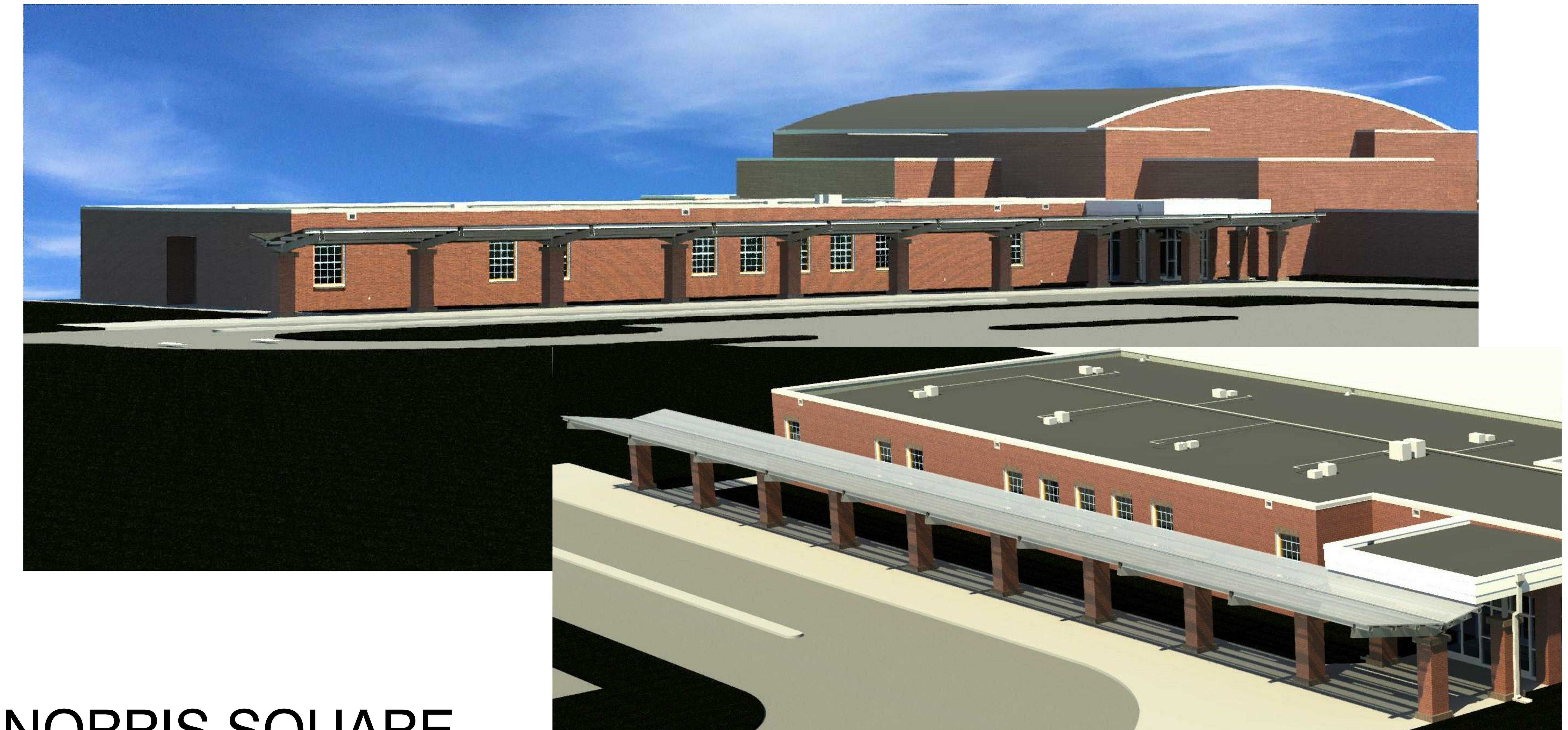
AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL



5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT DIRECTORY:

OWNER:
ANDERSON COUNTY SCHOOLS
CONTACT: CLAY MCKAMEY
101 S. MAIN STREET
CLINTON, TN 37716
865-457-2519

STRUCTURAL ENGINEER:
MBI COMPANIES INC.
NICK DEAL
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
865-584-0999

MECHANICAL ENGINEER:
MBI COMPANIES INC.
JOHN BUCHANAN
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
865-584-0999

ARCHITECT:
MBI COMPANIES INC.
CHARLES M. GRANT
299 N. WEISGARBER ROAD
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865-584-0999

ELECTRICAL ENGINEER:
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MARK NEWLIN
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
865-584-0999

CIVIL ENGINEER:
MBI COMPANIES INC.
CHRIS TRIKO
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
865-584-0999

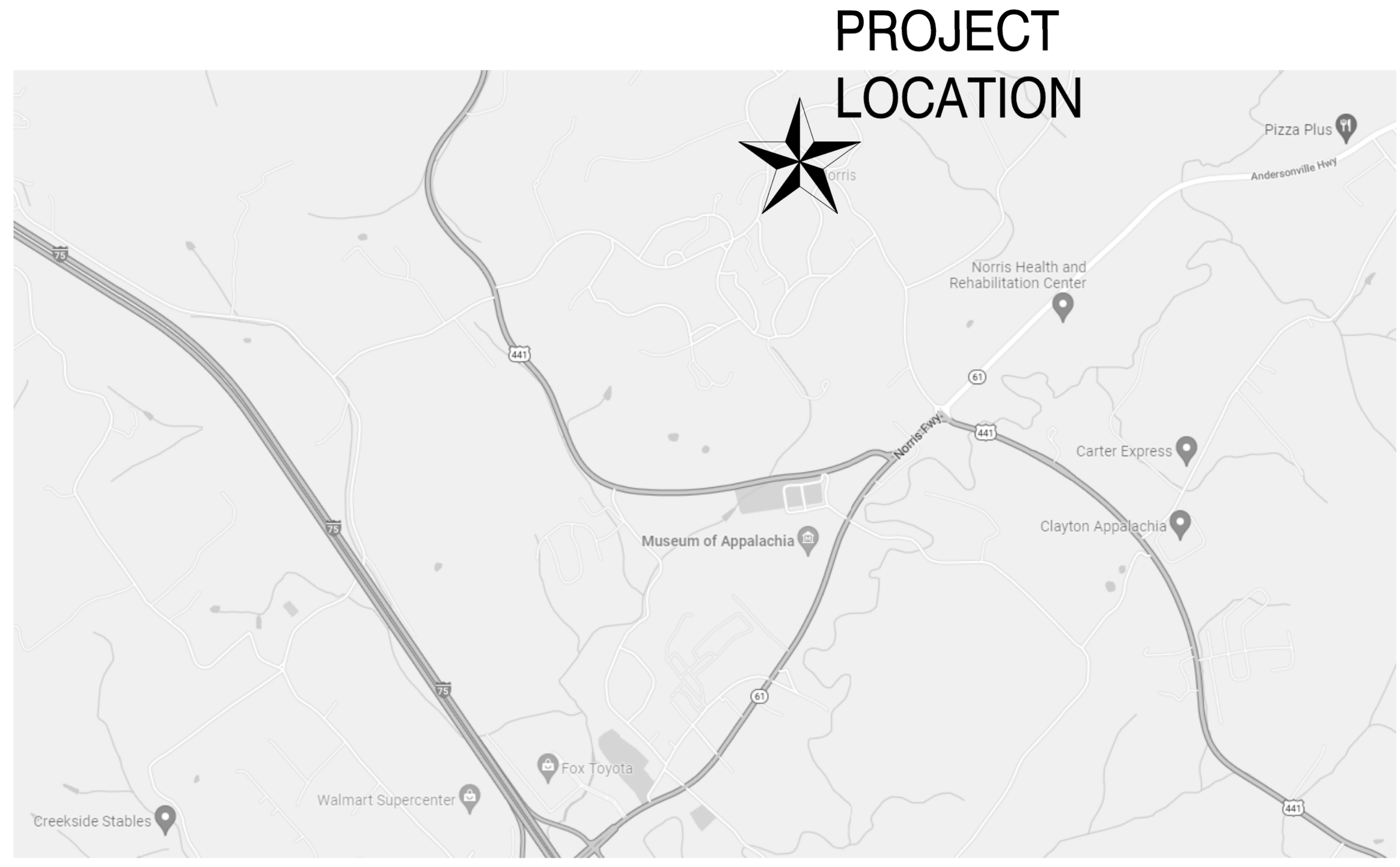
LIST OF DRAWINGS:

ABBREVIATIONS:

AFF	- ABOVE FINISH FLOOR	MTL	- METAL
ALT	- ALTERNATE	MG	- MANUFACTURING
ALUM	- ALUMINUM	MFR	- MANUFACTURER
ARCH	- ARCHITECTURAL	MIN	- MINIMUM
ACT	- ACOUSTICAL TILE CEILING	MISC	- MISCELLANEOUS
ASPH	- ASPHALT	NIC	- NOT IN CONTRACT
BF	- BOTTOM FACE	NTS	- NOT TO SCALE
BSMT	- BASEMENT	NO, #	- NUMBER
BM	- BENCH MARK	OC	- ON CENTER
BLDG	- BUILDING	OD	- OUTSIDE DIAMETER
BLK	- BLOCK	P	- PLATE
BRG	- BEARING	PLAS	- PLASTIC
CB	- CATCH BASIN	P LAM	- PLASTIC LAMINATE
CJ	- CONTROL JOINT	PLYWD	- PLYWOOD
CHB	- CHALK BOARD	PTD	- PAINTED
CLG	- CEILING	RAD;R	- RADIUS
CLOS, CL	- CLOSET	RD	- ROOF DRAIN
CLR	- CLEAR	REINF	- REINFORCING
COL	- COLUMN	REQ'D	- REQUIRED
COMP	- COMPOSITION	RS	- RISER
CONC	- CONCRETE	RM	- ROOM
CONST	- CONSTRUCTION	RO	- ROUGH OPENING
CMU	- CONCRETE MASONRY UNIT	SCHED	- SCHEDULE
CT	- CERAMIC TILE	SCWD	- SOLID CORE WOOD
DTL	- DETAIL	SECT	- SECTION
D, DIA	- DIAMETER	SHT	- SHEET
DN	- DOWN	SIM	- SIMILAR
DWG	- DRAWING	SPECS	- SPECIFICATIONS
DF	- DRINK FOUNTAIN	SQFT / SF	- SQUARE FEET
DS	- DOWNSPOUT	STD	- STANDARD
EA	- EACH	STL	- STEEL
EF	- EACH FACE	STOR	- STORAGE
ELEC	- ELECTRIC	SD	- STORM DRAIN
EWC	- ELECTRIC WATER COOLER	SUSP	- SUSPENDED
ELEV	- ELEVATION	SQ	- SQUARE
EXIST	- EXISTING	TB	- TACK BOARD
EXT	- EXTERIOR	T'HOLD	- THRESHOLD
EJ	- EXPANSION JOINT	TLT	- TOILET
FE	- FIRE EXTINGUISHER	TD, TDS	- THREAD (S)
FL	- FLOOR	TF	- TOP FACE
FD	- FLOOR DRAIN	TYP	- TYPICAL
FT	- FOOT	U	- URINAL
FTNG	- FOOTING	VIF	- VERIFY IN FIELD
GALV	- GALVANIZED IRON	VS	- VENT STACK
GA	- GAUGE	VOL	- VOLUME
GYP	- GYPSUM	VT	- VINYL TILE
HB	- HOSE BIB	VERT	- VERTICAL
HCWD	- HOLLOW CORE WOOD	WSCT	- WAINSCOT
HDW	- HARDWARE	WC	- WATER CLOSET
HGT	- HEIGHT	WH	- WATER HEATER
HM	- HOLLOW METAL	WPFG	- WATERPROOFING
ID	- INSIDE DIAMETER	WF	- WIDE FLANGE
IN	- INCH	WDW	- WINDOW
INV	- INVERT	WD	- WOOD
JAN	- JANITOR	W/	- WITH
JST	- JOIST	WWF	- WELDED WIRE FABRIC
LAV	- LAVATORY	WWM	- WELDED WIRE MESH
lb	- POUND	L	- ANGLE
MH	- MANHOLE	@	- AT
MAX	- MAXIMUM	C	- CHANNEL
MECH	- MECHANICAL	∅	- DIAMETER

VICINITY MAP:

PROJECT LOCATION



MATERIALS LEGEND:

CONCRETE BLOCK
CONCRETE IN SECTION
RIGID INSULATION, EIFS AS NOTED
BRICK
SOIL IN SECTION
PLYWOOD
METAL IN SECTION
CRUSHED STONE
FINISH WOOD
GYP. BOARD, PLASTER, OR CONCRETE IN PLAN AS NOTED
BATT INSULATION
WOOD FRAMING

PROJECT INFORMATION:

PROJECT DESCRIPTION
A NEW 9,347 S.F. CLASSROOM ADDITION FOR NORRIS MIDDLE SCHOOL.

JURISDICTION
CITY OF NORRIS, TN
DEPARTMENT OF ZONING; BUILDING PERMITS
20 CHESTNUT DRIVE
P.O. BOX 1090
NORRIS, TN 37828
PHONE NUMBER: (865) 494-7645

3
RESPONDING FIRE DEPARTMENT:
RICK ROACH, FIRE CHIEF
9 WEST CIRCLE
NORRIS, TN 37828
PHONE: 865-494-7645
EMAIL: NORRISFIRECHIEF@GMAIL.COM

DESIGN CODES
2018 INTERNATIONAL BUILDING CODE
2017 NATIONAL ELECTRICAL CODE
2018 INTERNATIONAL FIRE CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL FUEL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2009 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES CODE (ICC A117.12009)

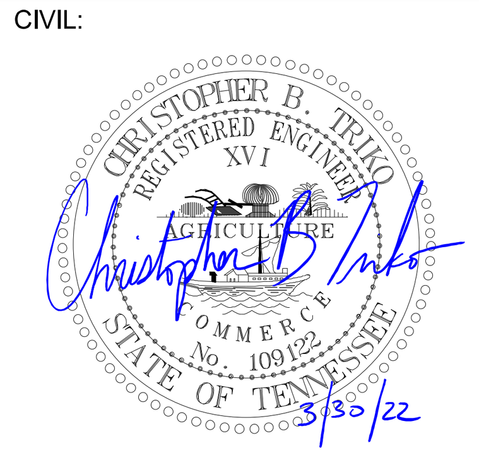
TYPE OF CONSTRUCTION: II-B, SPRINKLERED.
OCCUPANCY: EDUCATIONAL
NUMBER OF STORIES: 2 STORY EXISTING, 1 STORY ADDITION
3
IECC CLIMATE ZONE: 4A, ANDERSON COUNTY, TENNESSEE

STATE DESIGN CODES

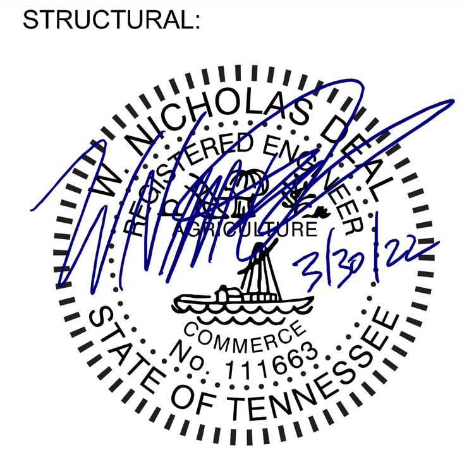
2012 INTERNATIONAL EXISTING BUILDING CODE
2012 INTERNATIONAL BUILDING CODE (EXCLUDING CHAPTER 11 AND SECTION 3411)
2017 NATIONAL ELECTRICAL CODE, NFPA 70
2012 INTERNATIONAL FIRE CODE
2012 INTERNATIONAL MECHANICAL CODE
2012 INTERNATIONAL PLUMBING CODE
2012 INTERNATIONAL FUEL GAS CODE
2012 INTERNATIONAL ENERGY CONSERVATION CODE
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN
2012 NFPA - 101 LIFE SAFETY CODE

NOTE:
WHERE THERE IS A DISCREPANCY BETWEEN THE STATE AND LOCAL BUILDING CODES, THE MORE STRINGENT REQUIREMENT SHALL APPLY

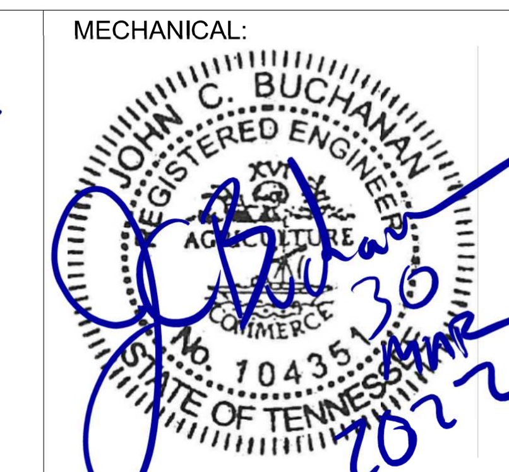
CIVIL:



STRUCTURAL:



MECHANICAL:



ELECTRICAL:

MBI

MBI COMPANIES INC.
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
PHONE: (865) 584-0999
FAX: (865) 584-5213
WEB: mbicompanies.com

CONSULTANT

SEAL

PROJECT INFORMATION

PROJECT:
AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:
5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	KEF
REVIEWED BY:	CMG

SHEET TITLE: COVER SHEET

SHEET NO.: G000

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3/31/2022 10:51:35 AM

GENERAL NOTES

1. COMPLY WITH ALL PERTINENT PROVISIONS OF THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" ISSUED BY A.G.C. OF AMERICA, INC. AND THE SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION ISSUED BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1926 OSHA.
2. THE APPROPRIATE TRAFFIC CONTROL SIGNS AS DEFINED BY THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, F.H.W.A., 2009", SHALL BE INSTALLED AT THE INCEPTION OF CONSTRUCTION AND SHALL BE PROPERLY MAINTAINED AND/OR OPERATED DURING THE TIME SUCH SPECIAL CONDITIONS EXIST. THEY SHALL REMAIN IN PLACE ONLY AS LONG AS THEY ARE NEEDED AND SHALL BE REMOVED IMMEDIATELY AFTER NEED.
3. NOTHING IN THE GENERAL NOTES OR SPECIAL PROVISIONS SHALL RELIEVE THE CONTRACTOR FROM THEIR RESPONSIBILITIES TOWARD THE SAFETY AND CONVENIENCE OF THE GENERAL PUBLIC.
4. VERIFY THE LOCATIONS OF ALL PROPOSED ITEMS PRIOR TO COMMENCING CONSTRUCTION. NOTIFY A/E IMMEDIATELY OF ANY DISCREPANCIES BEFORE STARTING WORK. COMMENCEMENT OF CONSTRUCTION AFTER SUCH DISCOVERY SHALL BE AT THE CONTRACTOR'S RISK.
5. ANY AREA THAT IS DISTURBED OUTSIDE THE LIMITS OF CONSTRUCTION DURING THE LIFE OF THE PROJECT SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.

DEMOLITION NOTES

1. DO ALL DEMOLITION WORK REQUIRED TO REMOVE EXISTING MASONRY WALLS, PAVING, FOUNDATIONS, CONCRETE SLABS, EXISTING UNDERGROUND PIPING, CONDUIT, BUILDING FINISHES, DOORS, WINDOWS AS SHOWN ON THE DRAWINGS AND ANY OTHER NECESSARY ITEMS TO INSTALL THE PROPOSED WORK.
2. CONTRACTORS SUBMITTING PROPOSALS SHALL DETERMINE THE QUANTITIES OF DEMOLITION WORK REQUIRED BY FIELD INVESTIGATION OF THE BUILDING AND SITE.
3. SUBMIT A DEMOLITION SCHEDULE TO THE PROJECT MANAGER PRIOR TO EXECUTION OF THE WORK. INDICATE PROPOSED METHODS AND SEQUENCE OF OPERATIONS. INCLUDE PROPOSAL FOR CONTROL OF DUST AND NOISE, AND COORDINATION FOR SHUT-OFF, CAPPING, AND CONTINUATION OF UTILITY SERVICES.
4. MAINTAIN TEMPORARY BARRICADES FOR PROTECTION OF JOB PERSONNEL AND THE PUBLIC. REMOVE BARRICADES WHEN NO LONGER REQUIRED.
5. CONDUCT OPERATIONS IN SUCH A MANNER AS TO MINIMIZE INTERFERENCE WITH USE OF PUBLIC WAYS AND ADJACENT USED FACILITIES. DO NOT CLOSE, BLOCK OR OTHERWISE OBSTRUCT USE OF PUBLIC WAYS OR FACILITIES WITHOUT WRITTEN CONSENT OF AUTHORITIES HAVING JURISDICTION. PROVIDE ALTERNATIVE ROUTES TO CLOSED OR OBSTRUCTED FACILITIES AS REQUIRED BY LOCAL REGULATIONS.
6. EXISTING UTILITIES INDICATED TO REMAIN SHALL BE KEPT IN SERVICE AND PROTECTED FROM DAMAGE DURING DEMOLITION OPERATIONS.
7. DO NOT INTERRUPT EXISTING UTILITIES USED OR OCCUPIED FACILITIES UNLESS AUTHORIZED IN WRITING BY AUTHORITIES HAVING JURISDICTION IF INTERRUPTION IS ALLOWED, PROVIDE ALTERNATIVE TEMPORARY SERVICES ACCEPTABLE TO GOVERNING AUTHORITIES.
8. LOCATE, IDENTIFY, SHUT OFF, CAP AND DISCONNECT UTILITIES AT PROPERTY LINE OR VALVE AS REQUIRED. PROVIDE BY-PASS CONNECTIONS AS REQUIRED TO MAINTAIN SERVICES TO ADJACENT PROPERTIES AND FACILITIES. PROVIDE A MINIMUM OF 72 HOURS ADVANCE NOTICE TO PROPERTY OWNERS IF SHUT-DOWN OF SERVICES IS REQUIRED DURING THE CHANGE-OVER.
9. COORDINATE WITH ALL UTILITY COMPANIES 48 HOURS PRIOR TO ANY DEMOLITION WORK.
10. REMOVE DEBRIS, RUBBISH, AND OTHER SUBSTANCES FROM SITE. LEGALLY TRANSPORT AND DISPOSE OF SUCH MATERIALS OFF-SITE.
11. BURYING OR BURNING OF MATERIALS ON THE PROJECT SITE IS FORBIDDEN.
12. AVAILABILITY FOR DEMOLITION MUST BE CONFIRMED BY OWNER JUST PRIOR TO DEMOLITION.
13. THE USE OF EXPLOSIVES IS STRICTLY PROHIBITED.
14. HISTORIC ARTIFACTS, INCLUDING CORNERSTONES, THEIR CONTENTS, COMMEMORATIVE PLAQUES AND TABLETS, ANTIQUES, AND OTHER ITEMS OF SIGNIFICANCE SHALL REMAIN THE PROPERTY OF THE OWNER. NOTIFY OWNERS REPRESENTATIVE IF SUCH ARTICLES ARE ENCOUNTERED. OBTAIN APPROVAL REGARDING METHOD OF REMOVAL. SALVAGE SUCH ARTICLES AND TURN OVER TO OWNER.
15. IF HAZARDOUS MATERIALS ARE ENCOUNTERED, COMPLY WITH APPLICABLE REGULATIONS IN HANDLING, REMOVING, AND PROTECTING AGAINST EXPOSURE OR ENVIRONMENTAL POLLUTION.
16. REGRADE ALL AREAS WHERE DEMOLITION HAS OCCURRED. PROVIDE SMOOTH TRANSITION BETWEEN EXISTING AND NEW GRADING, THERE SHALL NOT BE ANY VOIDS, PITS, OR MOUNDING OF EARTHWORK.

SITE NOTES

1. WHERE PROPOSED PAVEMENT ABUTS EXISTING PAVEMENT, THE EXISTING PAVEMENT SHALL BE CUT IN A NEAT STRAIGHT LINE THROUGH PAVEMENT AND BASE. PROVIDE A SMOOTH TRANSITION.
2. INSTALL EXPANSION JOINT MATERIAL BETWEEN NEW AND EXISTING CONCRETE AND/OR ASPHALT.
3. MAINTAIN AND PROTECT EXISTING PAVEMENT OR GRAVEL SURFACES WHICH ARE TO REMAIN. CONTRACTOR SHALL REPLACE DAMAGED AREAS, MATCHING DEPTH, MATERIAL AND GRADE OF EXISTING SURFACES.
4. DIMENSIONS SHOWN ARE TO FACE OF CURB, CENTER OF COLUMN, EDGE OF BUILDING EXTERIOR OR CENTER OF PAINTED STRIPES.
5. SIDEWALK AND PAVING JOINTS ARE SHOWN FOR REFERENCE ONLY. REVIEW JOINT LAYOUT WITH ALL SPECIFICATIONS AND DETAILS BEFORE POURING CONCRETE.

SURVEY NOTES

1. BOUNDARY AND TOPOGRAPHIC INFORMATION WAS PREPARED BY **MBI COMPANIES INC, 299 N. WEISGARBER ROAD, KNOXVILLE TN 37919. SURVEY PERFORMED 01/06/2022**.
2. COORDINATES ARE IN FEET AND REFERENCE TO **TENNESSEE STATE PLANE SYSTEM OF 1983**.
3. BEARINGS SHOWN ARE BASED ON MAGNETIC NORTH.
4. THE VERTICAL DATUM IS BASED ON **THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)**.
5. FIELD VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. EXISTING UTILITIES SHOWN ON DRAWINGS ARE APPROXIMATE IN DEPTH AND LOCATION. REPAIR EXISTING UTILITIES DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

GRADING NOTES

1. FIELD VERIFY CRITICAL GRADES AT CONNECTION POINTS SUCH AS ENTRANCES PRIOR TO CONSTRUCTION AND NOTIFY PROJECT MANAGER OR ENGINEER OF ANY DISCREPANCIES.
2. THE MINIMUM SLOPE FOR PARKING, SIDEWALKS, AND LANDSCAPED AREAS IS 1%. FIELD VERIFY MINIMUM SLOPE IS ACHIEVED.
3. MAXIMUM SLOPE IN HANDICAP PARKING AREAS IS 2%. MAXIMUM LONGITUDINAL SIDEWALK SLOPE IS 5%. SLOPE SIDEWALKS AWAY FROM BUILDING AT $1\frac{1}{2}$% CROSS SLOPE UNLESS OTHERWISE NOTED. SIDEWALK CROSS SLOPE CANNOT EXCEED 2% IN ANY CASE.
4. UNLESS OTHERWISE NOTED, ELEVATIONS SHOWN REPRESENT FINISHED GRADES. ADJUST FOR PAVEMENT THICKNESS, TOPSOIL, ETC.
5. ADJUST DRAINAGE STRUCTURE TOPS AS NECESSARY TO MATCH FINAL GRADES.
6. NO SLOPE SHALL BE STEEPER THAN 2(H):1(V)
7. ALL EARTHWORK SHALL MEET THE FOLLOWING REQUIREMENTS AT A MINIMUM:
   - A. FOLLOW RECOMMENDATIONS OF THE PROJECT SUBSURFACE INVESTIGATION REPORT. REPORT ANY CONTRADICTIONS TO THE PROJECT MANAGER. SOIL EXCAVATION SHALL BE CONSIDERED AS UNCLASSIFIED.
   - B. OBTAIN CERTIFICATION FROM A TESTING LAB, SIGNED AND SEALED BY AN ENGINEER, STATING THAT ALL EARTHWORK IS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND SUBSURFACE INVESTIGATION REPORT AND SOILS ARE CAPABLE OF SUPPORTING THE STRUCTURE AND IMPROVEMENTS.
   - C. SUBMIT SOIL SAMPLES FOR TESTING AS REQUIRED BY THE PROJECT GEOTECHNICAL ENGINEER.
   - D. SOIL FOR COMPACTED BACKFILL AND ENGINEERED FILL SHALL CONSIST OF CLEAN GRANULAR SOILS, CLAY SOILS, OR SHALE SOILS HAVING A PLASTICITY INDEX OF LESS THAN 35 AND A MINIMUM DENSITY OF 90 POUNDS PER CUBIC FOOT WHEN COMPACTED TO ONE HUNDRED PERCENT (100%) OF ITS MAXIMUM DRY DENSITY PER STANDARD PROCTOR TEST. (ASTM D698) MATERIAL SHALL BE FREE OF VEGETATION, ROOTS, ROCKS LARGER THAN 2" IN ANY DIMENSION, DEBRIS AND OTHER DELETERIOUS MATERIALS. RESIDUAL SOIL EXCAVATED AT THE SITE MAY BE USED FOR BACKFILL IF IT MEETS THE SPECIFICATION REQUIREMENTS. THE MOISTURE CONTENT OF THE FILL SOILS SHOULD BE MAINTAINED WITHIN +3 AND -3 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT DETERMINED FROM THE STANDARD PROCTOR COMPACTION TEST.
   - E. ALL FILL IN AREAS TO BE OCCUPIED BY THE BUILDING(S) AND PAVING, INCLUDING AN AREA 10 FEET OUTSIDE THE PERIMETERS THEREOF, SHALL BE CONTROLLED (ENGINEERED) FILL AND THE COMPACTION SHALL BE TESTED BY A LICENSED AND QUALIFIED GEOTECHNICAL ENGINEER. CONTROLLED FILL IN AREAS OF BUILDINGS SHALL BE COMPACTED IN MAXIMUM 4" LIFTS TO AT LEAST 98% OF MAXIMUM DRY DENSITY WITHIN 3% OF OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM SPECIFICATION D-698 (STANDARD PROCTOR). FILL IN AREAS OF ASPHALT PAVING SHALL BE COMPACTED IN MAXIMUM 6" LIFTS TO AT LEAST 98% OF MAXIMUM DRY DENSITY WITHIN 3% OF OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM SPECIFICATION D-698. THE UPPER 12 INCHES OF FILL BENEATH PAVEMENTS AND UPPER 24 INCHES BENEATH FOOTINGS AND GRADE SLABS SHALL BE COMPACTED TO 100%. PROVIDE 95% COMPACTION IN ALL OTHER AREAS.
   - F. AFTER STRIPPING TOPSOIL, ALL FILL AREAS SHALL BE PROOFROLLED AND MONITORED BY THE PROJECT GEOTECHNICAL ENGINEER.
   - G. FILL OUTSIDE OF BUILDING AND PAVEMENT SHALL BE PLACED IN 8" LIFTS IN THE PRESENCE OF A REPRESENTATIVE OF THE SOIL TESTING LAB, COMPACTED TO SPECIFIED REQUIREMENTS, AND TESTED EVERY 900 SF FOR EACH LAYER OF FILL. REMEDY ANY INADEQUATELY PLACED FILL TO MEET PROJECT SPECIFICATIONS.
   - H. ALL LANDSCAPED AND GRASS AREAS SHALL HAVE A MINIMUM OF 5" OF CLEAN TOPSOIL.
   - I. TOLERANCES FOR SURFACES: HARDSCAPE: ± 0.025'
     LANDSCAPE/GRASSED AREAS: ± 0.1'
   - J. ALL OFFSITE BORROW AND SPOIL SITES, IF REQUIRED, SHALL BE PROPERLY PERMITTED.

DRAINAGE NOTES

1. FIELD VERIFY CRITICAL GRADES AT CONNECTION POINTS PRIOR TO CONSTRUCTION OR FABRICATION OF PRECAST STRUCTURES.
2. UNLESS OTHERWISE NOTED, HDPE SHALL BE HANCOR, LANE HDPE, OR ADS N-12 SMOOTH INTERIOR WALL HDPE PIPE. PROVIDE #57 STONE BEDDING AND BACKFILL TO PAVEMENT SUBGRADE OR 12" ABOVE PIPE IN GRASS AREAS. ALL PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF AASHTO M252, TYPE S (4"-10") OR AASHTO M294, TYPE S (12"-48"). GASKET SHALL MEET THE REQUIREMENTS OF ASTM F477. INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D2321. JOINTS SHALL BE SILT TIGHT AND NON-RATED WATERTIGHT GASKETS SHALL BE COVERED WITH A REMOVABLE WRAP BY THE MANUFACTURER TO ENSURE THAT THE GASKET IS FREE FROM DEBRIS.
3. UNLESS OTHERWISE NOTED, RCP SHALL BE CLASS III CONFORMING TO ASTM C-76 (LATEST REVISION): "STANDARD SPECIFICATION FOR REINFORCED CONCRETE CULVERT, STORM DRAIN, AND SEWER PIPE".
4. ROOF LEADERS SHALL BE ASTM D3034 SDR 35 PVC WITH GASKET JOINTS. UNLESS OTHERWISE NOTED ON THE PLANS, 4" SHALL BE LAID AT A 2% MINIMUM SLOPE AND 6" SHALL BE LAID AT 1% MINIMUM SLOPE.
5. COORDINATE WITH GOVERNING AGENCY FOR ALL REQUIRED MATERIAL APPROVALS, INSPECTIONS AND TESTING.

EROSION CONTROL NOTES

1. UNLESS SHOWN OTHERWISE, ALL DISTURBED AREAS NOT ULTIMATELY RECEIVING A HARD SURFACE SHALL HAVE A MINIMUM DEPTH OF 5" OF TOPSOIL AND BE STABILIZED WITH GRASS.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL APPLICABLE PERMITS AND COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS RELATED TO SITE GRADING, EROSION AND SEDIMENTATION CONTROL, AND STORMWATER RUNOFF.
3. NO LAND DISTURBANCE IS PERMISSIBLE UNTIL THE CONTRACTOR HAS SUBMITTED A SIGNED NOTICE OF INTENT AND RECEIVED A NOTICE OF COVERAGE FROM THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC). COORDINATE WITH OWNER TO ENSURE THAT ALL NECESSARY PERMITS HAVE BEEN RECEIVED PRIOR TO LAND DISTURBANCE.
4. A NOTICE WILL BE POSTED BY NEAR THE CONSTRUCTION ENTRANCE BEFORE WORK BEGINS CONTAINING:
   - A. A COPY OF THE NOC WITH THE TRACKING NUMBER ASSIGNED BY TDEC.
   - B. THE NAME, COMPANY NAME, TELEPHONE NUMBER, EMAIL AND ADDRESS OF THE PROJECT SITE OPERATOR INCLUDING A LOCAL CONTACT PERSON.
   - C. A PROJECT DESCRIPTION
   - D. THE LOCATION OF THE SWPPP ON SITE.
5. IN PREPARATION FOR AND PRIOR TO INSTALLATION OF EROSION AND SEDIMENTATION CONTROL MEASURES, THE CONTRACTOR SHALL:
   - A. EXAMINE THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND THE SITE EROSION AND SEDIMENTATION CONTROL DRAWINGS AT THE SITE.
   - B. NOTIFY ENGINEER OF DEFICIENCIES OR CHANGES IN THE SWPPP OR DRAWINGS REQUIRED BY CURRENT SITE CONDITIONS. REVISIONS OF THE DOCUMENTS WILL BE MADE AS DETERMINED BY THE ENGINEER.
6. FURNISH, ERECT AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES IN CONFORMITY WITH THE TENNESSEE EROSION AND SEDIMENT CONTROL HANDBOOK, FOURTH EDITION, AS PREPARED BY TDEC. SEE PLAN AND DETAILS FOR SPECIFIC EROSION AND SEDIMENTATION CONTROL MEASURES.
7. EROSION AND SEDIMENTATION CONTROL MEASURES SHOWN ON THIS PLAN ARE A MINIMUM REQUIREMENT. MAINTAIN, MODIFY AND ADD EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION AS NECESSARY TO PREVENT SEDIMENT FROM LEAVING THE SITE.
8. ENVIRONMENTAL PERMIT REQUIREMENTS: SHOW COMPLIANCE WITH ALL REQUIREMENTS OF THE GENERAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES CURRENTLY ADOPTED BY TDEC (CGP) AND THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP). PROVIDE ENGINEER AND TDEC WITH COPIES OF ALL REQUIRED PAPERWORK. PERFORM AND PROVIDE ALL MAINTENANCE, INSPECTIONS, RECORD KEEPING, AND REPORTING.
9. INSPECTIONS WILL BE PERFORMED BY PERSONNEL CERTIFIED IN THE TDEC LEVEL 1 EROSION CONTROL COURSE. PROOF OF INSPECTOR'S CERTIFICATION SHALL BE KEPT ON FILE AT THE JOBSITE ALONG WITH ALL INSPECTION REPORTS AND OTHER REQUIRED PAPERWORK IDENTIFIED IN THE PROJECT SWPPP AND THE CGP. MAINTENANCE REPAIR NEEDS IDENTIFIED BY INSPECTIONS SHALL BE ADDRESSED WITHIN 7 DAYS OR BEFORE THE NEXT RAIN EVENT. DOCUMENT WHEN MAINTENANCE ITEMS ARE COMPLETED ON THE INSPECTION REPORT.
10. MAINTAIN A RAIN GAUGE AND RAINFALL RECORDS ON SITE AS REQUIRED BY TDEC.
11. EROSION AND SEDIMENTATION CONTROL IMPLEMENTATION:
    - A. STAKE THE DISTURBED AREA LIMITS AND UNDISTURBED AREAS IN THE FIELD BEFORE BEGINNING WORK
    - B. INSTALL CONSTRUCTION EXIT
    - C. TEMPORARY EROSION AND SEDIMENTATION CONTROL: PROVIDE MEASURES TO PREVENT SOIL EROSION AND DISCHARGE OF SOIL-BEARING WATER RUNOFF AND AIRBORNE DUST TO UNDISTURBED AREAS AND TO ADJACENT PROPERTIES AND WALKWAYS, ACCORDING TO THE SITE EROSION AND SEDIMENTATION CONTROL DRAWINGS AS WELL AS THE CGP AND THE SWPPP.
    - D. BEGIN SITE GRADING
    - E. VERIFY THAT FLOWS OF WATER REDIRECTED FROM CONSTRUCTION AREAS OR GENERATED BY CONSTRUCTION ACTIVITY DO NOT ENTER OR CROSS TREE- OR PLANT- PROTECTION ZONES.
    - F. INSPECT, REPAIR, AND MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED.
    - G. CLEAN, REPAIR, AND RESTORE ADJOINING PROPERTIES AND ROADS AFFECTED BY EROSION AND SEDIMENTATION FROM THE PROJECT SITE DURING THE COURSE OF THE PROJECT. OBTAIN PERMISSION AND APPROPRIATE PERMITS TO ACCESS AREAS OUTSIDE THIS SITE.
    - H. AFTER FINAL STABILIZATION OF THE SITE, REMOVE EROSION AND SEDIMENTATION CONTROLS AND RESTORE AND STABILIZE AREAS DISTURBED DURING REMOVAL.
    - I. STORMWATER CONTROL: COMPLY WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION. PROVIDE BARRIERS IN AND AROUND EXCAVATIONS AND SUBGRADE CONSTRUCTION TO PREVENT FLOODING BY RUNOFF OF STORMWATER FROM HEAVY RAINS.
    - J. PROJECT MANAGER OR ENGINEER MAY DIRECT CONTRACTOR TO LIMIT SURFACE AREA OF ERODIBLE EARTH MATERIAL EXPOSED BY CLEARING AND GRUBBING, EXCAVATION, BORROW AND EMBANKMENT OPERATIONS AND MAY DIRECT CONTRACTOR TO PROVIDE IMMEDIATE PERMANENT OR TEMPORARY POLLUTION CONTROL MEASURES.
    - K. PROVIDE PERMANENT EROSION CONTROL MEASURES AT EARLIEST PRACTICAL TIME TO MINIMIZE REQUIREMENT FOR TEMPORARY EROSION CONTROLS. PERMANENTLY SEED AND MULCH CUT SLOPES AS EXCAVATION PROCEEDS.
    - L. MAINTAIN TEMPORARY EROSION CONTROL SYSTEMS INSTALLED BY CONTRACTOR AS DIRECTED BY PROJECT MANAGER OR ENGINEER TO CONTROL SILTATION AT ALL TIMES THROUGHOUT WORK. PROVIDE MAINTENANCE OR ADDITIONAL WORK DIRECTED BY ENGINEER WITHIN 48 HOURS OF NOTIFICATION BY ENGINEER.
12. EROSION CONTROL SHALL BE MAINTAINED UNTIL PAVING IS COMPLETED AND LAWNS HAVE BEEN ESTABLISHED. PROTECT ADJACENT PROPERTIES AND WATER RESOURCES FROM EROSION AND SEDIMENT DAMAGE THROUGHOUT THE LIFE OF THE PROJECT UNTIL A NOTICE OF TERMINATION IS FILED WITH TDEC. CONTRACTOR COORDINATE WITH THE ENGINEER AND OWNER FOR APPROVAL TO FILE A NOTICE OF TERMINATION AT THE APPROPRIATE TIME.
13. STABILIZATION MEASURES WILL BE INITIATED AS SOON AS POSSIBLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY OR PERMANENT SOIL STABILIZATION AT THE CONSTRUCTION SITE (OR PHASE OF THE PROJECT) MUST BE COMPLETED NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. PERMANENT STABILIZATION WITH PERENNIAL VEGETATION OR OTHER PERMANENTLY STABLE, NON-ERODING SURFACE SHALL REPLACE ANY TEMPORARY MEASURES AS SOON AS PRACTICABLE. UNPACKED GRAVEL CONTAINING FINES OR CRUSHER RUNS WILL NOT BE CONSIDERED A NON-ERODING SURFACE.
14. ALL WATER DISCHARGED FROM EXCAVATIONS AND TEMPORARY SEDIMENT PONDS SHALL BE FILTERED USING SEDIMENT CONTROLS ACCEPTABLE TO TDEC AS WELL AS THE LOCAL AUTHORITY HAVING JURISDICTION.
15. UNLESS OTHERWISE NOTED, RIP-RAP SHALL BE T.D.O.T. MACHINED CLASS A-1 WITH A MEDIAN RIP-RAP SIZE D50 OF 6", 9" THICK AND SHALL BE UNDERLAIN WITH A NON-WOVEN GEOTEXTILE FABRIC.
16. CONCRETE WASHOUT AREA SHALL BE IN CONFORMANCE WITH STANDARDS OF TDEC, AS WELL AS THE LOCAL PERMITTING AUTHORITY HAVING JURISDICTION.
17. AT THE END OF THE PROJECT, DURING FINAL SITE STABILIZATION, DEWATER TEMPORARY SEDIMENT PONDS AND TRAPS IN CONFORMANCE WITH STANDARDS OF TDEC, AS WELL AS THE LOCAL PERMITTING AUTHORITY HAVING JURISDICTION. REMOVE ALL TEMPORARY EROSION CONTROLS AT THE END OF THE PROJECT AND COORDINATE WITH OWNER TO FILE NOTICE OF TERMINATION, AT THE APPROPRIATE TIME, WITH AUTHORITY HAVING JURISDICTION.
18. CONTRACTOR COORDINATE WITH ENGINEER AT BEGINNING OF LAND DISTURBANCE TO DETERMINE WHETHER OR NOT AN INITIAL SITE ASSESSMENT INSPECTION BY THE ENGINEER IS REQUIRED. IF REQUIRED, THE SITE ASSESSMENT INSPECTION BY THE ENGINEER MUST BE PERFORMED WITHIN 1 MONTH OF STARTING CONSTRUCTION. ALLOW ENGINEER A MINIMUM OF 1 WEEK NOTICE IN SCHEDULING SITE ASSESSMENT INSPECTIONS.

UTILITY NOTES

1. COORDINATE WITH EXISTING UTILITIES AND STORM SEWER INSTALLATION TO AVOID CONFLICTS . UTILITY INSTALLATION AND MATERIAL SHALL MEET THE REQUIREMENTS OF **NORRIS WATER COMMISSION, CLINTON UTILITIES BOARD, AND POWELL-CLINCH UTILITY DISTRICT** AND ALL APPLICABLE CODES. COORDINATE WITH **NORRIS WATER COMMISSION, CLINTON UTILITIES BOARD, AND POWELL-CLINCH UTILITY DISTRICT** PRIOR TO CONSTRUCTION TO DETERMINE MATERIAL, INSTALLATION TESTING AND INSPECTION REQUIREMENTS. VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. PAVEMENT REPAIR AND TRAFFIC CONTROL SHALL MEET THE REQUIREMENTS OF THE AGENCY HAVING JURISDICTION.
3. COORDINATE LOCATION OF GAS LINE TO AVOID CONFLICTS WITH OTHER UTILITIES. CONNECTION TO EXISTING GAS SERVICE SHALL MEET THE REQUIREMENTS OF **POWELL-CLINCH UTILITY DISTRICT.** CONTACT **POWELL-CLINCH UTILITY DISTRICT** AND COORDINATE INSTALLATION.
4. GAS METER AND SUPPLY LINE SHALL BE SIZED AND INSTALLED BY **POWELL-CLINCH UTILITY DISTRICT** FOR THE LOADS SHOWN ON THE PLUMBING DRAWINGS. PROVIDE 4" SLEEVE UNDER PAVED AREAS.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY AND ALL PERMITS AND LICENSES REQUIRED TO WORK IN THE PUBLIC R.O.W. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TAP FEES AND COORDINATION WITH **NORRIS WATER COMMISSION** TO ESTABLISH WATER AND SEWER SERVICE.
6. PROVIDE 10' MIN. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER LINES. WHERE CROSSINGS OCCUR, PROVIDE 18" MIN SEPARATION BETWEEN WATER AND SEWER LINES. PROVIDE 6" MIN. CLEARANCE BETWEEN STORM SEWERS AND OTHER UTILITIES. UNLESS OTHERWISE NOTED PROVIDE 3' MINIMUM COVER FOR ALL UTILITIES. PROVIDE #57 STONE BEDDING AND BACKFILL TO SUBGRADE FOR ALL UTILITIES LOCATED IN PAVED AREAS.
7. ADJUST ALL EXISTING UTILITY STRUCTURES, WHETHER SPECIFICALLY INDICATED ON THE DRAWINGS OR NOT, TO MATCH FINAL GRADES. ADJUSTMENTS SHALL MEET THE REQUIREMENTS OF **NORRIS WATER COMMISSION, CLINTON UTILITIES BOARD, AND POWELL-CLINCH UTILITY DISTRICT**.
8. COORDINATE WITH **NORRIS WATER COMMISSION, CLINTON UTILITIES BOARD, AND POWELL-CLINCH UTILITY DISTRICT** TO REMOVE OR ABANDON EXISTING UTILITIES, WHETHER SPECIFICALLY INDICATED ON THE DRAWINGS OR NOT, THAT ARE LOCATED WITHIN THE PROJECT LIMITS AND NO LONGER IN USE.
9. UNLESS OTHERWISE NOTED, ALL SANITARY SEWER PIPE AND FITTINGS SHALL BE PVC MEETING THE REQUIREMENTS OF ASTM D 3034. USE SDR 35 UNLESS OTHERWISE SPECIFIED. FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM D 3311 AND ASTM D 2665. PIPE SHALL HAVE AN INTEGRAL BELL END WITH GASKET SEAL WHICH HAS BEEN REINFORCED WITH A STEEL RING, BAND, OR OTHER RIGID MATERIAL THAT PERMANENTLY LOCKS THE GASKET IN PLACE. THE JOINT SHALL MEET THE REQUIREMENTS OF ASTM D 3212. GASKETS SHALL BE OF A LOCK-IN TYPE GASKET, REIBER TYPE OR APPROVED SUBSTITUTE, MEETING THE REQUIREMENTS OF ASTM F-477. UNLESS OTHERWISE NOTED, MINIMUM SLOPE SHALL BE 2.0% FOR 4" LINE AND 1.0% FOR 6" LINES.
10. UNLESS OTHERWISE NOTED, ALL WATER LINES SHALL BE AWWA C900 PVC (CLASS 200) WITH BELL END FOR PUSH-ON TYPE JOINTS. JOINTS SHALL CONSIST OF COMPACT PATTERN DUCTILE IRON FITTINGS MEETING THE REQUIREMENTS OF AWWA C 153 WITH RUBBER GASKETS MEETING THE REQUIREMENTS OF AWWA C 111. INSTALLATION SHALL COMPLY WITH UL 1285.
11. (NOT USED)
12. FIRE LINE SIZE SHALL BE VERIFIED BY SPRINKLER CONTRACTOR. CERTIFIED CALCULATIONS SHALL BE SUBMITTED TO THE OWNER. SEE THE FIRE PROTECTION PLAN FOR FURTHER REQUIREMENTS. ALL FIRE PROTECTION PIPING STARTING FROM THE POINT OF SERVICE MUST BE INSTALLED BY A TENNESSEE REGISTERED SPRINKLER CONTRACTOR.
13. ALL WATER LINE MATERIALS SHALL BE LEAD FREE.

ABBREVIATIONS

NOTE: ALL ABBREVIATIONS MAY NOT APPLY TO THIS PROJECT

@	AT
&	AND
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
ADA	AMERICANS WITH DISABILITIES ACT
APP'D	APPROVED
APPROX. OR ~	APPROXIMATE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASPH.	ASPHALT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWWA	AMERICAN WATER WORKS ASSOCIATION
B/C	BACK OF CURB
BLDG.	BUILDING
BLVD.	BOULEVARD
BM	BENCHMARK
B/W	BOTTOM OF WALL
Δ	CURVE DELTA ANGLE
CB	CATCH BASIN
CFS	CUBIC FEET PER SECOND
CGP	CONSTRUCTION GENERAL PERMIT
CI	CURB INLET
C	CENTERLINE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
C.O.	CLEANOUT
CONC.	CONCRETE
CONT.	CONTINUOUS
°	DEGREES
DCB	DOUBLE CATCH BASIN
DIA. OR Ø	DIAMETER
DIP	DUCTILE IRON PIPE
DWG.	DRAWING
E	EAST
EA.	EACH
E.F.	EACH FACE
EIP	EXISTING IRON PIPE
EL. OR ELEV.	ELEVATION
EOP	EDGE OF PAVEMENT
EPA	ENVIRONMENTAL PROTECTION AGENCY
ETC.	ET CETERA
E.W.	EACH WAY
EX. OR EXIST.	EXISTING
F/C	FACE OF CURB
FFE	FINISHED FLOOR ELEVATION
FIN.	FINISHED
FP	FIRE PROTECTION
FT.	FEET
GC	GENERAL CONTRACTOR
GI	GRATE INLET
GPM	GALLONS PER MINUTE
GV	GAS VALVE
H	HORIZONTAL
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
HP HDPE	HIGH PERFORMANCE HIGH DENSITY POLYETHYLENE
HWY.	HIGHWAY
ID	INSIDE DIAMETER OR INLINE DRAIN
IN.	INCH(ES)
INV.	INVERT
IPF	IRON PIN FOUND
JB	JUNCTION BOX
L	LENGTH
LBS.	POUNDS
LF	LINEAR FEET
MAX.	MAXIMUM
MH	MANHOLE
MIN.	MINIMUM
MUTCD	MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES
N	NORTH
N/A	NOT APPLICABLE
NFPA	NATIONAL FIRE PROTECTION AGENCY
NIC	NOT IN CONTRACT
NIP	NEW IRON PIN
NO. OR #	NUMBER
NOI	NOTICE OF INTENT
NPDES	NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
N.T.E.	NOT TO SCALE
O.C.	ON CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PIV	POST INDICATOR VALVE
POB	POINT OF BEGINNING (ALIGNMENT)
POE	POINT OF ENDING (ALIGNMENT)
PP	POWER/UTILITY POLE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
Q1	1 YEAR STORM PEAK FLOW
Q10	10 YEAR STORM PEAK FLOW
QLP	QUALIFYING LOCAL PROGRAM
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REF.	REFERENCE
REQ'D	REQUIRED
REV.	REVISION
R.O.W.	RIGHT-OF-WAY
S	SOUTH
SAN.	SANITARY
SCH.	SCHEDULE
SD	STORM DRAIN
SDR	STANDARD DIMENSION RATIO
SF	SQUARE FEET
SPAP	SPECIAL POLLUTION ABATEMENT PERMIT
SQ.	SQUARE
ST.	STREET
STA.	STATION
SS	SANITARY SEWER
SSFM	SANITARY SEWER FORCE MAIN
SWPPP	STORM WATER POLLUTION PREVENTION PLAN
TBM	TEMPORARY BENCH MARK
TDEC	TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
T.D.O.T.	TENNESSEE DEPARTMENT OF TRANSPORTATION
THK.	THICK
TC	TOP OF CASTING
T/C	TOP OF CURB ELEVATION
TP	TOP OF PAVEMENT ELEVATION
T/W	TOP OF WALL
TYP.	TYPICAL
V	VERTICAL
W	WEST
W/	WITH
WS	WATER SURFACE
WV	WATER VALVE
W.W.F.	WELDED WIRE FABRIC
W.W.M.	WELDED WIRE MESH
YD	YARD DRAIN

LEGEND

EXISTING	LEGEND	PROPOSED
P/E	EASEMENT	C/E
R/W	RIGHT-OF-WAY	R/W
PL	PROPERTY LINE	PL
2010	MAJOR CONTOUR	2010
2011	MINOR CONTOUR	2011
SS	SANITARY SEWER	SS
G	GAS PIPING	G
W	WATER LINE	W
OU	OVERHEAD UTILITIES	OU
UE	ELECTRIC (UNDERGROUND)	UE
UT	TELEPHONE/COMM.	T
SD	STORM SEWER	SD
	ROOF DRAINS	RD
	FIRE SUPPRESSION LINE	F
	FORCE MAIN	SSFM
	SILT FENCE	SF
	REINFORCED SILT FENCE	SSF
	CONSTRUCTION LIMITS	
	SETBACK	
	EXISTING TO BE REMOVED	
	DRAINAGE SWALE	
	CHECK DAM	
	DIVERSION DITCH	TD
	TUBES AND WATTLES	
	CURBLINE	
	CURBLINE	
	BUILDING	
X	FENCE	X
	VEGETATION	
S	SEWER MANHOLE	S
GT	GREASE TRAP	GT
ST	STORM MANHOLE	ST
JB	JUNCTION BOX	JB
CB	CATCH BASIN	
CB	CURB INLET	
	THROATED INLET	
©	CLEAN OUT	©
	HEADWALL	
XXX.XX ×	SPOT GRADE	XXX.XX
	OUTFALL	OUT
	RIPRAP OUTLET PROTECTION	
	TEMP. CONSTRUCTION EXIT	
	INLET PROTECTION	
	THRUST BLOCK	
W	WATER VALVE	
W	WATER METER	W
PIV	POST INDICATOR VALVE	
FH	FIRE HYDRANT	
	FIRE DEPARTMENT CONNECTION	
IV	IRRIGATION VALVE	
G	GAS VALVE	
GM	GAS METER	G
	UTILITY POLE	
EV	ELECTRICAL VAULT	
EM	ELECTRIC METER	
E	ELECTRICAL BOX	
GW	GUY WIRE	
	LIGHT STANDARD	
T	TELEPHONE PEDESTAL	
	BOLLARD	
	SLOPE DRAIN	
	SLOPE MATTING	
	TEMPORARY STABILIZATION	TS
	PERMANENT STABILIZATION	PS
	CONCRETE WASHOUT	CW
	FILTER RING	
	BENCHMARK	
	CONTROL POINT	

AREAS & CALCULATIONS

IMPERVIOUS AREA

EXISTING		PROPOSED		TOTAL INCREASE	
0.54	Acres	1.59	Acres	1.05	Acres
23,390	sqft	69,468	sqft	46,078	sqft

DISTURBED AREA

TOTAL SITE AREA		DISTURBED AREA	
12.3	Acres	2.37	Acres
535,788	sqft	103,237	sqft

PARKING CALCULATION

	PROVIDED
REGULAR	70
ACCESSIBLE	03
TOTAL	73

PROPERTY INFORMATION

OWNER
NAME: ANDERSON COUNTY SCHOOLS
ADDRESS: 101 S. MAIN ST.
CLINTON, TN 37716
PHONE: (865) 463-2800

PROPERTY DATA
ADDRESS: 5 NORRIS SQ.
NORRIS, TN 37828
MAP: 031F
PARCEL ID: FAR002.00
ZONING: FAR

VERTICAL DATUM: NAVD 88

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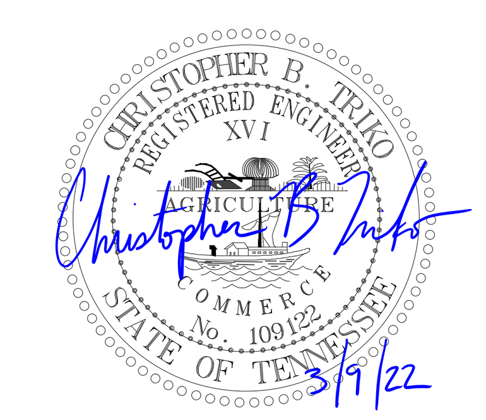
MBI

ENGINEER:
MBI COMPANIES INC.
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
PHONE: (865) 584-0999
FAX: (865) 584-5213
WEB: mbicompanies.com

CONSULTANT

SEAL



PROJECT INFORMATION
PROJECT:
AN ADDITION
& RENOVATION TO:
NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:
5 NORRIS SQUARE
NORRIS, TN 37828
PROJECT NO.: 210042-04

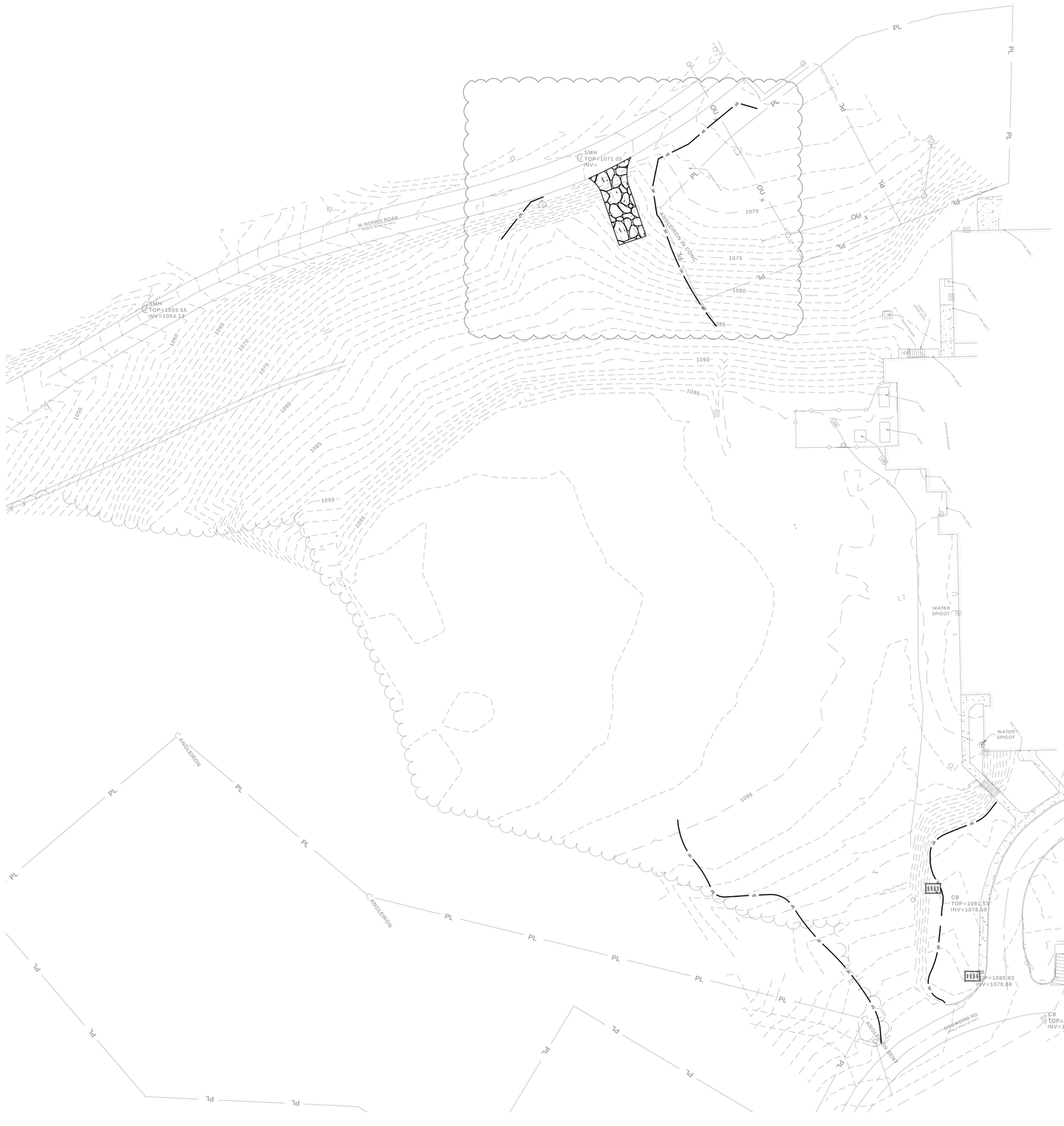
ACTIVE DESIGN PHASE
- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
2	03/09/2022	ADDENDUM #2

KEY PLAN

SHEET INFORMATION
SHEET ISSUED: 03/02/2022
DESIGNED BY: I.A.J.
DRAWN BY: I.A.J.
REVIEWED BY: C.B.T.
SHEET TITLE:
CIVIL NOTES
& LEGEND
SHEET NO.:
C001



PHASE 1 EROSION PREVENTION & SEDIMENT CONTROL PLAN

1

GENERAL SHEET NOTES

1. SEE SHEET C001 FOR CIVIL NOTES AND LEGENDS

EROSION CONTROL LEGEND

SF	SILT FENCE; SEE DETAIL 3/C800
	CONSTRUCTION EXIT; SEE DETAIL 1/C800
	INLET PROTECTION; SEE DETAIL 4/C800

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GRAPHIC SCALE
40 0 20 40 80 120
1 INCH = 40'

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CONSULTANT

SEAL

CHRISTOPHER D. IMMEL
REGISTERED ENGINEER
XVI
AGRICULTURE
COMMERCE
No. 109125
STATE OF TENNESSEE
2/22/22

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AN ADDITION
& RENOVATION TO:
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PROJECT ADDRESS:
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NORRIS, TN 37828

PROJECT NO.: 210042-04

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REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	ADDENDUM #1

KEY PLAN

SHEET INFORMATION

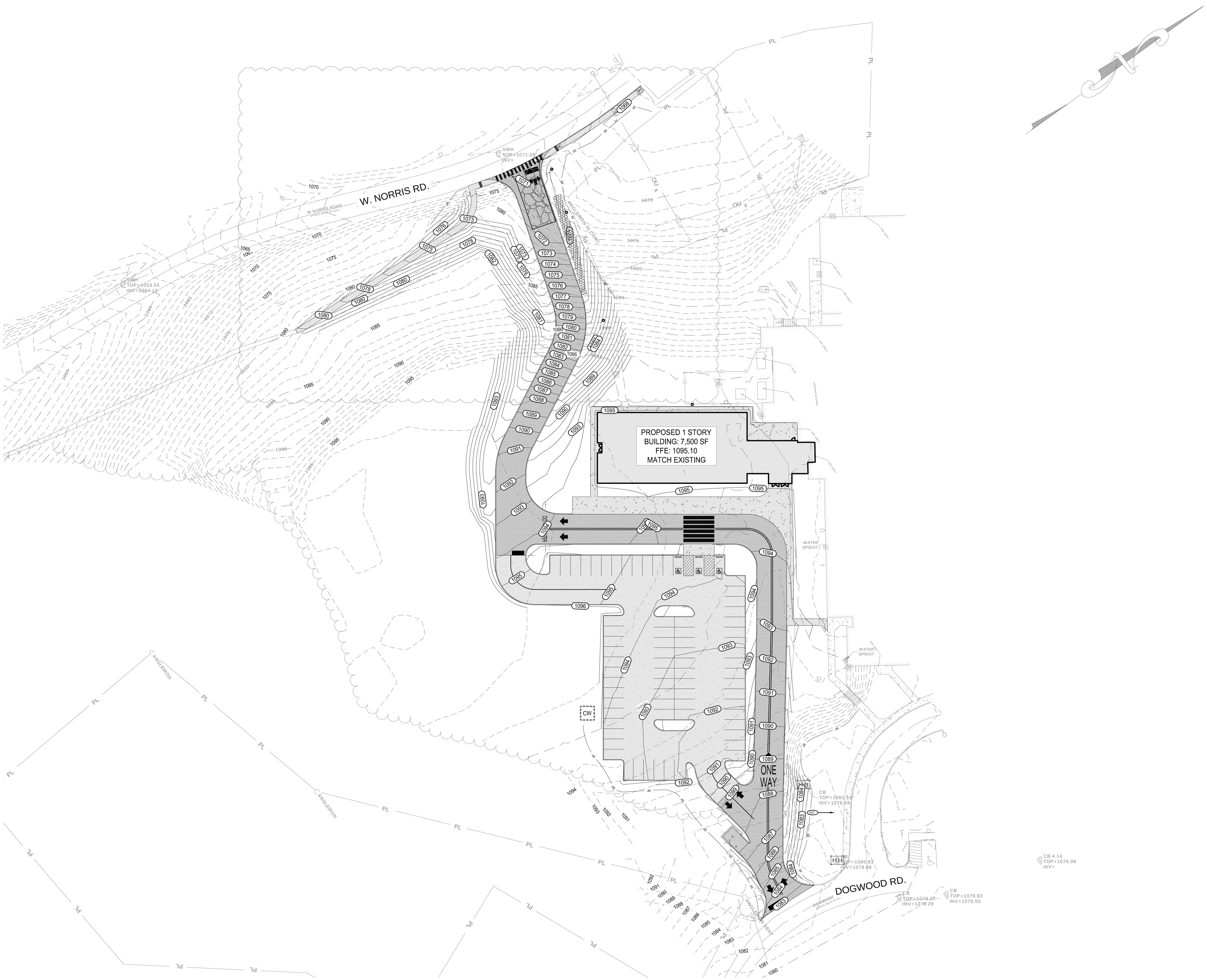
SHEET ISSUED:	02/04/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE:

PHASE 1 EROSION PREVENTION & SEDIMENT CONTROL PLAN

SHEET NO.:

C100



PHASE 2 EROSION PREVENTION & SEDIMENT CONTROL PLAN

1

GENERAL SHEET NOTES:

1. SEE SHEET C001 FOR CIVIL NOTES AND LEGENDS

EROSION CONTROL LEGEND

- SF — SILT FENCE; SEE DETAIL 3/C800
- CONSTRUCTION ENTRANCE; SEE DETAIL 1/C800
- INLET PROTECTION; SEE DETAIL 4/C800
- OUTFALL
- CW — CONCRETE WASHOUT; SEE DETAIL 5/C800
- PS — PERMANENT STABILIZATION; SEE SEED MIXTURE TABLES BELOW
- SLOPE MATTING; SEE DETAIL 2/C800

PERMANENT SEED MIXTURES (TDOT)

GROUPS	SEEDING DATES	GRASS SEEDS	PERCENT
A	FEBRUARY 1 TO JULY 1	KENTUCKY 31 FESCUE	80%
		KOREAN LESPEDEZA	15%
		ENGLISH RYE	5%
B	JUNE 1 TO AUGUST 15	KENTUCKY 31 FESCUE	55%
		ENGLISH RYE	20%
		KOREAN LESPEDEZA	15%
		GERMAN MILLET	10%
B1	APRIL 15 TO AUGUST 15	BERMUDAGRASS (HULLED)	70%
		ANNUAL LESPEDEZA	30%
C	AUGUST 1 TO DECEMBER 1	KENTUCKY 31 FESCUE	70%
		ENGLISH RYE	20%
		WHITE CLOVER	10%
C1	FEBRUARY 1 TO DECEMBER 1	KENTUCKY 31 FESCUE	70%
		CROWN VETCH	25%
		ENGLISH RYE	5%

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CONSULTANT

SEAL

CHRISTOPHER B. TRIKO REGISTERED ENGINEER XVI AGRICULTURE COMMERCE No. 109122 STATE OF TENNESSEE
2/22/22

PROJECT INFORMATION

PROJECT:
AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:
5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 210042-04

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REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	ADDENDUM #1

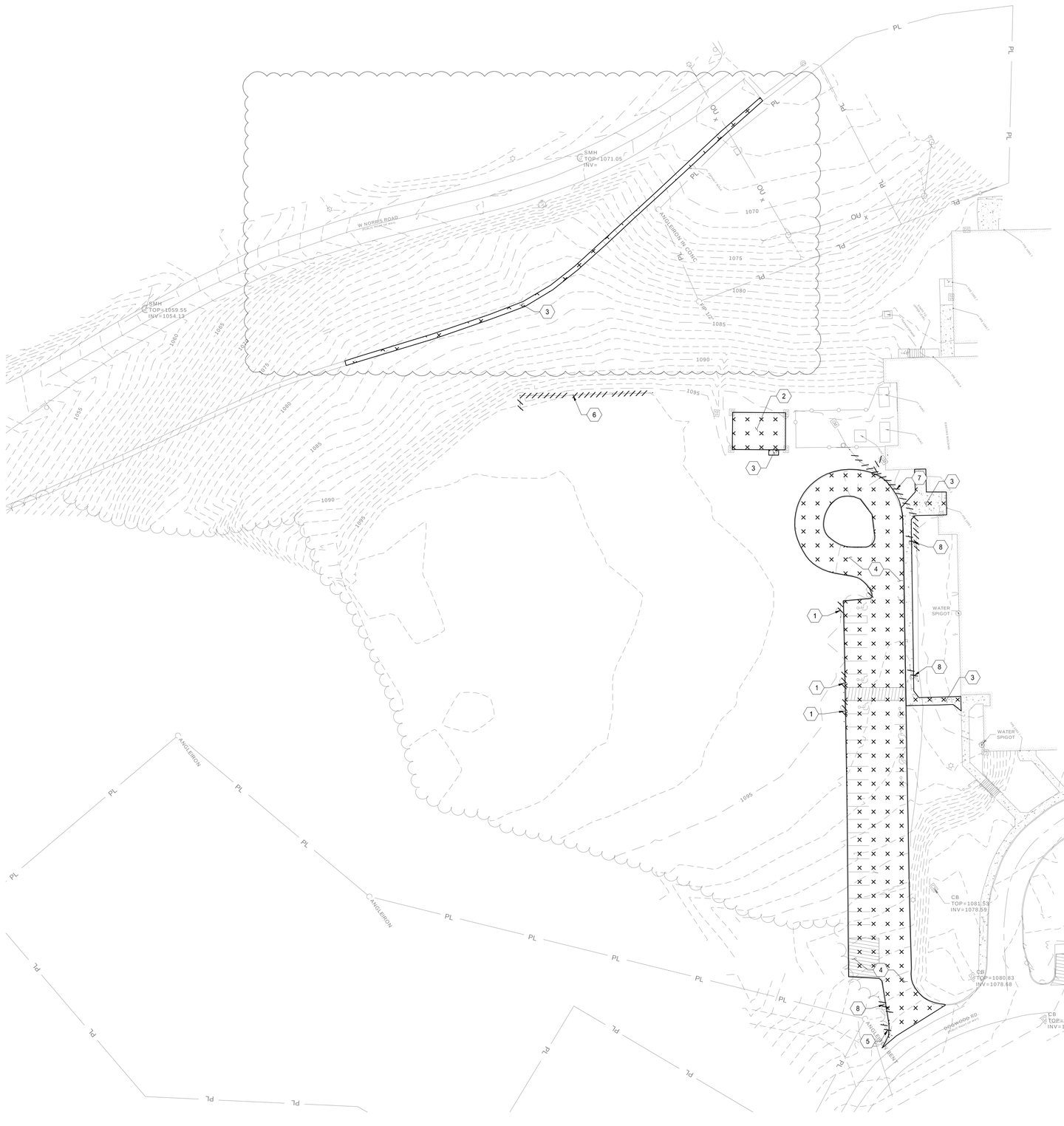
KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE:
PHASE 2 EROSION PREVENTION & SEDIMENT CONTROL PLAN

SHEET NO.: C101



SITE DEMO PLAN

1

GENERAL SHEET NOTES:

1. SEE SHEET C001 FOR CIVIL NOTES AND LEGENDS

DEMOLITION LEGEND

TO BE REMOVED

TO BE DEMOLISHED

DEMOLITION KEYED NOTES

1. REMOVE EXISTING "ADA PARKING SPACE" SIGN
2. DEMOLISH EXISTING SHED
3. DEMOLISH EXISTING SIDEWALK
4. DEMOLISH EXISTING ASPHALT AND CURB
5. REMOVE EXISTING "STOP" SIGN
6. REMOVE EXISTING FENCE
7. REMOVE EXISTING GAS LINE; BY LOCAL UTILITY
8. REMOVE EXISTING "NO PARKING" SIGN

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GRAPHIC SCALE

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1 INCH = 40'

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CONSULTANT

SEAL

CHRISTOPHER D. IMHOFF
REGISTERED ENGINEER
XVI
AGRICULTURE
COMMERCE
No. 109125
STATE OF TENNESSEE
2/22/22

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KEY PLAN

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DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

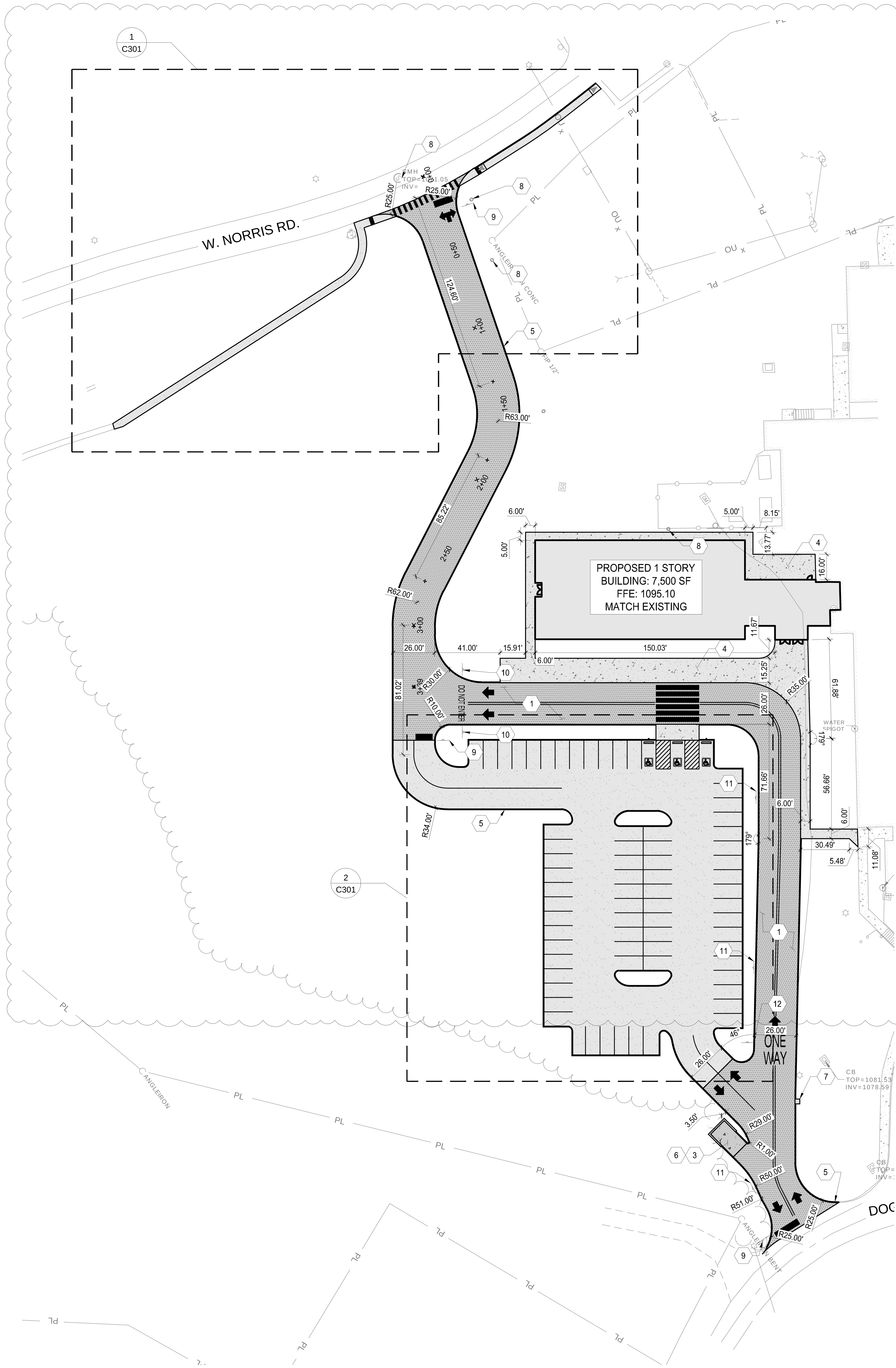
SHEET TITLE:

SITE DEMOLITION PLAN

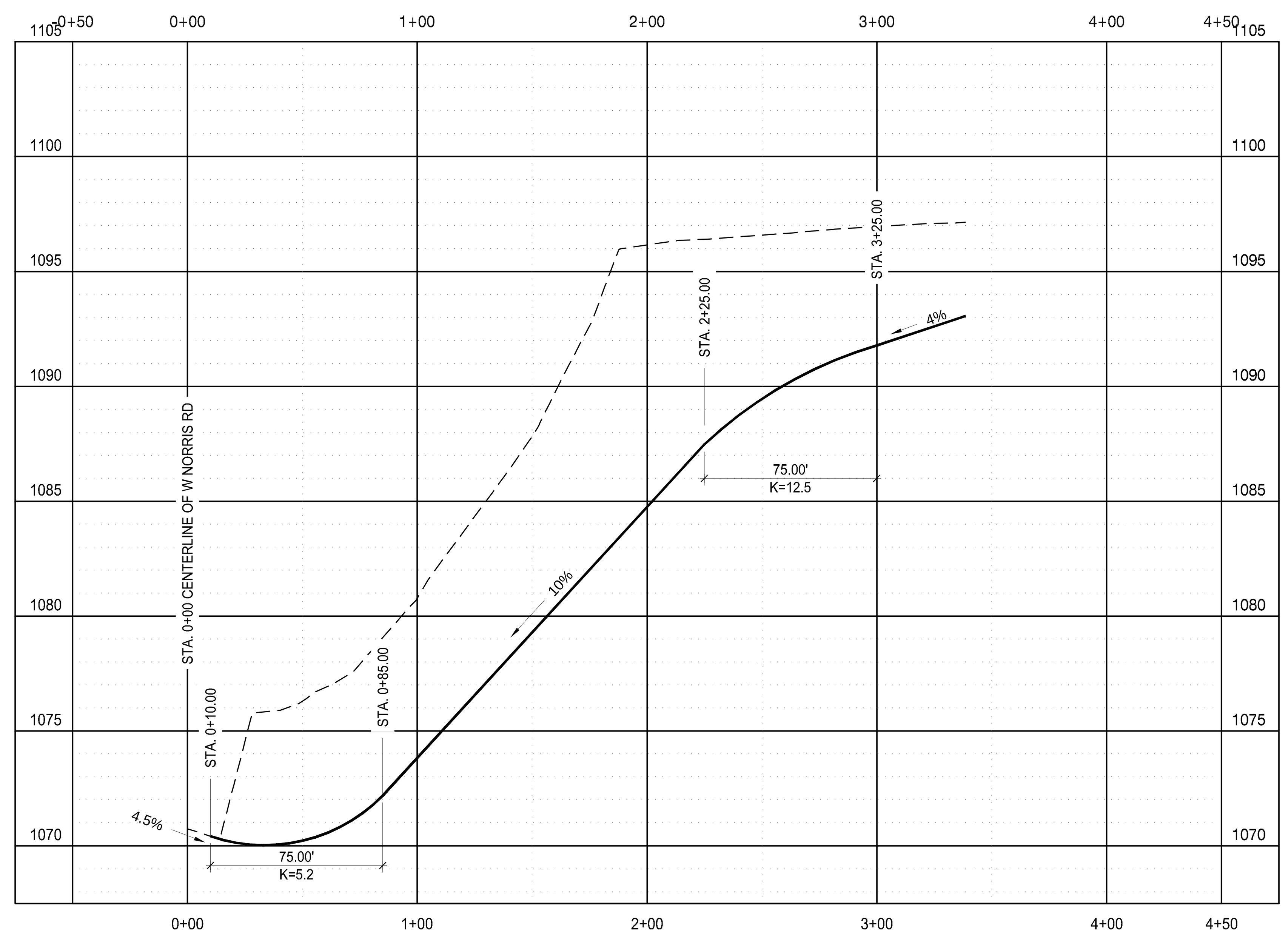
SHEET NO.:

C200

CONTRACTOR TO PROVIDE SIGNAGE TO WARN AND PROTECT THE PUBLIC FROM CONSTRUCTION ACTIVITIES



SITE LAYOUT PLAN
1



ENTRANCE ROAD PROFILE
2

SCALE: H: 1" = 50'-0" V: 1" = 5'-0"

GENERAL SHEET NOTES:

1. SEE SHEET C001 FOR CIVIL NOTES AND LEGENDS
2. FOR TYPICAL PARKING SPACE LAYOUT, SEE 1/C802
3. ALL RADII NOT LABELED ARE TO BE R3.00'

AREAS & CALCULATIONS

IMPERVIOUS AREA

EXISTING		PROPOSED		TOTAL INCREASE	
0.54	Acres	1.63	Acres	1.09	Acres
23,390	sqft	70,843	sqft	47,453	sqft

DISTURBED AREA

TOTAL SITE AREA		DISTURBED AREA	
12.3	Acres	2.48	Acres
535,788	sqft	10,029	sqft

PARKING CALCULATION

PROVIDED	
REGULAR	70
ACCESSIBLE	03
TOTAL	73

SITE LEGEND

- PAINTED DOUBLE STRIP, COLOR TO BE YELLOW
- ONE WAY — PAINTED 'ONE WAY' LETTERS, COLOR TO BE WHITE; SEE DETAIL 8/C802
- PAINTED DIRECTIONAL ARROWS, COLOR TO BE WHITE; SEE DETAIL 8/C802
- PAINTED PEDESTRIAN CROSSWALK, COLOR TO BE WHITE; SEE DETAIL 9/C802
- PAINTED STOP BAR, COLOR TO BE WHITE; SEE DETAIL 8/C802
- DO NOT ENTER — PAINTED 'DO NOT ENTER' LETTERS, COLOR TO BE WHITE; SEE DETAIL 8/C802

X SITE KEYED NOTES

1. HEAVY DUTY ASPHALT PAVING; SEE DETAIL 2/C801
2. LIGHT DUTY ASPHALT PAVING; SEE DETAIL 2/C801
3. CONCRETE PAVING; SEE DETAIL 2/C801
4. CONCRETE SIDEWALK; SEE DETAIL 1/C801
5. CONCRETE CURB; SEE DETAIL 3/C801
6. WASTE ENCLOSURE; SEE ARCHITECTURAL SHEETS FOR DETAILS
7. CURB CUT WITH CONCRETE APRON; SEE DETAIL 5/C801
8. SANITARY SEWER STRUCTURE; SEE SHEET C600 FOR DETAILS
9. POLE MOUNTED 'STOP' SIGN; SEE DETAIL 7/C802
10. POLE MOUNTED 'DO NOT ENTER' SIGN; SEE DETAIL 7/C802
11. POLE MOUNTED 'NO PARKING' SIGN; SEE DETAIL 7/C802
12. POLE MOUNTED 'ONE WAY' SIGN; SEE DETAIL 7/C802

811 Know what's below. Call before you dig.
In Tennessee call 811 or 1-800-351-1111

GRAPHIC SCALE
40 0 20 40 80 120
1 INCH = 40'

MBI

ENGINEER:
MBI COMPANIES INC.
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
PHONE: (865) 584-0999
FAX: (865) 584-5213
WEB: mbicompanies.com

CONSULTANT

SEAL

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:
5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	ADDENDUM #1

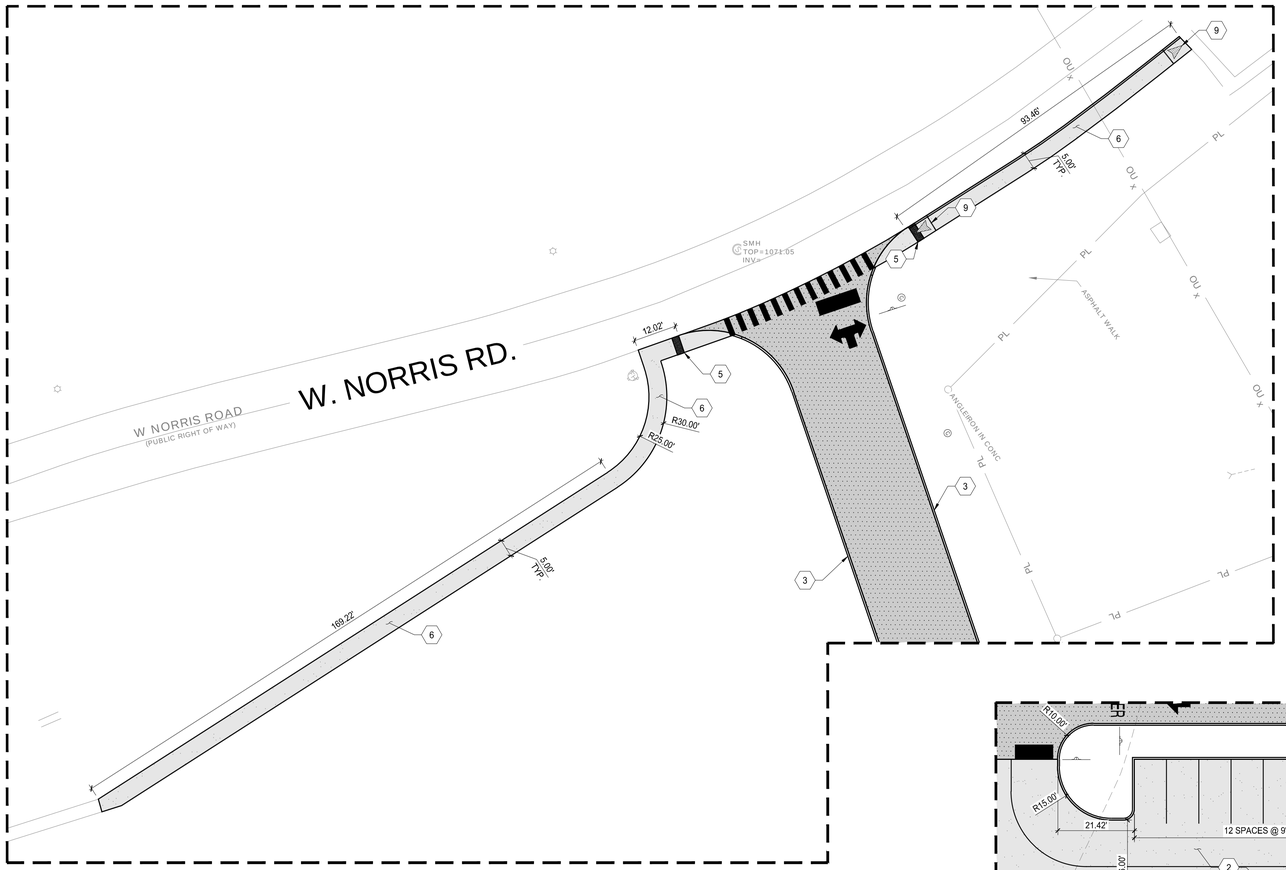
KEY PLAN

SHEET INFORMATION

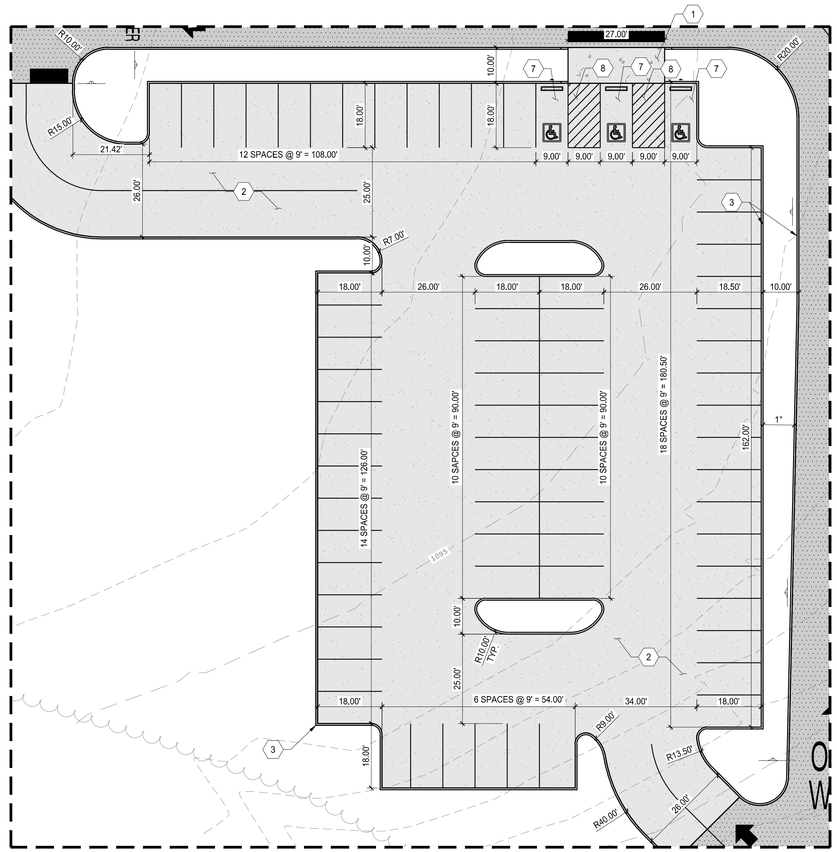
SHEET ISSUED:	02/04/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE: SITE LAYOUT PLAN

SHEET NO.: C300

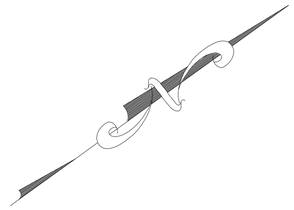


WALKING PATH LAYOUT PLAN 1



PARKING LOT LAYOUT PLAN 2

CONTRACTOR TO PROVIDE SIGNAGE TO WARN AND PROTECT THE PUBLIC FROM CONSTRUCTION ACTIVITIES



GENERAL SHEET NOTES:

1. SEE SHEET C001 FOR CIVIL NOTES AND LEGENDS
2. FOR TYPICAL PARKING SPACE LAYOUT, SEE 1/C802
3. ALL RADII NOT LABELED ARE TO BE R3.00'

SITE LEGEND

PAINTED DIRECTIONAL ARROWS, COLOR TO BE WHITE; SEE DETAIL 8/C802

PAINTED PEDESTRIAN CROSSWALK, COLOR TO BE WHITE; SEE DETAIL 9/C802

PAINTED STOP BAR, COLOR TO BE WHITE; SEE DETAIL 8/C802

X SITE KEYED NOTES

1. CONCRETE SIDEWALK; SEE DETAIL 1/C801
2. LIGHT DUTY ASPHALT PAVING; SEE DETAIL 2/C801
3. CONCRETE CURB; SEE DETAIL 3/C801
5. TACTILE WARNING PAD; SEE DETAIL 6/C801
6. ADA COMPLIANT ASPHALT RAMP; MAX SLOPE 5%; SEE DETAIL 2/C801
7. ADA COMPLIANT PARKING SPACE; SEE DETAIL 2/C802
8. PAINTED 'NO PARKING' AREA, COLOR TO BE WHITE; SEE DETAIL 3/C802
9. ADA COMPLIANT SINGLE CONCRETE RAMP; SEE DETAIL 3/C802

Know what's **below.**
Call before you dig.
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GRAPHIC SCALE
20 0 10 20 40 60
1 INCH = 20'

MBI

ENGINEER:
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WEB: mbicompanies.com
CONSULTANT

SEAL

CHRISTOPHER B. TRUAX
REGISTERED ENGINEER
XVI
AGRICULTURE
COMMERCE
100125
STATE OF TENNESSEE
2/22/22

PROJECT INFORMATION

PROJECT:

AN ADDITION
& RENOVATION TO:
NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:
5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- [ ] FOR REVIEW ONLY
- [ ] FOR PERMITTING ONLY
- [ ] SCHEMATIC DESIGN
- [ ] DESIGN DEVELOPMENT
- [ ] CONSTRUCTION BIDDING
- [x] CONSTRUCTION DOCUMENTS
- [ ] AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	ADDENDUM #1

KEY PLAN

SHEET INFORMATION

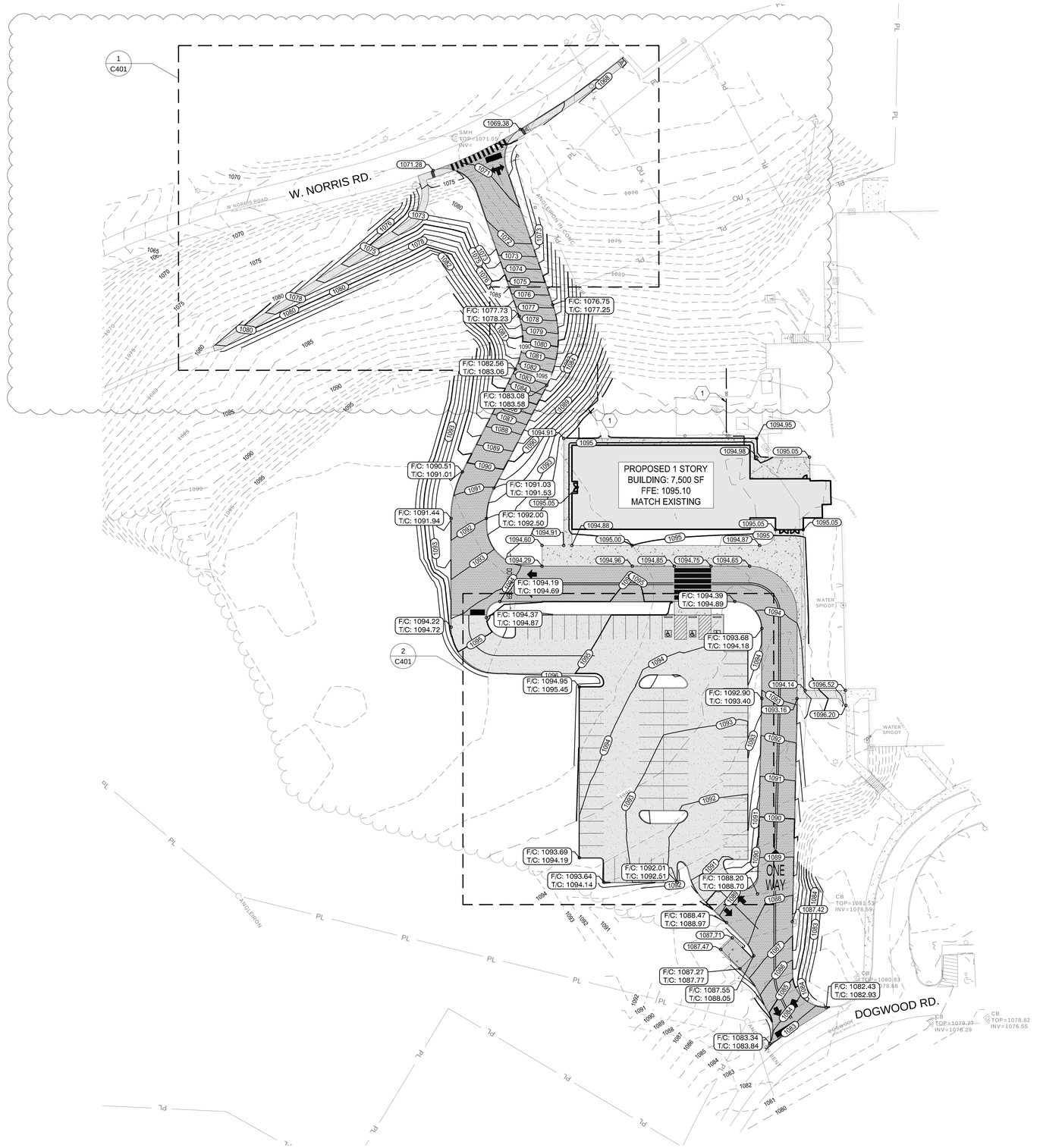
SHEET ISSUED:	02/04/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE:

ENLARGED SITE PLANS

SHEET NO.:

C301



SITE GRADING AND DRAINAGE LAYOUT PLAN 1

GENERAL SHEET NOTES

1. SEE SHEET C001 FOR CIVIL NOTES AND LEGENDS

GRADING KEYED NOTES

(1) 8" PVC ROOF DRAIN PIPE; MIN. SLOPE 1% UNTIL DAYLIGHT; SEE DETAIL 4/C803

MBI

ENGINEER:

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CONSULTANT

SEAL

CHRISTOPHER B. TRUE
REGISTERED ENGINEER
XVI
AGRICULTURE
COMMERCE
No. 109125
STATE OF TENNESSEE
2/22/22

PROJECT INFORMATION

PROJECT:

AN ADDITION
& RENOVATION TO:
NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 21042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	ADDENDUM #1

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE:

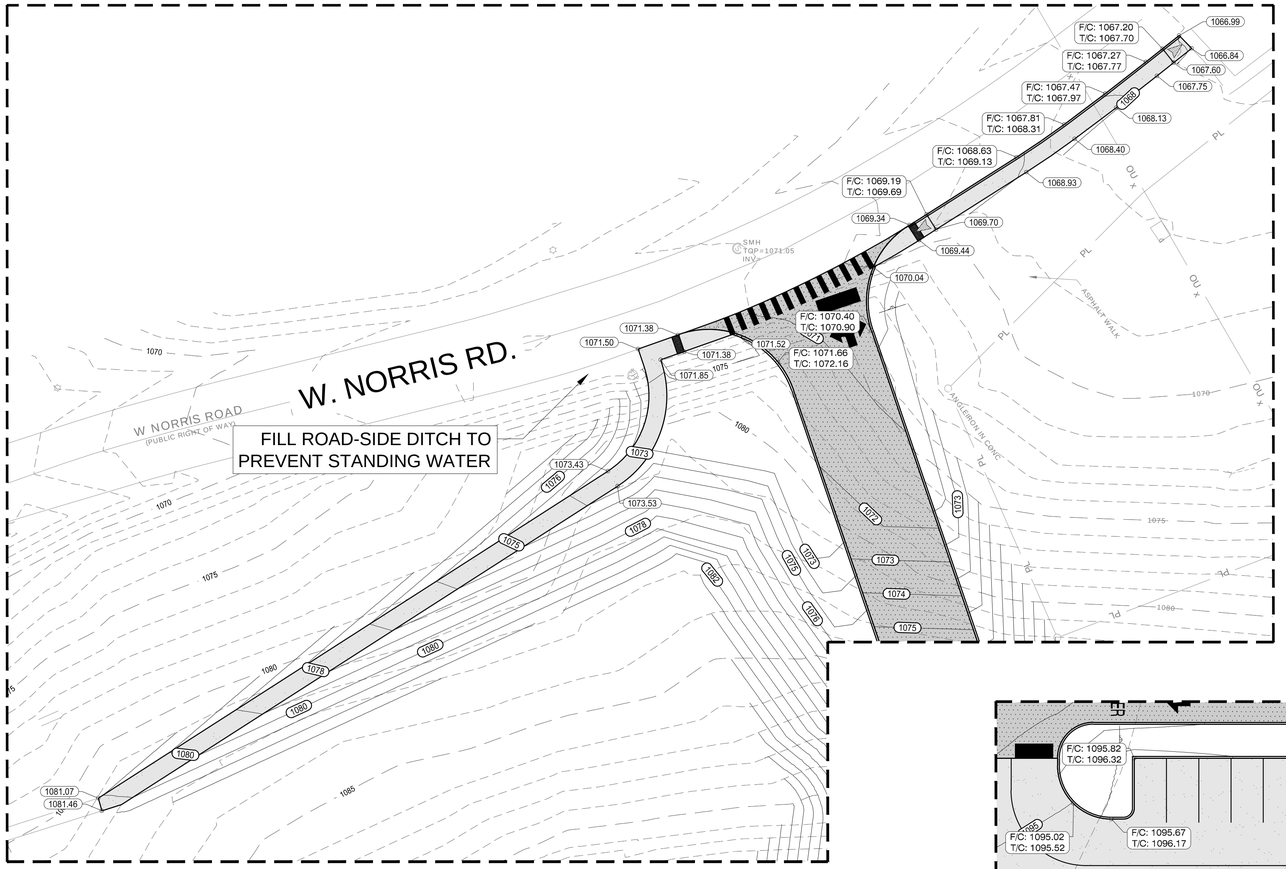
SITE GRADING AND DRAINAGE PLAN

SHEET NO.:

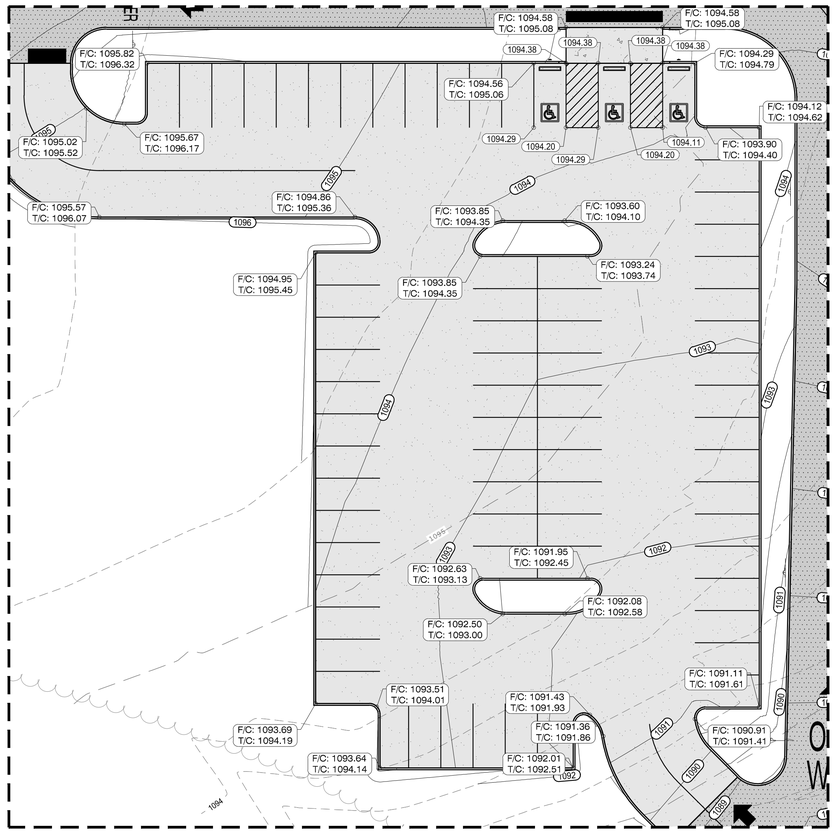
C400

811 Know what's below. Call before you dig.
In Tennessee call 811 or 1-800-351-1111

GRAPHIC SCALE
40 0 20 40 80 120
1 INCH = 40'



WALKING PATH GRADING PLAN 1



PARKING LOT GRADING PLAN 2

GENERAL SHEET NOTES:

1. SEE SHEET C001 FOR CIVIL NOTES AND LEGENDS

MBI

ENGINEER:

MBI COMPANIES INC.
299 N. WEISGARBER ROAD
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CHRISTOPHER B. TRUETT
REGISTERED ENGINEER
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AGRICULTURE
COMMERCE
No. 109125
STATE OF TENNESSEE
2/22/22

PROJECT INFORMATION

PROJECT:

AN ADDITION
& RENOVATION TO:
NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

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- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	ADDENDUM #1

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE:

ENLARGED GRADING PLANS

SHEET NO.:

C401

811 Know what's below. Call before you dig.
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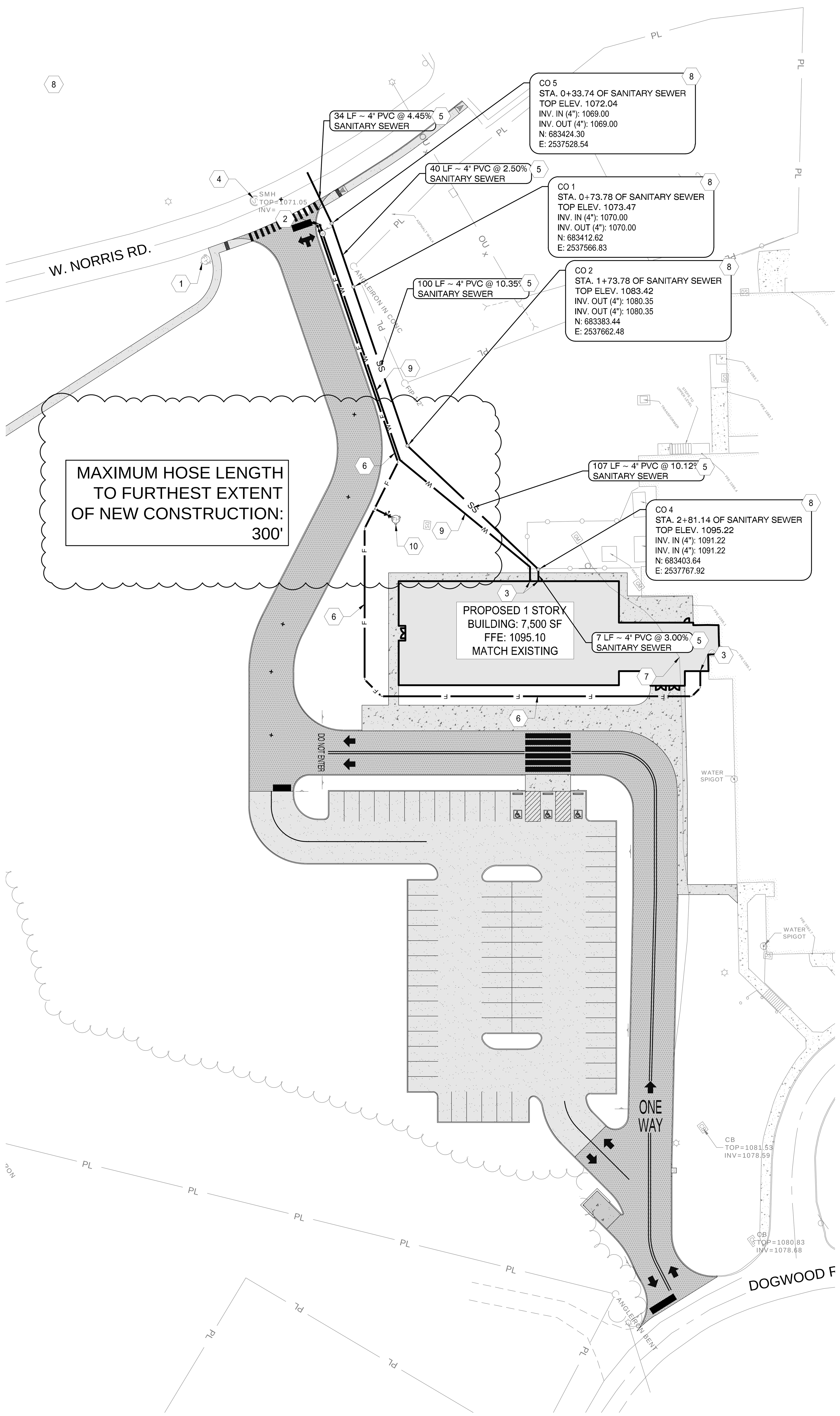
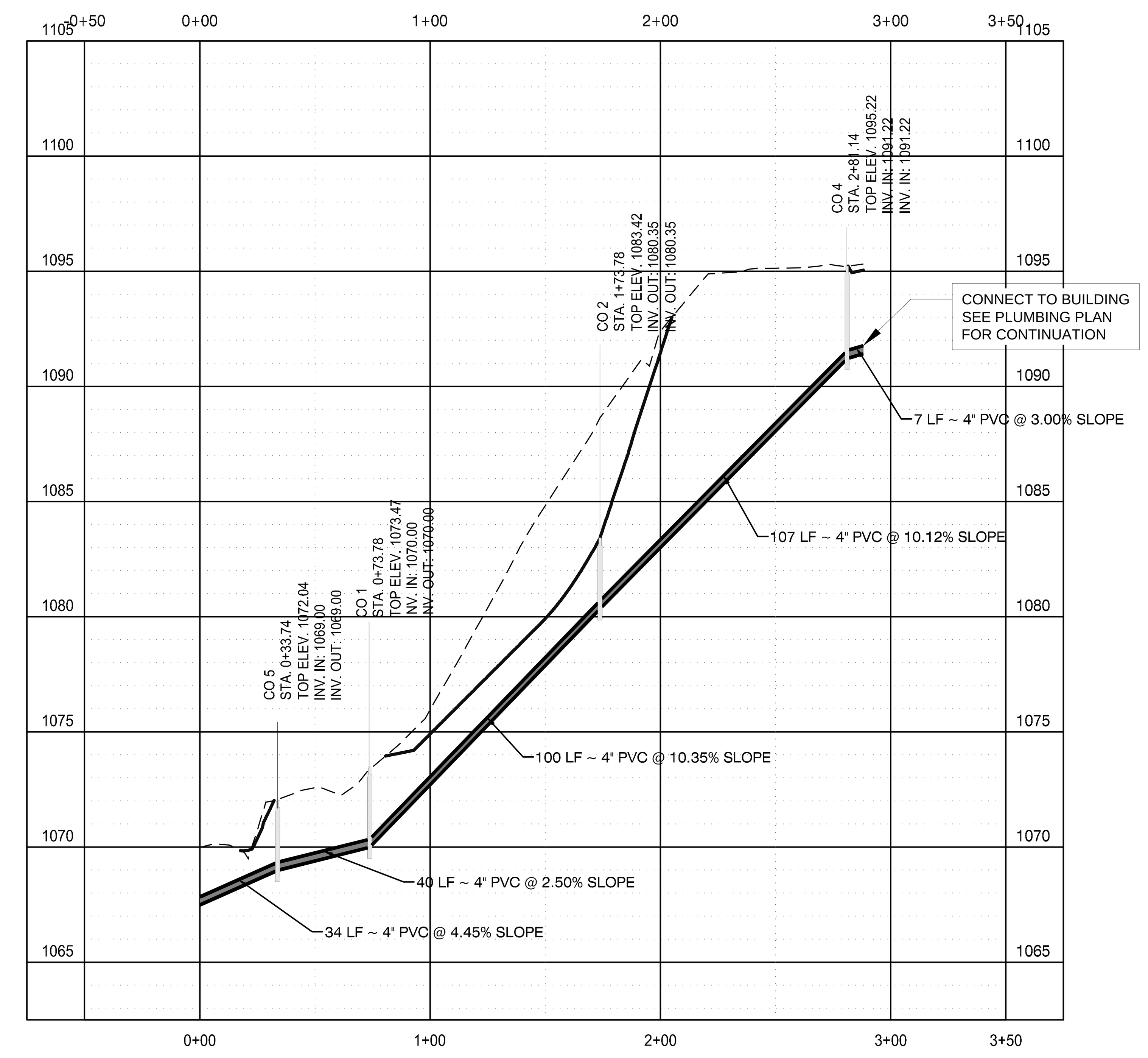
GRAPHIC SCALE

20 0 10 20 40 60

1 INCH = 20'



SITE UTILITY PLAN (1)



SANITARY SEWER 1 (1)

SCALE: H: 1" = 50'-0" V: 1" = 5'-0"

GRAPHIC SCALE

50 0 25 50 100 150

1 INCH = 50'

GENERAL SHEET NOTES

1. SEE SHEET C001 FOR CIVIL NOTES AND LEGENDS
2. COORDINATE ALL UTILITY CROSSINGS; SEE DETAIL 2/C803
3. FIELD LOCATE ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION. DETERMINE LOCATED, SIZE, MATERIAL & INVERTS. REPORT ANY DISCREPANCIES TO OWNER & ENGINEER BEFORE PROCEEDING WITH CONSTRUCTION & INSTALLATION.

