 12 () 24 () 30 () 42 HINGED DOOR WITH KEYED LATCH () IS () JS NOT REQUIRED
 PANELBOARD IS TO BE () FUSED () BOLT IN CIRCUIT BREAKER TYPE HARD WIRED SURGE PROTECTION () IS () JS NOT REQUIRED
 ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT CURRENT I_{sc} = XX,000 AMPS, SYM RMS

LOCATION: EAST GATE EQUIPMENT RACK

PANELBOARD SCHEDULE										EXISTING PANEL						
BUS AMPS			LOAD	POLES	TRIP	CIRC	BUS			CIRC	TRIP	POLES	LOAD	BUS AMPS		
A	B	C					A	B	C					A	B	C
-	-	-	GUARD HOUSE	2	60	1	1	2	3	20	1	MG-1A VEHICLE GATE	-	-	-	
-	-	-	CONVENIENCE RECEPTACLE	1	20	5	4	5	6	20	1	MG-1B VEHICLE GATE	-	-	-	
-	-	-	SPARE	1	20	7	7	8	9	20	1	SPARE	-	-	-	
-	-	-	SPARE	1	20	9	9	10	11	20	1	SPARE	-	-	-	
-	-	-	SPARE	1	20	11	11	12	13	20	1	SPARE	-	-	-	
-	-	-	SPARE	1	20	13	13	14	15	20	1	SPARE	-	-	-	
-	-	-	SPARE	1	20	15	15	16	17	20	1	SPARE	-	-	-	
-	-	-	SPARE	1	20	17	17	18	19	20	1	SPARE	-	-	-	
-	-	-	SPARE	1	20	19	19	20	21	30	3	SPD	-	-	-	
-	-	-	SPARE	1	20	21	21	22	23	-	-	SPACE	-	-	-	

RATED VOLTAGE: 120/208 3 PHASE 4 WIRE FEED IS TO BE () BOTTOM: () TOP FROM: EXIST PNL IN GYM ELEC. RM
 RATING IS TO BE () 100 () 225 () 400 AMPS GROUND BAR IS REQUIRED
 () MAIN BREAKER 100 AMPS () MAIN LUGS ONLY NEUTRAL BUS IS TO BE () FULL () DOUBLE SIZE
 BRANCH POLES= () 12 () 24 () 30 () 42 HINGED DOOR WITH KEYED LATCH () IS () JS NOT REQUIRED
 PANELBOARD IS TO BE () FUSED () BOLT IN CIRCUIT BREAKER TYPE HARD WIRED SURGE PROTECTION () IS () JS NOT REQUIRED
 ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT CURRENT I_{sc} = XX,000 AMPS, SYM RMS

TRANSFORMER SCHEDULE						
NO.	KVA	PHASE	PRIMARY VOLTAGE	SECONDARY VOLTAGE	LOCATION	NOTES
T-EG	30	3Ø	480V	120/208V	EAST GATE	NEMA 3R



WIRE AND CONDUIT SCHEDULE

1	4#1/0, 1#4G - 2" C
2	4#8, 1#8G - 3/4" C
3	4#3, 1#8G - 1-1/4" C
4	1#8G, SEE GROUNDING NOTE

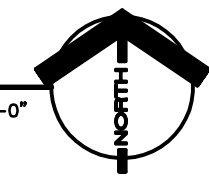
GROUNDING NOTE:
 ALL EQUIPMENT GROUNDS SHALL BE CONNECTED TO THE FOLLOWING POINTS IN ACCORDANCE WITH N.E.C. ARTICLE 250:
 BUILDING GROUNDING LOOP, COLD WATER PIPE, AND BUILDING STEEL.

- PLAN NOTES:**
- NEW GUARD HOUSE.
 - PEDESTAL WITH CAMERA, INTERCOM, AND ACCESS CONTROL, PROXIMITY CARD, AND KEYPAD. PROVIDE KNOX BOX AS REQUIRED BY MARTIN COUNTY FIRE RESCUE.
 - GATE MOTOR, SEE DISCONNECT SCHEDULE.
 - PEDESTRIAN GATE WITH PANIC HARDWARE. NO ELECTRICAL POWER OR SYSTEMS, SHOWN FOR REFERENCE ONLY.
 - ENCLOSURE, IF REQUIRED.
 - PROVIDE AND INSTALL NEW BREAKER. BREAKER TO MATCH EXISTING TYPE.
 - ROUTE UNDERGROUND CONDUITS FROM GATE ENTRY TO EXISTING GUARD HOUSE 'A' AS FOLLOWS:
 1-1" GATE MOTOR CONTROL.
 1-1" GATE MOTOR POWER.
 1-1" ACCESS CONTROL (KEYPAD, PROXIMITY READER).
 1-1" ALPHONE (VOICE/VIDEO).
 1-1" SPARE.
 - TRENCHING OF ROADWAY REQUIRED.
 - PROVIDE STRUT RACKS FOR EXTERIOR MOUNTED EQUIPMENT. CONTAINING DISCONNECT SWITCH AND MAINTENANCE RECEPTACLE, WIRED TO CIRCUIT INDICATED, SEE DETAIL 2/E-301.
 - PROVIDE AND INSTALL KNOX-BOX (3200 SERIES) WITH INTEGRAL MULTIPURPOSE ELECTRICAL SWITCH WITH ENCLOSURE, 1/4" PLATE STEEL HOUSING, 1/2" THICK DOOR WITH INTERIOR GASKET SEAL. BOTH KNOX AND LOCK SHALL HAVE 1/8" STEEL DUST COVER WITH TAMPER SEAL. MOUNTING CAPABILITY. FINISH COLOR SHALL BE ALUMINUM. VERIFY EXACT MOUNTING HEIGHT AND LOCATION WITH MARTIN COUNTY FIRE RESCUE PRIOR TO ROUGH-IN.
 - MANUAL GATE; NO ELECTRICAL WORK, SHOWN FOR REFERENCE ONLY.
 - COREDRIILL WALL LOW TO ACCOMMODATE CONDUIT PENETRATION. WEATHERPROOF OPENING AS REQUIRED. PAINT EXPOSED CONDUITS TO MATCH ADJACENT SURFACE.
 - TRANSFORMER T-EG, PROVIDE HOUSE KEEPING PAD.

1 ENLARGED ELECTRICAL PLAN - GUARD HOUSE, GATES 1A AND 1B

E-204

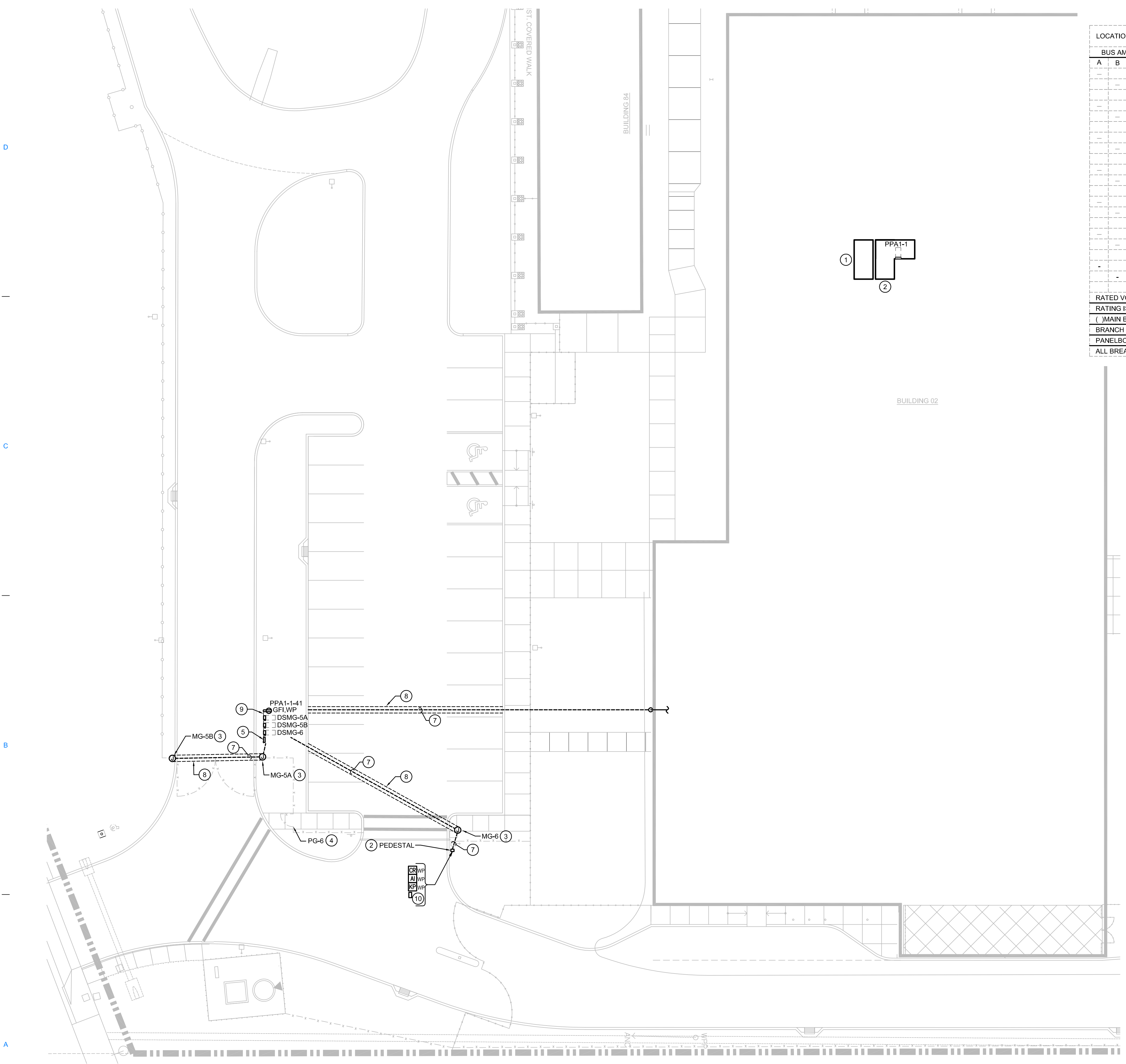
SCALE: 1/16"=1'-0"



Comm. No: 16025.14
 Date: 08/27/2019
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No.	Date	Note

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LOCATION: BLDG 02 - ELECTRICAL RM 153 **PANELBOARD SCHEDULE** EXISTING PANEL **PPA1-1**

BUS AMPS			LOAD	POLES	TRIP	CIRC.	BUS	CIRC.	TRIP	POLES	LOAD	BUS AMPS		
A	B	C										A	B	C
-	-	-	EXIST ART LAB RECEP	1	20	1	A	2	20	1	EXIST CORR. 101 RECEPT EXT WEST	-	-	-
-	-	-	EXIST POTTERY WHEEL 116 RECEPT	1	20	3	B	4	20	1	EXIST-RECEPT CLASSROOM 107	-	-	-
-	-	-	EXIST POTTERY WHEEL 116 RECEPT	1	20	5	C	6	20	1	EXIST-RECEPT TEACHER WALL 107	-	-	-
-	-	-	EXIST POTTERY WHEEL 116 RECEPT	1	20	7	A	8	20	1	EXIST-RECEPT CLASSROOM 108	-	-	-
-	-	-	EXIST POTTERY WHEEL 116 RECEPT	1	20	9	B	10	20	1	EXIST-RECEPT TEACHER WALL 108	-	-	-
-	-	-	EXIST TEACHERS WALL 186 RECEPT	1	20	11	C	12	20	1	EXIST-RECEPT CLASSROOM 111	-	-	-
-	-	-					A	14	20	1	EXIST-RECEPT TEACHER WALL 111	-	-	-
-	-	-	EXIST KILN 118 EAST	3	50	15	B	16	20	1	EXIST-RECEPT CLASSROOM 113	-	-	-
-	-	-					C	18	20	1	EXIST-RECEPT TEACHER WALL 113	-	-	-
-	-	-					A	20	20	1	EXIST-RECEPT CLASSROOM 114	-	-	-
-	-	-	EXIST KILN 118 WEST	3	50	21	B	22	20	1	EXIST-RECEPT TEACHER WALL 114	-	-	-
-	-	-					C	24	20	1	EXIST EWC RECEPTACLE 101	-	-	-
-	-	-	EXIST SUPP. INST. 115, STORAGE 117	1	20	25	A	26	20	1	EXIST EWC RECEPTACLE 101	-	-	-
-	-	-	EXIST FIRE DOOR 103B	1	20	27	B	28	20	1	EXIST EWC RECEPTACLE 101	-	-	-
-	-	-	EXIST EXTERIOR GFCI EAST	1	20	29	C	30	20	1	EXIST EWC RECEPTACLE 101	-	-	-
-	-	-	EXIST TRACK LTG 116	1	20	31	A	32	-	-	EXIST HAND DRYER BOYS GRP 156	-	-	-
-	-	-	EXIST TRACK LTG 120 EAST	1	20	33	B	34	-	-	EXIST HAND DRYER BOYS GRP 156	-	-	-
-	-	-	EXIST TRACK LTG 120 WEST	1	20	35	C	36	-	-	EXIST HAND DRYER BOYS GRP 156	-	-	-
-	-	-	DSMG-5A,5B VEHICLE GATE	6	1	20	37	38	-	-	SPACE	-	-	-
-	-	-	DSMG-6 VEHICLE GATE	6	1	20	39	40	-	-	SPACE	-	-	-
-	-	-	0.2 RECEPTACLE	6	1	20	41	42	-	-	SPACE	-	-	-

RATED VOLTAGE: 120/208 3 PHASE, 4 WIRE FEED IS TO BE () TOP FROM: PANEL 'DP-RA'

RATING IS TO BE () 150 () 225 () 400 AMPS GROUND BAR IS REQUIRED

() MAIN BREAKER 60 AMPS () MAIN LUGS ONLY NEUTRAL BUS IS TO BE () FULL () DOUBLE SIZE

BRANCH POLES= () 12 () 24 () 30 () 42 HINGED DOOR WITH KEYPAD LATCH () IS () IS NOT REQUIRED

PANELBOARD IS TO BE () FUSED () BOLT IN CIRCUIT BREAKER TYPE HARD WIRED SURGE PROTECTION () IS () IS NOT REQUIRED

ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT CURRENT $I_{sc}=10,000$ AMPS, SYM RMS

ENLARGED ELECTRICAL PLAN - GATES 5A, 5B, AND 6 SCALE: 1/16"=1'-0"

PLAN NOTES:

- APPROXIMATE LOCATION OF EXISTING IDF ROOM 151.
- APPROXIMATE LOCATION OF EXISTING ELECTRICAL ROOM 153.
- GATE MOTOR, SEE DISCONNECT SCHEDULE.
- PEDESTRIAN GATE WITH PANIC HARDWARE. NO ELECTRICAL POWER OR SYSTEMS, SHOWN FOR REFERENCE ONLY.
- ENCLOSURE, IF REQUIRED.
- EXISTING SPARE CIRCUIT BREAKER TO BE USED FOR PROPOSED LOAD. UPDATE PANELBOARD SCHEDULE ACCORDINGLY
- ROUTE UNDERGROUND CONDUITS FROM GATE ENTRY TO EXISTING GUARD HOUSE 'A' AS FOLLOWS:
 1-1" GATE MOTOR CONTROL.
 1-1" GATE MOTOR POWER.
 1-1" ACCESS CONTROL (KEYPAD, PROXIMITY READER).
 1-1" C ALPHONE (VOICE/VIDEO).
 1-1" C SPARE.
- TRENCHING OF ROADWAY REQUIRED, SEE CIVIL SHEET 6 FOR HARDSCAPE PATCHING.
- PROVIDE STRUT RACKS FOR EXTERIOR MOUNTED EQUIPMENT, CONTAINING DISCONNECT SWITCH AND MAINTENANCE RECEPTACLE, WIRED TO CIRCUIT INDICATED, SEE DETAIL 2/E-301.
- PROVIDE AND INSTALL KNOX-BOX (3200 SERIES) WITH INTEGRAL MULTIPURPOSE ELECTRICAL SWITCH WITH ENCLOSURE, 1/4" PLATE STEEL HOUSING, 1/2" THICK DOOR WITH INTERIOR GASKET SEAL, BOTH KNOX AND LOCK SHALL HAVE 1/8" STEEL DUST COVER WITH TAMPER SEAL, MOUNTING CAPABILITY. FINISH COLOR SHALL BE ALUMINUM. VERIFY EXACT MOUNTING HEIGHT AND LOCATION WITH MARTIN COUNTY FIRE RESCUE PRIOR TO ROUGH-IN.

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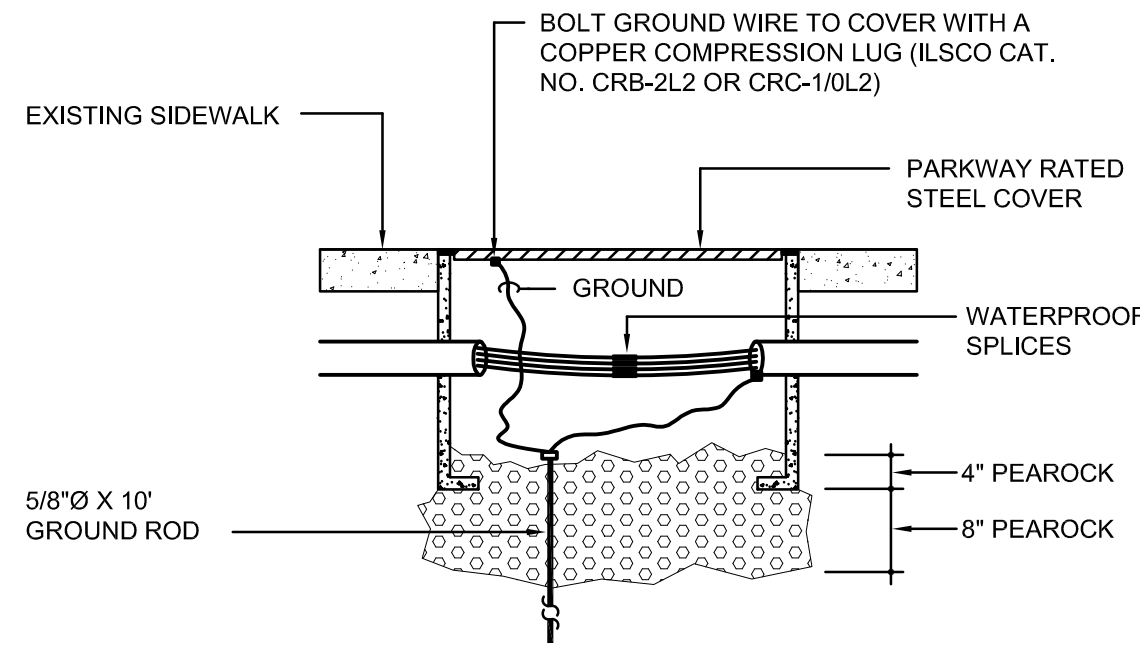
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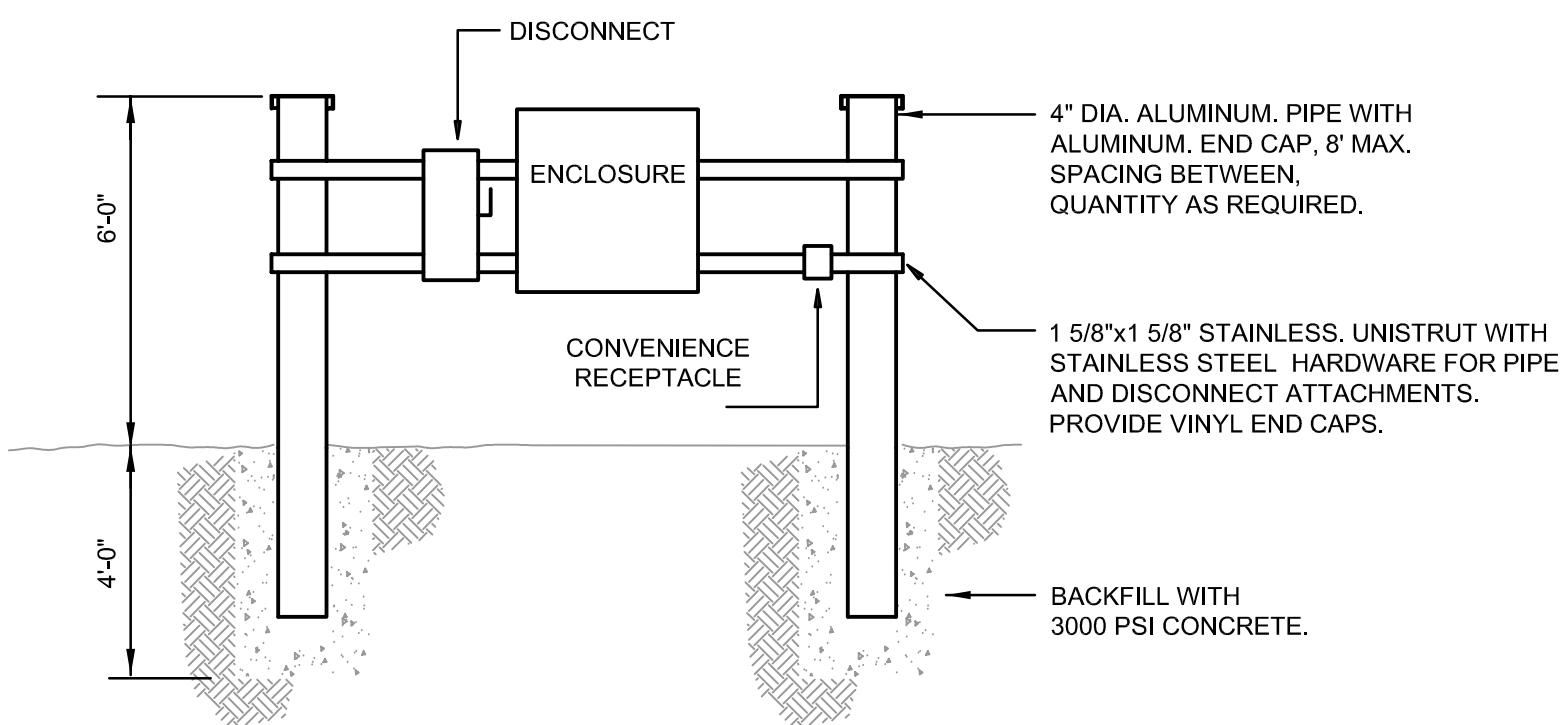
Certification Number 6059
 Charles C. Gableman, P.E. 51916

ENLARGED ELECTRICAL PLAN
E-205



1 TYPICAL PULL BOX SECTION

E-301 SCALE: NONE

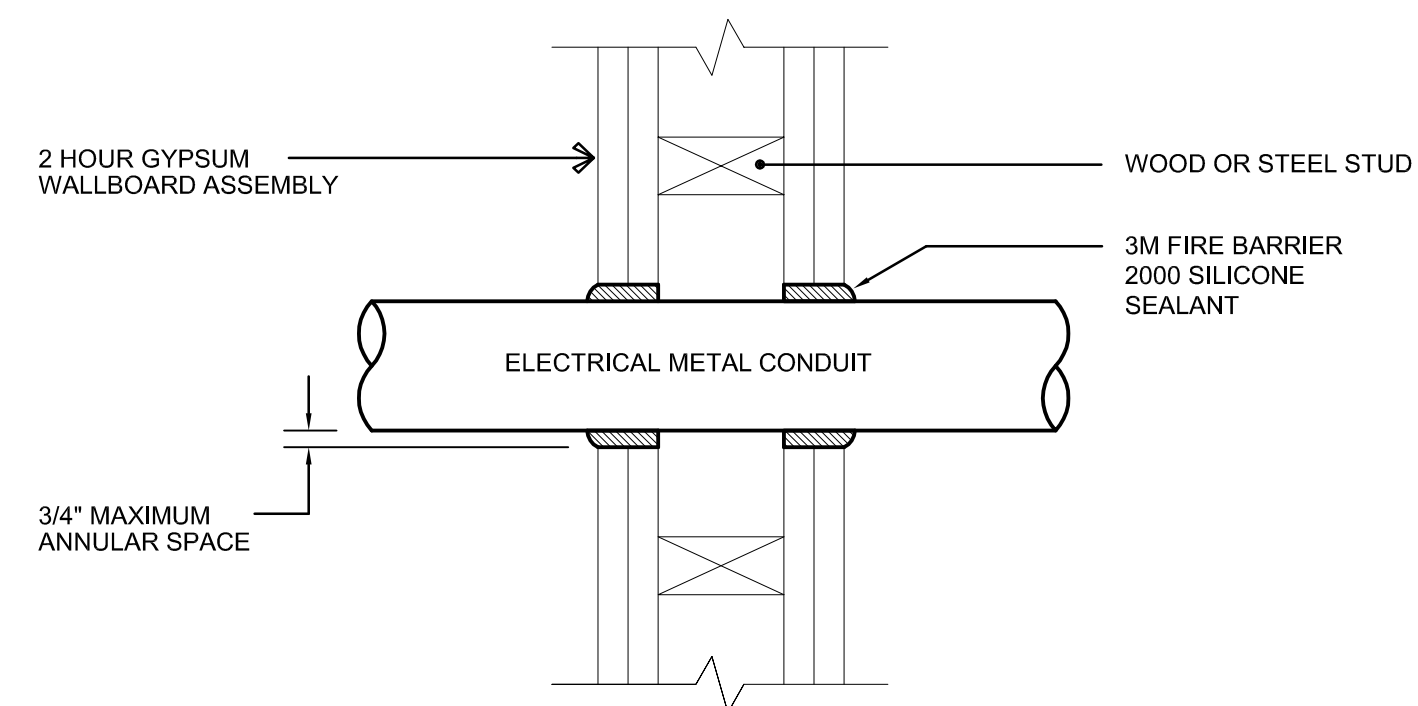


2 PANEL MOUNTING DETAIL - TYPICAL

E-301 SCALE: NONE

DISCONNECT SWITCH SCHEDULE							
NO.	SWITCH/FUSE	VOLTAGE	LOCATION	CIR NO.	CONDUIT/CONDUCTOR	ENCL. TYPE	REMARKS
DSMG-1A	30A/2P15ADEF	120V/1Ø	MG-1A	EG-2	3/4"C-3#12, 1#12G	NEMA 4X-SS	RACK MOUNT
DSMG-1B	30A/2P15ADEF	120V/1Ø	MG-1B	EG-4	3/4"C-3#12, 1#12G	NEMA 4X-SS	RACK MOUNT
DSMG-3A	30A/2P15ADEF	120V/1Ø	MG-3A	GHA-9	3/4"C-3#12, 1#12G	NEMA 4X-SS	RACK MOUNT
DSMG-3B	30A/2P15ADEF	120V/1Ø	MG-3B	GHA-9	3/4"C-3#12, 1#12G	NEMA 4X-SS	RACK MOUNT
DSMG-4	30A/2P15ADEF	120V/1Ø	MG-4	GHA-7	3/4"C-3#12, 1#12G	NEMA 4X-SS	RACK MOUNT
DSMG-5A	30A/2P15ADEF	120V/1Ø	MG-5A	PPA1-1-37	3/4"C-3#12, 1#12G	NEMA 4X-SS	RACK MOUNT
DSMG-5B	30A/2P15ADEF	120V/1Ø	MG-5B	PPA1-1-37	3/4"C-3#12, 1#12G	NEMA 4X-SS	RACK MOUNT
DSMG-6	30A/2P15ADEF	120V/1Ø	MG-6	PPA1-1-39	3/4"C-3#12, 1#12G	NEMA 4X-SS	RACK MOUNT
DS-EG	60A/3P150ADEF	480V/3Ø	T-EG	MDP-14,16,18	SEE ONE-LINE	NEMA 4X-SS	NOTE 1

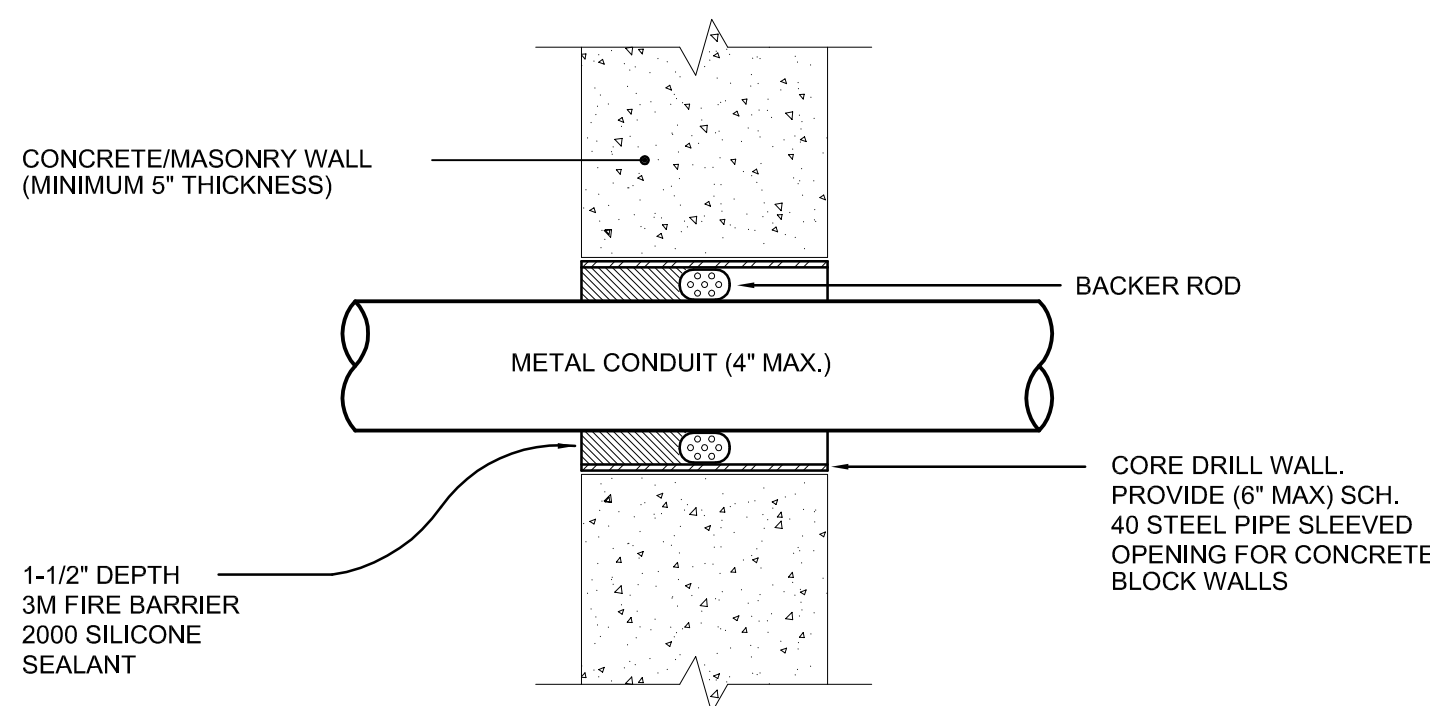
NOTES:
1. 4" HOUSE KEEPING PAD. PROVIDE TWO TRAFFIC BOLLARDS AT CORNERS, SOUTH SIDE.



