

STRUCTURAL DESIGN CRITERIA

CODES:

Florida Building Code, 2017
 ASCE 7-10, Minimum Design Loads for Buildings and other Structures
 (for Wind Load Design Only).
 Building Code Requirements for Reinforced Concrete (ACI 318-11)
 Specifications for Structural Concrete for Buildings (ACI 301-05)
 Building Code Requirements for Masonry Structures (ACI 530-13)
 AISC Manual of Steel Construction, ASD, (Thirteenth Edition)
 SJI Standard Specifications for steel joist and joist girders - 43rd Edition

DEAD LOADS:

Roof: Roofing.....10 PSF
 Structure.....10 PSF
 Ceilings.Mech./Elec.....10 PSF
 Total30 PSF

ROOF LIVE LOADS: Lr = 20xR1xR2 (PSF), 12<Lr<20 (PSF)

Roof Design Load (PSF):					
R2 Roof Slope (in./ft.)	R1 Area (sq.ft.)				
	<200	300	400	500	≥600
≤4:12	20	18	16	14	12

WIND LOADS (ASCE 7-10)

Vult = 150 Mph, Vasd = 116 Mph
 Category III, kd = 0.85
 Exposure = "C"
 Internal Coefficient GC pi = ± 0.18, Enclosed Building
 Components and Cladding ASD Design Wind Pressure (PSF):
 Edge Zone: varies
 Site Walls: 31 psf
 Roof Top Equipment:
 Lateral = 59 PSF
 Uplift = 46 PSF

SEE SHEET S1.6 FOR WIND PRESSURES.

CONCRETE STRENGTH AT 28 DAYS:

All Concrete Unless Otherwise Indicated 3000 PSI

Tilt-up Concrete Walls 3000 PSI

REINFORCING:

Welded wire fabric shall conform to ASTM A185
 All reinforcing bars ASTM A615-60 60,000 PSI
 All stirrups and ties ASTM A615-40 40,000 PSI

CONCRETE MASONRY UNITS:

ASTM C90 or C129, standard weight units, fm = 1500 PSI
 Mortar Type "S": 1800 PSI
 Concrete Grout: 3000 PSI
 Continuous masonry inspection is required during construction.

STRUCTURAL STEEL:

All structural wide flange shapes ASTM A992, Fy = 50 ksi, u.n.o.
 All shapes and plates u.n.o. = ASTM A36 = 36,000 KSI
 Tube Steel : ASTM A500, Grade B, Fy = 46,000 PSI
 Pipe Steel : ASTM A53, Type E or S, Fy = 35,000 PSI
 Shop and Field welds: E70XX Electrodes
 Structural Bolts: ASTM A325, Bearing Type Connections
 Structural Bolts: ASTM A307 for Secondary Connections where indicated only.
 All bolts cast in concrete: ASTM A36 or ASTM A-307

SOIL BEARING VALUE:

Assumed Allowable soil bearing pressure after compaction: 2500 PSF
 See Soils Report and Specifications for compaction requirements.

STRUCTURAL NOTES

SUBMITTALS:

Submit shop drawings for all prefabricated or field fabricated components, including reinforcing, structural steel, steel joist, metal decking, etc. Submit product data showing compliance for products and components, including concrete, masonry, structural steel, etc. Submittals shall be in electronic PDF format UNO. For Non-Electronic submittals, submit a reproducible copy plus six prints of all drawings, unless otherwise indicated. Submit six copies of product data. Submit drawings and calculations signed and sealed by a registered Professional Engineer for all manufacturer or contractor designed components.

TESTING:

The Contractor will provide testing services for Earthwork, Concrete, Structural Steel, and others as may be required. General Contractor shall coordinate this work with the Testing Laboratory.

SECTION 02224 - EXCAVATING, BACKFILLING AND COMPACTION FOR STRUCTURES

PART 1 FOUNDATION SUBGRADE PREPARATION:

1.01 GENERAL

A. General Report has been prepared by Universal Engineering Sciences, South Daytona, Florida, Report No.132712, dated October 17, 2017. Contractor shall obtain a copy of the report and is responsible for the preparing the site in accordance with report, except where more stringent requirement are specified.

B. Existing Structures: Where the proposed foundations would be located adjacent to, or within one footing width of the existing foundations of the existing buildings, the proposed foundations shall be positioned so that the bottom elevations of the proposed foundations are equal to the bottom elevations of the existing foundations. It is noted that the foundation elements of the existing building must be adequately supported during excavation and placement of the proposed foundations. Methods of supporting the existing foundation should be determined by the Contractor, but may include bracing, underpinning and/or other appropriate methods.

Some settlement of the existing structures foundations can occur if precautions are not taken during construction. This settlement can result in cracking of the existing structures. The contractor shall take precautions during construction to prevent settlement and any damage to adjacent structures.

C. Special care shall be taken to ascertain that all existing underground structures are removed from the proposed construction area. Pipes shall be removed as they may serve as conduits for subsurface erosion resulting in excessive settlements. Overexcavated areas resulting from the removal of underground structures and/or debris shall be backfilled as described under the "Suitable Fill Material and the Compaction of Fill Soils" Section.

D. General Excavation Requirements:

- The entire structure area plus a (5) foot margin beyond the perimeter foundation shall be stripped and cleared of all surface vegetation, root laden topsoils, or concrete rubble, and grubbed of roots and stumps. Strip and clear at least (20) feet into the future addition at the west side of the building.
- After stripping, the entire foundation area it shall be overexcavated to a depth of 5 feet below the bottom of the deepest footings, or 5 feet below the existing grade, whichever is lower. Extend the overexcavation and compaction at least 20 feet into the proposed future addition area on the west side of the building. The excavated surfaces shall be thoroughly moistened to a damp condition with an ample supply of water and then compacted with overlapping passes of a large self-propelled vibratory drum roller or equivalent.
- The compaction effort described above shall be continued until a density equivalent to 98 percent of the Modified Proctor maximum density (ASTM D-1557) has been achieved for a minimum depth of 2 feet below the excavated ground.
- Following satisfactory completion of the initial compaction of the excavated bottom areas at specified minimum depths, the areas may be brought up to finished subgrade levels. The fill shall consist of fine sand with less than 10% passing the No 200 sieve, free of rubble and other unsuitable materials. The on-site fine sands are ideal for use as fill material below the structure. Any imported fill materials should be tested and approved prior to acquisition. Approved sand fill should be placed in loose lifts not exceeding 12 inches in thickness and should be compacted to a minimum of 98% of the maximum modified Proctor dry density (ASTM D-1557) Density tests to confirm compaction should be performed in each lift fill before the next lift is placed.

5. Individual footing areas (ie, excavations) should be compacted with hand-held tampers (plate tampers or jumping jacks) to achieve 98 percent density (ASTM D-1557) for a minimum depth of 2 feet below footing bottom elevations.

6. Backfill soils placed adjacent to footings or walls below or above grade shall be carefully compacted with a light rubber-tired roller or vibratory plate compactor to avoid damaging the footings or walls. Approved sand fills placed in footing excavations above the bearing level, and in other areas which are expected to provide support or foundation embedment constraint, shall be placed in loose lifts not exceeding 12 inches and should be compacted to a minimum of 98% of the maximum modified Proctor dry density (ASTM D-1557).

7. Earthwork operations shall take place under the full-time observation of the geotechnical field technician.

8. Care shall be exercised to avoid damaging any neighboring structures while the compaction operation is underway. Prior to commencing compaction, occupant of adjacent structures shall be notified and the existing condition (i.e. cracks) of the structures and documented with photographs and survey (if deemed necessary). Compaction shall cease if deemed detrimental to adjacent structures, and the Architect and Geotechnical Engineer shall be notified immediately.

E. Suitable Fill Material and the Compaction of Fill Soils

1. All fill materials shall be free of organic materials, such as roots and vegetation. As a general guide, use fill with 3 to 10 percent by dry weight of material passing the U.S. Standard No. 200 sieve size. The fine sand, slightly silty fine sand and slightly clayey fine sand are suitable as fill materials and, with proper moisture control, should densify using standard, non-vibratory compaction methods. Soils with more than 10 percent passing the No. 200 sieve will be more difficult to compact due to their inherent nature to retain soil moisture.

2. All structural fill shall be placed in level lifts not to exceed 12 inches in uncompacted thickness. Each lift shall be compacted by means of static compaction equipment to at least 98 percent of the modified Proctor (ASTM D-1557) maximum dry density value. The filling and compaction operations shall continue in lifts until the desired elevation(s) is achieved. If hand-held compaction equipment is used, reduce the lift thickness to 4 inches. Use hand held compaction equipment immediately adjacent to existing structures.

F. Foundation Support by Spread Footings and Foundation Compaction Criteria

1. Excavate the foundations to the proposed bottom of footing elevations and, thereafter, verify the in-place compaction for a depth of 24 inches below the footing bottoms. If necessary, compact the bottom of the excavations to achieve a minimum dry density equivalent to 98 percent of the modified Proctor maximum dry density (ASTM D-1557) value for a depth of 24 inches below the footing bottoms.

2. Brace all retaining walls during backfill and compactions operations.

G. Floor Slab Vapor Barrier and Slab Compaction Requirements

1. Compaction beneath all floor slabs shall be verified for a depth of 24 inches and meet the 98 percent criteria (modified Proctor, ASTM D-1557).

2. Precautions shall be taken during the slab construction to minimize moisture entry from the underlying subgrade soils. This shall be achieved through the installation of an impervious membrane (vapor barrier) between the subgrade soils and floor slab. See concrete specifications.

H. Dewatering

1. Dewater if required to achieve the necessary stripping, overexcavation, and subsequent construction, backfilling, and compaction requirements presented in the preceding sections. The actual method(s) of dewatering shall be determined by the contractor, however, regardless of the method(s) used, draw down the water table sufficiently, a minimum of two to three feet, below the bottom of the excavation(s) to preclude "pumping" and/or compaction-related problems with the foundation soils.

2. Dewatering shall be accomplished with the knowledge that the permeability of soil decreases with an increasing silt and clay content. Therefore, a silty fine sand is less permeable than a fine sand. The SP,SP/SM, and SM type soils can usually be dewatered by well pointing or ditch/sump methods.

H. Temporary Excavations:

The Contractor shall be familiar with local, state and federal safety regulations, including current Occupational Safety and Health Administration (OSHA) excavation and trench safety standards. Construction site safety is the responsibility of the Contractor. The Contractor shall also be responsible for the means, methods, techniques, sequences, and operations of the construction. The Contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should not exceed those specified in local, state, or federal safety regulations; e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926. Consult with Geotechnical Engineer regarding types of soil present at the site and temporarily side slope inclinations. Soil types may vary throughout the site.

1.02 TESTING

A. Soil Testing: The Contractor will employ a testing laboratory to perform tests and to submit test reports.

B. Sampling and testing for quality control during placement will include the following, and as directed by the Architect.

- Granular Fill Testing: Make gradation test on each sample in accordance with ASTM C 136.
- Soil Materials: Test for liquid limit in accordance with ASTM D 423, plasticity index in accordance with ASTM D 424, material finer than No. 200 sieve in accordance with ASTM D 1140. One test shall be required from each source and each change in type of material. If a blend is necessary, one test shall be required for each soil used in the blend and one test for proposed blend.
- In-Place Density Tests: Make tests in randomly selected locations in accordance with ASTM D 1557 as follows:

MATERIALS TEST FREQUENCY

- Fill and Backfill 1 per lift per 5000 sq.ft.
- Subgrade 1 per lift per 5000 sq.ft. per foot of depth as indicated in soils report.
- Continuous Wall Footing 1 test every 200 lin. ft. Footings.
- Individual Column Footing 1 test at every one out of four Footings.

SECTION 03100 - CONCRETE FORMWORK

PART 1 GENERAL:

1.01 DESCRIPTION:

The work under this Section of the Specifications includes all labor, materials, equipment and services necessary to complete the concrete formwork as shown on the Drawings and herein specified.

1.02 RELATED SECTIONS:

- 03210 Concrete Reinforcement
- 03311 Normal Weight Structural Concrete

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TO THE BEST OF MY KNOWLEDGE THE DRAWINGS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.
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NO. △	REVISION/ SUBMISSIONS	DATE
1	ADDENDUM No.1 FOUNDATION PACKAGE	03/23/18
SHT. TITLE		
SEAL	COMMISSION NO. 1613	SCALE:
NAME: EDDIE L. COX, P.E.	PROJECT ARCH. JEH	SHEET NO.
REG. NO.: 27499	DRAWN: RLP	S1.0
EMAIL: ecocx@fcien지니어ing.com	CHECKED: ELC	
	DATE: 28-FEB-2018	



1.03 QUALITY ASSURANCE:

Work performed shall be in accordance with American Concrete Institute (ACI) Standards.

- A. Specifications for Structural Concrete for Buildings (ACI 301-95).
- B. Building Code Requirements for Reinforced Concrete (ACI 318-02).
- C. Proposed Revision and the Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete (ACI 304-95).
- D. Recommended Practice for Concrete Formwork (ACI 347-95) for Shoring and Re-shoring in Multi-story Construction, as shown herein specified.

PART 2 PRODUCTS:

2.01 MATERIALS:

A. Forms for Concrete:

- 1. Plywood, boards, metal or other acceptable materials. Plywood shall be not less than 3/4 inch thick, conforming to U.S. Product Standard PS-1 for B-B concrete form Plywood, Class 1, Exterior Grade, mill oiled and edge sealed.

- 2. Earth forms permitted based on soil conditions.

B. Accessories:

- 1. Form Ties: Snap tie type as best suited to support loads of forms and concrete. Ties shall be removed to a minimum depth of one inch inside of concrete.
- 2. Form Releasing Agent: Non-staining form oil, type as selected to provide a positive release of forms from concrete surface.

PART 3 EXECUTION:

3.01 Installation:

A. Shapes and Dimensions:

- 1. Construct forms to the exact sizes, shapes, lines, and dimensions required to obtain accurate alignment, location, grades, level and plumb work in the finished structure.
- 2. Provide for offsets, anchorages and inserts, and other features required in the work.

B. Shoring And Re-Shoring:

- 1. Shore and reshore floor directly under floor or roof being placed, so that loads from construction above will transfer directly to these shores. Space shoring in stories below this level in such a manner that no floor or member will induce tensile stress in concrete members where no reinforcing steel is provided. Extend shores beyond minimums to ensure proper distribution of loads throughout structure.
- 2. Remove Shores and Re-shore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate re-shoring to safely support work without excessive stress or deflection.
- 3. Keep re-shores in place a minimum of 7 days after placing upper tier, and longer if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

C. Formwork:

1. Responsibility:

Contractor shall be fully responsible for adequacy of formwork in its entirety. Forms shall support loads they will be required to sustain and shoring and reshoring shall maintain their dimensional and surface correctness to provide members required by Drawings.

2. Application of Form Coating:

Immediately before placing reinforcing, coat faces of forms in contact with concrete with form releasing agent, applied in compliance to manufacturer's recommendations.

3. Removal of forms:

Formwork supporting weight of concrete, such as beam soffits, joists, slabs and other structural elements, may not be removed in less than 3 days and until concrete has attained design minimum compressive strength at 28 days. Determine the potential compressive strength of in place concrete by testing field-cured specimens representative of concrete location or members.

- 4. Form facing material may be removed 1 day after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

- 5. Apply curing compound to all formed surfaces when formwork is removed in less than 7 days.

- 6. Reused forms shall be thoroughly cleaned of dirt, debris, concrete, and foreign matter. Forms shall not be reused if they have developed defects which would affect their tightness and strength.

D. Adjust and Clean:

- 1. Repair any form members which have been damaged prior to placement of concrete. Maintain forms in excellent condition prior to placement, and during curing of all concrete.

SECTION 03210 - CONCRETE REINFORCING

PART 1 GENERAL:

1.01 DESCRIPTION:

The work under this Section of the Specifications includes all labor, materials, equipment and services necessary to complete the concrete reinforcement as shown on the Drawings and herein specified.

1.02 RELATED SECTIONS:

- A. 03100 Concrete Formwork

- B. 03311 Normal Weight Structural Concrete

1.03 QUALITY ASSURANCE:

Work performed shall be in accordance with American Concrete Institute (ACI) Standards.

- A. Specifications for Structural Concrete for Buildings (ACI 301-95).

- B. Building Code Requirements for Reinforced Concrete (ACI 318-02).

- C. Proposed Revision and the Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete (ACI 304-95).

- D. Recommended Practice for Concrete Formwork (ACI 347-95) for Shoring and Re-shoring in Multi-story Construction, and as herein specified.

1.04 SUBMITTALS:

Submit Shop Drawings for approval of reinforcement showing bar sizes and arrangements, splice details, notes, support bars, and accessories. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures". Shop drawing submittals shall include a minimum of one reproducible sepi and three prints of each sheet.

PART 2 PRODUCTS:

2.01 MATERIALS:

- A. Reinforcing Bars: New deformed bars free from rust, scale, and oil complying with ASTM A 615, manufactured from billet steel, Grade 60, yield strength 60,000 psi minimum.
- B. Ties and Stirrups: ASTM A615, Grade 40 or Grade 60.
- C. Welded Wire Fabric: ASTM A 185, cold drawn wire, size and gage as indicated on drawings.
- D. Foundations: Use precast concrete pads of proper depth. Do not use wire chairs. Use #5 standees for top steel.
- E. Reinforcing Accessories: Stainless steel, Galvanized steel or plastic-tipped accessories with up-turned legs as required for supporting and fastening reinforcing bars and welded wire fabric in place as per CRSI recommendations, and as shown on the drawings.

PART 3 EXECUTION:

3.01 INSTALLATION:

- A. General: Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Arrange, space and securely tie reinforcement together with minimum 16 gage wire to hold reinforcement accurately in position during concrete placement operations. Hold reinforcing tolerance position. Use only approved shop drawings to position reinforcing.
 - 1. Lap Splices: Footings, Walls, Columns, Beams, Slabs: 36 diameters or 2'-0 min., whichever is more. Masonry Cell Reinforcing: No. 5 = 45" min. Temperature Reinforcing: 20 diameters or 1'-0 min., whichever is more. Welded Wire Mesh: 8" lap
- B. Vertical Reinforcing: Reinforcing in columns shall be continuous; lap as shown on the drawings. Dowel reinforcing shall be as detailed on approved submittals.
- C. Horizontal Reinforcing: Reinforcing in beams shall be continuous, lapping as detailed on approved submittals.
- D. Welded Wire Fabric Reinforcement: Cut to required size and lay flat in place. Lap fabric 8" at sides and ends and securely wire together and to other reinforcement at frequent intervals with 16 gage wire.
- E. Architect shall be notified 48 hours in advance of each pour in order to schedule periodic inspections.
- F. Coverages: Concrete protection for reinforcement shall conform to ACI 318 and approved placement drawings. Minimum requirements include the following:
 - 1. Concrete deposited against the ground: 3".
 - 2. Concrete exposed to weather: 2" for reinforcing bars larger than No. 5 and 1-1/2" for No. 5 bars and smaller.
 - 3. Concrete not exposed directly to ground or weather: 3/4 in. for slabs, 1-1/2" for beams and walls.
 - 4. Concrete in columns: 1-1/2".
- G. REINFORCING ACCESSORIES: All accessories shall have upturned legs and be stainless steel, plastic dipped, or hot dipped galvanized after fabrication. Individual high chairs shall be provided under support bars, shall be of proper height for slab thickness, and shall not be over 4'-0" O.C. maximum, unless otherwise indicated. Support bars shall not extend over 1'-0" beyond outer chairs. Support bars shall be No. 5 continuous, 4'-0" O.C. maximum, unless otherwise indicated.

SECTION 03311 - NORMAL WEIGHT STRUCTURAL CONCRETE

PART 1 GENERAL:

1.01 DESCRIPTION:

The work under this Section of the Specifications includes all labor, materials, equipment and services necessary to complete the concrete work as shown on the Drawings and herein specified.

