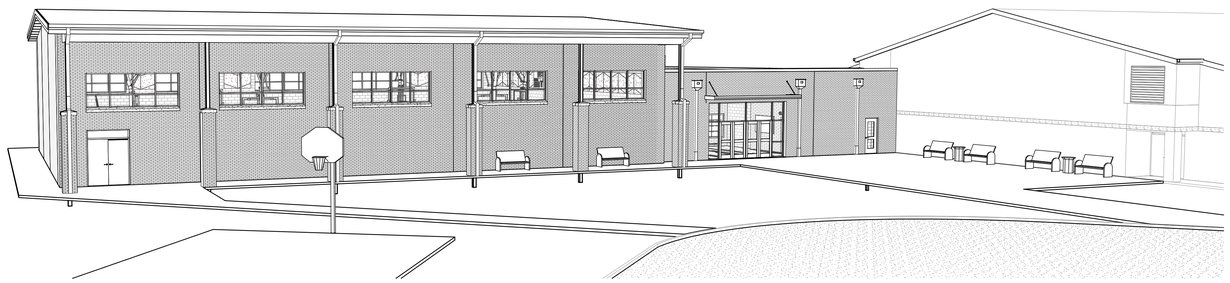
Harnett County Schools

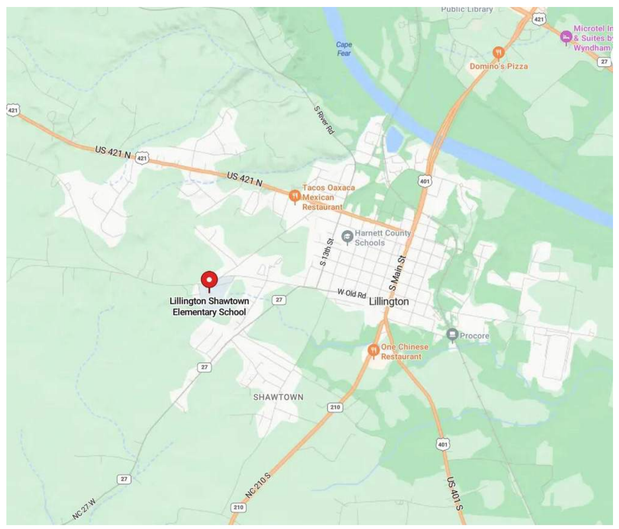
LILLINGTON-SHAWTOWN ELEMENTARY GYMNASIUM ADDITION

855 Old US Highway 421, Lillington NC 27546

RENDERING



VICINITY MAP



SHEET INDEX

* SHEETS PREFIXED WITH '*' (ASTERISK) REQUIRE COLOR REPRODUCTION FOR PROPER INFORMATION DISPLAY.

	SHEET	TITLE
GENERAL		
	G000	COVER SHEET
	G001	GENERAL NOTES, ABBREVIATIONS & LEGENDS
	G002	BUILDING CODE SUMMARY
	G111	LIFE SAFETY / OCCUPANCY TABULATION PLANS
CIVIL		
	C0.0	COVER SHEET
	C0.1	KEY PLAN
	C1.0	EXISTING CONDITIONS AND DEMOLITION PLAN
	C2.0	PHASE I EROSION CONTROL PLAN
	C2.1	PHASE II EROSION CONTROL PLAN
	C2.2	PHASE III EROSION CONTROL PLAN
	C3.0	SITE PLAN
	C3.1	UTILITY PLAN
	C4.0	GRADING PLAN
	C4.1	STORMWATER MANAGEMENT PLAN
	C4.2	UTILITY PROFILE
	C5.0	NOTES AND DETAILS
	C5.1	NOTES AND DETAILS
	C5.2	NOTES AND DETAILS
	C5.3	NOTES AND DETAILS
	C5.4	NOTES AND DETAILS
STRUCTURAL		
	S-001	GENERAL NOTES
	S-010	SPECIAL INSPECTIONS
	S-030	ROOF LOADING DIAGRAM
	S-040	ROOF ATTACHMENT DIAGRAM
	S-100	FOUNDATION PLAN
	S-101	SLAB PLAN
	S-102	ROOF FRAMING PLAN
	S-200	FOUNDATION SECTIONS
	S-300	TYPICAL CMU WALLS
	S-301	ROOF FRAMING DETAILS
	S-302	ROOF FRAMING DETAILS
ARCHITECTURAL		
	A100	FLOOR PLANS
*	A121	RCP
	A131	ROOF PLAN
	A201	EXTERIOR ELEVATIONS
	A301	BUILDING SECTIONS
	A311	EXTERIOR WALL SECTIONS
	A401	BATHROOM PLAN & INT ELEVATIONS
*	A402	GYM & LOBBY INTERIOR ELEVATIONS
	A501	DETAILS-INTERIOR & MISC
	A502	DETAILS-EXTERIOR
	A503	DETAILS-EXTERIOR
	A504	DETAILS-SS METAL ROOF
	A601	DOOR SCHEDULE / SF ELEVATIONS
*	A701	FINISH PLAN + SCHEDULE
*	A801	3D VIEWS
FIRE ALARM		
	FA-001	FIRE ALARM LEGEND AND NOTES
	FA-101	ADDITION FIRE ALARM PLAN
	FA-601	FIRE ALARM DETAILS
PLUMBING		
	P-001	PLUMBING LEGEND, INDEX AND NOTES
	P-002	PLUMBING SCHEDULES
	P-101	PLUMBING DRAINAGE PLAN
	P-102	ROOF PLUMBING DRAINAGE PLAN
	P-201	PLUMBING SUPPLY PLAN
	P-202	ROOF PLUMBING SUPPLY PLAN
	P-301	PLUMBING GAS PIPING PLAN
	P-501	PLUMBING DETAILS
	P-502	WASTE & VENT RISER DIAGRAM
	P-503	DOMESTIC RISER DIAGRAM
	P-504	NATURAL GAS RISER DIAGRAM
MECHANICAL		
	M-001	MECHANICAL LEGEND AND NOTES
	M-002	MECHANICAL SCHEDULES
	M-101	MECHANICAL PLAN
	M-102	ROOF MECHANICAL PLAN
	M-501	MECHANICAL DETAILS
	M-601	MECHANICAL CONTROL DIAGRAMS
ELECTRICAL		
	E-001	ELECTRICAL LEGEND AND NOTES
	E-002	ELECTRICAL SPECIFICATIONS
	E-010	OVERALL ELECTRICAL PLAN
	E-101	ADDITION LIGHTING PLAN
	E-201	ADDITION POWER PLAN
	E-301	ROOF EQUIPMENT CONNECTION PLANS
	E-401	SPECIAL SYSTEMS PLAN
	E-601	ELECTRICAL DETAILS
	E-602	ELECTRICAL DETAILS
	E-603	ELECTRICAL DETAILS
	E-701	ELECTRICAL DIAGRAMS & PANEL SCHEDULES
	E-801	LIGHTING FIXTURE SCHEDULE
Grand total: 78		

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CONSULTANTS

CIVIL ENGINEER:
TIMMONS GROUP
5410 TRINITY ROAD, SUITE 102
RALEIGH, NC 27607
PHONE: 919-866-4938

STRUCTURAL ENGINEER:
BENNETT & PLESS
5430 WADE PARK BLVD, SUITE 400
RALEIGH, NC 27607
PHONE: 919-832-5587

PLUMBING/MECHANICAL/ELECTRICAL/FIRE PROTECTION ENGINEER:
OPTIMA ENGINEERING
150 FAYETTEVILLE STREET, SUITE 520
RALEIGH, NC 27601
PHONE: 919-926-2200

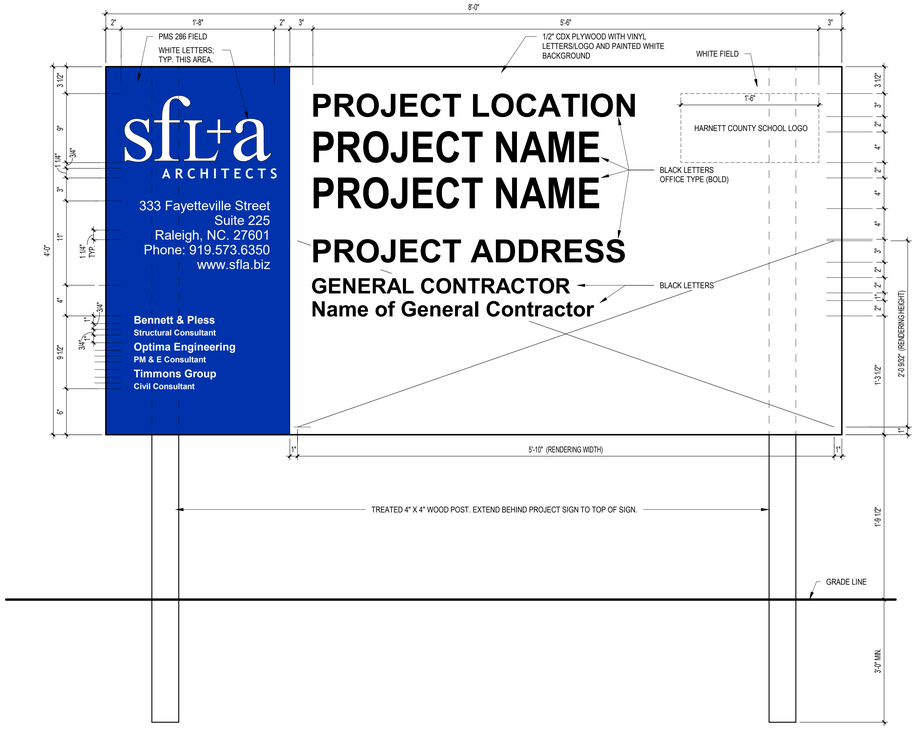
SET NUMBER:
07-26-24
CONSTRUCTION DOCUMENTS

Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY
GYMNASIUM ADDITION
855 Old US Highway 421, Lillington NC 27546

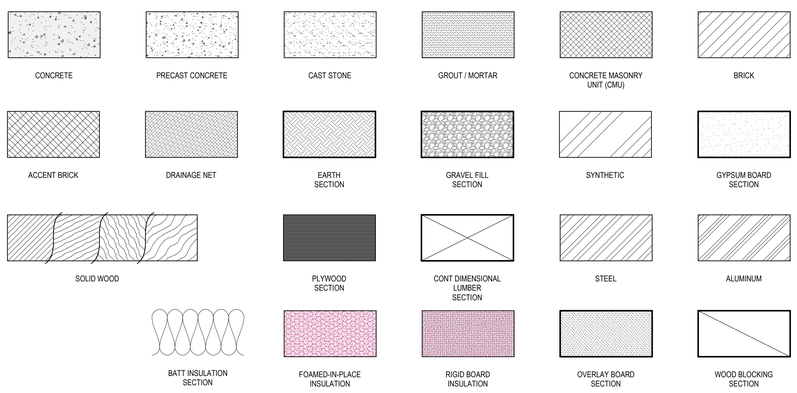
PROJECT NUMBER: 02110.300

7/29/2024 7:36:40 AM Autodesk Docs://02110.300 Lillington-Shawtown ES/02110.300_Lillington-Shawtown ES Addition_Arch_r23.rvt

PROJECT SIGN



DETAIL HATCH LEGEND



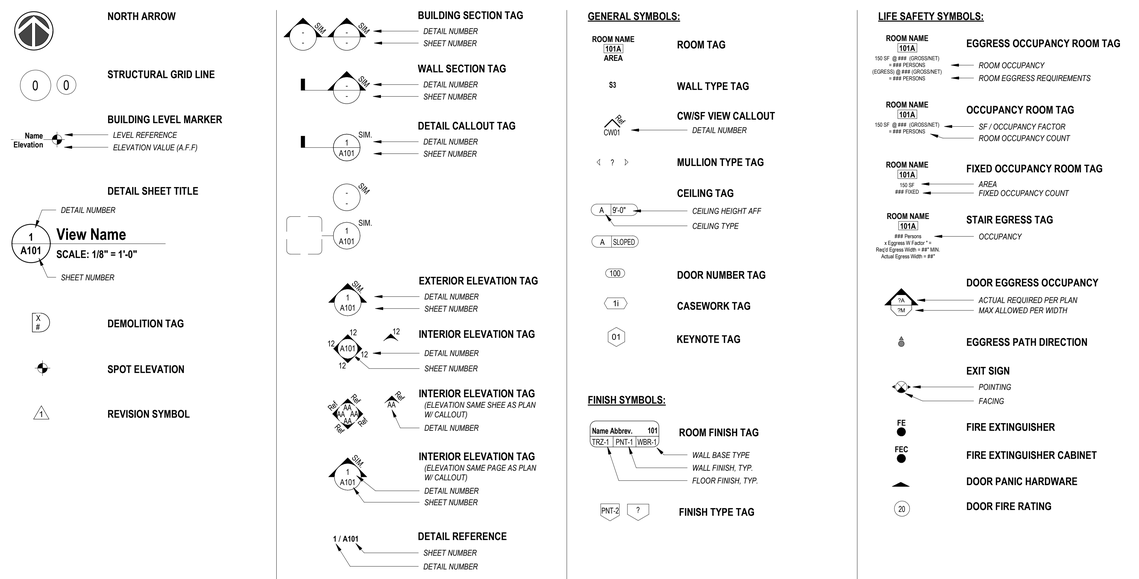
ABBREVIATIONS

A/C	AIR CONDITIONING
AB	ANCHOR BOLT
AD	AREA DRAIN
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
AMP	AMPERE
APPROX	APPROXIMATE
ARCH	ARCHITECT (URAL)
AUTO	AUTOMATIC
BB	BULLETIN BOARD
BBRG	BEAM BEARING
BD	BOARD
BFF	BELOW FINISHED FLOOR
BIT	BITUMINOUS
BLDG	BUILDING
BLK	BLOCK (ING)
BM	BENCH MARK
BOD	BOTTOM OF DECK
BTM	BOTTOM
BPL	BEARING PLATE
BRG	BEARING
BSMT	BASEMENT
BTW	BETWEEN
BUR	BUILT-UP ROOFING
BW	BOTH WAYS
CB	CATCH BASIN
CAB	CABINET
CEM	CEMENT
CER	CERAMIC
CF	CUBIC FOOT
CI	CAST IRON
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLOS	CLOSET
CLR	CLEAR (ANCE)
CMP	COMPOSITE METAL PANEL
CMT	CERAMIC MOSAIC (TILE)
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONTR	CONTRACT (OR)
CORR	CORRIDOR
CPT	CARPET (ED)
CSMT	CASEMENT
CT	CERAMIC TILE
CTR	CENTER
CY	CUBIC YARD
DEMO	DEMOLISH, DEMOLITION
DET	DETAIL
DF	DRINKING FOUNTAIN
DH	DOUBLE HUNG
DIAM	DIAMETER
DIM	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DL	DEAD LOAD
DM	DECORATIVE MASONRY
DPR	DAMPER
DR	DOOR
DS	DOWNSPOUT
DT	DRAIN TILE
DWG	DRAWING
E	EAST
EA	EACH
EC	ELECTRICAL CONTRACTOR
EJ	EXPANSION JOINT
ELEC	ELECTRIC
ELEV	ELEVATION
EMER	EMERGENCY
ENCL	ENCLOSE (URE)
ENG	ENGINEER (ING)
EOD	EMERGENCY OVERFLOW DRAIN
EP	ELECTRIC PANEL
EQ	EQUAL
EQP	EQUIPMENT
EST	ESTIMATE
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FA	FIRE ALARM
FB	FACE BRICK
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FFE	FINISH FLOOR ELEVATION
FHC	FIRE HOSE CABINET
FIN	FINISH (ED)
FLR	FLOOR (ING)
FLUOR	FLUORESCENT
FLEX	FLEXIBLE
FOB	FACE OF BRICK
FOGB	FACE OF GYPSUM BOARD
FP	FIREPROOF
FR	FRAME (D)
FRMG	FRAMING
FRT	FIRE-RETARDANT
FT	FOOT / FEET
FTG	FOOTING
FUR	FURRED (ING)
GA	GAGE, GAUGE
GALV	GALVANIZED
GB	GRAB BAR
GBL	GLASS BLOCK
GC	GENERAL CONTRACT (OR)
GCMU	GLAZED CONC. MASONRY UNIT
GF	GROUND FACE
GFRC	GLASS FIBER RE. CONC.
GL	GLASS, GLAZING
GP	GALVANIZED PIPE
GYP	GYPSUM
GWB	GYPSUM WALL BOARD
HB	HOSE BIBB
HC	HOLLOW CORE
HD	HEAVY DUTY
HDR	HEADER
HDW	HARDWARE
HM	HOLLOW METAL
HOR	HORIZONTAL
HJT	HORIZONTAL JOINT REINFORCEMENT
HT	HEIGHT
HTG	HEATING
HWD	HARDWOOD
HWH	HOT WATER HEATER
HVAC	HEATING / VENTILATING / A/C
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE (D), (ING)
INT	INTERIOR
INV	INVERT
IWB	INTERACTIVE WHITE BOARD
JAN	JANITOR
JC	JANITOR'S CLOSET
JT	JOINT
JST	JOIST
KD	KNOCK DOWN
KIT	KITCHEN
KPL	KICK PLATE
L	LENGTH
LAB	LABORATORY
LAD	LADDER
LAV	LAVATORY
LB	LAG BOLT
LBL	LABEL
LBS	POUND (S)
LH	LEFT HAND
LT	LIGHT
LW	LIGHTWEIGHT
LWC	LIGHTWEIGHT CONCRETE
LVL	LAMINATED VENEER LUMBER
MAS	MASONRY
MAT	MATERIAL (S)
MAX	MAXIMUM
MB	MARKER BOARD
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MED	MEDIUM
MFR	MANUFACTURE (R)
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MH	MANHOLE
MEMB	MEMBRANE
MO	MASONRY OPENING
MR	MOISTURE RESISTANT
MUL	MULLION
MTL	METAL
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NOM	NOMINAL
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OPG	OPENING
OPP	OPPOSITE
OPPH	OPPOSITE HAND
OS	OVERFLOW SCUPPER
PAR	PARALLEL
PBD	PARTICLE BOARD
PC	PLUMBING CONTRACTOR
PCF	POUNDS PER CUBIC FOOT
PCT	PORCELAIN CERAMIC TILE
PERF	PERFORATED
PERIM	PERIMETER
PG	PLATE GLASS
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLF	POUNDS PER LINEAL FOOT
PT	PRESSURE TREATED
PRV	POWER ROOF VENT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
PWD	PLYWOOD
QT	QUARRY TILE
R	RISER
RA	RETURN AIR
RAD	RADIUS
RB	RUBBER BASE
RT	RUBBER TILE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REIN	REINFORCE (D), (ING)
REF	REFERENCE
REFR	REFRIGERATOR
REG	REGISTER
REQ	REQUIRED
RET	RETURN
REV	REVISION (S), REVISED
RH	RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
S	SOUTH
SAP	SUSPENDED ACOUSTICAL PANELS
SB	SPLASH BLOCK
SC	SOLID CORE
SCH	SCHEDULE
SD	STORM DRAIN
SEC	SECTION
SF	STOREFRONT
SIM	SIMILAR
SND	SANITARY NAPKIN DISPOSAL
SNV	SANITARY NAPKIN VENDOR
SP	SOUNDPROOF
SPKR	SPEAKER
SQ	SQUARE
SS	STAINLESS STEEL
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STR	STRUCTURAL
SUS	SUSPENDED
SYM	SYMMETRICAL
SYS	SYSTEM
T	TREAD
T&G	TONGUE AND GROOVE
TB	TACK BOARD
TEL	TELEPHONE
TG	TEMPERED GLASS
THR	THRESHOLD
TP	TOILET PARTITION
TOB	TOP OF BEAM
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOW	TOP OF WALL
TS	TACK STRIP
TTD	TOILET TISSUE DISPENSER
TYP	TYPICAL
UL	UNDERWRITER'S LABORATORY
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
US	UTILITY SHELF
V	VOLT
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEN	VENEER
VIF	VERIFY IN FIELD
VR	VAPOR RETARDER
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W	WEST
WB	WOOD BASE
WC	WATER CLOSET
WD	WOOD
WG	WIRE GLASS
WH	WALL HUNG
WI	WROUGHT IRON
WM	WIRE MESH
W/O	WITHOUT
WP	WATERPROOFING
WT	WEIGHT
WWF	WELDED WIRE FABRIC

GENERAL NOTES

1. WALL DIMENSIONS ARE TO FACE OF MASONRY, FACE OF METAL STUD, FACE OF STEEL OR CENTERLINE & STEEL COLUMN, UNLESS OTHERWISE NOTED. DETERMINE LOCATION OF WALLS NOT DIMENSIONED BY THEIR RELATION TO ADJACENT DIMENSIONED WALLS AND COLUMNS.
2. ALL EXTERIOR SIDEWALKS SHALL SLOPE AWAY FROM THE BUILDING AT 1/4" PER FOOT.
3. MAINTAIN INTEGRITY OF ACOUSTIC WALLS AND CEILINGS AT ALL WALL PENETRATIONS AND EQUIPMENT RECESSES.
4. ALL CERAMIC TILE TO HAVE CONTROL JOINTS THAT ALIGN WITH CONTROL JOINTS IN CONCRETE SLAB.
5. THERE SHALL BE NO PENETRATIONS IN THROUGH-WALL FLASHING.
6. DOOR JAMB FROM INTERSECTING WALLS: STUD - 6" TYPICAL UNO. CMU - 4" TYPICAL UNO.
7. CONTRACTOR SHALL AVOID THE USE OF DISSIMILAR METALS IN CONTACT WITH ONE ANOTHER AS MUCH AS POSSIBLE AND SHALL PROVIDE FELTS, BOND BREAKERS, TAPE, OR OTHER APPLICABLE MATERIAL SEPARATION WHERE SUCH CONTACT IS UNAVOIDABLE.

KEY SYMBOLS LEGEND



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CONSTRUCTION DOCUMENTS

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY GYMNASIUM ADDITION

855 Old US Highway 421, Lillington NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24

PROJECT #: 02110.300
DRAWN BY: JK
CHECKED BY: Checker

GENERAL NOTES, ABBREVIATIONS & LEGENDS

G001

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: Lillington-Shawtown Elementary – Gymnasium Addition
Address: 855 Old US Highway 421, Lillington NC Zip Code: 27546
Owner/Authorized Agent: Harnett County Schools Phone # 919-893-8151 E-Mail : Dr. Aaron Flemming
Owned By: Harnett County Schools Board of Education
Code Enforcement Jurisdiction: Harnett County

CONTACT:

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural	SfL+a Architects	Robbie Ferris	6184	919-573-6350	rferris@sfla.biz
Civil	Timmons Group	William Altman	045892	919-866-4938	william.altman@timmons.com
Electrical	Optima Engineering	Morgan Gunter	048210	919-926-2200	mgunter@optimaengineering.com
Fire Alarm	Optima Engineering	Morgan Gunter	048210	919-926-2200	mgunter@optimaengineering.com
Plumbing	Optima Engineering	Daniel Revilla	043866	704-927-1786	drevilla@optimaengineering.com
Mechanical	Optima Engineering	Thomas Landen	040316	704-926-2214	dlanden@optimaengineering.com
Sprink.-Standpipe					
Structural	Bennett & Pless	Bobby Lasater	014526	919-832-5587	blasater@bennett-pless.com
Retaining Walls >5' High					
Other					

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: New Building

2018 NC EXISTING BUILDING CODE: Select one Select one Select one
CONSTRUCTED: (date) ________ **CURRENT OCCUPANCY(S)** (Ch. 3): E
RENOVATED: (date) ________ **PROPOSED OCCUPANCY(S)** (Ch. 3): E

RISK CATEGORY (Table 1604.5): **Current:** II **Proposed:** II

BASIC BUILDING DATA
Construction Type: II-B
Sprinklers: No N/A
Standpipes: No
Primary Fire District: No **Flood Hazard Area:** Yes
Special Inspections Required: Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
1st Floor	*93,520	183	93,703
1st Floor		10,530	10,530
TOTAL			104,233

* Existing school square footage.

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
North 0'	UP, NS	NP	0
South > 30'	UP, NS	UL	-
West > 30'	UP, NS	UL	-
East > 30'	UP, NS	UL	-

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: Yes
Exit Signs: Yes
Fire Alarm: Yes
Smoke Detection Systems: Yes
Carbon Monoxide Detection: Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: G111

- ☒ Fire and/or smoke rated wall locations (Chapter 7)
- ☒ Assumed and real property line locations (if not on the site plan)
- ☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
- ☒ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
- ☒ Occupant loads for each area
- ☒ Exit sign locations (1013)
- ☒ Exit access travel distances (1017)
- ☒ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
- ☐ Dead end lengths (1020.4)
- ☒ Clear exit widths for each exit door
- ☒ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
- ☒ Actual occupant load for each exit door
- ☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
- ☒ Location of doors with panic hardware (1010.1.10)
- ☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
- ☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
- ☒ Location of doors equipped with hold-open devices
- ☐ Location of emergency escape windows (1030)
- ☒ The square footage of each fire area (202)
- ☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
- ☐ Note any code exceptions or table notes that may have been utilized regarding the items above

* See sheet S-001 for structural design*

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_S) Select one
Seismic (I_E) Select one

Live Loads: Roof ________ psf
Mezzanine ________ psf
Floor ________ psf

Ground Snow Load: ________ psf

Wind Load: Ultimate Wind Speed ________ mph (ASCE-7)
Exposure Category Select one

SEISMIC DESIGN CATEGORY: Select one
Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) Select one
Spectral Response Acceleration S_S________%g S_1________%g
Site Classification (ASCE 7) Select one
Data Source: Select one
Basic structural system Select one
Analysis Procedure: Select one
Architectural, Mechanical, Components anchored? Select one

LATERAL DESIGN CONTROL: Select one

SOIL BEARING CAPACITIES:
Select one ________________ psf
Pile size, type, and capacity ________________________

ALLOWABLE AREA

Primary Occupancy Classification(s): Educational
Accessory Occupancy Classification(s): ________________
Incidental Uses (Table 509): ________________
Special Uses (Chapter 4 – List Code Sections): ________________
Special Provisions: (Chapter 5 – List Code Sections): ________________
Mixed Occupancy: No Separation: Select one Exception: ____________

Select one

$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$

________ + ________ + …… = ______ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]
1	E	10,530	14,500	NOT USED	14,500

[1] Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = X (F)
b. Total Building Perimeter = X (P)
c. Ratio (F/P) = X (F/P)
d. W = Minimum width of public way = 30 (W)
e. Percent of frontage increase $I_f = 100[F/P - 0.25] \times W/30$ = X (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum 3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE [1]
Building Height in Feet (Table 504.3) [2]	55'	26' – 6"	
Building Height in Stories (Table 504.4) [3]	2	1	

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1.
[3] The maximum height of open parking garages must comply with Table 406.5.4.

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

UNIT CLASSIFICATION	TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED
N/A								

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED		TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	96" SPACES	132" SPACES	
SEE CIVIL DRAWINGS					
TOTAL					

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

1,305 Occupants (653 Men, 653 Women)
WC=1/125, 1/100 Lav=1/200 DF=1/500

USE		WATERCLOSETS			URINALS	LAVATORIES			SHOWERS /TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE	UNISEX		MALE	FEMALE	UNISEX		REGULAR	ACCESSIBLE
SPACE	A-3	3	7	-	3	4	4	-	-	2	1

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)

* See sheet M-001 for mechanical design*

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: ________
summer dry bulb: ________

Interior design conditions
winter dry bulb: ________
summer dry bulb: ________
relative humidity: ________

Building heating load: ________

Building cooling load: ________

Mechanical Spacing Conditioning System
Unitary
description of unit: ________
heating efficiency: ________
cooling efficiency: ________
size category of unit: ________
Boiler
Size category. If oversized, state reason.: ________
Chiller
Size category. If oversized, state reason.: ________

List equipment efficiencies: ________

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/______* REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses		0	0				
Bearing Walls							
Exterior							
Plan North	0	2	2	G002	UL U905		
Plan East	> 30'	0	0				
Plan West	> 30'	0	0				
Plan South	> 30'	0	0				
Interior		0	0				
Nonbearing Walls and Partitions							
Exterior walls							
North		N/A	N/A				
East		N/A	N/A				
West		N/A	N/A				
South		N/A	N/A				
Interior walls and partitions		0	0				
Floor Construction Including supporting beams and joists		N/A	N/A				
Floor Ceiling Assembly		N/A	N/A				
Columns Supporting Floors		N/A	N/A				
Roof Construction, including supporting beams and joists		0	0				
Roof Ceiling Assembly		N/A	N/A				
Columns Supporting Roof		0	0				
Shaft Enclosures - Exit		N/A	N/A				
Shaft Enclosures - Other		N/A	N/A				
Corridor Separation		0	0				
Occupancy/Fire Barrier Separation		N/A	N/A				
Fire Wall Separation		2	2	G002	UL U905		
Smoke Barrier Separation		N/A	N/A				
Smoke Partition		N/A	N/A				
Tenant/Dwelling Unit/ Sleeping Unit Separation		N/A	N/A				
Incidental Use Separation		N/A	N/A				

* Indicate section number permitting reduction

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: Select one

Exempt Building: No Provide code or statutory reference:

Climate Zone: 4A
Method of Compliance: Energy Code - Prescriptive
(If "Other" specify source here)________________

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly: System 1-Adhered TPO membrane over rigid insulation on metal deck
System 2-standing seam metal roof over slip sheet, rigid insulation and metal deck
U-Value of total assembly: 0.037
R-Value of insulation: R-30 min
Skylights in each assembly: ________
U-Value of skylight: ________
total square footage of skylights in each assembly: ________

Exterior Walls (each assembly)
Description of assembly: 4" masonry veneer w/ 1-3/8" air space over 3" foamed in place closed cell insulation over 8" or 12" cmu
U-Value of total assembly: 0.45
R-Value of insulation: R-9.5ci min
Openings (windows or doors with glazing)
U-Value of assembly: E,W,S=Solarban 90 Grey (U-0.29)
N=Solarban 60 Clear (U-0.29)
Solar heat gain coefficient: 0.25 / 0.40
projection factor: 0 / 6%
Door R-Values: R-8

Walls below grade (each assembly)
Description of assembly: 4" solid CMU w/ 4.25" spray, closed cell insulation & 8" CMU grouted solid
U-Value of total assembly: 0.23
R-Value of insulation: R-7.5ci min

Floors over unconditioned space (each assembly)
Description of assembly: ________________
U-Value of total assembly: ________
R-Value of insulation: ________

Floors slab on grade
Description of assembly: 4" concrete w/ WWF over 15 mil vapor barrier on 4" granular fill
U-Value of total assembly: 0.79
R-Value of insulation: R-15
Horizontal/vertical requirement: 24" / 24"
slab heated: No

* See sheet E-001 for electrical design*

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Select one

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)
- ☐ C406.2 More Efficient HVAC Equipment Performance
- ☐ C406.3 Reduced Lighting Power Density
- ☐ C406.4 Enhanced Digital Lighting Controls
- ☐ C406.5 On-Site Renewable Energy
- ☐ C406.6 Dedicated Outdoor Air System
- ☐ C406.7 Reduced Energy Use in Service Water Heating

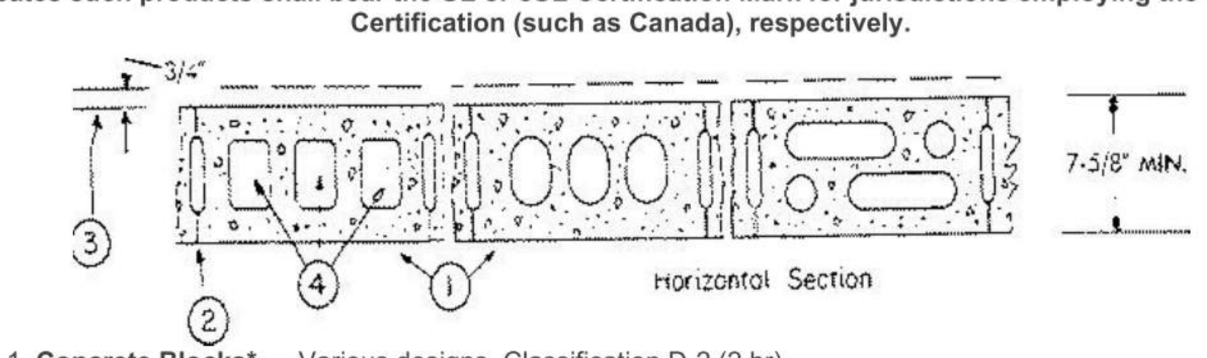
Design No. U905
June 10, 2019

Bearing Wall Rating — 2 HR.

Nonbearing Wall Rating — 2 HR

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Concrete Blocks*** — Various designs. Classification D-2 (2 hr).

See **Concrete Blocks** category for list of eligible manufacturers.

2. **Mortar** — Blocks laid in full bed of mortar, nom. 3/8 in. thick, of not less than 2-1/4 and not more than 3-1/2 parts of clean sharp sand to 1 part Portland cement (proportioned by volume) and not more than 50 percent hydrated lime (by cement volume). Vertical joints staggered.

3. **Portland Cement Stucco or Gypsum Plaster** — Add 1/2 hr to classification if used. Where combustible members are framed in wall, plaster or stucco must be applied on the face opposite framing to achieve a max. Classification of 1-1/2 hr. Attached to concrete blocks (Item 1).

4. **Loose Masonry Fill** — If all core spaces are filled with loose dry expanded slag, expanded clay or shale (Rotary Kiln Process), water repellant vermiculite masonry fill insulation, or silicone treated perlite loose fill insulation add 2 hr to classification.

5. **Foamed Plastic*** — (Optional-Not Shown) — 1-1/2 in. thick max, 4 ft wide sheathing attached to concrete blocks (Item 1).
ATLAS ROOFING CORP — "EnergyShield Pro Wall Insulation", "EnergyShield Pro 2 Wall Insulation", EnergyShield CGF Pro and EnergyShield Ply Pro

CARLISLE COATINGS & WATERPROOFING INC — Type R2+ SHEATHE

FIRESTONE BUILDING PRODUCTS CO L L C — "Enverge™ CI Foil Exterior Wall Insulation" and "Enverge™ CI Glass Exterior Wall Insulation"

HUNTER PANELS — Types "Xci-Class A", "Xci Foil (Class A)", "Xci 286"
RMAX OPERATING L L C — Types "TSX-8500", "ECOMAXci FR", "TSX-8510", "ECOMAX xi FR White", "ECOMAXci", "ECOMAXci FR Air Barrier", "Thermasheath-XP", "Thermasheath", "Durasheath", "Thermasheath-3", "Durasheath-3".

THE DOW CHEMICAL CO — Types Thermax Sheathing, Thermax Light Duty Insulation, Thermax Heavy Duty Insulation, Thermax Metal Building Board, Thermax White Finish Insulation, Thermax ci Exterior Insulation, Thermax XARMOR ci Exterior Insulation, Thermax IH Insulation, Thermax Plus Liner Panel, Thermax Heavy Duty Plus (HDP) and TUFF-R™ ci Insulation

5A. **Building Units** — As an alternate to Items 5, min. 1-in thick polyisocyanurate composite foamed plastic insulation boards, nom. 48 by 48 or 96 in.
HUNTER PANELS — "Xci NB", "Xci Ply"

RMAX OPERATING L L C — "Thermasheath-SI", "ECOBASEci", "ThermaBase-CI", "ECOMAXci FR Ply", "ECOMAXci Ply".

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CONSTRUCTION DOCUMENTS

Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY GYMNASIUM ADDITION
855 Old US Highway 421, Lillington NC 27546

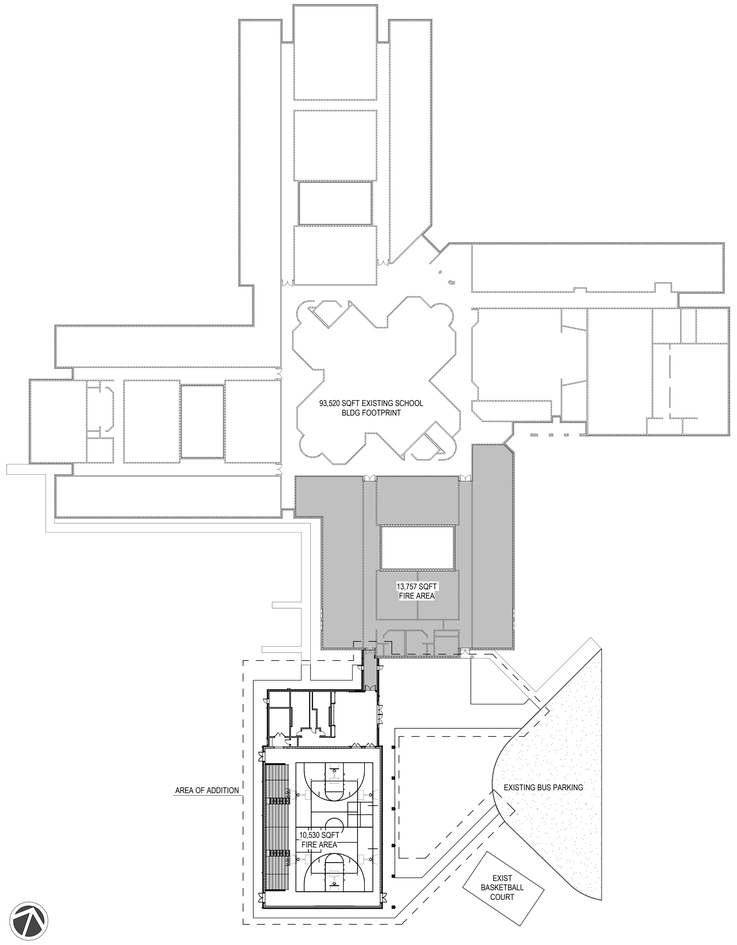
ENERGY STAR PARTNER

No.	Date	Description

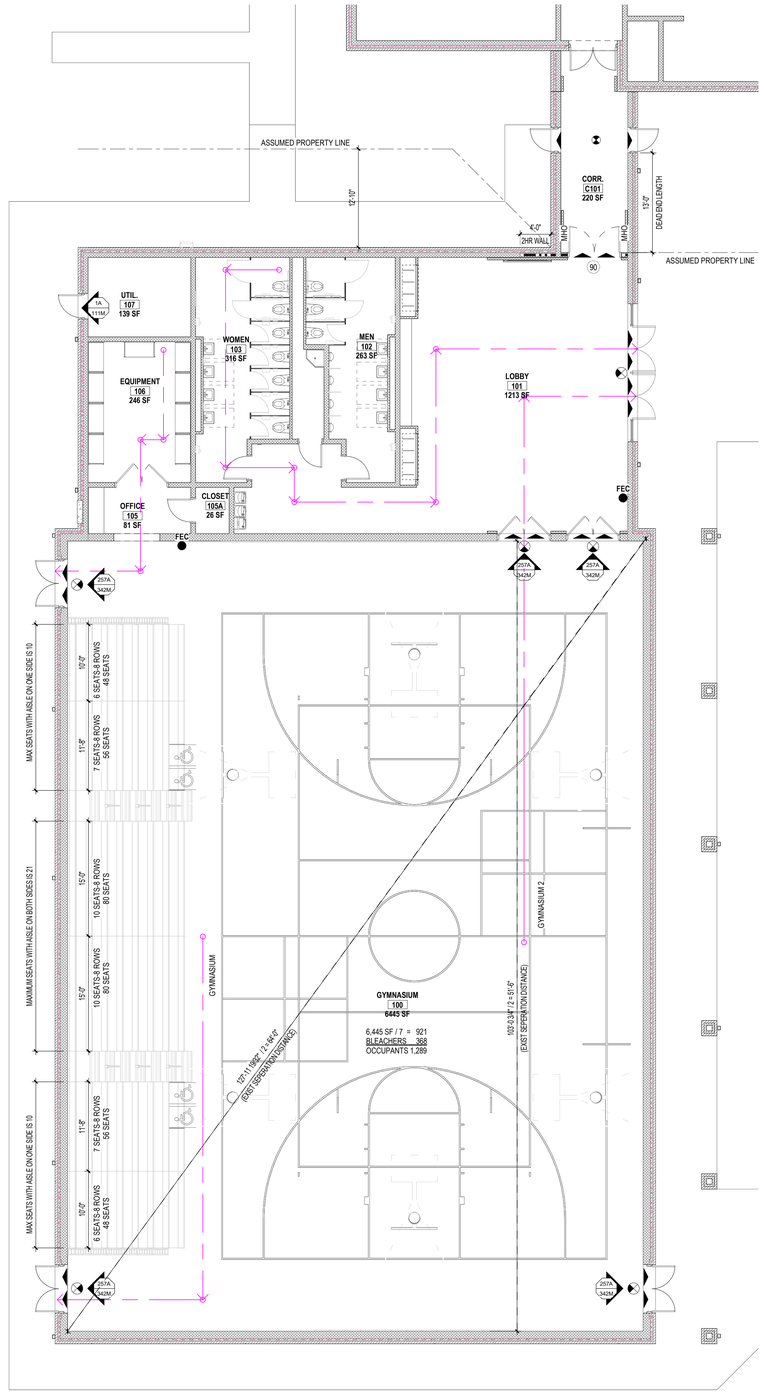
ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JK CF
CHECKED BY: Checker

BUILDING CODE SUMMARY

G002



2 G111 **OVERALL BUILDING PLAN**
SCALE: 1" = 40'-0"



1 G111 **LIFE SAFETY PLAN**
SCALE: 1/8" = 1'-0"

LIFE SAFETY LEGEND

SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED
90	DOOR FIRE RATING IN MINUTES
	EGRESS DOOR
	EGRESS DOOR WITH PANIC HARDWARE
1A 111M	ACTUAL NUMBER OF OCCUPANTS EGRESSING THROUGH EXIT. MAXIMUM NUMBER OF OCCUPANTS ALLOWED THROUGH EXIT.
FEC	FIRE EXTINGUISHER
	EXIT SIGN
36DW	36" DOOR WIDTH NOMINAL = 33.5" CLEAR (167 OCCUPANTS PER DOOR AT 0.3"/NON-SPRINKLERED)
72DW	PAIR OF 36" DOORS WIDTH NOMINAL = 68.5" CLEAR (342 OCCUPANTS PER DOOR AT 0.2"/NON-SPRINKLERED)

LIFE SAFETY GENERAL NOTES:

1. SEE SHEET G002 FOR UL DESIGNS

ROOM NAME	TRAVEL DISTANCE
EQUIPMENT	43' - 0"
GYMNASIUM	66' - 4"
GYMNASIUM 2	85' - 10"
WOMEN	111' - 0"

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CONSTRUCTION DOCUMENTS

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY GYMNASIUM ADDITION

855 Old US Highway 421, Lillington NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JR
CHECKED BY: Checker

LIFE SAFETY / OCCUPANCY TABULATION PLANS

G111

CONSTRUCTION DOCUMENTS

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 OLD US HWY 421, LILLINGTON, NC 27546

Sheet List Table	
Sheet Number	Sheet Title
C0.0	COVER SHEET
C0.1	KEY PLAN
C1.0	EXISTING CONDITIONS & DEMOLITION PLAN
C2.0	PHASE I EROSION CONTROL PLAN
C2.1	PHASE II EROSION CONTROL PLAN
C2.2	PHASE III EROSION CONTROL PLAN
C3.0	SITE PLAN
C3.1	UTILITY PLAN
C4.0	GRADING PLAN
C4.1	STORMWATER MANAGEMENT PLAN
C4.2	UTILITY PROFILES
C5.0	NOTES AND DETAILS
C5.1	NOTES AND DETAILS
C5.2	NOTES AND DETAILS
C5.3	NOTES AND DETAILS
C5.4	NOTES AND DETAILS

UTILITY / MUNICIPALITY CONTACTS:

A. TOWN OF LILLINGTON
PLANNING AND INSPECTIONS DEPARTMENT
CONTACT: LANDON CHANDLER
PLANNING DIRECTOR
(910) 893-0316
LTCHANDLER@LILLINGTONNC.ORG

B. HARNETT COUNTY PUBLIC WORKS
CONTACT: ASHLEY WIMBERLY
PUBLIC WORKS DIRECTOR
(910) 893-2654

C. BURIED CABLE LOCATION
NC 811

D. ELECTRICITY PROVIDER
PROGRESS ENERGY

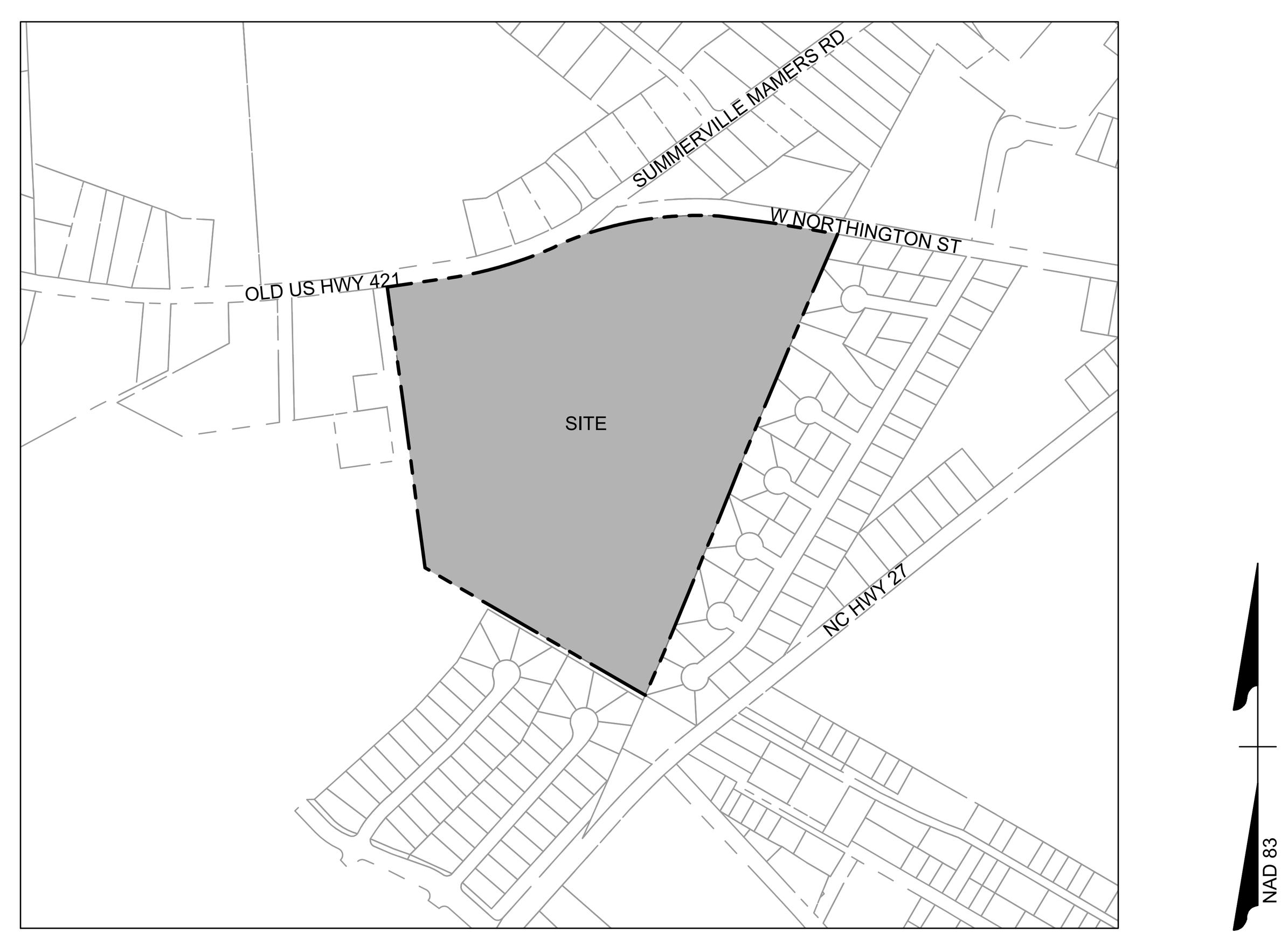
E. WATER/SEWER PROVIDER
HARNETT REGIONAL WATER
(910) 893-7575

CONSULTANT CONTACTS:

OWNER
HARNETT COUNTY SCHOOLS
1008 S 11TH STREET
LILLINGTON, NC 27546

ARCHITECT
SFL+A ARCHITECTS
JEREMY KONKEL, NCARB
PROJECT COORDINATOR
333 FAYETTEVILLE ST, STE 225
RALEIGH, NC 27601
919-573-63339

SITE ENGINEER
TIMMONS GROUP
CONTACT: WILL ALTMAN, PE
5410 TRINITY ROAD, SUITE 102
RALEIGH, NC 27607
PHONE: 919-866-4938



VICINITY MAP
1" = 500'

SITE DATA TABLE	
JURISDICTION	CITY OF LILLINGTON
ZONING	100% RESIDENTIAL SINGLE-FAMILY (RS-20)
PIN #	0549877938
DEED	BOOK 1625, PG 0824
EXISTING USE	SCHOOL, ELEMENTARY
PROPOSED USE	SCHOOL, ELEMENTARY
FLOOD ZONE	NO FLOOD PLAINS ONSITE PER FIRM MAP 3720054800J
CONSTRUCTION TYPE	TYPE 2B
OCCUPANCY TYPE	E
EXISTING TRACT AREA	42.15 ± ACRES
PROPOSED TRACT AREA	42.15 ± ACRES
NUMBER OF LOTS EXISTING	1
NUMBER OF LOTS PROPOSED	1
NUMBER OF UNITS	1
DISTURBED AREA	+/- 1.99 AC
IMPERVIOUS AREA	EXISTING TO REMAIN: 6.62 AC PROPOSED: 0.71 AC TOTAL: 7.33 AC
PROPOSED TOTAL % IMPERVIOUS	(7.33 AC / 42.15 AC)% = 17.4%
MIN LOT FRONTAGE	N/A
MAXIMUM BUILDING HEIGHT	55 FT
PROPOSED BUILDING HEIGHT	26'-6"
MINIMUM BUILDING SETBACK	FRONT: 30 FT SIDE: 10 FT SIDE STREET: 20 FT REAR: 25 FT
MAXIMIUM NUMBER OF LOTS	1
MIN LOT SIZE	20,000 SF
MINIMUM LOT WIDTH	100 FT
EXISTING BUILDING SQUARE FOOTAGE	95,130 SF (2.18 AC)
PROPOSED BUILDING ADDITION SQUARE FOOTAGE	GYM: 10,530 SF (0.24 AC)
RIVER BASIN	CAPE FEAR
STREAM CLASSIFICATION	WS-IV
NUMBER OF SCMS	0
PROPOSED BUILDING ADDITION SPRINKLED	NO

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Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY ADDITION
855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

COVER SHEET

C0.0

ADJOINING PROPERTY INFORMATION

1	PURCHASING FUND 2023 2 LLC PIN: 0549-98-6652.000 DB 4225 PG 2943
2	BALLENTINE LATANYA PIN: 0549-98-6522.000 DB 3491 PG 0742
3	POULLARD LATARA N JT W/ROS PIN: 0549-98-5457.000 DB 3488 PG 0994
4	ROSE BETTE PIN: 0549-98-5385.000 DB 3488 PG 0707
5	EMILIES CROSSING HOMEOWNERS ASSOC INC PIN: 0549-98-6202.000 DB 3580 PG 0415
6	NIJIMBERE DAVID PIN: 0549-98-4185.000 DB 4161 PG 1326
7	SANTOS MARIAN A PIN: 0549-98-3086.000 DB 4215 PG 1238
8	HARRIS TYWANIA LANIECE PIN: 0549-97-3818.000 DB 3635 PG 0553
9	BONACICH DRAGO PIN: 0549-97-3638.000 DB 4167 PG 2429
10	ELDRED AUSTIN A & EDRED SHELBY PIN: 0549-97-2672.000 DB 3550 PG 0748
11	DIAZ RAFAEL V & VELEZ ELENA ABIGAIL PIN: 0549-97-1680.000 DB 3547 PG 0072
12	BATTLE ROBYN PIN: 0549-97-1488.000 DB 3590 PG 0677
13	SFR JV 2 NTL BORROWER LLC & C/O TRICON AMERICAN HOMES LLC PIN: 0549-97-1368.000 DB 4216 PG 0159
14	SFR JV 2 NTL BORROWER LLC & C/O TRICON AMERICAN HOMES LLC PIN: 0549-97-0371.000 DB 4216 PG 0159
15	MCIVER WHITNEY ROBIN & MCIVER CHRISTOPHER ANTONIO ORLANDO PIN: 0549-97-1118.000 DB 3570 PG 0004
16	HALL KEYONDA & HALL DARRYL PIN: 0549-97-0133.000 DB 3583 PG 0536
17	BUTLER HELEN RENEE PIN: 0549-87-9075.000 DB 3587 PG 0247
18	STEWART SEQUIA A & STEWART ANDERICKA R PIN: 0549-87-9091.000 DB 3586 PG 0024
19	CURRIE WILLIE LEE PIN: 0549-86-9834.000 DB 1145 PG 0300
20	SHULTZ GARRET & SHULTZ LINDSAY PIN: 0549-86-8902.000 DB 4200 PG 1744
21	MASSEY YVETTE & MASSEY ANTONIO PIN: 0549-86-7959.000 DB 3533 PG 0091
22	WARREN-WALTON GWENDOLYN Y PIN: 0549-87-6032.000 DB 3552 PG 0085
23	BOYD VICTORIA PIN: 0549-87-5028.000 DB 3600 PG 0719
24	SANDOVAL RICHARD EDWIN & RODRIGUEZ MELISSA PIN: 0549-87-4175.000 DB 3607 PG 0326
25	MUNFORD KEIAH NICOLE PIN: 0549-87-3178.000 DB 3616 PG 0711
26	2 GEN HOLDINGS LLC PIN: 0549-77-2324.000 DB 3066 PG 0637
27	TOWN OF LILLINGTON PIN: 0549-78-9132.000 DB PG (N/A)
28	NC DEPARTMENT OF TRANSPORTATION PIN: 0600-97-9610.000 DB PG (N/A)
29	NC DEPARTMENT OF TRANSPORTATION PIN: 0549-98-4723.000 DB PG (N/A)

NAD 83

SCALE 1"=80'

0 80' 160'

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Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
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ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24

PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

KEY PLAN

C0.1

GENERAL NOTES:

1. ALL DISTANCES ARE HORIZONTAL GROUND, U.S. SURVEY FEET.
2. ALL ACREAGE CALCULATED BY COORDINATES.
3. NO REGISTER OF DEED SEARCH DONE BY OR FURNISHED TO SURVEYOR REGARDING DEED OR COVENANT RESTRICTIONS.
4. ADJOINING OWNER AND STREET INFORMATION PER CITY OF LILLINGTON TAX RECORDS.
5. THE GPS PORTION OF THE BOUNDARY WORK WAS PERFORMED TO THIRD ORDER, CLASS I, FGCC SPECIFICATIONS, THE COORDINATES WERE OBTAINED BY REAL TIME KINEMATIC DIFFERENTIAL GPS OBSERVATIONS USING TRIMBLE SURVEY GRADE R8 GNSS GPS UNIT, NCGS RTK NETWORK ADJUSTMENTS TO NC GRID NAD' 83, 2011 ADJUSTMENTS.
6. THE EXISTENCE OF UTILITIES MAY IMPLY THE EXISTENCE OF AN EASEMENT.
7. UNDERGROUND UTILITIES WITHIN THE STREET RIGHT-OF-WAY AS MARKED BY PAINTED LINES BY NC ONE CALL AND IDENTIFIED AS PER NC ONE CALL COLOR CODE. UNDERGROUND UTILITIES ON SITE WERE MARKED AND IDENTIFIED AS PER CLIENT.
8. ELEVATIONS ARE NAVD '88 DATUM.
9. CONTRACTOR RESPONSIBLE FOR ALL DEMOLITION REQUIRED WITHIN THE LIMITS OF WORK SHOWN.
10. IT SHALL BE UNLAWFUL FOR ANY PERSON TO MAKE ANY EXCAVATION OR DO ANY OTHER WORK WHICH MAY CAUSE A DANGEROUS CONDITION IN OR ON ANY STREET, ALLEY, SIDEWALK, PUBLIC WAY OR PUBLIC PLACE IN THE CITY, UNLESS A WRITTEN PERMIT THEREFOR SHALL HAVE BEEN FIRST OBTAINED FROM AN OFFICER OF THE CITY VESTED WITH AUTHORITY TO GRANT THE SAME. NO PERMIT SHALL BE ISSUED IN ANY CASE WHERE A BOND IS REQUIRED, UNTIL A BOND SHALL HAVE BEEN EXECUTED.
11. THERE ARE NO AREAS OF ENVIRONMENTAL CONCERN OTHER THAN THOSE SHOWN.
12. CONTRACTOR SHALL COORDINATE THE LOCATION OR RELOCATION OF ALL OVERHEAD AND UNDERGROUND COMMUNICATION LINES, ELECTRIC AND GAS SERVICE WITH THE APPROPRIATE UTILITY COMPANY AND/OR THE TOWN PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL PROVIDE CONDUITS AS REQUIRED FOR THESE UTILITIES UNDER PAVED AREAS.