3 CONDUIT PENETRATION THROUGH RATED GYPSUM WALL

E-301 (UL #W-L-1010) SCALE: NONE

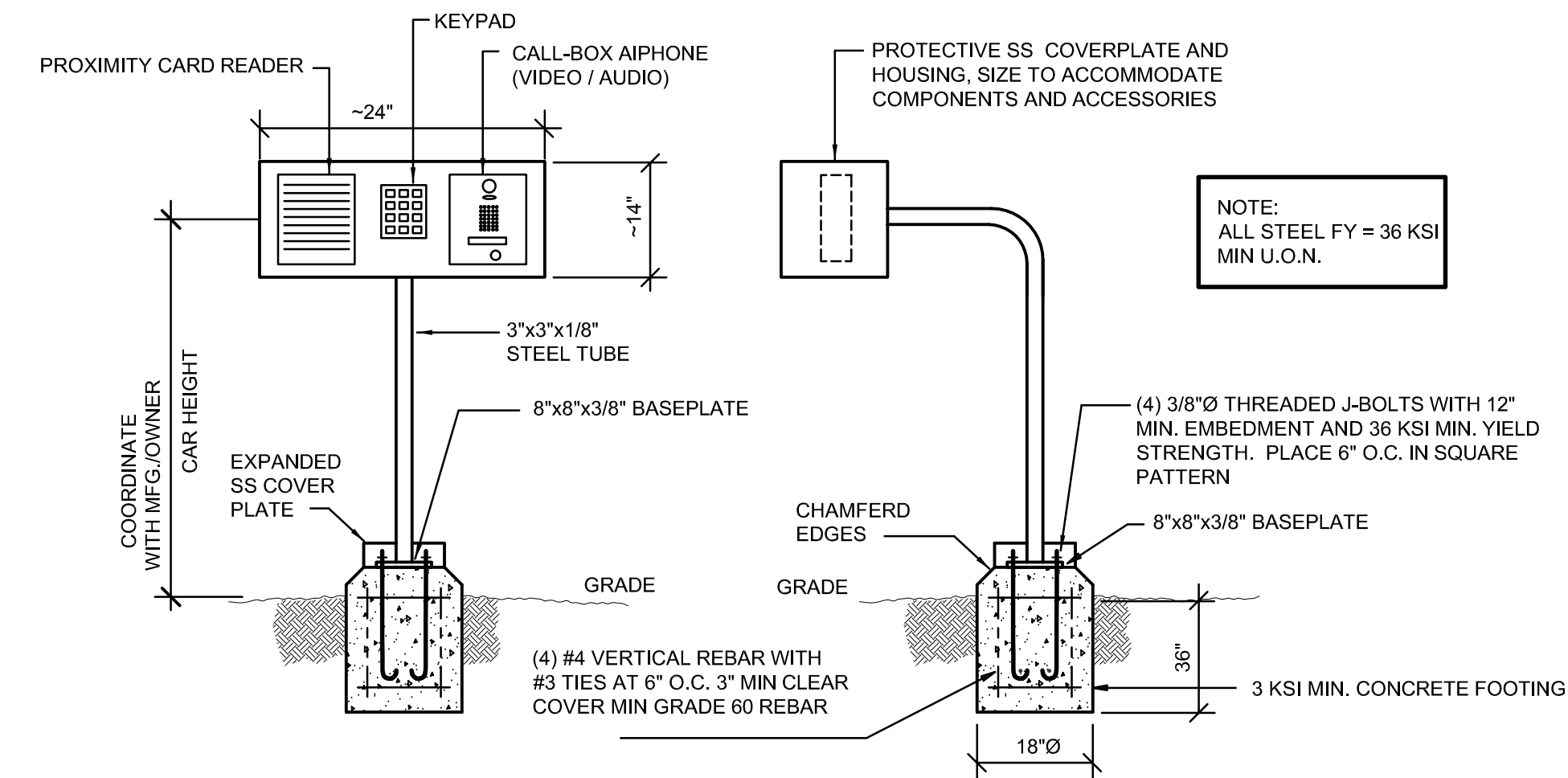
- CONDUIT PENETRATION NOTES (GYPSUM):
1. MAXIMUM 3/4" ANNULAR SPACE.
 2. INSTALL 3M FIRE BARRIER 2000 SILICONE SEALANT TO COMPLETELY FILL THE ANNULAR SPACE BETWEEN THE PIPE AND THE WALL ASSEMBLY. FILL TO THE FULL THICKNESS OF THE GYPSUM WALL (MINIMUM 1-1/4" SEALANT THICKNESS) PLUS AN ADDITIONAL 1/4" INCH CROWN AROUND THE PERIMETER OF THE CONDUIT.



4 CONDUIT PENETRATION THROUGH RATED CONCRETE/MASONRY WALL

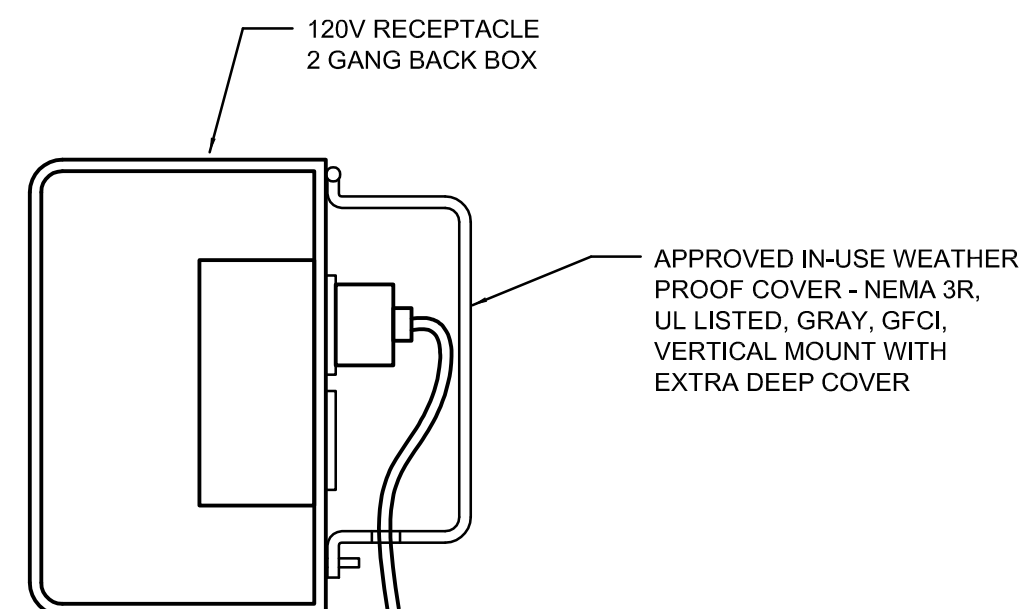
E-301 (UL #C-AJ-1014) SCALE: NONE

- CONDUIT PENETRATION NOTES (CONCRETE/MASONRY):
1. CORE DRILL FOR A MAXIMUM 6 INCH DIAMETER OPENING WITH MAXIMUM 6 INCH SCHEDULE 40 STEEL PIPE SLEEVED OPENING FOR CONCRETE BLOCK OR BRICK WALLS OR MAXIMUM 3/4 INCH ANNULAR SPACE.
 2. INSTALL OPEN CELL POLYURETHANE BACKER ROD IN OPENING. RECESS 1-1/2 INCHES FROM WALL SURFACE.
 3. INSTALL A MINIMUM OF 1-1/2 INCHES OF 3M FIRE BARRIER 2000 SILICONE SEALANT OVER BACKER ROD.



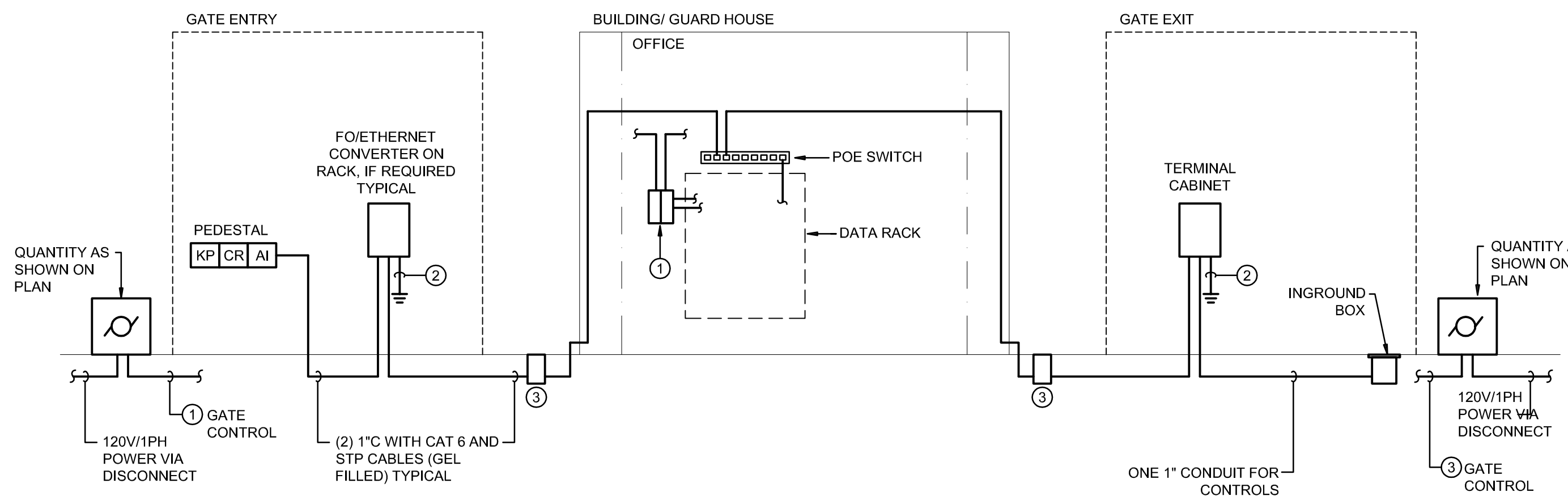
5 INTERCOM STATION PEDESTAL DETAIL

E-301 SCALE: NONE



6 EXTERIOR 120V RECEPTACLE DETAIL

E-301 SCALE: NONE



7 PARTIAL ACS/AIPHONE/GATE RISER DIAGRAM

E-301 SCALE: NONE

AIPHONE SYSTEM SHALL BE COMPATIBLE WITH EXISTING INFRASTRUCTURE.

RISER NOTES

- 1 RELAYS AND POWER DISTRIBUTION MODULES FOR GATE RELEASE UPON KEYPAD, CARD / PROXIMITY READER, AIPHONE MASTER STATION SIGNAL, PROVIDE AS REQUIRED.
- 2 3/4" C 1#6G.
- 3 CONTROLS HANDHOLE, VIF.

Comm. No: 16025.14
Date: 08/27/2019
Drawn: MCH

Revisions		
No.	Date	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.

Certification Number 6059
Charles C. Coburn, P.E. 51916

MARTIN COUNTY HIGH SCHOOL EXTERIOR STUCCO REPAIRS & GUTTER/DOWNSPOUT REPLACEMENT: CAFETERIA & MUSIC BUILDINGS

MARTIN COUNTY SCHOOL DISTRICT
PERMIT DOCUMENTS SUBMITTAL

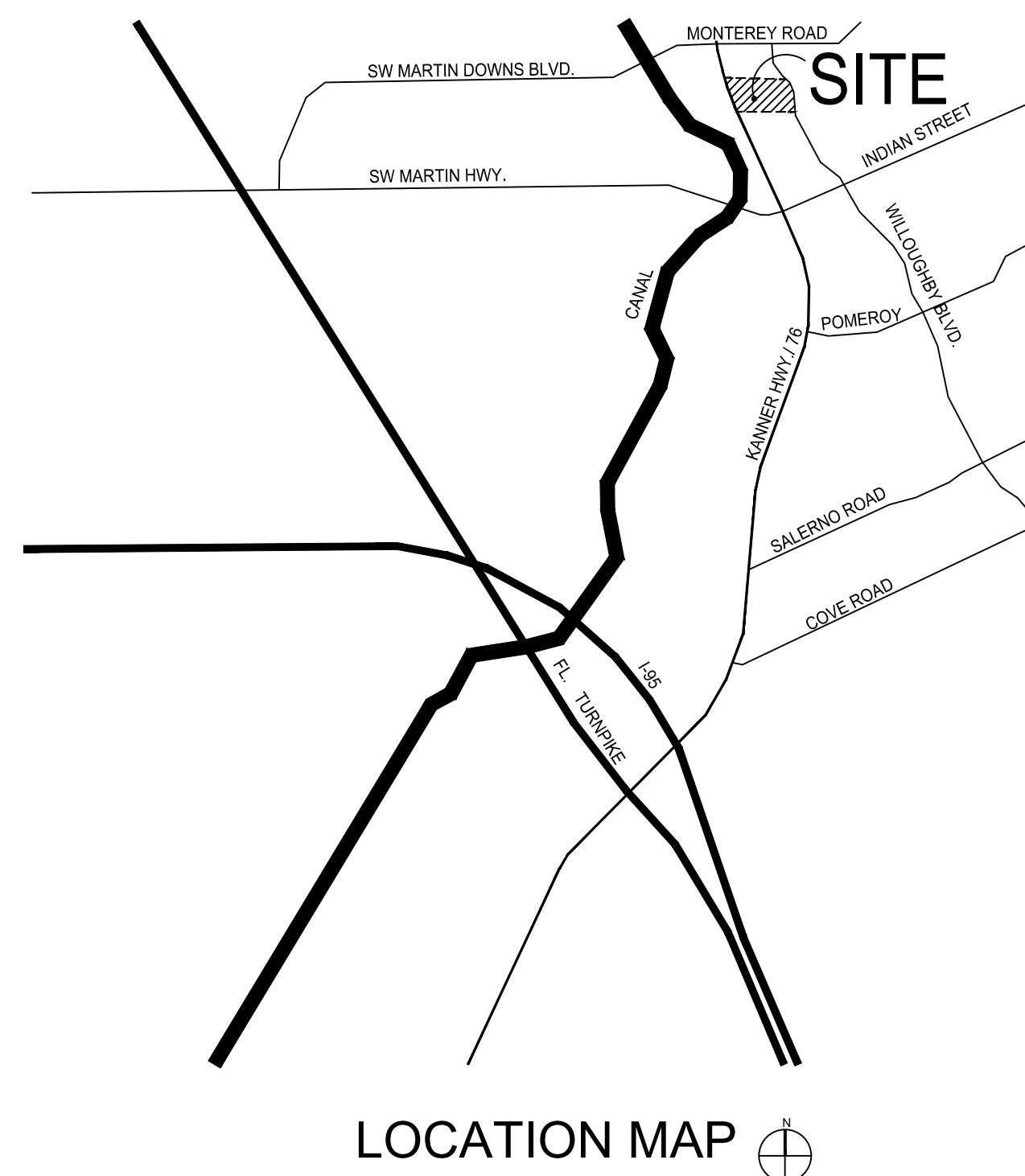
ARCHITECTURAL DESIGN CONSULTANT:

HARVARD JOLLY ARCHITECTURE

2047 VISTA PARKWAY, SUITE 100
WEST PALM BEACH, FL 33411
PHONE: 561-478-4457 FAX: 561-478-4102

BOARD MEMBERS:

CHRISTIA LI ROBERTS	CHAIR
MICHAEL DITERLIZZI	VICE CHAIR
MARSHA POWERS	MEMBER
VICTORIA DEFENTHALER	MEMBER
TONY ANDERSON	MEMBER
Laurie J Gaylord	SUPERINTENDENT



SHEET NO.	TITLE	ORIGINAL DATE	REVISION NO.	LATEST REVISION DATE
ARCHITECTURAL				
G-001	COVER SHEET & INDEX	04/16/19	1	09/12/19
AS-101	OVERALL SITE PLAN	04/16/19		
A-141	ROOF PLANS	04/16/19		
AD-201	EXTERIOR ELEVATIONS DEMOLITION	04/16/19		
AD-202	EXTERIOR ELEVATIONS DEMOLITION	04/16/19		
AD-203	EXTERIOR ELEVATIONS DEMOLITION	04/16/19		
A-201	EXTERIOR ELEVATIONS RENOVATION	04/16/19	1	09/12/19
A-202	EXTERIOR ELEVATIONS RENOVATION	04/16/19	1	09/12/19
A-203	EXTERIOR ELEVATIONS RENOVATION	04/16/19	1	09/12/19
A-401	DETAILS	04/16/19		
A-501	SPECIFICATIONS	04/16/19		
A-502	SPECIFICATIONS	04/16/19		
A-503	SPECIFICATIONS	04/16/19		
A-504	SPECIFICATIONS	04/16/19		
A-505	SPECIFICATIONS	04/16/19		
A-506	SPECIFICATIONS	04/16/19		

SCOPE OF WORK

SCOPE OF WORK INCLUDES TOTAL REMOVAL AND DISPOSAL OF APPLIED DECORATIVE FOAM BAND AS WELL AS GUTTERS AND DOWNSPOUTS FROM BUILDING 10 MUSIC AND BUILDING 14 CAFETERIA. EXISTING GUTTERS AND DOWNSPOUTS SHALL BE REPLACED IN SIMILAR PROFILE AND DIMENSIONS EXCEPT USING STAINLESS STEEL MATERIALS. REPLACED DOWNSPOUTS SHALL BE RECONNECTED TO UNDERGROUND UTILITIES AS CURRENTLY INSTALLED. FOAM BAND SHALL BE REMOVED AND EXPOSED SURFACES CLEANED OF ALL ADHESIVE RESIDUE. STAINLESS STEEL FLASHING SHALL BE INSTALLED IN CONDITIONS WHERE EXISTING BRICK IS OFFSET FROM EXTERIOR BUILDING WALL. AT CONDITIONS WHERE THE TOP ROW BRICK IS FLUSH WITH THE EXTERIOR WALL, REPLACE MORTAR JOINT AS REQUIRED. EXISTING STUCCO WALL ABOVE BRICK/STUCCO TRANSITION SHALL BE REPAINTED TO MATCH EXISTING COLOR.

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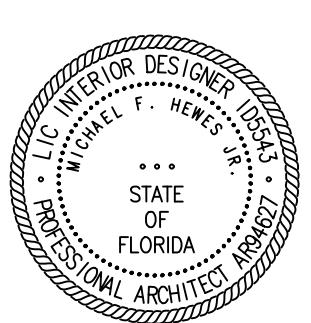
Date: 04/16/2019

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Revisions

No.	Date	Note
1	09/12/19	PRE-BID RFI'S

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.



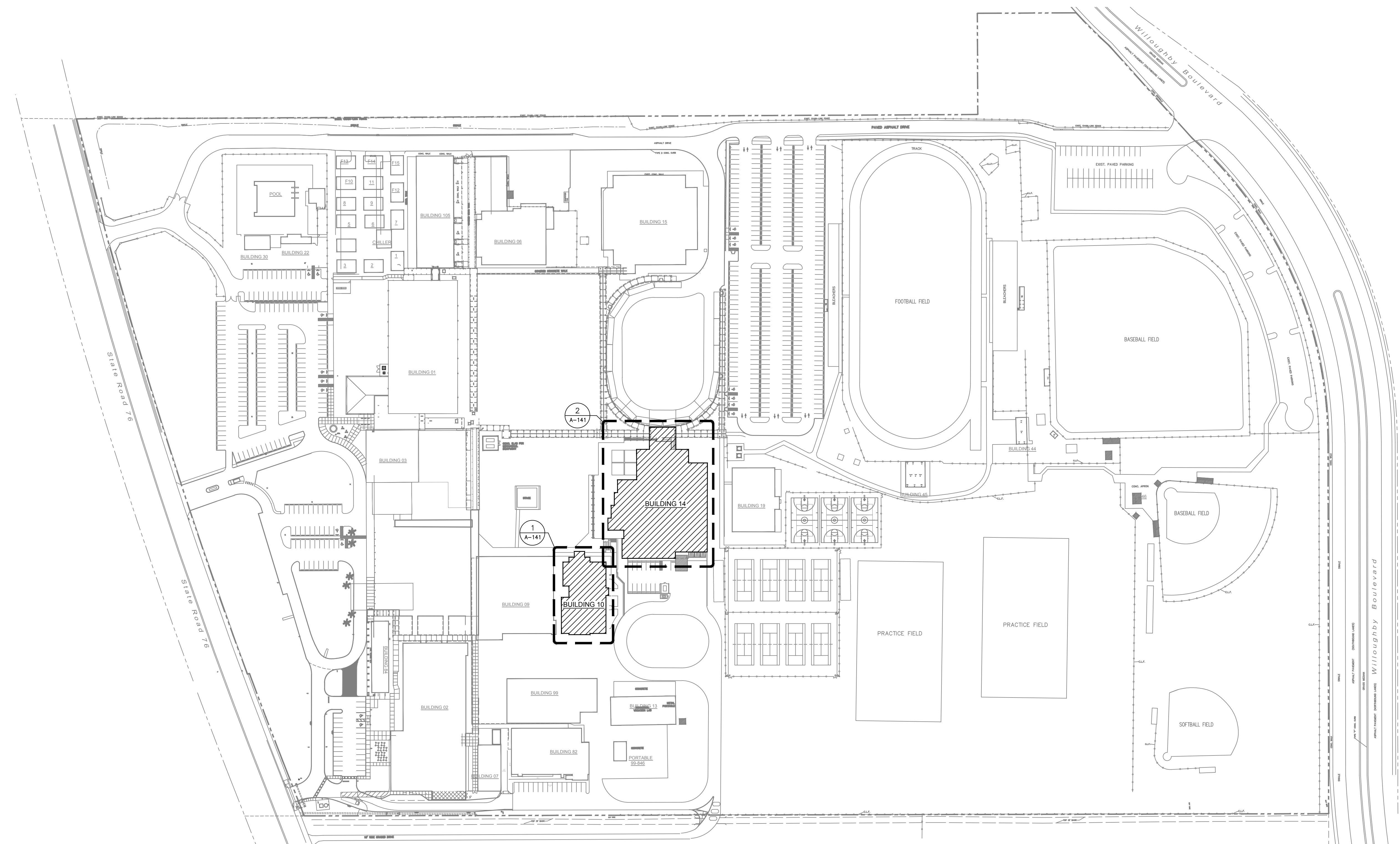
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COVER SHEET

G-001

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH SREF 2014, THE FLORIDA BUILDING CODE 6TH EDITION (2017) (WITH ALL APPLICABLE REVISIONS), FLA. FIRE PREVENTION CODE 6TH EDITION. ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH ALL APPLICABLE REQUIREMENTS OF:
 - 1.1. THE FLORIDA BUILDING CODE 2017 6TH EDITION INCLUDING ALL SUPPLEMENTS.
 - 1.2. THE AUTHORITY OF JURISDICTION/PLAN REVIEW AND FIRE REVIEW PERMITS AND APPROVALS INCLUDING THE DISTRICT DESIGN GUIDELINES AND MASTER SPECIFICATIONS
 - 1.3. ALL STATE AND LOCAL ZONING CODES
 - 1.4. PERMITS SHALL BE POSTED IN A VISIBLE PLACE AT ALL TIMES. ALL PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.
2. ALL WORK, MATERIALS AND EQUIPMENT UTILIZED IN THIS PROJECT SHALL BE NEW AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND SPECIFICATIONS.
3. ALL WORK FOR THIS PROJECT SHALL CONFORM TO STANDARDS PUBLISHED BY RECOGNIZED PROFESSIONAL AND INDUSTRY ORGANIZATIONS.
4. ANY DEVICES/ EQUIPMENT REMOVED FOR THE PURPOSES OF CONSTRUCTION SHALL BE RE-CONNECTED AND TESTED ACCORDING TO THE CURRENT CODES AND DISTRICT REQUIREMENTS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE SITE PRIOR TO BIDDING AND FAMILIARIZING HIMSELF WITH ALL EXISTING CONDITIONS AFFECTING THE WORK, INCLUDING BUT NOT LIMITED TO PRIVATE AND PUBLIC UTILITIES, ON AND OFF SITE ACCESS ROADS AND OTHER SUPPORT FACILITIES.
6. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY UNEXPECTED OR UNKNOWN FIELD CONDITIONS, ERRORS, OMISSIONS, OR DISCREPANCIES IN THE DRAWINGS, PROJECT MANUAL, OR CONTRACT DOCUMENTS PRIOR TO PROCEEDING WITH THE WORK OR SHOP FABRICATIONS.
7. CONTRACTOR SHALL PREPARE AND MAINTAIN ALL CONSTRUCTION AREAS, AS WELL AS SURROUNDING AREAS FREE OF DEBRIS OR HAZARDOUS EQUIPMENT AT ALL TIMES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND/OR THE REPLACEMENT OF ANY ITEMS DAMAGED DURING CONSTRUCTION OR CLEAN-UP. CONSTRUCTION PERSONNEL SHALL BE CONFINED TO THE LIMITS OF THE CONSTRUCTION AREA. ALL OSHA REGULATIONS FOR CONSTRUCTION AREAS SHALL BE STRICTLY FOLLOWED.
9. DRAWINGS ARE NOT TO BE SCALED. WRITTEN DIMENSIONS SHALL BE FOLLOWED.
10. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL BEFORE COMMENCING FABRICATION AND/OR INSTALLATION OF ALL APPLICABLE ITEMS FOR CONSTRUCTION. ALL SHOP DRAWINGS DIMENSIONS SHALL BE FIELD VERIFIED, REVIEWED AND APPROVED BY CONTRACTOR BEFORE SUBMITTAL. SHOP DRAWINGS WHICH ARE INCOMPLETE OR LACKING SUFFICIENT INFORMATION WILL BE RETURNED WITHOUT REVIEW. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL DEBRIS AND CONSTRUCTION MATERIAL FROM THE SITE. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR PROPERLY CLEANING ALL AREAS PRIOR TO FINAL ACCEPTANCE BY THE OWNER INCLUDING BUT NOT LIMITED TO WINDOWS, FLOORS, WALLS, DOORS, EQUIPMENT, ETC.
12. CONTRACTOR TO INSTALL BARRIERS AS NECESSARY AND REQUIRED AROUND PERIMETER OF CONSTRUCTION LIMITS TO PROTECT THE PUBLIC. EGRESS FROM THE EXISTING BUILDINGS SHALL NOT BE REDUCED OR LIMITED.
13. WHERE EXISTING SURFACES ARE TO BE PATCHED AND FILLED TO "LIKE NEW" CONDITION, THEY SHALL BE MADE TO MATCH THICKNESS AND FINISH OF ADJACENT CONSTRUCTION. FINISHES SHALL BE REPLACED TO THE END OF EACH WALL OR NEAREST CONSTRUCTION JOINT.
14. CONTRACTOR TO PROVIDE A SAFETY PLAN PRIOR TO START OF CONSTRUCTION TO CLEARLY DELINEATE AREAS FOR CONSTRUCTION, SAFETY BARRIERS, EXITS AND CONSTRUCTION TRAFFIC DURING THE DEMOLITION/ NEW CONSTRUCTION ACTIVITIES.
15. ALL AREAS, REGARDLESS OF LOCATION, WILL BE REQUIRED TO BE REPAIRED IF DISTURBED BY THE CONSTRUCTION. CONTRACTOR TO REVIEW AS-BUILT DOCUMENTS BEFORE COMMENCING CONSTRUCTION AND VISIT THE SITE TO RECOGNIZE THE AREAS WITHIN THE SCOPE OF WORK.
16. TO THE BEST OF OWNER'S KNOWLEDGE THERE ARE NO HAZARDOUS CONTAINING MATERIALS IN THE LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE OWNER IMMEDIATELY IF ANY HAZARDOUS CONTAINING MATERIALS ARE ENCOUNTERED.
17. IN THE EVENT OF ANY CONFLICTS BETWEEN ANY AND ALL OF THE ABOVE MENTIONED REQUIREMENTS THE MOST STRINGENT SHALL APPLY.
18. THE WORK IS TO TAKE PLACE ON AN OCCUPIED AND ACTIVE CAMPUS. ALL PERSONNEL WORKING ON-SITE WITH THIS PROJECT MUST HAVE, WEAR AND DISPLAY A MCSDD BADGE. CONTRACTOR/ VENDOR MUST APPLY AT THE MCSDD AND PAY FOR ALL MCSDD BADGE ASSOCIATED COSTS.