UTILITY CONTACTS

WATER
NORRIS WATER COMMISSION
20 CHESTNUT ST
NORRIS, TN 37828
(865) 494-7645

SEWER
NORRIS WATER COMMISSION
20 CHESTNUT ST
NORRIS, TN 37828
(865) 494-7645

GAS
POWELL-CLING UTILITY DISTRICT
203 E 1ST ST
ROCKY TOP, TN 37769
(865) 426-2822

ELECTRIC
CLINTON UTILITIES BOARD
1001 CHARLES G. SEIVERS BLVD
CLINTON, TN 37717
(865) 457-9232

PROFILE LEGEND

EXISTING GRADE

PROPOSED GRADE

UTILITY LEGEND

PIPE FITTING; SEE DETAIL 5/C803

PIPE TEE; SEE DETAIL 5/C803

GATE VALVE; SEE DETAIL 7/C803

WATER METER BY LOCAL UTILITY

~~CO CLEANOUT; SEE DETAIL 6/C803~~

POST INDICATOR VALVE; SEE DETAIL 1/C804

UTILITY KEYED NOTES

1. EXISTING FIRE HYDRANT
2. WATER LINE CONNECTION BY LOCAL UTILITY COMPANY. COORDINATE TAP & WATER METER LOCATIONS.
3. FOR CONTINUATION SEE PLUMBING PLAN
4. CONNECTION TO EXISTING MANHOLE; BY LOCAL UTILITY
5. 4" ASTM D3034 SDR35 PVC BUILDING SANITARY SEWER SERVICE LINE @ 2.0% MIN. SLOPE; SEE DETAIL 1/C803
6. 6" C-900 PVC FIRE PROTECTION SERVICE LINE; SEE DETAIL 1/C803
7. GAS SERVICE LINE; TO BE RELOCATED BY LOCAL UTILITY
8. SANITARY SEWER CLEANOUT; SEE DETAIL 6/C803
9. ~~2" POTABLE WATER (PVC CLASS 200); SEE DETAIL 1/C803~~
10. FIRE HYDRANT; SEE DETAIL 2/C804

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GRAPHIC SCALE

40 0 20 40 80 120

1 INCH = 40'

MBI

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CONSULTANT

SEAL

CHRISTOPHER B. TRIKO REGISTERED ENGINEER XVI AGRICULTURE COMMERCE No. 109122 STATE OF TENNESSEE

3/30/22

PROJECT INFORMATION

PROJECT:

AN ADDITION
& RENOVATION TO:
NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	ADDENDUM #1
2	03/09/2022	ADDENDUM #2
3	03/30/2022	ADDENDUM #3

KEY PLAN

SHEET INFORMATION

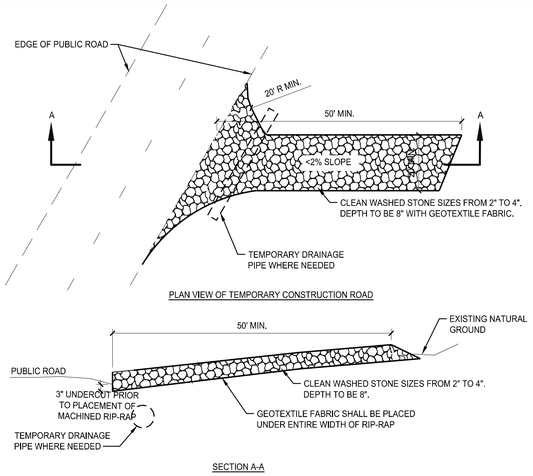
SHEET ISSUED:	03/02/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE:

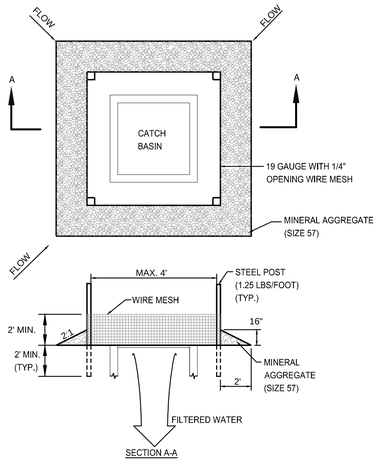
SITE UTILITY PLAN

SHEET NO.:

C500

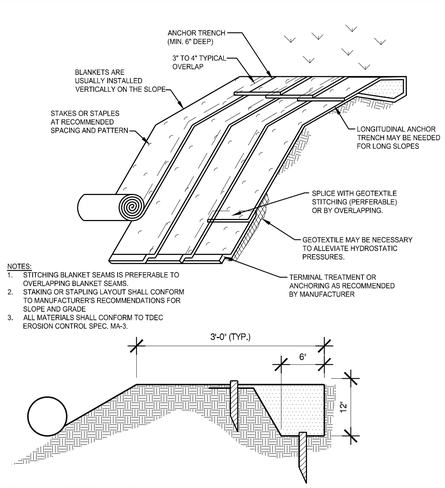


CONSTRUCTION EXIT 1

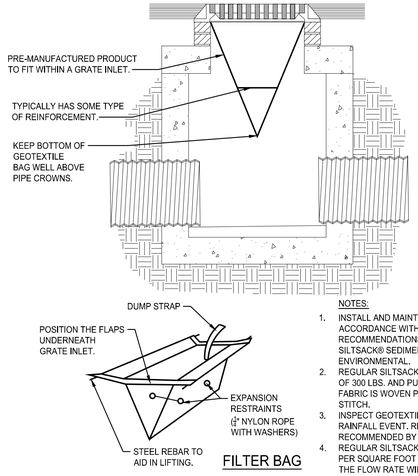


HARDWARE CLOTH AND GRAVEL INLET PROTECTION

INLET PROTECTION 4



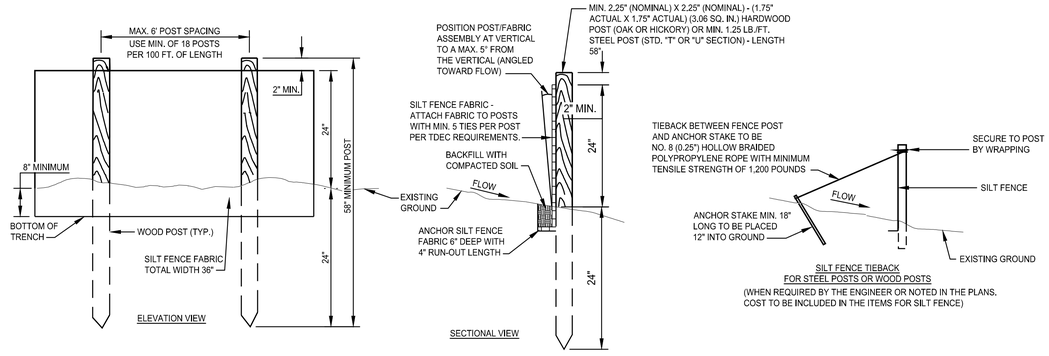
SLOPE MATTING 2



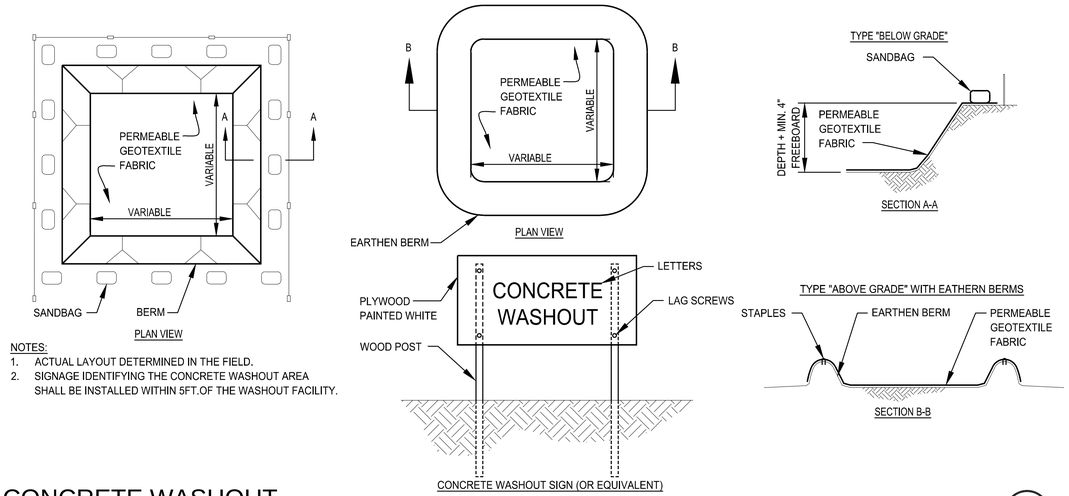
FILTER BAG

NOTES:
1. INSTALL AND MAINTAIN GEOTEXTILE FILTER BAG IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. PRODUCT SHOWN IS THE SILTSACK® SEDIMENT CONTROL DEVICE MADE BY ACF ENVIRONMENTAL.
2. REGULAR SILTSACK® HAS A GRAB TENSILE STRENGTH OF 300 LBS. AND PUNCTURE STRENGTH OF 120 LBS. FABRIC IS WOVEN POLYPROPYLENE WITH DOUBLE STITCH.
3. INSPECT GEOTEXTILE FILTER BAG AFTER EACH RAINFALL EVENT. REMOVE SEDIMENT AS RECOMMENDED BY MANUFACTURER.
4. REGULAR SILTSACK® HAS A FLOW RATE OF 40 GPM PER SQUARE FOOT OF CLEAN GEOTEXTILE MATERIAL. THE FLOW RATE WILL BE MUCH LOWER WHEN FILLED WITH SEDIMENT.

SILT FENCE 3



CONCRETE WASHOUT 5



NOTES:
1. ACTUAL LAYOUT DETERMINED IN THE FIELD.
2. SIGNAGE IDENTIFYING THE CONCRETE WASHOUT AREA SHALL BE INSTALLED WITHIN 5FT.OF THE WASHOUT FACILITY.

MBI

ENGINEER:

MBI COMPANIES INC.
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
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CONSULTANT

SEAL

CHRISTOPHER B. TRUAX
REGISTERED ENGINEER
XVI
AGRICULTURE
&
COMMERCE
No. 109125
STATE OF TENNESSEE
2/9/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ■ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ☐ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/03/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

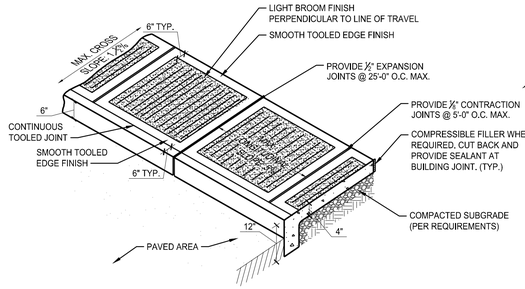
SHEET TITLE:

CIVIL DETAILS

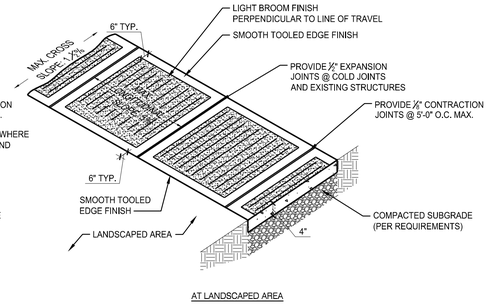
SHEET NO.:

C800

CONCRETE SIDEWALK 1



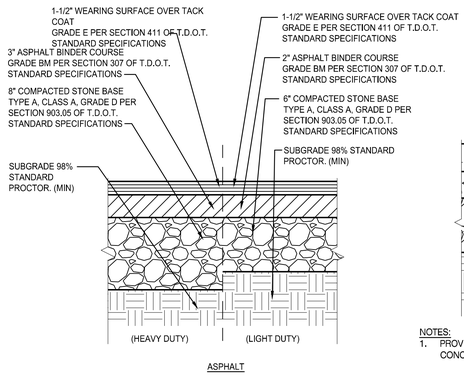
AT PAVED AREA



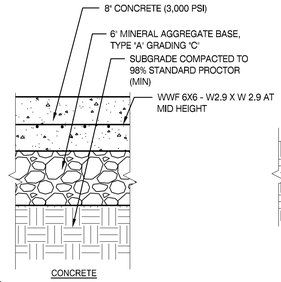
AT LANDSCAPED AREA

NOTES:
1. JOINT SPACING SHALL BE UNIFORM AND TYPICALLY LESS THAN 30xSLAB THICKNESS. IN NO CASES SHALL JOINT SPACING EXCEED 15'
2. THE LENGTH OF JOINT SPACING SHALL NOT EXCEED 1.5w
3. SAWING OF THE JOINTS SHALL BEGIN AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PERMIT SAWING WITHOUT EXCESSIVE RAVELING BUT IN NO CASE LONGER THAN 18 HOURS AFTER POURING. ALL JOINTS SHALL BE SAWED BEFORE UNCONTROLLED SHRINKAGE CRACKING OCCURS. IF NECESSARY, THE SAWING OPERATIONS SHALL BE CARRIED ON BOTH DAY AND NIGHT REGARDLESS OF WEATHER CONDITIONS. A STANDBY SAW SHALL BE AVAILABLE IN THE EVENT OF BREAKDOWN.
4. CONCRETE SHALL BE THOROUGHLY CONSOLIDATED AGAINST AND ALONG THE FACES OF ALL FORMS AND ALONG THE FULL LENGTH AND ON BOTH SIDES OF ALL JOINTS.
5. THE JOINTS CAN BE COMPLETELY FILLED WITH SEALANT MATERIAL OR PREMOLDED JOINT FILLER CAN BE INSERTED IN THE JOINT FIRST TO REDUCE THE AMOUNT OF SEALANT REQUIRED.
6. SEALER TO BE POURED TO WITHIN ¼" OF TOP OF PAVEMENT.
7. PRIOR TO SEALING, JOINT SURFACES MUST BE CLEANED AND FREE OF CURING COMPOUND, RESIDUE, LAITANCE AND ANY OTHER FOREIGN MATERIAL.
8. THE SURFACE SHOULD BE DRY WHEN THE SEALANT IS POURED.
9. THE CONCRETE SHALL BE DEPOSITED ON A MOIST GRADE IN SUCH MANNER AS TO REQUIRED AS LITTLE REHANDLING AS POSSIBLE. PLACING SHALL BE CONTINUOUS BETWEEN TRANSVERSE JOINTS WITHOUT THE USE OF INTERMEDIATE BULKHEADS. NECESSARY HAND SPREADING SHALL BE DONE WITH SHOVELS, NOT RAKES. WORKMEN SHALL NOT BE ALLOWED TO WALK ON THE FRESHLY MIXED CONCRETE WITH BOOTS OR SHOES COATED WITH EARTH OR FOREIGN SUBSTANCES.
10. ALL JOINT DOWELS MUST BE LEVEL, TRUE AND ADEQUATELY SUPPORTED SO THERE IS NO MOVEMENT DURING THE PLACEMENT OF CONCRETE.
11. TRANSVERSE CONSTRUCTION JOINTS ARE NECESSARY FOR PLANNED INTERRUPTIONS, AND WHERE EMERGENCY INTERRUPTIONS SUSPEND OPERATIONS FOR 30 MINUTES OR MORE.
12. ALL JOINTS & JOINT SEALANTS SHALL MEET T.D.O.T.'S STANDARDS AND SPECIFICATIONS.

PAVING SECTIONS 2

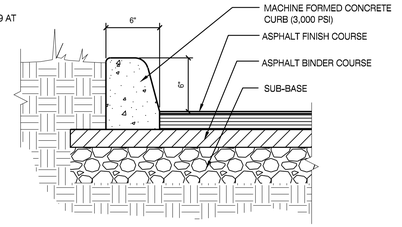


ASPHALT

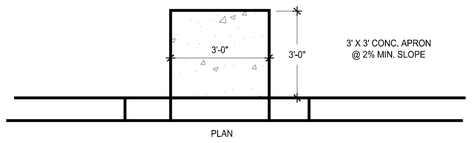


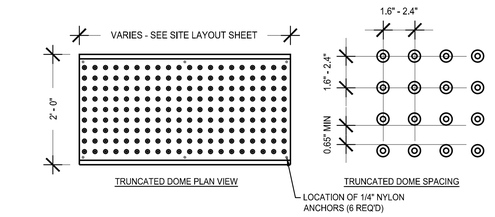
CONCRETE

NOTES:
1. PROVIDE CONTRACTION JOINTS. SEE CONCRETE JOINT DETAIL



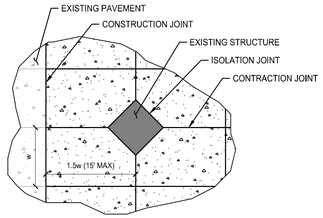
CONCRETE CURB 3



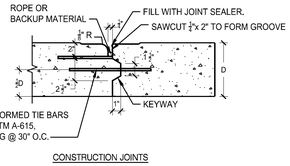


CONCRETE JOINTS 4

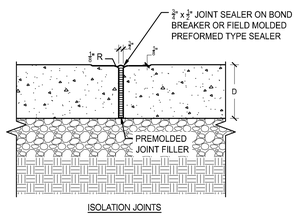
CONTRACTION JOINTS



TYPICAL JOINT PLACEMENT



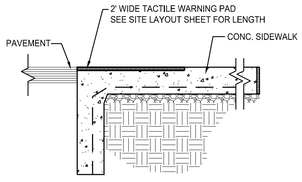
CONSTRUCTION JOINTS



ISOLATION JOINTS

CONCRETE APRON 5

TACTILE WARNING PAD 6

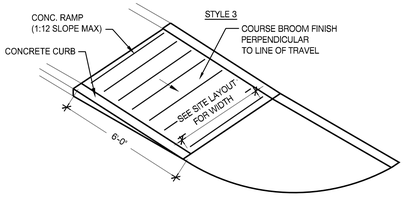


TACTILE WARNING PAD

PADS SHALL ONLY BE INSTALLED ON FULLY CURED CONCRETE. PADS SHALL ALSO BE INSTALLED PER MANUFACTURER SPECIFICATIONS AND RECOMMENDATIONS. ONCE ADHESIVE HAS SET, INSTALL 14"x1" NYLON ANCHORS THOUGH MAT AND INTO CONCRETE. SEE PLAN VIEW FOR PLACEMENT.

ACCEPTABLE MANUFACTURER:

DETECTABLE WARNING SYSTEM, INC.
(OR APPROVED EQUAL)
P.O. BOX 17685 ANAHEIM, CA 92817
TEL: (866) 999-7452 URL:
HTTP://WWW.DETECTABLE-WARNING.COM
SIZES: 2'-0 11/16" x 3'-11 3/16" x 1/4"
COLOR: BY ARCHITECT



ADA SINGLE RAMP 7

MBI

ENGINEER:

MBI COMPANIES INC.
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
PHONE: (865) 584-0999
FAX: (865) 584-5213
WEB: mbicompanies.com

CONSULTANT

SEAL

CHRISTOPHER B. TRUETT
REGISTERED ENGINEER
XVI
AGRICULTURE
COMMERCE
No. 109155
STATE OF TENNESSEE
2/22/22

PROJECT INFORMATION

PROJECT:

AN ADDITION
& RENOVATION TO:
NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 21042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ■ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ☐ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.:	DATE	DESCRIPTION
1	02/22/2022	ADDENDUM #1

KEY PLAN

SHEET INFORMATION

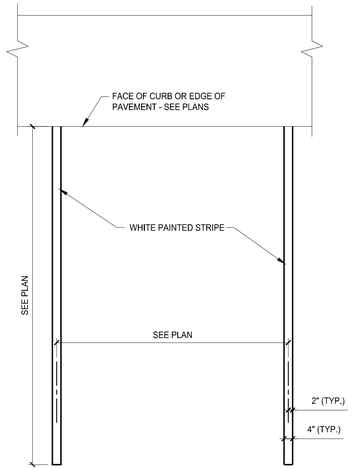
SHEET ISSUED:	02/04/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE:

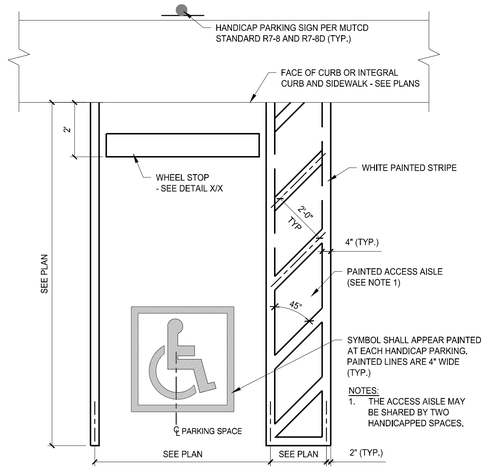
CIVIL DETAILS

SHEET NO.:

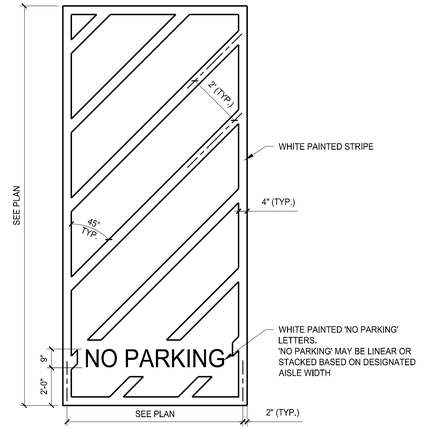
C801



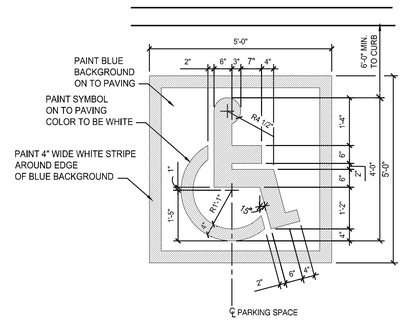
PARKING SPACE 1



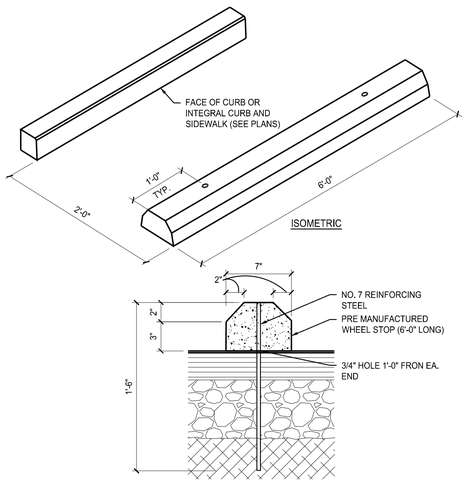
HANDICAP PARKING SPACE 2



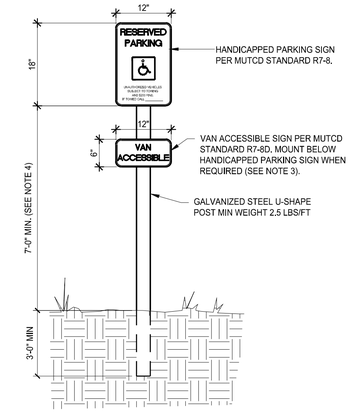
'NO PARKING' AREA 3



PAINTED HANDICAP SYMBOL 4

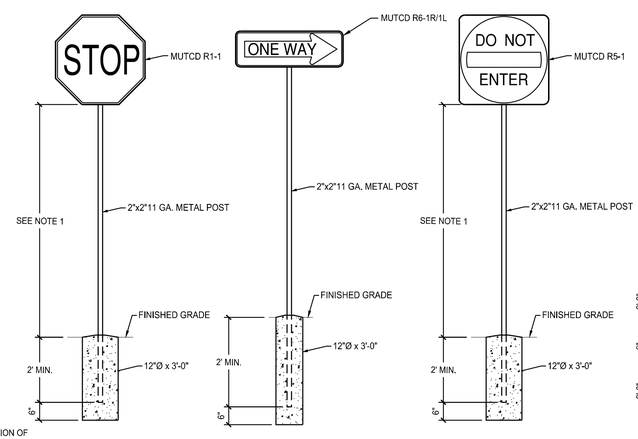


WHEEL STOP 5



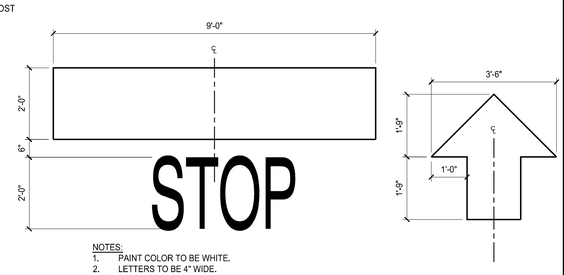
NOTES:
1. CONTRACTOR TO PROVIDE NEW SIGN AT ALL HANDICAP PARKING STALLS.
2. CONTRACTOR TO VERIFY NAME AND NUMBER OF CONTACT PERSON OR COMPANY PRIOR TO FABRICATION OF SIGNAGE.
3. ONE OF EVERY 6 HANDICAPPED SPACES AND NO LESS THAN ONE SHALL BE VAN ACCESSIBLE.
4. MOUNTING HEIGHT FOR SIGN MAY BE REDUCED TO 5'-0" ABOVE GROUND LEVEL IF IT IS LOCATED IN A NON-PEDESTRIAN AREA, SUCH AS ON A BUILDING OR IN A LANDSCAPED AREA.

STANDARD HANDICAP SIGN 6



NOTE:
1. MOUNTING HEIGHT SHALL BE AT LEAST 7 FEET FOR NEW INSTALLATIONS IN AREA WITH PEDESTRIAN MOVEMENTS OR PARKING.

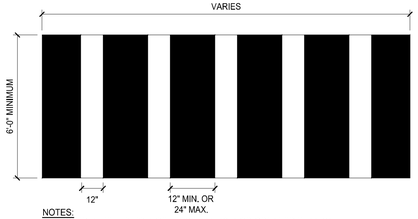
TRAFFIC SIGNAGE 7



NOTES:
1. PAINT COLOR TO BE WHITE.
2. LETTERS TO BE 4" WIDE.

PAINTED MARKINGS 8

N.T.S.



NOTES:
1. SOLID WHITE LINES, NOT LESS THAN 12" NOR GREATER THAN 24".
2. GAPS BETWEEN TRAVERSE LINES SHALL BE 12".

CROSSWALK 9

MBI

ENGINEER:

MBI COMPANIES INC.
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
PHONE: (865) 584-0999
FAX: (865) 584-5213
WEB: mbicompanies.com

CONSULTANT

SEAL

CHRISTOPHER D. TRUE
REGISTERED ENGINEER
XVI
AGRICULTURE
COMMERCE
No. 109125
STATE OF TENNESSEE
2/9/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 21004204

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ■ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ☐ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/03/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

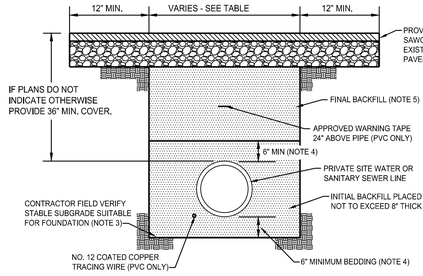
SHEET TITLE:

CIVIL DETAILS

SHEET NO.:

C802

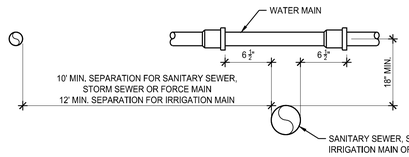
WATER AND SEWER TRENCH (1)



NOTES:
1. ALL PRIVATE SITE UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODE, LOCAL UTILITY REQUIREMENTS, AND THE LOCAL AGENCY HAVING JURISDICTION OVER BUILDING CONSTRUCTION.
2. THIS DETAIL ADDRESSES A TRENCH TYPE INSTALLATION. THIS DETAIL DOES NOT ADDRESS OSHA TRENCH SAFETY REQUIREMENTS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO MEET ALL HEALTH AND SAFETY ISSUES REGARDING TRENCH SAFETY.
3. WHERE THE TRENCH BOTTOM IS UNSUITABLE FOR FOUNDATION IN THE OPINION OF THE PROJECT GEOTECHNICAL ENGINEER, THE CONTRACTOR SHALL STABILIZE THE TRENCH BOTTOM ACCORDING TO THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER.
4. BEDDING AND INITIAL BACKFILL TO 6" ABOVE THE CROWN OF THE PIPE SHALL BE #57 CRUSHED STONE. ELIMINATE VOIDS BY KNIFING UNDER AND AROUND PIPE WITH SHOVEL OR OTHER MEANS AT THE DISCRETION OF THE CONTRACTOR.
5. FINAL BACKFILL FOR ALL PIPES LOCATED IN PAVED AREAS SHALL BE COMPACTED #57 CRUSHED STONE MEETING THE REQUIREMENTS OF THE STATE'S DEPARTMENT OF TRANSPORTATION.
6. FOR GRASS OR LANDSCAPED AREAS, PROVIDE #57 CRUSHED STONE INITIAL BACKFILL TO 6" ABOVE CROWN OF PIPE AND COVER GRAVEL WITH A NONWOVEN GEOTEXTILE TO PREVENT MIGRATION OF FINES. FINAL BACKFILL TO SURFACE SHALL BE SOIL FREE OF FOREIGN DEBRIS. SOIL BACKFILL SHALL BE PLACED IN 8" LOOSE LIFTS AND BE COMPACTED TO 90% STANDARD DENSITY PER AASHTO T-99 OR PER PROJECT SPECIFICATIONS, WHICHEVER IS MORE STRINGENT. TOP 6" SHALL BE TOPSOIL FROM SITE STRIPPING OPERATIONS LOOSELY PLACED.
7. IF PLANS AND SPECIFICATIONS DO NOT INDICATE OTHERWISE, PAVEMENT REPAIR SHALL MATCH EXISTING SECTION AS A MINIMUM REQUIREMENT.

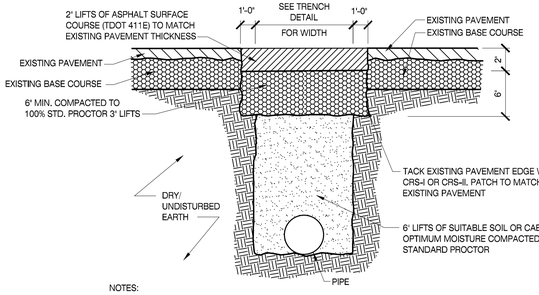
MINIMUM TRENCH WIDTHS	
PIPE DIA. (IN.)	MIN. WIDTH (IN.)
< 4	18
4	21
6	23
8	26

PIPE SEPARATION (2)



1. WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER, NON-POTABLE IRRIGATION MAINS, AND FORCE MAINS BY A MINIMUM CLEAR VERTICAL DISTANCE OF 18" MEASURED BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE TOP OF THE LOWER PIPE. THE 18" MINIMUM VERTICAL SEPARATION DISTANCE DOES NOT APPLY TO SEPARATION OF SEWER LATERALS AND POTABLE WATER MAIN PIPELINE INSTALLATIONS. ALSO, WATER MAINS SHALL BE SEPARATED FROM STORM SEWER, SANITARY SEWER AND FORCE MAINS BY 10' AND FROM IRRIGATION MAINS BY 12' MEASURED HORIZONTALLY BETWEEN OUTSIDE OF PIPES.
2. ALL CROSSINGS WITH VERTICAL CLEARANCE LESS THAN 18" SHALL REQUIRE SUBMISSION AND APPROVAL OF A DEVIATION. IF A DEVIATION IS SUBMITTED, THE FOLLOWING MINIMUM STIPULATIONS APPLY: THE CROSSING SHALL BE MADE USING THICKNESS CLASS 200 AWWA C-900 DR14, PVC (CLASS 235 AWWA C-905, DR 18, PVC FOR PIPES GREATER THAN 12" IN DIAMETER) OR DUCTILE IRON, PRESSURE CLASS 250 PIPE FOR A HORIZONTAL DISTANCE OF 10' ON EACH SIDE OF THE CROSSING. WATER MAIN CONCRETE ENCASEMENT SHALL ONLY BE MADE AFTER WRITTEN APPROVAL OF THE WATER DIRECTOR OR HIS DESIGNEE.
3. 18" CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER CROSSES UNDER SEWER LINE.
4. WATER MAINS, SANITARY SEWER, STORM SEWER, AND NON-POTABLE IRRIGATION MAINS SHALL BE IN SEPARATE TRENCHES.
5. WATER MAINS CROSSING ANY TYPE OF SANITARY SEWER, INCLUDING FORCE MAIN, OR STORM SEWER SHALL HAVE THE ONE FULL LENGTH OF WATER MAIN CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THAT THE WATER JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST 3' FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER.
6. 10" STONE SHALL BE UTILIZED FOR SEPARATION BETWEEN GRAVITY SANITARY SEWER LINES AND STORMWATER LINES.

ASPHALT REPAIR (3)



NOTES:
1. EDGE TO BE SAWED WITH A CONCRETE SAW TO A NEAT SQUARED EDGE. BROOMED CLEAN OF DUST BEFORE TACK COAT IS APPLIED.
2. EDGES TO BE TACKED WITH CR-SI OR CRS-II.
3. CONTRACTOR RESPONSIBLE FOR REPLACEMENT OF ANY PAVEMENT MARKINGS DISTURBED OR COVERED BY OVERLAY.
4. SEE NOTES ON SHEET PR2 FOR ROAD SECTION SPECIFICATIONS.

STORM SEWER TRENCH (4)

1. ALL HDPE PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, LATEST ED., AND ALL CMP SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM A 798, LATEST ED.
2. THIS DETAIL ADDRESSES A TRENCH TYPE INSTALLATION. FOR EMBANKMENT OR OTHER INSTALLATIONS, FOR CMP SEE AASHTO SECTION 27, FOR HDPE SEE AASHTO SECTION 30, THIS DETAIL DOES NOT ADDRESS OSHA TRENCH SAFETY REQUIREMENTS. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO MEET ALL HEALTH AND SAFETY ISSUES REGARDING TRENCH SAFETY.
3. WHERE THE TRENCH BOTTOM IS UNSUITABLE FOR FOUNDATION IN THE OPINION OF THE PROJECT GEOTECHNICAL ENGINEER, THE CONTRACTOR SHALL STABILIZE THE TRENCH BOTTOM ACCORDING TO THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER.
4. BEDDING AND INITIAL BACKFILL TO 6" ABOVE THE CROWN OF THE PIPE SHALL BE #57 CRUSHED STONE. ELIMINATE VOIDS BY KNIFING UNDER AND AROUND PIPE WITH SHOVEL OR OTHER MEANS AT THE DISCRETION OF THE CONTRACTOR.
5. FINAL BACKFILL FOR ALL PIPES LOCATED IN PAVED AREAS SHALL BE COMPACTED #57 CRUSHED STONE MEETING THE REQUIREMENTS OF THE TENNESSEE STATE DEPARTMENT OF TRANSPORTATION. FOR GRASS OR LANDSCAPED AREAS, PROVIDE #57 CRUSHED STONE INITIAL BACKFILL TO 6" ABOVE CROWN OF PIPE AND COVER GRAVEL WITH A NONWOVEN GEOTEXTILE TO PREVENT MIGRATION OF FINES. FINAL BACKFILL TO SURFACE SHALL BE SOIL FREE OF FOREIGN DEBRIS. SOIL BACKFILL SHALL BE PLACED IN 8" LOOSE LIFTS AND BE COMPACTED TO 90% STANDARD DENSITY PER AASHTO T-99 OR PER PROJECT SPECIFICATIONS, WHICHEVER IS MORE STRINGENT. TOP 6" SHALL BE TOPSOIL FROM SITE STRIPPING OPERATIONS LOOSELY PLACED.
6. MINIMUM COVER, H, IS 24" UP TO 48" DIAMETER PIPE. H IS 36" FOR 54" TO 60" DIAMETER PIPE. H IS MEASURED FROM TOP OF PIPE TO TOP OF FLEXIBLE PAVEMENT OR GROUND SURFACE IN GRASS OR LANDSCAPE AREAS WHERE APPLICABLE. FOR RCP AND CONCRETE PIPE, H IS 12" MINIMUM.

RCP AND CONCRETE	
PIPE DIA (IN)	MINIMUM WIDTH (IN)
12	22
15	26
18	31
24	40
30	50
36	59
42	68
48	78
54	87
60	98

ALUMINIZED CMP, HDPE AND PVC	
PIPE DIA (IN)	MINIMUM WIDTH (IN)
4	21
6	23
8	26
10	28
12	30
15	34
18	39
24	48
30	56
36	64
42	72
48	80
54	88
60	96

THRUST BLOCK (5)

NOTES:
1. KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES.
2. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH.
3. REQUIRED VOLUMES OR BEARING AREAS AT FITTINGS SHALL BE AS INDICATED BELOW, ADJUSTED, IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING STRESS(ES) STATED IN THE SPECIFICATIONS.
4. THRUST BLOCK VOLUMES FOR VERTICAL BENDS HAVING UPWARD RESULTANT THRUSTS ARE BASED ON TEST PRESSURE OF 150 PSIG AND THE WEIGHT OF CONCRETE = 4050 LBS/CU YD. TO COMPUTE VOLUMES FOR DIFFERENT TEST PRESSURES, USE THE FOLLOWING EQUATION: VOLUME = (TEST PRESS./150) x (TABLE VALUE).
5. BEARING AREAS FOR HORIZONTAL BEND THRUST BLOCKS ARE BASED ON TEST PRESSURE OF 150 PSIG AND AN ALLOWABLE SOIL BEARING STRESS OF 2000 LBS/SQ FT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, MULTIPLY TABLE VALUES BY THE FACTOR (13.33)(P'/S'), WHERE:

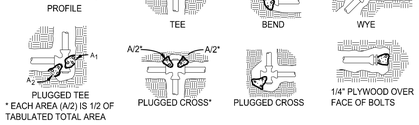
   P'b = ACTUAL TEST PRESSURE, PSIG
   S'b = ACTUAL SOIL BEARING PRESSURE, PSF.

6. THRUST BLOCKS FOR VERTICAL BENDS HAVING DOWNWARD RESULTANT THRUSTS SHALL BE THE SAME AS FOR HORIZONTAL BENDS.
7. BEARING AREAS, VOLUMES, AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER THIS STANDARD
8. BEARING AREA OF THRUST BLOCK SHALL NOT BE LESS THAN 1.0 SQ FT.
9. VERTICAL BENDS THAT REQUIRE A THRUST BLOCK VOLUME EXCEEDING 5 CUBIC YARDS REQUIRE SPECIAL BLOCKING DETAILS. SEE PLANS FOR VOLUMES SHOWN TO LEFT OF SOLID LINE IN TABLE.
10. TEST PRESSURES ARE SHOWN IN THE PIPING SCHEDULE.
11. ALLOWABLE SOIL BEARING STRESS IS 2000 LBS/SQ FT.

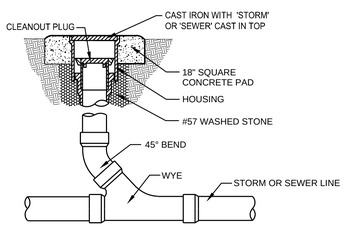
BEARING AREA OF THRUST BLOCKS IN SQ. FT. (HORIZONTAL BENDS)							
FITTING SIZE	TEE, WYE, PLUG, OR CAP	90° BEND PLUGGED CROSS	TEE PLUGGED RUN		BEND ANGLE		
			A 1	A 2	45°	22 1/2°	11 1/4°
4	1.0	1.4	1.9	1.4	1.0	-	-
6	2.1	3.0	4.3	3.0	1.6	1.0	-
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	8.4	11.8	8.4	4.6	2.4	1.2
12	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	48.0	68.0	48.0	26.2	13.6	6.8

VOLUME OF THRUST BLOCK IN CUBIC YARDS (VERTICAL BENDS)			
FITTING SIZE	BEND ANGLE		
	45°	22 1/2°	11 1/4°
4	1.1	0.4	0.2
6	2.7	1.0	0.4
8	4.0	1.5	0.6
10	6.0	2.3	0.9
12	8.5	3.2	1.3
14	11.5	4.3	1.8
16	14.8	5.6	2.3

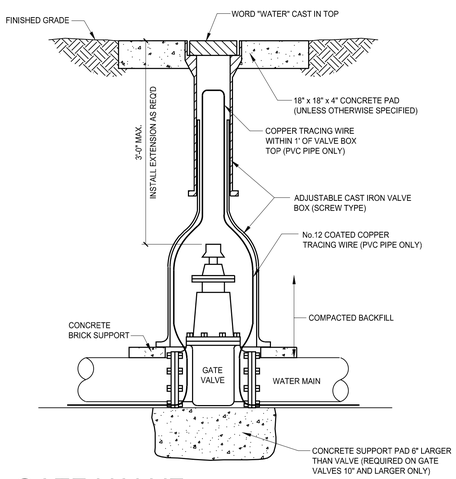
FITTING SIZE	ROD SIZE	EMBEDMENT
12" AND LESS	#6	30"
14"-16"	#8	36"



STORM/SEWER CLEANOUT (6)



GATE VALVE (7)



MBI

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CONSULTANT

SEAL

CHRISTOPHER B. TRUAX
REGISTERED ENGINEER
XVI
AGRICULTURE
COMMERCE
100125
STATE OF TENNESSEE
2/9/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO:
NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 21004Z-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ■ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ☐ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

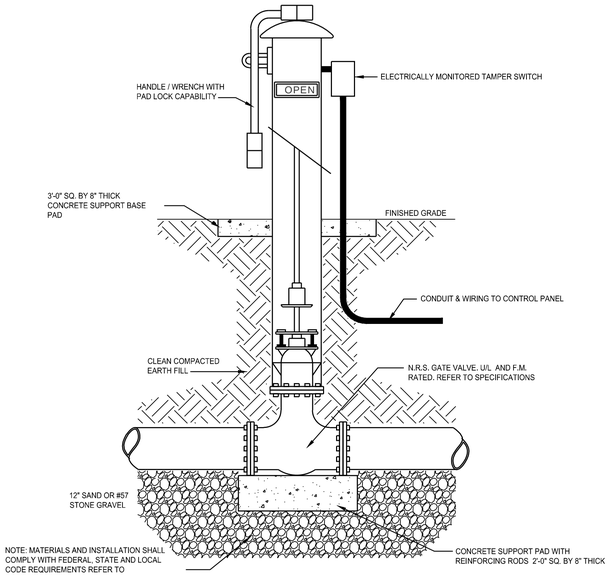
KEY PLAN

SHEET INFORMATION

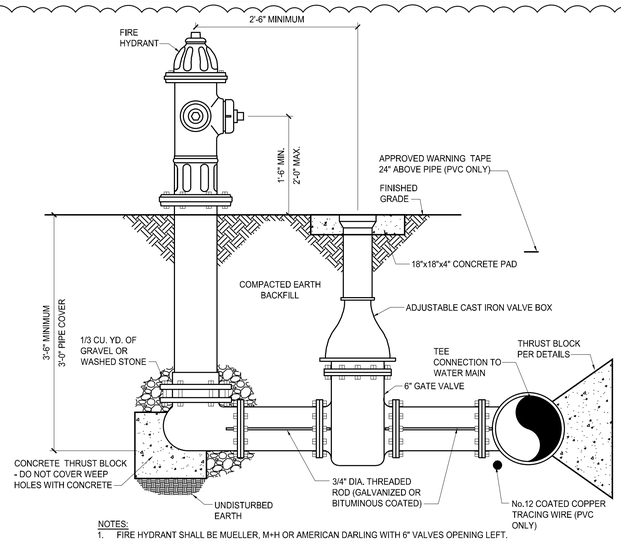
SHEET ISSUED: 02/03/2022
DESIGNED BY: I.A.J.
DRAWN BY: I.A.J.
REVIEWED BY: C.B.T.

SHEET TITLE: CIVIL DETAILS

SHEET NO.: C803



POST INDICATOR VALVE 1



NOTES:
1. FIRE HYDRANT SHALL BE MUELLER, M+H OR AMERICAN DARLING WITH 6" VALVES OPENING LEFT.
2. ALL VALVES SHALL BE RATED FOR 200 psi WORKING PRESSURE AND SHALL OPEN LEFT. PROVIDE VALVES BY MUELLER, M+H, OR AMERICAN DARLING.

FIRE HYDRANT ASSEMBLY 2

MBI

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CONSULTANT

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CHRISTOPHER B. TRUE
REGISTERED ENGINEER
XVI
AGRICULTURE
COMMERCE
No. 109155
STATE OF TENNESSEE
3/30/22

PROJECT INFORMATION

PROJECT:

AN ADDITION
& RENOVATION TO:
NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	03/30/2022	ADDENDUM #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	03/02/2022
DESIGNED BY:	I.A.J.
DRAWN BY:	I.A.J.
REVIEWED BY:	C.B.T.

SHEET TITLE:

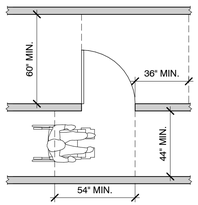
CIVIL DETAILS

SHEET NO.:

C804

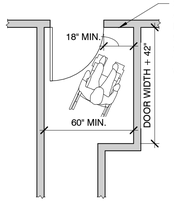
ARCH D

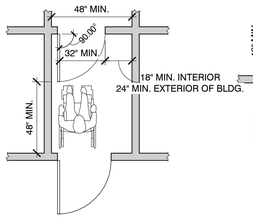
NOTES:
1. CLEAR SPACES MUST BE LEVEL TO PREVENT WHEELCHAIRS FROM ROLLING WHEN THE OCCUPANT RELEASES THE WHEEL GRIPS TO REACH FOR THE DOOR. 1/4" SLOPE PER FOOT IS ALLOWED FOR DRAINAGE.
2. WHERE DOORS OPEN ONTO BUT NOT INTO A CORRIDOR. THE REQUIRED LEVEL AREA BEYOND THE DOORS MAY BE A MINIMUM OF 48" A.F.F.



NOTE: 48" MIN. IF DOOR HAS BOTH A LATCH AND A CLOSER

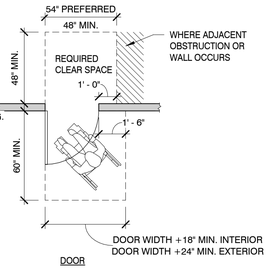
CORRIDOR PLAN





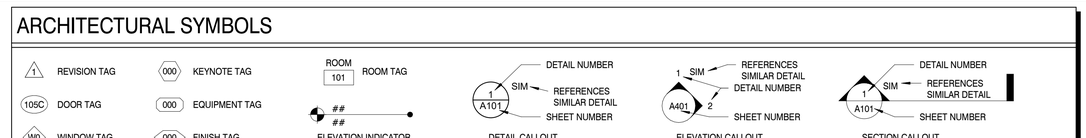
VESTIBULE

RAMP LANDING AT DOORWAY

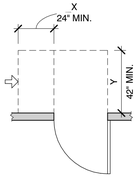


DOOR

ARCHITECTURAL SYMBOLS

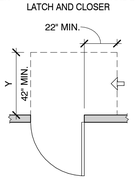


NOTE: Y=48" MIN. IF DOOR HAS CLOSER



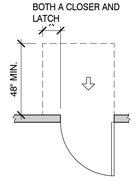
LATCH SIDE APPROACH, PUSH SIDE

NOTE: Y=48" MIN. IF DOOR HAS BOTH LATCH AND CLOSER



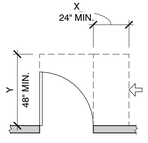
HINGE SIDE APPROACH, PUSH SIDE

NOTE: X=12" IF DOOR HAS BOTH A CLOSER AND LATCH



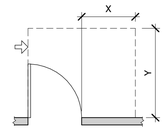
FRONT APPROACH, PUSH SIDE

NOTE: Y=54" MIN. IF DOOR HAS CLOSER

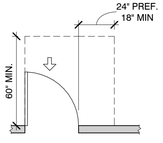


LATCH SIDE APPROACH, PULL SIDE

NOTE: X=36" MIN IF Y=60" X=42" MIN IF Y=54"

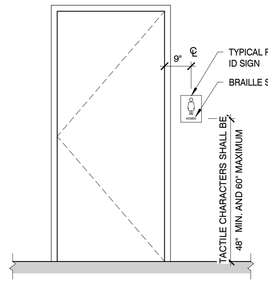


HINGE SIDE APPROACH, PULL SIDE

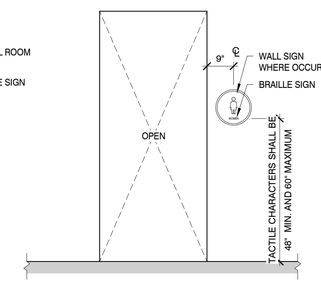


FRONT APPROACH, PULL SIDE

NOTES:
1. WHERE A SIGN CONTAINING RAISED CHARACTERS AND BRAILLE IS PROVIDED AT A DOOR, THE SIGN SHALL BE ALONGSIDE THE DOOR AT THE LATCH SIDE. WHERE A SIGN CONTAINING RAISED CHARACTERS AND BRAILLE IS PROVIDED AT DOUBLE DOORS WITH ONE ACTIVE LEAF, THE SIGN SHALL BE LOCATED ON THE INACTIVE LEAF. WHERE A SIGN CONTAINING RAISED CHARACTERS AND BRAILLE IS PROVIDED AT DOUBLE DOORS WITH TWO ACTIVE LEAVES, THE SIGN SHALL BE TO THE RIGHT OF THE RIGHT-HAND DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE OF A SINGLE DOOR, OR TO THE RIGHT SIDE OF DOUBLE DOORS, SIGNS SHALL BE ON THE NEAREST ADJACENT WALL. SIGNS CONTAINING RAISED CHARACTERS AND BRAILLE SHALL BE LOCATED SO THAT A CLEAR FLOOR AREA 18 INCHES (455 MM) MINIMUM BY 18 INCHES (455 MM) MINIMUM, CENTERED ON THE RAISED CHARACTERS IS PROVIDED BEYOND THE ARC OF ANY DOOR SWING BETWEEN THE CLOSED POSITION AND 45 DEGREE OPEN POSITION.
2. RAISED CHARACTERS SHALL BE 48 INCHES (1220 MM) MINIMUM ABOVE THE FLOOR, MEASURED TO THE BASELINE OF THE LOWEST RAISED CHARACTER AND 60 INCHES (1525 MM) MAXIMUM ABOVE THE FLOOR, MEASURED TO THE BASELINE OF THE HIGHEST RAISED CHARACTER.



MOUNTING SIGN ON WALL (WITH DOOR & FRAME)



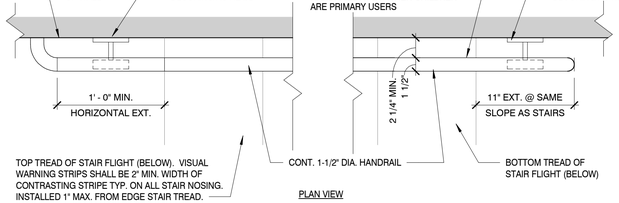
MOUNTING SIGN ON WALL (NO DOOR)

GENERAL NOTES

1. THE ARCHITECT HAS MADE EVERY EFFORT TO SET FORTH IN THE CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS AND DISCREPANCIES IN THE DRAWINGS AND SPECIFICATIONS SHALL NOT EXCUSE HIM FROM PROVIDING A COMPLETED FACILITY AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS. IN THE EVENT OF DISCREPANCIES, CONTRACTOR SHALL PRICE THE MORE EXPENSIVE AND EXTENSIVE WORK, UNLESS DIRECTED OTHERWISE.
2. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. THE DRAWINGS, GENERAL NOTES AND SPECIFICATIONS ARE COMPLIMENTARY, AND WHAT IS CALLED FOR BY ANY WILL BE BINDING AS IF CALLED FOR BY ALL. WORK SHOWN OR REFERRED TO ON ANY DRAWING SHALL BE PROVIDED AS THOUGH SHOWN ON ALL RELATED DRAWINGS. IF THERE IS ANY CONFLICT OR DISCREPANCY WITHIN OR BETWEEN ANY OF THE CONTRACT DOCUMENTS INVOLVING THE QUALITY OR QUANTITY OF WORK REQUIRED, THE WORK OF HIGHEST QUALITY AND/OR GREATEST QUANTITY SHOWN OR SPECIFIED SHALL BE FURNISHED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL CONTRACT DOCUMENTS AND FIELD CONDITIONS, AND CONFIRM THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION.
4. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK, USING HIS BEST SKILL AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT. THE CONTRACTOR SHALL PROVIDE AT THE PROJECT SITE A FULL SET OF CONSTRUCTION DOCUMENTS ANNOTATED WITH THE LATEST REVISIONS AND CLARIFICATIONS FOR THE USE BY ALL.
5. CONDUCT OPERATIONS IN SUCH A MANNER AS TO MINIMIZE INTERFERENCE WITH USE OF PUBLIC WAYS AND ADJACENT USED FACILITIES. DO NOT CLOSE, BLOCK OR OTHERWISE OBSTRUCT USE OF PUBLIC WAYS OR FACILITIES WITHOUT WRITTEN CONSENT OF AUTHORITIES HAVING JURISDICTION. PROVIDE ALTERNATE ROUTES TO CLOSED OR OBSTRUCTED FACILITIES AS REQUIRED BY LOCAL REGULATIONS.
6. EXCEPT WHERE OTHERWISE SPECIFIED, THE CONTRACTOR SHALL AT ALL TIMES PROVIDE PROTECTION AGAINST WEATHER TO MAINTAIN ALL WORK, MATERIALS, APPARATUS, AND FIXTURES FROM INJURY OR DAMAGES. AT THE END OF THE DAY'S WORK, ALL NEW WORK LIKELY TO BE DAMAGED SHALL BE COVERED OR OTHERWISE PROTECTED AS REQUIRED.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HIS OWN TELEPHONE AND TOILET FOR ALL SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL TAPS, EXTENSIONS, VALVES, OR OTHER DEVICES NECESSARY TO RUN POWER TOOLS AND EQUIPMENT. SUCH MODIFICATIONS TO EXISTING UTILITIES MUST BE REMOVED AT COMPLETION OF THE PROJECT.
8. THE CONTRACTOR SHALL LIMIT THE INGRESS AND EGRESS OF WORKERS AND EQUIPMENT TO THE CONSTRUCTION SITE TO AUTHORIZED PERSONS ONLY. DAMAGE TO ANY EXISTING INTERIOR OR EXTERIOR CONSTRUCTION SHALL BE REPAIRED TO "LIKE NEW" CONDITION UNDER THIS CONTRACT.
9. THE CONTRACTOR SHALL MAINTAIN AT ALL TIMES ADEQUATE SAFETY BARRICADES FOR PROTECTION OF JOB PERSONNEL AND THE PUBLIC AND CLEAR ACCESS IN AND OUT OF THE WORK SITE SO AS TO FACILITATE DAILY TRAFFIC MOVEMENT, DELIVERIES, AND SAFETY. REMOVE BARRICADES WHEN NO LONGER REQUIRED.
10. REMOVE DEBRIS, RUBBISH, AND OTHER SUBSTANCES FROM SITE. LEGALLY TRANSPORT AND DISPOSE OF SUCH MATERIALS OFF-SITE. BURYING OR BURNING OF "TO BE REMOVED" MATERIALS ON THE PROJECT SITE IS FORBIDDEN.
11. COOPERATE WITH THE APPLICABLE CITY OR OTHER GOVERNMENT OFFICIALS AND INSPECTORS AT ALL TIMES. IF SUCH OFFICIAL OR INSPECTOR DEEMS SPECIAL INSPECTION NECESSARY, PROVIDE ALL ASSISTANCE AND FACILITIES THAT WILL EXPEDITE HIS INSPECTION.
12. ALL DETAILS OF CONSTRUCTION SHALL CONFORM WITH THE APPLICABLE CODES (SEE PROJECT INFORMATION ON COVER SHEET)
13. PROVIDE HIGH SECURITY SURFACE MOUNTED BOX W/ TAMPER SWITCH (FIRE DEPARTMENT KEY BOX) AT THE ENTRANCE. THREE COMPLETE SETS OF KEYS MUST BE PROVIDED. KEYS MUST BE PROVIDED FOR ALL ROOMS CONTAINING FIRE AND LIFE SAFETY SYSTEM CONTROLS. PRIOR TO INSTALLATION VERIFY EXACT LOCATION AND EXACT TYPE OF BOX REQUIRED WITH LOCAL AUTHORITY HAVING JURISDICTION.
14. MOUNT FIRE EXTINGUISHERS LISTED IN SPECIFICATIONS AT LOCATIONS SHOWN AND/OR DIRECTED BY FIRE DEPARTMENT CODE OFFICIAL HAVING JURISDICTION.
15. INSTALL ALL MANUFACTURED ITEMS, MATERIALS, AND EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDED SPECIFICATIONS, UNLESS OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE. ALL WORK PERFORMED AND MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE, AS A MINIMUM STANDARD, WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES HAVING JURISDICTION. CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY BEARING ON THE PERFORMANCE OF THE WORK.
16. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS NOTED OTHERWISE. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO AFFECT ALL INSTALLATIONS INDICATED ON THE DRAWINGS. THE WORK SHALL ALSO INCLUDE ALL MATERIALS, DETAIL AND LABOR NECESSARY FOR THE SUCCESSFUL INSTALLATION OF THE WORK DESCRIBED HEREIN.
17. ALL DIMENSIONS ARE TO FACE OF CONC. BLOCK, CONC. PANEL, FACE OF EXISTING FINISH, OR FACE OF NEW STUD, UNLESS OTHERWISE NOTED. "CLEAR" DENOTES FINISH TO FINISH DIMENSIONS.
18. CONTRACTOR IS TO COORDINATE THE BUILDING PLANS WITH THE CIVIL AND SURVEY DRAWINGS FOR EXACT ELEVATIONS AND SLOPES OF EXTERIOR GRADES FOR INSTALLATION OF NEW EXTERIOR STAIRS, RAMPS AND SIDEWALKS. CONTRACTOR TO FIELD VERIFY EXTERIOR GRADES AT BUILDING ENTRANCES TO ALIGN WITH FINISHED FLOOR ELEVATIONS AND/OR NEW STAIR/RAMP ELEVATIONS. GRADING AT BUILDING PERIMETER TO SLOPE AWAY FROM BUILDING MIN. 1/4" PER FOOT.
19. ALL GRADES, LINES, LEVELS, AND DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO START OF CONSTRUCTION. ANY ERROR OR INCONSISTENCY SHALL BE REPORTED TO THE ARCHITECT FOR INSTRUCTIONS PRIOR TO START OF CONSTRUCTION.
20. CONTRACTOR IS TO FIELD VERIFY LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR POSSIBLE CONFLICTS.
21. CONTRACTOR IS TO FIELD VERIFY LOCATIONS AND RUNS OF ALL NEW AND EXISTING STORM SEWER PIPING AND ROOF TIE-INS. REPORT ANY DISCREPANCY TO THE ARCHITECT PRIOR TO START OF CONSTRUCTION.
22. DO NOT INTERRUPT EXISTING UTILITIES IN OCCUPIED FACILITIES UNLESS AUTHORIZED IN WRITING BY AUTHORITIES HAVING JURISDICTION. IF INTERRUPTION IS ALLOWED, PROVIDE ALTERNATE TEMPORARY SERVICES ACCEPTABLE TO GOVERNING AUTHORITIES. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES 48 HOURS PRIOR TO ANY DEMOLITION WORK.
23. CONTRACTOR SHALL PERFORM HIGH QUALITY PROFESSIONAL WORK. JOIN MATERIALS TO UNIFORM ACCURATE FITS SO THEY MEET WITH NEAT, STRAIGHT LINES, FREE OF SMEARS OR OVERLAPS. INSTALL EXPOSED MATERIALS APPROPRIATELY LEVEL, PLUMB AND AT THE ACCURATE RIGHT ANGLES, OR FLUSH WITH ADJOINING MATERIALS. WORK OF EACH TRADE SHALL MEET ALL NATIONAL STANDARDS PUBLISHED BY THAT TRADE.
24. BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK THE CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND SHALL BE RESPONSIBLE FOR THEIR CORRECTNESS. ANY DIFFERENCES BETWEEN DIMENSIONS INDICATED ON THE DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT FOR INSTRUCTIONS AND CONSIDERATIONS BEFORE PROCEEDING WITH THE WORK.
25. FURNISH AND INSTALL ALL REQUIRED BACKING FOR ALL SHELVES, CABINETS, FIXTURES, HANDRAILS AND EQUIPMENT. COORDINATING WITH OWNER AND CONTRACTOR FOR EXACT SIZE, NUMBER, AND LOCATION PRIOR TO START OF CONSTRUCTION. METAL BACKING PLATES TO BE FLAT STOCK (20 GAUGE MIN.) WHEN APPLIED TO METAL FRAMING. ALL WOOD BLOCKING, NAILERS, ETC. MUST BE FIRE RETARDANT TREATED.
26. GLAZING IN DOORS AND ADJACENT PANELS MUST BE TEMPERED. RESPONSIBILITY OF GLAZING SUBCONTRACTOR TO VERIFY & PLACE TEMPERED GLASS AS REQUIRED BY THE LOCAL BUILDING CODE & INSPECTOR.
27. SPOUT OUTLETS FOR WHEELCHAIR ACCESSIBLE DRINKING FOUNTAINS SHALL BE 36" MAX A.F.F. AND FOR STANDING PERSONS SHALL BE 38" MIN A.F.F. AND 43" MAX. A.F.F.
28. FILL ALL C.M.U. CELLS BELOW FINISH FLOOR OR FINISHED GRADE, WHICHEVER IS HIGHER SHALL BE SOLID GROUTED.
29. PROVIDE ADA COMPLIANT SIGNAGE AT ALL TOILET AND BATHROOMS. APPROPRIATELY IDENTIFIED AS "MEN" AND "WOMEN".
30. ALL TOILET ROOMS AND BATHROOMS WALLS SHALL EXTEND FROM FINISH FLOOR TO FLOOR/ ROOF DECK ABOVE, PROVIDE SOUND BATT INSULATION IN ENTIRE STUD CAVITY.
31. ALL WALLS WITHIN 24" OF SERVICE SINK, URINAL AND/ OR WATER CLOSET SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE, TO A HEIGHT OF NOT LESS THAN 48" A.F.F. IF TILE OR FRP IS NOT SPECIFIED PROVIDE EPOXY PAINT, COLOR TO BE SELECTED BY ARCHITECT.
32. ALL WALL BASE IN TOILET ROOMS, BATHROOMS AND KITCHENS SHALL BE COVED AND EXTEND UPWARD ONTO THE WALL A MIN. OF 4" A.F.F.

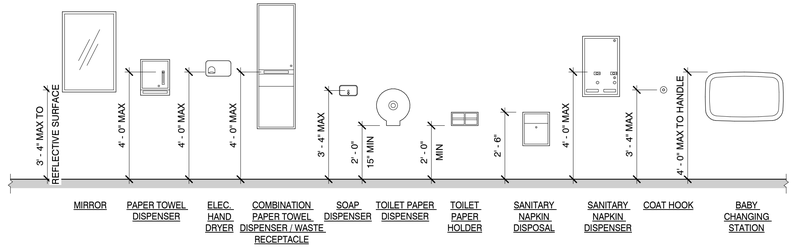
CORRIDOR CLEARANCES 1

SCALE : 1/4" = 1'-0"



DOOR CLEARANCES 2

SCALE : 1/4" = 1'-0"



SIGNAGE NOTES AND DETAILS 3

SCALE : 1/2" = 1'-0"

STAIR HANDRAIL DETAILS AND NOTES 4

SCALE : 1 1/2" = 1'-0"

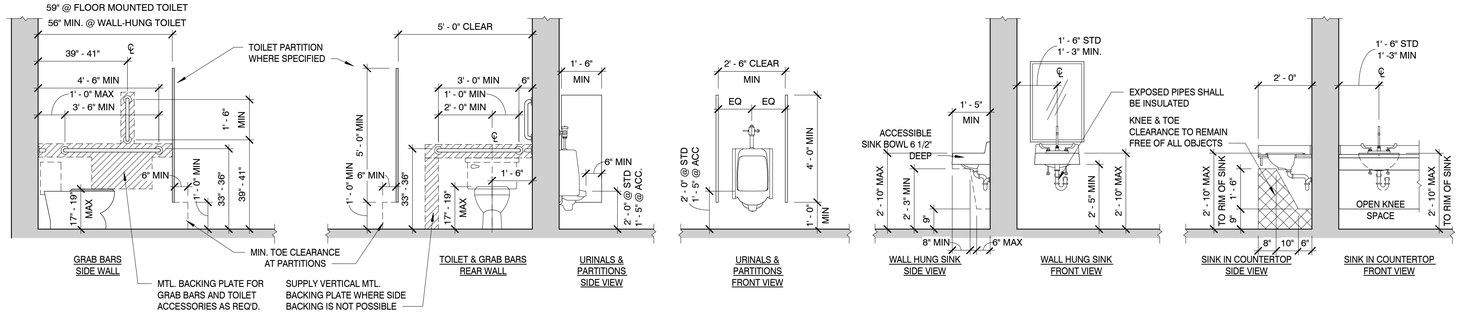
NOTES:
1. ALL GRAB BARS SHALL BE 1 1/4" - 1 1/2"Ø W/ 1 1/2" CLEAR BETWEEN GRAB BAR & FINISH SURFACE OF WALL.
2. FIXED SIDE WALL GRAB BARS SHALL BE 42" MIN. IN LENGTH, LOCATED 12" MAX. FROM REAR WALL AND EXTENDING 54" MIN. FROM REAR WALL. IN ADDITION, A VERT. GRAB BAR 18" MIN. IN LENGTH SHALL BE MOUNTED WITH THE BOTTOM OF THE BAR BETWEEN 39" - 41" A.F.F. AND THE CENTER LINE OF THE BAR LOCATED BETWEEN 39" - 41" FROM REAR WALL. [ANSI 604.5.1]
3. REAR WALL GRAB BAR SHALL BE 36" MIN. IN LENGTH, AND EXTEND FROM THE CENTERLINE OF THE WATER CLOSET 12" MIN. ON SIDE CLOSEST TO WALL, AND 24" MIN. ON THE TRANSFER SIDE. [ANSI 604.5.2]
4. ALLOWABLE STRESS SHALL NOT BE EXCEED FOR MATERIALS USED WHERE A VERT. OR HORZ. FORCE OF 250 POUNDS IS APPLIED AT ANY POINT ON THE GRAB BAR, FASTENER MOUNTING DEVICE, OR SUPPORTING STRUCTURE. [ANSI 609.8]
5. GRAB BARS SHALL BE INSTALLED IN A HORIZ. POSITION, 33" MIN - 36" MAX. A.F.F. MEASURED TO THE TOP OF THE GRIPPING SURFACE. [ANSI 609.4]

RESTROOM ACCESSORY MOUNTING HEIGHTS 5

SCALE : 3/8" = 1'-0"

PLUMBING FIXTURES DETAILS 6

SCALE : 3/8" = 1'-0"



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2/4/2022 2:11:12 PM

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STATE OF TENNESSEE
4/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE, NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	KEF
REVIEWED BY:	CMG

SHEET TITLE:

GENERAL NOTES AND ACCESSIBILITY DETAILS

SHEET NO.:

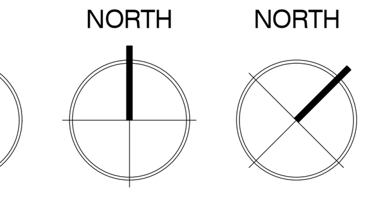
A000

ARCH D

DEMOLITION PLAN

SCALE : 1/8" = 1'-0"

1



DEMOLITION PLAN KEYNOTES

1. REMOVE EXISTING EXTERIOR DOORS, ADJACENT LITES, AND FRAME.

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SHEET NO.:	A001

ARCH D

LIFE SAFETY PLAN LEGEND

AREA OCCUPANCY TAG

- AREA NAME
- AREA NUMBER
- AREA OCCUPANT TYPE
- AREA OCCUPANT LOAD
- AREA SQUARE FOOTAGE

(AREA NAME / 101 / AST / OCC. - # / 150 SF)

DOOR / STAIR EGRESS TAG

- REQ WIDTH (30")
- ACTUAL LOAD (150)
- MAX LOAD (180)
- ACTUAL WIDTH (36")

- F — FIRE ALARM PULL STATION
- CEILING MOUNTED FIRE ALARM COMBINATION AUDIO/VISUAL SPEAKER STROBE DEVICE
- L — CEILING MOUNTED FIRE ALARM VISUAL STROBE DEVICE
- EXIT SIGN
- S — CEILING MOUNTED SMOKE DETECTOR DEVICE
- FACP — FIRE ALARM CONTROL PANEL
- FEC — FIRE EXTINGUISHER CABINET MTD W/ HIGHEST OPERABLE PART @ 48" AFF MAX

INDICATES DISTANCE TO EXIT — DIST: ###'

PATH OF TRAVEL

0 HR RATED WALL

WALL PARTITION - SMOKE PARTITION - CMU WALL - SEE UL 263 AND/OR UL 618. SMOKE SEAL TOP OF WALL AT ROOF DECK. (3)

LIFE SAFETY CODE SPACE FUNCTIONS PER IBC TABLE 1004.1.2

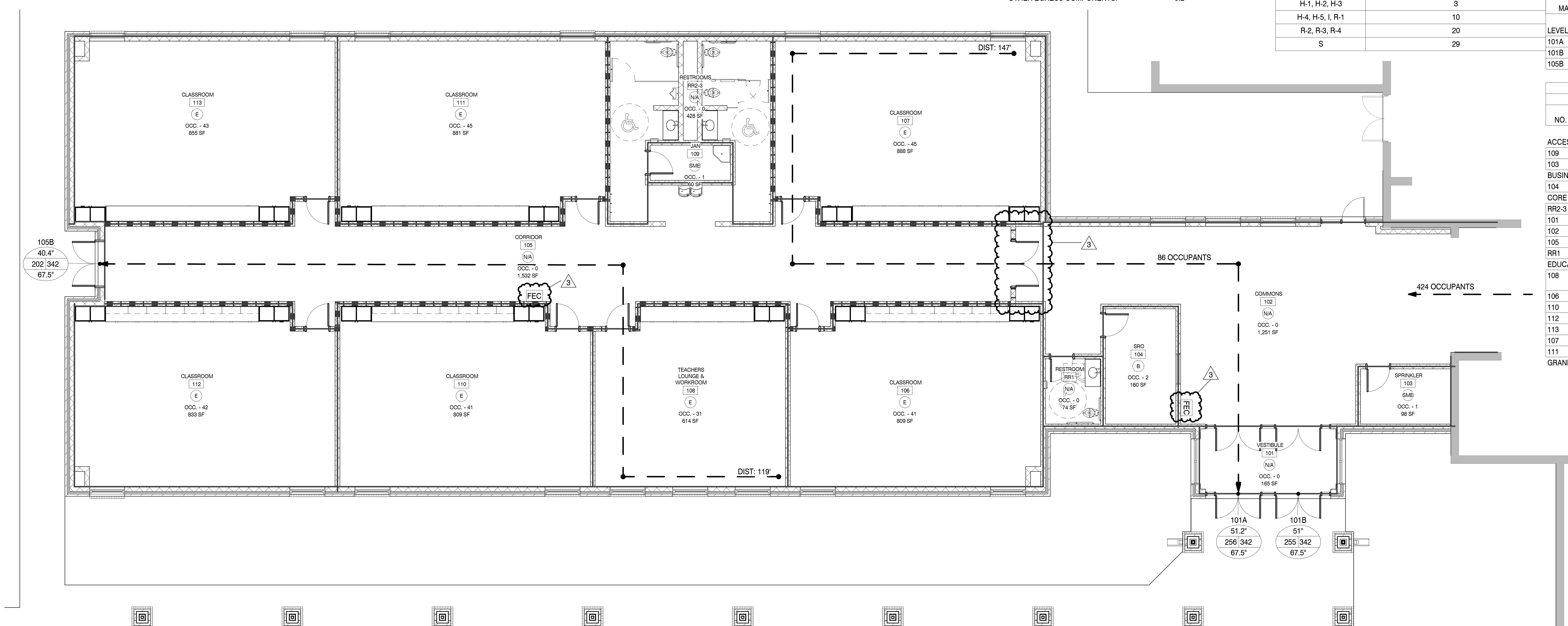
ABBREV	SPACE FUNCTION	SF PER PERSON	GROSS / NET SF
B	BUSINESS AREAS	150	GSF
E	EDUCATIONAL - CLASSROOM	20	NSF
N/A	CORE	0	
SME	ACCESSORY STORAGE AREA / MECHANICAL ROOM	300	GSF

SMOKE PARTITION IDENTIFICATION

(3)

FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS, SMOKE BARRIERS AND SMOKE PARTITIONS OR ANY OTHER WALL REQUIRED TO HAVE PROTECTED OPENINGS OR PENETRATIONS SHALL BE EFFECTIVELY AND PERMANENTLY IDENTIFIED WITH SIGNS OR STENCILING. SUCH IDENTIFICATION SHALL:

1. BE LOCATED IN ACCESSIBLE CONCEALED FLOOR, FLOOR-CEILING OR ATTIC SPACES;
2. BE LOCATED WITHIN 15 FEET (4572 MM) OF THE END OF EACH WALL AND AT INTERVALS NOT EXCEEDING 30 FEET (9144 MM) MEASURED HORIZONTALLY ALONG THE WALL OR PARTITION; AND
3. INCLUDE LETTERING NOT LESS THAN 3 INCHES (76 MM) IN HEIGHT WITH A MINIMUM 3/8 INCH STROKE IN A CONTRASTING COLOR INCORPORATING THE SUGGESTED WORDING, "FIRE AND/OR SMOKE BARRIER—PROTECT ALL OPENINGS" OR OTHER WORDING.



LIFE SAFETY PLAN - CLASSROOM ADDITION

SCALE : 1/8" = 1'-0"

3

BUILDING NORTH — MAGNETIC NORTH

BUILDING OCCUPANCY

BUILDING OCCUPANCY CLASSIFICATIONS PER IBC CHAPTERS 3, 4, 5

BUILDING OCCUPANCY GROUP: *IBC CHAPTER 3*

- ○ GROUP A-1
- ○ GROUP A-2
- ○ GROUP A-3
- ○ GROUP A-4
- ○ GROUP A-5
- ● GROUP B
- ● GROUP E
- ○ GROUP F-1
- ○ GROUP F-2
- ○ GROUP H-1
- ○ GROUP H-2
- ○ GROUP H-3
- ○ GROUP H-4
- ○ GROUP H-5
- ○ GROUP I-1
- ○ GROUP I-2
- ○ GROUP I-3
- ○ GROUP I-4
- ○ GROUP M
- ○ GROUP R-1
- ○ GROUP R-2
- ○ GROUP R-3
- ○ GROUP R-4
- ○ GROUP S-1
- ○ GROUP S-2
- ○ GROUP U

MIXED USE / OCCUPANCY: *IBC SECTIONS 508 / 509*

- ○ ACCESSORY OCCUPANCIES — *IBC SECTION 508.2*
- ○ NONSEPARATED OCCUPANCIES — *IBC SECTION 508.3*
- ○ SEPARATED OCCUPANCIES — *IBC SECTION 508.4*
- ○ INCIDENTAL USES — *IBC SECTION 509*

SPECIAL REQUIREMENTS: *IBC CHAPTERS 4, 5*

- ○ HIGH-RISE BUILDING — *IBC SECTION 403*
- ○ ATRIUM — *IBC SECTION 404*
- ○ HAZARDOUS MATERIALS — *IBC SECTION 414*
- ○ MEZZANINE — *IBC SECTION 505.2*
- ○ EQUIPMENT PLATFORM — *IBC SECTION 505.3*

MEANS OF EGRESS

DOORS: *PER IBC 1010*

- THE CLEAR WIDTH OF AN EGRESS DOOR OPENING SHALL NOT BE LESS THAN 32" AND NOT MORE THAN 48". THE CLEAR HEIGHT OF AN EGRESS DOOR OPENING SHALL NOT BE LESS THAN 80".
- DOORS SHALL SWING IN THE DIRECTION OF EGRESS TRAVEL WHERE SERVING A ROOM OR AREA CONTAINING AN OCCUPANT LOAD OF 50 OR MORE PERSONS OR A GROUP H OCCUPANCY.

STAIRWAYS: *PER IBC 1011*

- THE CLEAR WIDTH OF A STAIRWAY SHALL NOT BE LESS THAN 44". THE MINIMUM HEADROOM SHALL NOT BE LESS THAN 80" AS MEASURED FROM THE NOSING.