DEMOLITION NOTES:

1. NOTIFY OWNER AND ARCHITECT IMMEDIATELY OF UTILITY SERVICE INTERRUPTIONS TO NEIGHBORING PROPERTIES.
2. UTILITIES ENCOUNTERED THAT ARE NOT INCLUDED WITHIN THE EXISTING CONDITIONS PLANS SHALL BE REMOVED OR RELOCATED PER THE OWNER, ARCHITECT AND UTILITY PROVIDERS DIRECTION.
3. **EVERYTHING WITHIN THE LIMITS OF DISTURBANCE SCHEDULED TO BE DEMOLISHED SHALL ONLY PROCEED AFTER ALL TREE PROTECTION FENCE AND PERIMETER EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED AND INSPECTED PER THE EROSION CONTROL PLAN. INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES AS NECESSARY TO PREVENT SEDIMENT LADEN RUNOFF FROM EXITING THE SITE.**
4. ALL TRASH AND MISCELLANEOUS DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL MANOR.
5. ALL WORK SHALL BE IN ACCORDANCE WITH TOWN OF LILLINGTON AND HARNETT COUNTY STANDARDS.
6. OPEN BURNING OF TREES, LIMBS, STUMPS, AND CONSTRUCTION DEBRIS ASSOCIATED WITH THIS DEVELOPMENT IS PROHIBITED.
7. ALL EXISTING FIRE HYDRANTS TO REMAIN CLEAR AND OPERATIONAL DURING ALL PHASES OF CONSTRUCTION
8. ALL PLAYGROUND EQUIPMENT WITHIN THE LIMITS OF DISTURBANCE SHALL BE REMOVED AND TURNED OVER TO THE OWNER PRIOR TO DEMOLITION.

LEGEND

- NEW PROPERTY LINE
- OLD LOT LINE
- LINE NOT SURVEYED
- FENCE
- OVERHEAD POWER LINE
- PAINTED GAS LINE
- PAINTED POWER LINE
- PAINTED TELEPHONE LINE
- PAINTED WATER LINE
- PAINTED CABLE TV LINE
- UTILITY LINE
- EASEMENT LINE
- RIGHT OF WAY LINE
- EDGE OF PAVEMENT
- GRAVEL ROAD
- FLOOD PLAIN
- IPF - IRON PIPE FOUND
- IRF - IRON ROD FOUND
- IRS- IRON ROD SET
- SANITARY MANHOLE
- TELEPHONE PEDESTAL
- CABLE TV PEDESTAL
- SIGN
- ELECTRIC METER
- POWER POLE
- LIGHT POLE
- GAS TEST LOCATION
- BOLLARD
- MAILBOX
- YARD LIGHT
- GUY

DEMOLITION LEGEND

- REMOVE
- LOD — LIMITS OF DISTURBANCE

Site Benchmark
Rebar and cap Flush w/Ground
Elev. 317.74 (NC GRID NAD 83/2011
COORDINATES
N = 597,719.73'
E = 2,048,686.79'

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NORTH CAROLINA PROFESSIONAL SEAL 045892 ENGINEER William P. Altman

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North Carolina License No. C-1652
Site Development | Residential | Infrastructure | Technology
63407-333

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24

PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

EXISTING CONDITIONS & DEMOLITION PLAN

C1.0

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. ALL CONSTRUCTION SHALL COMPLY WITH NCDEQ STANDARDS AND SPECIFICATIONS.
2. A COPY OF THE APPROVED EROSION CONTROL PLAN MUST BE ON FILE AT THE JOB SITE AT ALL TIMES.
3. FAILURE TO FOLLOW THE APPROVED PLAN SEQUENCE AND DETAILS COULD SUBJECT THE CONTRACTOR TO FINES AND PENALTIES ISSUED BY DEQ.
4. FIELD VERIFY ALL DIMENSIONS AND GRADES ON THESE PLANS PRIOR TO CONSTRUCTION. FAILURE TO NOTIFY THE OWNER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH PLAN OR GRADE CHANGES, MAY RESULT IN NO EXTRA COMPENSATION PAID TO THE CONTRACTOR FOR ANY WORK DONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY.
5. EXCAVATION AND EARTH MOVING OPERATIONS SHALL BE CONDUCTED UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER.
6. VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. EXISTING UTILITIES SHOWN ARE FROM THE BEST AVAILABLE RECORDS AND FROM A SURVEY OF ABOVE GROUND FEATURES. NO WARRANTY IS GIVEN OR IMPLIED AS TO THE ACCURACY OF THE INFORMATION. ALL EXISTING UTILITIES SHOULD BE CONSIDERED APPROXIMATE IN LOCATION AND VERIFIED PRIOR TO COMMENCING ACTIVITY ON SITE.
7. ALL ADJACENT ROADS TO THE SITE ARE TO BE SWEPT AND WASHED AT THE END OF EACH WORK DAY TO ENSURE NO SEDIMENT COLLECTS ON THE ROADWAYS.
8. SILT FENCE OUTLETS ARE TO BE PROVIDED ALONG ALL LOW POINTS OF SILT FENCE AND AREAS WHERE RUNOFF MAY CONCENTRATE CAUSING DAMAGE TO SILT FENCE. CONTRACTOR TO INSTALL OUTLETS AS NECESSARY TO ENSURE SILT FENCE IS FULLY FUNCTIONAL THROUGHOUT THE DURATION OF CONSTRUCTION.
9. INSPECT AND PROPERLY MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES WEEKLY AND AFTER EVERY RAINFALL EVENT.
10. INSTALL ANY ADDITIONAL EROSION CONTROL MEASURES AS NECESSARY TO PREVENT SEDIMENT RUNOFF.
11. PROVIDE NCDEQ WITH THE LOCATION OF OFFSITE STOCKPILES USED TO STORE EXCAVATED SOIL FROM THE SITE. THE LOCATION OF OFFSITE STOCKPILES MUST BE AN UPLAND AREA. IF AN OFFSITE BORROW OR SPOIL SITE IS UTILIZED, THEN THE DISTURBED AREA FOR THE BORROW/SPOIL SITE MUST BE INCLUDED IN THE LAND DISTURBANCE PERMIT. THE CONTRACTOR WILL PROVIDE THE LOCATION OF ALL EXCAVATED SOILS USED FOR THIS PROJECT TO NCDEQ. THIS AREA MUST ALSO BE AN UPLAND AREA.
12. CONCRETE WASHOUT TO BE LOCATED A MINIMUM OF 50' FROM ANY DRAINAGE STRUCTURE.
13. THE EROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM REQUIREMENTS.
14. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, ENFORCEMENT OFFICER, OR OTHER GOVERNING AGENCY.
15. PRIOR TO PLACEMENT OF A DRAINAGE LAYER, THE SUBGRADE SHOULD BE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS FOUND IN SECTION 5.1.2 PROOFROLLING OF THE GEOTECH REPORT.

PHASE I EROSION CONTROL CONSTRUCTION SEQUENCE:

1. SCHEDULE A PRECONSTRUCTION CONFERENCE WITH THE TOWN OF LILLINGTON, NCDEQ, AND DESIGN TEAM, PROVIDING A 48 HOUR NOTIFICATION. OBTAIN A LAND-DISTURBING PERMIT.
2. INSTALL GRAVEL CONSTRUCTION ENTRANCE, SILT FENCE, AND/OR OTHER MEASURES AS SHOWN ON THE APPROVED PLAN. CLEAR ONLY AS NECESSARY TO INSTALL THESE DEVICES. SEED TEMPORARY DIVERSIONS AND BERMS IMMEDIATELY AFTER CONSTRUCTION.
3. BEGIN CLEARING AND GRUBBING. MAINTAIN DEVICES AS NEEDED. BEGIN ROUGH GRADING OF SITE.
4. PROCEED TO PHASE II AND MAINTAIN ALL INSTALLED EROSION CONTROL FEATURES AND ADJUST AS NEEDED.

EROSION CONTROL LEGEND

- TEMPORARY CONSTRUCTION ENTRANCE
- DIVERSION DITCH
- STAGING & STOCKPILE AREA
- SILT FENCE
- LIMIT OF DISTURBANCE
- TREE PROTECTION
- DRAINAGE AREA
- SILT FENCE OUTLET
- SLOPE MATTING REQUIRED SOIL STABILIZATION WITHIN 7 DAYS
- CHANNEL LINING
- CONCRETE WASHOUT AREA
- HARDWARE CLOTH & GRAVEL INLET PROTECTION
- COMPOST SOCK INLET PROTECTION
- SEDIMENT FILTER BAG
- ROCK CHECK DAM
- DUST CONTROL

LIMITS OF DISTURBANCE: +/- 1.99 AC

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PHASE I EROSION CONTROL PLAN

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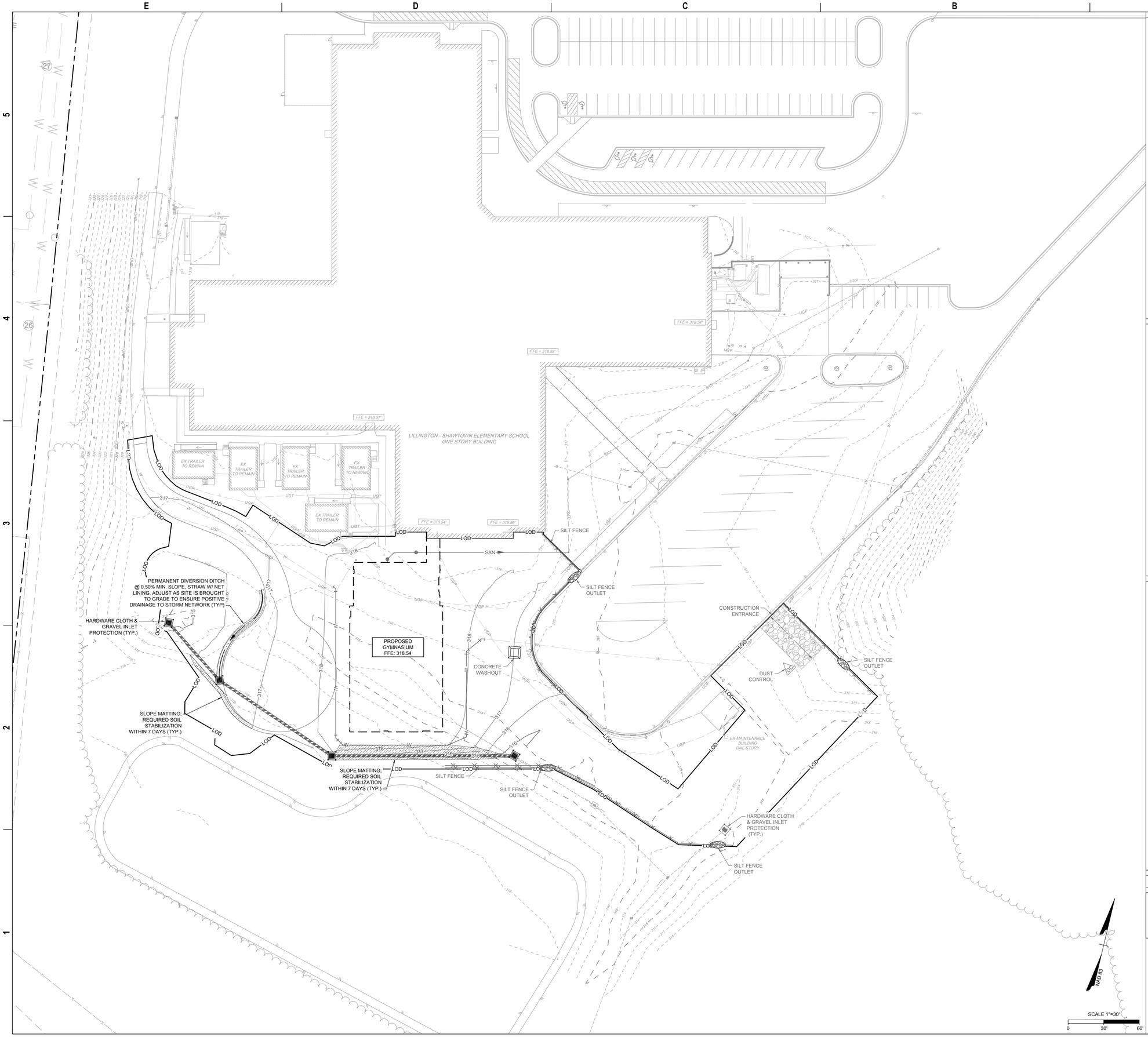

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15. PRIOR TO PLACEMENT OF A DRAINAGE LAYER, THE SUBGRADE SHOULD BE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS FOUND IN SECTION 5.1.2 PROOFROLLING OF THE GEOTECH REPORT.

PHASE II EROSION CONTROL CONSTRUCTION SEQUENCE:

1. MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN GOOD WORKING ORDER. SILT FENCE, INLET PROTECTION, AND OTHER SIMILAR MEASURES MUST BE CLEANED OUT BEFORE THEY ARE HALF FULL. CLOGGED STONE FILTERS MUST BE REFRESHED/REPLACED. SILT FENCE CANNOT HAVE HOLES OR TEARS.
2. BEGIN BRINGING SITE TO GRADE AND CONTINUE INSTALLATION OF THE STORM DRAINAGE SYSTEM. ALL OFFSITE IMPORT IS REQUIRED TO COME FROM A PERMITTED EROSION CONTROL SITE OR PERMITTED MINE. PIPE INLET PROTECTION SHALL BE UTILIZED AT THE END OF EACH WORK DAY TO ENSURE PIPE NETWORK IS NOT INUNDATED WITH SEDIMENT.
3. INSTALL SITE IMPROVEMENTS, WATER MAINS AND UTILITY SERVICES AS SHOWN ON THE APPROVED PLANS. ALL OPEN TRENCHES FOR UTILITY AND STORMWATER INSTALLATION SHALL BE PROTECTED FROM SEDIMENTATION BY PILING EXCAVATED MATERIAL ON THE UPHILL SITE OF EXCAVATION.
4. INSTALL ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES AND/OR INCREASE MAINTENANCE FREQUENCY WHERE APPROVED MEASURES FAIL TO PREVENT ACCELERATED EROSION, OFF-SITE SEDIMENTATION, OR REPETITIVE NON-COMPLIANCE ISSUES. ALL MEASURES MUST BE INSTALLED PER PLAN DETAIL. ENSURE CONSTRUCTION TRAFFIC IS LIMITED TO THE CONSTRUCTION ENTRANCES ONLY.
5. GROUND COVER SHALL BE PROVIDED AS FOLLOWS:
   - FOR ALL AREAS OF MODERATE AND/OR STEEP SLOPES, PROVIDE TEMPORARY GROUND COVER IF THE SLOPE HAS NOT BEEN DISTURBED FOR A PERIOD OF FOURTEEN (14) DAYS. SLOPES GREATER THAN 3:1 REQUIRE GROUND COVER IN SEVEN (7) DAYS.
   - PROVIDE GROUND COVER SUFFICIENT TO RESTRAIN EROSION ON ANY PORTION OF THE SITE UPON WHICH FURTHER AND-DISTURBING ACTIVITY IS NOT BEING UNDERTAKEN WITHIN FOURTEEN (14) CALENDAR DAYS OF TEMPORARILY OR PERMANENTLY SUSPENDING LAND DISTURBING ACTIVITY.
   - ESTABLISH PERMANENT GROUND COVER SUFFICIENT TO RESTRAIN EROSION WITHIN FOURTEEN (14) CALENDAR DAYS FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT AND/OR PRIOR TO FINAL INSPECTION.
8. MODIFICATIONS TO THE APPROVED AND PERMITTED PLANS SHALL BE APPROVED BY EROSION CONTROL INSPECTIONS PRIOR TO REMOVAL OR INSTALLATION. CONTACT THE EROSION CONTROL INSPECTOR TO OBTAIN SIGN-OFF ON THE PLANS. PROCEED TO PHASE III.

EROSION CONTROL LEGEND

- TEMPORARY CONSTRUCTION ENTRANCE
- DIVERSION DITCH
- STAGING & STOCKPILE AREA
- SILT FENCE
- LOD — LIMIT OF DISTURBANCE
- TP — TREE PROTECTION
- DRAINAGE AREA
- SFO — SILT FENCE OUTLET
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- COMPOST SOCK INLET PROTECTION
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- ROCK CHECK DAM
- DC — DUST CONTROL

LIMITS OF DISTURBANCE: +/- 1.99 AC

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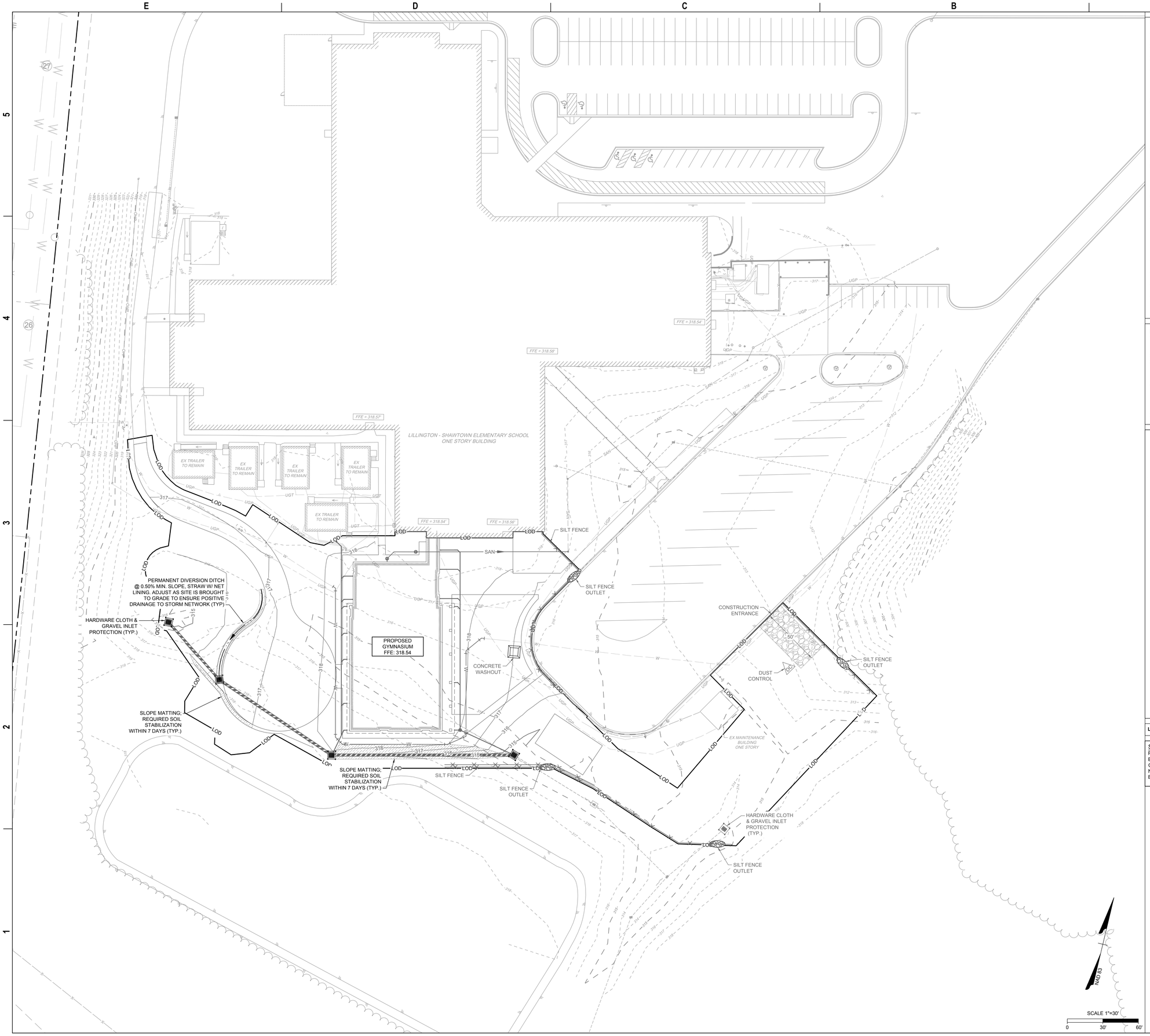
PHASE II EROSION CONTROL PLAN

C2.1



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15. PRIOR TO PLACEMENT OF A DRAINAGE LAYER, THE SUBGRADE SHOULD BE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS FOUND IN SECTION 5.1.2 PROOFROLLING OF THE GEOTECH REPORT.

PHASE III EROSION CONTROL CONSTRUCTION SEQUENCE:

1. MAINTAIN ALL EXISTING EROSION CONTROL FEATURES PREVIOUSLY CONSTRUCTED AND INSTALL ANY ASSOCIATED WITH PHASE II EROSION CONTROL.
2. CONTINUE SITE IMPROVEMENT WORK.
3. MODIFICATIONS TO THE APPROVED AND PERMITTED PLANS SHALL BE APPROVED BY EROSION CONTROL INSPECTIONS PRIOR TO REMOVAL OR INSTALLATION. CONTACT THE EROSION CONTROL INSPECTOR TO OBTAIN SIGN-OFF ON THE PLANS.
4. MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN GOOD WORKING ORDER. SILT FENCE, INLET PROTECTION, AND OTHER SIMILAR MEASURES MUST BE CLEANED OUT BEFORE THEY ARE HALF FULL. CLOGGED STONE FILTERS MUST BE REFRESHED/REPLACED. SILT FENCE CAN NOT HAVE HOLES OR TEARS.
5. ONCE SITE HAS BEEN STABILIZED, NOTIFY NCDEQ.

EROSION CONTROL LEGEND

- TEMPORARY CONSTRUCTION ENTRANCE
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- STAGING & STOCKPILE AREA
- SILT FENCE
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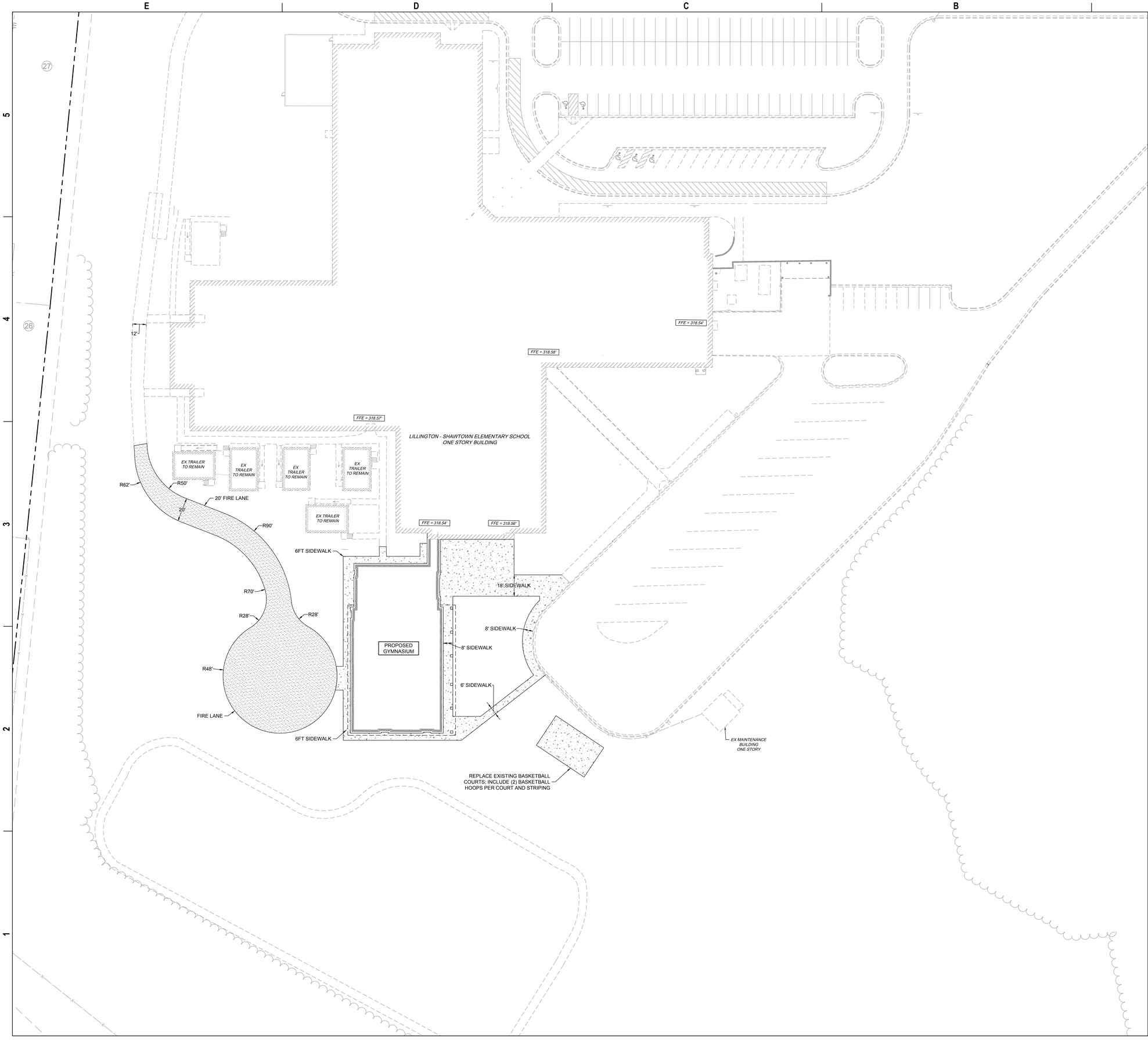
PHASE III EROSION CONTROL PLAN

C2.2



SITE LAYOUT NOTES

1. ALL DRIVEWAYS MUST BE INSTALLED TO THE MINIMUM CITY OF LILLINGTON STANDARDS.
2. ALL PROPOSED BUILDINGS, VEHICULAR AREAS, PEDESTRIAN AREAS, SIGNAGE AND LANDSCAPING WILL MEET CITY ARCHITECTURAL AND SITE DESIGN REQUIREMENTS.
3. WHERE SIDEWALK IS PROPOSED AT THE BACK OF CURB SIDEWALK SHALL BE A MINIMUM OF 5' WIDE.
4. EXISTING DITCH BANKS ARE NOT TO BE DISTURBED AND IF EXISTING DITCH BANKS ARE DISTURBED, THEY SHALL BE REGARDED TO HAVE 3:1 OR FLATTER SIDE SLOPES AND THE CENTERLINE GRADED TO PRODUCE POSITIVE DRAINAGE.
5. FOR EROSION CONTROL REQUIREMENTS, REFER TO THE APPROVED PERMIT/PLAN
6. SLOPES 3:1 CAN BE SEEDED, SLOPES 2:1 SHALL BE SODDED, SLOPES 1:1 REQUIRE AN ENGINEERED DESIGN
7. TURN AROUND MUST MEET NC FIRE CODE

SIGNAGE NOTES

1. STOP SIGNS – R1-1 HIGH INTENSITY PRISMATIC, 30" (36 INCHES SHALL BE USED WHEN THE SIGN FACE MULTI-LANE APPROACHES. WHERE SIDE ROADS INTERSECT A MULTI-LANE STREET OR HIGHWAY THAT HAS A SPEED LIMIT OF 45 MPH OR HIGHER, THE MINIMUM SIZE OF THE STOP SIGNS FACING THE SIDE ROAD APPROACHES, EVEN IF THE SIDE ROAD ONLY HAS ON APPROACH LANE SHALL BE 36 X 36 INCHES). MOUNTING HEIGHT IS 7 FEET TO THE BOTTOM OF THE SIGN. U-CHANNEL POSTS SHOULD BE USES FOR MOUNTING.
2. ALL CROSSWALKS SHALL MEET THE TOWN OF LILLINGTON STANDARDS.
3. STOP/YIELD BARS SHALL BE A MINIMUM OF 4 FEET BEHIND THE CROSSWALK. WHEN USED ON MULTI-LANE HIGHWAYS OR MID-BLOCK CROSSWALKS THE STOP BAR SHOULD BE A MINIMUM OF 40 FEET. PRIOR TO THE CROSSWALK.
4. PLACE THE WORD STOP IN ADVANCE OF THE STOP BARS AT THE END OF PARKING ISLES.

HATCHING LEGEND

- CONCRETE SIDEWALK
- HIGH DENSITY ASPHALT

MAG 83

SCALE 1"=30'

0 30' 60'

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SITE PLAN

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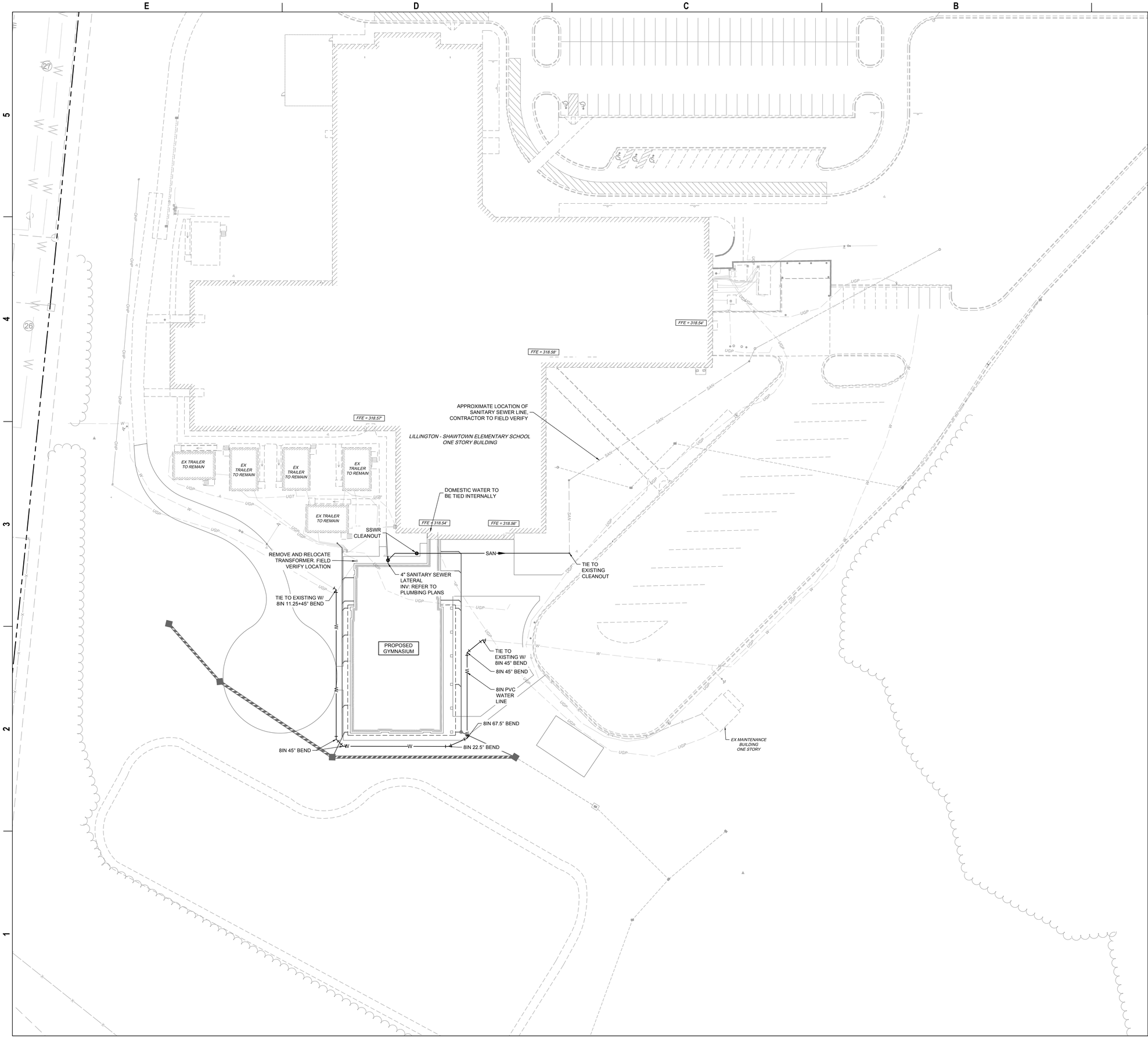

UTILITY NOTES

1. CONTRACTOR SHALL HAVE NORTH CAROLINA ONE CALL (811) LOCATE ALL EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
2. ALL UNDERGROUND FEATURES INDICATED ON THE PLANS SHOULD BE CONSIDERED APPROXIMATE IN LOCATION AND SHOULD BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF ANY CONFLICTS OR DISCREPANCIES ARE NOTED.
3. CONTRACTOR SHALL COORDINATE THE LOCATION OR RELOCATION OF ALL OVERHEAD AND UNDERGROUND COMMUNICATION LINES, ELECTRIC AND GAS SERVICE WITH THE APPROPRIATE UTILITY COMPANY AND/OR THE CITY PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL PROVIDE CONDUITS AS REQUIRED FOR THESE UTILITIES UNDER PAVED AREAS.
4. ALL ILLUSTRATED UTILITY INFRASTRUCTURE IS DIAGRAMMATIC AND MAY NOT REPRESENT THE ACTUAL SIZE OF INFRASTRUCTURE. NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF ANY CONFLICTS OR DISCREPANCIES ARE NOTED.
5. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TOWN OF LILLINGTON AND THE STATE OF NORTH CAROLINA STANDARDS AND SPECIFICATIONS.
6. CURB STOPS ARE REQUIRED AND SHALL BE LOCATED 1 FOOT FROM THE METER BOX. CURB STOPS SHALL BE INSTALLED IN A CURB STOP BOX AS MANUFACTURED BY FORD, A.Y. MCDONALD, OR TRUMBULL.
7. SERVICE SADDLES SHALL BE ALL BRONZE WITH DOUBLE BRONZE STRAPS WITH A NEOPRENE "O" RING GASKET ATTACHED TO THE BODY.
8. ALL WATER METERS SHALL BE PROVIDED AND INSTALLED BY THE TOWN OF LILLINGTON UTILITIES DEPARTMENT METERS DIVISION.
9. METERS WILL BE THE SAME SIZE IN DIAMETER AS THE SERVICE.
10. A 3' CLEAR SPACE SHALL BE MAINTAINED AROUND ALL WATER METERS.
11. ALL 6" SANITARY SEWER SERVICES CONNECTIONS SHALL BE MADE INTO MANHOLES ONLY.
12. UTILITY TRENCHES SHALL BE CUT AND PAVEMENT REPAIRED TO THE TOWN OF LILLINGTON STANDARDS.
13. ALL DISTURBED HARDSCAPE AND LANDSCAPING (CONCRETE, ASPHALT, BRICK, TREES, SHRUBS, ETC) SHALL BE REPLACED ACCORDING TO THE TOWN OF LILLINGTON AND NCDOT STANDARDS AND SPECIFICATIONS.
14. BOUNDARY AND SURVEY INFORMATION IS TAKEN FROM A SURVEY BY TIMMONS GROUP.
15. ALL CLEANOUTS LOCATED IN PAVED AREAS ARE REQUIRED TO BE LOCATED IN A TRAFFIC LOAD BEARING MINI MANHOLE.
16. PER THE TOWN OF LILLINGTON UDO, ALL NEW UTILITY LINES (POWER, CABLE, ETC.) MUST BE UNDERGROUND

NAD 83

SCALE 1"=30'
0 30' 60'

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LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

Harnett County Schools

855 Old US Highway 421
Lillington, NC 27546

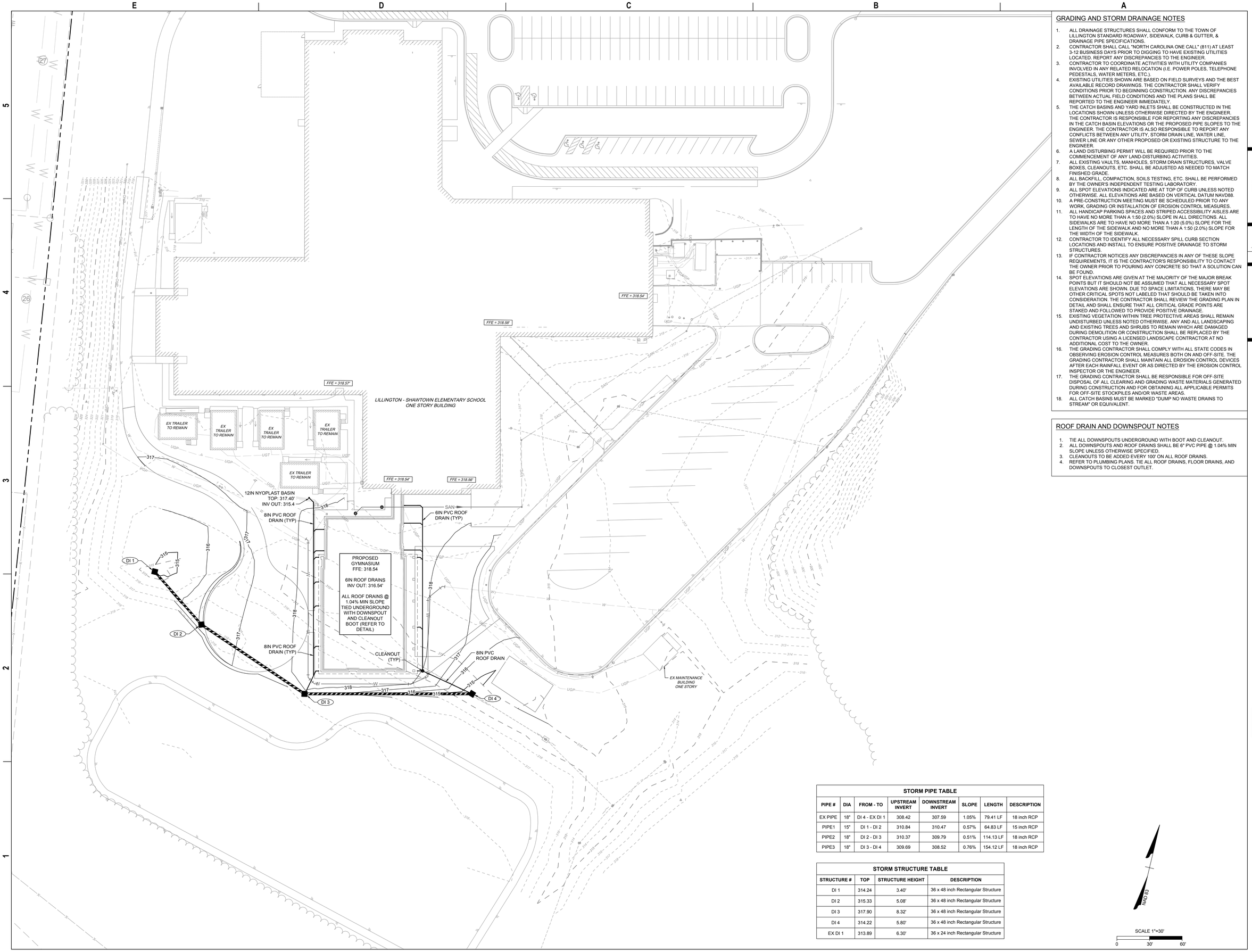
ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

UTILITY PLAN

C3.1



GRADING AND STORM DRAINAGE NOTES

1. ALL DRAINAGE STRUCTURES SHALL CONFORM TO THE TOWN OF LILLINGTON STANDARD ROADWAY, SIDEWALK, CURB & GUTTER, & DRAINAGE PIPE SPECIFICATIONS.
2. CONTRACTOR SHALL CALL "NORTH CAROLINA ONE CALL" (811) AT LEAST 3-12 BUSINESS DAYS PRIOR TO DIGGING TO HAVE EXISTING UTILITIES LOCATED. REPORT ANY DISCREPANCIES TO THE ENGINEER.
3. CONTRACTOR TO COORDINATE ACTIVITIES WITH UTILITY COMPANIES INVOLVED IN ANY RELATED RELOCATION (I.E. POWER POLES, TELEPHONE PEDESTALS, WATER METERS, ETC.).
4. EXISTING UTILITIES SHOWN ARE BASED ON FIELD SURVEYS AND THE BEST AVAILABLE RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THE PLANS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
5. THE CATCH BASINS AND YARD INLETS SHALL BE CONSTRUCTED IN THE LOCATIONS SHOWN UNLESS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR REPORTING ANY DISCREPANCIES IN THE CATCH BASIN ELEVATIONS OR THE PROPOSED PIPE SLOPES TO THE ENGINEER. THE CONTRACTOR IS ALSO RESPONSIBLE TO REPORT ANY CONFLICTS BETWEEN ANY UTILITY, STORM DRAIN LINE, WATER LINE, SEWER LINE OR ANY OTHER PROPOSED OR EXISTING STRUCTURE TO THE ENGINEER.
6. A LAND DISTURBING PERMIT WILL BE REQUIRED PRIOR TO THE COMMENCEMENT OF ANY LAND-DISTURBING ACTIVITIES.
7. ALL EXISTING VAULTS, MANHOLES, STORM DRAIN STRUCTURES, VALVE BOXES, CLEANOUTS, ETC. SHALL BE ADJUSTED AS NEEDED TO MATCH FINISHED GRADE.
8. ALL BACKFILL, COMPACTION, SOILS TESTING, ETC. SHALL BE PERFORMED BY THE OWNER'S INDEPENDENT TESTING LABORATORY.
9. ALL SPOT ELEVATIONS INDICATED ARE AT TOP OF CURB UNLESS NOTED OTHERWISE. ALL ELEVATIONS ARE BASED ON VERTICAL DATUM NAVD88.
10. A PRE-CONSTRUCTION MEETING MUST BE SCHEDULED PRIOR TO ANY WORK, GRADING OR INSTALLATION OF EROSION CONTROL MEASURES.
11. ALL HANDICAP PARKING SPACES AND STRIPED ACCESSIBILITY AISLES ARE TO HAVE NO MORE THAN A 1:50 (2.0%) SLOPE IN ALL DIRECTIONS. ALL SIDEWALKS ARE TO HAVE NO MORE THAN A 1:20 (5.0%) SLOPE FOR THE LENGTH OF THE SIDEWALK AND NO MORE THAN A 1:50 (2.0%) SLOPE FOR THE WIDTH OF THE SIDEWALK.
12. CONTRACTOR TO IDENTIFY ALL NECESSARY SPILL CURB SECTION LOCATIONS AND INSTALL TO ENSURE POSITIVE DRAINAGE TO STORM STRUCTURES.
13. IF CONTRACTOR NOTICES ANY DISCREPANCIES IN ANY OF THESE SLOPE REQUIREMENTS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE OWNER PRIOR TO POURING ANY CONCRETE SO THAT A SOLUTION CAN BE FOUND.
14. SPOT ELEVATIONS ARE GIVEN AT THE MAJORITY OF THE MAJOR BREAK POINTS BUT IT SHOULD NOT BE ASSUMED THAT ALL NECESSARY SPOT ELEVATIONS ARE SHOWN. DUE TO SPACE LIMITATIONS, THERE MAY BE OTHER CRITICAL SPOTS NOT LABELED THAT SHOULD BE TAKEN INTO CONSIDERATION. THE CONTRACTOR SHALL REVIEW THE GRADING PLAN IN DETAIL AND SHALL ENSURE THAT ALL CRITICAL GRADE POINTS ARE STAKED AND FOLLOWED TO PROVIDE POSITIVE DRAINAGE.
15. EXISTING VEGETATION WITHIN TREE PROTECTIVE AREAS SHALL REMAIN UNDISTURBED UNLESS NOTED OTHERWISE. ANY AND ALL LANDSCAPING AND EXISTING TREES AND SHRUBS TO REMAIN WHICH ARE DAMAGED DURING DEMOLITION OR CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR USING A LICENSED LANDSCAPE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
16. THE GRADING CONTRACTOR SHALL COMPLY WITH ALL STATE CODES IN OBSERVING EROSION CONTROL MEASURES BOTH ON AND OFF-SITE. THE GRADING CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL DEVICES AFTER EACH RAINFALL EVENT OR AS DIRECTED BY THE EROSION CONTROL INSPECTOR OR THE ENGINEER.
17. THE GRADING CONTRACTOR SHALL BE RESPONSIBLE FOR OFF-SITE DISPOSAL OF ALL CLEARING AND GRADING WASTE MATERIALS GENERATED DURING CONSTRUCTION AND FOR OBTAINING ALL APPLICABLE PERMITS FOR OFF-SITE STOCKPILES AND/OR WASTE AREAS.
18. ALL CATCH BASINS MUST BE MARKED "DUMP NO WASTE DRAINS TO STREAM" OR EQUIVALENT.

ROOF DRAIN AND DOWNSPOUT NOTES

1. TIE ALL DOWNSPOUTS UNDERGROUND WITH BOOT AND CLEANOUT.
2. ALL DOWNSPOUTS AND ROOF DRAINS SHALL BE 6" PVC PIPE @ 1.04% MIN SLOPE UNLESS OTHERWISE SPECIFIED.
3. CLEANOUTS TO BE ADDED EVERY 100' ON ALL ROOF DRAINS.
4. REFER TO PLUMBING PLANS. TIE ALL ROOF DRAINS, FLOOR DRAINS, AND DOWNSPOUTS TO CLOSEST OUTLET.

STORM PIPE TABLE

PIPE #	DIA	FROM - TO	UPSTREAM INVERT	DOWNSTREAM INVERT	SLOPE	LENGTH	DESCRIPTION
EX PIPE	18"	DI 4 - EX DI 1	308.42	307.59	1.05%	79.41 LF	18 inch RCP
PIPE1	15"	DI 1 - DI 2	310.84	310.47	0.57%	64.83 LF	15 inch RCP
PIPE2	18"	DI 2 - DI 3	310.37	309.79	0.51%	114.13 LF	18 inch RCP
PIPE3	18"	DI 3 - DI 4	309.69	308.52	0.76%	154.12 LF	18 inch RCP

STORM STRUCTURE TABLE

STRUCTURE #	TOP	STRUCTURE HEIGHT	DESCRIPTION
DI 1	314.24	3.40'	36 x 48 inch Rectangular Structure
DI 2	315.33	5.08'	36 x 48 inch Rectangular Structure
DI 3	317.90	8.32'	36 x 48 inch Rectangular Structure
DI 4	314.22	5.80'	36 x 48 inch Rectangular Structure
EX DI 1	313.89	6.30'	36 x 24 inch Rectangular Structure

NAD 83

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0 30' 60'

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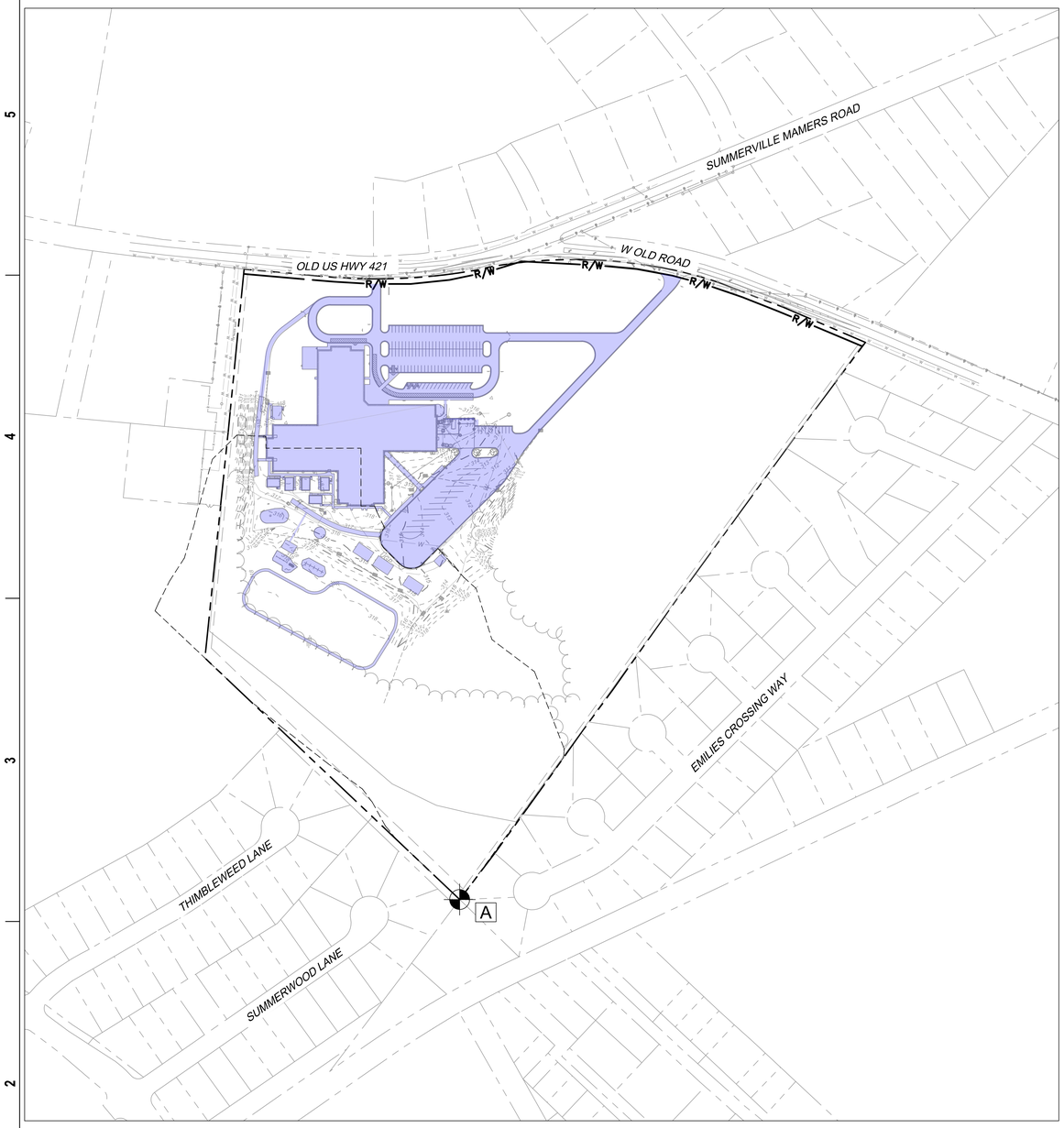
GRADING PLAN

C4.0



PRE-DEVELOPED SITE

POST-DEVELOPED SITE

STORMWATER QUANTITY CALCULATIONS:

ANALYSIS POINT	DRAINAGE AREA (Acres)	(CN)	Q1	Q2	Q10	Q100
PRE-DEVELOPMENT (A)	4.13	64	1.880	3.595	9.461	21.01
POST-DEVELOPMENT (A)	4.13	65	2.122	3.901	9.908	21.64

STORMWATER QUALITY CALCULATIONS

PRE DEVELOPMENT IMPERVIOUS SURFACES = 7.10 ACRES

POST DEVELOPMENT IMPERVIOUS SURFACE = 7.43 ACRES
EXISTING IMPERVIOUS SURFACE = 6.72 ACRES
PROPOSED IMPERVIOUS SURFACE = 0.71 ACRES
DEMOLISHED IMPERVIOUS SURFACES = 0.38 ACRES

INCREASE IN TOTAL IMPERVIOUS SURFACE = 0.33 ACRES; +4.65%

LEGEND

- EXISTING IMPERVIOUS
- PROPOSED IMPERVIOUS
- DRAINAGE AREA

NAD 83

SCALE 1"=100'
0 100' 200'

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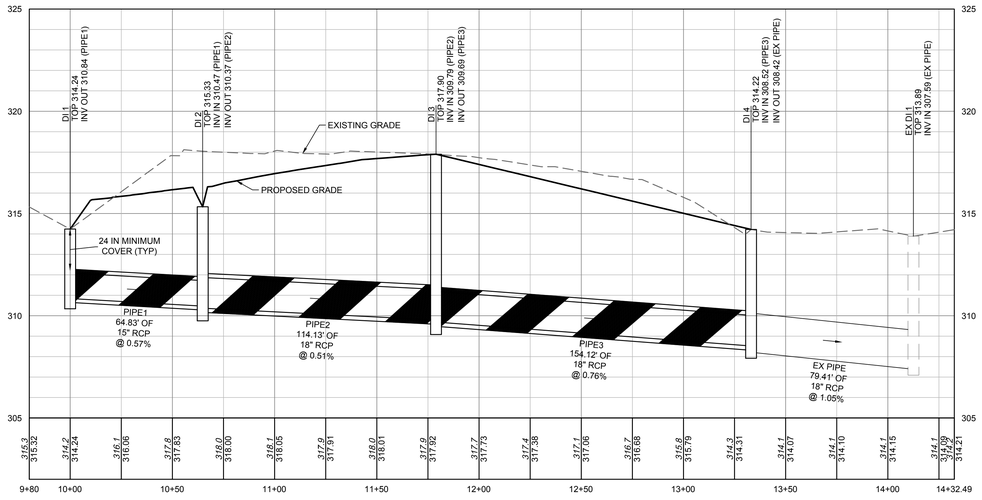
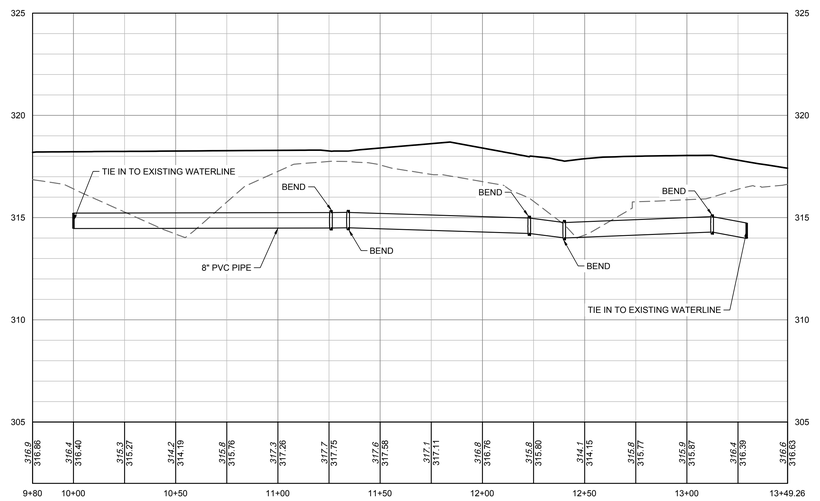
STORMWATER MANAGEMENT PLAN

C4.1



DI 1 - EX DI 1

3
0
0 30
PROFILE SCALE



WATER PROFILE

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SUPPLEMENTARY ADDITION

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY

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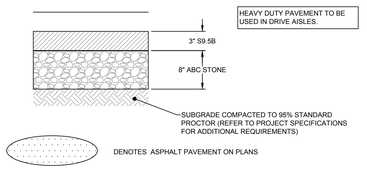
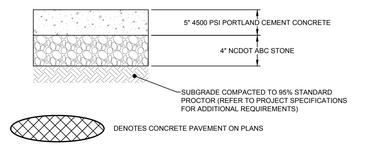
UTILITY PROFILES

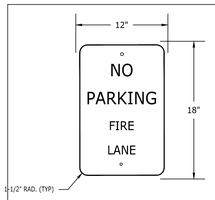
C4.2



HEAVY DUTY ASPHALT
NOT TO SCALE



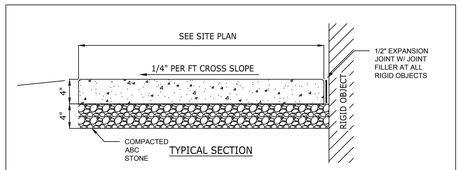
CONCRETE PAVEMENT
NOT TO SCALE



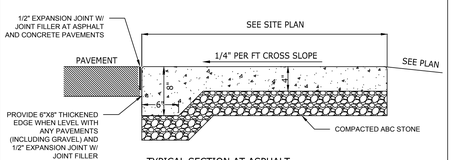
SIGN COLORS:

LETTERING ..... RED
STRIPE ..... RED
BACKGROUND ..... WHITE

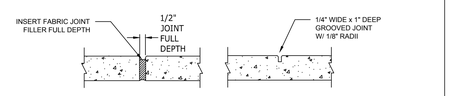
FIRE LANE NO PARKING SIGN
NOT TO SCALE



TYPICAL SECTION



TYPICAL SECTION AT ASPHALT

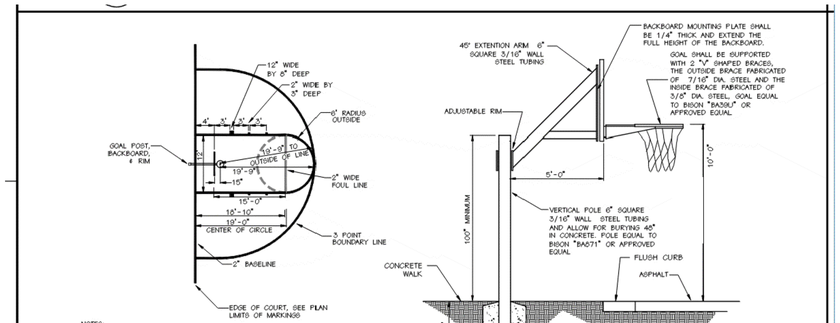


TYPICAL EXPANSION JOINT TYPICAL CONTROL JOINT

NOTES:

1. PROVIDE GROOVE CONTROL JOINT 1" DEEP WITH 1/8" RADII IN SIDEWALK AT 5' INTERVALS UNLESS INDICATED OTHERWISE.
2. PROVIDE 1/2" EXPANSION JOINT AT 30' INTERVALS.
3. PROVIDE 1/2" EXPANSION JOINT WHERE THE SIDEWALK ABUTS ANY RIGID STRUCTURE.
4. SEE SPECIFICATIONS FOR ADDITIONAL JOINT SPACING REQUIREMENTS.
5. ALL CONCRETE SIDEWALKS SHALL BE 3,000 P.S.I. MIN. WITH BROOM FINISH.
6. PROVIDE 2% MAX. CROSS SLOPE ON SIDEWALKS
   ALL SIDEWALKS SHALL RECEIVE BROOM FINISH AS INDICATED IN THE SPECIFICATIONS.