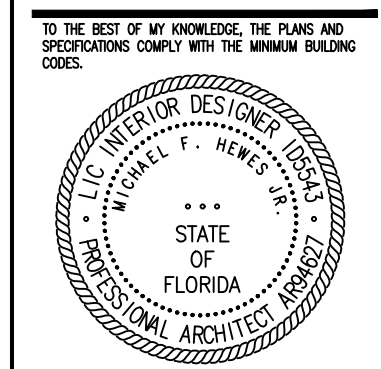
1 OVERALL SITE PLAN
SCALE: 1" = 100'-0"

Filename: P:\16025.10 - MCSHS Exterior Repairs\5 CAD Sheets\24x36\AS Sheets\AS-101 OVERALL SITE PLAN Plot Date: 4/16/2019 Plotted By: Michael F. Hewes, Jr.

MCSD Martin County High School
Exterior Repairs/Gutter & DS Replacement
2801 S Kanner Highway, Stuart, FL 34994
Permit Documents Submittal

Comm. No: 16025.10
Date: 04/16/2019
Drawn: *

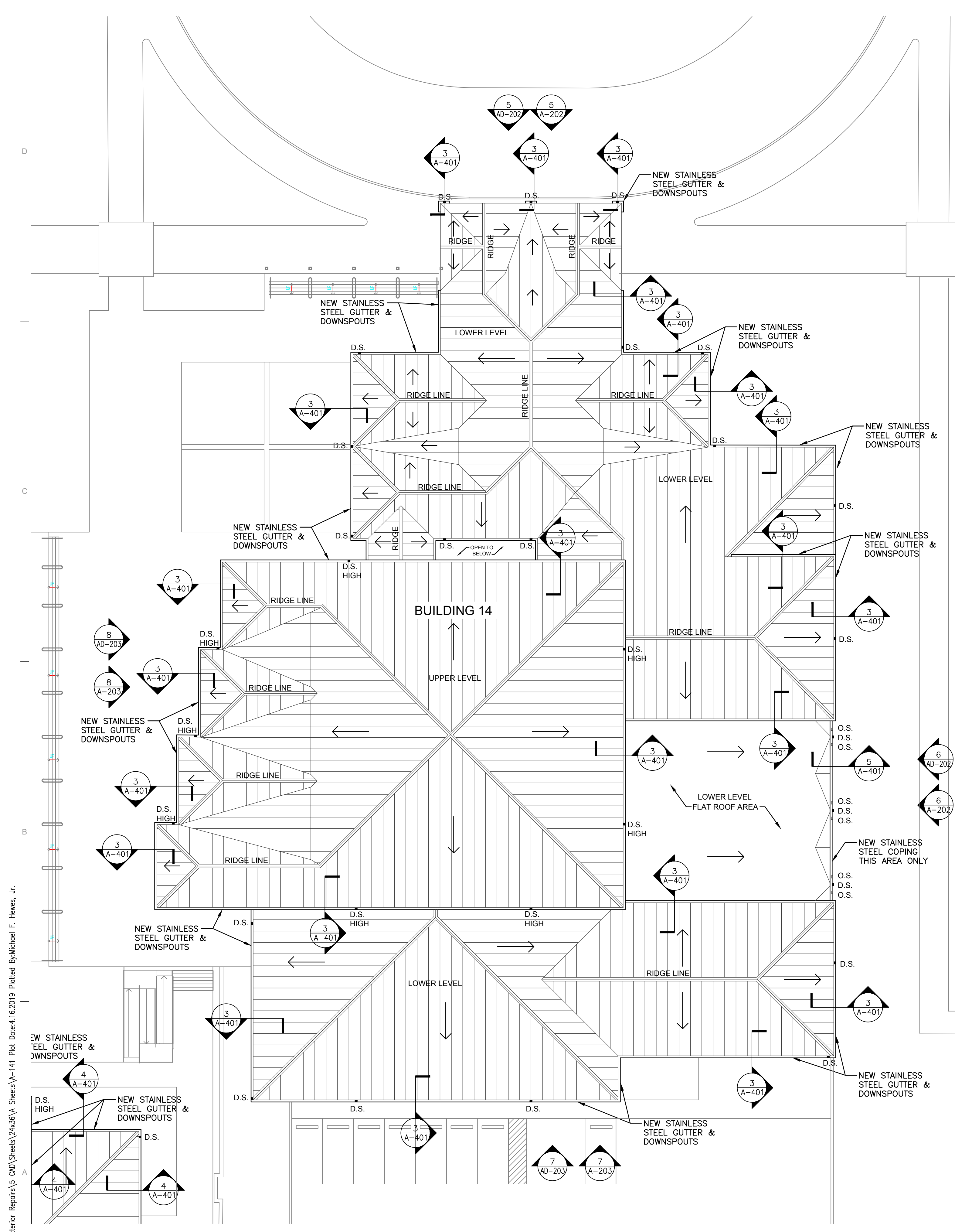
Revisions	
No.	Date



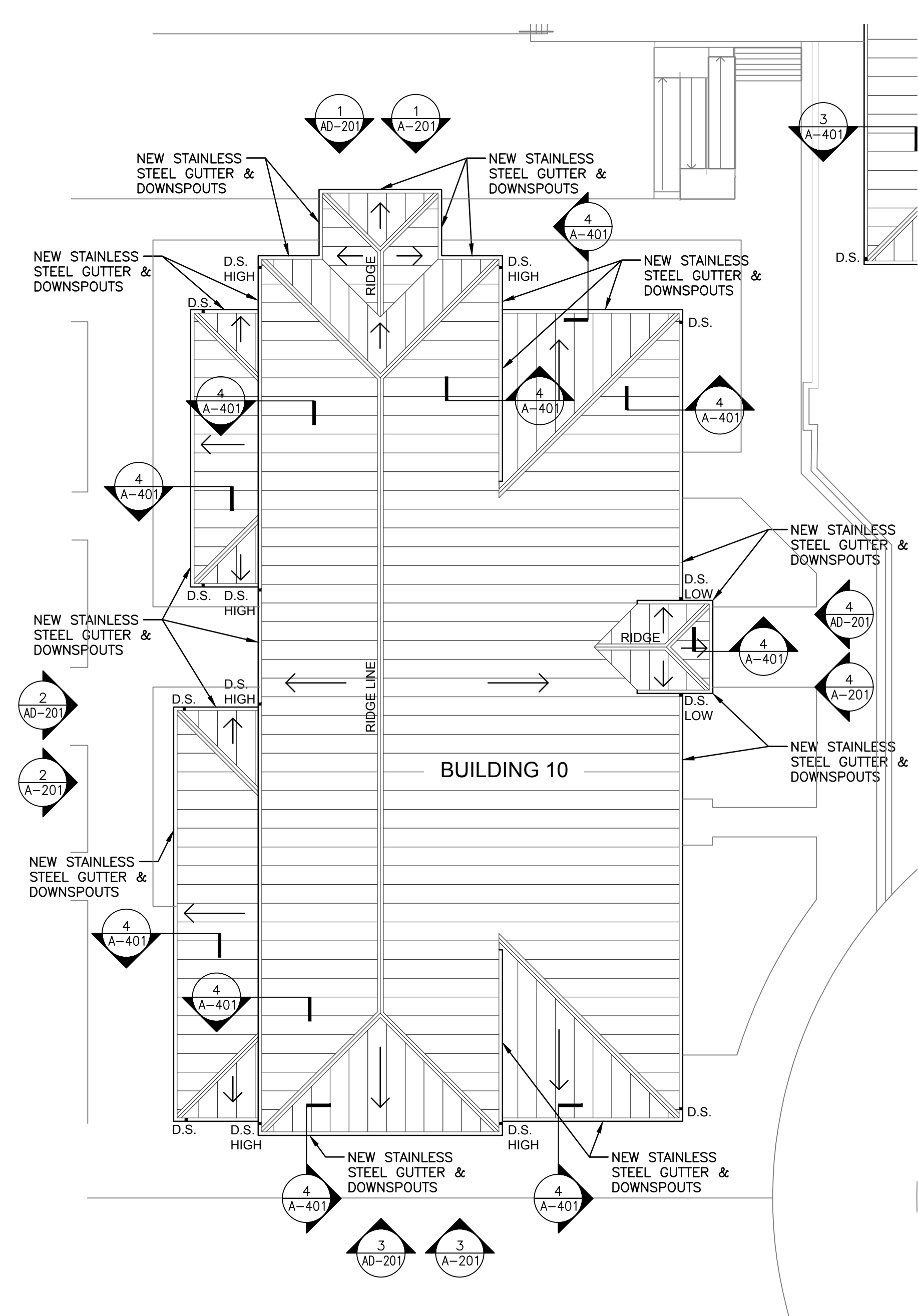
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OVERALL SITE PLAN

AS-101



2 ROOF PLAN: BUILDING 14 CAFE
 SCALE: 1/16" = 1'-0"



1 ROOF PLAN: BUILDING 10 MUSIC
 SCALE: 1/16" = 1'-0"

- ### LEGEND
- D.S. NEW STAINLESS STEEL DOWNSPOUT
 - O.S. EXISTING OVERFLOW SCUPPER TO REMAIN
 - ▨ EXISTING ROOF TO REMAIN
 - EXISTING ROOF SLOPE DIRECTION

DEMOLITION GENERAL NOTES

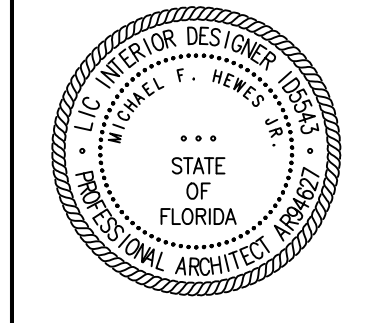
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5. CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OF WORK OF OTHER TRADES SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
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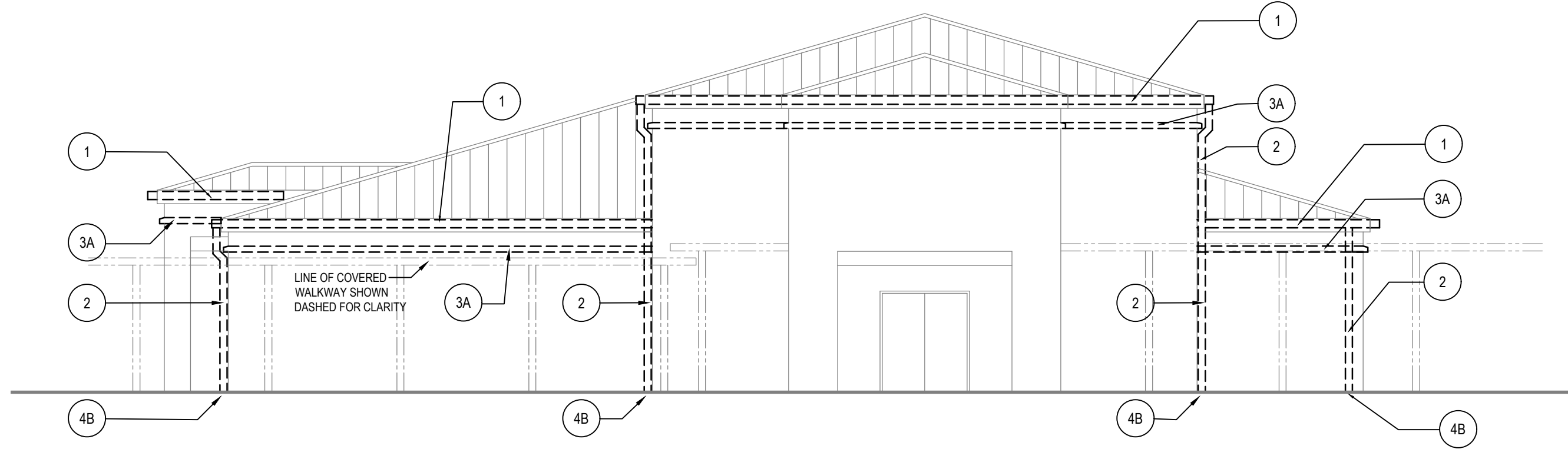
Revisions		
No.	Date	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.

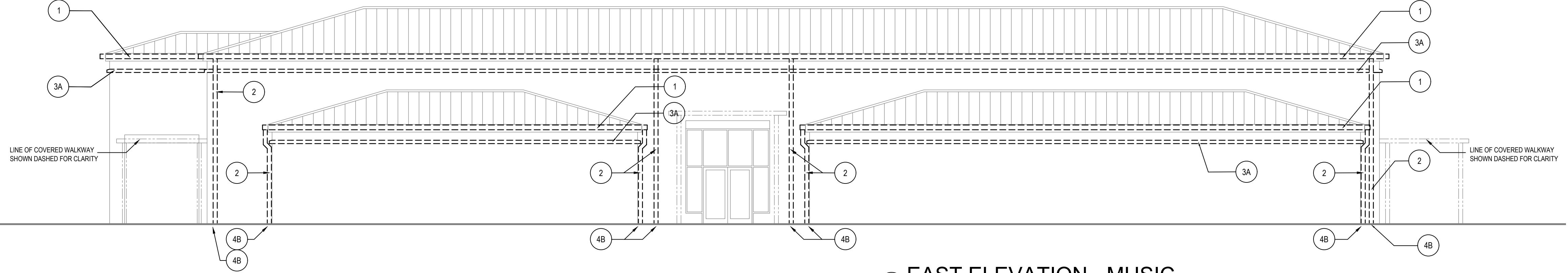


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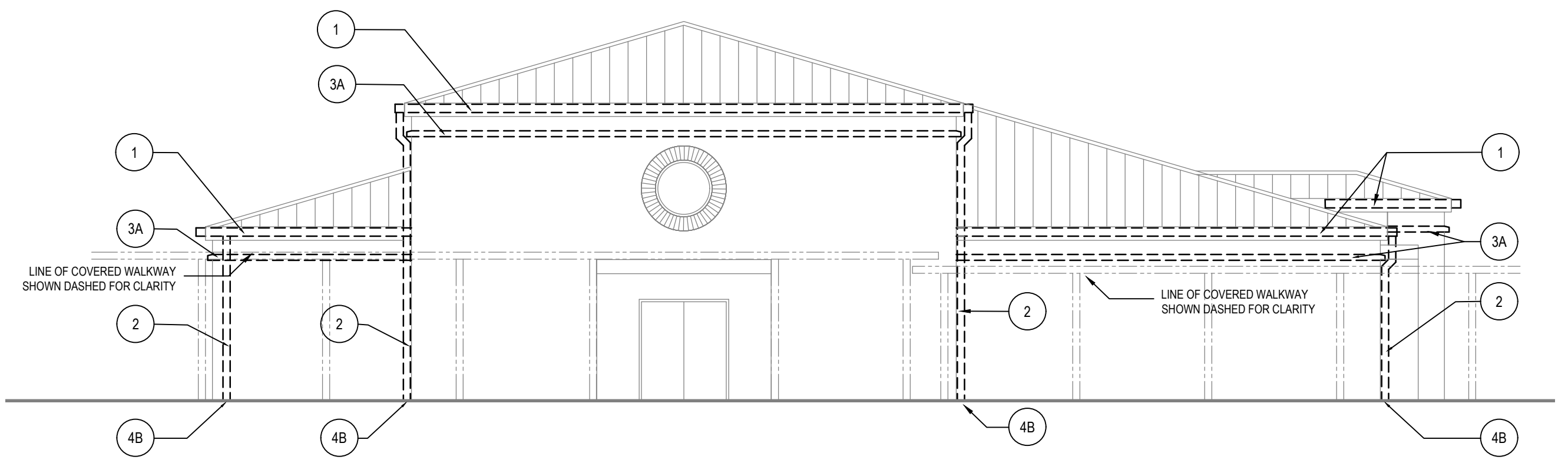
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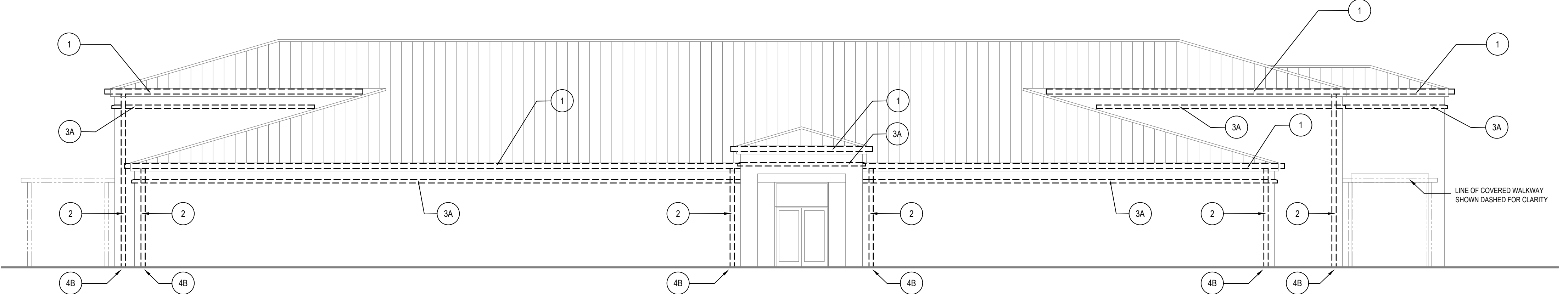
1 NORTH ELEVATION - MUSIC
SCALE: 1/8" = 1'-0"



2 EAST ELEVATION - MUSIC
SCALE: 1/8" = 1'-0"



3 SOUTH ELEVATION - MUSIC
SCALE: 1/8" = 1'-0"



4 WEST ELEVATION - MUSIC
SCALE: 1/8" = 1'-0"

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22. GENERAL CONTRACTOR SHALL PROVIDE SEPARATION FROM DISSIMILAR METALS IN THE INSTALLATION OF NEW GUTTERS, DOWNSPOUTS, COLLECTOR BOXES, STRAPS, FLASHINGS AND ASSOCIATED ACCESSORIES.
23. GENERAL CONTRACTOR SHALL REPLACE DAMAGED AND DETERIORATED FASCIA BOARDS AS REQUIRED FOR THE INSTALLATION OF NEW GUTTERS.

DEMOLITION KEY NOTES

- 1 REMOVE EXISTING GUTTER AND SUPPORT STRAPS. APPROPRIATE METHODS SHALL BE EMPLOYED TO ENSURE THE REMOVAL SHALL NOT CAUSE DAMAGE TO EXISTING METAL ROOF EAVE FASCIA
- 2 REMOVE EXISTING DOWNSPOUT AND SUPPORT STRAPS. APPROPRIATE METHODS SHALL BE EMPLOYED TO REMOVE STRAP FASTENERS FROM EXISTING WALL MATERIAL TO PREVENT REMOVAL/DAMAGE OF EXISTING WALL MATERIAL.
- 3A REMOVE EXISTING DECORATIVE FOAM BANDING FROM FACE OF WALL. MECHANICALLY REMOVE REMAINING FOAM PIECES LEFT TO WALL
- 3B REMOVE EXISTING DECORATIVE FOAM BANDING FROM FACE OF WALL. MECHANICALLY REMOVE REMAINING FOAM PIECES LEFT TO WALL. CONTRACTOR SHALL INSTALL TEMPORARY POLYETHYLENE SHEETING OVER EXPOSED JOINT OF BRICK TO ADJACENT WALL SURFACE. SHEETING SHALL BE SECURE AS NECESSARY SO AS TO REMAIN IN PLACE UNTIL RENOVATION WORK IS COMPLETE
- 4A REMOVE EXISTING BASE-OF-DOWNSPOUT TRANSITION MATERIAL WITH EXISTING PIPE OF EXISTING UNDERGROUND STORM WATER PIPING. THIS INCLUDES EXISTING METAL COVERS AND / OR JOINT FILLER MATERIALS
- 4B REMOVE PORTION OF EXISTING CONCRETE SLAB OR GRADE TO EXPOSE EXISTING BASE-OF-DOWNSPOUT TRANSITION MATERIAL WITH EXISTING PIPE OF EXISTING UNDERGROUND STORM WATER PIPING TO ALLOW FOR DOWNSPOUT TO BE REMOVED
- 5 REMOVE EXISTING RAIN WATER COLLECTOR
- 6 REMOVE EXISTING PARAPET FLASHING. CONTRACTOR SHALL INSTALL TEMPORARY POLYETHYLENE SHEETING OVER EXPOSED PARAPET. SHEETING SHALL BE SECURE AS NECESSARY SO AS TO REMAIN IN PLACE UNTIL RENOVATION WORK IS COMPLETE

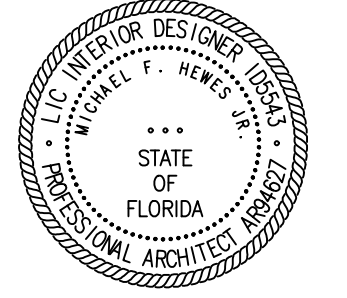
HARVARD JOLLY ARCHITECTURE
 2047 Vista Drive, Ste 100, West Palm Beach, FL 33411-727-896-4611 | www.harvardjolly.com | AAC000119

MCSD Martin County High School
 Exterior Repairs/Gutter & DS Replacement
 2801 S Kanner Highway, Stuart, FL 34994
 Permit Documents Submittal

Comm. No: 16025.10
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Revisions		
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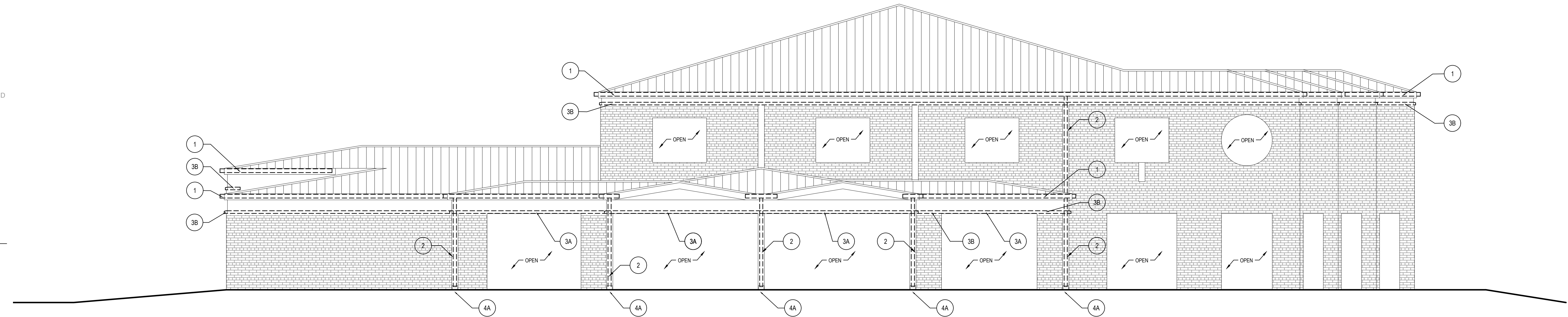
TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.