1.02 RELATED SECTIONS:

- A. 03100 Concrete Formwork

- B. 03210 Concrete Reinforcement

- C. 03470 Site Cast Tilt-up Concrete

1.03 QUALITY ASSURANCE:

Work performed shall be in accordance with American Concrete Institute (ACI) Standards.

- A. Specifications for Structural Concrete for Buildings (ACI 301-95).

- B. Building Code Requirements for Reinforced Concrete (ACI 318-02).

- C. Proposed Revision and the Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete (ACI 304-95).

- D. Recommended Practice for Concrete Formwork (ACI 347-95) for Shoring and Re-shoring in Multi-story Construction, and as herein specified.

1.04 SUBMITTALS:

Design mixes for each class of concrete shall be submitted for review prior to pouring any concrete. The design mixes shall list all ingredients and admixtures and shall list the slump. Submittals shall include current (within last 12 months) field experience or trial batch data to indicate satisfactory performance of each mix design used. Submit manufacturer data for all admixtures.

1.05 ADJUSTMENT TO CONCRETE MIXES:

Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in the work.

PART 2 PRODUCTS:

2.01 Materials:

- A. Portland Cement: ASTM C 150, Type I.
- B. Aggregates: ASTM C33/Fine and coarse aggregates.
- C. Water: Potable, clean and free from deleterious amounts of acids, alkalis, or organic materials.
- D. Fly Ash and Pozzolans: ASTM C 618, except that loss on ignition of Class F fly ash shall not exceed 6%. Limit use of fly ash not to exceed 25% of cement content by weight. Provide fly ash from a single source for exposed concrete.
- E. Slag: ASTM C989, Grade 120. "Standard Specification for Ground Iron Blast - Furnace Slag for use in Concrete and Mortars." Limit use of slag not to exceed 50 percent of cement content by weight.
- 1. Acceptable products:
 - a. NEWCEM
- F. Water-Reducing Admixture: ASTM C494, Type A, type to density of concrete but containing no calcium chloride.
- G. Air-Entraining Admixture: ASTM C260.
- H. Curing Materials: ASTM C309, method as selected to keep concrete moist during curing period. In the case curing compounds are used in areas where waterproofing membrane is required, the compound must be type that is compatible with waterproofing membrane.
- I. Non-Shrink Grout: CRD-C 588, factory pre-mixed grout.
- J. Joint sealant material: Polysulfide based, one-part Elastomeric sealant, complying with FS TT-S-00230, Class A, Type II (non-sag).
- K. Vapor Retarder: Provide vapor retarder cover over prepared base material where indicated below slabs on grade. Use only materials which are resistant to decay when tested in accordance with ASTM E1745 class A or B and ASTM E 154, as follows:
- L. Expansion Joint Filler: Shall be non-extruded resilient type, conforming to ASTM D1751 (bituminous) for exterior use.
 - Polyethylene sheet not less than 10 mils thick with 6" lapped and taped joints.

2.02 MIXES:

A. Classes of Concrete:

- 1. Standard Weight Concrete: 3000 psi strength at 28 days, 470 lbs. cement per cu. yd. minimum, w/c ratio, 0.58 maximum.
- 2. Standard Weight Concrete for Columns and Beams only (2" pump mix): 3000 psi strength at 28 days, 470 lbs. cement per cu. yd. minimum, w/c ratio, 0.58 maximum, 900 lbs. minimum of 3/8" coarse aggregate.
- 3. Standard Weight Concrete for Masonry Fill Cells Only: 3000 psi strength at 28 days with coarse aggregate 3/8" minimum, w/c ratio .65 maximum. Note: This class of concrete not to be used for columns and tie beams. Test in accordance with ASTM C 1019.

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TO THE BEST OF MY KNOWLEDGE THE DRAWINGS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.
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NO. 	REVISION/ SUBMISSIONS	DATE
1	ADDENDUM No.1 FOUNDATION PACKAGE	03/23/18
SHT. TITLE		
SEAL	COMMISSION NO. 1613	SCALE:
NAME: EDDIE L. COX, P.E.	PROJECT ARCH. JEH	SHEET NO.
REG. NO. 27499	DRAWN: RLP	S1.1
EMAIL: ecox@fcengineering.com	CHECKED: ELC	
	DATE: 28-FEB--2018	



B. Slump Limits:
Proportion and design mixes to result in concrete slump at point of placement as follows:

- Ramps and sloping surfaces: Not more than 3".
- Reinforced foundation systems: Not less than 3" and not more than 5".
- Reinforced masonry filled cells: For pea gravel concrete, no less than 9" or more than 11".
- All other concrete: Not less than 3" and not more than 5".
- Addition of water at the site to increase slump is prohibited.

C. Air Entrainment:
2% to 4% air, all concrete.

D. Ready-Mix Concrete:
Concrete shall be transit-mixed concrete batched, mixed and supplied in accordance with ASTM C 94. Total mixing time shall not exceed 1 1/2 hours. Reduce mixing time in accordance with ASTM C 94.

PART 3 EXECUTION:

3.01 Preparation:
The Contractor shall coordinate the setting of all bolts, inserts, anchors, embeds, sleeves, dovetail slots, and other miscellaneous items as work progresses. The Contractor shall also coordinate openings, slopes, and depressions in concrete slabs as shown on the Drawings.

A. Slabs-on-grade:
All slabs on grade shall be 4" thick, reinforced with 6 x 6 / W1.4 xW1.4 WWF placed in upper third, unless otherwise indicated. Provide control joints at 20'-0" o.c. maximum in each direction, unless otherwise indicated.

3.02 Installation:

A. Placement:
Concrete shall be placed in final position to avoid separation due to rehandling or flowing. Full vibration of mix shall be used to consolidate concrete in forms and around reinforcing.

B. Finishing:

1. Joints: Finish edge along joints neatly with edging tool.
2. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.
3. Smooth-Rubbed Finish: Exterior and interior concrete surfaces which will not be covered by other construction shall receive a smooth rubbed finish.
4. Float and Trowel Finish: All floor slabs to receive finish floorings shall be floated and steel troweled. Slab shall be level with a tolerance of 1/8" in 10' except where drains occur, in which case the floors shall be pitched to the drains in direction indicated on Drawings.
5. Non-Slip Broom Finish: Apply non-slip broom finish to concrete platforms, steps, and ramps, areas to receive hard tile and elsewhere as shown on the drawings.

C. Curing:
Concrete shall be cured in a manner to establish the full strength and to avoid premature drying. All exposed surface concrete slabs, columns, and beams shall be sprayed with curing compound. Formed surfaces shall be sprayed immediately after form removal. Concrete surfaces to receive water-proofing membrane shall be sprayed with a compatible membrane curing compound, and shall be installed per the manufacturer's instructions. Concrete slabs on grade shall be placed over 10 mil. polyethylene vapor barrier with 6" lapped and taped joints.

D. Joints:

1. Construction Joints: Locate and install construction joints, which are not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to the Architect. Proposed construction joint locations shall be submitted for review prior to construction.
2. Provide Keyways at least 1-1/2" deep in construction joints in slabs and footings; approved bulkheads designed for this purpose may be used for slabs.
3. Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints.
4. Contraction (Control) Joints in Slabs-on-ground:
Construct contraction joints in slabs-on-ground to form panels of patterns as shown. Use inserts 1/4" wide x 1/3 of slab depth, unless otherwise indicated.
5. Form contraction joints: Use galvanized metal keyways. Contraction joints may be formed by saw cuts. Saw cuts shall be made as soon after slab finishing as possible without dislodging aggregate.

E. Concrete Surface Repairs:

1. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to Architect.
2. Mix dry-pack mortar, consisting of one part portland cement to 2 1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing.
3. Cut out honeycombs, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.

b. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

3. Structural repairs shall be performed as directed by the Architect/Engineer.

F. EMBEDMENTS, SLEEVES, AND OPENINGS:

It is the responsibility of the Contractor to coordinate the location and installation of anchorage devices cast into the structural frame for the support of material and equipment that is furnished and installed by various trades. All embedded conduit shall not be thinner than standard schedule 40 steel pipe and shall be spaced not less than 4 diameters on center, and outside diameter shall not exceed 1/3 the slab thickness. Aluminum pipe or conduit shall not be embedded in concrete. All penetrations through beams and slabs must be sleeved.

Sleeves or conduit not shown on the structural drawings and larger than 1 1/2" O.D. shall receive written approval prior to placement. Sleeves shall be located a minimum of 1'-0" from the face of any column. Sleeves shall be spaced a minimum of 3 diameters O.C.

Locate all sleeves or conduit passing horizontally through beams at mid depth. Sleeves or conduit not shown on the structural drawings and larger than 1 1/2" O.D. shall receive written approval prior to placement.

Pitch concrete slabs where required for drainage. Concrete shall not be less than the minimum slab or beam thickness shown.

All anchors, inserts, and plate embeds for the support of steel shall be placed in accordance with approved shop drawings in conjunction with these drawings.

PART 4 CONCRETE TESTING:

4.01 Quality Control Testing During Construction:

A. The Contractor will employ a testing laboratory to perform tests and to submit test reports.

B. Sampling and testing for quality control during placement of concrete will include the following and as directed by the Architect. All sampling for pumped concrete shall be performed at the discharge end of the hose, unless otherwise indicated.

C. Sampling Fresh Concrete:
ASTM C 172, except modified for slump to comply with ASTM C 94.

D. Slump:
ASTM C 143; one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.

E. Air Content:
ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure for normal weight concrete; one for each set of compressive strength test specimens.

F. Concrete Temperature:
Test hourly when air temperature is 40 degrees F and below, and when 80 degrees F and above; and each time a set of compression test specimens is made.

G. Compression test for masonry fill concrete:
ASTM C 1019 in accordance with ACI 530.1 "Specifications for Masonry Structures".

H. Compression Test Specimen:
ASTM C 31; one set of 4 standard cylinders (from same batch of concrete) for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.

I. Compressive Strength Tests:
ASTM C 39; one set for each 50 cubic yards or fraction thereof, of each concrete class placed in any one day, or for each 4000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days with the average used for concrete evaluation, and 1 specimen retained in reserve for later testing if required.

1. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
2. When total quantity of a given class of concrete is less than 50 cubic yards, strength test may be waived by Architect if, in his judgment, adequate evidence of satisfactory strength is provided.
3. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
4. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test falls below specified compressive strength by more than 500 psi.

J. Test Results will be reported in writing and sent directly to Architect and Contractor on same day that test are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and material; compressive breaking strength and type of break for 7-day test, and 28-day tests.

K. Additional Tests:
The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

1. Contractor shall pay for such additional testing as may be required, when unacceptable concrete is verified.

L. Defective Work:
Concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes, shall be corrected at the Contractor's expense, without extensions of time.

1. The Contractor shall also be responsible for the cost of corrections to any other work affected by or resulting from corrections of the concrete work.

SECTION 03470
SITE-CAST TILT-UP CONCRETE
PART 1 - GENERAL
1.1 SECTION INCLUDES

- A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following.
1. Site-cast tilt-up concrete panels.
- B. Related Work: The following items are not included in this Section and are specified under the designated Sections:
1. Cast-in-Place Concrete: Requirements for slab-on-grade design and construction and general requirements for concrete used in tilt-up panels.
 2. Sheet Metal Flashing and Trim: Flashing to adjacent materials.
 3. Painting and Coating: Site-finishing of panels as applicable.
- C. Reference Standards: Comply with applicable provisions of the following standards and regulations:
1. AWS D1.1 - Structural Welding Code - Steel.
 2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 3. ASTM A185 - Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement.
 4. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 5. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 6. ASTM C33 - Standard Specification for Concrete Aggregates.
 7. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 8. ASTM C78 - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
 9. ASTM C293/C293M - Standard Test Method for Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading).
 10. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
 11. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete.
 12. ASTM C150 - Standard Specification for Portland Cement.
 13. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 14. ASTM C989/C989M - Standard Specification for Slag Cement for Use in Concrete and Mortars.
 15. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials.
 16. ACI 301 - Specifications for Structural Concrete for Buildings.
 17. ACI 305 - Specification for Hot Weather Concreting.
 18. ACI 306 - Guide to Cold Weather Concreting.
 19. ACI 315 - Standard for Details and Detailing Concrete Reinforcement.
 20. ACI 318 - Building Code Requirements for Structural Concrete.
 21. ACI 551 - Guide to Tilt-Up Concrete Construction.
 22. CRSI Manual of Standard Practice and CRSI Specifications for Placing Reinforcement.
 23. BSR/ASHRAE/ESNA 90.1.
 24. ASHRAE Handbook of Fundamentals.
 25. ASCE 37 - Design Loads on Structures During Construction.
 26. Tilt-Up Concrete Association Wind Bracing Guidelines (TCA).
 27. Tilt-Up Concrete Association Erection Safety Procedures Brochure (TCA).

1.2 SUBMITTALS

- A. Shop Drawings: Submit panel shop drawings and erection drawings detailing the Work of this Section including temporary bracing. Reinforcing bars shown on the project drawings do not allow for lifting and erection stresses. Shop drawings shall be stamped by a structural engineer licensed in the jurisdiction of the project and responsible for their preparation. Include the following:
1. Concrete mix designs for each mix specified.
 2. Mix design for structural grout for panel supports.
- B. Verification Samples for Exposed Finishes: Prior to construction of mock-up submit representative samples of exposed finishes for review. Samples shall be cast vertically and be approximately 18 by 18 by 2 inches in size.
- C. Quality Control Submittals:
1. Product Data: For each product, including bond breakers, joint sealants, insulation, connection devices.
 2. Manufacturer's Instructions: For manufactured items used, submit the manufacturer's current recommended methods of installation, including relevant limitations and safety precautions.
 3. Test Reports: Submit certified laboratory test reports confirming physical characteristics of materials used in the performance of the Work of this Section.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction. Where those requirements conflict with this Specification, comply with the more stringent provisions.
- B. Qualifications for Tilt-Up Contractors: Contractor performing the tilt-up operations shall demonstrate the experience and expertise required to manage and execute the specified work.
1. Provide certification that supervisor to be employed in the Work has been ACI certified, meeting Site Cast Tilt-Up Supervisor qualifications.
- C. Qualifications for Field Personnel: Contractor shall show evidence of competence in site cast tilt-up concrete construction. Workers shall be proficient in production and erection operations and shall be under the direct supervision of qualified personnel.
- D. Qualifications for Welding: Qualify welding processes and welding operators in accordance with ANSI/AWS D1.4. Provide certification that welders to be employed in the Work have satisfactorily passed AWS qualification tests within the previous 12 months.
- E. Job Mock-up Panel for Architectural Finishes: Prepare one panel using forming technique and construction methods to be used on the project for each level of finish shown on the drawings according to the following:
1. Panels shall be a minimum of 4-feet by 8-feet. Incorporate edge and reveal conditions as detailed on the project drawings.
 2. For painted concrete finishes: Utilize full range of color as specified. Utilize reveal characterization as specified.
 3. For abraded or exposed colored concrete finishes: Utilize full range size and colors in aggregate. Utilize full range of color in grout. Match the degree of abrasion (e.g. sand-blast, water-blast, retarder, acid etch, etc.) specified.
 4. For textured or architectural liner finishes: Utilize full range of texture as specified. Sample shall consist of section showing integration of both horizontal and vertical liner joints.
 5. For cast-in-brick or stone finishes: Utilize full range of color sampling for brick specified. Sample shall consist of one repaired brick in field of display.
 6. Cast mock-up over slab joint or column joint if actual panels will be affected by these conditions.
 7. Maintain approved mock-up for comparison with finish work.
 8. Dispose of mock-up when project is completed or when directed by Architect.

1.4 PROJECT CONDITIONS

- A. Job Conditions: Comply with the following:
1. Do not construct formwork, place steel reinforcement or concrete, or erect panels during adverse weather unless approved measures are taken to prevent damage. During period of dry winds, low humidity and other conditions causing rapid drying, protect fresh concrete with an evaporation retardant (monomolecular film) or fine fog spray of water applied immediately after screeding and bull floating. Maintain protection until final finishing and curing compounds are applied.
 2. For cold weather conditions, adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. Concrete materials and reinforcing steel, forms, fillers and ground with which concrete is to come in contact shall be free from frost. If shelters are used, the type of fuel used for heating shall not weaken the concrete surface. Frozen materials or materials containing ice shall not be used.
 3. For hot weather conditions proper attention shall be given to concrete materials, production methods, handling, placing, protection and curing to prevent excessive concrete temperatures or water evaporation that may increase shrinkage and impair required strength or serviceability of the member or structure.

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TO THE BEST OF MY KNOWLEDGE THE DRAWINGS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.
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NO. △	REVISION/ SUBMISSIONS	DATE
1	ADDENDUM No.1 FOUNDATION PACKAGE	03/23/18

SHT. TITLE		
SEAL	COMMISSION NO. 1613	SCALE:
NAME: EDDIE L. COX, P.E.	PROJECT ARCH. JEH	SHEET NO.
REG. NO. 27499	DRAWN: RLP	S1.2
EMAIL: ecocx@fcien지니어.com	CHECKED: ELC	
	DATE: 28-FEB--2018	