CONCRETE SIDEWALK
NOT TO SCALE



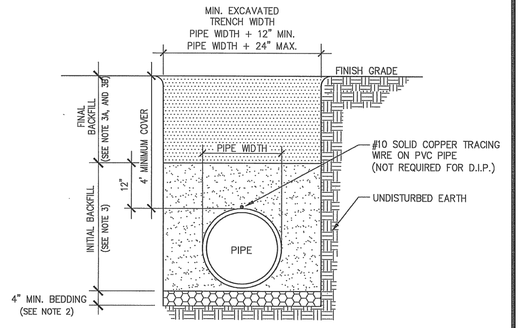
NOTES:

1. TO MEASURE 3 POINT BOUNDARY LINE, DROP PLUMB LINE FROM CENTER OF BASKET RIM. MEASURE 19'-9" FROM THAT POINT TO FORM 150° HALF CIRCLE. CONTINUE LINES TO A POINT ON BASELINE 5'-3" FROM SIDELINES.
2. HALF-COURT STRIPING: INCLUDE HALF OF BOTH CENTER CIRCLES (2" RAD. AND 6" RAD.), AND 2" WIDE DIVISION LINE.
3. FOR THE BROKEN LINE SEMICIRCLE IN THE FREE THROW LANE, THERE SHALL BE 5 MARKS 18" LONG AND 7 SPACES, 14" LONG.
4. SEE SPECS FOR STRIPES, CONCRETE, ETC... FURNISH ONE NET (INSTALLED) PER GOAL
5. SEE SITE PLAN FOR COURT CONSTRUCTION DETAILS.
6. SEE SPECIFICATIONS FOR OTHER MATERIALS REQUIREMENTS.
7. CONTRACTOR SHALL FURNISH TWO BASKETBALL GOALS FOR EACH COURT SHOWN ON DRAWINGS. SEE CONSTRUCTION DRAWINGS FOR DETAILS OF INSTALLATION. PROVIDE 10 GA. ALUMINUM BACKBOARD, WHITE, RECTANGULAR SHAPED 42"X60" WITH ORANGE SHOOTER'S SQUARE/BORDER, DOUBLE RIM WITH NET, BLACK POWDER COATED POLE FINISH.
8. ALL PAVEMENT STRIPES SHALL BE WHITE.
9. BACKBOARD SHALL HAVE ORANGE SHOOTERS TARGET BOX.

NOTES

1. THE STANDARD RIM SHALL BE FABRICATED FROM 3/16" BACK PLATES AND SIDE PLATES FULLY WELDED. RIM SHALL BE DOUBLE 5/8" DIAMETER HIGH STRENGTH STEEL WELDED TOGETHER AT A MINIMUM OF SIX PLACES. NETS SHALL BE ATTACHED BY MEANS OF A NETLOCK SYSTEM CONSISTING OF A CONTINUOUS 3/16" X 3" STEEL BAND STAMPED WITH HOLES TO FACILITATE EITHER NYLON OR CHAIN NETS. THE BAND SHALL BE ROLLED TO 16" DIAMETER AND WELDED TO THE BOTTOM OF THE TWO RIMS AND ADD SUPPORT TO THE RIM. THE ENTIRE RIM SHALL BE POWDER COATED ORANGE.
2. SEE SPECIFICATIONS FOR OTHER MATERIAL REQUIREMENTS.
3. INSTALL FOOTINGS PER MANUFACTURER RECOMMENDATIONS

Basketball Court Details
N.T.S.



NOTES:

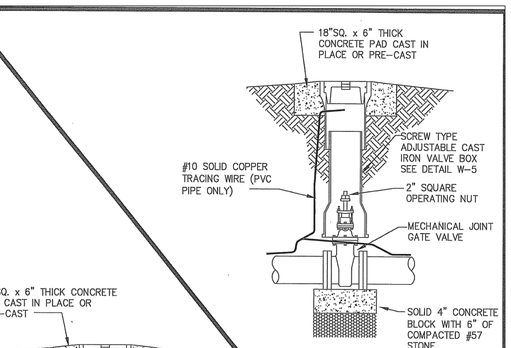
1. LAYING CONDITIONS AS PER AWWA C-600 AND C-605 STANDARDS.
2. BEDDING MATERIAL SHALL BE 4" MINIMUM THICKNESS, LOOSE SOIL (DEFINED AS NATIVE SOIL EXCAVATED FROM THE TRENCH), FREE FROM ROCKS AND SHALL PROVIDE UNIFORM SUPPORT FOR THE FULL LENGTH OF THE PIPE. COMPACT TO 95% OF MAXIMUM DENSITY.
3. INITIAL BACKFILL SHALL BE LIGHTLY CONSOLIDATED IN MAXIMUM 6" LOOSE LIFTS, COMPACTED TO 95% OF MAXIMUM DENSITY.
   A. UNDER AREAS TO BE SEEDED OR SODDED, COMPACT SUCCEEDING LAYERS OF FINAL BACKFILL IN 12" LOOSE LIFTS TO 85% OF MAXIMUM DENSITY.
   B. UNDER STRUCTURES, PAVEMENTS AND ROAD SHOULDERS, COMPACT SUCCEEDING LAYERS OF FINAL BACKFILL IN 6" LOOSE LIFTS TO 95% OF MAXIMUM DENSITY EXCEPT COMPACT TOP 12" OF SUBGRADE TO 98 % OF MAXIMUM DENSITY.
4. PROVIDE SOLID COPPER WIRE IN SUFFICIENT LENGTH FOR ALL BURIED PVC PIPING. AT VALVE BOXES, BRING WIRE TO WITHIN 6" OF THE TOP OF BOX AND INSERT INTO BOX THROUGH A DRILLED HOLE. NOT REQUIRED FOR D.I.P. ATTACH WIRE TO PIPE @ 4'-0" INTERVALS WITH CABLE TIES.

DATE	BY	DESCRIPTION
		REVISIONS

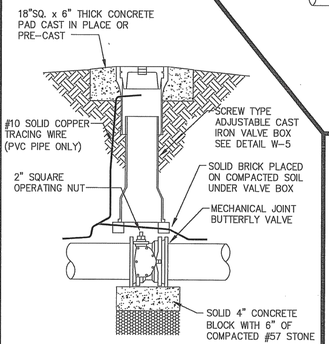
TOWN OF LILLINGTON PUBLIC WORKS

WATER MAIN TRENCH DETAIL

SCALE	DRAWING #
N.T.S.	W-1



GATE VALVE ASSEMBLY



BUTTERFLY VALVE ASSEMBLY

NOTES:

1. INSTALL MARKER POSTS (DETAIL W-3) ON THE EDGE OF THE DOT RIGHT-OF-WAY LINE.
2. PROVIDE MARKER POSTS AT ALL LINE VALVES.
3. ABBREVIATION "MV" SHALL BE STAMPED ON POSTE TO INDICATE "MAIN VALVE".
4. BRING #10 SOLID COPPER TRACING WIRE (PVC PIPE ONLY) TO WITHIN 6" OF TOP OF VALVE BOX AND INSERT INTO BOX THROUGH DRILLED HOLE.

DATE	BY	DESCRIPTION
		REVISIONS

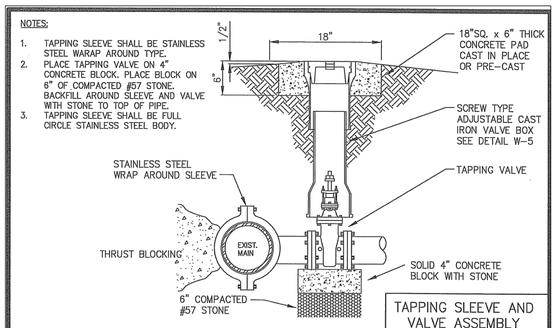
TOWN OF LILLINGTON PUBLIC WORKS

GATE AND BUTTERFLY VALVE ASSEMBLY DETAILS

SCALE	DRAWING #
N.T.S.	W-2

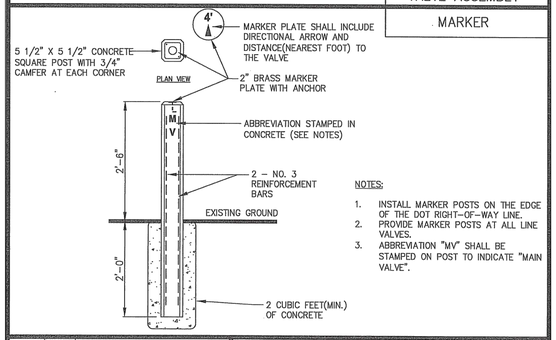
NOTES:

1. TAPPING SLEEVE SHALL BE STAINLESS STEEL WRAP AROUND TYPE.
2. PLACE TAPPING VALVE ON 4" CONCRETE BLOCK. PLACE BLOCK ON 6" OF COMPACTED #57 STONE. BACKFILL AROUND SLEEVE AND VALVE WITH STONE TO TOP OF PIPE.
3. TAPPING SLEEVE SHALL BE FULL CIRCLE STAINLESS STEEL BODY.



TAPPING SLEEVE AND VALVE ASSEMBLY

MARKER



NOTES:

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2. PROVIDE MARKER POSTS AT ALL LINE VALVES.
3. ABBREVIATION "MV" SHALL BE STAMPED ON POST TO INDICATE "MAIN VALVE".

DATE	BY	DESCRIPTION
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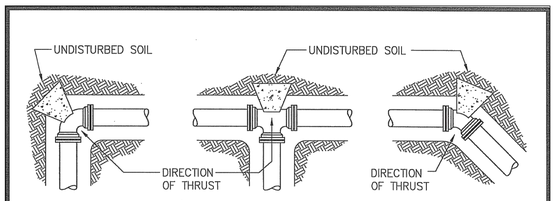
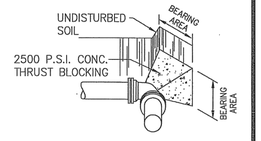
TAPPING SLEEVE AND VALVE ASSEMBLY AND MARKER DETAIL

SCALE	DRAWING #
N.T.S.	W-3



NOTES

1. ALL BENDS AND TEES SHALL HAVE CONCRETE THRUST BLOCKING.
2. MINIMUM BEARING AREA SHALL BE AS GIVEN IN TABLE (SEE W-6, SHEET 2 OF 2).
3. CONCRETE SHALL BE 2500 P.S.I. MINIMUM.
4. CONCRETE SHALL NOT CONTACT BOLTS OR FLANGES OF MECHANICAL JOINT FITTINGS.



ISOMETRIC

SHEET
1 OF 2

DATE	BY	DESCRIPTION
		REVISIONS

TOWN OF LILLINGTON PUBLIC WORKS

CONCRETE THRUST BLOCKING DETAIL

SCALE	DRAWING #
N.T.S.	W-6

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I. AND SAFETY FACTOR OF 1.5

SIZE AND DEGREE OF PIPE BEND	STATIC THRUST IN POUNDS	S_b SOFT CLAY (#/ft²)	SILT (#/ft²)	GRAVEL OR COURSE SAND (#/ft²)	SANDY SILT (#/ft²)	SAND (#/ft²)	SANDY CLAY (#/ft²)	HARD CLAY (#/ft²)
		1,000	1,500	1,600	3,000	4,000	6,000	9,000
		BEARING AREA (A_b) IN SF						
4" PIPE	11 1/4°	2	1	1	1	1	0	0
	22 1/2°	2,911	4	3	3	1	1	0
	45°	5,710	9	6	5	3	2	1	1
	90°	10,850	16	11	10	5	4	3	2
	PLUG & BRANCH	7,460	11	7	7	4	3	2	1
6" PIPE	11 1/4°	2,021	4	3	2	1	1	1	0
	22 1/2°	5,018	8	5	5	3	2	1	1
	45°	9,843	15	10	9	5	4	2	2
	90°	18,197	27	18	17	9	7	5	3
	PLUG & BRANCH	12,860	19	13	12	6	5	3	2
8" PIPE	11 1/4°	3,791	6	4	4	2	1	1	1
	22 1/2°	7,546	11	8	7	4	3	2	1
	45°	14,802	22	15	14	7	6	4	2
	90°	27,351	41	27	26	14	10	7	5
	PLUG & BRANCH	19,340	29	19	18	10	7	5	3
10" PIPE	11 1/4°	5,363	8	5	5	3	2	1	1
	22 1/2°	10,675	16	11	10	5	4	3	2
	45°	20,940	31	21	20	10	8	5	3
	90°	38,693	58	39	36	19	15	10	6
	PLUG & BRANCH	27,360	41	27	26	14	10	7	5
12" PIPE	11 1/4°	7,206	11	7	7	4	3	2	1
	22 1/2°	14,343	22	14	13	7	5	4	2
	45°	28,135	42	28	26	14	11	7	5
	90°	51,986	78	52	49	26	19	13	9
	PLUG & BRANCH	36,760	55	37	34	18	14	9	6
14" PIPE	11 1/4°	9,319	14	9	9	5	3	2	2
	22 1/2°	18,549	28	19	17	9	7	5	3
	45°	36,366	55	36	34	18	14	9	6
	90°	67,232	101	67	63	34	25	17	11
	PLUG & BRANCH	47,540	71	48	45	24	18	12	8
16" PIPE	11 1/4°	11,707	18	12	11	6	4	3	2
	22 1/2°	23,302	35	23	22	12	9	6	4
	45°	45,708	69	46	43	23	17	11	8
	90°	84,457	127	84	79	42	32	21	14
	PLUG & BRANCH	59,720	90	60	56	30	22	15	10
20" PIPE	11 1/4°	14,365	22	14	13	7	5	4	2
	22 1/2°	28,592	43	29	27	14	11	7	5
	45°	56,095	84	56	53	28	21	14	9
	90°	103,634	155	104	97	52	39	26	17
	PLUG & BRANCH	73,280	110	73	69	37	27	18	12
24" PIPE	11 1/4°	20,493	31	20	19	10	8	5	3
	22 1/2°	40,789	61	41	38	20	15	10	7
	45°	80,011	120	80	75	40	30	20	13
	90°	147,842	222	148	139	74	55	37	25
	PLUG & BRANCH	104,540	157	105	98	52	39	26	17

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90 DEGREES TO THE THRUST VECTOR.
USE 6"-90 DEGREE BEND VALUE FOR THE HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

SHEET
2 OF 2

DATE	BY	DESCRIPTION
		REVISIONS

TOWN OF LILLINGTON PUBLIC WORKS

CONCRETE THRUST BLOCKING DETAIL

SCALE	DRAWING #
N.T.S.	W-6

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Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

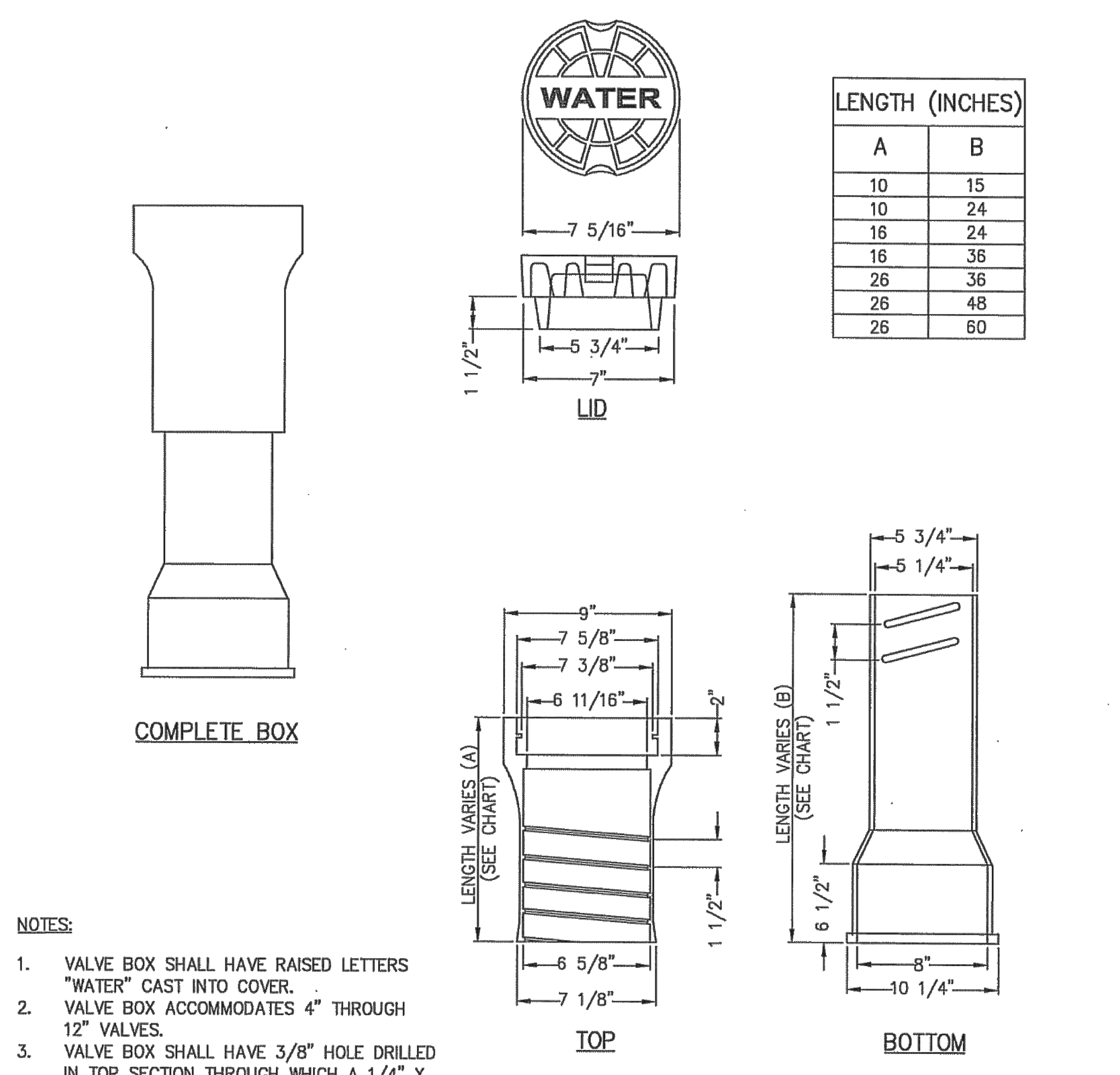
ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

NOTES AND DETAILS

C5.0

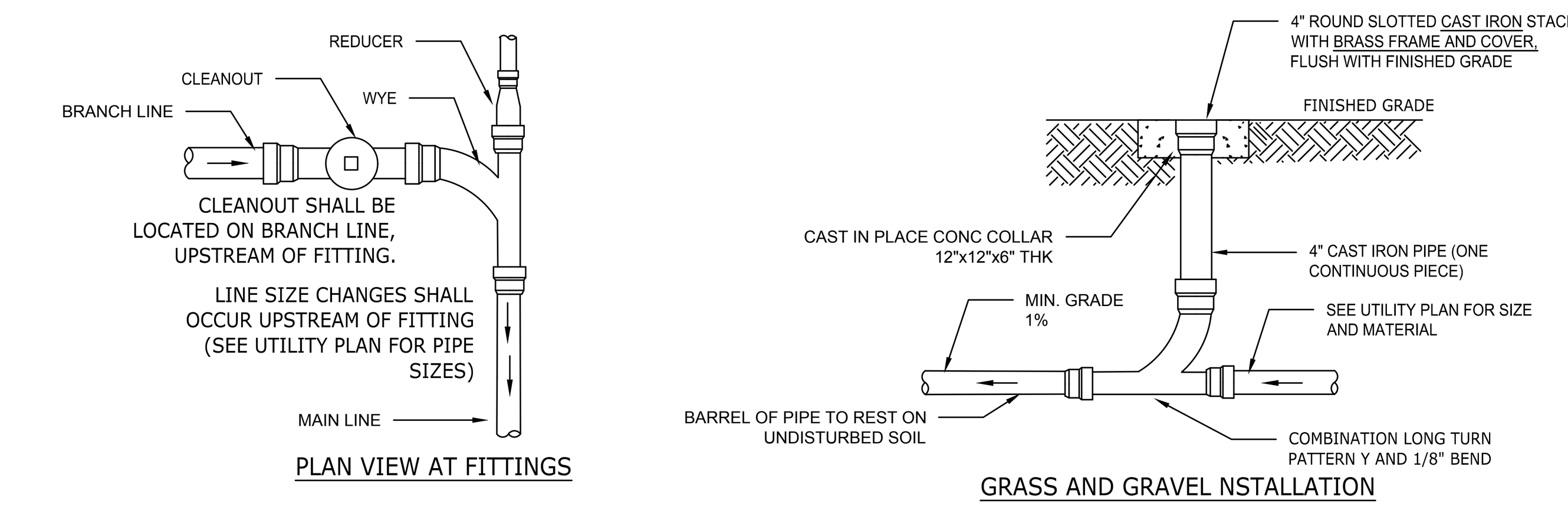


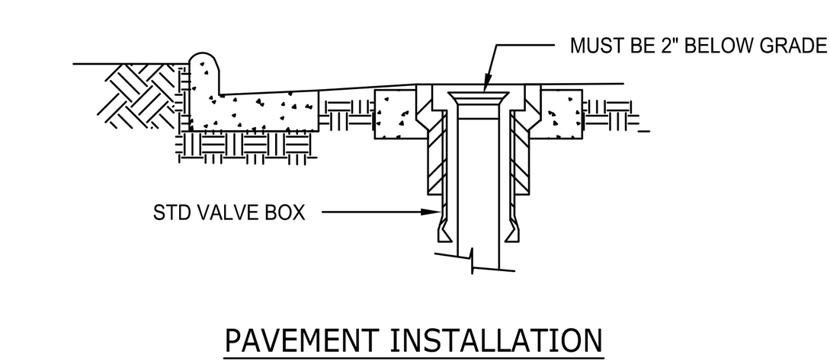
LENGTH (INCHES)	
A	B
10	15
10	24
16	24
16	36
26	36
26	48
26	60

NOTES:

1. VALVE BOX SHALL HAVE RAISED LETTERS "WATER" CAST INTO COVER.
2. VALVE BOX ACCOMMODATES 4" THROUGH 12" VALVES.
3. VALVE BOX SHALL HAVE 3/8" HOLE DRILLED IN TOP SECTION THROUGH WHICH A 1/4" X 1 1/2" GALVANIZED BOLT SHALL BE USED TO SECURE A #10 TRACER WIRE FOR NON-FERROUS PIPE. A 1/2" WASHER SHALL BE USED BETWEEN THE NUT AND INSIDE OF BOX, HAND TIGHTENED.
4. DIMENSIONS SHOWN ARE FOR INFORMATION ONLY AND VARY BASED ON THE MANUFACTURER.
5. CASTINGS SHALL BE MANUFACTURED IN THE U.S.A.

DATE	BY	DESCRIPTION	TOWN OF LILLINGTON PUBLIC WORKS		
			SCREW TYPE VALVE BOX DETAIL	SCALE: N.T.S.	DRAWING #: W-5
REVISIONS					



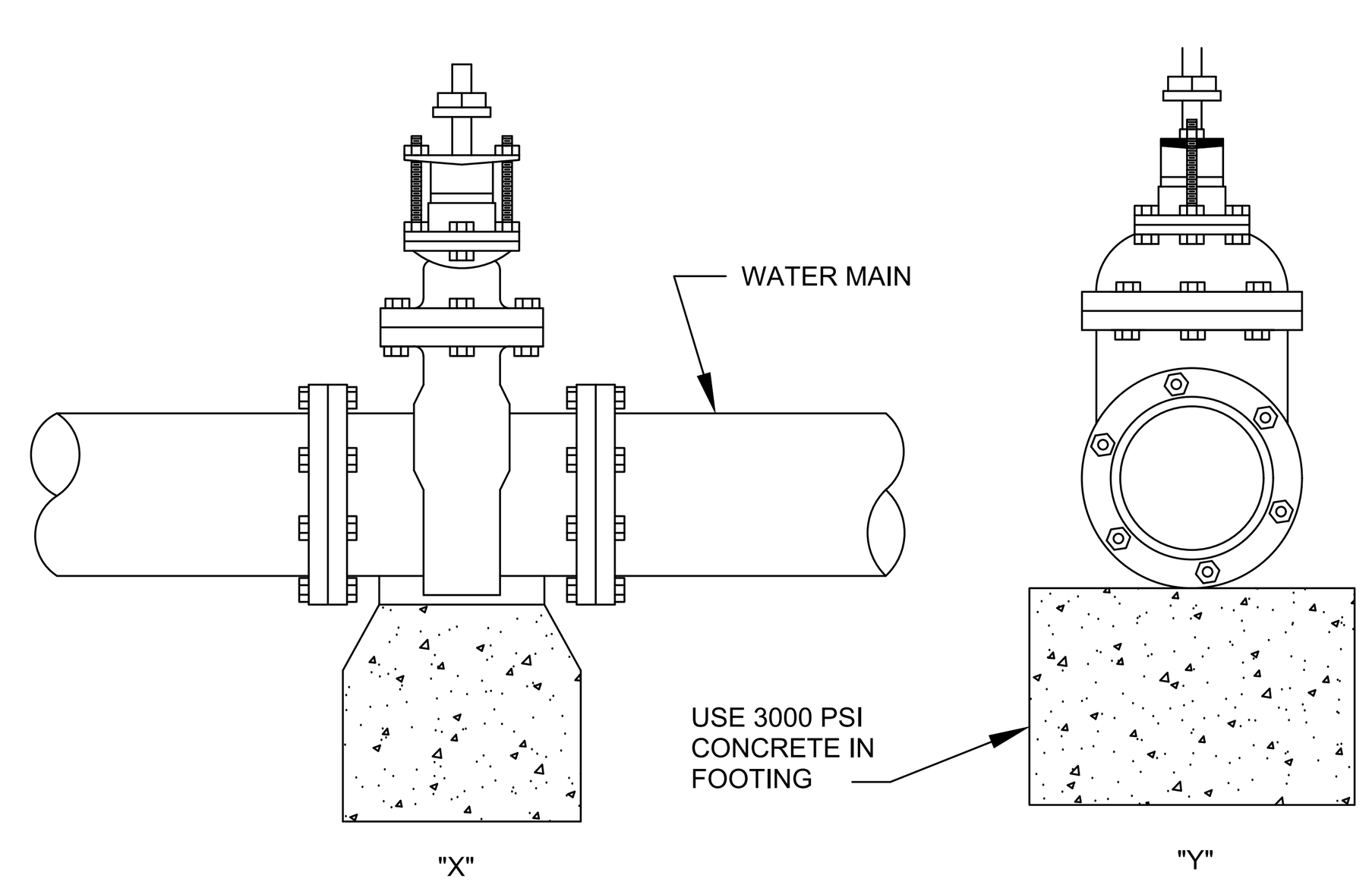


NOTES

1. CLEANOUTS IN PAVEMENT SHALL BE INSTALLED INSIDE A VALVE BOX. WITH TOP OF CLEANOUT INSIDE 2" BELOW FINISH GRADE.
2. ALL CLEANOUTS SHALL HAVE SEWER OR STORM NOTED ON COVER AS APPLICABLE.
3. CLEANOUT COVERS SHALL BE BRASS.
4. CLEANOUTS IN GRASS, GRAVEL OR MULCH SHALL HAVE 12"X12"X6" CAST IN PLACE CONCRETE COLLAR FLUSH WITH FINISH GRADE.
5. ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL. THE FULL LENGTH OF THE SERVICE DITCH SHALL BE COMPACTED IN 6" LAYERS WITH MECHANICAL TAMP.
6. RISER STACK IN GRASS SHALL BE 4" CAST IRON, PROVIDE REDUCING WYE AS NEEDED TO TRANSITION TO DIFFERING LATERAL PIPE SIZE.

STANDARD CLEANOUT

NOT TO SCALE



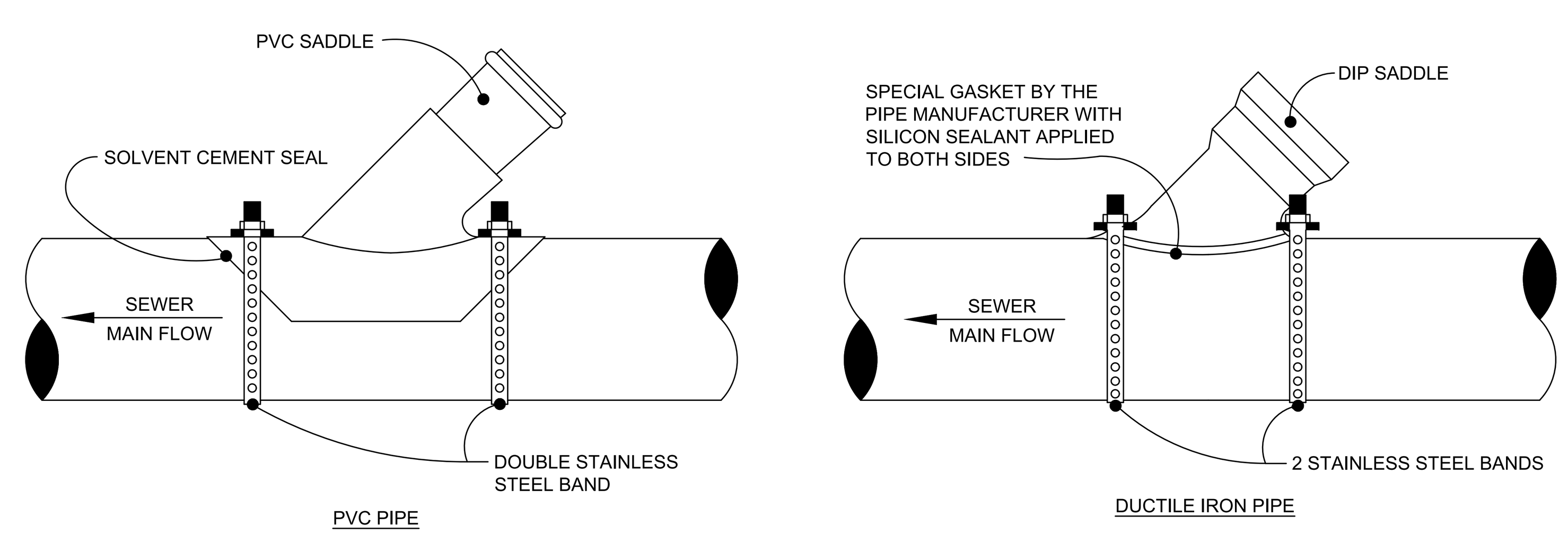
1. "X"x"Y" MUST EQUAL THE SQUARE FOOTAGE OF THE BEARING AREA AS SHOWN IN THE TABLE BELOW.

BEARING SURFACE AREA FOR VALVE FOOTINGS

VALVE SIZE	6"	8"
QUICKSAND,POOR SOIL (1000 PSF)	7	12
GRAVEL,COURSE SAND (1600 PSF)	5	8
SOFT CLAY (2000 PSF)	4	6
FAIRLY DRY CLAY, CLEAN DRY SAND (4000 PSF)	2	3
DRY CLAY, COMPACT SAND (8000 PSF)	1	2

STANDARD VALVE FTG. FOR WATER MAINS

NOT TO SCALE

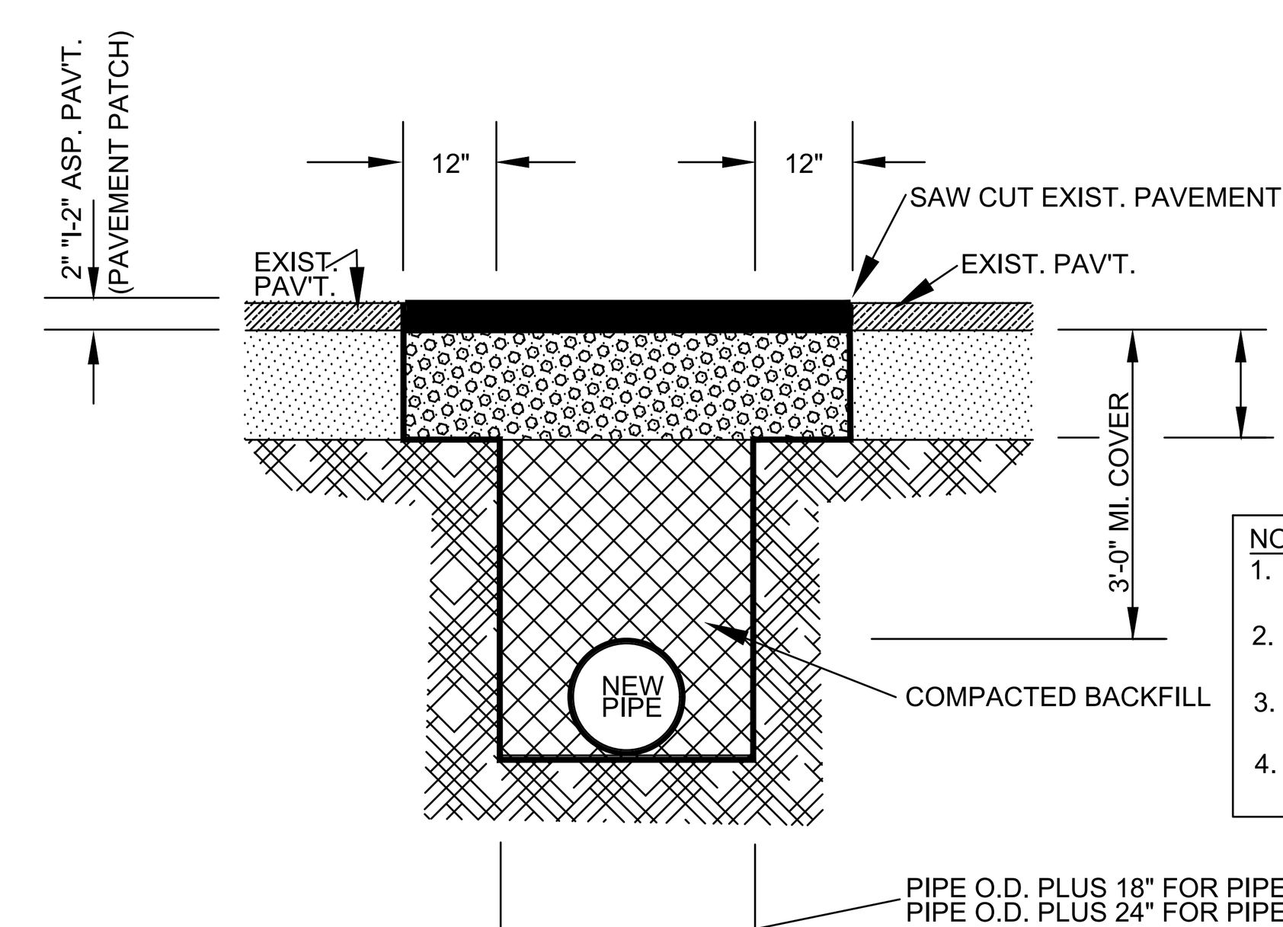


NOTES:

1. PVC SOLVENT CEMENT SHALL BE USED FOR PVC SADDLES.
2. TRUSS SADDLES SHALL BE USED WITH TRUSS PIPE.
3. DIP CONNECTIONS SHALL BE MJ IN-LINE WYE OR ROMAC SEWER SADDLE TYPE CB OR OTHER AS APPROVED.

STANDARD SANITARY SEWER LATERAL CONNECTIONS

NOT TO SCALE

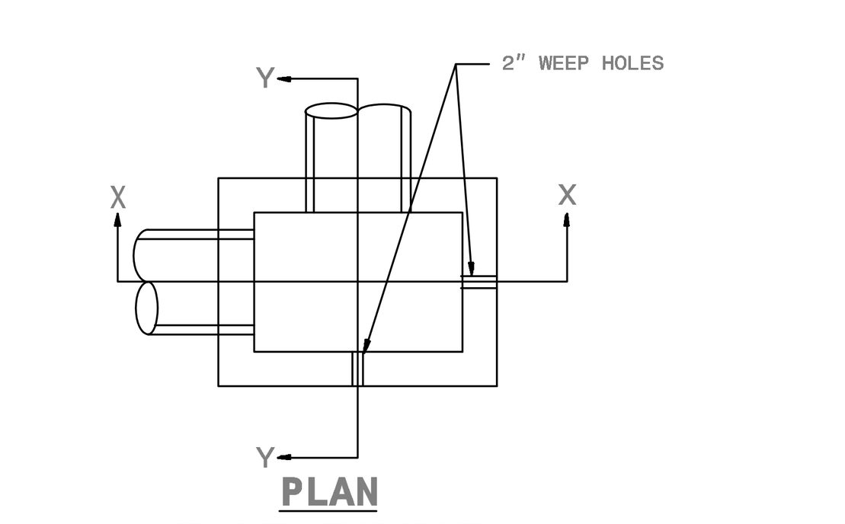


NOTES:

1. PAVEMENT SHALL BE CUT TO TRUE LINE AND REMOVED BEFORE TRENCH IS CUT.
2. STONE AND PAVEMENT TO BE PLACED WITH LEAST INTERFERENCE TO TRAFFIC.
3. STABILIZED AGGREGATE TO BE SECURED FROM AN APPROVED QUARRY.
4. ALL PAVEMENT REPAIRS TO BE IN ACCORDANCE WITH N.C.D.O.T. SPECIFICATIONS.

TYPICAL TRENCH IN BITUMINOUS SURFACE AREAS DETAIL

NOT TO SCALE



GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

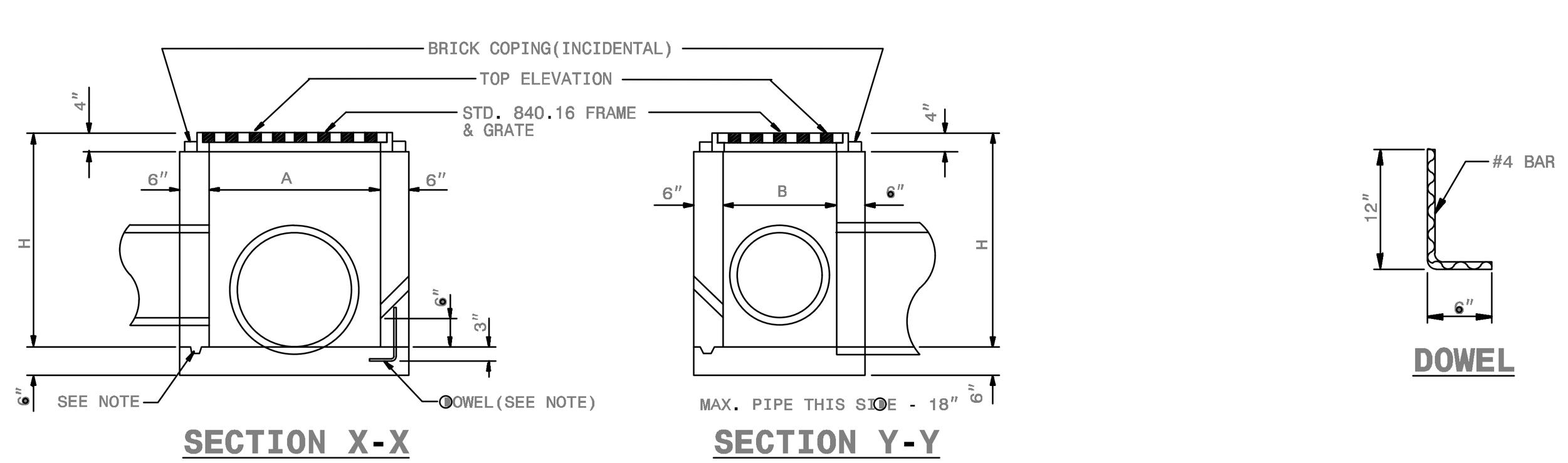
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.



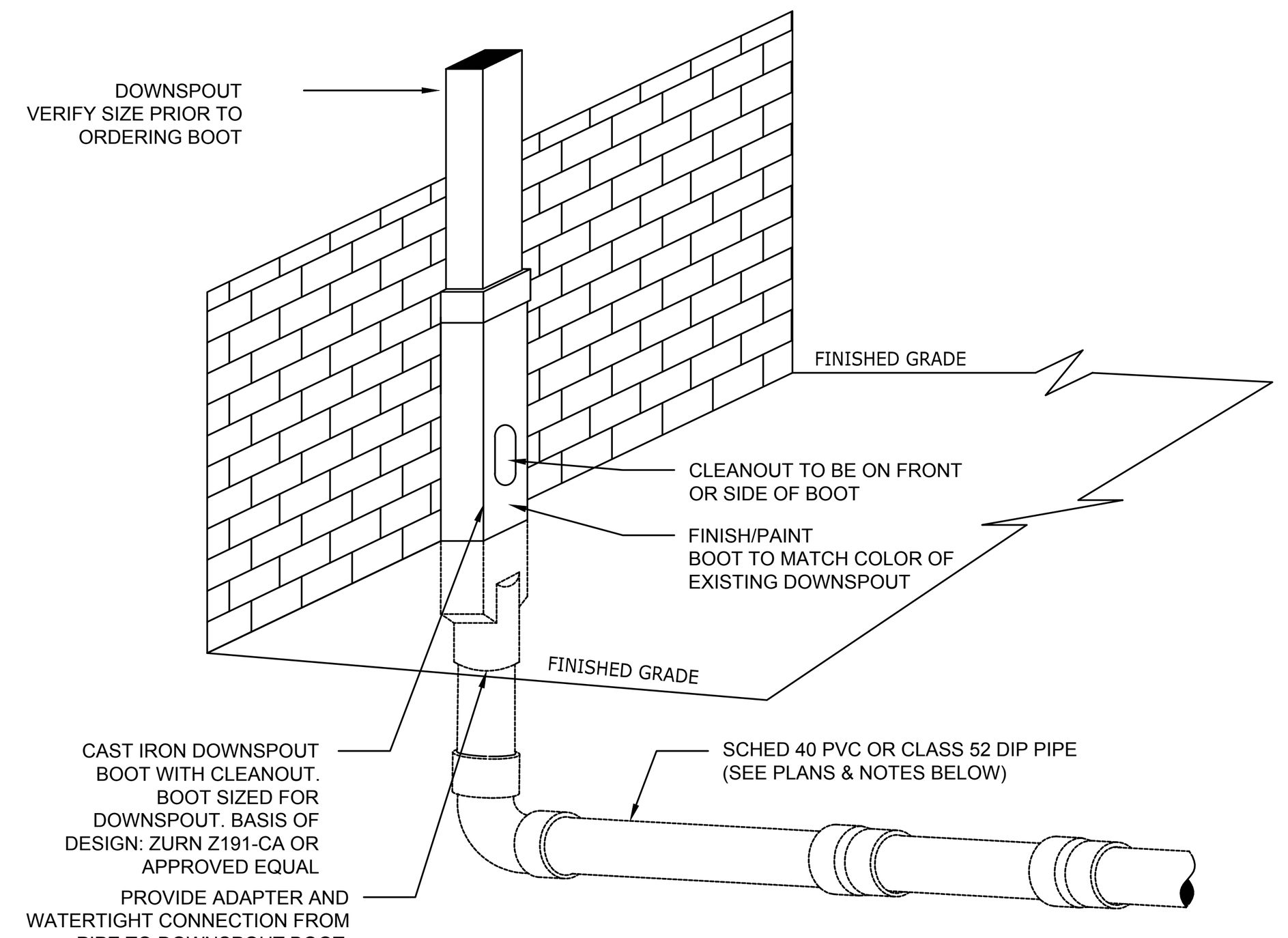
DIMENSIONS AND QUANTITIES FOR DROP INLET(BASED ON MIN. HEIGHT, H)								
DIMENSIONS OF BOX & PIPE				CUBIC YARDS CONC. IN BOX			DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	MIN. HEIGHT					
D	A	B	H	BOTTOM SLAB	WALL PER FT. HT.	TOTAL CONCRETE FOR MINIMUM HEIGHT, H	C.M.	R.C.
12"	3'-0"	2'-0"	2'-0"	0.222	0.222	0.592	0.015	0.026
15"			2'-3"			0.648	0.023	0.036
18"			2'-6"			0.703	0.033	0.049
24"			3'-0"			0.814	0.059	0.085
30"	3'-0"	2'-0"	3'-6"	0.222	0.222	0.925	0.092	0.127

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATIO
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
CONCRETE DROP INLET
12" THRU 30" PIPE

SHEET 1 OF 1
840.14



NOTES:

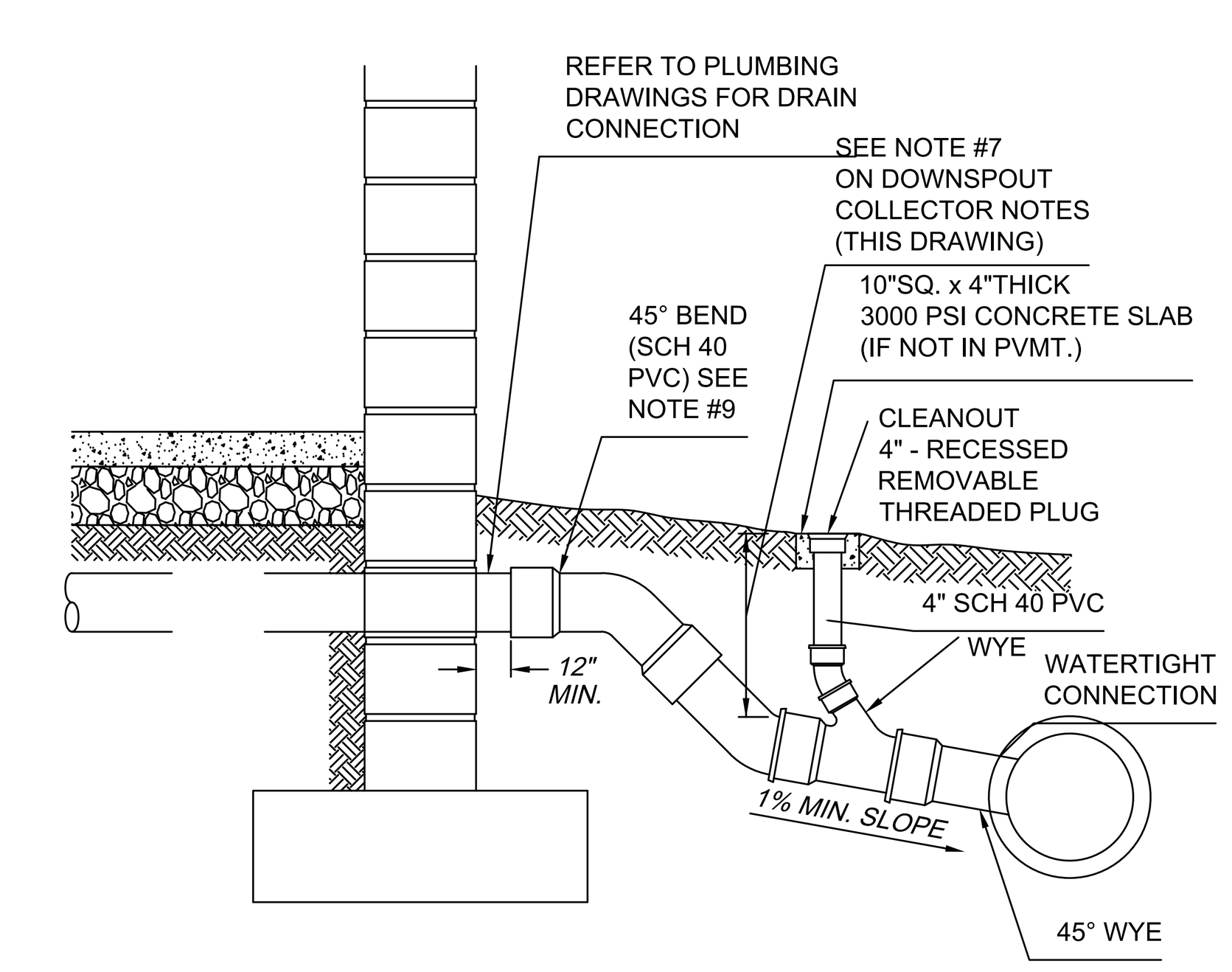
1. INSTALL CAST IRON DOWNSPOUT BOOT ON EXISTING DOWNSPOUT AND MOUNT SECURELY TO WALL.
2. FINISH / PAINT BOOT TO MATCH COLOR OF DOWNSPOUT.
3. ALL BELOW GRADE ROOF DRAINAGE PIPING SHALL BE 6" PVC @ 1.0% MIN. SLOPE UNLESS NOTED OTHERWISE.
4. PIPE SHALL BE DIP WHEN LESS THAN 24" OF COVER IS PROVIDED.
5. VERIFY DOWNSPOUT DIMENSIONS MATCH BOOT DIMENSIONS PRIOR TO ORDERING BOOT OR ADAPTOR.
6. MAINTAIN A WATERTIGHT CONNECTION AT ALL PIPE CONNECTIONS BELOW GRADE.
7. THE SITE WORK CONTRACTOR IS RESPONSIBLE FOR ALL WORK TO AND INCLUDING THE 45° BEND FOR ROOF DRAINS.
8. CONTRACTOR TO PROVIDE ANY MODIFICATIONS TO THE EXISTING DOWNSPOUT PIPING AS NECESSARY IN ORDER TO INSTALL THE DOWN SPOUT BOOT AND FITTINGS AS SHOWN. THIS INCLUDES SHORTENING OF THE DOWNSPOUT AND REMOVAL OF ANY ELBOWS OR FITTINGS.

CAST IRON DOWNSPOUT COLLECTOR

NO SCALE

COLLECTOR NOTES:

1. CONNECT ALL BUILDING DOWNSPOUTS INTO THE ROOF DRAIN COLLECTOR SYSTEM OR DIRECTLY INTO THE STORM SEWER SYSTEM.
2. THE ROOF DRAIN COLLECTOR SYSTEM IS SMOOTH-LINED, CORRUGATED POLYETHYLENE PIPE LAID AT MINIMUM SLOPES AS INDICATED.
3. PIPES CONNECTING TO INDIVIDUAL DOWNSPOUTS ARE 6" PROVIDE MINIMUM 6" PIPE SIZE 5' OUTSIDE BUILDING. ALL OTHER DRAIN PIPES ARE SIZED AS INDICATED INCREASING IN SIZE FROM UPSTREAM TO DOWNSTREAM.
4. PROVIDE CLEANOUTS AS INDICATED AND AS REQUIRED BY LOCAL BUILDING CODE.
5. MAKE CONNECTIONS INTO CONCRETE PIPES WITH A FLEXIBLE WATERTIGHT TEE CONNECTOR THAT IS MECHANICALLY EXPANDED INTO A CORDED OPENING. CONNECTOR SHALL BE KOR-N-TEE OR APPROVED EQUAL.
6. MAINTAIN ADEQUATE OUTFALL FOR ROOF DRAIN DURING AND AFTER THE COMPLETION OF CONSTRUCTION.
7. MINIMUM DEPTH OF COVER SHALL BE ONE (1) FOOT. FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.
8. MAINTAIN A WATERTIGHT CONNECTION AT ALL PIPE CONNECTIONS BELOW GRADE.
9. INSTALL THE DOWNSPOUT COLLECTOR DRAIN BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDING. THE SITE WORK CONTRACTOR IS RESPONSIBLE FOR ALL WORK TO AND INCLUDING THE 45° BEND. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF DOWNSPOUTS ON BUILDING EXTERIOR WALLS.



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Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

NOTES AND DETAILS

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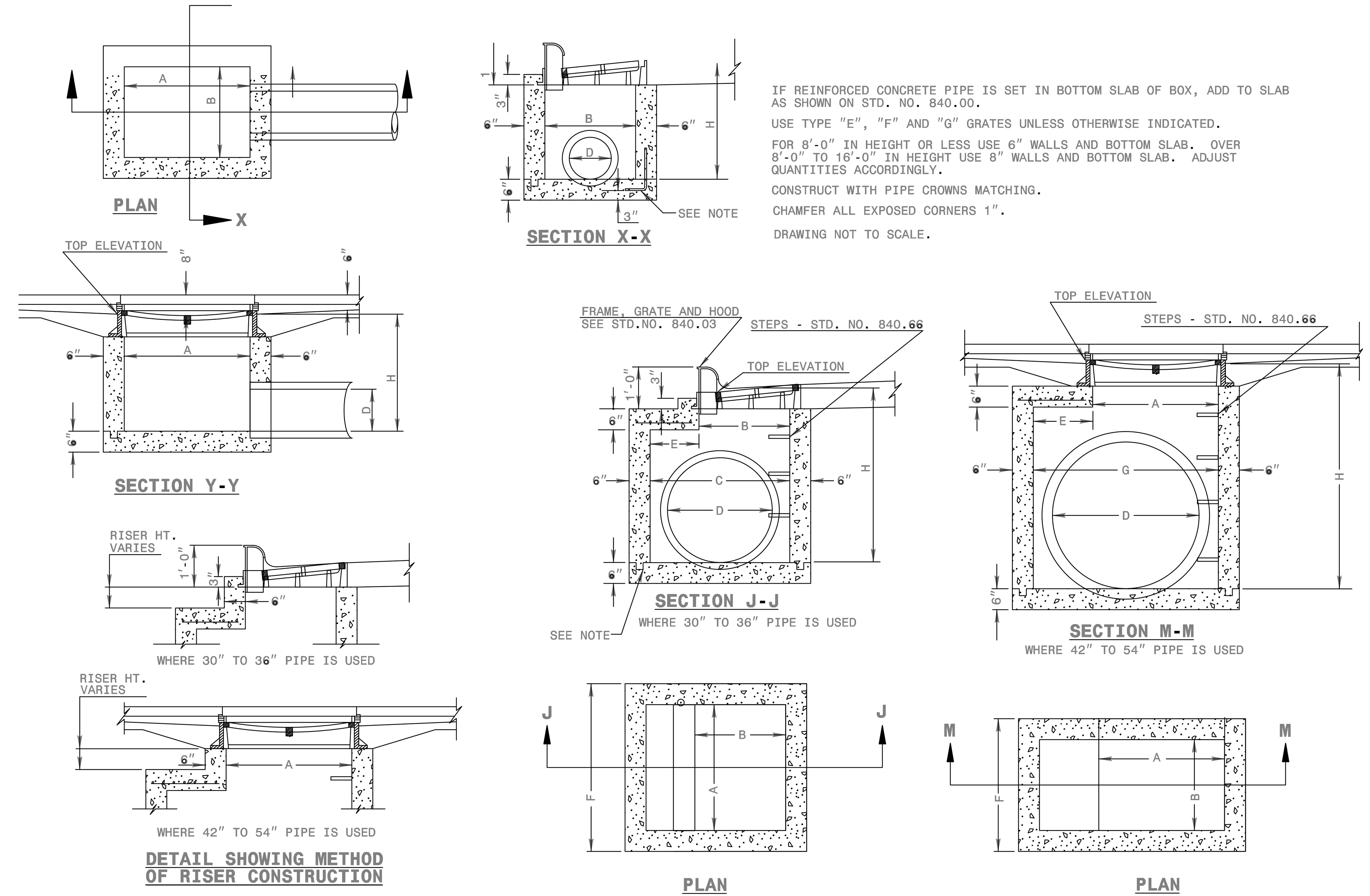
E D C B A



IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" TO 16'-0" IN HEIGHT USE 8" WALLS AND BOTTOM SLAB. ADJUST QUANTITIES ACCORDINGLY.