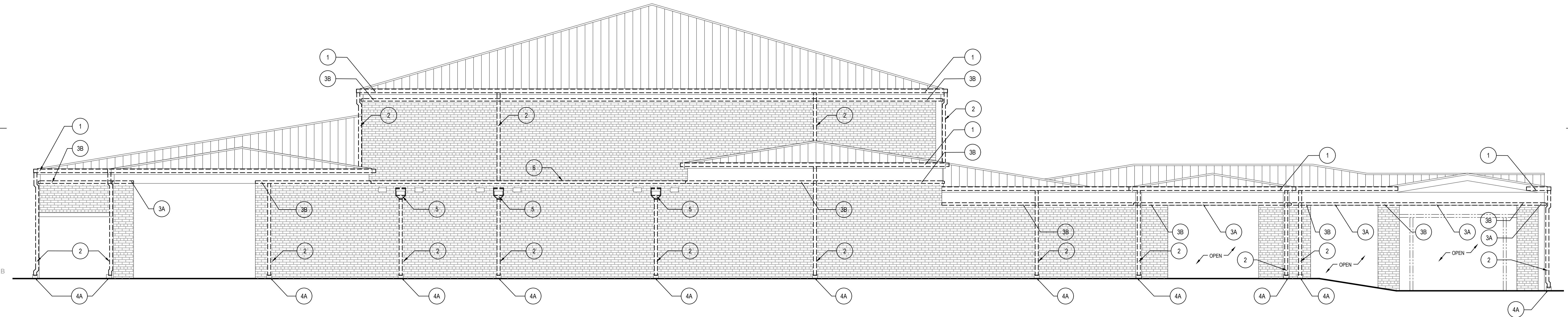
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EXTERIOR ELEVATIONS DEMOLITION

AD-201



5 NORTH ELEVATION - CAFETERIA
 SCALE: 1/8" = 1'-0"



6 EAST ELEVATION - CAFETERIA
 SCALE: 1/8" = 1'-0"

DEMOLITION GENERAL NOTES

- DEMOLITION KEYNOTES** - REFER TO DEMOLITION KEYNOTES FOR SPECIFIC DEMOLITION REQUIREMENTS. SPECIFIC DEMOLITION ITEMS ARE NOT TO BE CONSIDERED ALL INCLUSIVE OR COMPLETE IN THEMSELVES. PERFORM ADDITIONAL DEMOLITION THAT MIGHT REASONABLY BE REQUIRED FOR PREPARATION OF INSTALLATION OF NEW CONSTRUCTION OR SPECIFIED FINISHES. DEMOLITION SHALL BE PERFORMED IN A MANNER THAT WILL NOT DAMAGE ADJOINING SURFACES INDICATED TO REMAIN. SURFACES SHALL BE PATCHED IF NECESSARY TO PROVIDE A SUITABLE SUBSTRATE FOR NEW FINISHES.
- SCHEDULING** - SCHEDULE DEMOLITION WORK WITH OWNER'S PROJECT MANAGER PRIOR TO START OF WORK TO MAXIMIZE PRODUCTIVITY.
- PROTECTION** - EXERCISE CARE DURING WORK TO PROTECT INTERIOR AND EXTERIOR EXISTING CONSTRUCTION TO REMAIN. REPAIR TO EXISTING CONSTRUCTION DUE TO DAMAGE SHALL BE DONE AT NO COST TO THE OWNER.
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- CUTTING AND PATCHING** REQUIRED FOR THE INSTALLATION OF WORK OF OTHER TRADES SHALL BE SUBMITTED PRIOR TO THE BEGINNING OF THE WORK WITH SUFFICIENT TIME ALLOWED FOR THEIR REVIEW.
- THE WORK SHALL INCLUDE ALL ITEMS MENTIONED ON THE DRAWINGS AS WELL AS IN THE SPECIFICATIONS AND NOTES. ITEMS NOTED 'BY OTHERS' MAY STILL REQUIRE COORDINATION FOR PROPER INSTALLATION. WORK TO BE DONE SHALL BE ALL INCLUSIVE AND ANY WORK NOT MENTIONED, BUT REASONABLY IMPLIED, SHALL BE INCLUDED. THIS INCLUDES ANY PATCHING MADE NECESSARY BY THE WORK. THE CONTRACTOR SHALL FURNISH AND COORDINATE ALL LABOR AND MATERIALS FOR WORK INCLUDED IN HIS CONTRACT, IN AMPLE TIME AND WITH SUFFICIENT QUANTITIES, SO THAT ALL WORK MAY BE COMPLETED WITHIN THE DESIGNATED TIME LIMITS.**
- THE CONTRACTOR AND SUBCONTRACTORS SHALL VISIT THE SITE AND VERIFY ALL FIELD CONDITIONS WITH THE DRAWINGS AND SPECIFICATIONS. INCONSISTENT INFORMATION SHALL BE REPORTED TO THE ARCHITECT PRIOR TO SUBMITTING THE BID.**
- THE PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE (FBC) EDITION CURRENT AT THE TIME OF ISSUANCE OF PERMITS. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND MUNICIPAL LAWS AND ORDINANCES. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE SAFETY OF THE EMPLOYEES ON THE WORK AND SHALL COMPLY WITH ALL APPLICABLE OSHA PROVISIONS.**
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DEMOLITION KEY NOTES

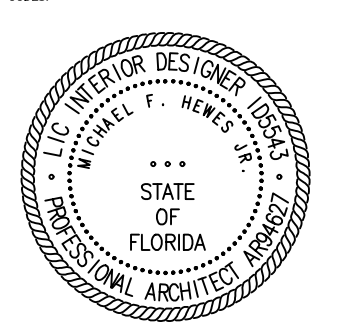
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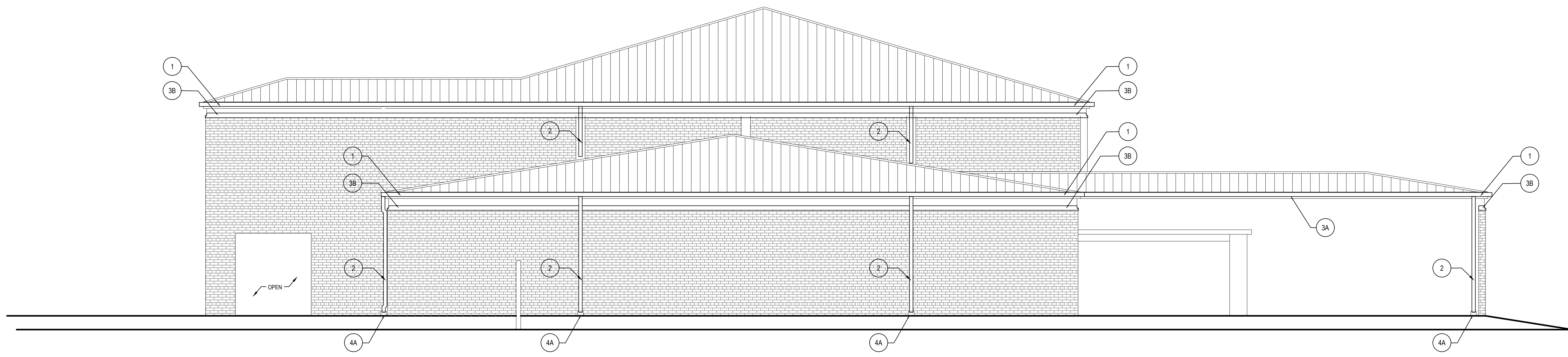
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EXTERIOR ELEVATIONS DEMOLITION

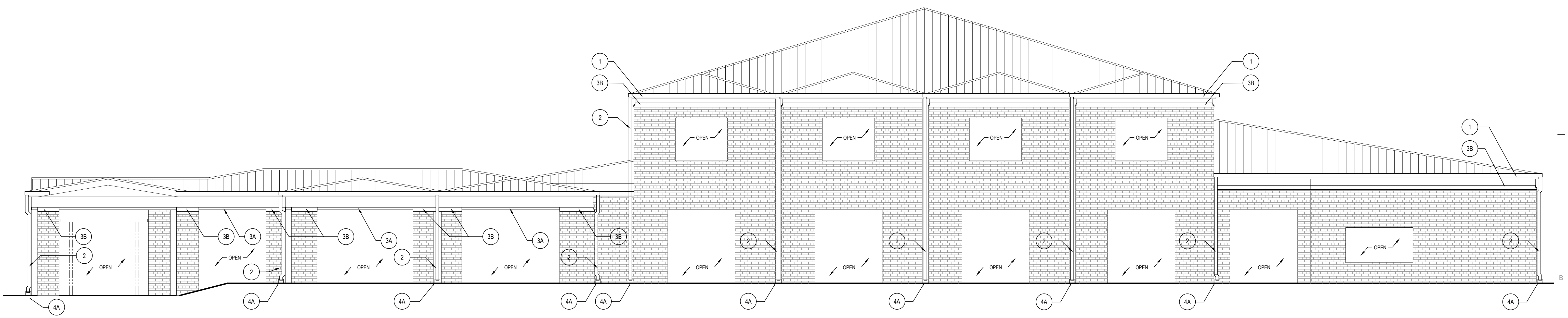
AD-202

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7 SOUTH ELEVATION - CAFETERIA
SCALE: 1/8" = 1'-0"



8 WEST ELEVATION - CAFETERIA
SCALE: 1/8" = 1'-0"



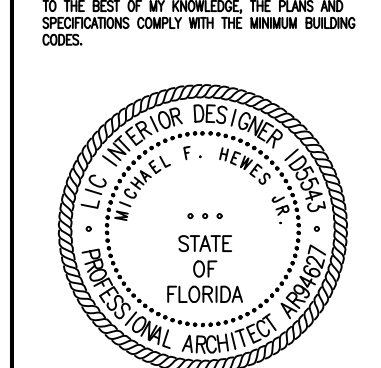
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DEMOLITION KEY NOTES

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Revisions	
No.	Note



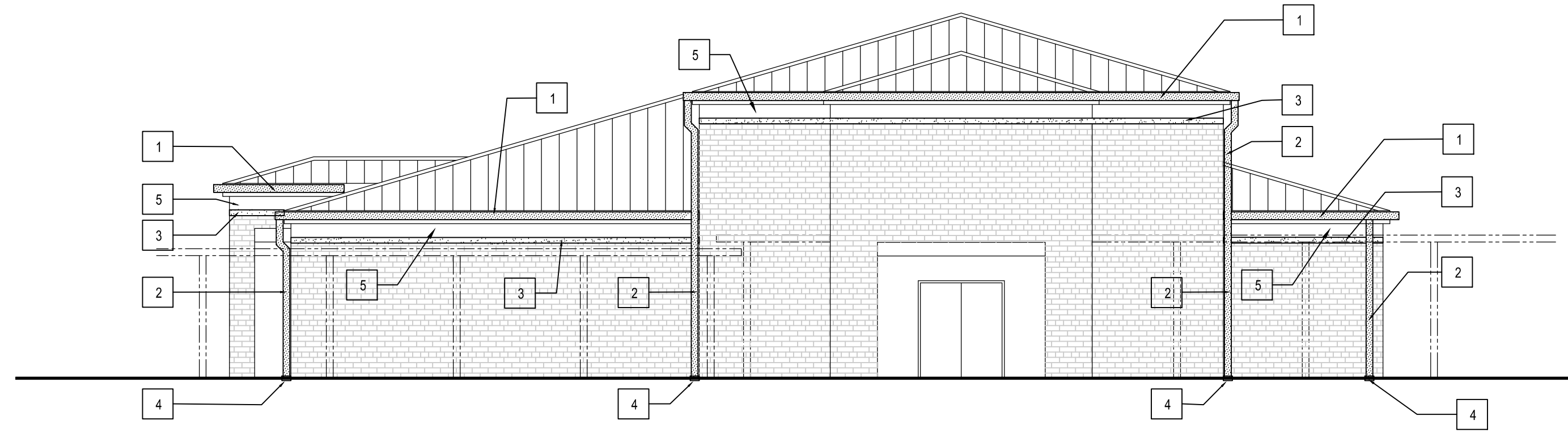
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EXTERIOR ELEVATIONS DEMOLITION

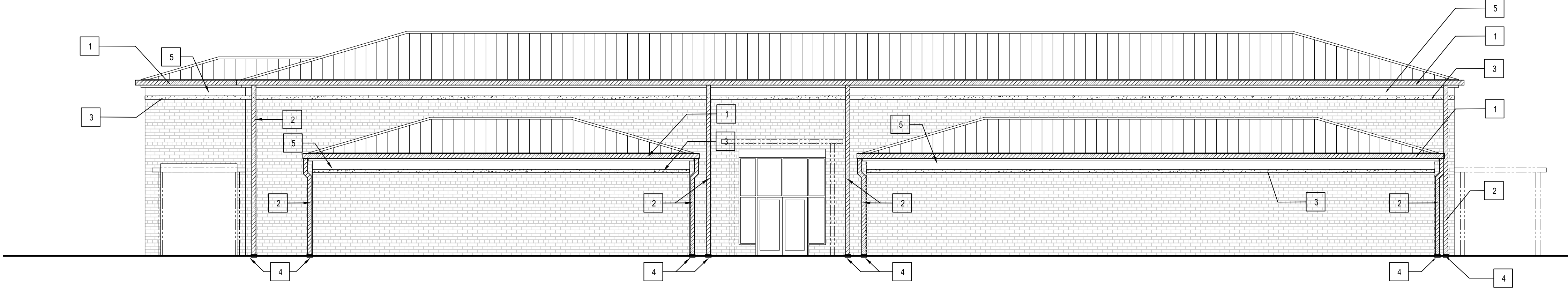
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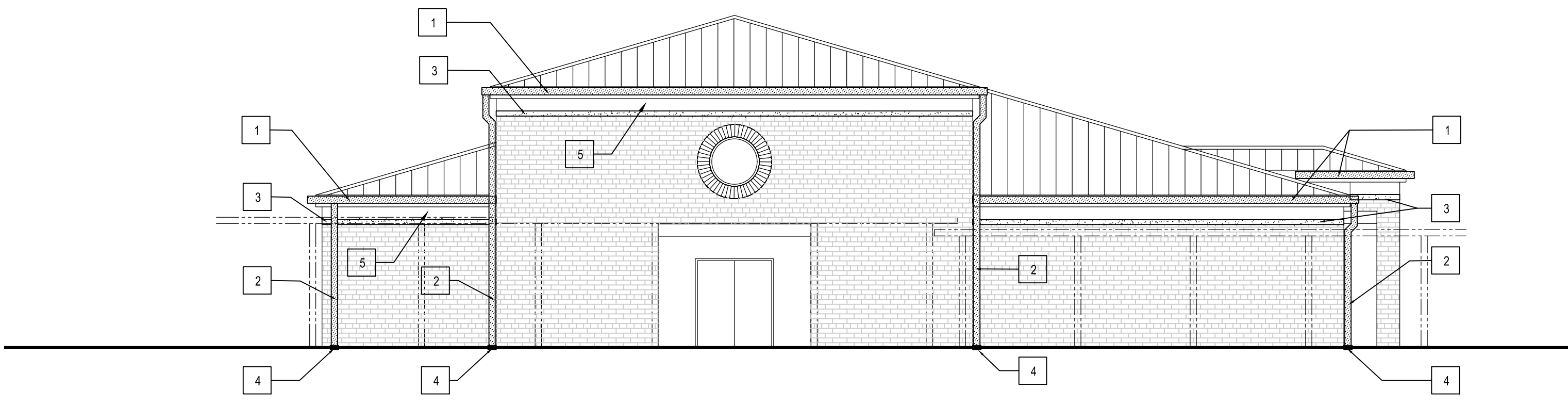
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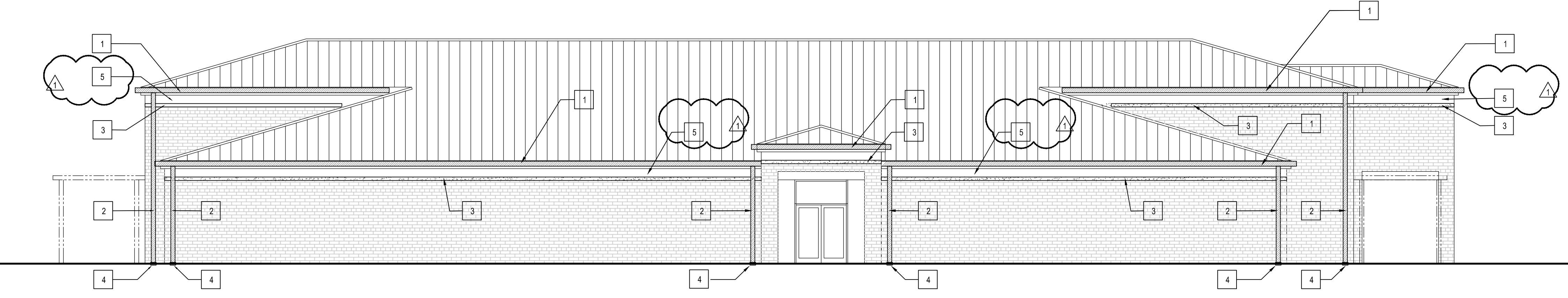
1 NORTH ELEVATION - MUSIC
SCALE: 1/8" = 1'-0"



2 EAST ELEVATION - MUSIC
SCALE: 1/8" = 1'-0"



3 SOUTH ELEVATION - MUSIC
SCALE: 1/8" = 1'-0"



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RENOVATION GENERAL NOTES

1. ALL WORK, MATERIALS AND EQUIPMENT UTILIZED IN THIS PROJECT SHALL BE NEW AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND SPECIFICATIONS.
2. DRAWINGS ARE NOT TO BE SCALED. WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY UNEXPECTED OR UNKNOWN FIELD CONDITIONS, ERRORS, OMISSIONS, OR DISCREPANCIES IN THE DRAWINGS, PROJECT MANUAL OR CONTRACT DOCUMENTS PRIOR TO PROCEEDING WITH THE WORK OR SHOP FABRICATIONS.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BEFORE COMMENCING FABRICATION AND/OR INSTALLATION OF ALL APPLICABLE ITEMS FOR CONSTRUCTION. ALL SHOP DRAWINGS DIMENSIONS SHALL BE FIELD VERIFIED, REVIEWED AND APPROVED BY CONTRACTOR BEFORE SUBMITTAL.
5. PROTECT EXISTING SURFACES AND BUILDING COMPONENTS FROM DAMAGE.
6. PROTECT EXISTING SITE GROUND LEVEL SURFACES NO IN THE WORK AREA FROM DAMAGE.
7. RESTORE AREAS AFFECTED BY THE WORK TO CONDITIONS TO MATCH EXISTING CONDITIONS BEFORE THE WORK.
8. THE USE OF LADDERS FOR WORKER ACCESS TO ROOF EAVES IS NOT ALLOWED. AT LOCATIONS WHERE COVERED WALKWAYS RESTRICT ACCESS TO ROOF EAVES, THE USE OF LADDERS IS ACCEPTABLE.
9. THE ROOF OF COVERED WALKS SHALL BE PROTECTED BY THE CONTRACTOR'S INSTALLATION OF PROTECTION BOARD LAID ON ROOF FLUTES. MECHANICAL FASTENING THROUGH THIS PROTECTION BOARD IS NOT ALLOWED.
10. EXISTING DOWNSPOUTS CONNECTED TO UNDERGROUND UTILITIES SHALL BE RECONNECTED ONCE REPLACED.
11. EXISTING DOWNSPOUTS THAT EMPTY TO SPLASH BLOCKS SHALL HAVE NEW CONCRETE SPLASH BLOCKS INSTALLED.
12. GENERAL CONTRACTOR SHALL FIELD VERIFY EXISTING GUTTER AND COLLECTOR BOX PROFILES, AS WELL AS, DOWNSPOUT DIMENSIONS AND REPLACE WITH SIMILAR SIZE AND CAPACITY BUT WITH HIGH GRADE STAINLESS STEEL MATERIAL; SEE SPECIFICATIONS.
13. THE WORK IS TO TAKE PLACE ON AN OCCUPIED AND ACTIVE CAMPUS. ALL PERSONNEL WORKING ON-SITE WITH THIS PROJECT MUST HAVE, WEAR AND DISPLAY A MARTIN COUNTY SCHOOL DISTRICT BADGE. CONTRACTOR/VENDOR MUST APPLY AT THE MCSD AND PAY FOR ALL BADGE ASSOCIATED COSTS.

RENOVATION KEY NOTES

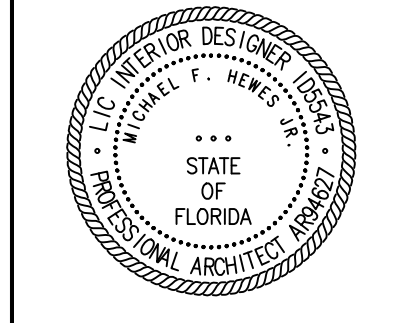
- 1 NEW 7" W. X 8" D. STAINLESS STEEL GUTTER WITH STAINLESS STEEL SUPPORT STRAPS AT 24" O.C.
- 2 NEW 6" X 6" STAINLESS STEEL DOWNSPOUT WITH STAINLESS STEEL SUPPORT STRAPS ATTACHED WITH STAINLESS STEEL FASTENERS AT 48" O.C.
- 3 AREA UNDER REMOVED FOAM BAND SHALL BE MECHANICALLY BRUSHED / GROUND TO REMOVE ADHESIVE. CARE SHALL BE EMPLOYED SO AS NOT TO REMOVE EXISTING WALL MATERIAL.
- 4 NEW DOWNSPOUT INTERFACE WITH EXISTING UNDERGROUND STORM WATER PIPING
- 5 AREA OF STUCCO SURFACE TO BE PAINTED
- 6 NEW CONTINUOUS CUSTOM-PROFILE STAINLESS STEEL FLASHING WITH CONTINUOUS CLEAT OVER THE TOP OF BRICK-TO-BUILDING CONDITION
- 7 NEW STAINLESS STEEL STORM WATER COLLECTION BOX; NEW SHALL MATCH EXISTING IN DIMENSIONS, PROFILE AND SIZE
- 8 NEW STAINLESS STEEL PARAPET COPING

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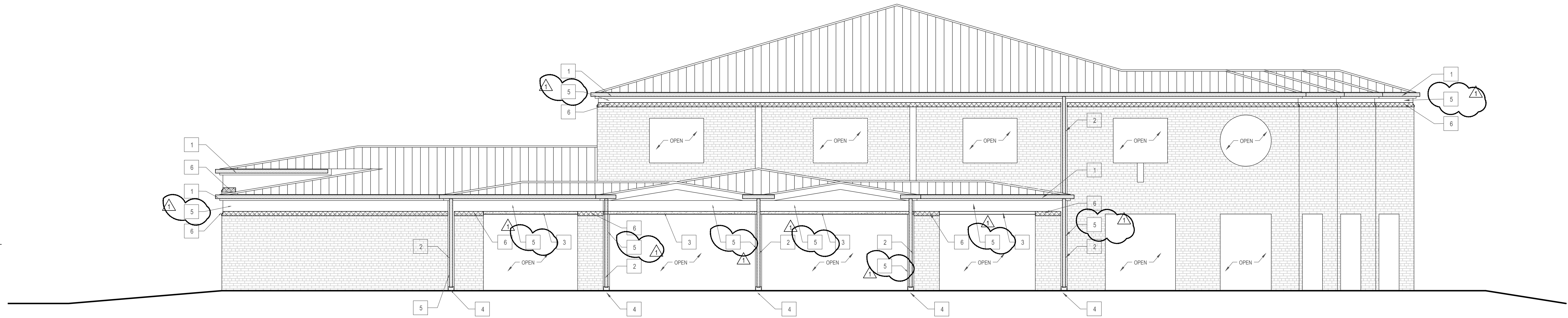
Revisions		
No.	Date	Note
1	09/12/19	PRE-BID RFTS

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.

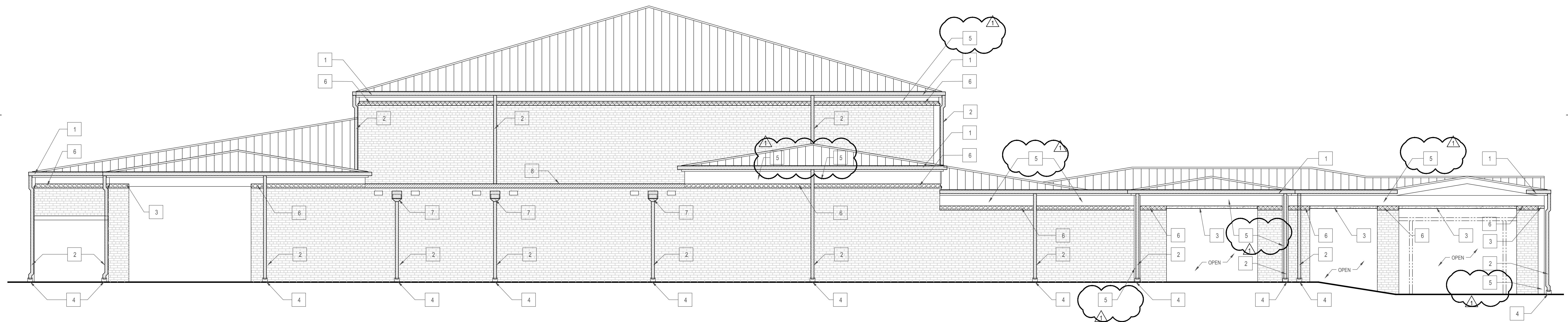


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EXTERIOR ELEVATIONS



5 NORTH ELEVATION - CAFETERIA
SCALE: 1/8" = 1'-0"



6 EAST ELEVATION - CAFETERIA
SCALE: 1/8" = 1'-0"

RENOVATION GENERAL NOTES

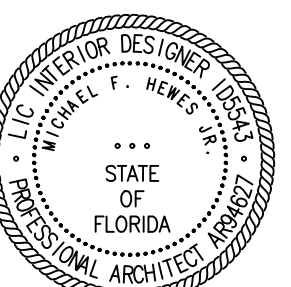
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2. DRAWINGS ARE NOT TO BE SCALED. WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY UNEXPECTED OR UNKNOWN FIELD CONDITIONS, ERRORS, OMISSIONS, OR DISCREPANCIES IN THE DRAWINGS, PROJECT MANUAL OR CONTRACT DOCUMENTS PRIOR TO PROCEEDING WITH THE WORK OR SHOP FABRICATIONS.
4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BEFORE COMMENCING FABRICATION AND/OR INSTALLATION OF ALL APPLICABLE ITEMS FOR CONSTRUCTION. ALL SHOP DRAWINGS DIMENSIONS SHALL BE FIELD VERIFIED, REVIEWED AND APPROVED BY CONTRACTOR BEFORE SUBMITTAL.
5. PROTECT EXISTING SURFACES AND BUILDING COMPONENTS FROM DAMAGE
6. PROTECT EXISTING SITE GROUND LEVEL SURFACES NO IN THE WORK AREA FROM DAMAGE.
7. RESTORE AREAS AFFECTED BY THE WORK TO CONDITIONS TO MATCH EXISTING CONDITIONS BEFORE THE WORK.
8. THE USE OF LADDERS FOR WORKER ACCESS TO ROOF EAVES IS NOT ALLOWED. THE USE OF LADDERS IS ACCEPTABLE.
9. AT LOCATIONS WHERE COVERED WALKWAYS RESTRICT ACCESS TO ROOF EAVES, THE USE OF LADDERS IS ACCEPTABLE.
10. THE ROOF OF COVERED WALKS SHALL BE PROTECTED BY THE CONTRACTOR'S INSTALLATION OF PROTECTION BOARD LAID ON ROOF FLUTES. MECHANICAL FASTENINGS THROUGH THIS PROTECTION BOARD IS NOT ALLOWED.
11. EXISTING DOWNSPOUTS CONNECTED TO UNDERGROUND UTILITIES SHALL BE RECONNECTED ONCE REPLACED.
12. EXISTING DOWNSPOUTS THAT EMPTY TO SPLASH BLOCKS SHALL HAVE NEW CONCRETE SPLASH BLOCKS INSTALLED.
13. GENERAL CONTRACTOR SHALL FIELD VERIFY EXISTING GUTTER AND COLLECTOR BOX PROFILES, AS WELL AS, DOWNSPOUT DIMENSIONS AND REPLACE WITH SIMILAR SIZE AND CAPACITY BUT WITH HIGH GRADE STAINLESS STEEL MATERIAL; SEE SPECIFICATIONS.
14. THE WORK IS TO TAKE PLACE ON AN OCCUPIED AND ACTIVE CAMPUS. ALL PERSONNEL WORKING ON-SITE WITH THIS PROJECT MUST HAVE, WEAR AND DISPLAY A MARTIN COUNTY SCHOOL DISTRICT BADGE. CONTRACTOR/VENDOR MUST APPLY AT THE MCSD AND PAY FOR ALL BADGE ASSOCIATED COSTS.