- 1.5 COORDINATION
- A. Coordinate site cast tilt-up operations with Work of other trades in order that Work may be expedited and omissions and delays avoided.
- PART 2 - PRODUCTS
- 2.1 TILT-UP CONCRETE, GENERAL
- A. Comply with ACI 301, unless modified by requirements in the Contract Documents.
- 2.2 PANEL MATERIALS
- A. Forms:
- Forms shall contain blockouts required to provide openings detailed on Drawings. Coordinate openings with other trades.
 - Panel boundary forms shall be rigidly constructed and well braced steel or wood forms, straight and with precise corners. Design to withstand stresses resulting from the casting process. Consideration should be given to exposed formed surfaces. Forming surfaces shall be smooth and clean prior to pouring of concrete.
 - Forms shall be attached to the finished building slab using non-intrusive glues and/or adhesives wherever possible in lieu of nails and bolts to eliminate penetrations and blemishes. Repairs shall be approved by the Architect
 - Panels may be stacked for ease of casting, in forms as specified above.
 - When panels are stack cast, maintain a continuous sound and smooth casting to match the finish of the original casting surface.
 - Bondbreaker shall be compatible with curing compound and other finishes, including paint, and floor finish or be completely removed according to the manufacturer's cleaning instructions.
- B. Reveal Materials: Materials used for creating reveals or relief in the exterior face of the panel shall be of adequate strength to withstand construction traffic/loads without damage.
- C. Concrete Materials:
- Cementitious materials shall conform to ASTM C150. Portland cement shall be Type II. Fly Ash shall be Type F. GGBFS prohibited.
 - Fine and coarse aggregates shall consist of clean, hard strong, and durable inert material, free of injurious amounts of deleterious substances, conforming to ASTM C33 for normal weight concrete.
 - Concrete shall be a design mix approved by Engineer. See concrete specifications.
 - Mixing water shall be free of any acid, alkali, oil or organic material that may interfere with the setting of the cement.
 - Admixtures shall be approved by Architect.
 - Concrete shall be produced and delivered in accordance with ASTM C94.
- D. Quality of Concrete: Ready-mixed concrete shall conform to ASTM C94. Concrete shall have a minimum compressive strength at 28 days as indicated on the project drawings and as required for panel erection, or specified, and tested according to ASTM C39.
- E. Sacking Materials: Portland cement and water, mixed to a uniform creamy paste.
- F. Dry-Pack Materials: In accordance with requirements specified in Section 03300 - Cast-in-Place Concrete.
- G. Steel Reinforcement:
- Reinforcing bars shall conform to ASTM A615/A615M, Grade 60.
 - Welded wire reinforcement shall conform to ASTM A185 or A497 based on type and location and shall be of the style shown on the project drawings. Welded wire reinforcement shall be supplied in flat sheets.
 - Bar mats for concrete reinforcement shall conform to ASTM A184.
- H. Lifting Hardware: Lifting hardware, inserts, braces, and related embedded and attached items shall be manufactured specifically for site cast tilt-up construction.
- I. Randomly-Mixed Reinforcing Elements (Fibers): The use of materials mixed with the concrete for reinforcement are commonly applicable for reduction of plastic shrinkage and thermal expansion/contraction. They shall not be used as flexural reinforcement in structural panels unless approved by a licensed design professional and reviewed by the Architect and Engineer. Consult the manufacturer's literature for proper material quantities and application procedures.
- J. Miscellaneous Metals:
- Provide inserts, dowels, and other items to be cast in panels, including items required for erection and bracing.
 - Steel that will be exposed to the exterior or damp environments in finished panels shall be plastic-tipped, hot-dipped galvanized or protected by other means to prevent corrosion or oxidation of the metal after fabrication in accordance with ASTM A123. Ensure that the plastic will not create stress concentrations within the thin sections of concrete when located near a surface from differential thermal expansion and contraction ultimately resulting in local shear failure of the concrete surface producing surface blemishes.
- K. Supports for Steel Reinforcement: Supports may consist of metal, all-plastic and concrete materials.
- Supports for steel reinforcement shall be designed to prevent spalling of concrete surfaces or streaking of panel face from corrosion.
 - Metal supports shall be either galvanized after fabrication or with tips protected with plastic. No galvanized or plastic tip metal support shall be used on panels to receive exposed or sandblasted finish.
 - All-plastic supports should be of such design as to adequately support reinforcement, provide minimal surface contact and be of such coloring as to not be distinguishable on any surfaces. Minimal surface contact is defined as having a total contact surface area not to exceed 0.10 square inches (64.5 mm²) per contact point. Refer to CRSI Manual of Standard Practice.
 - Concrete supports may only be used in situations where surface contact is not visible.
- 2.3 CONCRETE CURING MATERIALS
- A. Liquid Membrane-Forming Curing Compound:
- Liquid-type membrane-forming curing compound complying with ASTM C309, Type I and I D, Class B. It is preferred that the curing compound/bondbreaker be the same product or compatible, and that only one manufacturer's product is used.
 - Concrete Curing of Casting Beds: Concrete in and around those areas to be used for casting shall be cured after finishing and as soon as the free water on the surface has disappeared and no water sheen is visible, but not so late that the liquid curing compound will be absorbed into the concrete. The cure and/or bondbreaking compound should be applied at the manufacturer's recommended coverage to achieve minimum moisture loss.
 - Curing compound must be compatible with the bond breaker and other finishes, including paint, and floor finish.
- B. Reusable Wet Cure Covers: Impregnated fiber mat with a white or light colored backing having low permeability with high moisture retention to maintain the proper moisture content during the concrete curing process. Comply with ASTM C171 for reflection and moisture retention.
- 2.4 SEALANTS
- A. Sealants and Caulking: Comply with requirements of Specification Sections for Joint Sealants.
- 2.5 BONDBREAKER
- A. Liquid Dissipating Membrane-Forming Curing Compound.
- The bond breaking material shall also be a dissipating membrane forming material complying with ASTM C 309-98a, Type I and I D, Class B.
- The bond breaking compound shall be applied with adequate time to dry prior to placement of reinforcing steel.
 - The bond breaking compound shall dry in 30-minutes or less at 100°F to reduce panel clean up.
 - Material shall be compatible with curing material.
 - The bond breaker used shall be fully removed from the slab surface or shall be compatible with any curing compound or coating specified for interior or exterior concrete panels and slab
- B. Comply with manufacturer's instructions for the proper cleaning procedures and finished surface preparation for the building slab, for proper procedures for post applying a liquid floor hardener or sealant to areas where bond breaker is present, and for proper cleaning procedures for preparation of painted surface and sealer applications.

PART 3 - EXECUTION

3.1 CASTING SURFACES

- A. Casting Slab Preparation:
- Casting slab shall be cured. Saw cuts, cracks, joints or defects in the casting bed shall be filled so as to minimize transfer of the joint line to the panel face.
 - Waste slabs, if used, shall be of sufficient thickness and strength so as not to crack with the weight of the panels.

- Contractor shall be responsible for compatibility of curing agents, sealants, and releasing agents utilized in the Work. If panels are to be stacked, the troweled surface shall be considered the casting bed and shall be treated as the same.
 - Isolation pockets shall be formed in such a manner as to minimize the transfer of the pocket to the finished appearance of the panel.
- B. Bondbreaker shall be applied in accordance with manufacturer's printed instructions for the applicable condition.
- C. Locate and install all inserts and anchorages required for the panels prior to casting of any concrete. Wet-setting of any insert is not permitted and wet-setting of any anchorage is not permitted unless approved by the Architect.
- D. After placing steel reinforcement for panels, check casting slab surfaces for continuity of bondbreaker. If touch-up or recoating of worn, damaged or missing areas is required, the Contractor shall remove the steel reinforcement entirely prior to re-application of the bondbreaker unless approved by the Architect.
- 3.2 FORMING PANELS
- A. Layout the panels for casting in a manner that minimizes the locations of floor joints, column isolation joints and other construction joints in the panel faces. Prevent the layout of the panels over temporarily poured casting surfaces such as pre-formed columns and pits unless deemed absolutely necessary.
- B. Forms shall be designed to maintain the perimeter of the panel as shown on the project drawings within 1/4-inch maximum deflection during pouring.
- C. Formed blockouts for openings in the panels shall be designed to limit the deflection during pouring to a maximum of 1/8 inch.
- D. Where reveals are specified in panels, assure that forming strips are straight and securely fastened to prevent movement or floating during placing operations and that alignment between adjacent panels is correct. Reveal tolerances shall comply with requirements specified in this Section.
- 3.3 PLACING CONCRETE
- A. Place concrete in accordance with recommendations in ACI 309 and the following:
- Concrete shall be thoroughly worked around reinforcement, around the embedded items, and into corners of the forms.
 - Cold joints shall not be permitted in an individual site cast tilt-up panel.
- 3.4 FIELD QUALITY CONTROL TESTING
- A. Field Testing:
- The Contractor shall make and store a minimum of four 6x12 cylinders or five 4x8 cylinders and four 6x6x24 beams in accordance to ASTM C31. Specimens shall be made for each class of concrete, for each 100 cu.yds. or fraction thereof, and for each day concrete is cast, or not less than once for each 5,000 sq.ft. of panel area.
 - Test cylinders shall be tested in accordance with ASTM C39. A minimum of 2 from each set shall be tested at 7 days and the rest at 28 days.
 - Test beams shall be tested in accordance with ASTM C78. At least two from each set shall be tested prior to panel erection. The average of the two beam results shall be considered the tested flexural strength to determine if the specified flexural strength has been met. Remaining specimens shall be kept in reserve in the event that additional testing is needed.
 - Test specimens and test reports shall accurately indicate in which panel, by number and concrete delivery tag, the concrete represented by each test specimen was placed.
 - Copies of test reports shall be distributed to Owner, Architect, Building Official and Contractor. Reports shall indicate location of tests, dates, technician, and other pertinent information
- B. Deficient Compressive Strength: In the event that concrete tests indicate a 7-day or 28-day strength below that which was specified, the Contractor with the agreement of the Architect shall have the mix adjusted so that subsequent concrete will comply with the minimum strength requirements.
- The Owner may require core specimens to be taken and tested, at the Contractor's expense. If core tests fall below minimum requirements, as determined by the Architect, the concrete in place will be deemed to be defective.
 - This concrete shall be removed and replaced or strengthened in a manner acceptable to the Owner and Architect, at the Contractor's expense.
 - Demolition or repair of other materials or systems as a result of repair or replacement of defective concrete shall be at the Contractor's expense.
- 3.5 CURING AND PROTECTION
- A. Comply with recommendations in ACI 308 and the following:
- Protect freshly placed concrete from premature drying and excessive cold or hot temperatures, and maintain without drying at a relatively constant temperature for the period of time necessary for hydration of the cement and proper hardening of the concrete.
 - Apply liquid membrane curing compound in accordance with manufacturer's recommendations.
 - Underlying panels in a stack cast arrangement shall be cured in the same manner as casting beds.
- B. Moist Curing in lieu of Liquid Membranes for Curing:
- Cover panels completely with burlap strips immediately after finishing. Lay as many lines of soaker hose as needed. Quickly and completely wet the entire exposed surface.
 - Cover panels completely with 4-mil polyethylene, transguard or burlene to prevent evaporation. The panels shall be kept wet for seven days. Do not allow alternate wetting and drying. The polyethylene shall be turned over and down the edge of the forms and securely fastened.
 - In panels or areas to be cured, weight the polyethylene, transguard or burlene with enough and type of weight to prevent normal winds from the area from blowing it off the panels. Keep panels wet until erection begins or approved by the Architect.
- 3.6 CASTING TOLERANCES
- A. Dimensions of the finished panels, prior to erection in the structure, shall conform to the casting tolerances stated below unless otherwise specified or approved by the Architect.
- B. Deviation from Specified Height or Width of Structural Panel:
- Up to 20 feet Plus or minus 1/4 inch
 - 20 feet to 30 feet Plus or minus 3/8 inch
 - Each additional 10-foot increment in excess of 30 feet Plus or minus 1/8 inch
 - Maximum overall tolerance Plus or minus 5/8 inch
- C. Deviation from Specified Panel Thickness: Note the tolerance listed is for the average variation of panel thickness through any cross-section of the panel.
- Variation Plus or minus 3/8 inch
- D. Deviation in Length of Diagonals for a Rectangular Member or Opening, where Length of Diagonal is as follows. Note the tolerance listed is the measured difference in length of the two diagonals across any rectangle.
- 6 ft. or less Plus or minus 1/8 inch
 - Each additional 6 ft. or part thereof Plus or minus 1/8 inch
 - Not to exceed Plus or minus 1/2 inch
- E. Deviations from Specified Size:
- Rough opening Plus or minus 1 inch
 - Finished opening Plus or minus 1/2 inch
 - Rustication or architectural feature Plus or minus 1/8 inch
- F. Deviation from Specified Location (any direction):
- Blockout or opening Plus or minus 1 inch
 - Bolts, pipes or sleeves Plus or minus 1/2 inch
 - Lifting and bracing inserts per manufacturer's specs, not to exceed Plus or minus 1 inch
 - Embeds Plus or minus 1 inch
 - Reglets for flashing or bricks Plus or minus 1/4 inch
 - Rustication or architectural feature Plus or minus 1/8 inch
 - Electrical box or accessory of another trade Plus or minus 1 inch
- G. Deviation from Plane:
- Embeds (Tipping & Flushness) Plus or minus 1/4 inch
 - Surface of concrete between embeds Plus or minus 1/4 inch
 - Depth of recess Plus or minus 1/4 inch

H. Deviation from Specified Position of Reinforcement:

- Cover, in accordance with ACI 318 and in no case less than specified elsewhere Plus or minus 1/4 inch
- Individual member (location) Plus or minus 1/4 inch
- Perpendicular to plane of span Plus or minus 1/4 inch
- Parallel to plane of span Plus or minus 1 inch

I. Dimensions of Thin-Brick Elements Incorporated into Tilt-up Panels:

- Thickness, variation Plus 0, minus 1/16 inch
- Maximum thickness 1 inch
- Minimum thickness 1/2 inch
- Unit dimension 8 inches or less, variation Plus 0, minus 1/16 inch
- Unit dimension greater than 8 inches, variation Plus 0, minus 3/32 inch

3.7 PANEL FINISH

- A. Finish exposed surfaces of panels as indicated on the Drawings including both the front and back of the panels as well as any exposed edges as defined below. Visible surfaces of the panels, when in place shall be free from surface defects as defined below.
- B. Grade A - Architectural: Projects designed for the circulation of people within a distance of 10 feet to 25 feet.
- Panel surfaces shall be free of voids, holes, pockets and other surface deformations greater than 1/8 inch.
 - Surfaces of panels shall not project reinforcing patterns, floor joints or other projections or voids from the casting surface.
 - Cracks are not permissible in excess of 1/32 inch.
 - Surface repairs shall be performed in such a way as to prevent the projection of repair strokes through the intended finish.
 - Holes shall be filled with patching material to present a smooth surface ready for painting unless the designed finish is to result in exposed aggregates whereby the patching material shall match the intended color and texture.
- C. Grade B - Standard: Projects designed for the circulation of people within a distance greater than 25 feet while retaining an emphasis on quality finishes and aesthetic detail.
- Panel surfaces shall be free of all voids, holes, pockets and other surface deformations greater than 1/4 inch.
 - Surfaces of panels may be repaired sufficiently to prevent excessive projection of blemishes through intended finish.
 - Cracks are permissible as naturally resulting from curing. Cracks are not permissible as caused by erection forces.
 - Surface repairs shall improve the appearance of the panels within the descriptions above provided they do not result in additional blemishes that are visible within the distance set.
 - Holes shall be filled with patching material to present a smooth surface ready for painting unless the designed finish is to result in exposed aggregates whereby the patching material shall match the intended color and texture.
- D. Grade C - Utility: Projects designed for remote areas with little or no public interaction and/or projects designed specifically for interior use with little or no emphasis towards the exterior design.
- Consult with the Architect and the Owner prior to initiating the project to determine the expectations for the project appearance.
 - Panel surfaces showing voids, holes, pockets and other surface deformations are permissible provided they do not weaken the structural integrity of the panel or the finish of the panel.
 - Cracked surfaces are permissible provided the cracks are not resulting from structural weakness or failure and provided they do not present the potential for failure of the finish over the life of the building.
- E. Surfaces to be painted shall be prepared to receive paint finish as specified in Specification Section Painting and Coating.
- 3.8 HANDLING AND ERECTION OF PANELS
- A. Engineer panels for erection stresses and selection of lifting system and hardware.
- Minimum strength of panels at time of erection shall be in accordance with the lifting design. It is recommended that the Contractor take extra test specimens and field cure to verify concrete strength of panels.
 - Before starting erection operations, Contractor shall check relevant job site conditions insofar as they are ready for the erection of panels. Each element shall be properly marked to correspond with the designation indicated on the approved Shop Drawings.
 - Use erection equipment that will prevent damage to existing construction, permanent floor slabs and panels. Damage to Work shall be repaired or replaced at the Contractor's expense and in a manner acceptable to the Architect prior to painting or coating.
 - Temporary panel bracing shall not be removed until roof diaphragm is completely welded and installed.
- B. Set panels in the position assigned. Place panels evenly on prepared setting pads or proper-capacity shims. Grout space under panels for full bearing or provide additional support until grouting takes place.
- Provide sufficient number of shims to adequately distribute the load on the footing or grout as soon as practical to prevent damage of the footing.
- C. Panels not attached to the building frame at the time of erection shall be braced in position using a bracing system designed to resist wind and other loads that may reasonably be determined until structural connections have been made. There shall be a minimum of two braces per panel. Engineering of bracing shall be the responsibility of the Contractor. Panel bracing connection shall be maintained daily to assure tightness.
- D. Dry-pack grout installation and preparation for weld pockets and other panel block outs not cast in during pouring shall be performed as follows:
- Remove laitance down to sound concrete
 - Surface to receive grout shall be rough and reasonably level
 - Surface shall have been properly wet cured
 - Do not use curing compounds
 - Clean surface of oil, grease, dirt and loose particles.
 - Remove free water from concrete and bolt holes immediately before grouting.
- E. After Panels are Erected:
- Check connecting bolts at the floor and panels daily to ensure tightness.
 - Protect elements to prevent staining, warping or cracking. After panels are erected, dismantle panel erection devices and patch panels as required for a uniform appearance.
 - After panels are erected, patch holes or other blemishes in casting slab that were caused by the panel casting and erection processes in a manner acceptable to the Architect.
 - Attach each panel to foundations and slab-on-grade is indicated on the drawings.
- 3.9 ERECTION TOLERANCES
- A. Erection Tolerances: Dimensions of the finished panel in the erected position in the structure shall conform to the erection tolerances stated below unless otherwise specified or approved by the Architect.
- B. Deviation from Specified Dimension Between Controlling Surface or Line and Building Reference Line:
- Horizontal dimension to vertical surface Plus 1/2 inch, minus 1/4 inch.
 - Vertical dimension to horizontal surface Plus 1/4 inch, minus 1/2 inch.
 - From top elevation Plus or minus 1/2 inch.
- C. Deviation from Plumb of the Controlling Surface or Line:
- Any 10 feet of member height Plus or minus 1/4 inch
 - Each additional 10 feet of height Plus or minus 1/4 inch
 - Not to exceed Plus or minus 1 inch
- D. Deviation from Specified Relationship of Adjacent Members:
- Matching edges at horizontal and vertical joints Plus or minus 1/2 inch
 - Matching faces exposed to view Plus or minus 3/8 inch
 - Matching faces not exposed to view Plus or minus 3/4 inch
 - Bowing between adjacent members 1/2 inch
 - Alignment of brick mortar joints across joints, jog in alignment, 1/8 inch
 - Alignment of brick mortar joints across joints, alignment with panel centerline Plus or minus 1/8 inch



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NO. △	REVISION/ SUBMISSIONS	DATE
1	ADDENDUM No.1 FOUNDATION PACKAGE	03/23/18
SHT. TITLE		
SEAL	COMMISSION NO. 1613	SCALE:
NAME: EDDIE L. COX, P.E.	PROJECT ARCH. JEH	SHEET NO.
REG. NO.: 27499	DRAWN: RLP	S1.3
EMAIL: ecox@fcien지니어ing.com	CHECKED: ELC	
	DATE: 28-FEB-2018	



- E. Deviation from Specified Joint Width:
- Vertical joint (governs over joint taper), total Plus or minus 3/8 inch.
 - Horizontal joint (governs over joint taper), total Plus or minus 3/8 inch
 - Visually noncritical joint Plus or minus 1/2 inch
 - Joint taper over any 10 ft. length measured between the panels at the exterior face of the panels at the joint. 3/8 inch
 - Joint taper over entire length measured between the panels at the exterior face of the panels at the joint Plus or minus 1/2 inch
 - Variation in width of exposed brick mortar joints measured difference in joint width indicating the panel edges are not parallel Plus or minus 1/8 inch

- F. Deviation of Architectural Features at Face of Panel:
- Brick (individual) out of plane, any one Minus 1/4 inch depth of form liner joint.
 - Brick (individual) tipping, any one Minus 1/4 inch depth of form liner joint
 - Brick (individual) out of square, any one Plus or minus 1/16 inch
 - Brick (field), max. per panel 2 percent

3.10 SEALING OF PANEL JOINTS

- A. Clean the panel joints of contaminants, including form release agents and concrete laitance. Dust and loose particles shall be blown out or otherwise cleaned to provide proper bond. Apply sealants in accordance with manufacturer's recommendations.
- B. Install fire-resistive blanket where indicated.
- C. Install joint insulation where indicated to consist of a limited expansion polyurethane insulation or an approved equal as provided in accordance with Specification Section-Insulation.
- D. Install back-up rod, primer, paint and sealant in accordance with Specification Section-Sealants and Caulking.

3.11 ATTACHING PANELS TO BUILDING FRAME

- A. Perform welding in accordance with ANSI/AWS D1.4. Wait a minimum of 28 days from panel casting before making panel-to-panel welds.

3.12 CLEANING AND PROTECTION

- A. Remove trash, debris, surplus materials, tools and equipment from site on a regular basis.
- B. After erection, the General Contractor shall protect site-cast tilt-up concrete surfaces from damage by subsequent construction operations until Substantial Completion.

SECTION 04210 - REINFORCED CONCRETE UNIT MASONRY

PART 1 GENERAL:

- 1.01 Description of Work:
Extent of each type of masonry work is indicated on the drawings.
- 1.02 Codes and Standards:
Masonry construction and materials shall conform to all requirements of The Florida Building Code and the "Specifications for Masonry Structures" ACI 530.1, published by the American Concrete Institute, Detroit, Michigan, unless more stringent requirements are specified herein.