CONSTRUCT WITH PIPE CROWNS MATCHING.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

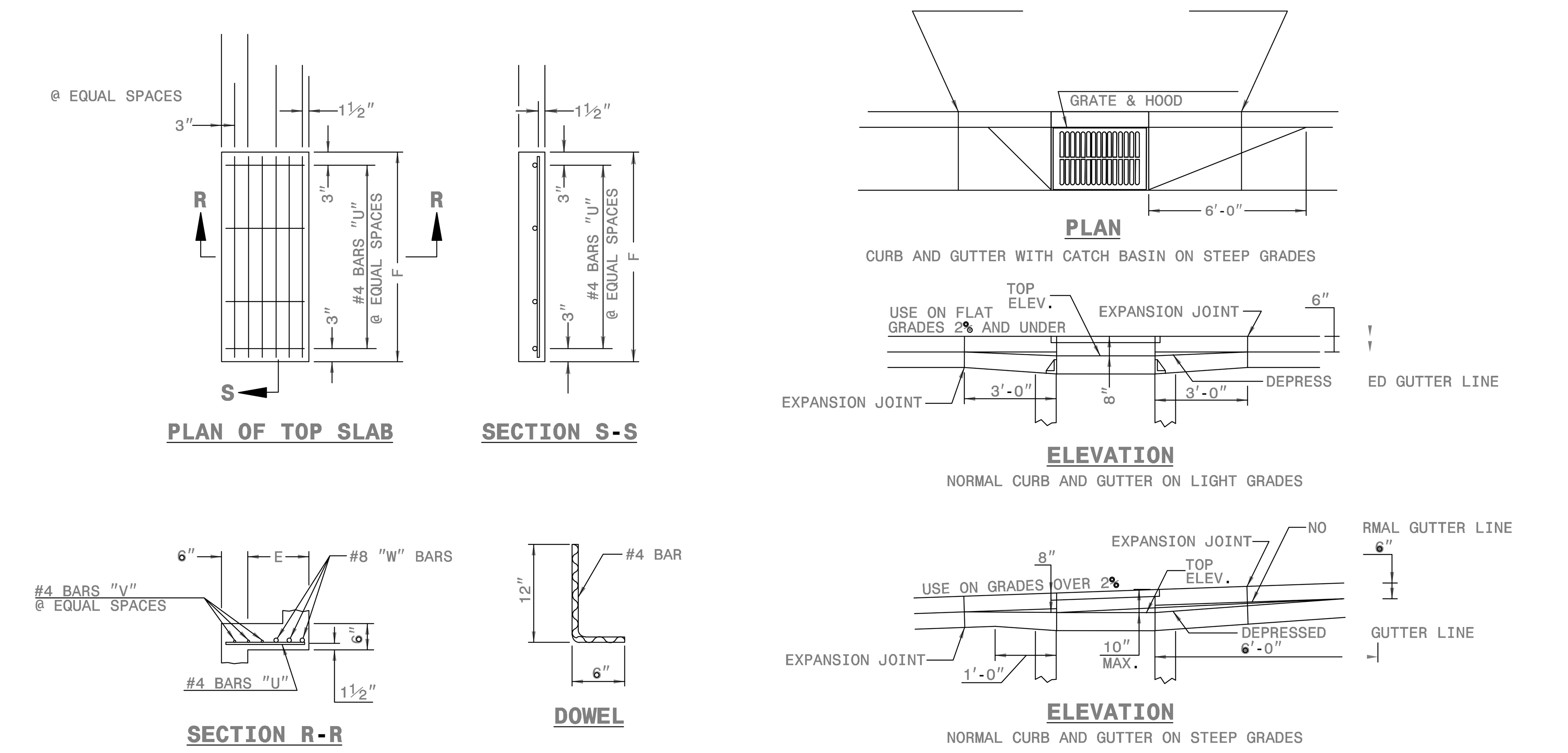
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N C

1-18

ROADWAY STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

SHEET 1 OF 2

840.02



MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN(BASED ON MIN. HEIGHT, H, WITH NO RISER) *

DIMENSIONS OF BOX AND PIPE						COVER DIMENSION										CU.YDS. CONC. IN BOX			DEDUCTIONS ONE PIPE	
PIPE	SPAN	WIDTH	WIDTH	SPAN	MIN. HEIGHT			BARS-U		BARS-V		BARS-W		TOTAL LBS.	TOP SLAB	BOTTOM SLAB	TOT. CONC. FOR MINIMUM HEIGHT, H		
D	A	B	C	G	H	E	F	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH					C.M.	R.C.
12"	3'-0"	2'-2"	--	--	2'-9"	--	--	--	--	--	--	--	--	--	--	0.235	0.772	0.015	0.026
15"	3'-0"	2'-2"			3'-0"											0.235	0.829	0.023	0.036
18"	3'-0"	2'-2"			3'-3"											0.235	0.887	0.033	0.049
24"	3'-0"	2'-2"			3'-9"											0.235	1.001	0.059	0.085
30"	3'-0"	2'-2"	3'-4"		4'-3"	1'-2"	4'-0"	4	1'-5"	2	3'-9"	3	3'-9"	39	0.123	0.321	1.433	0.092	0.127
36"	3'-0"	2'-2"	3'-10"		4'-9"	1'-8"	4'-0"	4	1'-11"	3	3'-9"	3	3'-9"	43	0.161	0.358	1.714	0.132	0.178
42"	3'-0"	2'-2"		4'-5"	5'-3"	1'-5"	3'-2"	4	1'-8"	2	2'-11"	3	2'-11"	32	0.112	0.318	1.738	0.180	0.243
48"	3'-0"	2'-2"		5'-0"	5'-9"	2'-0"	3'-2"	4	2'-3"	3	2'-11"	3	2'-11"	35	0.145	0.352	2.052	0.235	0.317
54"	3'-0"	2'-2"		5'-7"	6'-3"	2'-7"	3'-2"	4	2'-10"	5	2'-11"	3	2'-11"	41	0.180	0.386	2.387	0.297	0.401

* RISER HAS .228 CUBIC YARDS OF CONCRETE P ER FOOT HEIGHT

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH

1-18

ROADWAY STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

SHEET 2 OF 2

840.02

GENERAL NOTES

USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.

USE ASTM A615 GRADE 60 REINFORCING STEEL. USE ASTM A1064 WELDED WIRE FABRIC (WWF).

FABRICATE, ASSEMBLE AND DESIGN PRECAST MANHOLE COMPONENTS ACCORDANCE WITH AASHTO M199.

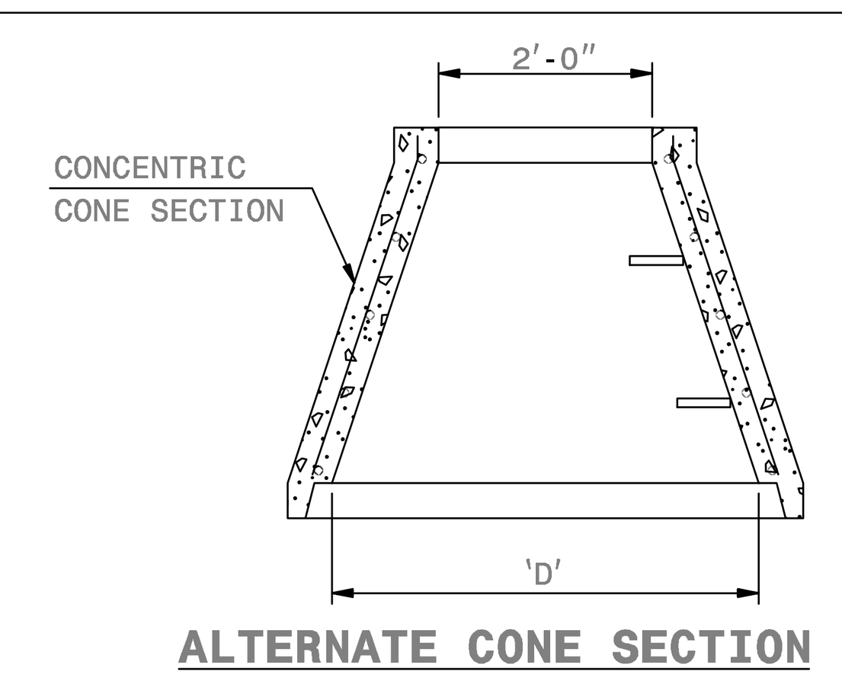
ASSEMBLE RISER AND GRADE RINGS WITH THE STEPS SPACED 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.

WHERE THE MANHOLE IS EXPOSED TO ROAD TRAFFIC, CONSTRUCT THE TOP OF THE MANHOLE FLUSH WITH THE GROUND AND A MINIMUM OF 9" ABOVE THE GROUND AT OTHER LOCATIONS.

LIMIT DEPTH OF FILL TO 30'-0" FROM FINISH GRADE TO TOP OF BOTTOM SLAB.

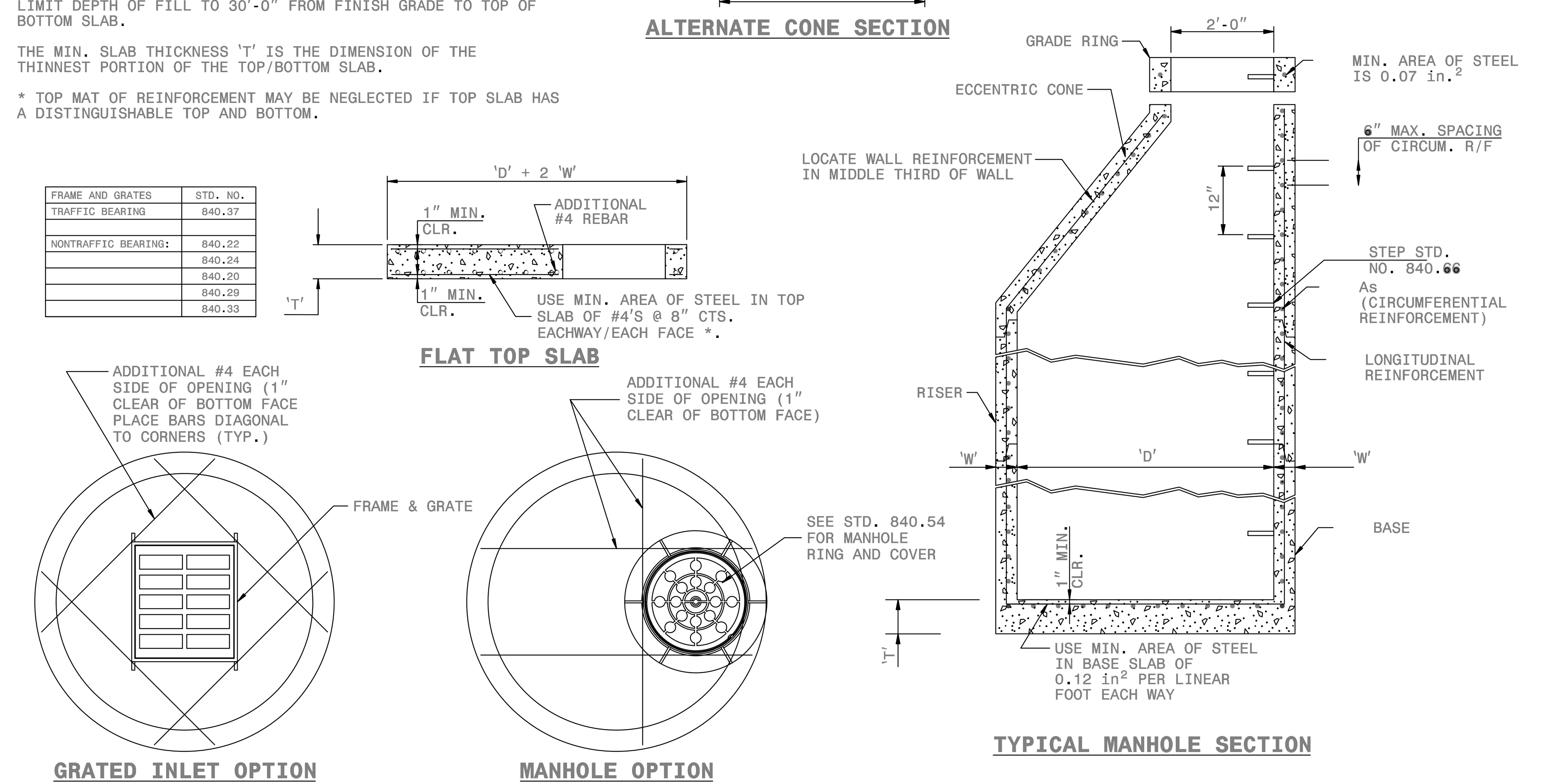
THE MIN. SLAB THICKNESS 'T' IS THE DIMENSION OF THE THINNEST PORTION OF THE TOP/BOTTOM SLAB.

* TOP MAT OF REINFORCEMENT MAY BE NEGLECTED IF TOP SLAB HAS A DISTINGUISHABLE TOP AND BOTTOM.



D	W	T	As
INTERNAL DIAMETER (FT.)	MIN. WALL THICKNESS (IN.)	MIN. TOP/BOTTOM SLAB THICKNESS (IN.)	MIN. CIRCUMFERENTIAL AREA OF STEEL PER VERTICAL FT. (SQ. IN.)
4	4	6	0.12
5	5	8	0.15
6	6	8	0.18

FRAME AND GRATES	STD. NO.
TRAFFIC BEARING	840.37
NONTRAFFIC BEARING:	840.22
	840.24
	840.20
	840.29
	840.33



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH N C

1-18

ROADWAY STANDARD DRAWING FOR PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 48" PIPE

SHEET 1 OF 1

840.52

Date:

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes		
Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10 feet or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
· Temporary grass seed covered with straw or other mulches and tackifiers. · Hydroseeding · Rolled erosion control products with or without temporary grass seed · Appropriately applied straw or other mulch · Plastic sheeting	· Permanent grass seed covered with straw or other mulches and tackifiers · Geotextile fabrics such as permanent soil reinforcement matting · Hydroseeding · Shrubs or other permanent plantings covered with mulch · Uniform and evenly distributed ground cover sufficient to restrain erosion · Structural methods such as concrete, asphalt or retaining walls · Rolled erosion control products with grass seed

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

Page:

NORTH CAROLINA Environmental Quality

EFFECTIVE DATE: 11/12/2020

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Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

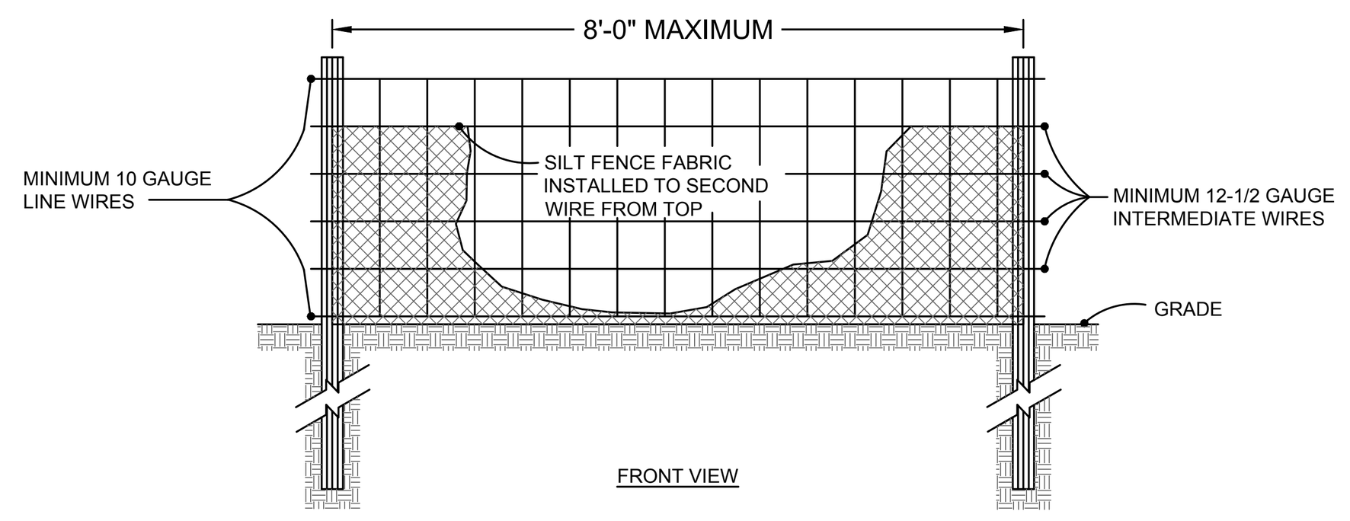
No.	Date	Description

ISSUE DATE: 07-26-24

PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

NOTES AND DETAILS

C5.2



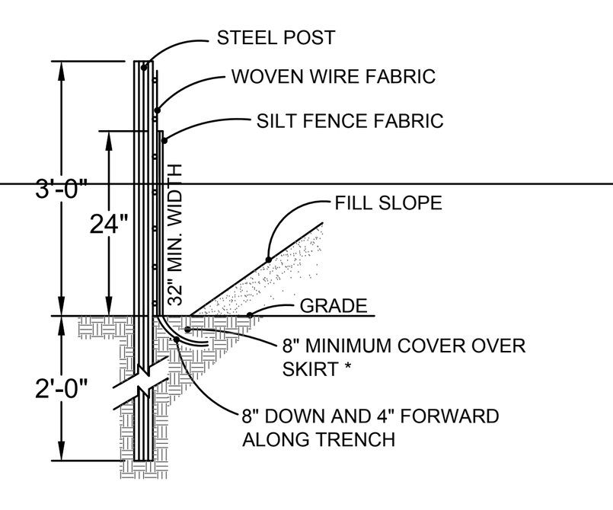
NOTE:
USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.

MAINTENANCE
INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.

SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.

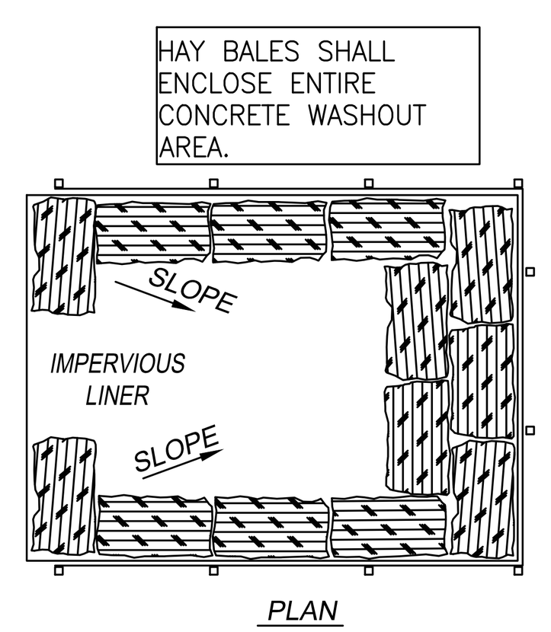
REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.



SILT FENCE
NO SCALE

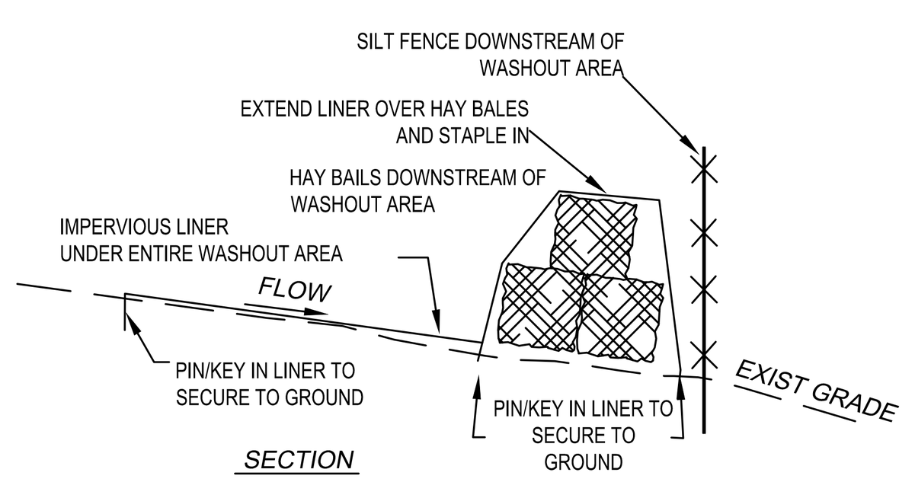
MAINTENANCE NOTES:

1. INSPECT AREA REGULARLY AND AFTER EACH RAIN EVENT AND MAKE REPAIRS PROMPTLY.
2. ENSURE CONCRETE IS BEING CAPTURED AND IS NOT FLOWING THROUGH OR AROUND BARRIERS.
3. REPLACE HAY BALES AND SILT FENCE THAT NO LONGER DRAIN OR FILTER EFFICIENTLY.
4. REPLACE OR PATCH IMPERVIOUS LINER THAT IS BECOMES DAMAGED. RE-ANCHOR LINER AS NEEDED.
5. REMOVE ACCUMULATED DRIED CONCRETE THAT IS IMPEDING DRAINAGE OR REDUCING STORAGE VOLUME. DISPOSE OF WASTE CONCRETE PROPERLY.



NOTES:

1. LOCATE WASH-OUT AREA AT LEAST 50' FROM OPEN WATERS AND DRAINAGE INLETS.
2. LINE LIMITS OF TEMP CONCRETE WASH OUT AREA WITH IMPERVIOUS LINER OF 8-MIL LAMINATED PLASTIC GEOTEXTILE FABRIC (DURA-SKRIM 8BW OR APPROVED EQUAL).
3. ADD STRAW BAILS ON DOWN-GRADIENT END OF LINER.
4. PROPERLY DISPOSE OF DRIED CONCRETE AND RESTORE AREA TO FINAL GRADES AND SURFACES AT COMPLETION OF CONSTRUCTION.

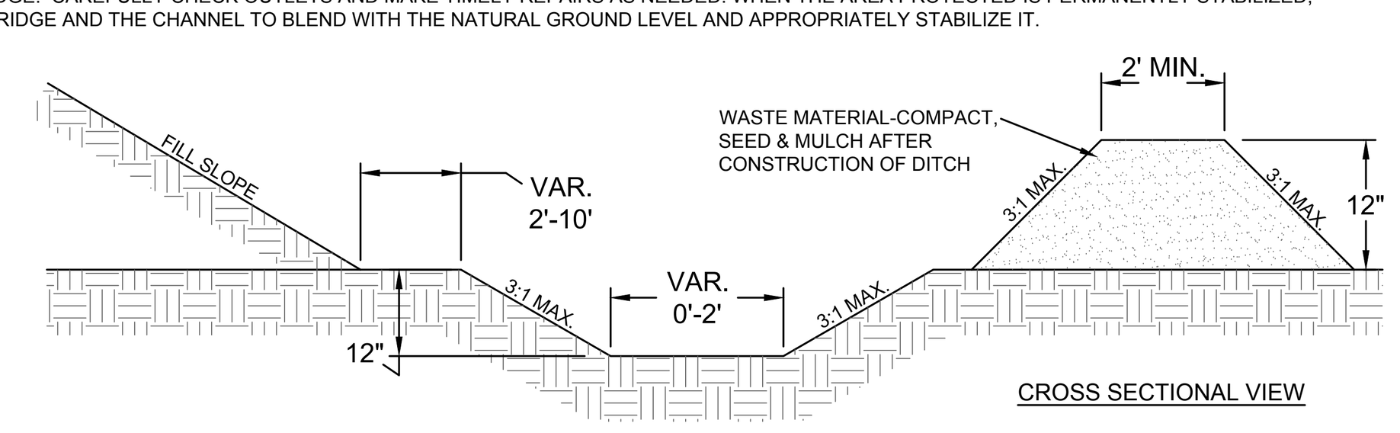


CONCRETE WASHOUT AREA
NO SCALE

NOTES:

1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.

MAINTENANCE
INSPECT TEMPORARY DIVERSIONS ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION RIDGE. CAREFULLY CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED. WHEN THE AREA PROTECTED IS PERMANENTLY STABILIZED, REMOVE THE RIDGE AND THE CHANNEL TO BLEND WITH THE NATURAL GROUND LEVEL AND APPROPRIATELY STABILIZE IT.



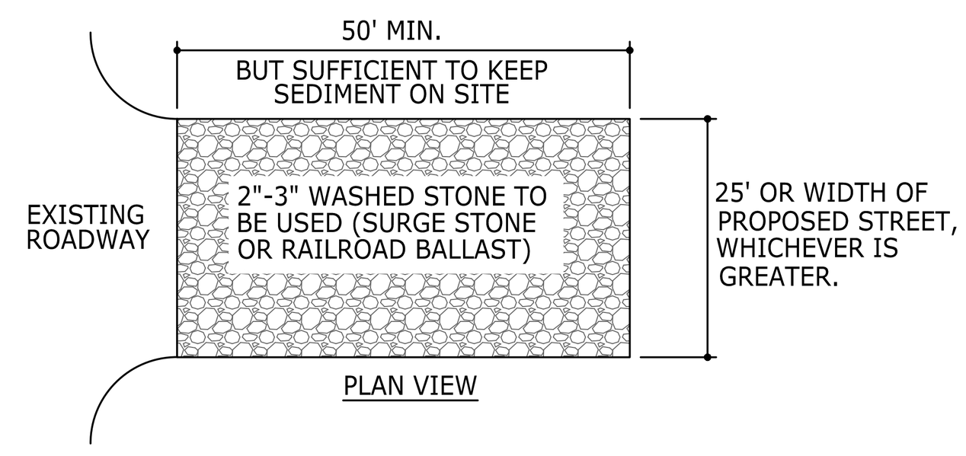
TEMPORARY DIVERSIONS

DITCH	TOTAL FLOW (CFS)	SLOPE (%)	BOTTOM WIDTH (FT)	RIGHT SLOPE (H:V)	LEFT SLOPE (H:V)	FLOW DEPTH (FT)	LINER
CHANNEL 1	0.64	0.69	0	3:1	3:1	0.36	NAG C125

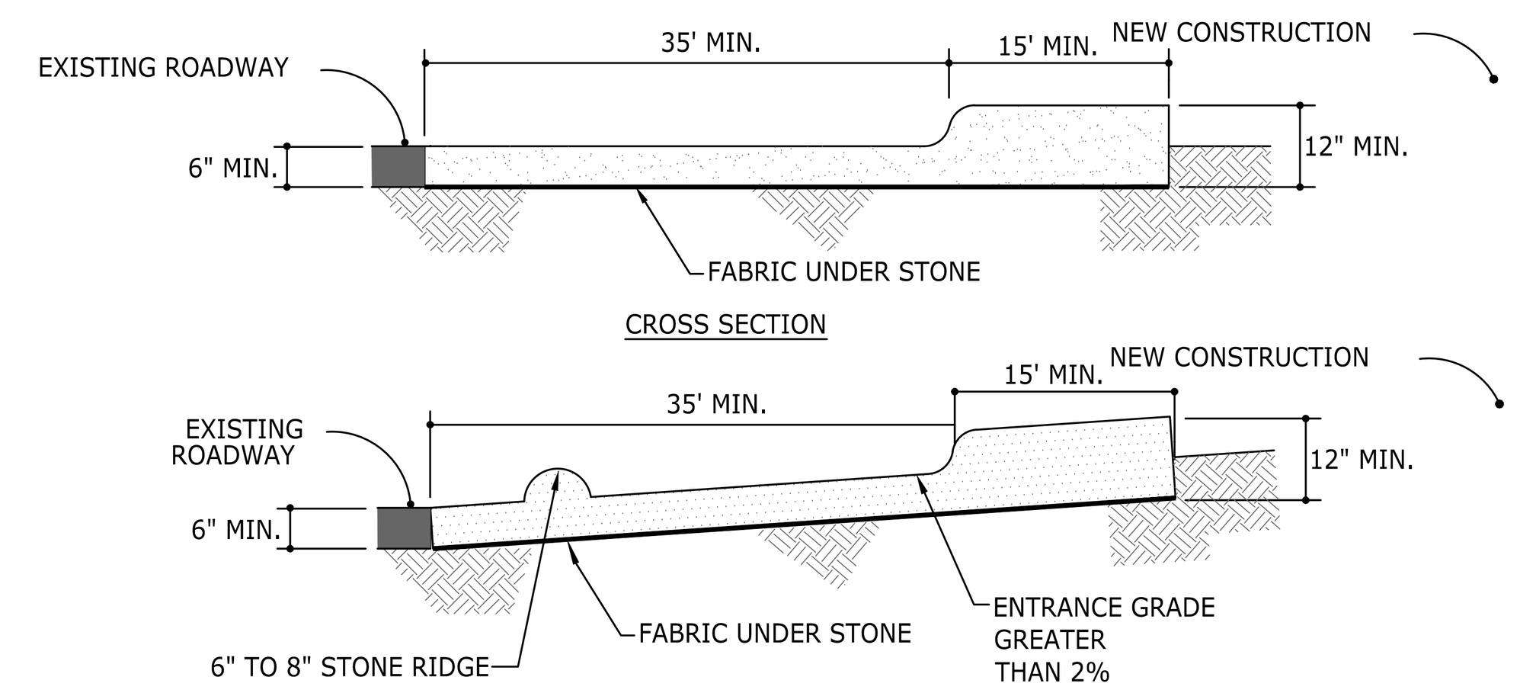
PERMANENT DIVERSIONS

DITCH	TOTAL FLOW (CFS)	SLOPE (%)	BOTTOM WIDTH (FT)	RIGHT SLOPE (H:V)	LEFT SLOPE (H:V)	FLOW DEPTH (FT)	LINER
CHANNEL 1	0.64	0.69	0	3:1	3:1	0.45	GRASS

CLEAN WATER DIVERSION
NO SCALE

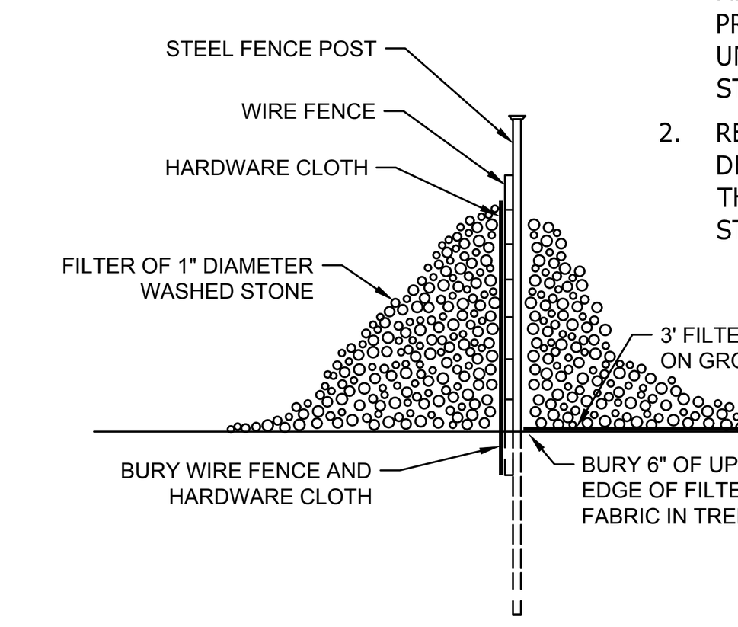


NOTES:
1. PUT SILT FENCE OR TREE PROTECTION FENCE UP TO ENSURE CONSTRUCTION ENTRANCE IS USED.
2. IF CONSTRUCTION ON THE SITES ARE SUCH THAT THE MUD IS NOT REMOVED BY THE VEHICLE TRAVELING OVER THE STONE, THEN THE TIRES OF THE VEHICLES MUST BE WASHED BEFORE ENTERING THE PUBLIC ROAD.
3. MAINTAIN GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING CONSTRUCTION SITE. ENTRANCE WILL REQUIRE PERIODIC REMOVAL OF SEDIMENT-LADEN STONE AND REPLACEMENT WITH FRESH STONE.



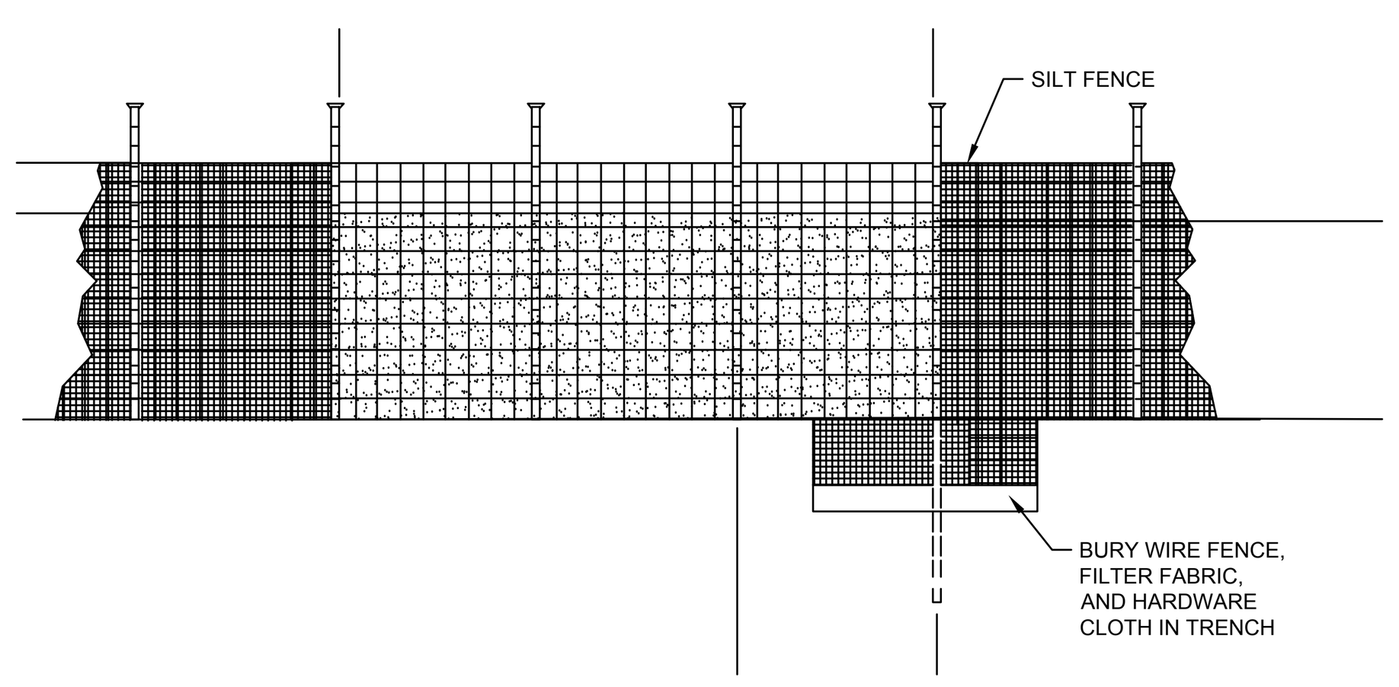
MAINTENANCE
MAINTAIN THE GRAVEL PAD IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH TWO-INCH STONE. AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT AND CLEAN IT OUT AS NECESSARY. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS.

GRAVEL CONSTRUCTION ENTRANCE
NO SCALE



MAINTENANCE NOTES:
1. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE/OUTLET. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT. REMOVE & REPLACE STONE AS NECESSARY AS IT BECOMES CLOGGED WITH SEDIMENT.
2. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

NOTES:
1. INSTALL SILT FENCE PER STD. SILT FENCE DETAIL.
2. LOCATE REINFORCED OUTLET AT LOW POINTS OF SILT FENCE BARRIER.
3. PLACE RIP RAP WITH CARE. DO NOT TEAR SILT FENCE FABRIC.



REINFORCED SILT FENCE OUTLET
NO SCALE

TEMPORARY SEED SCHEDULE (Jan 1 - May 1)

GRASS SPECIES BLEND	PLANTING RATE	MIN. % PURE SEED	MAX. % WEED SEED
ANNUAL RYE GRASS	50-LBS PER 1-ACRE	85%	1%

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,00LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 750 LB/ACRE 10-10-10 FERTILIZER.

MULCH:
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

TEMPORARY SEED SCHEDULE (May 1 - Sept 30)

GRASS SPECIES BLEND	PLANTING RATE	MIN. % PURE SEED	MAX. % WEED SEED
GERMAN MILLET	30-LBS PER 1-ACRE	85%	1%

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,00LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 750 LB/ACRE 10-10-10 FERTILIZER.

MULCH:
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

TEMPORARY SEED SCHEDULE (Oct 1 - Dec 30)

GRASS SPECIES BLEND	PLANTING RATE	MIN. % PURE SEED	MAX. % WEED SEED
ANNUAL RYE GRASS	50-LBS PER 1-ACRE	85%	1%

SOIL AMENDMENTS:
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,00LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 1,000 LB/ACRE 10-10-10 FERTILIZER.

MULCH:
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE:
REPAIR AND REFERTILIZE DAMAGES AREAS IMMEDIATELY. TOPDRESS WITH 50 LB/ACRE OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/ACRE KOBE (PIEDMONT AND COASTAL PLAIN) OR KOREAN (MOUNTAINS) LESPEDEZA IN LATE FEBRUARY OR EARLY MARCH.

TEMPORARY SEEDING SPECIFICATIONS

COMPLETE GRADING BEFORE PREPARING SEEDBEDS, AND INSTALL ALL NECESSARY EROSION CONTROL PRACTICES SUCH AS, DIKES, WATERWAYS, AND BASINS. MINIMIZE STEEP SLOPES BECAUSE THEY MAKE SEEDBED PREPARATION DIFFICULT AND INCREASE THE EROSION HAZARD. IF SOILS BECOME COMPACTED DURING GRADING, LOOSEN THEM TO A DEPTH OF 6-8 INCHES USING A RIPPER, HARROW, OR CHISEL PLOW.

SEEDBED PREPARATIONS

GOOD SEEDBED PREPARATION IS ESSENTIAL TO SUCCESSFUL PLANT ESTABLISHMENT. A GOOD SEEDBED IS WELL-PULVERIZED, LOOSE, AND UNIFORM. WHERE HYDROSEEDING METHODS ARE USED, THE SURFACE MAY BE LEFT WITH A MORE IRREGULAR SURFACE OF LARGE CLODS AND STONES.

- **LIMING -** APPLY LIME ACCORDING TO SOIL TEST RECOMMENDATIONS. IF THE PH (ACIDITY) OF THE SOIL IS NOT KNOWN, AN APPLICATION OF GROUND AGRICULTURAL LIMESTONE AT THE RATE OF 1 TO 1 1/2 TONS/ACRE ON COARSE-TEXTURED SOILS AND 2-3 TONS/ACRE ON FINE-TEXTURED SOILS IS USUALLY SUFFICIENT. APPLY LIMESTONE UNIFORMLY AND INCORPORATE INTO THE TOP 4-6 INCHES OF SOIL. SOILS WITH A PH OF 6 OR HIGHER NEED NOT BE LIMED.
- **FERTILIZER -** BASE APPLICATION RATES ON SOIL TESTS. WHEN THESE ARE NOT POSSIBLE, APPLY A 10-10-10 GRADE FERTILIZER AT 700-1,00 LB/ACRE. BOTH FERTILIZER AND LIME SHOULD BE INCORPORATED INTO THE TOP 4-6 INCHES OF SOIL. IF A HYDRAULIC SEEDER IS USED, DO NOT MIX SEED AND FERTILIZER MORE THAN 30 MINUTES BEFORE APPLICATION.
- **SURFACE ROUGHENING -** IF RECENT TILLAGE OPERATIONS HAVE RESULTED IN A LOOSE SURFACE, ADDITIONAL ROUGHENING MAY NOT BE REQUIRED, EXCEPT TO BREAK UP LARGE CLODS. IF RAINFALL CAUSES THE SURFACE TO BECOME SEALED OR CRUSTED, LOOSEN IT JUST PRIOR TO SEEDING BY DISKING, RAKING, HARROWING, OR OTHER SUITABLE METHODS. GROOVE OR FURROW SLOPES STEEPER THAN 3:1 ON THE CONTOUR BEFORE SEEDING (REFER TO THE NCDEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL, PRACTICE 6.03, SURFACE ROUGHENING).

PLANT SELECTION

- SELECT AN APPROPRIATE SPECIES OR SPECIES MIXTURE FROM TABLE 6.10A FOR SEEDING IN LATE WINTER AND EARLY SPRING, TABLE 6.10B FOR SUMMER, AND TABLE 6.10C FOR FALL.
- IN THE MOUNTAINS, DECEMBER AND JANUARY SEEDING HAVE POOR CHANCES OF SUCCESS. WHEN IT IS NECESSARY TO PLANT AT THESE TIMES, USE RECOMMENDATIONS FOR FALL AND A SECURELY TACKED MULCH.

SEEDING

- EVENLY APPLY SEED USING A CYCLONE SEEDER (BROADCAST), DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. USE SEEDING RATES GIVEN IN TABLES 6.10A-6.10C. BROADCAST SEEDING AND HYDROSEEDING ARE APPROPRIATE FOR STEEL SLOPES WHERE EQUIPMENT CANNOT BE DRIVEN. HAND BROADCASTING IS NOT RECOMMENDED BECAUSE OF THE DIFFICULTY IN ACHIEVING A UNIFORM DISTRIBUTION.
- SMALL GRAINS SHOULD BE PLANTED NO MORE THAN 1 INCH DEEP, AND GRASSES AND LEGUMES NO MORE THAN 1/2 INCH. BROADCAST SEED MUST BE COVERED BY RAKING OR CHAIN DRAGGING, AND THEN LIGHTLY FIRMED WITH A ROLLER OR CULTIPACKER. HYDROSEEDED MIXTURES SHOULD INCLUDE A WOOD FIBER (CELLULOSE) MULCH.

MULCHING

THE USE OF AN APPROPRIATE MULCH WILL HELP ENSURE ESTABLISHMENT UNDER NORMAL CONDITIONS, AND IS ESSENTIAL TO SEEDING SUCCESS UNDER HARSH SITE CONDITIONS (REFER TO THE NCDEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL, PRACTICE 6.14, MULCHING). HARSH SITE CONDITIONS INCLUDE:

- SEEDING IN FALL FOR WINTER COVER (WOOD FIBER MULCHES ARE NOT CONSIDERED ADEQUATE FOR THIS USE),
- SLOPES STEEPER THAN 3:1,
- EXCESSIVELY HOT OR DRY WEATHER,
- ADVERSE SOILS (SHALLOW, ROCKY, OR HIGH IN CLAY OR SAND), AND
- AREAS RECEIVING CONCENTRATED FLOW.

IF THE AREA TO BE MULCHED IS SUBJECT TO CONCENTRATED WATERFLOW, AND IN CHANNELS, ANCHOR MULCH WITH NETTING (REFER TO THE NCDEQ EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL, PRACTICE 6.14, MULCHING).

TEMPORARY SEEDING MAINTENANCE

RESEED AND MULCH AREAS WHERE SEEDING EMERGENCE IS POOR, OR WHERE EROSION OCCURS, AS SOON AS POSSIBLE. DO NOT MOW. PROTECT FROM TRAFFIC AS MUCH AS POSSIBLE.

PERMANENT SEED SCHEDULE (MAY 1-AUGUST 15)

GRASS SPECIES BLEND	PLANTING RATE	MIN. % PURE SEED	MAX. % WEED SEED
HULLED SUNSTAR OR RIVIERA BERMUDA	200-LBS PER 1-ACRE	98%	1%

NOTES:
1. PERMANENT SEEDING FOR THIS PROJECT SHALL OCCUR BETWEEN MAY 1-AUGUST 15. ADJUSTED AS NECESSARY FOR ADEQUATE GROUND TEMPERATURES. GROUND TEMPERATURES SHALL BE IN THE RANGE OF 60-80 DEGREES FOR GERMINATION.
2. REFER TO SPECIFICATION SECTION 329200

TEMPORARY/PERMANENT SEEDING
NO SCALE

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Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

NOTES AND DETAILS

C5.3

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

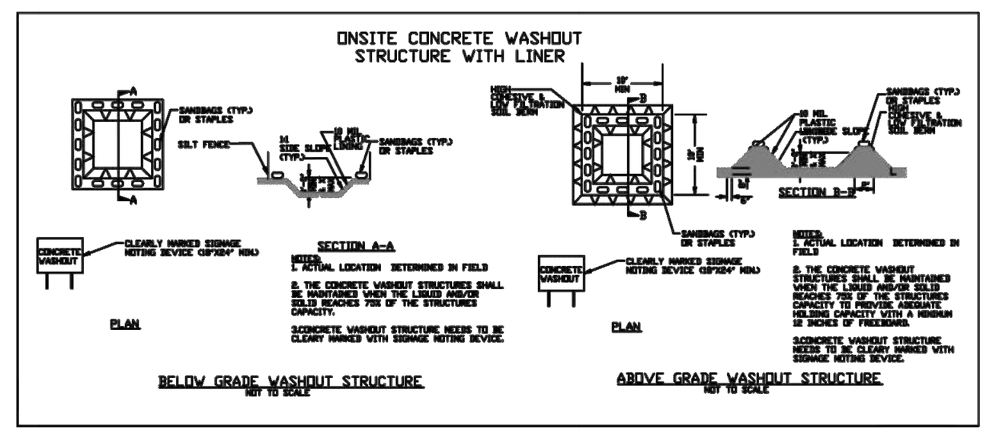
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

NORTH CAROLINA Environmental Quality



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

EFFECTIVE: 04/01/19

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (and this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event $\geq$ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDOs)	At least once per 7 calendar days and within 24 hours of a rain event $\geq$ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event $\geq$ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event $\geq$ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible.*** The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

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Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24

PROJECT #: 63407
DRAWN BY: SC
CHECKED BY: WA

NOTES AND DETAILS

C5.4

DESIGN CRITERIA

LOCATION: LILLINGTON, NORTH CAROLINA
BUILDING CODE: 2018 NORTH CAROLINA BUILDING CODE
RISK CATEGORY: III
BASIC LATERAL FORCE RESISTING SYSTEM:
INTERMEDIATE REINFORCED MASONRY SHEAR WALLS
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE

DESIGN LIVE LOADS

ROOF	20 PSF
CORRIDORS	100 PSF
MECHANICAL	150 PSF

ROOF SNOW LOAD

P_g = 15 PSF
C_e = 0.9
I_s = 1.1
C_t = 1.0
P_f = 10.4 PSF
P_m = 16.5 PSF

RAIN ON SNOW 15 PSF

WIND LOAD

V = 125 MPH (3 SECOND GUST)
EXPOSURE C
DESIGN (DESIGN/ULTIMATE) WIND BASE SHEAR:
V_x = 280k V_y = 193k
INTERNAL PRESSURE COEFFICIENT = ±0.18
COMPONENTS & CLADDING PER ASCE 7
FIGURES 30.5-1

WIND LOADS ON COMPONENTS & CLADDING FOR GIVEN TRIBUTARY AREAS (psf)

	ZONE	10 SQ FT	20 SQ FT	50 SQ FT	100 SQ FT	500 SQ FT
ROOF	1	+16.0/-38.2	+16.0/-37.2	+16.0/-35.9	+16.0/-34.9	+16.0/-34.9
	2	+16.0/-64.1	+16.0/-57.2	+16.0/-48.2	+16.0/-41.4	+16.0/-41.4
	3	+16.0/-96.4	+16.0/-79.9	+16.0/-58.0	+16.0/-41.4	+16.0/-41.4
ROOF OVHNG	2	-55.1	-54.2	-52.9	-51.9	-35.7
	3	-90.8	-71.3	-45.4	-25.9	-25.9
WALL	4	+34.9/-37.9	+33.4/-36.3	+31.3/-34.3	+29.8/-32.7	+26.2/-29.1
	5	+34.9/-46.6	+33.4/-43.5	+31.3/-39.4	+29.8/-36.3	+26.2/-29.1

1. DETERMINE WIND LOADS ON COMPONENTS IN ACCORDANCE WITH THE NCSBC AND ASCE-7 OR WITH THIS TABLE. REFERENCE ASCE 7-10 FIGURE 30.5-1. TRIBUTARY AREA = GREATER OF LxW OR LxL/3.
2. DESIGN FOR ALLOWABLE CAPACITY USING LOADS FROM ASCE-7 OR FROM THIS TABLE.
3. DEFLECTIONS MAY BE CALCULATED BASED ON 70% OF THESE LOADS.
4. POSITIVE PRESSURES ARE DIRECTED TOWARD THE INTERIOR. NEGATIVE LOADS ARE DIRECTED AWAY FROM THE INTERIOR. NEGATIVE ROOF LOADS ARE UPLIFT LOADS.
5. NET UPLIFT IS EQUAL TO THE GROSS UPLIFT LOAD CALCULATED FROM ASCE-7 OR FROM THIS TABLE MINUS 60% OF THE ROOFING ALLOWANCE SUMPERIMPOSED DEAD LOAD SHOWN ON S100

SEISMIC CRITERIA

SEISMIC DESIGN VALUES DETERMINED UTILIZING 2008 USGS HAZARD DATA
SPECTRAL RESPONSE ACCELERATIONS S_s = 0.184g S_1 = 0.086g
SITE CLASS D
SPECTRAL RESPONSE COEFFICIENTS S_{ds} = 0.197g S_{d1} = 0.138g
SEISMIC DESIGN CATEGORY C
DESIGN ULTIMATE SEISMIC BASE SHEAR: V_x = 87k V_y = 87k
IMPORTANCE FACTOR I_e = 1.25
DESIGN SEISMIC RESPONSE COEFFICIENT C_s = 0.099
RESPONSE MODIFICATION FACTOR R = 3.5

SPECIAL INSPECTION REQUIREMENTS

THE FOLLOWING SYSTEMS ARE SUBJECT TO THE SPECIAL INSPECTION REQUIREMENTS OF THE NCSBC, CHAPTER 17.

1. CAST-IN-PLACE CONCRETE
2. MASONRY
3. STRUCTURAL STEEL
4. STEEL JOIST
5. STEEL DECK
6. SOILS
7. SPECIAL INSPECTIONS FOR WIND RESISTANCE

GENERAL NOTES

GENERAL

1. DESIGN, FURNISH, AND INSTALL TEMPORARY SHORING, BRACING, AND OTHER TEMPORARY SUPPORTS REQUIRED FOR CONSTRUCTING THE STRUCTURE AND TO MAINTAIN THE STABILITY THROUGHOUT ALL PHASES OF CONSTRUCTION UNTIL THE STRUCTURE IS COMPLETED. ALL TEMPORARY SUPPORTS ARE TO BE REMOVED UNLESS NOTED OTHERWISE.
2. USE STRUCTURAL DRAWINGS IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND THE DRAWINGS OF OTHER TRADES.
3. COORDINATE WITH OTHER TRADES THE ACTUAL LOCATIONS AND SIZES OF OPENINGS AND PENETRATIONS REQUIRED BY THEIR WORK.
4. COORDINATE WITH OTHER TRADES THE ACTUAL LOCATIONS AND ELEVATIONS OF BURIED SERVICES PASSING NEAR FOUNDATIONS. UNDERGROUND SERVICES WHICH PASS BENEATH WALL FOOTINGS SHALL HAVE AT LEAST 12" OF CLEARANCE BELOW THE BOTTOM OF THE FOOTING. WHERE THIS IS NOT ACHIEVED, EITHER STEP THE FOOTING DOWN BENEATH THE SERVICE OR INSTALL A STEEL PIPE SLEEVE FOR THE SERVICE TO PASS THROUGH. SLEEVES ARE FURNISHED AND INSTALLED BY THE TRADE INSTALLING THE SERVICE. NO SERVICE IS TO BE INSTALLED BENEATH COLUMN FOOTINGS UNLESS APPROVED BY THE ARCHITECT.
5. COORDINATE WITH OTHER TRADES THE ACTUAL LOCATIONS AND TYPES OF ATTACHMENTS AND ANCHORS THAT ARE REQUIRED BY THE TRADES TO FASTEN THEIR WORK TO THE STRUCTURE.
6. MODIFICATIONS TO STRUCTURAL COMPONENTS AND INSTALLATION OF PENETRATIONS THROUGH STRUCTURAL MEMBERS ARE NOT PERMITTED WITHOUT PRIOR APPROVAL OF THE ARCHITECT.
7. VERIFY ACTUAL DIMENSIONS, LOCATIONS, AND CONDITIONS OF EXISTING CONSTRUCTION PRIOR TO PROCEEDING WITH WORK OR ORDERING MATERIALS WHICH COULD BE AFFECTED BY EXISTING CONDITIONS.

FOUNDATIONS

1. THE FOUNDATION DESIGN IS BASED ON GEOTECHNICAL ENGINEERING REPORT BY TERRACON CONSULTANTS, INC. DATED MAY 7, 2024.
2. ALL FOOTINGS SHALL BE PLACED ON UNDISTURBED SOIL OR COMPACTED STRUCTURAL FILL. NET ALLOWABLE BEARING PRESSURE IS 3000 PSF.
3. SITE PREPARATION SHOULD BEGIN WITH THE DEMOLITION OF THE EXISTING PAVEMENT AND STRUCTURES AND DEBRIS REMOVAL WHERE NEW CONSTRUCTION WILL OCCUR. AS PART OF THE DEMOLITION, BURIED CONCRETE FOUNDATIONS ASSOCIATED WITH EXISTING MODULAR STRUCTURES SHOULD ALSO BE REMOVED. EXISTING UTILITIES THAT ARE TO BE ABANDONED SHOULD BE PROPERLY BACKFILLED WITH COMPACTED STRUCTURAL FILL UTILITIES THAT ARE TO REMAIN IN SERVICE SHOULD BE ACCURATELY LOCATED HORIZONTALLY AND VERTICALLY TO MINIMIZE CONFLICT WITH NEW FOUNDATION CONSTRUCTION.

   PRIOR TO PLACING FILL, EXISTING VEGETATION AND ROOT MAT SHOULD BE REMOVED. COMPLETE STRIPPING OF THE TOPSOIL SHOULD BE PERFORMED IN THE PROPOSED BUILDING PAD AREAS.

   THE SUBGRADE SHOULD BE PROOFROLLED WITH AN ADEQUATELY LOADED VEHICLE SUCH AS A FULLY-LOADED TANDEM-AXLE DUMP TRUCK. THE PROOFROLLING SHOULD BE PERFORMED UNDER THE DIRECTION OF THE GEOTECHNICAL ENGINEER. AREAS EXCESSIVELY DEFLECTING UNDER THE PROOFROLL SHOULD BE DELINEATED AND SUBSEQUENTLY ADDRESSED BY THE GEOTECHNICAL ENGINEER. EXCESSIVELY WET OR DRY MATERIAL SHOULD EITHER BE REMOVED, OR MOISTURE CONDITIONED AND RECOMPACTED. ANY EXISTING FILL MATERIAL ENCOUNTERED BENEATH THE BUILDING/FOOTING FOOTPRINT SHALL BE REMOVED AND REPLACED.

MATERIAL PROPERTY REQUIREMENTS FOR ON-SITE SOIL FOR USE AS GENERAL FILL AND STRUCTURAL FILL ARE NOTED IN THE TABLE BELOW:

PROPERTY	GENERAL FILL	STRUCTURAL FILL
COMPOSITION	FREE OF DELETERIOUS MATERIAL	FREE OF DELETERIOUS MATERIAL
MAXIMUM PARTICLE SIZE	6 INCHES (OR 2/3 OF THE LIFT THICKNESS)	3 INCHES
FINES CONTENT	NOT LIMITED	NOT LIMITED
PLASTICITY	NOT LIMITED	MAXIMUM LIQUID LIMIT OF 50 MAXIMUM PLASTICITY INDEX OF 30

STRUCTURAL AND GENERAL FILL SHOULD MEET THE FOLLOWING COMPACTION REQUIREMENTS.