RENOVATION KEY NOTES

- 1 NEW 7" W. X 8" D. STAINLESS STEEL GUTTER WITH STAINLESS STEEL SUPPORT STRAPS AT 24" O.C.
- 2 NEW 6" X 6" STAINLESS STEEL DOWNSPOUT WITH STAINLESS STEEL SUPPORT STRAPS ATTACHED WITH STAINLESS STEEL FASTENERS AT 48" O.C.
- 3 AREA UNDER REMOVED FOAM BAND SHALL BE MECHANICALLY BRUSHED / GROUND TO REMOVE ADHESIVE. CARE SHALL BE EMPLOYED SO AS NOT TO REMOVE EXISTING WALL MATERIAL.
- 4 NEW DOWNSPOUT INTERFACE WITH EXISTING UNDERGROUND STORM WATER PIPING
- 5 AREA OF STUCCO SURFACE TO BE PAINTED
- 6 NEW CONTINUOUS CUSTOM-PROFILE STAINLESS STEEL FLASHING WITH CONTINUOUS CLEAT OVER THE TOP OF BRICK-TO-BUILDING CONDITION
- 7 NEW STAINLESS STEEL STORM WATER COLLECTION BOX; NEW SHALL MATCH EXISTING IN DIMENSIONS, PROFILE AND SIZE
- 8 NEW STAINLESS STEEL PARAPET COPING

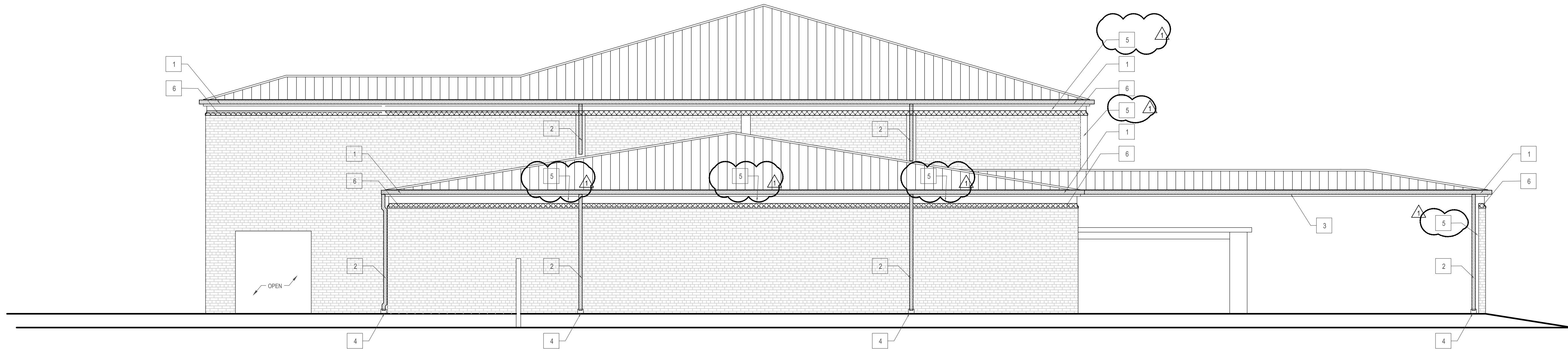
Revisions		
No.	Date	Note
1	09/12/19	PRE-BID RFP'S

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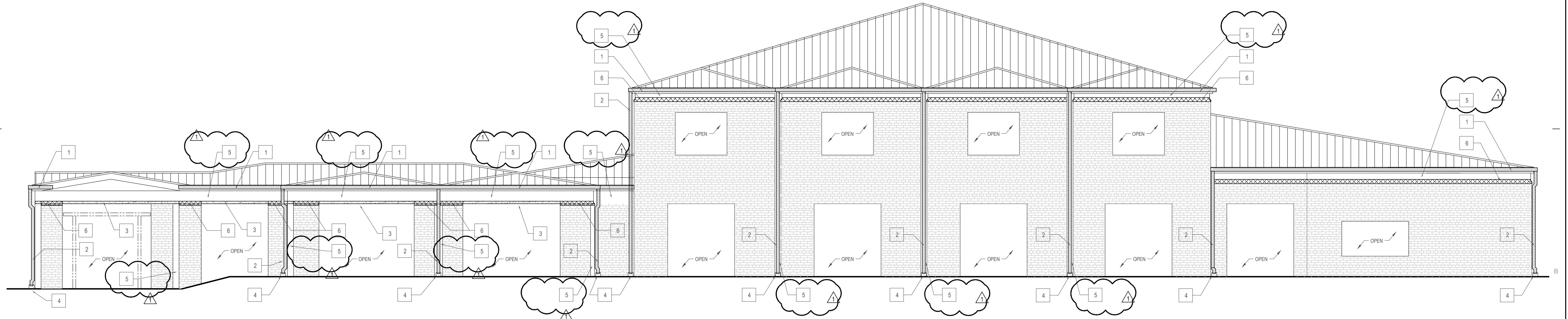


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EXTERIOR ELEVATIONS



7 SOUTH ELEVATION - CAFETERIA
SCALE: 1/8" = 1'-0"



8 WEST ELEVATION - CAFETERIA
SCALE: 1/8" = 1'-0"

RENOVATION GENERAL NOTES

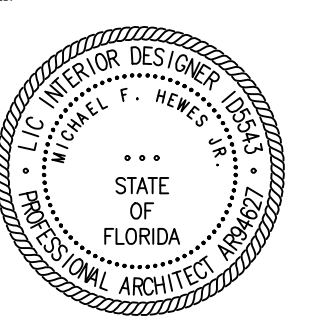
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Revisions	
No.	Note
1	09/12/19 PRE-BID RFP'S

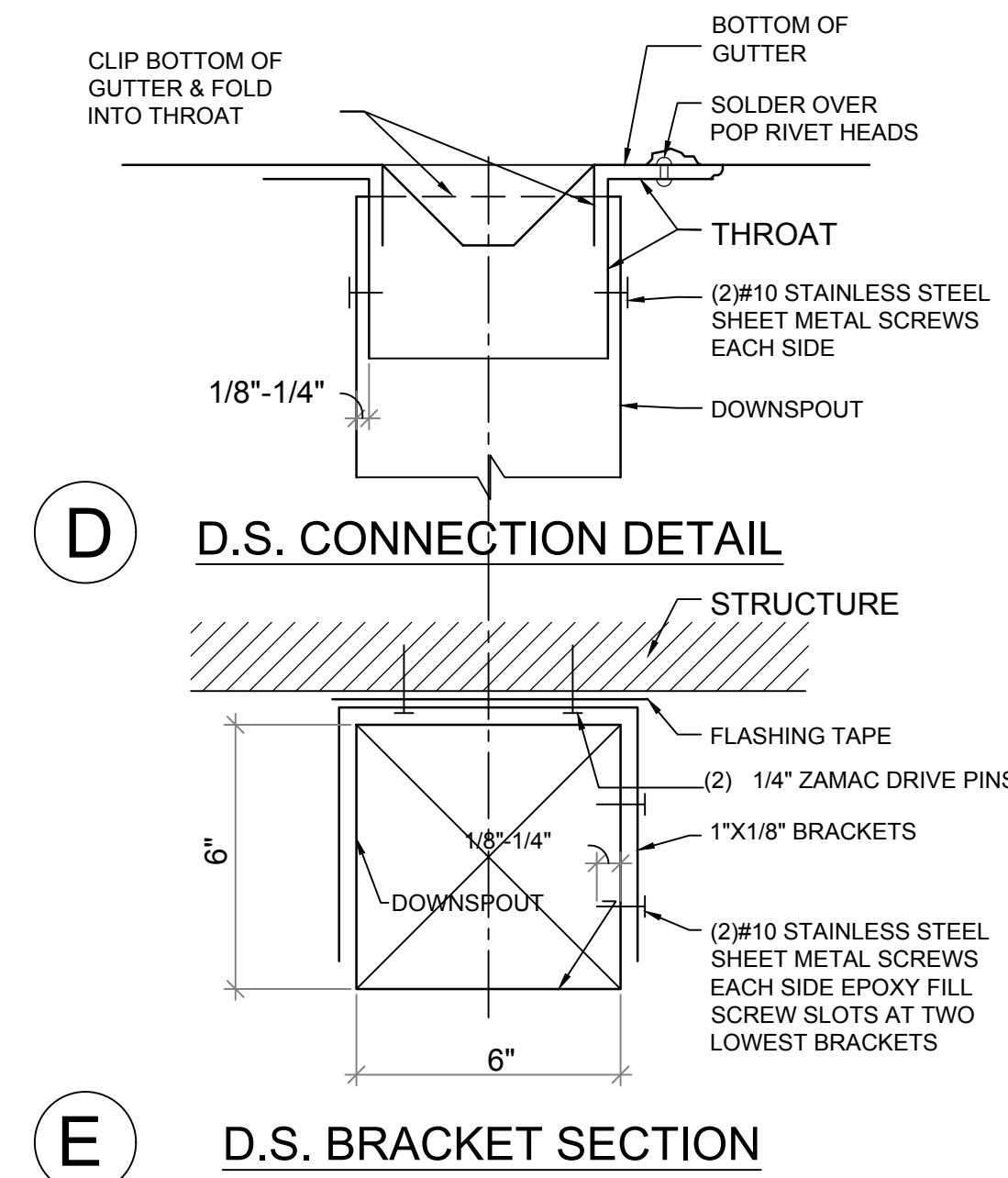
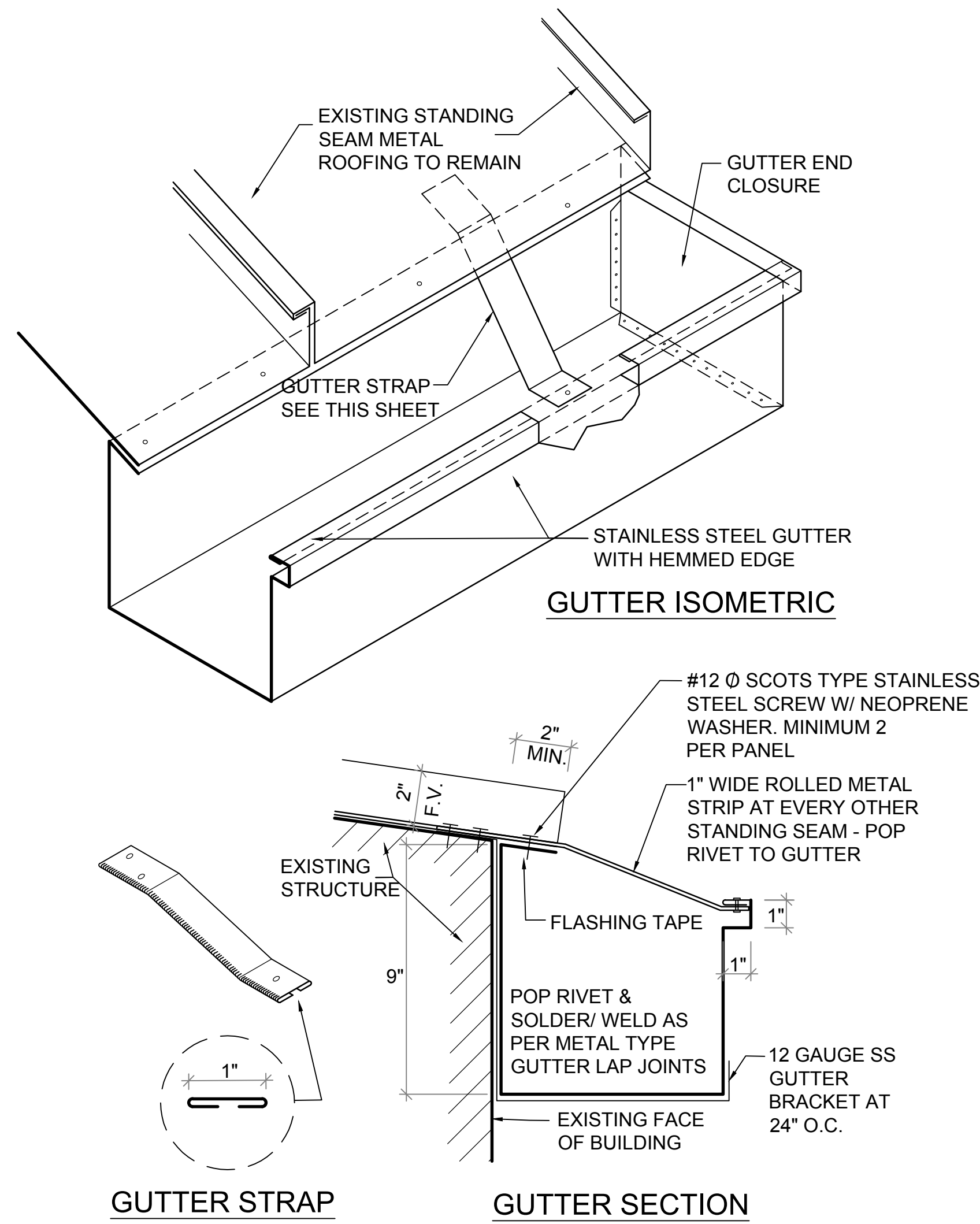
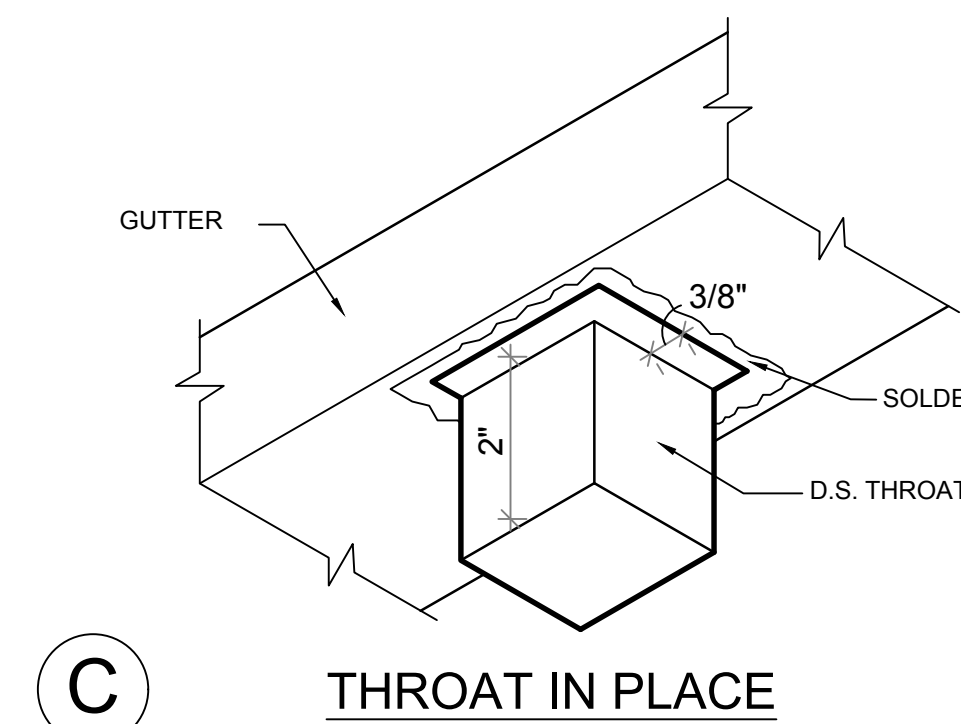
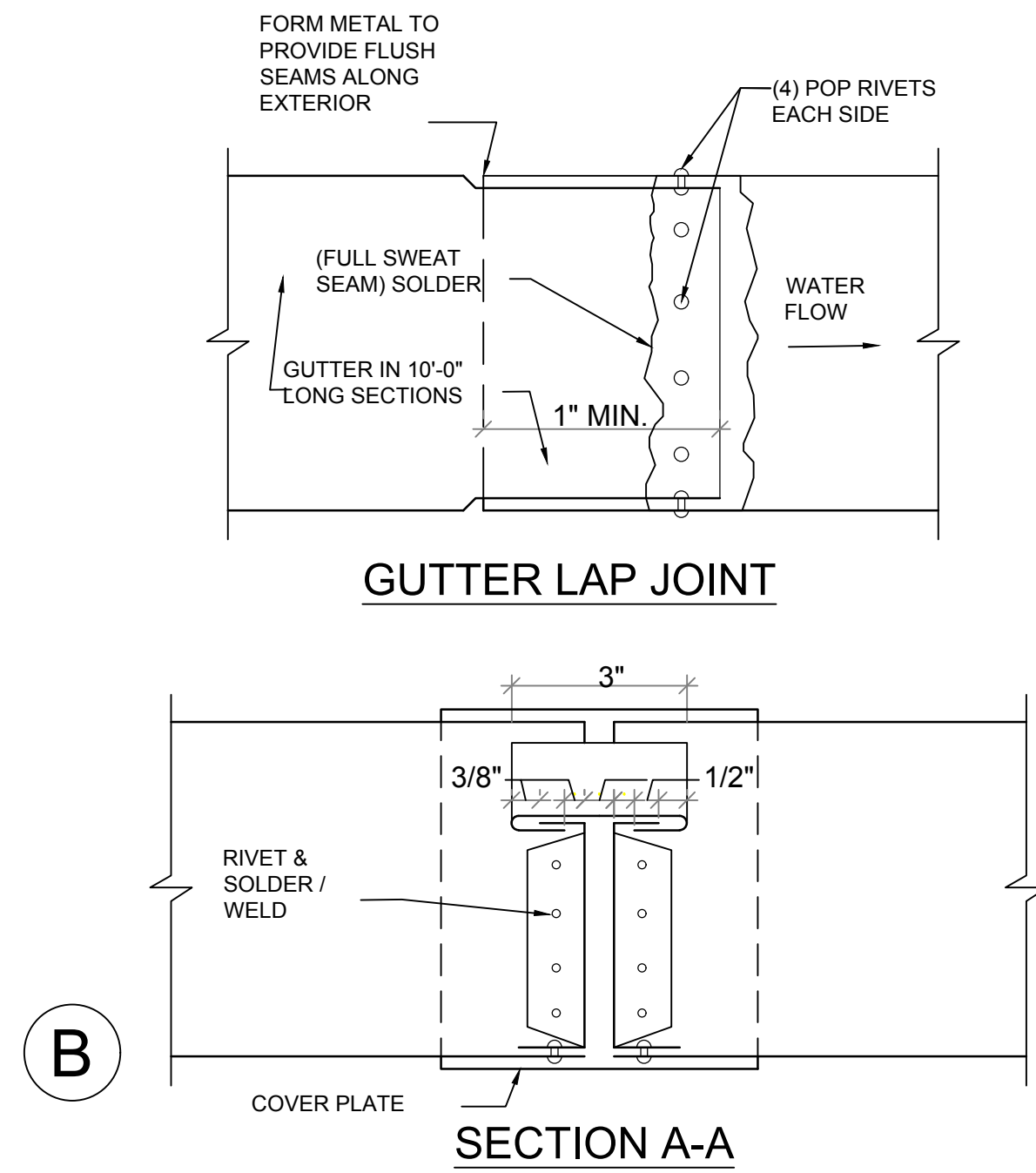
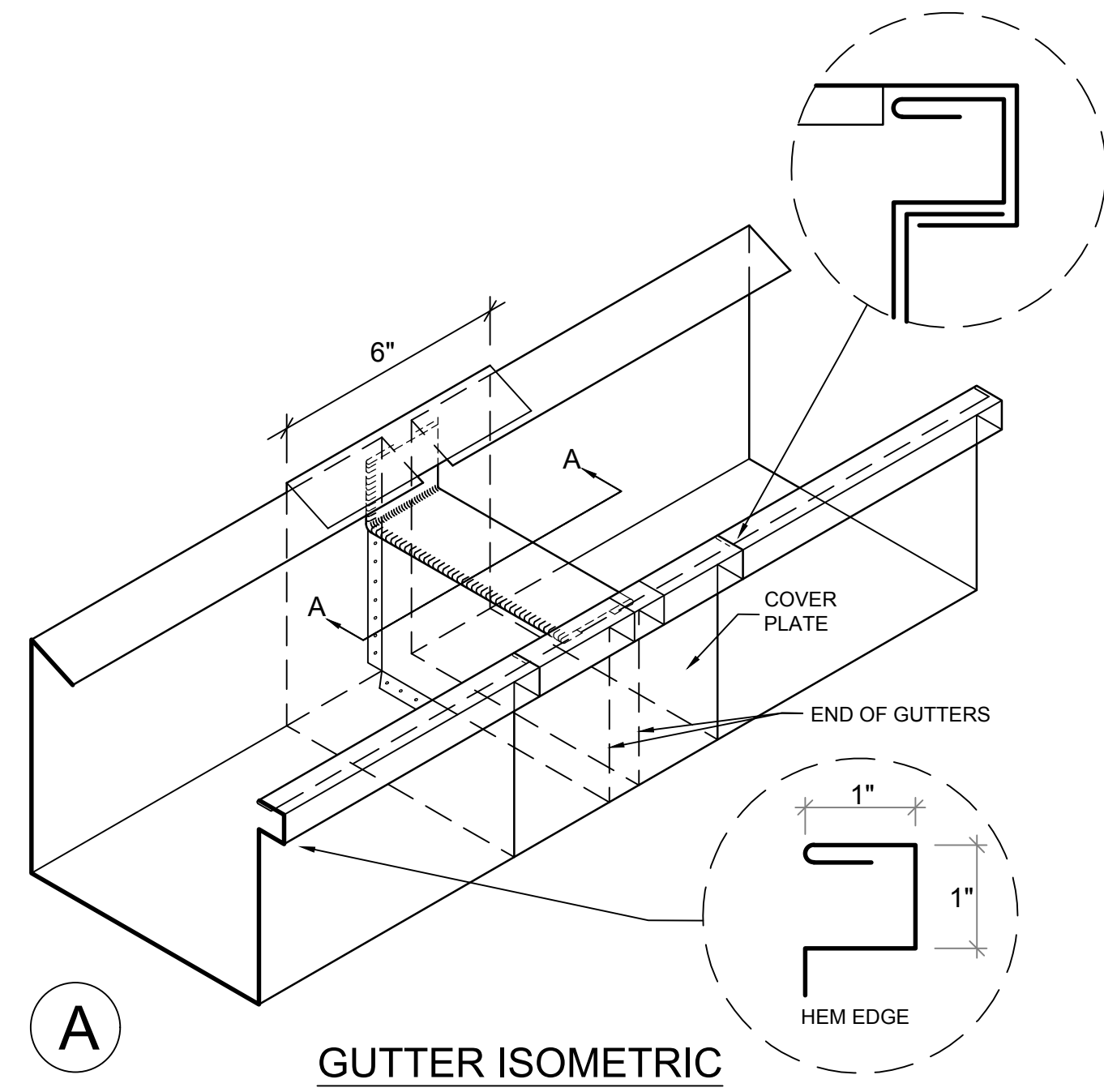
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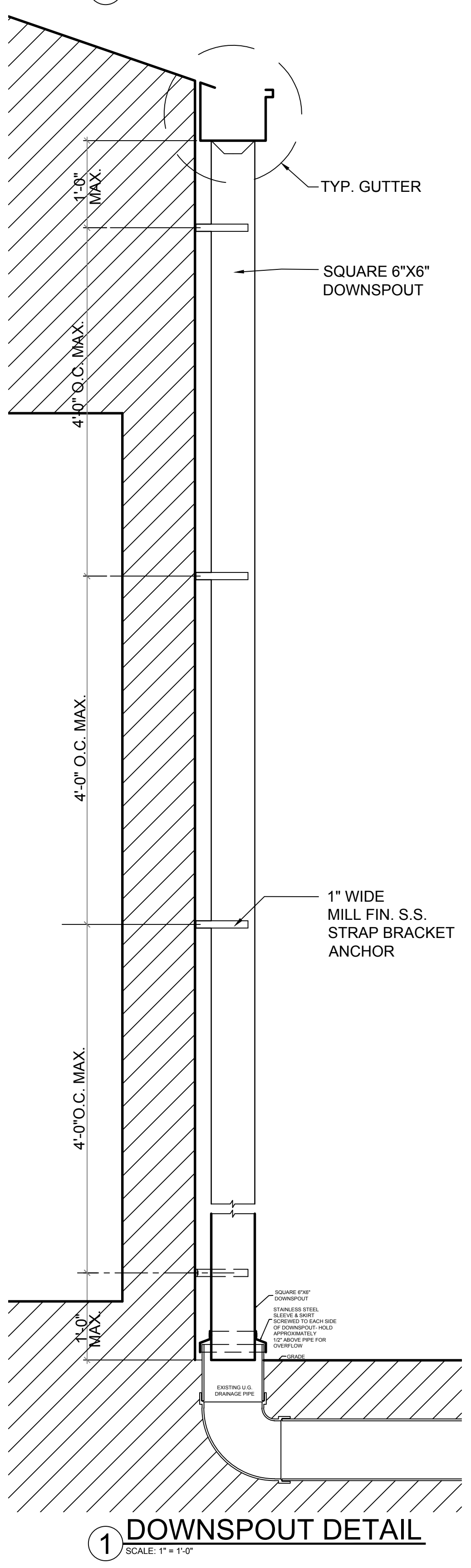
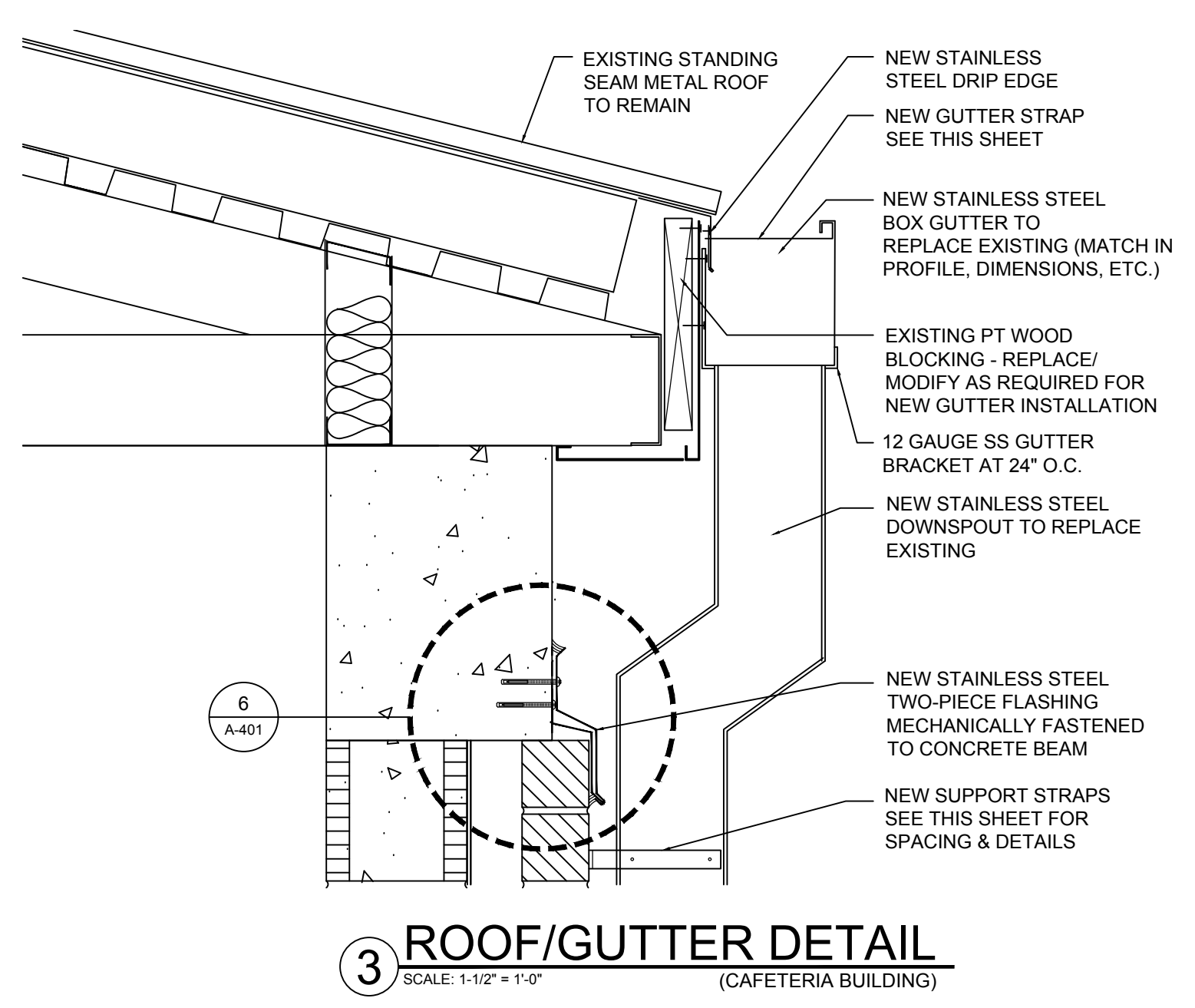
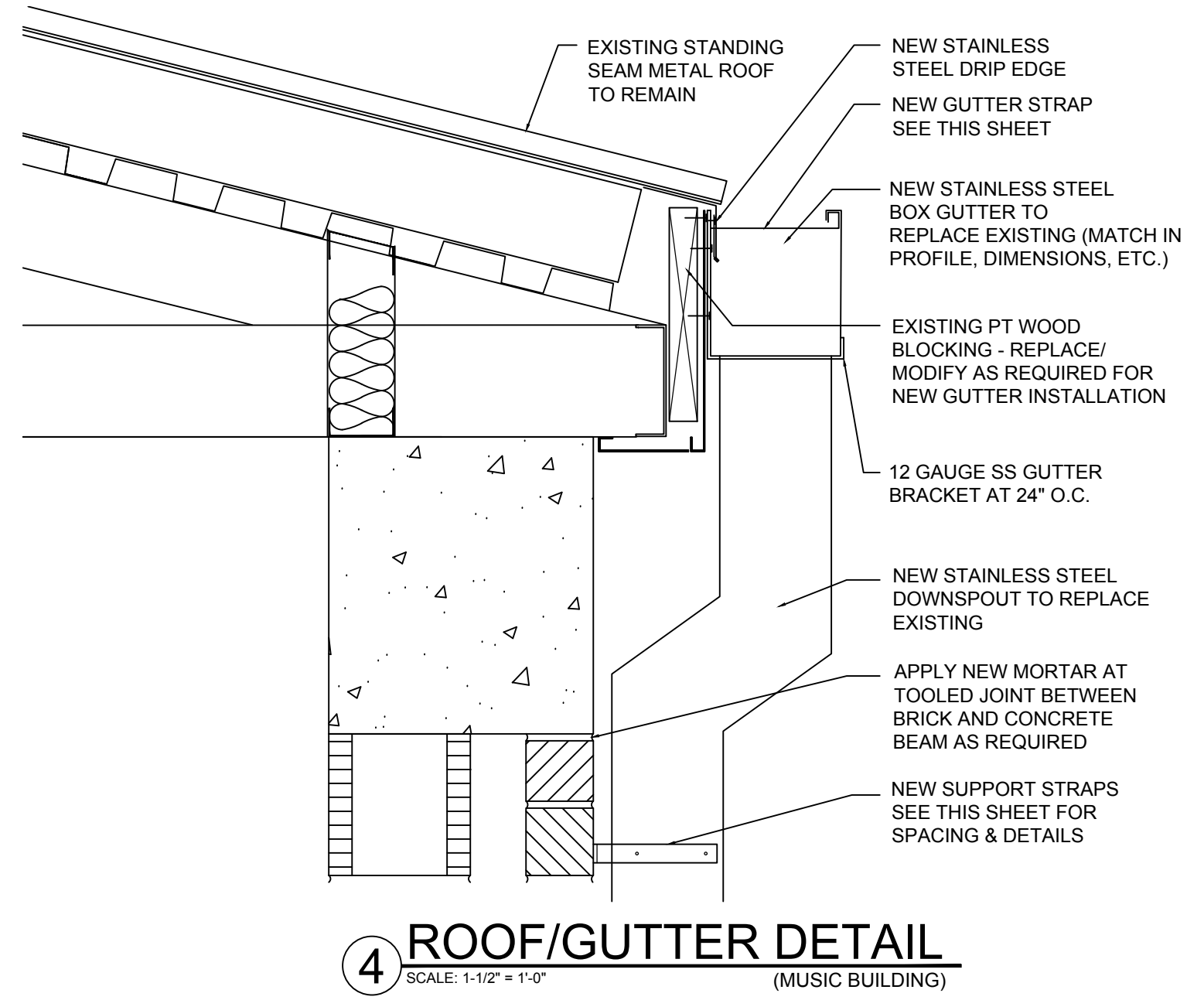
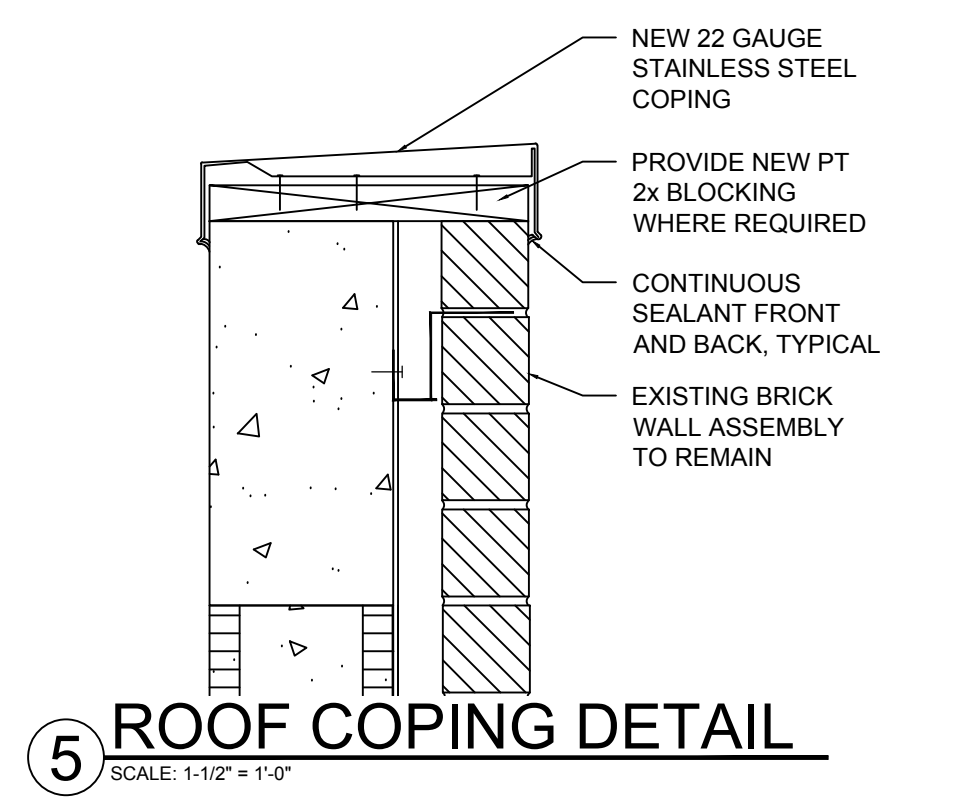
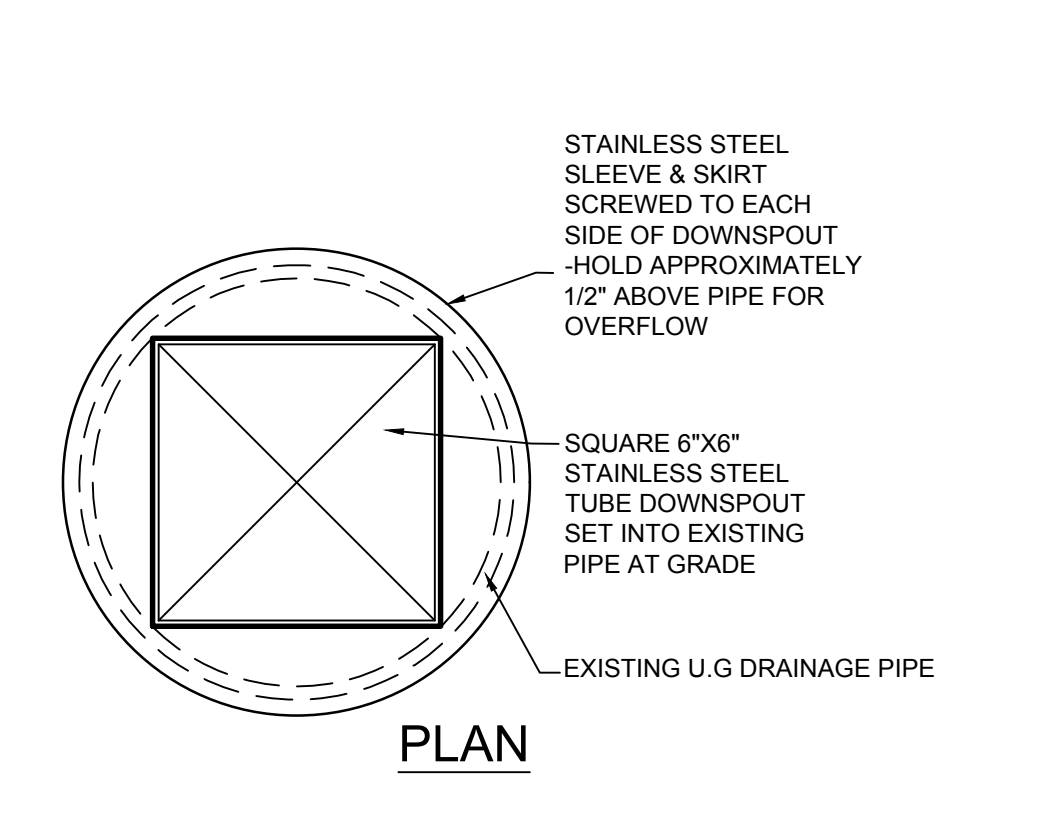
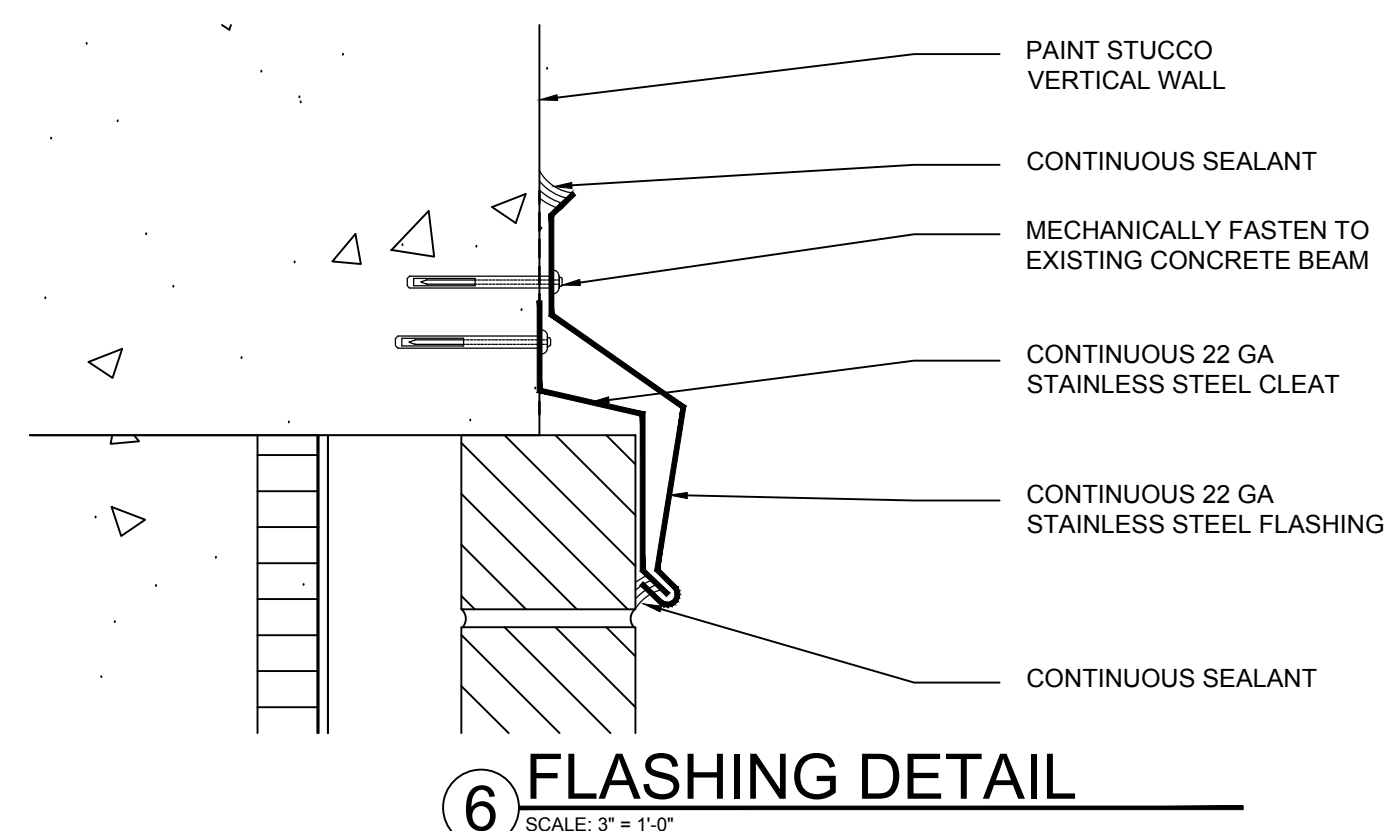
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EXTERIOR ELEVATIONS