1.03 Qualifications and Inspections:

- A. Concrete Masonry Contractor Qualifications:
All reinforced and load bearing unit masonry shall be constructed by a Certified Structural Masonry Contractor; construction shall be performed by Certified Structural Masons. The Contractor and Masons shall be certified by the Florida Concrete And Products Association.

- B. Concrete Masonry Inspections:
Provide masonry construction inspection and written reports of concrete masonry walls indicated as requiring inspection on the Masonry Plans to insure that masonry construction is in conformance with the Contract Documents. Masonry inspection is required for those masonry elements which must be constructed to attain high design strengths, including, but not limited to, vertically reinforced grouted CMU walls, grouted CMU wall, and load-bearing CMU walls.

Inspection Agency shall be either a certified masonry inspector or a Registered Structural Engineer. Submit certification to A/E prior to the Pre-Masonry Conference. The individual or individuals who will perform the masonry inspection shall be present for the Pre-Masonry Conference. The inspection agency shall be independent of the certified masonry contractor.

Inspection shall use NCMA-TEK 65 Field Inspection of Engineered Concrete Masonry and NCMA-TEK 132 Inspector's Guide for Concrete Masonry Construction and ACI 530.1 as guidelines.

The masonry inspector shall prepare a written report or reports for each day of inspection. Each report shall include project identification name and number, name of masonry contractor, name of inspecting service, date of report, specific location of work inspected, horizontal joint reinforcing size, type, spacing, and lap, preparation of cores and cavities to be grouted, inspect every core and cavity, vertical reinforcing centering clip size, type, spacing, and proper alignment, size spacing and lap of vertical reinforcing and installation in centering clips, installation and vibration of grout in cores and cavities, remarks as to general conditions pertinent to the strength and quality of the masonry work.

The masonry inspector shall be present and observe all grouting operations in walls requiring inspection. The masonry inspector shall be present at the project site within sufficient time, in advance of grouting operations, to inspect the construction to insure its conformance to the contract Documents and that grouting may proceed. Periodically, the masonry inspector shall be present during the placing of masonry units and reinforcement. No grouting shall be permitted unless the masonry inspector is present and has indicated that the masonry construction is properly prepared for the grouting operation.

1.04 Submittals:

- A. Product Data:
Submit manufacturer's specifications and other data for each type of masonry unit, accessory, and other manufactured products, including certifications that each type complies with specified requirements. Include instructions for handling, storage, installations and protection. Submittals shall include certification that masonry units comply with specified strength requirements.

1.05 Job Conditions:

- A. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns.
- B. Do not apply concentrated loads for at least 3 days after building masonry walls or columns.
- C. All Filled Cells and Columns shall be poured at least two hours prior to pouring lintel block or tie beams. Maximum construction height of masonry walls without filled cell or column pours shall be 4'-0". Provide clean out holes at the base of filled cells which have grout heights in excess of 4'-0". The holes shall be kept open for inspection. The concrete for filled cells shall be vibrated with a mechanical pencil vibrator during placement to insure complete filling of the block core, and re-consolidated with the vibrator before final set, approximately 10 to 30 minutes after initial placement depending on grout consistency and weather conditions. Fill all cells containing reinforcing steel. Provide prefabricated "tee" and corner sections of masonry "Dur-O-Wall" type reinforcing at all intersecting masonry walls. Lap splice all horizontal wall reinforcing 6".

PART 2 PRODUCTS:

2.01 Masonry Units, General:

- A. Concrete Masonry Units (CMU):
ASTM C90, Grade N-1, Type II (non- moisture controlled) Regular Weight Units. Masonry units shall have a minimum net area compressive strength of 1900 PSI for a minimum compressive strength of masonry assemblage (fm) of 1500 PSI.

1. Size:
Manufacturer's standard units with nominal face dimensions of 16" long x 8" (15-5/8" x 7-5/8" actual), unless otherwise indicated.

2. Special Shapes: Provide where required for lintels, corners, jambs, control joints, headers, bonding, scored accent walls and other special conditions.

B. Mortar Materials:

1. Portland Cements: ASTM C150, Type I.
2. Sand Aggregate: ASTM C144. Once approved, use sand from same source for entire project.
3. Water: Potable.
4. Hydrated Lime: ASTM C207, Type S.
5. Masonry Cement: ASTM C91.

2.02 Materials:

- A. All masonry reinforcement, anchors, ties and metal embedded in masonry shall be galvanized, in accordance with ASTM A 153, Class B-2, Hot-Dip, (1.50 oz. per sq. ft.).

- B. Continuous Wire Reinforcing and Ties for Masonry: Provide welded wire horizontal joint reinforcement units prefabricated in straight lengths of not less than 10 feet, with matching corner and tee units. Fabricate from cold-drawn steel wire complying with ASTM A82, with deformed continuous side rods and plain cross-rods, and a unit width of 1-1/2" to 2" less than thickness of wall or partition.

C. Horizontal Joint Reinforcement:

1. All Concrete Masonry Walls: Standard No. 9 gauge ladder type unless otherwise indicated.
2. Ladder type fabricated with single pair of 9 gage side rods and 9 gage continuous diagonal cross rods spaced not more than 16" o.c.
3. Galvanize horizontal joint reinforcement after fabrication with 1.5 oz. zinc coating. Hot-dipped galvanized is required for reinforcing in all exterior walls.
4. Space all horizontal joint reinforcing at 16" o.c. vertically, unless otherwise noted.

D. Acceptable Manufacturers:

- DUR-O-WALL.
- AA Wire Products Company.
- Heckman Building Products, Inc.
- Masonry Reinforcing Corporation of America.
- Hohman and Barnard
- Wire Bond

E. Masonry Accessories:

- Reinforcing Bars:
Deformed steel, ASTM A615, Grade 60 of the sizes shown.
- Individual Wire Ties for Masonry:
Fabricate from 3/16" cold-drawn steel wire, ASTM A82, unless otherwise indicated, of the length required for proper embedment in wythes of masonry.
- Anchors and Ties:
Provide straps, bars, bolts and rods fabricated from not less than 16 gage sheet metal or 3/8" diameter rod stock, unless otherwise indicated.
- Flashing for Masonry:
Provide concealed flashings, shown to be built into masonry, as follows:

Fabricate through-wall metal flashings with deformations in both directions for integral mechanical mortar bond.
- Weepholes:
Unless otherwise indicated, provide 1/4" round cotton rope (sashcord) to form weepholes.
- Masonry Insulation:
See insulation specifications for manufacturer installed masonry insulation.
- Grout and Concrete Stop: For masonry course below bond beams or masonry lintels. Equal to Dur-O-Wall Dur-O Stop, widths as required.
- Wall flashings: Dur-O-Wall DCF 1500S, or Architect approved equal. Widths as required to provide not less than 12 inch vertical and horizontally as required to outer face of wall. All vertical joints soldered. Hemmed edges that are embedded in mortar joints.
- Control joint in concrete unit masonry:
 - Control joint to be used with standard sash block 6-7/8" depth, as manufactured by: Wire-Bond, Masonry Reinforcing Corporation of America; AA Wire Products Co. "Blok-Tite" AA 2003; Greenstreak Plastic Products 666; Williams Products, Inc. "Slot Seal Wide Flange" 2016-3 (6-1/2" depth); or an Architect approved equal.
 - Mechanical reinforcing positioners shall be used thru-out to hold reinforcing in the proper location and position prior to and during the grouting operation. Locate positioners at top and bottom, and at 4'-0 o.c. maximum.

F. Mortar and Grout Mixes:

1. Mortar:
Except as otherwise specified, mortar shall be ASTM C270, Type S. Mortar shall be accurately measured by VOLUME (proportion method). Mortar for walls and partitions of concrete block shall be one of the two following mixes, at Contractor's options:

1 part Portland Cement	1/2 part Portland Cement
1/2 part Lime Putty or	1 part Masonry Cement
4 parts Sand	4 parts Sand

2. Mortar and Grout Mixes:
Do not use calcium chloride in mortar or grout.

3. Grout: ASTM C476.

4. Concrete Fill For Reinforced Cells:
See concrete specifications.

PART 3 EXECUTION:

3.01 Installation, General:

- A. Thickness:
Build masonry construction to the full thickness shown, except, build single wythe walls to the actual thickness of the masonry units, using units of nominal thickness shown or specified.

- B. Build chases and recesses as shown and as required for the work of other trades. Provide not less than 8" of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses.

- C. Pattern Bond:
Lay exposed masonry in the bond pattern shown, or if not shown, lay in running bond vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners, unless otherwise indicated.

- D. Built-In Work:
As the work progresses, build in items specified on the drawings. Fill in solidly with masonry around built-in items. Fill space between hollow metal frames and masonry solidly with mortar. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.

- E. Intersecting Walls:
If carried up separately, block vertical joint with 8" maximum offsets and provide rigid steel anchors spaced not more than 4'-0" o.c. vertically, or omit blocking and provide rigid steel anchors at not more than 2'-0" o.c. vertically. Form anchors of galvanized steel not less than 1-1/2" x 1/4" x 2'-0" long with end turned up not less than 2" or with cross pins. If used with hollow masonry units, embed ends in mortar filled cores.

- F. Masonry Control Joints:
Install vertical masonry control joints at a maximum horizontal spacing of two times the total wall height, but not exceeding 50 feet on centers maximum. Do not locate control joints within two feet of any wall openings, columns or floor and roof supports. Coordinate placement with Architect prior to construction.

- G. Non-Bearing masonry walls shall be anchored to structural supports using dovetail anchors at 16 inches on centers vertical or horizontal dimension, unless otherwise indicated. See Concrete Specifications for dovetail slots.

- H. Where work of other trades requires cut out of masonry units, fill all cut-outs solid with mortar after installation of their work.

- I. Provide 8" deep precast "U" lintels over all masonry wall openings with a span of 8'-0" or less, unless otherwise noted. Reinforce lintel with 2 - #5 and fill solid with concrete. Cut out bottom of lintel at bearing. Minimum end bearing shall be 8".

J. Mortar Bedding and Jointing:

- Use Type S Mortar throughout.
- Batch Control:
Measure and batch materials either by volume or weight, such that the required proportions for mortar can be accurately controlled and maintained. Measurement of sand exclusively by shovel will not be permitted.
- Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells; also bed webs in mortar in starting course on footings and foundation walls and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or to be filled with concrete or grout.
- Joints:
Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not otherwise indicated, lay walls with 3/8" joints. Tool mortar joints which are exposed and have become "thumbprint" hard with an approved jointer slightly larger than width of mortar joint so complete contact is made along edges of units, compressing and sealing surface of joint. Tool ALL joints so as to squeeze mortar back into joints. Do no tooling until after mortar has taken its initial set.
- Horizontal Joint Reinforcing:
Provide continuous horizontal joint reinforcing as shown and specified. Fully embed longitudinal side rods in mortar for their entire length with a minimums of units. Do not bridge control and expansion joints with reinforcing. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend units as directed by manufacturer for continuity at at returns, offsets, pipe enclosures and other special conditions.
- For single wythe and cavity walls, space reinforcing at 16" o.c. vertically, unless otherwise indicated.
- Cleaning:
Protect masonry against staining from wall coverings or by other sources and wipe excess mortar off surface as work progresses. After work of this section has been completed, clean concrete block masonry surfaces with stiff fiber brushes, leaving concrete block masonry clean, free of mortar daubs, and with tight mortar joints throughout. Immediately after cleaning, rinse down concrete block masonry surfaces thoroughly with clear water.
- Mechanical reinforcing positioners shall be used thru-out to hold reinforcing in the proper location and position prior to and during the grouting operation. Locate positioners at top and bottom, and at 4'-0 o.c. maximum.

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TO THE BEST OF MY KNOWLEDGE THE DRAWINGS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES.
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NO.	REVISION/ SUBMISSIONS	DATE
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SHT. TITLE		
SEAL	COMMISSION NO. 1613	SCALE:
	PROJECT ARCH. JEH	SHEET NO.
NAME: EDDIE L. COX, P.E.	DRAWN: RLP	S14
REG. NO. 27499	CHECKED: ELC	
EMAIL: ecocx@fcengineering.com	DATE: 28-FEB--2018	



L. Fill all cells with grout at all embedded anchor bolts or structural conditions.

3.02 Masonry Testing:

A. The Contractor will employ a testing laboratory to perform test and to submit test results.

1. Masonry Grout

Test masonry grout in accordance with ASTM C1019, one test for every 5000 square feet of wall area or every 50 cubic yards, whichever is less, but not less than one test for each days pour.

2. Masonry Mortar:

Perform pre-construction and construction testing of masonry mortar in accordance with ASTM C780 as indicated below. One test for every 5000 square feet of wall area.

a. Annex A4: Mortar aggregate ratio test method .

b. Annex A7: Compressive strength of molded masonry mortar cylinders and cubes.

SECTION 05120 - STRUCTURAL STEEL

PART I GENERAL:

1.01 DESCRIPTION OF WORK:

The work under this Section of the Specifications includes all labor, materials, equipment and services necessary to complete the structural framing as shown on the drawings and as herein specified.

1.02 QUALITY ASSURANCE:

Work performance shall be in accordance with the American Institute of Steel Construction (AISC), the American Welding Society (AWS) and the Research Council on Riveted and Bolted Structural Joints. All welders shall have passed qualification tests using welding procedures prescribed by the American Welding Society Code. Copies of such Certification shall be submitted to the Contractor and kept on file prior to performance of any work by the welder. Welders shall be certified within the previous twelve months.

A. Modify AISC "Code of Standard Practice for Steel Buildings and Bridges" by deletion of the following sentence: "This approval constitutes the Owner's acceptance of all responsibility for the design adequacy of any connections designed by the fabricator as part of his preparation of these shop drawings".

1.03 SUBMITTALS:

Submit for approval shop drawings indicating all information necessary for job standards, shop and field connections, items embedded in concrete, splices, anchor bolts and base plate plans, details for fabrication and erection of component parts of the structure, and erection plans. Indicate size and weight of members, type and location of shop and field connections; type, size, and extent of all welds. Submittals shall include a minimum of one reproducible sepia and three prints of each sheet.

PART II PRODUCTS:

2.01 MATERIALS:

A. Structural Steel: Structural Wide Flange shapes, shall conform to ASTM A992 steel, Fy = 50,000 psi. Tube steel shall conform to ASTM A500, Grade B. Pipe steel shall conform to ASTM A53, Type E or S. All other structural shapes and plates shall comply with ASTM A36 = 36,000 KSI.

B. Bolts: High strength bolts and nuts shall conform to ASTM A325. All bolts shall be 3/4" diameter and shall be bearing type connections unless otherwise indicated. Washers and nuts shall conform to ASTM A325.

1. Unfinished bolts shall conform to ASTM A307 only where indicated on the drawings.

C. Welding Electrodes: Conforming to AWS A5.1 or A5.5 or Series E70.

D. Shop Primer: Red oxide primer, SSPC - Paint 13.

E. Headed Stud-Type Shear Connectors: ASTM A 108, Grade 1015 or 1020, cold-finished carbon steel with dimensions complying with AISC Specifications.

F. Drilled-In Expansion Anchors:

1. Wedge anchors for interior, weather protected areas only shall meet the physical requirements of Federal Specification FF-S-325 Group II, Type 4, Class 1 and the plating requirements of Federal Specification QQ-Z-325C Type II, Class 3.

2. Exterior areas exposed to weather:

a. Stainless steel wedge anchors. The entire anchor shall be manufactured from 300 series stainless steel and meet the physical requirements of Federal specifications FF-S-325 Group II, Type 4, Class 1.

b. Hot-dipped galvanized wedge anchors shall meet the physical requirements of Federal Specifications FF-S-325 Group II, Type 4, Class 1 and be hot-dip galvanized in accordance with ASTM A153, Class C.

3. Acceptable manufactures:

a. Trubolt Wedge Anchors as manufactured by ITW Ramset/Redhead, Wood Dale, Illinois.

b. Approved equal.

G. Non-Metallic Shrink Resistant Grout: Pre-mixed, non-metallic, non-corrosive, non-staining product containing selected silica plasticizing and water reducing agents, complying with CE-CRD-C621.

2.02 FABRICATION:

A. Shop Painting: Structural steel items shall be wire brushed, cleaned, and painted with one coat of red oxide primer to provide a uniform dry film thickness of not less than 1.5 mils. Surfaces which are to be welded or bolted with friction type connections shall not be painted. Two coats of primer shall be applied to surfaces which will be inaccessible after assembly or erection.

B. Galvanizing: ASTM A123 (iron and steel products) and ASTM A153 (iron and steel hardware), hot dipped galvanized, as applicable.

C. Galvanized Steel:

Hot-dipped Galvanize all exterior steel, bolts, nuts, and washers in accordance with ASTM A123 and ASTM A153.

De-slag and field touch-up paint all welds, connections, abraded or rusted areas, etc, with zinc coating as follows:

Organic zinc-rich, cold-galvanizing compound, 95% metallic zinc by weight in the dried film, applied at 3 mils wet, 1.5 mils dry, per coat, 2 coats min. conforming to ASTM A780 by the following or approved equivalent.

- 1. Rust-Oleum Corp. 2117 Bright Galvanizing Compound or 2185 Cold Galvanizing Compound.
2. Z.R.C. Cold Galvanizing Compound.

D. Splices: Will not be allowed except where indicated on approved shop drawings.

PART III EXECUTION:

1.01 ERECTION:

A. Erector shall examine conditions of the work and shall notify the Contractor of conditions detrimental to the timely and proper erection of structural steel. Deficiencies shall be corrected prior to beginning steel erection.

B. General: Erect framing true and plumb and provide temporary bracing wherever necessary to take care of all loads to which the structure may be subjected, including erection equipment and its operation. Such bracing shall be left in place as long as may be required for safety and be removed by Contractor as part of his requirement. As erection progresses, the work shall be securely connected to take care of all dead load, wind, and erection stresses.

C. Tolerances: Shall not exceed AISC specifications.

D. Welding: Structural joints made by welding shall conform to applicable industry standards for pre-qualified welds and welding procedures. Where practicable, the shop welding of main material shall be done by the automatic submerged-arc process.

E. High Strength Steel Bolts: Structural joints made by using high strength bolts, hardened washers, and nuts.

F. Do not Enlarge unfair holes in members by burning or by use of drift pins. Ream holes that must be enlarged to admit bolts.

G. Touch Up Paint immediately after erection of all welds, bolted connections, and abraded areas to provide a minimum dry film thickness of 2.0 mils of same material used for shop painting.

H. Wedge anchors shall be hot-dipped galvanized or stainless steel at all exterior conditions, including brick shelf angles, etc., unless otherwise indicated.

PART IV TESTING:

1.01 FIELD QUALITY CONTROL:

The Contractor will retain the services of a testing laboratory to certify the adequacy of all field assembled connections per ASTM specifications.

A. Shop Bolted Connections: Fabricator shall inspect in accordance with AISC Specifications.

B. Shop Welding: Fabricator shall inspect and test during fabrication of structural steel assemblies, as follows:

1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.

2. Perform visual inspection of all welds.

C. Field Bolted Connections: Testing lab shall inspect all high-strength bolted connections for compliance with AISC specifications.

D. Field Welding: Testing lab shall inspect and test during erection of structural steel as follows:

1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.

2. Perform visual inspection of all welds.

E. Perform tests of welds as follows: If visual welds are found to be defective, the following procedures are to be used at Architects option.

1. Liquid Penetrant Inspection: ASTM E 165.

2. Magnetic Particle Inspection: ASTM E 109, performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration not acceptable.

3. Radiographic Inspection: ASTM E 94 and ASTM E 142; minimum quality level "2-2T".

4. Ultrasonic Inspection: ASTM E 164.

F. Testing and retesting of defective work will be performed at Contractors expense.

G. Test results shall be reported to the Architect in writing on the same day that testing is performed.

OPEN WEB STEEL JOIST AND JOIST GIRDERS:

The design, fabrication, and erection of steel joists shall conform to the requirements of "The Steel Joist Institute Standard Specifications for Open Web Steel Joist", latest edition. The bottom chord of all joist shall be constructed of double angles. Provide extended ends as shown on drawings.