ITEM	STRUCTURAL FILL	GENERAL FILL
MAXIMUM LIFT THICKNESS	10 INCHES IN LOOSE THICKNESS WHEN HEAVY, SELF-PROPELLED COMPACTION EQUIPMENT IS USED. 6 INCHES IN LOOSE THICKNESS WHEN HANDGUIDED EQUIPMENT (I.E. JUMPING JACK OR PLATE COMPACTOR) IS USED.	SAME AS STRUCTURAL FILL
MINIMUM COMPACTION REQUIREMENTS	95% OF THE MATERIAL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698). 98% OF THE MATERIAL'S STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D 698) IN UPPER 1 FOOT OF STRUCTURAL FILL.	92% OF THE MATERIAL'S STANDARD PROTOR MAXIMUM DRY DENSITY (ASTM D698)
WATER CONTENT RANGE	LOW PLASTICITY FINE-GRAINED SOIL (PI<30) : -3% TO +3% OF OPTIMUM. COARSE-GRAINED SOIL: -3% TO +3% OF OPTIMUM	AS REQUIRED TO ACHIEVE MIN. COMPACTION REQUIREMENTS AND STABILITY

IMPORTED FILL MATERIALS: IMPORTED FILL MATERIALS SHOULD MEET THE FOLLOWING MATERIAL PROPERTY REQUIREMENTS. REGARDLESS OF ITS SOURCE, STRUCTURAL FILL SHOULD CONSIST OF APPROVED MATERIALS THAT ARE FREE OF ORGANIC MATTER AND DEBRIS. FROZEN MATERIAL SHOULD NOT BE USED, AND FILL SHOULD NOT BE PLACED ON A FROZEN SUBGRADE.

SOIL TYPE	USCS CLASSIFICATION	ACCEPTABLE PARAMETER (FOR STRUCTURAL FILL)
LOW PLASTICITY, FINE-GRAINED SOIL	CL, CL-ML ML, SM, SC	LIQUID LIMIT LESS THAN 50 PLASTICITY INDEX LESS THAN 30
COARSE-GRAINED SOIL	GW, GP, GM, GC, SW, SP, SM, SC	LESS THAN 50% PASSING NO. 200 SIEVE LIQUID LIMIT LESS THAN 50 PLASTICITY INDEX LESS THAN 30
SELECT GRANURAL FILL	SP, SP-SM, SW, OR SW-SM	LESS THAN 12% PASSING NO. 200 SIEVE PLASTICITY INDEX LESS THAN 10

4. NO FOUNDATIONS SHALL BE PLACED IN WATER OR ON FROZEN GROUND.
5. ALL FOOTING EXCAVATIONS ARE TO BE FINISHED BY HAND.
6. ALL FINISHED FOUNDATION EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE ARCHITECT OR HIS DESIGNATE BEFORE ANY CONCRETE IS PLACED.
7. UNLESS OTHERWISE NOTED, ALL FOOTINGS AND PILASTERS SHALL BE CENTERED UNDER SUPPORTED MEMBERS.
8. DOWELS FROM FOUNDATIONS INTO PIERS, COLUMNS, BUTTRESSES, OR WALLS ABOVE SHALL BE THE SAME SIZE AND NUMBER AS VERTICAL REINFORCEMENT IN PIERS, COLUMNS, BUTTRESSES, OR WALLS ABOVE, EXCEPT AS OTHERWISE SHOWN ON THE DRAWINGS.
9. CAREFULLY FOLLOW THE REQUIREMENTS OF THE SPECIFICATIONS FOR BACKFILL UNDER OR ADJACENT TO ANY PORTION OF THE BUILDING.
10. WHERE FOUNDATION ELEMENTS ARE TO HAVE FILL ON BOTH SIDES, EACH SIDE SHALL BE FILLED SIMULTANEOUSLY, MAINTAINING A COMMON ELEVATION.
11. COORDINATE UNDERFLOOR DRAIN REQUIREMENTS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS AND THE REQUIREMENTS OF THE GEOTECHNICAL ENGINEER.
12. CONTRACTOR SHALL PROVIDE CONTINUOUS CONTROL OF SURFACE AND UNDERGROUND WATER AS REQUIRED DURING CONSTRUCTION SUCH THAT THE WORK IS DONE IN THE DRY.

CAST-IN-PLACE

1. MATERIALS
   - A. PORTLAND CEMENT: ASTM C150, TYPE I.
   - B. FLY ASH: ASTM A618, CLASS C OR F.
   - C. NORMAL-WEIGHT AGGREGATE: ASTM ASTM C33, CLASS 3M.
   - D. REINFORCING STEEL: ASTM A615 GRADE 60.
   - E. REINFORCING STEEL, WELDABLE: ASTM A706.
   - F. WELDED WIRE FABRIC: ASTM A185, FLAT SHEETS.
   - G. UNDER-SLAB DRAINAGEFILL: 4" WASHED CRUSHED STONE, MAXIMUM AGGREGATE SIZE OF 3/4".
   - H. VAPOR BARRIER: ASTM E1745, CLASS B; FIVE-PLY, NYLON OR POLYESTER CHORD, 15 MILS THICKNESS.
   - I. WATERSTOP: SELF EXPANDING.
2. CONCRETE MIXES
   - A. FOOTINGS: 3000 PSI NW
   - B. SLABS-ON-GRADE: 3000 PSI NW.
   - C. SLABS-ON-GRADE EXPOSED TO WEATHER: 4500 PSI NW, AIR-ENTRAINED.
3. PERFORM CONCRETE WORK IN ACCORDANCE WITH ACI 318 AND ACI 301.
4. PROVIDE CONCRETE COVER AS FOLLOWS:
   - A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3".
   - B. CONCRETE EXPOSED TO EARTH OR WEATHER:
     - a. #5 OR SMALLER: 1 1/2".
     - b. #6 OR LARGER: 2".
   - C. CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
     - a. SLABS, WALLS, JOIST: 3/4"
     - b. BEAMS, COLUMNS: 1 1/2" TO PRIMARY REINFORCEMENT, TIES, STIRRUPS, OR SPIRALS.
5. PROVIDE CONTINUOUS REINFORCEMENT WHEREVER POSSIBLE. SPLICE ONLY AS SHOWN OR APPROVED. MINIMUM LAP LENGTHS, EXPRESSED IN NUMBER OF BAR DIAMETERS, SHALL BE AS FOLLOWS:

BAR SIZE	NORMAL WT. CONCRETE STRENGTH, fc (psi)		
	3000	4000	5000
#6 OR SMALLER	57 DIA.	49 DIA.	44 DIA.
#7 OR LARGER	71 DIA.	62 DIA.	55 DIA.

MULTIPLY THE ABOVE LENGTHS BY 1.3 FOR TOP BARS AND BY 1.3 FOR LIGHTWEIGHT CONCRETE. WHERE BARS OF UNEQUAL DIAMETER ARE LAPPED, USE THE LAP LENGTH OF THE SMALLER BAR. THE ABOVE LENGTHS ARE CLASS "B" TENSION LAP SPLICES BASED ON GRADE 60 BARS WITH A COVER OF AT LEAST 1 BAR DIA. AND SPACING AT LEAST 3 BAR DIA. LAP LENGTHS SHALL BE INCREASED IN ACCORDANCE WITH ACI 318 IF COVER IS LESS THAN 1 BAR DIA. OR SPACING IS LESS THAN 3 BAR DIA.

6. ACCURATELY INSTALL AND PROPERLY SECURE ANCHORS, BEARING PLATES, SLEEVES, AND OTHER EMBEDDED ITEMS.
7. ACCURATELY LOCATE AND BLOCK OUT OPENINGS AND PENETRATIONS.
8. COORDINATE WITH OTHER TRADES FOR ANCHORS, EMBEDDED ITEMS, SLEEVES, AND PENETRATIONS REQUIRED AND/OR FURNISHED BY THE OTHER TRADES.
9. PROVIDE CONTRACTION JOINTS IN SLABS-ON-GRADE WHERE INDICATED ON THE PLANS. PROVIDE A JOINT DEPTH EQUAL TO AT LEAST 25% OF THE SLAB THICKNESS.
10. INSTALL AND SEAL VAPOR BARRIER IN ACCORDANCE WITH ASTM E1643 AND MANUFACTURER'S INSTRUCTIONS. LAP JOINTS 6" AND SEAL WITH MANUFACTURER'S RECOMMENDED TAPE.
11. FLOOR FINISHES:
    - A. FLOAT FINISH: SURFACES TO RECEIVE A TROWEL FINISH, TO BE COVERED WITH FLUID-APPLIED OR SHEET WATERPROOFING, OR TO BE COVERED WITH BUILT-UP OR MEMBRANE ROOFING.
    - B. TROWEL FINISH: SURFACES EXPOSED TO VIEW OR COVERED WITH RESILIENT FLOORING, CARPET, WOOD FLOORING, PAINT, SEALER, OR OTHER THIN FILM FINISH.
    - C. TROWEL AND FINE-BROOM FINISH: SURFACES TO BE COVERED WITH QUARRY OR CERAMIC TILE INSTALLED BY THE THIN-SET OR THICK-SET METHOD.
    - D. BROOM FINISH: EXTERIOR CONCRETE PLATFORMS, STEPS, AND RAMPS
12. FLOOR FINISH TOLERANCE:
    - A. SLABS TO RECEIVE TROWEL OR TROWEL AND FINE-BROOM FINISH:
      - a. SPECIFIED OVERALL VALUES: FF=25 / FL=20.
      - b. MINIMUM LOCAL VALUES: FF=17 / FL=15..
13. FINISH SLABS FLAT AND LEVEL.
14. NO CONDUIT OR PIPE MAY BE RUN WITHIN STRUCTURAL CONCRETE MEMBERS EXCEPT WHERE INDICATED.

STRUCTURAL MASONRY

1. SCOPE: THESE NOTES APPLY TO LOAD BEARING MASONRY OR MASONRY THAT IS PART OF THE LATERAL LOAD RESISTING SYSTEM. SEE ARCHITECTURAL FOR OTHER MASONRY.
2. ALL MASONRY WORK SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" (ACI530-13) AND "SPECIFICATIONS FOR MASONRY STRUCTURES" (ACI530.1-13)
3. MATERIALS
   - A. CONCRETE MASONRY UNITS: ASTM C90, 2000 PSI MIN. UNIT STRENGTH.
   - B. MORTAR: ASTM C270, PROPORTION SPECIFICATION, TYPE S.
   - C. GROUT: ASTM C476; SLUMP = 8" TO 11". COMPRESSIVE STRENGTH f'c = 3000 PSI
   - D. MASONRY f'm = 2000 PSI.
   - E. REINFORCING STEEL: ASTM A615, GRADE 60. Fs = 32,000 PSI
4. LAP REINFORCING AS FOLLOWS, UNLESS NOTED OTHERWISE.

#3	1'-6"	#7	5'-6"
#4	2'-0"	#8	8'-6"
#5	2'-6"	#9	10'-9"
#6	4'-0"	#10	14'-0"

5. INSTALL REINFORCING IN THE CENTER OF CELLS UNLESS INDICATED OTHERWISE.
6. ADEQUATELY SECURE REINFORCING TO PREVENT MOVEMENT PRIOR TO GROUT FILL.
7. GROUT ALL CELLS OF MASONRY UNITS INSTALLED BELOW FINAL GRADE.
8. ABOVE GRADE, GROUT ONLY REINFORCED CELLS UNLESS INDICATED OTHERWISE.

STRUCTURAL STEEL

1. MATERIALS
   - A. STRUCTURAL STEEL WIDE FLANGE SHAPES: ASTM A992
   - B. OTHER STRUCTURAL STEEL ROLLED SHAPES: ASTM A36
   - C. RECTANGULAR OR ROUND HSS: ASTM A500, GR B
   - D. STEEL PLATE: ASTM A36
   - E. HIGH STRENGTH BOLTS: ASTM A325
   - F. ANCHOR RODS: ASTM F1554, GRADE 36
   - G. WELD ELECTRODE: IN ACCORDANCE WITH AWS D1.1
2. FABRICATE AND ERECT STEEL IN ACCORDANCE WITH THE AISC SPECIFICATION. PERFORM SHOP AND FIELD WELDING IN ACCORDANCE WITH AWS D1.1 WITH CURRENTLY CERTIFIED WELDERS.
3. UNLESS NOTED OTHERWISE, ALL BOLTED CONNECTIONS ARE MADE WITH 3/4" HIGH STRENGTH BOLTS INSTALLED SNUG TIGHT.
4. DESIGN OF BEAM CONNECTIONS ARE DELEGATED TO THE STEEL FABRICATOR. SHOP STANDARD SIMPLE SHEAR CONNECTIONS WILL BE PERMITTED. SERVICE LEVEL (UNFACTORED) BEAM REACTIONS ARE SHOWN ON THE FRAMING PLAN. WHERE NOT SHOWN DESIGN FOR MINIMUM END REACTION OF 10 KIPS FOR A SHEAR CONNECTION AND 10 KIP-FT FOR A MOMENT CONNECTION. THE EOR WILL REVIEW AND APPROVE THE PROPOSED CONNECTION.
5. STEEL PREPARATION AND FINISH:
   - A. INTERIOR FRAMING: SSPC SP3 POWER TOOL CLEANING; PAINT 23 LATEX PRIMER FOR STEEL SURFACES.
   - B. BRICK RELIEF ANGLES AND LINTELS: SSPC SP6 COMMERCIAL BLAST CLEANING; HOT DIPPED GALVANIZED.
6. FOR BEAMS NOT MEETING THE MINIMUM SIZE REQUIREMENT OF THE UL ASSEMBLY, THE CONTRACTOR SHALL PROVIDE FOR APPROVAL W/D CALCULATIONS AS REQUIRED IN SECTION 721.5.2.2 OF THE NC STATE BUILDING CODE.

STEEL DECK

1. 3" DEEP ROOF DECK ATTACHMENT TO STRUCTURAL STEEL
   - A. FASTEN ROOF DECK PANELS TO STEEL SUPPORTING MEMBERS WITH 5/8" NOMINAL DIAMETER PUDDLE WELDS OR WELDS WITH AN EQUAL PERIMETER, OR SEAM WELDS NOT LESS THAN 1 1/2" LONG.
   - B. WELD EDGES AND INTERIOR RIBS OF DECK UNITS TO EACH SUPPORTING MEMBER WITH A MINIMUM OF THREE WELDS PER DECK UNIT.
   - C. WELD SPACING: SEE ROOF DECK ATTACHMENT PLAN ON S-040.
   - D. FASTEN SIDE LAPS WITH #10 SELF-DRILLING SCREWS. SEE ROOF DECK ATTACHMENT PLAN ON S-040. DECK SPANS 36" OR LESS DO NOT REQUIRE SIDE LAP FASTENERS.
   - E. END BEARING: 3" MINIMUM.
   - F. END JOISTS: LAPPED
   - G. DO NOT HANG ANYTHING FROM THE ROOF DECK.
   - H. PER AWS D1.3, A WELDING PROCEDURE SPECIFICATION (WPS) AND A PROCEDURE QUALIFICATION RECORD (PQR) FOR WELDING SHEET METAL MUST BE SUBMITTED TO THE EOR FOR REVIEW AND APPROVAL PRIOR TO ANY DECK WELDING.
2. 1 1/2" DEEP ROOF DECK ATTACHMENT TO STRUCTURAL STEEL
   - A. FASTEN ROOF DECK PANELS TO STEEL SUPPORTING MEMBERS WITH 5/8" NOMINAL DIAMETER PUDDLE WELDS OR WELDS WITH AN EQUAL PERIMETER, OR SEAM WELDS NOT LESS THAN 1 1/2" LONG.
   - B. WELD EDGES AND INTERIOR RIBS OF DECK UNITS TO EACH SUPPORTING MEMBER WITH A MINIMUM OF THREE WELDS PER DECK UNIT.
   - C. WELD SPACING: SEE ROOF DECK ATTACHMENT PLAN ON S-040.
   - D. FASTEN SIDE LAPS WITH #10 SELF-DRILLING SCREWS. SEE ROOF DECK ATTACHMENT PLAN ON S-040. DECK SPANS 36" OR LESS DO NOT REQUIRE SIDE LAP FASTENERS.
   - E. END BEARING: 1 1/2" MINIMUM.
   - F. END JOINTS: LAPPED
   - G. DO NOT HANG ANYTHING FROM THE ROOF DECK.
   - H. PER AWS D1.3, A WELDING PROCEDURE SPECIFICATION (WPS) AND A PROCEDURE QUALIFICATION RECORD (PQR) FOR WELDING SHEET METAL MUST BE SUBMITTED TO THE EOR FOR REVIEW AND APPROVAL PRIOR TO ANY DECK WELDING.

STEEL JOISTS

1. MATERIALS
   - A. STEEL JOISTS: SJI SPECIFICATIONS, K SERIES.
   - B. LONG SPAN STEEL JOISTS: IN ACCORDANCE WITH SJI SPECIFICATIONS.
   - C. BRIDGING AND ACCESSORIES: IN ACCORDANCE WITH SJI SPECIFICATIONS.
   - D. HIGH-STRENGTH BOLTS: ATSM A325
   - E. CARBON STEEL BOLTS: ASTM A307, GRADE A
   - F. WELD ELECTRODE: IN ACCORDANCE WITH AWS D1.1
2. FABRICATE AND ERECT JOISTS IN ACCORDANCE WITH THE SJI SPECIFICATIONS.
3. PERFORM SHOP AND FIELD WELDING WITH CERTIFIED WELDERS IN ACCORDANCE WITH AWS D1.1
4. INSTALL 3/4 INCH DIAMETER HIGH STRENGTH BOLTS, SNUG TIGHT, IN BOLTED JOIST-TO-STRUCTURAL STEEL, JOIST-TO-JOIST GIRDER, AND JOIST SPLICE CONNECTIONS.
5. INSTALL CARBON STEEL BOLTS IN BOLTED CONNECTIONS FOR BRIDGING AND JOIST ACCESSORIES.
6. INSTALL BRIDGING AND UPLIFT BRIDGING AS REQUIRED BY THE SJI SPECIFICATIONS.

CONCRETE AND MASONRY ANCHORS

1. EXPANSION ANCHORS: WEDGE TYPE, CARBON STEEL, ZINC PLATED OR SIMILARLY TREATED FOR CORROSION RESISTANCE. INSTALL IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
2. EXPANSION ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES ACI 193 FOR USE IN CONCRETE APPLICATIONS, OR ICC-ES ACO1 FOR USE IN MASONRY APPLICATIONS.
3. ADHESIVE ANCHORS: CARBON STEEL, A36 MATERIAL OR EQUIVALENT, WITH A TWO-PART, PREPACKAGED AND PREMEASURED ADHESIVE READY FOR INJECTION INTO THE ANCHOR HOLE. INSTALL ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
4. ADHESIVE ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR USE IN CONCRETE APPLICATION, OR ICC-ES AC58 FOR USE IN MASONRY APPLICATIONS.

POST-INSTALLED ANCHORS

UNLESS OTHERWISE INDICATED ON PLANS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES, OR APPROVED EQUAL:

	ADHESIVE ANCHOR	MECHANICAL ANCHOR
SOLID CONCRETE	HILTI HY 200 SAFE SET HILTI RE 500 SD DEWALT/POWERS AC200+ DEWALT/POWERS PURE110+	HILTI KWIK HUS EZ HILTI KWIK BOLT TZ DEWALT/POWERS POWER-STUD+SD2 DEWALT/POWERS SCREW-BOLT+
GROUTED MASONRY	HILTI HY 270 DEWALT/POWERS AC100+GOLD	HILTI KWIK BOLT 3 DEWALT/POWERS POWER-STUD+SD1
HOLLOW MASONRY OR BRICK	HILTI HY 270 WITH APPROPRIATE SCREEN TUBE DEWALT/POWERS AC100+GOLD	HILTI HLC SLEEVE ANCHOR DEWALT/POWERS LOK-BOLT AS

1. SUBSTITUTION REQUESTS FOR ALTERNATIVE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE.
2. INSTALL ANCHORS PER THE MANUFACTURED INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGE.
3. 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 (ACI 318-11 D.9.2.2). PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF INSTALLATION.
4. ADHESIVE ANCHORS MUST BE INSTALLED IN CONCRETE AGED A MINIMUM OF 21 DAYS (ACI 318-11 D.2.2).
5. ADHESIVE ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR USE IN CONCRETE APPLICATION, OR ICC-ES AC58 FOR USE IN MASONRY APPLICATIONS.

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CONSTRUCTION DRAWINGS

HARNETT COUNTY SCHOOLS

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-2024
PROJECT #: 02110.300
DRAWN BY: D. DRAFTER
CHECKED BY: S. ENG

GENERAL NOTES

S-001

SCHEDULE OF SPECIAL INSPECTION SERVICES

MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT Y/N	EXTENT	AGENT*	DATE COMPLETED
1704.2 Inspection of Fabricators					
Verify fabrication/quality control procedures.	In-plant review (3)	Y	Periodic	1	.
1705.1.1 Special Cases (work unusual in nature, including but not limited to alternative materials and systems, unusual design applications, materials and systems with special manufacturer's requirements	Submittal review, shop (3) and/or field inspection	N		.	.
1705.2 Steel Construction					
1. Fabricator and erector documents (Verify reports and certificates as listed in AISC 360, chapter N, paragraph 3.2 for compliance with construction documents)	Submittal Review	Y	Each submittal	1	.
2. Material verification of structural steel	Shop (3) and field inspection	Y	Periodic	1	.
3. Embedments (Verify diameter, grade, type, length, embedment. See 1705.3 for anchors)	Field inspection	Y	Periodic	1	.
4. Verify member locations, braces, stiffeners, and application of joint details at each connection comply with construction documents	Field inspection	Y	Periodic	1	.
5. Structural steel welding:					
a. Inspection tasks Prior to Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-1)	Shop (3) and field inspection	Y	Observe or perform as noted (4)	1	.
b. Inspection tasks During Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-2)	Shop (3) and field inspection	Y	Observe (4)	1	.
c. Inspection tasks After Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-3)	Shop (3) and field inspection	Y	Observe or perform as noted (4)	1	.
d. Nondestructive testing (NDT) of welded joints: see Commentary					
1) Complete penetration groove welds 5/16" or greater in risk category III or IV	Shop (3) or field Ultrasonic testing - 100%	N	Periodic	.	.
2) Complete penetration groove welds 5/16" or greater in risk category II	Shop (3) or field Ultrasonic testing - 10% of welds mimimum	N	Periodic	.	.
3) Thermally cut surfaces of access holes when material t > 2"	Shop (3) or field magnetic Partical or Penetrant testing	N	Periodic	.	.
4) Welded joints subject to fatigue when required by AISC 360, Appendix 3, Table A-3.1	Shop (3) or field radiographic or Ultrasonic testing	N	Periodic	.	.
5) Fabricator's NDT reports when fabricator performs NDT	Verify reports	N	Each Submittal (5)	.	.
6. Structural steel bolting:	Shop (3) and field inspection				
a. Inspection tasks Prior to Bolting (Observe, or perform for each bolted connection, in accordance with QA tasks listed in AISC 360, Table N5.6-1)		Y	Observe or perform as noted (4)	1	.
b. Inspection tasks During Bolting (Observe the QA tasks listed in AISC 360, Table N5.6-2)		Y	Observe (4)	1	.
1) Pre-tensioned and slip-critical joints		N			
a) Turn-of-nut with matching markings		N	Periodic	1	.
b) Direct tension indicator		N	Periodic	.	.
c) Twist-off type tension control bolt		N	Periodic	.	.
d) Turn-of-nut without matching markings		N	Continuous	.	.
e) Calibrated wrench		N	Continuous	.	.
2) Snug-tight joints		Y	Periodic	1	.
c. Inspection tasks After Bolting (Perform tasks for each bolted connection in accordance with QA tasks listed in AISC 360, Table N5.6-3)		Y	Perform (4)	1	.
7. Inspection of steel elements of composite construction prior to concrete placement in accordance with QA tasks listed in AISC 360, Table N6.1	Shop (3) and field inspection and testing	N	Observe or perform as noted (4)	.	.
1705.2.2 Steel Construction Other Than Structural Steel					
1. Material verification of cold-formed steel deck:					
a. Identification markings	Field inspection	Y	Periodic	1	.
b. Manufacturer's certified test reports	Submittal review	Y	Each Submittal	1	.
2. Connection of cold-formed steel deck to supporting structure:	Shop (3) and Field inspection				.
a. Welding		N	Periodic	.	.
b. Other fasteners (in accordance with AISC 360, Section N6)					.
1) Verify fasteners are in conformance with approved submittal		Y	Periodic	1	.
2) Verify fasteners installation is in conformance with approved submittal and manufacturer's recommendations		Y	Periodic	1	.
3. Reinforcing steel	Shop (3) and field inspection				
a. Verification of weldability of steel other than ASTM A706		N	Periodic	.	.
b. Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, boundary elements of special concrete structural walls and shear reinforcement		N	Continuous	.	.
c. Shear reinforcement		N	Continuous	.	.
d. Other reinforcing steel		N	Periodic	.	.
1705.3 Concrete Construction					
1. Inspection of reinforcing steel installment (see 1705.2.2 for welding)	Shop (3) and field inspection	Y	Periodic	1	.
2. Inspection of prestressing steel installation	Shop (3) and field inspection	N	Periodic	.	.
3. Inspection of anchors cast in concrete where allowable loads have been increased per section 1908.5 or where strength design is used	Shop (3) and field inspection	N	Periodic	.	.

SCHEDULE OF SPECIAL INSPECTION SERVICES

MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT Y/N	EXTENT	AGENT*	DATE COMPLETED
4. Inspection of anchors and reinforcing steel post-installed in hardened concrete: Per research reports including verification of anchor type, anchor dimensions, hole dimensions, hole cleaning procedures, anchor spacing, edge distances,concrete embedment and tightening torque	Field inspection	Y	Periodic or as required by the research report issued by an approved source	1	.
5. Verify use of approved design mix	Shop (3) and field inspection	Y	Periodic	1	.
6. Fresh concrete sampling, perform slump and air content tests and determine temperature of concrete	Shop (3) and field inspection	Y	Continuous	1	.
7. Inspection for concrete and shotcrete placement for proper application techniques	Shop (3) and field inspection	N	Continuous		.
8. Inspection for maintenance of specified curing temperature and techniques	Shop (3) and field inspection	Y	Periodic	1	.
9. Inspection of prestressed concrete:	Shop (3) and field inspection	N			.
a. Application of prestressing force		N	Continuous		.
b. Grouting of bonded prestressing tendons in seismic-force-resisting system		N	Continuous		.
10. Erection of precast concrete members					
a. Inspect in accordance with construction documents	Field inspection	Y	In Accordance with Construction Documents	.	.
b. Perform inspections of welding and bolting in accordance with Section 1705.2	Field inspection	Y	In Accordance with Section 1705.2	.	.
11. Verification of in-situ concrete strength, prior to stressing of tendons in post tensioned concrete and prior to removal of shores and forms from beams and structural slabs	Review field testing and laboratory reports	N	Periodic		.
12. Inspection of formwork for shape, lines, location and dimensions	Field inspection	Y	Periodic	1	.
13. Concrete strength testing and verification of compliance with construction documents	Field testing and review of laboratory reports	Y	Periodic	1	.
1705.4 Masonry Construction					
(A) Level A, B and C Quality Assurance:					
1. Verify compliance with approved submittals	Field inspection	Y	Periodic	1	.
(B) Level B Quality Assurance:					
1. Verification of f'm and f'_{AAC} prior to construction	Testing by unit strength method or prism test method	Y	Periodic	1	.
(C) Level C Quality Assurance:					
1. Verification of f'm and f'AAC prior to construction and for every 5,000 SF during construction	Testing by unit strength method or prism test method	N	Periodic	.	.
2. Verification of proportions of materials in premixed or preblended mortar, prestressing grout, and grout other than self-consolidating grout, as delivered to the project site	Field inspection	N	Continuous	.	.
3. Verify placement of masonry units	Field inspection	N	Periodic	-	.
(D) Levels B and C Quality Assurance:					
1. Verification of Slump Flow and Visual Stability Index (VSI) of self-consoldiating grout as delivered to the project	Field testing	N	Continuous	.	.
2. Verify compliance with approved submittals	Field inspection	Y	Periodic	1	.
3. Verify proportions of site-mixed mortar, grout and prestressing grout for bonded tendons	Field inspection	Y	Periodic	1	.
4. Verify grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages	Field inspection	Y	Periodic	1	.
5. Verify construction of mortar joints	Field inspection	Y	Periodic	1	.
6. Verify placement of reinforcement, connectors, and prestressing tendons and anchorages	Field inspection	Y	Level B - Periodic	1	.
		N	Level C - Continuous	.	.
7. Verify grout space prior to grouting	Field inspection	Y	Level B - Periodic	1	.
		N	Level C - Continuous	.	.
8. Verify placement of grout and prestressing grout for bonded tendons	Field inspection	Y	Continuous	1	.
9. Verify size and location of structural masonry elements	Field inspection	Y	Periodic	1	.
10. Verify type, size, and location of anchors, including details of anchorage of masonry to structural members, frames, or other construction	Field inspection	Y	Level B - Periodic	1	.
		N	Level C - Continuous	.	.
11. Verify welding of reinforcement (see 1705.2.2)	Field inspection		Continuous	.	.
12. Verify preparation, construction, and protestion of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F)	Field inspection	Y	Periodic	1	.
13. Verify application and measurement of prestressing force	Field inspection	N	Continuous	.	.
14. Verify placement of AAC masonry units and construction of thin-bed mortar joints (first 5000 SF of AAC masonry)	Field inspection	N	Continuous	.	.
15. Verify placement of AAC masonry units and construction of thin-bed mortar joints (after the first 5000 SF of AAC masonry)	Field inspection	N	Level B - Periodic	.	.
		N	Level C - Continuous	.	.
16. Verify properties of thin-bed mortar for AAC masonry (first 5000 SF of AAC masonry)	Field inspection	N	Continuous	.	.
17. Verify properties of thin-bed mortar for AAC masonry (after the first 5000 SF of AAC masonry)	Field inspection	N	Level B - Periodic	.	.
		N	Level C - Continuous	.	.
18. Prepare grout and mortar specimens	Field testing	Y	Level B - Periodic	1	.
		N	Level C - Continuous	.	.
19. Observe preparation of prisms	Field inspection	Y	Level B - Periodic	1	.
		N	Level C - Continuous	.	.
1705.5 Wood Construction					
1. Inspection of the fabrication process of wood structural elements and assemblies in accordance with Section 1704.2.5	In-plat review (3)	N	Periodic	.	.
2. For high-load diaphragms, verify grade and thickness of structural panel sheathing agree with approved building plans	Field inspection	N	Periodic	.	.

SCHEDULE OF SPECIAL INSPECTION SERVICES

MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT Y/N	EXTENT	AGENT*	DATE COMPLETED
3. For high-load diaphragms, verify nominal size of framing members at adjoining panel edges, nail or staple diameter and length, number of fastener lines, and that spacing between fasteners in each line and at edge margins agree with approved building plans	Field inspection	N	Periodic	.	.
4. Metal-plate-connected wood trusses spanning 60 feet or greater: verify temporary and permanent restraint/bracing are installed in accordance with the approved truss submittal package	Field inspection	N	Periodic	.	.
1705.6 Soils					
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Field inspection	Y	Periodic	1	.
2. Verify excavations are extended to proper depth and have reached proper material.	Field inspection	Y	Periodic	1	.
3. Perform classification and testing of controlled fit materials.	Field inspection	Y	Periodic	1	.
4. Verify use of proper materials, densities, and lift thicknesses during placement and compaction of controlled fill	Field inspection	Y	Continuous	1	.
5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly	Field inspection	Y	Periodic	1	.
1705.7 Driven Deep Foundations					
1. Verify element materials, sizes and lengths comply with requirements	Field inspection	N	Continuous	.	.
2. Determine capacities of test elements and conduct additional load test, as required	Field inspection	N	Continuous		
3. Observe driving operations and maintain complete and accurate records for each element	Field inspection	N	Continuous		
4. Verify placement locations and plumbness, confirm type and size of hammer ,record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element	Field inspection	N	Continuous	.	.
5. For steel elements, perform additional inspections per Section 1705.2	See Section 1705.2	N	See Section 1705.2	.	.
6. For concrete elements and concrete-filled elements, perform additional inspections per Section 1705.3	See Section 1705.3	N	See Section 1705.3	.	.
7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge	Field inspection	N	In Accordance with Construction Documents	.	.
8. Perform additional inspections and tests in accordance with the construction documents	Field inspection and testing	N	In Accordance with Construction Documents	.	
1705.8 Cast-in-Place Deep Foundations					
1. Observe drilling operations and maintain complete and accurate records for each element	Field inspection	N	Continuous	.	.
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes	Field inspection	N	Continuous	.	.
3. For concrete elements, perform additional inspections in accordance with Section 1705.3	See Section 1705.3	N	See Section 1705.3	.	.
4. Perform additional inspections and tests in accordance with the construction documents	Field inspection and testing	N	In Accordance with Construction Documents	.	
1705.9 Helical Pile Foundations					
1. Verify installation equipment, pile dimensions, tip elevations, final depth, final installation torque and other data is required	Field inspection	N	Continuous	-	.
2. Perform additional inspections and tests in accordance with the construction documents	Field inspection and testing	N	In Accordance with Construction Documents	-	.
1705.10.1 Structural Wood Special Inspections For Wind Resistance					
1. Inspection of field gluing operations of elements of the main windforce-resisting system	Field inspection	N	Continuous	.	.
2. Inspection of nailing, bolting, anchoring and other fastening of components within the main windforce-resisting system	Shop (3) and field inspection	N	Periodic	.	.
1705.10.2 Cold-formed Steel Special Inspections For Wind Resistance					
1. Inspection during welding operations of elements of the main windforce-resisting system	Shop (3) and field inspection	N	Periodic	.	.
2. Inspections for screw attachment, bolting, anchoring and other fastening of components within the main windforce-resisting system	Shop (3) and field inspection	N	Periodic	.	.
1705.10.3 Wind-resisting Components					
1. Roof cladding	Shop (3) and field inspection	N	Periodic	.	.
2. Wall cladding	Shop (3) and field inspection	N	Periodic	.	.
1705.11.1 Structural Steel Special Inspections for Seismic Resistance					
Inspection of structural steel in accordance with AISC 341	Shop (3) and field inspection	N	In Accordance with ASCE 341	.	.
1705.11.2 Structural Wood Special Inspections for Seismic Resistance					
1. Inspection of field gluing operations of elements of the seismic-force resisting system	Field inspection	N	Continuous	.	.
2. Inspection of nailing, bolting, anchoring and other fastening of components within the seismic-force-resisting system	Shop (3) and field inspection	N	Periodic	.	.
1705.11.3 Cold-formed Steel Light-Frame Construction Special Inspections for Seismic Resistance					
1. Inspection during welding operations of elements of the seismic-force-resisting system	Shop (3) and field inspection	N	Periodic	.	.
2. Inspections for screw attachment, bolting, anchoring and other fastening of components within the seismic-force-resisting system	Shop (3) and field inspection	N	Periodic	.	.
1705.11.4 Designated Seismic Systems Verification					
Inspect and verify that the component label, anchorage or mounting conforms to the certificate of compliance in accordance with Section 1705.12.3	Field inspection	N	Periodic	.	.

SCHEDULE OF SPECIAL INSPECTION SERVICES

MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT Y/N	EXTENT	AGENT*	DATE COMPLETED
1705.11.5 Archtectural Components Special Inspections for Seismic Resistance					
1. Inspection during the erection and fastening of exterior cladding and interior and exterior veneer	Field inspection	N	Periodic	.	.
2. Inspection during the erection and fastening of interior and exterior nonbearing walls	Field inspection	N	Periodic	.	.
3. Inspection during anchorage of access floors	Field inspection	N	Periodic	.	.
1705.11.6 Mechanical and Electrical Components Special Inspections for Seismic Resistance					
1. Inspection during anchorage of electrical equipment for emergency or standby power systems	Field inspection	Y	Periodic	1	.
2. Inspection during the anchorage of other electrical equipment	Field inspection	N	Periodic	.	.
3. Inspection during installation and anchorage of piping systems designed to carry hazardous materials, and their associated mechanical units	Field inspection	Y	Periodic	1	.
4. Inspection during the installation and anchorage of HVAC ductwork that will contain hazardous materials	Field inspection	N	Periodic	.	.
5. Inspection during the installation and anchorage of vibration isolation systems	Field inspection	N	Periodic	.	.
1705.11.7 Storage Racks Special Inspection for Seismic Resistance					
Inspection during the anchorage of storage racks 8 feet or greater in height	Field inspection	N	Periodic	.	.
1705.11.8 Seismic Isolation Systems					
Inspection during the fabrication and installation of isolator units and energy dissipation devices used as part of the seismic isolation system	Shop and field inspection	N	Periodic	.	.
1705.12.1 Concrete Reinforcement Testing and Qualification for Seismic Resistance					
1. Review certified mill test reports for each shipment of reinforcement used to resist earthquake-induced flexural and axial forces in reinforced concrete special moment frames, special structural walls, and coupling beams connecting special structural walls	Review certified mill test reports	N	Each Shipment	.	.
2. Verify reinforcement weldability of ASTM A615 reinforcement used to resist earthquake-induced flexural and axial forces in reinforced concrete special moments frames, special structural walls, and coupling beams connecting special structural walls	Review test reports	N	Each Shipment	.	.
1705.12.2 Structural Steel Testing and Qualification for Seismic Resistance					
Test in accordance with the quality assurance requirements of AISC 341	Shop (3) and field testing	N	Per AISC 341	.	.
1705.12.3 Seismic Certification of Nonstructural Components					
Review certificate of compliance for designed seismic system components	Certificate of compliance review	N	Each Submittal	.	.
1705.12.4 Seismic Isolation Systems					
Test seismic isolation systems in accordance with ASCE 7, Section 17.8	Prototype testing	N	Per ASCE 7	.	.
1705.13 Sprayed Fire-resistant Materials					
1. Verify surface condition preparation of structural members	Field inspection	N	Periodic	.	.
2. Verify application of sprayed fire-resistant materials	Field inspection	N	Periodic	.	.
3.Verify average thickness of sprayed fire-resistant materials applied to structural members	Field inspection	N	Periodic	.	.
4. Verify density of sprayed fire-resistant material complies with approved fire-resistant design	Field inspection and testing	N	Per IBC Section 1705.13.5	.	.
5. Verify the cohesive/adhesive bond strength of the cured sprayed fire-resistant material	Field inspection and testing	N	Per IBC Section 1705.13.6	.	.
1705.14 Mastic and Intumescent Fire-resistant Coatings					
Inspect mastic and intumescent fire-resistant coatings applied to structural elements and decks	Field inspection	N	Periodic	.	.
1705.15 Exterior Insulation and Finish Systems (EIFS)					
1.Verify materials, details and installations are per the approved construction documents	Field inspection	N	Periodic	.	.
2. Inspection of water-resistive barrier over sheathing substrate	Field inspection	N	Periodic	.	.
1705.16 Fire-resistant Penetrations and Joints					
1. Inspect penetration firestop	Field testing	N	Per ASTM E2174	.	.
2. Inspect fire-resistant joint systems	Field testing	N	Per ASTM E2393	.	.
1705.17 Smoke Control Systems					
1. Leakage testing and recording of device locations prior to concealment	Field testing	N	Periodic	.	.
2. Prior to occupancy and after sufficient completion, pressure difference testing, flow measurements, and detection and control vertification	Field testing	N	Periodic	.	.

* INSPECTION AGENTS	FIRM	ADDRESS	TELEPHONE NO.
1. To be determined			
2. .	.	.	.
3.			
4.			

Notes:
1. *The inspection and testing agent(s) shall be engaged by the Owner or the Owner's Agent, and not by the Contractor orsubcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official prior to commencing work. The qualifications of the Special Inspector(s) and/or testing agencies may be subject to the approval of the Building Official and/or the Design Professional.*
2. *The list of Special Inspectors may be submitted as a separate document, if noted so above.*
3. *Special Inspections as required by Section 1704.2.5 are not required where the fabricator is approved in accordance with IBC Section 1704.2.5.2*
4. *Observe on a random basis, operations need not be delayed pending these inspections. Perform these tasks on each welded joint, bolted connection, or steel element.*
5. *NDT of welds competed in an approved fabricator's shop may be performed by that fabricator when approved by the AHJ. Refer to AISC 360, N7*

Encircle "Yes" or "No" as appropriate and date this document below:
Are Requirements for Seismic Resistance included in the Statement of Special Inspections? Yes (No)
Are Requirements for Wind Resistance included in the Statement of Special Inspections? Yes (No)

DATE: mm-dd-2019

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14526 ROBERT E. LASATER, JR. 7-26-24

CONSTRUCTION DRAWINGS

HARNETT COUNTY SCHOOLS
LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-2024

PROJECT #: 02110.300
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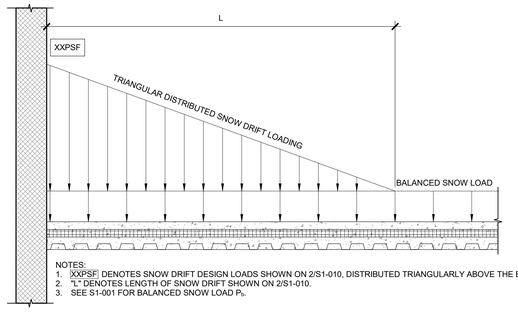
SPECIAL INSPECTIONS

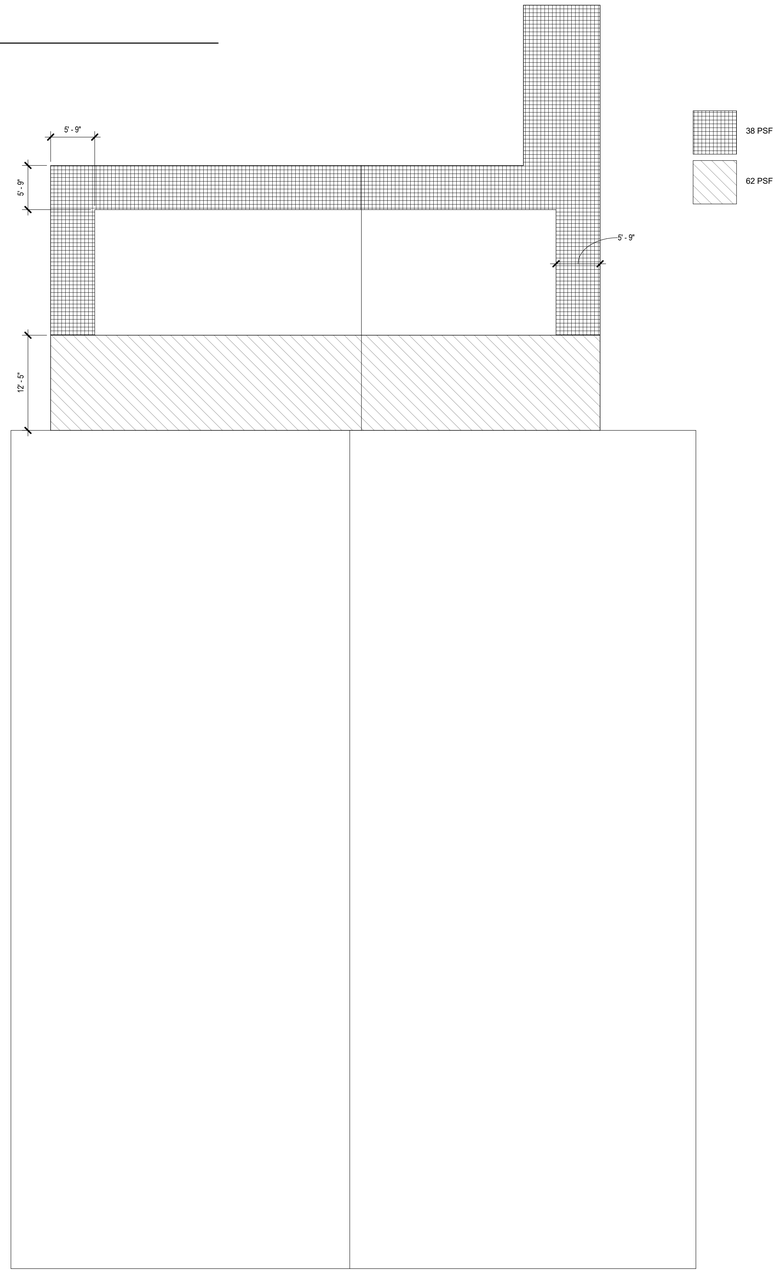
S-010



NOTES:
1. XXPSF DENOTES SNOW DRIFT DESIGN LOADS SHOWN ON 2/S1-010, DISTRIBUTED TRIANGULARLY ABOVE THE BALANCED SNOW LOAD.
2. "L" DENOTES LENGTH OF SNOW DRIFT SHOWN ON 2/S1-010.
3. SEE S1-001 FOR BALANCED SNOW LOAD P_b.

3 / S-030 SECTION THRU SNOW DRIFT LOADING

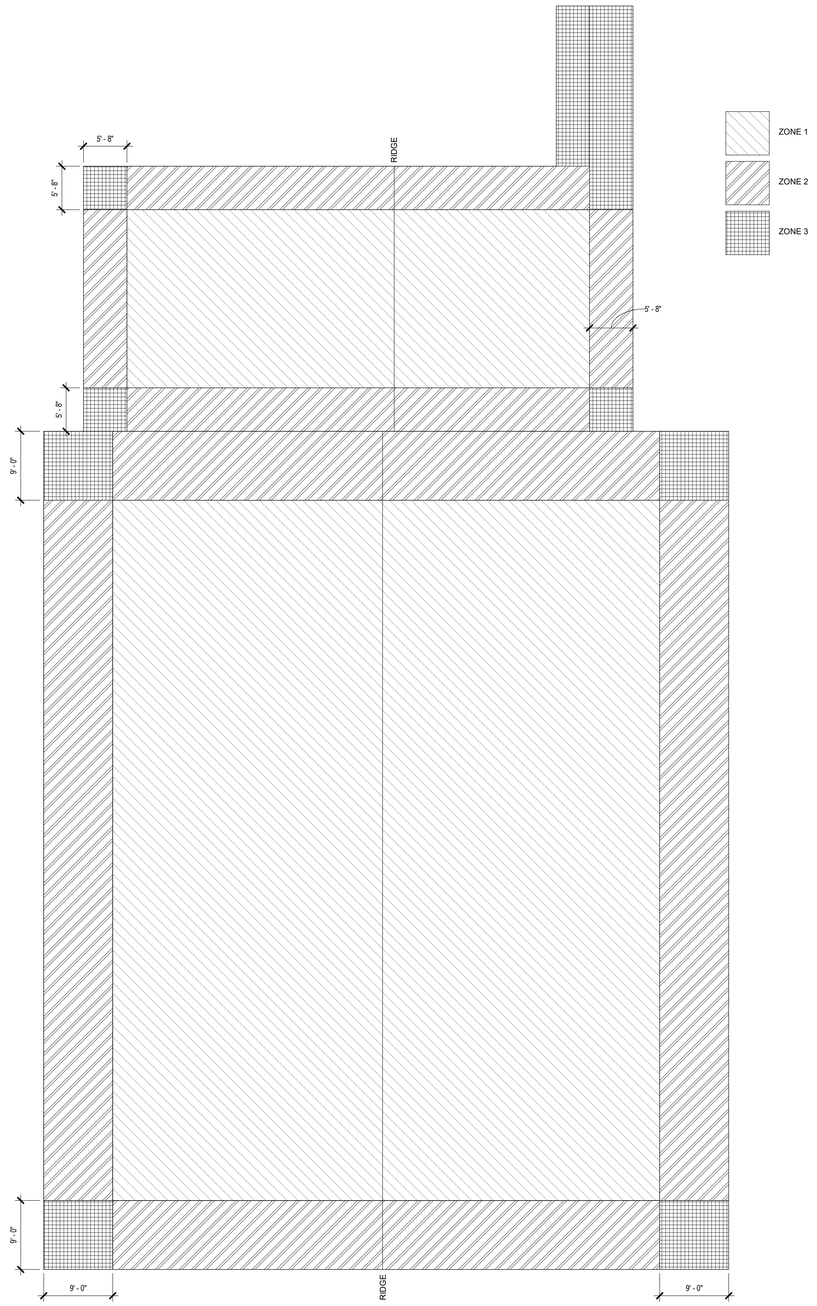
SCALE: 3/4" = 1'-0"



NOTES:
1. ROOF SNOW DRIFT DESIGN LOADS INDICATED ON THIS SHEET ARE TRIANGULARLY DISTRIBUTED ABOVE THE BALANCED SNOW LOAD. DESIGN SNOW DRIFT LOADS SHALL BE USED FOR STEEL JOIST AS INDICATED ON SHEET S-001.
2. SEE SHEET S-001 FOR BALANCED SNOW LOAD P_b.

2 / S-030 AREA SNOW DRIFT DESIGN LOADS

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



NOTE: SEE SHEET S-001 FOR C & C WIND LOADS FOR EACH ZONE

1 / S-030 ROOF WIND PRESSURE ZONE

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

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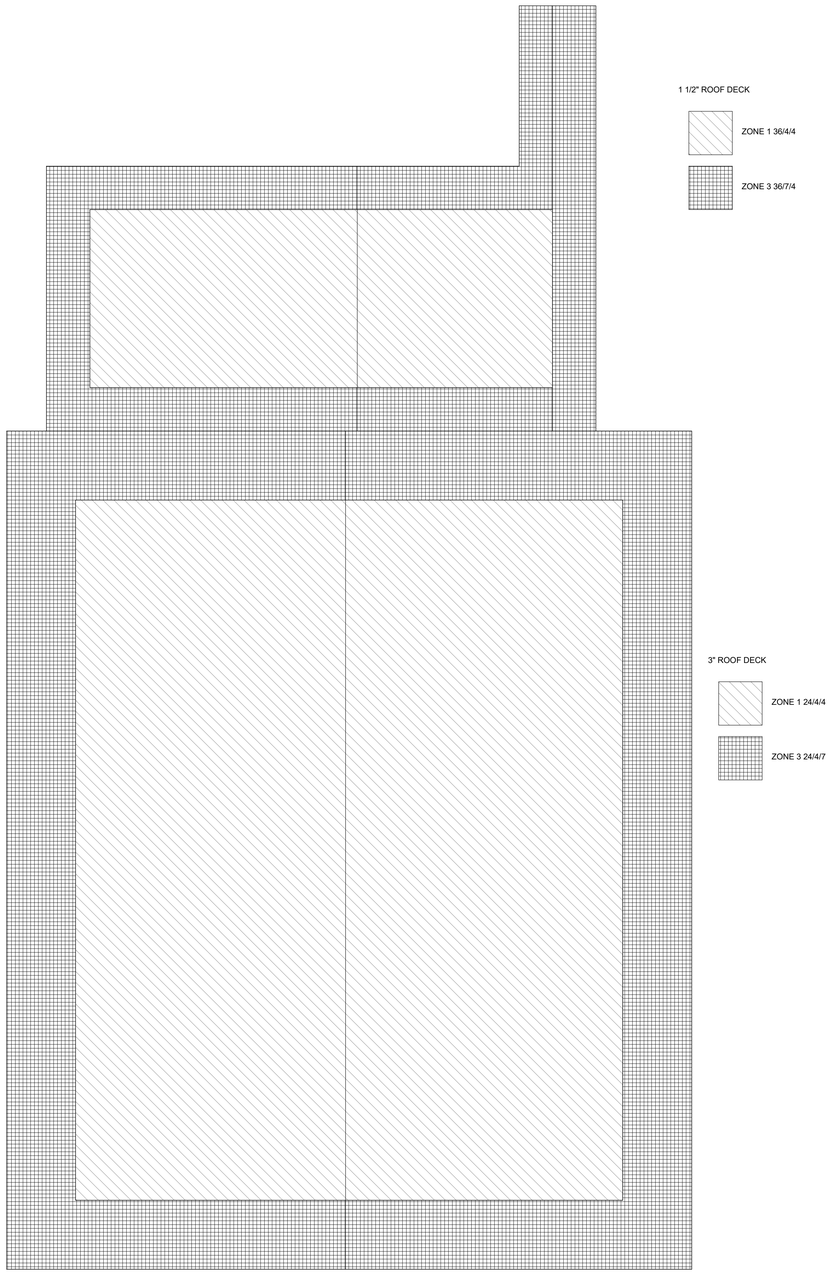
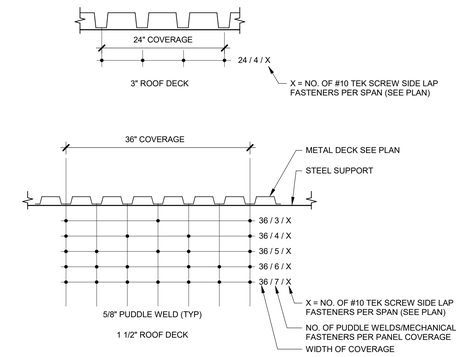
ROOF LOADING DIAGRAM

S-030





CONNECTION PATTERNS - FOR LOCATION SEE ROOF DECK ATTACHMENT LAYOUT

2 / S-040 **ROOF DECK CONNECTION PATTERN**
SCALE: 1" = 1'-0"

1 / S-040 **ROOF DECK ATTACHMENT LAYOUT**
SCALE: 1/8" = 1'-0"

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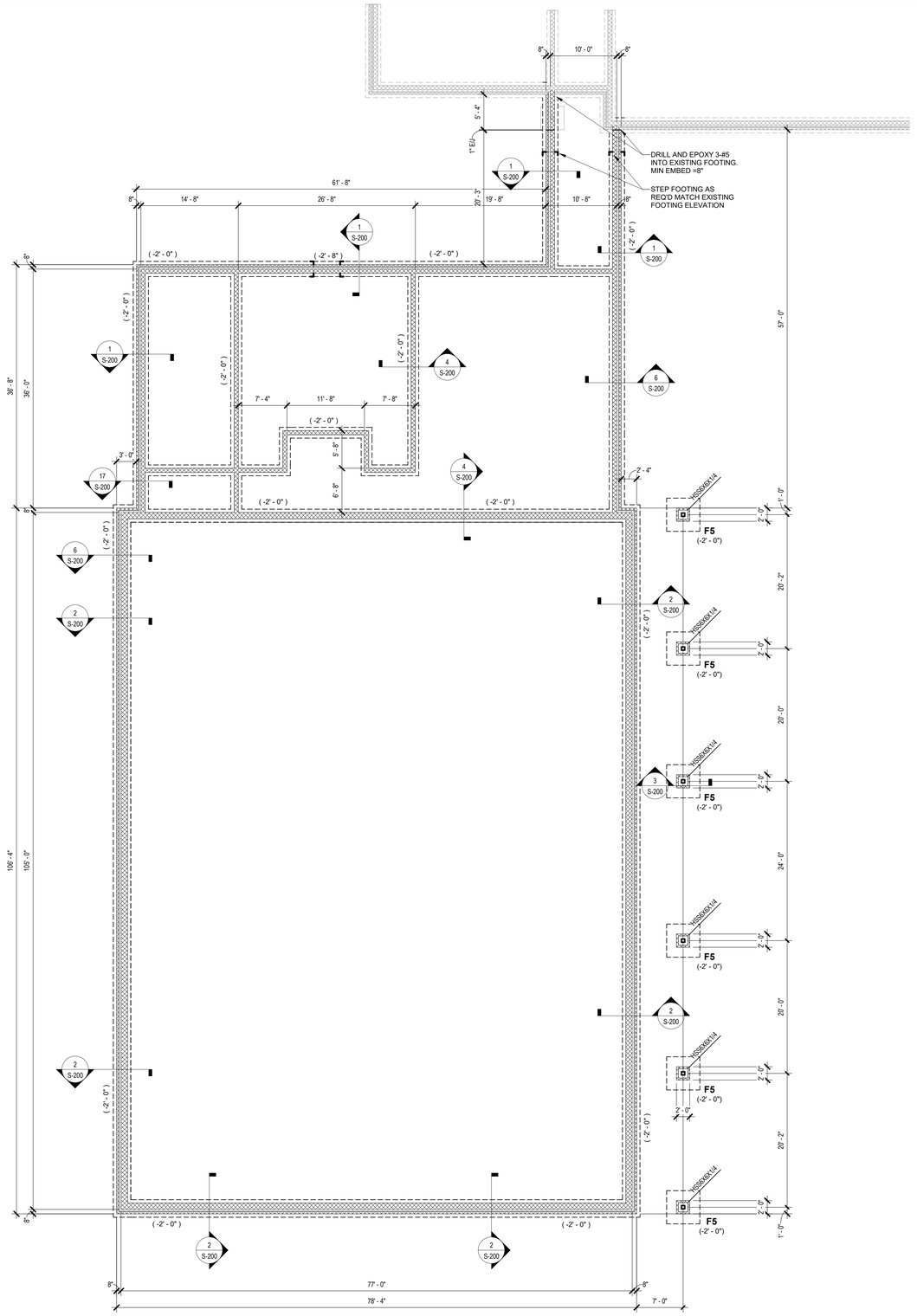
ROOF ATTACHMENT DIAGRAM

S-040



1 S-100 FOUNDATION PLAN

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

FOUNDATION PLAN NOTES:

1. NUMBER IN PARENTHESIS DENOTES TOP OF FOOTING BELOW FIN. FLOOR ELEVATION = 0'-0" (REF. 318.54' MSL) (MATCH EXISTING).
2. **F5.0** DENOTES COLUMN FOOTING. SEE 3/S-200 FOR DETAIL.
3. SEE 5/S-300 FOR CMU WALL REINFORCING REQUIREMENTS.
4. SEE S-101 FOR VERT. WALL REINFORCING SIZE AND SPACING. PROVIDE #5@48" VERTICAL REINFORCING IN INTERIOR CMU WALLS U.O.N.
5. ⌐ ¬ DENOTES STEPPED FOOTING, SEE DETAIL 10/S-200. G.C. COORDINATE STEP LOCATION AND DEPTH W/ PLUMBING CONTRACTOR PRIOR TO FOOTING EXCAVATION.
6. IN ADDITION TO REINFORCING SHOWN ON THE DRAWINGS, PROVIDE #6 VERT. BAR IN JAMBS OF ALL DOORS AND WINDOWS. PROVIDE #6 VERT. BAR EA. SIDE OF EXPANSION JOINTS AND CONTROL JOINTS. SEE DETAIL 4/S-300.
7. **WCJ** DENOTES WALL CONTROL JOINT IN EXTERIOR/LOAD BEARING CMU. SEE S-101 FOR PLAN LOCATIONS. SEE ARCH'L FOR JOINT LOCATIONS IN EXTERIOR BRICK AND INTERIOR NON-LOAD BEARING CMU.
8. REFER TO ARCH'L DRAWINGS FOR INTERIOR WALL DIMENSIONS NOT SHOWN ON STRUCTURAL.
9. PROVIDE BOND BEAMS IN MASONRY WALLS @ 9'-4" MAX AND TOP COURSE OF ALL WALLS.
10. PROVIDE CORNER BARS IN BOND BEAMS AT WALL CORNERS AND INTERSECTIONS. LAP 2'-0".
11. FIELD VERIFY EXISTING CONDITIONS PRIOR TO FOOTING EXCAVATION.