Filename: P:\16025.10 - MCHS Exterior Repairs\5 CAD Sheets\24x36\A Sheets\A-203 EXTERIOR ELEVATIONS Plot Date: 04/16/2019 Plotted By: Michael F. Hewes, Jr.

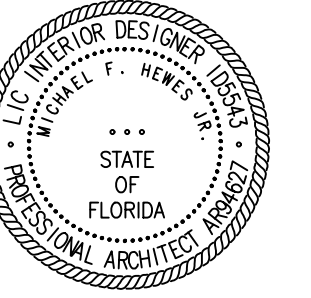


7 GUTTER DETAILS
SCALE: 3" = 1'-0"



Revisions		
No.	Date	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE BUILDING CODES.



Filename: P:\16025.10 - MCS Exterior Repairs\5 CAD Sheets\24x36\A Sheets\A-401 DETAILS Plot Date: 4/16/2019 Plotted By: Michael F. Hewes, Jr.

SECTION 01 30 00 - SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 REQUIREMENTS INCLUDED

A. Coordinate work of trades and schedule elements of alterations and renovation work by procedures and methods of expedite completion of the work.
B. In addition to demolition specified in Section 02 07 20, and that specifically shown, cut, move or remove items as necessary to provide access or to allow alterations and new work to proceed. Include such items as:

- 1. Repair or removal of hazardous or unsanitary conditions.
2. Removal of abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring.
3. Removal of unusable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, rusted metals and deteriorated concrete.
4. Cleaning of surfaces, and removal of surface finishes as needed to install new work and finishes.
C. Patch, repair and refinish existing items to remain, to the specified condition for each material, with a workmanlike transition to adjacent new items of construction.

1.3 RELATED SECTIONS

- A. Section 01 11 00 - Summary of Work
B. Section 01 71 00 - Cleaning

C. Section 02 07 20 - Minor Demolition for Remodeling

1.4 SEQUENCE AND SCHEDULES

A. Schedule work in the sequences specified in Section 01 11 00 - Summary of Work.

B. Submit separate detailed sub-schedule for alterations work, coordinated with the Construction Schedules. Show:

- 1. Each stage of work and dates of Substantial Completion of areas, as appropriate.
2. Date of Substantial Completion for each area of alterations work, as appropriate.
3. Trades and subcontractors employed in each stage.

1.5 ALTERATIONS, CUTTING AND PROTECTION

A. Assign the work of moving, removal, cutting and patching, to trades qualified to perform the work in a manner to cause the least damage to each type of work, and provide means of returning surfaces to appearance of new work.

B. Perform cutting and removal work to remove minimum necessary, and in a manner to avoid damage to adjacent work:

1. Cut finish surfaces such as masonry, concrete, wood, tile, plaster or metals, by methods to terminate surfaces in a straight line at a natural point of division.

C. Protect from damage existing finishes, equipment, and adjacent work which is scheduled to remain:

1. Protect existing and new work from weather and extremes of temperature:
a. Maintain existing interior work above 60 degrees F., but less than 75 degrees F.
b. Provide weather protection, waterproofing, heat and humidity control as needed to prevent damage to remaining existing work and to new work.

D. Provide temporary enclosure to separate work areas from existing building, completed areas, and from areas occupied by Owner. Provide weatherproof enclosures, humidity and thermal environment necessary for Owner's operations, and wherever roof or exterior walls are penetrated. Additionally, assure that such enclosures prevent dust and debris from entering areas outside the work area.

E. Discoveries of construction, furnishings and articles having a value shall remain in possession of Owner.

- 1. Promptly notify Architect.
2. Protect discovery from damage from elements or work.
3. Architect will promptly transmit Owner's decision for disposition of discovery.
4. Contractor shall store items to be retained by Owner in a safe, dry place on site, or shall dispose of items which Owner releases.

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

A. General Requirements that Work Be Complete:

1. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing work:
a. Generally, Contract Documents will not define products or standards of workmanship present in existing construction; Contractor shall determine products by inspection and any necessary testing, and workmanship by use of the existing as a sample of comparison. Contractor shall be responsible for paying all required costs for testing indicated above.
2. Presence of a product, finish, or type of construction, requires that patching, extending, or matching shall be performed as necessary to make work complete and consistent to identical standards of quality as specified for new work of like character.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Patch and extend existing work using skilled mechanics who are capable of matching existing quality of workmanship. Quality of patched or extended work shall not be less than that specified for new work.

3.2 ADJUSTMENTS

A. Where partitions are removed, patch floors, walls, and ceilings, with finish materials to match existing.

1. Where removal of partitions results in adjacent spaces becoming one, rework floors, walls and ceilings to provide smooth planes without breaks, steps or bulkheads.
2. Where extreme change of plane of two (2) inches or more occurs, request instructions from Architect/Engineer as to method of making transition.

B. Where existing floor surfaces are found to be in poor condition or are damaged, patch, repair or replace surface to be flush with existing or new floor surface prior to replacing finish flooring material.

C. Trim and refinish existing doors as necessary to clear new floors.

3.3 DAMAGED SURFACES

A. Patch and replace any portions of an existing finished surface which is found to be damaged, lifted, discolored, or shows other imperfections, with matching material:

1. Provide adequate support of substrate prior to patching the finish.
2. Refinish patched portions of painted or coated surfaces in a manner to produce uniform color and texture over entire surface.
3. When existing surface finish cannot be matched, refinish entire surface to nearest intersections.

B. Existing concrete surfaces that are damaged or not level shall be patched and leveled.

3.4 TRANSITION FROM EXISTING TO NEW WORK

A. When new work abuts or finishes flush with existing work, make a smooth and workmanlike transition. Patched work shall match existing adjacent work in texture and appearance so that the patch or transition is invisible at a distance of five (5) feet:

1. When finished surfaces are cut in such a way that a smooth transition with new work is not possible, terminate existing surface in a neat manner along a straight line at a natural line of division, and provide a trim appropriate to finish surface.
2. Verify with Architect as to the type or style of trim required prior to purchase or installation of such trim.

3.5 CLEANING

A. Perform Periodic and Final Cleaning as Specified in Section 017100:

- 1. Clean Owner-occupied areas daily where subject to construction dirt, dust or debris.
2. Clean spillage, overspray, and heavy collection of dust from construction operations in Owner-occupied areas immediately.
3. Clean adjacent site or public areas of construction debris, including windblown debris, on a daily basis.

B. At completion of work or each trade, clean area and make surfaces ready for work of successive trades.

C. At completion of alterations work in each area, provide final cleaning and return space to a condition suitable for use by Owner, or suitable for the next phase of construction.

END OF SECTION 01 30 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Submittals include shop drawings, design calculations, diagrams, illustrations, schedules, performance charts, nomenclature charts, samples, brochures, and other data prepared by the Contractor or any subcontractor, manufacturer, supplier, fabricator, or distributor and which illustrate some portion of the Project.

B. Contract Documents do not include shop drawings, vendor drawings, or any material prepared and submitted by the Contractor.

1.2 SUBMITTAL PROCEDURES

A. Prior to the initial submittal, Contractor shall submit to the Architect/Engineer's a completed

B. Submittals shall be accompanied by a transmittal letter with the following information:

- 1. Project name.
2. Contractor's name.
3. Date submitted.
4. Description of items submitted; identify work and product by Specification Section.
5. Number of drawings and other pertinent data.

C. Provide blank space on each submittal for the Architect/Engineer's review stamp.

D. Submit four prints of each shop drawing.

E. Contractor shall direct specific attention on the submittal to any deviation from the Contract Documents.

1.3 CONTRACTOR RESPONSIBILITY

A. Contractor shall make all submittals in advance of installation or construction to allow the Architect/Engineer sufficient time for review.

B. Contractor shall stamp and sign each sheet of shop drawings and product data, and sign or initial each sample to certify compliance with requirements of Contract Documents. SUBMITTALS RECEIVED WITHOUT THE CONTRACTOR'S STAMP OF REVIEW WILL BE RETURNED TO THE CONTRACTOR FOR REVIEW AND RESUBMITTAL.

C. It is the Contractor's responsibility to furnish equipment, materials, and labor for the Project which meets the requirements of the codes and authorities quoted as well as the Contract Documents. Proprietary items specified herein only establish a minimum functional and aesthetic standard and it is incumbent upon the Contractor to ascertain conformance of these proprietary items or any proposed substitution with the codes and authorities.

D. By reviewing, approving and submitting shop drawings, product data, or samples, Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, member sizes catalog numbers, and similar data and that he has checked and coordinated shop drawings with the requirements of the Project and of the Contract Documents.

E. Work requiring shop drawings, whether called for by the Contract Documents or requested by the Contractor, shall not commence until the submission has been reviewed by the Architect/Engineer. Work may commence if the Contractor verifies the accuracy of the Architect/Engineer's corrections and notations and complies with them without exception and without requesting change in Contract Sum or Contract Time.

1.4 ARCHITECT / ENGINEER REVIEW

A. Architect/Engineer will review submittals with reasonable promptness.

B. Architect/Engineer's review or corrections refer only to the general arrangement and conformance of the subject of the submittals with the design concept of the project and with the information given in the Contract Documents. Under no conditions should the Contractor consider the review to include the dimensions, quantities, and details of the items nor the approval of an assembly in which the item functions.

C. Architect's/Engineer's review shall not relieve the Contractor from responsibility for errors or omissions in the submittals.

D. Architect/Engineer's review of submittals shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has directed specific attention to the deviation at the time of submission and the Architect/Engineer has given written approval to the specific deviation.

E. Architect/Engineer's review of submittals shall not be construed as authorizing any change in the Contract Sum or Contract Time.

1.5 SHOP DRAWINGS

A. Present in a clear and thorough manner. Title each drawing with Project name and number; identify each element of drawings by reference to sheet number and detail of Contract Documents.

B. Reproduction of Contract Drawings for shop drawings is not acceptable.

C. Identify field dimensions; show relationship to adjacent or critical features of Work or products.

1.6 PRODUCT DATA

A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section and Article number. Show reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; components parts; finishes; dimensions; and required clearances.

B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the work. Delete information which is not applicable.

C. Provide manufacturer's preparation, assembly, and installation instructions.

1.7 SAMPLES

A. Submit full range of manufacturer's standard finishes except where more restrictive requirements are specified, indicating colors, textures, and patterns.

B. Submit samples to illustrate functional characteristics of products, including parts and attachments as required by Architect/Engineer.

C. Approved samples which are of proper size may be incorporated in Work.

D. Label each sample with identification.

E. Field Finishes: Provide full samples at Project, at location acceptable to Architect/Engineer, as required by individual Specification Section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed work.

1.8 RESUBMITTALS

A. When submittals are returned to the Contractor with the Architect/Engineer's corrections the Contractor shall make the required corrections. Upon request, resubmit one corrected set.

B. Contractor shall direct specific attention on the resubmittal to all revisions including those requested by the Architect/Engineer on previous submission.

1.9 DISTRIBUTION

A. Distribute reproductions of shop drawings, copies of product data, and samples which bear the Architect/Engineer's review stamp to job site file, Record Documents file, subcontractors, suppliers, other affected contractors, and other entities requiring information.

B. Work shall be in accordance with and performed from the reviewed drawings.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION 01 33 00

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
1. Laboratory Mockups: Full-size physical assemblies constructed at testing facility to verify performance characteristics.
2. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on Project site, consisting of multiple products, assemblies, and subassemblies.
3. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes, doors, windows, millwork, casework, specialties, furnishings and equipment, and lighting.

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five years previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems:
1. Seismic-force-resisting system, designated seismic system, or component listed in the designated seismic system quality-assurance plan prepared by Architect.
2. Main wind-force-resisting system or a wind-resisting component listed in the wind-force-resisting system quality-assurance plan prepared by Architect.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

- 1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.

5. Identification of test and inspection methods.

6. Number of tests and inspections required.

7. Time schedule or time span for tests and inspections.

8. Requirements for obtaining samples.

9. Unique characteristics of each quality-control service.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

C. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.

2. Special inspections required by authorities having jurisdiction and indicated on the "Statement of Special Inspections".

3. Owner-performed tests and inspections indicated in the Contract Documents.

D. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mockups.

E. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.7 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

- 1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspectng.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

- 1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

- 1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.8 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders.

3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

J. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

K. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures".

L. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in pre-installation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

M. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

- 1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 72 29.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

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SECTION 01 41 00 - REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 CODE REQUIREMENTS

- A. Perform all work on this Project in strict accordance with, but not limited to, applicable requirements and portions of the latest editions of the currently adopted codes, revisions, amendments, and their references.

- Florida Building Code:
 - Florida Building Code - Building
 - Florida Building Code - Fuel Gas
 - Florida Building Code - Mechanical
 - Florida Building Code - Plumbing
 - National Electrical Code - FBC Chapter 27
 - FBC Referenced Codes and Standards -- Chapter 35
- Florida Fire Prevention Code, Ch. 69A-60, Florida Administrative Code, which includes:
 - NFPA 1
 - Referenced Mandatory Codes and Standards listed in 69A-60.005, FAC
 - Referenced Mandatory Codes and Standards listed in NFPA 101
- U.S. Access Board, Americans with Disabilities Act Architectural Guidelines, July 23, 2004, accessibility requirements for children
- State Fire Marshal's rule 69A-58 FAC

1.3 CODE STANDARDS

- A. All work shall conform to applicable portions of the adopted, or the latest edition of the standards listed, which shall include, but is not limited to, the following:

- Aluminum Association (AA)
- American Concrete Institute (ACI)
- American Institute of Steel Construction (AISC)
- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- American Society of Mechanical Engineers (ASME)
- American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
- American Welding Society (AWS)
- Architectural Woodworking Institute (AWI)
- Architectural Aluminum Manufacturer's Association (AAMA)
- Commercial Standards (CS)
- Federal Specifications and Standards (FSS)
- National Occupations Safety and Health Administration (OSHA)
- National Institute for Standards and Technology (NIST)
- Architectural Sheet Metal Manual (SMACNA)
- Underwriter's Laboratories (UL)
- U.S. of America Standards Institute (ASI)
- U.S. Department of Commerce Product Standards (USDCPS)

1.4 CODE DISCREPANCIES

- A. In case of discrepancy between the codes, standards, and specifications listed, the most strict or most stringent requirement shall govern.

1.5 COMPLIANCE WITH CODES

- A. A permit issued by the Building Department having jurisdiction will be construed as permission to proceed with construction, and not as authority to violate, cancel, alter, or set aside any of the provisions of any Codes.
- B. Nor shall issuance of a permit prevent the Building Official from thereafter requiring a correction of errors in plans, construction, or violations of any Codes.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION 01 41 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

- A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

- Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 10 days of receipt of request.
 - Form of Approval: As specified in Section 01 33 00 "Submittal Procedures".
 - Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 33 00 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
 - Each Contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 - If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 - Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

- Store products to allow for inspection and measurement of quantity or counting of units.
- Store materials in a manner that will not endanger Project structure.
- Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
- Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
- Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- Protect stored products from damage and liquids from freezing.
- Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures".

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 - Where products are accompanied by the term "as selected," Architect will make selection.
 - Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 - Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

- Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
- Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
- Products:
 - Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
 - Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
- Manufacturers:
 - Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
 - Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
- Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 - If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
 - Evidence that the proposed product does not require revisions to the Contract Documents that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 - Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - Evidence that proposed product provides specified warranty.
 - List of similar installations for completed projects with project names and addresses and names and addresses of Architects and Owners, if requested.
 - Samples, if requested.

PART 3 - EXECUTION

(Not Used)

END OF SECTION 01 60 00

SECTION 01 71 00 - CLEANING

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Execute cleaning during progress of the work and at completion of the work, as required by General Conditions and other portions of the Specifications.

1.2 RELATED SECTIONS

- A. Conditions of the Contract
- B. Each Specification Section - Cleaning for specific products or work.

1.3 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

- A. Execute periodic cleaning to keep the work, the site, and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris, and rubbish.
- C. Remove waste materials, debris and rubbish from the site periodically, and dispose of legal disposal areas away from the site. Pay all fees for disposal.

3.2 DUST CONTROL

- A. Perform work operations and cleaning in a manner to prevent excessive dust generation.
- B. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.
- C. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.3 FINAL CLEANING

- A. Employ skilled workmen for final cleaning.
- B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.
- C. Wash and shine glazing and mirrors.
- D. Polish glossy surfaces to a clear shine.
- E. Ventilating Systems:
 - Clean permanent filters and replace disposable filters in units were operated during construction.
 - Clean ducts, blowers and coils if units were operated without filters during construction.
 - Clean surfaces and blades of grilles, diffusers, registers, lenses, louvers, etc.
- F. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds. Clean roof area and adjacent surfaces of any dirt or debris from construction activities.
- G. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean. Inspect areas adjacent to the work area for any windblown debris and clean as necessary.

END OF SECTION 01 71 00

SECTION 01 72 00 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 REQUIREMENTS INCLUDED

- A. Maintain at the site for the Owner one (1) record copy of:
 - Drawings.
 - Specifications
 - Addenda
 - Change Orders and other modifications to the Contract.
 - Architect Field Orders or written instructions
 - Approved Shop Drawings, Product Data and Samples.
 - Field Test Records

B. Update Record Documents on a continual basis.

1.3 RELATED SECTIONS

- A. Section 01 33 00 - Shop Drawings, Product Data and Samples

1.4 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
 - Provide files and racks for storage of documents.
- B. File documents and samples in accordance with CSI/CSC format.
- C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- D. Make documents and samples available at all times for inspection by Architect. Review and verify monthly, prior to submittal of Contractor's Application for Payment.
 - Owner and Architect shall review record documents prior to approval of monthly Application for Payment.
- E. Update documents to record changes as the work progresses. Completed portions of work should be recorded in a clear, legible and finished manner.
- F. As a minimum, update documents prior to each Application for Payment. Architect shall review documents prior to approval of Application for Payment. Failure of the Contractor to maintain record documents/as stated shall result in the non-approval of the Application for Payment.

1.5 RECORDING

- A. Drawings - Legibly mark drawings to record actual construction:
 - Depths of various elements of foundation in relation to finish first floor datum.
 - Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - Field changes of dimension and detail
 - Changes made by Addenda, Supplemental Instruction, Construction Change Directive, or Change Order.
 - Details not an original Contract Drawings.

- B. Specifications - Legibly mark each section to record:
 - Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - Changes made by Supplemental Instruction, Construction Change Directive, or Change Order.

1.6 SUBMITTAL

- A. At Contract close-out, the Contractor shall be responsible for providing an electronic PDF file of final Record Drawings and documents onto a readable portable storage unit. The Contractor shall request AutoCAD and Word electronic files of the Contract Documents from the Architect. The Contractor shall engage knowledgeable, professional personnel to produce electronic Record Documents from the received electronic files and be based on the actual construction recordings of the Work. Deliver the electronic file and two (2) sets of full-size printed Record Drawings to Architect for the Owner and Architect's records.
- B. Accompany submittal with transmittal letter in duplicate, containing:
 - Date
 - Project title and number
 - Contractor's name and address
 - Title and number of each Record Document
 - Signature of Contractor or his authorized representative.

END OF SECTION 01 72 00

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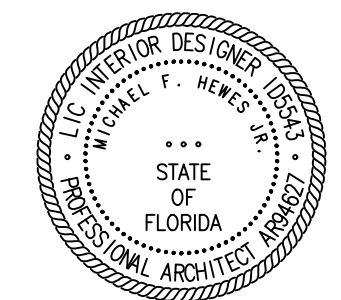
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Revisions	
No.	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS CONFORM WITH THE MINIMUM BUILDING CODES.