LIFE SAFETY SYSTEMS:

LIFE SAFETY SYSTEMS ARE PER IBC CHAPTER 9

- ● AUTOMATC SPRINKLER SYSTEM PER NFPA 13
- ● FIRE ALARM SYSTEM PER NFPA 72
- ● PORTABLE FIRE EXTINGUISHERS PER NFPA 10
- ○ STANDPIPE SYSTEM PER NFPA 14

EGRESS CAPACITY FACTORS

EGRESS CAPACITY FACTORS ARE PER: IBC 1005

- ● AUTOMATC SPRINKLER SYSTEM
- ○ EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM

MINIMUM REQUIRED EGRESS WIDTH:
STAIRWAYS: 0.3
OTHER EGRESS COMPONENTS: 0.2

CONSTRUCTION TYPE AND ALLOWABLE BUILDING AREA

BUILDING AREAS AND CONSTRUCTION TYPE PER IBC CHAPTER 5

CONSTRUCTION TYPE: *IBC CHAPTER 5*

CLASS \ TYPE	I	II	III	IV	V
A					
B		●			
HT					

BUILDING AREA MODIFICATIONS: *IBC CHAPTER 5*

- ● AUTOMATIC SPRINKLER SYSTEM
  - ○ HEIGHT INCREASE — *IBC SECTION 504.3*
  - ○ AREA INCREASE — *IBC SECTION 506.2*
- ○ FRONTAGE INCREASE — *IBC SECTION 506.3*
- ○ UNLIMITED AREA — *IBC SECTION 507*

BUILDING AREA AND HEIGHT: *IBC TABLE 506.2 / 504.3*

MAXIMUM AREA ALLOWED: 68,875 PER STORY
ACTUAL BUILDING AREA: 44,554 PER STORY
MAXIMUM HEIGHT ALLOWED: 2 STORIES, 55 FEET
ACTUAL BUILDING HEIGHT: 50'-4"

$If = [F/P - 0.25]\ W/30$
$= [1 - 0.25]\ 30/30$
$If = .75$

$Aa = At + (At \times If) + (At \times Is)$
$= 14{,}500 + (14{,}500 \times 0.75) + (14{,}500 \times 3)$
$= 14{,}500 + 10{,}875 + 43{,}500$
$Aa = 68{,}875$ SF PER STORY

ADDITIONAL FIRE RESISTANCE RATING INFORMATION

DESCRIPTION	FIRE RATING	CODE
SHAFT / HOISTWAY ENCLOSURES		*PER IBC 713.4 / 3002.1*
• 4 STORIES OR GREATER	2 HR	
• LESS THAN 4 STORES	1 HR	
EXIT ENCLOSURES		*PER IBC 1022.2*
• 4 STORIES OR GREATER	2 HR	
• LESS THAN 4 STORES	1 HR	
EXIT PASSAGEWAYS	1 HR	*PER IBC 1023.3*

MINIMUM NUMBER OF EXITS PER IBC TABLE 1006.3.2

OCCUPANT LOAD	MIN NUMBER OF EXITS PER STORY
1-500	2
501-1000	3
> 1000	4

SPACES WITH ONE EXIT PER IBC TABLE 1006.2.1

OCCUPANCY	MAXIMUM OCCUPANT LOAD
A, B, E, F, M, U	49
H-1, H-2, H-3	3
H-4, H-5, I, R-1	10
R-2, R-3, R-4	20
S	29

FIRE RESISTANCE RATING REQUIREMENTS

FIRE RESISTANCE RATING REQUIREMENTS PER IBC TABLE 601

TYPE OF CONSTRUCTION: IIB

PRIMARY STRUCT FRAME: 0 HOURS
BEARING WALLS (EXT): 0 HOURS
BEARING WALLS (INT): 0 HOURS
NONBEARING WALLS AND PARTITIONS (EXT): PER IBC TABLE 602
NONBEARING WALLS AND PARTITIONS (INT): 0 HOURS
FLOOR CONSTRUCTION: 0 HOURS
ROOF CONSTRUCTION: 0 HOURS

IBC TABLE 602: EXTERIOR WALL FIRE RATING

SEPERATION DISTANCE	CONS TYPE	OCCUPANCY GROUP H	F-1, M, S-1	A, B, E, F-2, I, R, S-2, U
X < 5	ALL	3	2	1
5 ≤ X ≤ 10	IA	3	2	1
	OTHERS	2	1	1
10 ≤ X ≤ 30	IA, IB	2	1	1
	IIB, VB	1	0	0
	OTHERS	1	1	1
X ≥ 30	ALL	0	0	0

COMMON PATH OF TRAVEL PER IBC 1006.2.1

OCCUPANCY	SPRINKLERED
A, E, M	75
B	100

MAXIMUM TRAVEL DISTANCE PER IBC 1017.2

OCCUPANCY	SPRINKLERED
A, E, F-1, M, R, S-1	250
B	300

DEAD END CORRIDOR PER IBC 1020.4

OCCUPANCY	SPRINKLERED
B	50
E	50

CORRIDOR FIRE RATING PER IBC TABLE 1020.1

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQ'D FIRE RATING W/ SPRINKLER SYSTEM
H-1, H-2, H-3	ALL	1
H-4, H-5	> 30	1
A, B, E, F, M, S, U	> 30	0
R	> 10	.5 / 1
I-2	ALL	SECTION 407.2 & .3
I-1, I-3	ALL	1
I-4	ALL	0

EGRESS DOOR SCHEDULE

DOOR MARK	WIDTH REQUIRED	WIDTH PROVIDED	EGRESS OCCUPANT LOAD	MAXIMUM LOAD
LEVEL 2				
101A	51.2"	67.5"	256	337
101B	51"	67.5"	255	337
105B	40.4"	67.5"	202	337

LIFE SAFETY LOAD CALCULATIONS

AREA NO.	NAME	SQ.FT.	OCCUPANT LOAD: LOAD FACTOR	CALCULATED LOAD
ACCESSORY STORAGE AREA / MECHANICAL ROOM				
109	JAN	60 SF	300	1
103	SPRINKLER	98 SF	300	1
BUSINESS AREAS				
104	SRO	160 SF	150	2
CORE				
RR2-3	RESTROOMS	428 SF	0	
101	VESTIBULE	165 SF	0	
102	COMMONS	1251 SF	0	
105	CORRIDOR	1532 SF	0	
RR1	RESTROOM	74 SF	0	
EDUCATIONAL - CLASSROOM				
108	TEACHERS LOUNGE & WORKROOM	614 SF	20	31
106	CLASSROOM	809 SF	20	41
110	CLASSROOM	809 SF	20	41
112	CLASSROOM	833 SF	20	42
113	CLASSROOM	855 SF	20	43
107	CLASSROOM	888 SF	20	45
111	CLASSROOM	881 SF	20	45
GRAND TOTALS		9457 SF		292

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DESIGNED BY: CMG
DRAWN BY: KEF
REVIEWED BY: CMG
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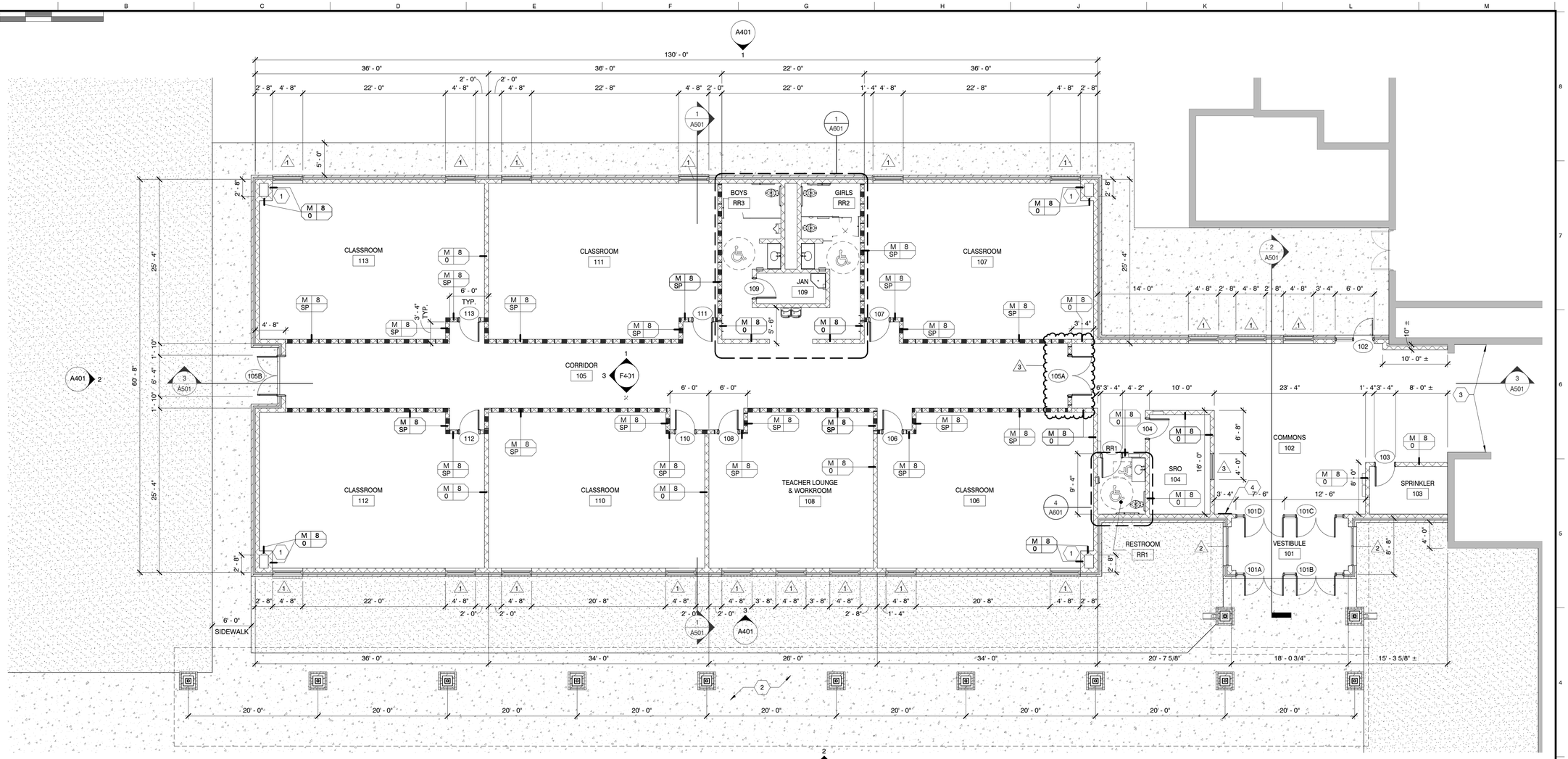
SHEET NO.: A002

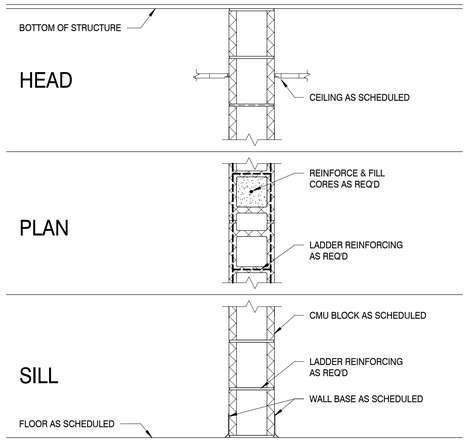
ARCH D



DIMENSIONED FLOOR PLAN

SCALE : 1/8" = 1'-0"

INTERIOR WALL TYPE



WALL TYPE ID — M — MASONRY CMU WALL

WALL TYPE NOTES:

WALL TYPE ADDITIONAL COMPONENTS

ADDITIONAL COMPONENTS GROUP CODE	A	B	C	D	E	F	G	NOTES
ADD SOUND ATTENUATION BATTS	•							
STC RATING	45							
ADD RIGID INSULATION								
ADD SPRAYFOAM INSULATION								
PROVIDE LEAD LINED GYPSUM BOARD								
PROVIDE FOIL LINED GYPSUM BOARD								
PROVIDE SECURITY MESH ABOVE CEILING TO STRUCTURE ABOVE								
ADD SMOKE SEAL		•						

NOTES:
1. ALL FIRE RATED WALL ASSEMBLIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH UL 263
2. PROVIDE TYPE-X GWB WHERE WALLS ARE FIRE RATED
3. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE FIRE STOPPED AND SEALED IN ACCORDANCE WITH UL 263
4. PARTITION WALLS ARE UNINSULATED EXCEPT WHERE FIRE RATED OR WHERE NOTED IN THE ADDITIONAL COMPONENTS SCHEDULE.
5. SILL PLATES, TOP PLATES, AND DEFLECTION TRACKS SHALL BE OF SAME SIZE AND GAGE AS STUD
6. WHERE FURRING WALLS ARE UNINSULATED, GWB MAY STOP A MIN. OF 6" ABOVE CEILING
7. COORDINATE LOCATIONS OF EXPANSION JOINTS IN MASONRY WALLS WITH STRUCT DWGS
8. PROVIDE WATER RESISTANT BACKING BOARD ON BOTH SIDES OF WET WALLS WHERE BOTH SIDES ARE WET
9. PROVIDE WATER RESISTANT BACKING BOARD IN LIEU OF GWB AT THE FOLLOWING LOCATIONS.
   A. WHERE INDICATED BY WALL TYPE
   B. WET LOCATIONS SUCH AS WATER FOUNTAINS, SHOWER STALLS, TUB SURROUNDS.
   C. WHERE CERAMIC TILE FINISHES ARE INDICATED. REFER TO FINISH PLANS FOR ADDITIONAL INFORMATION.
   D. WITHIN 2 FEET HORIZONTALLY AND 4 FEET VERTICALLY OF JANITOR / MOP SINKS
10. WALL TYPES INDICATED ARE INDEPENDENT OF APPLIED FINISHES. SEE FINISH PLANS FOR ADDITIONAL INFORMATION.
11. WATER RESISTANT BACKING BOARD SHALL BE TYPE-X AND ON OUTSIDE LAYER WHERE WET WALLS ARE FIRE RATED.

FLOOR PLAN KEYNOTES

1. CHASE FOR ROOF DRAIN PIPE.
2. CANOPY DETAILS ON SHEET A503.
3. FINISH OPENING WHERE EXTERIOR DOOR AND LITE SYSTEM WAS REMOVED.
4. INSTALL CAST BRONZE DEDICATION PLAQUE PER SECTION 10 14 16.

WALL LEGEND

SD 10 / 2 A

EJ — EXTERIOR WALL - BRICK VENEER ON MTL STUD

WALL PARTITION - CMU WALL

WALL PARTITION - SMOKE PARTITION - CMU WALL - SEE UL 263 AND/OR UL 618, SMOKE SEAL TOP OF WALL AT ROOF DECK

- EJ = EXPANSION JOINT
- FOR MASONRY EXPANSION JOINTS - SEE STRUCTURAL SHEETS
- SEE WALL SECTIONS FOR MORE INFORMATION ON EXTERIOR WALL CONSTRUCTION

WALL TYPE TAG

WALL TYPE ID — CORE THICKNESS

SD 10 / 2 A

FIRE RATING/ SMOKE PARTITION (SP) — ADDITIONAL COMPONENTS

OPAQUE THERMAL ENVELOPE REQ'S

ROOFS	
INSULATION ENTIRELY ABOVE DECK	R-30CI
WALLS, ABOVE GRADE	
MASS	R-9.5CI
SLAB-ON-GRADE FLOORS	
UNHEATED SLAB	R-10 FOR 24 BELOW
OPAQUE DOORS	
SWINGING	U-0.61

FOR SI: 1 INCH = 25.4 MM. CI = CONTINUOUS INSULATION. NR = NO REQUIREMENT.

(a) ASSEMBLY DESCRIPTIONS CAN BE FOUND IN ANSI/ASHRAE/IESNA APPENDIX A

(b) WHERE USING R-VALUE COMPLIANCE METHOD, A THERMAL SPACER BLOCK SHALL BE PROVIDED, OTHERWISE USE THE U-FACTOR COMPLIANCE METHOD IN TABLE C402.1.2.

(c) R-5.7CI IS ALLOWED TO BE SUBSTITUTED WITH CONCRETE BLOCK WALLS COMPLYING WITH ASTM C 90, UNGROUTED OR PARTIALLY GROUTED AT 32 INCHES OR LESS ON CENTER VERTICALLY AND 48 INCHES OR LESS ON CENTER HORIZONTALLY, WITH UNGROUTED CORES FILLED WITH MATERIALS HAVING A MAXIMUM THERMAL CONDUCTIVITY OF 0.44 BTU-IN/H-F2 °F.

BUILDING NORTH — MAGNETIC NORTH

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CHARLES M. GRAY — REGISTERED — AGRICULTURE — ARCHITECT — COMMERCE — No. 2010078 — STATE OF TENNESSEE — 3/30/22

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SHEET TITLE: DIMENSIONED FLOOR PLAN

SHEET NO.: A101

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DOOR SCHEDULE

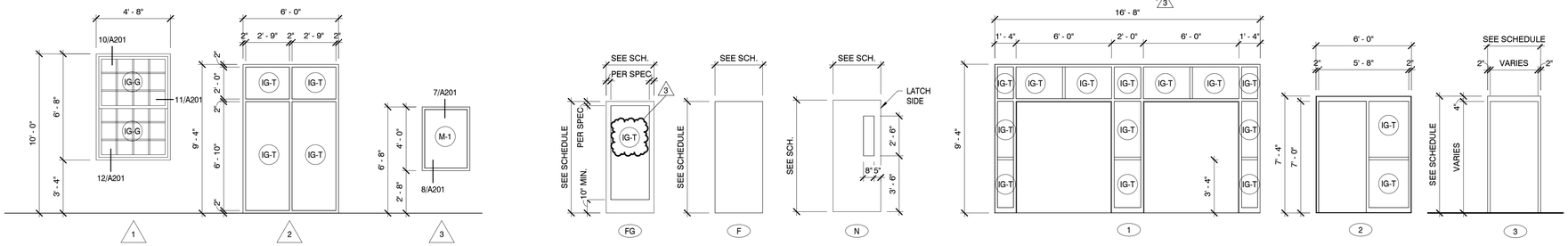
	DOORS							FRAMES			DETAILS				
NUMBER	D-TYPE	D-MATL	FULL WIDTH	PANELS	HEIGHT	THICK	FINISH	F-TYPE	F-MATL	F-FINISH	HEAD	JAMB	T-HOLD	H-WARE	REMARKS
101A	FG	HM	6' - 0"	PAIR	7' - 0"	1 3/4"	PT	1	HM	PT	1/A201	2/A201	5/A201	1A	
101B	FG	HM	6' - 0"	PAIR	7' - 0"	1 3/4"	PT	1	HM	PT	1/A201	2/A201	5/A201	1B	ADA PUSH BUTTON OPENER
101C	FG	HM	6' - 0"	PAIR	7' - 0"	1 3/4"	PT	1	HM	PT	1/A201	2/A201	5/A201	1D	ADA PUSH BUTTON OPENER
101D	FG	HM	6' - 0"	PAIR	7' - 0"	1 3/4"	PT	1	HM	PT	1/A201	2/A201	5/A201	1C	
102	FG	HM	3' - 0"	SINGLE	7' - 0"	1 3/4"	PT	2	HM	PT	1/A201	2/A201	5/A201	1E	
103	F	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	2	
104	F	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	3	
105A	F	WD	6' - 0"	PAIR	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	1F	MAGNETIC HOLDERS, SMOKE SEALS
105B	FG	HM	6' - 0"	PAIR	7' - 0"	1 3/4"	PT	3	HM	PT	1/A201	2/A201	5/A201	1A	
106	N	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	5	SMOKE SEALS
107	N	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	5	SMOKE SEALS
108	N	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	5	SMOKE SEALS
109	F	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	2	
110	N	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	5	SMOKE SEALS
111	N	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	5	SMOKE SEALS
112	N	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	5	SMOKE SEALS
113	N	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	5	SMOKE SEALS
RR1	F	WD	3' - 0"	SINGLE	7' - 0"	1 3/4"	ST	3	HM	PT	3/A201	4/A201	6/A201	6	

GENERAL DOOR NOTES

1. INTERIOR WOOD DOORS TO BE FACTORY FINISH. WOOD SPECIES TO BE ROTARY CUT BIRCH.
2. EXTERIOR HOLLOW METAL DOORS ARE TO BE INSULATED.
3. EXTERIOR HOLLOW METAL DOORS AND FRAMES ARE TO BE FACTORY PRIMED AND FIELD PAINTED.

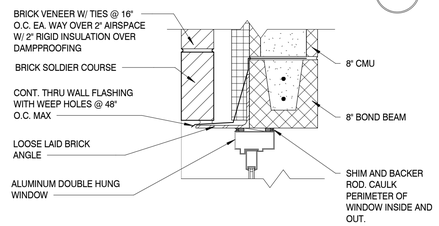
GLAZING SCHEDULE

M-1	1/4" THICK TRANSPARENT ONE-WAY MIRROR, FULLY TEMPERED.
IG-T	1" THICK INSULATED GLASS WITH 1/2" AIR SPACE AND TWO 1/4" LITES, FULLY TEMPERED
IG-G	1" THICK INSULATED GLASS WITH 1/2" AIR SPACE, WITH INTERSTITIAL GRILLES, AND TWO 1/4" LITES, FULLY TEMPERED



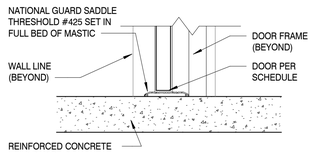
WINDOW TYPES

SCALE : 1/4" = 1'-0"



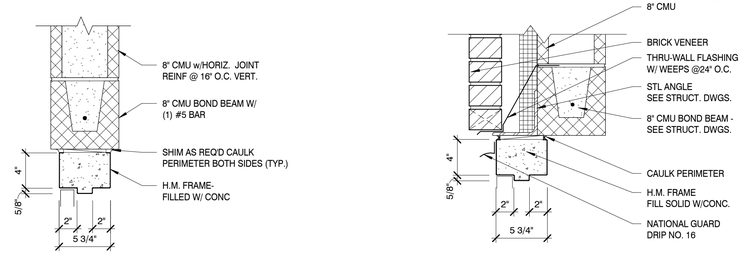
DOOR TYPES

SCALE : 1/4" = 1'-0"



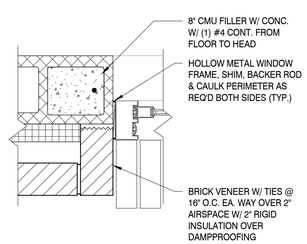
DOOR FRAME TYPES

SCALE : 1/4" = 1'-0"



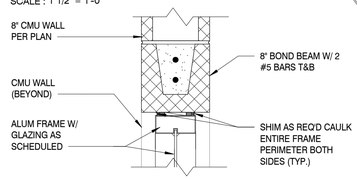
HEAD DETAIL 10

SCALE : 1 1/2" = 1'-0"



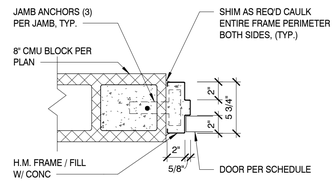
THRESHOLD DETAIL 6

SCALE : 1 1/2" = 1'-0"



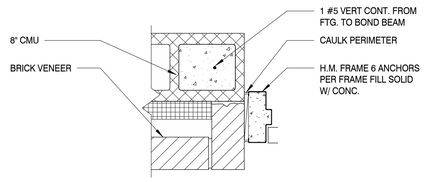
HEAD DETAIL 3

SCALE : 1 1/2" = 1'-0"



HEAD DETAIL 1

SCALE : 1 1/2" = 1'-0"



WINDOW JAMB 11

SCALE : 1 1/2" = 1'-0"

WINDOW HEAD 7

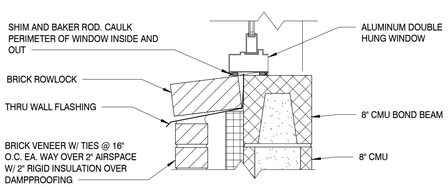
SCALE : 1 1/2" = 1'-0"

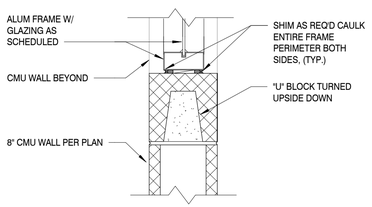
JAMB DETAIL 4

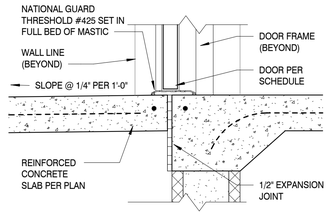
SCALE : 1 1/2" = 1'-0"

JAMB DETAIL 2

SCALE : 1 1/2" = 1'-0"







SILL DETAIL 12

SCALE : 1 1/2" = 1'-0"

WINDOW SILL 8.

SCALE : 1 1/2" = 1'-0"

THRESHOLD DETAIL 5

SCALE : 1 1/2" = 1'-0"

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CONSULTANT

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PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	Addendum #1
2	03/09/2022	Addendum #2
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	KEF
REVIEWED BY:	CMG

SHEET TITLE:

DOOR SCHEDULE, WINDOW TYPES, AND DETAILS

SHEET NO.:

A201

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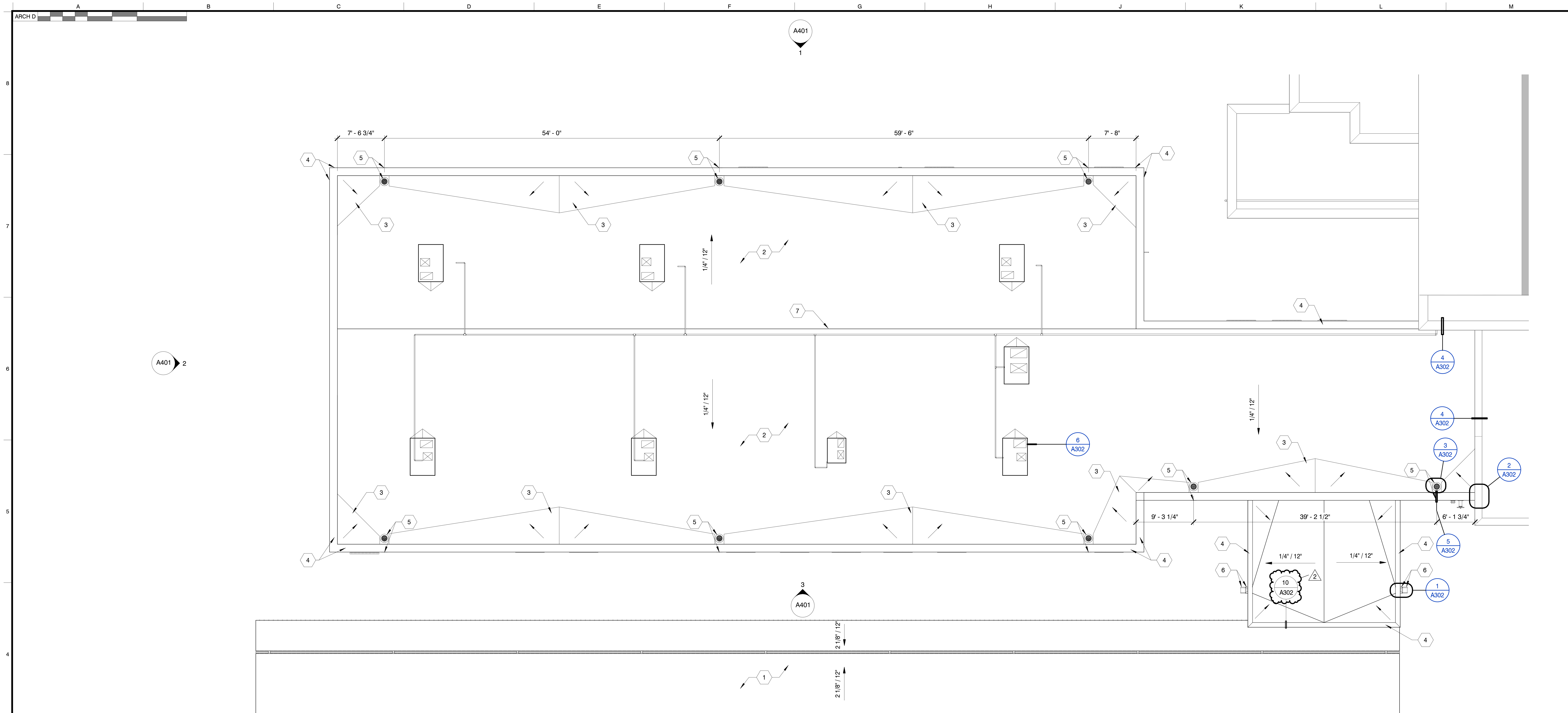

ROOF PLAN

SCALE : 1/8" = 1'-0"

1

BUILDING NORTH

MAGNETIC NORTH

ROOF PLAN KEYNOTES

1. FREESTANDING CANOPY WITH CORRUGATED POLYCARBONATE PANELS..
2. EPDM ROOFING.
3. TAPERED INSULATION, SLOPE TO DRAIN.
4. METAL COPING CAP.
5. ROOF DRAIN AND OVERFLOW SCUPPER.
6. SCUPPER, CONDUCTOR HEAD, DOWNSPOUT, AND CONCRETE SPLASHBLOCK.
7. ROOF RIDGE LINE.

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REVISION INFORMATION

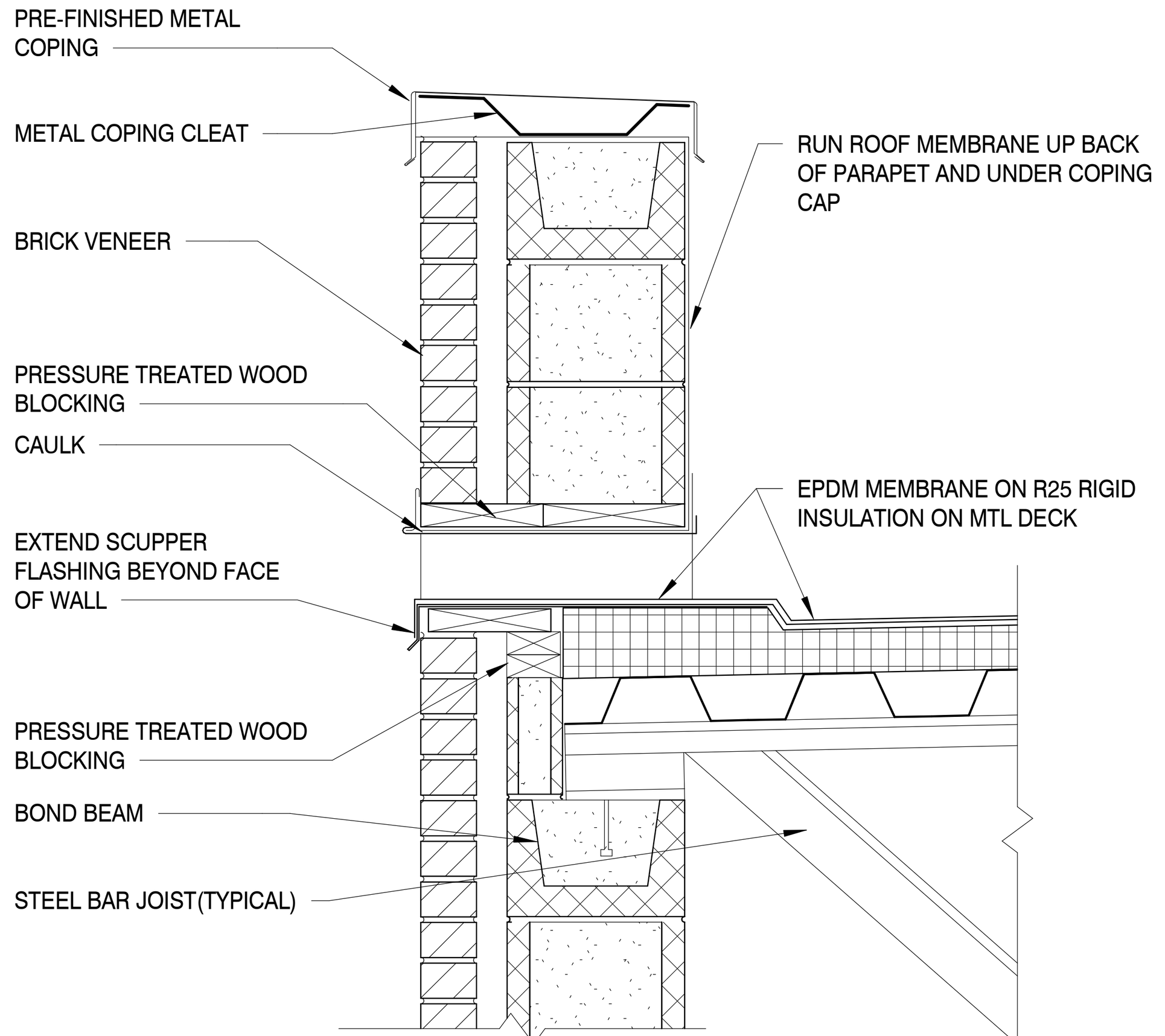
NO.	DATE	DESCRIPTION
2	03/09/2022	Addendum #2

KEY PLAN

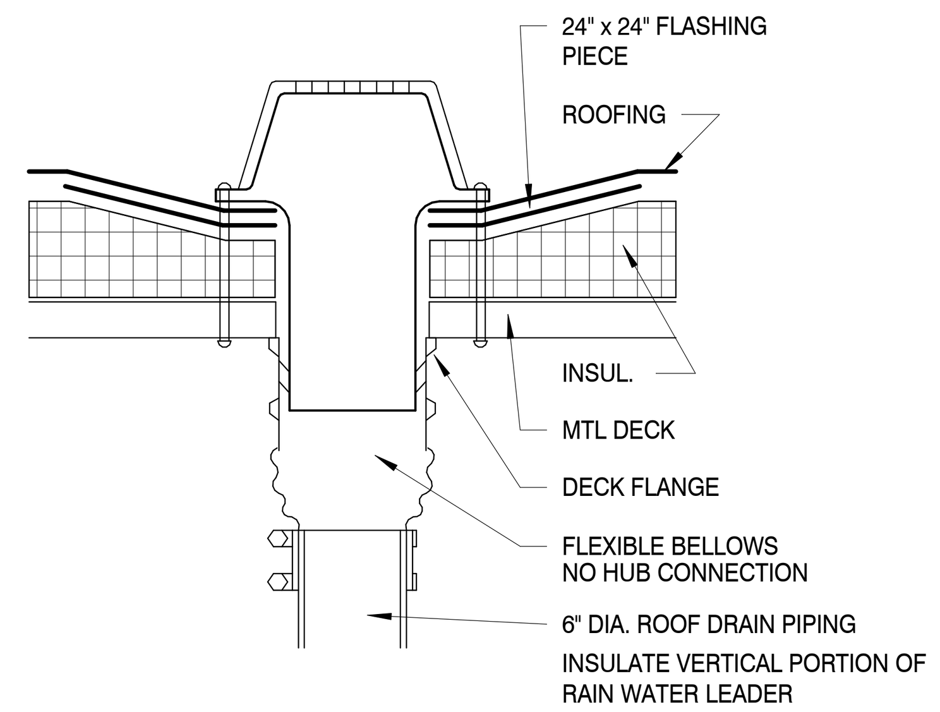
SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	KEF
REVIEWED BY:	CMG
SHEET TITLE:	ROOF PLAN
SHEET NO.:	A301

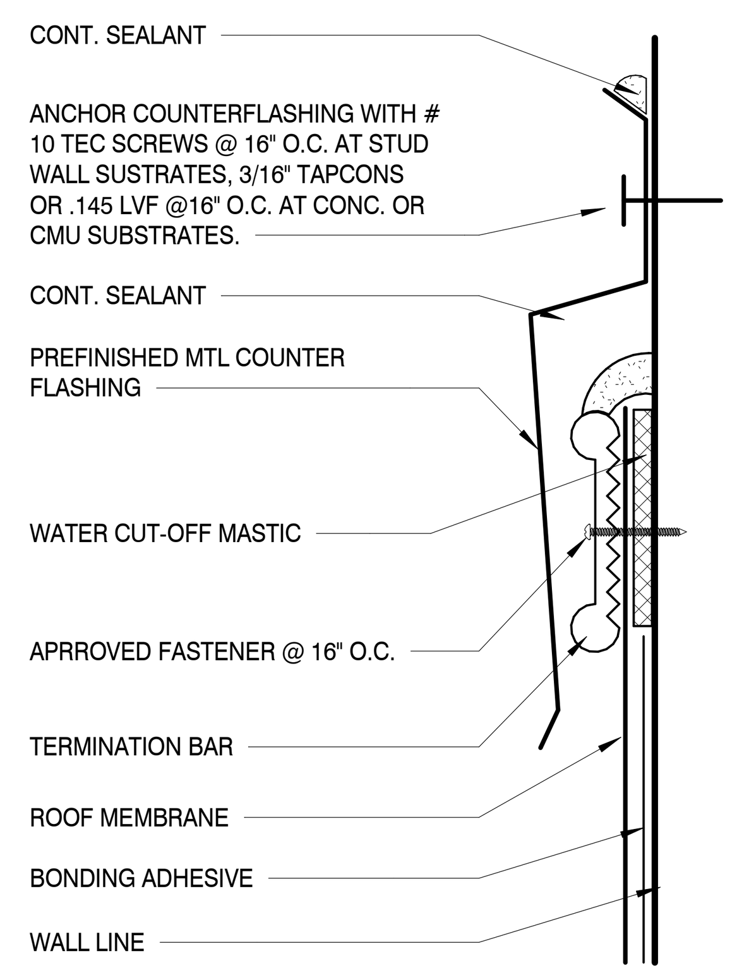
ARCH D



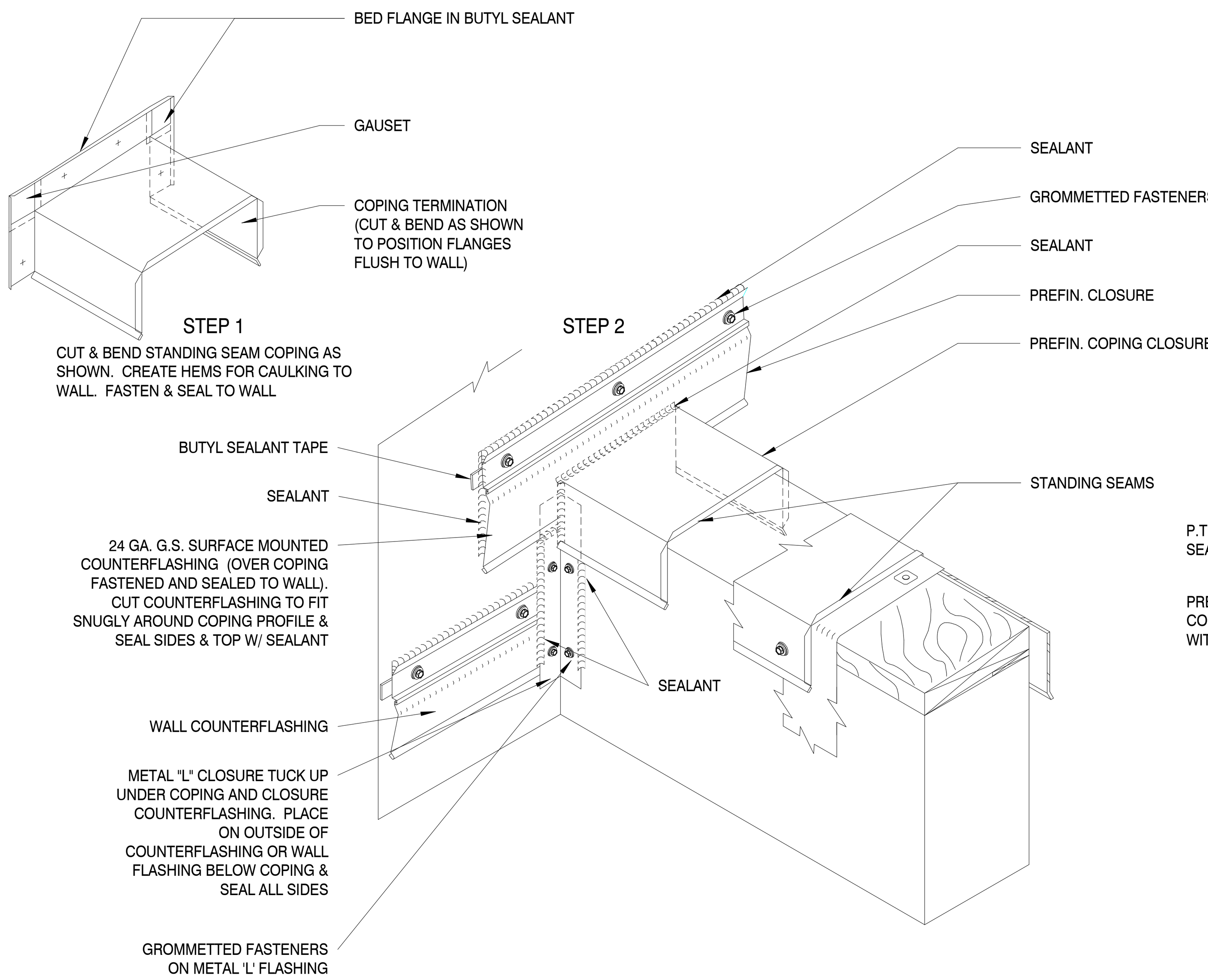
PARAPET W/ OVERFLOW SCUPPER 5
SCALE : 1" = 1'-0"



ROOF DRAIN 3
SCALE : 1 1/2" = 1'-0"

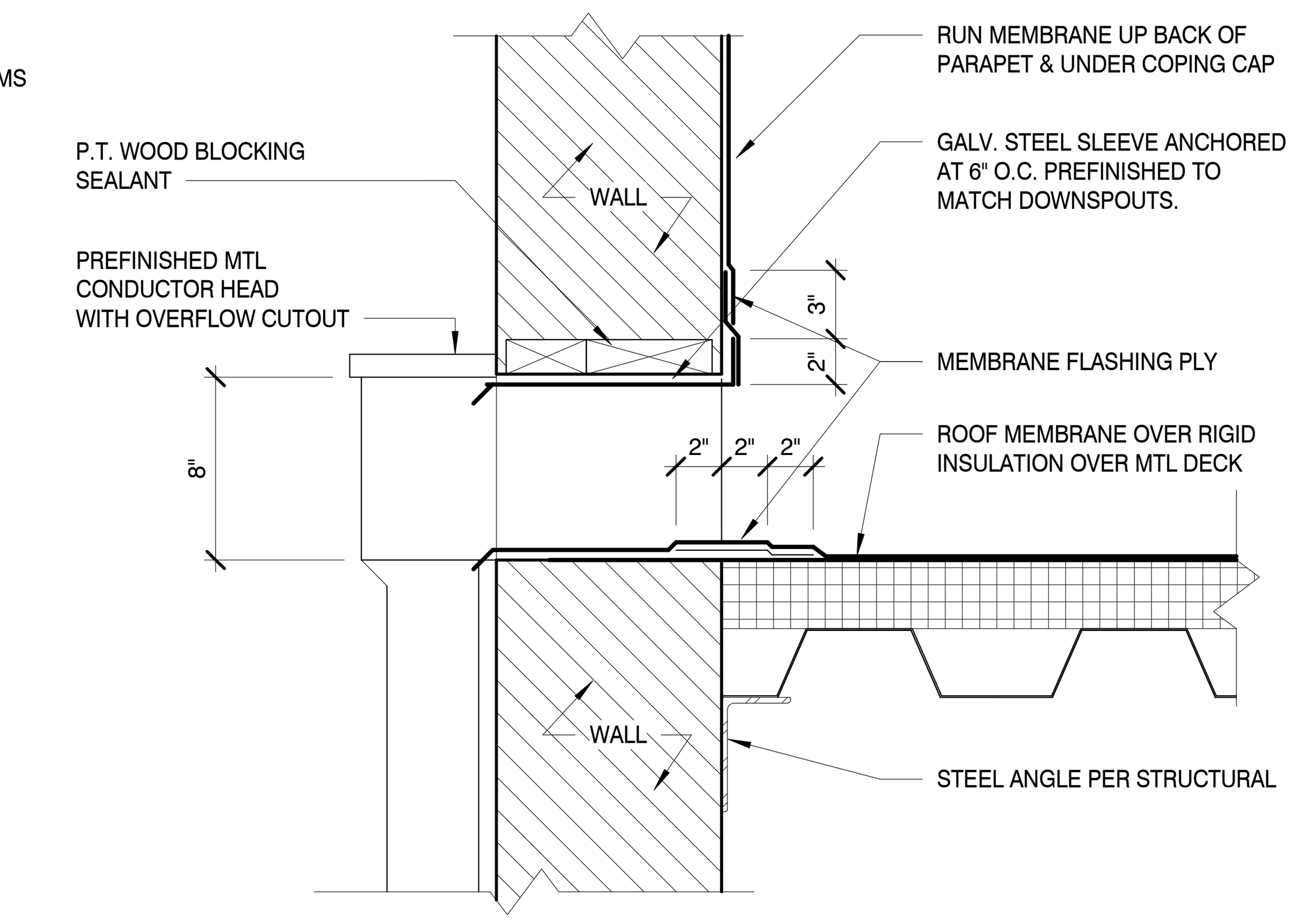


TERM BAR DETAIL 4
SCALE : 3" = 1'-0"

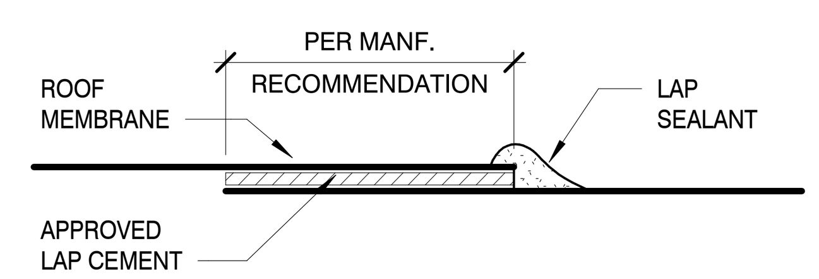


NOTE : FABRICATE METAL CLOSURE WITH COPING MATING TO COUNTERFLASHING, SEALED WATERTIGHT. IF WALL COUNTERFLASHING IS LOWER THAN THE CLOSURE, PROVIDE A METAL "L" FLASHING (AS SHOWN)

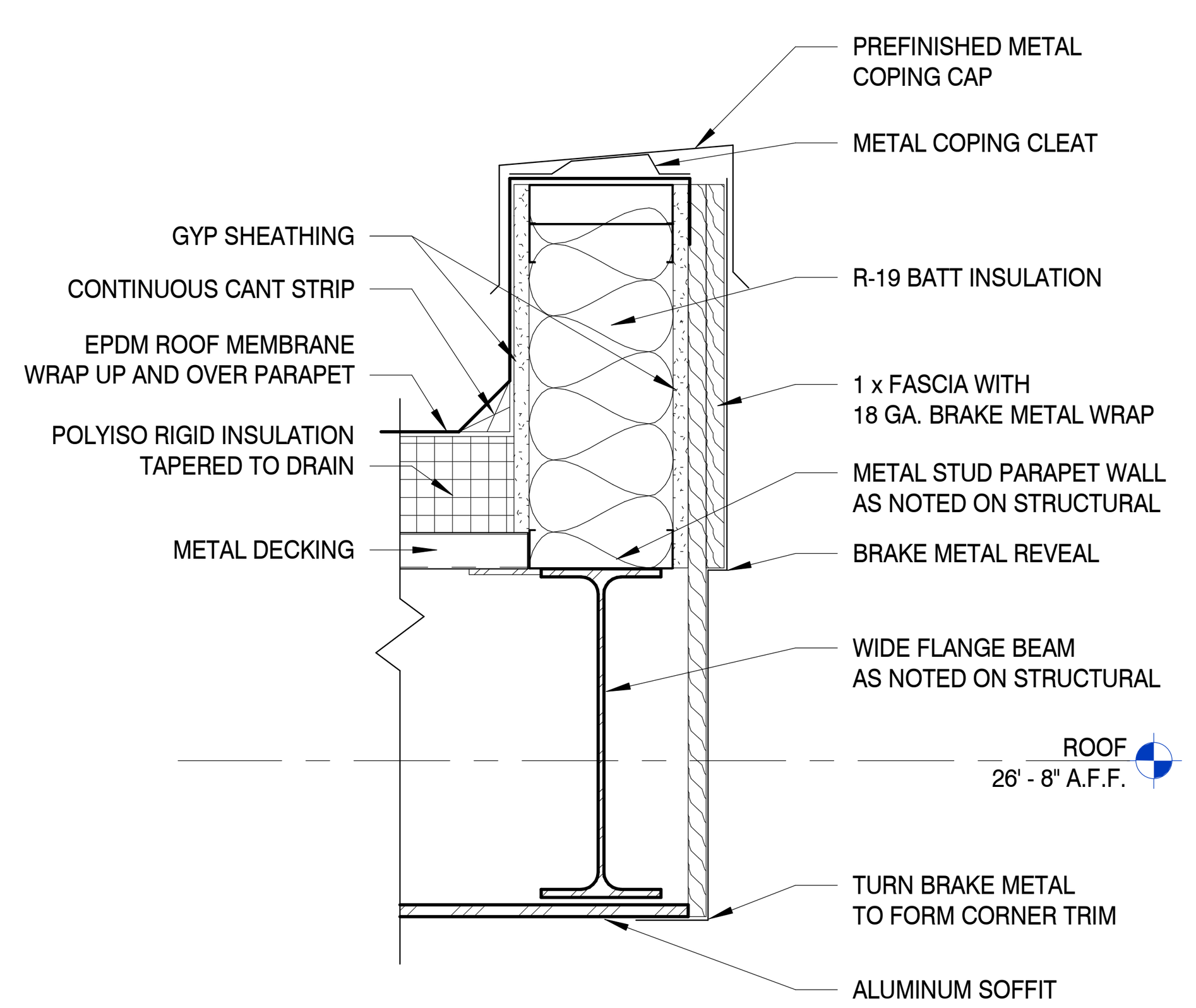
COPING TERMINATION DETAIL 2
SCALE : 1 1/2" = 1'-0"



SCUPPER AND DOWNSPOUT 1
SCALE : 1 1/2" = 1'-0"

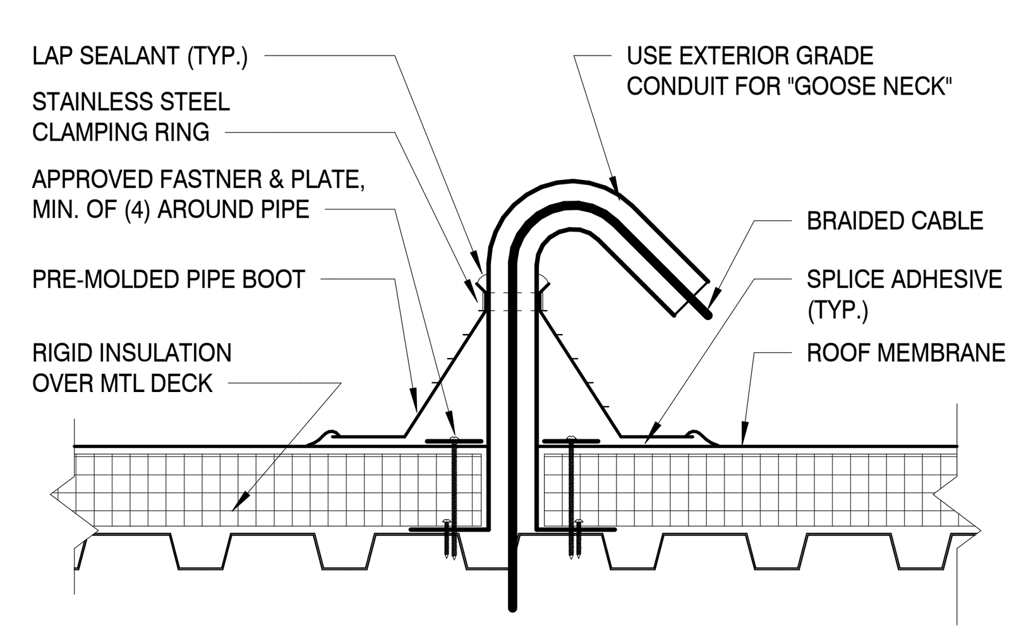


LAP SPLICE DETAIL 7
SCALE : 6" = 1'-0"

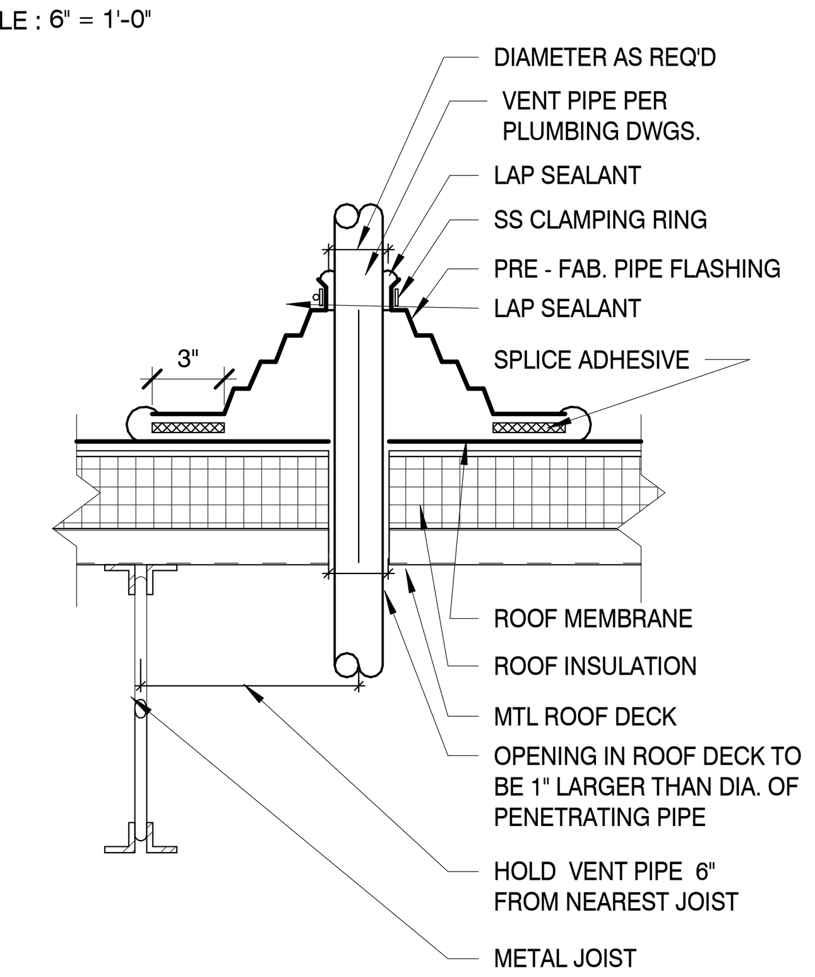


2

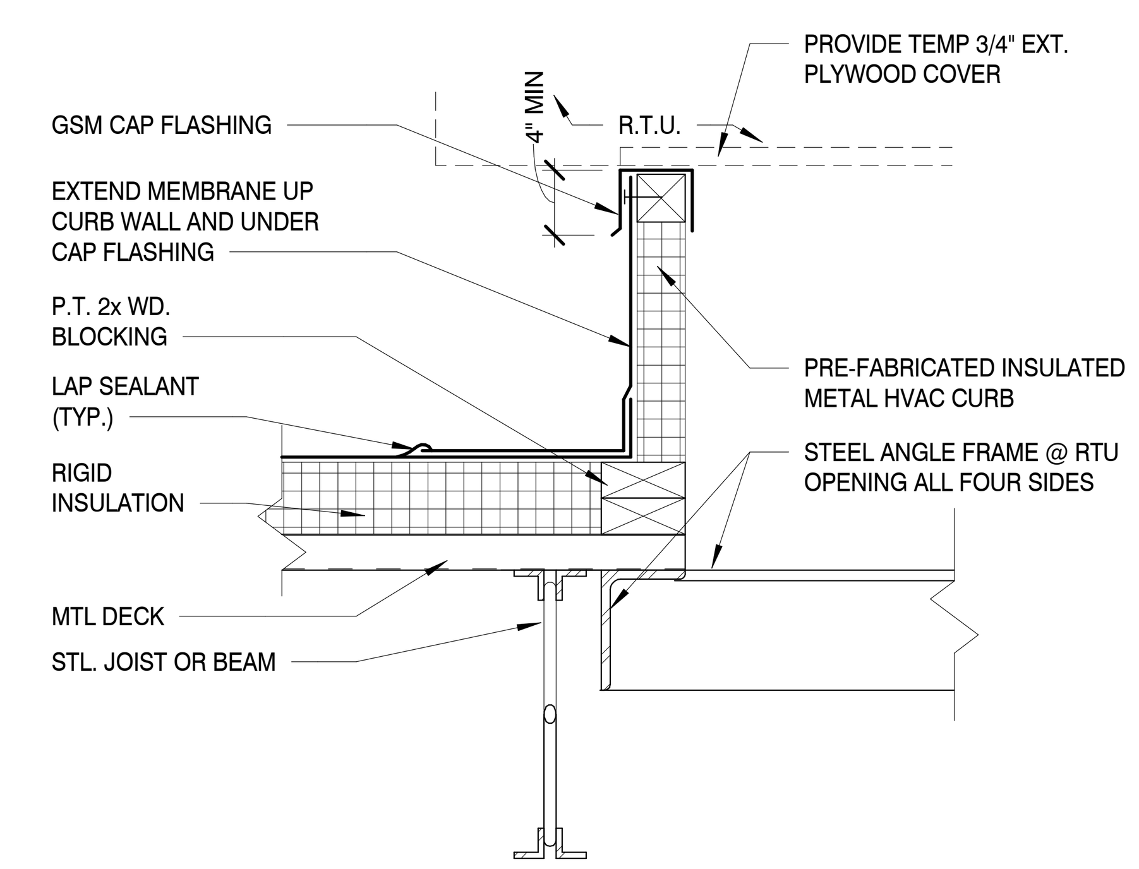
ENTRY PARAPET 10
SCALE : 1 1/2" = 1'-0"



CABLE PENETRATION DETAIL 9
SCALE : 1 1/2" = 1'-0"



VENT PIPE DETAIL 8
SCALE : 1 1/2" = 1'-0"



ROOF CURB DETAIL 6
SCALE : 1 1/2" = 1'-0"

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CONSULTANT

SEAL

PROJECT INFORMATION

PROJECT: AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS: 5 NORRIS SQUARE, NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

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- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
2	03/09/2022	Addendum #2

KEY PLAN

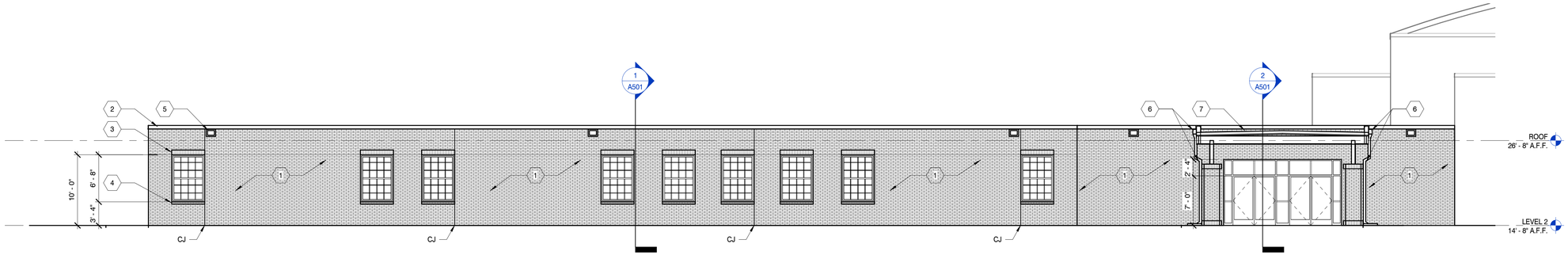
SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	KEF
REVIEWED BY:	CMG

SHEET TITLE: ROOF DETAILS

SHEET NO.: A302

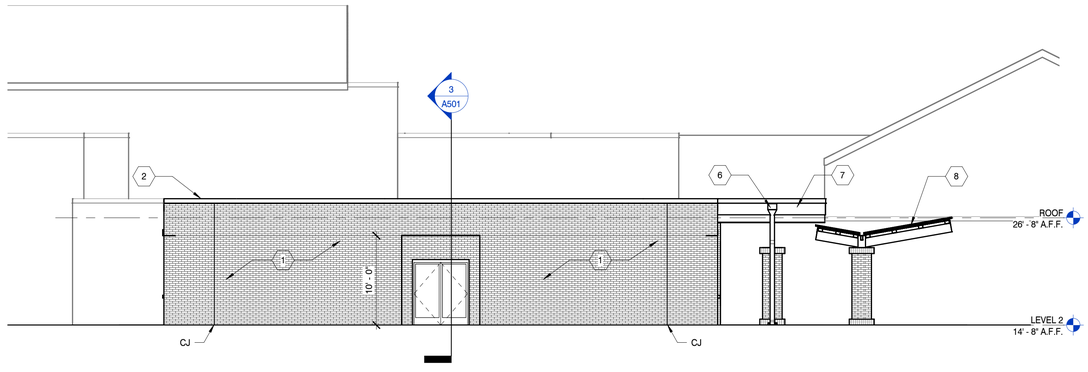
ARCH D



SOUTH ELEVATION

SCALE : 1/8" = 1'-0"

3



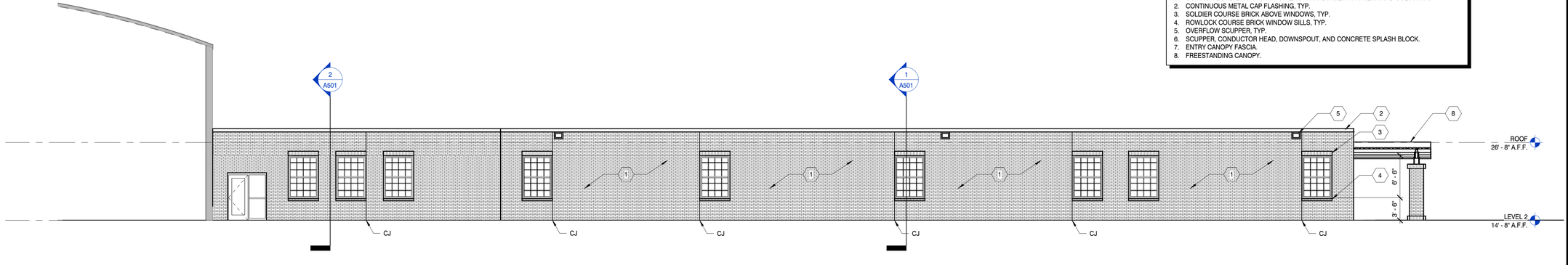
WEST ELEVATION

SCALE : 1/8" = 1'-0"

2

ELEVATION KEYNOTES

1. COMMON BOND BRICK TO MATCH EXISTING ADJACENT PATTERN AND COLOR MIX.
2. CONTINUOUS METAL CAP FLASHING, TYP.
3. SOLDIER COURSE BRICK ABOVE WINDOWS, TYP.
4. ROWLOCK COURSE BRICK WINDOW SILLS, TYP.
5. OVERFLOW SCUPPER, TYP.
6. SCUPPER, CONDUCTOR HEAD, DOWNSPOUT, AND CONCRETE SPLASH BLOCK.
7. ENTRY CANOPY FASCIA.
8. FREESTANDING CANOPY.



NORTH ELEVATION

SCALE : 1/8" = 1'-0"

1

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CHARLES M. GRANT
REGISTERED ARCHITECT
No. 25
AGRICULTURE
COMMERCE
No. 00100078
STATE OF TENNESSEE
4/7/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

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REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

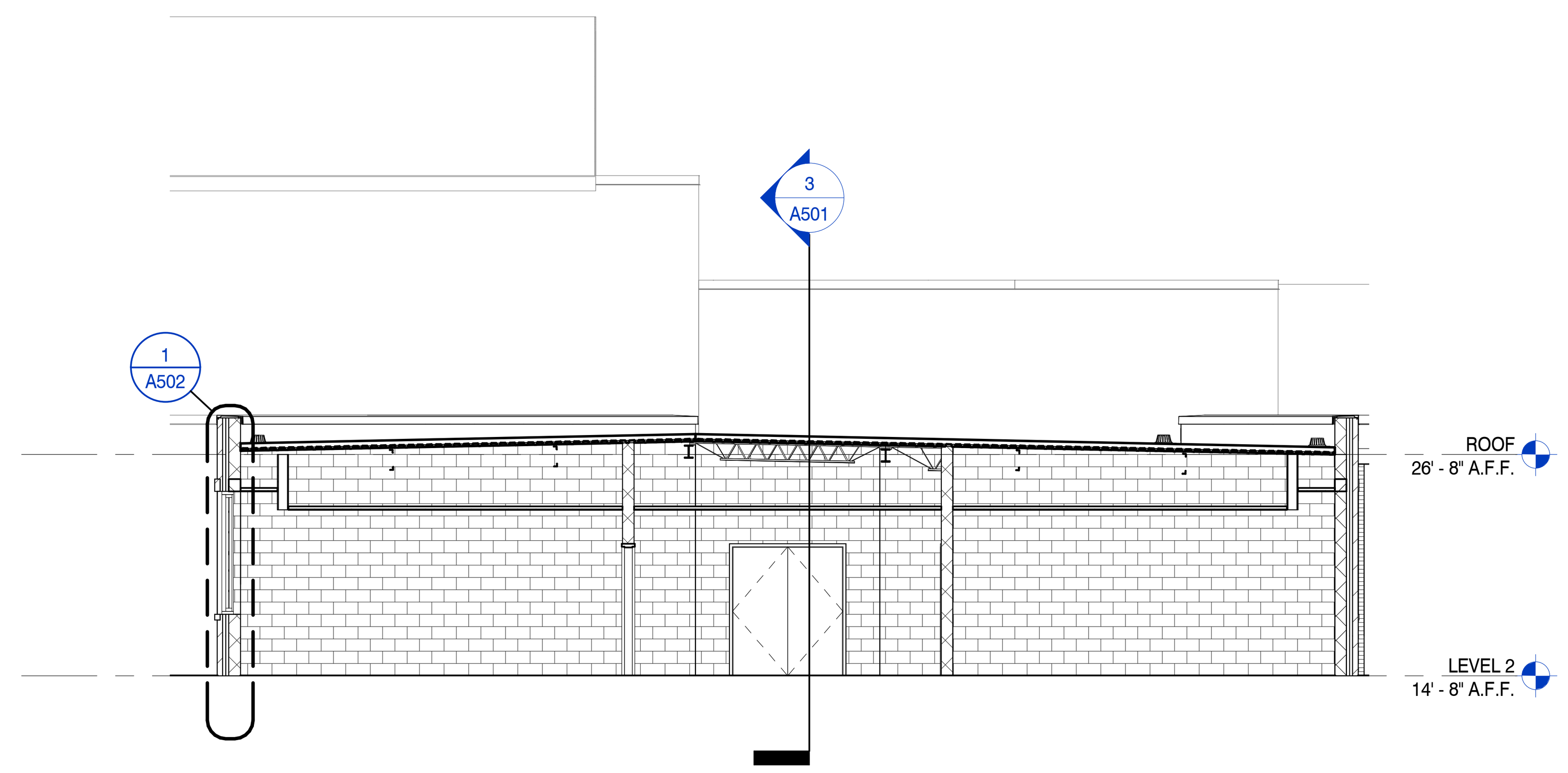
SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	KEF
REVIEWED BY:	CMG

SHEET TITLE:

EXTERIOR ELEVATIONS

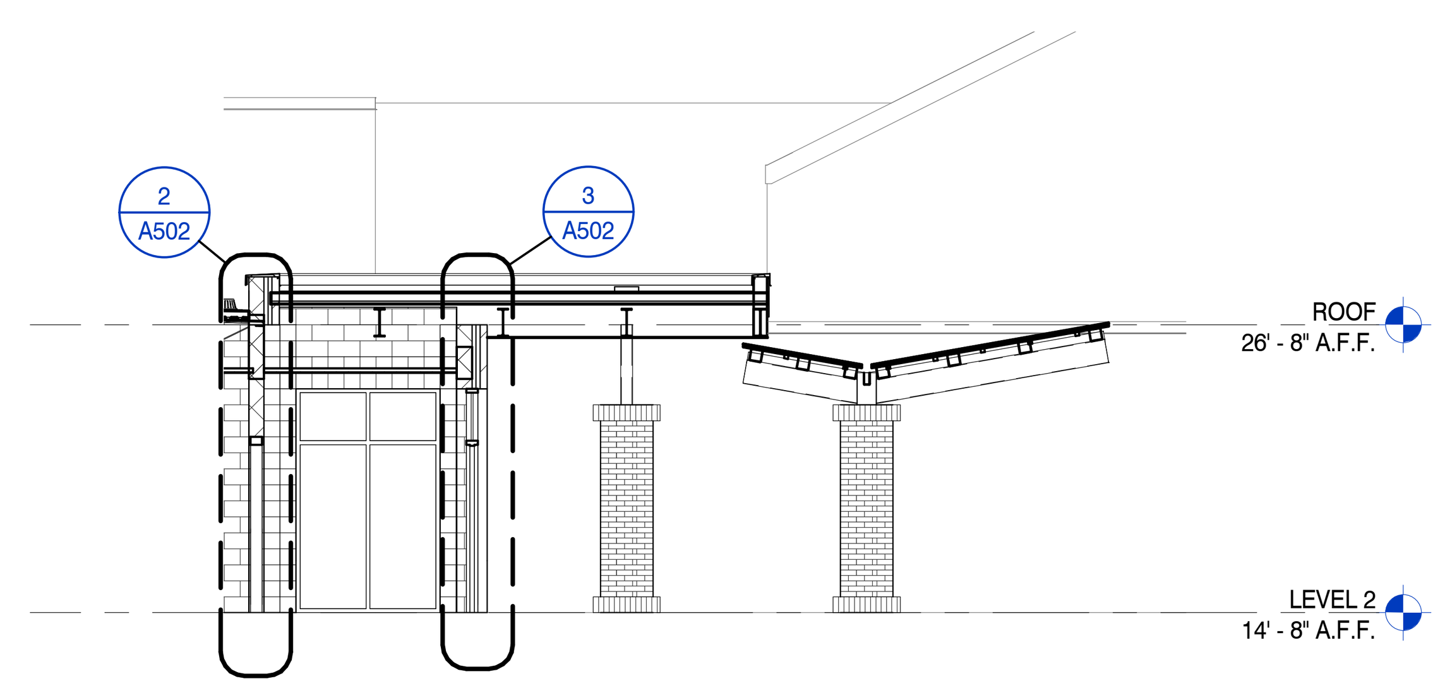
SHEET NO.:

A401



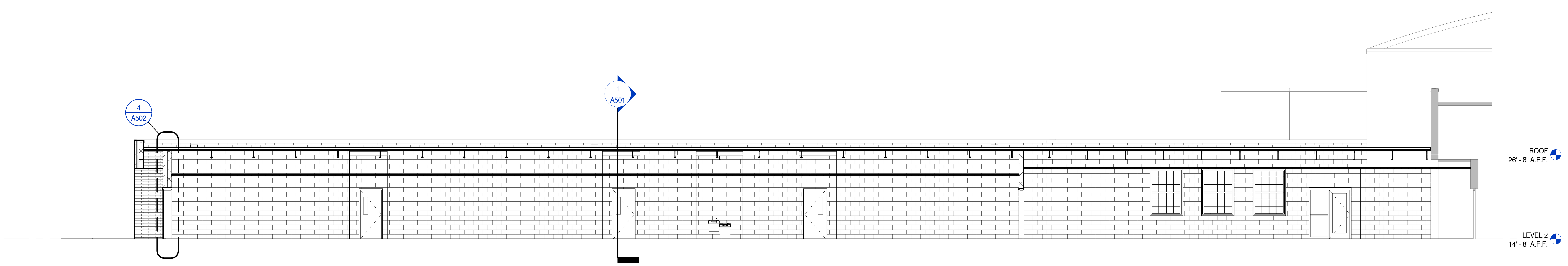
NORTH-SOUTH SECTION @ CLASSROOMS
SCALE : 1/8" = 1'-0"

1



NORTH-SOUTH SECTION @ ENTRY
SCALE : 1/8" = 1'-0"

2



EAST-WEST SECTION @ HALLWAY
SCALE : 1/8" = 1'-0"

3

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NORRIS, TN 37828

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REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	KEF
REVIEWED BY:	CMG
SHEET TITLE:	BUILDING SECTIONS
SHEET NO.:	A501

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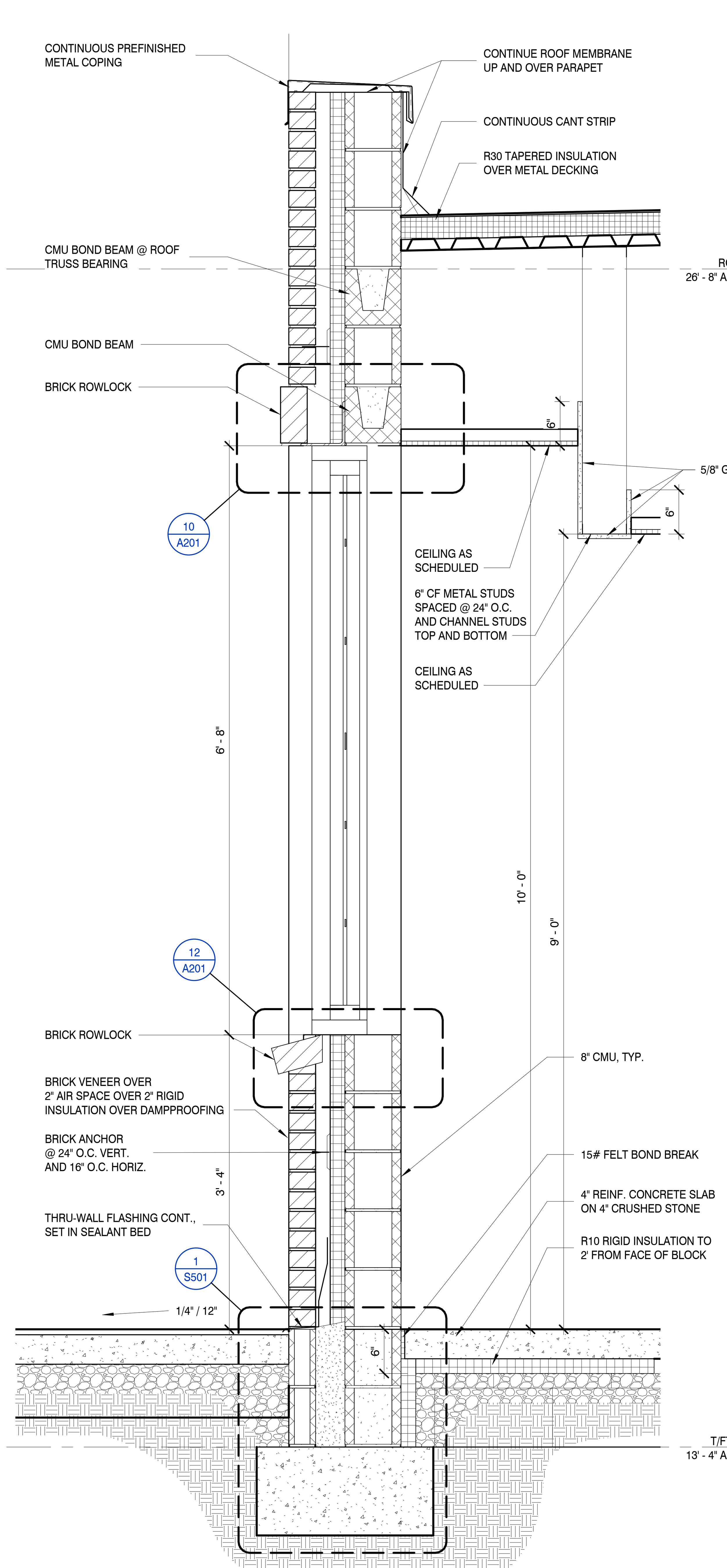
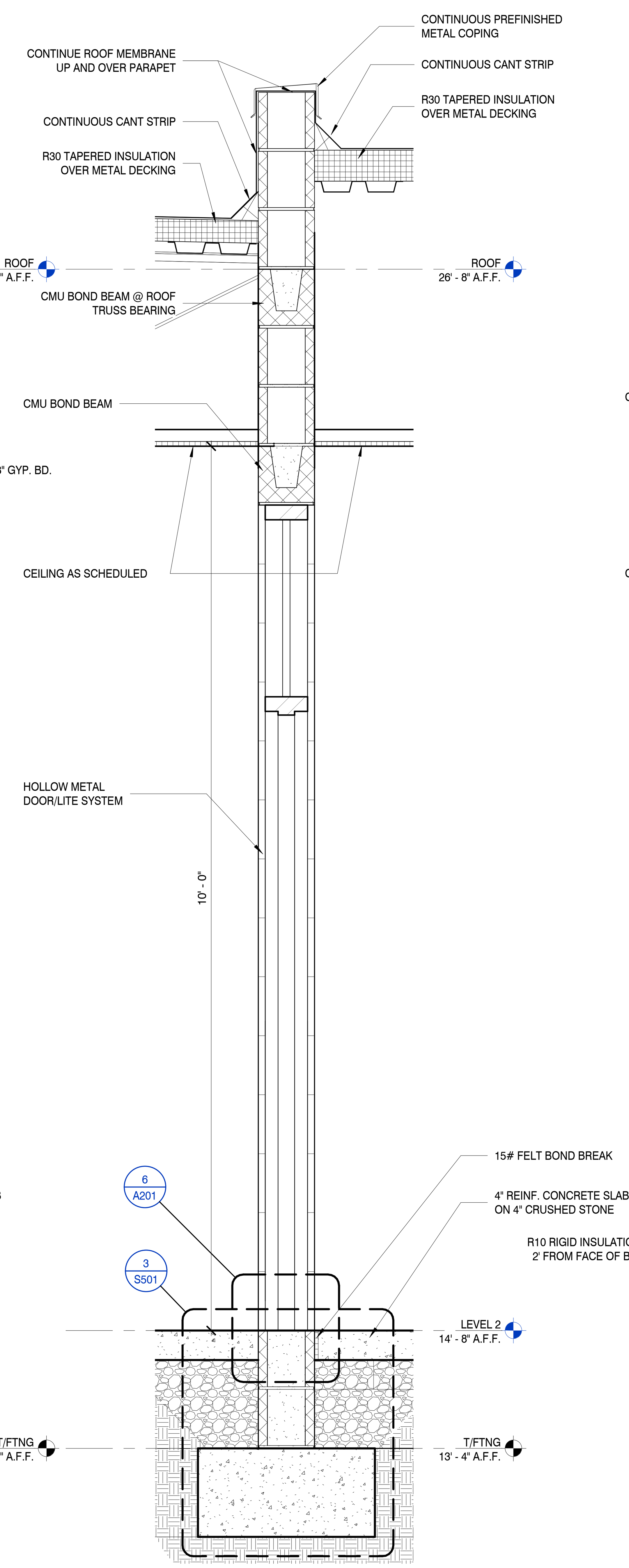


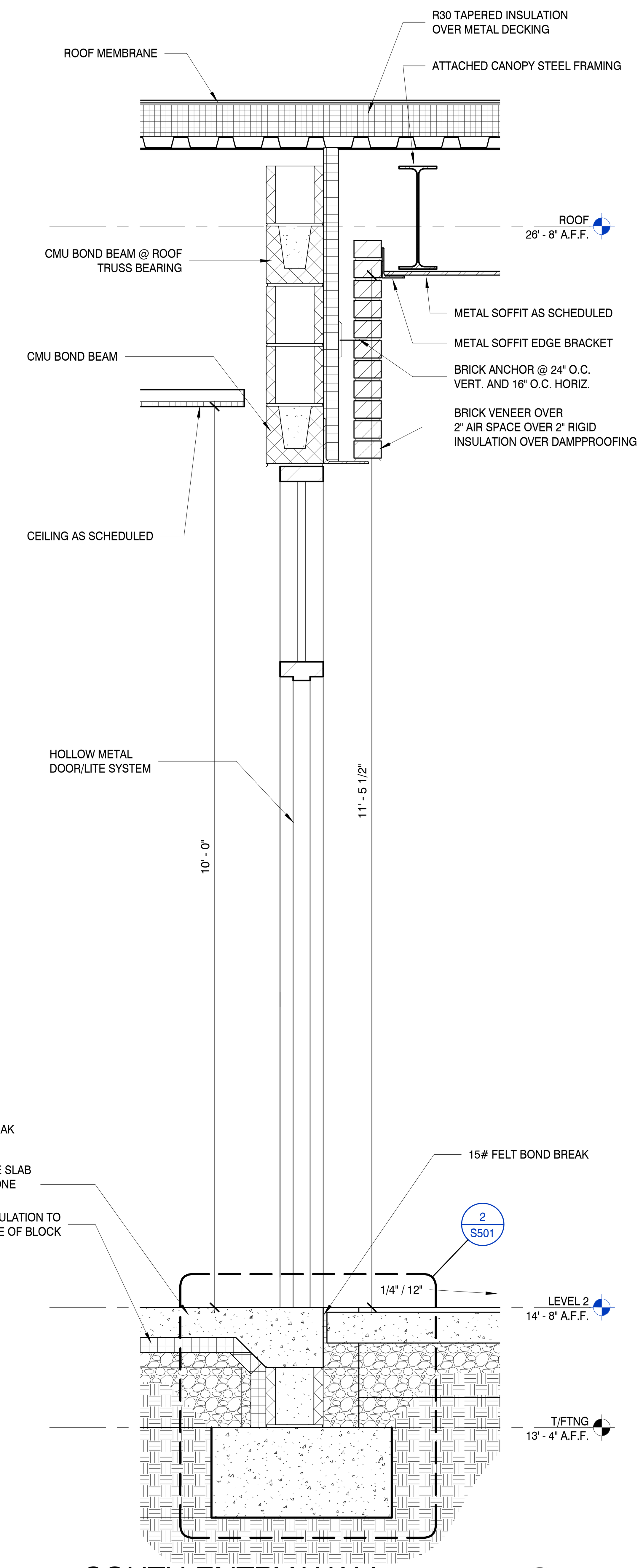
NORTH WALL @ CLASS 1

SCALE : 1" = 1'-0"



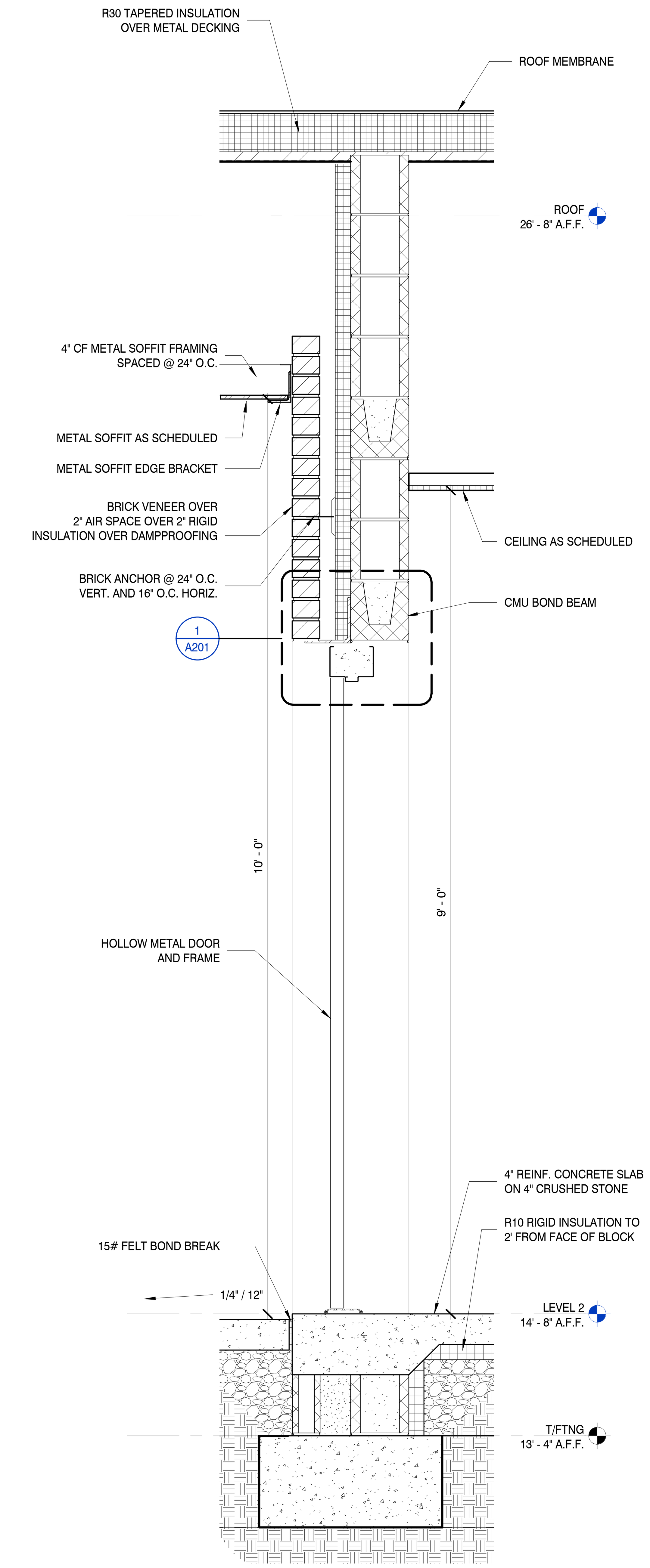
SOUTH WALL @ ENTRY 2

SCALE : 1" = 1'-0"



SOUTH ENTRY WALL 3

SCALE : 1" = 1'-0"



WEST WALL @ HALLWAY 4

SCALE : 1" = 1'-0"

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NO.	DATE	DESCRIPTION

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SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	KEF
REVIEWED BY:	CMG
SHEET TITLE:	

EXTERIOR WALL SECTIONS

SHEET NO.:

A502

ARCH D

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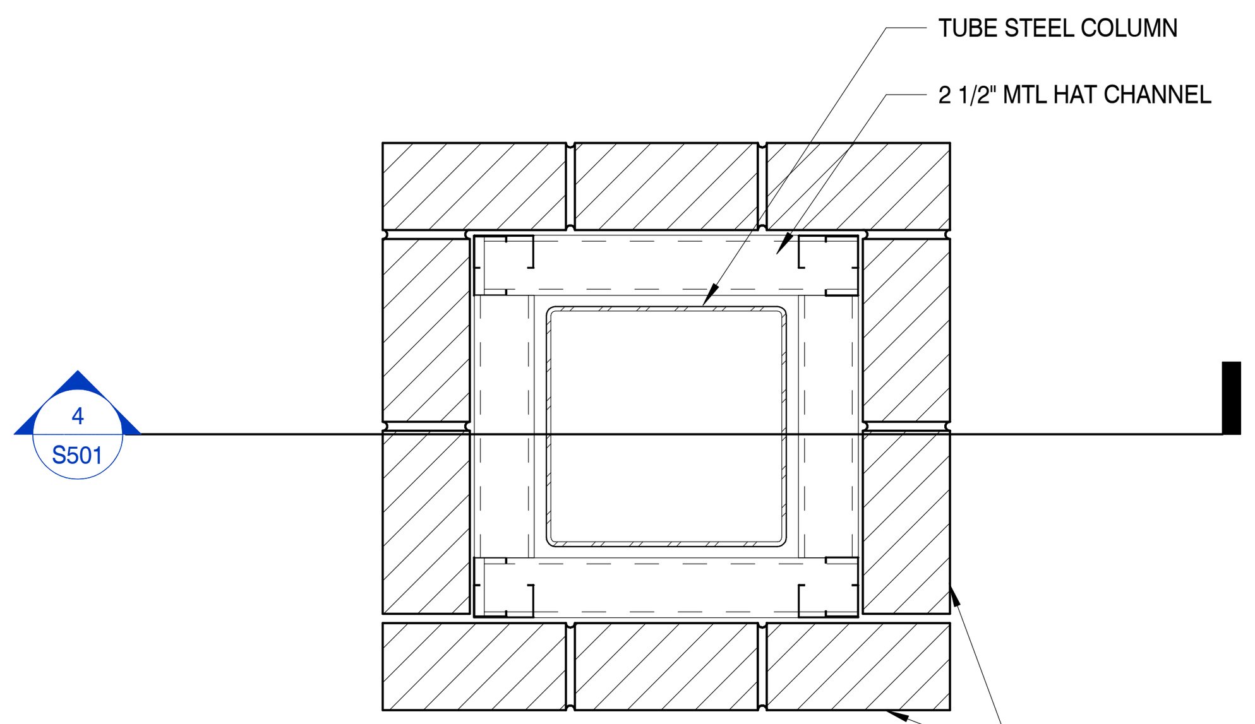
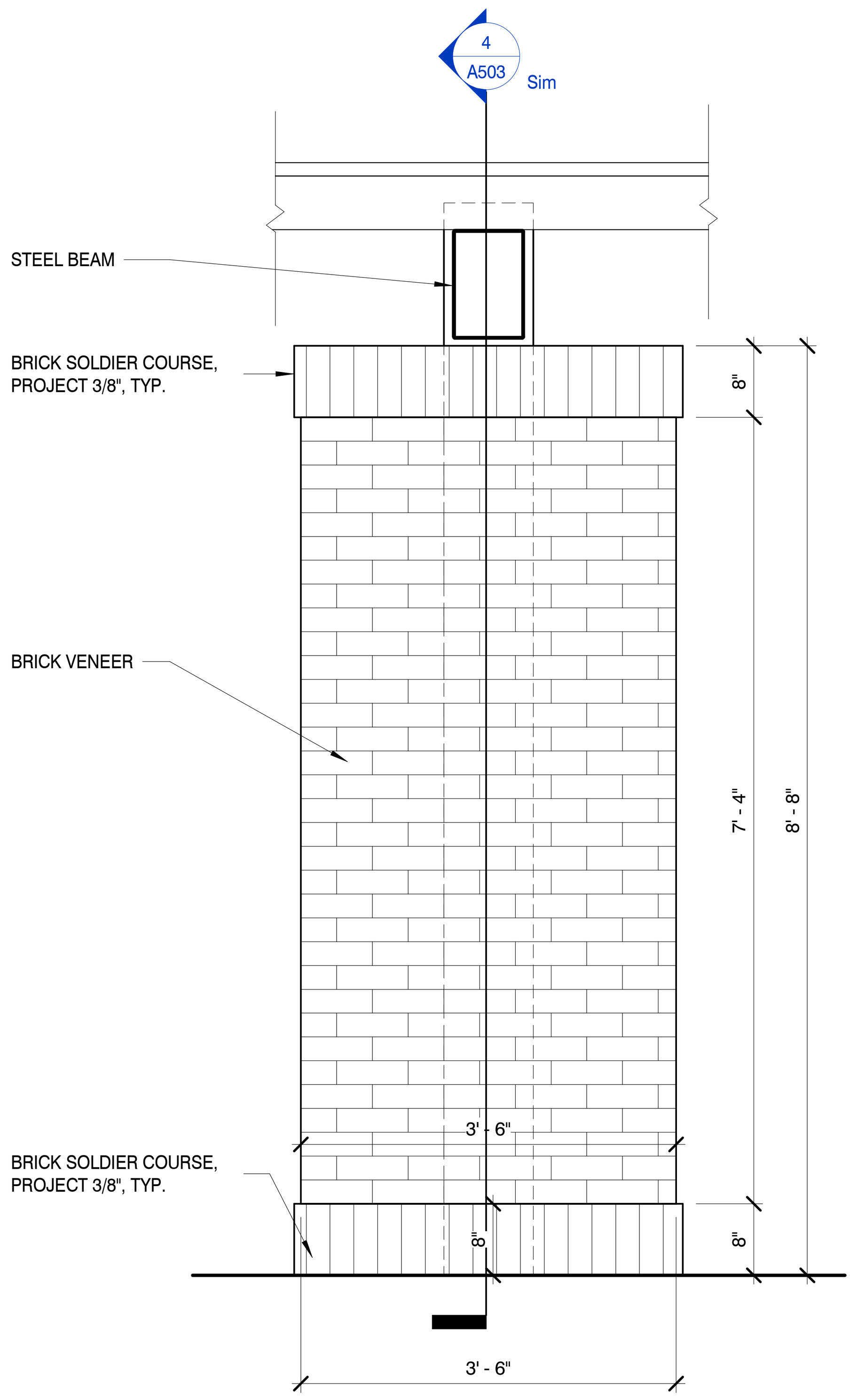


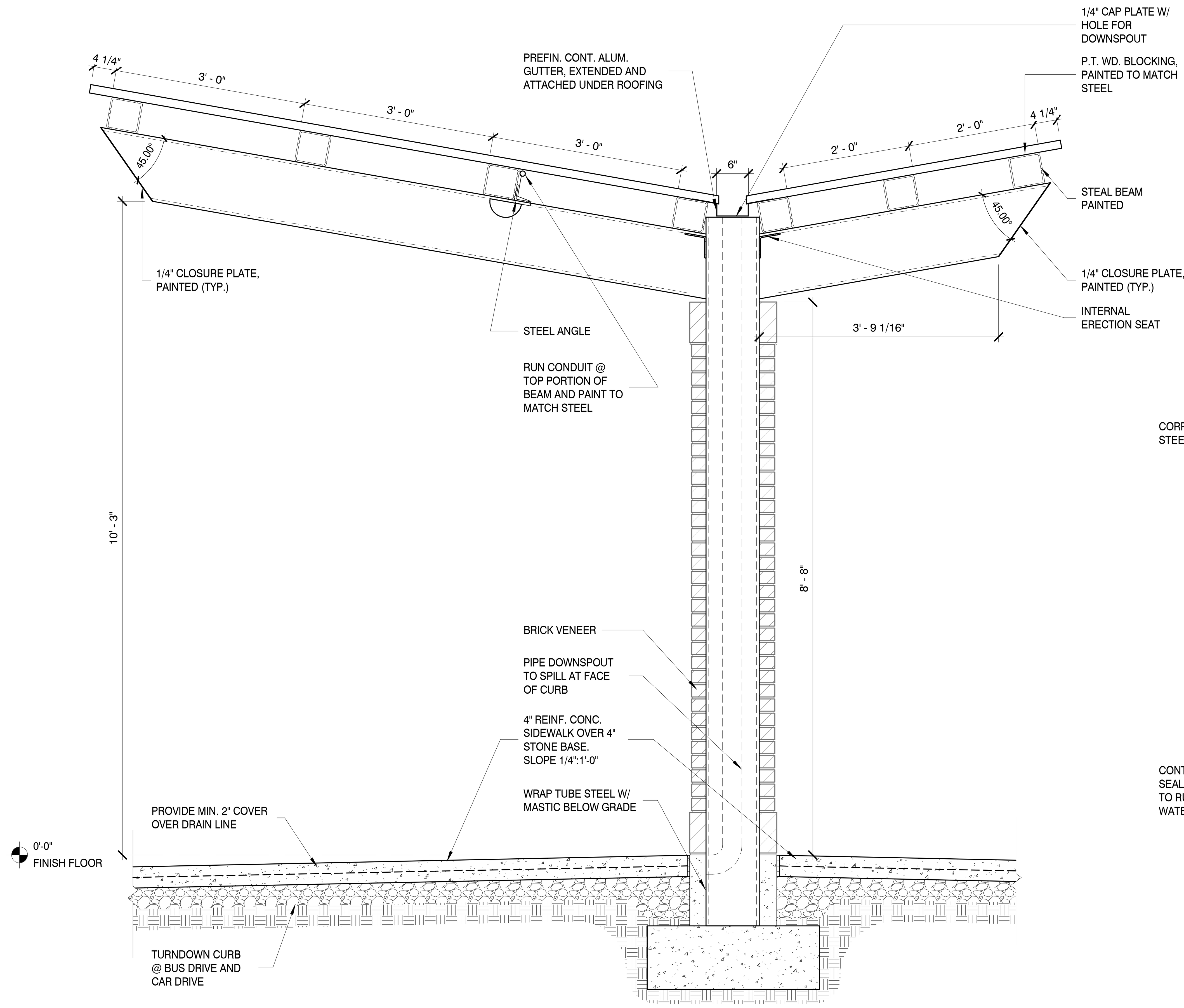
CANOPY COLUMN PLAN 1

SCALE : 1 1/2" = 1'-0"



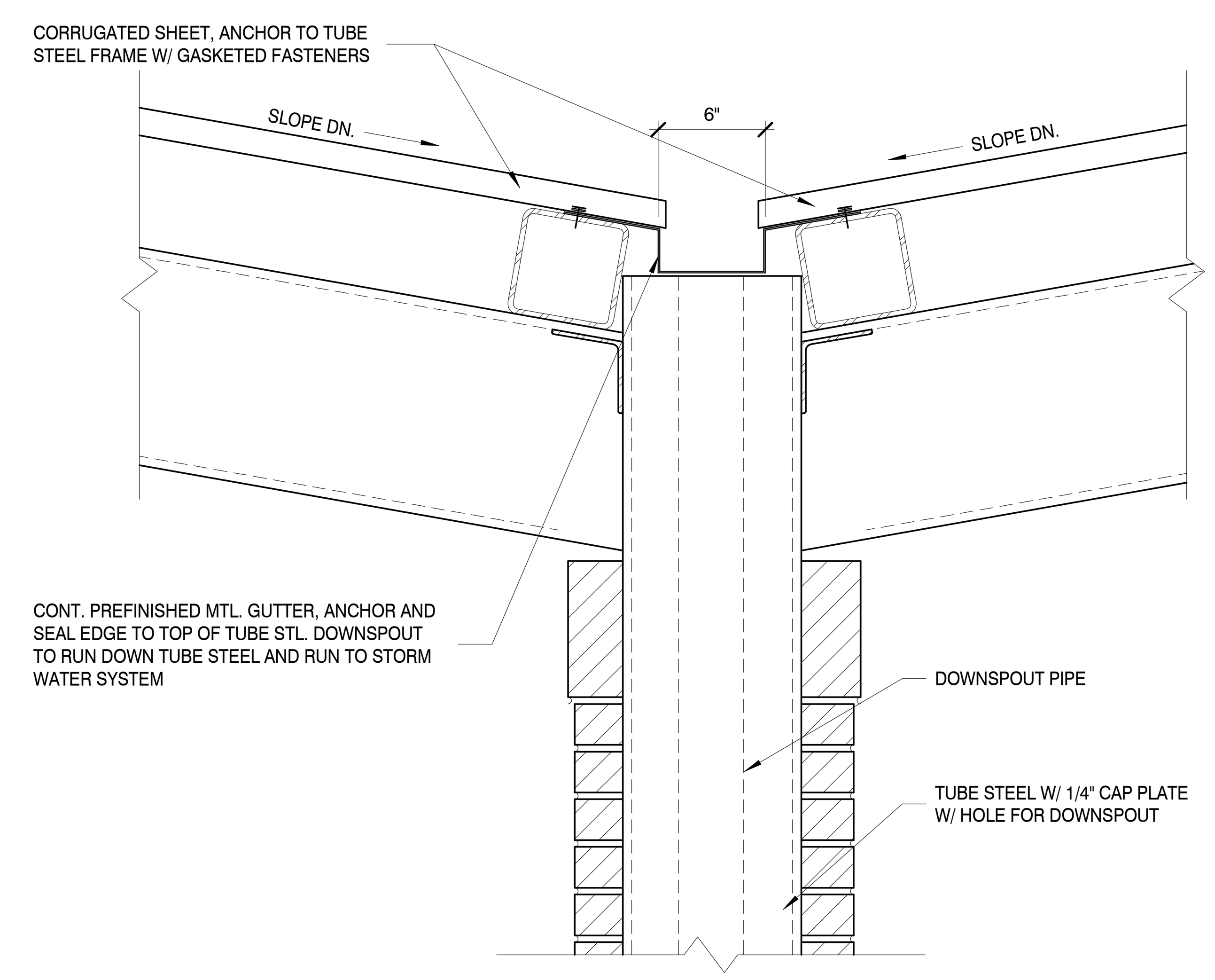
CANOPY COLUMN ELEVATION 3

SCALE : 3/4" = 1'-0"



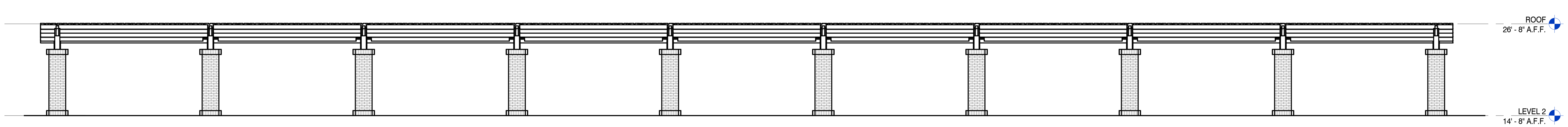
CANOPY SECTION @ STEEL COLUMN 1 4

SCALE : 3/4" = 1'-0"



CANOPY DETAIL 5

SCALE : 1 1/2" = 1'-0"



CANOPY ELEVATION 2

SCALE : 1/8" = 1'-0"

ARCH D

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AGRICULTURE COMMERCE
No. 00100078
STATE OF TENNESSEE

PROJECT INFORMATION

PROJECT: AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS: 5 NORRIS SQUARE, NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

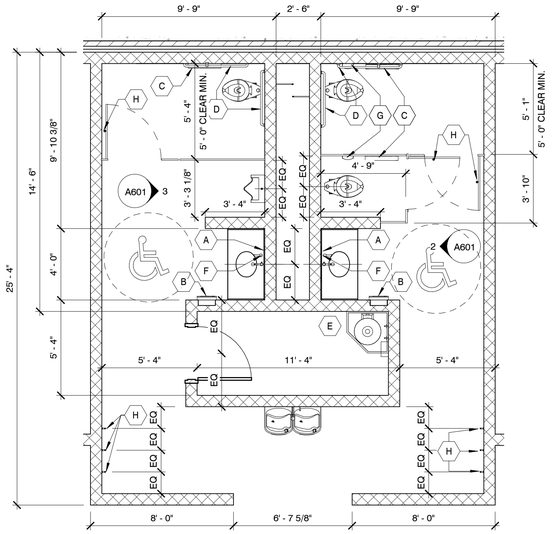
REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

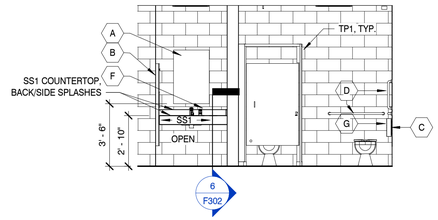
SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	LAP
REVIEWED BY:	CMG
SHEET TITLE:	CANOPY DETAILS
SHEET NO.:	A503



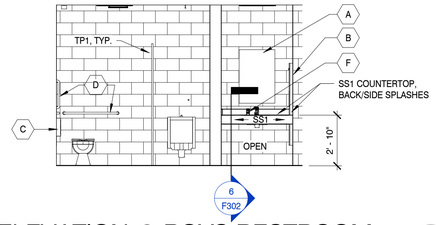
RESTROOM ENLARGED PLAN 1

SCALE : 1/4" = 1'-0"



ELEVATION @ GIRLS RESTROOM 2

SCALE : 1/4" = 1'-0"

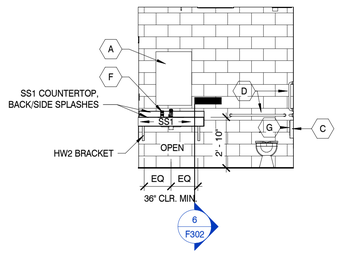


ELEVATION @ BOYS RESTROOM 3

SCALE : 1/4" = 1'-0"

STAFF RR ENLARGED PLAN 4

SCALE : 1/4" = 1'-0"



ELEVATION @ STAFF RESTROOM 5

SCALE : 1/4" = 1'-0"

GENERAL PLUMBING NOTES

1. ALL PLUMBING MATERIAL AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND ORDINANCES.
2. SEE PLUMBING DRAWINGS FOR LOCATIONS AND SIZES OF ACCESS PANELS.
3. ALL FIXTURES AND ACCESSORIES SHALL COMPLY WITH THE CURRENT A.D.A., STATE OR LOCAL REGULATIONS FOR MOUNTING HEIGHTS AND CLEARANCES.
4. ALL HOT WATER AND DRAIN PIPES SHALL BE INSULATED PER A.D.A. REQUIREMENTS. MINIMUM HOT WATER SUPPLY INSULATION SHALL BE PRE-MOLDED FIBERGLASS PIPE INSULATION WITH WHITE ALL SERVICE JACKET. INSULATION THICKNESS SHALL BE MIN. 1". SEE PLUMBING DRAWINGS.
5. ALL GRAB BARS IN NEW CONSTRUCTION SHALL BE INSTALLED WITH CONCEALED ANCHOR PLATES.
6. THE FLUSH ACTIVATOR SHALL BE LOCATED ON THE WIDE CLEARANCE SIDE OF HANDICAPPED UNITS AND SHALL BE LEVER TYPE. THE FORCE TO ACTIVATE SHALL NOT EXCEED 5 POUNDS. ACTIVATION SHALL BE WITHIN 40" OF FIN. FLOOR.
7. LAVATORY FAUCET CONTROLS SHALL BE LEVER TYPE AND THE FORCE TO ACTIVATE SHALL NOT EXCEED 5 POUNDS.
8. PROVIDE BLOCKING IN WALLS AS REQ'D FOR ALL FIXTURES AND EQUIPMENT.
9. ALL DIMENSIONS ARE TO FACE OF STUD OR FACE OF FURRING UNLESS OTHERWISE NOTED. "CLEAR" DENOTES FINISH TO FINISH.
10. TOILET ROOM WALLS TO HAVE SOUND BATT INSULATION FROM FLOOR TO DECK ABOVE.
11. GYP. BD. IN ALL WET AREAS TO BE WATER RESISTANT GYP. BD.
12. CONCRETE BACKER BOARD SHALL BE PROVIDED BEHIND TILE AT WALLS.
13. ADJUST SUPPLY LINE WALL PENETRATION HEIGHTS AS NEEDED TO AVOID CONFLICTS BETWEEN FLUSH VALVES AND GRAB BAR MOUNTING HEIGHTS. GRAB BAR MOUNTING HEIGHTS ARE TO TAKE PRIORITY.
14. CONTRACTOR TO CORRIDATE WITH SPECIFIED FIXTURES AND FINISHES TO ENSURE RIM OF LAVATORIES TO BE 34" A.F.F. MAX.