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FOUNDATION PLAN

S-100

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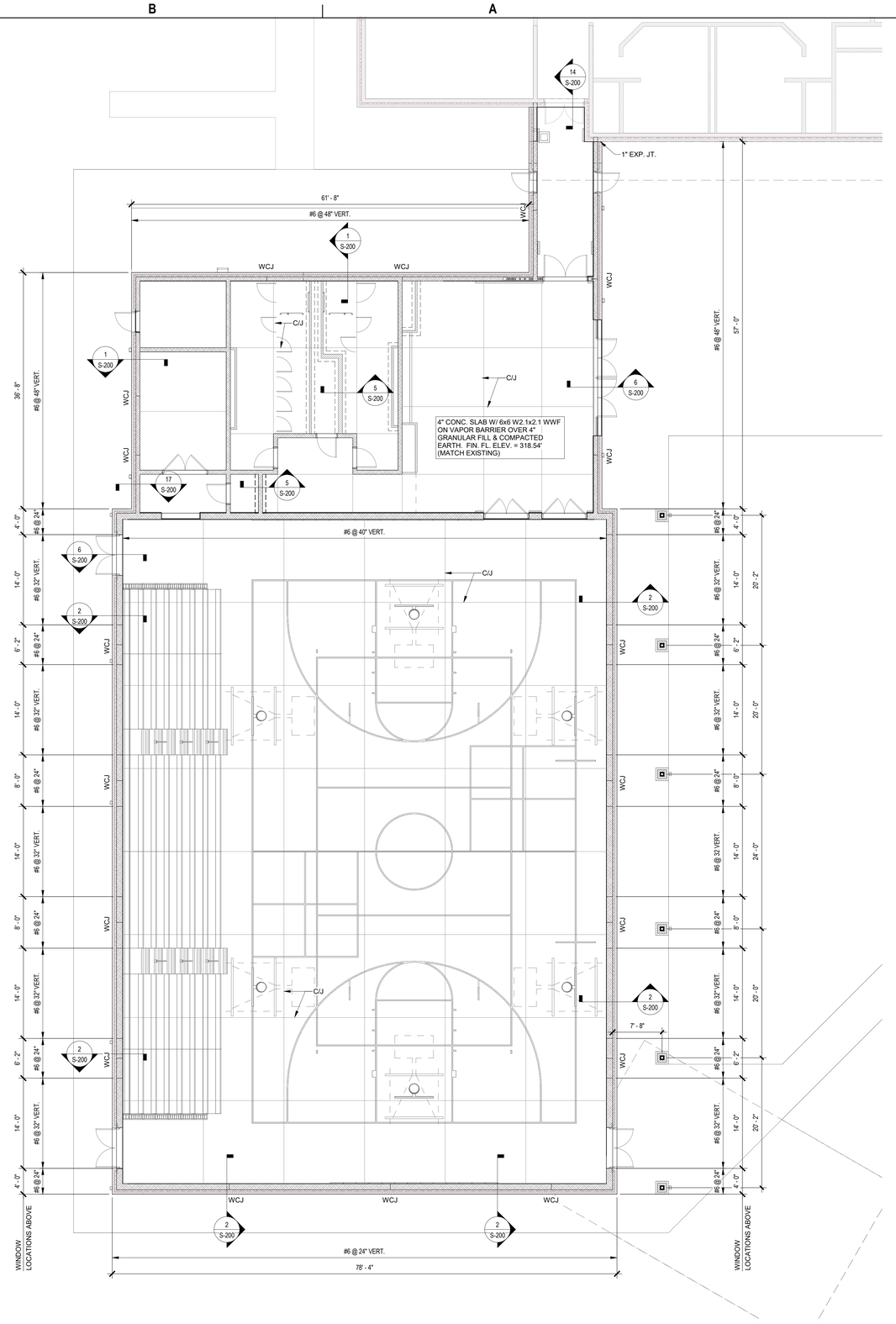

1 / S-101 **01_SLAB PLAN**

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

SLAB PLAN NOTES:

1. FINISH FLOOR ELEVATION = 0'-0" (318.54' MSL) (MATCH EXISTING).
2. **C/J** DENOTES SLAB CONTROL / CONSTRUCTION JOINT. SEE DETAIL 11 / S-200.
3. SEE DETAIL 12 / S-200 FOR SLAB REINFORCING AT RE-ENTRANT CORNERS.
4. SEE DETAIL 8 / S-200 FOR SLAB DEPRESSION DETAIL.
5. REFER TO ARCHITECTURAL FLOOR PLAN FOR LOCATION OF FLOOR DRAINS.
6. **WCJ** DENOTES WALL CONTROL JOINT. SEE DETAIL 4/S300. SEE ARCHITECTURAL FOR JOINT LOCATIONS IN INTERIOR CMU WALLS.

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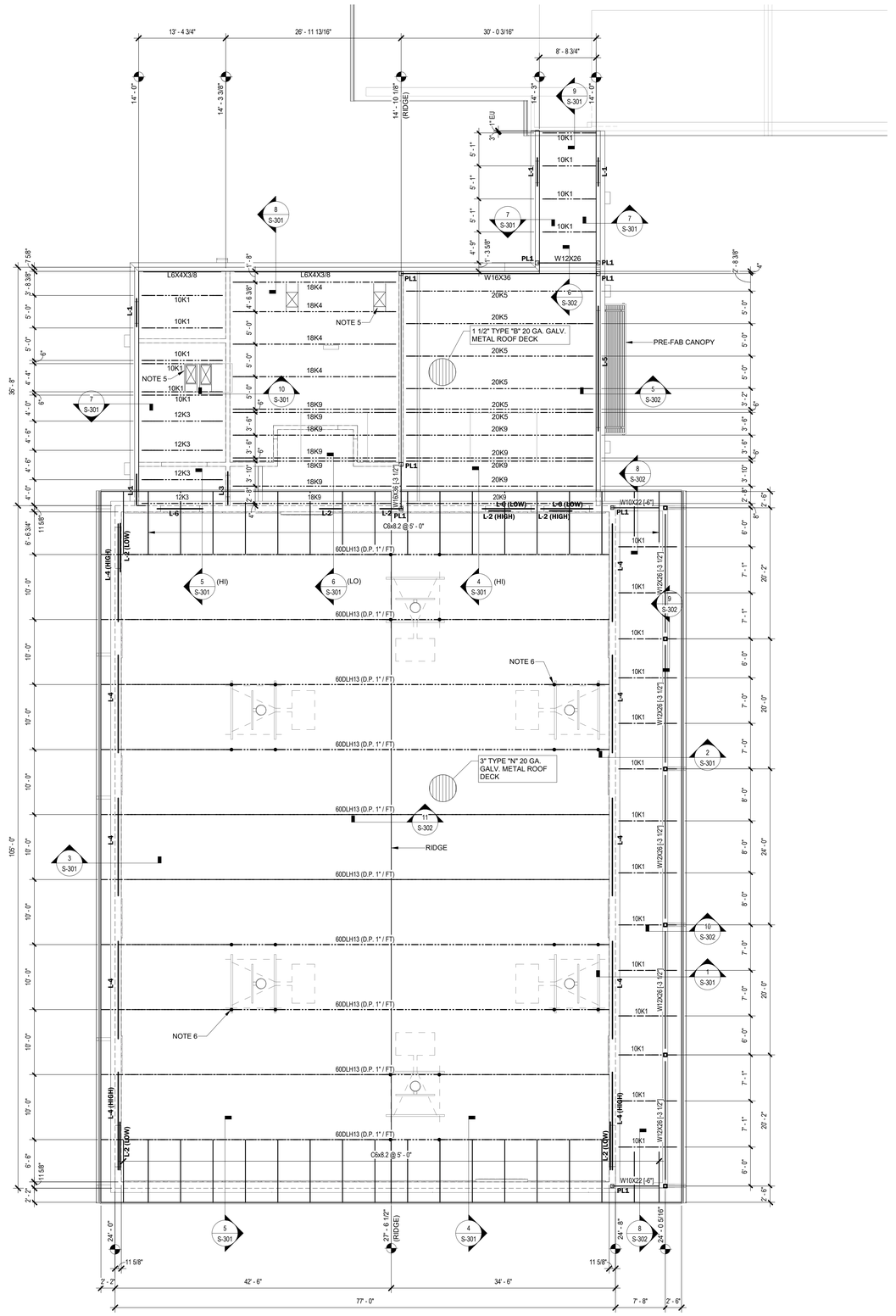
SLAB PLAN

S-101



ROOF FRAMING PLAN

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

ROOF FRAMING PLAN NOTES:

1. ——▼ DENOTES DECK BEARING ELEVATION (DBE) U.N.O. ABOVE FIN. FLOOR ELEV. = 0'-0" (318.54' MSL).
2. **L-1** DENOTES LOAD BEARING/EXTERIOR LINTEL. SEE SCHEDULE ON S300.
3. INTERIOR NON-LOAD BEARING WALLS NOT EXTENDING TO DECK SHALL BE BRACED BY INTERSECTING WALLS OR ANGLE BRACING TO JOIST AT MAX SPACING OF 20'. COORDINATE W/ ARCH'L FOR WALLS EXTENDING TO DECK.
4. USE WIND LOAD TABLE ON S010, WIND ZONES ON S010, AND A ROOF DL = 8 PSF TO DETERMINE NET JOIST UPLIFT. PROVIDE ADD'L BRIDGING AS REQ'D.
5. SEE DETAILS 1 AND 2/S-302 FOR ROOF OPENING DETAILS.
6. DESIGN JOIST FOR 200#/ POINT LOADS FROM BASKETBALL GOALS IN ADDITION TO DL + LL = 50PSF. G.C. COORDINATE GOAL SUPPORT LOCATIONS WITH JOIST SUPPLIER.

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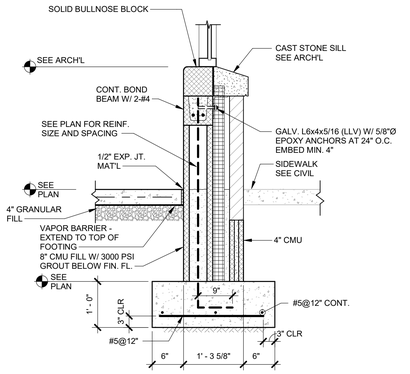
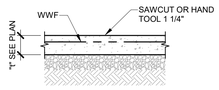
ROOF FRAMING PLAN

S-102

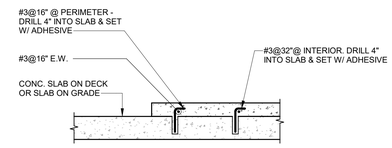


17 S-200 EXTERIOR WALL FOOTING DETAIL@ WINDOW
SCALE: 3/4" = 1'-0"

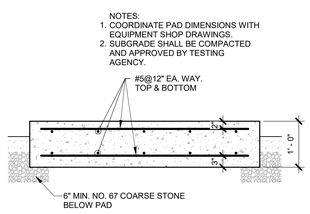


NOTE:
IN LIEU OF SAWCUT OR HAND TOOL
CONTRACTOR MAY USE FULL-DEPTH
PREFORMED JOINT.

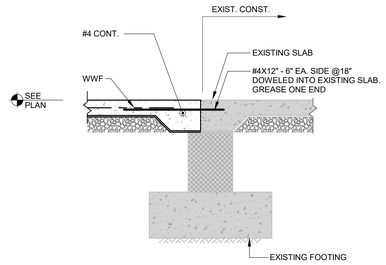
CONTROL JOINT



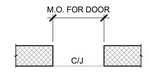
16 S-200 TYPICAL EQUIP. PAD DETAIL
SCALE: 3/4" = 1'-0"



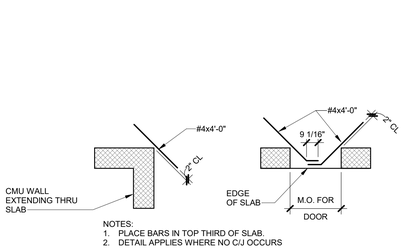
15 S-200 EXTERIOR EQUIPMENT PAD
SCALE: 3/4" = 1'-0"



14 S-200 SECTION THRU EXISTING CORRIDOR
SCALE: 3/4" = 1'-0"

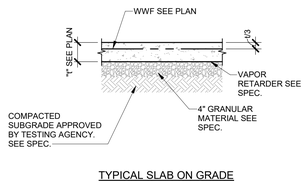


13 S-200 CONTROL JOINT DETAILS
SCALE: 1/4" = 1'-0"



NOTES:
1. PLACE BARS IN TOP THIRD OF SLAB.
2. DETAIL APPLIES WHERE NO C/J OCCURS

12 S-200 SLAB PLAN @ RE-ENTRANT CORNER
SCALE: 1/4" = 1'-0"

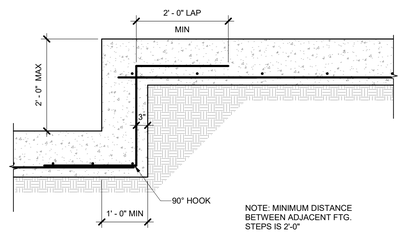


NOTE:
IN LIEU OF FORMING KEY WAY
CONTRACTOR MAY USE 1/2"Ø x 2'-0" LONG
SMOOTH DOWELS WITH ONE END
GREASED. PLACE AT 24"

CONSTRUCTION JOINT

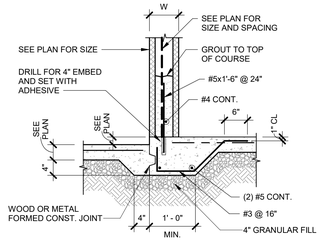
TYPICAL SLAB ON GRADE

11 S-200 TYPICAL SLAB ON GRADE DETAILS
SCALE: 3/4" = 1'-0"

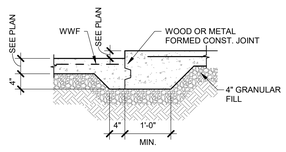


NOTE: MINIMUM DISTANCE
BETWEEN ADJACENT FTG.
STEPS IS 2'-0"

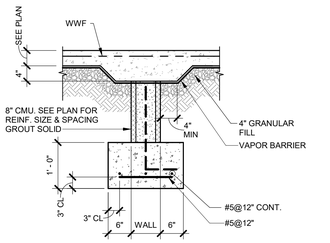
10 S-200 STEPPED FOOTING DETAIL
SCALE: 3/4" = 1'-0"



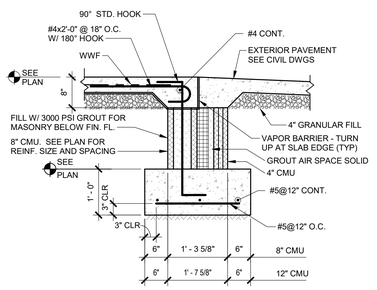
9 S-200 DEPRESSED SLAB @ THICKENED SLAB
SCALE: 3/4" = 1'-0"



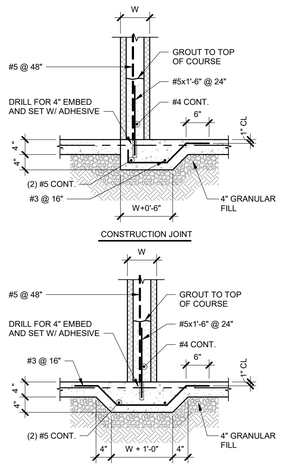
8 S-200 TYPICAL DEPRESSED SLAB
SCALE: 3/4" = 1'-0"



7 S-200 TYPICAL DOOR OPENING AT INTERIOR SLAB
SCALE: 3/4" = 1'-0"

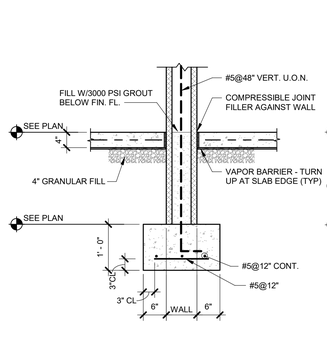


6 S-200 TYPICAL EXTERIOR DOOR OPENING
SCALE: 3/4" = 1'-0"

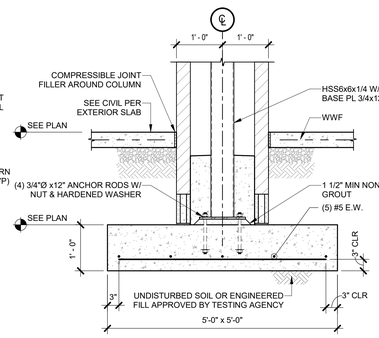


CONSTRUCTION JOINT

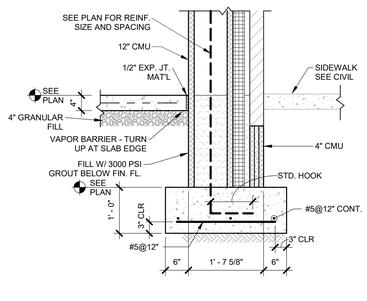
5 S-200 THICKENED SLAB
SCALE: 3/4" = 1'-0"



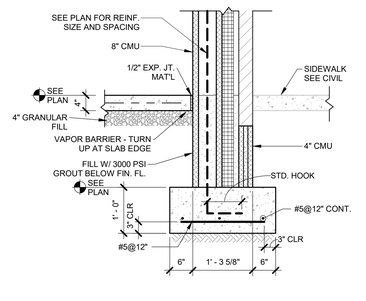
4 S-200 INTERIOR WALL FOOTING DETAIL
SCALE: 3/4" = 1'-0"



3 S-200 COLUMN FOOTING DETAIL
SCALE: 3/4" = 1'-0"



2 S-200 WALL FOOTING DETAIL
SCALE: 3/4" = 1'-0"



1 S-200 WALL FOOTING DETAIL
SCALE: 3/4" = 1'-0"

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CONSTRUCTION DRAWINGS

HARNETT COUNTY SCHOOLS

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

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ENERGY STAR PARTNER

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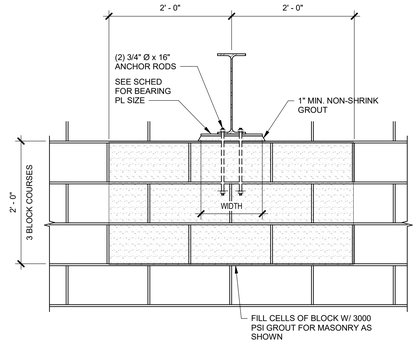
FOUNDATION SECTIONS

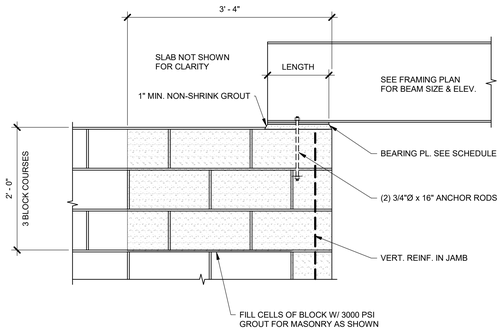
S-200

BEARING PLATE SCHEDULE

MARK	LENGTH	WIDTH	THICKNESS	REMARKS
PL1	7"	7"	1/2"	



11 S-300 **BEAM BEARING DETAIL**
SCALE: 1" = 1'-0"



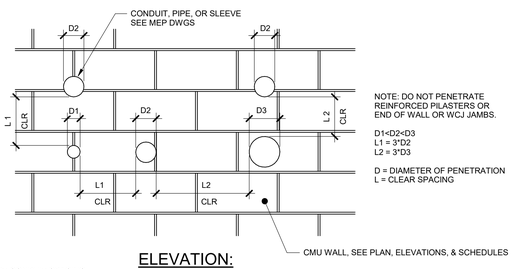
10 S-300 **BEAM BEARING DETAIL**
SCALE: 1" = 1'-0"

LOAD BEARING / EXTERIOR LINTEL SCHEDULE

MARK	WALL TYPE	LINTEL	SIZE	REINF.	SECTION	BEARING END	REMARKS
L-1	8" CMU 4" BRICK	U-BLOCK STEEL	8x16 PL 3/8x7 1/4" (HORIZ.) PL 3/8x6" (VERT.)	(2)#5	1' - 3 5/8"	8"	HOT DIPPED GALV. SEE 6/S300
L-2	12" CMU 4" BRICK	U-BLOCK STEEL	12x24 PL 3/8x7 1/4" (HORIZ.) PL 3/8x7" (VERT.)	(2)#5	1' - 7 5/8"	8"	HOT DIPPED GALV. SEE 6/S300
L-3	8" CMU	U-BLOCK	8x16	(2)#5	8"	8"	
L-4	12" CMU 4" BRICK	U-BLOCK	W16x36 PL 3/8x19 BOT	-		8"	HOT DIPPED GALV. 1/2"ø x 4" HSA@16" BEARING PL 1/2x11x11 1/4" STIFF PL @ 4'-0"
L-5	8" CMU 4" BRICK	U-BLOCK STEEL	W16x36 PL 3/8x15 BOT	-		-	HOT DIPPED GALV. 1/2" X 4" HSA @ 16" BEARING PL 1/2x11x11 x 1/4" STIFF PL @ 4'-0"
L-6	12" CMU	U-BLOCK STEEL	12x16	(2)#5	11 5/8"	8"	
OPNG LESS THAN 30" WIDE	8" CMU	U-BLOCK	8x8	(2)#5	8"	8"	
OPNG 30" TO 42" WIDE	8" CMU	U-BLOCK	8x16	(2)#5	8"	16"	

NON-LOAD BEARING / INTERIOR LINTEL SCHEDULE

WALL TYPE	OPENING WIDTH	LINTEL TYPE	LINTEL SIZE	REINF.	BEARING EA. END	REMARKS
8" CMU	< 4'-0"	U-BLOCK	8x8	(2) #4	8"	
8" CMU	4' THRU 6'	U-BLOCK	8x8	(2) #5	8"	
8" CMU	6'-4" THRU 8'-0"	U-BLOCK	8x16	(2) #5	8"	
8" CMU	10'-0" THRU 12'-0"	U-BLOCK	8x16	(2) #6	8"	
8" CMU	13'-0"	U-BLOCK	8x24	(2) #6 TOP (2) #6 BOT	8"	

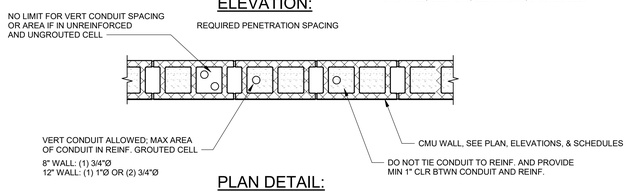


NOTE: DO NOT PENETRATE REINFORCED PILASTERS OR END OF WALL OR WCJ JAMBS.

D1<D2<D3
L1 = 3"D2
L2 = 3"D3

D = DIAMETER OF PENETRATION
L = CLEAR SPACING

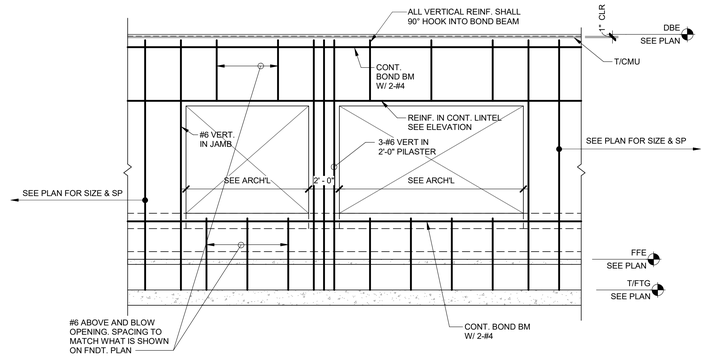
ELEVATION:
REQUIRED PENETRATION SPACING



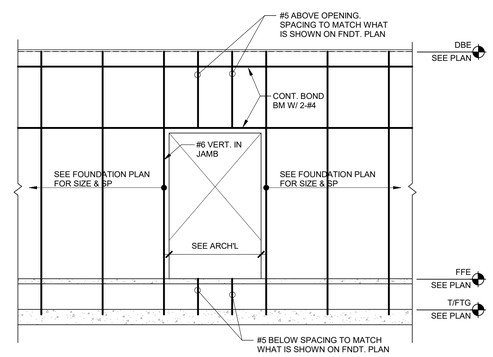
PLAN DETAIL:
EMBEDDED UTILITIES

NOTES:
1. REFER TO MEP DRAWINGS FOR ALL TELECOM, CONDUIT, AND PIPES 8"Ø AND SMALLER. CONTRACTOR TO FOLLOW DETAIL SPACING REQUIREMENTS FOR LAYOUT. IF SPACING CANNOT BE MAINTAINED, PENETRATIONS MUST BE GROUPED BELOW CMU LINTEL. NOTIFY THE EOR FOR LINTEL REQUIREMENTS.
2. CONDUITS SHALL NOT PENETRATE BOND BEAMS NOR LINTELS.
3. PIPES WITH LIQUID, GAS, OR VAPORS HIGHER THAT 150" ARE NOT PERMITTED VERTICALLY WITHIN WALLS.
4. PIPES WITH PRESSURE IN EXCESS OF 55 PSI ARE NOT PERMITTED VERTICALLY WITHIN WALLS.
5. PIPES WITH WATER OR LIQUID SUBJECT TO FREEZING ARE NOT PERMITTED VERTICALLY WITHIN WALLS.

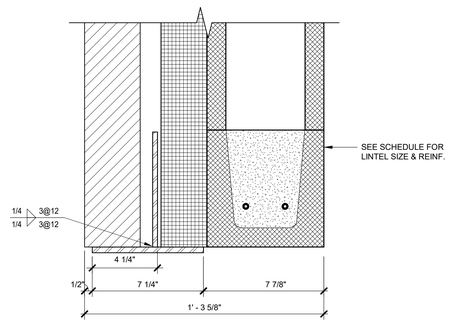
9 S-300 **CMU WALL UTILITY PENETRATION AND EMBEDMENT TYPICAL DETAIL**
SCALE: 1" = 1'-0"



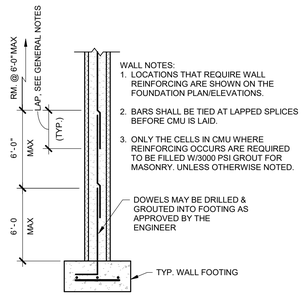
8 S-300 **TYP. EXTERIOR 8" CMU WALL ELEVATION @ OPENING**
SCALE: 1/4" = 1'-0"



7 S-300 **TYP. WALL ELEVATION - AT INT. OPENING**
SCALE: 1/4" = 1'-0"

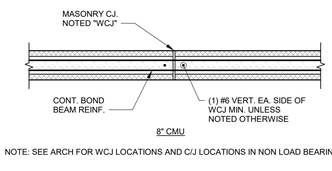


6 S-300 **LINTEL DETAIL**
SCALE: 3" = 1'-0"



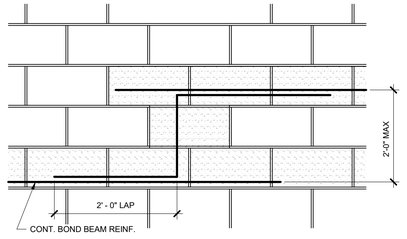
WALL NOTES:
1. LOCATIONS THAT REQUIRE WALL REINFORCING ARE SHOWN ON THE FOUNDATION PLAN/ELEVATIONS.
2. BARS SHALL BE TIED AT LAPPED SPLICES BEFORE CMU IS LAID.
3. ONLY THE CELLS IN CMU WHERE REINFORCING OCCURS ARE REQUIRED TO BE FILLED W/3000 PSI GROUT FOR MASONRY. UNLESS OTHERWISE NOTED.

5 S-300 **CMU WALL REINF. DETAIL**
SCALE: NTS

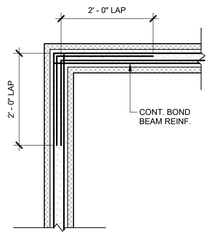


NOTE: SEE ARCH FOR WCJ LOCATIONS AND C/J LOCATIONS IN NON LOAD BEARING WALLS.

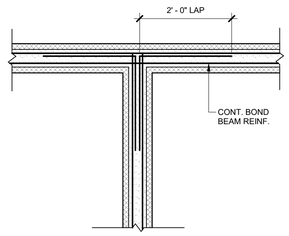
4 S-300 **TYP. CONTROL JOINT DETAIL**
SCALE: 3/4" = 1'-0"



3 S-300 **TYP. STEP IN BOND BEAM**
SCALE: 1" = 1'-0"



2 S-300 **TYP. BOND BEAM CORNER**
SCALE: 3/4" = 1'-0"



1 S-300 **TYP. BOND BEAM INTERSECTION**
SCALE: 3/4" = 1'-0"

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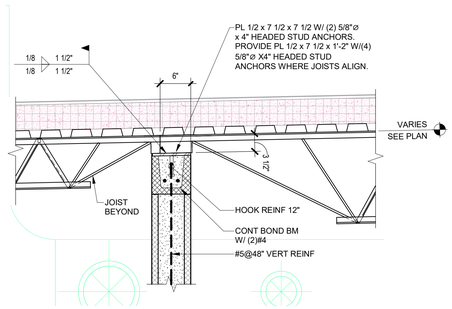
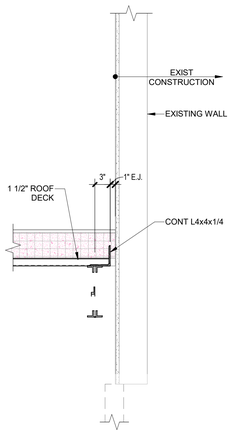
TYPICAL CMU WALLS

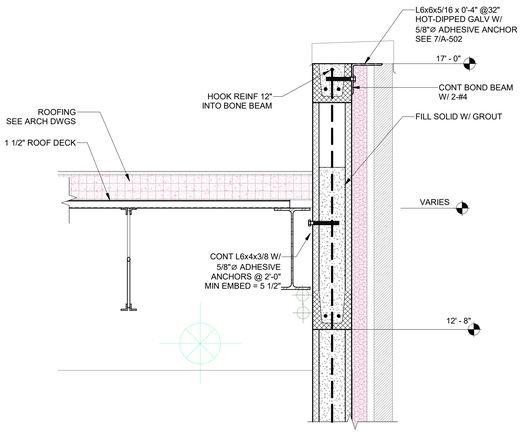
S-300



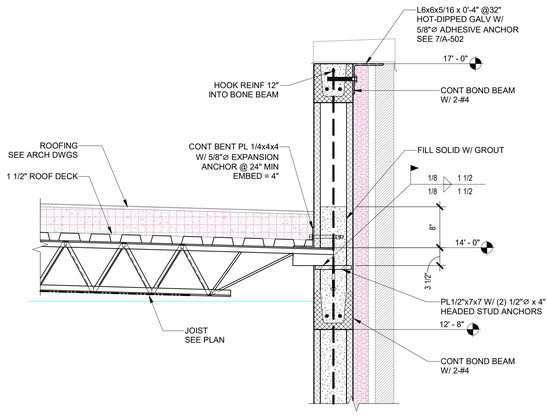
10 S-301 **JOIST BEARING DETAIL AT ROOF**
SCALE: 1" = 1'-0"



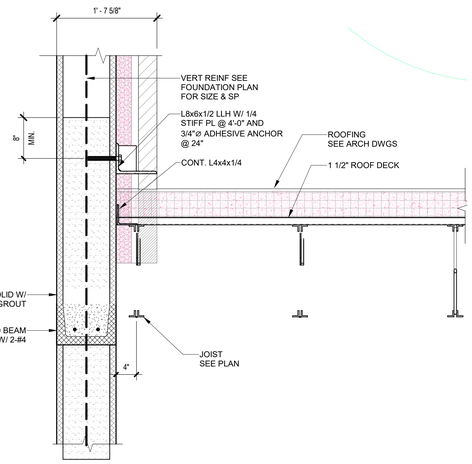
9 S-301 **SECTION THRU ROOF**
SCALE: 1" = 1'-0"



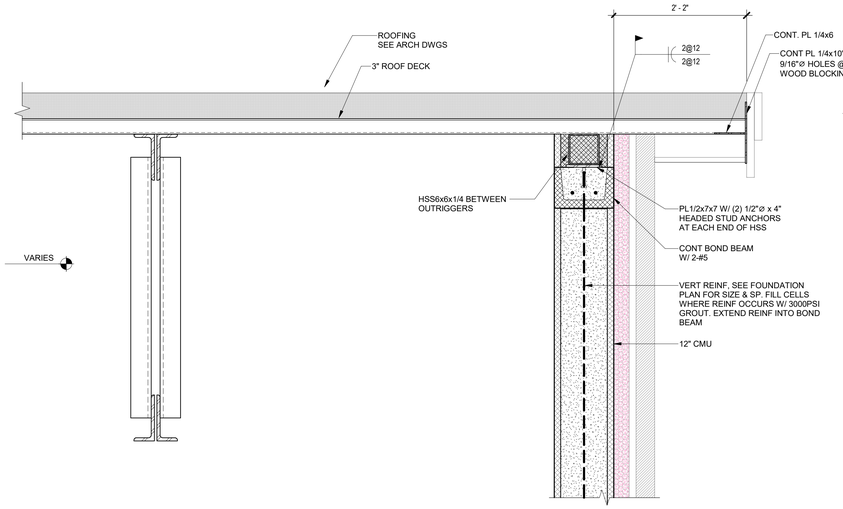
8 S-301 **SECTION THRU ROOF**
SCALE: 1" = 1'-0"



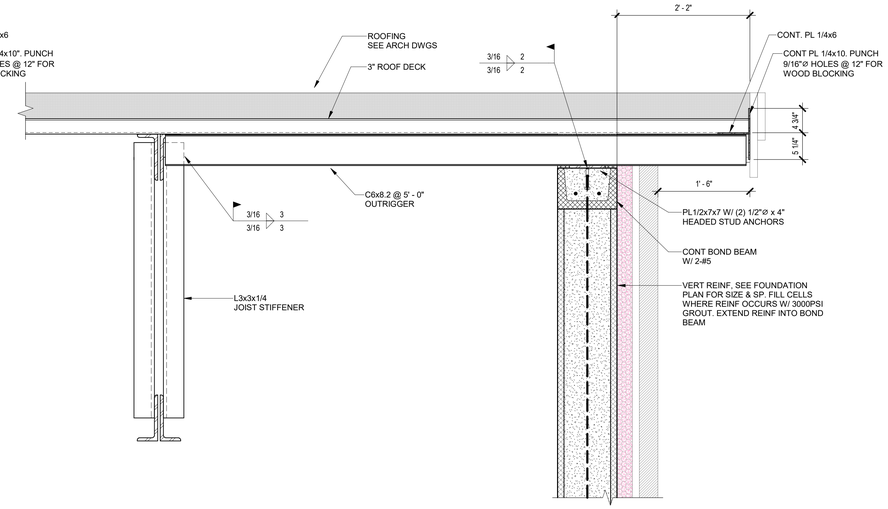
7 S-301 **SECTION THRU ROOF**
SCALE: 1" = 1'-0"



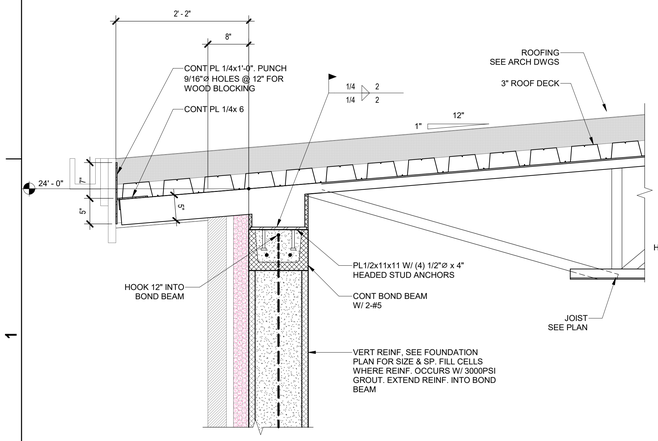
6 S-301 **SECTION THRU LOW ROOF**
SCALE: 1" = 1'-0"



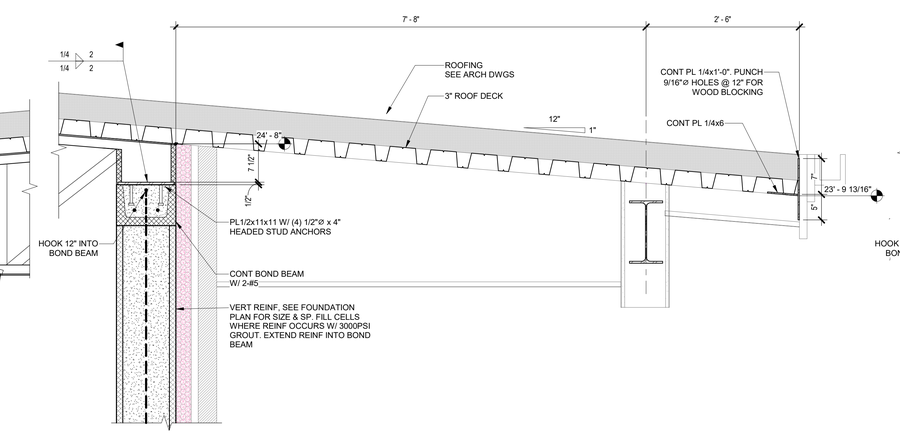
5 S-301 **SECTION BETWEEN OUTRIGGERS @ GYM**
SCALE: 1" = 1'-0"



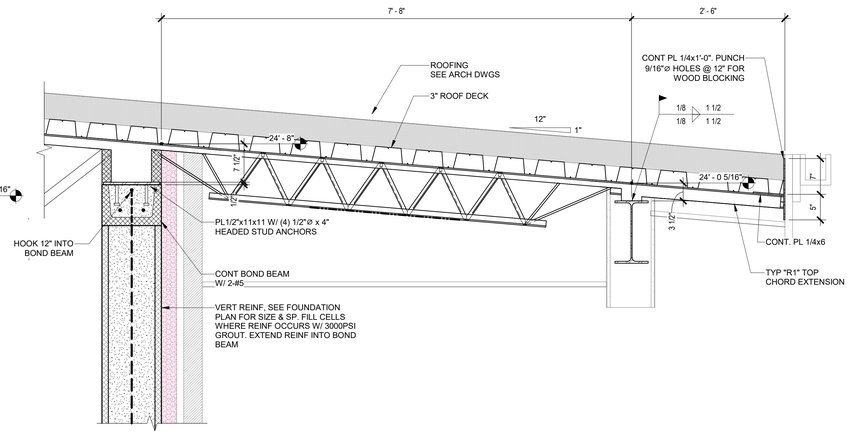
4 S-301 **SECTION THRU OUTRIGGER @ GYM**
SCALE: 1" = 1'-0"



3 S-301 **SECTION THRU GYM ROOF**
SCALE: 1" = 1'-0"



2 S-301 **SECTION THRU GYM ROOF**
SCALE: 1" = 1'-0"



1 S-301 **SECTION THRU GYM ROOF**
SCALE: 1" = 1'-0"

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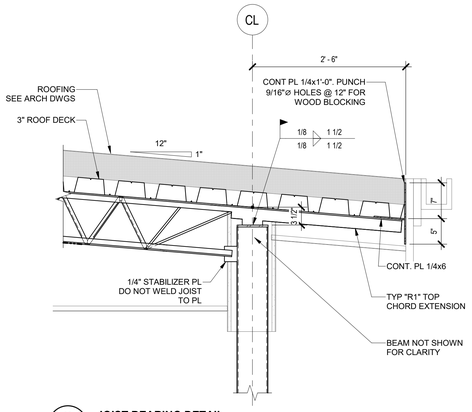
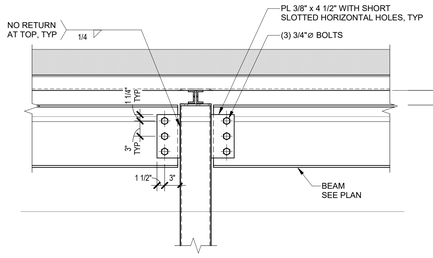
ROOF FRAMING DETAILS

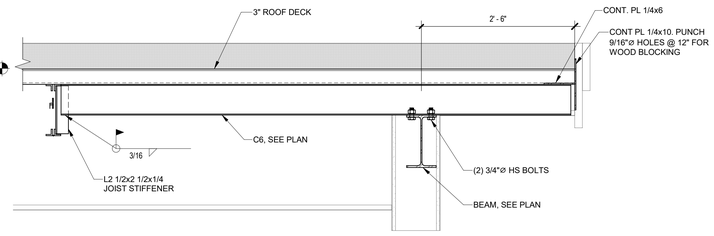
S-301



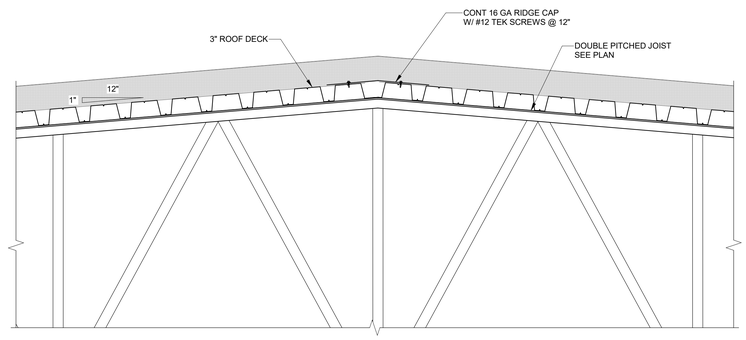
10 / S-302 JOIST BEARING DETAIL
SCALE: 1" = 1'-0"



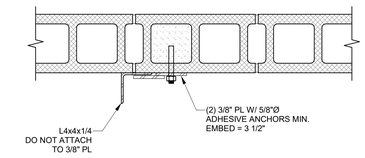
9 / S-302 SECTION AT TYPICAL BEAM TO COLUMN CONNECTION
SCALE: 1" = 1'-0"



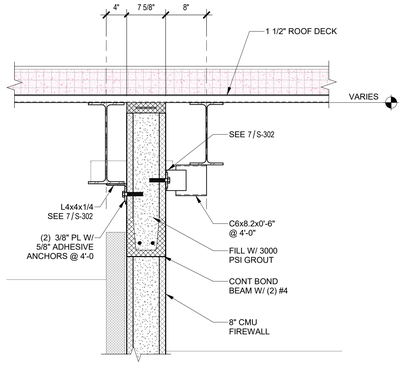
8 / S-302 SECTION THRU ROOF
SCALE: 1" = 1'-0"



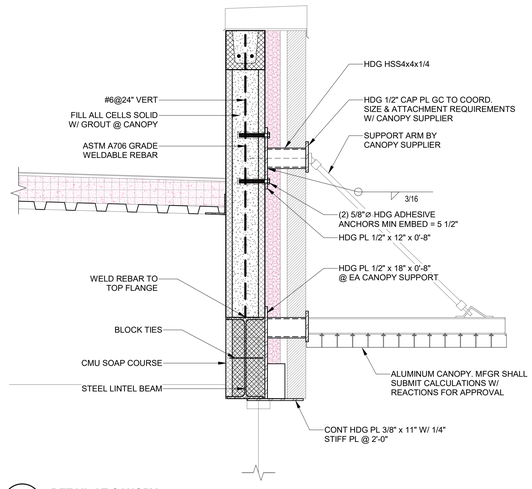
11 / S-302 SECTION THRU RIDGE
SCALE: 1" = 1'-0"



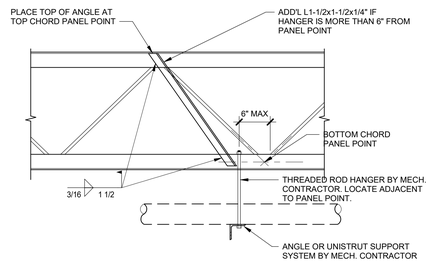
7 / S-302 Z-CLIP DETAIL
SCALE: 1 1/2" = 1'-0"



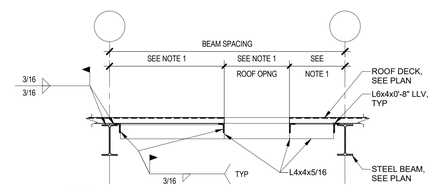
6 / S-302 SECTION THRU FIREWALL
SCALE: 1" = 1'-0"



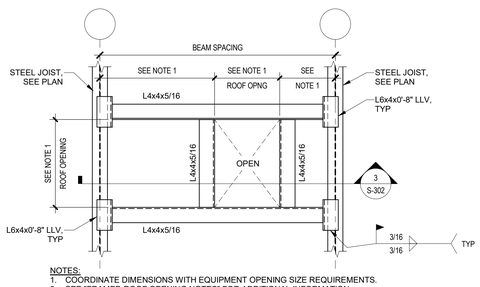
5 / S-302 DETAIL AT CANOPY
SCALE: 1" = 1'-0"



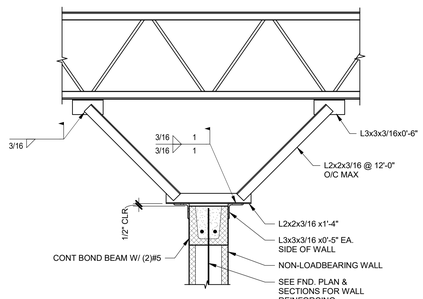
4 / S-302 TYP. JOIST REINFORCING
SCALE: 1" = 1'-0"



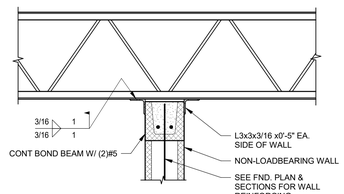
3 / S-302 SECTION AT TYPICAL FRAMED ROOF OPENING
SCALE: 3/4" = 1'-0"



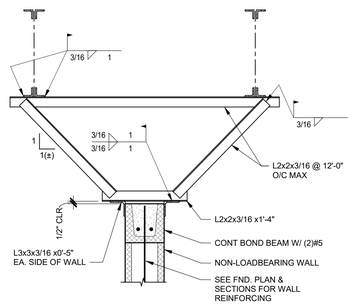
2 / S-302 PLAN DETAIL AT TYPICAL FRAMED ROOF OPENING
SCALE: 3/4" = 1'-0"



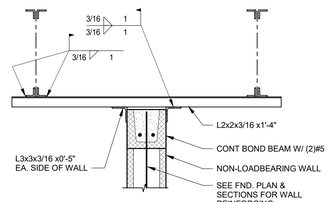
WALL PERPENDICULAR TO FRAMING - OPTION 1



WALL PERPENDICULAR TO FRAMING - OPTION 2



WALL PARALLEL TO FRAMING - OPTION 1



WALL PARALLEL TO FRAMING - OPTION 2

NOTES:
1. CONTRACTOR COORDINATE BRACING OPTIONS BASED ON DIRECTION AND HEIGHT OF WALL RELATIVE TO JOIST FRAMING.

1 / S-302 NON-LOAD BEARING CMU WALL BRACING DETAIL BELOW DECK
SCALE: 1" = 1'-0"

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CONSTRUCTION DRAWINGS

HARNETT COUNTY SCHOOLS
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855 Old US Highway 421
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No.	Date	Description

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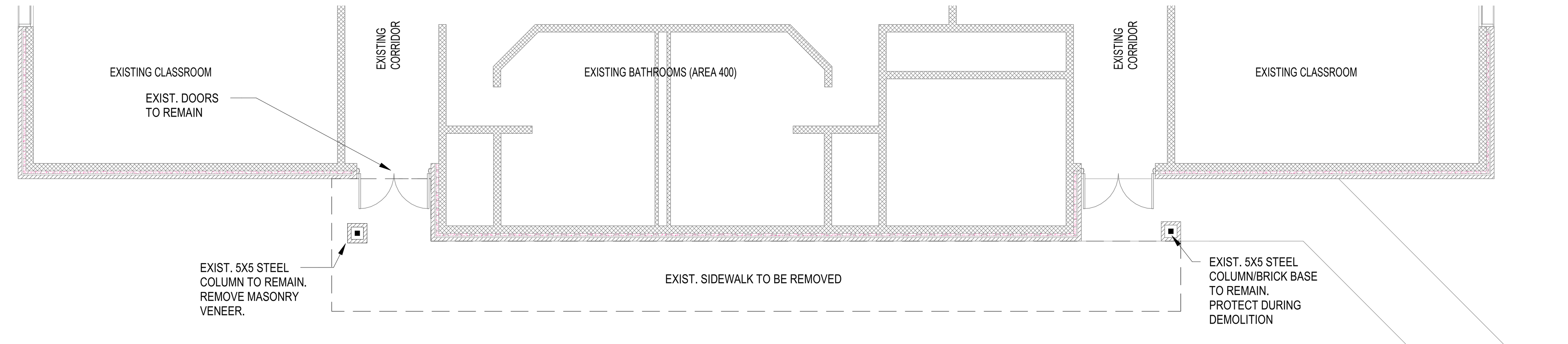
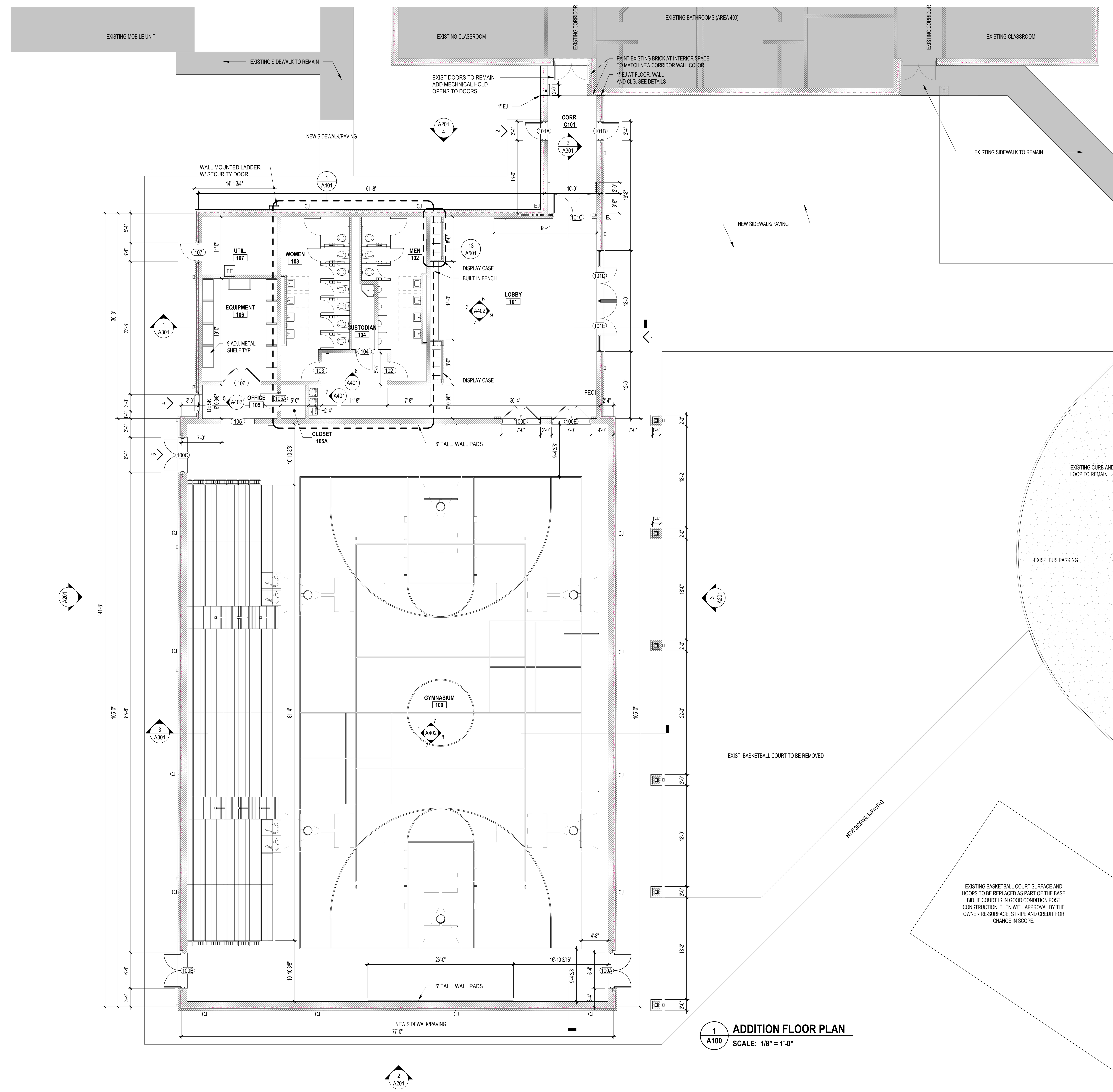
ROOF FRAMING DETAILS

S-302



3 A100 **DEMOLITION PLAN**
SCALE: 1/8" = 1'-0"



1 A100 **ADDITION FLOOR PLAN**
SCALE: 1/8" = 1'-0"

FLOOR PLAN LEGEND

SYMBOL	DESCRIPTION
(2 hour rated wall line)	2 HOUR RATED WALL
CJ	BRICK CONTROL JOINT - SEE DETAIL A5 SHEETS
FD	FLOOR DRAIN - SEE PLUMBING DRAWINGS
SF3	STOREFRONT TAG
	WINDOW TAG - SEE SHEET A601 AND FLOOR PLANS
100	DOOR TAG - SEE SHEET A601 AND FLOOR PLANS

GENERAL NOTES:

1. SEE SHEET **G002** FOR UL DESIGNS
2. ALL CURTAINWALL (CW) AND STOREFRONT (SF) DIMENSIONED TO FACE OF MULLION, UNO.
3. ALL EXTERIOR MASONRY DIMENSIONED TO EXTERIOR FACE OF CMU BLOCK.
4. ALL METAL STUD WALLS DIMENSIONED TO FACE OF STUD, UNO.
5. ALL DOORS IN MASONRY DIMENSIONED TO MASONRY OPENING.
6. ALL DOORS IN METAL STUD WALLS DIMENSIONED TO CENTERLINE.
7. PROVIDE BULLNOSE UNITS AS FOLLOWS:
   A. WALL OUTSIDE CORNERS.
      a. EXCEPTION: PROVIDE ANGLE-CORNER UNITS FOR FIRST EXPOSED COURSE AT OUTSIDE CORNERS SCHEDULED TO RECEIVE WALL BASE FINISH. GRIND EXPOSED UPPER PORTION OF ANGLE-CORNER UNIT TO CREATE A SMOOTH TRANSITION TO MATCH THE BULLNOSE UNITS ABOVE. SEE ENLARGED, STANDARD DETAIL IN THIS SET ON A5 SHEETS.
   B. WALL CAP, UNLESS OTHER CAP MATERIAL FINISH IS NOTED.
   C. WINDOW SILLS, UNLESS OTHER SILL MATERIAL FINISH IS NOTED.
   D. END WALLS
   E. PILASTERS

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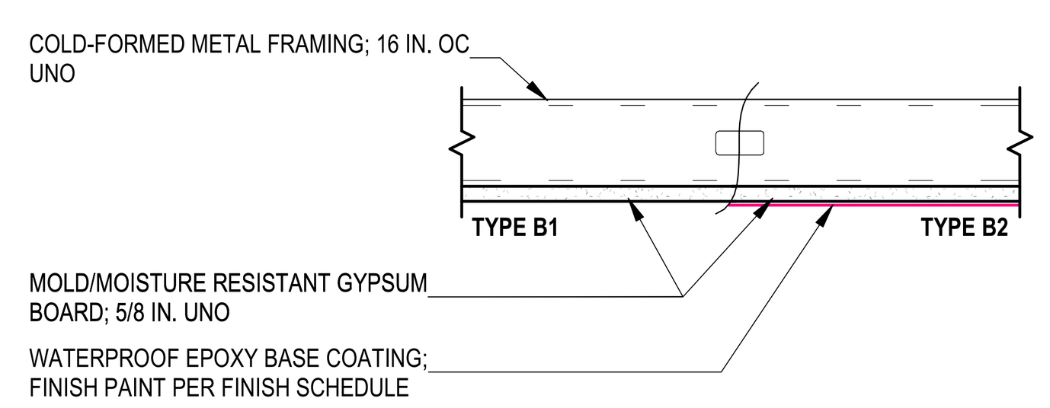
FLOOR PLANS

A100

B	0'-0"	DRYWALL CEILING ON STUDS

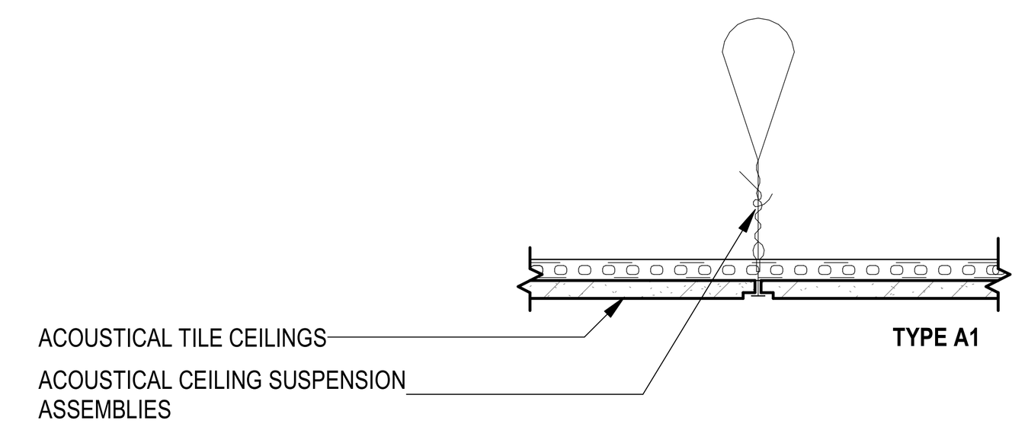
TYPE MARK:
B1 = 5/8" GYPSUM CEILING PANELON METAL STUD.
B2 = 5/8" GYPSUM CEILING PANEL (MOLD RESISTANT) W/ WATERPROOF EPOXY BASE COATING ON METAL STUD.