Steel joists shall be designed to special diagrams and loads indicated on the drawings. Calculations for all joist shall be submitted for review, signed and sealed by a professional structural engineer. See specifications.

Joist manufacturer shall check design of joist designations shown on the drawings for stresses from wind uplift and from pitch. Minimum Design net wind uplift shall be -16 psf zone 1, -27 psf zone 2, -48 psf zone 3 u.n.o. See sheet S1.5 for Roof Zones. Design net wind uplift shall be as specified in the general notes, deducting a maximum of 15 psf dead load, but not exceeding actual dead load. Live load reductions are prohibited for roof joist design.

METAL ROOF DECK ATTACHMENTS (WELDED CONNECTIONS):

Metal Deck shall be as indicated on the drawings and in the specifications. All metal decking shall be G60 galvanized, unless otherwise indicated. Diaphragm metal deck attachments shall be made with welded connections as follows:

Roof Deck 1 1/2", 22 gage and 20 gage as noted, galvanized, wide rib metal deck: ASTM A653 SQ Grade 33, G60:

Ends of deck, at laps, and each intermediate support shall be welded to supports using a 36/7 or 30/6 pattern. Side laps shall be fastened with No.10 stitch screws at 12" o.c. between each support.

Perimeter edges shall be welded at 6" centers, maximum.

Welds shall be minimum 5/8" diameter.

All metal deck welding shall be performed by certified welders and inspected by an Independent Testing Laboratory.

Touch up paint all welds with galvanizing repair paint.

GENERAL NOTES:

Provide 2'-0"x2'-0" corner bars, same number and size, for all horizontal reinforcing, in footings, concrete, beams, walls, and thickened slabs on grade.

All details and sections shown on drawings are intended to be typical and shall be construed to apply to any similar situation elsewhere on the project, except where a different detail is shown.

It is necessary to use the structural drawings with the architectural drawings and project specifications to have a complete scope of the work involved in this project.

All anchors, inserts, plate embeds and reinforcing shall be placed in accordance with approved shop drawings in conjunction with these drawings. Use strongbacks and templates to secure anchor bolts.

Concrete wedge anchors or sleeve anchors, and Tapcons (used for securing secondary framing members only as indicated on the drawings) shall be HILTI KWIK Bolt 3 (KB-3) or approved equal. Size and length as indicated on the drawings. Minimum embedment for wedge anchors shall be 5" unless otherwise indicated. Tapcons shall be 1/4" diameter with 1 1/2" embedment unless otherwise indicated. Provide hot dipped galvanized or stainless steel anchors for all exterior fasteners, unless otherwise indicated. Tapcons shall be installed with 4" edge distance to concrete, 1" edge distance to steel, 3" min. spacing. UNO.

Epoxy installed anchor bolts shall be HILTI HY200 or EPCON C6 epoxy anchor system using HILTI HAS standard rods for interior weather protected air conditioned areas only, and AISI 304 or 316 stainless steel or hot-dipped galvanized for all exterior applications, with 6" minimum embedment, unless otherwise indicated. Install in strict accordance with manufacturers printed instructions.

Epoxy installed rebar shall be installed with HILTI HY200 or EPCON C6 epoxy anchor system with 8" minimum embedment, unless otherwise indicated. Install in strict accordance with manufacturers printed instructions.

Note: Drill-in type anchors are detailed for many connection types. Where reinforcing occurs, particularly in poured-in-place concrete construction, conflicts with reinforcing will occur during installation. Anchors must be relocated when this occurs. The contractor may use cast-in-place anchor bolts or inserts (such as Hohmann and Bernard) in place of drill-in anchors subject to the approval of the Architect/Engineer. Anchor substitutions shall have the same or greater capacity as that specified. Contractor to carefully coordinate the location of cast-in-place anchors with affected trades.

Fill all masonry cells with concrete where fasteners occur to masonry.

Embedment anchors shall be Nelson headed anchors with fluxed ends (or approved equal), size and spacing as indicated on the drawings. Studs shall be automatically end welded to develop 100% of anchor capacity in accordance with recommendations of Nelson Stud Welding Company.

Field verify all existing dimensions, elevations, and conditions that affect new work or fabrication of new structural components. Notify Engineer immediately of all deviations or discrepancies found.

No structural drawings are to be reproduced in any form without written permission of the structural engineer.

Do not scale drawings.

ABBREVIATIONS LIST

Table listing abbreviations and their meanings: CONN. CONNECTION, CONT. CONTINUOUS, DIA. DIAMETER, DIM. DIMENSION, E.A. HILTI HVA EPOXY ANCHOR, FTG. FOOTING, FDN. FOUNDATION, F.O.S. FACE OF STUD, GB. GRADE BEAM, H.S.A. HEADED STUD ANCHORS, L.L.H. LONG LEG HORIZONTAL, L.D.T. LARGE DIAMETER TAPCONS, L.L.V. LONG LEG VERTICAL, LSL. TIMBER STRAND, LW. LONG WAY, MAS. MASONRY, ML. MICROLAM, P. PLATE, PSL OR PL. PARALLAM, P.T. POST TENSIONED, PT. PRESSURE TREATED, SIM. SIMILAR, SS. STAINLESS STEEL, ST'L. STEEL, SW. SHEAR WALL, SW. SHORT WAY, REINF. REINFORCEMENT, R/W. REINFORCED WITH, TB. TIE BEAM, TE. THICKENED EDGE, TYP. TYPICAL, T.S. TUBE STEEL, U.N.O. UNLESS NOTED OTHERWISE, W.A. WEDGE ANCHOR, W.W.F. WELDED WIRE FABRIC

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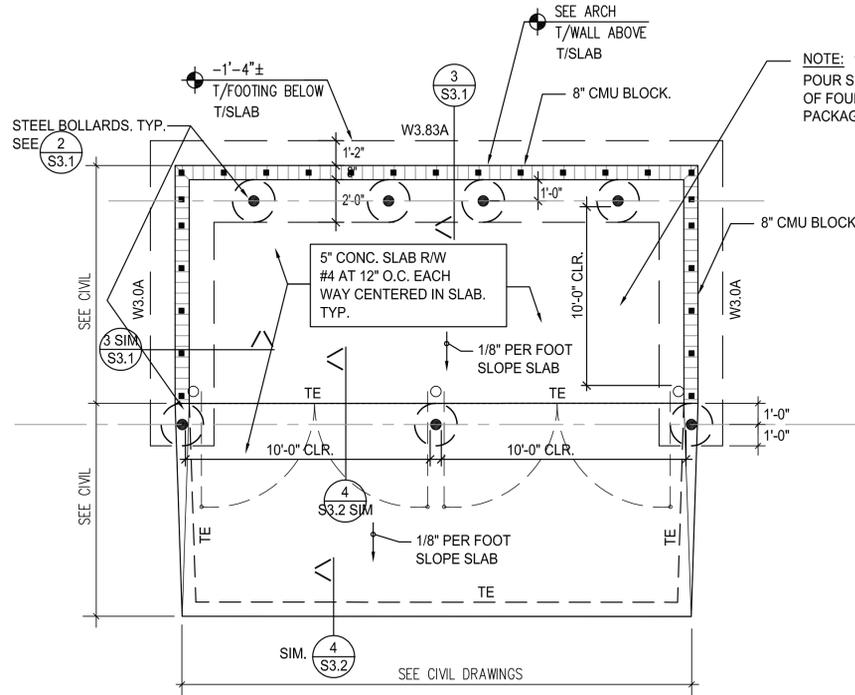
TO THE BEST OF MY KNOWLEDGE THE DRAWINGS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE MINIMUM BUILDING CODES. 1758

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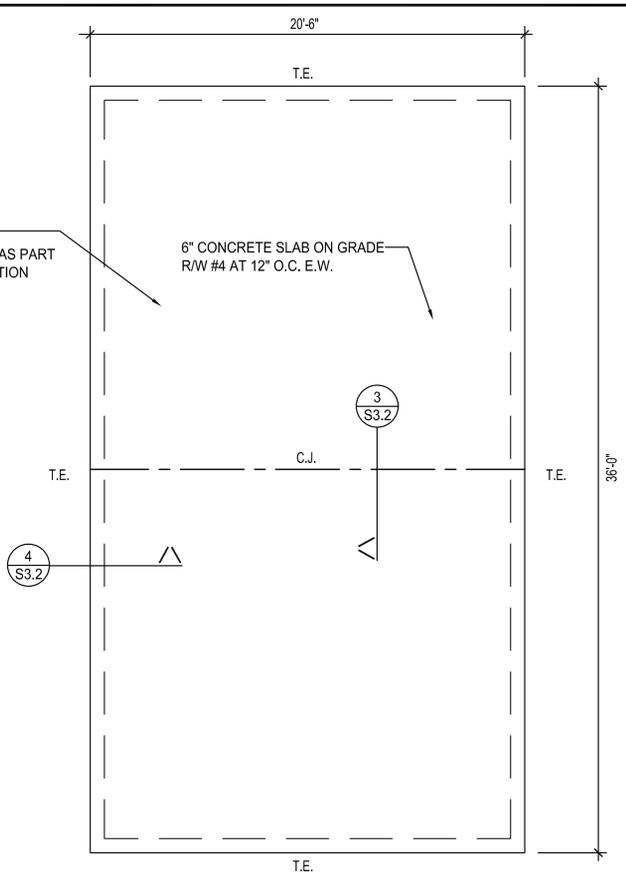
FIRST STEP HOMELESS SHELTER 3889 WEST INTERNATIONAL SPEEDWAY BLVD. DAYTONA BEACH, FLORIDA

Table with columns: NO., REVISION/ SUBMISSIONS, DATE, SHT. TITLE, SEAL, COMMISSION NO. (1613), SCALE, PROJECT ARCH-JEH, SHEET NO. (S1.5), NAME (EDDIE L. COX, P.E.), DRAWN (RLP), CHECKED (ELC), DATE (28-FEB.-2018)

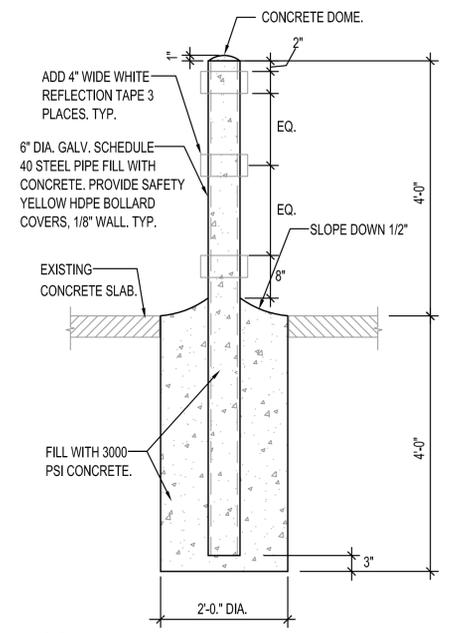




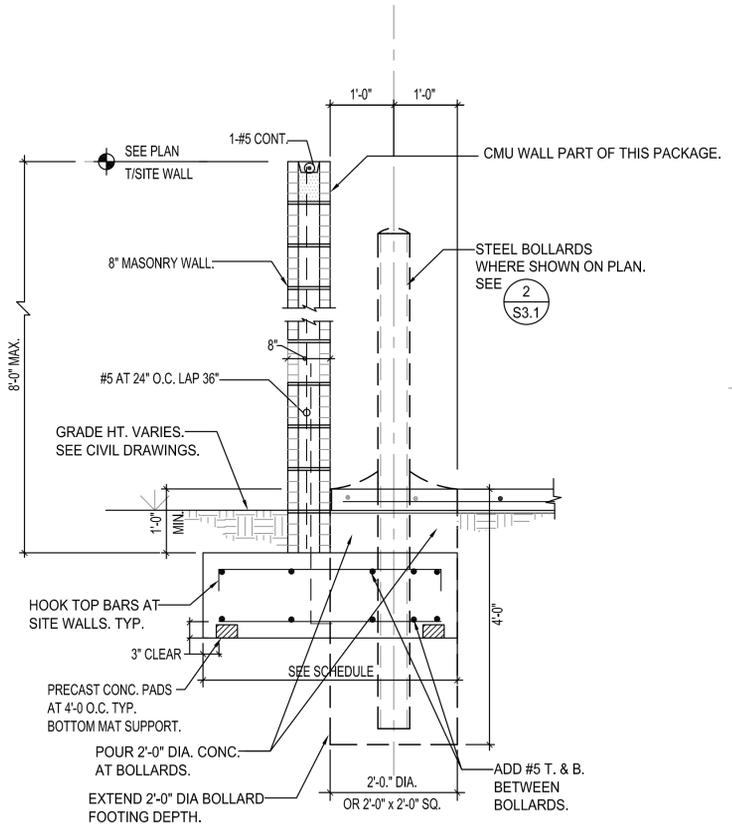
1 FOUNDATION PLAN - DUMPSTER
S3.1 SCALE: 1/4" = 1'-0"



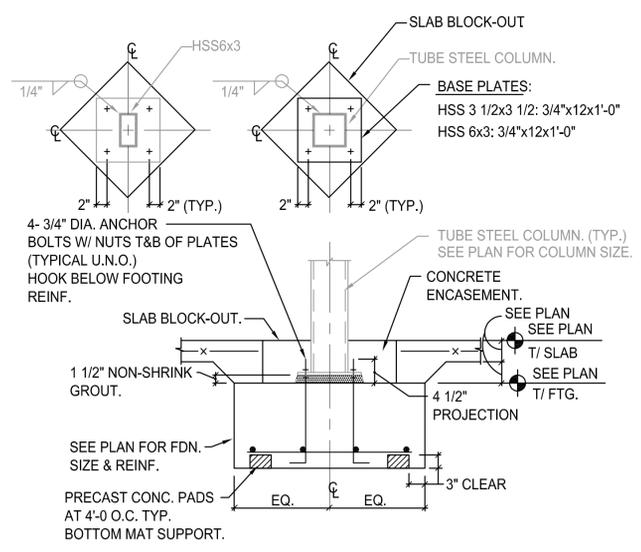
1A FOUNDATION PLAN - STORAGE UNITS
S3.1 SCALE: 1/4" = 1'-0"



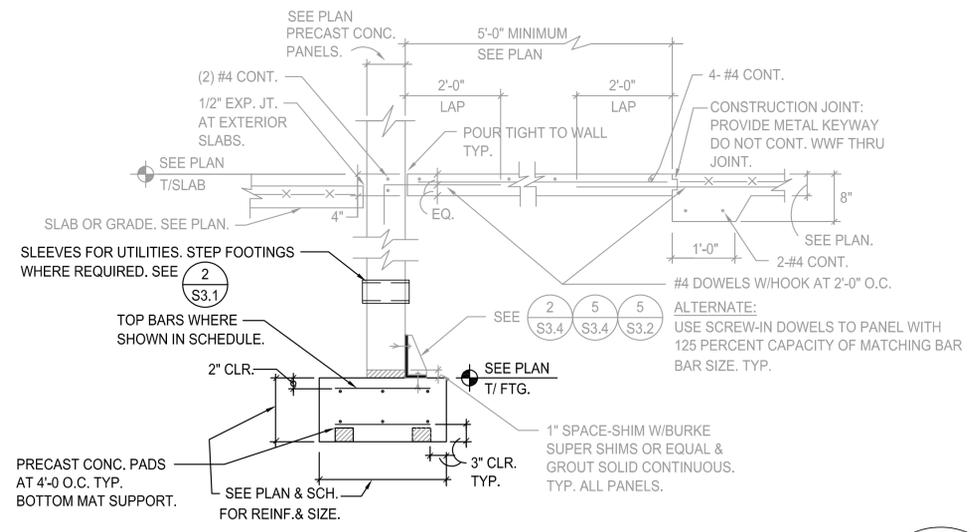
2 TYPICAL BOLLARD DETAIL
S3.1 SCALE: 3/4" = 1'-0"



3 DUMPSTER WALL DETAIL
S3.1 SCALE: 3/4" = 1'-0"



4 SECTION
S3.1 SCALE: 3/4" = 1'-0"



5 TYPICAL FOOTING/CONCRETE PANEL DETAIL
S3.1 SCALE: 3/4" = 1'-0"

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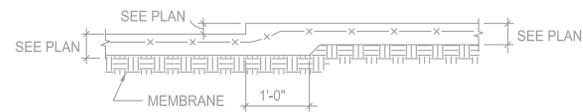
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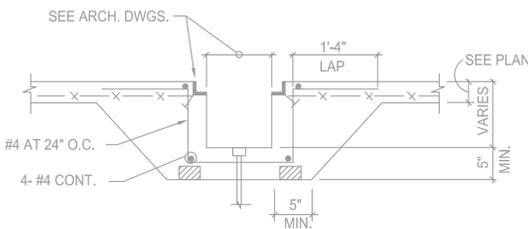
NO.	REVISION/ SUBMISSIONS	DATE
1	ADDENDUM No.1 FOUNDATION PACKAGE	03/23/18

SHT. TITLE		COMMISSION NO.	SCALE:
SEAL		1613	
NAME: EDDIE L. COX, P.E.	DRAWN: RLP	PROJECT ARCH: JEH	SHEET NO.
REG. NO. 27499	CHECKED: ELC		S3.1
EMAIL: ecoc@fcien지니어ing.com	DATE: 28-FEB-2018		

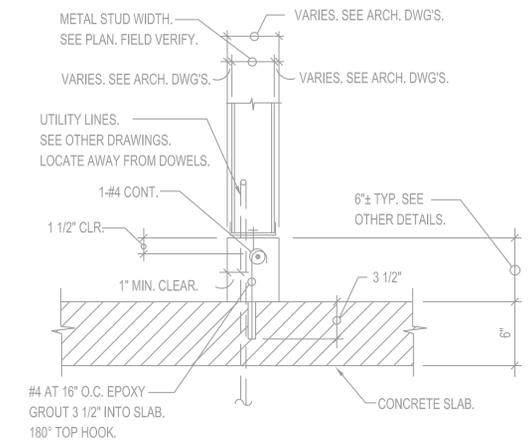




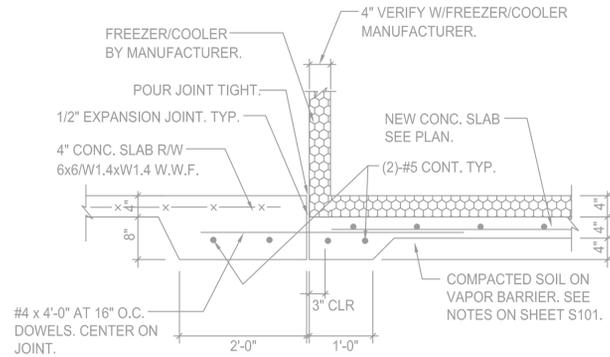
1 TYPICAL DEPRESSED SLAB DETAIL
S3.3 SCALE: 3/4" = 1'-0"



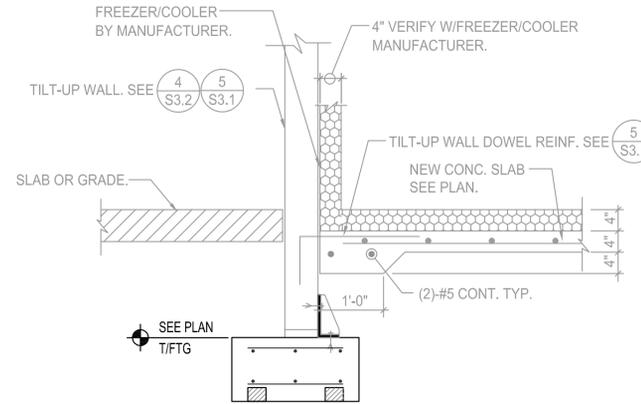
2 SECTION - TRENCH DRAIN
S3.3 SCALE: 3/4" = 1'-0"



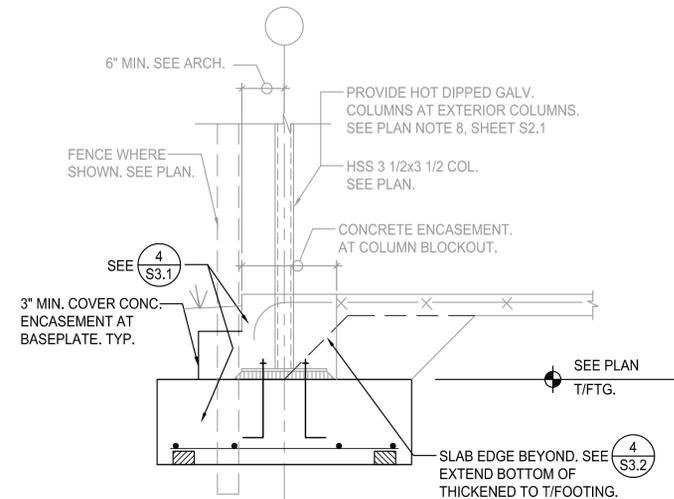
5 TYPICAL CONCRETE CURB AT NEW METAL STUD WALLS
S3.3 SCALE: 1 1/2" = 1'-0"



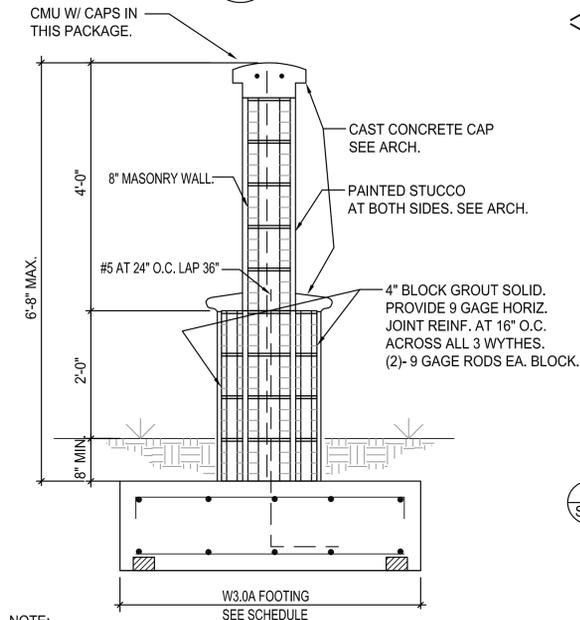
3 SECTION
S3.3 SCALE: 3/4" = 1'-0"



4 SECTION
S3.3 SCALE: 3/4" = 1'-0"



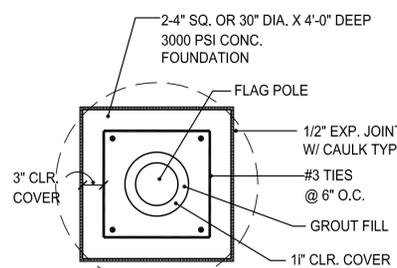
6 SECTION
S3.3 SCALE: 3/4" = 1'-0"



NOTE:
SEE ARCH. SITE PLAN FOR LOCATION.