RESTROOM ACCESSORIES X

A. 24" x 36" FRAMELESS MIRROR W/ 1/4" FLOAT PLATE SET IN SILICONE. (40" A.F.F. TO BOTTOM OF REFLECTIVE SURFACE).

B. PAPER TOWEL DISPENSER AND WASTE RECEPTACLE

C. TOILET TISSUE DISPENSER (WALL MOUNTED). DISPENSER SHALL BE LOCATED ITHIN 12" OF THE FRONT EDGE OF THE TOILET SEAT. (1 PER STALL)

D. 42" & 36" HORIZ. AND 18" VERT. STAINLESS STEEL GRAB BAR, (SURFACE MOUNTED). 1 1/4" - 1 1/2"Ø MOUNTED 1 1/2" FROM WALL.

E. 36" MOP RACK

F. SOAP DISPENSER

G. FEMININE NAPKIN RECEPTACLE

H. COAT HOOK

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CONSULTANT

SEAL

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SHEET ISSUED:	02/04/2022
DESIGNED BY:	CMG
DRAWN BY:	AJA
REVIEWED BY:	CMG

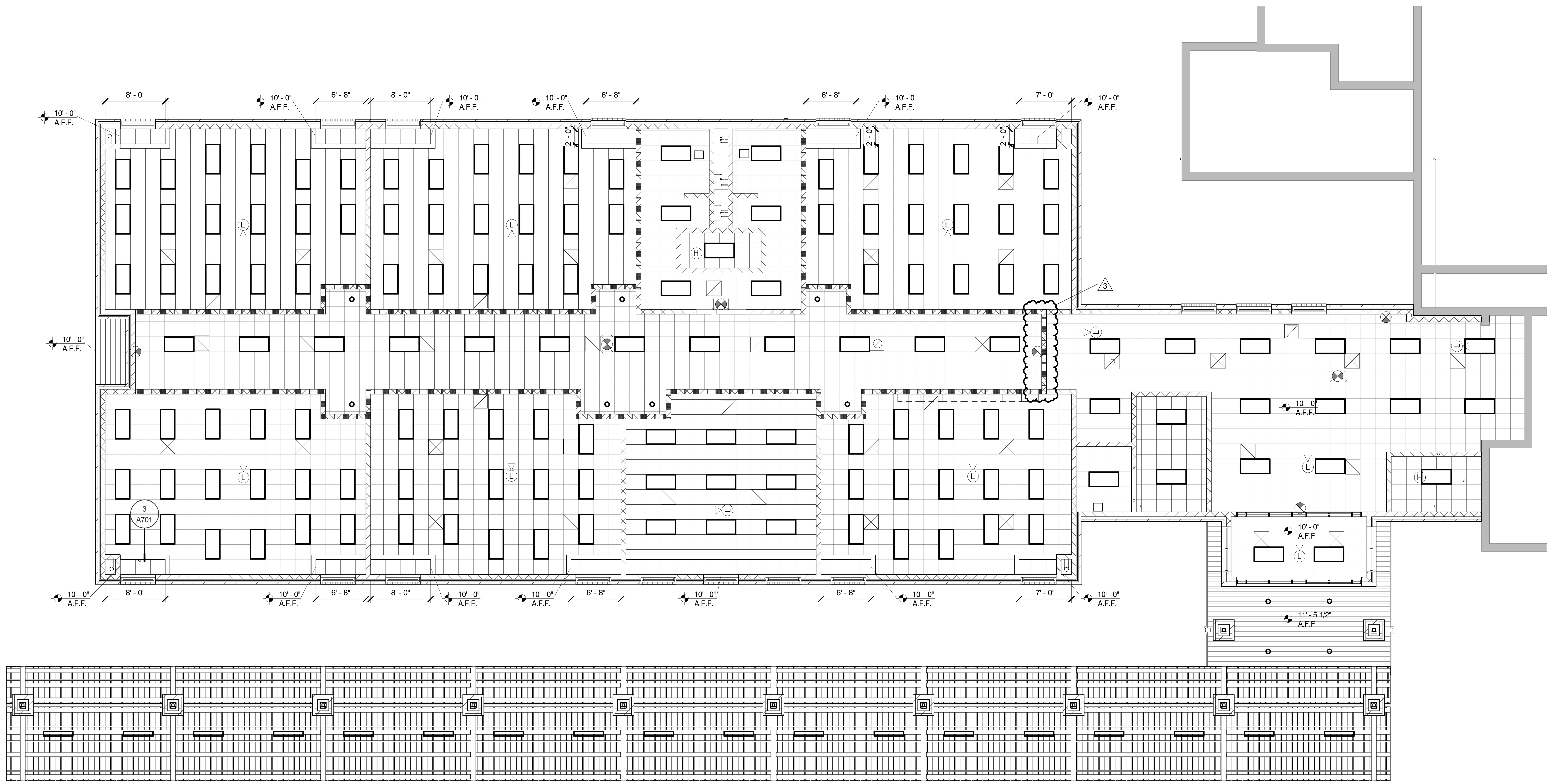
SHEET TITLE:

ENLARGED PLANS AND ELEVATIONS

SHEET NO.:

A601

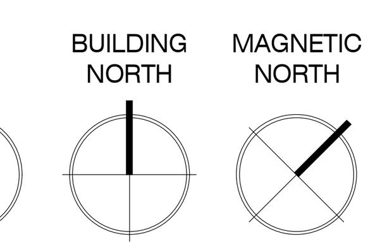
ARCH D



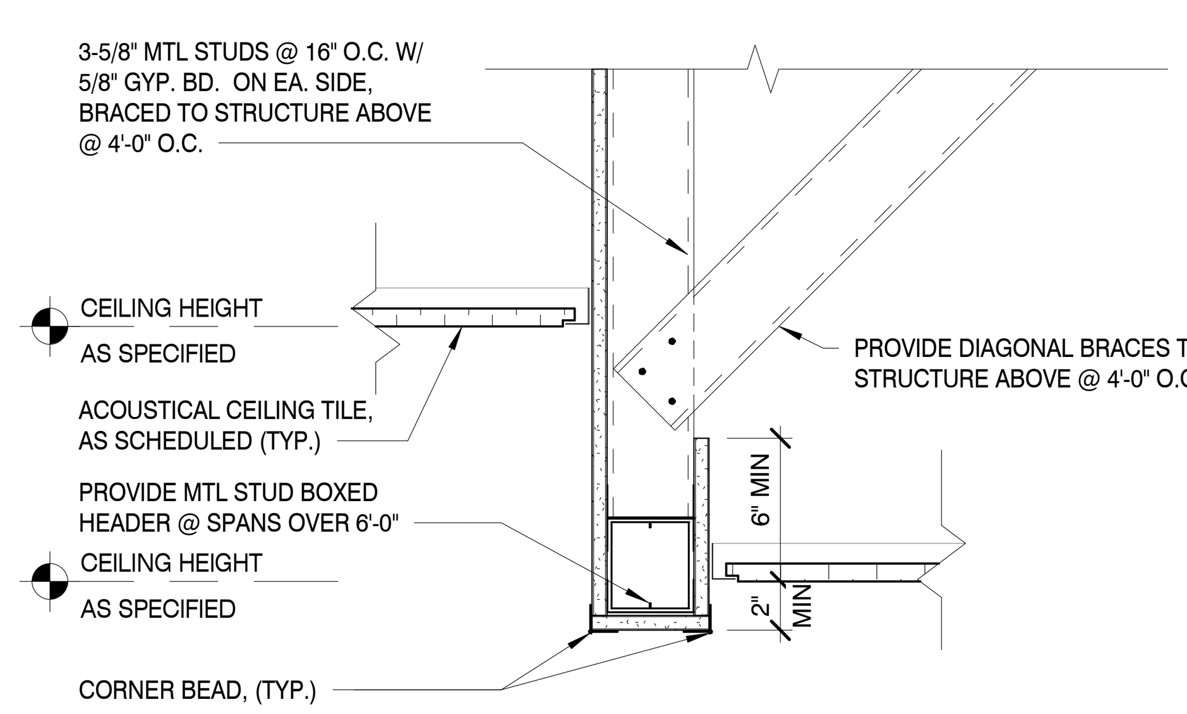
REFLECTED CEILING PLAN

SCALE : 1/8" = 1'-0"

1



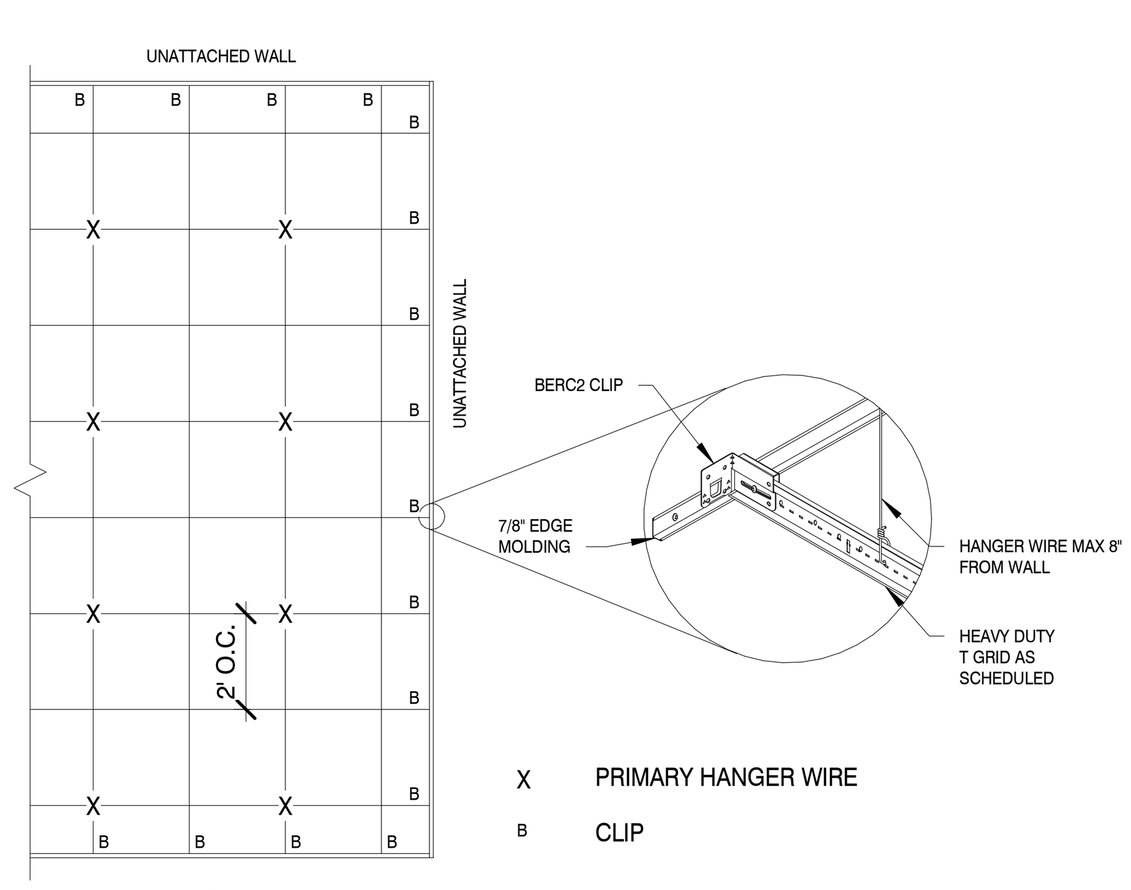
SEISMIC DESIGN CATEGORY D INSTALLATION - ICC-ES APPROACH



GYP. BD. CEILING DETAIL

SCALE : 1 1/2" = 1'-0"

3



SEISMIC BRACING DETAIL

SCALE : 1/4" = 1'-0"

2

REFLECTED CEILING LEGEND

2X4 LED FIXTURE	COMBINATION EMERGENCY LIGHT AND EXIT LIGHT	24"X24" ACOUSTICAL CEILING TILE (ACT2 UNLESS OTHERWISE NOTED)	
2X4 LED VOLUMETRIC LAY-IN FIXTURE	EXIT LIGHT	5/8" GYP. BD. CEILING (TO BE PAINTED P1 UNLESS NOTED OTHERWISE)	
8" RECESSED CAN LIGHT	EMERGENCY LIGHT	PREFINISHED FLUSH SEAM ALUMINUM SOFFIT	
4'-0" SURFACE LINEAR LIGHTING	HVAC SUPPLY DIFFUSER	9'-0" A.F.F. CEILING HEIGHT UNLESS OTHERWISE NOTED	
EXHAUST FAN	HVAC R/A GRILL		

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3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

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DRAWN BY:	KEF
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SHEET TITLE:

REFLECTED CEILING PLAN AND DETAILS

SHEET NO.:

A701

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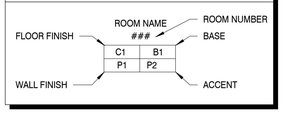
ARCH D

ADD ALTERNATE:

ROOMS 216 & 217 OF EXISTING BUILDING:
- REPAINT ALL WALLS (P2)
- REMOVE EXISTING MILLWORK AND REPLACE WITH NEW PER SHEET F303

INTERIOR FINISH TAG

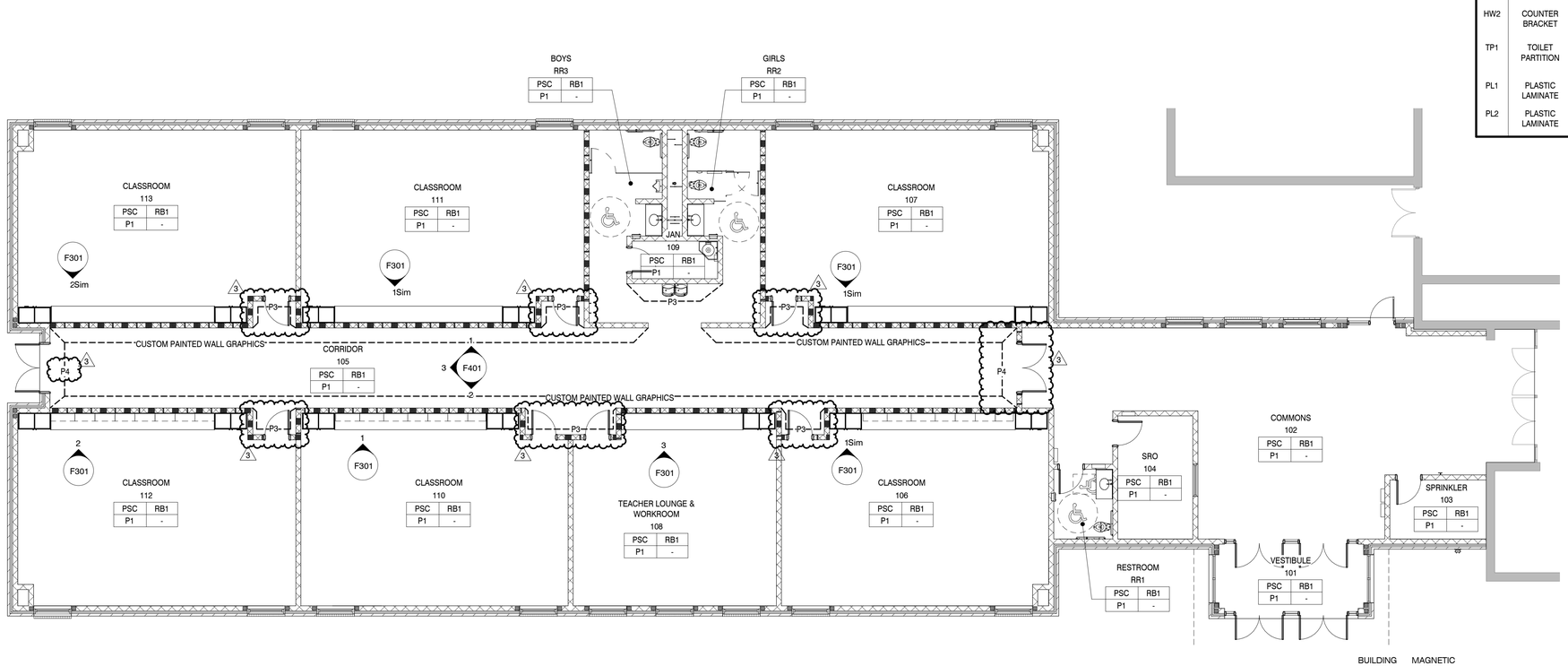


GENERAL INTERIOR NOTES

1. ALL FURR DOWNS TO BE PAINTED P1 UNLESS OTHERWISE NOTED
2. ALL HOLLOW METAL PAINT SHALL HAVE SEMI-GLOSS FINISH
3. CONTRACTOR TO PROVIDE APPROPRIATE TRANSITIONS AS REQUIRED
4. PRIOR TO CONSTRUCTION, CONTRACTOR TO SUBMIT ALL SAMPLES TO ARCHITECT FOR REVIEW AND APPROVAL
5. ALL GYPSUM WALL BOARD TO BE PAINTED
6. CONTRACTOR SHALL PROVIDE APPROPRIATE SEAM SEALANT FOR ALL CARPET TRANSITIONS
7. CONTRACTOR SHALL PROVIDE APPROPRIATE GROUT & SEALANT FOR ALL FLOOR & WALL TILE APPLICATIONS

FINISH SCHEDULE

CODE	ITEM	MANUFACTURER	DESCRIPTION
	FLOORING		NOTE: LOCATE THE FLOOR FINISH CHANGE AT DOOR OPENINGS AT THE CENTERLINE OF THE DOOR LEAF
PSC	POLISHED SEALED CONCRETE	_____	GRAY STAIN
	WALL BASE		
RB1	RUBBER BASE	TARKETT	TG4 BLACK MAGIC B
	WALLS		
P1	PAINT	SHERWIN WILLIAMS	SW 7646 FIRST STAR (GENERAL WALL PAINT U.N.O.)
P2	PAINT	SHERWIN WILLIAMS	SW 7069 IRON ORE HOLLOW METAL PAINT (FRAMES & DOORS ONLY AT BUILDING INTERIOR)
P3	PAINT	SHERWIN WILLIAMS	SW 7595 SOMMELIER (ACCENT)
P4	PAINT	SHERWIN WILLIAMS	SW 9049 SKYFALL (ACCENT)
P5	PAINT	SHERWIN WILLIAMS	SW 6254 LAZY GRAY (ACCENT)
P6	PAINT	SHERWIN WILLIAMS	SW 2849 WESTCHESTER GRAY (ACCENT)
P7	PAINT	SHERWIN WILLIAMS	WHITE TO MATCH EXISTING EXTERIOR TRIM, SEMI-GLOSS (EXTERIOR METAL DOORS/FRAMES AND CANOPY POST)
	CEILING		
ACT1	ACOUSTICAL CEILING TILE	ARMSTRONG	CALLA, 2824, 24 X 24 X 1, WHITE GRID 9/16", SUPERFINE
GB1	GYP. BD. BULKHEAD	SHERWIN WILLIAMS	PAINT (P1) UNLESS NOTED OTHERWISE
	MISC.		
ST1	DOOR STAIN	VT INDUSTRIES	SELECT WHITE BIRCH, COLOR: SERENGETI SE18
SS1	SOLID SURFACE COUNTERTOP	LIVINGSTONE	AVALANCHE L721, 3CM, EASED EDGE
HW1	MILLWORK HARDWARE	ELEMENTS NAPLES	CYLINDRICAL BAR PULL, 156DBB DARK BRUSHED BRONZE (CABINET DOOR/ DRAWER PULLS)
HW2	COUNTER BRACKET	RAKKS	SURFACE MOUNTED EH COUNTER SUPPORT W/ ROUNDED EDGES, EHR-1818
TP1	TOILET PARTITION	SCRANTON	HINY HIDERS, FLOOR MOUNTED-OVERHEAD BRACE,ORANGE PEEL,CHARCOAL GRAY, CONTINUOUS 71" H STAINLESS STEEL HELIX , OCCUPANCY INDICATOR, STAINLESS STEEL 71" CONTINUOUS STRIKE
PL1	PLASTIC LAMINATE	WILSONART	NATURAL COTTON 4946-38 (COUNTERTOPS)
PL2	PLASTIC LAMINATE	WILSONART	FRENCH PEAR 8220-38 (CABINET FRONTS/SIDES)



FLOOR FINISH PLAN

SCALE : 1/8" = 1'-0"

1

BUILDING NORTH

MAGNETIC NORTH

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NO.	DATE	DESCRIPTION
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

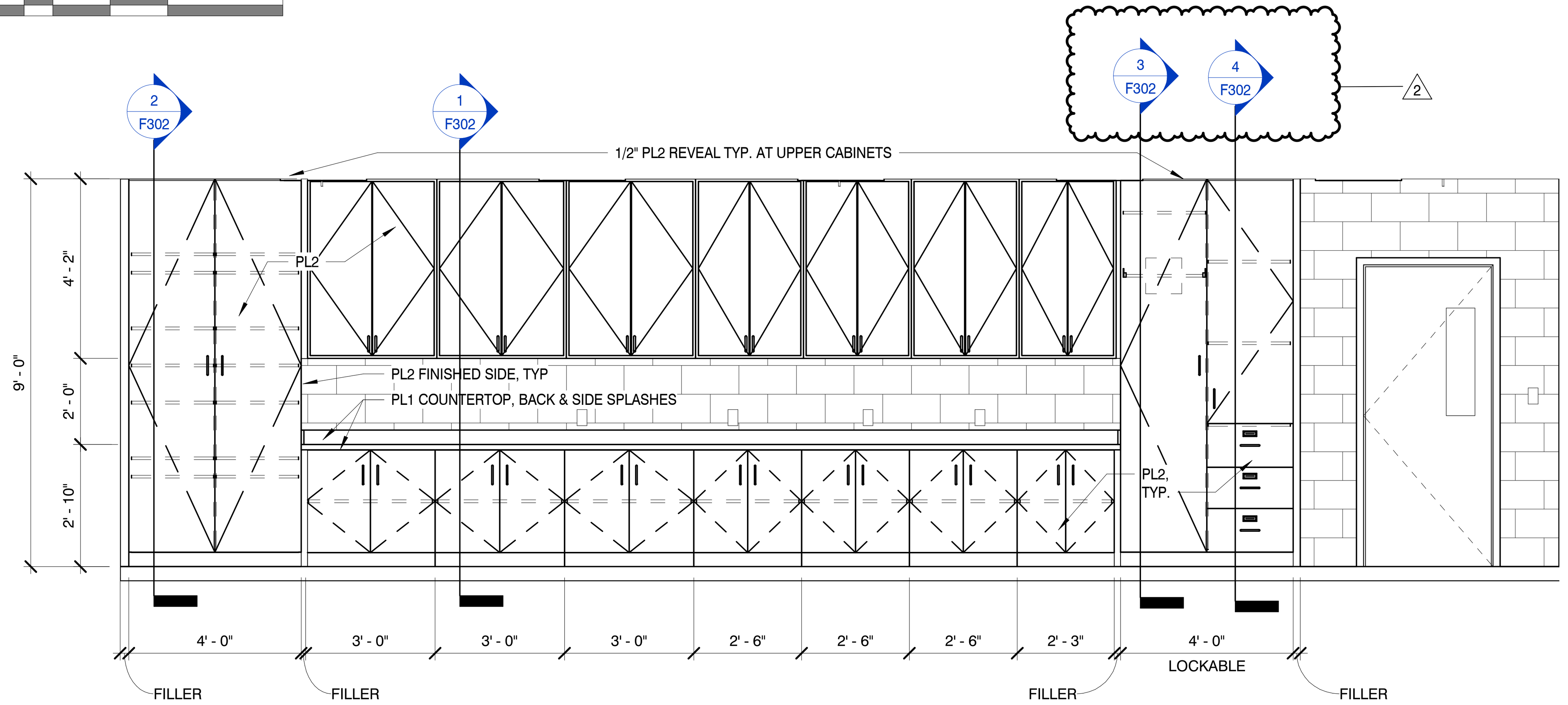
SHEET ISSUED:	02/04/2022
DESIGNED BY:	KEF
DRAWN BY:	MMW/AJA
REVIEWED BY:	CMG

SHEET TITLE:

FLOOR FINISH PLANS

SHEET NO.:

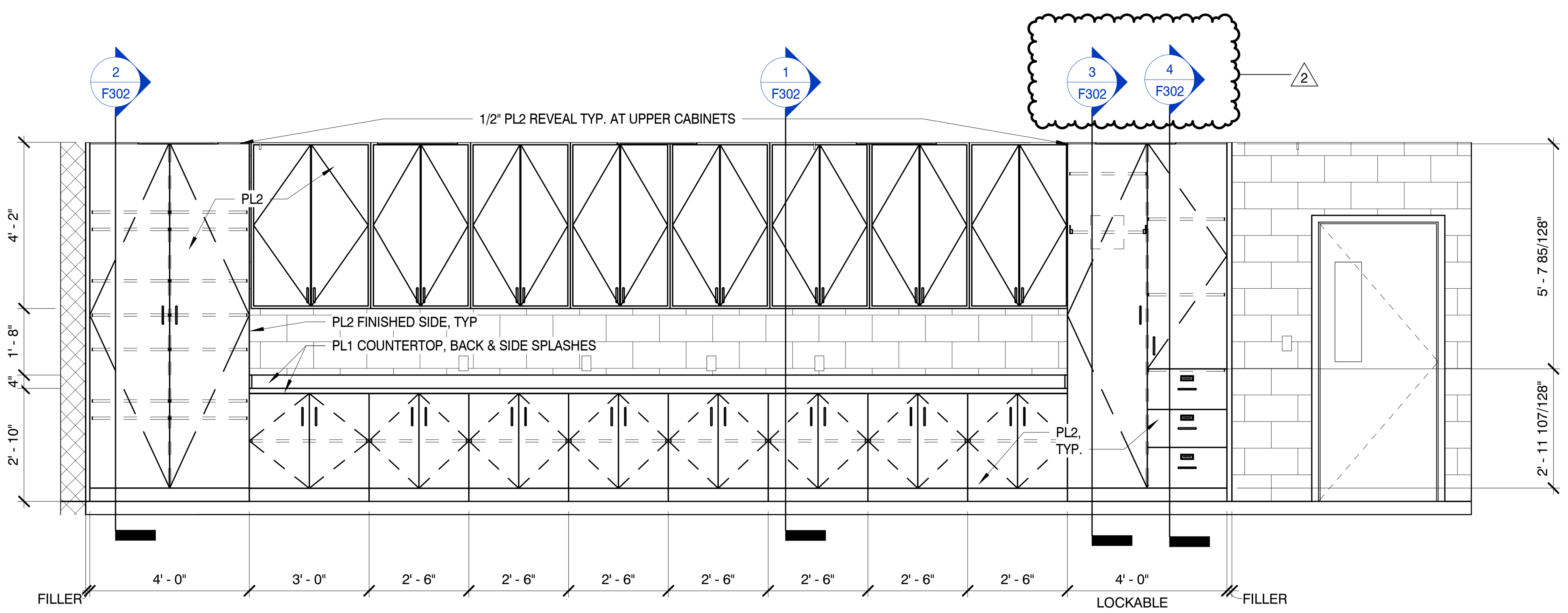
F101



MILLWORK ELEVATION

1

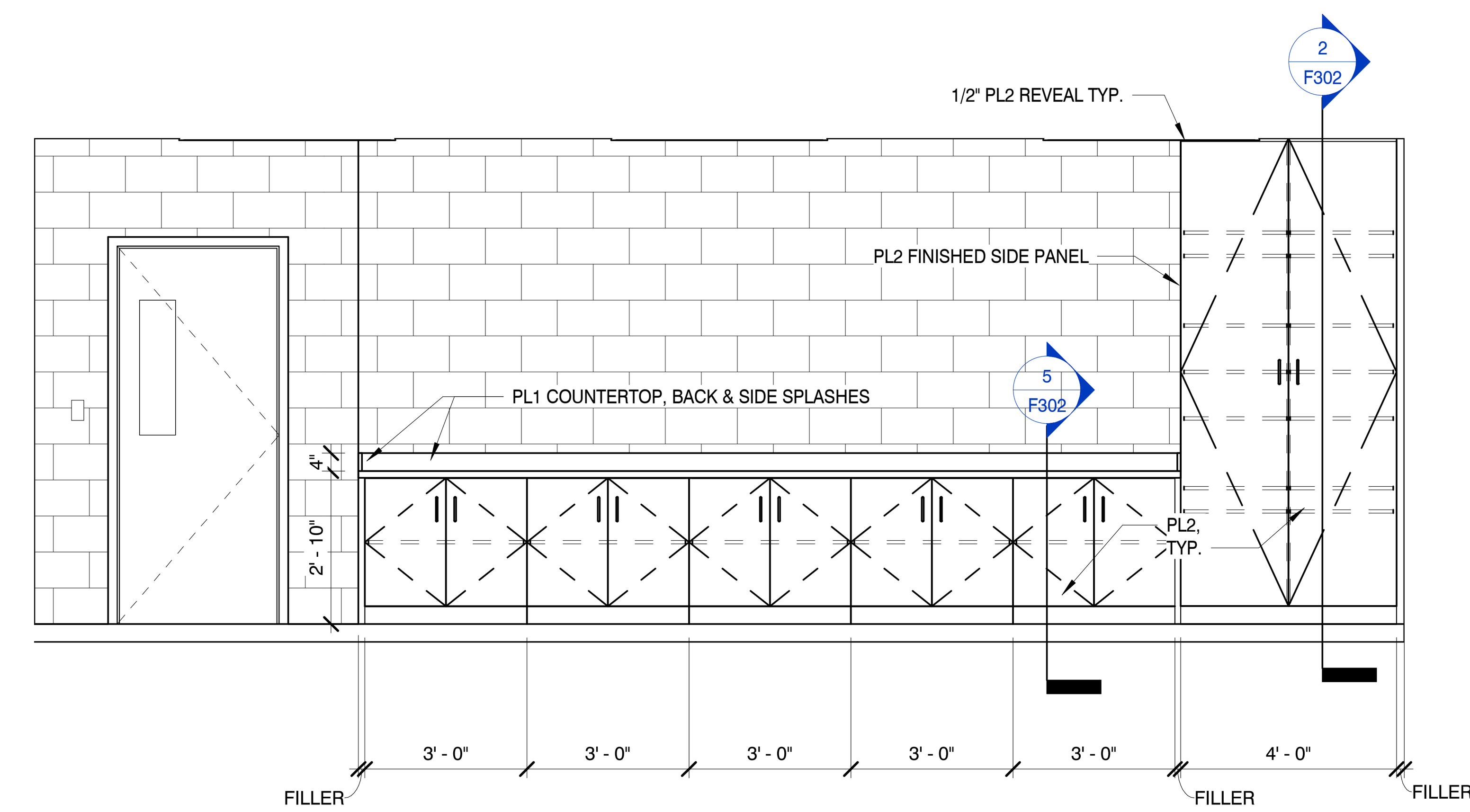
SCALE : 3/8" = 1'-0"



MILLWORK ELEVATION

2

SCALE : 3/8" = 1'-0"



MILLWORK ELEVATION

3

SCALE : 3/8" = 1'-0"

GENERAL MILLWORK NOTES

1. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SUPERVISION NECESSARY TO FABRICATE MILLWORK.
2. SEE DRAWINGS, SCHEDULES AND DETAILS FOR LOCATION, QUANTITY AND DESIGN OF MILLWORK REQUIRED.
3. MILLWORK IS DEFINED AS ALL SHOP FABRICATED CABINETRY AND COUNTERTOPS, INCLUDING THE INSTALLATION OF THEM AS NECESSARY TO COMPLETE THE WORK.
4. ALL WORK SHALL CONFORM TO THE QUALITY STANDARDS OF THE ARCHITECTURAL WOODWORK INDUSTRY (AWI) FOR CUSTOM GRADE.
5. FURNISH ALL ITEMS OF ROUGH HARDWARE AND WOOD BLOCKING OR OTHER ACCESSORIES SHOWN OR REQUIRED TO PROPERLY SECURE THE WORK IN PLACE.
6. CABINET MANF. SHALL HAVE A PROVEN HISTORY OF PRODUCING FINE QUALITY MILLWORK.
7. CONTRACTOR SHALL NOT DELIVER OR INSTALL MILLWORK UNTIL BUILDING IS ENCLOSED, WET WORK IS COMPLETE AND HVAC SYSTEM IS OPERATING AND MAINTAINING TEMPERATURE AND RELATIVE HUMIDITY AT OCCUPANCY LEVELS DURING THE REMAINDER OF CONSTRUCTION PERIOD.
8. CONTRACTOR TO FIELD VERIFY WHERE MILLWORK IS INDICATED TO FIT TO OTHER CONSTRUCTION. VERIFY DIMENSIONS AND INDICATE MEASUREMENTS ON SHOP DRAWINGS.
9. CONTRACTOR TO COORDINATE FABRICATION SCHEDULE WITH CONSTRUCTION PROGRESS TO AVOID DELAYING THE WORK.
10. CONTRACTOR TO LOCATE CONCEALED FRAMING, BLOCKING AND REINFORCEMENTS THAT SUPPORT WOODWORK BY FIELD MEASURING BEFORE BEING ENCLOSED AND INDICATE MEASUREMENTS ON SHOP DRAWINGS.
11. CONTRACTOR TO COORDINATE SIZES AND LOCATIONS OF FRAMING, BLOCKING, FURRING, REINFORCEMENTS AND OTHER RELATED UNITS OF WORK AS INDICATED TO ENSURE THAT ARCHITECTURAL WOODWORK CAN BE SUPPORTED AND INSTALLED AS INDICATED.

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REVISION INFORMATION

NO.	DATE	DESCRIPTION
2	03/09/2022	Addendum #2

KEY PLAN

SHEET INFORMATION

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SHEET TITLE:

MILLWORK ELEVATIONS

SHEET NO.:

F301

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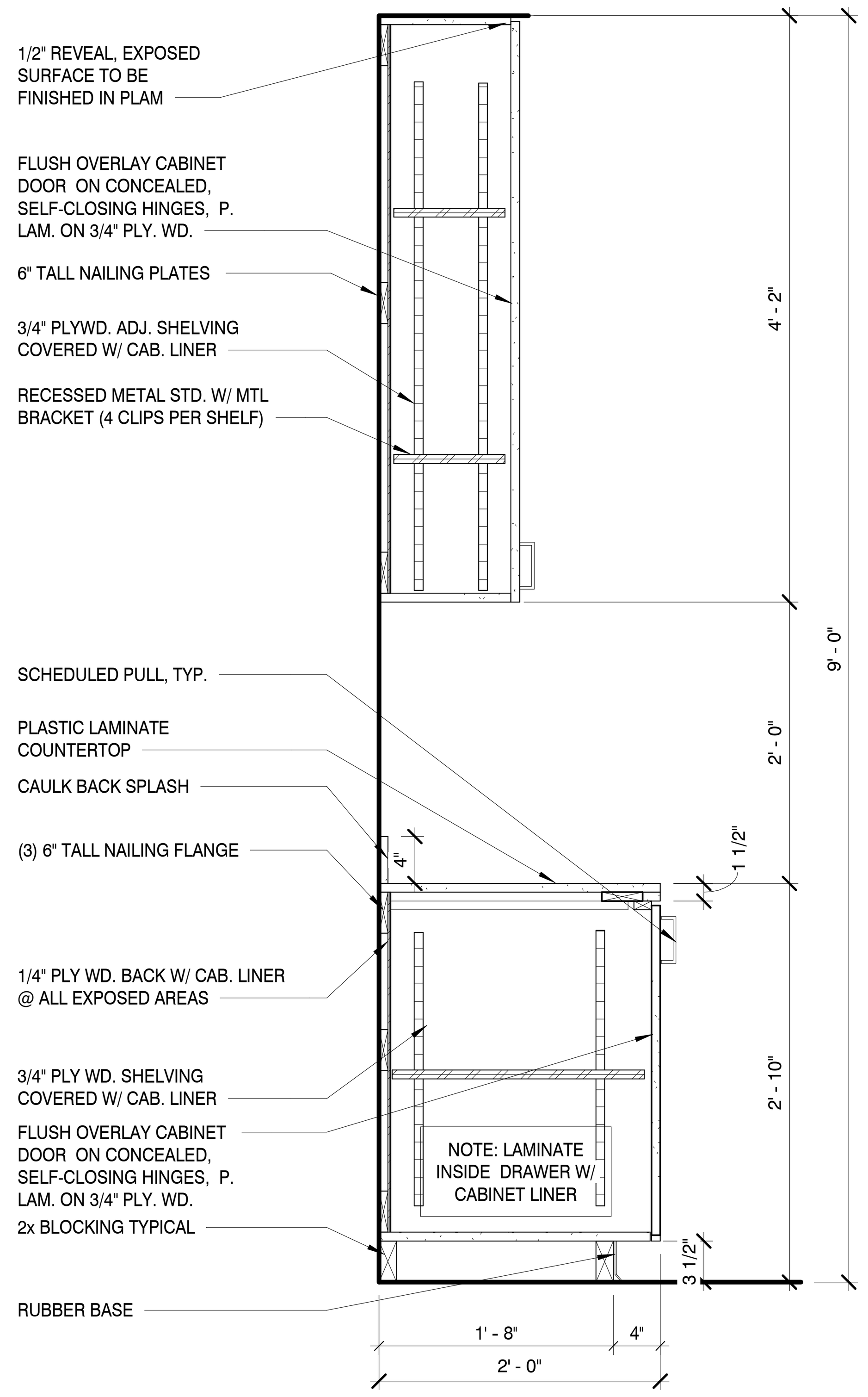
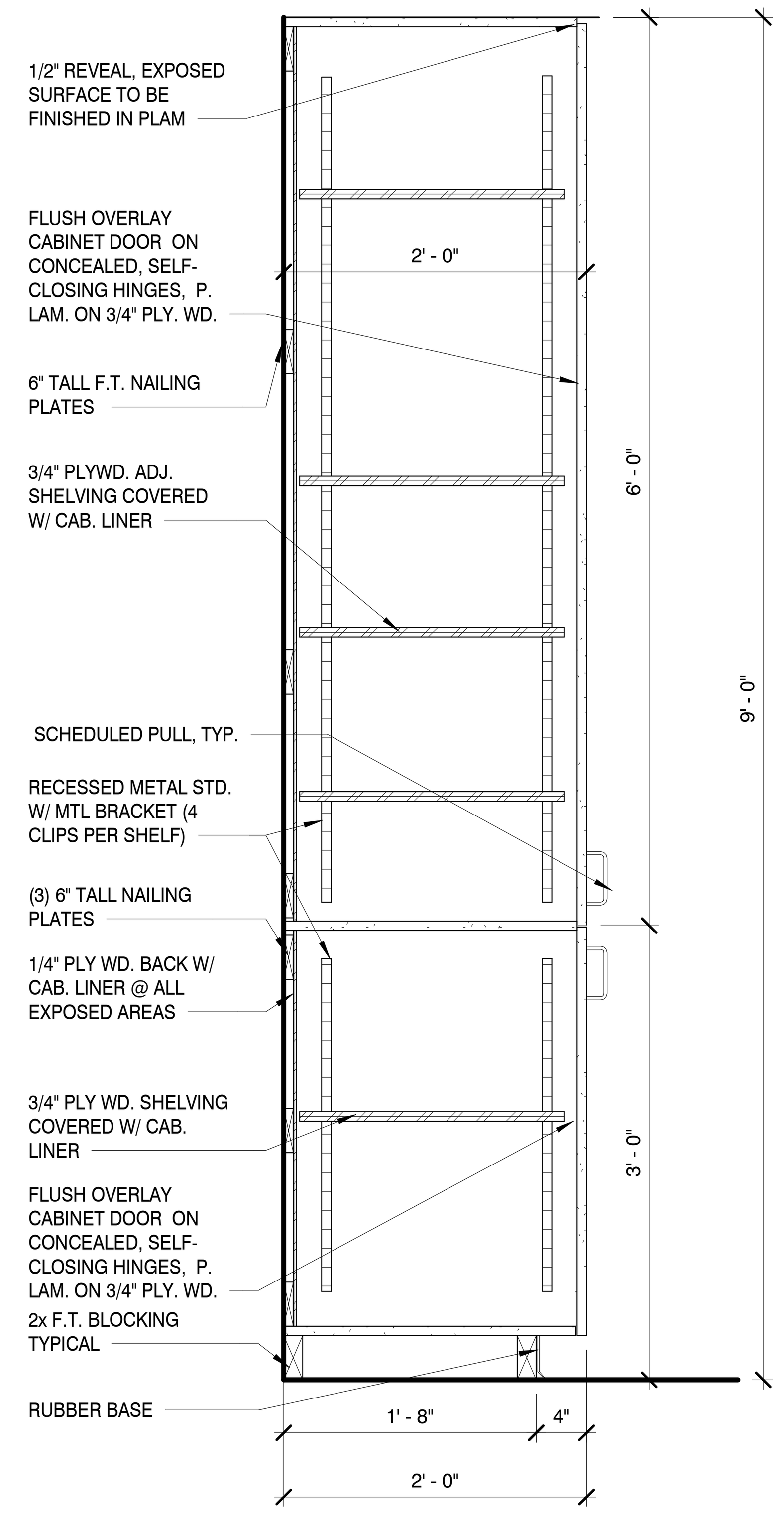


MILLWORK SECTION 1

SCALE : 1" = 1'-0"



MILLWORK SECTION 2

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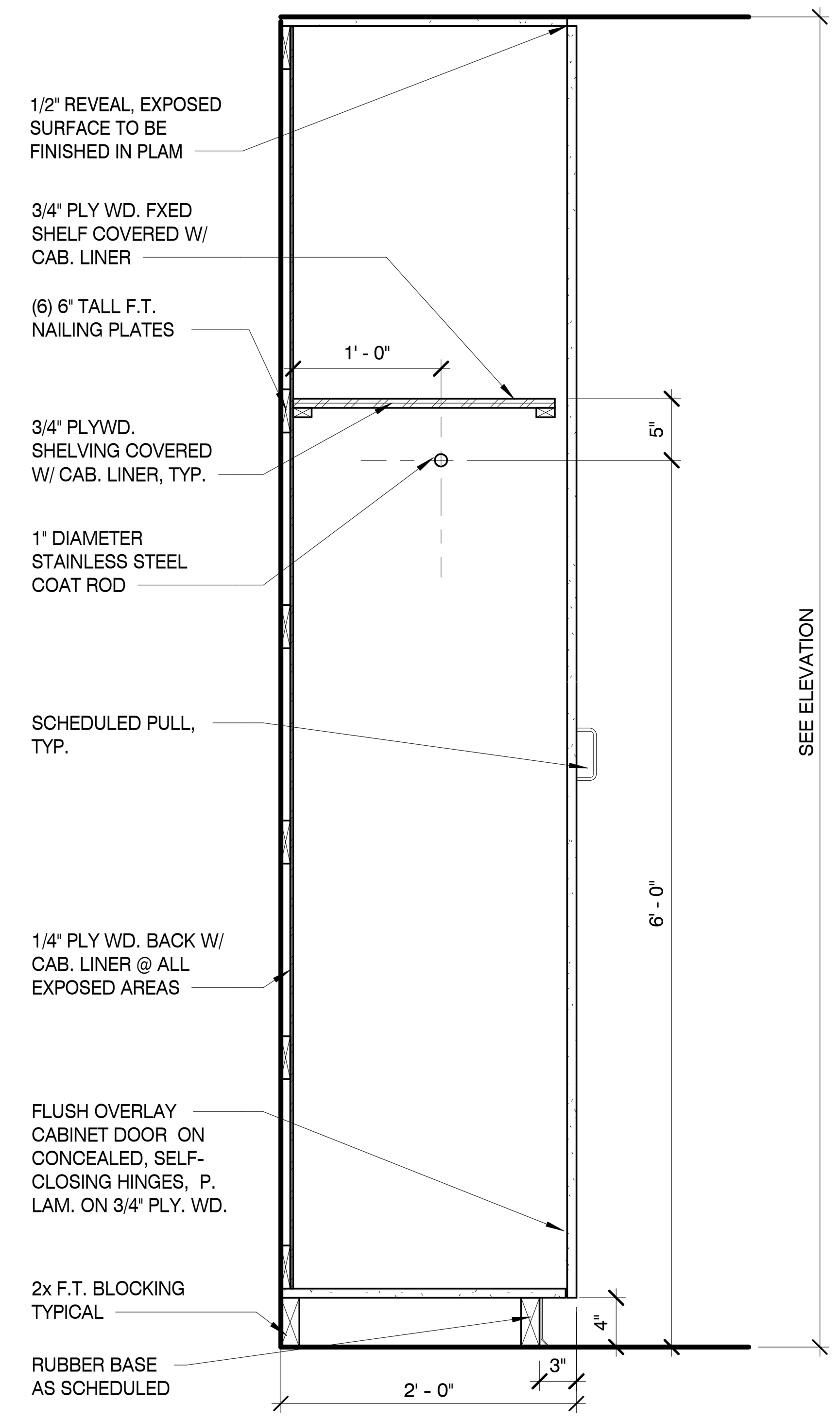
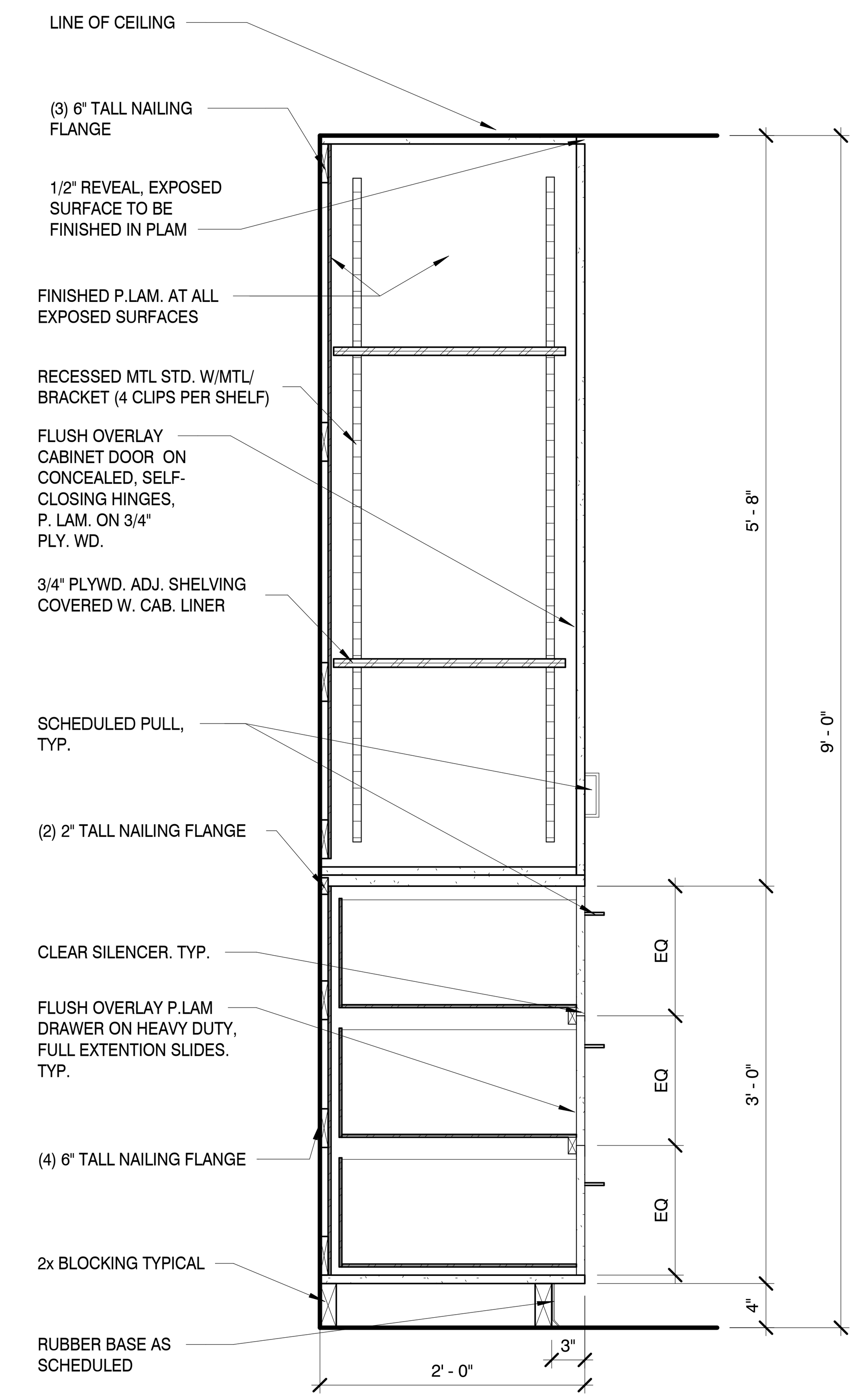


MILLWORK SECTION 3

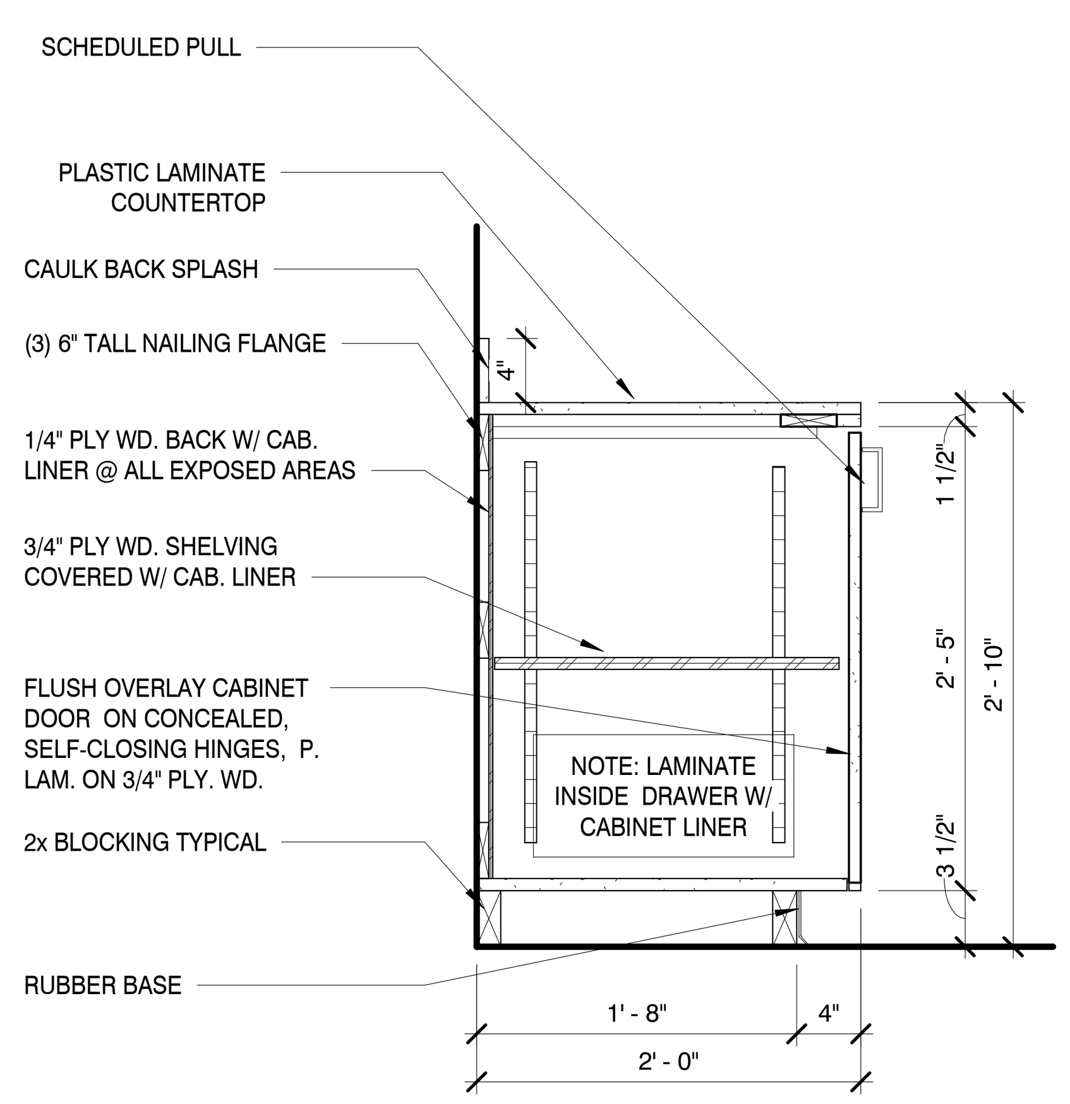
SCALE : 1" = 1'-0"



MILLWORK SECTION 4

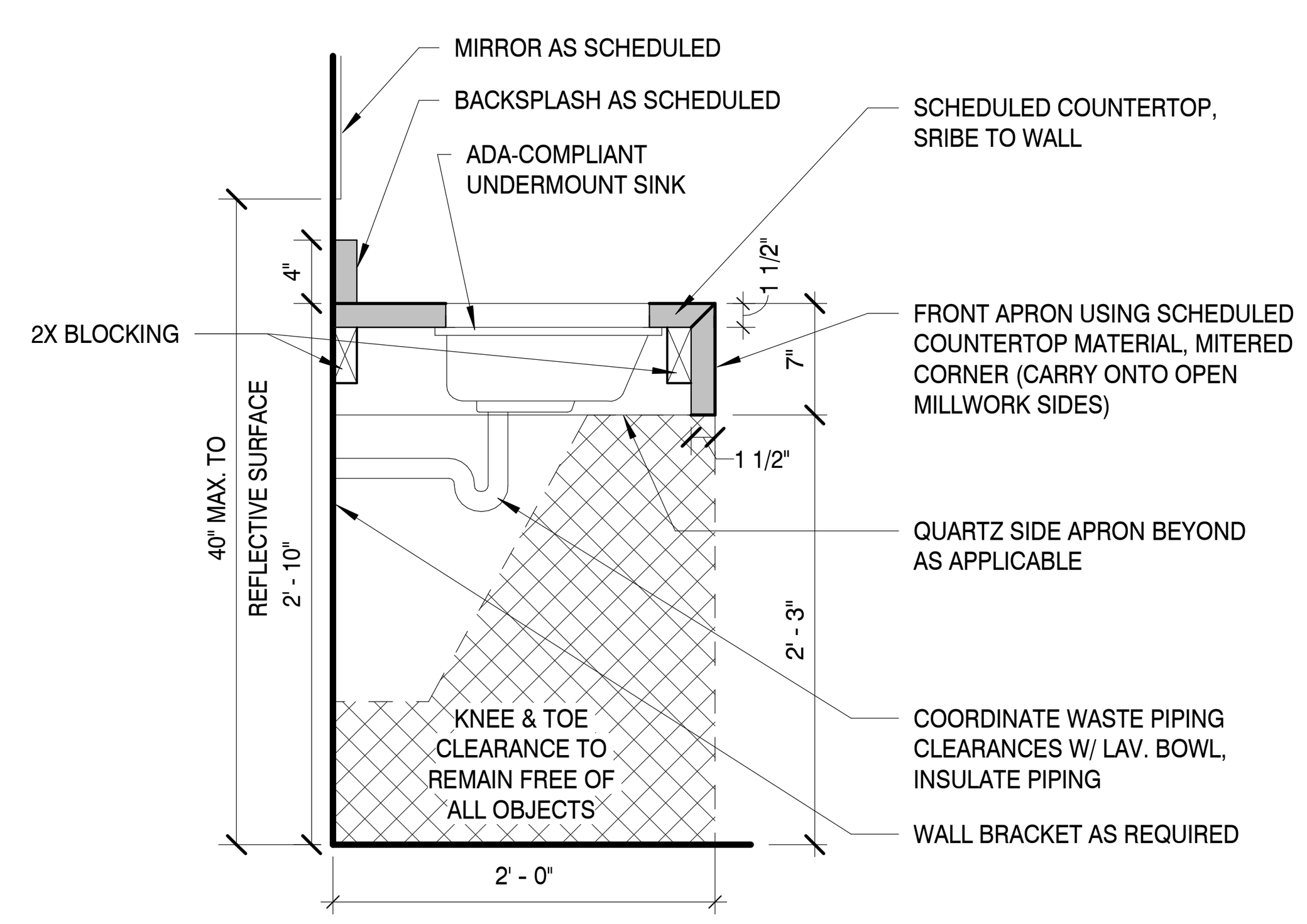
SCALE : 1" = 1'-0"

3



MILLWORK SECTION 5

SCALE : 1" = 1'-0"



MILLWORK SECTION 6

SCALE : 1" = 1'-0"

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3	03/30/2022	Addendum #3

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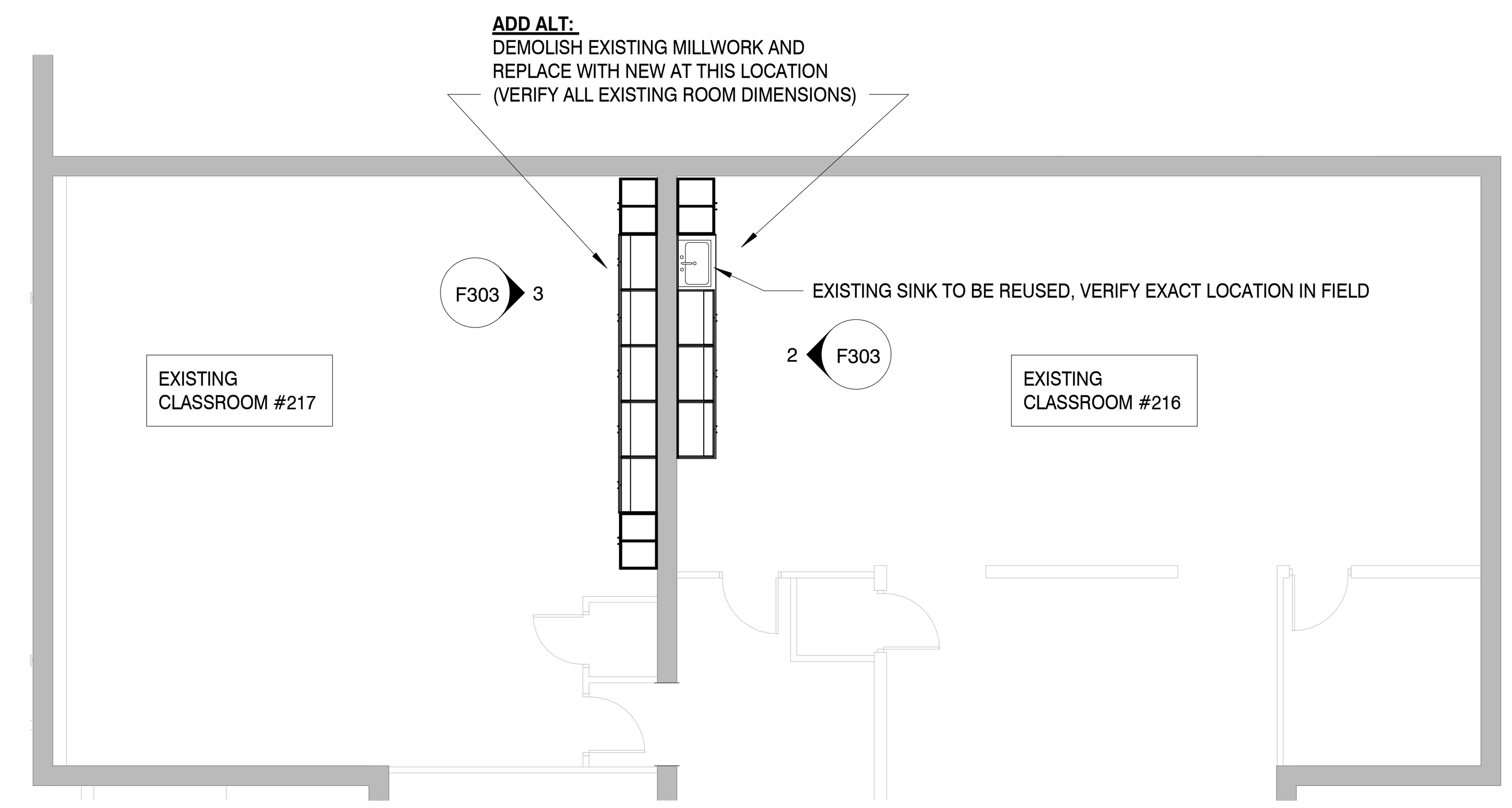
DRAWN BY:	MMW/AJA
REVIEWED BY:	CMG

SHEET TITLE: MILLWORK DETAILS

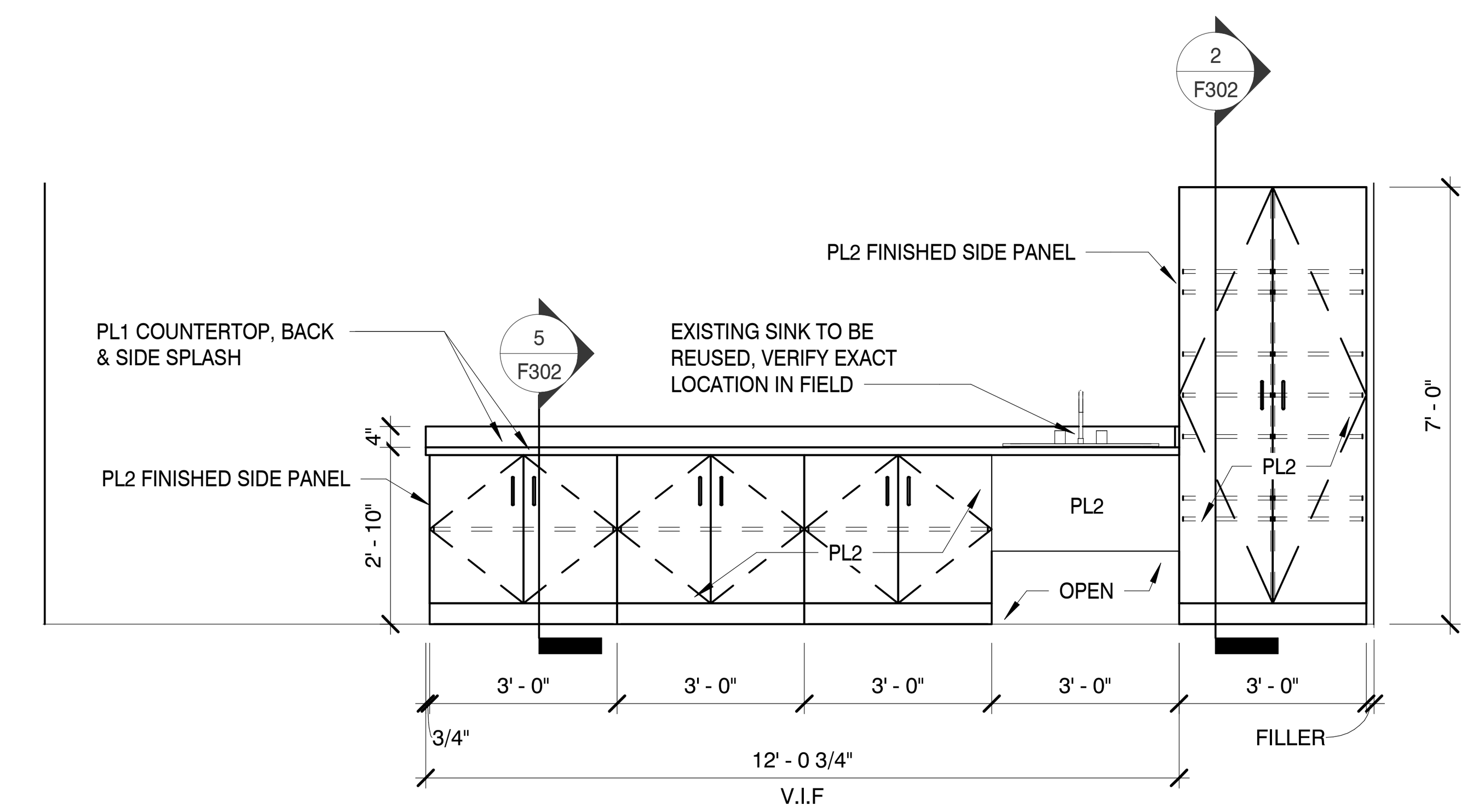
SHEET NO.: F302

ARCH D



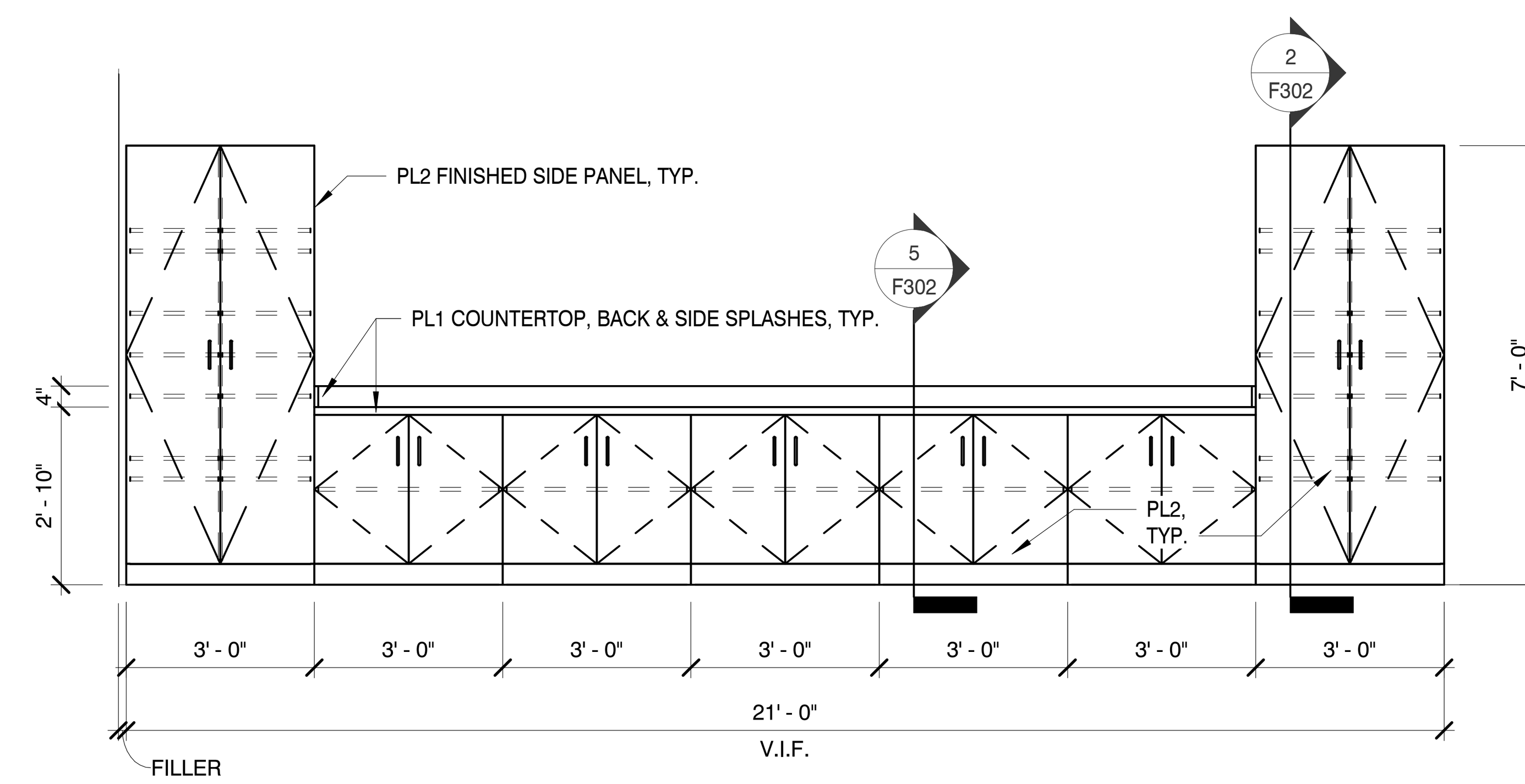
SECOND FLOOR PLAN (EXISTING BUILDING) 1

SCALE : 1/8" = 1'-0"



MILLWORK ELEVATION - CLASSROOM 216 2

SCALE : 3/8" = 1'-0"



MILLWORK ELEVATION FOR CLASSROOM 217 3

SCALE : 3/8" = 1'-0"

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KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	KEF
DRAWN BY:	MMW/AJA
REVIEWED BY:	CMG
SHEET TITLE:	

MILLWORK - ADD ALT

SHEET NO.:

F303

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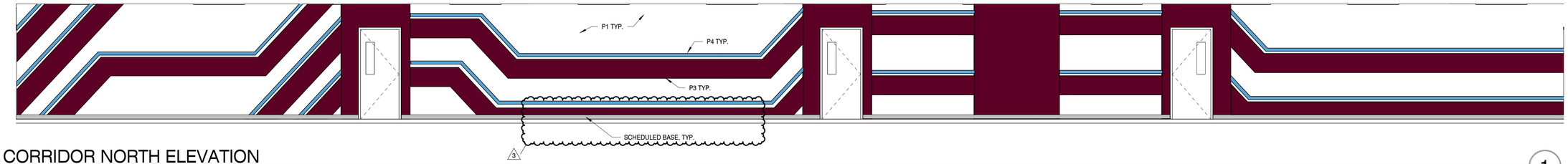
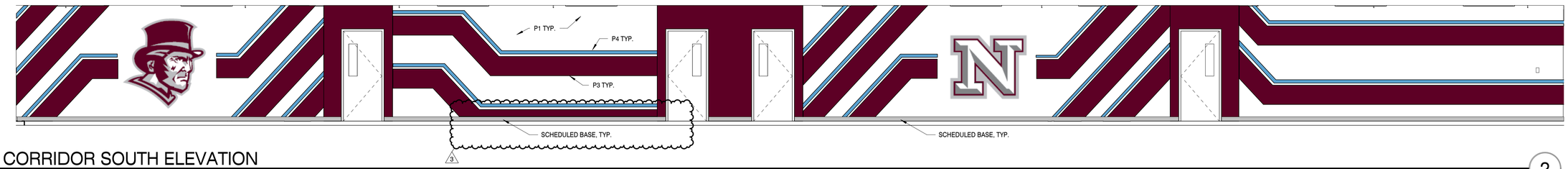


CORRIDOR NORTH ELEVATION

SCALE : 1/4" = 1'-0"

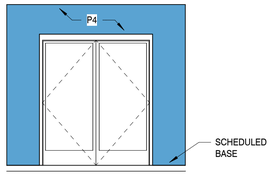
1



CORRIDOR SOUTH ELEVATION

SCALE : 1/4" = 1'-0"

2



CORRIDOR WEST ELEVATION

SCALE : 1/4" = 1'-0"

3

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MBI COMPANIES INC.
299 N. WEISGARBER ROAD
KNOXVILLE, TN 37919
PHONE: (865) 584-0999
FAX: (865) 584-5213
WEB: mbicompanies.com

CONSULTANT

SEAL

CHARLES M. GRAY
REGISTERED
ARCHITECT
No. 2010078
STATE OF TENNESSEE
3/30/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
2	03/09/2022	Addendum #2
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	KEF
DRAWN BY:	MMW/AJA
REVIEWED BY:	CMG

SHEET TITLE:

INTERIOR ELEVATIONS

SHEET NO.:

F401

ARCH D

GENERAL NOTES

1. Structural drawings are intended to be used in close coordination with the civil, architectural, mechanical, plumbing and electrical drawings. Any discrepancies or omissions shall be brought to the attention of the Architect and resolved prior to the beginning of construction.
2. Submit written request to the Architect for approval of any proposed change to the requirements of the contract documents. Splicing, cutting, notching or other alterations to structural members are not permitted without written authorization of the Structural Engineer. Any unauthorized deviation from the contract documents, and correction thereof, is the responsibility of the Contractor.
3. The Contractor is responsible for the means and methods of construction in regards to job site safety.
4. The Contractor shall verify all dimensions and conditions. The Architect shall be notified of any discrepancies.
5. The Contractor is responsible for bracing the structure prior to the completion of all roof, floor, and wall diaphragms.
6. The Contractor shall coordinate the structural foundation and framing layouts with other trades.
7. Where live loads for which each floor or portion thereof a commercial or industrial building is or has been designed to exceed 50 psf, such design live loads shall be conspicuously posted by the owner in that part of each story in which they apply using durable signs.

SUBMITTAL NOTES

1. The Structural Engineer's review is only for general conformance with the design concept, the construction documents and specifications. Corrections or comments made on this review do not relieve the contractor from compliance with the plans and specifications. Comments on this review do not authorize an increase in the construction budget.
2. Approval of shop drawings does not indicate acceptance of deviations from the contract documents, unless accepted by the Engineer in writing prior to submission of shop drawings. Conflicts resulting from such deviations, conflicts between this work and the work of other trades due to such deviations, and dimensional conflicts as a result of such deviations shall be deemed the Contractor's responsibility.
3. Any changes to the details shown in these contract documents shall be submitted in writing by RFI and approved by the Architect and Engineer prior to submitting shop drawings. All such changes shall be "bubbled" on the shop drawings and referenced to the proper RFI.
4. Submittals shall conform to the requirements of the contract documents. Non-conforming or non-reviewed submittals will be returned without review.
5. Submittals shall be checked and marked "Reviewed - No Exceptions Taken" by the Contractor prior to submittal to the Architect. Submittals that have not been reviewed by the Contractor prior to submittal will be returned without review.
6. Submittals shall not contain reproductions of the contract documents. Submittals containing such reproductions will be returned without review.
7. Submit the following items for the Engineer's review:
   a) Concrete mix designs
   b) Reinforcing steel
   c) Contraction joint locations in masonry walls
   d) Structural steel (1)(2)
   e) Steel joists and joist girders
   f) Metal deck
   g) Cold-formed steel framing (1)(2)
   Footnotes:
   (1) See material specific notes for items to be reviewed by a Specialty Engineer
   (2) Calculations shall be submitted and signed/sealed by the Specialty Engineer

DESIGN CODES AND SPECIFICATIONS

Building Code	2018 International Building Code
Design Loads	ASCE 7-16: Minimum Design Loads for Buildings and Other Structures
Concrete	ACI 318-14: Building Code Requirements for Structural Concrete
	ACI 315-99: Manual of Standard Practice for Detailing Concrete Structures
	ACI 301-10: Specifications for Structural Concrete
	ACI 305.1-06: Specifications for Hot Weather Concrete
	ACI 306.1-90: Standard Specification for Cold Weather Concreting
	ACI 302.1R-04: Guide for Concrete Floor and Slab Construction
	ACI 304.R-00: Guide for Measuring, Mixing, Transporting and Placing Concrete
	CRSI 8th Edition: Placing Reinforcing Bars
	AWS D1.4/D1.4M-2017 Structural Welding Code - Reinforcing Steel
Steel	AISC 360-16: Specification for Structural Steel Buildings
	AWS D1.1/D1.1M-2015: Structural Welding Code - Steel
	AWS D1.8/D1.8M-2016: Structural Welding Code - Seismic Supplement
Masonry	TMS 402-16: Building Code Requirements for Masonry Structures
Cold-formed Steel	AISI S100-16: North American Specification for the Design of Cold-formed Steel Structural Members.
	SSMA (ICC ES: ESR-3064P): Steel Stud Manufacturers Association Product Technical Information

DESIGN LOADS

1. Dead Load	
Roof	20 psf
2. Live Load	
Classrooms	40 psf
Lobbies and Corridors	100 psf (3)
Roof (unreducible)	20 psf
3. Snow Load	
Ground Snow Load, Pg	10 psf
Risk Category	III
Importance Factor, I	1.0
Exposure Factor, Ce	1.0
Thermal Factor, Ct	1.0
Flat Roof Snow Load, Pf	7 psf
4. Wind Load	
Ultimate Wind Speed	111 mph
Nominal Wind Speed	86 mph
Risk Category	III
Exposure Category	C
Enclosure Classification	Enclosed
Internal Pressure Coefficient	±0.18
Mean Roof Height, h	12 ft
Velocity Pressure, qh	26.3 psf
Wall C&C Pressure (zone 5)	
Effective Area < 50 sf	+16.1 / -21.6 psf
50 sf ≤ Effective Area < 100 sf	+14.4 / -18.2 psf
Effective Area ≥ 100 sf	+13.7 / -16.8 psf
Roof C&C Pressure (flat roof, zone 3)	
Effective Area < 50 sf	+10.0 / -46.2 psf
50 sf ≤ Effective Area < 100 sf	+10.0 / -36.0 psf
Effective Area ≥ 100 sf	+10.0 / -31.7 psf
Roof Net Uplift Pressure for Open Web Steel Joist Design	-10.0 psf
Note: Wind pressures above are reported at nominal level (0.6W)	
5. Seismic Load	
Risk Category	III
Importance Factor, I	1.0
Site Class	D
Mapped Acceleration Parameters	
Ss	48.2%
S1	11.7%
Design Spectral Acceleration Parameters	
Sds	0.454
Sd1	0.185
Seismic Design Category	C
Analysis Method	Equivalent Lateral Force
Basic Seismic Force Resisting System	
Bearing Wall System: Intermediate Reinforced Masonry Shear Walls	
Response Modification Coefficient, R	3.5
System Overstrength Factor, Ωo	2
Deflection Amplification Factor, Cd	2.25
Seismic Base Shear Coefficient, Cs	0.162

SPECIALTY ENGINEER REQUIREMENTS

1. Steel pan stairs shall be designed by the steel fabricator's specialty engineer. The design shall include stringers, treads, hand railings, platforms, pan inserts, miscellaneous supports and connections. Shop drawings shall be submitted for review and must be signed and sealed by a Professional Engineer registered in the same state as the project location. Shop drawings not signed and sealed will be rejected without review. A minimum design live load of 100 psf shall be used.
2. Handrails, posts and support connections shall be designed by the steel fabricator's specialty engineer. Shop drawings shall be submitted for review and must be signed and sealed by a Professional Engineer registered in the same state as the project location. Shop drawings not signed and sealed will be rejected without review. Design loads shall conform to all requirements of the governing building code. Handrail assemblies guards shall also be designed for the following minimum criteria:
   a) 50 lbs per linear foot in any direction
   b) Single concentrated load of 200 lbs applied in any direction
   c) Intermediate rails designed to withstand a horizontal applied normal load of 50 lbs on an 1'-0" x 1'-0" area
   d) Grab bars to resist a single concentrated load of 250 lbs applied in any direction
3. Exterior curtain walls shall be designed by the vendor's specialty engineer. The design shall include frame, glass, glazing and connections. Shop drawings shall be submitted for review and must be signed and sealed by a Professional Engineer registered in the same state as the project location. Shop drawings not signed and sealed will be rejected without review. Design loads shall conform to all requirements of the governing building code. Shop drawings shall contain anticipated load reactions that will be applied to the supporting structure.

FOUNDATION NOTES

1. Foundation design parameters have been recommended in a geotechnical report provided by:
   S&ME, INC.
   1413 Topside Road
   Louisville, TN 37777
   Phone: (865) 970-0003
   Project No.: 219016
   Date: 12/06/2021
2. Foundation design parameters:
   a) Minimum Frost Protection Depth = 18"
   b) Allowable Soil Bearing Pressure = 2500 psf
   c) Subgrade Modulus = 100 pci
3. All footings shall bear on firm undisturbed residual soil and/or engineered earth fill compacted to 98% of its maximum dry density as per ASTM D698 (Standard Proctor), unless noted otherwise. THE SOIL BEARING CAPACITY IS TO BE VERIFIED BY A GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.
4. Provide the minimum frost depth protection depth from finished grade to the bottom of any exterior footing or turn down building slab. Also provide a minimum of 1'-0" cover from finished grade to the top of any exterior footing. Contractor to coordinate the location and depths of footing steps as required by finished grade conditions.
5. Contractor to coordinate the location and depths of footing steps as required to allow for the passage of underground plumbing and utilites.
6. Backfill retaining walls with clean crushed stone (No. 57 or 67 size) 2-6" wide (minimum) from the top of the footing to within 1'-0" of finished grade.
7. Provide 6" diameter perforated pipe footing drains at all retaining walls and foundation walls in which finished grade occurs above the finished floor elevation. Footing drains are to be totally independent and not connect with any other type of water drainage systems except at the footing drain terminations. The Architect or Structural Engineer should approve connections at the footing drain terminations.
8. Provide continuous waterstops between footings and concrete/masonry walls at locations where finished grade is located above the adjacent finished floor or at floor pits (i.e. elevator shaft).
9. Contractor shall treat soil under slabs, footings and crawl spaces with EPA approved chemical vermin control or as required per the building code.
10. Refer to the mechanical, plumbing or electrical drawings for concrete pads and foundations not shown on the structural drawings.

CONCRETE NOTES

1. All concrete elements shall be installed and detailed in accordance with the appropriate ACI documents. Contractor to have copies of the ACI documents at the job site during construction.
2. Concrete compressive strength, f'c, at 28-days shall be as follows at minimum unless noted otherwise:
   a) Footings: 3000 psi (2500 psi used in design)
   b) Interior Slabs on Grade Less Than 6" Thick: 3000 psi (non air entrained)
   c) CMU Core Fill: 3000 psi
   d) Concrete Exposed to Weather: 4000 psi (w/ 4%-6% air entrainment)
3. The maximum water-to-cement ratios shall be as follows:
   a) Concrete exposed to freezing and thawing: 0.50
   b) Concrete subject to deicers and/or required to be watertight: 0.45
   c) All other concrete types: 0.58
4. Concrete mix designs shall be submitted as follows:
   a) Each mix design shall be labeled to indicate the area in which the concrete is to be placed (i.e. foundations, slab on grade, columns, etc.). Failure to do so will cause delay and/or rejection of submittals.
   b) Proposed mix design shall be in accordance with Method 1 or Method 2 of ACI 301. Provide supporting data in tabular form for each separate proposed mix.
   c) Submit concrete mix designs for each proposed class of concrete.
5. Fly ash, meeting ASTM C618 Class C or Class F may be used to replace up to 25% of Portland cement. Contractor and supplier shall coordinate to ensure that required set times for concrete are not adversely affected by use of fly ash. Contractor and all concrete subcontractors shall have experience with handling, placing and finishing concrete with fly ash.
6. Grout used in grout beds under column base plates shall be cement based, non-shrink grout. The grout shall exhibit no shrinkage in accordance with ASTM C827, "Test Method for Early Volume Change of Cementitious Mixtures" and shall have a minimum 28-day compressive strength of 5000 psi when tested in accordance with ASTM C109, "Test Method for Compressive Strength of Hydraulic Cement Mortars."
7. The following minimum concrete cover shall be provided for reinforcing bars:
   a) Cast against and permanently exposed earth: 3"
   b) Formed and exposed to earth or weather (#6 thru #18 bars): 2"
   c) Formed and exposed to earth or weather (#5 bars, W31 wire and smaller): 1-1/2"
   d) Slabs, walls & joists formed and not exposed to weather or in contact with the ground (#11 bar and smaller): 3/4"
   e) Beams, girders & columns formed and not exposed to weather or in contact with the ground: 1-1/2"
8. Unless noted otherwise, slabs on grade shall be 4" thick with 6x6-W1.4xW1.4 W.W.F. on 20 mil polyethylene vapor barrier on 4" thick crushed stone base.
9. Slab on grade contraction joints may be saw cuts 1/8" wide x 1/4 slab thickness as detailed or other submitted and approved method. Joints shall be placed at 24'-0" o.c. maximum spacing. Areas created by joints shall have a maximum aspect ratio of 1.5:1.
10. Slab on grade construction joints shall be as detailed or other submitted and approved method.
11. Vapor barrier shall be placed over prepared base material where indicated below slabs on grade. Vapor barrier shall be no less than 20 mil thick in accordance with ACI 302.1R.
12. Vapor barrier shall conform to ASTM E1745, Class B or higher unless noted otherwise. The membrane shall have a water-vapor permeance rate no greater than 0.3 perms when tested in accordance with ASTM E154, Section 11, a minimum tensile strength of 30 lb/in when tested in accordance with ASTM E154, Section 9 and a resistance to puncture of 1700 grams in accordance with ASTM E154, Section 10.
13. Vapor barrier shall be arranged in a layout to minimize seams and penetrations. Overlap all seams a minimum of 6" and seal with tape. All penetrations must be sealed using a combination of seam tape and mastic in accordance with manufacturer's latest printed instructions.
14. See architectural, mechanical, plumbing, fire protection and electrical drawings for drips, chamfers, reglets, slots, sleeves, rustications, inserts and anchors not noted on structural drawings. Unless shown on structural drawings, no openings larger than 12" x 12" shall be placed in slabs or walls without prior approval from the Architect or Engineer. Approvals must be obtained prior to fabrication of steel and placement of concrete.
15. Contractor to include with contract price an allowance for twenty (20) cubic yards of reinforced concrete including materials and labor.

REINFORCING STEEL NOTES

1. Reinforcing steel and accessories shall be detailed, fabricated and placed in accordance with the latest edition of the ACI Detaling Manual. Provide shop drawings for reinforcing steel prior to fabrication.
2. Bar reinforcing shall conform to ASTM A615, Grade 60.
3. Welded bar reinforcing shall conform to ASTM A706, Grade 60.
4. Bar reinforcing lap splices shall be Class "B" but not less than 24", unless noted otherwise.
5. Reinforcing shall be held securely in position with standard accessories in accordance with ACI 315 and CRSI Manual of Standard Practice.
6. Welded wire fabric shall conform to ASTM A185.
7. Welded wire fabric lap splices shall be the cross wire spacing plus 6" but not less than 10"
8. Welded wire fabric located in concrete slabs shall be located in the center of the slab unless noted otherwise. Supports used shall be spaced at a maximum of 3'-0" o.c. in any direction.

REINFORCING STEEL NOTES

9. Provide top steel reinforcing, same size and spacing as bottom steel, in footings at any location where the soil changes from residual to engineered fill. Top steel shall extend 8'-0" minimum each side of the soil transition area. Use #3 stirrups at 18" o.c. at these locations to tie top and bottom steel.
10. Provide top steel reinforcing, same size and spacing as bottom steel, in footings at any corner in load bearing walls. Top steel shall extend 8'-0" minimum each way from the wall corner. Use #3 stirrups at 18" o.c. at these locations to tie top and bottom reinforcing.
11. Provide (2) #4 bars x 4'-0" long in slabs on grade at all re-entrant corners, contraction joint terminations and isolation joint terminations.
12. Provide 2'-6" x 2'-6" corner bars at the corners of all continuously reinforced elements such as footings, walls, bond beams, etc. Corner bars shall be the same size, spacing, location and quantity as the continous reinforcing.

STRUCTURAL STEEL NOTES

1. Structural steel shall be designed, fabricated, erected, etc. as per the AISC Manual of Steel Construction.
2. Submit shop drawings of structural steel prior to fabrication.
3. Connections not detailed on the structural drawings should be designed and detailed by the steel detailer under direct supervision of a Professional Engineer experienced in design of this work and licensed in the state where the project is located.
4. Member reactions shown on the structural drawings are given as maximum loads derived from the Allowable Stress Design load combinations prescribed by ASCE 7.
5. Allowable Strength Design (ASD) values are to be utilized in the selection or completion of the connection details.
6. Unless specific member reactions are shown on the structural drawings, connections shall develop the following loads found in the AISC Steel Construction Manual:
   a) Simple span beam shear connections: 1/2 of the maximum total uniform load capacity tabulated in Part 3 for the given shape and span
   b) Simple span beam moment connections: 90% of Allowable plastic moment (0.9Mp) strength tabulated in Part 3 for the given shape
   c) Brace connections (compression): Allowable axial compressive strength tabulated in Part 4 for the given shape and unbraced length
   d) Brace connections (tension): Allowable axial tension strength tabulated in Part 5 for the given shape
7. Structural calculations signed and sealed by a Professional Engineer shall be submitted with shop drawings for the following connections if not specifically detailed on the structural drawings:
   a) Shear connections with reaction greater than 100 kips
   b) Field bolted moment connections
   c) Braced frame connections
   d) Collector beam connections
   e) Truss connections
8. Structural steel material to be as follows:
   a) Channels, angles and plates: ASTM A36
   b) W- and WT-shapes: ASTM A992
   c) Pipes: ASTM A53 Grade B
   d) HSS: ASTM A500 Grade B
9. Bolted connections shall be bearing type, snug-tightened joints unless noted otherwise and should utilize 3/4" Ø (min.) high strength bolts conforming to ASTM A325.
10. Welded connections should utilize E70 electrodes.
11. Structural steel shall receive a shop coat of rust-inhibitive primer unless noted otherwise. Contractor shall coordinate fire proofing requirements of structural steel with architectural drawings to determine whether the chosen fire proofing material can tolerate the primer.
12. Structural steel exposed to weather shall be hot dipped galvanized in accordance with ASTM A123 unless directed otherwise by the Architect.
13. Protect structural steel from earth, gravel and/or concrete with 1/8" thick hydrocide mastic.
14. Beams supported by concrete or masonry walls to bear on a steel bearing plate, measuring 6" wide x 12" long x 1/2" thick, with (2) 1/2" diameter x 6" long headed studs cast into the wall unless noted otherwise.
15. Columns shall be anchored at minimum with (4) 3/4" diameter x 9-1/2" embed (measured from top of footing to center of embedded washer) ASTM F1554 Grade 36 anchor rods unless noted otherwise. Anchor rods shall be straight and fitted with a double nut and washer at embedded end. Threads shall project a minimum of 4" above the top of base plate and shall receive double nuts and washers for leveling. Provide 1-1/2" minimum between top of footing and bottom of base plate for placement of non-shrink grout.
16. Post-installed adhesive anchors may be considered as a substitute for 3/4" diameter cast-in-place anchor rods provided the adhesive anchors are field tested to resist forces specified by the Structural Engineer. Submit request to Structural Engineer prior to installation for approval. See Post-Installed Anchor Notes for approved adhesive anchors.
17. Post-installed adhesive anchors for connecting steel members to concrete or masonry shall use approved adhesive anchors listed in Post-Installed Anchor Notes. Threaded rods shall be ASTM A36 material unless noted otherwise. Submit request to Structural Engineer to use alternate adhesive anchor for approval prior to installation.
18. Post-installed expansion/screw anchors for connecting steel members to concrete or masonry shall use approved mechanical anchors listed in Post-Installed Anchor Notes. Submit request to Structural Engineer to use alternate expansion/screw anchor for approval prior to installation.
19. HSS4X4 or 4" pipe and smaller columns shall have 3/4" top plates sizes as required and 12x12x3/4" base plates unless noted otherwise.
20. HSS5X5, HSS6X6, 5" pipe or 6" pipe columns shall have 3/4" top plates sized as required and 14x14x3/4" base plates unless noted otherwise.
21. Welding shall be performed by operators qualified in accordance with AWS tests for the types of welding required for this project. All welders must be certified for the type of welding specified and shall be in accordance with an approved WPS. All quality procedures and personnel shall be in accordance with AWS D1.1.
22. Minimum welds unless noted otherwise:
   a) Bar joists to supports: 1/8" x 2 1/2" fillet weld each side
   b) Joist girders to supports: 1/4" x 2 1/2" fillet weld each side
   c) All others not specified: 1/8" x 2" long fillet weld except where noted as "all around"
23. Roof deck shall be 1-1/2", 22 gauge, Type B painted steel decking meeting the requirements of the Steel Deck Institute unless noted otherwise. Deck shall be welded to the supporting steel with 5/8" puddle welds on a 36/4 pattern with (2) #10 screw sidelap fasteners per span unless noted otherwise.
24. Metal deck shall be erected with a minimum three (3) span condition and shall lap at the centerline of supports a minimum of 2". Provide a minimum end bearing of 2" on supports. Metal deck shall be erected and fastened in accordance with the manufacturer's specifications and erection pay-outs.
25. Provide at minimum a L4X4X1/4 edge angle at the perimeter of all roof decks and at all openings in roof decks unless noted otherwise.
26. Refer to civil, architectural, mechanical, plumbing, fire protection and electrical drawings for structural steel items not shown on the structural drawings.
27. Refer to Specialty Engineer Requirements for additional criteria for steel stairs and handrails.
28. Contractor to include with the contract price an allowance for two (2) tons of structural steel including materials and labor.

STEEL JOIST AND GIRDER NOTES

1. Steel joists, joist girders and associated bridging shall be designed, fabricated, erected, etc. as per the latest edition of the SJI Standard Specifications and the applicable OSHA standards.
2. Steel joists shall be designed for the uniform Allowable Stress Design (ASD) loads specified in the SJI Load Tables and Weight Tables for Steel Joists and Joist Girders and the concentrated loads indicated on the drawings and/or joist diagrams.
3. Joist manufacturer to supply material and specification for installation of field located elements such as diagonals to be placed at HVAC supports, bottom chord extensions not sized on the drawings, etc.
4. Submit shop drawings of steel joists and joist girders prior to fabrication.
5. All joists and joist girders framing into columns shall have erection bolts and be field welded into final position. Bottom chords are to be extended to columns and stabilized by a vertical stabilizer plate to prevent rotation during erection. Bottom chord should not be rigidly attached to vertical stabilizer plate unless noted otherwise. Vertical stabilizer plate shall be a minimum of 6" x 6" and shall extend a minimum of 3" below the bottom chord of the joist with a 13/16" hole to provide an attachment point for guying or plumbing cables.
6. Any hangers except ceiling support wires supported from joists shall be placed at panel points and connected without drilling holes in joists or field welding.
7. K-series joists to be attached to supporting steel with 1/8" x 2" fillet welds each side of joist or (2) 1/2" Ø A307 bolts.
8. LH-series joists to be attached to supporting steel with 3/16" x 2" fillet welds each side of joist or (2) 3/4" Ø A307 bolts.
9. Joist girders to be attached to supporting steel with 1/4" x 2-1/2" fillet welds each side of girder or (2) 3/4" Ø A307 bolts.
10. K-series joists supported by masonry walls to bear on 4x6x3/8" minimum bearing plates with (1) 1/2" diameter x 4" long headed studs unless noted otherwise.
11. LH-series joists supported by masonry walls to bear on 6x9x1/2" minimum bearing plates with (3) 1/2" diameter x 6" long headed studs unless noted otherwise.
12. Coordinate elevations of wall ledgers and beams when parallel to steel joists with spans equal to or greater than 60'-0" to accommodate standard joist camber.

GALVANIZED STEEL NOTES

1. All steel exposed to earth or weather, including exposed lintel angles, shall be galvanized unless directed otherwise by Architect.
2. Hot-dip galvanizing shall be performed in accordance with ASTM A123 for fasteners with minimum coating thickness as specified in ASTM standards. Standard practice for galvanization shall be performed in accordance with ASTM A385.
3. Galvanizer shall submit certificate of conformance as a part of the steel shop drawing submittal stating that project specifications have been met.
4. If galvanized steel is stored for a period in excess of one month after galvanization, galvanizer and/or fabricator shall package and store steel by methods required to prevent tight or nested stacks and to allow development of zinc coating.
5. For a material thicker than 3/4", drill holes in steel. For material 3/4" or less, punched holes are acceptable. Punched holes shall be punched undersized and then reamed an additional 1/8" overall. All holes shall be tapped after galvanizing to remove coating on interior surface of hole.
6. All bolts used for connections at galvanized steel members shall be galvanized per noted standards.
7. Weld rods used for welds at galvanized steel shall be composed of no more than 25% silicon material.
8. Damaged areas, bare spots, welds and field connections shall be touch-up galvanized per methods stipulated in ASTM A780.
9. Refer to ASTM A143, A384 and D6386 for additional standard practices related to special conditions for hot-dip galvanizing.
10. Galvanized faying surfaces at slip critical connectios shall be hot-dip galvanized in accordance with ASTM A123 and shall be roughened by means of hand wire brushing. Power wire brushing is not permitted.