UL DESIGN **#: N/A**

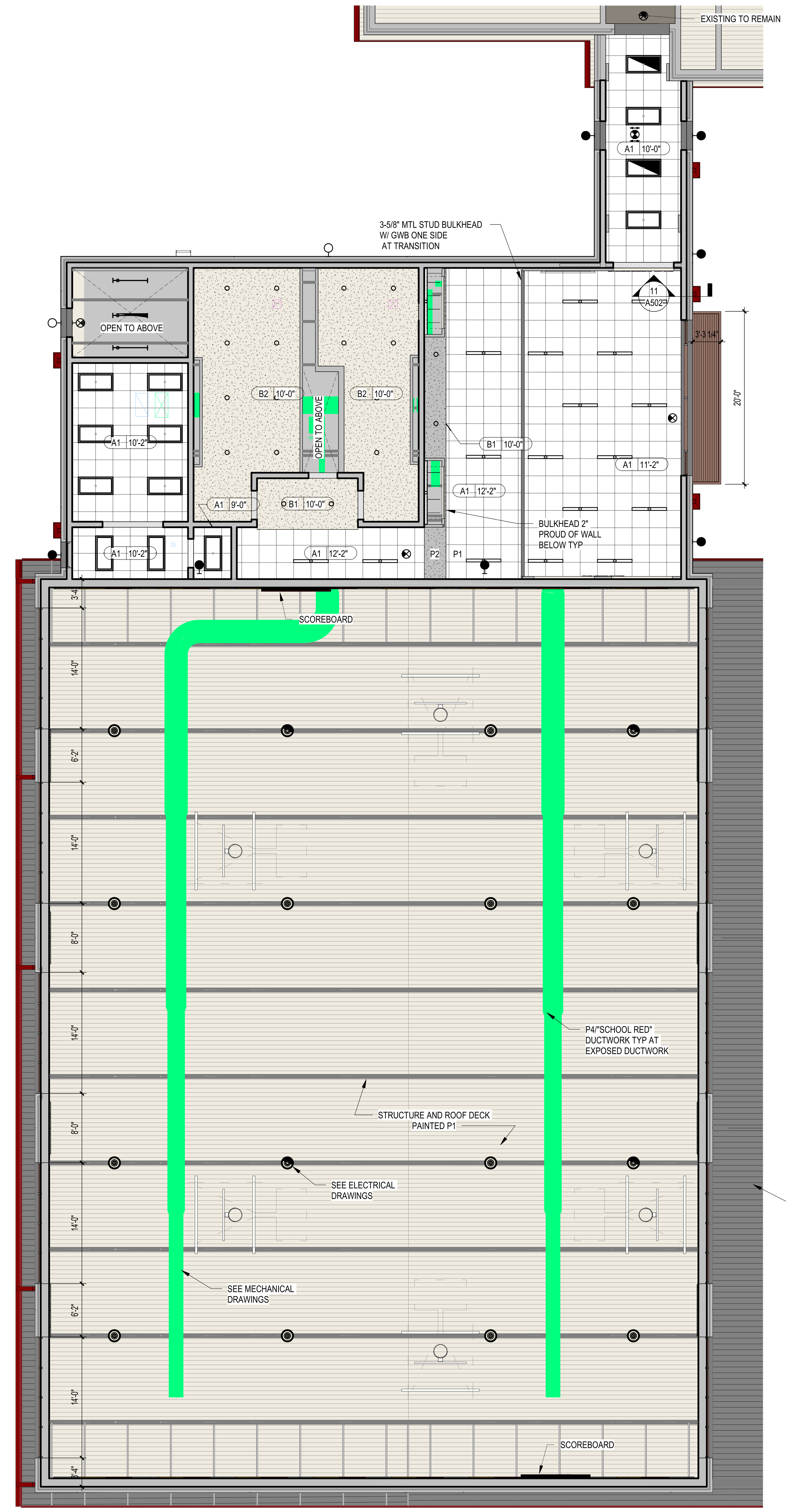
A	0'-0"	ACOUSTICAL CEILING TILE

TYPE MARK:
A1 = 24"x24" STANDARD MATERIAL



UL DESIGN **#: N/A**

2 / A121 STANDARD ASSEMBLIES (CEILING)
SCALE: 1 1/2" = 1'-0"



1 / A121 FIRST FLOOR REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

REFLECTED CEILING PLAN LEGEND

CEILING TYPE — A | 8' - 0" — CEILING HEIGHT

SYMBOL	DESCRIPTION
	2' x 2' ACOUSTICAL CEILING PANELS TYPE "A": TYPICAL PANELS (CENTER GRID IN ROOM/SPACE)
	GYPSUM WALL BOARD CEILING TYPE "B": TYPICAL CEILING SYSTEM, PAINTED (METAL STUD FRAMING OR SUSPENDED DRYWALL SYSTEM)
	TYPE "C": FLUSH METAL CEILING SYSTEM, PRE-FINISHED
	LED EXIT SIGN
	DOWNLIGHT - SEE ELECTRICAL
	2X4 LAY-IN LED
	2X4 LAY-IN EMERGENCY LED
	LED STRIP LIGHT
	RECESSED LINEAR LED
	WALL MOUNTED EXTERIOR LIGHT
	EMERGENCY WALL MOUNTED EXTERIOR LIGHT
	DIFFUSER - SEE MECHANICAL DWG
	RETURN - SEE MECHANICAL DWG
	DIFFUSER GRILLE - SEE MECHANICAL DWG
	EHAUST - SEE MECHANICAL DWG

RCP GENERAL NOTES:

1. REFER TO ELECTRICAL SHEETS FOR LIGHT FIXTURE TYPES AND ADDITIONAL INFORMATION.
2. COORDINATE LOCATION OF ACCESS PANELS WITH PLUMBING CONTRACTOR.
3. ANY EXISTING FIXTURES AND CEILING EQUIPMENT TO REMAIN IS INDICATED BY GRAY LINEWORK. SEE ELECTRICAL AND MECHANICAL FOR CLARIFICATION OF EXISTING AND NEW.
4. ALL EXPOSED STRUCTURE, PIPING, DUCT WORK, ELECTRICAL DEVICES, ETC IN AREAS INDICATED AS EXPOSED STRUCTURE TO BE PAINTED COLOR MATCHED TO ADJACENT SURFACE EXCEPT MECHANICAL ROOMS.
5. INTERIOR LOUVERS TO BE PAINTED TO MATCH THE WALL, SURFACE OR BULKHEAD COLOR THAT THE LOUVER IS INSTALLED IN.
6. EAVE AND CANOPY SOFFITS TO BE 7" FLUSH METAL PANEL SYSTEM.
7. CONTROL JOINTS ARE NOTED IN GYPSUM CEILINGS AS 'CJ'
8. PER OSHA, ALL TOILET ROOMS MUST HAVE A SCRUBBABLE AND CLEANABLE FLOOR, WALL AND CEILING.
9. ALL LAY IN CEILING GRID TO BE WHITE UNO.

PAINT NOTES

1. PAINT P1 STANDARD WALL FIELD IN ALL LOCATIONS U.N.O.
2. EPOXY PAINT TYPICAL AT ALL RESTROOMS, JANITOR CLOSETS, AND KITCHEN / SERVING AREAS.
3. SEMIGLOSS PAINT TYPICAL AT ALL CONCRETE MASONRY WALLS AND HOLLOW METAL DOOR FRAMES, U.N.O.
4. EGGSHELL PAINT TYPICAL AT ALL GYPSUM BOARD WALLS U.N.O.
5. FLAT PAINT TYPICAL AT ALL CEILING & BULKHEAD CONDITIONS, U.N.O.
6. PAINT COLORS DESIGNATED AT COLUMN SURROUNDS TO BE APPLIED TO ALL SIDES OF COLUMN UP TO CEILING.
7. PAINT COLORS DESIGNATED AT BULKHEADS TO BE APPLIED TO ENTIRE VERTICAL AND HORIZONTAL FACES, UNLESS NOTED OTHERWISE IN RCP AND ELEVATIONS.

P1 WHITE SW6070-HERON PLUME
P2 GREY SW7674-PEPPERCORN
P3 GOLD SW6905-GOLDFINCH
P4 MAROON SW6300-BURGUNDY

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RCP

*A121

IF THIS TEXT IS NOT THE COLOR RED, THIS SHEET IS MISSING INFORMATION

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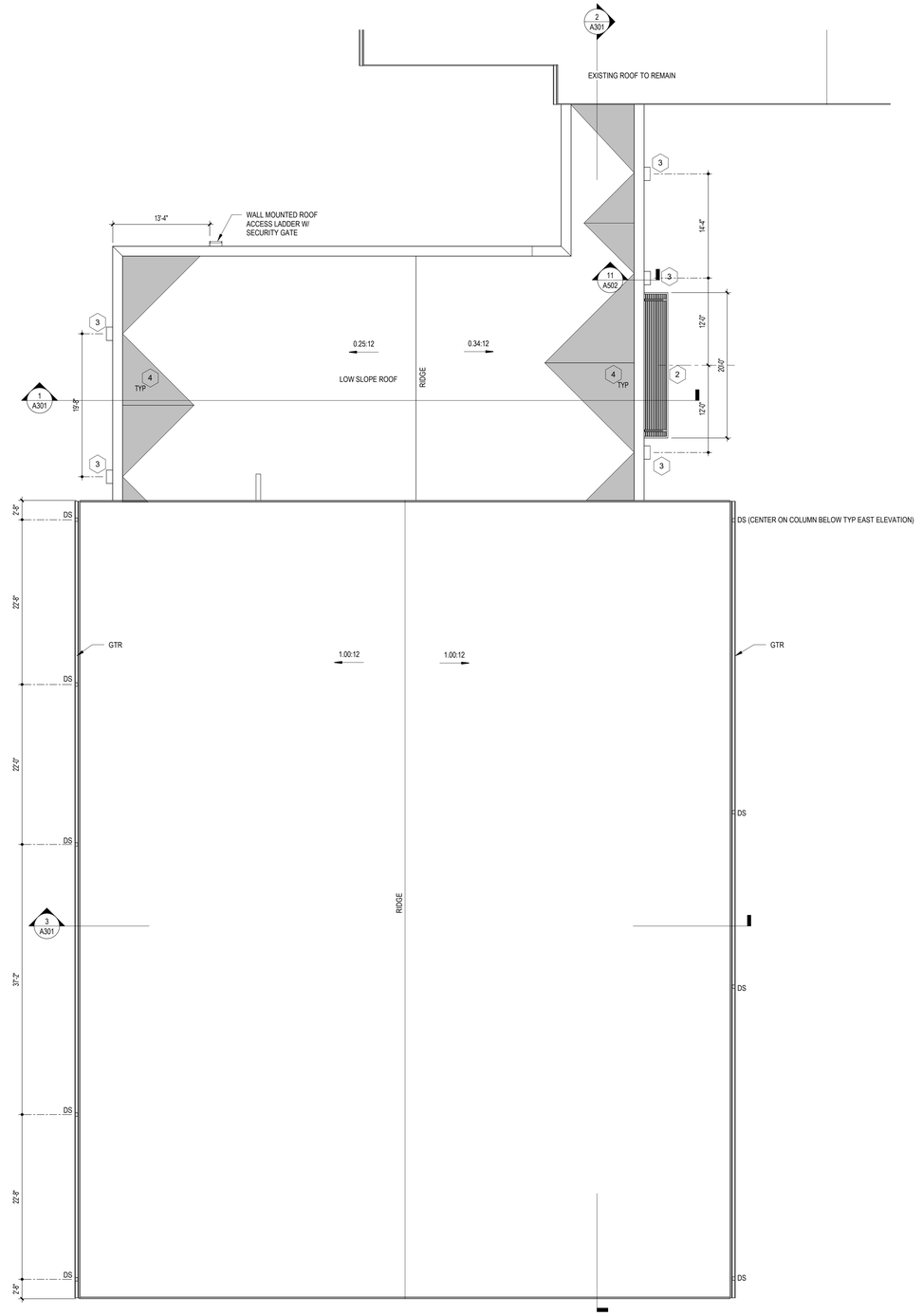

ROOF PLAN

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

ROOF PLAN LEGEND

SYMBOL	DESCRIPTION
DS	4" x 6" DOWNSPOUT
GTR	CONTINUOUS 6" x 6" GUTTER
○ VTR	VENT PIPE ROOF PENETRATION - SEE SHEET A504

GENERAL NOTES:

1. SEE PLUMBING AND MECHANICAL DRAWINGS FOR ROOF MOUNTED EQUIPMENT AND ROOF PENETRATIONS.
2. SEE SHEET A5 SHEET SERIES FOR ROOF & CANOPY DETAILS.

KEYNOTE LEGEND (ROOF PLAN)

#	
1	NOT USED
2	MANUFACTURED ALUMINUM CANOPY - BELOW. COORDINATE DRAIN LOCATION WITH RAMP BELOW
3	WALL SCUPPER AND COLLECTOR HEAD WITH DOWNSPOUT
4	TAPERED ROOF INSULATION CRICKETS FOR DRAINAGE - 1/2":12" SLOPE

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ROOF PLAN

A131

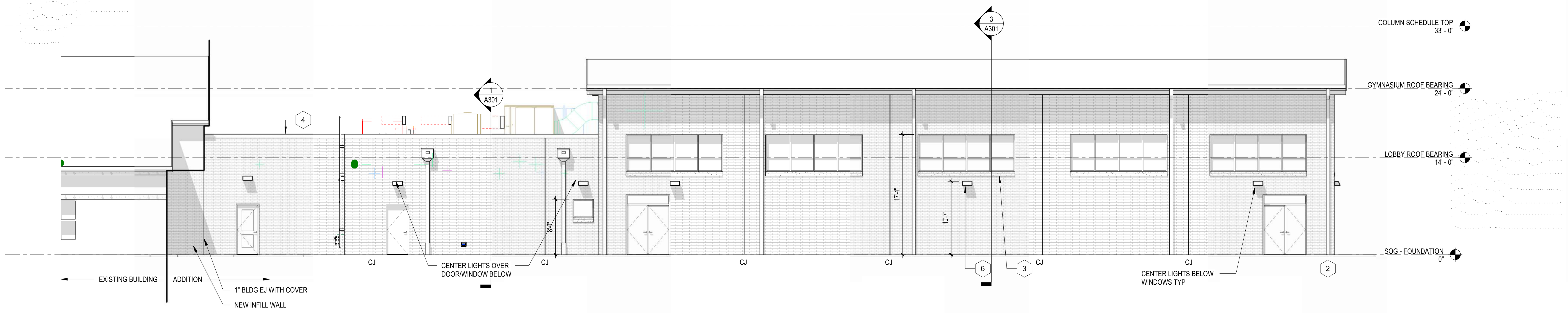
ELEVATION LEGEND

SYM.	DESCRIPTION
(spot elevation symbol)	SPOT ELEVATION
CL	CENTERLINE
CJ	CONTROL JOINT
EJ	EXPANSION JOINT

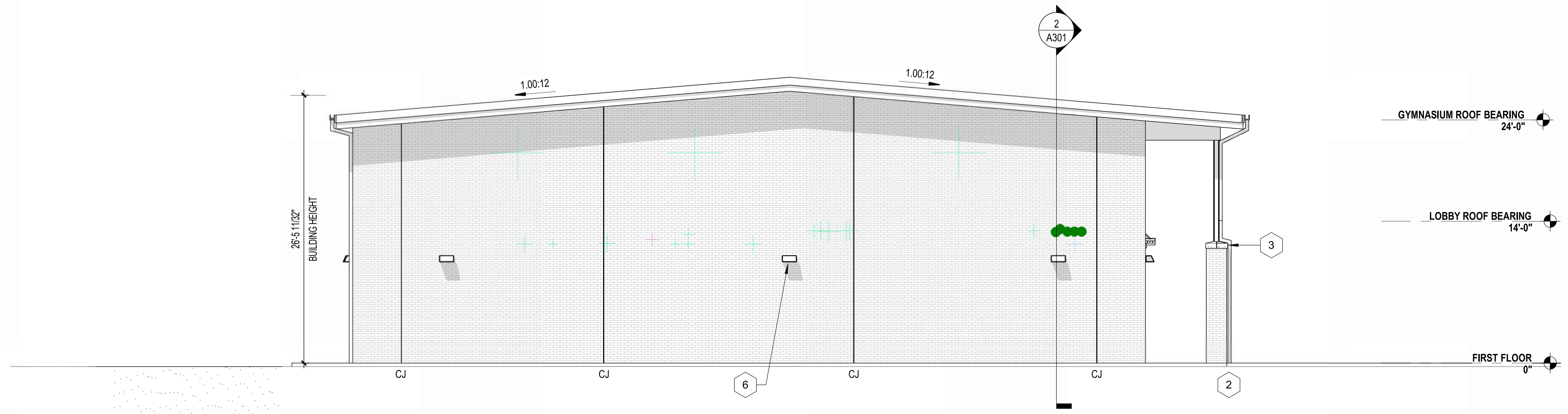
REFER TO SHEET G001 SYMBOLS LIBRARY FOR FULL SYMBOL DESCRIPTION

KEYNOTE LEGEND (EXT. ELEVS)

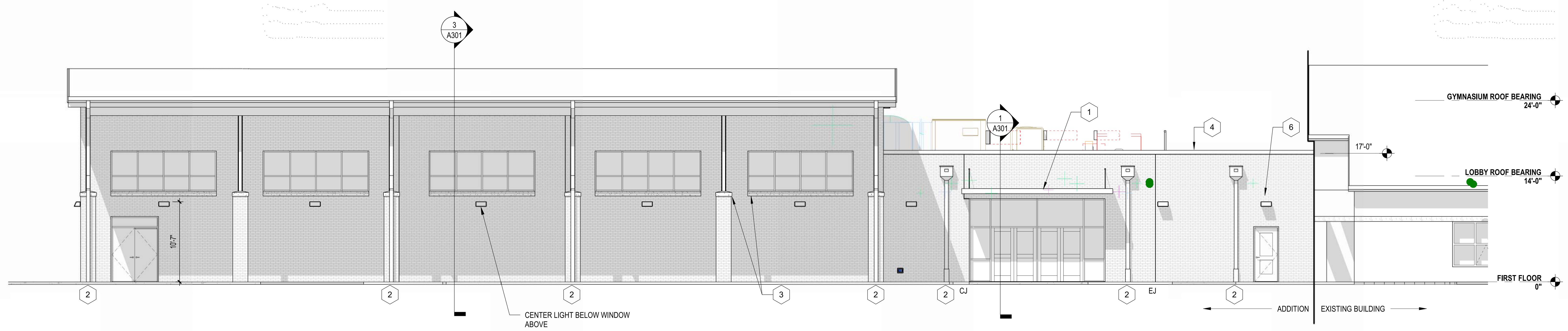
1. PRE-MANUFACTURED WALL-MOUNTED CANOPY SYSTEM. CENTER ABOVE DOOR UNO
2. 4" X 6" DOWNSPOUT WITH CAST IRON BOOT - TIE TO STORM DRAINS BELOW GRADE.
3. PRE-CAST WINDOW/COLUMN SILL.
4. CONT. PRE-FINISHED METAL COPING.
5. METAL WALL LOUVER - SEE MECHANICAL.
6. EXTERIOR WALL PACK LIGHT FIXTURE - SEE ELECTRICAL.



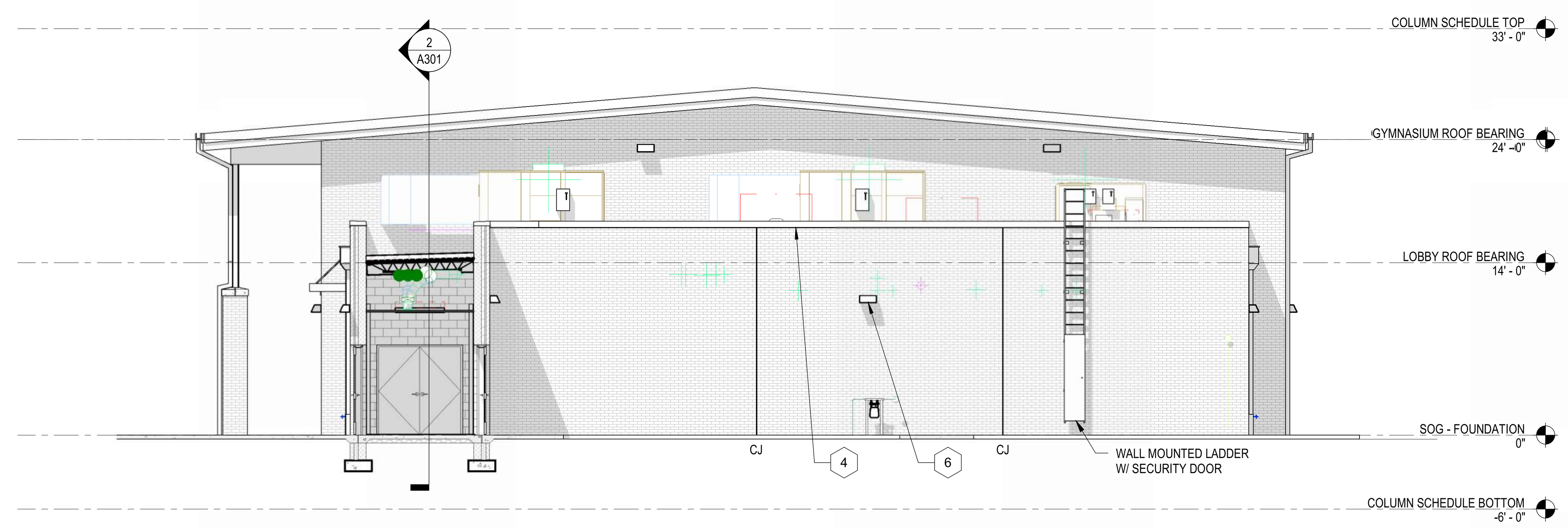
1 A201 WEST ELEVATION-PLAN RIGHT
SCALE: 1/8" = 1'-0"



2 A201 SOUTH ELEVATION-PLAN BOTTOM
SCALE: 1/8" = 1'-0"



3 A201 EAST ELEVATION-PLAN RIGHT
SCALE: 1/8" = 1'-0"



4 A201 NORTH ELEVATION-PLAN TOP
SCALE: 1/8" = 1'-0"

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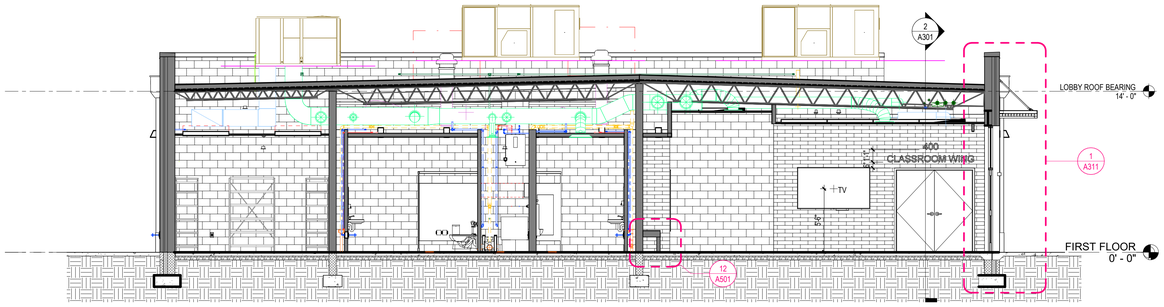
EXTERIOR ELEVATIONS

A201

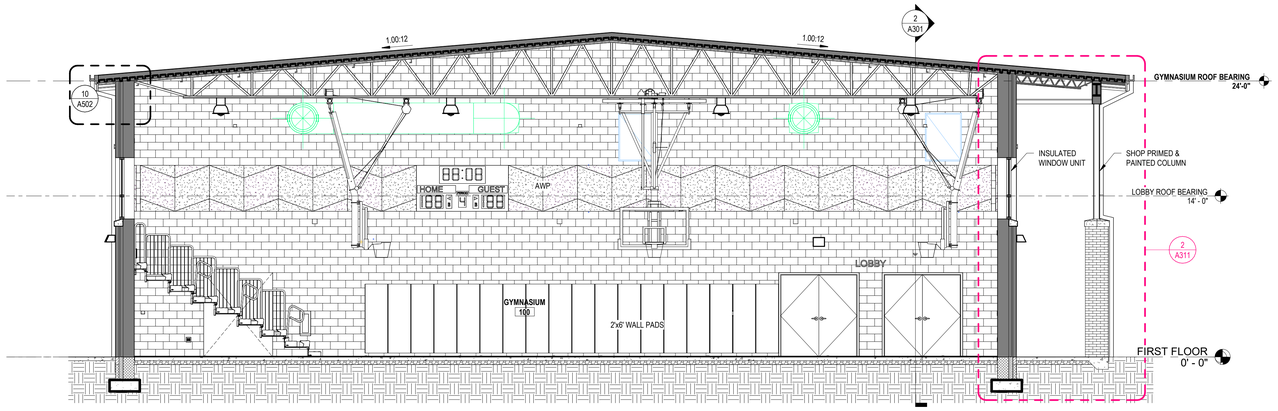
SECTION GENERAL NOTES

1. WALL DIMENSIONS ARE TO FACE OF MASONRY, FACE OF METAL STUD, FACE OF STEEL OR CENTERLINE & STEEL COLUMN, UNLESS OTHERWISE NOTED. DETERMINE LOCATION OF WALLS NOT DIMENSIONED BY THEIR RELATION TO ADJACENT DIMENSIONED WALLS AND COLUMNS.
2. ALL EXTERIOR SIDEWALKS SHALL SLOPE AWAY FROM THE BUILDING AT 1/4" PER FOOT.
3. MAINTAIN INTEGRITY OF ACOUSTIC WALLS AND CEILINGS AT ALL WALL PENETRATIONS AND EQUIPMENT RECESSES.
4. THERE SHALL BE NO PENETRATIONS IN THROUGH-WALL FLASHING.
5. CONTRACTOR SHALL AVOID THE USE OF DISSIMILAR METALS IN CONTACT WITH ONE ANOTHER AS MUCH AS POSSIBLE AND SHALL PROVIDE FELTS, BOND BREAKERS, TAPE, OR OTHER APPLICABLE MATERIAL SEPARATION WHERE SUCH CONTACT IS UNAVOIDABLE.



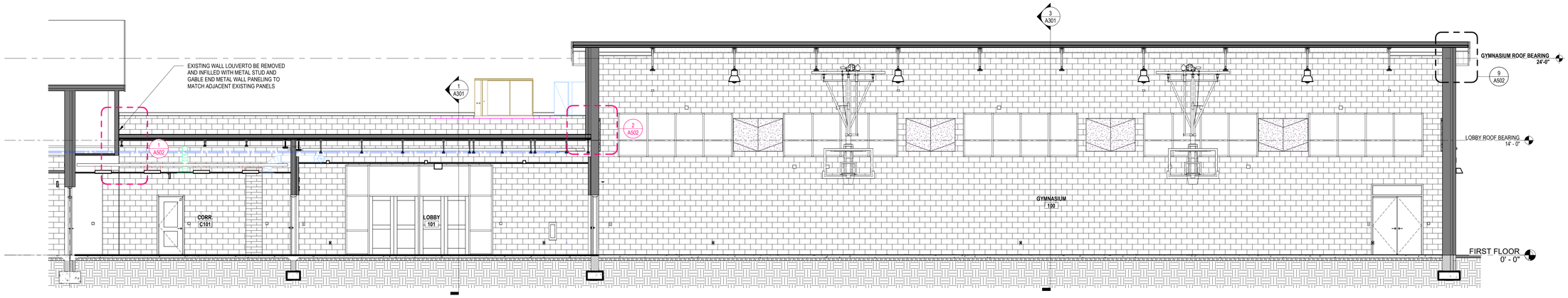
1 A301 LOBBY CROSS SECTION

SCALE: 3/16" = 1'-0"



3 A301 GYMNASIUM CROSS SECTION

SCALE: 3/16" = 1'-0"



2 A301 SOUTH-NORTH SECTION

SCALE: 3/16" = 1'-0"

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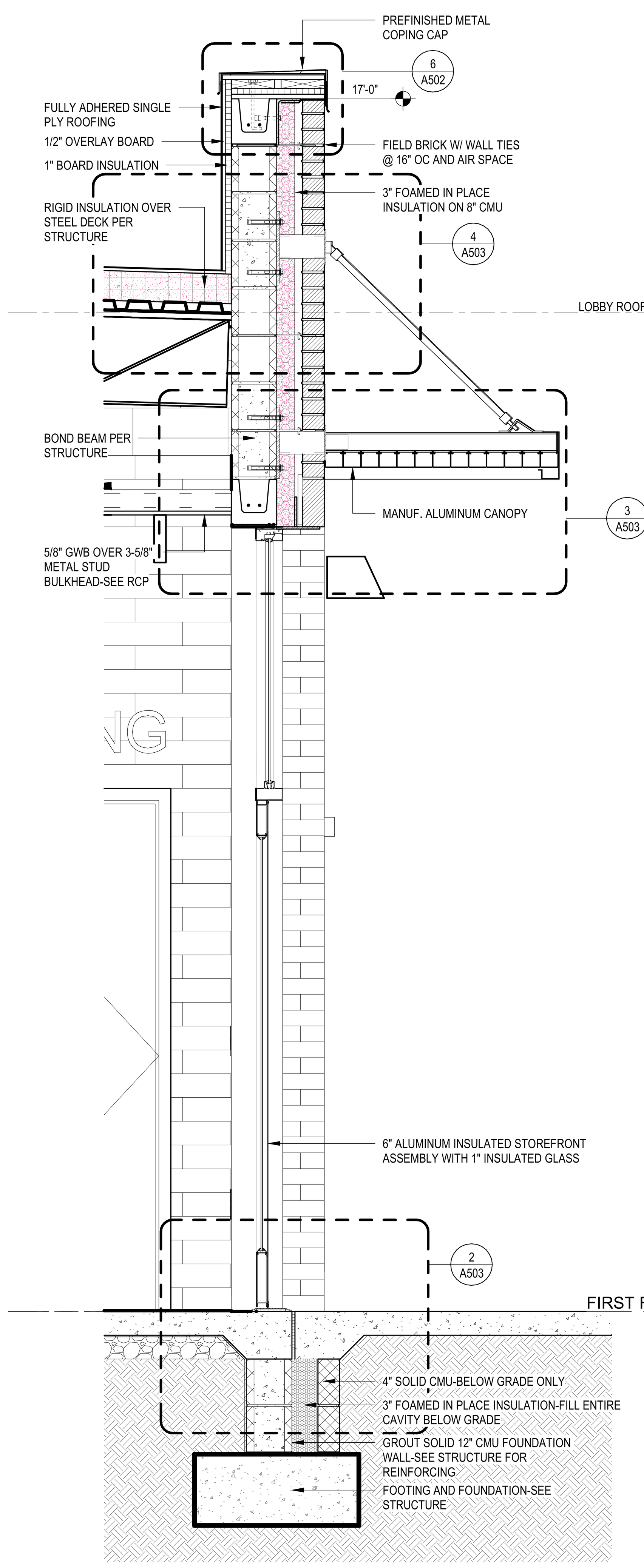
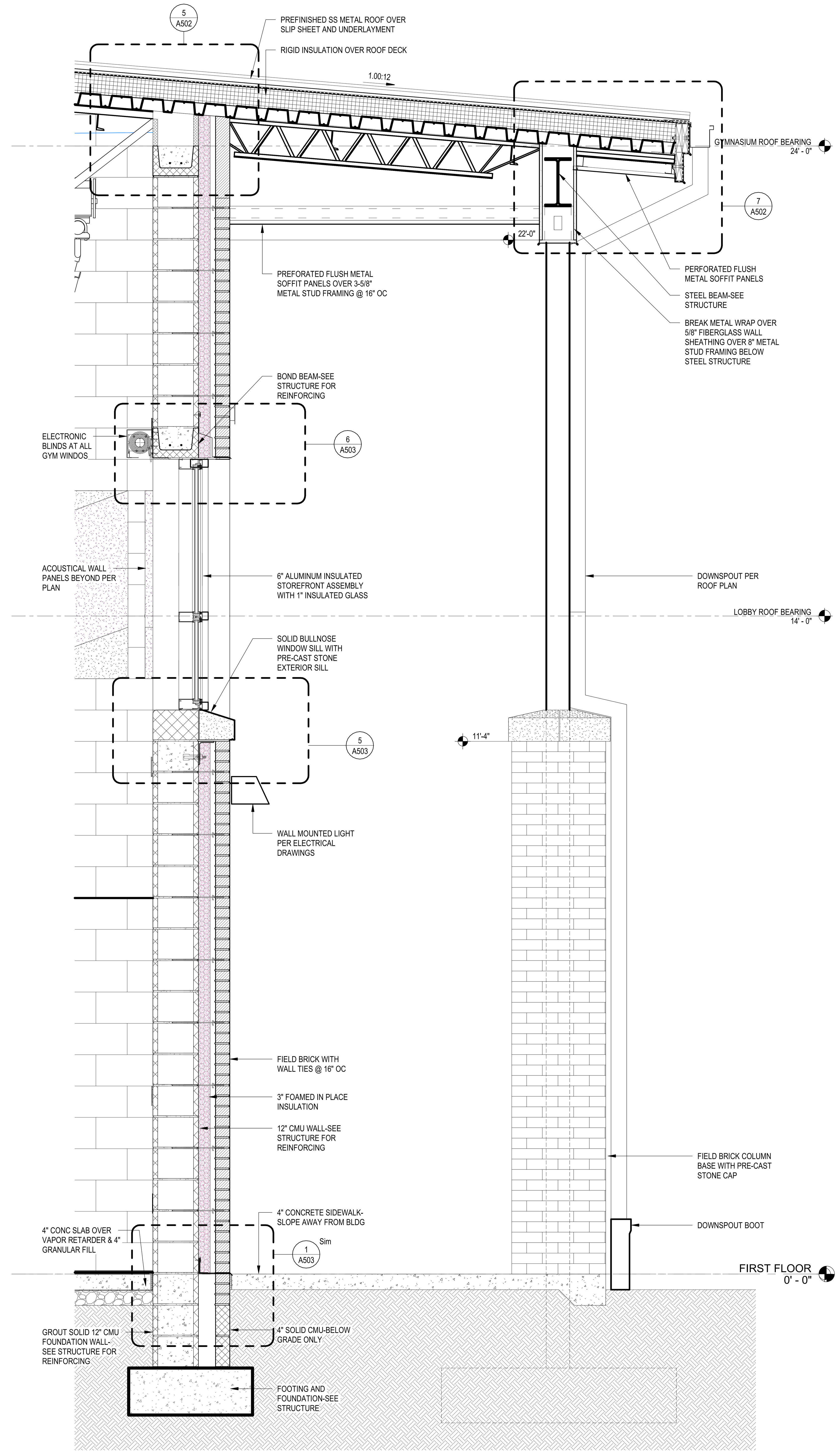
BUILDING SECTIONS

A301

E D C B A



1 A311 **LOBBY WALL SECTION**
SCALE: 3/4" = 1'-0"



2 A311 **GYMNASIUM WALL SECTION**
SCALE: 3/4" = 1'-0"

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EXTERIOR WALL SECTIONS

A311

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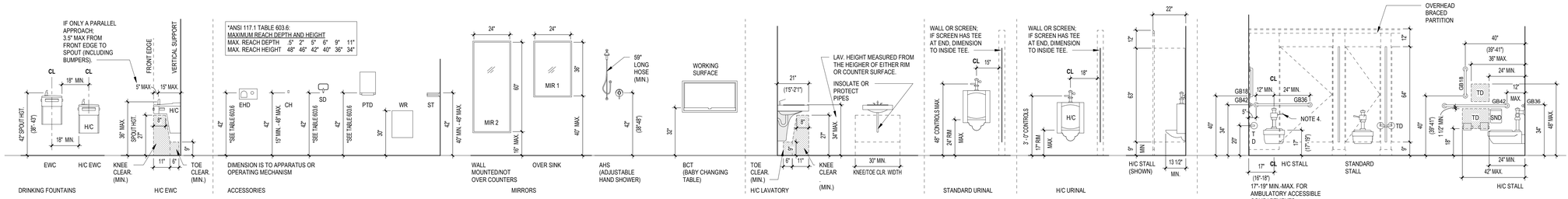
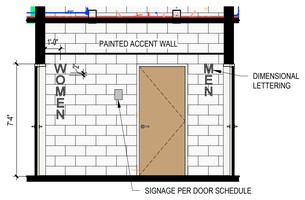
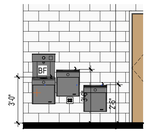


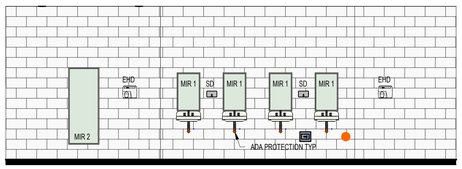
8 A401 **ACCESSIBLE + STANDARD FIXTURE MOUNTING HEIGHTS (ADULTS)**
SCALE: 3/8" = 1'-0"



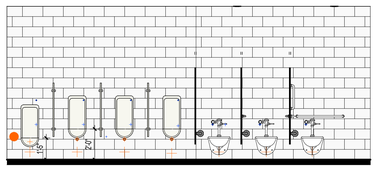
6 A401 **BATHROOM ENTRY WALL ELEVATION**
SCALE: 1/4" = 1'-0"



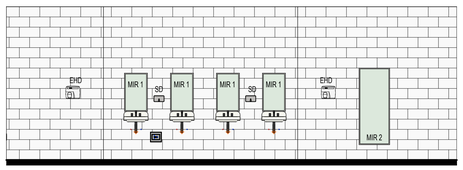
7 A401 **BATHROOM D. FOUNTAIN ELEVATION**
SCALE: 1/4" = 1'-0"



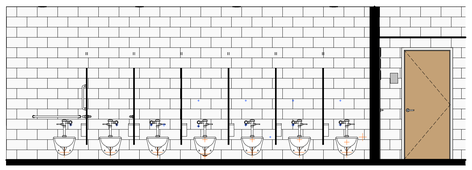
2 A401 **MENS LAV ELEV.**
SCALE: 1/4" = 1'-0"



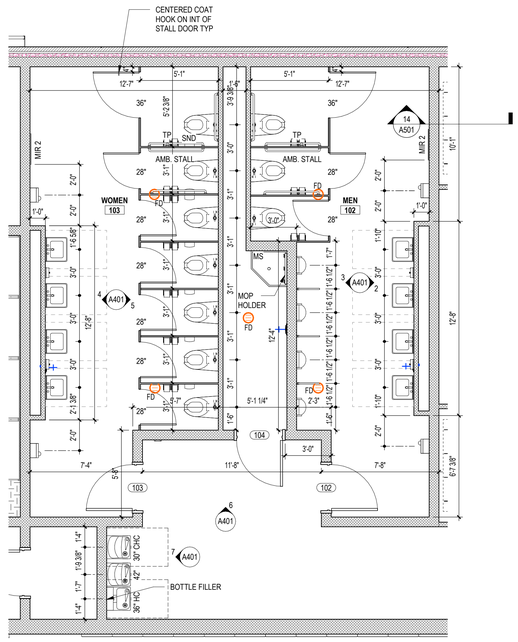
3 A401 **MENS WC ELEV.**
SCALE: 1/4" = 1'-0"



4 A401 **WOMENS LAV ELEV.**
SCALE: 1/4" = 1'-0"



5 A401 **WOMENS WC ELEV.**
SCALE: 1/4" = 1'-0"



1 A401 **ENLAGED BATHROOM PLAN**
SCALE: 1/4" = 1'-0"

ENLARGED PLANS GEN. NOTES

1. REFER TO FINISH PLANS ON A701 FOR ADDITIONAL **PAINT / FINISH / SIGNAGE GENERAL NOTES**
2. SEE SHEET **G002** FOR UL DESIGNS.
3. ALL CURTAINWALL (CW) AND STOREFRONT (SF) DIMENSIONED TO FACE OF MULLION, UNO.
4. ALL EXTERIOR MASONRY DIMENSIONED TO EXTERIOR FACE OF BRICK VENEER (IF APPLICABLE). IF NO VENEER, TO EXTERIOR FACE OF CMU, UNO.
5. ALL METAL STUD WALLS DIMENSIONED TO FACE OF STUD, UNO.
6. ALL DOORS IN MASONRY DIMENSIONED TO MASONRY OPENING.
7. ALL DOORS IN METAL STUD WALLS DIMENSIONED TO CENTERLINE.

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ROBERT WAYNE FERRIS 7/26/24 NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT RALEIGH, N.C.

CONSTRUCTION DOCUMENTS

Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY GYMNASIUM ADDITION
855 Old US Highway 421, Lillington NC 27546

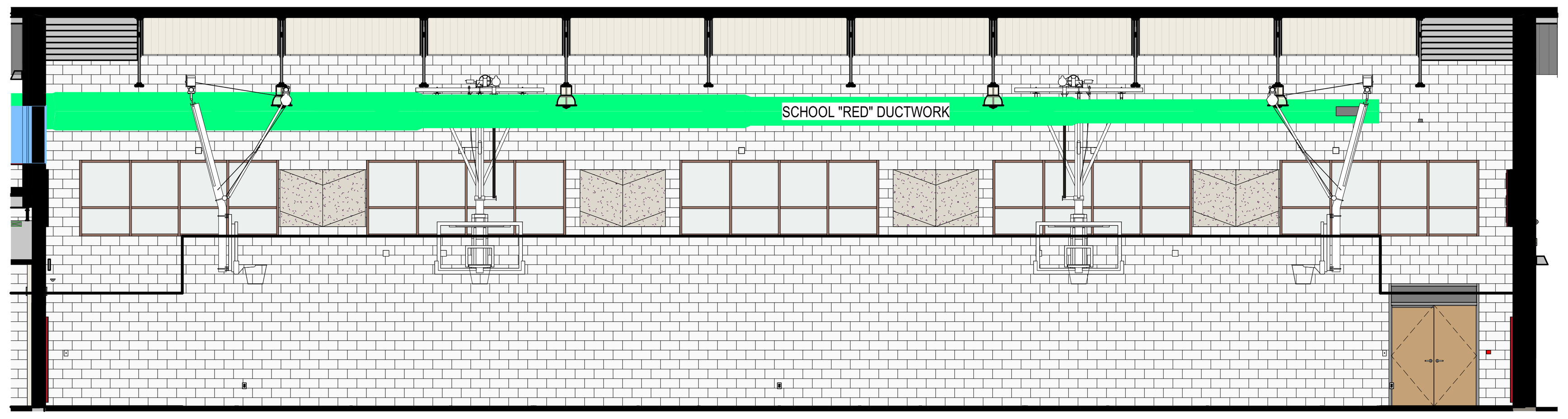
ENERGY STAR PARTNER

No.	Date	Description

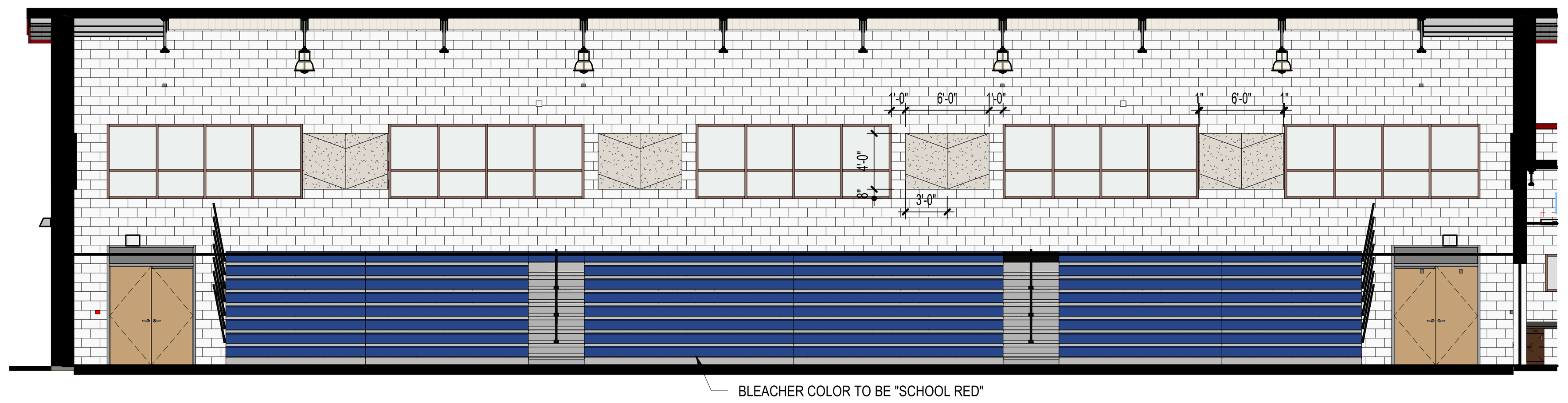
ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JK
CHECKED BY: Checker

BATHROOM PLAN & INT ELEVATIONS

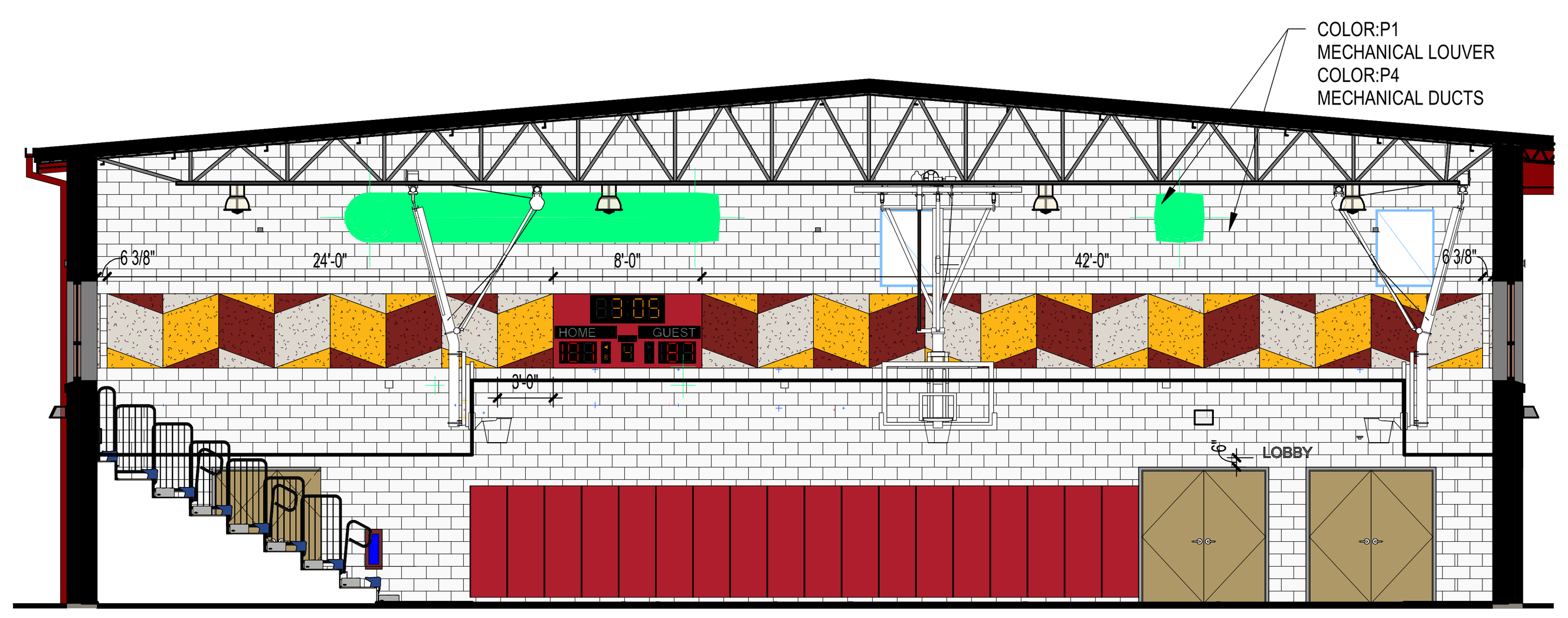
A401



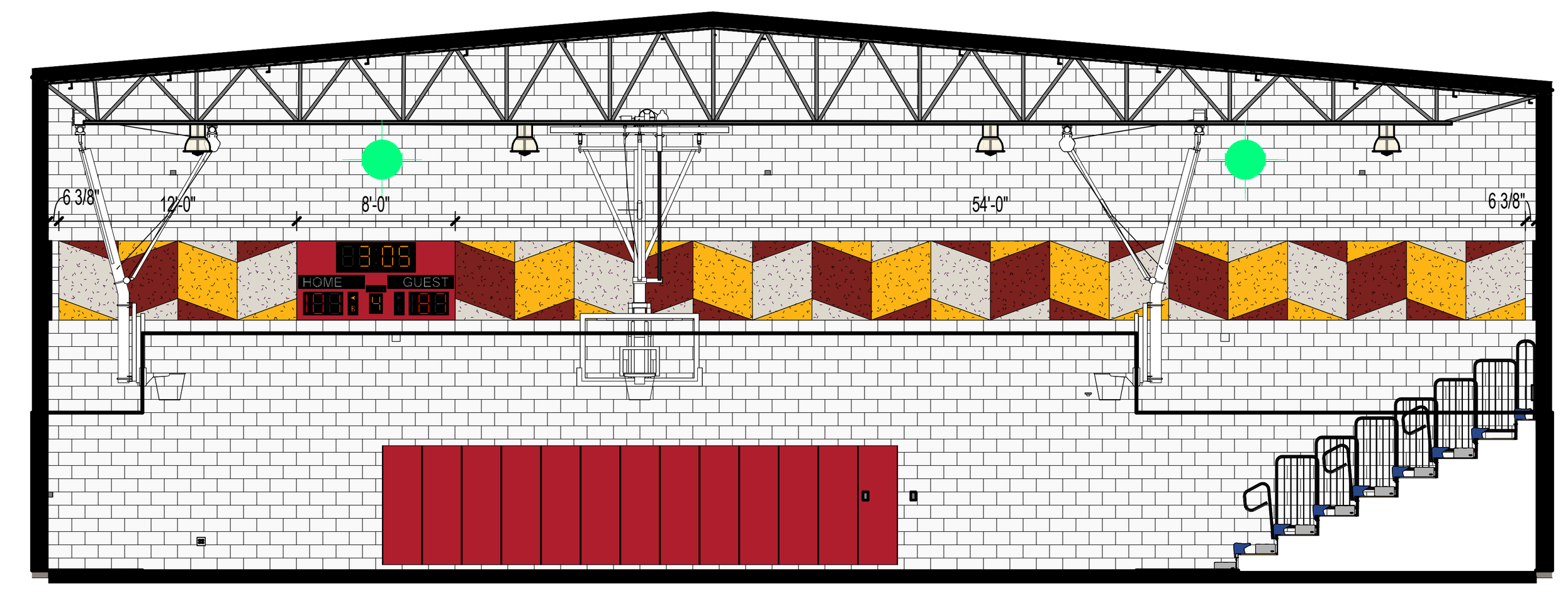
8 A402 **GYM ELEVATION-EAST**
SCALE: 1/8" = 1'-0"



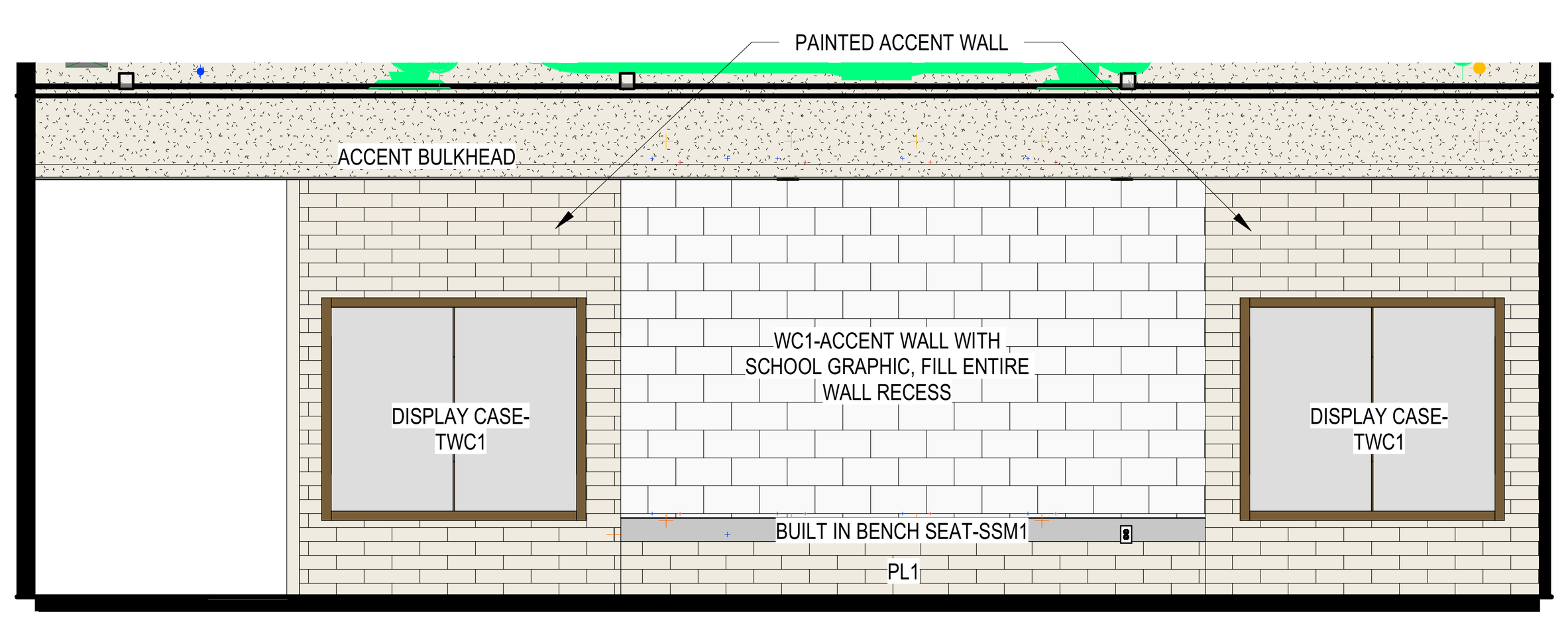
1 A402 **GYM ELEVATION-WEST**
SCALE: 1/8" = 1'-0"