7 SECTION - MONUMENT SIGN DETAIL
S3.3 SCALE: 3/4" = 1'-0"

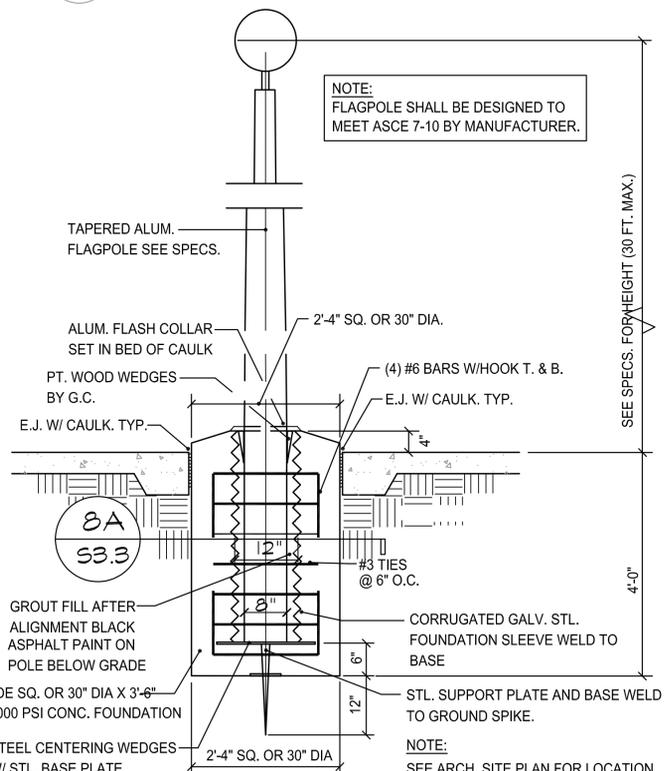
NOTE:
FLAGPOLE WIND DESIGN LOADS PER ASCE 7-10
1. BARE POLE (NO FLAG): $V_{ult} = 150$ MPH, CAT III, EXP. C
2. POLE WITH FLAG: $V_{ult} = 100$ MPH, CAT III, EXP. C
3. FLAG MUST BE REMOVED BEFORE A HURRICANE EVENT.
4. MAXIMUM FLAG SIZE = 6 FT x 10 FT.



8A FLAGPOLE FOUNDATION PLAN
S3.3 SCALE: 3/4" = 1'-0"



7A MONUMENT SIGN ELEVATION
S3.3 SCALE: N.T.S.



8 FLAGPOLE SECTION
S3.3 SCALE: 3/4" = 1'-0"

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NO. Δ	REVISION/ SUBMISSIONS	DATE
1	ADDENDUM No.1 FOUNDATION PACKAGE	03/23/18
SHT. TITLE		
SEAL	COMMISSION NO. 1613	SCALE:
NAME: EDDIE L. COX, P.E.	PROJECT ARCH: JEH	SHEET NO.
REG. NO. 27499	DRAWN: RLP	S3.3
EMAIL: ecocx@fcienr.com	CHECKED: ELC	DATE: 28-FEB.-2018



ELECTRICAL/TELECOM SYMBOL LEGEND

SYMBOL	DESCRIPTION
	MANHOLE
	PULLBOX
	HANDHOLE
	TRANSFORMER
	AUTOMATIC TRANSFER SWITCH
	NEMA RATING; NEMA 1 UNLESS OTHERWISE NOTED NON-FUSED DISCONNECT SWITCH, RATING AS NOTED NF = NON-FUSED
	NEMA RATING; NEMA 1 UNLESS OTHERWISE NOTED FUSED DISCONNECT AF = AMPERE RATING OF FUSE AR = AMPERE RATING OF SWITCH 4X SS = NEMA 4X STAINLESS STEEL ENCLOSURE
	# OF POLES NEMA RATING; NEMA 1 UNLESS OTHERWISE NOTED COMBINATION MAGNETIC MOTOR STARTER, SIZE AS NOTED, 3-POLE UNLESS OTHERWISE NOTED 4X SS = NEMA 4X STAINLESS STEEL ENCLOSURE NEMA STARTER SIZE
	SWITCHBOARD/ SWITCHGEAR/ DISTRIBUTION PANEL
	BRANCH CIRCUIT PANELBOARD, OVER 250 VOLTS, SURFACE MOUNTED
	BRANCH CIRCUIT PANELBOARD, OVER 250 VOLTS, FLUSH MOUNTED
	BRANCH CIRCUIT PANELBOARD, UNDER 250 VOLTS, SURFACE MOUNTED
	BRANCH CIRCUIT PANELBOARD, UNDER 250 VOLTS, FLUSH MOUNTED
	CONDUIT CONCEALED IN SLAB, UNDERGROUND OR UNDER FLOOR
	CONDUIT STUBBED OUT OR UP
	CONDUIT CONTINUED
	EXISTING TO REMAIN (LIGHT, SOLID LINE)
	NEW (HEAVY, SOLID LINE OR DASHED LINE)
	EXTERIOR POLE-MOUNTED AREA LIGHT FIXTURE. ARMS AS INDICATED ON DRAWINGS

ABBREVIATIONS

AC	ALTERNATING CURRENT	LBS	POUNDS
ADA	AMERICANS WITH DISABILITIES ACT	MAX	MAXIMUM
AF	AMPERE FRAME	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR	MDP	MAIN SERVICE DISTRIBUTION PANEL
AFG	ABOVE FINISHED GRADE	MIN	MINIMUM
AIC	AMPERE INTERRUPTING CAPACITY	MSB	MAIN SERVICE SWITCHBOARD
AL	ALUMINUM	MTD	MOUNTED
AMP	AMPERE	MTG	MOUNTING
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MVA	MEGA VOL T AMPS
ASA	AMERICAN STANDARDS ASSOCIATION	NEC	NATIONAL ELECTRICAL CODE
AT	AMPERE TRIP	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
ATS	AUTOMATIC TRANSFER SWITCH	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
AUX	AUXILIARY	NIC	NOT IN CONTRACT
AWG	AMERICAN WIRE GAUGE	OSHA	OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
BC	BARE COPPER	P	POLE
C	CONDUIT OR RACEWAY	PB	PULLBOX
CO	CONDUIT OR RACEWAY ONLY	PNL	PANEL
DISC	DISCONNECT	PRI	PRIMARY
DISC SW	DISCONNECT SWITCH	PVC	POLYVINYLCHLORIDE
EMT	ELECTRIC METALLIC TUBING	POWER	POWER
EOR	ENGINEER OF RECORD	RMS, GRC	RIGID GALVANIZED STEEL CONDUIT
ETR	EXISTING TO REMAIN	RSS	ROOT-MEAN-SQUARE
FBC	FLORIDA BUILDING CODE	SEC	SECONDARY
FLA	FULL LOAD AMPERES	SS	STAINLESS STEEL
FT	FEET	TEL	TELEPHONE
GND, G	GROUND	TYP	TYPICAL
HORIZ	HORIZONTAL	UG	UNDERGROUND
IBC	INTERNATIONAL BUILDING CODE	UON	UNLESS OTHERWISE NOTED
IECC	INTERNATIONAL ENERGY CONSERVATION CODE	UL	UNDERWRITERS LABORATORIES
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS	UTIL	UTILITY
IES	ILLUMINATING ENGINEERING SOCIETY	V	VOLT
IMC	INTERMEDIATE METAL CONDUIT	VA	VOLT-AMPERE
IN	INCHES	W	WIRE
IPCEA	INSULATED POWER CABLE ENGINEERS ASSOCIATION	WP	WEATHER PROOF
JB OR J-BOX	JUNCTION BOX	XFR	TRANSFER
KV	KILOVOLT	XFR	TRANSFER
KVA	KILOVOLT AMPERES	XFR	TRANSFER
KW	KILOWATT		
KWH	KILOWATT HOURS		

NOTE: SOME SYMBOLS SHOWN ON THIS LEGEND MAY NOT PERTAIN TO THIS PROJECT.

APPLICABLE CODES

ALL FURNISHED ELECTRIC EQUIPMENT, MATERIALS, AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST ADOPTED EDITION BY THE AUTHORITIES HAVING JURISDICTION, OF THE CODES AND STANDARDS OF THE FOLLOWING ORGANIZATIONS:

- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), INCLUDING (BUT NOT LIMITED TO):
 - NATIONAL ELECTRICAL CODE (NEC), NFPA 70
 - NATIONAL FIRE ALARM CODE, NFPA 72
 - LIFE SAFETY CODE, NFPA 101
 - EMERGENCY AND STANDBY POWER SYSTEMS, NFPA 110
 - STANDARD FOR THE INSTALLATION OF LIGHTNING PROTECTION SYSTEMS, NFPA 780
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), INCLUDING (BUT NOT LIMITED TO):
 - NATIONAL ELECTRICAL SAFETY CODE, ANSI C2
 - OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
 - FEDERAL COMMUNICATION COMMISSION (FCC)
 - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
 - INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)
 - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
 - NATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)
 - AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)
 - ILLUMINATION ENGINEERING SOCIETY (IES)
 - ANTI-FRICTION BEARING MANUFACTURERS ASSOCIATION (AFBMA)
 - BUILDING OFFICIALS AND CODE ADMINISTRATORS INTERNATIONAL, INC. (BOCA)
 - INTERNATIONAL CODE COUNCIL (ICC):
 - INTERNATIONAL BUILDING CODE (IBC)
 - INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO)
 - INTERNATIONAL ENERGY CONSERVATION CODE (IECC), ENDORSED BY THE U.S. DEPARTMENT OF ENERGY (DOE)
 - COMBINED ANSIS/ASHRAES STANDARD 90.1 - "ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS"
 - NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION INSTALLATION STANDARDS (NECA)
 - AMERICANS WITH DISABILITIES ACT (ADA)
 - APPLICABLE STATE AND LOCAL CODES, AMENDMENTS, REGULATIONS, AND PRACTICES.
 - APPLICABLE REGULATORY REQUIREMENTS AND ADVISORY PRACTICES OF APPROPRIATE:
 - AUTHORITIES HAVING JURISDICTION (AHJs)
 - APPLICABLE STANDARDS, REGULATIONS, AND PRACTICES OF THE OWNER.
 - CODES APPLICABLE TO FLORIDA ONLY, INCLUDING:
 - FLORIDA BUILDING CODE
 - FLORIDA ENERGY CONSERVATION
 - FLORIDA FIRE PREVENTION CODE

WHERE A CONFLICT EXISTS BETWEEN THE AUTHORITY HAVING JURISDICTION, APPLICABLE STATE AND LOCAL BUILDING CODES, AMENDMENTS, REGULATIONS, AND PRACTICES, AND ANY PROVISIONS OF THE ABOVE REFERENCED CODES OR STANDARDS, THE MORE STRINGENT OR RESTRICTIVE REQUIREMENT SHALL TAKE PRECEDENCE.

ELECTRICAL/TELECOM SPECIFICATIONS

26 05 01 - COMMON WORK RESULTS

A. SCOPE OF WORK:

THE WORK PROVIDED UNDER THIS DIVISION SHALL INCLUDE ALL LABOR, MATERIALS, PERMITS, INSPECTIONS AND REINSPECTION FEES, TOOLS, EQUIPMENT, TRANSPORTATION, INSURANCE, TEMPORARY PROTECTION, TEMPORARY LIGHTING, SUPERVISION AND INCIDENTAL ITEMS ESSENTIAL FOR PROPER INSTALLATION AND OPERATION, EVEN THOUGH NOT SPECIFICALLY MENTIONED OR INDICATED BUT WHICH ARE USUALLY PROVIDED OR ARE ESSENTIAL FOR PROPER INSTALLATION AND OPERATION OF ALL ELECTRICAL SYSTEMS AS INDICATED IN CONTRACT DOCUMENTS.

B. NOTICES:

GIVE ALL NOTICES, FILE ALL PLANS, PAY ALL FEES, OBTAIN ALL PERMITS AND APPROVALS FROM AUTHORITIES HAVING JURISDICTION. INCLUDE ALL FEES IN THE BID PRICE.

C. INTERPRETATION OF DRAWINGS:

- THE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW EXACT LOCATIONS OF CONDUIT RUNS, OUTLET BOXES, JUNCTION BOXES, PULL BOXES, ETC. THE LOCATIONS OF EQUIPMENT, APPLIANCES, FIXTURES, CONDUITS, OUTLETS, BOXES AND SIMILAR DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. EXACT LOCATIONS SHALL BE AS ACCEPTED BY THE ENGINEER DURING CONSTRUCTION. OBTAIN IN THE FIELD ALL INFORMATION RELEVANT TO THE PLACING OF ELECTRICAL WORK AND IN CASE OF INTERFERENCE WITH OTHER WORK, PROCEED AS DIRECTED BY THE ENGINEER AND PROVIDE ALL LABOR AND MATERIALS NECESSARY TO COMPLETE THE WORK IN AN ACCEPTABLE MANNER.
- DISCREPANCIES: NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES FOUND DURING CONSTRUCTION OF THE PROJECT AND DO NOT PROCEED WITH THAT PORTION OF THE PROJECT, UNTIL A WRITTEN DEFINITIVE STATEMENT IS RECEIVED PROVIDING CLEAR DIRECTION. IF A CONFLICT EXISTS BETWEEN THE CONTRACT DOCUMENTS AND ANY APPLICABLE CODE OR STANDARD, THE MOST STRINGENT REQUIREMENT SHALL BE INCLUDED FOR THIS PROJECT. THE ENGINEER SHALL MAKE THE DECISION REGARDING QUESTIONABLE AREAS OF CONFLICT.

ALL MATERIALS SHALL BE NEW, FREE FROM DEFECTS AND SHALL BE EITHER U.L. LABELED, U.L. LISTED OR BEAR THE SEAL OF A NATIONALLY RECOGNIZED ELECTRICAL TESTING LABORATORY.

SHOP DRAWINGS ARE REQUIRED FOR ALL MATERIALS AND EQUIPMENT.

ALL EQUIPMENT SHALL BE FIRMLY MOUNTED USING APPROVED HANGERS ATTACHED TO STRUCTURAL PORTIONS OF THE BUILDING. SUPPORTING WITH THE WIRE IS PROHIBITED. LIGHT FIXTURES RECESSED IN CEILINGS SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE INDEPENDENT OF THE CEILING SYSTEM.

SERVICE AND METERING SHALL MEET THE REQUIREMENTS OF THE LOCAL UTILITY COMPANY AND ALL PROVISIONS OF NAPA 70. TEMPORARY LIGHT AND POWER SHALL BE PROVIDED AS REQUIRED BY OSHA.

SYSTEMS GUARANTEE: PROVIDE A ONE-YEAR GUARANTEE. THIS GUARANTEE SHALL BE BY THE CONTRACTOR TO THE OWNER FOR ANY DEFECTIVE WORKMANSHIP OR MATERIAL WHICH HAS BEEN PROVIDED UNDER THIS CONTRACT AT NO COST TO THE OWNER FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE SYSTEM. THE GUARANTEE SHALL INCLUDE ALL LAMPS, FOR NINETY DAYS AFTER DATE OF SUBSTANTIAL COMPLETION OF THE SYSTEM. EXPLAIN THE PROVISIONS OF GUARANTEE TO THE OWNER AT THE DEMONSTRATION OF COMPLETED SYSTEM.

J. TEST AND PERFORMANCE VERIFICATION

- EQUIPMENT AND APPLICATIONS SHALL BE PER NEMA STANDARDS.
- CABLES, MOTORS, GROUNDS, TRANSFORMERS, AND THE EMERGENCY SYSTEM SHALL BE THOROUGHLY TESTED. CONTRACTOR SHALL PROVIDE A REPORT INDICATING THE RESULTS OF ALL TESTS.

26 05 53 - ELECTRICAL IDENTIFICATION

LANGUAGE ON ALL IDENTIFICATION LABELS SHALL BE IN ENGLISH.

CONDUITS SYSTEM MARKERS SHALL BE ENGRAVED PLASTIC LAMINATE NAMEPLATES AND SHALL BE ADHESIVE OR PRE-TENSIONED SNAP ON COLOR CODED, SYSTEM MARKING MATERIALS.

IDENTIFY ALL RACEWAYS PROVIDED OR UTILIZED AS PART OF THIS PROJECT AS FOLLOWS:

- APPLY BANDS 10 FEET ON CENTER ALONG THE RACEWAY SYSTEM AND AT EACH SIDE OF WALLS OR FLOORS, AND AT BRANCHES FROM MAINS.

SPOT PAINTING ON ROUGH-IN:

- CONDUIT, RACEWAYS, BOXES, BACKBONES, PANELBOARDS, ETC. SHALL BE SPOT PAINTED. CONDUIT SHALL BE IDENTIFIED WITHIN 6 INCHES OF THE BOX OR ENCLOSURE. THE ENTIRE BOX AND COVERPLATE SHALL BE PAINTED.