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SPECIFICATIONS

A-502

SECTION 01 72 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. The requirements and limitations for the cutting and patching of work

1.3 SUBMITTALS

- A. Submit written request in advance of cutting or alteration, which affects:

- 1. The structural integrity of any element of project
2. The integrity of weather exposed or moisture resistant element
3. The efficiency, maintenance, or safety of any operational element
4. Visual qualities of sight exposed elements
5. Work of Owner or separate contractor
B. Include in request:
1. The identification of project
2. The location and description of affected work
3. The necessity for cutting or alteration
4. A description of proposed work, and products
5. Any possible alternatives to cutting and patching
6. Any effect on work of Owner or separate contractor
7. Written permission from affected separate contractor(s)
8. Proposed date and time the work starts

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Primary Products: Those required for original installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching.
B. After uncovering existing work, assess conditions affecting performance of work.
C. The Contractor beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Provide temporary supports to ensure structural integrity of the work.
1. Provide devices and methods to protect other portions of project from damage.
B. Provide protection from elements for areas, which may be exposed by uncovering work.
C. Maintain excavations free of water.

3.3 CUTTING

- A. Execute cutting and fitting including excavation and fill to complete work.
B. Uncover work to install improperly sequenced work.
C. Remove and replace defective or non-conforming work.
D. Remove samples of installed work for testing when requested.
E. Provide openings in the work for penetration of mechanical and electrical work.
F. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight-exposed surfaces.
G. Cut rigid materials using masonry saw or core drill.
1. Pneumatic tools not allowed without prior approval.

3.4 PATCHING

- A. Execute patching to complement adjacent work.
B. Properly fit products together to integrate with other work.
C. Execute work by methods to avoid damage to other work and which, provide appropriate surfaces to receive patching and finishing.
D. Employ original installer to perform cutting and patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.
E. Restore work with new products in accordance with requirements of Contract Documents.
F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
H. Refinish surfaces to match adjacent finish.
1. For continuous surfaces, refinish to nearest intersection or natural break.
2. For an assembly, refinish entire unit.

END OF SECTION 01 72 29

SECTION 01 74 00 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Compile specified warranties and bonds
B. Compile specified service and maintenance contracts
C. Co-execute submittals when so specified
D. Review submittals to verify compliance with Contract Documents
E. Submit to Architect for review and transmittal to Owner
1.2 RELATED SECTIONS
A. Instruction to Bidders - Bid or Proposal Bonds
B. Conditions of the Contract - Labor and Material Payment Bond
C. Supplementary Conditions - Maintenance Bonds
D. Conditions of the Contract - General Warranty of Construction
E. Section 01 77 00 - Contract Close-Out
F. Section 01 78 23 - Operating and Maintenance Data
G. Each respective Section of Specifications: Warranties and Bonds Required for Specific Products
H. The respective Section of Specifications which specifies the product: Provisions of Warranties and Bonds, Duration
1.3 SUBMITTAL REQUIREMENTS

- A. Assemble warranties, bonds and service and maintenance contracts, executed by each of respective manufacturers, suppliers and subcontractors in accordance with General Conditions and Supplementary Conditions.

- B. Number of original signed copies required: Two (2) each.

- C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information of each item:

- 1. Product of work item.
2. Firm, with name of principal, address and telephone number.
3. Scope.
4. Date of beginning of warranty, bond or service and maintenance contract.
In no case shall the date begin prior to acceptance by Architect of that portion of the work.
5. Duration of warranty, bond or service maintenance contract.
6. Provide information for Owner's personnel:
a. Proper procedure in case of failure
b. Instances which might affect the validity of warranty or bond.
c. Contractor, name of responsible principal, address and telephone number.

- D. The Contractor shall assure that no products, equipment, or materials bearing asbestos shall be used or installed in the Work.

The Contractor shall submit on his letterhead the Warranty - Guarantees in the following form for all overall Projects and the work under each Section of the Specifications. The Contractor shall submit all of the Warranty-Guarantees to the Architect, as a prerequisite to the final payment. The period of time shall be one (1) year, unless otherwise noted under the various Sections.

WARRANTY - GUARANTEE

We hereby warrant and guarantee the _____ which we have installed in the _____ Project _____ year(s) from the Date of Substantial Completion.

We agree to repair or replace to the satisfaction of the Architect any or all work that may prove defective in workmanship or materials within that period, ordinary wear and tear and unusual abuse or neglect excepted, together with any other work which may be damaged or displaced in so doing.

Any repairs or replacements shall bear an additional twelve (12) months guarantee, in addition to any remaining warranty period, as herein stated, dated from the final acceptance of repairs or replacement.

In the event of our failure to comply with the above-mentioned conditions within a reasonable time after being notified in writing, we collectively and separately do hereby authorize the Owner to proceed to have defects repaired and made good at our expense, and will pay the costs and charges therefore immediately upon demand.

(SIGNATURE OF CONTRACTOR OR SUBCONTRACTOR)

DATE: _____

(SIGNATURE OF CONTRACTOR) only where subcontractor is major signer

1.4 FORMS OF SUBMITTALS

- A. Prepare in duplicate packets
B. Format:
1. Size: 8-1/2" x 11" punch sheets for standard 3-ring binder:
a. Folder larger sheet to fit into binders.
2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:
a. Title of Project
b. Location of Project
c. Name of Contractor
C. Binders: Commercial quality, 3-ring, with durable and cleanable plastic covers, all of same color.

1.5 TIME OF SUBMITTALS

- A. For equipment of components parts of equipment put into service during progress of construction:
1. Submit documents within ten (10) days after inspection and acceptance.
B. Otherwise make submittals within ten (10) days after Date of Substantial Completion, prior to final request for payment.
C. For items of work where acceptance is delayed materials beyond Date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.

1.6 SUBMITTALS REQUIRED

- A. Submit warranties, bonds, and service and maintenance contracts as specified in respective Sections of Specifications.
B. Submit additional manufacturer's standard warranties where available at no additional cost, but not specifically indicated in respective Specification Section.

END OF SECTION 01 74 00

SECTION 01 77 00 - CONTRACT CLOSE-OUT

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the work.

1.2 RELATED SECTIONS

- A. Conditions of the Contract - Fiscal provisions, legal submittals and additional administrative requirements.
B. Section 01 11 00 - Summary of Work
C. Section 01 71 00 - Cleaning
D. Section 01 72 00 - Project Record Documents
E. Section 01 78 23 - Operating and Maintenance Data
F. Section 01 74 00 - Warranties and Bonds
G. The respective Sections of Specifications - Close-Out Submittals required of Trades.

1.3 SUBSTANTIAL COMPLETION

- A. When Contractor considers the work is substantially complete, he shall submit to Architect:
1. A written notice that the work or designated portion thereof, is substantially complete.
2. A complete list of items to be completed or corrected.
B. Within a reasonable time after receipt of such notice, Architect will make a project review to determine the status of completion.
C. Should Architect concur that the work is substantially complete, he will:
1. Architect will promptly notify the Contractor in writing, giving the reasons therefore.
2. Contractor shall remedy the deficiencies in the work and send a second written notice of Substantial Completion to the Architect.
D. When Architect concurs that the work is substantially complete, he will:

- 1. Prepare a Certificate of Substantial Completion on AIA form G704, accompanied by Contractor's list of items to be completed or corrected, as verified and amended by the Architect.
2. Submit the Certificate of Owner and Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.
1.4 FINAL PROJECT REVIEW

- A. When Contractor considers the work is complete, he shall submit written certification that:

- 1. Contract Documents have been reviewed.
2. Work has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.
4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
5. Work is completed and ready for Architect's final project review.

- B. Architect will make a project review visit to verify the status of completion with reasonable promptness after receipt of such certification.

- C. Should Architect consider that the work is incomplete or defective:

- 1. Architect will promptly notify the Contractor's in writing, listing the incomplete or defective work.
2. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to Architect that the work is complete.
3. Architect will again review the corrected work.

- D. When the Architect finds that the work is acceptable under the Contract Documents, he shall request the Contractor to make close-outs submittals.

1.5 ADDITIONAL REVIEW FEES

- A. Should Architect perform additional project review(s) due to failure of the work to comply with either the Contract Documents or with the claims of completion made by the Contractor?

- 1. Owner shall compensate Architect of such additional services, and Contractor shall reimburse Owner by means of a deductive Change Order.

1.6 CONTRACTOR'S CLOSE-OUT SUBMITTALS TO ARCHITECT'S

- A. Evidence of compliance with requirements of governing authorities:
1. Certificate of Occupancy.
2. Certificates of Inspection:
a. Mechanical
b. Electrical
B. Project Record Documents: To requirements of Section 01 72 00.

- C. Operating and Maintenance Data Instruction to Owner's Personnel: To requirements of Section 01 78 23.

- D. Warranties and Bonds: To requirements of Section 01 74 00.

- E. Evidence of Payment and Release of Liens: To requirements of General and Supplementary Conditions, AIA Forms G706 and G706A.

- F. Certificate of Insurance for products and completed operations, including continuing insurance coverage complying with requirements.

- G. Submit updated final statement, accounting for additional (final) changes to Contract Sum.

- H. Contractor's written warranty for minimum of one (1) year to accordance with the General Conditions.

- I. Submit certified copy of Architect's/Engineer's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Architect/Engineer.

- J. Submit Consent of Surety Company to Final Payment, AIA Form G707.

1.7 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit updated final statement of accounting to Architect.
B. Statement shall reflect all adjustments to the Contract Sum:

- 1. The Original Contract Sum.
2. Additions and Deductions resulting from:
a. Previous Change Orders
b. Allowances
c. Unit Prices
d. Deductions for uncorrected work
e. Penalties and bonuses
f. Deductions for liquidated damages
g. Deductions for additional review fees
h. Other adjustments
3. Total Contract Sum, as adjusted
4. Previous payments
5. Sum remaining due
C. Architect will prepare a final Change Order reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

- 1.8 FINAL APPLICATION FOR PAYMENT
A. Contractor shall submit the final Application of Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

END OF SECTION 01 77 00

SECTION 02 41 13 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, materials, services, and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
1. Required demolition of designated existing elements
2. Salvage of designated items

1.3 REFERENCES

- A. Comply with NFPA 1 - Chapter 29 and NFPA 241 Standard for Safeguarding Construction Alteration and Demolition Operation 2000 Edition.
B. Florida Building Code - FBC

1.4 NOTIFICATION OF OWNERS OF UTILITY LINES AND EQUIPMENT

- A. Notify the Owner or local authority owning any conduits, wires, pipes, or equipment affected by demolition work.
B. Arrange for removal or relocation of affected items and pay fees or costs in conjunction with removal or relocation, except as otherwise noted.

1.5 PROTECTION

- A. Prior to starting any work on site, provide a safety plan as outlined in Section 423 FBC to the Building Department for approval.
B. Coordinate the implementation of the safety plan with the Building Department, Campus Police, School Representative, and Program Management.
C. Prior to starting demolition operations, provide necessary protection of existing spaces and items to remain.
D. Owner may be continuously occupying areas of the building immediately adjacent to areas of selective demolition. If Owner continues to occupy the facility comply with the following:
1. Conduct demolition work in a manner that will minimize need for disruption of the Owners normal operations.
2. Provide protective measures as required to provide free and safe passage of Owner's personnel and public to and from occupied portions of the facilities.
3. Provide minimum of 72 hours advance notice to Owner of demolition activities that will impact Owners normal operations
a. Obtain specific approval from Owner for impact.
E. Owner assumes no responsibility for actual condition of items to be demolished.
1. Owner will maintain conditions at time of commencement of contract insofar as practical.
F. Protect any exposed existing finish work that is to remain during demolition operations.
G. Erect and maintain dust proof partitions, closures, and ventilator system as required preventing the spread of dust or fumes to occupied portions of the building.
1. Take whatever precautions necessary to minimize impact on occupied areas.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for demolition of structures, safety of adjacent structures, dust control, runoff, and erosion control, and disposal of demolished materials.
B. Obtain required permits from authorities having jurisdiction.
C. Notify affected utility companies before starting work and comply with their requirements.
D. Do not close or obstruct roadways, sidewalks, and hydrants, without permits.
E. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.
1. Contact the Architect and Owner immediately.
F. Test soils around buried tanks for contamination.
G. No demolition will occur during school hours without the written permission of the Owner.

1.7 EXPLOSIVES

- A. The use of explosives is strictly prohibited.

PART 2 PRODUCTS - (Not applicable)

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify the proper disconnection and capping of all abandoned utilities.
B. Verify that required barricades and other protective measures are in place.
C. Provide necessary shoring, bracing, and other precautions required for proper support of existing structure during cutting and demolition operations.
D. Photograph existing conditions of structure, surfaces, equipment and surrounding spaces that could be misconstrued as damage resulting from selective demolition work; submit photographs and written report of existing damage to Architect prior to starting work.
1. Contractor shall repair damage caused to existing facilities at no cost to Owner unless they can provide documentation indicating pre-existing damage.

3.2 DEMOLITION OPERATIONS

- A. Cut and remove elements and equipment as designated on Drawings.
1. Remove elements in their entirety unless otherwise indicated.
B. Execute demolition in a careful and orderly manner with least possible disturbance or damage to adjoining surfaces and structure.
C. Exercise extreme caution in cutting and demolition of portions of existing structure.
1. Obtain approval of Architect prior to cutting or removing structural members for any reason.
D. Avoid excessive vibrations in demolition procedures that may transmit through existing structure and finish materials.
E. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning assessment, removal, handling, and protection against exposure or environmental pollution and immediately contact the District's ECO.

3.3 DISPOSAL

- A. Materials, equipment, and debris resulting from demolition operations shall become property of Contractor.
1. Remove demolition debris at least once each day in accordance with applicable City, State, and Federal Laws.
B. Cover debris in trucks with approved netting to prevent spillage during transportation.
C. Do not store except in approved containers or burn materials on site.
1. Remove combustible waste materials in a manner approved by local Fire Department.
2. Remove, handle, and dispose of any hazardous waste and debris in accordance with applicable City, State, and Federal Laws.
D. Transport demolition debris to off-site disposal area and legally dispose of debris.
E. Use street routes specifically designated by City for hauling debris.
F. When possible dispose of material to recycling centers.

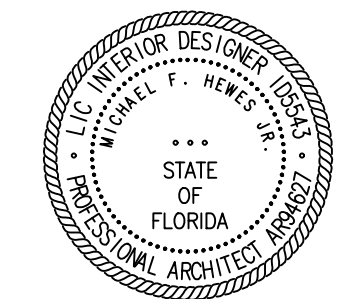
3.4 CLEANING AND REPAIR

- A. Leave building broom clean and free of debris, ready to receive new work.
B. Repair demolition performed in excess of that required.
1. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition.

END OF SECTION

Table with 2 columns: No., Date, Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS COMPLY WITH THE MINIMUM BUILDING CODES.



Michael F. Hewes Jr Architect License #AR94627 ©2019 HARVARD JOLLY, INC.

SECTION 02 41 13 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, materials, services, and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:
 1. Required demolition of designated existing elements
 2. Salvage of designated items

1.3 REFERENCES

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- B. Florida Building Code - FBC

1.4 NOTIFICATION OF OWNERS OF UTILITY LINES AND EQUIPMENT

- A. Notify the Owner or local authority owning any conduits, wires, pipes, or equipment affected by demolition work.
- B. Arrange for removal or relocation of affected items and pay fees or costs in conjunction with removal or relocation, except as otherwise noted.

1.5 PROTECTION

- A. Prior to starting any work on site, provide a safety plan as outlined in Section 423 FBC to the Building Department for approval.
- B. Coordinate the implementation of the safety plan with the Building Department, Campus Police, School Representative, and Program Management.
- C. Prior to starting demolition operations, provide necessary protection of existing spaces and items to remain.
- D. Owner may be continuously occupying areas of the building immediately adjacent to areas of selective demolition. If Owner continues to occupy the facility comply with the following:
 1. Conduct demolition work in a manner that will minimize need for disruption of the Owners normal operations.
 2. Provide protective measures as required to provide free and safe passage of Owner's personnel and public to and from occupied portions of the facilities.
 3. Provide minimum of 72 hours advance notice to Owner of demolition activities that will impact Owners normal operations.
 - a. Obtain specific approval from Owner for impact.
- E. Owner assumes no responsibility for actual condition of items to be demolished.
 1. Owner will maintain conditions at time of commencement of contract insofar as practical.
 2. Protect any exposed existing finish work that is to remain during demolition operations.
- F. Erect and maintain dust proof partitions, closures, and ventilator system as required preventing the spread of dust or fumes to occupied portions of the building.
 1. Take whatever precautions necessary to minimize impact on occupied areas.

1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for demolition of structures, safety of adjacent structures, dust control, runoff, and erosion control, and disposal of demolished materials.
- B. Obtain required permits from authorities having jurisdiction.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, and hydrants, without permits.
- E. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.
 1. Contact the Architect and Owner immediately.
- F. Test soils around buried tanks for contamination.
- G. No demolition will occur during school hours without the written permission of the Owner.

1.7 EXPLOSIVES

- A. The use of explosives is strictly prohibited.

PART 2 PRODUCTS - (Not applicable)

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify the proper disconnection and capping of all abandoned utilities.
- B. Verify that required barricades and other protective measures are in place.
- C. Provide necessary shoring, bracing, and other precautions required for proper support of existing structure during cutting and demolition operations.
- D. Photograph existing conditions of structure, surfaces, equipment and surrounding spaces that could be misconstrued as damage resulting from selective demolition work; submit photographs and written report of existing damage to Architect prior to starting work.
 1. Contractor shall repair damage caused to existing facilities at no cost to Owner unless they can provide documentation is indicating pre-existing damage.

3.2 DEMOLITION OPERATIONS

- A. Cut and remove elements and equipment as designated on Drawings.
 1. Remove elements in their entirety unless otherwise indicated.
- B. Execute demolition in a careful and orderly manner with least possible disturbance or damage to adjoining surfaces and structure.
- C. Exercise extreme caution in cutting and demolition of portions of existing structure.
 1. Obtain approval of Architect prior to cutting or removing structural members for any reason.
- D. Avoid excessive vibrations in demolition procedures that may transmit through existing structure and finish materials.
- E. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning assessment, removal, handling, and protection against exposure or environmental pollution and immediately contact the District's ECO.

3.3 DISPOSAL

- A. Materials, equipment, and debris resulting from demolition operations shall become property of Contractor.
 1. Remove demolition debris at least once each day in accordance with applicable City, State, and Federal Laws.
- B. Cover debris in trucks with approved netting to prevent spillage during transportation.
- C. Do not store except in approved containers or burn materials on site.
 1. Remove combustible waste materials in a manner approved by local Fire Department.
 2. Remove, handle, and dispose of any hazardous waste and debris in accordance with applicable City, State, and Federal Laws.
- D. Transport demolition debris to off-site disposal area and legally dispose of debris.
- E. Use street routes specifically designated by City for hauling debris.
- F. When possible dispose of material to recycling centers.

3.4 CLEANING AND REPAIR

- A. Leave building broom clean and free of debris, ready to receive new work.
- B. Repair demolition performed in excess of that required.
 1. Return structures and surfaces to remain to condition existing prior to commencement of selective demolition.

END OF SECTION

SECTION 07 62 00 - FLASHING AND SHEET METAL

PART 1 GENERAL

1.1 SCOPE OF WORK

- A. Flashing, counter-flashing, roofing gutters and nailers, and fabricated sheet metal items for roofing intersections with vertical surfaces, copings, curbs, gutters, eaves, roof drains, scuppers, vents and other roof penetrations.

1.2 RELATED SECTIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. See District Master Specifications and Design Criteria for other related sections. These include but are not limited to the following:
 - A. Section 01 25 13 - Product Substitution Procedures.
 - B. Section 01 31 00 - Project Coordination.
 - C. Section 01 33 00 - Submittal Procedures.
 - D. Section 01 42 00 - References.
 - E. Section 01 45 00 - Quality Control.
 - F. Section 01 66 00 - Product Storage and Handling.
 - G. Section 01 78 00 - Closeout Submittals.
 - H. Section 03 52 16 - Lightweight Insulating Concrete.
 - I. Section 06 10 00 - Rough Carpentry.
 - J. Section 05 31 23 - Steel Roof Decking.
 - K. Section 07 11 13 - Bituminous Dampproofing.
 - L. Section 07 52 00 - Modified Bituminous Membrane Roofing
 - M. Section 07 61 13 - Standing Seam Metal Roofing.
 - N. Section 07 72 00 - Roof Accessories.
 - O. Section 07 92 13 - Elastomeric Joint Sealants.

1.3 REFERENCES

- A. See Section 01 42 00 - References for additional reference standards, abbreviations, definitions, and acronyms.
- B. ANSI-SPRI/ES-1.
- C. American Society for Testing and Materials (ASTM):
 1. ASTM A240/A240M-15a: Standard Specification for Heat-resisting Chromium and Chromium-nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels
 2. ASTM A653/A653M-13: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process
 3. ASTM A755/A755M-15: Standard Specification for Steel Sheet, Metallic-Coated by the Hot Dipped Process (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
 4. ASTM D4586/D4586M-07(2012)e1: Standard Specification for Asphalt Roof Cement, Asbestos Free.
 5. ASTM B32-08(2014): Standard Specification for Solder Metal (Lead Free).
- D. Florida Building Code (FBC), 6th Edition.
- E. National Roofing Contractors Association (NRCA) "Roofing and Waterproofing Manual" Detail for installation of units.
- F. Sheet Metal and Air-Conditioning Contractor's National Association, Inc. (SMACNA): Architectural Sheet Metal Manual", latest Edition. Details for fabrication of units, including flanges and installation to coordinate with type of roofing indicated.

1.4 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Submit Shop Drawings on flashing and sheet metal work.
- C. Samples:
 1. Submit 8" (203 mm) x 8" (203 mm) square samples of each specified sheet materials to be exposed as finished surfaces.
 2. Submit each samples of factory fabricated products exposed as finished work, complete with specified factory finish.

1.5 QUALITY ASSURANCE

- A. Comply with Section 01 45 00 - Quality Control.
- B. Regulatory Requirements: Ensure flashing and sheet metal complies with requirements of Florida Building Code, NRCA, SMACNA, and ANSI-SPRI/ES-1.
- C. Coordinate application of flashings with application of roofing, protruding material, and roof accessories to provide a complete weather tight installation under provisions of the specified warranty requirements.
- D. Perform work in accord with referenced standards and manufacturer's printed installation instructions.

1.6 PRE-INSTALLATION MEETING

- A. Comply with Section 01 31 00 - Project Coordination.
- B. Meeting Format:
 1. Pre-installation meeting shall occur after approval of Shop Drawings by Contractor/CM and accepted by AE.
 2. Meeting shall convene minimum of one week before starting work.
 3. Required Attendees:
 - a. Contractor/CM.
 - b. Roof flashings installer.
 - c. Roofing and roofing equipment manufacturers.
 - d. Installers of deck or substrate construction to receive roofing work.
 - e. Installers of roof-top mechanical, plumbing or electrical items or other work in and around roofing that must precede or follow roofing work.
 - f. Other subcontractors associated with work.
 - g. Architect.
 - h. Owner's Project Manager.
 4. Contractor/CM shall make arrangements for meeting and notify parties required to attend.
- 5. Agenda shall include:
 - a. Review preparation and installation procedures and coordinating and scheduling required with related work.
 - b. Review roof, roof equipment, doors, and window system requirements (drawings, specifications, and other contract documents).
 - c. Review Shop Drawings and associated submittals.
 - d. Review manufacturer's technical materials.
 - e. Review and finalize construction schedule related to work and verify availability of materials, personnel, equipment and facilities needed to make progress and avoid delays.
 - f. Review required inspection, testing, certifying and material usage accounting procedures.
 - g. Review weather and forecasted weather conditions, and procedures for coping with unfavorable conditions, including temporary roofing.
 - h. Meeting may be combined with roofing pre-installation meeting.

1.7 WARRANTIES

- A. Comply with Section 01 78 00 - Closeout Submittals.
- B. Provide installer's five (5) year written warranty for flashings indicated.
 1. Flashings shall resist design wind speeds required by Florida Building Code, Chapter 16, in which installer agrees to repair or replace flashing components of roofing system that fail in materials or workmanship within specified warranty period.
 2. Flashing failures shall include water leaks, fasteners, accessories, flashing and sheet metal, grounds/nailers, gutters and downspouts, scuttles and vents, curbs, and other flashing components of roofing system.
- C. See Roofing Specifications for additional warranties that shall also apply.
- D. Warranty shall be a term type, with no conditions, exclusions, including exclusions of remedies by Owner, deductibles or limitations on coverage amount. Conditions, exclusions, or dollar limits.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Manufactured flashing and sheet metal products are to contain recycled content.
- B. Sheet Material:
 1. Type 316L stainless steel, 22 gage, complying with ASTM A167.
 2. Flashing for Pipes, Conduits, and Round Equipment Supports: Type 316L stainless steel, 22 gage, complying with ASTM A240.
 3. Solder: Per ASTM B32.
- C. Fastening Devices:
 1. Stainless steel fasteners compatible with metal and roofing system. Use of powder-activated fasteners is prohibited.
 2. Attach sheet metal to wood with exposed fastenings: No. 10 x 1-1/4" (31.8mm) pan head stainless steel sheet metal screws. Provide neoprene sealant washers and stainless steel washers under screw heads.
 3. Attachment of sheet metal to masonry or concrete: No. 10 x 1-1/4" (31.8mm) pan head stainless steel masonry screws. Provide neoprene sealant washers and stainless steel washers under screw heads.
 4. Roofing Cement: Plastic roofing cement complying with requirements of ASTM D2822 or as appropriate and as recommended by roofing manufacturer.

2.2 ACCESSORIES

- A. Roof Drain Flashing: Minimum 4 lb (1.82 Kg) per ft² lead sheet flashing, 36" (91.44 cm) x 36" (91.44 cm) installed in accord with NRCA specifications.
- B. Cants:
 1. Pre-fabricated 16-gage, galvanized, minimum 4" (101 mm) vertical height, formed at 45° angle to walls and parapets.
 2. Manufacturer: Concrete USA; Product: ARBS (Alternative Roof Blocking System).
 3. Substitutions: Comply with Section 01 25 13 - Product Substitution Procedures.

C. Copings:

- 1. Fabricate in approximately 10' (3 m) sections using sheet 22-gage stainless steel to detail as indicated.
 - 2. Provide continuous 16-gage stainless steel outer hold-down cleat with punched holes at 6" (152 mm) on center and face fasten at inward facing parapet components with removable fasteners as required for sheet metal.
 - 3. Provide 8" (203 mm) wide joint covers.
 - 4. Manufacturer: SBC Industries, North Miami, Florida.
 - 5. Substitutions: Comply with Section 01 25 13 - Product Substitution Procedures.
- D. Curb to Duct Flashing and Counter Flashing:
- 1. Fabricate from stainless steel to fit duct curbs and ducts projecting from curbs.
 - 2. Provide 4" (101 mm) vertical flange to cover top edge of bituminous base flashings. Form flange bottom towards curb, with 1/2" (6.3 mm) bottom edge bent 1/2" (6.3 mm) out and hemmed.
 - 3. At top of curbs bend metal 90° and extend horizontally over to duct, then bend upward and extend vertically not less than 3" (71.2 mm) from top edge of flashing out 3/8" (9.5 mm) to receive sealant.
 - 4. Provide for field soldered lap joints at corners and 1" (25.4 mm) lap joints at horizontal miter splices.

E. Edge Drrips:

- 1. Fabricate using sheet 22-gage stainless steel drip edge to detail indicated, in not over 10' (3 m) sections.
 - 2. Provide continuous 16-gage stainless steel continuous cleat with punched holes spaced as necessary. If cleat extends 6" (152 mm) or more below top fastener, provide second row of punched holes spaced as necessary.
 - 3. Provide 4" (101 mm) roof flange, and extend bottom drip not less than 1" (25.4 mm) below bottom of roof sheathing, with bottom 1/2" (19 mm) kick-out to drip water away from finish wall.
 - 4. Manufacturer: Concrete USA; Product: ARBS (Alternative Roof Blocking System).
 - 5. Substitutions: Request for substitutions shall be in accord with Section 01 25 13 - Product Substitution Procedures.
- F. Pipes, Conduits, Wires, and Round Equipment Supports Penetrating Roofing or Resting on Roofing:
- 1. Type 304L stainless steel, 22-gage, complying with ASTM A240.
 - 2. Form tubular stainless steel sleeves sized to shape of penetration, not less than 8" (202 mm) above finished roofing with 4" (101 mm) wide base flange welded to water-tight to sleeve.
 - 3. Shop punch flanges.
 - 4. Seal flashing and cover with protective umbrella.
 - 5. Pre-manufactured roof penetration seals.
 - a. Manufacturer: SBC Industries, North Miami, Florida.
 - 6. Substitutions: Request for substitutions shall be in accord with Section 01 25 13 - Product Substitution Procedures.

G. Sanitary Vent Stack Flashings:

- 1. 4 lb (1.82 Kg) per ft² lead flashing.
- 2. Form tubular lead flashing sleeve not less than 8" (202 mm) high with diameter 1/2" (12.7mm) larger than vent stack.
- 3. Provide 4" (101 mm) wide flange soldered water-tight.
- 4. Provide vandal-proof vent covers.