POST-INSTALLED ANCHOR NOTES

1. Post-installed anchors shall be used only where specified on structural drawings.
2. The installation of post-installed anchors for missing or misplaced cast-in-place anchors shall be approved by the Structural Engineer.
3. Care shall be given to avoid conflicts with existing reinforcing when drilling holes. Existing reinforcing bars in the concrete structure shall not be cut unless approved by the Structural Engineer.
4. Submittal of all proposed products with technical data and current ICC-ES reports is required for review and approval by the Structural Engineer. Additional application calculations may be required by the Structural Engineer.
5. All anchors shall be installed in strict accordance with manufacturer's printed installation instructions (MPII) in conjunction with edge distance, spacing and embedment depth as indicated on the drawings.
6. The contractor shall arrange for a manufacturer's field representative to provide installation training for all products to be used prior to commencement of work. Only trained installers shall perform post-installed anchor installation. A record of training shall be kept on site and be made available to the Structural Engineer or inspector as requested.
7. Adhesive anchors installed in horizontal to vertically overhead orientation to support sustained tension loads shall be done by a certified adhesive anchor installer (AAI) as certified through ACI/CRSI. Proof of current certification shall be submitted to the EOR for approval prior to commencement of installation.
8. Adhesive anchors must be installed in concrete aged a minimum of 21 days.
9. Mechanical anchors into concrete shall have been tested and qualified for use in accordance with ACI 355.2 and ICC-ES AC193 for cracked, uncracked and seismic concrete recognition. Approved anchors include the following:
   a) Hilti KH-EZ
   b) Simpson Titen HD
   c) DeWalt Screw-Bolt+
10. Adhesive anchors into concrete shall have been tested and qualified for use in accordance with ACI 355.4 and ICC-ES AC308 for cracked, uncraced and seismic concrete recognition. Approved anchors include the following:
   a) Hilti RE-500 V3
   b) Simpson SET-XP
   c) DeWalt Pure 110+
11. Mechanical anchors into masonry shall have been tested and qualified for use in accordance with ICC-ES AC01 or AC106. Approved anchors include the following:
   a) Hilti KH-EZ
   b) Simpson Titen HD
   c) DeWalt Screw-Bolt+
12. Adhesive anchors into masonry shall have been tested and qualified for use in accordance with ICC-ES AC58. Approved anchors include the following:
   a) Hilti HY-70
   b) Simpson AT-XP
   c) DeWalt AC100+ Gold
13. Provide Special Inspection for all mechanical and adhesive anchors per the applicable building code and per the current ICC-ES report. Adhesive anchors installed in horizontal of upwardly inclined orientations to resist sustained tension loads shall be continuously inspected during installation by an inspector specially approved for that purpose by the building official.

MASONRY NOTES

1. Structural masonry is defined as being either load bearing or serving as the lateral force resisting system. Structural masonry is shown on the structural plans, and is defined in schedules and details on the structural drawings. Partition walls, masonry veneer and other non-structural masonry are shown on the architectural drawings.
2. Concrete masonry units shall be light weight and shall conform to ASTM C90.
3. Minimum concrete masonry compressive strength, f'm, shall be 2000 psi at 28 days.
4. Mortar shall conform to ASTM C270. Type S mortar shall be used for structural masonry and partition walls. Type N mortar shall be used for veneer.
5. Masonry bar reinforcing shall conform to ASTM A615, Grade 60.
6. Masonry joint reinforcing shall be Hohmann and Barnard, Inc. assembly or approved equal and shall have product approval of governing code. Reinforcing shall be ladder type and shall be manufactured from cold drawn steel wire conforming to ASTM A1064. Cross rods and side rods shall not be less than W1.7 (9 ga) wire. May provide preformed corners and tees to match type, size and spacing of joint reinforcing.
7. Structural masonry walls shall be reinforced as follows unless noted otherwise:
   a) 6" CMU: (1) #4 vertical @ 48" o.c.
   b) 8" CMU: (1) #5 vertical @ 48" o.c.
   c) 12" CMU: (1) #5 vertical @ 48" o.c.
8. See architectural drawings for interior non-structural masonry partition walls which may or may not be shown on the structural drawings. Interior non-structural masonry partition walls should be reinforced as follows for the given unbraced height for an out-of-plane load of 10 psf unless noted otherwise. Brace the top of partition walls as shown in the typical details. Braces to be located at a maximum spacing of 12'-0" o.c. along the wall length with braces located no further than 1'-0" from an unsupported free end (without a corner) and 8'-0" from tees or corners. Braces not required when wall length is less than 12'-0" between tees or corners.
   a) 6" CMU up to 17'-6" unbraced: (1) #5 vertical @ 48" o.c.
   b) 6" CMU up to 20'-6" unbraced: (1) #5 vertical @ 32" o.c.
   c) 6" CMU up to 23'-0" unbraced: (1) #5 vertical @ 16" o.c.
   d) 8" CMU up to 24'-6" unbraced: (1) #5 vertical @ 32" o.c.
   e) 8" CMU up to 28'-3" unbraced: (1) #6 vertical @ 32" o.c.
   f) 8" CMU up to 31'-9" unbraced: (1) #6 vertical @ 16" o.c.
9. All masonry walls shall have horizontal joint reinforcing consisting of (2) W1.7 wires spaced at 16" o.c. unless noted otherwise.
10. All vertical bar reinforcing shall extend from the foundation to the top of wall. Provide dowels same size and spacing as vertical bar reinforcing into foundation.
11. All vertical bar reinforcing shall extend through all bond and tie beams.
12. All vertical reinforcing shall be located within the center of the wall unless noted otherwise. For reinforcing which is not centered, provide 3/4" clear space between reinforcing and face shell.
13. All horizontal bar reinforcing shall be placed within bond beam units.
14. Masonry bar reinforcing development length and lap splice length shall be 64 bar diameters but not less than 12 inches.
15. Masonry joint reinforcing lap splice length shall be 36 wire diameters, but not less than 6 inches.
16. Fill reinforced masonry cores, bond beams and lintels with grout conforming to ASTM C476. Fine and coarse grouts shall attain a minimum compressive strength of 3000 psi at 28 days. Grout shall attain 80% of design strength prior to application of service loads.
17. All cells below finished floor or finished grade, whichever is higher, shall be solid grouted.
18. The selection of fine and coarse grouts and the maximum grout pour height shall be in conformance with the grout space requirements set forth in the Specification for Masonry Structures (ACI 530.1 / ASCE 6 / TMS 602).
19. Each grout lift shall not exceed 5'-0" unless inspection cleanouts are provided in the bottom course of the lift.
20. Stop each intermediate grout lift 1-1/2" below the top of masonry at the top of the lift.
21. Grout shall be consolidated immediately after pouring and reconsolidated.
22. Provide reinforcing positioners at 5'-0" on center minimum vertically.
23. Furnish all special shapes, such as bond beam, open end, lintel and pilaster units, as required to accomodate reinforcing.
24. When it is necessary to cut masonry, use an approved masonry saw. Use no units less than half size.
25. Provide bond beam at joist and beam bearing locations.
26. Provide tie bond beam at floor or roof diaphragms and at top of wall. Where diaphragms slope, step tie bond beam as required to follow slope and provide lap splice for tie bond beam reinforcing at each step.
27. Bond and tie bond beams shall be reinforced as follows unless noted otherwise:
   a) 6x8 Bond / Tie Bond Beam: (1) #4 cont.
   b) 6x16 Bond / Tie Bond Beam: (1) #4 cont. T&B
   c) 8x8 Bond / Tie Bond Beam: (2) #5 cont.
   d) 8x16 Bond / Tie Bond Beam: (2) #5 cont. T&B
   e) 12x8 Bond / Tie Bond Beam: (2) #5 cont.
   f) 12x16 Bond / Tie Bond Beam: (2) #5 cont. T&B
28. Vertical contraction joints in concrete masonry shall be spaced at 25'-0" on center maximum unless noted otherwise on architectural or structural plans (See notes 29 & 30 for reinforcing required at joint). Joints shall be 3/8" wide and shall extend the full height of the wall. Joints shall be free of mortar and grout. Head joints to align full height of joint. Preferred joint locations are as follows. Submit joint layout for approval with masonry submittal. See typical contraction joint detail for more information.
   a) Not less than 1'-4" from a joist or beam bearing plate
   b) Near wall openings, not less than required lintel jamb width away from opening
   c) Near wall corners in one of the two joining walls, not greater than 5'-0" from corner
   d) Near column lines
   e) At changes in wall height
   f) At changes in wall thickness
   g) At tee intersections between an interior and exterior wall
29. All horizontal joint reinforcing shall be discontinuous at vertical contraction joints.
30. All horizontal bar reinforcing shall be discontinuous at vertical contraction joints except where reinforcing is used as a tie bond beam at floor or roof diaphragms and at top of wall.
31. Lintels at wall openings shall be provided as follows unless noted otherwise. See typical lintel detail for more information.
   a) Opening width up to 4'-0": 8" nominal depth w/ (2) #4 bars
   b) Opening width over 4'-0" up to 8'-0": 16" nominal depth w/ (2) #5 bars T&B
   c) Opening width over 8'-0" up to 12'-0": 24" nominal depth w/ (2) #6 bars T&B
   d) Opening width over 12'-0" up to 16'-0": 32" nominal depth w/ (2) #6 bars T&B
32. Jambs at wall openings shall be provided as follows unless noted otherwise. See typical jamb detail for more information.
   a) Opening width up to 4'-0": (1) bar and 8" min. width each side
   b) Opening width over 4'-0" up to 8'-0": (2) bars and 16" min. width each side
   c) Opening width over 8'-0" up to 12'-0": (3) bars and 24" min. width each side
   d) Opening width over 12'-0" up to 16'-0": (4) bars and 32" min. width each side
33. Pre-cast lintels shall not be permitted unless noted otherwise.
34. Provide lintels above mechanical, plumbing or electrical wall penetrations which exceed 16" wide.
35. All anchors shall be located within solid grouted cells.

COLD-FORMED STEEL (CFS) NOTES

1. Cold-formed steel framing shall be designed, detailed and installed per the latest editions of the NASPEC and SSMA Product Technical Information.
2. Cold-formed steel framing not designed and detailed in the structural drawings shall be designed by a specialty engineer employed by the framing sub-contractor. The design shall include exterior and interior wall assemblies, ceiling assemblies and other miscellaneous framing.
3. Submit shop drawings which include the following items:
   a) Plan layout showing location of cold-formed steel framing members and assemblies, including type, spacing and gauge of members
   b) Accesories and details required for proper installation
   c) Permanent and/or supplemental bracing, strapping, bridging, etc.
   d) Structural calculations, signed and sealed by a Professional Engineer registered in the same state as the project location, to verify the framing assembly's ability to meet or exceed the loads set forth by the governing building code
4. For proprietary cold-formed steel framing materials to be considered as an equal product, the Contractor shall submit product data, installation details and any other supplemental information required by the Structural Engineer with the shop drawing submittal.
5. Cold-formed steel material and minimum yield strength shall be as follows based on material thickness:
   a) 33 and 43 mil: ASTM A653 Grade A, Fy = 33 ksi
   b) 54, 68 and 97 mil: ASTM A653 Grade D, Fy = 50 ksi
6. Deflection criteria for walls shall be as follows:
   a) Interior: Height (inches) / 240
   b) Exterior: Height (inches) / 360
   c) Support masonry veneer: Height (inches) / 600
7. All structural cold-formed steel framing shall be factory color coded to provide a suitable visible means of field checking for proper location of gauge material. Submit color coding schedule with shop drawing submittal prior to installation.
8. Wall studs shall be positioned vertically between top and bottom tracks and spaced no greater than 16" on center unless noted otherwise. Securely anchor each stud to the top or bottom track with (2) #12-14 x 5/8" hex or pan head screws with one screw in each flange.
9. Wall studs shall be cut to proper length to provide a tight fit between the stud and the web of the track so as not to have the screws carrying the structural loads.
10. Top and bottom tracks shall be the same gauge as the studs unless noted otherwise.
11. At track butt joints, abutting pieces of track shall be securely anchored to a common structural element or be butt welded and/or mechanically spliced together.
12. Top and bottom tracks shall be securely anchored to the supporting structure as detailed in the structural drawings or as directed by the specialty engineer.
13. Screws for steel-to-steel and rigid material-to-steel (i.e. wood structural sheathing, gypsum board, etc.) shall be corrosion-resistant coated, self-drilling tapping screws conforming to ASTM C1513.
14. Attach exterior gypsum sheathing to exterior of each stud with #12-14 x 1" wafer or bugle head screws located 3/8" from ends and edges and spaced at 8" on center max.
15. All welds shall be touched up with a zinc-rich paint.
16. All load bearing walls, lateral bracing, etc. shall be field reviewed by the Architect or Structural Engineer prior to being concealed.

MBI

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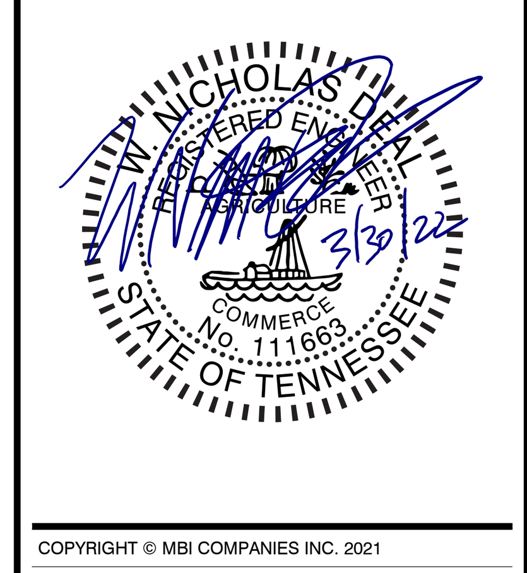
SEAL



PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	ZSP
DRAWN BY:	KAS
REVIEWED BY:	WND
SHEET TITLE:	STRUCTURAL NOTES
SHEET NO.:	S001

ARCH D

GENERAL SPECIAL INSPECTION NOTES

1. Special inspection is defined by the building code as "Inspection of construction requiring the expertise of an approved special inspector in order to ensure compliance with this code and the approved construction documents" (see 2012 IBC Chapter 17).
2. Definitions of special inspection frequency:
   a) Continuous: Special inspection by the special inspector who is present when and where the work to be inspected is being performed.
   b) Periodic: Special inspection by the special inspector who is intermittently present where the work to be inspected has been or is being performed.
   c) Perform: Tasks to be performed for each welded joint or member or for each bolted connection.
   d) Observe: Items to be observed on a random basis. Operations need not be delayed pending these inspection.
   e) Document: Create a report documenting that the work has been performed in accordance with the contract documents.
3. The owner or the owner's agent shall employ one or more special inspectors to provide inspections during construction on the types of work listed under 2012 IBC Section 1705. The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection. The special inspector shall disclose all possible conflicts of interest so that objectivity can be confirmed by the building official and/or the design professional.
4. Special inspectors are as defined in specification section 014500. All other testing falls under specification section 014000.
5. Report requirements:
   a) Special inspectors shall keep records of inspections. The special inspector shall furnish inspection reports to the building official, and to the registered design professional in responsible charge. Reports shall indicate that work inspected was done in conformance to the approved construction documents.
   b) Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the registered design professional in responsible charge prior to the completion of that phase of the work.
   c) A final report documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon by the permit applicant and the building official prior to the start of the work.
6. In the event that the project locale does not require a building official to be involved, the owner or owner's agent shall review the special inspection requirements with the design professional to determine which items for special inspection are mandatory.
7. Special inspection items listed in the following tables are required if the inspection item pertains to the project.

STATEMENT OF SPECIAL INSPECTIONS

Project: AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL
Location: 5 NORRIS SQUARE, NORRIS, TN 37828
Owner:
Design Professional: W. Nicholas Deal, P.E., S.E.

This Statement of Special Inspections is submitted in accordance with Section 1704.3 of the 2012 IBC. It includes a Schedule of Special Inspection Services applicable to the above referenced Project as well as the identity of the individuals, agencies, or firms intended to be retained for conducting these inspections. If applicable, it includes Requirements for Seismic Resistance and/or Requirements for Wind Resistance.

Are requirements for Seismic Resistance included in the Statement of Special Inspections? No
Are requirements for Wind Resistance included in the Statement of Special Inspections? No

The Special Inspector(s) shall keep records of all inspections and shall furnish interim inspection reports to the Building Official and to the Registered Design Professional in Responsible Charge at a frequency agreed upon by the Design Professional and the Building Official prior to the start of work. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge prior to completion of that phase of work. A Final Report of Special Inspections documenting required special inspections and corrections of any discrepancies noted in the inspections shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge at the conclusion of the project.

Frequency of interim report submittals to the Building Official and Registered Design Professional in Responsible Charge shall be as follows:

Building Official: Monthly
Design Professional in Responsible Charge: Bi-weekly

Statement of Special Inspections Prepared by:

Type or print name

Signature Date

Building Official's Acceptance:

Signature Date

Preparer's Seal

CONCRETE CONSTRUCTION

Concrete (2012 IBC: Table 1705.3, 1705.12.1)

Required	Task	Extent	Description	Service
Yes	1. Reinforcing steel, including prestressing tendons	Periodic	Verify prior to placing concrete that reinforcing is of specified type, grade and size; that it is free of oil, dirt and rust; that it is located and spaced properly; that hooks, bends, ties, stirrups and supplemental reinforcement are placed correctly; that lap lengths, stagger and offsets are provided; and that all mechanical connections are installed per the manufacturer's instructions and/or evaluation report.	Field inspection
Yes	2. Anchors cast in concrete	Periodic	Verify prior to placing concrete that cast in anchors have proper embedment, spacing and edge distance.	Field inspection
Yes	3. Post-installed anchors or dowels	Periodic	Inspect all post-installed anchors/dowels as required by the approved ICC-ES report.	Field inspection and/or anchor capacity testing
Yes	4. Use of required mix design	Periodic	Verify that all mixes used comply with the approved construction documents.	Submittal review and field verification
Yes	5. Concrete slump, air content, and temperature	Continuous	At the time fresh concrete is sampled to fabricate specimens for strength test, verify these tests are performed.	Field inspection
Yes	6. Concrete & shotcrete placement	Continuous	Verify proper application techniques are used during concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated.	Field inspection
Yes	7. Curing temperature and techniques	Periodic	Inspect curing, cold weather protection and hot weather protection procedures	Field inspection
No	8. Pre-stressed concrete	Continuous	Verify application of prestressing forces and grouting of bonded prestressing tendons in the seismic force-resisting system.	Field inspection
No	9. Erection of precast concrete	Periodic	Verify that all precast elements are lifted, assembled and braced in accordance with the approved construction documents.	Field inspection
Yes	10. In-situ concrete strength verification	Periodic	Prior to the removal of shores and forms or the stressing of post-tensioned tendons, verify that adequate strength has been achieved.	Field inspection
Yes	11. Formwork	Periodic	Inspect the forms to ensure that they are placed plumb and conform to the shapes, lines, and dimensions of the members as required by the approved construction documents.	Field inspection
No	12. Reinforcement complying with ASTM A615 in special moment frames, special structural walls and coupling beams (only when Special Inspections for seismic resistance is required)	Periodic	Verify that ASTM A615 reinforcing steel used in these areas complies with ACI 318: 21.1.5.2 by means of certified mill test reports. If this reinforcing steel is to be welded, chemical tests shall be performed in accordance with ACI 318: 3.5.2.	Field inspection
No	13. Reinforcement placement within progressive collapse resisting system (only when Special Inspections for progressive collapse resistance is required)	Continuous	Visually inspect reinforcing steel placement with a particular emphasis on reinforcing steel anchorages, laps and other details within the progressive collapse resisting system, including horizontal tie force elements, vertical tie force elements and bridging elements.	Field inspection

STRUCTURAL STEEL CONSTRUCTION

Prior to Welding (AISC 360-10: Table N5.4-1; AISC 341-10: Table J6-1)

Required	Task	Extent	Description	Service
Yes	1. Verify welding procedure specifications (WPS) and consumable certificates	Perform		Submittal review
Yes	2. Material identification (type/grade)	Observe		Shop and field inspection
Yes	3. Welder identification system	Observe	A system shall be maintained by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low-stress dye type.	Submittal review
Yes	4. Fit-up of groove welds (including joint geometry)	Observe	Verify joint preparation, dimensions (alignment, root opening, root face, bevel), cleanliness (condition of surface steel), tacking (tack weld quality and location), and backing type and fit (if applicable).	Shop and field inspection
Yes	5. Configuration and finish of access holes	Observe		Shop and field inspection
Yes	6. Fit-up of fillet welds	Observe	Verify dimensions (alignment, gaps at root), cleanliness (condition of steel surfaces), and tacking (tack weld quality and location).	Shop and field inspection

During Welding (AISC 360-10: Table N5.4-2; AISC 341-10: Table J6-2)

Required	Task	Extent	Description	Service
Yes	1. Use of qualified welders	Observe		Shop and field inspection
Yes	2. Control and handling of welding consumables	Observe	Verify packaging and exposure control.	Shop and field inspection
Yes	3. No welding over cracked tack welds	Observe		Shop and field inspection
Yes	4. Environmental conditions	Observe	Verify wind speed within limits and precipitation and temperature criteria being met.	Shop and field inspection
Yes	5. WPS followed	Observe	Verify settings on weld equipment, travel speed, selecting welding materials, shielding gas type/flow rate, preheat applied, interpass temperature maintained (min./max.), proper position (F, V, H, OH), and intermix of filler metals avoided unless approved.	Submittal review with shop and field verification
Yes	6. Welding techniques	Observe	Verify interpass and final cleaning, each pass within profile limitations, and each pass meets quality requirements.	Shop and field inspection

After Welding (AISC 360-10: Table N5.4-3; AISC 341-10: Table J6-3)

Required	Task	Extent	Description	Service
Yes	1. Welds cleaned	Observe		Shop and field inspection
Yes	2. Size, length and location of welds	Perform		Shop and field inspection
Yes	3. Welds meet visual acceptance criteria	Perform	Verify crack prohibition, weld/base-metal fusion, crater cross section, weld profiles, weld size, undercut, and porosity.	Shop and field inspection
Yes	4. Arc strikes	Perform		Shop and field inspection
Yes	5. k-area	Perform	When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3" of the weld.	Shop and field inspection
Yes	6. Backing removed and weld tabs removed (if required)	Perform / Document		Shop and field inspection
Yes	7. Backing removed, weld tabs removed and finished, and fillet welds added (if required)	Perform / Document		Shop and field inspection
Yes	8. Placement of reinforcing or contouring fillet welds (if required)	Perform / Document		Shop and field inspection
Yes	9. Repair activities	Perform		Shop and field inspection
Yes	10. Document acceptance or rejection of welded joint or member	Perform		Shop and field inspection

STRUCTURAL STEEL CONSTRUCTION (CONT'D)

After Bolting (AISC 360-10: Table N5.6-3; AISC 341-10: Table J7-3)

Required	Task	Extent	Description	Service
Yes	1. Document acceptance or rejection of bolted connections	Perform		Field inspection

Other Steel Inspections (AISC 360-10: N5.7)

Required	Task	Extent	Description	Service
Yes	1. Anchor rods and other embedments supporting structural steel	Perform	Verify the diameter, grade, type and length of the anchor rod or embedded item, and the extent or depth of embedment prior to placement of concrete.	Field inspection
Yes	2. Fabricated steel or erected steel frame	Observe	Verify compliance with the details shown on the construction documents, such as braces, stiffeners, member locations and proper application of joint details at each connection.	Field inspection

Steel Elements of Composite Construction Prior to Concrete Placement (AISC 360-10: Table N6.1)

Required	Task	Extent	Description	Service
Yes	1. Placement and installation of steel deck	Perform		Field inspection
Yes	2. Placement and installation of steel headed stud anchors	Perform		Field inspection
Yes	3. Document acceptance or rejection of steel elements	Perform		Field inspection

SOILS CONSTRUCTION

Soil (2012 IBC: Table 1705.6)

Required	Task	Extent	Description	Service
YES	1. Foundation bearing capacity	Periodic	Verify the materials below foundations are adequate to achieve the design bearing capacity.	Field inspection
YES	2. Excavations	Periodic	Verify the excavations are extended to the proper depth and have reached proper material.	Field inspection
YES	3. Perform classification and testing of compacted fill materials	Periodic		Field inspection
YES	4. Compacted fill material	Continuous	Verify the use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	Field inspection
YES	5. Subgrade	Periodic	Prior to placement of compacted fill, observe sub-grade and verify that the site has been properly prepared.	Field inspection

MASONRY CONSTRUCTION - LEVEL B

Prior to Construction (ACI 530-11: 1.5)

Required	Task	Extent	Description	Service
Yes	1. Review material certificates, mix designs, test results and construction procedures	Periodic	Verify that materials conform to the requirements of the approved construction documents.	Submittal review

As Construction Begins (ACI 530-11: Table 1.19.2)

Required	Task	Extent	Description	Service
Yes	1. Proportions of site-prepared mortar	Periodic	Verify that mortar is of the type and color specified on the construction documents, that it conforms to ASTM C270, and that it is mixed in accordance with ACI 530.1: 2.6A.	Submittal review and field verification
Yes	2. Construction of mortar joints	Periodic	Verify that the mortar joints comply with ACI 530.1: 3.3B.	Field inspection
No	3. Grade and size of prestressing tendons and anchorages	Periodic	Verify that prestressing tendons comply with ACI 530.1: 2.4B and that anchorages, couplers, and end blocks comply with 2.4H.	Field inspection
Yes	4. Location of reinforcement, connectors, and prestressing tendons and anchorages	Periodic	Verify that reinforcement is placed in accordance with ACI 530.1: 3.4. Prestressing tendons shall be placed per 3.6A.	Field inspection
No	5. Prestressing technique	Periodic	Verify that prestressing technique complies with ACI 530.1: 3.6B.	Field inspection
No	6. Properties of thin-bed mortar for AAC masonry	Continuous / Periodic	Verify that mortar complies with ACI 530.1: 2.1C. Continuous inspection for the first 5000 sf of wall and periodic for all following applications.	Field inspection

Prior to Grouting (ACI 530-11: Table 1.19.2)

Required	Task	Extent	Description	Service
Yes	1. Grout space	Periodic	Verify that grout space is free of mortar droppings, debris, loose aggregate, and other deleterious materials and that cleanouts are provided per ACI 530.1: 3.2D and 3.2F.	Field inspection
Yes	2. Grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages	Periodic	Verify that reinforcement, joint reinforcement, wall ties, anchor bolts and veneer anchors comply with the approved construction documents and ACI 530: 1.16.	Submittal review and field verification
Yes	3. Placement of reinforcement, connectors, and prestressing tendons and anchorages	Periodic	Verify that reinforcement, joint reinforcement, wall ties, anchor bolts and veneer anchors are installed in accordance with the approved construction documents and ACI 530.1: 3.2E, 3.4 and 3.6A.	Field inspection
Yes	4. Proportions of site-prepared grout and prestressing grout for bonded tendons	Periodic	Verify that grout is proportioned per ASTM C476 and has a slump between 8" to 11". Self-consolidated grout shall not be proportioned onsite.	Field inspection
Yes	5. Construction of mortar joints	Periodic	Verify that mortar joints are placed in accordance with ACI 530.1: 3.3B.	Field inspection

During Construction (ACI 530-11: Table 1.19.2)

Required	Task	Extent	Description	Service
Yes	1. Size and location of structural elements	Periodic	Verify the locations of structural elements with respect to the approved construction documents and confirm that tolerances meet the requirements of ACI 530.1: 3.3F.	Field inspection
Yes	2. Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.	Periodic	Verify that correct anchorages and connections are provided per the approved construction documents and ACI 530: 1.16.4.3 and 1.17.1.	Field inspection
Yes	3. Welding of reinforcement	Continuous	Verify welded reinforcement meets the requirements of ACI 530: 2.1.7.7.2, 3.3.3.4(c), and 8.3.3.4(b).	Field inspection
Yes	4. Preparation, construction, and protection of masonry during cold weather (<40ºF) or hot weather (>90ºF)	Periodic	Verify that cold weather construction is performed in accordance with ACI 530.1: 1.8C and hot weather construction per ACI 530.1: 1.8D.	Field inspection
No	5. Application and measurement of prestressing force	Continuous	Verify the proper prestressing force is applied per ACI 530.1: 3.6B.	Field inspection
Yes	6. Placement of grout and prestressing grout for bonded tendons is in compliance	Continuous	Verify placement of grout is done in accordance with ACI 530.1: 3.5 and placement of grout for bonded tendons is in accordance with ACI 530.1: 3.6C.	Field inspection
No	7. Placement of AAC masonry units and construction of thin-bed mortar joints	Continuous / Periodic	Verify that mortar is placed in accordance with ACI 530.1: 3.3B.8. Continuous inspection for the first 5000 sf of wall and periodic for all following applications.	Field inspection
Yes	8. Observation of grout specimens, mortar specimens, and/or prisms	Periodic	Confirm that specimens/prisms are performed as required by ACI 530.1: 1.4.	Field inspection

Minimum Testing (ACI 530-11: Table 1.19.2)

Required	Task	Extent	Description	Service
Yes	1. Verification of Slump Flow and Visual Stability Index (VSI) for self-consolidating grout	--	Compressive strength tests should be performed in accordance with ASTM C1019 for slump flow and ASTM C1611 for VSI.	Field inspection
Yes	2. Verification of f'm and f'AAC	--	Determine the compressive strength for each wythe by the "unit strength method" or by the "prism test method" as specified in ACI 530:1 1.4B prior to construction.	Field inspection

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SEAL

W. NICHOLAS DEAL
REGISTERED ENGINEER
AGRICULTURE
CHEMICAL
ENGINEER
No. 111663
STATE OF TENNESSEE

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

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NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED: 02/04/2022
DESIGNED BY: ZSP
DRAWN BY: KAS
REVIEWED BY: WND
SHEET TITLE:

SPECIAL INSPECTIONS

SHEET NO.:

S002

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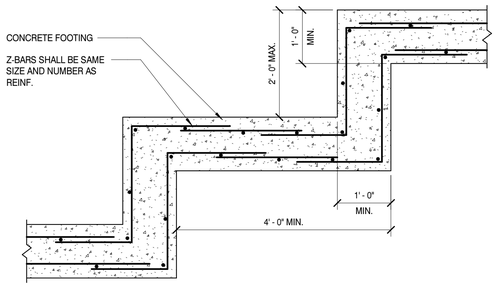
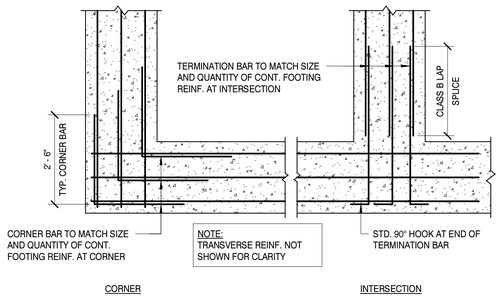


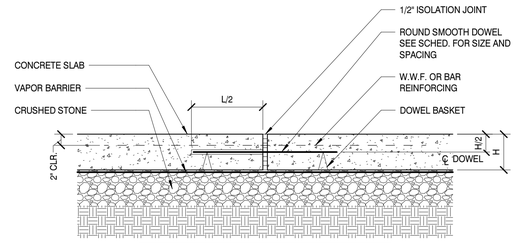
FOOTING STEP DETAIL 1

SCALE : 3/4" = 1'-0"



TYP. WALL FOOTING REINF. LAYOUT 2

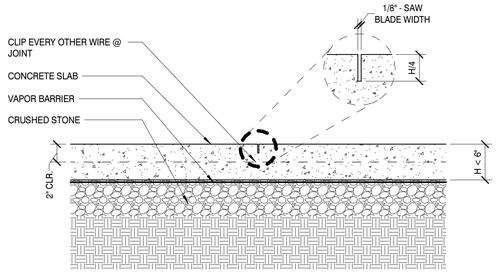
SCALE : 1/2" = 1'-0"



DOWEL SCHEDULE			
SLAB THICKNESS	DIAMETER	LENGTH (L)	SPACING
H ≤ 6"	3/4" Ø	14"	12" O.C.
6" < H ≤ 8"	1" Ø	16"	12" O.C.
8" < H ≤ 12"	1-1/4" Ø	18"	12" O.C.

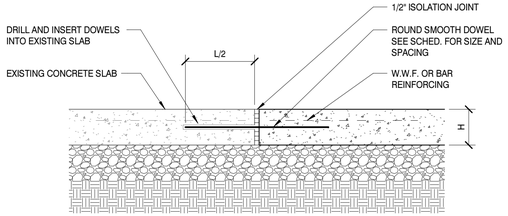
CONSTRUCTION JOINT DETAIL 3

SCALE : 1 1/2" = 1'-0"



CONTRACTION JOINT DETAIL 4

SCALE : 1 1/2" = 1'-0"

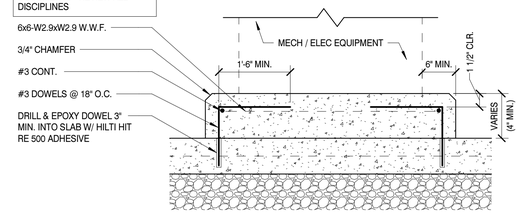


DOWEL SCHEDULE			
SLAB THICKNESS	DIAMETER	LENGTH (L)	SPACING
H ≤ 6"	3/4" Ø	14"	12" O.C.
6" < H ≤ 8"	1" Ø	16"	12" O.C.
8" < H ≤ 12"	1-1/4" Ø	18"	12" O.C.

SLAB TO EXISTING SLAB DETAIL 5

SCALE : 1 1/2" = 1'-0"

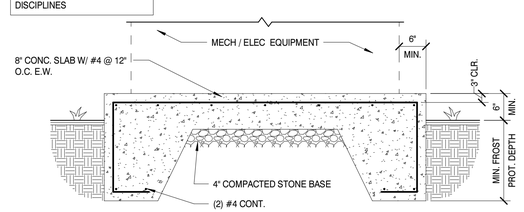
NOTE:
EQUIP. PAD TO BE UTILIZED AS INDICATED IN CONTRACT DOCUMENTS - REVIEW ALL DISCIPLINES



INTERIOR EQUIP. PAD DETAIL 6

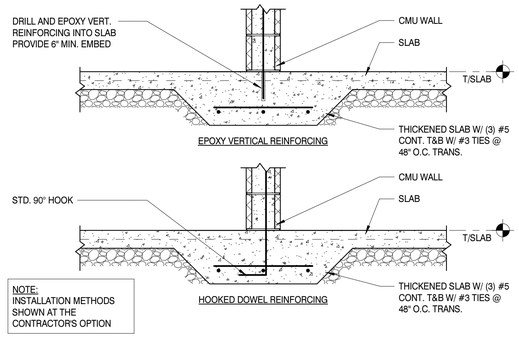
SCALE : 1 1/2" = 1'-0"

NOTE:
EQUIP. PAD TO BE UTILIZED AS INDICATED IN CONTRACT DOCUMENTS - REVIEW ALL DISCIPLINES



EXTERIOR EQUIP. PAD DETAIL 7

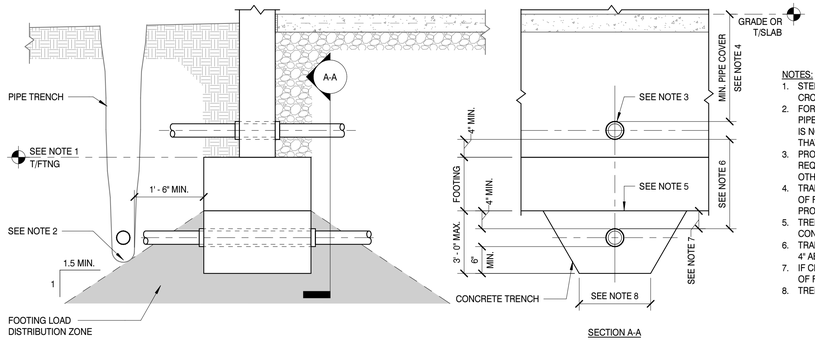
SCALE : 3/4" = 1'-0"



NOTE:
INSTALLATION METHODS SHOWN AT THE CONTRACTORS OPTION

THICKENED SLAB DETAIL 8

SCALE : 3/4" = 1'-0"



SECTION A-A

NOTES:
1. STEP FOOTING AS REQUIRED TO ALLOW TRANSVERSE PIPES TO CROSS ABOVE OR BELOW FOOTING AS SHOWN.
2. FOR PIPES RUNNING PARALLEL TO FOOTING, FOOTING DEPTH AND PIPE LOCATION SHALL BE COORDINATED SO THAT THE PIPE TRENCH IS NOT LOCATED WITHIN THE FOOTING LOAD DISTRIBUTION ZONE THAT EXTENDS OUT FROM THE BOTTOM EDGE OF THE FOOTING.
3. PROVIDE PIPE SLEEVE AND COMPRESSIBLE FILLER MATERIAL AS REQUIRED TO ACCOMMODATE 1" SETTLEMENT UNLESS NOTED OTHERWISE IN GEOTECHNICAL REPORT AT ALL PIPE PENETRATIONS.
4. TRANSVERSE PIPE PENTRATIONS MAY BE PLACED BETWEEN THE TOP OF FOOTING AND THE SLAB ON GRADE THROUGH THE STEM WALL PROVIDED MINIMUM PIPE COVER IS MAINTAINED.
5. TRENCH AND FOOTING MAY BE POURED MONOLITHICALLY AT THE CONTRACTOR'S OPTION.
6. TRANSVERSE PIPES SHALL NOT CROSS THROUGH FOOTING OR AREA 4" ABOVE AND BELOW FOOTING.
7. IF CROWN OF PIPE IS LOCATED GREATER THAN 4'-0" BELOW BOTTOM OF FOOTING, NO CONCRETE TRENCH IS REQUIRED.
8. TRENCH WIDTH SHALL BE EQUAL TO FOOTING WIDTH ABOVE.

TYPICAL PIPE AND TRENCH LOCATIONS AT FOUNDATION 9

SCALE : 3/4" = 1'-0"

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KEY PLAN

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REVIEWED BY:	WND

SHEET TITLE:

TYPICAL FOUNDATION AND SLAB ON GRADE DETAILS

SHEET NO.:

S003

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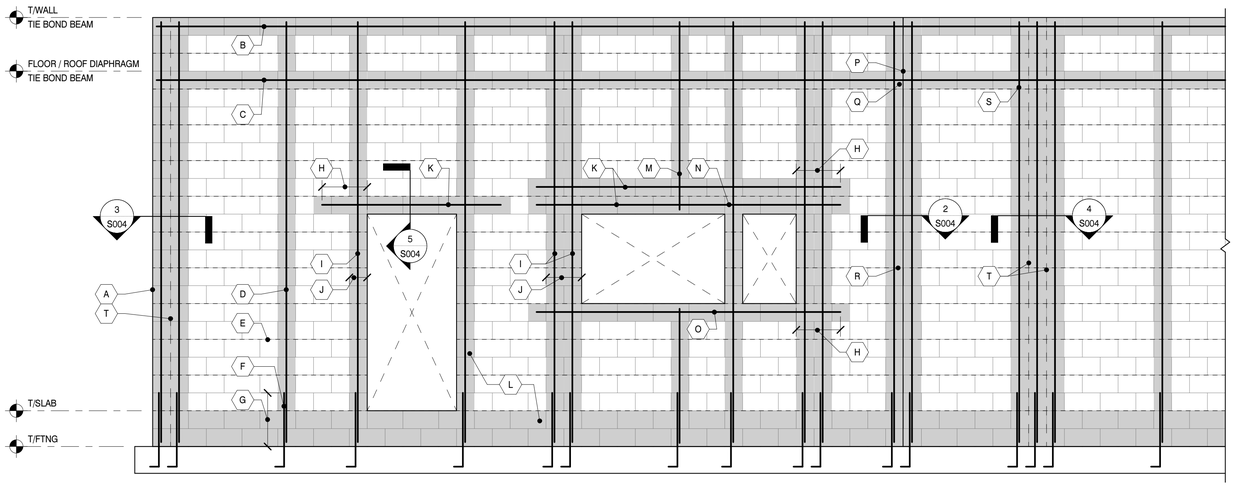


CMU WALL ELEVATION GUIDE (W/ HORIZONTAL JOINT REINFORCING) 1

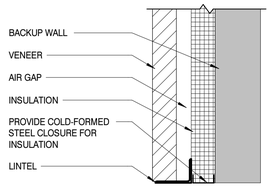
SCALE: 3/8" = 1'-0" S-B1000115 - CMU WALL ELEVATION W/ HORIZ JOINT REINF

GENERAL NOTES

1. THIS DETAIL IS FOR REFERENCE ONLY TO IDENTIFY THE COMPONENTS OF MASONRY WALL CONSTRUCTION. FOR SPECIFIC REQUIREMENTS OF WALL CONSTRUCTION, REFER TO NOTES, PLANS AND DETAILS.

KEYED NOTES

A. WALL CORNER
B. TIE BOND BEAM AT TOP OF WALL
C. TIE BOND BEAM AT FLOOR / ROOF DIAPHRAGM
D. VERTICAL BAR REINFORCING
E. HORIZONTAL JOINT REINFORCING
F. FOUNDATION DOWELS
G. REINFORCING SPLICE LENGTH OF 64 BAR DIAMETERS BUT NOT LESS THAN 12"
H. EXTEND REINFORCING BEYOND EDGE OF OPENING FOR DEVELOPMENT INTO WALL A DISTANCE OF 40 BAR DIAMETERS BUT NOT LESS THAN 24"
I. JAMB REINFORCING EACH SIDE OF OPENING
J. JAMB WIDTH
K. LINTEL REINFORCING
L. SOLID GROUTED CELLS
M. CONTINUATION OF INTERRUPTED VERTICAL WALL REINFORCING ABOVE OPENINGS
N. WHEN PIER BETWEEN SERIES OF OPENINGS IS LESS THAN 1'-4" WIDE, CONSIDER OVERALL WIDTH OF SERIES TO DETERMINE LINTEL SIZE
O. 8" HIGH BOND BEAM AT BOTTOM OF ALL OPENINGS
P. CONTRACTION JOINT (CJ)
Q. TIE BOND BEAM REINFORCING TO BE CONTINUOUS ACROSS CONTRACTION JOINT AT TOP OF WALL AND FLOOR / ROOF DIAPHRAGM
R. HORIZONTAL JOINT REINFORCING TO BE DISCONTINUOUS ACROSS CONTRACTION JOINT
S. KNOCK OUT BOND BEAM UNITS REQUIRED AT VERTICAL REINFORCING
T. WALL BEYOND

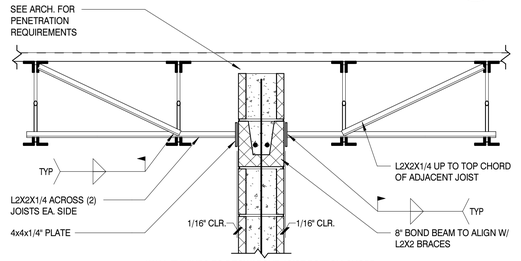


LOOSE LAID LINTEL SCHEDULE	
OPENING WIDTH	LINTEL SIZE
4'-0" OR LESS	L6x3-1/2x5/16 LLH
OVER 4'-0" TO 8'-0"	L6x4x5/16 LLH
OVER 8'-0" TO 12'-0"	L6x6x3/8
OVER 12'-0" TO 14'-0"	L8x6x7/16 LLV

NOTES:
1. PROVIDE 8" (MIN.) BEARING EACH END OF LINTEL.
2. ALL LINTELS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
3. HORIZONTAL LEG SIZE ABOVE COINCIDES WITH A 4" NOMINAL WIDTH VENEER AND A 2" MIN. AIR GAP. INCREASE HORIZONTAL LEG SIZE AS REQUIRED TO MAINTAIN 1" MAX. VENEER OVERHANG PAST LINTEL EDGE.

BRICK LINTEL DETAIL 6

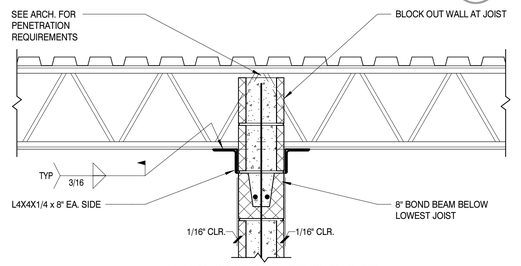
SCALE : 1" = 1'-0"



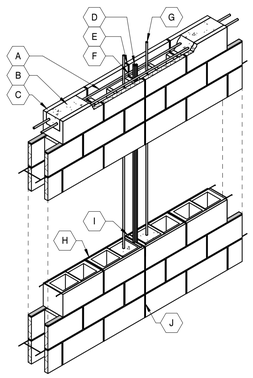
WALL EXTENDS TO DECK/ABOVE JOIST BOTTOM CHORD
(WALL PARALLEL TO JOIST)

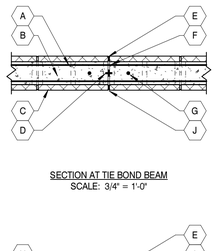
CMU PARTITION BRACING DETAIL 7

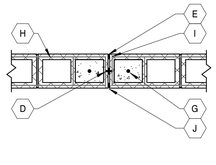
SCALE : 1" = 1'-0"



WALL EXTENDS TO DECK / ABOVE JOIST BOTTOM CHORD
(WALL PERPENDICULAR TO JOIST)





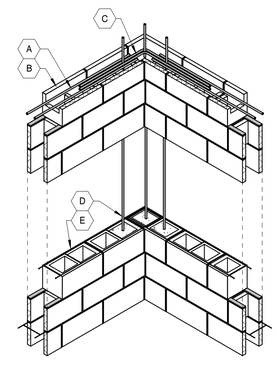


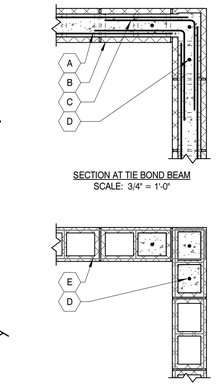
KEYED NOTES

A. TIE BOND BEAM REINFORCING
B. GROUT
C. BOND BEAM UNIT
D. PREFORMED GASKET IN SASH UNIT
E. BACKER ROD AND SEALANT
F. TIE BOND BEAM REINFORCING CONTINUOUS ACROSS JOINT
G. VERTICAL BAR REINFORCING (MATCH SIZE AND QUANTITY OF VERTICAL WALL REINFORCING) AT (1) CELL EACH SIDE OF JOINT
H. HORIZONTAL JOINT REINFORCING
I. TERMINATE HORIZONTAL JOINT REINFORCING EACH SIDE OF JOINT
J. HEAD JOINTS TO ALIGN FULL HEIGHT OF JOINT AND SHALL BE FREE OF MORTAR AND GROUT

CMU CONTRACTION JOINT DETAIL 2

SCALE : 1/2" = 1'-0"



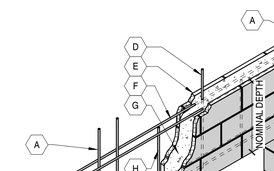


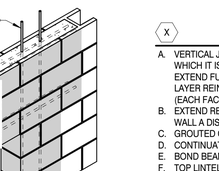
KEYED NOTES

A. TIE BOND BEAM REINFORCING (GROUT NOT SHOWN IN ISOMETRIC FOR CLARITY)
B. BOND BEAM UNIT
C. CORNER BAR (MATCH SIZE AND QUANTITY OF TIE BOND BEAM REINFORCING), LAP WITH TIE BOND BEAM REINFORCING
D. RAKE OUT MORTAR AND CAULK
E. HORIZONTAL JOINT REINFORCING
F. 1/4" x 1 1/2" W x 24" L Z-STRAP CONNECTOR WITH 2", 90° BEND EXTENSIONS EACH END SPACED AT 48" O.C. MAX.
G. VERTICAL BAR REINFORCING (MATCH SIZE AND QUANTITY OF VERTICAL WALL REINFORCING) AT (4) CELLS AT CORNER
H. GROUT ADDITIONAL CELLS AT Z-STRAP CONNECTOR

CMU WALL CORNER DETAIL 3

SCALE : 1/2" = 1'-0"





KEYED NOTES

A. TIE BOND BEAM REINFORCING (GROUT NOT SHOWN IN ISOMETRIC FOR CLARITY), LAP WITH HORIZONTAL BAR REINFORCING
B. BOND BEAM UNIT
C. CORNER BAR (MATCH SIZE AND QUANTITY OF HORIZONTAL BAR REINFORCING), LAP WITH HORIZONTAL BAR REINFORCING
D. VERTICAL BAR REINFORCING (MATCH SIZE AND QUANTITY OF VERTICAL WALL REINFORCING) AT (3) CELLS AT CORNER
E. HORIZONTAL JOINT REINFORCING

CMU LINTEL DETAIL 5

SCALE : 1/2" = 1'-0"

KEYED NOTES

A. VERTICAL JAMB BAR REINFORCING TO MATCH SIZE OF WALL REINFORCING IN WHICH IT IS CONTAINTED UNLESS NOTED OTHERWISE. REINFORCING TO EXTEND FULL HEIGHT OF WALL. PLACE ONE (1) BAR EACH CELL FOR SINGLE LAYER REINFORCED WALLS AND TWO (2) BARS EACH CELL FOR DUAL LAYER (EACH FACE) REINFORCED WALLS.
B. EXTEND REINFORCING BEYOND EDGE OF OPENING FOR DEVELOPMENT INTO WALL A DISTANCE OF 40 BAR DIAMETERS BUT NOT LESS THAN 24"
C. GROUTED CELL AT VERTICAL JAMB BAR REINFORCING
D. CONTINUATION OF INTERRUPTED VERTICAL WALL REINFORCING ABOVE OPENING
E. BOND BEAM BLOCK AT TOP OF LINTEL
F. TOP LINTEL REINFORCING
G. GROUT FULL DEPTH OF LINTEL ACROSS OPENING
H. #4 DOWEL @ 16" O.C. MAX. NOT REQUIRED WHEN COINCIDES WITH VERTICAL WALL REINFORCING.
I. LINTEL BLOCK AT BOTTOM OF LINTEL
J. BOTTOM LINTEL REINFORCING
K. SHADED AREA DENOTES EXTENT OF GROUTED CELLS FOR LINTEL AND JAMBS

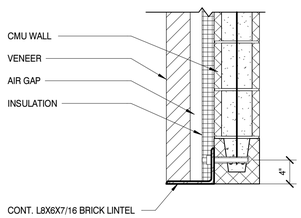
LINTEL SCHEDULE				
OPENING WIDTH	NOMINAL DEPTH	REINFORCING	NO. JAMB BARS	JAMB WIDTH
4'-0" OR LESS	8"	(2) #4 BOT.	(1)	8"
OVER 4'-0" TO 8'-0"	1'-4"	(2) #5 T&B	(2)	1'-4"
OVER 8'-0" TO 12'-0"	2'-0"	(2) #6 T&B	(3)	2'-0"
OVER 12'-0" TO 18'-0"	2'-8"	(2) #6 T&B	(4)	2'-8"

CMU WALL INTERSECTION DETAIL 4

SCALE : 1/2" = 1'-0"

CMU PARTITION BRACING DETAIL 8

SCALE : 1" = 1'-0"



BRICK LEDGER DETAIL 9

SCALE : 1" = 1'-0"

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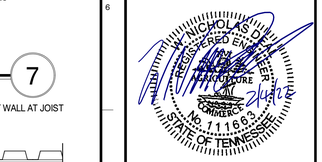
SEAL



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KEY PLAN

SHEET INFORMATION

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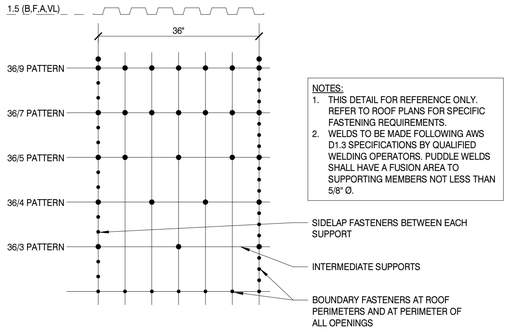
DESIGNED BY:	ZSP
DRAWN BY:	KAS
REVIEWED BY:	WND

SHEET TITLE:

TYPICAL CMU DETAILS W/ HORIZONTAL JOINT REINFORCING

SHEET NO.:

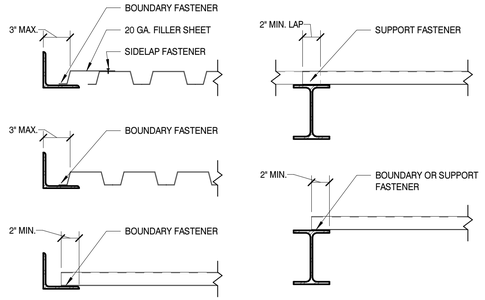
S004



NOTES:
1. THIS DETAIL FOR REFERENCE ONLY. REFER TO ROOF PLANS FOR SPECIFIC FASTENING REQUIREMENTS.
2. WELDS TO BE MADE FOLLOWING AWS D1.3 SPECIFICATIONS BY QUALIFIED WELDING OPERATORS. PUDDLE WELDS SHALL HAVE A FUSION AREA TO SUPPORTING MEMBERS NOT LESS THAN 5/8" Ø.

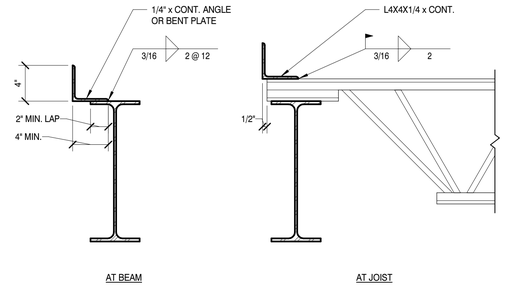
ROOF DECK FASTENING LAYOUT 1

SCALE : 3/4" = 1'-0"



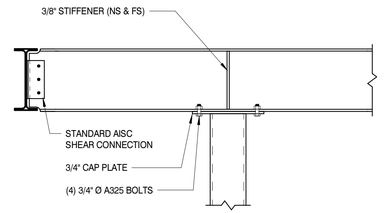
ROOF EDGE ANGLE DETAIL 2

SCALE : 1 1/2" = 1'-0"



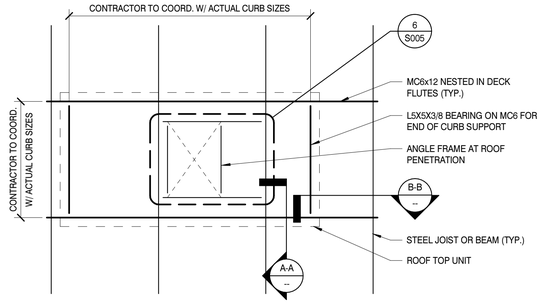
ROOF EDGE ANGLE DETAIL 3

SCALE : 1 1/2" = 1'-0"



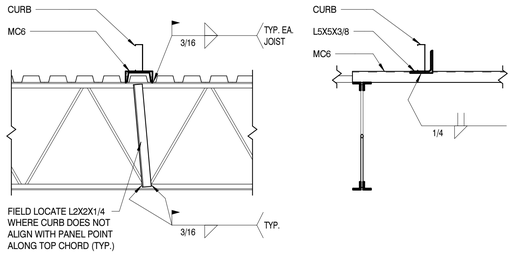
CONNECTION DETAIL 4

SCALE : 3/4" = 1'-0"



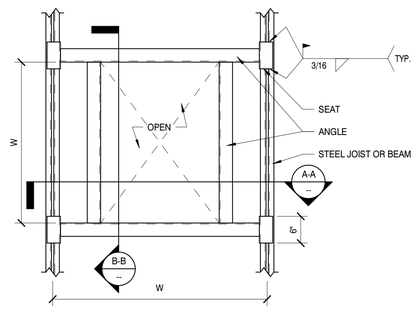
RTU CURB DETAIL 5

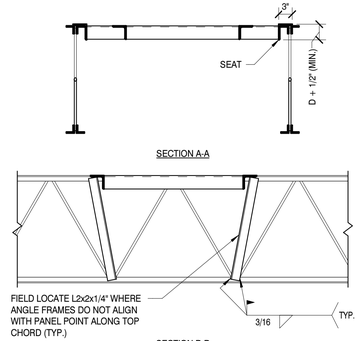
SCALE : 3/4" = 1'-0"



ANGLE FRAME SCHEDULE	
ANGLE SPAN (W)	ANGLE SIZE
2'-0" OR LESS	L2X2X1/4
OVER 2'-0" TO 4'-0"	L3X3X1/4
OVER 4'-0" TO 6'-0"	L4X4X5/16
OVER 6'-0" TO 8'-0"	L6X4X3/8 LLV

NOTES:
1. PROVIDE ANGLE FRAME AS SHOWN FOR OPENINGS 8"x8" OR 8" DIAMETER AND LARGER, INCLUDING ROOF DRAINS AND SUMPS.
2. USE LARGEST "W" DIMENSION FOR SELECTING ANGLE SIZE.
3. SEAT TO BE THE SAME DEPTH AS SUPPORTED ANGLE + 1/2" x 3" WIDE x 3/8" THICK x 6" LONG.
4. COORDINATE EXACT SIZE AND LOCATIONS OF OPENINGS WITH OTHER DISCIPLINES.
5. SHOP WELD ALL CONNECTIONS WITH 3/16" FILLET WELDS ALL AROUND.





ROOF OPENING DETAIL 6

SCALE : 3/4" = 1'-0"

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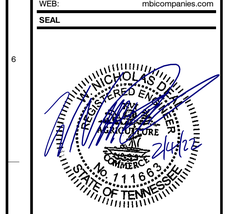

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

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- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	ZSP
DRAWN BY:	KAS
REVIEWED BY:	WND

SHEET TITLE:

TYPICAL STEEL DETAILS

SHEET NO.:

S005

ARCH D

GENERAL NOTES - FOUNDATION PLAN

1. ELEVATIONS ARE REFERENCED FROM THE FIRST LEVEL TOP OF SLAB (T/SLAB) DATUM ELEVATION OF 14'-8". SEE CIVIL DRAWINGS FOR EQUIVALENT MEAN SEA LEVEL ELEVATION.
2. CONTRACTOR TO COORDINATE LOCATION AND SIZE OF FOOTING STEPS AND SHOULD ADJUST AS REQUIRED TO MAINTAIN 1'-0" MINIMUM COVER OVER TOP OF FOOTING AND MEET LOCAL FROST DEPTH CRITERIA. COORDINATE WITH SITE GRADING PLAN. SEE FOUNDATION NOTES ON S0.0 FOR MORE INFORMATION.
3. TOP OF FOOTING (T/FTNG) ELEVATIONS ARE 13'-4" UNLESS NOTED OTHERWISE. ELEVATIONS ARE REFERENCED FROM THE DATUM LISTED IN NOTE #1.
4. COORDINATE FOUNDATION LAYOUT WITH PLUMBING AND OTHER UNDERGROUND UTILITIES. STEP AND/OR LOWER FOUNDATIONS AS NECESSARY TO PREVENT CONFLICTS.
5. COORDINATE PLACEMENT OF NEW FOOTINGS WITH EXISTING FOOTINGS AS REQUIRED. WHEN NEW FOOTINGS COME INTO CONTACT WITH EXISTING FOOTINGS, NEW FOOTINGS SHALL BE FOUNDED AT THE SAME DEPTH AS THE EXISTING FOOTINGS UNLESS NOTED OTHERWISE.
6. DEMOLISH EXISTING SLABS, FOUNDATION WALLS AND FOOTINGS AS REQUIRED FOR NEW CONSTRUCTION. REPAIR AND/OR REBUILD AREAS AS NEEDED TO MATCH EXISTING CONDITIONS.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF SOIL EXCAVATION AND SHALL PROVIDE SHORING OR OTHER PRECAUTIONS AS NECESSARY DUE TO THE CLOSE PROXIMITY OF THE EXISTING STRUCTURE. THE GEOTECHNICAL ENGINEER SHOULD BE CONSULTED TO DEVELOP A SUITABLE EXCAVATION PLAN.
8. SEE S00 SHEETS FOR ADDITIONAL NOTES AND TYPICAL DETAILS NOT SPECIFICALLY REFERENCED ON STRUCTURAL DRAWINGS.

KEYED NOTES - FOUNDATION PLAN

1 FLOOR SLAB TO BE 4" THICK SLAB ON GRADE WITH 6x6-W1.4xW1.4 WWF ON 20 MIL POLY VAPOR BARRIER OVER 4" CRUSHED STONE.

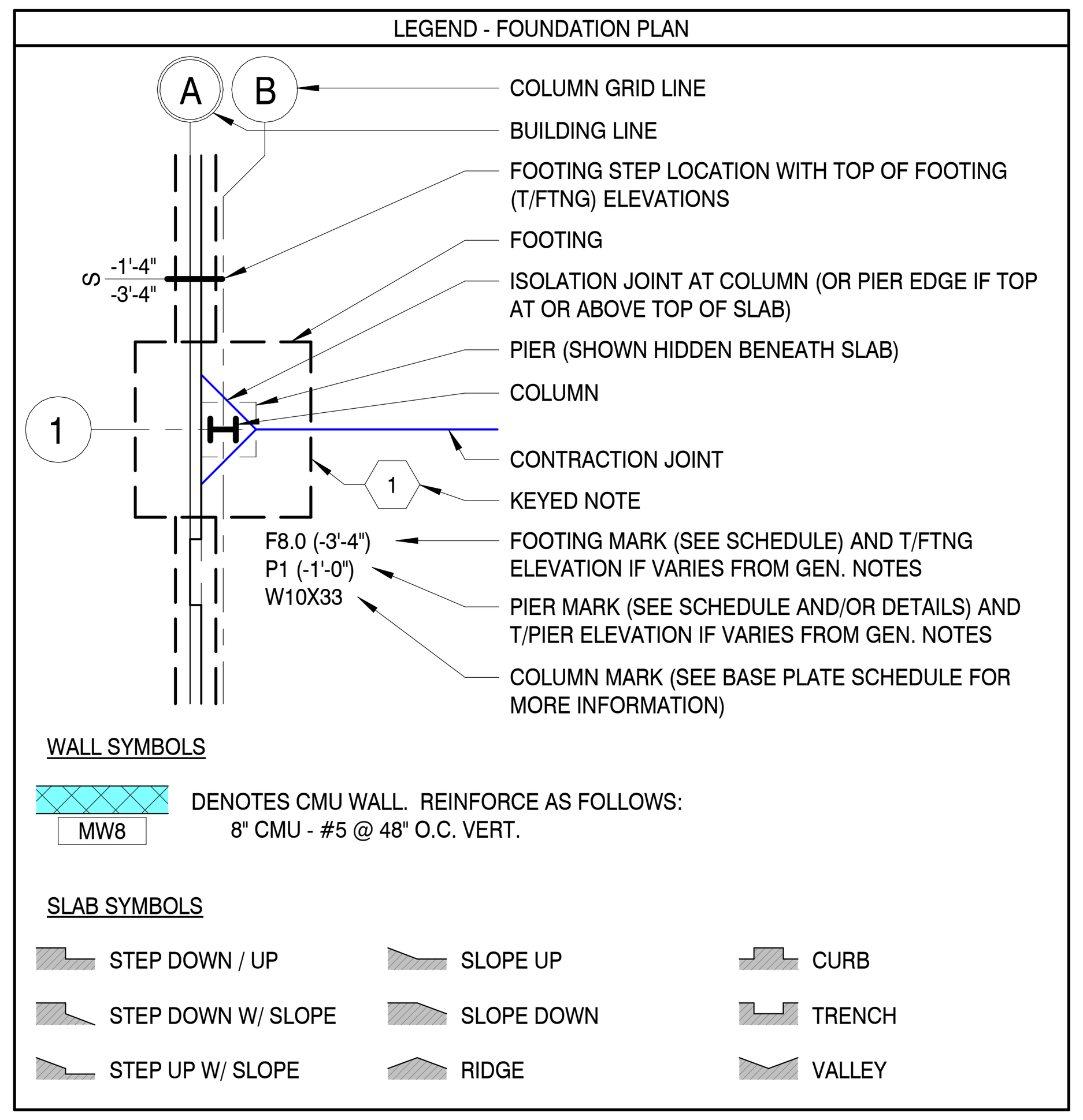
2 DENOTES SLAB CONTRACTION JOINT. SEE S000 SHEETS FOR ADDITIONAL INFORMATION.

3 NON-STRUCTURAL MASONRY WALLS (DEPICTED AS HIDDEN LINES OR NOT SHOWN) SHALL BEAR ON A THICKENED SLAB (SEE DETAIL 8/S003) UNLESS NOTED OTHERWISE. AT CONTRACTOR'S OPTION, A WALL FOOTING (TYPE WF2.0) MAY BE SUBSTITUTED FOR THICKENED SLAB.

FOUNDATION SCHEDULE

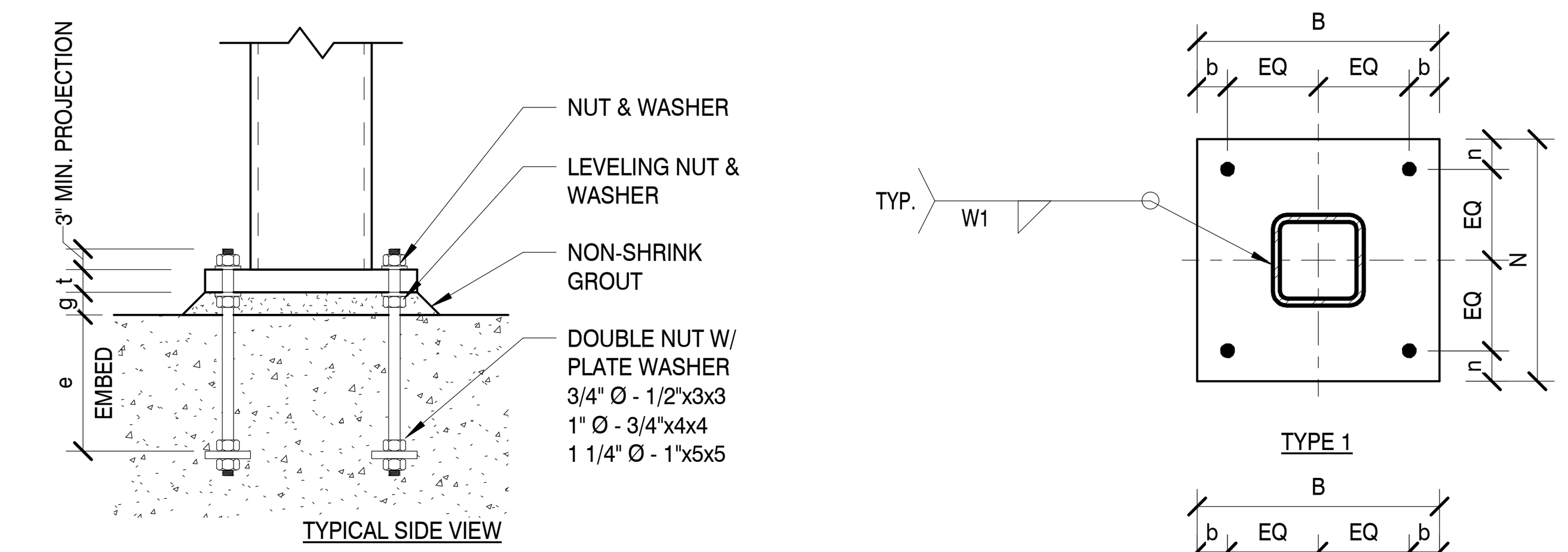
MARK	WIDTH	LENGTH	THICKNESS	REINFORCING	COMMENTS
F3.0	3' - 0"	3' - 0"	1' - 0"	(3) #5 E.W. BOT.	
F5.0	5' - 0"	5' - 0"	1' - 8"	(5) #5 E.W. BOT.	
TS2.0	2' - 0"		1' - 0"	(3) #5 CONT. T&B W/ #3 TIES @ 48" O.C. TRANS	
WF2.0	2' - 0"		1' - 0"	(3) #5 CONT. T&B W/ #3 TIES @ 48" O.C. TRANS	
WF3.0	3' - 0"		1' - 0"	(4) #5 CONT. T&B W/ #3 TIES @ 48" O.C. TRANS	

LEGEND - FOUNDATION PLAN

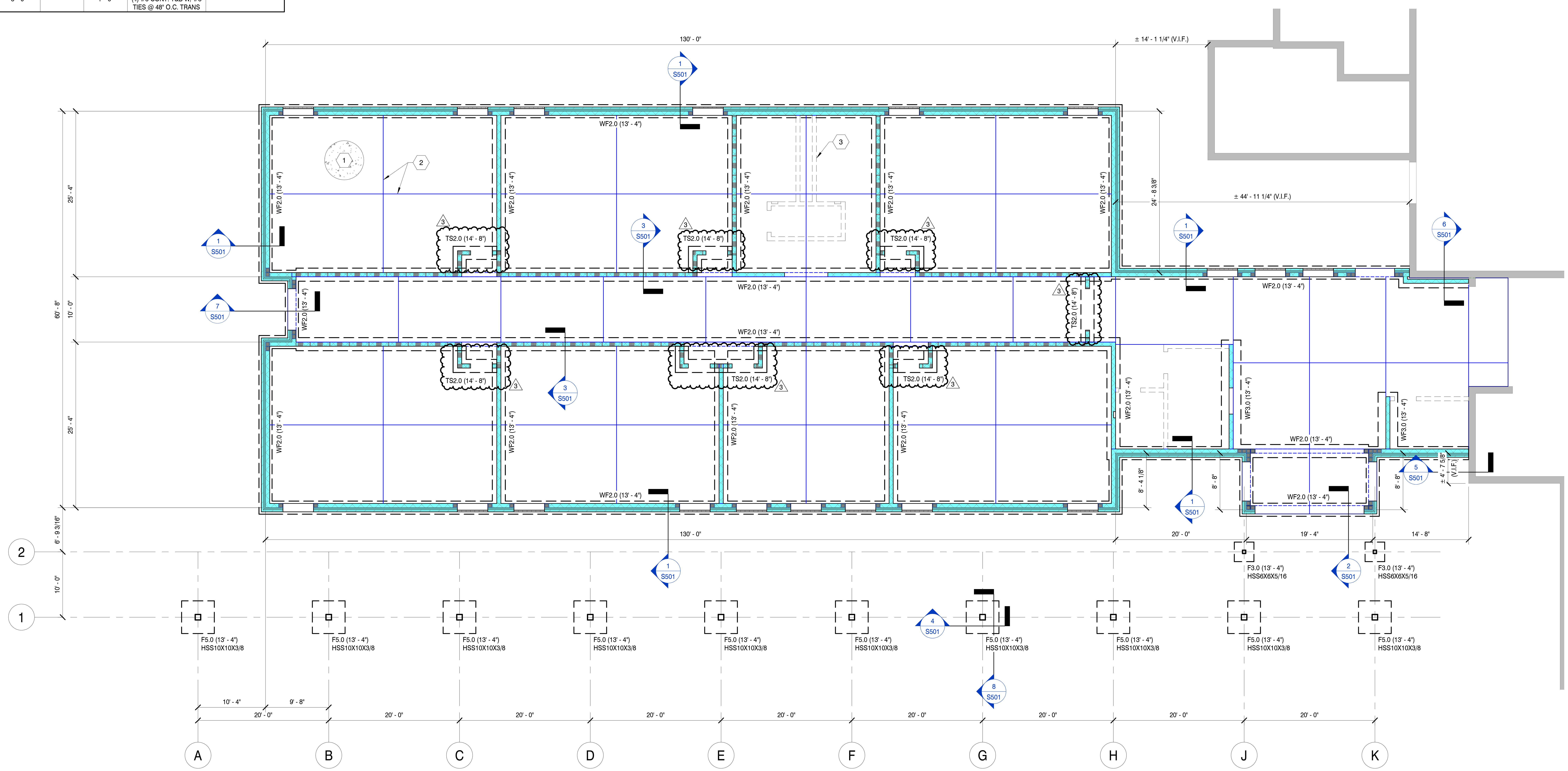


BASE PLATE SCHEDULE

COLUMN / BASE PLATE MARK	BASE PLATE PARAMETERS								ANCHOR PARAMETERS				WELD SIZE		COMMENTS
	TYPE	QTY	B	N	b	n	t	g	QTY	D	e	TYPE / MATERIAL	W1	W2	
HSS6X6X5/16	1	2	12"	12"	1 1/2"	1 1/2"	1"	1 1/2"	4	3/4"	9"	CIP F1554 GRADE 36	3/16"		
HSS10X10X3/8	2	10	20"	20"	2"	2"	1 1/2"	1 1/2"	6	1 1/4"	16"	CIP F1554 GRADE 36	1/4"		SEE DETAIL 6/S501



NOTES:
1. WHEN COLUMN IS SUPPORTED BY A PIER, INCREASE ANCHOR BOLT EMBED DEPTH (e) TO 18" FOR 3/4" Ø, 24" FOR 1" Ø AND 30" FOR 1-1/4" Ø ANCHOR BOLTS.
2. PROVIDE GUSSET PLATES WHERE VERTICAL BRACING CONNECTS AT COLUMN BASE PLATE. SEE PLANS AND/OR FRAMING ELEVATIONS FOR MORE INFORMATION.



FOUNDATION PLAN

SCALE : 1/8" = 1'-0"

1

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PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

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PROJECT NO.: 210042-04

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REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	ZSP
DRAWN BY:	KAS
REVIEWED BY:	WND

SHEET TITLE: FOUNDATION PLAN

SHEET NO.: S101

ARCH D

GENERAL NOTES - ROOF FRAMING PLAN

1. ELEVATIONS ARE REFERENCED FROM THE FIRST LEVEL TOP OF SLAB (T/SLAB) DATUM ELEVATION OF 14'-8". SEE CIVIL DRAWINGS FOR EQUIVALENT MEAN SEA LEVEL ELEVATION.
2. CONTRACTOR SHALL COORDINATE STRUCTURAL DRAWINGS WITH OTHER DISCIPLINES.
3. TOP OF STEEL (T/STL) LOCATED AT UNDERSIDE OF ROOF DECK UNLESS NOTED OTHERWISE.
4. REFER TO ARCHITECTURAL DRAWINGS FOR STRUCTURAL MEMBERS THAT RECEIVE FIRE PROOFING. VERIFY WHETHER OR NOT THESE MEMBERS SHALL BE PAINTED WITH FIRE PROOFING MANUFACTURER'S RECOMMENDATIONS.
5. GENERAL SIZE AND LOCATION OF ROOF TOP EQUIPMENT IS INDICATED ON THE PLAN. EXACT SIZE OF OPENINGS AND LOCATIONS OF FRAMING MUST BE DETERMINED UPON FINAL SELECTION OF EQUIPMENT. COORDINATE WITH MECHANICAL DRAWINGS.
6. COORDINATE JOIST AND TRUSS LAYOUT WITH MECHANICAL AND PLUMBING RUNS AND PENETRATIONS. REFER TO MECHANICAL PLANS FOR DUCT CHASES IF REQUIRED.
7. SEE S00 SHEETS FOR ADDITIONAL NOTES AND TYPICAL DETAILS NOT SPECIFICALLY REFERENCED ON STRUCTURAL DRAWINGS.

KEYED NOTES - ROOF FRAMING PLAN

1 ROOF DECK TO BE 1-1/2" 22 GA. TYPE B PAINTED ROOF DECKING WITH A MINIMUM 2 SPAN CONDITION. FASTEN DECKING WITH 5/8" PUDDLE WELDS ON A 36/4 PATTERN AT SUPPORTS, (6) #12 TEK SCREWS BETWEEN SUPPORTS AT SIDELAPS, AND 5/8" PUDDLE WELDS @ 6' O.C. AT ROOF DECK PERIMETER AND OPENINGS.

2 DENOTES STEEL JOIST BRIDGING. JOIST MANUFACTURER RESPONSIBLE FOR THE DESIGN OF STEEL JOISTS AND REQUIRED BRIDGING. SEE S000 SHEETS FOR ADDITIONAL INFORMATION REGARDING THE DESIGN OF THESE ELEMENTS. COORDINATE BRIDGING PLACEMENT SUCH THAT IT DOES NOT HINDER ROUTING OF DUCT WORK FROM ROOF TOP HVAC EQUIPMENT.

3 HSS6X6X1/4 PURLINS.

4 L4X4X1/4 CROSS-TIES @ 48" O.C. ALIGN WITH DECK VALLEYS.

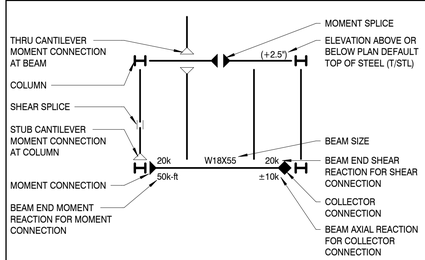
5 RTU CURB AND OPENING FRAMING PER DETAILS ON S005

6 L4X4X5/16 x CONT. LEDGER. FASTEN TO CMU WALL WITH 5/8"Ø x 4" EMBED SCREW ANCHORS @ 32" O.C.

LINTEL SCHEDULE

MARK	TYPE	WIDTH	DEPTH	REINFORCING	JAMB QTY	MAX. SPAN	COMMENTS
ML1	8X8	7 5/8"	8"	(2) #4 BOT.	1	5' - 0"	
ML2	8X16	7 5/8"	16"	(2) #5 T&B	2	8' - 0"	
ML3	8X32	7 5/8"	32"	(2) #5 T&B	4	18' - 0"	

LEGEND - ROOF FRAMING PLAN

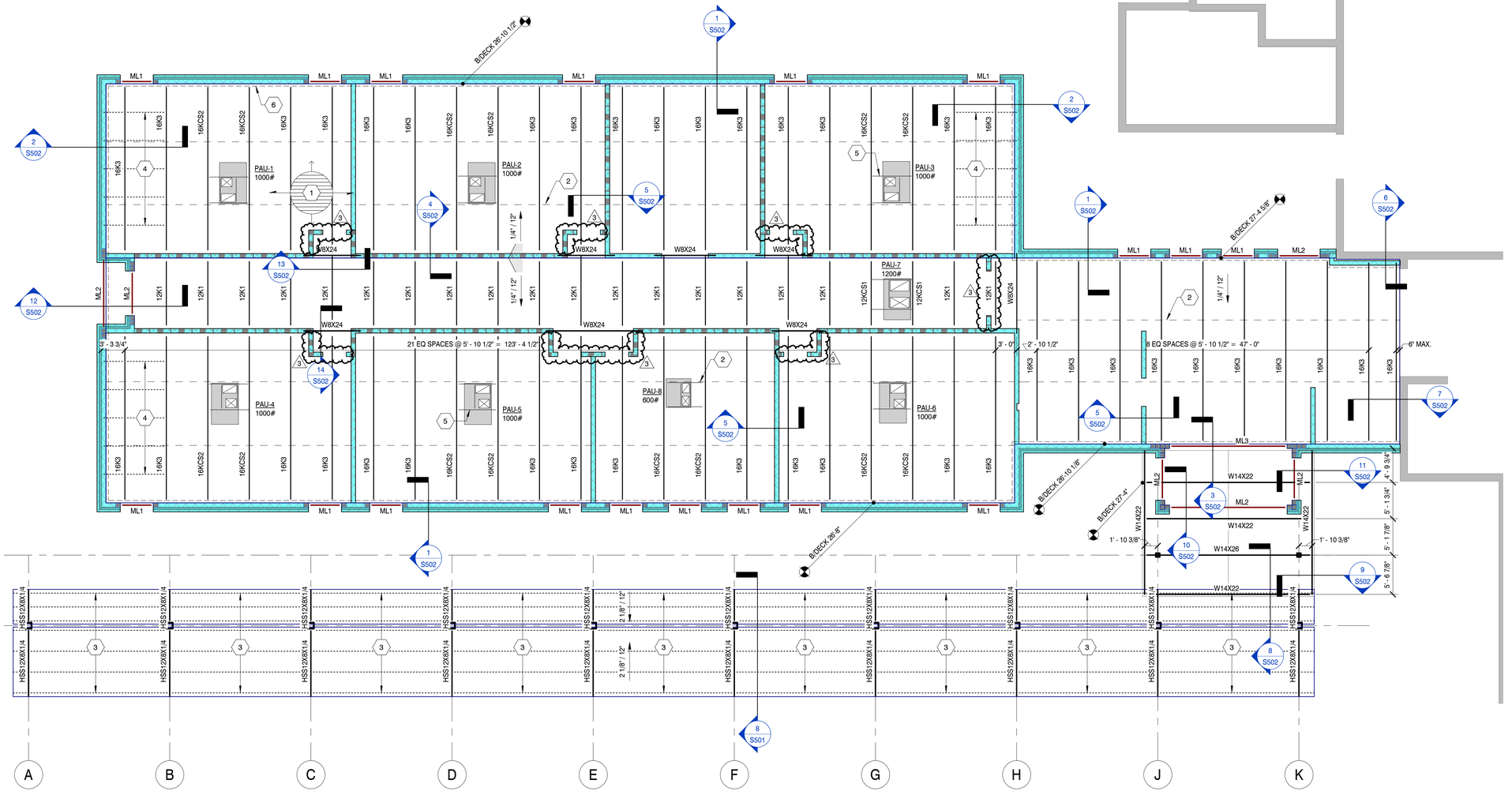


WALL SYMBOLS

DENOTES CMU WALL. REINFORCE AS FOLLOWS:
8" CMU - #5 @ 48" O.C. VERT.

SLAB SYMBOLS

STEP DOWN / UP
STEP DOWN W/ SLOPE
STEP UP W/ SLOPE
SLOPE UP
SLOPE DOWN
RIDGE
CURB
TRENCH
VALLEY



ROOF FRAMING PLAN

SCALE : 1/8" = 1'-0"

1

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PROJECT NO.: 210042-04

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3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	ZSP
DRAWN BY:	KAS
REVIEWED BY:	WND
SHEET TITLE:	

ROOF FRAMING PLAN

SHEET NO.:

S301

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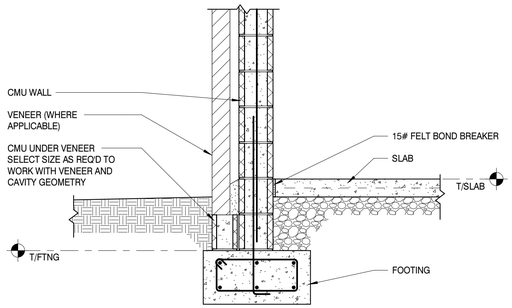
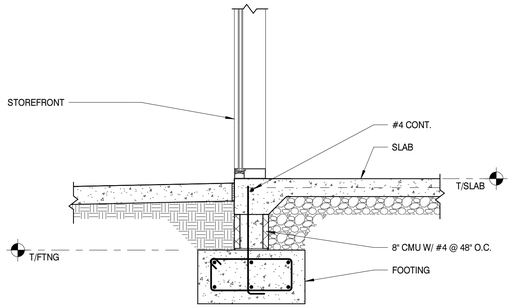


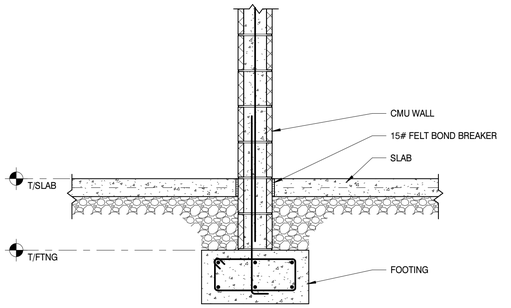
FOUNDATION DETAIL 1

SCALE : 3/4" = 1'-0"



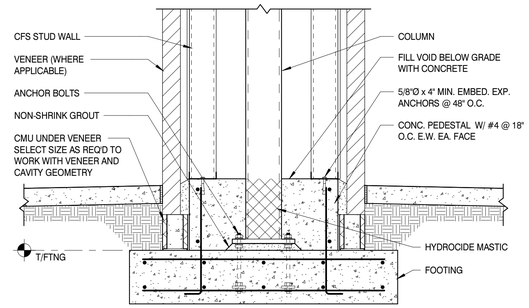
FOUNDATION DETAIL 2

SCALE : 3/4" = 1'-0"



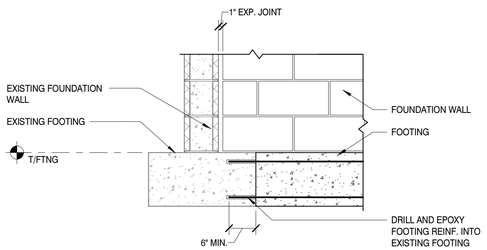
FOUNDATION DETAIL 3

SCALE : 3/4" = 1'-0"



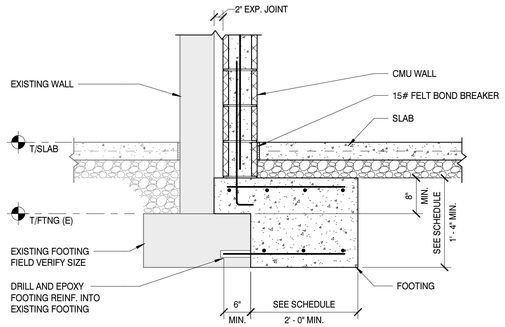
FOUNDATION DETAIL 4

SCALE : 3/4" = 1'-0"



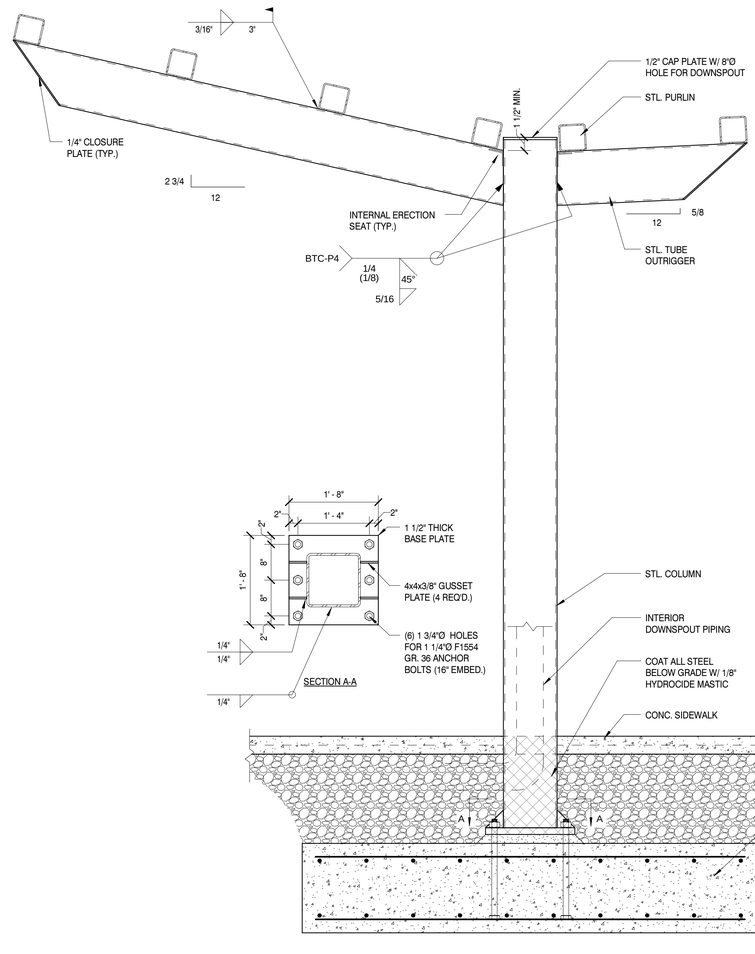
FOOTING DETAIL 5

SCALE : 3/4" = 1'-0"



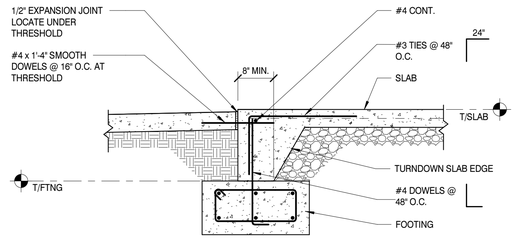
FOUNDATION DETAIL 6

SCALE : 3/4" = 1'-0"



CANOPY DETAIL 8

SCALE : 3/4" = 1'-0"



FOUNDATION DETAIL 7

SCALE : 3/4" = 1'-0"

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KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	ZSP
DRAWN BY:	KAS
REVIEWED BY:	WND

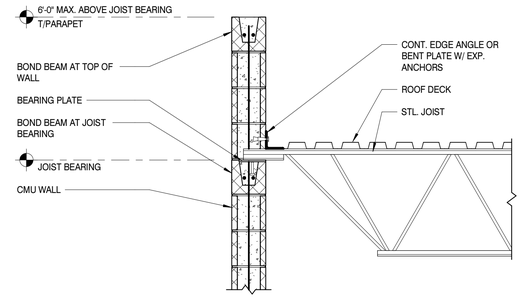
SHEET TITLE:

FOUNDATION DETAILS

SHEET NO.:

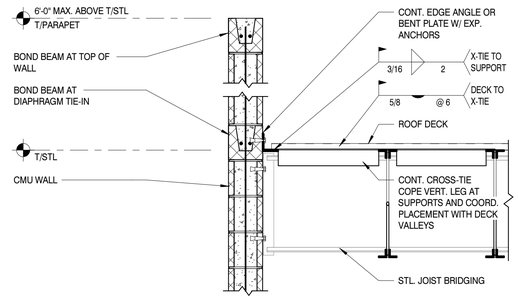
S501

ARCH D



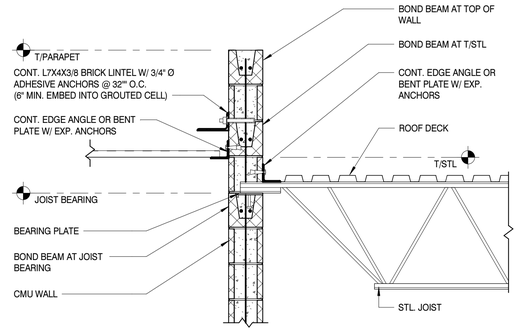
CONNECTION DETAIL 1

SCALE : 3/4" = 1'-0"



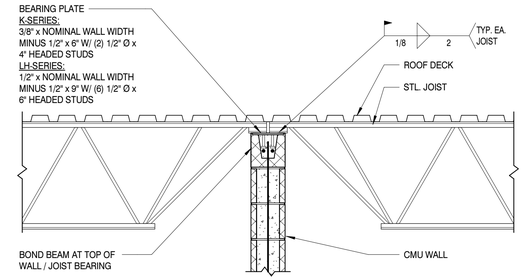
CONNECTION DETAIL 2

SCALE : 3/4" = 1'-0"



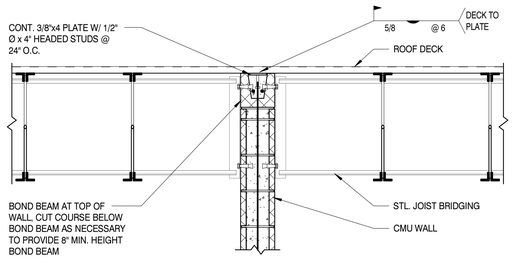
CONNECTION DETAIL 3

SCALE : 3/4" = 1'-0"



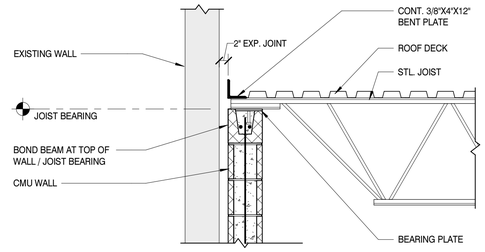
CONNECTION DETAIL 4

SCALE : 3/4" = 1'-0"



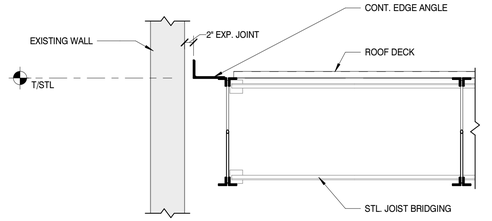
CONNECTION DETAIL 5

SCALE : 3/4" = 1'-0"



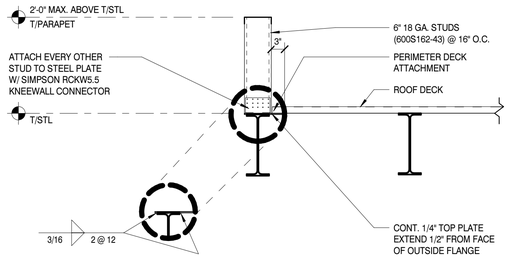
CONNECTION DETAIL 6

SCALE : 3/4" = 1'-0"



CONNECTION DETAIL 7

SCALE : 3/4" = 1'-0"



CONNECTION DETAIL 8

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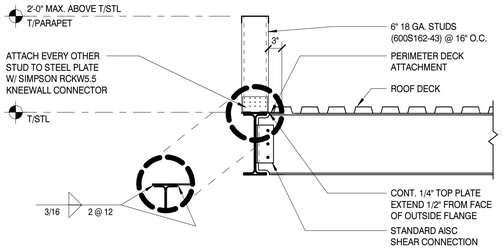
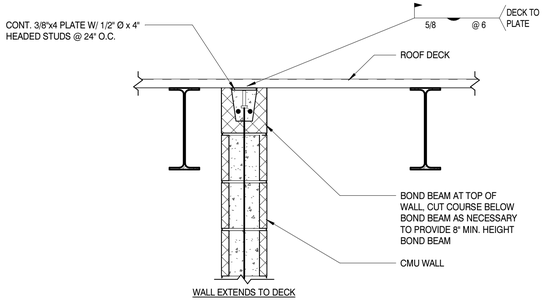


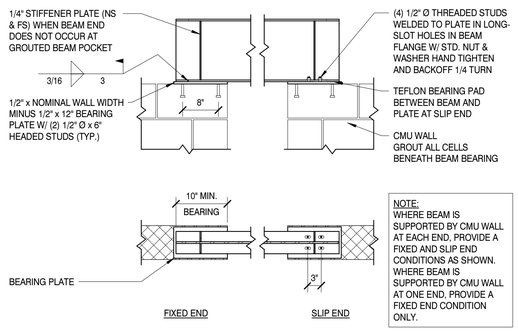
CONNECTION DETAIL 9

SCALE : 3/4" = 1'-0"



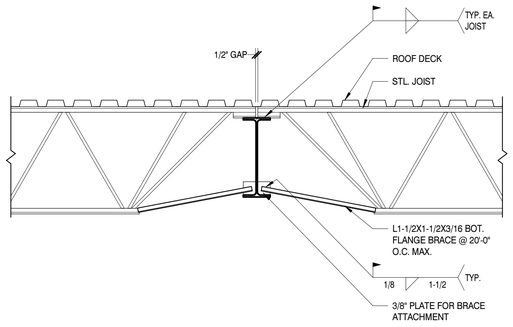
CONNECTION DETAIL 10

SCALE : 3/4" = 1'-0"



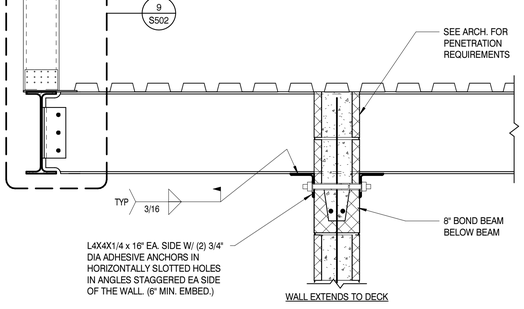
CONNECTION DETAIL 11

SCALE : 1" = 1'-0"



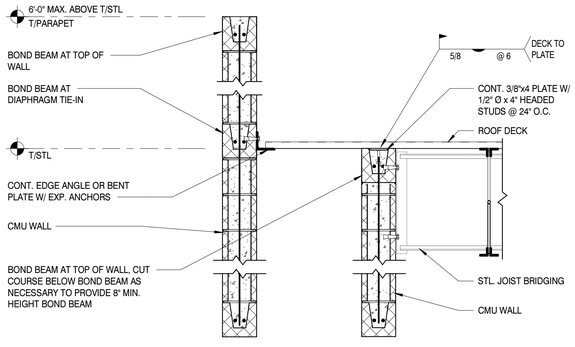
CONNECTION DETAIL 12

SCALE : 1" = 1'-0"



CONNECTION DETAIL 13

SCALE : 3/4" = 1'-0"



CONNECTION DETAIL 14

SCALE : 3/4" = 1'-0"

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SEAL

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	ZSP
DRAWN BY:	KAS
REVIEWED BY:	WND

SHEET TITLE:

ROOF FRAMING DETAILS

SHEET NO.:

S502

FIRE PROTECTION SPECIFICATIONS

SECTION 15300 - FIRE PROTECTION

PART I GENERAL

1.01 DESCRIPTION OF WORK:
- A. EXTENT OF FIRE PROTECTION WORK IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
- B. THE SYSTEM SHALL BE WET PIPE SYSTEM

1.02 QUALITY ASSURANCE:
- A. CODES AND STANDARDS:
  1. NFPA COMPLIANCE: INSTALL FIRE PROTECTION SYSTEM IN ACCORDANCE WITH NFPA 13 "STANDARDS FOR THE INSTALLATION OF SPRINKLER SYSTEMS". NFPA 14, "STANDARDS FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS" AND NFPA 24 "STANDARD FOR OUTSIDE PROTECTION."
  2. UL COMPLIANCE: PROVIDE FIRE PROTECTION PRODUCTS IN ACCORDANCE WITH UL STANDARDS; PROVIDE UL LABEL ON EACH PRODUCT.
  3. FM COMPLIANCE: PROVIDE FIRE PROTECTION PRODUCTS AND INSTALLATIONS IN ACCORDANCE WITH FM STANDARDS; PROVIDE FM LABEL ON EACH PRODUCT.
  4. FIRE DEPARTMENT/MARSHAL COMPLIANCE: INSTALL FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH LOCAL REGULATIONS OF FIRE DEPARTMENT OR FIRE MARSHAL.
  5. QUALIFICATIONS: HYDRAULIC CALCULATIONS AND PREPARATION OF SHOP DRAWINGS SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF A RESPONSIBLE MANAGING EMPLOYEE WHO HOLDS A NCET LEVEL III CERTIFICATION. INSTALLATION SHALL BE PERFORMED BY A LICENSED SPRINKLER CONTRACTOR.