- USE FOLLOWING COLORS FOR COLOR BANDS AND FOR COLOR CODING:

SYSTEM	COLOR
NORMAL POWER	WHITE

ELECTRICAL GENERAL NOTES

GENERAL:

- THE DRAWINGS AND APPLICABLE SPECIFICATIONS SHALL BE CONSIDERED SUPPLEMENTARY, ONE TO THE OTHER AND ARE CONSIDERED THE "CONTRACT DOCUMENTS". ALL WORKMANSHIP, METHODS AND/OR MATERIALS DESCRIBED OR IMPLIED BY ONE AND NOT DESCRIBED OR IMPLIED BY THE OTHER SHALL BE PROVIDED, FURNISHED OR PERFORMED AS IF IT HAD APPEARED IN BOTH SECTIONS. THE TERM "CONTRACT DOCUMENTS" DESCRIBED HEREIN IS NOT LIMITED SOLELY TO THE ELECTRICAL PORTION OF THE DRAWINGS AND SPECIFICATIONS, BUT ENCOMPASSES THE DRAWINGS AND SPECIFICATIONS OF ALL DIVISIONS AS A WHOLE.
- INCLUDE ALL COSTS FOR EXCAVATION, SAW CUTTING, DIRECTIONAL BORING, CORE DRILLING, BACKFILLING, SURFACE RESTORATION, REPAIR OF FINISHES, ETC. THAT IS REQUIRED IN ORDER TO MEET THE PROJECT REQUIREMENTS.
- INCLUDE IN BID ALL COSTS ASSOCIATED WITH TEMPORARY ELECTRICAL SERVICE AS REQUIRED FOR USE BY ALL TRADES DURING CONSTRUCTION. REMOVE TEMPORARY POWER AT THE COMPLETION OF THE PROJECT. OBTAIN AND PAY FOR ALL REQUIRED PERMITS FOR TEMPORARY POWER. ENGINEER OF RECORD SHALL BE PROVIDED WITH ADDITIONAL COMPENSATION FROM THE CONTRACTOR WHERE SIGNED & SEALED DRAWINGS ARE REQUESTED BY THE CONTRACTOR TO THE ENGINEER OF RECORD IF REQUIRED BY THE AHJ FOR THE TEMPORARY POWER.
- LOCATE, IDENTIFY, PROTECT AND DOCUMENT ALL UTILITY LINES LOCATED WITHIN THE PROJECT BOUNDARY. FOR LOCATING SITE UTILITIES, CONTACT SUNSHINE STATE ONE CALL OF FLORIDA, INC. AT LEAST 48 HOURS IN ADVANCE PRIOR TO DIGGING, AT 1-800-432-4770.
- INCLUDE IN BID THE TRANSPORT AND DISPOSAL OR RECYCLING OF ALL WASTE MATERIALS GENERATED BY THIS PROJECT IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL RULES, REGULATIONS AND GUIDELINES APPLICABLE. COMPLY FULLY WITH FLORIDA STATUTES REGARDING MERCURY-CONTAINING DEVICES, AND WITH ALL DEP AND EPA APPLICABLE GUIDELINES AT THE TIME OF DISPOSAL. PROVIDE OWNER WITH WRITTEN CERTIFICATION OF ACCEPTED DISPOSAL.

COORDINATION:

- THIS PROJECT REQUIRES COORDINATION DRAWINGS BY THE CONTRACTOR. PARTICIPATE IN THE COORDINATION DRAWING PREPARATION PROCESS AND PROVIDE ALL NECESSARY INFORMATION REQUIRED TO COORDINATE ALL TRADE INFORMATION.
- ALL WORK ON THE ELECTRICAL SYSTEM REQUIRED BY THE CONTRACT DOCUMENTS SHALL BE COORDINATED WITH THE WORK OF ALL OTHER DIVISIONS/TRADES PRIOR TO COMMENCEMENT OF WORK. AVOID INTERFERENCES WITH THE PROGRESS OF OTHER DIVISIONS/TRADES.
- WHERE A DISCREPANCY OR CONFLICT IS FOUND BETWEEN ONE DRAWING AND ANOTHER, OR BETWEEN A DRAWING AND APPLICABLE SPECIFICATIONS, NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY IN WRITTEN FORM. IN GENERAL, THE MOST STRINGENT REQUIREMENT SHALL GOVERN UNLESS THE DISCREPANCY CONFLICTS WITH APPLICABLE CODES OR OWNERS DESIGN STANDARDS, WHEREIN THE CODE OR OWNER'S DESIGN STANDARDS SHALL GOVERN.
- COORDINATE ALL PROJECT SCHEDULING AND PHASING REQUIREMENTS WITH ARCHITECT/ENGINEER AND OWNER PRIOR TO SUBMITTING BID PRICE. THIS PROJECT MAY REQUIRE PHASING SEQUENCES AND POTENTIAL PREMIUM TIME WORK AND ALL COSTS FOR SUCH SHALL BE INCLUDED IN THE BID PRICE. PROVIDE ADEQUATE WORK FORCE AND EQUIPMENT, AND INCLUDE PREMIUM TIME AS MAY BE REQUIRED IN ORDER TO ADHERE TO THE PROJECT SCHEDULE. ADDITIONALLY, ENSURE THAT LONG LEAD ITEMS DO NOT IMPACT THE PROJECT'S SCHEDULE OR PHASING.
- ANY TEMPORARY INTERRUPTION ON POWER REQUIRED FOR THE SYSTEM TIE-IN OR SWITCHOVER FOR ANY PORTION OF THE ELECTRICAL SYSTEM SHALL BE PRE-APPROVED IN WRITING BY THE OWNER AND SCHEDULED IN ADVANCE.
- COORDINATE EXACT REQUIREMENTS WITH THE LOCAL UTILITY COMPANIES AND PROVIDERS (ELECTRIC, TELEPHONE, CABLE TV, ETC.) AND INCLUDE ALL COSTS FOR PROVIDING TEMPORARY AND PERMANENT SERVICES REQUIRED FOR THIS PROJECT IN THE BID PRICE. BID PRICE SHALL INCLUDE, BUT NOT BE LIMITED TO, EXCAVATION, RACEWAYS, BACKFILL, EQUIPMENT, EQUIPMENT PADS, BACKBOARDS, METERS, GROUNDING, UTILITY ENGINEERING AND IMPACT FEES.
- CONDUCT WORK OPERATIONS AND DEBRIS REMOVAL IN A MANNER THAT ENSURES MINIMUM INTERFERENCE WITH NORMAL BUSINESS OPERATIONS, TRAFFIC, PARKING, ETC. ONGOING IN ADJACENT OCCUPIED SPACES OR FACILITIES. PROVIDE ALL THAT IS REQUIRED TO EFFECTIVELY PROTECT SURROUNDING OCCUPANTS, EQUIPMENT, FINISHES, FURNITURE, ETC. FROM DAMAGE OR EXCESSIVE NOISE THROUGHOUT THE DURATION OF THIS PROJECT. CONTRACTOR IS RESPONSIBLE FOR ANY LOSSES OR DAMAGE. ANY DAMAGE RESULTING FROM THE FAILURE TO ADHERE TO THIS REQUIREMENT, RESTORE DAMAGED ELEMENTS TO ORIGINAL CONDITION BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT/ENGINEER AND OWNER. AT NO ADDITIONAL COSTS, REPORT OF ANY SUCH OCCURRENCE TO THE ARCHITECT/ENGINEER AND OWNER IMMEDIATELY AND AWAIT WRITTEN DIRECTION PRIOR TO PROCEEDING WITH REPAIRS.

ELECTRICAL EQUIPMENT:

- PROVIDE A REINFORCED CONCRETE PAD, SIZED 4" LARGER IN ALL DIRECTIONS THAN THE FOOTPRINT OF THE EQUIPMENT, AND 4" HIGH, FOR ALL FREESTANDING, FLOOR-MOUNTED ELECTRICAL EQUIPMENT. PROVIDE VIBRATION ISOLATORS AND/OR ANCHORS PER MANUFACTURERS INSTRUCTIONS.
- IDENTIFICATION:
 - PROVIDE NEATLY HANDWRITTEN IDENTIFICATION ON THE EXTERIOR COVER OF ALL JUNCTION BOXES, PULLBOXES AND WIREWAYS, IDENTIFYING THE PANEL(S) CIRCUIT NUMBER(S) CONTAINED WITHIN.
 - PROVIDE REQUIRED IDENTIFICATION PER ANSI STANDARDS, NEC REQUIREMENTS, AND OWNER'S PUBLISHED DESIGN STANDARDS WHERE APPLICABLE.
- RACEWAYS:
 - ALL RACEWAYS THAT TURN UP INTO THE SLAB OR ELECTRICAL EQUIPMENT FROM UNDERGROUND SHALL BE RIGID GALVANIZED STEEL (RGS) WITH BITUMASTIC COATING FOR AT LEAST THE FINAL 18" IN LENGTH. THE USE OF NON-METALLIC CONDUIT ABOVE GRADE IS PROHIBITED.
 - PROVIDE POLYOLEFIN, IET-LINE #232 (NYLON PULL STRING) IN EACH EMPTY CONDUIT WITH ENGRAVED METAL TAG INDICATING CONDUIT DESIGNATION.
 - MINIMUM RACEWAY SIZE SHALL BE 3/4" UNLESS NOTED OTHERWISE. SET SCREW TYPE FITTINGS ARE ALLOWED FOR EMT CONDUIT.

GENERAL SPECIFICATIONS:

- THE DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO SHOW EVERY DETAIL OF CONSTRUCTION, METHODS, MATERIALS AND EQUIPMENT, OR EXACT LOCATIONS, ROUTING, ETC. THEY INDICATE THE RESULT TO BE ACHIEVED BY THE ASSEMBLAGE OF SEVERAL SYSTEMS FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM. DO NOT SCALE THE CONTRACT DOCUMENTS. COORDINATE EXACT EQUIPMENT LOCATIONS WITH THE ARCHITECTURAL, CIVIL AND STRUCTURAL CONTRACT DOCUMENTS, AS WELL AS FIELD CONDITIONS, APPROVED SHOP DRAWINGS AND WORK OF ALL OTHER DIVISIONS/TRADES.
- THE TERM "PROVIDE" USED IN THE CONTRACT DOCUMENTS INDICATES TO FURNISH AND INSTALL MATERIALS REQUIRED FOR CORRECT INSTALLATION OF A COMPLETE SYSTEM, UNLESS SPECIFICALLY NOTED OTHERWISE.
- UNLESS NOTED AS EXISTING, ALL ELECTRICAL INDICATED ON THE CONTRACT DOCUMENTS SHALL BE NEW, SHALL BE U.L. LISTED, AND SHALL BEAR A U.L. LABEL, WHERE NO U.L. LABEL OR LISTING IS AVAILABLE, THE MATERIAL SHALL BE LISTED WITH AN APPROVED, NATIONALLY RECOGNIZED ELECTRICAL TESTING AGENCY.
- PROVIDE EXPERIENCED, QUALIFIED AND RESPONSIBLE SUPERVISION FOR ALL WORK REQUIRED BY THE CONTRACT DOCUMENTS. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, TO THE SATISFACTION OF THE ARCHITECT/ENGINEER AND OWNER.
- CARRY ALL INSURANCE REQUIRED TO PROTECT AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF THIS PROJECT.
- GUARANTEE ALL MATERIALS AND WORKMANSHIP ARE FREE FROM DEFECTS FOR A PERIOD OF NOT LESS THAN ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE ARCHITECT/ENGINEER AND OWNER, UNLESS OTHERWISE NOTED IN DIVISION 1. AT NO ADDITIONAL COSTS, PROVIDE THE CORRECTION OF ANY DEFECTS INCLUDING REPAIR OR REPLACEMENT.
- INCLUDE ALL COSTS ASSOCIATED WITH PERMITS, LICENSES, FEES, INSPECTIONS, TESTING AND TEMPORARY POWER IN THE BID PRICE, UNLESS NOTED OTHERWISE.
- IF HAZARDOUS MATERIALS ARE ENCOUNTERED, COMPLY WITH ALL APPLICABLE RULES, REGULATIONS AND GUIDELINES CONCERNING REMOVAL, HANDLING, DISPOSAL AND PROTECTION AGAINST ENVIRONMENTAL EXPOSURE OR POLLUTION. PROVIDE DOCUMENTATION OF SAID COMPLIANCE.
- PROVIDE ELECTRONIC SUBMITTALS (PRODUCT DATA & SHOP DRAWINGS) FOR EACH MAJOR COMPONENT OF THE ELECTRICAL SYSTEM FOR REVIEW BY THE A/E AND OWNER. MAJOR COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO, RACEWAYS, BOXES, WIRE AND CABLE, EQUIPMENT, DEVICES, LIGHT FIXTURES, SWITCHGEAR, PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, FIRE ALARM SYSTEM, ETC. ALL SUBMITTALS ARE TO BE REVIEWED AND APPROVED BY THE CONTRACTOR FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS PRIOR TO SUBMITTING TO THE A/E. ALLOW A MINIMUM OF TEN (10) BUSINESS DAYS FOR REVIEW BY A/E, UNLESS OTHERWISE NOTED IN DIVISION 1.

- THE ELECTRICAL PORTION OF THE CONTRACT DOCUMENTS ARE COORDINATED WITH THE DESIGN BASIS EQUIPMENT SPECIFIED BY DIVISION 26 AND OTHER DIVISIONS, WHERE THE CONTRACTOR ELECTS TO SUBSTITUTE A PRODUCT IN LIEU OF PROVIDING THE DESIGN BASIS, AND SAID SUBSTITUTION IS ACCEPTED BY THE A/E AND OWNER, THE CONTRACTOR SHALL MAKE ALL CORRECTIONS TO THE ELECTRICAL SYSTEM NECESSARY IN ORDER TO ENSURE A COMPLETE AND OPERATIONAL INSTALLATION OF THE EQUIPMENT AT NO ADDITIONAL COSTS. WHERE THE CONTRACTOR'S DESIGN SUBSTITUTION RESULTS IN THE NEED FOR THE ENGINEER TO REVISE THE CONTRACT DOCUMENTS, THE ENGINEER RESERVES THE RIGHT TO REQUEST COMPENSATION FROM THE CONTRACTOR FOR SAID SERVICES.
- MAINTAIN A CURRENT AND ACCURATE SET OF PROJECT RECORD DOCUMENTS (AS-BUILTS) AT THE SITE THROUGHOUT THE DURATION OF THE PROJECT. RECORD DRAWINGS SHALL BE UPDATED EACH DAY TO REFLECT THE ACTUAL LOCATIONS, SIZES, ROUTING, ETC. OF EACH PORTION OF THE ELECTRICAL SYSTEM AFFECTED BY THIS WORK. A FINAL SET OF RECORD DOCUMENTS SHALL BE ISSUED TO THE A/E FOR REVIEW AND THEN SUBMITTED TO THE OWNER WITHIN 30 DAYS AFTER THE DATE OF FINAL ACCEPTANCE. PROVIDE RECORD DRAWINGS OF THE ACTUAL INSTALLATION INCLUDING SINGLE LINE DIAGRAM, POWER RISER DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM, SITE PLANS AND ALL ELECTRICAL FLOOR PLANS, DETAILS, PANEL SCHEDULES, ETC.

WHERE THERE IS A DISCREPANCY BETWEEN ABOVE GENERAL NOTES AND SPECIFICATIONS, WHERE APPLICABLE, SPECIFICATIONS SHALL BE FOLLOWED

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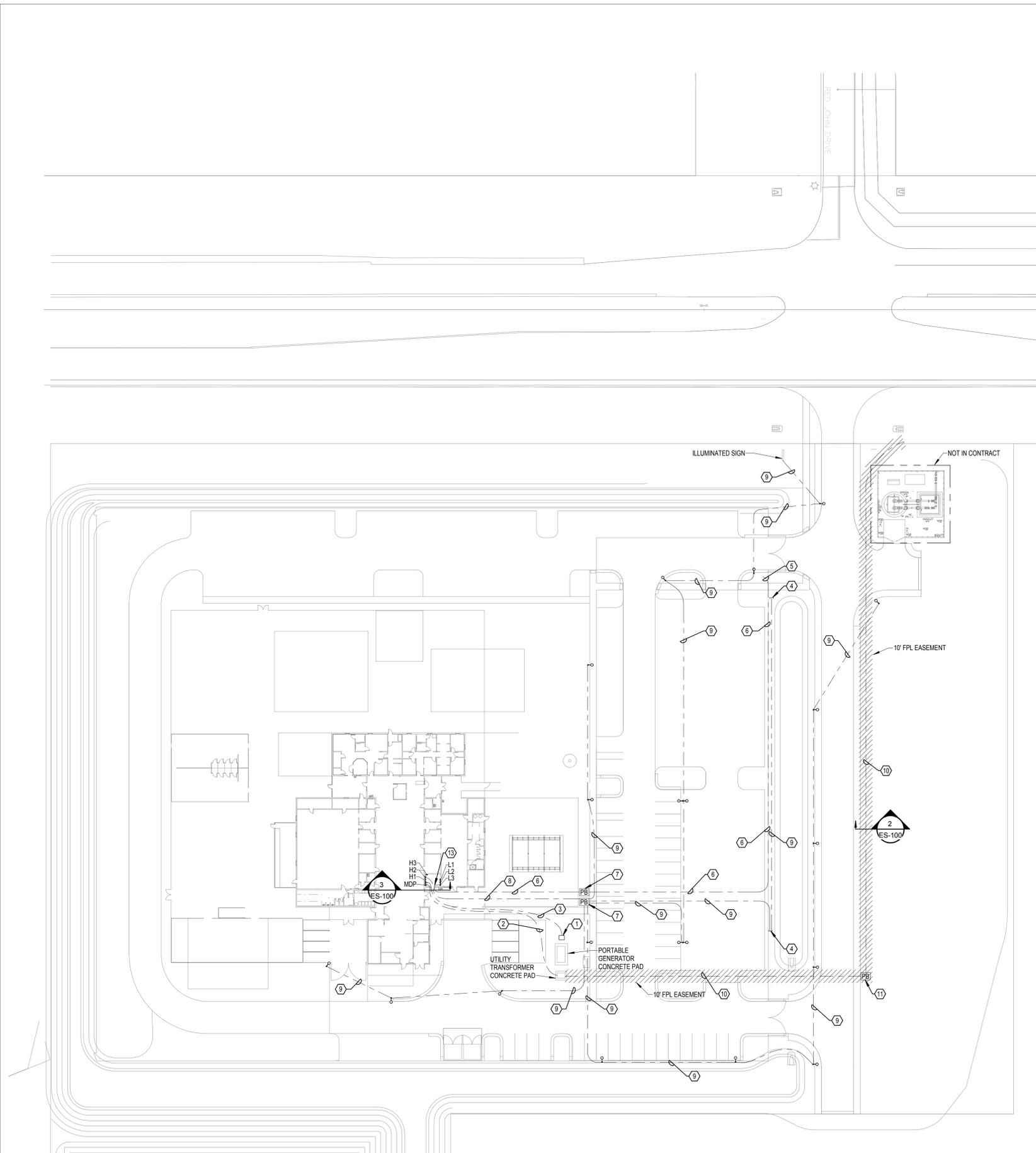
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NO.	REVISION/ SUBMISSIONS	DATE
1	ADDENDUM #1 - FOUNDATION PACKAGE	03/23/18

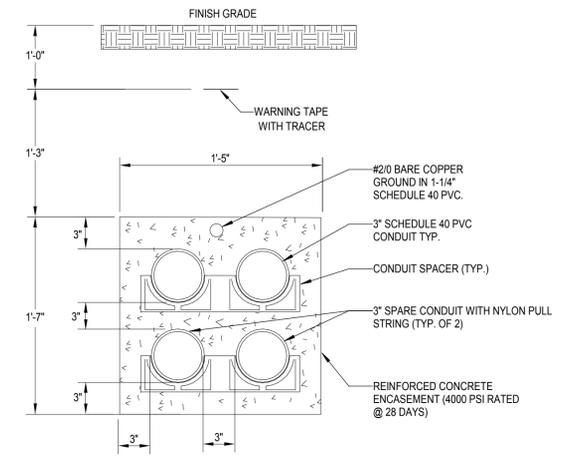
SHT. TITLE	ELECTRICAL/TELECOM LEGENDS & SYMBOLS	
SEAL	COMMISSION NO. 1613	SCALE: N.T.S.
	PROJECT ARCH: JEH	SHEET NO.
	DRAWN: CVM	ET001
	CHECKED: LAR	
	DATE: 03/23/2018	