H. Scuppers:

- 1. Fabricate using stainless steel to profiles and details shown.
- 2. Lock seam corners, solder water-tight and hem outer exposed edges.
- 3. Provide 4" (101 mm) wide minimum flanges formed to fit cants, decks and vertical wall surface.
- 4. Shop punch flanges for fastenings at 6" (152 mm) on center.
- 5. Type 316L stainless steel, 22 gage, stainless steel with mill finish.

I. Gutters:

- 1. Type 316L stainless steel, 22 gage, stainless steel with mill finish.
- 2. Gutters shall be minimum 6" (152 mm) wide x 6" (152 mm) deep, 22-gage stainless steel with mill finish.
- 3. Gutter straps shall be 1" (25.4 mm) wide rolled stainless steel located at 24" o.c. (61 cm) and pop riveted to gutter.
- 4. Gutter brackets shall be 1.25" wide by 0.125" thick stainless steel with mill finish located at 2'-6" o.c.
- 5. Gutters shall be in minimum 10'-0" long sections formed to provide flush exterior seams between gutter sections. Joints between gutter sections shall be 1/2" wide with 6" wide cover plates and support brackets to allow for expansion and contraction. Joints shall be fully bedded in sealant on inside joints.

J. Downspouts:

- 1. Downspouts:
 - a. Downspouts shall be 5" by 5" square 0.125" thick stainless steel with mill finish fabricated in one continuous piece down to kick-out diverter section at bottom of downspout.
 - b. Sections shall be welded and ground smooth.
 - c. Type 316L stainless steel, 22 gage, stainless steel with mill finish.
- 2. Downspout bracket/straps:
 - a. Straps shall be 1" wide by 0.125" thick located not more than 4'-0" apart with top and bottom brackets located not more than 12" from ends of downspouts.
 - b. Brackets shall be attached to structure with two .025" diameter Zamac drive pins per bracket.
 - c. Bracket shall be attached to gutter with two #10 sheet metal screws each side of bracket and caulked with sealant.
 - d. Type 316L stainless steel, 22 gage, stainless steel with mill finish.

K. Stucco Stop with Counter-flashing (2-piece):

- 1. Fabricate in approximately 10 ft sections using sheet stainless steel to details indicated.
 - 2. Provide receiver with 1.5" wall flange, 0.75" sloping stucco stop, and 0.75" flange bend downward with 0.50" hem.
 - 3. Shop punch wall flange for fastening.
 - 4. Provide shop fabricated soldered corner splices extending 4" each way.
 - 5. Provide counterflashing with 1.5" 45° top flange with 0.35" kick back at top and 4" bottom flange formed inward 3/2" towards wall with hemmed 0.25" kick at bottom.
 - 6. Provide 1.5" x 4" storm cleats.
 - 7. Manufacturer: Subject to compliance with requirements, provide products by following manufacturer:
 - a. SBC Industries, North Miami, Florida.
 - 8. Substitutions: Request for substitutions shall be in accord with Section 01 25 13 - Product Substitution Procedures
- L. Stucco Top with Counter-flashing (1-piece for re-roofing):
- 1. Fabricate in approximately 10 ft sections using sheet stainless steel to details as indicated.
 - 2. Provide counterflashing with 0.50" 45° leg for sealant with 1.5" wall flange with a 4" bottom flange formed inward 0.75" towards wall with hemmed 0.25" kick at bottom.
 - 3. Shop punch wall flange for fastening.
 - 4. Provide shop fabricated soldered corner splices extending 4 inches each way.
 - 5. Manufacturer: Subject to compliance with the specified requirements, provide products by the following manufacturer:
 - a. SBC Industries, North Miami, Florida.
 - 6. Substitutions: Substitutions: Request for substitutions shall be in accord with Section 01 25 13 - Product Substitution Procedures
- M. Surface Mounted Flashing (1-piece):
- 1. Fabricate in approximately 10 ft sections using sheet stainless steel to detail as indicated.
 - 2. Provide flashing with 1.50" wall flange with 0.25" kick at top to receive sealant, 0.50" 135° sloping top flange and 4" bottom flange formed inward 0.75" towards wall with hemmed 0.50" kick at bottom.
 - 3. Shop punch wall flange for fastening to meet wind loads per FBC
 - 4. Provide shop fabricated corner splices extending 4".
 - 5. Manufacturer: Subject to compliance with the specified requirements, provide products by following manufacturers:
 - a. SBC Industries, North Miami, Florida.
 - 6. Substitutions: Request for substitutions shall be in accord with Section 01 25 13 - Product Substitution Procedures

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not proceed with work until conditions detrimental to proper and timely completion of work have been corrected in acceptable manner.

3.2 INSTALLATION

- A. Lap, rivet, lock, or seal joints, as field conditions require.
- B. Provide necessary reinforcement, miscellaneous fittings, and accessories.
- C. Apply flashing and sheet metal work including miscellaneous fittings and accessories to even, smooth, sound, thoroughly clean and dry surfaces that are free from defects that might affect application. Prime metal flanges that receive bitumen under provisions of FBC and manufacturer's requirements.
- D. Perform soldering work slowly, with properly heated coppers to thoroughly heat seam material and sweat solder through full width of seam that shows no less than 1" of evenly flowed solder. Solder under provisions of ASTM B 32.
 1. Start soldering immediately after application of flux.
 2. Solder flat locked seam.
- E. Isolate dissimilar metals with accepted isolation paint or other accepted materials.
- F. Make flashing and sheet metal work water and weather tight, with lines, rises and angles sharp and true and plane surfaces free from waves and buckles.
- G. Provide sufficient fasteners and related hardware to ensure a complete and weather tight system.
- H. Base Flashings at Aluminum Walkways, Covers Abutting Concrete and Masonry:
 1. Set flashing tight against wall and with roof flange set on aluminum deck in bed of sealant.
 2. Secure roof flanges to metal deck with No. 10 x 0.50" stainless steel sheet metal screws at 6" on center maximum.
 3. Provide sealant washers and stainless steel washers under screw heads.
- I. Cants Strips: Install at transitions of roof membrane with flat vertical surfaces.
- J. Copings:
 1. Secure outer hold-down cleat to woodblock at 6 inches on center with ring shank roofing nails.
 2. Install coping over cleat. Allow 0.125" space between each coping section.
 3. Secure inside face of coping with removable grommet type fasteners.
 4. Provide 1" to 12" slope at coping to inner parapet wall.
 5. Install joint covers in full bed of sealant.
- K. Curb to Duct Flashing and Counterflashing:
 1. Install flashings after ducts through curbs are in place and after bituminous base flashings are completed.
 2. Place flashings in place on curbs and solder corners and corner miter laps water-tight.
 3. Secure counterflashing to vertical edge of curb nailers with No. 10 stainless steel sheet metal screws through sealant washers at not over 12" on center.
 4. Secure vertical upturned duct flashing to duct with No. 10 stainless steel sheet metal screws through sealants washers at not over 6" on center.
 5. Seal joint between flashings and ducts with sealant per Section 07 92 13 - Elastomeric Joint Sealants.
- L. Edge Drrips:
 1. Install continuous 20 gage stainless steel cleat.
 2. Set 22 gage stainless steel edge drip roof flanges in full bed of roofing cement over completed roofing.

- 3. Lap splices 4" minimum and seal top horizontal surface laps with cold bitumen.
- 4. Stagger nails at flange to roof deck at 4" on center.
- 5. Cover roof flanges with 2-ply felt stripping set in full bed of roofing cement.
- 6. Locate drip bottom not less than 0.75" away from finished vertical surfaces.

M. Roof Drains:

- 1. Prime roof drain flanges before applying roof felts.
 - 2. Set lead in full bed of cold bitumen over intermediate plies or cap sheet.
 - 3. Strip lead cover with 2 layers of roofing felts in solid coats of hot bitumen.
- N. Roof penetration materials at pipes, conduits and round equipment supports.
- 1. After preliminary examination install conical sealant cover with sealant.

O. Sanitary Vent Stack Flashings:

- 1. Install in accord with NRCA specifications.

P. Scuppers:

- 1. Set scuppers in full bed of roofing cement over completed base flashing and roof membrane.
- 2. Secure to masonry walls and concrete decks with stainless steel metal screws in lead shields at 6" on center.
- 3. Secure to wood nailers with stainless steel sheet metal screws at 6" on center.

Q. Stucco Stop with Counterflashing (2-piece):

- 1. Set receiver on masonry and concrete walls where indicated.
 - 2. Lap splices 4 inches minimum and seal laps with sealant.
 - 3. Secure to wall with No. 10 x 1.25" minimum Tap-Con screws 12" on center maximum.
 - 4. Check for membrane/bitumen seal on top of felt flashing before counterflashing installation.
 - 5. Attach storm cleats at 30" on center and with 1 cleat at each joint.
 - 6. Insert counterflashing into receiver, and secure tightly with storm cleats.
- R. Surface Mounted Flashing (1-piece):
- 1. Set on masonry and concrete walls over base flashing where indicated.
 - 2. Lap splices 4" minimum and seal laps with sealant.
 - 3. Secure to wall with No. 10 x 1-1/4 inch Tap-Con pan head screws at 12 inches on center maximum. Provide neoprene sealant washers and stainless steel washers.
 - 4. Where corrugated metal wall occurs, place preformed neoprene filler strip on wall immediately above top of metal base flashing.
 - a. Set filler strip in sealant and seal abutting edges of filler strip with sealant.
 - b. Place counterflashing over filler strip set in sealant and secure flashing to metal wall through filler strip with No. 10 x appropriate length stainless steel sheet metal screws at 6 inches on center maximum and centered on wall flutes.
 - c. Provide sealant washers and stainless steel washers under screw heads.
 - 5. Check for membrane/bitumen seal on top of felt flashing before flashing installation.

END OF SECTION

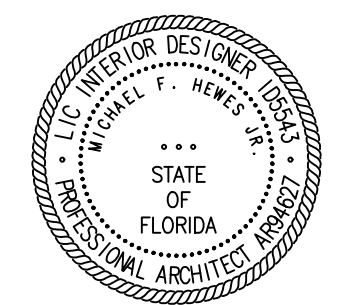
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Date: 04/16/2019

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Revisions	
No.	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS CONFORM WITH THE MINIMUM BUILDING CODES.



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Architect License #AR94627
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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SUMMARY

A. Section Includes:

- Silicone joint sealants.
- Urethane joint sealants.
- Latex joint sealants.
- Acoustical joint sealants.

B. Related Sections:

- Division 7 Section "Through Penetration Firestop System" for sealing joints in fire-resistance-rated construction.
- Division 9 Section "Gypsum Board" for sealing perimeter joints.
- Division 9 Section "Acoustical Panel Ceilings" for sealing edge moldings at perimeters with acoustical sealants.

1.3 PRECONSTRUCTION TESTING

- A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

- Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- Submit not fewer than eight pieces of each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
- Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
- For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
- Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

- B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

- Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
- Conduct field tests for each application indicated below:
 - Each kind of sealant and joint substrate indicated.
- Notify Architect seven days in advance of dates and times when test joints will be erected.
- Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
- Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

- Joint-sealant application, joint location, and designation.
- Joint-sealant manufacturer and product name.
- Joint-sealant formulation.
- Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and testing agency.
- B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.
- D. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
- Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- E. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- F. Field-Adhesion Test Reports: For each sealant application tested.
- G. Warranties: Sample of special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.

- D. Pre-installation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:

- When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
- When joint substrates are wet.
- Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
- Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
- Warranty Period: Ten (10) years from date of Substantial Completion.

- D. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
- Disintegration of joint substrates from natural causes exceeding design specifications.
 - Mechanical damage caused by individuals, tools, or other outside agents.
 - Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

- Architectural Sealants: 250 g/L.
- Sealant Primers for Nonporous Substrates: 250 g/L.
- Sealant Primers for Porous Substrates: 775 g/L.

- C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- D. Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

- A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.

- Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - BASF Building Systems; Omnisil 50.
 - Dow Corning Corporation; 756 SMS, 791, 795, 995.
 - GE Advanced Materials - Silicones; SilGlaze II SCS2800, SilProf NB SCS9000 SilProf SCS2000, UltraProf II SCS2900.
 - May National Associates, Inc.; Bondaflex Sil 295.
 - Pecora Corporation; 864, 895, 898.
 - Polymeric Systems, Inc.; PSI-641.
 - Sika Corporation, Construction Products Division; SikaSil-C995.
 - Tremco Incorporated; Spectrem 2, Spectrem 3.

- B. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

- Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - Pecora Corporation; 898.

2.3 URETHANE JOINT SEALANTS

- A. Single-Component, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type S, Grade P, Class 25, for Use T.

- Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - BASF Building Systems; Sonolastic SL 1.
 - Bostik, Inc.; Chem-Calk 950.
 - May National Associates, Inc.; Bondaflex PUR 35 SL.
 - Pecora Corporation; Urepan NR-201.
 - Polymeric Systems, Inc.; Flexiprene 952.
 - Schnee-Morehead, Inc.; Permatthane SM7101.
 - Sika Corporation, Construction Products Division; Sikaflex -1CSL.
 - Tremco Incorporated; Vulkan 45.

- B. Immersible, Single-Component, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type S, Grade P, Class 25, for Uses T and I.

- Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - Sika Corporation, Construction Products Division; Sikaflex -1CSL.
 - Tremco Incorporated; Vulkan 45.

2.4 LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

- Products: Subject to compliance with requirements available products that may be incorporated into the Work include, but are not limited to, the following:
 - BASF Building Systems; Sonolac.
 - Bostik, Inc.; Chem-Calk 600.
 - May National Associates, Inc.; Bondaflex 600, Bondaflex Sil-A 700.
 - Pecora Corporation; AC-20+.
 - Schnee-Morehead, Inc.; SM 8200.
 - Tremco Incorporated; Tremflex 834.

2.5 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, non-staining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

- Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - Pecora Corporation; AC-20 FTR, AIS-919.
 - USG Corporation; SHEETROCK Acoustical Sealant.

2.6 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are non-staining, are compatible with joint substrates, sealants, primers, and other joint fillers, and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance).
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

- Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - Concrete.
 - Masonry.
 - Exterior insulation and finish systems.
- Remove laitance and form-release agents from concrete.
- Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - Metal.
 - Glass.
 - Porcelain enamel.

- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond, do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

- Do not leave gaps between ends of sealant backings.
- Do not stretch, twist, puncture, or tear sealant backings.
- Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

- Place sealants so they directly contact and fully wet joint substrates.
 - Completely fill recesses in each joint configuration.
 - Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

- Remove excess sealant from surfaces adjacent to joints.
- Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- Provide finish joint profile where indicated per Figures 8B in ASTM C 1193.
- Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.
 - Use masking tape to protect surfaces adjacent to recessed toolled joints.

- G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.

3.4 FIELD QUALITY CONTROL

- A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

- Extent of Testing: Test completed and cured sealant joints as follows:
 - Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
 - Perform 1 test for each 1000 feet (300 m) of joint length thereafter or 1 test per each floor per elevation.
 - Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
 - For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
 - Inspect tested joints and report on the following:
 - Whether sealants filled joint cavities and are free of voids.
 - Whether sealant dimensions and configurations comply with specified requirements.
 - Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 - Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
 - Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.

- Joint Locations:
 - Isolation and contraction joints in cast-in-place concrete slabs.
 - Other joints as indicated.
- Urethane Joint Sealant: Immersible, single component, pourable, traffic grade.
- Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- B. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces subject to water immersion.

- Joint Locations:
 - Joints in pedestrian plazas.
 - Other joints as indicated.
- Urethane Joint Sealant: Immersible, single component, pourable, traffic grade.
- Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- C. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal non-traffic surfaces.

- Joint Locations:
 - Construction joints in cast-in-place concrete.
 - Joints between plant-precast architectural concrete units.
 - Control and expansion joints in unit masonry.
 - Joints in exterior insulation and finish systems.
 - Joints between different materials listed above.
 - Perimeter joints between materials listed above and frames of doors, windows and louvers.
 - Control and expansion joints in ceilings and other overhead surfaces.
 - Other joints as indicated.
- Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 50.
- Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- D. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

- E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces.

- Joint Locations:
 - Control and expansion joints on exposed interior surfaces of exterior walls.
 - Perimeter joints of exterior openings where indicated.
 - Title control and expansion joints.
 - Vertical joints on exposed surfaces walls and partitions.
 - Perimeter joints between interior wall surfaces and frames of interior doors and windows.
 - Other joints as indicated.
- Joint Sealant: Latex
- Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces.

- Joint Sealant Location:
 - Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - Title control and expansion joints where indicated.
 - Other joints as indicated.
- Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, Silicone Single component, nonsag, mildew resistant, acid curing
- Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

- G. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal non-traffic surfaces.

- Joint Location:
 - Acoustical joints where indicated.
 - Other joints as indicated.
- Joint Sealant: Acoustical.
- Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION 07 92 00

SECTION 09 91 13 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, Drawings, Specifications and the Sections included under Division 1, General Requirements and References are included as a part of this Section as though bound herein.

1.2 SECTION INCLUDES

- A. Provide labor, material, services and equipment necessary to furnish and install work as indicated and as specified herein, which includes, but is not limited to:

- Exterior paint and coating systems.

1.3 REFERENCES

- A. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products
- B. ASTM D3359 - Standard Test Methods for Measuring Adhesion by Tape Test
- C. ASTM D4442/92 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood Base Materials
- D. EPA - Method 24
- E. GS-11, GC-03
- F. NACE International (National Association of Corrosion Engineers) - Industrial Maintenance Painting
- G. NPCA (National Paint and Coatings Association) - Guide to U.S. Government Paint Specifications
- H. Paint - Certified Product List - Florida Department of Agriculture and Consumer Services
- I. PDCA (Painting and Decorating Contractors of America) - Architectural Painting Specifications Manual
- J. PDCA Standard P1-04 Touchup Painting and Damage Repair; Financial Responsibility
- K. PDCA Standard P5-04 Benchmark Sample Procedures for Paint and other Decorative Coating System
- L. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual
- M. SSPC-SP 1 - Solvent Cleaning
- N. Modern Guide to Paint Specifications (current edition) - Standard Type I

1.4 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this section.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product:
- Product characteristics
 - Surface preparation instructions and recommendations
 - Primer requirements and finish specifications
 - Storage and handling requirements
 - Application methods
 - Cautions and VOC levels, certification from manufacturer that products comply with local regulations controlling volatile organic compounds (VOC's).
 - Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
 - Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.
- B. Samples:
- Submit a complete set of color chips representing the full range of manufacturer's color samples available.
 - Submit two 9" x 9" samples illustrating selected colors and textures for each type.

1.6 INFORMATION SUBMITTALS

- A. Closeout Documents:
- Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as "Customize Project Color and Product Information" by Sherwin-Williams or equal. Manual shall include an Area Summary with finish schedule designating where each product/color/finish was used. It shall also include care and Cleaning instructions, touch up procedures, and a Product Data Sheet for each product used.

1.7 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
- Architect will select one surface to represent surfaces and conditions for application of each paint system.
 - Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. and at exterior inside and outside corner.
 - Other Items: Architect will designate items or areas required.
 - Final approval of color selections will be based on mockups.
 - If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
 - Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum 5-years documented experience.
- B. Applicator: Company specializing in performing the work of this section with minimum 5-years documented experience.

1.9 REGULATORY REQUIREMENTS

- A. Conform to applicable code for flame and smoke rating requirements for finishes.
- B. Painting manufacturer and Contractor shall conform to Federal Rules and Regulations, Vol. 63, No. 176, September 11, 1998, State and local VOC (Volatile Organic Compound) Regulations in area where Project is located. Notify Architect in writing if variations to Specifications herein are required.
- VOC content shall be a maximum 350 gm/liter, unless noted otherwise.
- C. VOC Content: Determine VOC (Volatile Organic Compound) content of solvent borne and waterborne paints and related coatings in accordance with EPA Method 24 or ASTM D3960.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
- Maintain containers in clean condition, free of foreign materials and residue.
 - Remove rags and waste from storage areas daily.
- B. Storage:
- Store paint materials in a properly ventilated area at the temperature range r required by the manufacturer.
 - Store and dispose of solvent-based materials and materials used with solvent-based materials in accordance with manufacturer's and other regulating authorities having jurisdiction.

1.11 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.12 MAINTENANCE MATERIAL

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- Paint: 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCT 2.1

2.1 MANUFACTURERS

- A. Acceptable Manufacturers
 1. The painting schedule is based on products manufactured by the Sherwin-Williams Company.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Sherwin Williams
 2. Benjamin Moore & Co.
 3. PPG Industries

2.2 COMPATIBILITY

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists".
- B. Paint materials and equipment shall be compatible in use; finish coats shall be compatible with prime coats; prime coats shall be compatible with the surface to be coated; tools and equipment shall be compatible with the coating to be applied.
 1. Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristic of finish materials to ensure use of compatible primers.
 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. Adhesion Test: Provide adhesion X-cut and tape test for primer adhesion per ASTM D3359 for every 200 s.f. of primed area.
- D. Thinners, when used, shall be only those thinners recommended for that purpose by the manufacturer of the material to be thinned.
- E. The term "paint," as used herein, includes enamels, paints, sealers, stains, fillers, emulsions, and other coatings, whether used as prime, intermediate, or finish coats.

2.3 ACCEPTANCE OF SPECIFICATION

- A. By submitting a proposal, the Contractor has reviewed the bidding documents with the painting subcontractor and accepts the Specifications as sufficient to produce approved painting results. If the painting subcontractor contends that the materials or number of coats specified will not produce satisfactory results, he shall so notify the Architect directly or indirectly through a Bidding Contractor 14 days prior to receipt of bids for proper action.
- B. The type of material to be used and the number of coats to be applied are listed in the "Painting Schedule" of this section of these specifications. Also refer to Room Finish Schedule.
 1. Paint exposed surfaces whether or not colors are designated in schedules, except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from standard colors or finishes available.
 2. The Architect shall not be limited in the number of colors selected for single space or for the complete Project.

2.4 PAINTING SCHEDULE

- A. Concrete (Cast-In Place Precast Concrete, Cement Plaster and Simulated Stucco)
 1. Latex Systems
 - a. Satin Finish
 - 1st Coat: S-W Loxon Concrete & Masonry Primer Sealer, A24W8300 (3.2_dry) - MPI#3
 - 2nd Coat: S-W SuperPaint Acrylic Satin, A89 Series - MPI#15
 - 3rd Coat: S-W SuperPaint Acrylic Satin, A89 Series (1.4-mil dry per coat)
 - B. Masonry
 1. Latex Systems
 - a. Satin Finish
 - 1st Coat: S-W Pro Industrial Heavy Duty Block Filler, B42W150 (8-10.5mil dry) - MPI#4 X-Green
 - 2nd Coat: S-W SuperPaint Acrylic Satin, A89 Series - MPI#15
 - 3rd Coat: S-W SuperPaint Acrylic Satin, A89 Series (1.4-mil dry per coat)
- A. Paints and Coatings - General
 1. Unless otherwise indicated, provide factory-mixed coatings.
 2. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application.
 3. Do not reduce, thin, or dilute coatings or add materials to coatings unless approved in manufacturer's product instructions.
 4. Confirm VOC's need by using the products MSDS sheets.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

2.5 ACCESSORIES

- A. Coating application accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows (Do not apply finishes unless moisture content of surfaces are below the following maximums):
 1. Concrete: 12 percent.
 2. Masonry (Clay and CMUs): 12 percent.
 3. Plaster: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
- E. Do not begin application of coatings until substrates have been properly prepared; notify Owner's Representative of unsatisfactory conditions before proceeding.
- F. If substrate preparation is the responsibility of another installer, notify Owner's Representative of unsatisfactory preparation before proceeding.
- G. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.
- H. Test shop applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- C. The surface shall be dry and in sound condition. Remove all oil, dust, dirt, loose rust, peeling paint, or other contamination to ensure good adhesion.
- D. Provide barrier coats over incompatible primers or remove and re-prime. Notify Architect in writing about anticipated problems using the specified finish coat material with substrates primed by others.
- E. Impervious Surfaces:
 1. Remove mildew by scrubbing with solution of tri_sodium phosphate and bleach.
 2. Rinse with clean water and allow surface to dry.
- F. Aluminum Surfaces:
 1. Remove all oil, grease, dirt, oxide, and other foreign material by cleaning per SSPC-SPI Solvent Cleaning.
- G. Block/Unit Masonry (Cinder and Concrete)
 1. Remove all loose mortar and foreign material.
 2. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners.
 3. Let concrete and mortar cure at least 30 days at 75°F unless the manufactures products are designed for application prior to the 30-day period.
 4. The pH of the surface and moisture content must be in accordance with the paint manufacturer's recommendations prior to painting.
- H. Concrete:
 1. Remove contamination by washing with an appropriate cleaner, rinse thoroughly.
 2. The pH of the surface and moisture content shall be in accordance with the paint manufacturer's recommendations prior to painting.
 3. Allow the surface to thoroughly dry.
 4. Clean concrete floor surfaces scheduled to be painted with a commercial solution of muriatic acid or other etching cleaner. Flush floor with clean water to neutralize acid and allow to dry before painting.
 5. Fill bug holes, air pockets, and other voids under another section with a cement-patching compound of sufficient cohesive strength to support the specified coating system.
 6. Clean per SSPC-SPI using detergent and water or a degreasing cleaner to remove greases and oils.
 7. Apply a test area, priming as required.
 8. Allow the coating to cure in accordance with the manufacturer's recommendation before testing.
 9. Perform adhesion tests in accordance with ASTM 3359 Adhesion by Tape Test.
 10. If adhesion is poor, then notify Owner's representative that additional surface preparation under another section is necessary to remove pre-treatments or contaminants that interfere with adhesion of the coating.
- I. Plaster Cement Surfaces:
 1. Shall allow to thoroughly dry for at least 30 days before painting, unless the manufacturer's products are designed for application prior to the 30-day period.
 1. Bare plaster must be cured and hard prior to painting.
 2. Correct any soft, porous, or powdery plaster per requirements under another section of the specifications.

3.3 MATERIALS PREPARATION

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing, and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.
- D. Use only thinners approved by the paint manufacturer and only within recommended limits.
- E. Preparation and testing of existing painted surfaces, indicated to be repainted to accommodate new work, shall be performed as work of this section.

3.4 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual".
- B. Use applicators and techniques suited for paint and substrate indicated.
- C. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- D. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- E. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.5 FIELD QUALITY CONTROL

- A. The right is reserved by Owner/Architect to invoke the following material testing procedure in addition to other tests indicated when and as often as he deems necessary during the period of field painting.
- B. Engage services of an independent testing laboratory to sample paint being used. Samples of materials delivered to project site will be taken, identified and sealed, and certified in presence of Contractor.
- C. Testing laboratory will perform appropriate tests for one or each of the following characteristics: Abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, recoating, skinning, color retention, alkali resistance, and quantitative materials analysis.
- D. If test results show that material being used does not comply with specified requirements, Contractor may be directed to stop painting work, and remove noncomplying paint; pay for testing; repaint surfaces coated with rejected paint; remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the 2 coatings are noncomparable.

3.6 EQUIPMENT

- A. Paint the following work where exposed.
 1. Uninsulated metal and plastic piping.
 2. Pipe hangers and supports.
 3. Metal and plastic conduit.

3.7 CLEAN-UP AND PROTECTION

- A. Upon completion of painting work, clean window glass and other paint_spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.
- B. Provide "Wet Paint" signs as required to protect newly painted finishes.
- C. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- D. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- E. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- F. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.8 TOUCH-UP AND DAMAGE REPAIR

- A. Contractor shall repair all deficiencies in coating application in accordance with PDCA Standard P1-04.
- B. Inform Owner's representative of all damage to properly painted surfaces and receive authorization prior to performing damage repair.

3.9 SITE ENVIRONMENTAL PROCEDURES

- A. Indoor Air Quality: Provide temporary ventilation as specified in Section - Temporary Controls.
- B. Waste Management: As specified in Section - Temporary Construction Facilities and as follows:
 1. Coordinate with manufacturer for take-back program. Set aside scrap to be returned to manufacturer for recycling into new product. Close and seal all partially used containers of pain to maintain quality as necessary for reuse.

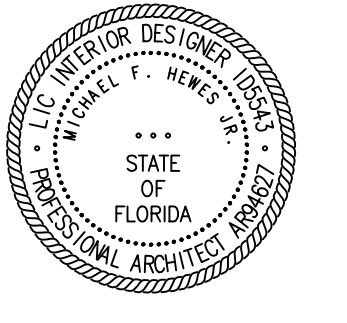
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Revisions	
No.	Note

TO THE BEST OF MY KNOWLEDGE, THE PLANS AND SPECIFICATIONS CONFORM WITH THE MINIMUM BUILDING CODES.



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