1.03 SUBMITTALS:
- A. PRODUCT DATA: SUBMIT MANUFACTURER`S TECHNICAL PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR FIRE PROTECTION MATERIALS AND PRODUCTS WITH A TABLE OF CONTENTS. IDENTIFY MATERIAL, SIZE , AND MODEL NUMBER OF EACH PRODUCT.
- B. SHOP DRAWINGS: SUBMIT SCALED LAYOUT DRAWINGS FOR FIRE PROTECTION PIPE AND FITTINGS INCLUDING, BUT NOT LIMITED TO, PIPE AND TUBE SIZES, LOCATIONS, ELEVATIONS, AND SLOPES OF HORIZONTAL RUNS, WALL AND FLOOR PENETRATIONS, AND CONNECTIONS. INDICATE INTERFACE AND SPATIAL RELATIONSHIPS BETWEEN PIPING AND APPROXIMATE EQUIPMENT.
- C. APPROVAL DRAWINGS: PREPARE APPROVAL DRAWINGS OF FIRE PROTECTION SYSTEMS INDICATING PIPE SIZES, PIPE LOCATIONS, FITTINGS, SHUTOFFS, EQUIPMENT, ETC. SUBMIT TO AGENCY HAVING JURISDICTION FOR APPROVAL. SUBMIT ONE APPROVED COPY, BEARING STAMP AND/OR SIGNATURE OF AGENCY HAVING JURISDICTION, BEFORE PROCEEDING WITH INSTALLATION.
- D. APPROVAL CALCULATIONS: PREPARE HYDRAULIC CALCULATIONS OF FIRE PROTECTION SYSTEM USING A FIRE HYDRANT FLOW TEST THAT IS NO MORE THAN 6 MONTHS OLD. SUBMIT TO AGENCY HAVING JURISDICTION FOR APPROVAL. SUBMIT TO ARCHITECT, ONE APPROVED COPY, BEARING STAMP AND/OR SIGNATURE OF AGENCY HAVING JURISDICTION, BEFORE PROCEEDING WITH INSTALLATION.
- E. RECORD DRAWINGS: AT PROJECT CLOSEOUT, SUBMIT RECORD DRAWINGS OF INSTALLED FIRE PROTECTION PIPING AND PRODUCTS.

PART II PRODUCTS

2.01 MATERIALS AND PRODUCTS:
- A. GENERAL: PROVIDE PIPING MATERIALS AND FACTORY-FABRICATED PIPING PRODUCTS OF SIZES, TYPES, PRESSURE RATINGS, TEMPERATURE RATINGS, AND CAPACITIES AS INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE SIZES AND TYPES MATCHING PIPING AND EQUIPMENT CONNECTIONS; PROVIDE FITTINGS OF MATERIALS WHICH MATCH PIPE MATERIALS USED IN FIRE PROTECTION SYSTEM.

2.02 BASIC IDENTIFICATION:
- A. GENERAL: PROVIDE IDENTIFICATION AS FOLLOWS;
  1. FIRE PROTECTION PIPING: PLASTIC PIPE MARKERS
  2. FIRE PROTECTION VALVES: PLASTIC VALVE TAGS.

2.03 BASIC PIPES AND PIPE FITTINGS:
- A. GENERAL: PROVIDE PIPES AND PIPE FITTINGS AS FOLLOWS:
- B. BLACK STEEL PIPE: SCHEDULE 40 FOR ABOVE 6"; BLACK STEEL PIPE: SCHEDULE 10 FOR 6" AND SMALLER; MECHANICAL GROOVED PIPE COUPLINGS (VICTAULIC 009N/108 IGS SYSTEM OR EQUAL) AND FITTINGS (FIRELOCK, VICTAULIC IR FITTINGS, OR EQUAL); ROLL-GROOVE AND MECHANICAL LOCKING TYPE.
- C. DUCTILE IRON PRESSURE PIPE: AWWA C-106 WITH FITTINGS COMPLYING WITH AWWA C-110 AND RUBBER GASKETS COMPLYING WITH AWWA C-111.
- D. BRAIDED FLEXIBLE, SPRINKLER HOSE FITTINGS: BRAIDED, FLEXIBLE HOSE FOR CONNECTION TO SPRINKLER WITH BRACKET FOR CONNECTION TO CEILING GRID.
  1. APPROVED MANUFACTURERS: FLEXHEAD AND VICTAULIC [AH2, AH2CC, AB6, OR VS1].
- E. BRANCH OUTLET FITTINGS:
  1. BODY MATERIAL: DUCTILE-IRON HOUSING WITH EPDM SEALS AND BOLTS AND NUTS.
  2. TYPE: MECHANICAL-T AND -CROSS FITTINGS.
  3. BRANCH OUTLETS: GROOVED, PLAIN-END PIPE, OR THREADED.
  4. APPROVED MANUFACTURERS: ANVIL, TYCO, AND VICTAULIC.

2.04 BASIC PIPING SPECIALTIES:
- A. GENERAL: PROVIDE PIPING SPECIALTIE:
  1. PIPE ESCUTCHEONS
  2. DIELECTRIC UNIONS
  3. DRIP PANS
  4. PIPE SLEEVES
  5. SLEEVE SEALS
  6. FIRE BARRIER PENETRATION SEALS

2.05 BASIC SUPPORTS AND ANCHORS:
- A. GENERAL: PROVIDE SUPPORTS AND ANCHORS AS FOLLOWS:
  1. ADJUSTABLE STEEL CLEVIS HANGERS, ADJUSTABLE STEEL BAND HANGERS, OR ADJUSTABLE BAND HANGERS, FOR HORIZONTAL PIPING HANGERS AND SUPPORTS.
  2. TWO-BOLT RISER CLAMPS FOR VERTICAL PIPING SUPPORTS.
  3. STEEL TURNBUCKLES AND MALLEABLE IRON SOCKETS FOR HANGER-ROD ATTACHMENTS.
  4. CONCRETE INSERTS, TOP-BEAM C-CLAMPS, SIDE BEAM OR CHANNEL CLAMPS OR CENTER BEAM CLAMPS FOR BUILDING ATTACHMENTS.
- B. ANCHORS:
  1. GENERAL: PROVIDE ANCHORAGES FOR TEES, PLUGS, CAPS, BENDS, AND HYDRANTS IN ACCORDANCE WITH NFPA 24.
  2. CLAMPS, STRAPS AND WASHERS: STEEL, ANSI/ASTM A-506
  3. RODS: STEEL, ANSI/ASTM A-575
  4. OD COUPLINGS: MALLEABLE IRON, ANSI/ASTM A-197
  5. BOLTS: STEEL, ANSI/ASTM A-307
  6. CAST-IRON WASHERS: ANSI/ASTM A-126, CLASS A
  7. THRUST BLOCKS: 2500 PSI CONCRETE

2.06 BASIC VALVES:
- A. GENERAL: PROVIDE VALVES AS FOLLOWS:
- B. INTERIOR VALVES:
  1. SECTIONAL: GATE VALVES OR BUTTERFLY VALVES; UL LISTED.
  2. CHECK: SWING CHECK VALVES; UL LISTED.
- C. EXTERIOR VALVES:
  1. GATE VALVES: STANDARD SHUT-OFF VALVES CAST INTO BODY, OUTSIDE-SCREW-AND-YOKE TYPE COMPLYING WITH AWWA C-500. SIZES 2" AND SMALLER SHALL BE BRONZE, 175 PSI WG, RISING STEM, SCREWED BONNET. SIZES 2 1/2" AND LARGER SHALL BE IRON BODY BRONZE MOUNTED, 175 PSI WG, SOLID WEDGE, REPLACEABLE SEAT (VICTAULIC SERIES 771, OR EQUAL).
  2. CHECK VALVES: GRAVITY-OPERATED, REGULAR TYPE, IRON-BODIED, BRONZE FITTED WITH METAL-TO-METAL OR RUBBER FACED CHECKS, COMPLYING WITH ASTM A-12 (VICTAULIC SERIES 717, OR EQUAL).
  3. BUTTERFLY VALVES: RUBBER SEATED, EQUIPPED WITH GEAR OR TRAVELLING NUT ACTUATOR TO MINIMIZE WATER HAMMER, COMPLYING WITH AWWA C-50 (VICTAULIC SERIES 705 FIRELOCK, OR EQUAL).
  4. INDICATOR POSTS: TELESCOPIC BARREL TYPE FOR USE WITH UNDERGROUND GATE VALVES.

2.07 SPECIAL VALVES:
- A. GENERAL: PROVIDE VALVES, UL LISTED, IN ACCORDANCE WITH THE FOLLOWING LISTING. PROVIDE SIZES AND TYPES WHICH MATE AND MATCH PIPING AND EQUIPMENT CONNECTIONS.
- B. ALARM CHECK VALVE: PROVIDE CAST-IRON WATER FLOW ALARM CHECK VALVE, 175 PSI WORKING PRESSURE. PROVIDE TRIM FOR BYPASS, DRAIN, ALARM, PRESSURE GAUGES AND FILL LINE.
  1. APPPROVED ALARM CHECK VALVE MANUFACTURERS: BERMAD, RELIABLE, TYCO, VICTAULIC, VIKING
- C. DRY PIPE VALVES: PROVIDE DIFFERENTIAL TYPE, 175 PSIG WORKING PRESSURE VALVE, CAST IRON WITH FLANGES ENDS, BRONZE SEAT WITH O-RING SEALS. TRIM SHALL INCLUDE AIR SUPPLY, DRAIN. PRIMING LEVEL, ALARM, PRESSURE GAUGES, AND FILL LINE.
  1. APPPROVED DRY VALVE MANUFACTURERS:RELIABLE, VICTAULIC, VIKING, TYCO
- D. HOSE OUTLET VALVES: PROVIDE ANGLE HOSE VALVES, 2-L/2" SIZE WHERE NOT OTHERWISE INDICATED.
- E. FIRE DEPARTMENT CONNECTION VALVE: PROVIDE FIRE DEPARTMENT CONNECTION IRON SWING CHECK VALVE, 175 PSI RATED WORKING PRESSURE, OF SIZE AND END TYPE INDICATED.
- F. DETECTOR CHECK VALVES: PROVIDE CAST-IRON BODY DETECTOR CHECK VALVE, BRONZE FITTED, WITH TAPPED BOSSES ON EACH SIDE FOR BY-PASS METER, AIR VENT, AND COVER-MOUNTED EYEBOLT.
  1. APPPROVED DETECTOR CHECK VALVE MANUFACTURERS: AMES, WATTS, WILKINS
- H. BACKFLOW PREVENTION VALVES
  1. PROVIDE APPROVED DOUBLE VALVE ASSEMBLIES TO SEPARATE AUTOMATIC FIRE SPRINKLER SYSTEM FROM POTABLE WATER SYSTEM.
  2. APPPROVED DOUBLE CHECK VALVE MANUFACTURERS: AMES, WATTS, WILKINS

2.08 HYDRANTS:
- A. GENERAL: PROVIDE CAST-IRON SIDEWALK FIRE HYDRANTS WITH THREADED MALE NOZZLE CONFORMING TO "AMERICAN NATIONAL STANDARD FIRE HOSE CONNECTION SCREW THREADS" UNLESS OTHER HOSE CONNECTION REQUIRED BY LOCAL FIRE AUTHORITIES.
- B. PROVIDE DRY-BARREL FIRE HYDRANTS (BASE VALVE TYPE) COMPLYING WITH AWWA C-502 AND AS FOLLOWS:
  1. WORKING PRESSURE, L50 PSI UNLESS OTHERWISE INDICATED.
  2. VALVE OPENING DIRECTION, CLOCKWISE, INDICATED BY ARROW AND THE WORD "OPEN" CAST ON DOME.
  3. NOZZLES, TWO 2-1/2" HOSE CONNECTIONS AND ONE 4-1/2" PUMPER CONNECTION WITH CAPS AND CHAINS. NOZZLE CAP NUTS TO MATCH OPERATING STEM NUTS. PROVIDE NATIONAL STANDARD HOSE THREADS ON 2-1/2". HOSE THREADS ON 4-1/2" PUMPER CONNECTION SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS: O.D.-4.875", P.D.-4.777", ROOT DIAMETER 4,653", 6 THREADS PER INCH, GAUGE 2C.

2.09 AUTOMATIC SPRINKLERS:
- A. GENERAL: PROVIDE AUTOMATIC SPRINKLERS OF TYPE INDICATED ON DRAWINGS, AND IN ACCORDANCE WITH THE FOLLOWING LISTING. PROVIDE FUSIBLE LINKS FOR 135ºF (57ºC) AND SPRINKLERS WITH NOMINAL 1/2" DISCHARGE ORIFICE UNLESS OTHERWISE INDICATED.
  1. PENDENT
     FINISH: WHITE
- B. APPPROVED SPRINKLER HEAD MANUFACTURERS: RELIABLE, VICTAULIC, VIKING, TYCO
- C. SPRINKLER CABINET AND WRENCH: FURNISH STEEL, BAKED RED ENAMELED, SPRINKLER BOX WITH CAPACITY TO STORE 12 SPRINKLERS AND WRENCH SIZED TO SPRINKLERS.
- D. IN AREAS SUBJECT TO PHYSICAL ABUSE SUCH AS GYMNASIUMS AND MECHANICAL ROOMS, PROVIDE STEEL WIRE GUARDS OVER SPRINKLERS.
- E. IN VARIOUS APPLICATIONS, UL LISTED AND FM APPROVED VICTAULIC V9 INSTALLATION READY COUPLING MAY BE USED TO JOIN 1/2", 3/4", OR 1" SPRINKLER HEADS ONTO THE 1" IGS OUTLET, OR APPROVED EQUAL.

2.10 SIDEWALK SIAMESE CONNECTIONS:
- A. GENERAL: PROVIDE Y-TYPE CAST BRASS SIDEWALK SIAMESE CONNECTIONS, ESCUTCHEON PLATE AND SLEEVE ASSEMBLY; WITH 2,90O, 2-1/2" FIRE DEPARTMENT INLETS WITH FEMALE HOSE CONNECTIONS, AMERICAN NATIONAL FIRE HOSE CONNECTION SCREW THREAD, EQUIPPED WITH SELF-CLOSING BRASS DOUBLE CLAPPER VALVES, EQUIPPED WITH PLUGS AND CHAINS, CONSTRUCTION FEATURES AS INDICATED, AND CONSTRUCTED WITH THE FOLLOWING ADDITIONAL CONSTRUCTION FEATURES:
  1. FINISH: POLISHED BRASS
  2. INLET STANDPIPE: 4" PIPE OR 6" PIPE (PIPE SIZE).
  3. CAST LETTERING: "AUTO. SPRK."
  4. PROVIDE KNOX BOX.
  5. APPROVED MANUFACTURERS: CROKER AND GUARDIAN FIRE

2.11 WALL TYPE SIAMESE CONNECTIONS:
- A. GENERAL: PROVIDE WALL TYPE CAST BRASS SIAMESE CONNECTIONS AND ESCUTCHEON PLATE ASSEMBLY, WITH 2, 2-1/2" FIRE DEPARTMENT INLETS WITH FEMALE HOSE CONNECTIONS, AMERICAN NATIONAL FIRE HOSE CONNECTION SCREW THREAD, EQUIPPED WITH INDIVIDUAL DROP CLAPPER VALVES, EQUIPPED WITH PLUGS AND CHAINS, CONSTRUCTION FEATURES AS INDICATED, AND CONSTRUCTED WITH THE FOLLOWING ADDITIONAL CONSTRUCTION FEATURES:
  1. FINISH: POLISHED BRASS
  2. INLET PIPE: 4" PIPE OR 6" PIPE (PIPE SIZE).
  3. CAST LETTERING: "AUTO. SPKR."
  4. ESCUTCHEON: 12" DIAMETER OF 7" X 14" RECTANGLE
  5. SIAMESE CONNECTION: FLUSH, STACKED INLETS; FLUSH, ADJACENT INLETS; Y-TYPE, INLETS STRAIGHT, PROJECTING CONFIGURATION; OR Y-TYPE, INLETS 45º, PROJECTING CONFIGURATION.
  6. PROVIDE KNOX BOX.
  7. APPROVED MANUFACTURERS: CROKER, GUARDIAN FIRE, POTTER ROEMER, AND VIKING

PART III EXECUTION

3.01 INSPECTION:
- A. GENERAL: EXAMINE AREAS AND CONDITIONS UNDER WHICH FIRE PROTECTION MATERIALS AND PRODUCTS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

3.02 INSTALLATION OF BASIC IDENTIFICATION:
- A. GENERAL: INSTALL MECHANICAL IDENTIFICATION SUCH THAT ALL FIRE PROTECTION PIPING AND EQUIPMENT CAN BE IDENTIFIED.
- B. INSTALL FIRE PROTECTION SIGNS ON PIPING IN ACCORDANCE WITH NFPA 13 AND NFPA 14 REQUIREMENTS.

3.03 INSTALLATION OF OUTSIDE PIPING:
- A. GENERAL: INSTALL EXTERIOR FIRE WATER SYSTEM IN COMPLIANCE WITH APPLICABLE PROVISIONS OF NFPA 24 AND AS HEREIN SPECIFIED. ARRANGE AND PAY FOR TAPS AND SERVICE BY LOCAL WATER UTILITY. FOR SLIP-JOINT PIPE, PROVIDE 3000 PSI CONCRETE THRUST BLOCKS AGAINST UNDISTURBED SOIL.
- B. DUCTILE-IRON PIPE: INSTALL IN ACCORDANCE WITH RECOMMENDED PROCEDURES OF THE CAST-IRON PIPE RESEARCH ASSOCIATION.
- C. HYDRANTS: INSTALL IN ACCORDANCE WITH AWWA M-17.
- D. CONTROL VALVES: INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- E. JOINT ADAPTERS: MAKE JOINTS BETWEEN CAST-IRON PIPE AND OTHER TYPES OF PIPE WITH STANDARD MANUFACTURED CAST-IRON ADAPTERS AND FITTINGS.
- F. INTERIOR INSPECTION: INSPECT CONDUIT TO DETERMINE WHETHER LINE DISPLACEMENT OR OTHER DAMAGE HAS OCCURRED.
  1. IF THE INSPECTION INDICATES POOR ALIGNMENT, DEBRIS, DISPLACED PIPE, INFILTRATION, OR OTHER DEFECTS, CORRECT SUCH DEFECTS TO SATISFACTION OF ARCHITECT/ENGINEER.
- G. CLEANING CONDUIT: CLEAR INTERIOR OF CONDUIT OF DIRT AND OTHER SUPERFLUOUS MATERIALS AS WORK PROGRESSES. MAINTAIN SWAB OR DRAG IN LINE AND PULL PAST EACH JOINT AS IT IS COMPLETED. PLACE PLUGS IN END OF UNCOMPLETED CONDUIT AT END OF DAY OR WHENEVER WORK STOPS. FLUSH LINES TO REMOVE COLLECTED DEBRIS BEFORE CONNECTING TO OTHER FIRE PROTECTION SYSTEMS. FLUSH CONDUIT AT RATES OF FLOW RECOMMENDED BY NFPA 24 UNLESS HIGHER RATES REQUIRED BY LOCAL AUTHORITIES.

3.04 INSTALLATION OF PIPES AND PIPE FITTINGS:
- A. GENERAL: INSTALL PIPES AND PIPE FITTINGS IN ACCORDANCE WITH DRAWING AND REQUIREMENT OF AUTHORITY HAVING JURISDICTION. NOTE THAT ALL WORK INCLUDING UNDERGROUND LINES MUST BE INSTALLED BY A LICENSED SPRINKLER CONTRACTOR.
- B. COMPLY WITH REQUIREMENTS OF NFPA 13 AND NFPA 14 FOR INSTALLATION OF FIRE PROTECTION PIPING MATERIALS. INSTALL PIPING PRODUCTS WHERE INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING SYSTEMS COMPLY WITH REQUIREMENTS AND SERVE INTENDED PURPOSES.
- C. COORDINATE WITH OTHER WORK, INCLUDING PLUMBING PIPING, AS NECESSARY, TO INTERFACE COMPONENTS OF FIRE PROTECTION PIPING PROPERLY WITH OTHER WORK.
- D. INSTALL DRAIN PIPING AT LOW POINTS OF PIPING SYSTEMS. PROVIDE DRY DRUM DRIPS WHERE INDICATED.
- E. INSTALL SECTIONAL VALVES IN INLET PIPING, AT BOTTOM OF EACH RISER, AND IN LOOPS.
- F. INSTALL FIRE DEPARTMENT CONNECTION VALVES IN PIPING WHERE FIRE DEPARTMENT CONNECTIONS ARE INDICATED.
- G. INSTALL WATER FLOW INDICATORS WHERE INDICATED.
  1. APPROVED MANUFACTURERS: POTTER, VIKING, AND WATTS.
- H. MOUNT SUPERVISORY SWITCHES ON EACH SECTIONAL VALVE.
- I. INSTALL PRESSURE GAGES ON RISER OR MAIN FEED, AT EACH SPRINKLER TEST CONNECTION, AND AT TOP OF EACH STANDPIPE.
- J. INSTALL MANUAL SHUTOFF AT EACH AUDIBLE ALARM STATION.
- K. INSTALL INSPECTOR'S TEST CONNECTIONS WHERE INDICATED, OR AT MOST REMOTE POINT FROM RISER.
- L. INSTALL ELECTRICALLY OPERATED ALARM BELL NEAR FIRE DEPARTMENT CONNECTION.
  1. FINISH: RED-ENAMEL FACTORY FINISH, SUITABLE FOR OUTDOOR USE.
  2. APPROVED MANUFACTURERS: FIRE-LITE ALARMS, NOTIFIER, AND POTTER.

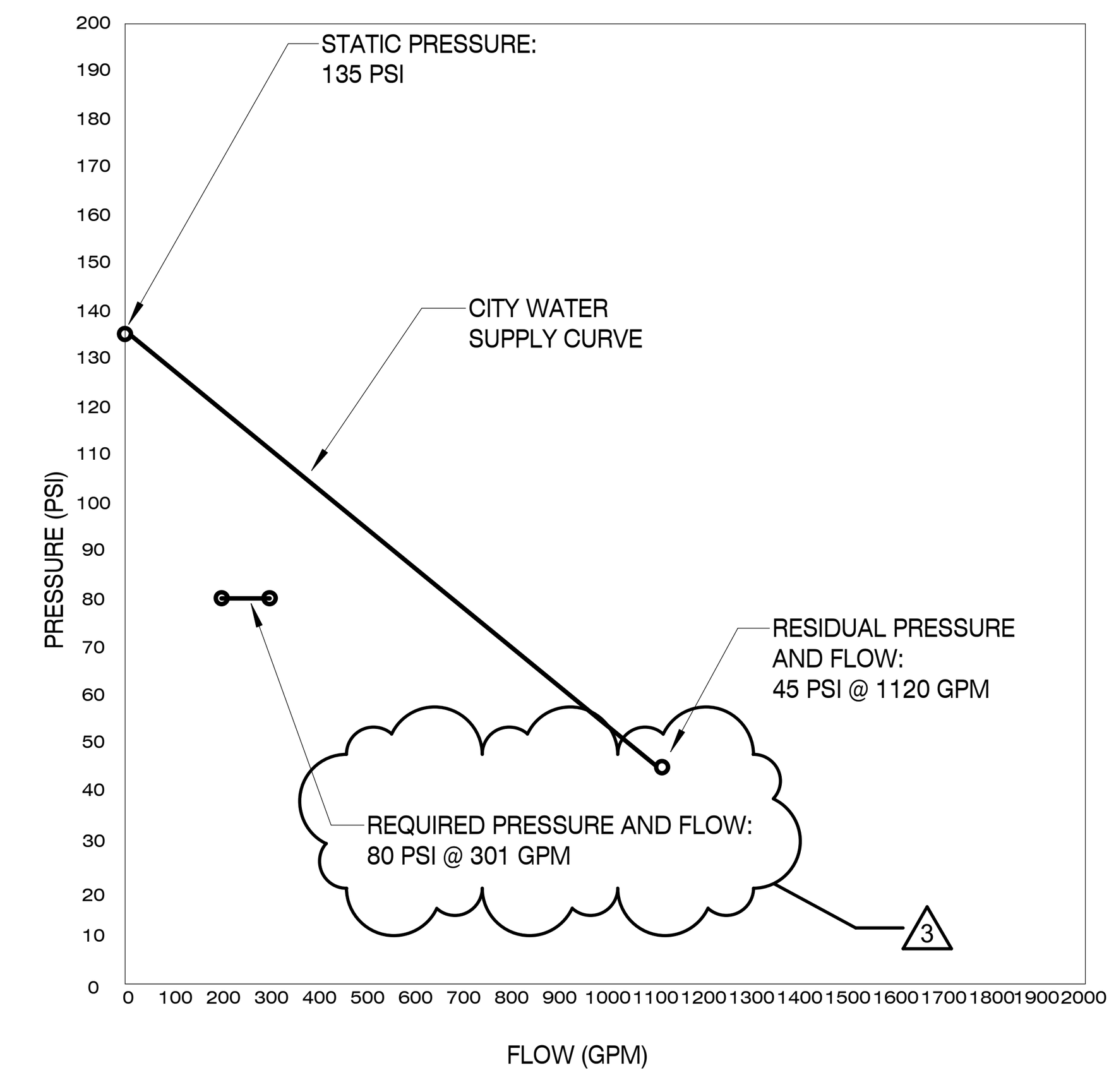
3.05 INSTALLATION OF VALVES:
- A. INSTALL VALVES IN PER MANUFACTURES WRITTEN RECOMMENDATIONS.
- B. DETECTOR CHECK VALVES: INSTALL IN HORIZONTAL POSITION AS INDICATED, ORIENTED FOR PROPER FLOW DIRECTION. INSTALL BY-PASS METER WITH GLOBE VALVE AND CHECK VALVE, IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION DIRECTIONS.
- C. INSTALL BACKFLOW PREVENTION VALVE TO SEPARATE SPRINKLER SYSTEM FROM POTABLE WATER SYSTEM.

3.06 INSTALLATION OF FIRE PROTECTION SPECIALTIES:
- A. GENERAL: INSTALL FIRE PROTECTION SPECIALTIES AS INDICATED, AND IN ACCORDANCE WITH NFPA 13 AND 14. FURNISH WIRING REQUIREMENTS TO ELECTRICAL INSTALLER FOR ELECTRICAL WIRING OF SUPERVISORY SWITCHES.

3.07 FIELD QUALITY CONTROL:
- A. SPRINKLER PIPING FLUSHING: PRIOR TO CONNECTING SPRINKLER RISERS FOR FLUSHING, FLUSH WATER FEED MAINS, LEAD-IN CONNECTIONS AND CONTROL PORTIONS OF SPRINKLER PIPING. AFTER FIRE SPRINKLER PIPING INSTALLATION HAS BEEN COMPLETED AND BEFORE PIPING IS PLACED IN SERVICE, FLUSH ENTIRE SPRINKLER SYSTEM, AS REQUIRED TO REMOVE FOREIGN SUBSTANCES, UNDER PRESSURE AS SPECIFIED IN NFPA 13. CONTINUE FLUSHING UNTIL WATER IS CLEAR, AND CHECK TO ENSURE THAT DEBRIS HAS NOT CLOGGED SPRINKLERS.
- B. PERFORM HYDROSTATIC TESTING OF COMPLETED OUTSIDE LINES IN ACCORDANCE WITH NFPA 24 UNLESS MORE STRINGENT TEST REQUIRED BY LOCAL AUTHORITIES HAVING JURISDICTION.
- C. HYDROSTATIC TESTING: AFTER FLUSHING SYSTEM, TEST FIRE SPRINKLER PIPING HYDROSTATICALLY, FOR PERIOD OF 2 HOURS, AT NOT LESS THAN 200 PSI OR AT 50 PSI IN EXCESS OF MAXIMUM STATIC PRESSURE WHEN MAXIMUM STATIC PRESSURE IS IN EXCESS OF 150 PSI. CHECK SYSTEM FOR LEAKAGE OF JOINTS. MEASURE HYDROSTATIC PRESSURE AT LOW POINT OF EACH SYSTEM OR ZONE BEING TESTED.
- D. REPAIR OR REPLACE PIPING SYSTEM AS REQUIRED TO ELIMINATE LEAKAGE IN ACCORDANCE WITH NFPA STANDARDS FOR "LITTLE OR NO LEAKAGE" AND RETEST AS SPECIFIED TO DEMONSTRATE COMPLIANCE.

3.08 ADJUSTING AND CLEANING:
- A. CLEANING AND INSPECTING: CLEAN AND INSPECT FIRE PROTECTION SYSTEMS TO BE WIP-DOWN CLEAN AND FREE FROM LEAKS AND DEFECTS. iNSPECT PIPE HANGERS TO INSURE SECURE STRUCTURAL CONNECTION AND THE HANGER IS TIGHT AND CARRYING THE WEIGHT OF THE PIPE.

3.09 EXTRA STOCK:
- A. HEADS: FOR EACH STYLE AND TEMPERATURE RANGE REQUIRED, FURNISH ADDITIONAL SPRINKLER HEADS, AMOUNTING TO ONE UNIT FOR EVERY 100 INSTALLED UNITS, BUT NOT LESS THAN 5 UNITS OF EACH.
- B. WRENCHES: FURNISH 2 SPANNER WRENCHES FOR EACH TYPE AND SIZE OF VALVE CONNECTION AND FIRE HOSE COUPLING.



PRELIMINARY SPRINKLER CALCULATION

Flow test Data		
Static Pressure:	135	
Residual Pressure:	45	
Flow (GPM) :	1120	
Date taken:	12/29/21	
Time:	AFTERNOON	
Test taken by:	NORRIS WATER COMMISSON	
Elevation of Hydrant:	0	
GPM Demand of BLDG.		
Most remote area or highest demand (Room Name)	CLASSROOM 113	
Design Density (NFPA 13 or supplied by Insurance Co.)	0.1	
Design Area (Square footage)	1500	
Overage Factor (1.20 typ.)	1.34	
Remote area GPM demand(Density x Area x Overage)	201	
Standpipe GPM demand (If required)(500 gpm for the first, 250 after)	0	
Hose GPM demand (100 Light, 250 ordinary, 500 extra hazard)	100	
Total GPM (Remote Area + Standpipe + Hose)	301	
Available Pressure		
Density	0.1	
Max Sprinkler Head coverage (As per NPFA 13 table 4-2.2)	168	
Square footage spacing x Density = GPM sprinkler head (Q)	16.8	
K-Factor of Sprinkler head (K)	5.6	
Equation: Pressure required at head=(Q / K)2	9	
Elevation difference from test hydrant to base of riser x .433	23	9.959
Elevation difference from base of riser to remote area x .433	15	6.495
Backflow Preventer pressure drop	5	
Safety Factor (5 psi min.) (SF)	5	
Fixed Pressure drop =	35	
Estimated Friction Drop Thru Fire Line		
Length of run from test hydrant to riser (HR)	355	
Pipe C Factor (Ductile Iron C-100)	100	
Nominal Pipe Inside Diameter (10", 8", 6", 4", 3")	6	
Friction loss in pipe (psi/ft) (Based on Hazen William Equation) (HW1)	0.005635	
HR x 1.30 x HW1 =	3	
Length of run from riser to last sprinkler head (estimated.) (RS)		
Base of Riser to farthest sprinkler	275	
Pipe C Factor (Black Steel C-120)	120	
Nominal Pipe Inside Diameter (6", 4", 3", 2-1/2", 2")	3	
Friction loss in pipe (psi/ft) (Based on Hazen William Equation) (HW2)	0.117604	
RS x 1.30 x HW2 =	42	
Estimated Required Flow Data for Building		
Required GPM	301	
Required PSI	80	

SPRINKLER LEGEND

SYM	DESCRIPTION	SPRAY	TYPE	TEMP.	ORIFICE	K	MODEL #	FINISH
●	PENDENT	15' X 15'	QUICK RESPONSE	135°F	1/2"	5.6	V2708	WHITE

FIRE PROTECTION GENERAL NOTES:

1. THE SPRINKLER HEADS SHOWN ARE GENERAL IN NUMBER AND LOCATION. THE EXACT NUMBERS AND LOCATIONS SHALL BE DETERMINED BY THE SUCCESSFUL SPRINKLER INSTALLER AND SHALL BE SHOWN ON HIS SHOP DRAWINGS. THE SPRINKLER SYSTEM SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND NFPA 13 & 24.
2. PROVIDE A HYDRAULICALLY DESIGNED FULL COVERAGE SPRINKLER SYSTEM.
3. PROVIDE DRY PENDANT TYPE HEADS IN COOLER, FREEZER AND/OR OTHER AREAS THAT ARE SUBJECT TO FREEZING FOR FREEZE PROTECTION.
4. THE SPRINKLER CONTRACTOR SHALL COORDINATE LOCATIONS OF SPRINKLER HEADS AND ASSOCIATED PIPING WITH ALL OTHER TRADES.
5. ALL SPRINKLER HEADS LOCATED IN 2'x2' TILES SHALL BE CENTERED.
6. SPRINKLER SYSTEM SHALL BE LIGHT HAZARD
7. CONTRACTOR SHALL VERIFY LOCATION AND INSTALLATION REQUIREMENTS OF BACKFLOW PREVENTER WITH THE LOCAL AUTHORITY HAVING JURISDICTION, AND LOCAL WATER UTILITY BEFORE CONSTRUCTION OR SITE EXCAVATION HAS BEGUN.
8. SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR FULL REPLACEMENT COST OF SURFACES DAMAGED BY DRAINAGE FROM THE SPRINKLER SYSTEM.
9. THE CONTRACTOR MUST PROVIDE A CERTIFIED CALCULATION DEMONSTRATING THE CHARACTERISTICS OF THE PROPOSED SYSTEM AND SHOWING PIPE SIZE AND SYSTEM FLOW.
10. THE MINIMUM PIPE SIZE FOR THE UNDERGROUND SPRINKLER MAIN IS 6", CONTRACTOR TO VERIFY WITH A CERTIFIED CALCULATION. THE MINIMUM BURY DEPTH FOR THE FIRE MAIN IS 36" BELOW FINISHED GRADE.
11. PROVIDE A "PUMPER" HYDRANT WITHIN 100' OF THE FIRE DEPARTMENT CONNECTION AS REQUIRED BY THE AHJ.
12. THE NEW SPRINKLER SYSTEM IS AN NFPA (13-4.1) WET PIPE SYSTEM.
13. ALL FIRE PROTECTION PIPING STARTING FROM POINT OF SERVICE ON MUST BE INSTALLED BY A TENNESSEE LICENSED FIRE PROTECTION CONTRACTOR. SEE THE SITE UTILITY DRAWING FOR UNDERGROUND PIPING AND VALVES REQUIRED.
14. ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE LOCAL CODES, RULES AND ORDINANCES.
15. THE VELOCITY OF WATER FOR SPRINKLER PIPING SHALL NOT EXCEED 21 FPS (FEET PER SECOND).
16. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR CONNECTIONS TO ALL UTILITY LINES AND PAY ALL FEES AND COSTS FOR CONNECTIONS TO THOSE SERVICES.
17. SEE MECHANICAL SHEETS FOR DIFFUSER LOCATIONS.
18. SEE ELECTRICAL LIGHTING SHEETS FOR LOCATION OF LIGHTS.

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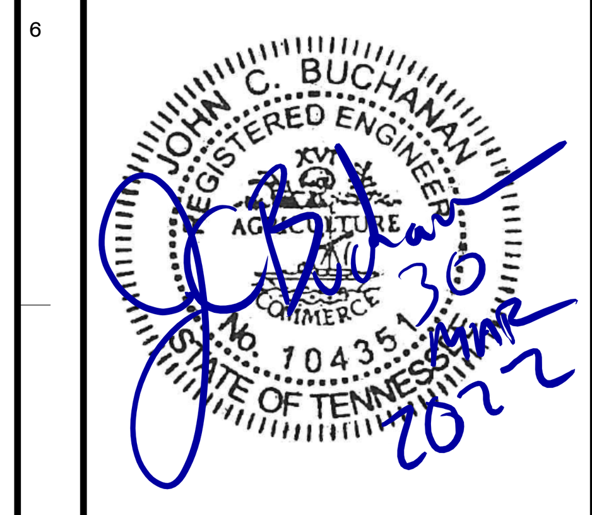
SEAL



PROJECT INFORMATION

PROJECT: AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS: 5 NORRIS SQUARE, NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE
- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	3/30/22	ADDENDUM #3

KEY PLAN

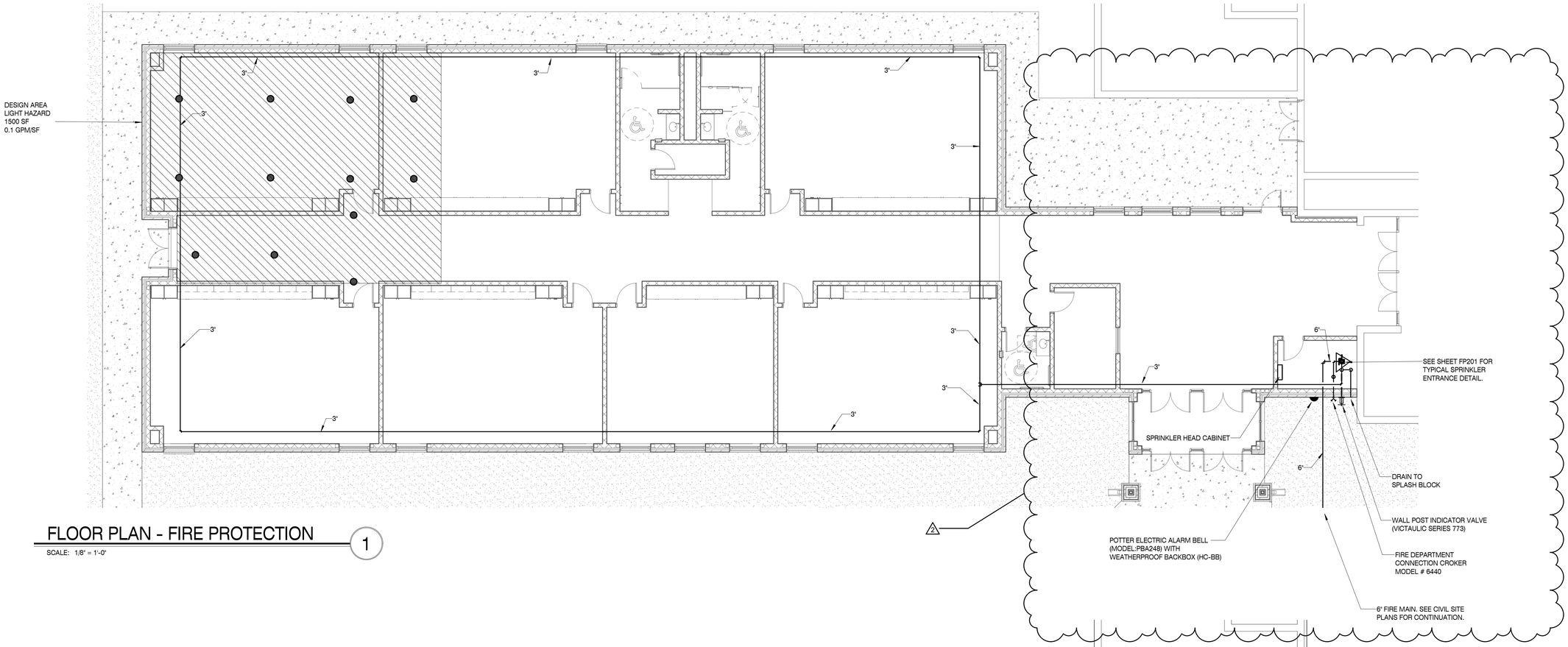
SHEET INFORMATION

SHEET ISSUED:	2/4/2022
DESIGNED BY:	DF
DRAWN BY:	DF
REVIEWED BY:	JCB

SHEET TITLE: FIRE PROTECTION LEGENDS, SPECIFICATIONS, AND NOTES

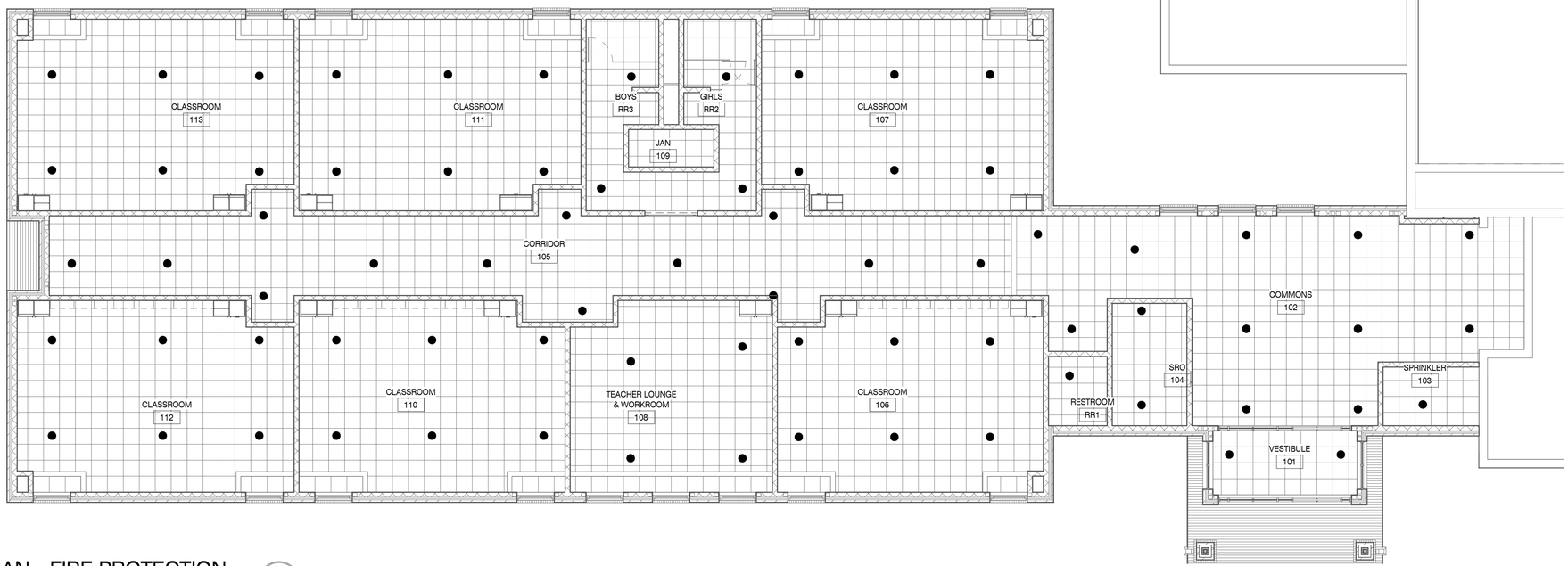
SHEET NO.: FP001

ARCH D



FLOOR PLAN - FIRE PROTECTION 1

SCALE: 1/8" = 1'-0"



CEILING PLAN - FIRE PROTECTION 2

SCALE: 1/8" = 1'-0"

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JOHN C. BUCHANAN
REGISTERED ENGINEER
No. 104351
STATE OF TENNESSEE

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KEY PLAN

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DRAWN BY:	DF
REVIEWED BY:	JCB

SHEET TITLE:

FLOOR PLAN - FIRE PROTECTION

SHEET NO.:

FP101

ARCH D

SEISMIC RESTRAINT FOR PIPING

BRACING OF PIPES:

A. VERTICAL PIPING

(1) ATTACHMENT - VERTICAL PIPING SHALL BE SECURED AT SUFFICIENTLY CLOSE INTERVALS TO KEEP THE PIPE IN ALIGNMENT AND CARRY THE WEIGHT OF THE PIPE AND CONTENTS. STACKS SHALL BE SUPPORTED AT THEIR BASES AND IF OVER 2 STORIES IN HEIGHT AT EACH FLOOR BY APPROVED METAL FLOOR CLAMPS.

(2) SCREWED PIPE - SCREWED PIPE (I.P.S.) SHALL BE SUPPORTED AT NOT - LESS THAN EVERY OTHER STORY HEIGHT.

(3) COPPER TUBING - COPPER TUBING SHALL BE SUPPORTED AT EACH STORY FOR PIPING 1 1/2" AND LARGER DIAMETER, AT NOT MORE THAN 6 FOOT INTERVALS FOR PIPING 1 1/2" AND SMALLER IN DIAMETER.

(4) PIPES OF OTHER APPROVED MATERIAL SHALL BE SUPPORTED IN ACCORDANCE WITH THEIR APPROVED INSTALLATION STANDARDS.

(5) VERTICAL RISERS SHALL BE SUPPORTED WITH A RISER CLAMP AT EACH FLOOR. WHERE THERMAL EXPANSION OCCURS, ANCHOR THE RISER AT THE MIDPOINT OR AT THE NEXT FLOOR ABOVE THE MIDPOINT WITH ADDITIONAL SUPPORTS ADJACENT TO THE TOP AND BOTTOM OF THE RISER; INSTALL GUIDES ON THE RISER AT EACH IMMEDIATE FLOOR. RISERS IN HIGH RISE BUILDINGS (SIX STORIES AND ABOVE) SHALL BE DESIGNED INDIVIDUALLY.

B. HORIZONTAL PIPING

(1) SUPPORTS - HORIZONTAL PIPING SHALL BE SUPPORTED AT SUFFICIENTLY CLOSE INTERVALS TO KEEP IT IN ALIGNMENT AND PREVENT SAGGING.

(2) SCREWED PIPE - SCREWED PIPE (I.P.S.) OR FLANGED PIPE SHALL BE SUPPORTED AT APPROXIMATELY 10 FOOT INTERVALS.

(3) COPPER TUBING - COPPER TUBING SHALL BE SUPPORTED AT APPROXIMATELY 6 FOOT INTERVALS FOR TUBING 1 1/2" AND SMALLER IN DIAMETER AND 10 FOOT INTERVALS FOR TUBING 2" AND LARGER IN DIAMETER.

(4) PIPES OF OTHER APPROVED MATERIALS SHALL BE SUPPORTED IN ACCORDANCE WITH THEIR APPROVED INSTALLATION STANDARDS.

3. TRANSVERSE BRACING AT 40' - 0" O.C. MAXIMUM UNLESS OTHERWISE NOTED.

4. LONGITUDINAL BRACING AT 80' - 0" O.C. MAXIMUM UNLESS OTHERWISE NOTED. WHEN THERMAL EXPANSION OR CONTRACTION IS INVOLVED, PROVIDE LONGITUDINAL BRACINGS AT ANCHOR POINTS. THE LONGITUDINAL BRACES AND THE CONNECTIONS MUST BE CAPABLE OF RESISTING THE FORCE INDUCED BY EXPANSION AND CONTRACTION.

5. TRANSVERSE BRACING FOR ONE PIPING SECTION MAY ALSO ACT AS LONGITUDINAL BRACING FOR THE PIPING SECTION CONNECTED PERPENDICULAR TO IT, IF THE BRACING IS INSTALLED 24' OF THE ELBOW OR TEE OF SIMILAR SIZE.

6. FOR THREADED PIPING THE FLEXIBILITY MAY BE PROVIDED BY THE INSTALLATION OF SWING JOINTS. IN WELDED OR SOLDER JOINT PIPING THE FLEXIBILITY SHALL BE PROVIDED BY EXPANSION LOOPS OR MANUFACTURED FLEXIBLE CONNECTORS. FOR PIPING WITH MANUFACTURED BALL JOINTS SELECT LENGTH OF PIPING OFFSET USING "SEISMIC DRIFT" IN PLACES OF "EXPANSION PER JOINT MANUFACTURERS' SELECTION TABLE. SEISMIC DRIFT = 0.015 FT. PER FOOT OF HEIGHT.

7. DO NOT USE BRANCH LINES TO BRACE MAIN LINES.

8. TRAPEZE HANGERS MAY BE USED. PROVIDE FLEXIBILITY IN JOINTS WHERE PIPES PASS THROUGH BUILDING SEISMIC OR EXPANSION JOINTS, OR WHERE RIGIDLY SUPPORTED PIPES CONNECT TO EQUIPMENT WITH VIBRATION ISOLATORS.

9. A RIGID PIPING SYSTEM SHALL NOT BE BRACED TO DISSIMILAR PARTS OF A BUILDING OR TWO DISSIMILAR BUILDING SYSTEMS THAT MAY RESPOND IN A DIFFERENT MODE DURING AN EARTHQUAKE. EXAMPLES: WALL AND A ROOF; SOLID CONCRETE WALL AND A METAL DECK WITH LIGHTWEIGHT CONCRETE FILL.

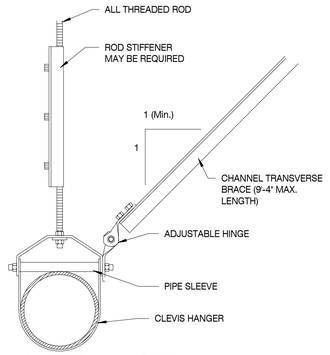
10. PROVIDE LARGE ENOUGH PIPE SLEEVES THROUGH WALLS OR FLOORS TO ALLOW FOR ANTICIPATED DIFFERENTIAL MOVEMENTS.

11. AT VERTICAL PIPE RISERS, WHEREVER POSSIBLE, SUPPORT THE WEIGHT OF THE RISER AT A POINT OR POINTS ABOVE THE CENTER OF GRAVITY OF THE RISER. PROVIDE LATERAL GUIDES AT THE TOP AND BOTTOM OF THE RISER, AND AT INTERMEDIATE POINTS NOT TO EXCEED 30' - 0" ON CENTER.

12. FOR GAS PIPING, THE BRACING DETAILS, SCHEDULES AND NOTES IN THE SMACNA GUIDE MAY BE USED EXCEPT THAT TRANSVERSE BRACING SHALL BE AT 20' - 0" O.C. MAXIMUM AND LONGITUDINAL BRACING AT 40' - 0" O.C. MAXIMUM. ALSO 1", 1 1/4", 1 1/2", AND 2" DIAMETER PIPES SHALL BE BRACED THE SAME AS 2 1/2" DIAMETER PIPE IN THE SMACNA GUIDE. (NO BRACING IS REQUIRED FOR PIPES 3/4" DIAMETER AND SMALLER).

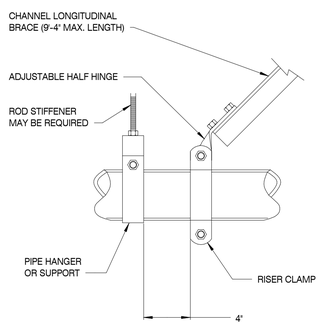
PIPING SEISMIC BRACING DETAIL 4

SCALE: N.T.S.



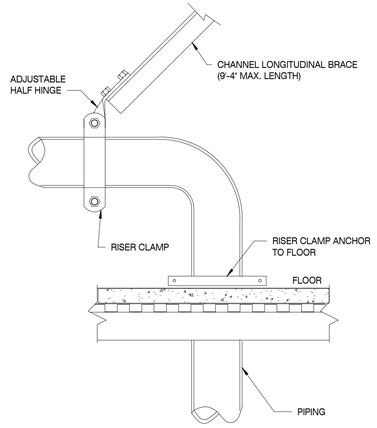
CLEVIS HANGER TRANSVERSE BRACING

NTS



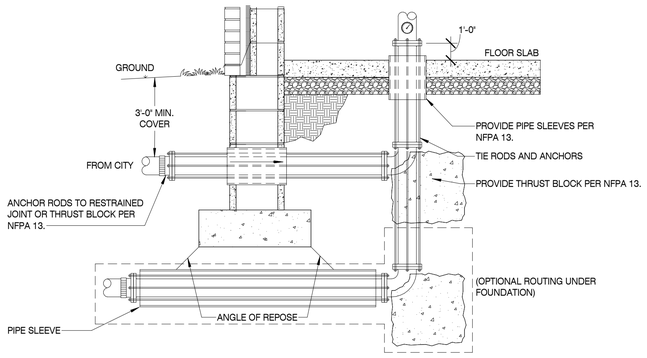
LONGITUDINAL BRACING

NTS



TOP OF RISER BRACING

NTS



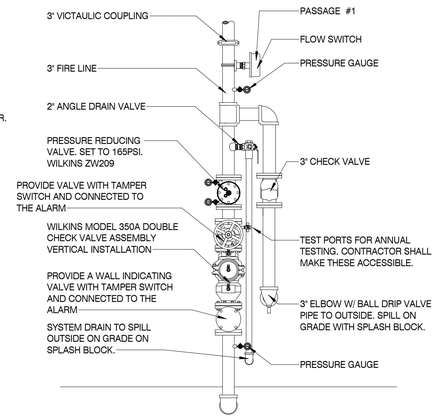
FIRE LINE LEAD-IN DETAIL 2

SCALE: 1/8" = 1'-0"

FIRE PROTECTION RISER SHALL BE INSTALLED BY A LICENSED FIRE PROTECTION CONTRACTOR. RISER IS SHOWN FOR INSTALLATION PURPOSES ONLY.

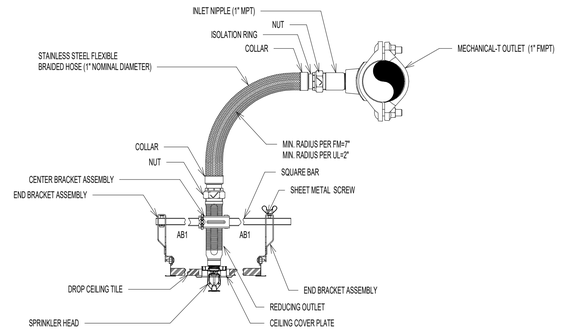
SEE SITE UTILITY PLAN AND IRRIGATION PLAN FOR CONTINUATION OF WATER LINES AND FIRE LINES LEAVING AND ENTERING THE BUILDING.

TEST PORTS, VALVES, AND GUAGES MUST BE ACCESIBLE FOR INSPECTION AND MAINTNANCE.



SPRINKLER ENTRANCE DETAIL 1

SCALE: N.T.S.



BRAIDED FLEXIBLE SPRINKLER HEAD CONNECTION 3

SCALE: 1/2" = 1'-0"

3

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SEAL

JOHN C. BUCHANAN REGISTERED ENGINEER 10435 STATE OF TENNESSEE

PROJECT INFORMATION

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AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

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PROJECT NO.: 210042-04

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REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	3/30/22	ADDENDUM #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	2/4/2022
DESIGNED BY:	DF
DRAWN BY:	DF
REVIEWED BY:	JCB

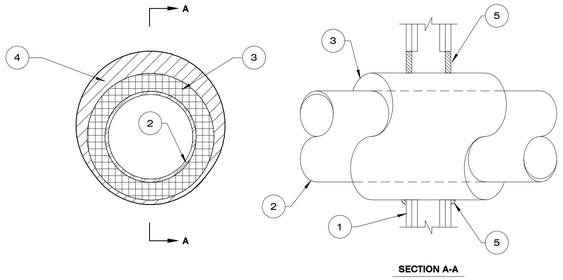
SHEET TITLE:

FIRE PROTECTION DETAILS

SHEET NO.:

FP201

System No. W-L-5029
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/2, 3/4, 1, 1-1/2 and 1-3/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
B. Gypsum Board* — 5/8 in. thick, 4 ft wide, with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 18-5/8 in.
The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One metallic pipe or tubing to be centered within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe — Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 12 in. diam (or smaller) cast or ductile iron pipe.
C. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
D. Copper Pipe — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.
See Pipe and Equipment Covering — Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
The hourly T Rating of the firestop system is dependent on the hourly fire rating of the wall assembly in which it is installed, the size and type of through penetrant and the pipe covering thickness, as shown in the table below:

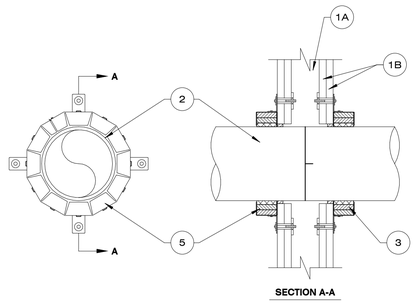
Wall Assembly Rating Hr	Through Penetrant		Pipe Covering Thkns In.	Annular Space		T Rating Hr
	Type +	Max Diam In.		Min In.	Max In.	
1	A	4	1	0	1-1/2	1/2
1	B or C	2	1 or 1-1/2	0	1-1/2	1/2
1	A	4	1-1/2	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	B or C	6	2	0	1-7/8	1
2	A	4	1	0	1-1/2	1
2	B or C	4	1 or 1-1/2	0	1-1/2	1
2	B or C	6	2	0	1-7/8	1
2	A	4	1-1/2	0	1-1/2	1-3/4
2	A	12	2	0	1-7/8	1-1/2
2	B or C	6	2	0	1-7/8	1

+Indicates penetrant type as itemized in Item 2.
3A. Pipe Covering* — (Not Shown) — As an alternate to Item 3, max 2 in. thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 8 AWG stainless steel wire spaced max 12 in. OC. When the alternate pipe covering is used, the T Rating shall be determined from the table above.
See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall . At the point contact location between pipe covering and gypsum board, a min 1/2 in. diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant
*Bearing the UL Classification Mark

FIRE PENETRATION DETAIL — 1

SCALE: N.T.S.

System No. W-L-2078
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1 and 2 Hr (See Items 2 and 3)
L Rating At Ambient — 3 CFM/sq ft
L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL fire Resistance Directory and shall include the construction features noted below:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced max 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
B. Gypsum Board* — Nom 5/8 in. thick gypsum board, as specified in the individual Wall and Partition Design. Max diam of opening is 11-1/2 in.
The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through-Penetrants — One nonmetallic pipe, conduit or tubing to be installed within the firestop system. The annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. Pipe or conduit to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes may be used:
A. Polyvinyl Chloride (PVC) Pipe — Nom 10 in. diam (or smaller) Schedule 40 solid-core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 10 in. diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
C. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 6 in. diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems
D. Flame Retardant Polypropylene (FRPP) Pipe — Nom 6 in. diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
E. Polyvinylidene Fluoride (PVDF) Pipe — Nom 4 in. diam (or smaller) PVDF pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
When max 6 in. diam pipe is used, T Rating is equal to the hourly fire rating of the wall. When nom 8 in. or 10 in. diam pipe is used, T Rating is 0 hr.
3. Firestop Device* — Firestop Collar — Firestop collar shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to both sides of the wall using the anchor hooks provided with the collar. (Minimum two anchor hooks for 1-1/2 and 2 in. diam pipes, three anchor hooks for 3 and 4 in. diam pipes, four anchor hooks for 6 in. diam pipes, ten anchor hooks for 8 in. diam pipes and twelve anchor hooks for 10 in. diam pipes). The anchor hooks are to be secured to the surface of wall with 3/16 in. diam by 2-1/2 in. long steel toggle bolts along with washers. As an alternate for pipe sizes of nom 4 in. diam or less, min No. 10 by 1-1/2 in. long drywall or laminate screws with min 3/4 in. steel washers may be used. When the drywall or laminate screw is used, T Rating shall not exceed 1 hr.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643 50/1.5'N, CP 643 63/2'N, CP 643 90/3'N, CP 643 110/4'N, CP 643 160/6'N, CP 644 200/8' andCP 644 250/10' Firestop Collars
4. Fill, Void or Cavity Material* — Sealant - (Not Shown) — Min 1/2 in. thickness of sealant applied within the annular space for nom 8 in. and 10 in. diam pipes, flush with each side of wall. Sealant in annular space is optional for max 6 in. diam pipes. A min 1/4 in. thickness of sealant is required within the annular space, flush with each side of wall, to attain the L Ratings for max 6 in. diam pipes.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant
*Bearing the UL Classification Mark

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3/30/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	3/30/22	ADDENDUM #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	3/30/2022
DESIGNED BY:	DF
DRAWN BY:	DF
REVIEWED BY:	JCB

SHEET TITLE:

FIRE PROTECTION DETAILS

SHEET NO.:

FP202

ARCH D

AIR DISTRIBUTION EQUIPMENT SCHEDULE

DESIGNATION		SERVICE	DESCRIPTION	MATERIAL/FINISH	MANUFACTURER MODEL NUMBER	SIZING CFM	NECK
	CD1	SQUARE, 3-CONE, CEILING SUPPLY DIFFUSER	24"x24" FACE T-BAR LAY-IN ADJUSTABLE PATTERN W/ O.B.D.	ALUMINUM WHITE ENAMEL	PRICE ASCDA	0-110 111-240 241-420 421-615 616-840	6"Ø 8"Ø 10"Ø 12"Ø 14"Ø
	CD2	SQUARE, 3-CONE, CEILING SUPPLY DIFFUSER	SURFACE MOUNTED, ADJUSTABLE PATTERN WITH O.B.D.	ALUMINUM WHITE ENAMEL	PRICE ASCDA		
	RCD	ROUND CONE DIFFUSER	FOUR CONE, ADJUSTABLE PATTERN	ALUMINUM WHITE ENAMEL	PRICE RCDA	0-410	10"Ø
	LSD1	LINEAR SLOT DIFFUSER	(_) __" SLOTS 2-WAY PATTERN CONTROL	ALUMINUM WHITE ENAMEL	PRICE ________		
	CR1	EGGCRATE FACE CEILING RETURN GRILLE	1/2"x1/2"x1/2" CORE, PANEL MTD, T-BAR LAY-IN, BORDER TYPE 3, WITH ALUMINUM O.B.D.	ALUMINUM CORE ALUMINUM FRAME WHITE ENAMEL	PRICE 80DAL-F	0-415 416-815 816-1300 1301-1680	10x10 14x14 18x18 22x22
	CR2		1/2"x1/2"x1/2" CORE, PANEL MTD, SURFACE MOUNT, BORDER TPE 1, WITH ALUMINUM O.B.D.	ALUMINUM CORE ALUMNIUM FRAME WHITE ENAMEL			
	TG	EGGCRATE FACE TRANSFER GRILLE	1/2"x1/2"x1/2" CORE, PANEL MTD, SURFACE MOUNT OR T-BAR LAY-IN AS REQUIRED	ALUMINUM CORE ALUMNIUM FRAME WHITE ENAMEL	PRICE 80	0-350 351-680 681-1125 1126-1680	10x10 14x14 18x18 22x22
	SWR1	SIDEWALL RETURN GRILLE	O DEG. FIXED HORZONTAL FACE BARS	ALUMINUM WHITE ENAMEL	PRICE 510ZD		
	CE1	EGGCRATE FACE CEILING EXHAUST GRILLE	1/2"x1/2"x1/2" CORE, PANEL MTD, T-BAR LAY-IN, BORDER TYPE 3 WITH ALUMINUM O.B.D.	ALUMINUM CORE ALUMNIUM FRAME WHITE ENAMEL	PRICE 80DAL-TB	0-415 416-815 816-1300 1301-1680	10x10 14x14 18x18 22x22
	CE2		1/2"x1/2"x1/2" CORE, PANEL MTD,SURFACE MOUNT, BODER TYPE 1 WITH ALUMINUM O.B.D.		PRICE 80DAL-F		

NOTES AND ACCESSORIES:
- SIZING COLUMN GOVERNS DEVICE NECK SIZE ONLY. RUN-OUT DUCT SIZES MAY VARY (SEE FLOOR PLAN DRAWINGS.) PROVIDE DUCT TRANSITIONS INCLUDING SQUARE TO ROUND AS REQUIRED.
- ALTERNATE MANUFACTURERS: KRUEGER, METALAIRE, PRICE
- MECHANICAL CONTRACTOR SHALL PROVIDE DIFFUSERS WITH APPROPRIATE AIR PATTERN AS SHOWN ON PLANS.
- PRIOR TO ORDERING DEVICES MECHANICAL CONTRACTOR SHALL PROVIDE TO ARCHITECT A COLOR/FINISH SELECTION CHART FOR EACH DEVICE SCHEDULED. SELECTIONS MAY DIFFER ON A SPACE BY SPACE BASIS PER ARCHITECTS' OPTION. IF COLOR/FINISH IS NOT COORDINATED WITH ARCHITECT PRIOR TO ORDERING MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING AND PAINTING TO MATCH INTERIOR.
- ORDER DIFFUSERS WITH VOLUME DAMPER.
- FOR SIDEWALL DIFFUSERS ADJUST VERTICAL BLADES FOR A 45 DEGREE HORIZONTAL SPREAD.
- FOR SIDEWALL DIFFUSER, GRILLES, AND REGISTERS SIZES ARE SHOWN ON FLOOR PLAN DRAWINGS.
- VERIFY EXACT FRAME TYPE WITH ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

HVAC SPECIFICATIONS

PART 1 - GENERAL

1.01 SCOPE
FURNISH ALL LABOR, MATERIALS, EQUIPMENT, CONTROL SYSTEMS, DEVICES, ACCESS PANELS, PERMITS, AND SERVICES NECESSARY TO INSTALL THE COMPLETE AND OPERABLE AIR CONDITIONING, HEATING, AND VENTILATING SYSTEM INDICATED ON THE DRAWINGS, AS SPECIFIED HEREIN, AND IN ACCORDANCE WITH ALL CITY, STATE, AND NATIONAL CODES, IF THERE IS A CONFLICT BETWEEN CODES AND OR THE CONTRACT DOCUMENTS, THE CONTRACTOR IS TO FOLLOW THE MORE STRINGENT OF THE REQUIREMENTS. ALL MATERIALS SHALL BE NEW AND ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE LOCAL CODES, PRODUCT APPROVAL, RULES AND ORDINANCES. ANY DAMAGED EQUIPMENT SHALL BE REPLACED OR RESTORED TO ORIGINAL CONDITION. ALL MECHANICAL EQUIPMENT SHALL BE ARI & UL LISTED WHERE APPLICABLE AND RATED FOR THE REQUIRED SERVICE, PRESSURES, TEMPERATURES AND SHALL BE PROVIDED WITH ALL NECESSARY TRANSFORMERS, SEALS, VALVES, CONNECTIONS, ETC. TO FUNCTION PROPERLY.

1.02 ELECTRICAL WORK
ALL CONDUIT, ROUGH IN ELECTRICAL BOXES AND WIRING, EXCLUDING LOW VOLTAGE CONTROL WIRING, SHALL BE INCLUDED UNDER THE ELECTRICAL SECTION OF THE CONTRACT DOCUMENTS, COORDINATE REQUIREMENTS AND ROUGH IN LOCATIONS FOR ALL EQUIPMENT. CONTROL WIRING SHALL BE PROVIDED AND INSTALLED UNDER THE MECHANICAL SECTION OF THE CONTRACT DOCUMENTS.

1.03 SUBMITTAL DATA
PRIOR TO ORDERING EQUIPMENT THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A MINIMUM OF THREE (3) COPIES OF THE EQUIPMENT BROCHURES, TECHNICAL DATA AND/OR SHOP DRAWINGS. AS AN ALTERNATIVE, AN ELECTRONIC SUBMITTAL IS ACCEPTABLE. CONTRACTOR IS INSTRUCTED TO CONSOLIDATE INFORMATION WHEN SUBMITTING ELECTRONICALLY AND AVOID MULTIPLE COMMUNICATIONS.

1.04 NOISE AND VIBRATION
EQUIPMENT SHALL OPERATE QUIETLY. THE OPERATION OF THE EQUIPMENT SHALL CAUSE NO PERCEPTIVE VIBRATION NOR OBJECTIONABLE NOISE IN ANY PORTION OF THE BUILDING OR STRUCTURE.

1.05 MAINTENANCE MANUALS
FURNISH (3) THREE SETS OF OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS COVERING HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS AS WELL AS EQUIPMENT WARRANTIES, CONTROL SEQUENCES AND DIAGRAMS. MANUALS ARE TO BE BOUND AND COVERED. DELIVER MANUALS TO THE ARCHITECT. INCLUDE A COMPLETE DESCRIPTION OF THE OPERATION OF THE CONTROL SYSTEM. THE CONTRACTOR SHALL INSTRUCT THE OWNER'S REPRESENTATIVE IN THE PROPER OPERATION OF ALL EQUIPMENT.

1.06 WARRANTIES
1. ALL WARRANTIES SHALL BEGIN UPON FINAL ACCEPTANCE BY THE OWNER, NOT BENEFICIAL USE BY THE CONTRACTOR.
2. FURNISH A FIVE (5) YEAR WARRANTY ON ALL COMPRESSORS AND REFRIGERATION CIRCUIT AND A ONE (1) YEAR WARRANTY ON ALL CONTROLS AND OTHER EQUIPMENT.
3. THE MC WILL WARRANTY ALL MECHANICAL SYSTEMS, DUCTWORK, THERMOSTATS, AND ALL OTHER EQUIPMENT, PARTS, AND LABOR SHOWN ON THE MECHANICAL DRAWINGS AND IN THE SPECIFICATIONS FOR A PERIOD OF ONE (1) YEAR AFTER ISSUANCE OF THE CERTIFICATE OF OCCUPANCY. SEE HVAC GENERAL NOTE 17.
4. ANY REPAIRS REQUIRING SYSTEM SHUT DOWN WILL BE DONE DURING NON-OPERATIONAL PERIODS.
5. THE MC SHALL COORDINATE WITH ALL OTHER TRADES PRIOR TO BIDDING AND PURCHASING ANY EQUIPMENT.
6. AN INDEPENDENT CONTRACTOR SHALL TEST AND BALANCE ALL MECHANICAL EQUIPMENT AIR DEVICES, EXTRACTORS, DAMPERS, AHU'S AND FANS, ETC. TO PROVIDE THE DESIGN QUANTITIES (+/- 5%) AS SHOWN ON THE PLANS OR SCHEDULES. PROVIDE T & B REPORT IN ACCORDANCE WITH THE AIR BALANCE COUNCIL (ABC) STANDARDS, SIGNED AND SEALED BY A REGISTERED ENGINEER. PROVIDE FINAL BALANCING FOR ALL SYSTEMS TO SATISFACTION OF OWNER AND ENGINEER. T & B CONTRACTOR SHALL VISIT THE JOB SITE DURING CONSTRUCTION TO ENSURE THAT ALL DUCTS, DAMPERS, AND OTHER AIR CONTROL DEVICES ARE INSTALLED FOR PROPER AND QUIET AIR DELIVERY.
7. PROVIDE ALL MATERIALS AND LABOR REQUIRED FOR EQUIPMENT ANCHORAGE TO BUILDING STRUCTURE.

1.07 PERMITS, ORDINANCES, AND INSPECTIONS
1. OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION FEES REQUIRED. DELIVER TO THE ARCHITECT, ALL CERTIFICATES AND INSPECTION REPORTS.
2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CITY, COUNTY, STATE, OR NATIONAL ORDINANCES AND CODES. EFFORT HAS BEEN MADE TO MEET OR EXCEED REQUIREMENTS. THE CONTRACTOR SHALL MAKE ANY MINOR ADJUSTMENTS TO MEET THESE REQUIREMENTS AT NO ADDITIONAL COST TO OWNER.

PART 2 - PRODUCTS

2.01 DUCTWORK
1. GENERAL
   A. SEE HVAC GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
   B. DIMENSIONS INDICATED ON THE DRAWINGS ARE INSIDE AREAS. WHERE DUCTS ARE TO BE INTERNALLY INSULATED OR LINED INCREASE SHEET METAL OVERALL DIMENSIONS TO ACCOMMODATE INSULATION THICKNESS.
   C. PROVIDE FLEXIBLE WOVEN DUCT CONNECTIONS IN DUCTS AS INDICATED. SECURE CONNECTIONS WITH GALVANIZED CHANNELS. PROVIDE A BRAIDED COPPER BRIDGE STRAP ACROSS FLEXIBLE CONNECTIONS.

2. FLEXIBLE DUCTWORK. THE CONTRACTOR MAY INSTALL SUPPLY DIFFUSERS WITH A MAXIMUM OF A 5 FOOT RUN OF INSULATED FLEXIBLE DUCTWORK EQUAL TO FLEXMASTER TYPE 1M, MINIMUM R=8. ALL FLEXIBLE DUCTWORK SHALL BE INSTALLED AND ENDS TERMINATED IN COMPLIANCE WITH THE METHODS SHOWN IN THE ADC INSTALLATION MANUAL AND USE METAL STRAPS NOT LESS THAN 1-1/2" WIDE AT A MAXIMUM OF 5 FEET ON CENTER. DUCTS SHALL NOT DEFLECT MORE THAN 1/2" IN 5 FEET NOR HAVE ANY KINKS OR RESTRICTIONS TO FLOW. ELBOWS SHALL HAVE A MINIMUM RADIUS OF ONE DUCT DIAMETER WITH INTERIOR LINER FULLY EXTENDED. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN NOR EXHAUST SYSTEMS.

3. LOW PRESSURE DUCTWORK
   A. CONCEALED SYSTEMS. (DEFINED AS ANY DUCTWORK NOT VISIBLE TO OCCUPANTS OF A SPACE) PROVIDE MINIMUM 26 GAUGE RECTANGULAR AND/OR ROUND GALVANIZED STEEL SHEET METAL DUCTWORK CONSTRUCTED AND INSTALLED IN THE VENTILATION SYSTEMS IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS. SEE HVAC GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
   B. EXPOSED SYSTEMS. (DEFINED AS ANY DUCTWORK VISIBLE TO OCCUPANTS OF A SPACE) FOR ALL DUCTWORK SYSTEMS PROVIDE GALVANEALED STEEL (ASTM A875) SPIRAL ROUND AND/OR SPIRAL FLAT OVAL CONSTRUCTED SHEET METAL DUCTWORK AND FITTINGS (SIZED AS INDICATED ON PLANS) AS MANUFACTURED BY EASTERN SHEET METAL OR APPROVED EQUAL. ALL DUCTWORK IS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
      I. PROVIDE 2" WG LEAKAGE CLASS FOR ALL SYSTEMS
      II. FOR SUPPLY AND OUTSIDE AIR INTAKE DUCTWORK PROVIDE DUAL WALL CONSTRUCTION WITH 2" FIBERGLASS INSULATION (MIN. K= 0.27). INNER WALL SHALL BE SOLID, PERFORATED INNER WALLS ARE NOT ACCEPTABLE.
      III. FOR RETURN AND EXHAUST DUCTWORK PROVIDE SINGLE WALL CONSTRUCTION.
      IV. ALL DUCTWORK IS TO BE CLEANED OF GREASE, OIL, AND DIRT THEN PRIMED PRIOR TO APPLICATION OF A TOP COAT. CLEANING AND PRIMING ARE TO BE PERFORMED BY PAINTING CONTRACTOR PER THE PAINT MANUFACTURER'S RECOMMENDATION. PAINT COLOR SELECTION IS TO BE APPROVED BY THE ARCHITECT.

4. MEDIUM PRESSURE DUCTWORK. (DEFINED AS SUPPLY DUCTWORK DOWNSTREAM OF AIR HANDLER AND UPSTREAM OF VAV BOX) PROVIDE GALVANEALED STEEL (ASTM A875) SPIRAL ROUND AND/OR SPIRAL FLAT OVAL CONSTRUCTED SHEET METAL DUCTWORK AND FITTINGS (SIZED AS INDICATED ON PLANS) AS MANUFACTURED BY EASTERN SHEET METAL OR APPROVED EQUAL. ALL DUCTWORK IS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
   A. CONCEALED SYSTEMS. (DEFINED AS ANY DUCTWORK NOT VISIBLE TO OCCUPANTS OF A SPACE) FOR ALL DUCTWORK SYSTEMS PROVIDE GALVANIZED (ASTM A653) OR GALVANEALED (ASTM A875) STEEL SPIRAL ROUND AND/OR SPIRAL FLAT OVAL CONSTRUCTED SHEET METAL DUCTWORK AND FITTINGS (SIZED AS INDICATED ON PLANS) AS MANUFACTURED BY EASTERN SHEET METAL OR APPROVED EQUAL. ALL DUCTWORK IS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
      I. PROVIDE 4" WG LEAKAGE CLASS FOR ALL SYSTEMS
      II. PROVIDE DUAL WALL CONSTRUCTION WITH 2" FIBERGLASS INSULATION (MIN. K=0.27). INNER WALL SHALL BE SOLID, PERFORATED INNER WALLS ARE NOT ACCEPTABLE.
      III. CONNECTIONS BETWEEN ALL DUCT SECTIONS AND FITTINGS TO BE GASKET SEALED.
   B. EXPOSED SYSTEMS. (DEFINED AS ANY DUCTWORK VISIBLE TO OCCUPANTS OF A SPACE) FOR ALL DUCTWORK SYSTEMS PROVIDE GALVANEALED STEEL (ASTM A875) SPIRAL ROUND AND/OR SPIRAL FLAT OVAL CONSTRUCTED SHEET METAL DUCTWORK AND FITTINGS (SIZED AS INDICATED ON PLANS) AS MANUFACTURED BY EASTERN SHEET METAL OR APPROVED EQUAL. ALL DUCTWORK IS TO BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS.
      I. PROVIDE 4" WG LEAKAGE CLASS FOR ALL SYSTEMS
      II. PROVIDE DUAL WALL CONSTRUCTION WITH 2" FIBERGLASS INSULATION (MIN. K=0.27). INNER WALL SHALL BE SOLID, PERFORATED INNER WALLS ARE NOT ACCEPTABLE.
      III. ALL DUCTWORK IS TO BE CLEANED OF GREASE, OIL, AND DIRT THEN PRIMED PRIOR TO APPLICATION OF A TOP COAT. CLEANING AND PRIMING ARE TO BE PERFORMED BY PAINTING CONTRACTOR PER THE PAINT MANUFACTURER'S RECOMMENDATION. PAINT COLOR SELECTION IS TO BE APPROVED BY THE ARCHITECT.
      IV. CONNECTIONS BETWEEN ALL DUCT SECTIONS AND FITTINGS TO BE GASKET SEALED.

2.02 DAMPERS.
PROVIDE APPROVED MANUAL BALANCE DAMPERS WHERE SHOWN ON THE PLANS FOR THE PROPER REGULATION OF THE AIR HANDLING SYSTEM AND SO LOCATE AS TO BE ACCESSIBLE.

2.03 GRILLES, REGISTERS, AND DIFFUSERS

1. FURNISH AND INSTALL WHERE INDICATED RETURN AND SUPPLY GRILLES, COMPLETE WITH BAKED ENAMEL FINISH AND OPPOSED BLADE DAMPERS.
2. ALL DUCTWORK AND DIFFUSERS SHALL BE RATED FOR THE USE, PRESSURE AND TEMPERATURE SPECIFIED AND AS REQUIRED BY THE CEILING OR WALL SYSTEM RATING. IF THE CEILING ASSEMBLY IS RATED PROVIDE RADIATION DAMPERS AT THE PENETRATION WHEN THE AREA OF ALL PENETRATIONS, INCLUDING DUCT AND DIFFUSERS, IN THE MEMBRANE EXCEED AN AGGREGATE AREA OF 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF CEILING AREA.
3. DUCT INSULATION: INSULATE ALL SUPPLY, RETURN AND OUTDOOR AIR DUCTWORK WITH A MINIMUM OF 2" THICK 3/4# DENSITY DUCTWRAP INSULATION. ALL INSULATION WILL HAVE FIRE/SMOKE RATING LESS THAN 25/50. ALL EXTERIOR DUCTWORK SHALL BE WEATHER-PROOFED WITH A COVERING OF "ALUMIGUARD" WRAP.

2.04 EXHAUST FANS
FANS SHALL BE AS INDICATED ON DRAWINGS.

2.05 CONTROLS
CONTROLS SHALL BE ELECTRIC/ELECTRONIC TYPE, PROVIDE ALL WIRING, ACTUATORS, AND CONTROL DEVICES. FURNISH ALL THERMOSTATS AND SENSORS WITH INSULATED SUB-BASE.

1. CONSTANT VOLUME SYSTEMS
   A. MOUNT THERMOSTATS AS INDICATED ON DRAWINGS.
   B. INSTALL TEMPERATURE AND HUMIDITY SENSORS IN MAIN RETURN TRUNK DUCT CLOSEST TO UNIT, IF SHOWN ON DRAWINGS.
2. VARIABLE AIR VOLUME (VAV) SYSTEMS
   A. MOUNT THERMOSTATS AS INDICATED ON DRAWINGS.
   B. THERMOSTAT SHALL COMMUNICATE WITH WEB-BASED CONTROLLER.
   C. CONTROL PANELS TO BE LOCATED AS REQUIRED. FOR CONTROLS SYSTEM TO OPERATE, IT SHALL BE ENERGIZED BY 120/1Ø, COORDINATED WITH ELECTRICAL CONTRACTOR AT NO COST TO PROJECT.

2.06 PROTECTIVE DEVICES

1. FIRE DAMPERS
   A. INSTALL NFPA APPROVED, FUSIBLE LINK OPERATED TYPE "B" FIRE DAMPERS OF SUITABLE RATING IN ALL DUCTWORK PENETRATIONS OF RATED WALLS AND FLOORS IN LOCATIONS REQUIRED BY LOCAL AND STATE ORDINANCES.
   B. PROVIDE ACCESS IN BOTH CEILING CONSTRUCTION AND DUCTWORK FOR MAINTENANCE OF ALL FIRE DAMPERS.

HVAC GENERAL NOTES

1. REFERENCE HVAC SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

2. ALL WARRANTIES SHALL BEGIN UPON FINAL ACCEPTANCE BY THE OWNER, NOT BENEFICIAL USE BY THE CONTRACTOR.

3. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATE THE APPROXIMATE ROUTING OF PIPING AND DUCTWORK. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS AND DELAYS MINOR OFFSETS AND ADJUSTMENTS SHALL BE PROVIDED WHERE REQUIRED AT NO ADDITIONAL COST TO THE OWNER.

4. COORDINATE CEILING DIFFUSERS AND REGISTER LOCATIONS WITH THE ARCHITECTURAL REFLECTED CEILING. COORDINATE SIDE WALL GRILLES AND REGISTERS WITH STRUCTURAL AND ARCHITECTURAL ELEMENTS.

5. DUCT DIMENSIONS INDICATED ON THE DRAWINGS ARE NET AIR SIDE DIMENSIONS.

6. DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS. SEAL ALL DUCTS, JOINTS, AND SEAMS IN DUCTWORK TO INSURE AGAINST LEAKAGE. MITERED ELBOWS SHALL BE PROVIDED WITH SINGLE THICKNESS TURNING VANES. SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK SHALL BE GALVANIZED STEEL WITH INSULATION AS NOTED. EXHAUST DUCTWORK SHALL BE GALVANIZED STEEL.

7. INSULATE SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK WITH A MINIMUM OF 2" THICK 3/4 PCF BLANKET INSULATION WITH FOIL VAPOR BARRIER. SEAL ALL JOINTS AND SEAMS IN THE VAPOR BARRIER. FOR ACCOUSTICAL REASONS, IN ADDITION TO EXTERIOR INSULATION, ALL RETURN AIR DUCTS WITHIN 15' OF AIR HANDLER ARE TO BE INTERNALLY LINED WITH 1" LAYER OF 3/4 LB DENSITY LINER.

8. DUCT SEALING: PRESSURE SENSITIVE TAPE USED AS THE PRIMARY SEALANT IS TO BE CERTIFIED AND SHALL COMPLY WITH UL-181A OR UL-181B. PROVIDE LONGITUDINAL SEAMS ON RIGID DUCT AND TRANSVERSE SEAMS ON ALL DUCTS. MECHANICAL FASTENERS AND SEALANTS SHALL BE USED TO CONNECT DUCTS AND AIR DISTRIBUTION DEVICES.

9. RECTANGULAR SUPPLY AND RETURN BRANCH TAKE-OFFS SHALL BE 45° THROAT TAKE-OFFS WITH BALANCING DAMPERS IN THE BRANCH DOWNSTREAM OF THE TAKE-OFF. ROUND SUPPLY AND RETURN TAKE-OFFS SHALL BE BELL-MOUTH OR SPIN-IN FITTINGS WITH DAMPERS IN THE BRANCH DOWNSTREAM. PROVIDE BACKDRAFT DAMPERS ON ALL EXHAUST FANS AND/OR INLINE FANS.

10. ALL LOUVERS, ALL GRILLES, EXPOSED PIPING, EXPOSED EQUIPMENT, AND EXPOSED DUCTWORK SHALL BE PAINTED TO MATCH ADJACENT SURFACE COLOR AND TEXTURE OR AS DIRECTED BY THE ARCHITECT. VERIFY COLOR AND TEXTURE WITH THE ARCHITECT PRIOR TO PAINTING. PAINT ALL EXPOSED MECHANICAL EQUIPMENT WITH BENJAMIN MOORE EPOXY ENAMEL 182 OR AS DIRECTED BY THE ARCHITECT.

11. THERMOSTATS AND SENSORS SHALL BE LOCATED 48" A.F.F. UNLESS OTHERWISE NOTED. ALL CONDUIT, ROUGH IN ELECTRICAL BOXES AND WIRING, EXCLUDING LOW VOLTAGE CONTROL WIRING, SHALL BE INCLUDED UNDER THE ELECTRICAL SECTION OF THE CONTRACT DOCUMENTS, COORDINATE REQUIREMENTS AND ROUGH IN LOCATIONS FOR ALL CONTROL DEVICES, ELECTRICAL CONNECTIONS TO EQUIPMENT, AND SWITCH LOCATION. CONTROL WIRING SHALL BE PROVIDED AND INSTALLED UNDER THE MECHANICAL SECTION OF THE CONTRACT DOCUMENTS.

12. PROVIDE A 12/12 (MINIMUM) ACCESS DOOR FOR ACCESS TO ALL DAMPERS, CONTROL DAMPERS, EXTRACTORS, PLENUMS, OR ANY OTHER DEVICE MOUNTED IN THE DUCT SYSTEM.

13. INSTALL ALL EQUIPMENT ACCORDING TO THE MANUFACTURERS' INSTRUCTIONS.

14. REFRIGERANT PIPING SHALL BE PRE-CHARGED TUBING PACKAGES OR TYPE ACR COPPER TUBING IN ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS.

15. PROVIDE A MINIMUM OF 10' CLEARANCE BETWEEN FRESH AIR INTAKES AND EXHAUST OUTLETS, RELIEF OUTLETS, PLUMBING VENTS, ETC.

16. PROVIDE CONDENSATE DRAINS WITH A VENTED P-TRAP FOR ALL COOLING COILS. P-TRAPS TO BE PVC ON INTERIOR INSTALLED EQUIPMENT AND TYPE M COPPER ON EXTERIOR INSTALLED EQUIPMENT.

17. THE OUTSIDE AIR QUANTITIES ARE CALCULATED ACCORDING TO TABLE 6-1 "MINIMUM VENTILATION RATES IN BREATHING ZONE" OF ASHRAE STANDARD 62.1. CHAPTER 6 "DESIGN FOR VARYING OPERATING CONDITIONS" HAS BEEN UTILIZED AS ALLOWED TO REDUCE AIRFLOW RATES FOR INTERMITTENT USE.

18. AFTER THE CONSTRUCTION OF THE BUILDING HAS REACHED A POINT WHERE THE PERMANENT HEATING AND COOLING SYSTEMS ARE OPERABLE, THE CONTRACTOR MAY, AT HIS OPTION, USE THE PERMANENT HEATING AND COOLING EQUIPMENT FOR TEMPORARY ENVIRONMENTAL CONTROL. THE CONTRACTOR MUST SUBMIT A REQUEST FOR USE TO THE ARCHITECT OUTLINING THE INTENDED USE. THE HEATING SYSTEM SHALL NOT BE USED FOR TEMPORARY HEAT UNTIL THE BUILDING IS BROOM CLEAN AND SHALL NOT BE USED WITHOUT ALL FILTERS IN PLACE. FILTERS MUST BE CHECKED WEEKLY AND REPLACED AS REQUIRED TO PROTECT THE EQUIPMENT AND DUCT SYSTEMS. UPON THE COMPLETION OF THE WORK, AND PRIOR TO SUBSTANTIAL COMPLETION. ALL DUCTWORK AND EQUIPMENT SHALL BE INTERNALLY CLEANED AND ALL FILTERS SHALL BE REPLACED WITH NEW FILTERS.

19. ALL OF THE COSTS ASSOCIATED WITH PROVIDING TEMPORARY HEATING AND COOLING SHALL BE BORNE SOLELY BY THE CONTRACTOR, INCLUDING BUT NOT LIMITED POWER CONSUMPTION, ADDITIONAL ACCESS DOORS FOR CLEANING, FILTERS, DUCT AND EQUIPMENT CLEANING, ENGINEER'S TIME, TEST AND BALANCE AGENT TIME TO SUPPORT THE ENGINEER'S INSPECTION, ETC.

20. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL EQUIPMENT WITH THE ELECTRICAL SERVICE AND THE EC. THE SCOPE OF THIS COORDINATION INCLUDES BUT IS NOT LIMITED TO, REQUIRED VOLTAGE, PHASE, AMP CAPACITY, WIRE SIZE, CONDUIT SIZE AND LOCATION, DISCONNECT SIZE AND LOCATION, FUSE SIZE, ETC. IN THE EVENT OF A CONFLICT, THE MC IS TO NOTIFY THE ENGINEER PRIOR TO MECHANICAL AND ELECTRICAL EQUIPMENT BEING ORDERED.

21. ALL CUTTING, PATCHING, STRUCTURAL STEEL, WEATHER PROOFING, PAINTING, AND WALL OPENINGS REQUIRED FOR THE INSTALLATION OF MECHANICAL WORK SHALL BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE OWNER. COORDINATE WITH OTHER TRADES.

22. PROVIDE VIBRATION ISOLATORS ON ALL MECHANICAL EQUIPMENT. IF NOT SPECIFICALLY CALLED OUT, PROVIDE AS RECOMMENDED BY MANUFACTURER FOR QUIET OPERATION.

23. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO BIDDING, ORDERING, FABRICATION OR INSTALLATION OF MATERIALS OR EQUIPMENT.

24. SUBMITTALS AND ACCEPTANCE:
THE CONTRACTOR SHALL SUBMIT A MINIMUM OF THREE (3) SETS OF HVAC SHOP DRAWINGS TO THE PROJECT MANAGER WHO SHALL THEN RELAY THEM TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE PURCHASE OF EQUIPMENT. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL SUBMIT OPERATION AND MAINTENANCE MANUALS FOR ALL MECHANICAL EQUIPMENT INCLUDED IN THE PROJECT. THE MANUALS SHALL BE COMPILED INTO A THREE RING BINDER AND TURNED OVER TO BUILDING OWNER.