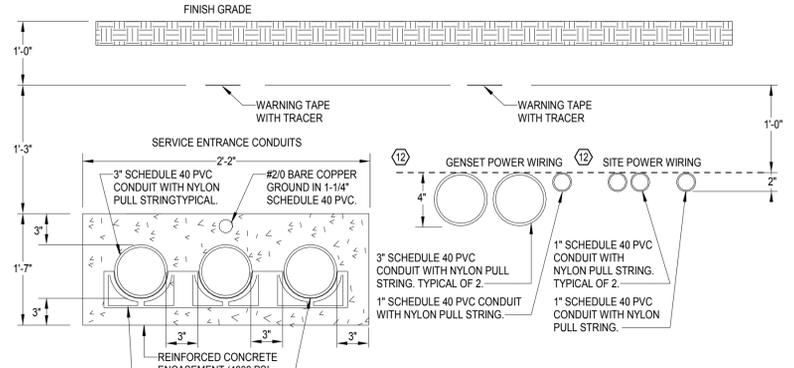
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FL License #65457



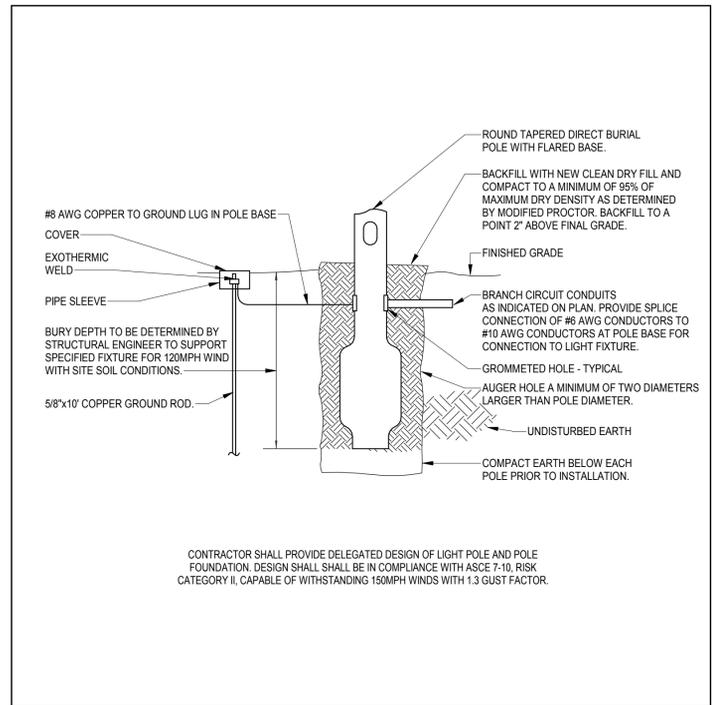
1 ELECTRICAL SITE CONVEYANCES PLAN
1" = 40'-0"



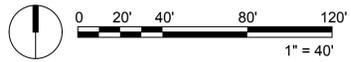
2 ELECTRICAL DUCT BANK DETAIL
N.T.S.



3 ELECTRICAL INCOMING CONDUITS DETAIL
N.T.S.



TYPICAL LIGHT POLE DETAIL
No Scale



- GENERAL NOTES**
- ALL UNDERGROUND CONDUIT AND CONDUCTOR ROUTING SHALL BE COORDINATED IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR SHALL PROVIDE PULL BOXES AS REQUIRED BY CODE FOR A COMPLETE CODE COMPLIANT INSTALLATION BASED ON INSTALLED CONDUIT ROUTING.
 - EXACT ROUTING OF UNDERGROUND CONDUIT SHALL BE DETERMINED IN FIELD WITH FIELD CONDITIONS.
 - COORDINATE EXACT LOCATION AND ELEVATION OF STEP FOOTER CROSSING IN FIELD AND WITH CIVIL AND STRUCTURAL DRAWINGS PRIOR TO CONSTRUCTION.

- CODED NOTES**
- PAD MOUNTED GENERATOR DOCKING STATION CONCRETE SLAB.
 - (3) 3" CONDUITS FROM TRANSFORMER SECONDARY. CONDUITS SHALL BE CONCRETE ENCASED. REFER TO DUCTBANK SECTION ON THIS SHEET FOR MORE INFORMATION.
 - (2) 3" AND (1) 1" CONDUIT TO GENERATOR DOCKING STATION. (1) 1" CONDUIT FOR FUTURE PERMANENT GENERATOR CONTROLS.
 - CAP AND MARK CONDUITS FOR CONNECTION TO FUTURE LIGHTING.
 - ELECTRICAL CONDUIT FOR GATE OPERATOR. COORDINATE EXACT LOCATION OF STUB-UP IN FIELD PRIOR TO INSTALLATION.
 - (1) 1" CONDUIT. FIELD COORDINATE EXACT ROUTING OF CONDUIT.
 - PROVIDE 28" L X 28" W X 24" D MINIMUM PRECAST CONCRETE PULL BOX.
 - (2) 1" CONDUITS WITH PULL STRING FOR SITE LIGHTING CONDUCTORS.
 - (1) 1" CONDUITS WITH PULL STRING FOR SITE LIGHTING CONDUCTORS.
 - (4) 3" CONDUITS FOR UTILITY PRIMARY CONDUCTORS. ROUTE CONDUITS TO EXISTING WOODEN POWER POLE. CONDUITS SHALL BE CONCRETE ENCASED. COORDINATE EXACT CONDUIT ROUTING AND POINT OF UTILITY TERMINATION IN FIELD PRIOR TO CONSTRUCTION.
 - PROVIDE 30" L X 30" W X 24" D MINIMUM PRECAST CONCRETE PULL BOX.
 - COORDINATE EXACT CONDUIT SPACING IN FIELD WITH STRUCTURAL STEP FOOTING PRIOR TO CONSTRUCTION.
 - COORDINATE CROSSING OF STRUCTURAL STEP FOOTING WITH STRUCTURAL DRAWINGS AND IN FIELD PRIOR TO CONSTRUCTION. STUB CONDUITS UP 18" AFF. CAP AND MARK CONDUITS.



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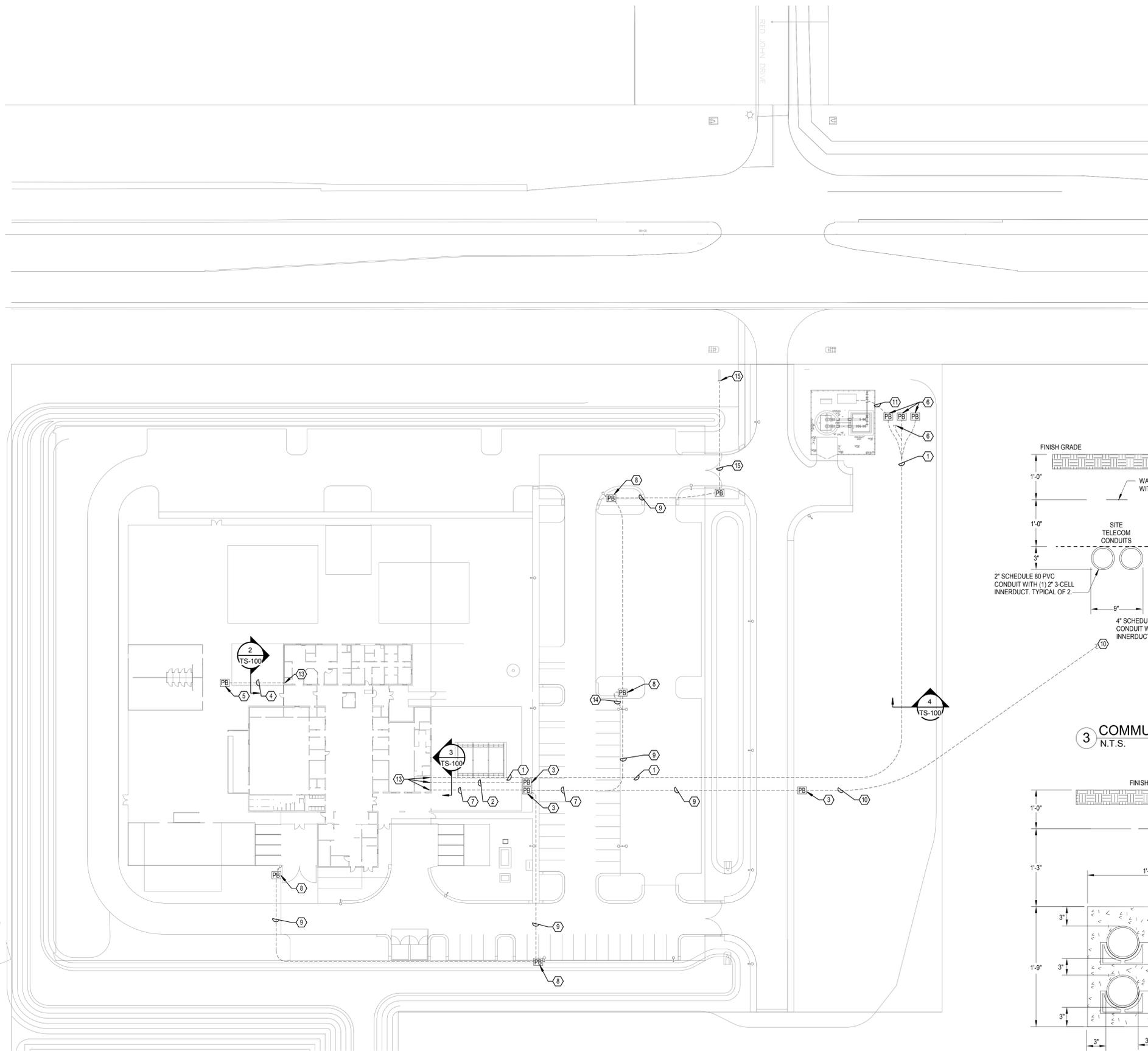
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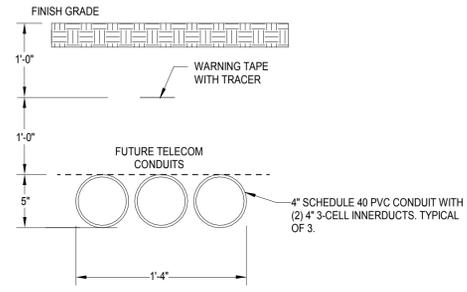
SHT. TITLE ELECTRICAL SITE PLAN		
SEAL	COMMISSION NO. 1613	SCALE: As indicated
LUIS A. ROSARIO, P.E. FL License #65457	PROJECT ARCH: JEH	SHEET NO.
	DRAWN: CVM	ES100
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	DATE: 03/23/2018	



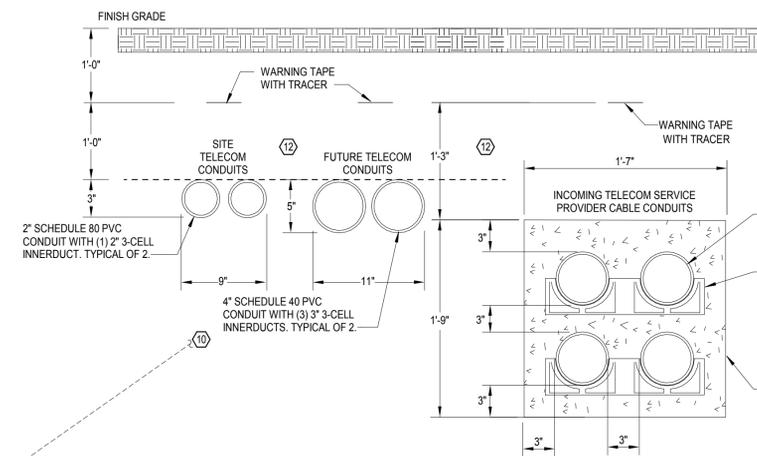
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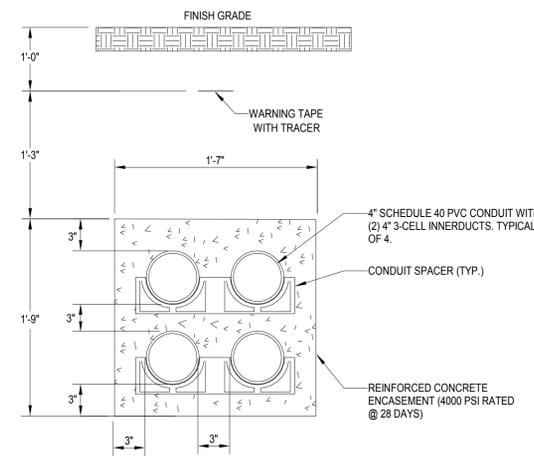
1 TELECOMM SITE CONVEYANCES PLAN
1" = 40'-0"



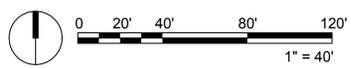
2 COMMUNICATIONS CONDUITS DETAIL
N.T.S.



3 COMMUNICATIONS INCOMING CONDUITS DETAIL
N.T.S.



4 COMMUNICATIONS DUCT BANK DETAIL
N.T.S.



- GENERAL NOTES**
1. ALL UNDERGROUND CONDUIT AND CONDUCTOR ROUTING SHALL BE COORDINATED IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR SHALL PROVIDE PULL BOXES AS REQUIRED BY CODE FOR A COMPLETE CODE COMPLIANT INSTALLATION BASED ON INSTALLED CONDUIT AND CONDUCTOR ROUTING.
 2. EXACT ROUTING OF UNDERGROUND CONDUIT SHALL BE DETERMINED IN FIELD WITH FIELD CONDITIONS.
 3. COORDINATE EXACT LOCATION AND ELEVATION OF STEP FOOTER CROSSING IN FIELD AND WITH CIVIL AND STRUCTURAL DRAWINGS PRIOR TO CONSTRUCTION.
 4. ALL CONDUIT CROSSINGS SHALL BE MADE AT 90 DEGREES. ALL UTILITY CROSSINGS SHALL BE MADE AT 90 DEGREES.
- CODED NOTES**
1. PROVIDE (4) 4" CONDUITS, EACH CONDUIT WITH (2) 4" 3-CELL MAXCELL INNERDUCT, OR APPROVED EQUAL FROM TELECOM ROOM. PROVIDE CONDUIT AND INNERDUCT OUT TO PROPERTY LINE FOR CONNECTION TO SERVICE PROVIDER. COORDINATE EXACT LOCATION OF SERVICE PROVIDER CONNECTION WITH SERVICE PROVIDER PRIOR TO INSTALLATION.
 2. PROVIDE (2) 4" CONDUITS, EACH CONDUIT WITH (2) 4" 3-CELL MAXCELL INNERDUCT, OR APPROVED EQUAL FROM TELECOM ROOM TO PULL BOX. PROVIDE CONDUIT AND INNERDUCT TO PULL BOX FOR FUTURE CONNECTION OF SITE EXPANSION. COORDINATE EXACT LOCATION OF CONDUIT AND PULL BOX WITH CIVIL DRAWINGS PRIOR TO INSTALLATION.
 3. 30" L X 30" W X 24" D MINIMUM PRECAST CONCRETE, TRAFFIC RATED, TELECOM PULL BOX. APPROVED EQUAL FROM TELECOM ROOM TO PULL BOX. PROVIDE CONDUIT AND INNERDUCT TO PULL BOX FOR FUTURE CONNECTION OF SITE EXPANSION. COORDINATE EXACT LOCATION OF CONDUIT AND PULL BOX WITH STRUCTURAL STEP FOOTING AND CIVIL DRAWINGS PRIOR TO INSTALLATION.
 4. PROVIDE (3) 4" CONDUITS, EACH CONDUIT WITH (2) 4" 3-CELL MAXCELL INNERDUCT, OR APPROVED EQUAL FROM TELECOM ROOM TO PULL BOX. PROVIDE CONDUIT AND INNERDUCT TO PULL BOX FOR FUTURE CONNECTION OF SITE EXPANSION. COORDINATE EXACT LOCATION OF CONDUIT AND PULL BOX WITH STRUCTURAL STEP FOOTING AND CIVIL DRAWINGS PRIOR TO INSTALLATION.
 5. 30" L X 30" W X 24" D MINIMUM PRECAST CONCRETE, TRAFFIC RATED, TELECOM PULL BOX. APPROVED EQUAL FROM TELECOM ROOM TO PULL BOX. PROVIDE CONDUIT AND INNERDUCT TO PULL BOX FOR FUTURE CONNECTION OF SITE EXPANSION. COORDINATE EXACT LOCATION OF CONDUIT AND PULL BOX WITH STRUCTURAL STEP FOOTING AND CIVIL DRAWINGS PRIOR TO INSTALLATION.
 6. TERMINATE (3) 4" CONDUITS, (1) CONDUIT EACH INTO 36" L X 38" W X 24" D PRECAST CONCRETE MAINTENANCE HOLE WITH STONE DRAINAGE. CAP (1) SPARE 4" CONDUIT. FLAG AND MARK FOR FUTURE USE.
 7. (2) 2" SCHED 80 PVC CONDUITS EACH CONDUIT WITH (1) 2" 3-CELL MAXCELL INNERDUCT, OR APPROVED EQUAL FROM TELECOM ROOM. COORDINATE EXACT ROUTING OF CONDUIT IN FIELD PRIOR TO INSTALLATION.
 8. PROVIDE 30" L X 30" W X 24" D PRECAST CONCRETE PULL BOX AT BASE OF LIGHT POLE.
 9. (1) 2" SCHED 80 PVC CONDUIT WITH (1) 2" 3-CELL MAXCELL INNERDUCT, OR APPROVED EQUAL. COORDINATE EXACT ROUTING OF CONDUIT IN FIELD PRIOR TO INSTALLATION.
 10. (1) 1" SCHED 40 PVC CONDUIT WITH PULL STRING TO EXISTING WOODEN POLE WITH EXISTING CCTV CAMERA. COORDINATE EXACT ROUTING OF CONDUIT IN FIELD PRIOR TO INSTALLATION. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF POLE PRIOR TO CONSTRUCTION.
 11. (1) 1" SCHED 40 PVC CONDUIT WITH PULL STRING TO EXISTING LIFT STATION CONTROL PANEL. COORDINATE EXACT ROUTING OF CONDUIT IN FIELD PRIOR TO INSTALLATION.
 12. COORDINATE EXACT CONDUIT SPACING IN FIELD WITH STRUCTURAL STEP FOOTING PRIOR TO CONSTRUCTION.
 13. COORDINATE CROSSING OF STRUCTURAL STEP FOOTING WITH STRUCTURAL DRAWINGS AND IN FIELD PRIOR TO CONSTRUCTION. STUB CONDUITS UP 18" AFF. CAP AND MARK CONDUITS.
 14. (1) 1" SCHED 40 PVC CONDUIT WITH PULL STRING TO LIGHT POLE. COORDINATE EXACT ROUTING OF CONDUIT IN FIELD PRIOR TO INSTALLATION.
 15. (1) 1" SCHED 40 PVC CONDUIT WITH PULL STRING TO LIGHTED SIGN. COORDINATE EXACT ROUTING OF CONDUIT IN FIELD PRIOR TO INSTALLATION. CAP AND MARK CONDUIT LOCATION FOR FUTURE CONNECTION.

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SHT. TITLE TELECOMM SITE PLAN		COMMISSION NO.	SCALE:
SEAL	1613	As indicated	
CHRISTOPHER H. VAN METER RCD Reg. No. 19103AR	PROJECT ARCH: JEH	DRAWN: CVM	SHEET NO.
	CHECKED: LAR	DATE: 03/23/2018	TS100

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