HVAC SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
12"Ø	ROUND DUCTWORK. DIAMETER INDICATED IN INCHES
20x12	RECTANGULAR SUPPLY AND RETURN DUCTWORK. SIZE INDICATED IN INCHES, FIRST NUMBER IS SIDE SHOWN
	FLEXIBLE DUCT
	SUPPLY OR OUTSIDE AIR DUCT UP
	SUPPLY OR OUTSIDE AIR DUCT DOWN
	RETURN AIR DUCT UP
	RETURN AIR DUCT DOWN
20X12	EXISTING DUCTWORK TO REMAIN
20X12	EXISTING DUCTWORK TO BE REMOVED
	90 DEGREE DUCTWORK ELBOW.
	RADIUS DUCTWORK ELBOW - ROUND OR RECTANGULAR
	FLARED SPIN-IN WITH DAMPER AND FLEX DUCT (DIFFUSER CONNECTION)
	ROUND AND RECTANGULAR DUCT BRANCH TAKE-OFF FROM RECTANGULAR MAIN WITH CONICAL TAP
	DUCTWORK SIZE TRANSITION
	DUCTWORK SQUARE TO ROUND TRANSITION
	POINT OF CONNECTION TO EXISTING
T EQUIP-#	THERMOSTAT
S EQUIP-#	SENSOR
$ EQUIP-#	SWITCH
M	MOTOR OPERATED DAMPER
SD	SMOKE DETECTOR - FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR AND INSTALLED BY MECHANICAL CONTRACTOR
	FIRE DAMPER
	SECURITY BAR
C	PROVIDE AND INSTALL A U.L. LISTED FIRE RATED CEILING DAMPER IN ACCORDANCE WITH FIRE RATING. DAMPER SHALL BE RUSKIN CFD TYPE OR APPROVED SUBSTITUTE
CD-1 (TYPE) 100 (AIRFLOW (CFM))	DIFFUSER/GRILLE LABEL
	VOLUME CONTROL DAMPER
CWS	CHILLED WATER SUPPLY PIPE
CWR	CHILLED WATER RETURN PIPE
HWS	HOT WATER SUPPLY PIPE
HWR	HOT WATER RETURN PIPE
E(NAME)	EXISTING PIPING TO REMAIN
X E(NAME) X	EXISTING TO BE REMOVED
RHG	REFRIG. HOT GAS LINE
RL	REFRIG. LIQUID LINE
RS	REFRIG SUCTION LINE
	STRAINER
	GAS COCK
	BALANCING VALVE
	PLUG VALVE
	GATE VALVE
	BUTTERFLY VALVE
	BALL VALVE
	CHECK VALVE
	TRIPLE DUTY VALVE
	PRESSURE RELIEF VALVE
	PIPE TURNING DOWN
	PIPE TURNING UP
TW	THERMOMETER
	GAUGE
	PIPE SLEEVE OR GUIDE
X	PIPE ANCHOR
GC	GAUGE COCK

ABBREVIATION	MEANING
AC	AIR CONDITIONER (ING)
ACCU	AIR COOLED CONDENSING UNIT
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
BALV	BALANCING VALVE
BF	BUTTERFLY VALVE
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BTU/HOUR
BV	BALL VALVE
CAD	COMPUTER AIDED DRAFTING
CCC	CLOSED CIRCUIT COOLER
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
COP	COEFFICIENT OF PERFORMANCE
CP	CONTROL PANEL
CR	CEILING RETURN OR CONDENSATE RETURN
CS	CIRCUIT SETTER
CT	COOLING TOWER
CU	CONDENSING UNIT
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
DB	DRY BULB (TEMPERATURE)
DG	DOOR GRILLE
DMS	DUCTLESS MINI-SPLIT SYSTEM
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EER	ENERGY EFFICIENCY RATING
EF	EXHAUST FAN
ELEV	ELEVATION
ERV	ENERGY RECOVERY VENTILATOR
EVAP	EVAPORATION OR EVAPORATIVE
EWT	ENTERING WATER TEMPERATURE
FC	FAN COIL
FD	FLOOR DRAIN
FP	FIRE PROTECTION
FPC	FIRE PROTECTION CONTRACTOR
FPM	FEET PER MINUTE
FS	FLOOR SINK
FZ	FREEZE
GC	GENERAL CONTRACTOR
GV	GATE VALVE
HD	HUB DRAIN
HEPA	HIGH EFFICIENCY PARTICULATE ARRESTANCE
HP	HEAT PUMP OR HORSEPOWER
HVAC	HEATING, VENTILATING, AND AC
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
MBH	1,000 BTU/HOUR
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LEED	LEADERSHIP IN ENERGY EFFICIENT DESIGN
LWT	LEAVING WATER TEMPERATURE
M	MOTOR
MAT	MIXED AIR TEMPERATURE
MAU	MAKE UP AIR UNIT
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPERES
MOCP	MAXIMUM OVER CURRENT PROTECTION (AMPERES)
MOD	MOTOR OPERATED DAMPER
MVD	MANUAL VOLUME DAMPER
OA	OUTSIDE AIR
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
PA	PRESSURIZATION AIR
PC	PLUMBING CONTRACTOR OR PERSONAL COMPUTER
PL	PRIMARY LOOP
PTAC	PACKAGED TERMINAL AC
PT	PRESSURE TRANSMITTER
PU	PACKAGED UNIT
PWR	PROCESS WATER RETURN
PWS	PROCESS WATER SUPPLY
RA	RETURN OR RELIEF AIR
RF	RETURN OR RELIEF FAN
RH	REHEAT OR RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SEER	SEASONAL ENERGY EFFICIENCY RATTING
SF	SUPPLY FAN
SL	SECONDARY LOOP
SS	STAINLESS STEEL
ST	STEAM
SWS	SIDE WALL SUPPLY (GRILLE)
SWR	SIDE WALL RETURN (GRILLE)
TDV	TRIPLE DUTY VALVE
TG	TRANSFER GRILLE
TOD	TOP OF DUCT
TT	TEMPERATURE TRANSMITTER
UV	ULTRAVIOLET LIGHT
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VVT	VARIABLE (VOLUME) VARIABLE (TEMPERATURE)
WB	WET BULB (TEMPERATURE)
WSHP	WATER SOURCE HEAT PUMP
XWS	CONDENSER WATER SUPPLY
XWR	CONDENSER WATER RETURN
#	POUNDS

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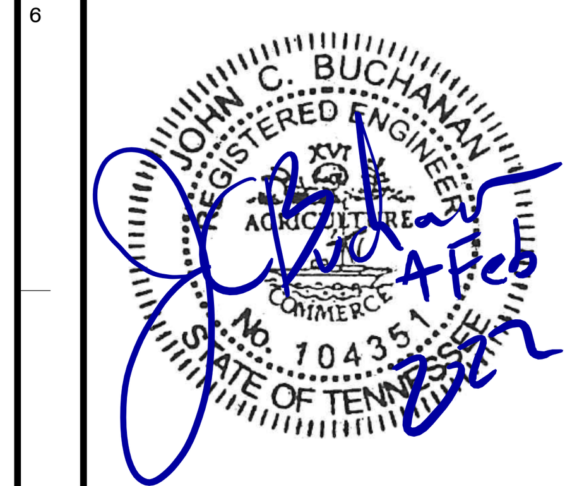
SEAL



PROJECT INFORMATION
PROJECT:
AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL
PROJECT ADDRESS:
5 NORRIS SQUARE, NORRIS, TN 37828
PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE
- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION
SHEET ISSUED: 2/4/2022
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DRAWN BY: DF
REVIEWED BY: JCB
SHEET TITLE:
HVAC LEGENDS, SPECIFICATIONS, AND NOTES
SHEET NO.:
M001

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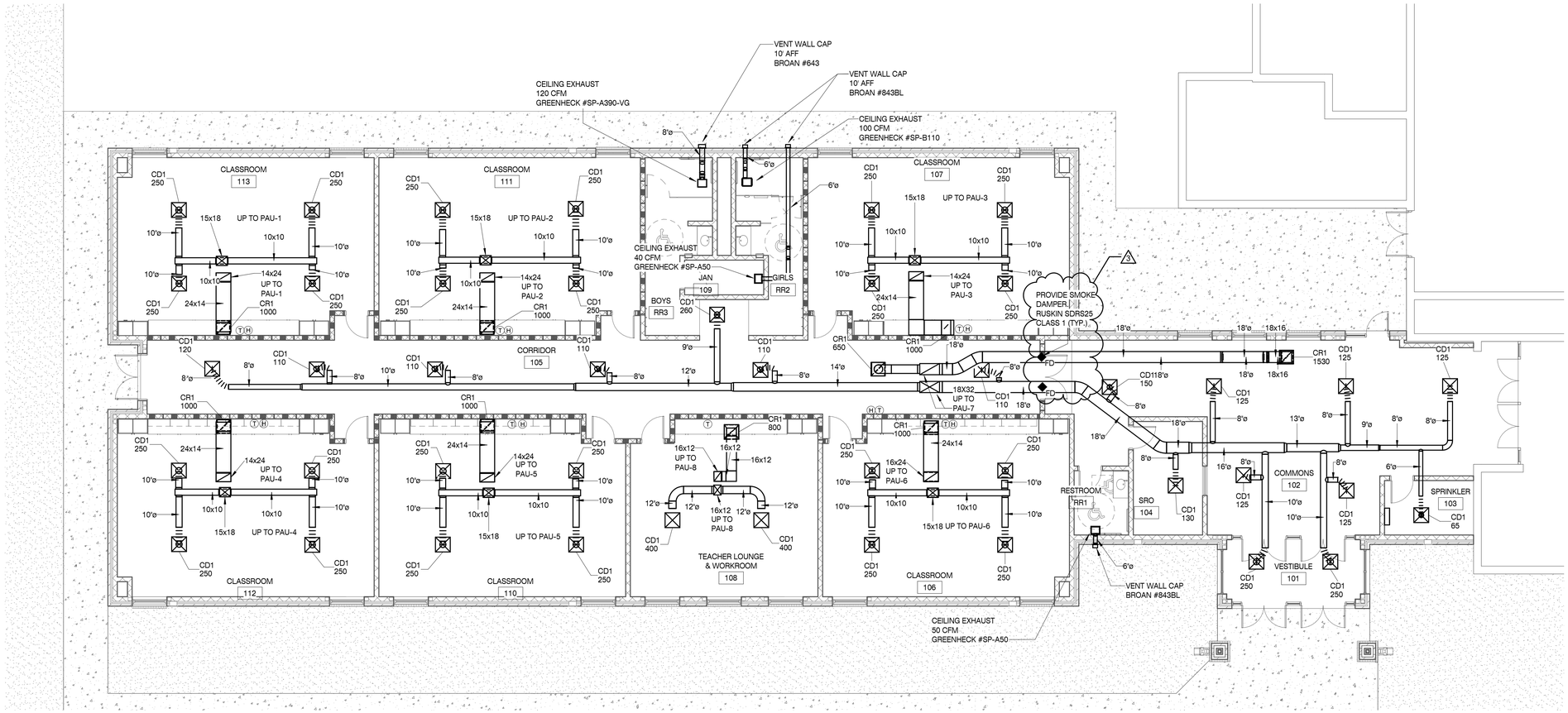

FLOOR PLAN - HVAC

1

SCALE: 1/8" = 1'-0"

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SEAL

JOHN C. BUCHANAN REGISTERED ENGINEER 104351 STATE OF TENNESSEE AGRICULTURE MECHANICAL COMMERCE

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

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3	3/30/22	ADDENDUM #3

KEY PLAN

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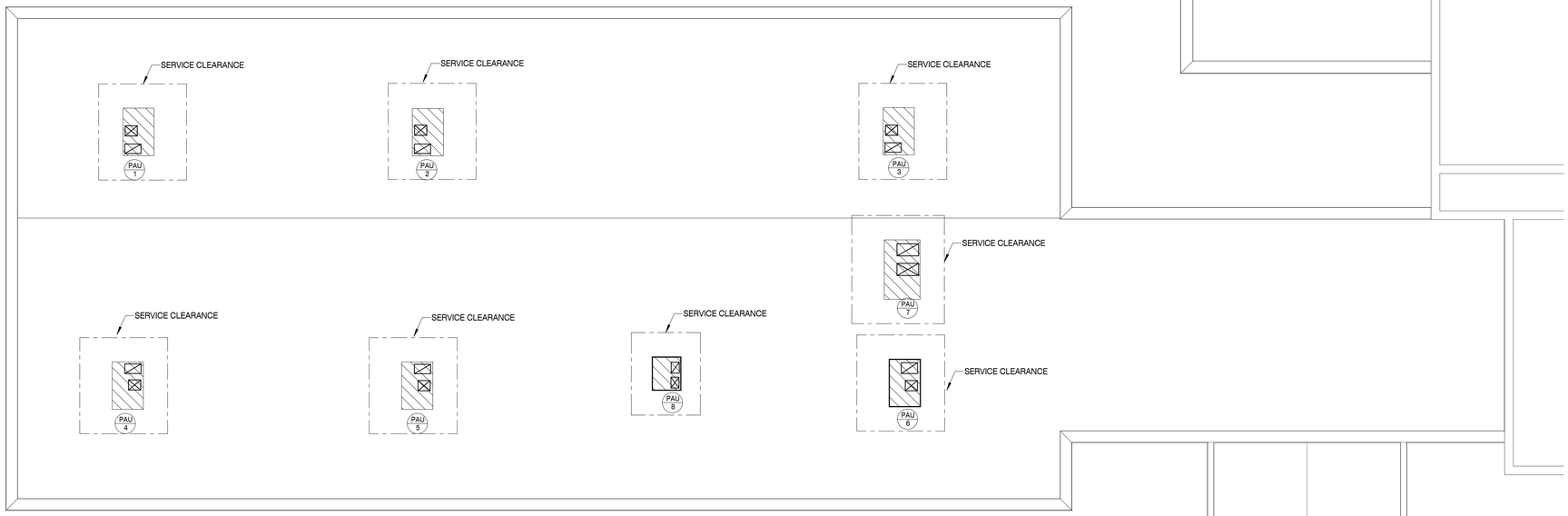
REVIEWED BY:	JCB

SHEET TITLE: FLOOR PLAN - HVAC

SHEET NO.: M101



ROOF PLAN - HVAC 1

SCALE: 1/8" = 1'-0"

GAS FIRED PACKAGED UNIT WITH DX COOLING SCHEDULE

DRAWING SYMBOL	SUPPLY AIR			OUTSIDE AIR	COOLING				HEATING		SMOKE DETECTORS		EFFICIENCIES			SINGLE POINT ELECTRICAL			WEIGHT	MFR MODEL
					TEMPS (°F) @ 95°F AMBIENT		CAPACITIES (MBH)		CAPACITIES (MBH)											
	TOTAL CFM	EXT. SP (IN. WG)	FAN HP	CFM	UNIT ENT AIR	COIL LVG AIR	TOTAL	SENS	INPUT	OUTPUT	SUPPLY	RETURN	EER	SEER	AFUE	MCA	MOCP	VOLTAGE	(LBS.)	NUMBER
PAU 1-6	1000	0.75	0.75	248	78.4 DB / 65.7 WB	55 DB / 54.3 WB	34	24.5	80	64	NO	NO	13	17.5	-	24	30	208/3	767	TRANE YHC037E3RMA**D6C100 00B000000000000000
PAU 7	2400	0.75	1	305	78 DB / 65 WB	57.9DB / 55.2WB	70	52.1	120	96	YES	YES	12.6	14.5	-	31	45	208/3	1168	TRANE YHC072E3RMA**D0C100 00B000000000000000
PAU 8	STAGE: 1/2 570/790	0.3	1	80	80 DB / 67 WB	----	24	-	STAGE: 1/2 48/60	-	NO	NO	12/17.7	16	81	19.5	30	208/1	370	TRANE 4YCZ6024A1

ACCESSORIES AND FEATURES:
- 5 YEAR COMPRESSOR WARRANTY.
- FILTER RACK AND THROW-AWAY 2" THICK FILTER FURNISHED WITH UNIT.
- UNIT SHALL BE TRANE OR APPROVED SUBSTITUTE.
- EQUIPMENT TO BE ARI CERTIFIED AND U.L. AND A.G.A. APPROVED.
- AUTOMATIC CHANGEOVER THERMOSTAT WITH LOCKING PLASTIC COVER.
- PROVIDE DUCT SMOKE DETECTORS ON UNITS SCHEDULED AT OR ABOVE 2000 CFM. PER NFPA 90A & ALL LOCAL CODES.
- SUBMIT SHOP DRAWINGS SHOWING COOLING CAPACITIES WITH MOTOR HEAT AS NOTED.
- PAU-(1-6)
  - SINGLE ZONE VAV.
  - HOT GAS REHEAT.
  - POWERED EXHAUST.
- PAU-7
  - HOT GAS REHEAT.
  - POWERED EXHAUST.
- PAU-8
  - 2 STAGE COMPRESSOR.
  - VAIRABLE SPEED FAN.
  - 2 POSITION MOTORIZED OA DAMPER

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JOHN C. BUCHANAN REGISTERED ENGINEER AGRICULTURE COMMERCE No. 104351 STATE OF TENNESSEE

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

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- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

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DRAWN BY:	DF
REVIEWED BY:	JCB

SHEET TITLE: ROOF PLAN - HVAC

SHEET NO.: M102

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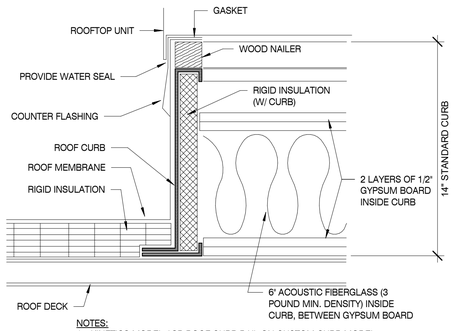
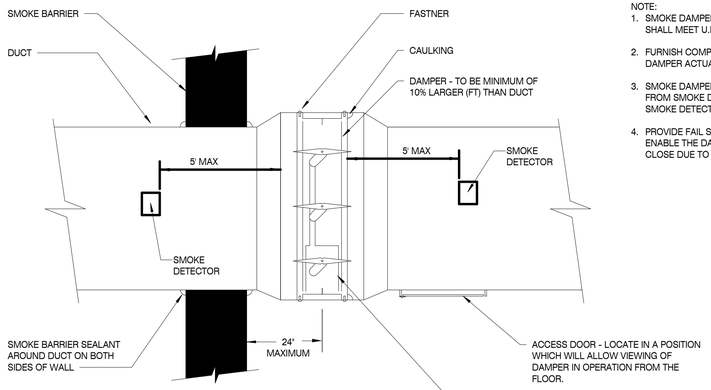


NOTES:
1. KINETICS MODEL ASR ROOF CURB RAIL ON CUSTOM CURB MODEL CRC-3 CURB, SEISMIC RATED, 14 GA.
2. PROVIDE STRUCTURAL SUPPORTS AS REQUIRED TO MAKE INSTALLED UNIT LEVEL
3. VERIFY ROOF SLOPE AND CONSTRUCTION. PROVIDE CURB TO MATCH.

ROOF CURB DETAIL 13

SCALE: N.T.S.

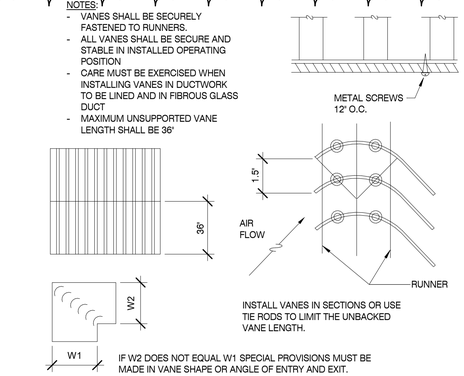


NOTE:
1. SMOKE DAMPER INSTALLATION SHALL MEET U.L. REQUIREMENTS
2. FURNISH COMPLETE WITH 120 VOLT DAMPER ACTUATOR
3. SMOKE DAMPER SHALL BE ACTIVATED FROM SMOKE DETECTOR TO CLOSE UPON SMOKE DETECTION.
4. PROVIDE FAIL SAFE DESIGN WHICH WILL ENABLE THE DAMPER TO AUTOMATICALLY CLOSE DUE TO LOSS OF POWER.

*COMPLETED INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF THE SMACNA FIRE, SMOKE AND RADIATION DAMPER INSTALLATION GUIDE FOR HVAC SYSTEMS, AND MANUFACTURERS INSTALLATION INSTRUCTIONS.

SMOKE DAMPER DETAIL 11

SCALE: N.T.S.



NOTES:
- VANES SHALL BE SECURELY FASTENED TO RUNNERS.
- ALL VANES SHALL BE SECURE AND STABLE IN INSTALLED OPERATING POSITION
- CARE MUST BE EXERCISED WHEN INSTALLING VANES IN DUCTWORK TO BE LINED AND IN FIBROUS GLASS DUCT
- MAXIMUM UNSUPPORTED VANE LENGTH SHALL BE 36'

INSTALL VANES IN SECTIONS OR USE TIE RODS TO LIMIT THE UNBACKED VANE LENGTH.

IF W2 DOES NOT EQUAL W1 SPECIAL PROVISIONS MUST BE MADE IN VANE SHAPE OR ANGLE OF ENTRY AND EXIT.

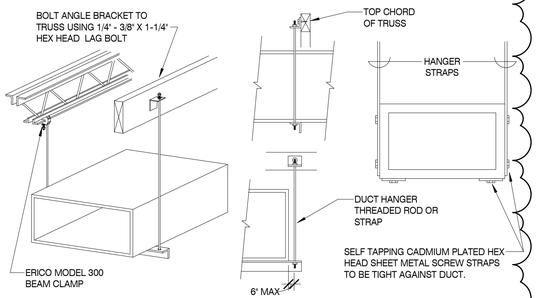
TURNING VANES DETAIL 1

SCALE: N.T.S.

HANGER SIZES FOR ROUND DUCT			
MAX SIDE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x 18-GAGE STRAP	NONE REQUIRED	10'-0"
36"	1/4" ROUND ROD	1-1/2"x1/2"x1/8"	8'-0"
48"	1/4" ROUND ROD	1-1/2"x1/2"x1/8"	8'-0"
60"	5/16" ROUND ROD	2"x2"x1/8"	8'-0"

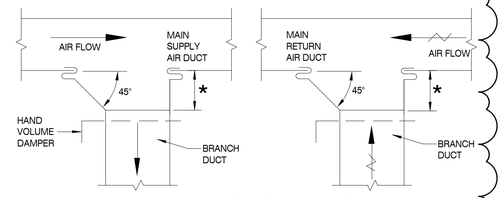
NOTE:
ALL SUPPLY AIR DUCTS SHALL BE WRAPPED EXTERNALLY AS PER SPECIFICATIONS.

NO POP RIVETS ALLOWED



RECTANGULAR DUCT HANGER DETAIL 2

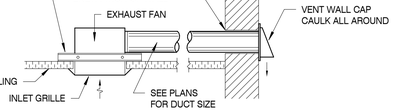
SCALE: N.T.S.



* EQUALS WIDTH OF BRANCH DUCT UP TO 12"
12" FOR ALL BRANCH DUCTS LARGER THAN 12".

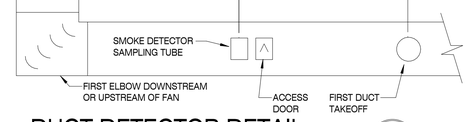
BRANCH DUCT TAKE-OFF DETAIL 3

SCALE: N.T.S.



CEILING EXHAUST FAN DETAIL 5

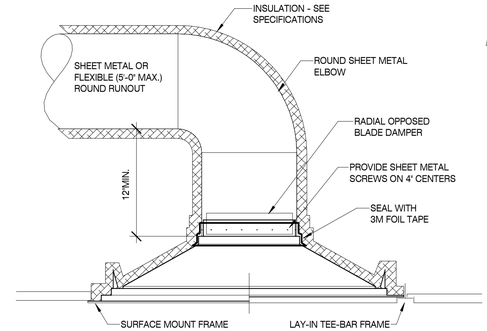
SCALE: N.T.S.



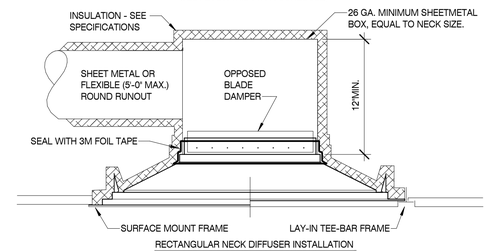
NOTE:
DUCT TAKEOFF - SHEET METAL CONNECTORS, INC. HIGH EFFICIENCY TAKEOFF W/DAMPER AND LOCKING QUADRANT.

DUCT DETECTOR DETAIL 7

SCALE: N.T.S.



ROUND NECK DIFFUSER INSTALLATION
(SEE AIR DISTRIBUTION SCHEDULE)

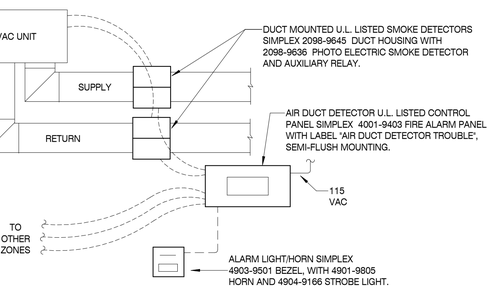


RECTANGULAR NECK DIFFUSER INSTALLATION
(SEE AIR DISTRIBUTION SCHEDULE)

NOTE:
WHERE SPACE LIMITATIONS DO NOT PERMIT THE ABOVE ROUND INSTALLATION, AN INSTALLATION SIMILAR TO THE SQUARE NECK MAY BE USED.

TYPICAL CEILING DIFFUSER DETAIL 9

SCALE: N.T.S.



NOTES:
1. LOCATE FIRE ALARM CONTROL PANEL AND HORN / LIGHT AS INDICATED ON THE DRAWINGS.
2. INTERLOCK HVAC UNIT TO SHUT DOWN UPON AN ALARM CONDITION.
3. ALL HVAC UNITS SHALL SHUT DOWN UPON AN ALARM FROM ANY DEVICE.
4. ALL PANELS AND CONTROL WIRING TO EQUIPMENT SHALL BE BY THE MECHANICAL INSTALLER.
5. SMOKE DETECTORS AND WIRING TO BE SUPERVISED AND GIVE A TROUBLE ALARM AND LIGHT IF A PROBLEM IS DETECTED.

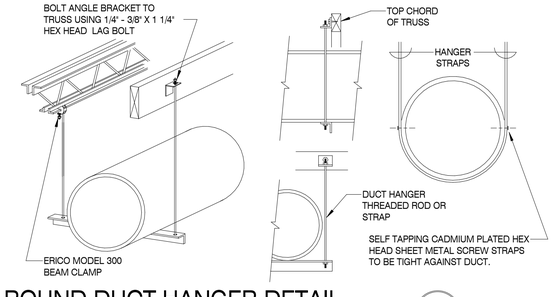
FIRE ALARM CONTROL DETAIL 10

SCALE: 1/8" = 1'-0"

HANGER SIZES FOR ROUND DUCT			
MAX SIDE	HANGER	HORIZONTAL SUPPORT ANGLE	MAXIMUM SPACING
30"	1"x 18-GAGE STRAP	1-1/2"x1/2"x1/8"	10'-0"
36"	1/4" ROUND ROD	1-1/2"x1/2"x1/8"	8'-0"
48"	1/4" ROUND ROD	2"x2"x1/8"	8'-0"
60"	5/16" ROUND ROD	2"x2"x1/8"	8'-0"
84"	5/16" ROUND ROD	2"x2"x1/8"	8'-0"

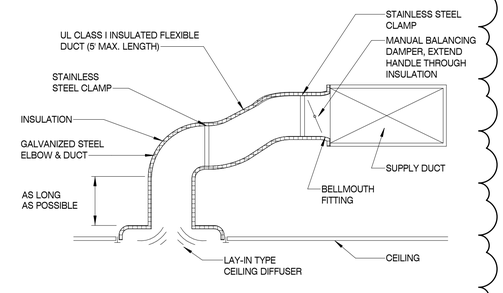
NOTE:
ALL SUPPLY AIR DUCTS SHALL BE WRAPPED EXTERNALLY AS PER SPECIFICATIONS.

NO POP RIVETS ALLOWED



ROUND DUCT HANGER DETAIL 6

SCALE: 1/8" = 1'-0"



SUPPLY BRANCH TAKE-OFF DETAIL 4

SCALE: N.T.S.

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CONSULTANT
MECHANICAL ENGINEER:

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SEAL

JOHN C. BUCHANAN
REGISTERED ENGINEER
AGRICULTURE
MECHANICAL
COMMERCIAL
No. 104351
STATE OF TENNESSEE
3/30/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	3/30/22	ADDENDUM #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	2/4/2022
DESIGNED BY:	DF
DRAWN BY:	DF
REVIEWED BY:	JCB

SHEET TITLE:

HVAC DETAILS

SHEET NO.:

M201

ARCH D

SZVAV AIR HANDLING UNIT SEQUENCE OF OPERATION (PAU-(1-6))

BUILDING AUTOMATION SYSTEM INTERFACE:
THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED BYPASS, MORNING WARM-UP / PRE-COOL, OCCUPIED / UNOCCUPIED AND HEAT / COOL MODES. IF COMMUNICATION IS LOST WITH THE BAS THE CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS. THE BAS SHALL ALSO SEND THE CONTROLLER A DUCT STATIC PRESSURE SETPOINT, DISCHARGE AIR TEMPERATURE SETPOINT, AND VENTILATION AIRFLOW SETPOINT, EACH CALCULATED BY OPTIMIZATION ROUTINES IN THE BAS.

OCCUPIED MODE:
DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN THE CURRENT AIRFLOW SETPOINT. THE UNIT CONTROLLER SHALL CONTROL THE SUPPLY FAN VFD. THE DX COOLING SHALL STAGE AND GAS HEAT SHALL MODULATE TO MAINTAIN THE CURRENT DISCHARGE AIR TEMPERATURE SETPOINT. IF ECONOMIZING IS ENABLED THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN THE CURRENT DISCHARGE AIR TEMPERATURE SETPOINT.

UNOCCUPIED MODE:
WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) THE SUPPLY FAN VARIABLE FREQUENCY DRIVE (VFD) SHALL BE ENABLED AND OPERATE AS NECESSARY. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE GAS HEAT SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN AND THE GAS HEAT SHALL BE DISABLED.
WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) THE SUPPLY FAN VARIABLE FREQUENCY DRIVE (VFD) SHALL BE ENABLED AND OPERATE AS NECESSARY, THE OUTSIDE AIR DAMPER SHALL OPEN IF ECONOMIZING IS ENABLED AND REMAIN CLOSED IF ECONOMIZING IS DISABLED AND THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN AND THE DX COOLING SHALL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

OPTIMAL START:
THE BAS SHALL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

MORNING WARM-UP MODE:
DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM-UP MODE SHALL BE ACTIVATED. WHEN MORNING WARM-UP IS INITIATED THE UNIT SHALL ENABLE THE SUPPLY FAN, RETURN FAN AND HEATING. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. WHEN THE AVERAGE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

PRE-COOL MODE:
DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE-COOL MODE SHALL BE ACTIVATED. WHEN PRE-COOL IS INITIATED THE UNIT SHALL ENABLE THE FAN AND COOLING OR ECONOMIZER. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, UNLESS ECONOMIZING. WHEN THE AVERAGE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

OPTIMAL STOP:
THE BAS SHALL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE TO THE SPACE TEMPERATURE OFFSET SETPOINT.

OCCUPIED BYPASS:
THE BAS SHALL MONITOR THE STATUS OF THE "ON" AND "CANCEL" BUTTONS OF THE SPACE TEMPERATURE SENSORS. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT SHALL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT SHALL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).

COOLING MODE:
THE UNIT CONTROLLER SHALL USE THE DISCHARGE AIR TEMPERATURE SENSOR AND DISCHARGE AIR TEMPERATURE COOLING SETPOINT TO DETERMINE WHEN TO INITIATE REQUESTS FOR COOLING. DISCHARGE AIR SETPOINT SHALL BE MAINTAINED BY MODULATING THE ECONOMIZER OR STAGING THE DX COOLING AS REQUIRED TO MAINTAIN THE DISCHARGE AIR SETPOINT.

HEATING MODE:
THE UNIT CONTROLLER SHALL USE THE DISCHARGE AIR TEMPERATURE SETPOINT AND DISCHARGE AIR TEMPERATURE SENSOR TO DETERMINE WHEN TO INITIATE REQUEST FOR HEATING. WHEN THE DISCHARGE AIR TEMPERATURE FALLS 10.0 DEG. F BELOW THE DISCHARGE AIR TEMPERATURE SETPOINT, THE HEATING WILL MODULATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE TO SETPOINT.

ECONOMIZER:
THE SUPPLY AIR SENSOR SHALL MEASURE THE DRY BULB TEMPERATURE OF THE AIR LEAVING THE EVAPORATOR COIL WHILE ECONOMIZING. WHEN ECONOMIZING IS ENABLED AND THE UNIT IS OPERATING IN THE COOLING MODE, THE ECONOMIZER DAMPER SHALL BE MODULATED BETWEEN ITS MINIMUM POSITION AND 100% TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. THE ECONOMIZER DAMPER SHALL MODULATE TOWARD MINIMUM POSITION IN THE EVENT THE MIXED AIR TEMPERATURE FALLS BELOW THE LOW LIMIT TEMPERATURE SETTING. COMPRESSORS SHALL BE DELAYED FROM OPERATING UNTIL THE ECONOMIZER HAS OPENED TO 100%.

FILTER STATUS:
A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER WHEN THE FAN IS RUNNING. IF THE SWITCH CLOSES FOR 2 MINUTES AFTER A REQUEST FOR FAN OPERATION A DIRTY FILTER ALARM SHALL BE ANNUNCIATED AT THE BAS.

CAV AIR HANDLING UNIT SEQUENCE OF OPERATION (PAU-7/PAU-8)

BUILDING AUTOMATION SYSTEM INTERFACE:
THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE CONTROLLER OCCUPIED BYPASS, MORNING WARM-UP / PRE-COOL, OCCUPIED / UNOCCUPIED AND HEAT / COOL MODES. IF COMMUNICATION IS LOST WITH THE BAS THE CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS. SPACE TEMPERATURE SETPOINT, AND VENTILATION AIRFLOW SETPOINT, EACH CALCULATED BY OPTIMIZATION ROUTINES IN THE BAS.

OCCUPIED MODE:
DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN THE CURRENT AIRFLOW SETPOINT. THE UNIT CONTROLLER SHALL ENABLE/DISABLE THE SUPPLY FAN. THE DX COOLING SHALL STAGE AND GAS HEAT SHALL MODULATE TO MAINTAIN THE CURRENT DISCHARGE AIR TEMPERATURE SETPOINT. IF ECONOMIZING IS ENABLED THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN THE CURRENT DISCHARGE AIR TEMPERATURE SETPOINT.

UNOCCUPIED MODE:
WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL BE ENABLED. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE GAS HEAT SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN AND THE GAS HEAT SHALL BE DISABLED.
WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL BE ENABLED, THE OUTSIDE AIR DAMPER SHALL OPEN IF ECONOMIZING IS ENABLED AND REMAIN CLOSED IF ECONOMIZING IS DISABLED AND THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN AND THE DX COOLING SHALL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

OPTIMAL START:
THE BAS SHALL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

MORNING WARM-UP MODE:
DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM-UP MODE SHALL BE ACTIVATED. WHEN MORNING WARM-UP IS INITIATED THE UNIT SHALL ENABLE THE SUPPLY FAN, RETURN FAN AND HEATING. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. WHEN THE AVERAGE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

PRE-COOL MODE:
DURING OPTIMAL START, IF THE AVERAGE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE-COOL MODE SHALL BE ACTIVATED. WHEN PRE-COOL IS INITIATED THE UNIT SHALL ENABLE THE FAN AND COOLING OR ECONOMIZER. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED, UNLESS ECONOMIZING. WHEN THE AVERAGE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

OPTIMAL STOP:
THE BAS SHALL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE TO THE SPACE TEMPERATURE OFFSET SETPOINT.

OCCUPIED BYPASS:
THE BAS SHALL MONITOR THE STATUS OF THE "ON" AND "CANCEL" BUTTONS OF THE SPACE TEMPERATURE SENSORS. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT SHALL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT SHALL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).

COOLING MODE:
THE UNIT CONTROLLER SHALL USE THE DISCHARGE AIR TEMPERATURE SENSOR AND DISCHARGE AIR TEMPERATURE COOLING SETPOINT TO DETERMINE WHEN TO INITIATE REQUESTS FOR COOLING. DISCHARGE AIR SETPOINT SHALL BE MAINTAINED BY MODULATING THE ECONOMIZER OR STAGING THE DX COOLING AS REQUIRED TO MAINTAIN THE DISCHARGE AIR SETPOINT.

HEATING MODE:
THE UNIT CONTROLLER SHALL USE THE DISCHARGE AIR TEMPERATURE SETPOINT AND DISCHARGE AIR TEMPERATURE SENSOR TO DETERMINE WHEN TO INITIATE REQUEST FOR HEATING. WHEN THE DISCHARGE AIR TEMPERATURE FALLS 10.0 DEG. F BELOW THE DISCHARGE AIR TEMPERATURE SETPOINT, THE HEATING WILL MODULATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE TO SETPOINT.

ECONOMIZER: (PAU-7 ONLY)
THE SUPPLY AIR SENSOR SHALL MEASURE THE DRY BULB TEMPERATURE OF THE AIR LEAVING THE EVAPORATOR COIL WHILE ECONOMIZING. WHEN ECONOMIZING IS ENABLED AND THE UNIT IS OPERATING IN THE COOLING MODE, THE ECONOMIZER DAMPER SHALL BE MODULATED BETWEEN ITS MINIMUM POSITION AND 100% TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. THE ECONOMIZER DAMPER SHALL MODULATE TOWARD MINIMUM POSITION IN THE EVENT THE MIXED AIR TEMPERATURE FALLS BELOW THE LOW LIMIT TEMPERATURE SETTING. COMPRESSORS SHALL BE DELAYED FROM OPERATING UNTIL THE ECONOMIZER HAS OPENED TO 100%.

FILTER STATUS:
A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER WHEN THE FAN IS RUNNING. IF THE SWITCH CLOSES FOR 2 MINUTES AFTER A REQUEST FOR FAN OPERATION A DIRTY FILTER ALARM SHALL BE ANNUNCIATED AT THE BAS.

EXISTING BMS FRONT END

1. THE EXISTING BMS IS AN AUTOMATED LOGIC CONTROL SYSTEM. THIS CONTROL SYSTEM SHALL TIE INTO THAT. THE CONTRACTOR SHALL PROVIDE CONTROLLERS FOR ALL UNITS WITH BACNET CONNECTIONS TO TIE INTO THE BAS FRONT END.

2

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3/9/2022 9:39:11 AM

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CONSULTANT

SEAL

JOHN C. BUCHANAN
REGISTERED ENGINEER
AGRICULTURE
No. 104351
STATE OF TENNESSEE

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	2/22/22	REV #1
2	3/9/22	ADDENDUM #2

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	2/4/2022
DESIGNED BY:	DF
DRAWN BY:	DF
REVIEWED BY:	JCB

SHEET TITLE:

HVAC CONTROLS

SHEET NO.:

M202

ARCH D

PLUMBING LEGEND

	COLD WATER (CW)
	HOT WATER (HW)
	HOT WATER RETURN (HWR)
110'	HOT WATER 110°
140'	HOT WATER 140°
F	FILTERED WATER
	SANITARY DRAIN (W)
	VENT (V)
G	GAS LINE
LP	LIQUID PROPANE
A	AIR
C	CONDENSATE DRAIN
O2	OXYGEN
NO	NITROUS OXIDE
V	VACUUM
GI	GREASE INTERCEPTOR WASTE LINE
AW	ACID WASTE
AV	ACID VENT
SD	STORM DRAIN
RD	ROOF DRAIN
RWL	RAIN WATER LEADER
FS	FLOOR SINK
FD	FLOOR DRAIN
HD	HUB DRAIN
VTR	VENT THRU ROOF
CO	CLEAN OUT IN FLOOR
CO	CLEAN OUT IN EXPOSED OR ABOVE CEILING LINE
CO	CLEAN OUT IN STACK
	WATER HAMMER ARRESTER
HB	HOSE BIBB
	SUPPLY STOP ZURN Z-8808-XL
	PIPE TURNING DOWN
	PIPE TURNING UP
	BALL VALVE
	BALANCING VALVE
	PRESSURE REDUCING VALVE
	REDUCED PRESSURE BACKFLOW PREVENTER
	STRAINER
TW	THERMOMETER
GC	GAUGE COCK
	GATE VALVE
	CHECK VALVE
	UNION
	VACUUM BREAKER
	CONNECT TO EXISTING
	GAS COCK
	AIR CONNECTION
	LP CONNECTION
	CIRCULATING PUMP

PLUMBING SPECIFICATIONS

GENERAL
A. SCOPE: FURNISH ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY FOR THE INSTALLATION OF ALL PLUMBING WORK REQUIRED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
B. WORK REQUIRED: IN GENERAL, THE WORK CONSISTS OF, BUT IS NOT LIMITED TO THE FOLLOWING:
1. DOMESTIC WATER SYSTEM CONNECTING TO EXISTING UTILITY
2. SANITARY SEWER SYSTEM CONNECTING TO EXISTING UTILITY
3. HOT WATER PIPING SYSTEM
4. PLUMBING FIXTURES
5. CONNECTION TO KITCHEN EQUIPMENT
C. PERMITS, ORDINANCES, AND INSPECTIONS:
1. OBTAIN AND PAY FOR ALL PERMITS AND INSPECTION FEES REQUIRED. DELIVER TO ARCHITECT, CERTIFICATES.
2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE CITY, COUNTY, STATE, OR NATIONAL ORDINANCES AND CODES. EFFORT HAS BEEN MADE TO MEET OR EXCEED REQUIREMENTS. THE CONTRACTOR SHALL MAKE ANY MINOR ADJUSTMENTS TO MEET THESE REQUIREMENTS AT NO ADDITIONAL COST TO OWNER.
D. INSTRUCTIONS AND INSTRUCTION BOOKLETS: THE CONTRACTOR SHALL INSTRUCT THE OWNER REPRESENTATIVE IN THE PROPER OPERATION OF ALL EQUIPMENT AND SYSTEMS. FURNISH LITERATURE PROVIDED BY THE MANUFACTURER. PRINTED INSTRUCTIONS AND MAINTENANCE DATA SHALL BE BOUND WITH COVER IN DUPLICATE AND DELIVERED TO THE ARCHITECT.
E. SUBMITTAL DATA: SUBMIT FOR APPROVAL, FIVE (5) COPIES, OF THE EQUIPMENT BROCHURES, TECHNICAL DATA AND/OR SHOP DRAWINGS.

PRODUCTS
A. ALL MATERIALS SHALL BE NEW, FIRST CLASS, AND COMPLY WITH LATEST ASTM SPECIFICATIONS AND STANDARDS RELATING TO SUCH MATERIALS.
B. WATER PIPING:
1. FURNISH AND INSTALL DIELECTRIC OR ISOLATION FITTINGS AT ALL POINTS WHERE COPPER PIPE CONNECTS TO WROUGHT IRON OR STEEL PIPE.
2. EXPOSED PIPE IN TOILET ROOMS: CHROME PLATED BRASS, AMERICAN BRASS COMPANY, OR EQUIVALENT. FURNISH AND INSTALL CHROME WALL PLATES.
3. PIPING UNDER FLOOR SLAB SHALL BE TYPE K SOFT TEMPER COPPER TUBING ASTM B-88 NO JOINTS SHALL BE PERMITTED UNDER FLOOR SLAB.
4. PIPING ABOVE FLOOR SLAB SHALL BE TYPE L HARD DRAWN COPPER TUBING ASTM B-88 USE WROUGHT COPPER SWEAT FITTINGS.
C. SANITARY WASTE, AND VENT PIPING: PIPING SHALL BE CAST IRON NO HUB DWV PIPE AND FITTINGS ABOVE GRADE MEETING ASTM A 888 or CISPI 301 STANDARDS. BELOW GRADE PIPING SHALL BE SOLID WALL SCHEDULE 40 PVC MEETING ASTM D 2665 STANDARDS.
D. PIPE HANGERS: ADJUSTABLE WROUGHT CLEVIS TYPE HANGER AND RODS; GRINNELL COMPANY OR EQUIVALENT.
E. CLEANOUTS:
1. FLOOR CLEANOUTS FOR SOIL AND WASTE LINES SHALL HAVE BODIES OF STANDARD PIPE SIZES AS MANUFACTURED BY ZURN OR EQUIVALENT.
2. WALL CLEANOUTS FOR SOIL AND WASTE LINES SHALL HAVE BODIES OF STANDARD PIPE SIZES AS MANUFACTURED BY ZURN OR EQUIVALENT.
F. VALVES:
1. BUTTERFLY VALVES 2 1/2" AND LARGER.
2. BALL VALVES 2" AND SMALLER.
3. UNIONS SHALL HAVE BRASS TO METAL GROUND JOINT SEAL.
G. ESCUTCHEON PLATES: PROVIDE CHROME PLATED ESCUTCHEON PLATES WHERE EXPOSED PIPE PASSES THROUGH WALLS, FLOORS, OR CEILING IN FINISHED AREAS. SEAL ALL PIPE PENETRATIONS WITH FIRE STOP AS REQUIRED, DRYWALL MUD OR GROUT TO MATCH ADJACENT WALL.
H. PIPE INSULATION:
1. ALL HOT WATER PIPE ABOVE GRADE SHALL BE INSULATED WITH 1" FIBERGLASS, LOW PRESSURE INSULATION WITH WHITE UNIVERSAL JACKET. APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS
2. ALL COLD WATER PIPE ABOVE GRADE SHALL BE INSULATED WITH 1/2" FIBERGLASS AS ABOVE.
I. WALL HYDRANT: "FROST PROOF" TYPE WITH VACUUM BREAKER ON ALL HOSE BIBS
J. FIXTURES:
1. FURNISH AND INSTALL ALL PLUMBING FIXTURES INDICATED ON DRAWINGS. FIXTURES SHALL BE AMERICAN STANDARD, KOHLER, ELJER, OR AS SPECIFIED IN THE PLUMBING FIXTURE SCHEDULE.
2. TRAPS: FOR LAVATORIES AND SINKS: BRASS, CHROME PLATED.
3. PROVIDE DEEP SEAL TRAPS AND TRAP PRIMERS FOR ALL FLOOR DRAINS AND HUB DRAINS.
K. HOT WATER HEATERS:
1. 99,000 BTUH INPUT AND LESS:
CONTRACTOR SHALL MAKE PROVISIONS TO KEEP 18" CLEAR AROUND HEATER.
2. 100,000 BTUH TO 199,000 BTUH INPUT:
CONTRACTOR SHALL MAKE PROVISIONS TO KEEP 18" CLEAR AROUND HEATER, AND SUBMIT A "APPLICATION FOR PERMISSION TO INSTALL" TO THE BOILER UNIT OF THE TENNESSEE DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT'S WORKPLACE REGULATIONS AND COMPLIANCE DIVISION (REGISTRATION AND INSPECTION).
3. 200,000 BTUH TO 399,000 BTUH INPUT:
CONTRACTOR SHALL MAKE PROVISIONS TO KEEP 18" CLEAR AROUND HEATER, THE HEATER MUST BE ASME CODE COMPLIANT, AND MUST BE FILED FOR REGISTRATION AND INSPECTION.
4. 400,000 BTUH AND MORE:
CONTRACTOR SHALL MAKE PROVISIONS TO KEEP 36" CLEAR AROUND HEATER, THE HEATER MUST BE ASME CODE COMPLIANT, AND MUST BE FILED FOR REGISTRATION AND INSPECTION.

GENERAL PLUMBING NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN STRICT ACCORDANCE WITH APPLICABLE LOCAL CODES, RULES AND ORDINANCES.
2. THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS.
3. ALL WORK SHALL BE PERFORMED BY A LICENSED PLUMBING CONTRACTOR, IN A FIRST-CLASS AND WORKMANLIKE MANNER. THE COMPLETE SYSTEM SHALL BE FULLY OPERATIVE.
4. ALL EXCAVATION AND BACKFILL, AS REQUIRED, FOR THIS PHASE OF CONSTRUCTION SHALL BE A PART OF THIS CONTRACT.
5. PROOF OF INSURANCE SHALL BE PROVIDED BY THE CONTRACTOR FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF WORK.
6. VERIFY LOCATION, SIZE, INVERTS AND ALL EXISTING UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION. ADVISE ENGINEER OF ANY DISCREPANCIES.
7. WATER PIPING SHALL BE TYPE "L" COPPER FOR 2 1/2" ABOVE GRADE. ALL UNDERGROUND WATER PIPING SHALL BE TYPE "K" COPPER WITH NO JOINTS UNDER SLAB.
8. SOIL, WASTE, VENT AND RAINWATER PIPING SHALL BE CAST IRON NO HUB ABOVE GRADE MEETING ASTM A 888 or CISPI 301 STANDARDS. BELOW GROUND PIPING SHALL BE SOLID WALL SCHEDULE 40 PVC MEETING ASTM D 2665 STANDARDS.
9. AIR CONDITIONING CONDENSATE DRAIN PIPING SHALL BE COPPER DWV PIPE AND FITTINGS. INSULATE ALL CONDENSATE PIPING ABOVE GRADE.
10. INSULATE ALL HOT WATER SUPPLY, HOT WATER RETURN, RAINWATER AND CONDENSATE LINES ABOVE GRADE AS FOLLOWS: HOT WATER SUPPLY AND RETURN, 1" THICK FIBERGLASS. RAINWATER LEADERS 1 1/2" THICK FIBERGLASS BLANKET ON DRAIN BODY AND 1" HORIZONTAL RWL. CONCEALED CONDENSATE PIPING 1/2" ARMAFLEX PERFORM.
11. ALL FIXTURES MUST BE PROVIDED WITH READILY ACCESSIBLE STOPS AND MARKED ACCESS PANELS.
12. FURNISH AND INSTALL APPROVED AIR CHAMBERS AT EACH PLUMBING FIXTURE GROUP AND P.D.I. APPROVED SHOCK ARRESTERS ON MAIN LINES OR RISERS.
13. DIELECTRIC COUPLINGS ARE REQUIRED BETWEEN ALL DISSIMILAR METAL PIPING AND EQUIPMENT CONNECTIONS.
14. ISOLATE COPPER PIPE FROM HANGER OR SUPPORTS WITH ISOLATOR PAD (HAIR FELT LINING) SUPER STRUT MODEL C15/16. FILL VOIDS BETWEEN PIPE AND WALL/FLOOR SLEEVES WITH FIRE-RATED FOAM SIMILAR TO CHASE TECHNOLOGY CORP. - CIC PR-855.
15. CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF C.O. CORRECTION OF ANY DEFECTS SHALL BE COMPLETED WITHOUT ADDITIONAL CHARGE AND SHALL INCLUDE REPLACEMENT OR REPAIR OF ANY OTHER PHASE OF THE INSTALLATION WHICH MAY HAVE BEEN DAMAGED.
16. PROVIDE 1/4" TRAP PRIMER LINE FOR ALL FLOOR DRAINS FROM THE NEAREST PLUMBING FIXTURE. PROVIDE MINIMUM 3' RADIUS, 1/4" PER FOOT SLOPE AROUND ALL FLOOR DRAINS.
17. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND ALL WATER HAMMER ARRESTORS. ACCESS PANELS IN RATED WALLS MUST MAINTAIN THE RATING. ALL ACCESS PANELS MUST MATCH THE FINISH OF THE WALL IN WHICH IT IS INSTALLED.
18. PROVIDE CHROME-PLATED COMBINATION COVER PLATE AND CLEANOUT PLUG FOR ALL WALL CLEANOUTS - JOSAM 58890 SERIES OR EQUAL.
19. PROVIDE EACH FIXTURE GROUP WITH ISOLATION VALVES, BOTH HOT (110) AND COLD WATER.
20. NO COMBUSTIBLE MATERIALS CAN BE USED IN MECHANICAL ROOMS OR IN CEILING SPACES WHERE USED AS RETURN AIR PLENUMS.
21. PROVIDE BACKFLOW PREVENTER - WILKINS MOD. # 575 OR EQUAL.
22. THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND INDICATE THE APPROXIMATE ROUTING OF PIPING AND LOCATION OF FIXTURES. THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AND MAKE MINOR OFFSETS AND ADJUSTMENTS AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
23. COORDINATE FIXTURES LOCATIONS WITH ARCHITECTURAL DRAWINGS.
24. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR CONNECTIONS TO ALL UTILITY LINES AND PAY ALL FEES AND COSTS FOR CONNECTIONS TO THOSE SERVICES.
25. ALL PIPING SHALL BE RUN IN CONCEALED LOCATIONS EXCEPT WHERE NOTED.
26. PLUMBING FIXTURES SHALL BE FIRST QUALITY VITREOUS CHINA, STAINLESS STEEL OR PLASTIC AS NOTED ON FIXTURE SCHEDULE. ALL FIXTURES SHALL BE RIGIDLY CONNECTED TO THE BUILDING AND SHALL BE CLEANED AND FUNCTIONAL PRIOR TO ACCEPTANCE.
27. REFER TO ARCHITECTURAL DRAWINGS FOR FINISHED GRADES.
28. CONTRACTOR SHALL PROVIDE PRESSURE REDUCING VALVE AND REDUCED PRESSURE BACKFLOW PREVENTION VALVE INSIDE BUILDING WHERE SERVICE ENTERS OR AS SHOWN ON THE SITE PLAN.
29. EXPOSED PIPING BELOW FIXTURES SHALL BE CHROME PLATED. PIPING AT FIXTURES IN HANDICAPPED ACCESSIBLE AREAS SHALL BE INSULATED TO PROTECT AGAINST BURNS.
30. ALL BURIED PIPING SHALL BE BEDDED AND COVERED IN SAND, GRAVEL, OR CRUSHED STONE.
31. AFTER COMPLETION OF PIPING TEST POTABLE WATER PIPING TO 125 LBS. PER SQ. INCH AND HOLD FOR 24 HOURS.
32. TEST DRAIN WASTE AND VENT PIPING BY FILLING TO LEVEL OF HIGHEST THE VENT.
33. AFTER INSTALLATION AND TESTING OF POTABLE WATER PIPING, STERILIZE ALL LINES IN ACCORD WITH CODES AND HEALTH DEPARTMENT REGULATIONS AND FLUSH AND FILL WITH CLEAN WATER.
34. PITCH POTABLE WATER LINES TOWARD DRAINS, INSTALL DRAIN WASTE AND VENT PIPING WITH MINIMUM SLOPES OF 1/4" PER FOOT FOR LINES UP TO 2 1/2" AND 1/8" PER FOOT FOR LINES 3" AND LARGER.
35. PROVIDE A TWO PIPE DIAMETER AIR GAP BETWEEN ALL INDIRECT WASTE AND THE RECEIVER.
36. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS AND RATINGS OF FIRE WALLS AND FLOOR CEILING ASSEMBLIES.
37. INSTALL FIRE STOP MATERIAL IN ACCORD WITH U.L. LISTING AT ALL PENETRATIONS.
38. PIPE WATER HEATER RELIEF VALVE TO EXTERIOR PER CODE OR TO FLOOR DRAIN.
39. PROVIDE MAXITROL SERIES GF OR EQUAL FUEL GAS STRAINER PER NFPA 86 UPSTREAM OF SAFETY SHUTOFF VALVES. (PHONE NUMBER - (248) 356-1400)
40. INSTALL WATER HEATERS IN ACCORD WITH MANUFACTURERS INSTRUCTION AND ALL STATE AND LOCAL CODE REQUIREMENTS. WATER STORAGE SHALL HAVE A TEMPERATURE OF 140 DEGREES.
41. ALL LAVATORIES AND HAND SINKS SHALL HAVE AN APPROVED ASSE 1070 DEVICE(S) PROVIDING A MAXIMUM OF 110° F FOR HOT WATER. PROVIDE SHOP DRAWINGS FOR APPROVAL.
42. ALL FOOD RELATED EQUIPMENT WITH DRAIN LINES, E.G., FOOD PREPARATION SINKS, WAREWASH SINKS, ETC. WASTE THROUGH A TWO PIPE DIAMETER AIR GAP OR APPROVED AIR BREAK. WATER HEATER/BOILER POP-OFF LINES; ICE MACHINE AND ICE BIN MELTWATER DRAIN LINES, WATER FILTER/TREATMENT EQUIPMENT DRAIN LINES, AND SIMILAR DRAINS FROM EQUIPMENT USING DOMESTIC WATER (INCLUDING DIPPER WELLS) MUST HAVE A TWO PIPE DIAMETER AIR GAP AT THE SEWER. EQUIPMENT SUCH AS DIPPER WELLS, STEAMERS, WOK TABLE FLUSH SYSTEMS, AND SIMILAR DEVICES WITH THE POTENTIAL FOR SUBMERGED INLETS, ETC. MUST HAVE AN APPROVED TWO PIPE DIAMETER AIR GAP OR DUAL CHECK VALVE MEETING ASSE STANDARD 1012, 1024, OR EQUIVALENT INSTALLED ON THE POTABLE WATER SUPPLY.
43. ALL SANITARY AND GREASE WASTE PIPING IN AND/OR BELOW KITCHEN AREAS SHALL BE CAST IRON MEETING ASTM A 888 or CISPI 301 STANDARDS.
44. PROVIDE "TRUEBRO" MODEL NO. 102 P-TRAP AND ANGLE VALVE INSULATION ASSEMBLIES. INSTALL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
45. THE "REDUCTION IN LEAD IN DRINKING WATER ACT" REQUIRES MATERIALS AND FIXTURES USED FOR THE DELIVERY OF POTABLE WATER TO CONTAIN LESS THAN 0.2% LEAD FOR SOLDER AND FLUX, AND NOT MORE THAN A WEIGHTED AVERAGE OF 0.25% LEAD FOR PIPES, FITTINGS, AND FIXTURES. EXCLUDED FROM THIS ACT ARE TOILETS, BIDETS, URINALS, FLUSH VALVES, TUB FILLERS, AND SHOWER VALVES.
46. IT IS THE INTENT OF THIS PROJECT TO CONFORM WITH THE REQUIREMENTS OF THE 2014 LEAD FREE ACT. EVERY EFFORT HAS BEEN MADE TO CALL FOR FIXTURES THAT COMPLY WITH THE ACT. EVEN SO, IT SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO INSTALL PRODUCTS THAT COMPLY WITH THE 2014 LEAD FREE SAFE WATER DRINKING ACT.

PLUMBING ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIR	COMPRESSED AIR
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BTU PER HOUR
CFH	CUBIC FEET PER HOUR
CF	CUBIC FEET
CI	CAST IRON
CO	CLEANOUT
CON	CONDENSATE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CU	COPPER
CW	COLD WATER (DOMESTIC)
DF	DRINKING FOUNTAIN
DI	DUCTILE IRON
EC	ELECTRICAL CONTRACTOR
EWC	ELECTRIC WATER COOLER
FD	FLOOR DRAIN
FR	FLOOD RIM
FS	FLOOR SINK
FT	FEET OR FOOT
FZ	FREEZE
GAL	GALLON
GC	GENERAL CONTRACTOR
GI	GREASE INTERCEPTOR
GPD	GALLON PER DAY
GPM	GALLON PER MINUTE
HB	HOSE BIBB
HD	HUB DRAIN
HS	HAND SINK
IDW	INDIRECT WASTE
IFGC	INTERNATIONAL FUEL GAS CODE
INV	INVERT ELEVATION
IPC	INTERNATIONAL PLUMBING CODE
IR	INFRARED
LAV	LAVATORY
LT	LAUNDRY TUB
MANF	MANUFACTURER
MV	MIXING VALVE
M	METER
MBH	1,000 BTU PER HOUR
MC	MECHANICAL CONTRACTOR
MS	MOP SINK
NG	NATURAL GAS
NIC	NOT IN CONTRACT
NO	NITROUS OXIDE
NTS	NOT TO SCALE
OI	OIL INTERCEPTOR
PC	PLUMBING CONTRACTOR
PE	POLYTHINE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RD	ROOF DRAIN
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RWL	RAIN WATER LEADER
SAN	SANITARY SEWER
SD	STORM DRAIN
SQ	SQUARE
SS	SERVICE SINK
TOP	TOP OF PIPE
UR	URINAL
VAC	VACUUM
VIF	VERIFY IN FIELD
VTR	VENT TO ROOF
WB	WASHER BOX
WC	WATER CLOSET
WH	WATER HEATER

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JOHN C. BUCHANAN
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No. 104351
STATE OF TENNESSEE

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	2/4/2022
DESIGNED BY:	KAS
DRAWN BY:	KAS
REVIEWED BY:	JCB

SHEET TITLE:

PLUMBING LEGEND AND NOTES

SHEET NO.:

P001

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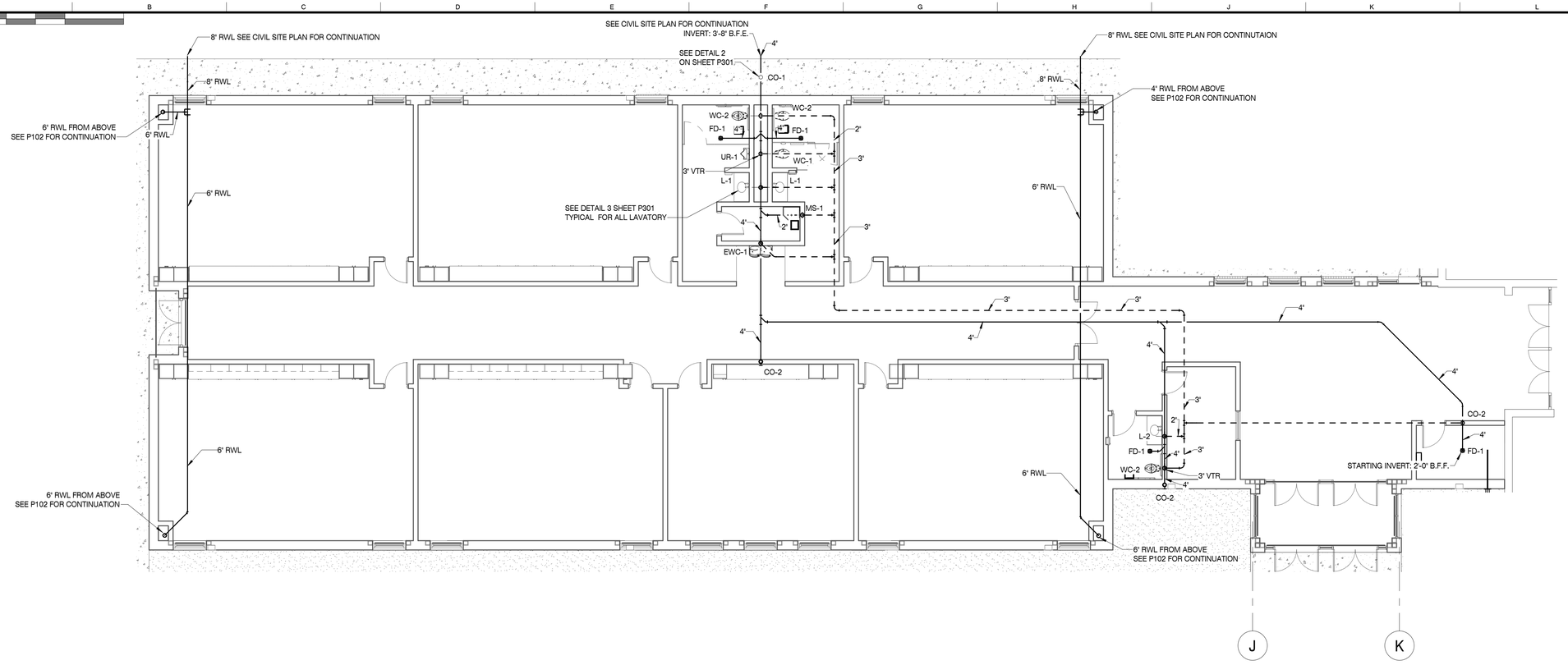
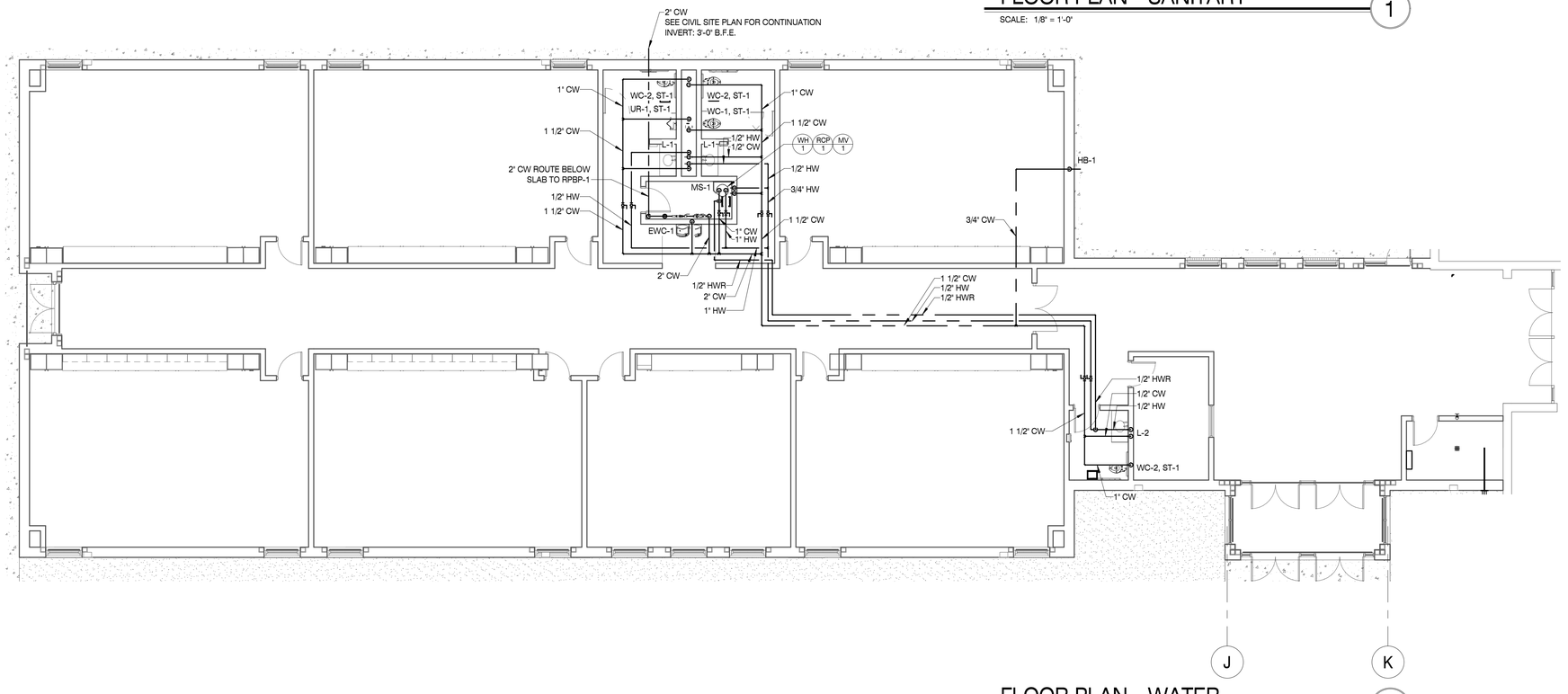


FLOOR PLAN - SANITARY

SCALE: 1/8" = 1'-0"

1



FLOOR PLAN - WATER

SCALE: 1/8" = 1'-0"

2

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FLOOR PLAN - PLUMBING

SHEET NO.:

P101

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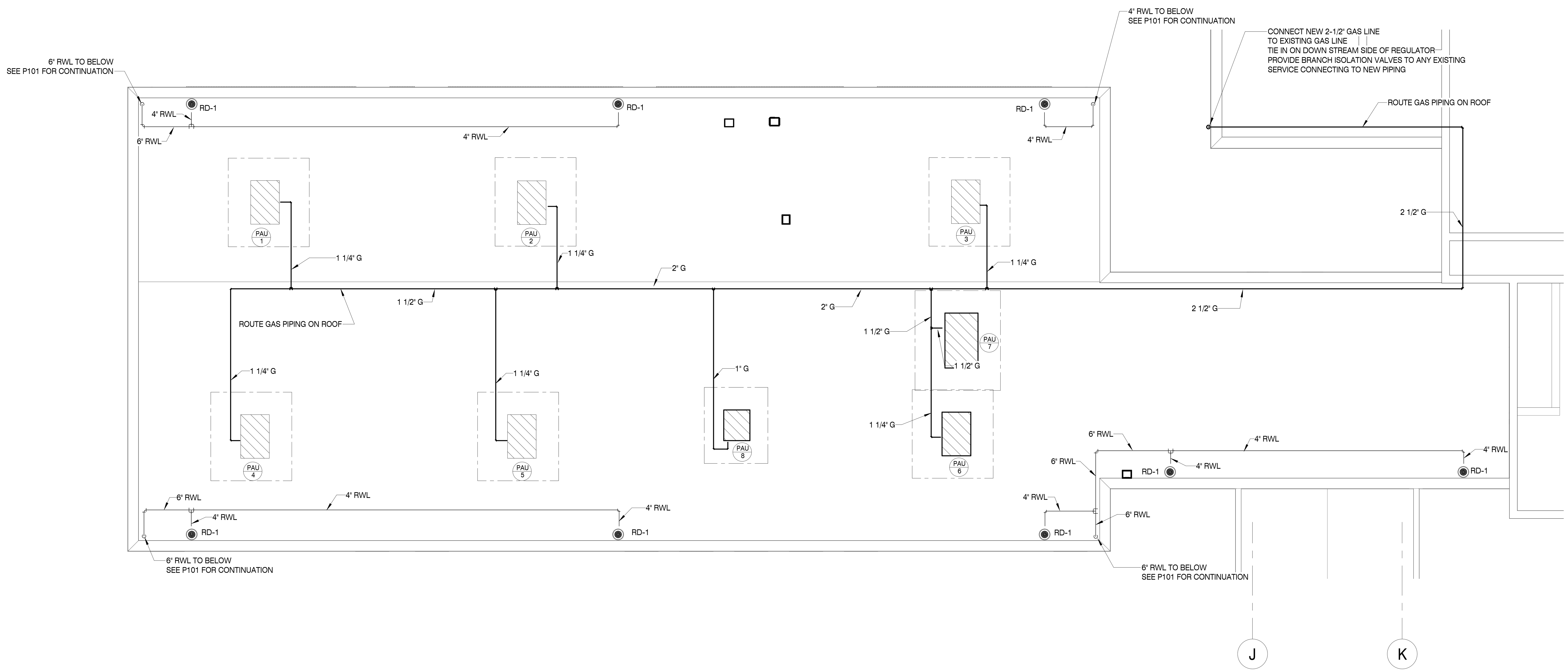

ROOF PLAN - PLUMBING

1

SCALE: 1/8" = 1'-0"

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4 Feb 2022

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REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	2/4/2022
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DRAWN BY:	DF
REVIEWED BY:	JCB
SHEET TITLE:	ROOF PLAN - PLUMBING
SHEET NO.:	P102

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WATER HEATER SCHEDULE (ELECTRIC)

DRAWING SYMBOL	STORAGE CAPACITY	NUMBER OF ELEMENTS	KILOWATT PER ELEMENT	VOLTAGE	RECOVERY GPH @ 100° RISE	MANUFACTURER & MODEL #	DIMENSIONS
WH 1	28 GALLON	2	4.5	208/1,60	21	STATE EN6-30-DOLS	31-1/4" x 24"

ACCESSORIES AND FEATURES:
- ALTERNATE MANUFACTURERS: AO SMITH, LOCHINVAR, BRADFORD WHITE
- UNIT SHALL BE ASME LISTED
- PROVIDE ASSE 1016/1017 DEVICE SET AT MAX 110° F
- NON-SIMULTANEOUS OPERATION

RECIRCULATION PUMP SCHEDULE

DRAWING SYMBOL	HP	VOLTAGE	MOTOR RPM	WEIGHT (LBS.)	MANUFACTURER & MODEL #	SYSTEM
RCP 1	1/12	115	2,650	11.6	B&G PL-30B	HW-RECIRC

ACCESSORIES AND FEATURES:
- ALL BRONZE CIRCULATOR PUMP
- PROVIDE WITH FLANGED BALL VALVES ON INLET AND OUTLET.
- SEE SPECIFICATIONS FOR OTHER PERTINENT INFORMATION.

PLUMBING FIXTURE SCHEDULE

**TRIM PRODUCTS (STOPS, PTRAPS, SUPPLIES ETC.) SHALL BE FROM SAME MANUFACTURER. ANY CONFLICTS WITH THE SCHEDULE AND THE CONSTRUCTION DOCUMENTS SHALL BE DIRECTED TO THE ENGINEER OF RECORD A MIN THREE (3) DAYS BEFORE BID DATE. CONTRACTOR SHALL PROVIDE A MIN OF THREE (3) COPIES OF SHOP DRAWINGS FOR APPROVAL. SEE SPECIFICATIONS

EQUAL PRODUCTS AND ALTERNATE MANUFACTURERS LISTED SHALL ALSO BE CONSIDERED: SLOAN, JOSAM, LEONARD, GUARDIAN, DURA-TRENCH, OASIS, HALSEY-TAYLOR, WILLOUGHBY

ITEM	DESCRIPTION	SPECIFICATION	CW (inch)	HW (inch)	W (inch)	V (inch)	REMARKS
CO-1	CLEANOUT	ZURN, Z1400-BP DURA-COAT CAST IRON ADJUSTABLE CLEANOUT WITH HEAVY DUTY CAST IRON TOP AND BRASS PLUG					
CO-2	CLEANOUT	ZURN LC, MODEL #CO2413-PVC-ST 3' X 4" WALL CLEANOUT BODY AND PLUG					
	WALL PLATE	ZURN LC, MODEL #CO2530-SS7 7" ROUND STAINLESS STEEL AQCCESS COVER W/ SECURING SCREW.					
FD-1	FLOOR DRAIN	ZURN, ZN415-S-P-Y SERVICE DRAIN WITH 6" SQUARE STRAINER & SEDIMENT BUCKET	1/2"		3"	1-1/2"	
	TRAP GUARD	ZURN, Z1072 ZSHIELD TRAP GUARD					
	TRAP	ZURN, Z-1000-P DEEP SEAL TRAP					
HB-1	ENCASED HOSE BIBB	ZURN, MODEL #Z-1320-CXL ENCASED, ECOLOTROLTM, LEAD-FREE, NON-FREEZE AUTOMATIC DRAINING WALL HYDRANT FOR FLUSH INSTALLATION. HYDRANT FEATURES INTEGRAL BACKFLOW PREVENTER WITH ANTI-SIPHON TECHNOLOGY, COPPER CASING, BRONZE AND STAINLESS STEEL INTERIOR COMPONENTS, NON-TURNING OPERATING ROD WITH FREE-FLOATING COMPRESSION CLOSURE VALVE, COMBINATION 3/4" FEMALE SOLDER AND 3/4" MALE PIPE THREAD INLET CONNECTION, AND 3/4" MALE HOSE CONNECTION. HYDRANT FURNISHED WITH CHROME-PLATED ROUGH CAST BRONZE HOUSING WITH LOCKING HINGED COVER STAMPED "WATER" AND INCLUDES OPERATING KEY.	3/4"				
L-1	LAVATORY	ZURN, Z5114 OVAL 20"X17" 4"CC VITREOUS CHINA DROP IN LAVATORY	1/2"	1/2"	1-1/4"	1-1/4"	
	FAUCET	SYMMONS, S-20-0-1.5 SYMMETRIX SINGLE HANDLE 4CC LAVATORY FAUCET WITH 1.5GPM AERATOR AND CERAMIC DISC CARTRIDGE					
	THERMOSTATIC MIXING VALVE	SYMMONS, 7-210-CK MAXLINE 3/8" THERMOSTATIC ASSE 1017/1070 MIXING VALVE					
	DRAIN	ZURN, Z8743-PC 1-1/4" CHROME PLATED CAST BRASS 17GA GRID DRAIN					
	P-TRAP	ZURN, Z8700-PC 1-1/4" CAST BRASS 17GA P-TRAP WITH CLEANOUT					
	SUPPLY	ZURN, Z8804-XL-LRLKQ-PC 1/2" X 3/8" COMP X COMP LAVATORY SUPPLY KIT WITH ESCUTCHEONS, 1/4 TURN CHROME PLATED STOPS AND CHROME PLATED COPPER TUBE SUPPLY LINES					
L-2	LAVATORY	ZURN, Z5344 20"X18" WALL HUNG 4"CC VITREOUS CHINA CONCEALED ARM LAVATORY	1/2"	1/2"	1-1/4"	1-1/4"	
	FAUCET	SYMMONS, S-20-0-1.5 SYMMETRIX SINGLE HANDLE 4CC LAVATORY FAUCET WITH 1.5GPM AERATOR AND CERAMIC DISC CARTRIDGE					
	THERMOSTATIC MIXING VALVE	SYMMONS, 7-210-CK MAXLINE 3/8" THERMOSTATIC ASSE 1017/1070 MIXING VALVE					
	DRAIN	ZURN, Z8743-PC 1-1/4" CHROME PLATED CAST BRASS 17GA GRID DRAIN					
	P-TRAP	ZURN, Z8700-PC 1-1/4" CAST BRASS 17GA P-TRAP WITH CLEANOUT					
	SUPPLY	ZURN, Z8804-XL-LRLKQ-PC 1/2" X 3/8" COMP X COMP LAVATORY SUPPLY KIT WITH ESCUTCHEONS, 1/4 TURN CHROME PLATED STOPS AND CHROME PLATED COPPER TUBE SUPPLY LINES					
	TRAP WRAP	ZURN, Z8946-1-NT COMBINATION TRAP WRAP KIT WITH ONE TRAP AND TWO SUPPLY PROTECTION WRAPS					
	CARRIER	PROVIDE WITH APPROPRIATE APPROVED ZURN CARRIER					
MS-1	MOP SINK	STERN WILLIAMS, MODEL # HL-1800-T35-T40-D 24" X 24" X 12" TERRAZZO "HILOW" SQUARE SERVICE SINK W/SS CAP. PROVIDE 18" HIGH STAINLESS STEEL BACK SPLASH, CAULK EDGES FOR WATER TIGHT SEAL. PROVIDE WITH HOSE AND WALL BRACKET, S.S. MOP HANGER 24" LENGTH WITH 3 SPRING LOADED RUBBER GRIPS	1/2"	1/2"	3"	1-1/2"	
	FAUCET	ZURN, MODEL # Z841M1-RC SERVICE SINK FAUCET W/VACUUM BREAKER SPOUT AND INTEGRAL ¾" HOSE THREADED OUTLET, PAIL HOOK AND WALL BRACE.					
	TRAP	ZURN, MODEL # Z-1000, 3" DEEP SEAL TRAP W/TRAP PRIMER Z-1022					
MV-1	MIXING VALVE	BRADLEY, MODEL # S59-3045 THERMOSTATIC MIXING VALVE ALL BRONZE AND STAINLESS STEEL CONSTRUCTION. PROVIDE WITH SWIVEL STOPS, REMOVABLE CARTRIDGE WITH STRAINER, BIMETALDIAL THERMOMETER.					
RPBP-1	BACKFLOW PREVENTER	WILKINS, MODEL # 975XL2TCUSAG REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER "Y" PATTERN BODY. PROVIDED WITH "Y" STAINER ON INLET SIDE OF DEVICE AND PROVIDED WITH AIRGAP AND TEST COCKS FACING UP FOR TESTER. INSTALLED HEIGHT MIN 4'-0" A.F.F. MAX 7'-0" A.F.F.					
	PRESS. RED. VALVE	WILKINS, MODEL # 500 SERIES BRONZE BODY CONSTRUCTION SERVICEABLE INLINE, CAN BE INSTALLED IN ANY POSITION. INSTALL ON INLET SIDE OF RPZ BACKFLOW DEVICE.					
	PRESSURE GUAGE	WILKINS, MODEL # 2004-25-300, 0-300 POUND GUAGE TO BE INSTALLED ON INLET AND OUTLET SIDE OF PRV.					
ST-1	HAMMER ARRESTOR	ZURN, MODEL #Z-1700-100 PLUMBING DRAINAGE INSTITUTE RATING 'A' (1-11 FU)					
UR-1	URINAL - HC	ZURN, Z5755-U OMNI-FLOW .125 TO 1GPF WALL MOUNTED TOP SPUD ASYMMETRIC BACK WALL URINAL WITH INTEGRAL P-TRAP AND VANDAL RESISTANT OUTLET STRAINER	3/4"		2"	1-1/2"	
	VALVE	ZURN, Z6003AV-WS1 AQUAVANTAGE MANUAL OPERATED FLUSH VALVE 1GPF CLOG RESISTANT TRIPLE FILTERED BY-PASS, DUAL SEAL AND CHLORAMINE RESISTANT INTERNAL PARTS					
	CARRIER	ZURN, MODEL # ZR-1222 SUPPORT W/BEARING PLATE.					
WC-1	WATER CLOSET	ZURN, Z5655-BWL1 1.6GPF SIPHON JET FLUSH ACTION FLOOR MOUNTED STANDARD HEIGHT WATER CLOSET WITH 2-1/8" FULLY GLAZED TRAPWAY	1"		4"	2"	
	CLOSET FLANGE	ZURN MODEL # CF2982 CAST IRON TORQUE SET CLOSET FLANGE WITH INTEGRAL TEST CAP					
	VALVE	ZURN, Z6000AV-WS1 AQUAVANTAGE MANUAL OPERATED FLUSH VALVE 1.6 GPF CLOG RESISTANT TRIPLE FILTERED BY-PASS, DUAL SEAL AND CHLORAMINE RESISTANT INTERNAL PARTS.					
	SEAT	ZURN, Z5955SS-EL-STS ELONGATED WHITE OPEN FRONT TOILET SEAT LESS COVER WITH SELF SUSTAINING STAINLESS STEEL CHECK HINGE					
WC-2	WATER CLOSET	ZURN, Z5665-BWL1 1.6GPF ADA SIPHON JET FLUSH ACTION FLOOR MOUNTED ADA HEIGHT WATER CLOSET WITH 2-1/8" FULLY GLAZED TRAPWAY	1"		4"	2"	
	CLOSET FLANGE	ZURN MODEL # CF2982 CAST IRON TORQUE SET CLOSET FLANGE WITH INTEGRAL TEST CAP					
	VALVE	ZURN, Z6000AV-WS1 AQUAVANTAGE MANUAL OPERATED FLUSH VALVE 1.6 GPF CLOG RESISTANT TRIPLE FILTERED BY-PASS, DUAL SEAL AND CHLORAMINE RESISTANT INTERNAL PARTS.					
	SEAT	ZURN, Z5955SS-EL-STS ELONGATED WHITE OPEN FRONT TOILET SEAT LESS COVER WITH SELF SUSTAINING STAINLESS STEEL CHECK HINGE					
RD-1	ROOF DRAIN	ZURN, MODEL # ZA100-DP-EA, DRAIN W/LOW SILHOUETTE DOME					

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NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	2/4/2022
DESIGNED BY:	KAS
DRAWN BY:	KAS
REVIEWED BY:	JCB

SHEET TITLE:

PLUMBING SCHEDULES

SHEET NO.:

P201

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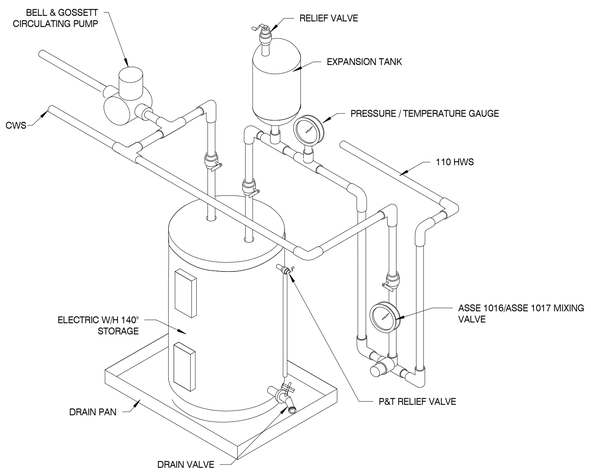
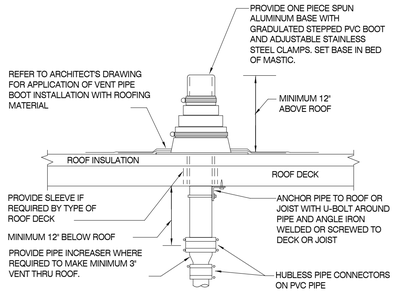
2/4/2022 2:31:21 PM



ELECTRIC WATER HEATER DETAIL 7

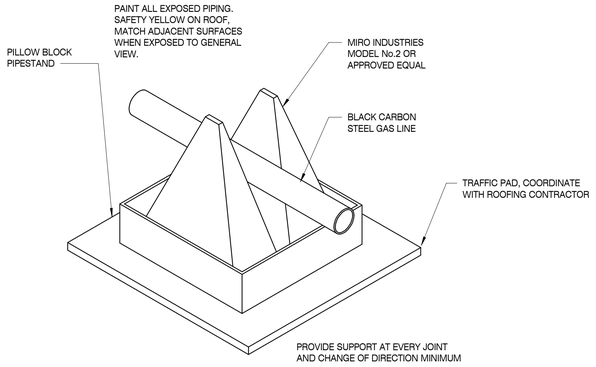
SCALE: N.T.S.



REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATED VENT THRU ROOF MINIMUM TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE AND ONE FOOT FROM ANY VERTICAL SURFACE. PROVIDE 1" FIBERGLASS INSULATION WITH ALL-SERVICE JACKET ON VENT PIPE INSIDE BUILDING WITHIN SIX FEET OF VENT THRU ROOF LOCATION. VERIFY FLASHING AND COUNTERFLASHING WITH ROOFING CONTRACTOR.

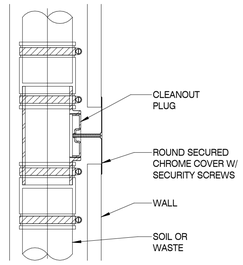
VENT THROUGH ROOF DETAIL 8

SCALE: 3" = 1'-0"



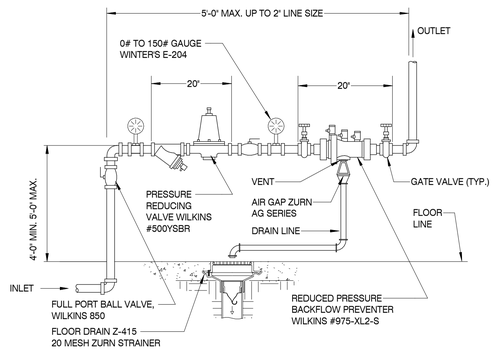
GAS LINE SUPPORT DETAIL 9

SCALE: N.T.S.



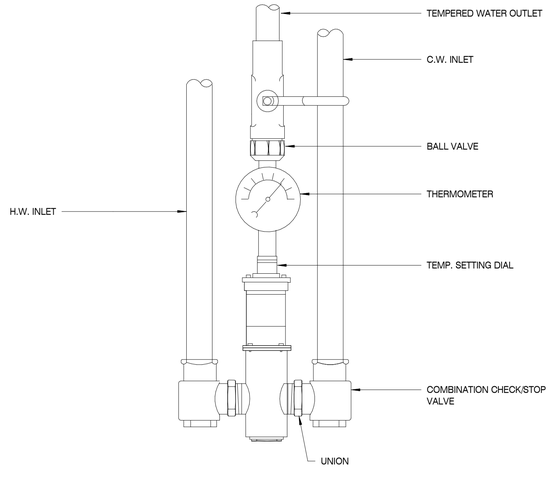
WALL CLEANOUT DETAIL 4

SCALE: N.T.S.



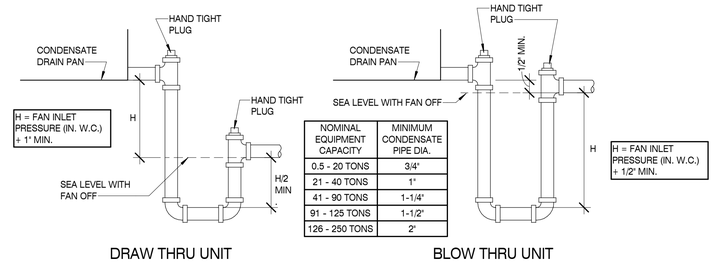
WATER SERVICE ENTRANCE DETAIL 5

SCALE: 1/8" = 1'-0"



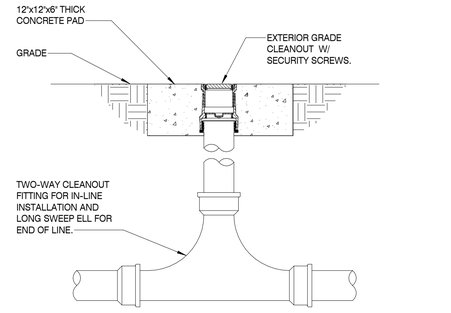
MIXING VALVE DETAIL 6

SCALE: N.T.S.



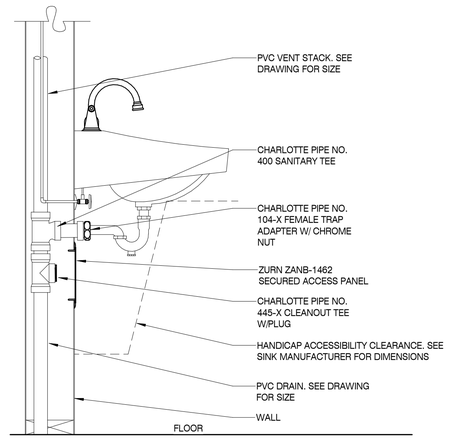
CONDENSATE TRAP DETAIL 1

SCALE: 1/8" = 1'-0"



EXTERIOR GRADE CLEANOUT 2

SCALE: N.T.S.



STACK CLEANOUT DETAIL 3

SCALE: 1/8" = 1'-0"

MBI

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SEAL

JOHN C. BUCHANAN REGISTERED ENGINEER 104351 STATE OF TENNESSEE

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE, NORRIS, TN 37828

PROJECT NO.: 210042-04

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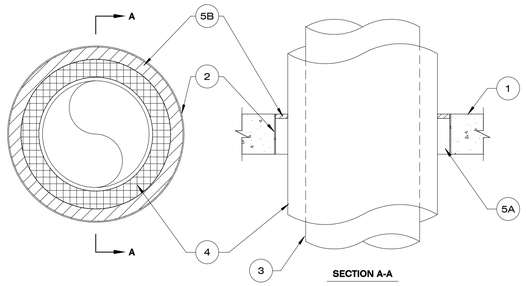
SHEET ISSUED:	2/4/2022
DESIGNED BY:	KAS
DRAWN BY:	KAS
REVIEWED BY:	JCB
SHEET TITLE:	

PLUMBING DETAILS

SHEET NO.:

P301

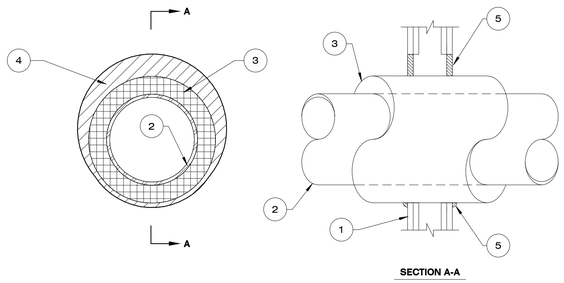
System No. C-AJ-5091
F Rating — 2 Hr
T Rating — 1 Hr
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft



SECTION A-A

1. Floor or Wall Assembly — Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening is 19-1/2 in. See Concrete Blocks (CAZT) category in the Fire Resistance directory for names of manufacturers.
2. Metallic Sleeve — (Optional) — Nom 20 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
2A. Sheet Metal Sleeve — (Optional) - Max 6 in. diam, min 26 ga galv steel provided with a 26 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. above the top surface of the floor.
2B. Sheet Metal Sleeve — (Optional) - Max 12 in. diam, min 24 ga galv steel provided with a 24 ga galv steel square flange spot welded to the sleeve at approximately mid- height, or flush with bottom of sleeve in floors, and sized to be a min of 2 in. larger than the sleeve diam. The sleeve is to be cast in place flush with bottom surface of floor and may extend a max of 1 in. above the top surface of the floor.
3. Through Penetrants — One metallic pipe or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe — Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 12 in. diam (or smaller) cast or ductile iron pipe.
C. Copper Pipe — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
D. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
4. Pipe Covering — Nom 2 in. thick hollow cylindrical heavy density (min 3.5 pcf) glass fiber units jacketed on the outside with an all-service jacket. Longitudinal joints sealed with metal fasteners or factory-applied, self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the edge of the periphery of the opening shall be min 1/2 in. to a max 2-1/4 in.
See Pipe Equipment Covering — Materials — (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4A. Pipe Covering — (Not Shown) — As an alternate to Item 4, max 2 in. thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 8 AWG stainless steel wire spaced max 12 in. OC. The annular space shall be min 1/2 in. to max 2-1/4 in.
5. Firestop System — The firestop system shall consist of the following:
A. Packing Material — Min 4 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
B. Fill, Void or Cavity Material* — Sealant — Min 1/2 in. thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant
*Bearing the UL Classification Mark

System No. W-L-5029
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/2, 3/4, 1, 1-1/2 and 1-3/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft



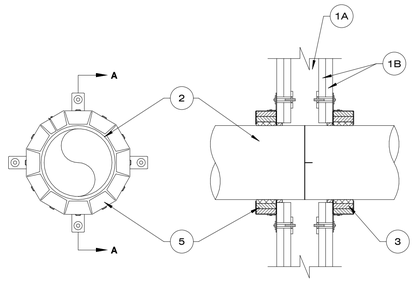
SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
B. Gypsum Board* — 5/8 in. thick, 4 ft wide, with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 18-5/8 in.
The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through Penetrants — One metallic pipe or tubing to be centered within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
A. Steel Pipe — Nom 12 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
B. Iron Pipe — Nom 12 in. diam (or smaller) cast or ductile iron pipe.
C. Copper Tubing — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
D. Copper Pipe — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.
jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.
See Pipe and Equipment Covering — Materials (BRGU) category in the Building Material Directory for the names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
The hourly T Rating of the firestop system is dependent on the hourly fire rating of the wall assembly in which it is installed, the size and type of through penetrant and the pipe covering thickness, as shown in the table below:

Wall Assembly Rating Hr	Through Penetrant		Pipe Covering Thkns In.	Annular Space		T Rating Hr
	Type +	Max Diam In.		Min In.	Max In.	
1	A	4	1	0	1-1/2	1/2
1	B or C	2	1 or 1-1/2	0	1-1/2	1/2
1	A	4	1-1/2	0	1-1/2	1
1	A	12	2	0	1-7/8	3/4
1	B or C	6	2	0	1-7/8	1
2	A	4	1	0	1-1/2	1
2	B or C	4	1 or 1-1/2	0	1-1/2	1
2	B or C	6	2	0	1-7/8	1
2	A	4	1-1/2	0	1-1/2	1-3/4
2	A	12	2	0	1-7/8	1-1/2
2	B or C	6	2	0	1-7/8	1

+Indicates penetrant type as itemized in Item 2.
3A. Pipe Covering* — (Not Shown) — As an alternate to Item 3, max 2 in. thick cylindrical calcium silicate (min 14 pcf) units sized to the outside diam of the pipe or tube may be used. Pipe insulation secured with stainless steel bands or min 8 AWG stainless steel wire spaced max 12 in. OC. When the alternate pipe covering is used, the T Rating shall be determined from the table above.
See Pipe and Equipment Covering — Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall . At the point contact location between pipe covering and gypsum board, a min 1/2 in. diam bead of fill material shall be applied at the pipe covering/gypsum board interface on both surfaces of wall.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant
*Bearing the UL Classification Mark

System No. W-L-2078
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1 and 2 Hr (See Items 2 and 3)
L Rating At Ambient — 3 CFM/sq ft
L Rating At 400 F — Less Than 1 CFM/sq ft



SECTION A-A

1. Wall Assembly — The fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL fire Resistance Directory and shall include the construction features noted below.
A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced max 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
B. Gypsum Board* — Nom 5/8 in. thick gypsum board, as specified in the individual Wall and Partition Design. Max diam of opening is 11-1/2 in.
The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. Through-Penetrants — One nonmetallic pipe, conduit or tubing to be installed within the firestop system. The annular space between pipe and periphery of opening shall be min 0 in. (point contact) to max 1/2 in. Pipe or conduit to be rigidly supported on both sides of the wall assembly. The following types and sizes of nonmetallic pipes may be used:
A. Polyvinyl Chloride (PVC) Pipe — Nom 10 in. diam (or smaller) Schedule 40 solid-core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 10 in. diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
C. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 6 in. diam (or smaller) Schedule 40 solid-core or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems
D. Flame Retardant Polypropylene (FRPP) Pipe — Nom 6 in. diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
E. Polyvinylidene Fluoride (PVDF) Pipe — Nom 4 in. diam (or smaller) PVDF pipe for use in closed (process or supply) or vented (drain, waste or vent) piping system.
When max 6 in. diam pipe is used, T Rating is equal to the hourly fire rating of the wall. When nom 8 in. or 10 in. diam pipe is used, T Rating is 0 hr.
3. Firestop Device* — Firestop Collar — Firestop collar shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to both sides of the wall using the anchor hooks provided with the collar. (Minimum two anchor hooks for 1-1/2 and 2 in. diam pipes, three anchor hooks for 3 and 4 in. diam pipes, four anchor hooks for 6 in. diam pipes, ten anchor hooks for 8 in. diam pipes and twelve anchor hooks for 10 in. diam pipes). The anchor hooks are to be secured to the surface of wall with 3/16 in. diam by 2-1/2 in. long steel toggle bolts along with washers. As an alternate for pipe sizes of nom 4 in. diam or less, min No. 10 by 1-1/2 in. long drywall or laminate screws with min 3/4 in. steel washers may be used. When the drywall or laminate screw is used, T Rating shall not exceed 1 hr.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643 50/1.5"N, CP 643 63/2"N, CP 643 90/3"N, CP 643 110/4"N, CP 643 160/6"N, CP 644 200/8" andCP 644 250/10" Firestop Collars
4. Fill, Void or Cavity Material* — Sealant - (Not Shown) — Min 1/2 in. thickness of sealant applied within the annular space for nom 8 in. and 10 in. diam pipes, flush with each side of wall. Sealant in annular space is optional for max 6 in. diam pipes. A min 1/4 in. thickness of sealant is required within the annular space, flush with each side of wall, to attain the L Ratings for max 6 in. diam pipes.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-One Sealant
*Bearing the UL Classification Mark

FIRE PENETRATION DETAIL

SCALE: N.T.S.

1

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SEAL

JOHN C. BUCHANAN
REGISTERED ENGINEER
No. 104351
STATE OF TENNESSEE

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

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REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	3/30/22	ADDENDUM #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	3/30/2022
DESIGNED BY:	KAS
DRAWN BY:	KAS
REVIEWED BY:	JCB

SHEET TITLE:

PLUMBING DETAILS

SHEET NO.:

P302

ELECTRICAL LEGEND

Symbol	Description
"LP1"	POWER PANELBOARD "LP1" MOUNT TOP 6'-0" ABOVE FINISHED FLOOR. SEE PANELBOARD SCHEDULE FOR EQUIPMENT CONTAINED IN PANELBOARD AND PANELBOARD RATINGS.
J	JUNCTION BOX, SIZE AND USE AS REQUIRED; COVERPLATE SHALL OVERLAP THE BOX EDGE BY 1/2" WHERE RECESSED IN WALL WITH CONCEALED WIRING.
	RECESSED FOUR GANG FLOOR BOX. TWO GANGS FOR POWER AND TWO GANGS FOR DATA. PROVIDE TWO DUPLEX RECEPTACLES IN POWER GANGS, FLANGE, AND BRASS COVER PLATE.
30A	SPECIAL AMPACITY OUTLET. SEE PLANS FOR NEMA CONFIGURATION.
	SIMPLEX RECEPTACLE - 125V, 20A MOUNT 3" ABOVE BACKSPLASH AT WORK COUNTERS OR LAVATORIES AND +18" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. COMMERCIAL SPECIFICATION GRADE RECEPTACLES.
GFI IG WPC	DUPLEX RECEPTACLE - 125V, 20A MOUNT 3" ABOVE BACKSPLASH AT WORK COUNTERS AND LAVATORIES AND +18" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. "GFI" INDICATES GROUND FAULT CIRCUIT INTERRUPTER TYPE, "WPC" INDICATES WEATHERPROOF COVER SHALL BE "CLOSED WHILE IN USE". "IG" INDICATES ISOLATED GROUND RECEPTACLE, ORANGE IN COLOR. PROVIDE COMMERCIAL SPECIFICATION GRADE RECEPTACLES.
WH	MISCELLANEOUS MECHANICAL EQUIPMENT, WH=WATER HEATER, UH=UNIT HEATER
	QUADRUPLEX CONVENIENCE OUTLET - 125V, 20A MOUNT +18" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. PROVIDE COMMERCIAL SPECIFICATION GRADE RECEPTACLES.
X	EXIT SIGN, "X" INDICATES FIXTURE TYPE, "C" INDICATES CEILING MOUNTED, "W" INDICATED WALL MOUNTED, "S" INDICATES SINGLE FACE, "D" INDICATES DOUBLE FACE. PROVIDE DIRECTIONAL ARROWS AS INDICATED ON PLANS. UNIT EQUIPPED WITH BATTERY BACK-UP.
	EMERGENCY/EXIT LIGHT COMBO UNIT, BATTERY BACK-UP POWERED. WIRE UNIT TO UNSWITCHED HOT ON CIRCUITS SHOWN.
	EMERGENCY LIGHTING UNIT, BATTERY BACK-UP POWERED. WIRE UNIT TO UNSWITCHED HOT ON CIRCUITS SHOWN.
a A L1A-3	LED DOWNLIGHT. "A" IS THE FIXTURE TYPE IN THE FIXTURE SCHEDULE. "a" INDICATES WHICH SWITCH CONTROLS THE FIXTURE; AND "3" INDICATES WHICH PANELBOARD CIRCUIT THE FIXTURE IS FED FROM.
AE L1A-3	LED DOWNLIGHT WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE LIGHTING WHEN NORMAL POWER IS NOT AVAILABLE. PROVIDE UNSWITCHED "HOT" CONDUCTOR (FROM SAME CIRCUIT FIXTURE IS USING) TO BATTERY PACK, IN ORDER TO ALLOW NORMAL SWITCHING OF LIGHT FIXTURE WITHOUT DISCHARGING BATTERY PACK. ANY FIXTURE SYMBOL THAT HAS SHADING INDICATES THAT FIXTURE HAS AN EMERGENCY BATTERY BACK-UP.
a A L1A-3	LED LIGHTING FIXTURE. "A" IS THE FIXTURE TYPE IN THE FIXTURE SCHEDULE. "L1A-3" INDICATES PANELBOARD CIRCUIT THAT THE FIXTURE IS FED FROM. "a" INDICATES WHICH SWITCH CONTROLS THE FIXTURE.
AE NL L1A-3	LED LIGHTING FIXTURE WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE LIGHTING WHEN NORMAL POWER IS NOT AVAILABLE. PROVIDE UNSWITCHED "HOT" CONDUCTOR (FROM SAME CIRCUIT FIXTURE IS USING) TO BATTERY PACK, IN ORDER TO ALLOW NORMAL SWITCHING OF LIGHT FIXTURE WITHOUT DISCHARGING BATTERY PACK. ANY FIXTURE SYMBOL THAT HAS SHADING INDICATES THAT FIXTURE HAS AN EMERGENCY BATTERY BACK-UP. "NL" INDICATES A NIGHT LIGHT FIXTURE, CONNECT FIXTURE TO UNSWITCHED HOT SO THAT FIXTURES STAYS ON AT ALL TIMES.
— — — —	CONDUIT UNDERGROUND, 1"C MINIMUM, UNLESS NOTED OTHERWISE.
LP1-1,3,5	HOMERUN - LP1 INDICATES PANELBOARD 1,3,5 INDICATE CIRCUIT NUMBERS. SEE PANELBOARD DESIGNATION SCHEDULE FOR ADDITIONAL INFORMATION.
	MARKS INDICATE NO. OF #12 CONDUCTORS IN 3/4" CONDUIT =PHASE =NEUTRAL =GROUND NO MARKS INDICATE 2 #12, #12 GROUND. WHEN TWO OR MORE CIRCUITS SHARE A COMMON NEUTRAL THE HOT CONDUCTORS MUST BE CONNECTED TO DIFFERENT PHASES IN THE PANELBOARD.
	CATV OUTLET MOUNT 18" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. EXTEND 1" EMPTY CONDUIT FROM OUTLET BOX ABOVE CEILING AND TERMINATE WITH BUSHING. PROVIDE NYLON PULL CORD IN EACH CONDUIT. PROVIDE 4" SQUARE BOX WITH SINGLE GANG DEVICE RING.
	TELEPHONE/DATA OUTLET MOUNT 18" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. EXTEND 1" EMPTY CONDUIT FROM OUTLET BOX TO ABOVE CEILING OR TO ROOF STEEL AND TERMINATE WITH BUSHING. PROVIDE NYLON PULL CORD IN EACH CONDUIT. PROVIDE 4" SQUARE BOX WITH SINGLE GANG DEVICE RING.
$3 $D $V	LOCAL 120/277V,20A WALL SWITCH, SINGLE POLE, MOUNT +48" ABOVE FINISHED FLOOR. "3" INDICATES 3-WAY, "D" INDICATES DIMMER SWITCH, "V" INDICATES VACANCY SENSOR. SPECIFICATION GRADE.
$L3 $LD $LV	LOCAL LOW VOLTAGE "L" WALL SWITCH, MOUNT +48" ABOVE FINISHED FLOOR. "3" INDICATES 3-WAY, "D" INDICATES DIMMER SWITCH, "V" INDICATES VACANCY SENSOR. WALL SWITCHES MAY WORK IN CONJUNCTION WITH CEILING SENSORS INDICATED BELOW. SPECIFICATION GRADE.
VS	DUAL TECHNOLOGY CEILING SENSOR FOR LIGHTING CONTROL. "OS" INDICATES OCCUPANCY SENSOR WITH "AUTO-ON" AND "AUTO-OFF". "VS" INDICATES VACANCY SENSOR WITH "MANUAL-ON" AND "AUTO-OFF" WITH ADJUSTABLE DELAY UP TO 15 MINUTES.
OSC	PIR TECHNOLOGY CORRIDOR SENSOR FOR LIGHTING CONTROL WITH "AUTO-ON" AND "AUTO-OFF." ACUITY HW(R)13 OR EQUIVALENT. MOUNT AT 8' - 0" A.F.F.
30/60	FUSED DISCONNECT SWITCH. "60" INDICATES SWITCH SIZE, "30" INDICATES FUSE SIZE. HEAVY DUTY "HP" RATED, PROVIDE NEMA 3R ENCLOSURES OUTDOORS. FUSE PER NAMEPLATE OF EQUIPMENT.
30	NON-FUSED DISCONNECT SWITCH. "30" INDICATES SWITCH SIZE. HEAVY DUTY "HP" RATED, PROVIDE NEMA 3R ENCLOSURE OUTDOORS.
TBB	TELEPHONE BACKBOARD.
D	DUCT SMOKE DETECTOR. 1-SUPPLY AIR DUCT, 1-RETURN AIR DUCT, SUPPLIED AND INSTALLED BY FIRE ALARM CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE THE DUCT SMOKE DETECTORS TO SHUT DOWN THE HVAC UNIT IN THE EVENT EITHER THE SUPPLY OR THE RETURN DUCT SMOKE DETECTOR GOES INTO ALARM. PROVIDE REMOTE TEST STATION IN AN ACCESSIBLE LOCATION, MOUNTED BELOW UNIT AT 48" A.F.F.
F	FIRE ALARM PULL STATION MOUNT 48" AFF.
V 75cd	WALL MOUNTED FIRE ALARM VISUAL STROBE DEVICE. MOUNT 90" A.F.F. 75cd INDICATES 75 CANDELAS
L 75cd 88dB	WALL MOUNTED FIRE ALARM COMBINATION AUDIO/VISUAL SPEAKER STROBE DEVICE. MOUNT 90" A.F.F. 75cd INDICATES 75 CANDELAS. 88dB INDICATES 88 DECIBELS.
L 75cd 88dB	CEILING MOUNTED FIRE ALARM COMBINATION AUDIO/VISUAL SPEAKER STROBE DEVICE. 75cd INDICATES 75 CANDELAS. 88dB INDICATES 88 DECIBELS.
S	CEILING MOUNTED FIRE ALARM SMOKE DETECTOR.
H	CEILING MOUNTED FIRE ALARM HEAT DETECTOR.
V 15cd	CEILING MOUNTED FIRE ALARM VISUAL ONLY STROBE DEVICE. 15cd INDICATES 15 CANDELAS.
TS	FIRE ALARM TAMPER SWITCH.
FS	FIRE ALARM FLOW SWITCH.
FACP	FIRE ALARM CONTROL PANEL. MOUNT TOP 6'-0" AFF. PROVIDE TWO DEDICATED PHONE LINES TO PANEL.
WAP	CEILING MOUNTED WIRELESS ACCESS POINT. PROVIDE 4" SQUARE BOX WITH SINGLE GANG DEVICE RING.
WIV	WALL INDICATOR VALVE
LCP	NEMA 1, SURFACE MOUNTED LIGHTING CONTROL PANEL, MVOLT. PROVIDE SINGLE POLE RELAYS AS SHOWN IN LCP SCHEDULES ON SHEET E501. PROVIDE 365 DAY ASTRONOMICAL PROGRAMMABLE TIMECLOCK AND PHOTOCELL (MOUNTED ON ROOF FACING NORTH).
OVR	LOW-VOLTAGE OVERRIDE LIGHT SWITCH. COMPATIBLE WITH LIGHTING CONTROL PANEL. MTD 48" AFF.
CO	CEILING MOUNTED FIRE ALARM CARBON MONOXIDE DETECTOR.
DH	DOOR HOLDER - OPERATED THROUGH FIRE ALARM SYSTEM. DOORS REMAIN OPEN UNTIL SMOKE IS DETECTED BY SMOKE DETECTORS ADJACENT TO THE DOORS OR LOSS OF POWER.
CR	SECURITY SYSTEM CARDREADER.
ES2	DOUBLE DOOR ELECTRIC STRIKE ACCESS CONTROL. REFER TO DETAIL 4/E501 FOR ADDITIONAL INFORMATION.

ELECTRICAL LEGEND CONTINUED

Symbol	Description
	PA SPEAKER.
	EXTERIOR PA SPEAKER.
	PUSH BUTTON.
F/SD	DUCT MOUNTED SMOKE OR COMBINATION FIRE/SMOKE DAMPER. CONNECT TO NEAREST UNSWITCHED 120V POWER CIRCUIT. CONTROL WITH DUCT MOUNTED SMOKE DETECTOR MOUNTED ABOVE DAMPER. DAMPER SHALL CLOSE UPON DETECTION OF SMOKE. PROVIDE ACCESS DOOR TO SERVICE DUCT SMOKE DETECTOR AND DAMPER WHERE REQUIRED, VIF LOCATION.

3

ELECTRICAL ABBREVIATIONS

A	AMPERES	FWE	FURNISHED WITH EQUIPMENT	N.C.	NORMALLY CLOSED
AC	ALTERNATING CURRENT	G	GROUNDING CONDUCTOR	N.I.C.	NOT IN CONTRACT
AF	ARC FAULT	GFI	GROUND FAULT INTERRUPTER	N.O.	NORMALLY OPEN
A.F.F.	ABOVE FINISHED FLOOR	HP	HORSEPOWER	NEC	NATIONAL ELECTRIC CODE
AWG	AMERICAN WIRE GAUGE	JB	JUNCTION BOX	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CKT	CIRCUIT	KCM	THOUSANDS OF CIRCULAR MILS	PH	PHASE
DC	DIRECT CURRENT	KV	KILOVOLTS	TYP.	TYPICAL
DISC	DISCONNECT	KVA	KILOVOLT-AMPERES	V	VOLT
DWG.	DRAWING	KW	KILOWATTS	W	WATT
ELEC.	ELECTRICAL/ELECTRIC	LTG	LIGHTING	WP	WEATHERPROOF
EWC	ELECTRIC WATER COOLER	N	NEUTRAL CONDUCTOR	WPC	"CLOSED WHILE IN USE" TYPE WEATHERPROOF COVER

FIRE ALARM SYSTEM NOTES

1. A) FURNISH AND INSTALL A COMPLETE ADDRESSABLE FIRE DETECTION AND EVACUATION SYSTEM. THE ENTIRE INSTALLATION SHALL CONFORM TO THE APPLICABLE SECTIONS OF NFPA-72, NATIONAL FIRE ALARM CODE, NFPA-101 LIFE SAFETY CODE, N.E.C. ARTICLE 760, THE AMERICANS WITH DISABILITIES ACT, AND LOCAL AUTHORITIES HAVING JURISDICTION. SUBSTITUTES FOR APPROVAL MUST MEET THE COMPLETE FUNCTIONALITY REQUIREMENTS AS SET FORTH IN THESE SPECIFICATIONS.

   B) DUE TO THE NATURE OF FIRE MARSHAL ACTIONS, INCLUDE AN ALLOWANCE OF AN ADDITIONAL 10% OF THE ORIGINAL JOB A/V DEVICE QUANTITIES TO BE INSTALLED AT THE DISCRETION OF THE LOCAL FIRE MARSHAL.

2. THE FIRE ALARM EQUIPMENT SUPPLIER SHALL BE AN ALARM SYSTEMS CONTRACTOR LICENSED BY THE STATE OF TENNESSEE AND SHALL INCLUDE A COPY OF THE LICENSE IN THE EQUIPMENT SUBMISSIONS. THE CONTRACTOR SHALL HAVE NICET CERTIFIED EMPLOYEES FOR THE SALE, SUPERVISION AND FINAL TESTING OF THE EQUIPMENT AND SHALL INCLUDE A COPY OF THE CERTIFICATE OF AT LEAST ONE EMPLOYEE IN THE EQUIPMENT SUBMISSIONS.

3. THE FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE NEED FOR ADDITIONAL CABINETS, BATTERIES, POWER SUPPLIES, PROGRAMMING, AND ANY ADDITIONAL HARDWARE OR SOFTWARE FOR A COMPLETE INSTALLATION AND EXPANSION. INCLUDE ALL COST IN ORIGINAL BID.

4. SUBMISSIONS:
   A) COMPLETE DESCRIPTIVE DATA INCLUDING U.L. LISTING FOR ALL COMPONENTS.
   B) COMPLETE CAD DRAWINGS OF THE PROPOSED SYSTEM SHOWING CONDUIT LAYOUT, WIRE COUNT AND DEVICE LOCATIONS.

5. ALL FIRE ALARM SYSTEM WIRING SHALL REMAIN SEPARATE FROM OTHER BUILDING SYSTEMS WIRING AND SHALL BE IN CONDUIT. ALL JUNCTION BOXES SHALL BE SPRAYED RED AND LABELED "FIRE ALARM". WIRING COLOR SHALL BE MAINTAINED THROUGHOUT THE INSTALLATION.

6. TESTING:
   A) THE COMPLETED SYSTEM SHALL BE FULLY TESTED BY THE FIRE ALARM CONTRACTOR AND THE MANUFACTURER'S NICET CERTIFIED TECHNICAL REPRESENTATIVE IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE. UPON COMPLETION OF A SUCCESSFUL TEST, THE FIRE ALARM CONTRACTOR SHALL VERIFY IN WRITING TO THE OWNER, ARCHITECT, AND GENERAL CONTRACTOR.
   B) THE FOLLOWING TEST SHALL BE PERFORMED BY THE FIRE ALARM MANUFACTURER'S AUTHORIZED REPRESENTATIVE. EACH AND EVERY NEW DEVICE SHALL BE TESTED FOR IT'S INTENDED FUNCTION. VERIFY THAT EACH NEW DEVICE IS LOCATED IN ITS APPROPRIATE LOCATION. WRITTEN VERIFICATION OF THIS TEST SHALL BE PROVIDED TO THE OWNER, ARCHITECT, AND GENERAL CONTRACTOR. THIS TEST SHALL BE PERFORMED IN ACCORDANCE WITH NFPA 72.

7. WARRANTY:
   THE NEW EQUIPMENT AND WIRING SHALL BE WARRANTED TO BE FREE FROM ELECTRICAL AND MECHANICAL DEFECTS FOR A PERIOD OF ONE (1) YEAR COMMENCING WITH START-UP AND OWNERS BENEFICIAL USE OF THE COMPLETED SYSTEM. WARRANTY SHALL INCLUDE ALL LABOR/TRAVEL TIME AND PARTS.

8. MONITORING:
   INCLUDE IN THE BID THE COST OF ONE YEAR OF MONITORING OF THE NEW FIRE ALARM SYSTEM BY A U.L. APPROVED MONITORING COMPANY.

EMERGENCY RADIO RESPONDER COVERAGE NOTES

1. EMERGENCY RADIO COMMUNICATION SIGNAL ENHANCEMENT SYSTEM TESTING, DESIGN, & ROUGH-IN:

   A. CONTRACTOR SHALL INCLUDE IN BASE BID PRICE TESTING OF EMERGENCY RESPONDER RADIO COMMUNICATIONS SIGNALS AND CELLULAR SIGNALS FOR THE NEW ADDITION ONLY. TEST RESULTS SHALL BE DOCUMENTED FOR BOTH THE OUTSIDE AND INTERIOR OF THE NEW ADDITION FOR DETERMINATION OF NEED FOR A BI-DIRECTIONAL AMPLIFIER SYSTEM TO BOOST THESE SIGNALS WITHIN THE FACILITY.
   B. ALL TESTS SHALL BE CONDUCTED, DOCUMENTED, AND SIGNED BY A PERSON IN POSSESSION OF AN FCC GENERAL RADIO TELEPHONE OPERATORS LICENSE. ALL TESTING PERSONNEL SHALL BE CERTIFIED AND AUTHORIZED BY THE SIGNAL BOOSTER MANUFACTURER IN THE INSTALLATION AND OPERATION OF THEIR EQUIPMENT. PERSONNEL QUALIFICATIONS MUST BE ACCEPTABLE TO THE AHJ.
   C. THE TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE EDITION OF UL2524, NFPA-72, NFPA 1221, IFC AND FCC COMPLIANT TO ESTABLISH STANDARDS OF QUALITY FOR MATERIALS AND PERFORMANCE.
   D. EC SHALL SUB-CONTRACT AN APPROVED MANUFACTURER OR A QUALIFIED AND APPROVED VENDOR TO PERFORM THE TESTS AND SHOULD THE TEST RESULTS SHOW THE NEED FOR A SIGNAL ENHANCEMENT SYSTEM(S) THAT VENDOR SHALL TEST AND DETERMINE RECOMMENDED LOCATIONS OF COMPONENTS AND EQUIPMENT WHICH ARE REQUIRED FOR PROPER COVERAGE TO MEET THE AFOREMENTIONED CODE REQUIREMENTS.
   E. CRITICAL AREAS SUCH AS EXIT STAIRS, EXIT PASSAGEWAYS, ELEVATOR LOBBIES, SPRINKLER SECTIONAL VALVE LOCATIONS AND SIMILAR CRITICAL AREAS SHALL BE PROVIDED WITH 100% FLOOR AREA RADIO COVERAGE. GENERAL BUILDING AREAS SHALL BE PROVIDED WITH 95% RADIO COVERAGE, OR AS SPECIFIED BY AHJ.
   F. THE IN-BUILDING EMERGENCY RADIO COMMUNICATION ENHANCEMENT SYSTEMS MUST PROVIDE THE FOLLOWING SIGNAL STRENGTHS:
      a. DOWNLINK - MINIMUM SIGNAL STRENGTH OF -95 DBM THROUGHOUT THE COVERAGE AREA.
      b. UPLINK - MINIMUM SIGNAL STRENGTH OF -95 DBM RECEIVED AT THE AHJ RADIO SYSTEM.
   G. CONDUIT SLEEVES SHALL BE INSTALLED AS REQUIRED AND ONE 2"C SHALL BE INCLUDED FROM DAS LOCATION TO ROOF FOR DONOR ANTENNA. WHERE INACCESSIBLE CEILINGS (GYP, ETC) ARE ENCOUNTERED, CONTRACTOR SHALL INCLUDE IN BASE BID PRICE DESIGN OF EMERGENCY RADIO RESPONDER COVERAGE SYSTEM. INDIVIDUAL UNIT ANTENNA LOCATIONS SHALL BE IDENTIFIED AND ROUGH-IN BOX INSTALLED AT EACH ANTENNA LOCATION. 3/4"C SHALL BE INSTALLED FROM EACH ANTENNA BACK BOX TO ACCESSIBLE LOCATION, TTB SERVING SAME AREA, OR DAS LOCATION AS REQUIRED FOR UNINHIBITED PATH OF DAS SYSTEM CABLING IF COMPLETE DAS SYSTEM IS REQUIRED UPON TESTING COMPLETION.

2. EMERGENCY RADIO COMMUNICATION SIGNAL ENHANCEMENT SYSTEM INSTALLATION:

   A. IF TESTING DETERMINES THAT AN EMERGENCY RADIO COMMUNICATION SIGNAL ENHANCEMENT SYSTEM IS REQUIRED FOR THE ADDITION, FURNISH AND INSTALL THE SYSTEM PER THE REQUIREMENTS OF SPEC SECTION 27 00 00.

GENERAL ELECTRICAL NOTES

1. ELECTRICAL DRAWINGS ARE PARTIALLY DIAGRAMMATIC. IN THE EVENT THAT THERE IS A DISCREPANCY OR THERE ARE ITEMS THAT ARE UNCLEAR, IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT THE ENGINEER FOR CLARIFICATION. REFER TO ARCHITECTURAL, STRUCTURAL, MECHANICAL AND HVAC DRAWINGS FOR GUIDANCE ON DIMENSIONS, CEILING HEIGHTS, DOOR SWINGS, ROOM FINISHES, STRUCTURAL AND ARCHITECTURAL DETAILS, LOCATIONS OF DUCTS, PIPES AND STRUCTURAL STEEL. INSTALL THE ELECTRICAL SYSTEMS WITHOUT INTERFERING WITH DUCTS, PIPES, STRUCTURAL STEEL OR OTHER SYSTEMS. LOCATE LIGHTING SYMMETRICALLY IN PROPER RELATION TO FINISHED AREAS EXCEPT WHERE DIMENSIONED ON THE DRAWINGS OR LOCATED ON REFLECTED CEILING PLANS.
2. SCOPE: FURNISH ALL LABOR, MATERIAL AND EQUIPMENT NECESSARY TO INSTALL ALL ELECTRICAL WORK INDICATED ON DRAWINGS, AS SPECIFIED HEREIN, AND IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), AND ALL STATE, AND CITY CODES.
3. PROVIDE ADDITIONAL SUPPORTS FOR SWITCHES, PANELBOARDS, RACEWAYS TRANSFORMERS, CABLE TRAYS AND OTHER ELECTRICAL EQUIPMENT WHERE THE BUILDING STRUCTURE IS NOT SUITABLE FOR DIRECT MOUNTING. ALL OTHER SUPPORTS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
4. A NUMERAL BESIDE A BRANCH CIRCUIT OUTLET ON WIRING PLANS INDICATES PANELBOARD BRANCH CIRCUIT CONNECTION. A LOWER CASE LETTER BESIDE AN OUTLET INDICATES THE SWITCH LEG CONNECTION WHERE OUTLETS ARE LOCALLY SWITCHED.
5. SYMBOLS IN THE LEGENDS ARE APPLICABLE GENERALLY. FOR EXACT REQUIREMENTS REFER TO THE SCHEDULES, LAYOUTS, DETAILS AND SPECIFICATIONS SINCE THE APPEARANCE OF A PARTICULAR SYMBOL IN THE LEGEND DOES NOT NECESSARILY IMPLY THAT THE ITEM IS INCLUDED IN THE CONTRACT.
6. MOUNT GROUPED DEVICES IN A SINGLE CONTINUOUS GANG BOX. USE PARTITIONS WHERE VOLTAGE BETWEEN EXPOSED LIVE PARTS OF ADJACENT SWITCHES MAY EXCEED 300 VOLTS.
7. VERIFY CEILING SUSPENSION SYSTEMS IN THE VARIOUS AREAS AND PROVIDE THE PROPER MOUNTING ACCESSORIES, TRIMS, ETC. TO SUIT THE PARTICULAR AREA.
8. PROVIDE SEAL FITTINGS IN CONDUITS THAT ENTER CONDITIONED AREA FROM NON-CONDITIONED AREAS.
9. ANY CONDUIT AND BOXES FOR HVAC CONTROL WIRING IS INCLUDED IN THIS SCOPE OF WORK. SEE MECHANICAL PLANS FOR LOCATIONS, TYPE AND QUANTITY OF CONTROL DEVICES.
10. ALL CONDUCTORS ARE COPPER. THHN/THWN 600 VOLT INSULATION. USE SOLID CONDUCTORS FOR WIRE SIZES #10 AWG AND SMALLER. USE STRANDED FOR WIRE NO. 8 AWG AND LARGER. MINIMUM WIRE SIZE IS #12 AWG. CONDUIT IS EMT (1/2" MINIMUM) WITH COMPRESSION FITTINGS UNLESS OTHERWISE NOTED. TYPE MC CABLE IS ALLOWED IN CONCEALED INTERIOR DRY LOCATIONS.
11. MAINTENANCE MANUALS AND INSTRUCTIONS: FURNISH THREE (3) SETS OF OPERATING INSTRUCTIONS FOR ANY ELECTRICAL EQUIPMENT INSTALLED.
12. ALL ELECTRICAL EQUIPMENT AND INSTALLATION WORK SHALL HAVE A ONE YEAR (1) WARRANTY. FURNISH WARRANTY SO THE DEFECTIVE MATERIALS AND/OR WORKMANSHIP SHALL BE REPAIRED/REPLACED IMMEDIATELY UPON NOTIFICATION AT NO COST TO THE OWNER FOR THE PERIOD OF THE WARRANTY.
13. ANY CONDUIT AND/OR CABLE TRAY PENETRATIONS THROUGH ANY FIRE WALL OR FLOOR SHALL BE FIRESTOP EQUAL TO OR GREATER THAN THE RATING OF THE FIRE WALL OR FLOOR THAT THEY PASS THROUGH. USE ONLY UL APPROVED METHODS AND ASSEMBLIES. RECEPTACLES LOCATED ON OPPOSITE SIDES OF A FIRE BARRIER SHALL BE SEPARATED BY A MINIMUM HORIZONTAL DISTANCE OF 2'0".
14. PERMITS: OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES, FEES INSPECTIONS, AND POWER COMPANY AID TO COMPLETE WORK SHOWN. INCLUDE ALL POWER COMPANY COSTS IN BID.
15. CONDUCTOR COLOR CODING: PROVIDE COLOR CODING FOR ALL BRANCH CIRCUIT CONDUCTORS THROUGHOUT THE PROJECT AS FOLLOWS:

PHASE	120/208 VOLT
A	BLACK
B	RED
C	BLUE
NEUTRAL	WHITE
GROUND	GREEN

16. CUTTING AND PATCHING: PROVIDE ALL CUTTING REQUIRED TO DO THE WORK. DO NOT CUT ANY STRUCTURAL ELEMENT WITHOUT APPROVAL. PATCHING SHALL BE OF QUALITY EQUAL TO AND MATCHING APPEARANCE OF EXISTING CONSTRUCTION. DO NOT CUT ANY STRUCTURAL ELEMENT WITHOUT APPROVAL.
17. GROUNDING: AS REQUIRED BY THE NATIONAL ELECTRICAL CODE SECTION 250.
18. WIRING DEVICES AND PLATES: SWITCHES SHALL BE HUBBELL OR LEVITON 20A 125VOLT AC COMMERCIAL SPECIFICATION GRADE. COLOR PER ARCHITECT. USE STEEL COVER PLATES IN UNFINISHED AREAS AND MATCHING NYLON COVER PLATES IN FINISHED AREAS.
19. SAFETY SWITCHES: USE HEAVY DUTY TYPE FUSIBLE OR NON-FUSIBLE AS REQUIRED. NEMA TYPE 1 INDOORS AND NEMA TYPE 3R FOR OUTDOORS. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL WHERE SHOWN OR REQUIRED BY CODE.
20. FUSES: USE DUAL ELEMENT, CURRENT LIMITING, TIME DELAY TYPE OR AS SPECIFIED BY EQUIPMENT SUPPLIER.
21. PANELBOARDS: USE PANELBOARDS WITH BOLT ON TYPE BREAKERS ONLY. PANELBOARDS SHALL HAVE SEPARATE NEUTRAL AND GROUND BUSSES. PANELBOARDS SHALL BE 20" WIDE. PROVIDE TYPED DIRECTORY CARDS FOR EACH PANELBOARD INSTALLED.
22. COORDINATION: COORDINATE ALL ELECTRICAL WORK WITH OTHER TRADES AND LOCAL UTILITY COMPANY. COORDINATE METERING REQUIREMENTS WITH LOCAL ELECTRICAL UTILITY COMPANY.
23. EQUIPMENT: CONNECT ALL ELECTRICALLY OPERATED EQUIPMENT INCLUDING HVAC. USE NEMA 3R DEVICES OUTDOORS. VERIFY LOADS AND LOCATIONS OF EQUIPMENT BEFORE CONNECTION. SIZE BREAKERS, DISCONNECTS, AND FUSES ACCORDING TO THE EQUIPMENT NAMEPLATE. SIZE WIRE ACCORDING TO THE NEC. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEWING THE EQUIPMENT SUPPLIED BY THE MECHANICAL CONTRACTOR AND OTHER TRADES AND SHALL BE RESPONSIBLE FOR MODIFYING THE CONNECTIONS WIRE, DISCONNECTS, BREAKERS, ETC. SHOWN ON THE DRAWINGS IN ORDER TO MAKE A COMPLETE INSTALLATION AND TO SATISFY THE MANUFACTURER'S REQUIREMENTS. THE ELECTRICAL CONTRACTOR SHALL SUPPLY ALL LABOR AND MATERIALS TO COMPLETE THE INSTALLATION.
24. RECORD DRAWINGS: MAINTAIN A RECORD SET OF ALL CHANGES DURING CONSTRUCTION. RECORD CHANGES ON A CLEAN SET OF CONTRACT CONSTRUCTION DOCUMENTS WHICH SHALL BE TURNED OVER TO THE OWNER UPON COMPLETION OF THE PROJECT.
25. IDENTIFICATION: IDENTIFY ALL MAJOR PIECES OF ELECTRICAL EQUIPMENT INSTALLED ON THE PROJECT. EXAMPLES INCLUDE PANELBOARDS, MOTOR STARTERS, DISCONNECTS, AND CONTROL PANELS. IDENTIFY WITH PERMANENT PLASTIC NAMEPLATES.
26. SUBMITTALS: UNLESS INSTRUCTED OTHERWISE THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR SUBMITTING FOUR (4) SETS OF SHOP DRAWINGS ON MAJOR PIECES OF ELECTRICAL EQUIPMENT. SUCH EQUIPMENT INCLUDES PANELBOARDS, LIGHTING, SWITCHGEAR, SECONDARY SYSTEMS, MOTOR CONTROLS, ETC. APPROVAL FROM THE ENGINEER OF EQUIPMENT MUST BE OBTAINED BEFORE PURCHASE AND INSTALLATION OF ELECTRICAL EQUIPMENT.
27. TEMPORARY POWER AND LIGHTING: ARRANGE FOR TEMPORARY ELECTRIC SERVICE AS REQUIRED FOR THE ENTIRE PROJECT DURING CONSTRUCTION. PROVIDE A MINIMUM OF ONE DUPLEX GFCI OUTLET FOR EACH 500 SQUARE FEET OF FLOOR AREA. ARRANGE FOR PERMANENT ELECTRICAL SERVICE AND FOR ORDERLY TRANSFER BETWEEN TEMPORARY AND PERMANENT ELECTRICAL SERVICES. PROVIDE GFCI PROTECTION AND LAMP GUARDS AS REQUIRED BY THE NEC.

    MINIMUM TEMPORARY LIGHTING LEVELS:

    ONE LAMP HOLDER FOR EACH 150 SQUARE FEET OF FLOOR SPACE. MINIMUM ONE PER ROOM.
    ONE LAMP HOLDER AT EACH STAIR LANDING AND FLOOR.
    ONE LAMP HOLDER AT 20" CENTERS IN INTERIOR CORRIDORS. MINIMUM ONE PER CORRIDOR.
28. 20A/1P RECEPTACLE AND J-BOX CIRCUIT CABLE SIZES SHALL BE #12 AWG UNLESS CIRCUIT LENGTH EXCEEDS MAXIMUM LENGTH OF 100FT. CABLE SIZE SHALL BE INCREASED TO #10 AWG FOR CIRCUITS BETWEEN 100FT AND 150FT IN LENGTH. CABLE SIZES SHALL BE INCREASED TO #8 AWG FOR CIRCUITS BETWEEN 150FT AND 250FT IN LENGTH. CABLE SIZES SHALL BE INCREASED TO #6 AWG FOR CIRCUITS BETWEEN 250FT AND 400FT IN LENGTH. FOR CIRCUITS WITH CABLE SIZES GREATER THAN #10 AWG, DOWNSIZE CONDUCTORS AT DEVICE BOXES VIA WIRENUT SPLICE TO #12 FOR FINAL TERMINATION TO WIRING DEVICE.

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SEAL

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	WAH
DRAWN BY:	WAH
REVIEWED BY:	SMN

SHEET TITLE:

ELECTRICAL LEGEND AND GENERAL NOTES

SHEET NO.:

E001

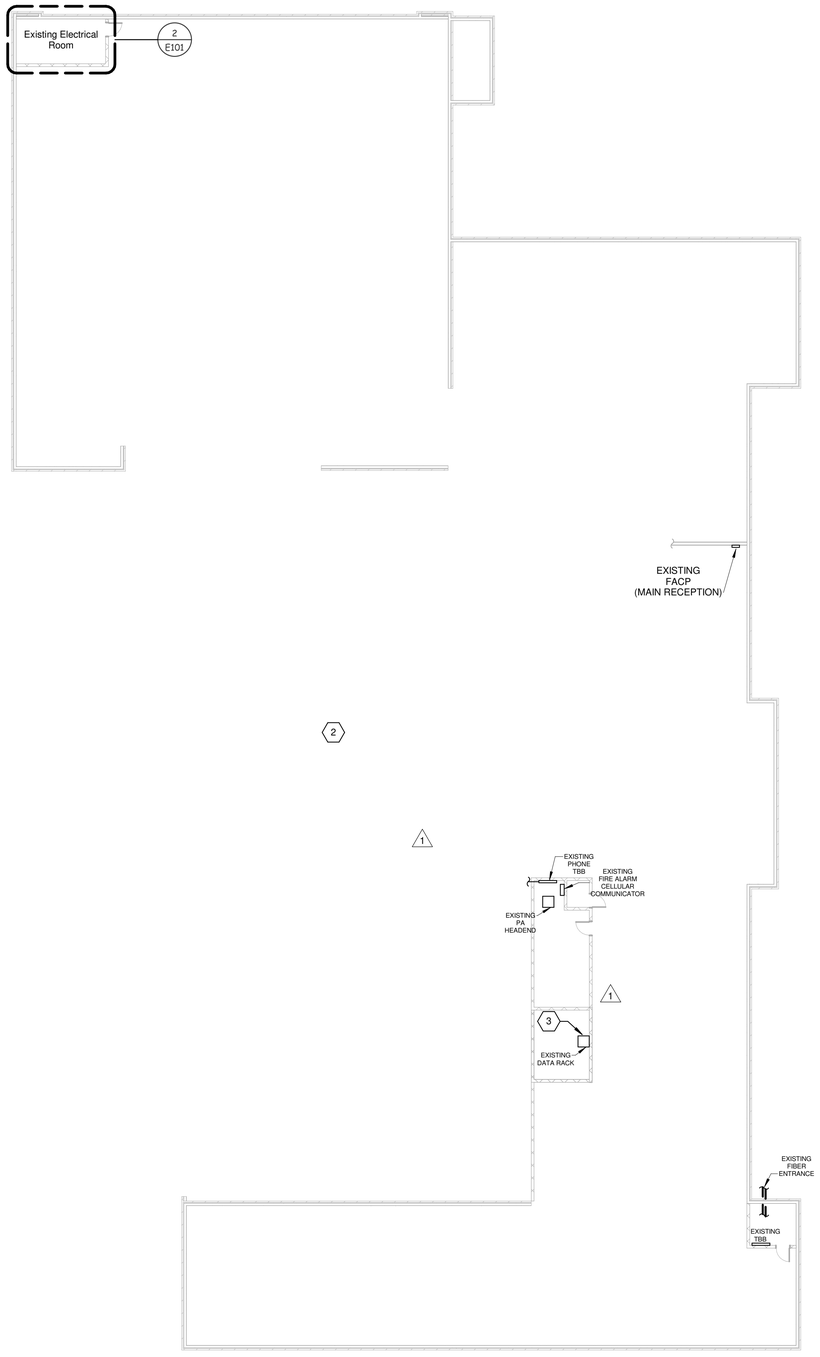
R:\Revit Projects\2021\210042_Anderson County School Board\210042-04_Classroom Addition for Norris Middle School\08_Electrical\210042-04_Elec_rvt21.rvt
3/30/2022 4:45:08 PM

GENERAL SHEET NOTES

1. SEE SHEET E001 FOR ELECTRICAL LEGEND AND GENERAL NOTES.
2. ALL EXISTING LOCATIONS SHOWN ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED BY CONTRACTOR DURING BIDDING.
3. FIELD VERIFY CONDUIT INTERCONNECTION PATHS TO EXISTING EQUIPMENT DURING BIDDING PHASE.

⬡ KEYED SHEET NOTES

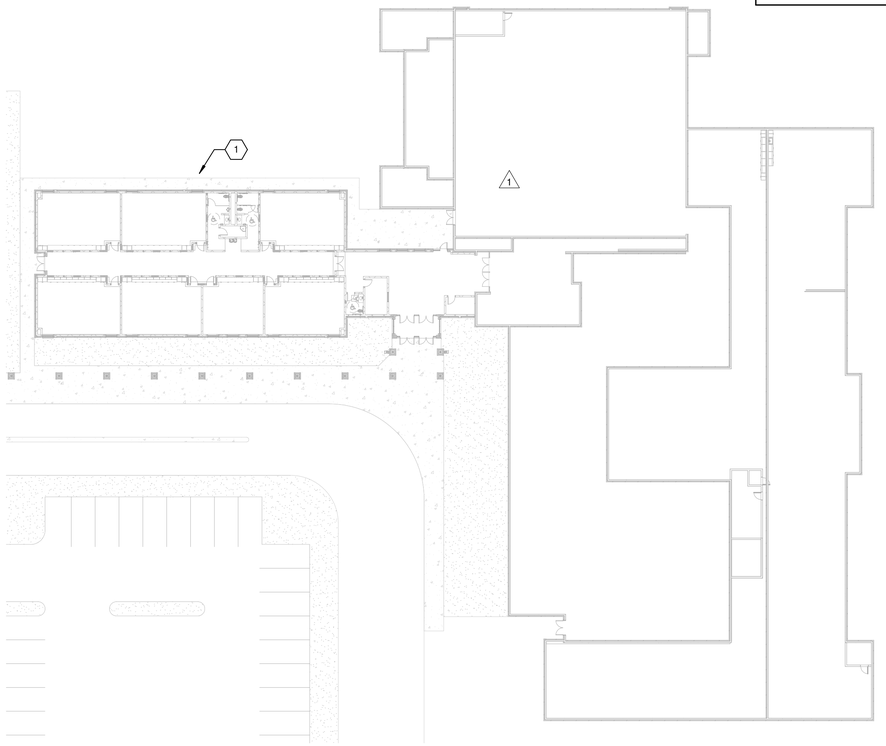
1. CLASSROOM ADDITION MEETS GRADE OF EXISTING BUILDING UPPER LEVEL.
2. ALL ROOMS/EQUIPMENT SHOWN IN THIS PLAN ARE ON THE LOWER LEVEL OF THE EXISTING BUILDING UNLESS NOTED OTHERWISE.
3. THIS DATA RACK IS LOCATED ON THE UPPER LEVEL OF THE EXISTING BUILDING.



EXISTING BUILDING EQUIPMENT INTERCONNECTION PLAN

SCALE: 1/16" = 1'-0"

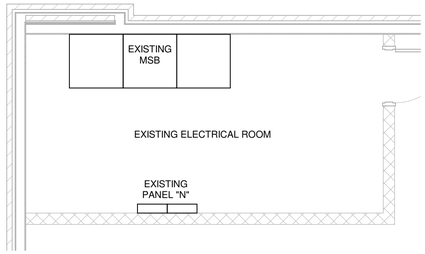
1



OVERALL BUILDING REFERENCE

SCALE: 1" = 30'-0"

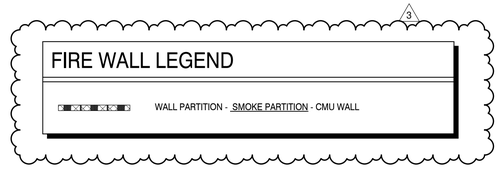
3



EXISTING ELECTRICAL ROOM

SCALE: 1/4" = 1'-0"

2



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SEAL

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3/30/22

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NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	Addendum #1
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	WAH
DRAWN BY:	WAH
REVIEWED BY:	SMN

SHEET TITLE:

EXISTING BUILDING EQUIPMENT INTERCONNECTION PLAN

SHEET NO.:

E101

FIRE WALL LEGEND

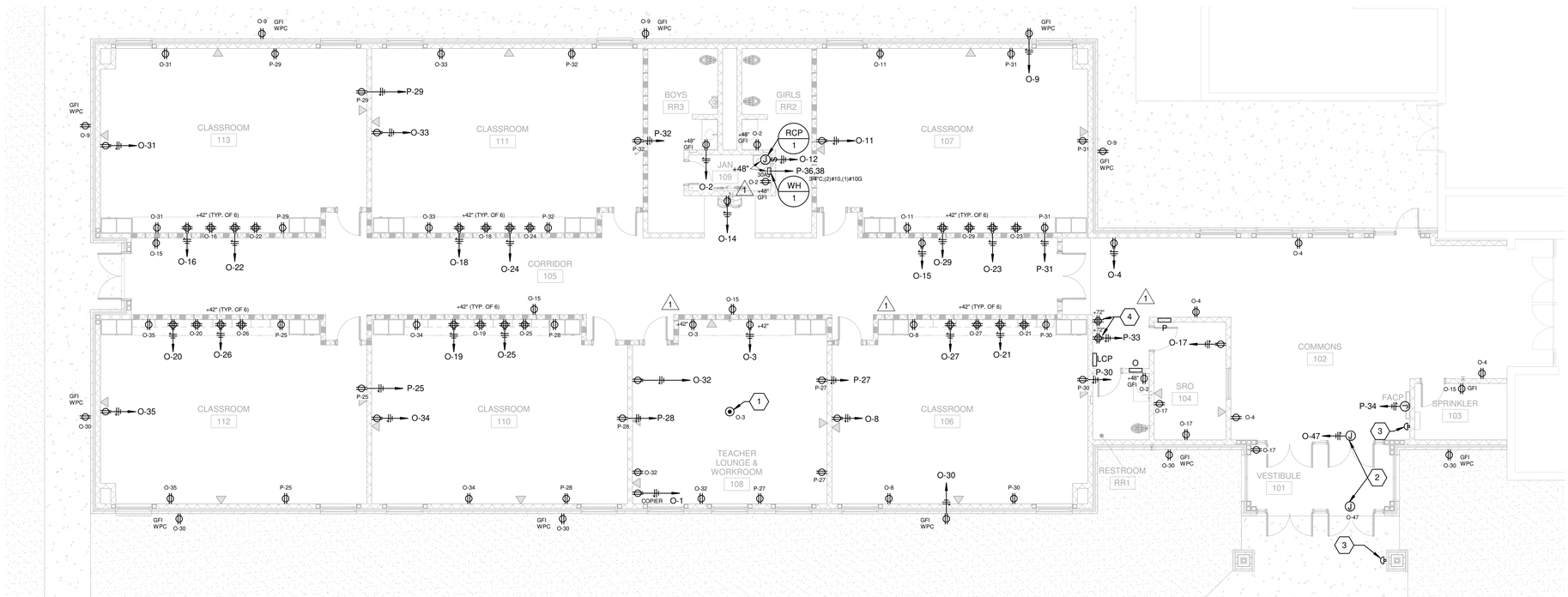
WALL PARTITION - SMOKE PARTITION - CMU WALL

GENERAL SHEET NOTES

1. SEE SHEET E001 FOR ELECTRICAL LEGEND AND GENERAL NOTES.

KEYED SHEET NOTES

1. EXTEND CONDUIT AND WIRING FROM FLOORBOX UNDERGROUND TO NEAREST FULL-HEIGHT WALL, UP IN WALL AND OVERHEAD TO CORRESPONDING CIRCUIT BREAKER.
2. PROVIDE JUNCTION BOX ABOVE CEILING FOR ADA AUTOMATIC DOOR.
3. PUSH BUTTON FOR ADA AUTOMATIC DOOR CONTROL. COORDINATE WITH OWNER AND DOOR SUPPLIER FOR INSTALLATION. WIRE PER MANUFACTURER SPECIFICATION.
4. FIELD VERIFY EXACT MOUNTING HEIGHT OF RECEPTACLES FOR DATA RACK WITH OWNER PRIOR TO ROUGH-IN.



CLASSROOM ADDITION POWER PLAN

SCALE: 1/8" = 1'-0"

1

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MBI

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SEAL

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No. 124650
STATE OF TENNESSEE
3/30/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

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KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	WAH
DRAWN BY:	WAH
REVIEWED BY:	SMN

SHEET TITLE:

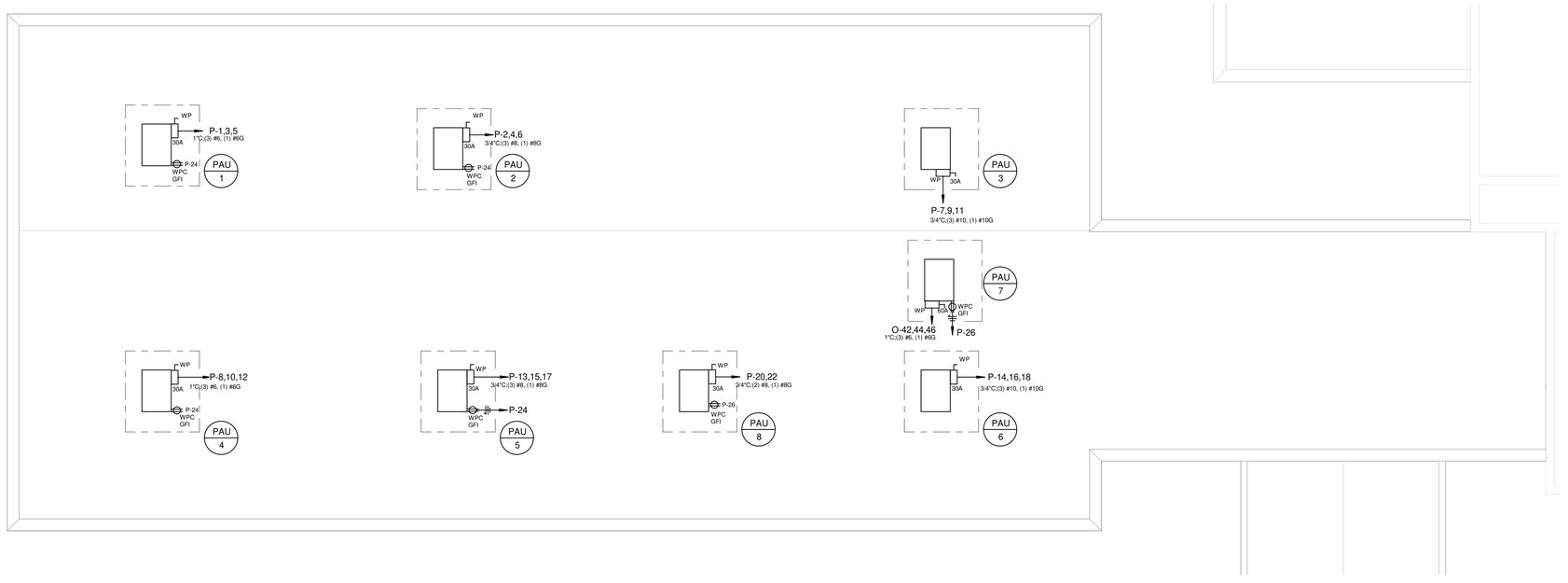
CLASSROOM ADDITION POWER PLAN

SHEET NO.:

E111

GENERAL SHEET NOTES

1. SEE SHEET E001 FOR ELECTRICAL LEGEND AND GENERAL NOTES.
2. LOCATIONS SHOWN ARE APPROXIMATE TO BE FIELD COORDINATED WITH MECHANICAL AND HVAC EQUIPMENT SUPPLIERS PRIOR TO ROUGH-IN AND INSTALLATION.



HVAC ROOF POWER PLAN

SCALE: 1/8" = 1'-0"

1

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SEAL

STEPHEN MARK NEWLIN JR. REGISTERED ENGINEER CIVIL No. 124630 STATE OF TENNESSEE

2/04/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

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REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	Designer
DRAWN BY:	Author
REVIEWED BY:	Checker

SHEET TITLE:

HVAC ROOF POWER PLAN

SHEET NO.:

E112

LIGHTING FIXTURE SCHEDULE

TYPE	LAMP TYPE	VOLTAGE	WATTS	LUMENS	COLOR TEMP (K)	CRI	MOUNTING	HEIGHT	MANUFACTURER	FINISH	MODEL	COMMENTS
A	LED	MVOLT	56	4363	3500	>80	RECESSED	CEILING	LITHONIA	N/A	CPANL 2X4 AL06 SWW7 M2	DIMMABLE 2X4 FLAT PANEL TROFFER, LOW OUTPUT.
AE	LED	MVOLT	56	4363	3500	>80	RECESSED	CEILING	LITHONIA	N/A	CPANL 2X4 AL06 SWW7 M2 ILBLP CP10 HE SD A	DIMMABLE 2X4 FLAT PANEL TROFFER, LOW OUTPUT. W/BATTERY BACKUP
B	LED	MVOLT	56	5354	3500	>80	RECESSED	CEILING	LITHONIA	N/A	CPANL 2X4 AL06 SWW7 M2	DIMMABLE 2X4 FLAT PANEL TROFFER, MEDIUM OUTPUT.
BE	LED	MVOLT	56	5354	3500	>80	RECESSED	CEILING	LITHONIA	N/A	CPANL 2X4 AL06 SWW7 M2 ILBLP CP10 HE SD A	DIMMABLE 2X4 FLAT PANEL TROFFER, MEDIUM OUTPUT. W/BATTERY BACKUP
C15	LED	MVOLT	18	1514	3500	>80	RECESSED	CEILING	LITHONIA	N/A	LDN6 35/15 L06AR LSS MVOLT GZ10	DIMMABLE 6" DOWNLIGHT
C25	LED	MVOLT	29	2504	3500	>80	RECESSED	CEILING	LITHONIA	N/A	LDN6 35/25 L06AR LSS MVOLT GZ10	DIMMABLE 6" DOWNLIGHT
C25E	LED	MVOLT	29	2504	3500	>80	RECESSED	CEILING	LITHONIA	N/A	LDN6 35/25 L06AR LSS MVOLT EZ10 EL	DIMMABLE 6" DOWNLIGHT W/BATTERY BACKUP
D	LED	MVOLT	50	4938	4000	>80	SURFACE	N/A	KENALL	N/A	MLRS8 48 F MB CP 1 45L40K DCC 1 DV WL	WET LOCATION IMPACT RESISTANT LED STRIP LIGHT
X	LED	MVOLT	1	N/A	N/A	N/A	UNIVERSAL	N/A	LITHONIA	WHITE	EXRG EL M6	SINGLE FACE EXIT SIGN W/BATTERY BACK-UP

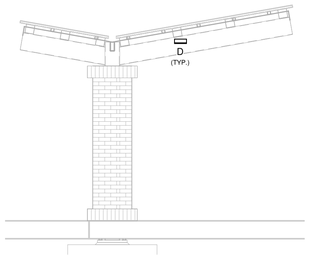
NOTES:
1. FURNISH AND INSTALL LAMPS FOR ALL FIXTURES.
2. THE FINISH OF ALL FIXTURES SHALL BE VERIFIED AND APPROVED BY THE ARCHITECT.
3. VERIFY ALL CEILING TYPES BEFORE STARTING ANY WORK. COORDINATE WITH ARCHITECTS REFLECTED CEILING PLAN FOR CEILING TYPES AND FIXTURE LOCATIONS.
4. PROVIDE ALL NECESSARY MOUNTING HARDWARE AND ACCESSORIES FOR A COMPLETE INSTALLATION OF ALL LIGHTING FIXTURES.
5. PROVIDE ALL NECESSARY EQUIPMENT FOR LOW VOLTAGE LIGHTING AND CONTROLS, SUCH ITEMS WOULD INCLUDE TRANSFORMERS, POWER PACKS, AND CABLING.
6. ALL FIXTURES IN KITCHEN OR FOOD PREP AREAS SHALL BE LENSED OR HAVE SHATTER PROOF LAMPS.
7. ALTERNATE FIXTURES MUST BE APPROVED BY ELECTRICAL ENGINEER. ALTERNATE FIXTURES MUST MATCH GENERAL DESIGN, LUMEN OUTPUT, COLOR TEMPERATURE, LIGHT DISTRIBUTION, AND FINISH.
8. PROVIDE BRIDGING STRUT AS NECESSARY.
9. SUPPORT FIXTURES PER DETAIL 3 ON SHEET E501 AS REQUIRED.

GENERAL SHEET NOTES

1. SEE SHEET E001 FOR ELECTRICAL LEGEND AND GENERAL NOTES.

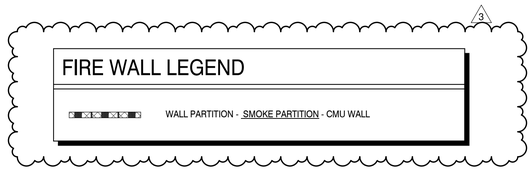
KEYED SHEET NOTES

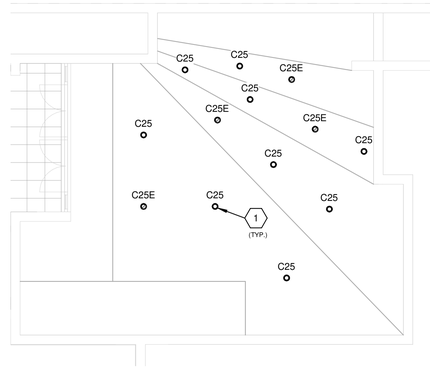
1. REPLACE EXISTING FIXTURE WITH NEW FIXTURE TYPE SHOWN. LOCATION AND QUANTITY SHOWN ARE APPOXIMATE TO BE FIELD VERIFIED BY CONTRACTOR DURING BIDDING PHASE. REUSE EXISTING WIRE AND CONDUIT.
2. SEE DETAIL 2 ON SHEET E501 FOR LIGHTING CONTROL INFORMATION.
3. PROVIDE JUNCTION BOX ABOVE CEILING FOR EXHAUST FAN CONNECTION. CONNECT TO 120V LIGHTING CIRCUIT AND SWITCH WITH LIGHTS IN SAME ROOM.
4. PROVIDE JUNCTION BOX ABOVE CEILING FOR EXHAUST FAN CONNECTION. CONNECT TO 120V UNSWITCHED LIGHTING CIRCUIT IN SAME ROOM VIA SEPARATE SWITCH IN ROOM. (1)



ENTRY CANOPY LIGHTING SECTION (2)

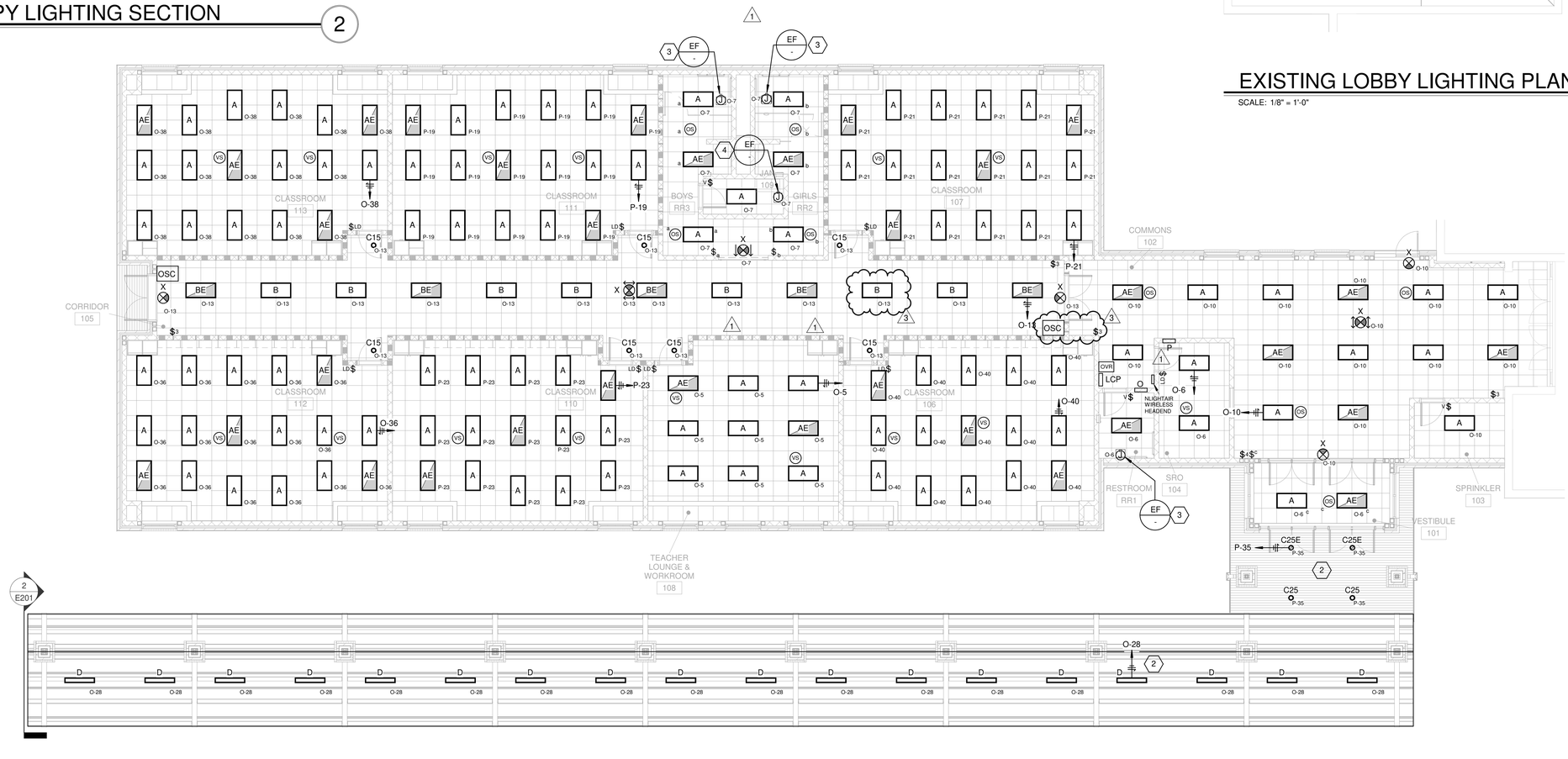
SCALE: 1/4" = 1'-0"





EXISTING LOBBY LIGHTING PLAN (3)

SCALE: 1/8" = 1'-0"



CLASSROOM ADDITION LIGHTING PLAN (1)

SCALE: 1/8" = 1'-0"

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SEAL

STEPHEN MARK NEWLIN JR. REGISTERED ENGINEER AGRICULTURE COMMERCE No. 124650 STATE OF TENNESSEE

3/30/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
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REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	Addendum #1
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	WAH
DRAWN BY:	WAH
REVIEWED BY:	SMN

SHEET TITLE:

LIGHTING PLANS

SHEET NO.:

E201

GENERAL SHEET NOTES

1. SEE SHEET E001 FOR ELECTRICAL LEGEND AND GENERAL NOTES.
2. ALL REQUIRED DOCUMENTATION REGARDING THE DESIGN OF FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS AND THE PROCEDURES FOR MAINTENANCE, INSPECTION, AND TESTING OF FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS SHALL BE MAINTAINED AT AN APPROVED, SECURED LOCATION FOR THE LIFE OF THE SYSTEM. (3)

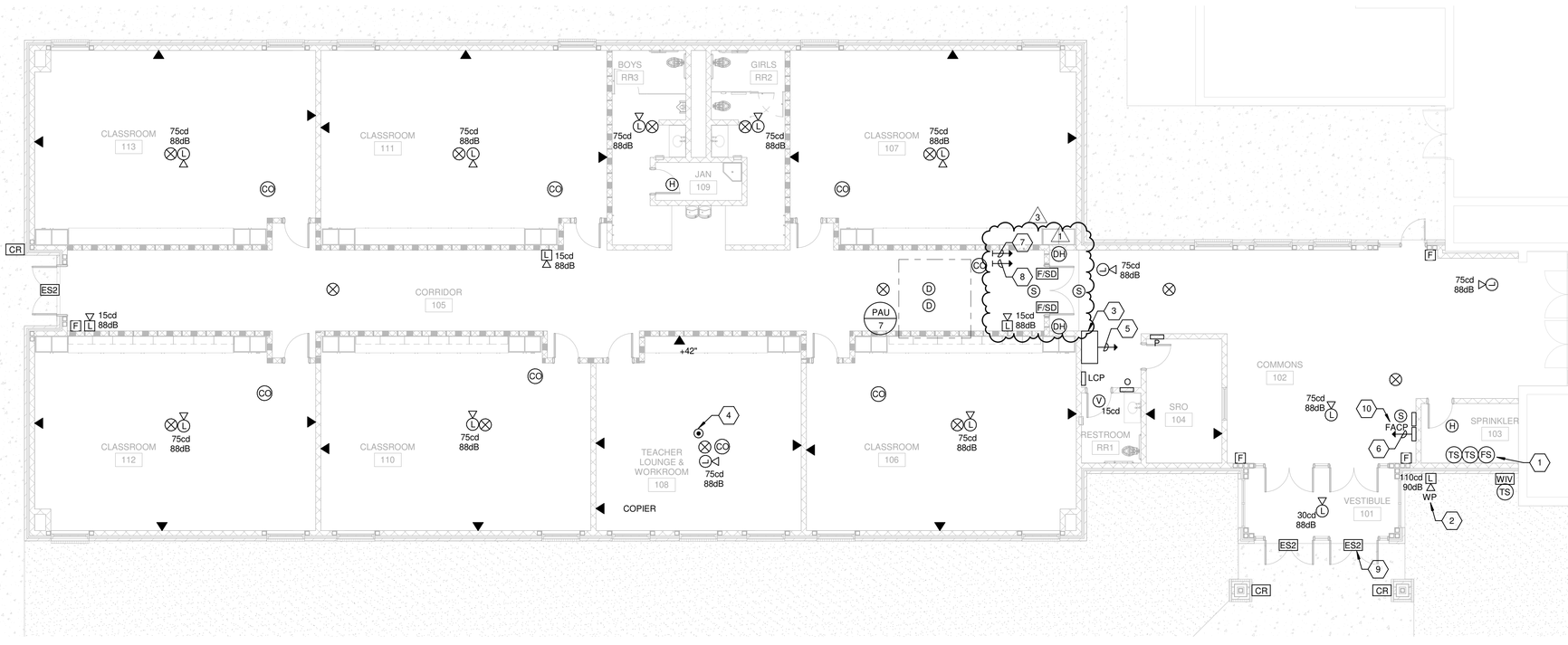
KEYED SHEET NOTES

1. PROVIDE QUANTITY OF TAMPER AND FLOW SWITCHES AS REQUIRED.
2. THIS DEVICE TO BE HORN/STROBE IN LIEU OF SPEAKER/STROBE.
3. DATA RACK FURNISHED AND INSTALLED BY OWNER.
4. EXTEND (2) 1" CONDUITS AND WIRING FROM FLOORBOX UNDERGROUND TO NEAREST FULL-HEIGHT WALL, UP IN WALL AND STUBBED OUT TO ABOVE ACCESSIBLE CEILING WITH BUSHING.
5. 2"C WITH PULLSTRING FROM NEW DATA RACK TO EXISTING DATA RACK IN ROOM BEHIND LIBRARY. SEE KEYED NOTE 3 ON SHEET E101 FOR INTERCONNECTION LOCATION.
6. FURNISH AND INSTALL 1-1/4"C AND ASSOCIATED WIRING FROM NEW FACP TO EXISTING FACP. PROVIDE NECESSARY COMPONENTS AND PROGRAMMING FOR BOTH SYSTEMS TO MONITOR TROUBLES AND ALARMS ON BOTH PANELS SO THAT BOTH PANELS GO INTO ALARM IF EITHER PANEL GOES INTO ALARM. SEE DETAIL 1/E101 FOR EXISTING FACP LOCATION.
7. EXTEND 1-1/4"C WITH PULLSTRING FROM ABOVE ACCESSIBLE CEILING TO EXISTING PHONE TBB LOCATION FOR PHONE CABLING. CABLING BY OTHERS. SEE DETAIL 1/E101 FOR EXISTING PHONE TBB LOCATION.
8. EXTEND 1-1/4"C WITH PULLSTRING FROM ABOVE ACCESSIBLE CEILING TO EXISTING PA HEADEND LOCATION FOR NEW PA SPEAKERS. CABLING BY OTHERS. SEE DETAIL 1/E101 FOR PA HEADEND LOCATION.
9. PROVIDE CONDUIT PROVISIONS FOR INTERLOCK OF ACCESS CONTROL AND MOTORIZED DOORS. OUTSIDE OF NORMAL HOURS, THE EXTERIOR PUSH BUTTON SHOULD ONLY OPERATE DOOR IF ACCESS IS GRANTED VIA THE CARD READER AND THE BUTTON IS PUSHED.
10. FURNISH AND INSTALL MIC AND REMOTE ANNUNCIATOR PANEL FOR NEW FACP NEXT TO EXISTING FACP LOCATION IN MAIN OFFICE RECEPTION. SEE SHEET E101 FOR EXISTING FACP LOCATION.

(3)

FIRE WALL LEGEND

WALL PARTITION - SMOKE PARTITION - CMU WALL



CLASSROOM ADDITION FIRE ALARM AND COMMUNICATIONS PLAN

SCALE: 1/8" = 1'-0"

1

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SEAL

STEPHEN MARK NEWLIN JR. REGISTERED ENGINEER STATE OF TENNESSEE AGRICULTURE COMMERCE NO. 124650

3/30/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

ACTIVE DESIGN PHASE

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KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	WAH
DRAWN BY:	WAH
REVIEWED BY:	SMN

SHEET TITLE:

CLASSROOM ADDITION FIRE ALARM AND COMMUNICATIONS PLAN

SHEET NO.:

E311

Branch Panel: O

Location: RESTROOM RR1
Supply From:
Mounting: RECESSED
Enclosure: TYPE 1

Volts: 120/208 3P
Phases: 3
Wires: 4

A.I.C. Rating: 35,000
Mains Type: BREAKER
Mains Rating: 200 A
MCB Rating: 200 A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	R - COPIER 108	20 A	1	1500...	720 VA					1	20 A	R - BATHROOMS RR1,RR2,RR3	2
3	R - WORKROOM 108 FLOOR	20 A	1			360 VA	900 VA			1	20 A	R - COMMONS 102	4
5	L - WORKROOM 108	20 A	1					495 VA	285 VA	1	20 A	L - VEST.101, ENTRY CANOPY, SRO 104, RR1	6
7	L - RR2, RR3, JANITOR 109	20 A	1	420 VA	540 VA					1	20 A	R - CLASSROOM 106	8
9	R - EXTERIOR WEST	20 A	1			900 VA	785 VA			1	20 A	L - COMMONS 102, SPRIKLER 103	10
11	R - CLASSROOM 107	20 A	1					540 VA	675 VA	1	20 A	E - RECIRC. PUMP	12
13	L - CORRIDOR 105	20 A	1	897 VA	180 VA					1	20 A	R - WATER FOUNTAIN -GFI	14
15	R - CORRIDOR 105 & SPRINKLER 103	20 A	1			900 VA	1500...			1	20 A	R - CHRG. 2 - CLASSROOM 113	16
17	R - JANITOR 109, SRO 104, VEST. 101	20 A	1					720 VA	1500...	1	20 A	R - CHRG. 2 - CLASSROOM 111	18
19	R - CHRG. 2 - CLASSROOM 110	20 A	1	1500...	1500...					1	20 A	R - CHRG. 2 - CLASSROOM 112	20
21	R - CHRG. 2 - CLASSROOM 106	20 A	1			1500...	1500...			1	20 A	R - CHRG. 1 - CLASSROOM 113	22
23	R - CHRG. 2 - CLASSROOM 107	20 A	1					1500...	1500...	1	20 A	R - CHRG. 1 - CLASSROOM 111	24
25	R - CHRG. 1 - CLASSROOM 110	20 A	1	1500...	1500...					1	20 A	R - CHRG. 1 - CLASSROOM 112	26
27	R - CHRG. 1 - CLASSROOM 106	20 A	1			1500...	720 VA			1	20 A	L - DROP-OFF CANOPY	28
29	R - CHRG. 1 - CLASSROOM 107	20 A	1					1500...	1080...	1	20 A	R - EXTERIOR EAST	30
31	R - CLASSROOM 113	20 A	1	540 VA	540 VA					1	20 A	R - WORKROOM 108	32
33	R - CLASSROOM 111	20 A	1			540 VA	540 VA			1	20 A	R - CLASSROOM 110	34
35	R - CLASSROOM 112	20 A	1					540 VA	935 VA	1	20 A	L - CLASSROOM 112	36
37	SPARE	20 A	1	0 VA	935 VA					1	20 A	L - CLASSROOM 113	38
39	SPARE	20 A	1			0 VA	825 VA			1	20 A	L - CLASSROOM 106	40
41	SPARE	20 A	1					0 VA	3000...	3	45 A	H - PAU-7	42
43	L - WALL PACKS	20 A	1	360 VA	3000...					--	--	--	44
45	L - WALL PACKS	20 A	1			250 VA	3000...			--	--	--	46
47	E - MOTORIZED DOORS	20 A	1					1800...	701 VA	2	20 A	L - SITE LIGHTING	48
49	TVSS - NOTE 1	30 A	3	0 VA	701 VA					--	--	--	50
51	--	--	--			0 VA	226 VA			2	20 A	L - SITE LIGHTING	52
53	--	--	--					0 VA	226 VA	--	--	--	54
			Total Load:	16333 VA		15946 VA		16997 VA					
			Total Amps:	137 A		133 A		142 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
H - HVAC	9000 VA	100.00%	9000 VA		
L - LIGHTING	6257 VA	100.00%	6257 VA	**Total Conn. Load:**	49276 VA
R - RECEPTACLE	27540 VA	68.16%	18770 VA	**Total Est. Demand:**	39502 VA
E - EQUIPMENT	2515 VA	75.00%	1886 VA	**Total Conn. Current:**	137 A
A - APPLIANCE	1500 VA	75.00%	1125 VA	**Total Est. Demand Current:**	110 A

NOTES: 1) FURNISH AND INSTALL TVSS EXTERNAL TO PANEL, RATINGS PER SPECIFICATIONS.

Branch Panel: P

Location: COMMONS 102
Supply From:
Mounting: RECESSED
Enclosure: TYPE 1

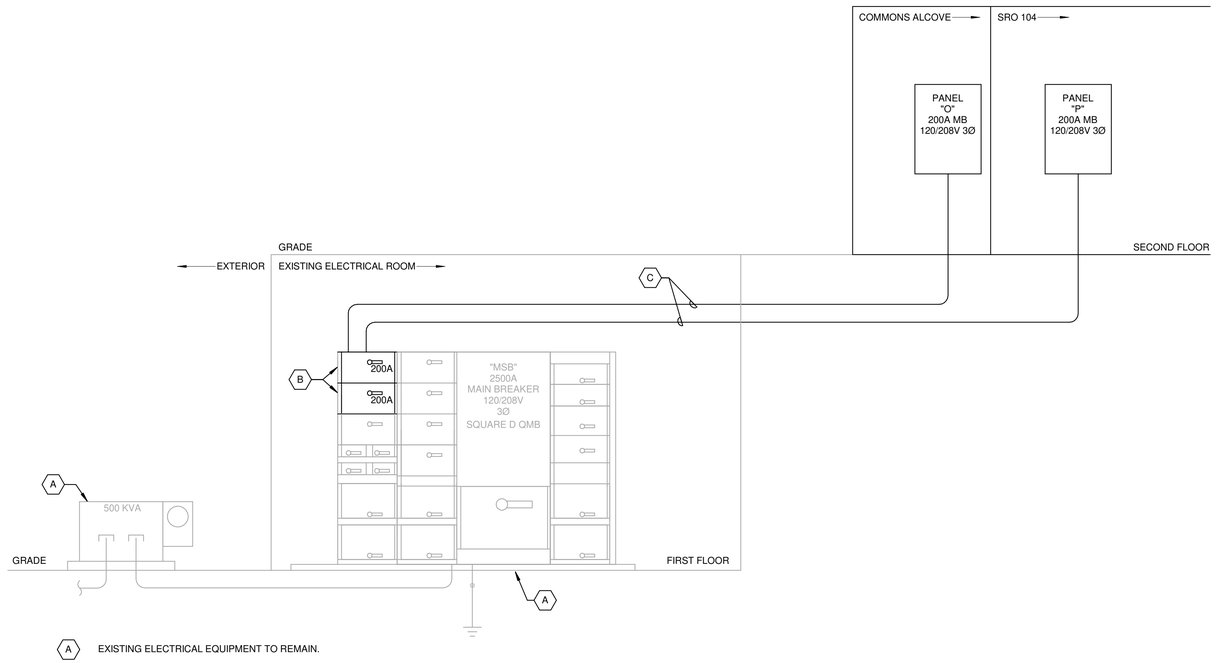
Volts: 120/208 3P
Phases: 3
Wires: 4

A.I.C. Rating: 35,000
Mains Type: BREAKER
Mains Rating: 200 A
MCB Rating: 200 A

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	H - PAU-1	30 A	3	2307...	2307...					3	30 A	H - PAU-2	2
3	--	--	--			2307...	2307...			--	--	--	4
5	--	--	--					2307...	2307...	--	--	--	6
7	H - PAU-3	30 A	3	2307...	2307...					3	30 A	H - PAU-4	8
9	--	--	--			2307...	2307...			--	--	--	10
11	--	--	--					2307...	2307...	--	--	--	12
13	H - PAU-5	30 A	3	2307...	2307...					3	30 A	H - PAU-6	14
15	--	--	--			2307...	2307...			--	--	--	16
17	--	--	--					2307...	2307...	--	--	--	18
19	L - CLASSROOM 111	20 A	1	935 VA	1625...					2	30 A	H - PAU-8	20
21	L - CLASSROOM 107	20 A	1			935 VA	1625...			--	--	--	22
23	L - CLASSROOM 110	20 A	1					825 VA	720 VA	1	20 A	R - ROOFTOP	24
25	R - CLASSROOM 112	20 A	1	540 VA	360 VA					1	20 A	R - ROOFTOP	26
27	R - WORKROOM 108	20 A	1			540 VA	540 VA			1	20 A	R - CLASSROOM 110	28
29	R - CLASSROOM 113	20 A	1					540 VA	540 VA	1	20 A	R - CLASSROOM 106	30
31	R - CLASSROOM 107	20 A	1	540 VA	540 VA					1	20 A	R - CLASSROOM 111	32
33	R - DATA RACK	20 A	1			720 VA	500 VA			1	20 A	E - FACP - NOTE 2	34
35	L - ENTRY CANOPY AND VESTIBULE 101	20 A	1					120 VA	2250...	2	30 A	H - WH-1	36
37	TVSS - NOTE 1	30 A	3	0 VA	2250...					--	--	--	38
39	--	--	--			0 VA	0 VA			1	20 A	SPARE	40
41	--	--	--					0 VA	0 VA	1	20 A	SPARE	42
			Total Load:	20630 VA		18700 VA		18835 VA					
			Total Amps:	172 A		156 A		157 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
H - HVAC	44770 VA	100.00%	44770 VA		
L - LIGHTING	2815 VA	100.00%	2815 VA	**Total Conn. Load:**	58165 VA
R - RECEPTACLE	5580 VA	100.00%	5580 VA	**Total Est. Demand:**	56915 VA
E - EQUIPMENT	5000 VA	75.00%	3750 VA	**Total Conn. Current:**	161 A
				Total Est. Demand Current:	158 A

NOTES: 1) FURNISH AND INSTALL TVSS EXTERNAL TO PANEL, RATINGS PER SPECIFICATIONS. 2) CIRCUIT SHALL BE RED, PROVIDED WITH LOCK-ON DEVICE AND LABELED AS "FIRE ALARM CIRCUIT".



A EXISTING ELECTRICAL EQUIPMENT TO REMAIN.

B NEW SQUARE D QMB FUSED SWITCH. 3Ø,4W,120/208V, AMPERAGE PER RISER. FUSES TO MATCH EXISTING GEAR kAIC RATING.

C 3"C;(4) 300KCMIL, (1) #3G

RISER DIAGRAM

SCALE: N.T.S.

1

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SEAL

STEPHEN MARK NEWLIN
REGISTERED ENGINEER
CERTIFICATE NUMBER
COMMERCE
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STATE OF TENNESSEE
2/22/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

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- ■ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	02/22/2022	Addendum #1

KEY PLAN

SHEET INFORMATION

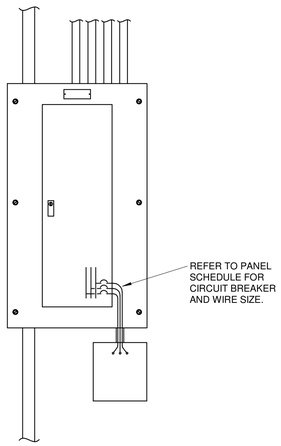
SHEET ISSUED:	02/04/2022
DESIGNED BY:	WAH
DRAWN BY:	WAH
REVIEWED BY:	SMN

SHEET TITLE:

RISER DIAGRAM AND PANELBOARD SCHEDULES

SHEET NO.:

E401

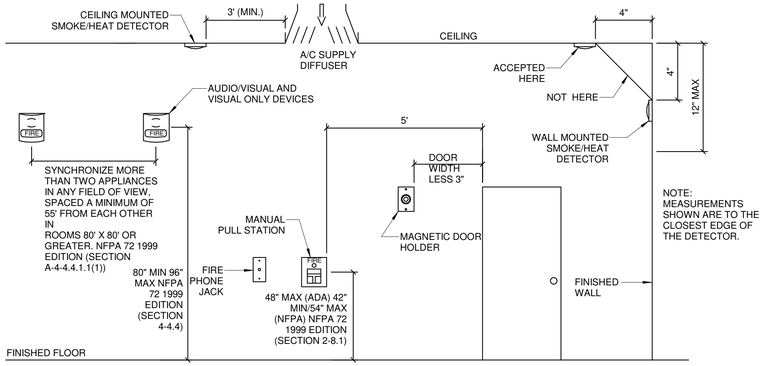


NOTE:

SPD SHALL BE CLOSE-NIPPLED TO PANEL ENCLOSURE AND CONNECTED TO CLOSEST CIRCUIT BREAKER IN SPACE TO MINIMIZE LENGTH OF CONDUCTORS (NOT TO EXCEED 18") AND AVOID UNNECESSARY BENDS.

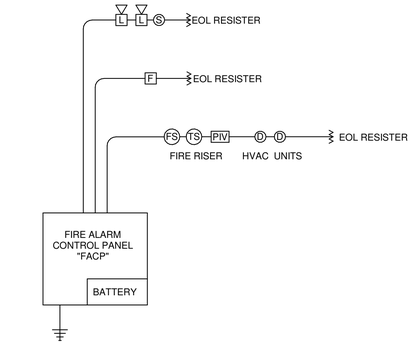
SURGE SUPPRESSION DETAIL 5

SCALE: N.T.S.



FIRE ALARM - DEVICE DETAIL 6

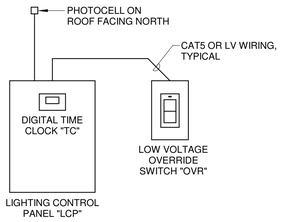
SCALE: N.T.S.



SEE PLANS FOR DEVICE TYPES, LOCATIONS, AND QUANTITIES.

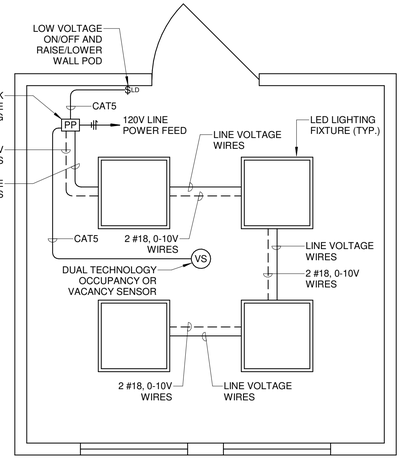
FIRE ALARM - RISER 7

SCALE: N.T.S.



LIGHTING CONTROL RISER 8

SCALE: N.T.S.



LIGHTING SEQUENCE FOR VACANCY SENSORS SHALL BE MANUAL ON/AUTO OFF AND AUTO ON/OFF FOR OCCUPANCY SENSORS WITH LOW VOLTAGE WALL SWITCH. LIGHTS WILL AUTOMATICALLY SWITCH OFF WITH VACANCY/OCCUPANCY SENSOR WHEN ROOM IS VACANT FOR 20 MINUTES. ALL VACANCY SENSORS SHALL BE SET TO MAXIMUM 20 MINUTE SHUT-OFF TIME. CONTRACTOR SHALL COORDINATE WITH LIGHTING SUPPLIER FOR QUANTITY OF SENSORS AND POWER PACKS REQUIRED BEFORE ORDERING.

LIGHTING CONTROL DETAIL 1

SCALE: N.T.S.

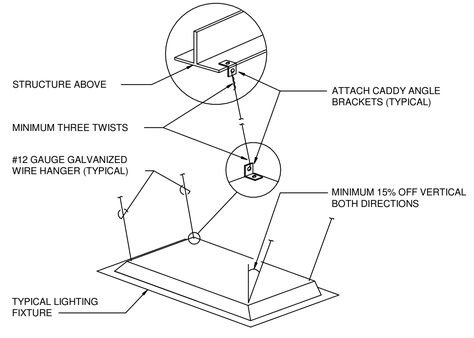
LIGHTING CONTROL PANEL "LCP"

RELAY	LOAD DESCRIPTION	SWITCHING ON/OFF	CIRCUIT #
1	ENTRYWAY CANS	TC/PC	P-35
2	PICKUP/DROPOFF CANOPY	TC/PC	O-28
3	SPARE	N/A	-
4	SPARE	N/A	-

NOTES:
1. "TC" INDICATES RELAY CONTROLLED BY TIMECLOCK. "PC" INDICATES RELAY CONTROLLED BY PHOTOCELL.
2. MOUNT PHOTOSENSOR ON ROOF FACING NORTH.
3. CIRCUIT P-35 EXTERIOR DOWNLIGHTS SHALL BE CONTROLLED VIA LIGHTING CONTROL PANEL TIMECLOCK AND PHOTOCELL IN ACCORDANCE WITH IECC 2018 C405.2.6.1 AND C405.2.6.3. 0-10V DIMMING WIRE SHALL BE RUN TO FIXTURES AND DIMMING SIGNAL SUPPLIED BY LIGHTING CONTROL PANEL TO MEET SETBACK REQUIREMENTS.

LIGHTING CONTROL SCHEDULE 2

SCALE: N.T.S.

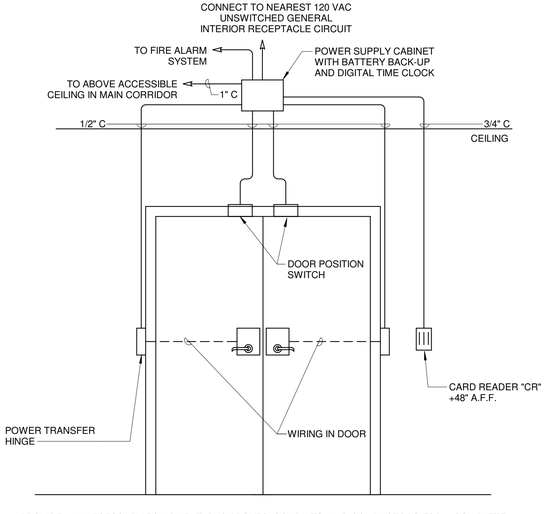


FIXTURE SUPPORT NOTES:

1. ATTACH ALL LIGHT FIXTURES TO THE CEILING GRID RUNNERS TO RESIST A HORIZONTAL FORCE EQUAL TO THE WEIGHT OF THE FIXTURES.
2. ALL FLUSH OR RECESSED LIGHT FIXTURES WEIGHING LESS THAN 56 POUNDS SHALL BE SUPPORTED DIRECTLY ON THE RUNNERS OF A HEAVY DUTY GRID SYSTEM AND THEY MUST HAVE A MINIMUM OF TWO #12 GAUGE SLACK SAFETY WIRES ATTACHED AT DIAGONAL CORNERS AND ANCHORED TO THE STRUCTURE ABOVE.
3. ALL FIXTURES SUPPORTED ON INTERMEDIATE DUTY GRID SYSTEMS MUST BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN FOUR TAUT #12 GAUGE WIRES ATTACHED TO THE STRUCTURE ABOVE.
4. ALL FLUSH OR RECESSED LIGHT FIXTURES WEIGHING MORE THAN 56 POUNDS MUST BE INDEPENDENTLY SUPPORTED BY NOT LESS THAN FOUR #12 GAUGE TAUT WIRES ATTACHED TO THE STRUCTURE ABOVE REGARDLESS OF THE TYPE OF CEILING GRID SYSTEM USED.
5. THE FOUR TAUT #12 GAUGE WIRES INCLUDING THEIR ATTACHMENT TO THE STRUCTURE ABOVE MUST BE CAPABLE OF SUPPORTING FOUR TIMES THE WEIGHT OF THE UNIT.

FIXTURE SUPPORT DETAIL 3

SCALE: N.T.S.



PROVIDE ALL NECESSARY EQUIPMENT, BACK BOXES, CONDUITS, AND CONDUCTORS FOR A COMPLETE INSTALLATION OF ACCESS CONTROL SYSTEM. VERIFY ACCESS CONTROL LOCATIONS WITH OWNER BEFORE ROUGH-IN. COORDINATE WITH ARCHITECTS DOOR SCHEDULE FOR APPROPRIATE DOOR HARDWARE. OMIT DEVICES NOT REQUIRED. VERIFY SIDE OF DOOR FOR DEVICE LOCATIONS.

ACCESS CONTROL - DOUBLE DOOR ELECTRIC STRIKE 4

SCALE: N.T.S.

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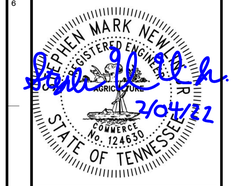

2/04/22

PROJECT INFORMATION

PROJECT:

AN ADDITION & RENOVATION TO: NORRIS MIDDLE SCHOOL

PROJECT ADDRESS:

5 NORRIS SQUARE,
NORRIS, TN 37828

PROJECT NO.: 210042-04

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- ■ CONSTRUCTION DOCUMENTS
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REVISION INFORMATION

NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

SHEET ISSUED: 02/04/2022
DESIGNED BY: WAH
DRAWN BY: WAH
REVIEWED BY: SMN

SHEET TITLE:

ELECTRICAL DETAILS

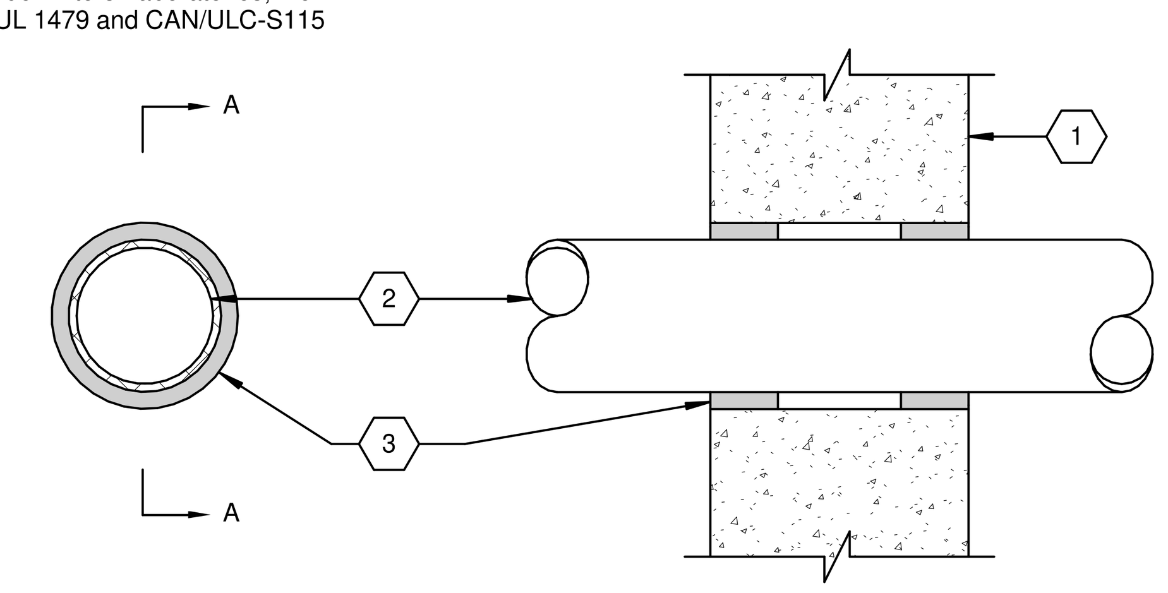
SHEET NO.:

E501

R:\Revit Projects\2021\210042_Anderson County School Board\210042-04_Classroom Addition for Norris Middle School\08_Electrical\210042-04_Elec_rvt21.rvt
2/4/2022 2:49:39 PM

C UL US CLASSIFIED
Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

SYSTEM NO. W-J-1042
F RATING - 4 HR
T RATING - 0 HR



SECTION A-A

1. WALL ASSEMBLY - MIN 7-5/8 IN. THICK WALL ASSEMBLY CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MIN 4 HR FIRE RATED WALL. MAX DIAM OF OPENING IS 13-5/8 IN.

   SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY NAMES OF MANUFACTURERS.

2. THROUGH PENETRANTS - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED CONCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND THE PERIPHERY OF THE OPENING SHALL BE MIN 3/8 IN. TO 1/2 IN. MAXIMUM. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

   A. STEEL PIPE - NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. CONDUIT - NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. DIAM STEEL CONDUIT.
   C. COPPER TUBING - NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING
   D. COPPER PIPE - NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. FILL, VOID OR CAVITY MATERIAL* - SEALANT - MIN 2 IN. THICKNESS APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.

   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - FS-ONE SEALANT

*BEARING THE UL CLASSIFICATION MARKING

HILTI
Hilti Firestop Systems

Reproduced by HILTI, Inc.
Courtesy of
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December 4, 2002

PENETRATION DETAIL - CONCRETE WALL (1)

SCALE: N.T.S.

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SEAL

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REVISION INFORMATION

NO.	DATE	DESCRIPTION
3	03/30/2022	Addendum #3

KEY PLAN

SHEET INFORMATION

SHEET ISSUED:	02/04/2022
DESIGNED BY:	DCH
DRAWN BY:	DCH
REVIEWED BY:	SMN

SHEET TITLE:

ELECTRICAL DETAILS

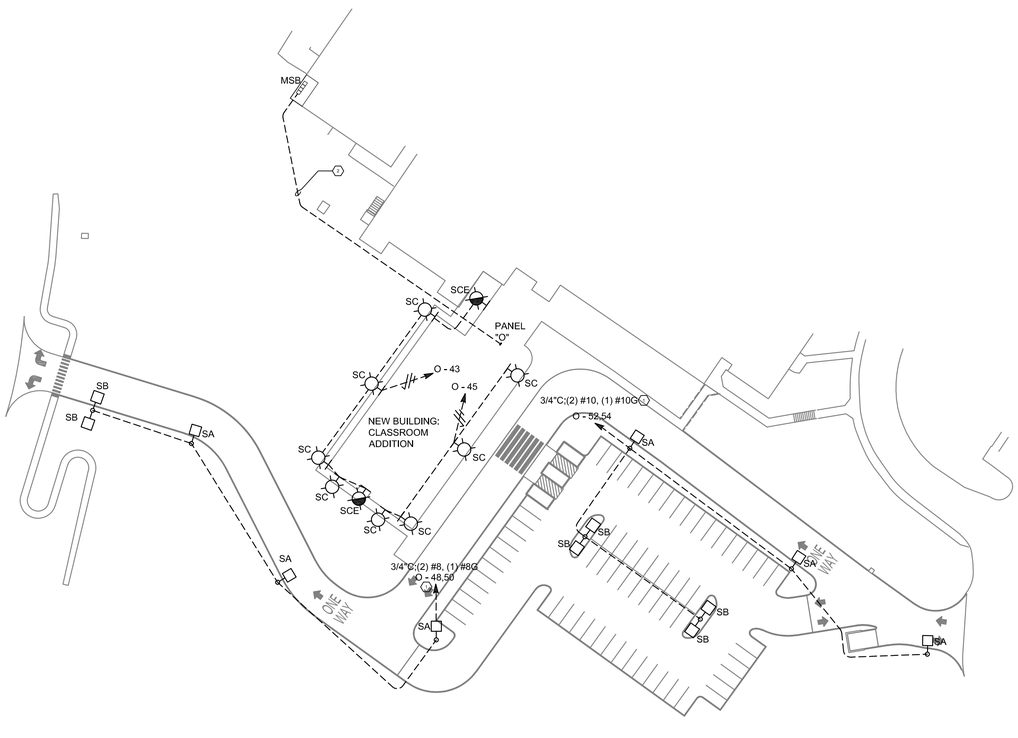
SHEET NO.:

E502

LIGHTING FIXTURE SCHEDULE

TYPE	LAMP TYPE	WATTS	VOLTS	MOUNTING	HEIGHT	MANUFACTURER	CATALOG NO.	REMARKS
SA	LED	217	208	POLE	25'-0"	LITHONIA	DSX2 LED P3 40K T4M MVOLT RPA NLTAIR2 PIRHN DBLXD	MOTION/AMBIENT SENSOR, WIRELESS ENABLED, TYPE 4 MEDIUM OPTIC, 28255 LUMENS, 4000K, 70CRI
SB	LED	125	208	POLE	25'-0"	LITHONIA	DSX1 LED P4 40K T4M MVOLT RPA NLTAIR2 PIRHN DBLXD	MOTION/AMBIENT SENSOR, WIRELESS ENABLED, TYPE 4 MEDIUM OPTIC, 14182 LUMENS, 4000K, 70CRI
SC	LED	52	120	WALL	12'-0"	LITHONIA	WDGE3 LED P1 40K 70CRI MVOLT SRM NLTAIR2 PIR DBLXD	MOTION/AMBIENT SENSOR, WIRELESS ENABLED, TYPE R2 OPTIC, 7649 LUMENS, 4000K, 70CRI
SCE	LED	52	120	WALL	12'-0"	LITHONIA	WDGE3 LED P1 40K 70CRI MVOLT SRM E10WH NLTAIR2 PIR DBLXD	MOTION/AMBIENT SENSOR, WIRELESS ENABLED, TYPE R2 OPTIC, 7649 LUMENS, 4000K, 70CRI, W/BATTERY BACKUP
P1	-	-	-	-	22'	LITHONIA	RSA-22-5G-DDBXD	STRAIGHT, ROUND, ALUMINUM POLE FOR FIXTURES "SA" AND "SB"

NOTES:
1. PROVIDE ALL NECESSARY ACCESSORIES AND EQUIPMENT FOR A COMPLETE INSTALLATION OF POLES AND LIGHTING FIXTURES.
2. ALTERNATE FIXTURES MUST MATCH DESIGN, LUMEN OUTPUT, COLOR TEMP, AND LIGHT DISTRIBUTION. SUPPLY POINT-TO-POINT CALCULATIONS WITH AVERAGE, MAXIMUM, AND MINIMUM FOOT CANDLE VALUES, MAX/MIN VALUE, AND AVG/MIN VALUE. ACCEPTABLE ALTERNATE MANUFACTURERS ARE COOPER AND PHILIPS.
3. LIGHTING SUBMITTALS ARE REQUIRED, INCLUDING FIXTURE MODEL NUMBER AND ACCESSORIES, LAMP CUT SHEET ETC. PARTIAL SUBMITTALS WILL NOT BE ACCEPTED.
4. PROVIDE FIXTURES WITH APPROPRIATE MOUNTING HARDWARE TO FIT POLES. ALL MOUNTING HARDWARE SHALL MATCH FIXTURE COLOR.



ELECTRICAL SITE PLAN

SCALE: 1" = 50'

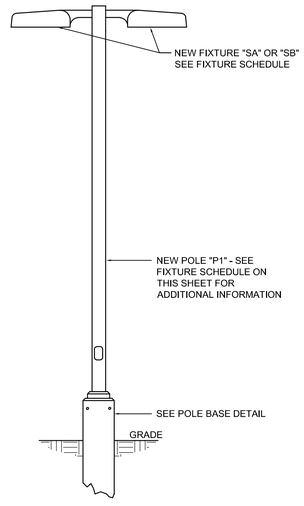
1

NOTES:

1. SEE SHEET E001 FOR ELECTRICAL LEGEND AND GENERAL NOTES.
2. ALL TYPE "SA", "SB, "SC", AND "SCE" FIXTURES TO BE CONTROLLED VIA WIRELESS SYSTEM WITH ASTRONOMICAL TIMECLOCK. SEE SHEET E201 FOR WIRELESS SYSTEM HEADEND EQUIPMENT LOCATION. HEADEND EQUIPMENT SHALL BE INSTALLED IN NEMA 1 ENCLOSURE LABELED "SLCP". FIXTURE MOTION SENSORS SHALL BE GROUPED TO WHERE ALL FIXTURES GO TO FULL BRIGHTNESS UPON MOTION DETECTION OF ANY FIXTURE IN THE SAME PARKING LOT. WHEN MOTION IS NOT DETECTED, FIXTURES SHALL BE PROGRAMMED TO A SETBACK OF 70% OF FULL BRIGHTNESS DURING TIMES REQUIRED BY IECC 2018 C405.2.6.3. ONE POLE LIGHT AMBIENT SENSOR SHALL BE CHOSEN AS THE MASTER SENSOR TO CONTROL ALL FIXTURES IN LOW LIGHT CONDITIONS. FIXTURE CONTROLS FOR TIME OF DAY AND MOTION DETECTION TIME SHALL BE PER IECC 2018 C405.2.6.3 & C405.2.6.4.

○ KEYED NOTES:

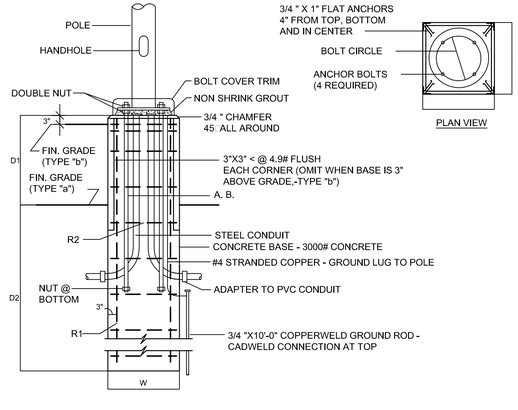
1. CONDUIT AND CABLE SIZE SHOWN IS FOR ENTIRE LENGTH SHOWN BETWEEN ALL FIXTURES ON CIRCUIT.
2. POWER FEEDERS. SEE RISER DIAGRAM ON SHEET E401 FOR CONDUIT AND CABLE SIZE AND ADDITIONAL INFORMATION.



POLE DETAIL

SCALE: N.T.S.

3



POLE HT.	D1	D2	W	R1	R2	A. B.'s (A307)	M max
22'	3'-0"	5'	24"	(4) # 6 BAR	#3 TIES @ 12"O.C. 3" O.C. @ TOP	(4) 3/4" X 24"	4.63 K-FT

POLE BASE DETAIL

SCALE: N.T.S.

2

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SEAL

STEPHEN MARK NEWLIN JR. REGISTERED ENGINEER AGRICULTURE COMMERCE NO. 124630 STATE OF TENNESSEE

2/04/22

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NO.	DATE	DESCRIPTION

KEY PLAN

SHEET INFORMATION

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DRAWN BY: WAH
REVIEWED BY: SMN
SHEET TITLE:

ELECTRICAL SITE PLAN

SHEET NO.:

ES101