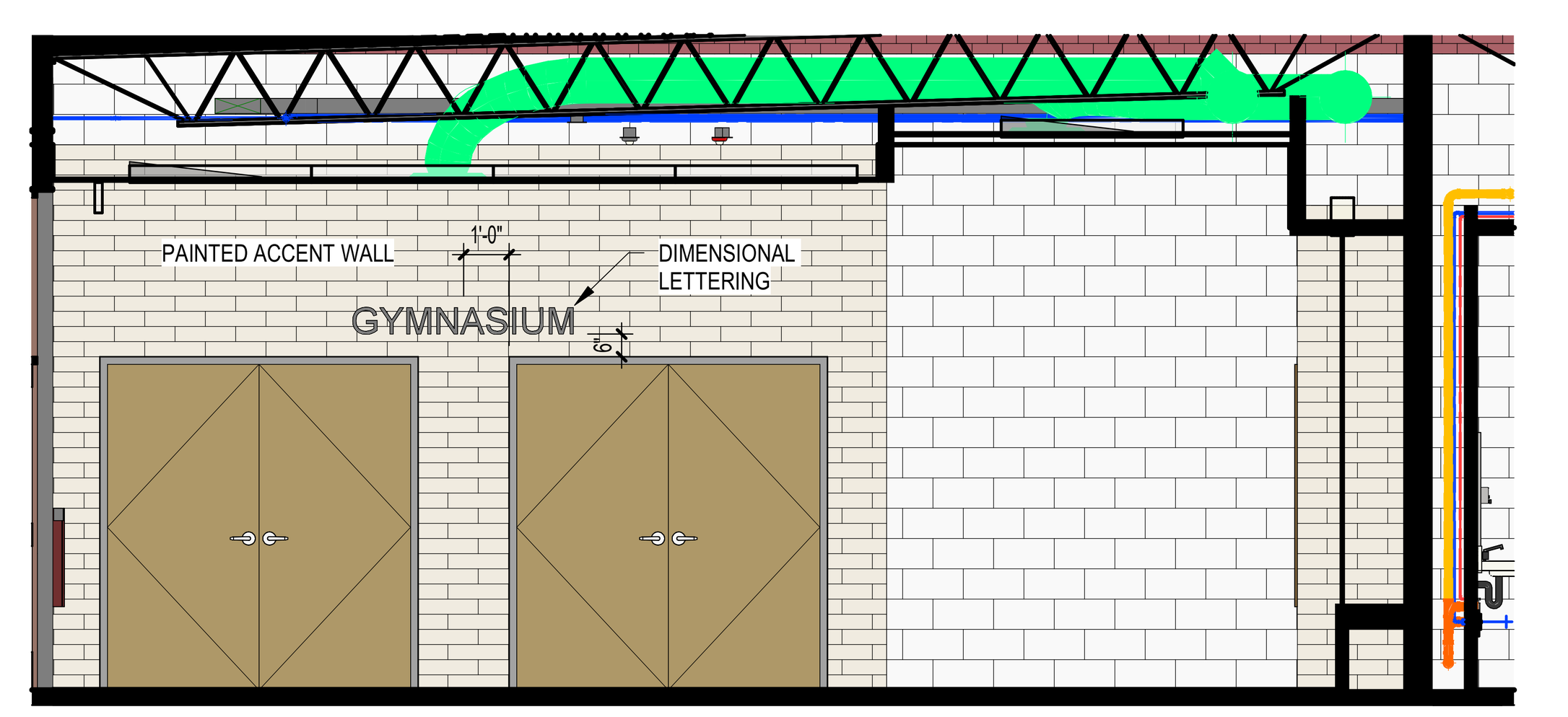
7 A402 **GYM ELEVATION-NORTH**
SCALE: 1/8" = 1'-0"



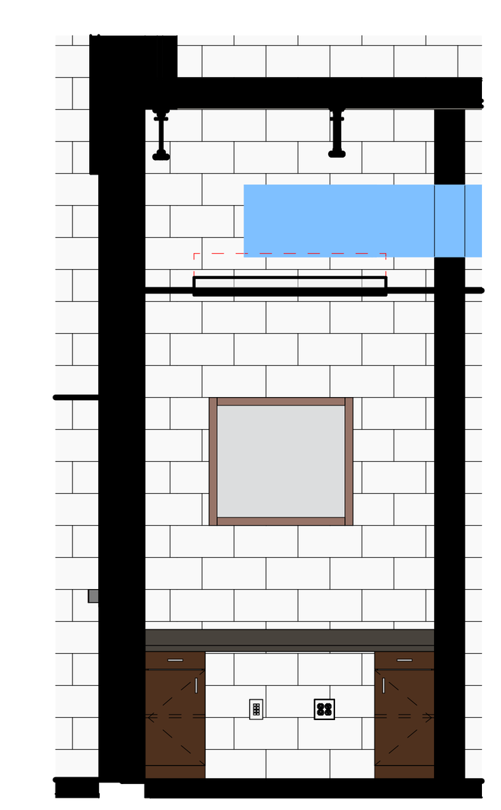
2 A402 **GYM ELEVATION-SOUTH**
SCALE: 1/8" = 1'-0"



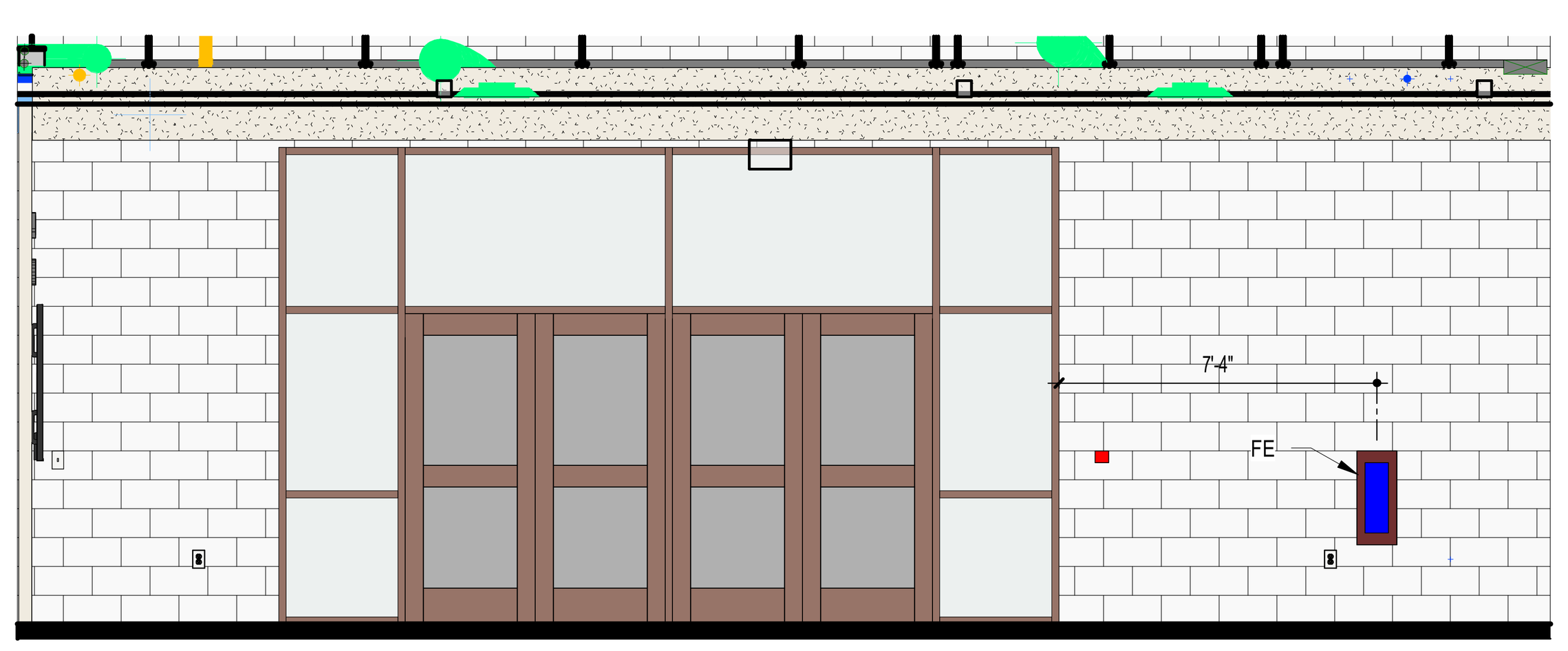
3 A402 **LOBBY ELEVATION-WEST**
SCALE: 1/4" = 1'-0"



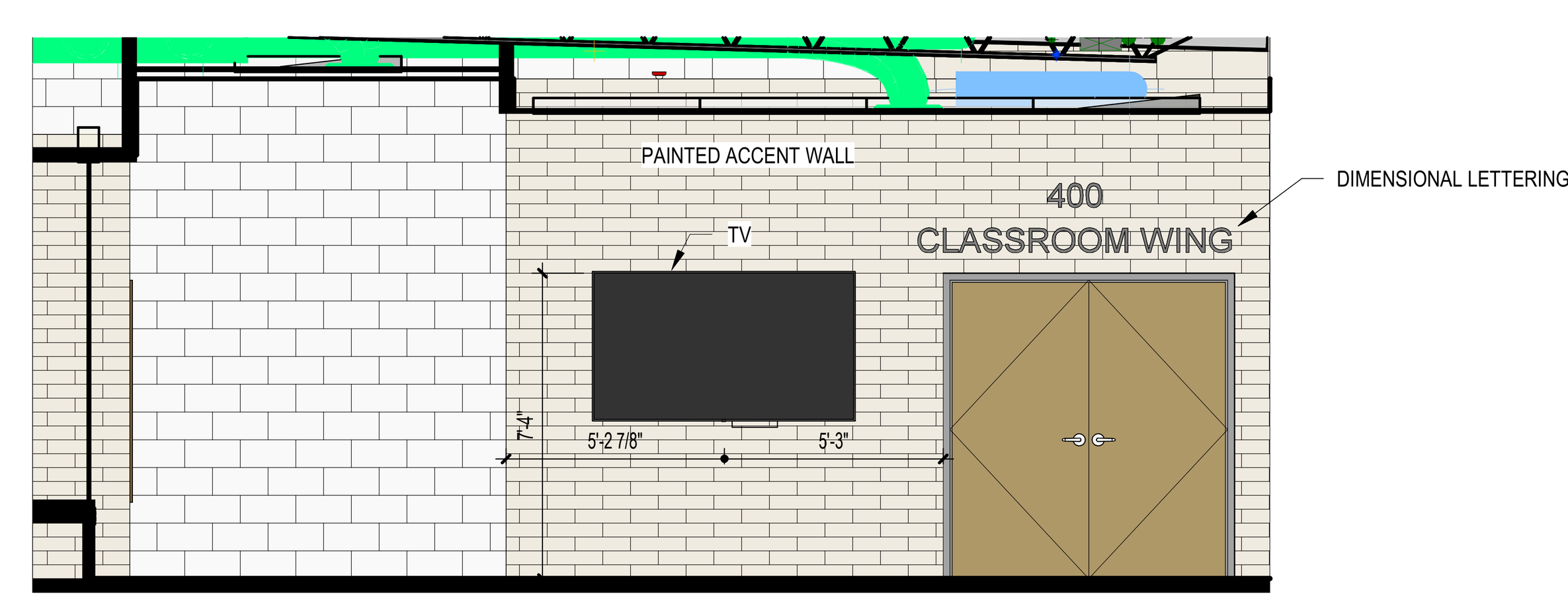
4 A402 **LOBBY ELEVATION-SOUTH**
SCALE: 1/4" = 1'-0"



5 A402 **OFFICE DESK ELEVATION**
SCALE: 1/4" = 1'-0"



9 A402 **LOBBY ELEVATION-EAST**
SCALE: 1/4" = 1'-0"



6 A402 **LOBBY ELEVATION-NORTH**
SCALE: 1/4" = 1'-0"

ENLARGED PLANS GEN. NOTES

1. REFER TO FINISH PLANS ON A701 FOR ADDITIONAL **PAINT / FINISH / SIGNAGE GENERAL NOTES**
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No.	Date	Description

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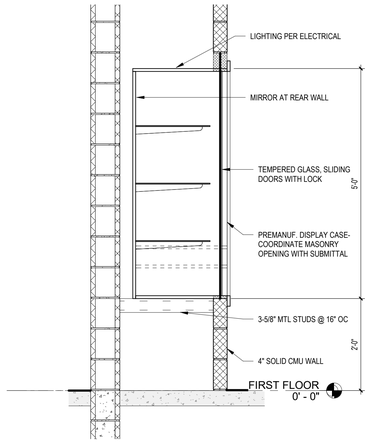
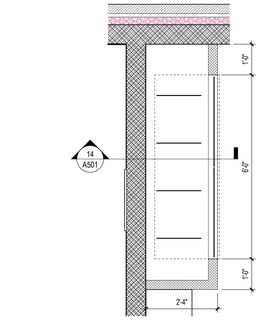
GYM & LOBBY INTERIOR ELEVATIONS

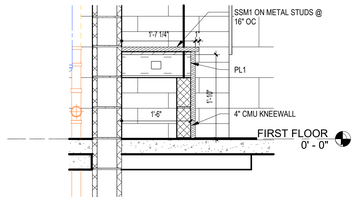
*A402



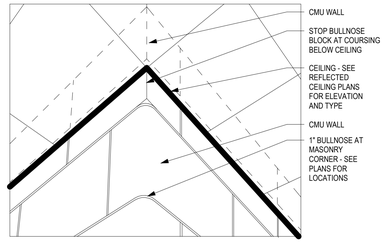
14 / A501 TROPHY CASE SECTION
SCALE: 3/4" = 1'-0"



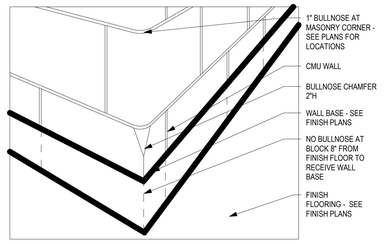
13 / A501 TROPHY CASE ENLARGED PLAN
SCALE: 1/2" = 1'-0"



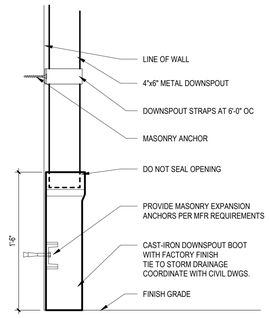
12 / A501 LOBBY BENCH DETAIL
SCALE: 3/4" = 1'-0"



11 / A501 1" BULLNOSE DETAIL-CEILING
SCALE: 12" = 1'-0"



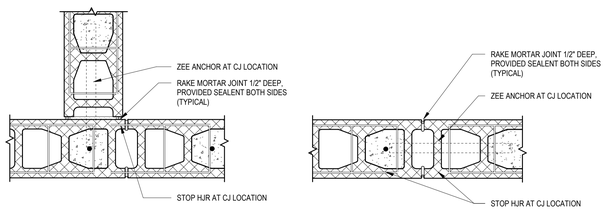
10 / A501 1" BULLNOSE DETAIL-WALL BASE
SCALE: 12" = 1'-0"



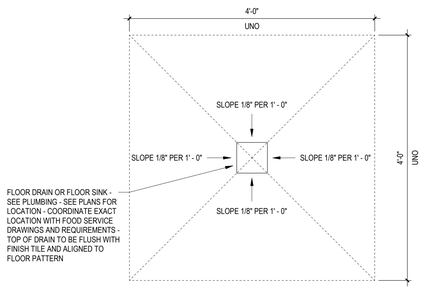
3 / A501 DOWNSPOUT BOOT
SCALE: 1 1/2" = 1'-0"

9 / A501 CMU END WALL DOOR JAMB
SCALE: 3" = 1'-0"

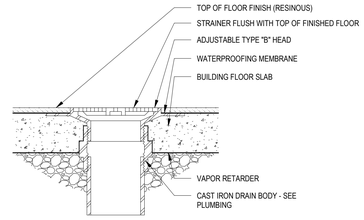
8 / A501 CMU DOOR JAMB
SCALE: 3" = 1'-0"



7 / A501 CONTROL JOINT DETAIL (TYPICAL CMU CONDITIONS)
SCALE: 1 1/2" = 1'-0"

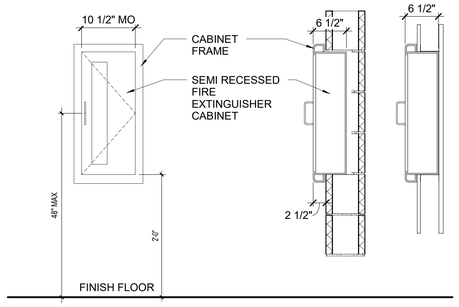


6 / A501 FLOOR DRAIN SLOPE DETAIL
SCALE: 1" = 1'-0"

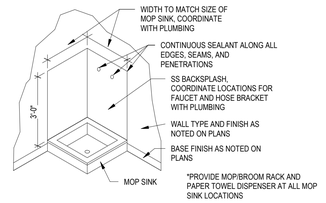


NOTE: SEE FLOOR DRAIN MFR REQUIREMENTS FOR DIMENSIONS AND TOLERANCES

2 / A501 FLOOR DRAIN DTL.
SCALE: 3" = 1'-0"



5 / A501 FE CABINET DETAIL
SCALE: 1" = 1'-0"



1 / A501 MOP SINK DTL
SCALE: 3/8" = 1'-0"

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CONSTRUCTION DOCUMENTS

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ENERGY STAR PARTNER

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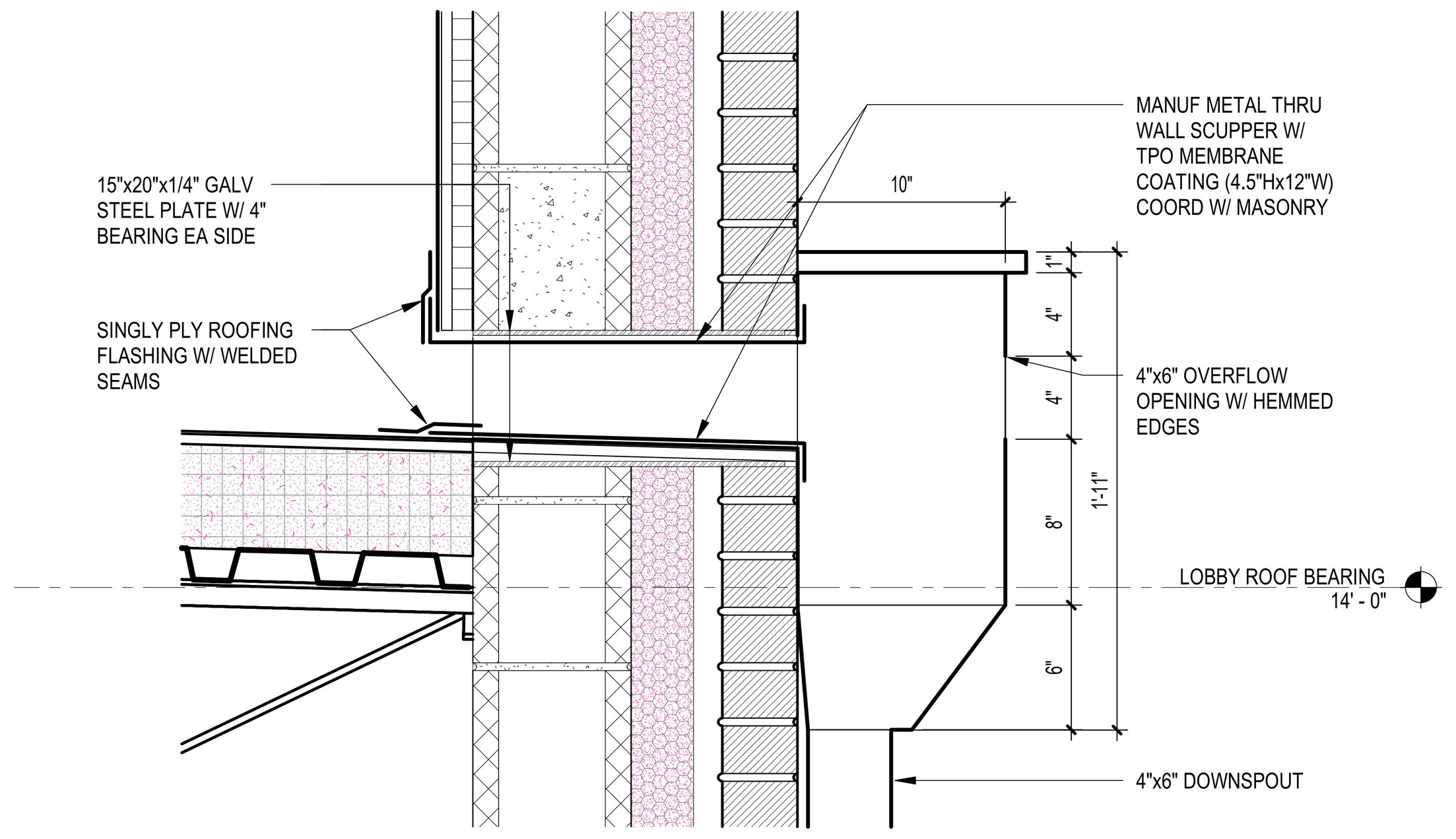
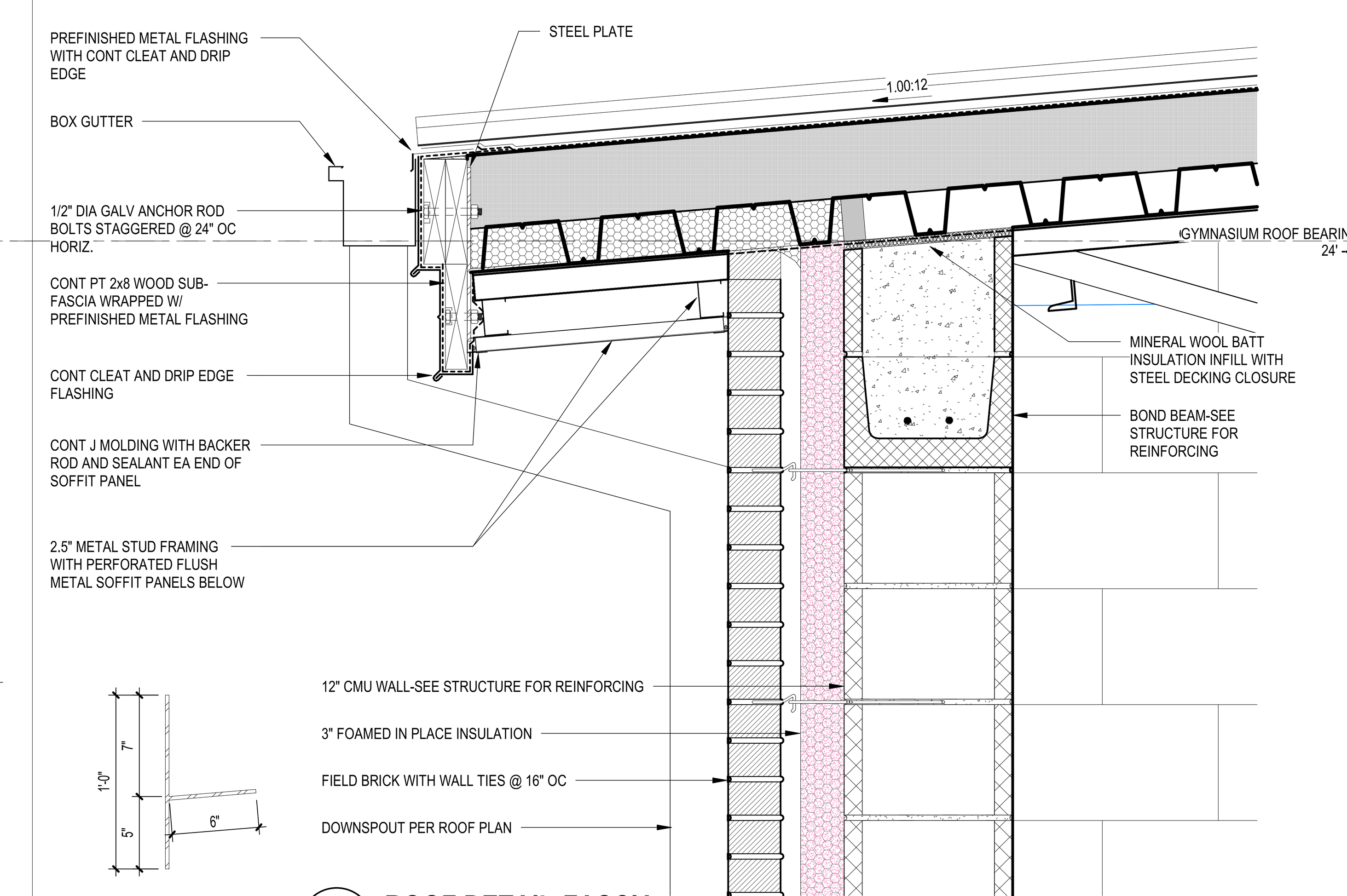
DETAILS-INTERIOR & MISC

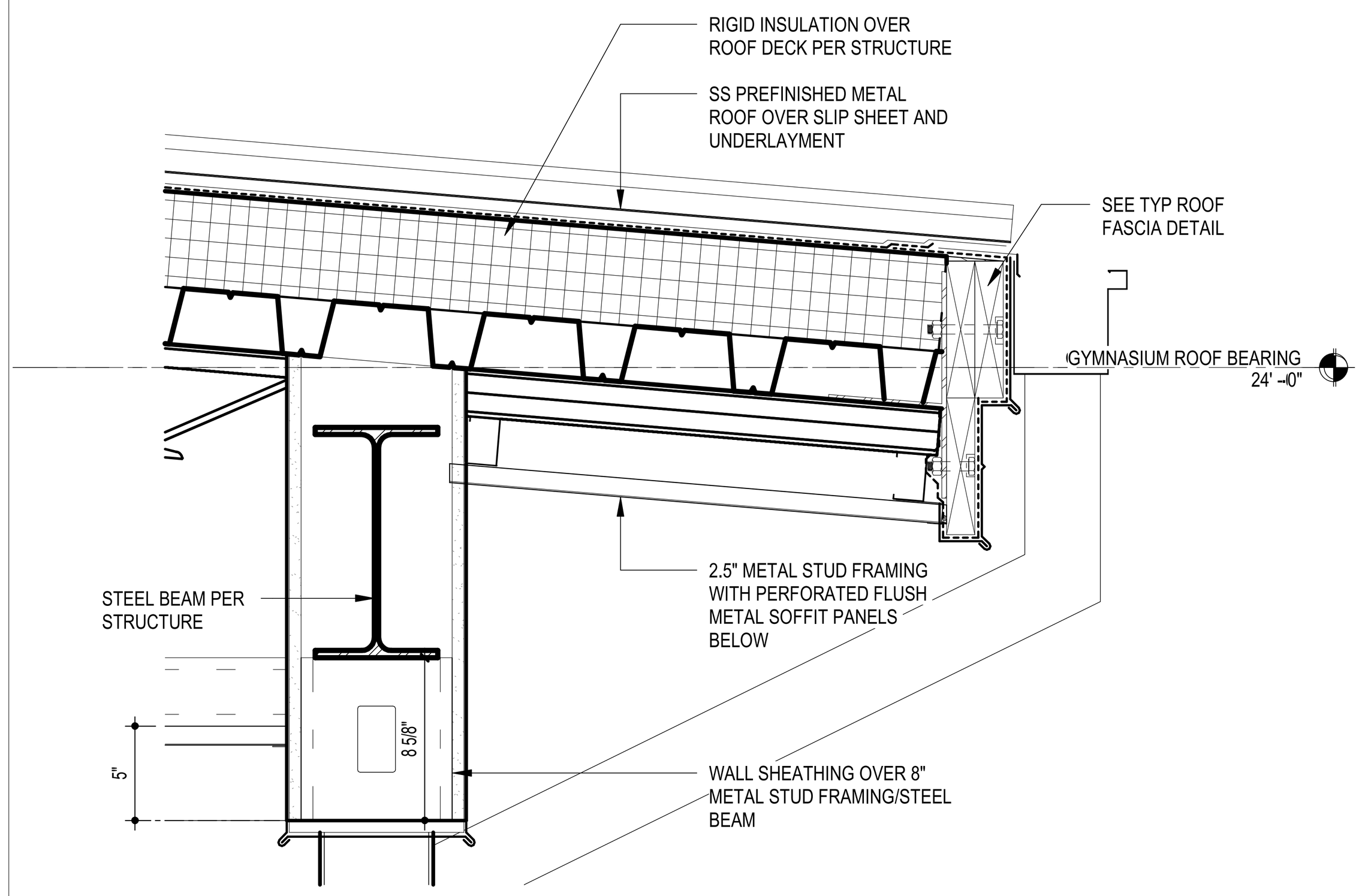
A501



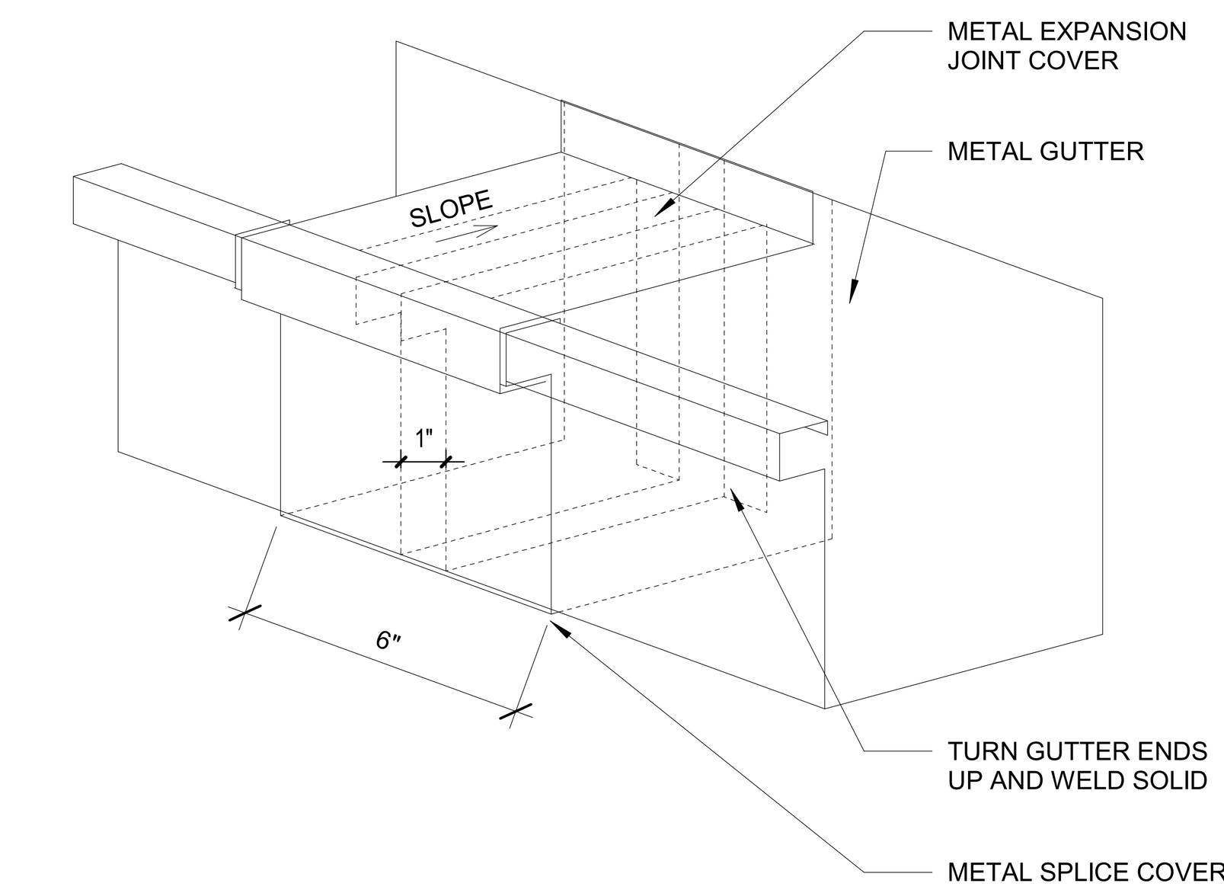
11 A502 **WALL SECTION AT COLLECTOR HEAD**
SCALE: 1 1/2" = 1'-0"



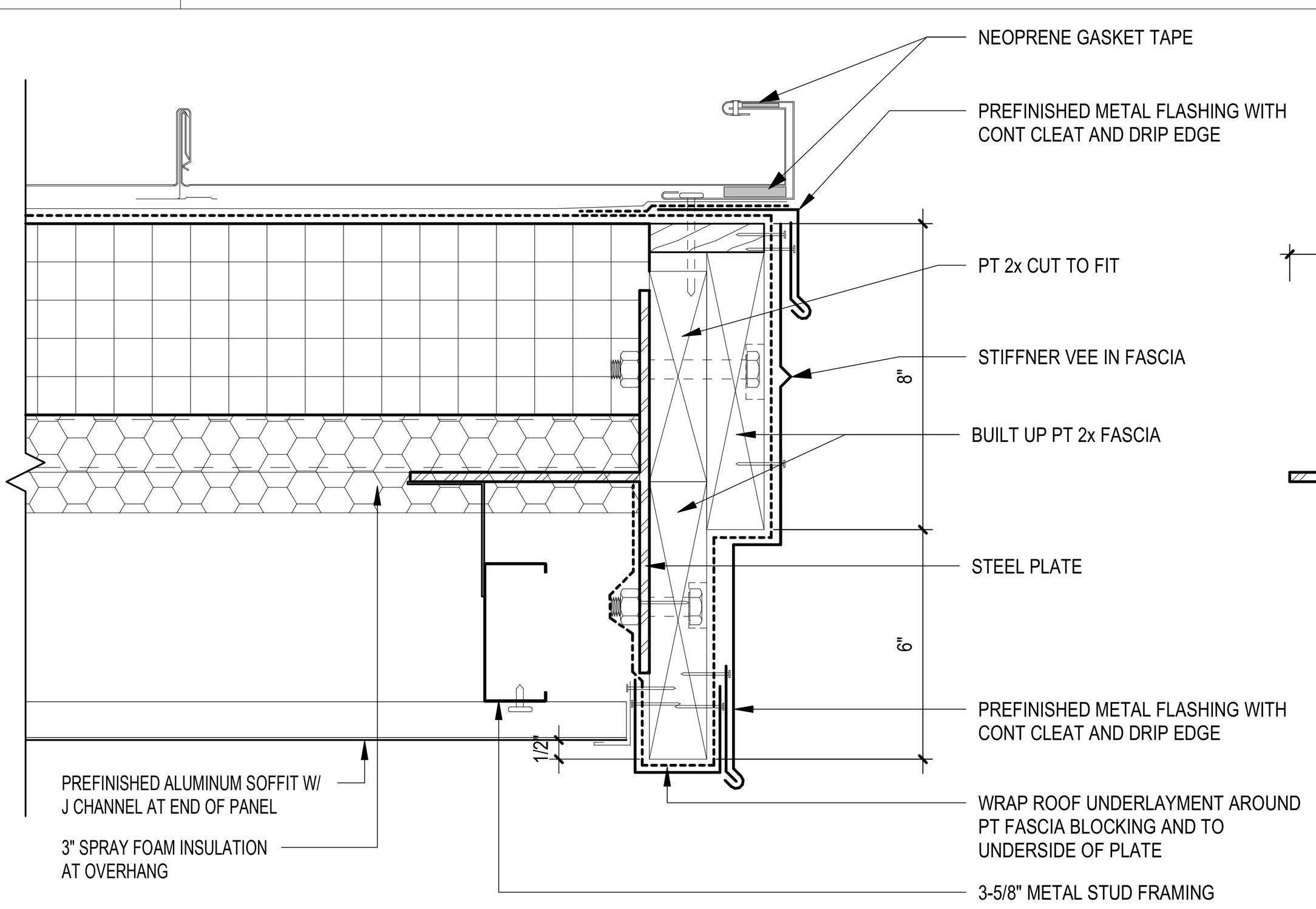
10 A502 **ROOF DETAIL-FASCIA**
SCALE: 1 1/2" = 1'-0"



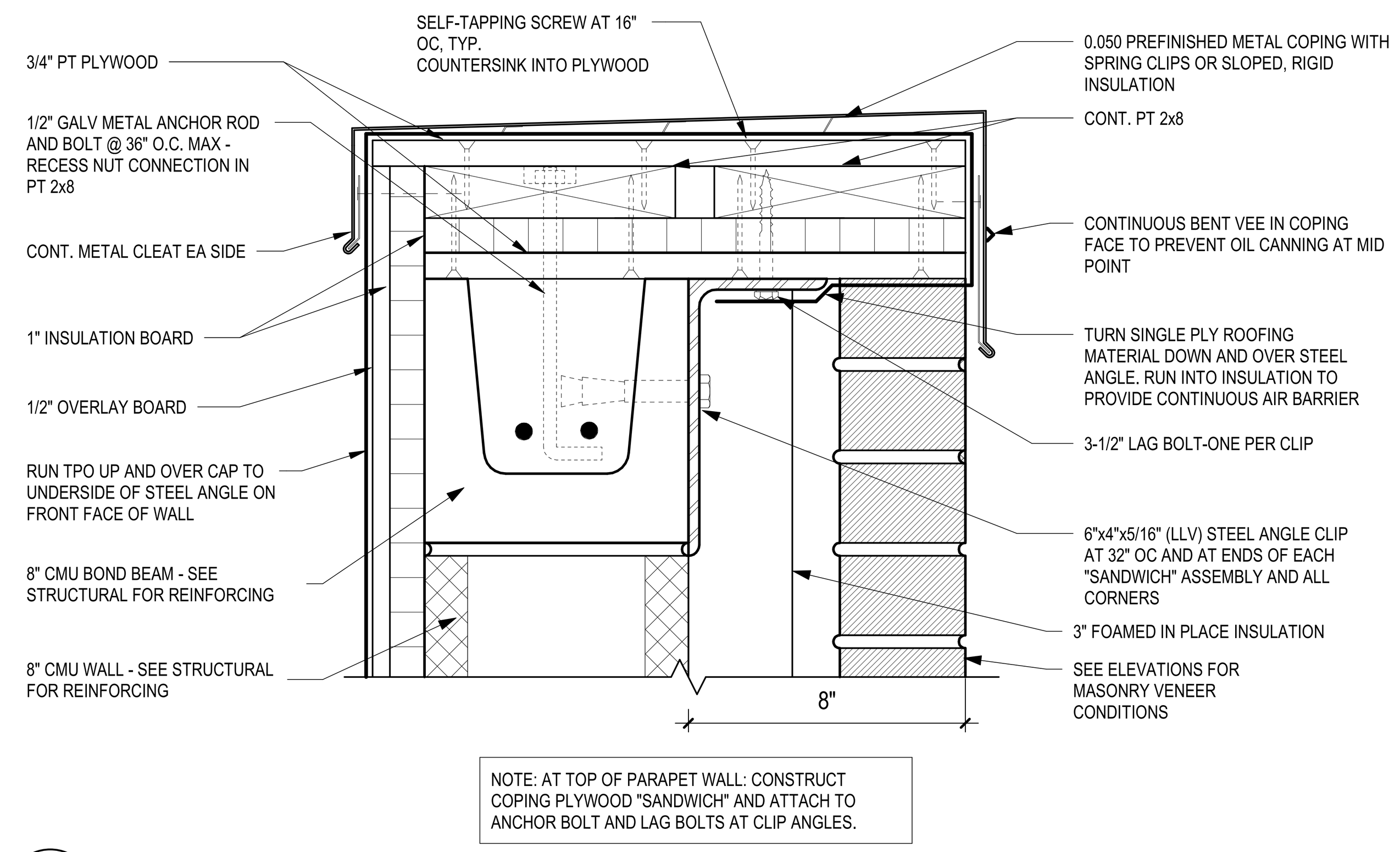
7 A502 **ROOF DETAIL-FASCIA AT OVERHANG**
SCALE: 1 1/2" = 1'-0"



3 A502 **GUTTER EJ DETAIL**
SCALE: 3" = 1'-0"

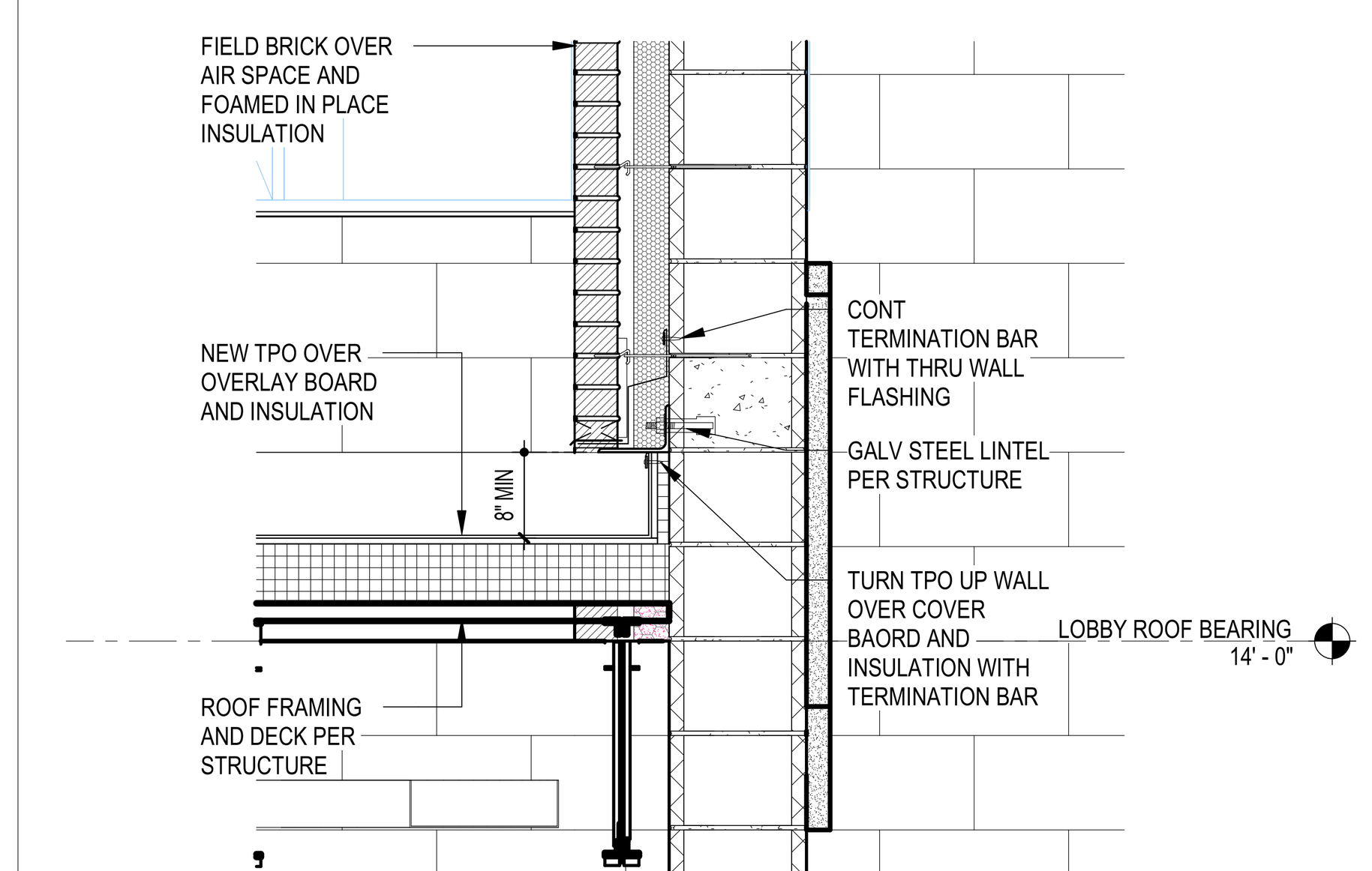


9 A502 **ROOF DETAIL-RAKE**
SCALE: 3" = 1'-0"

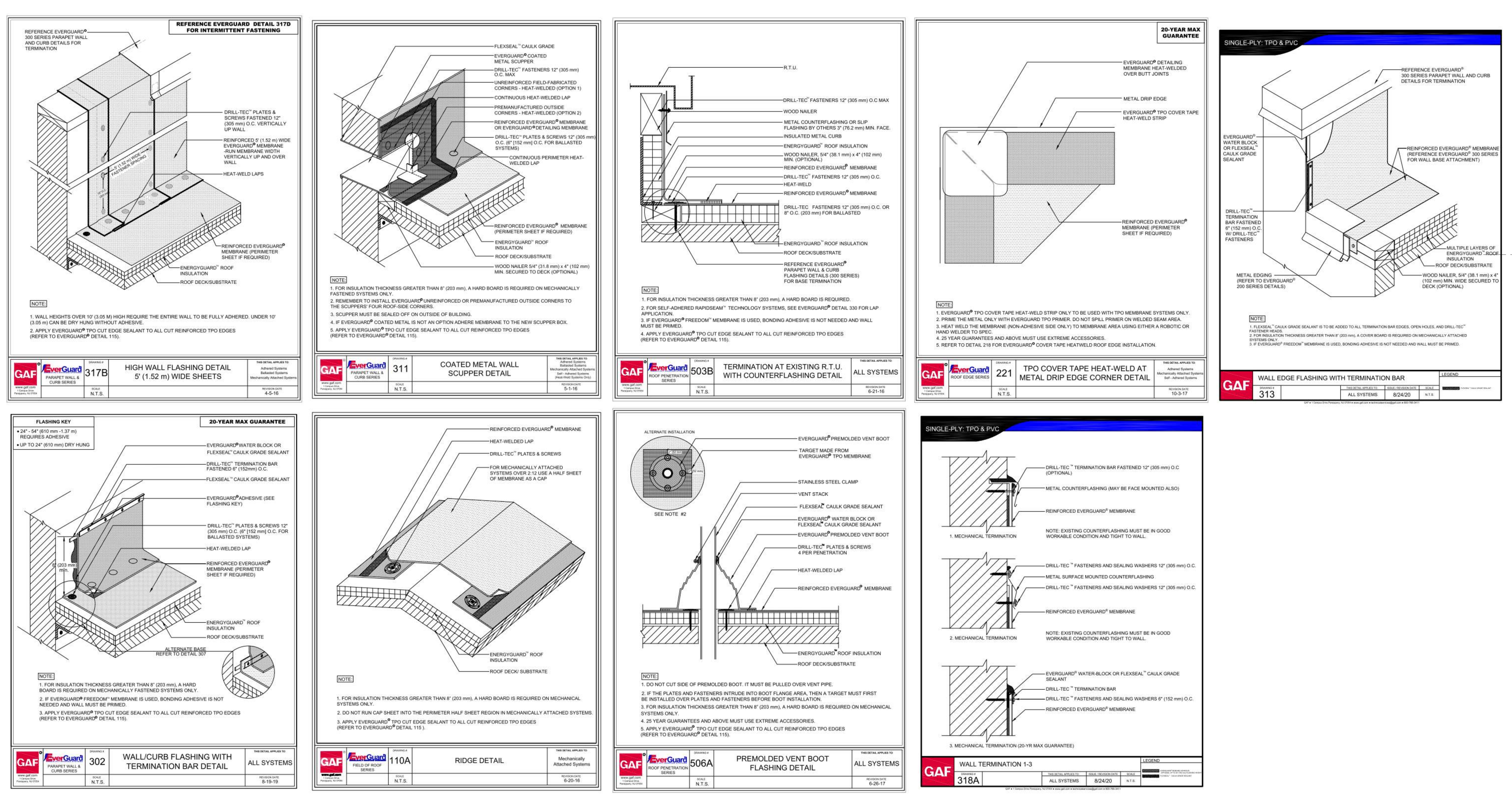


NOTE: AT TOP OF PARAPET WALL: CONSTRUCT COPING PLYWOOD "SANDWICH" AND ATTACH TO ANCHOR BOLT AND LAG BOLTS AT CLIP ANGLES.

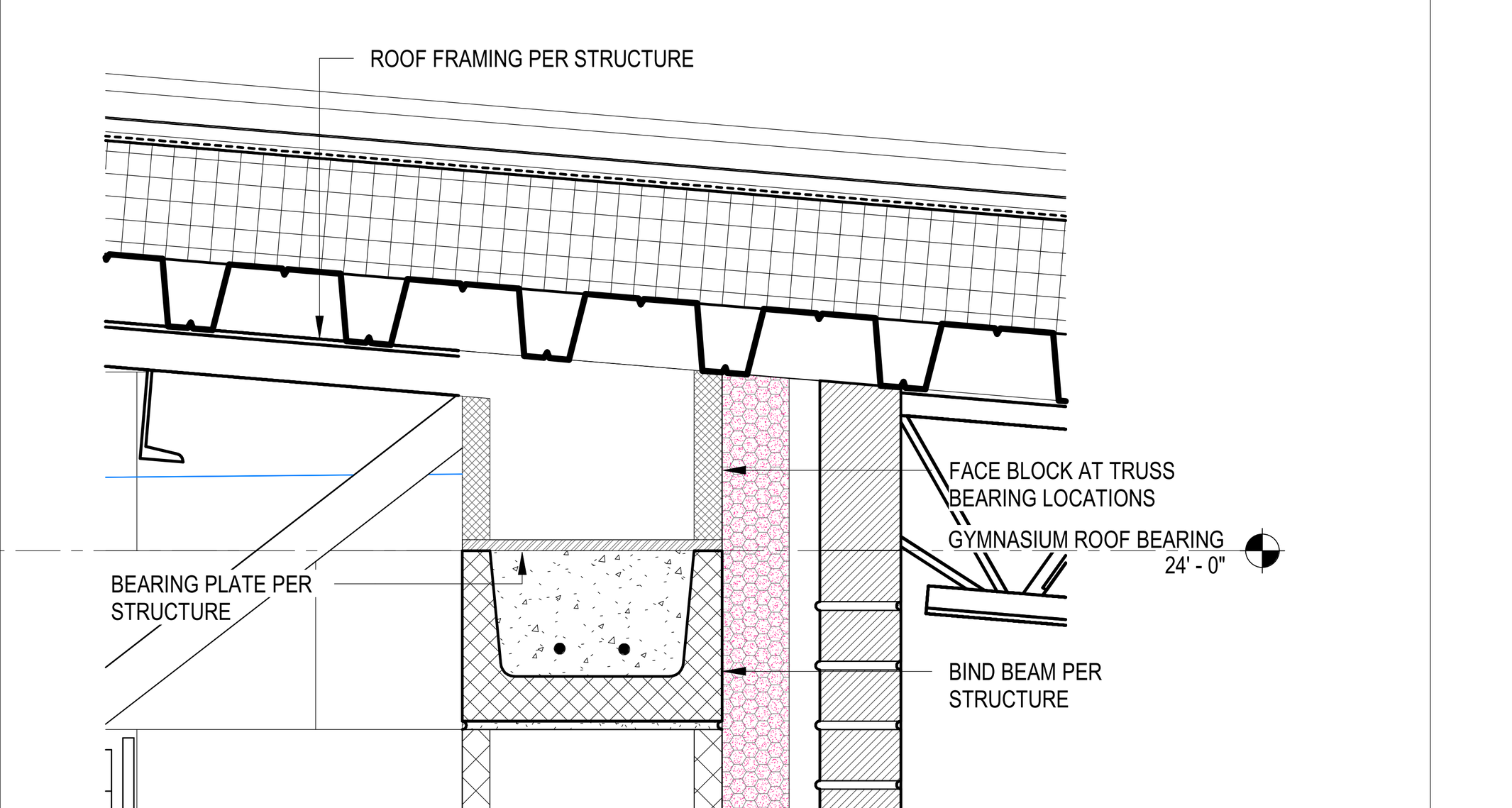
6 A502 **ROOF DETAIL-PARAPET CAP**
SCALE: 3" = 1'-0"



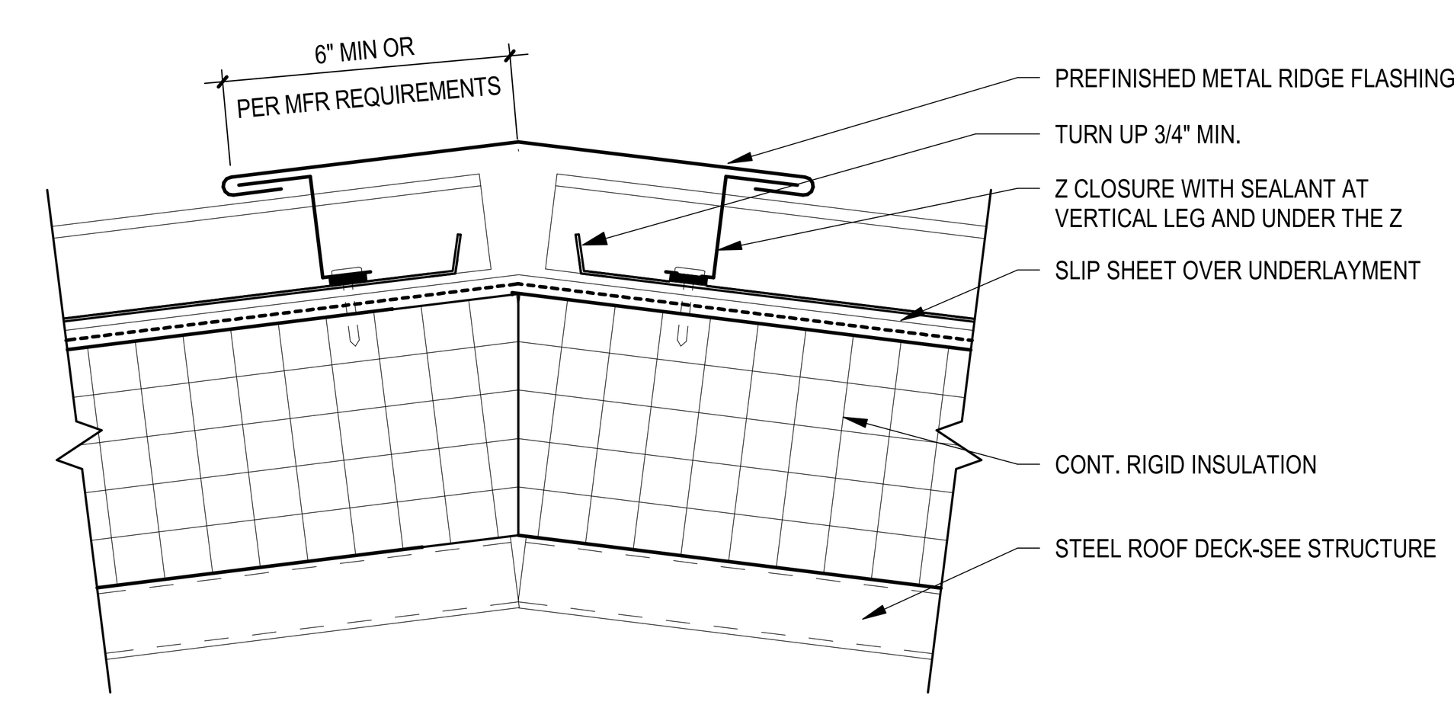
2 A502 **WALL/ROOF ENLARGED DETAIL**
SCALE: 3/4" = 1'-0"



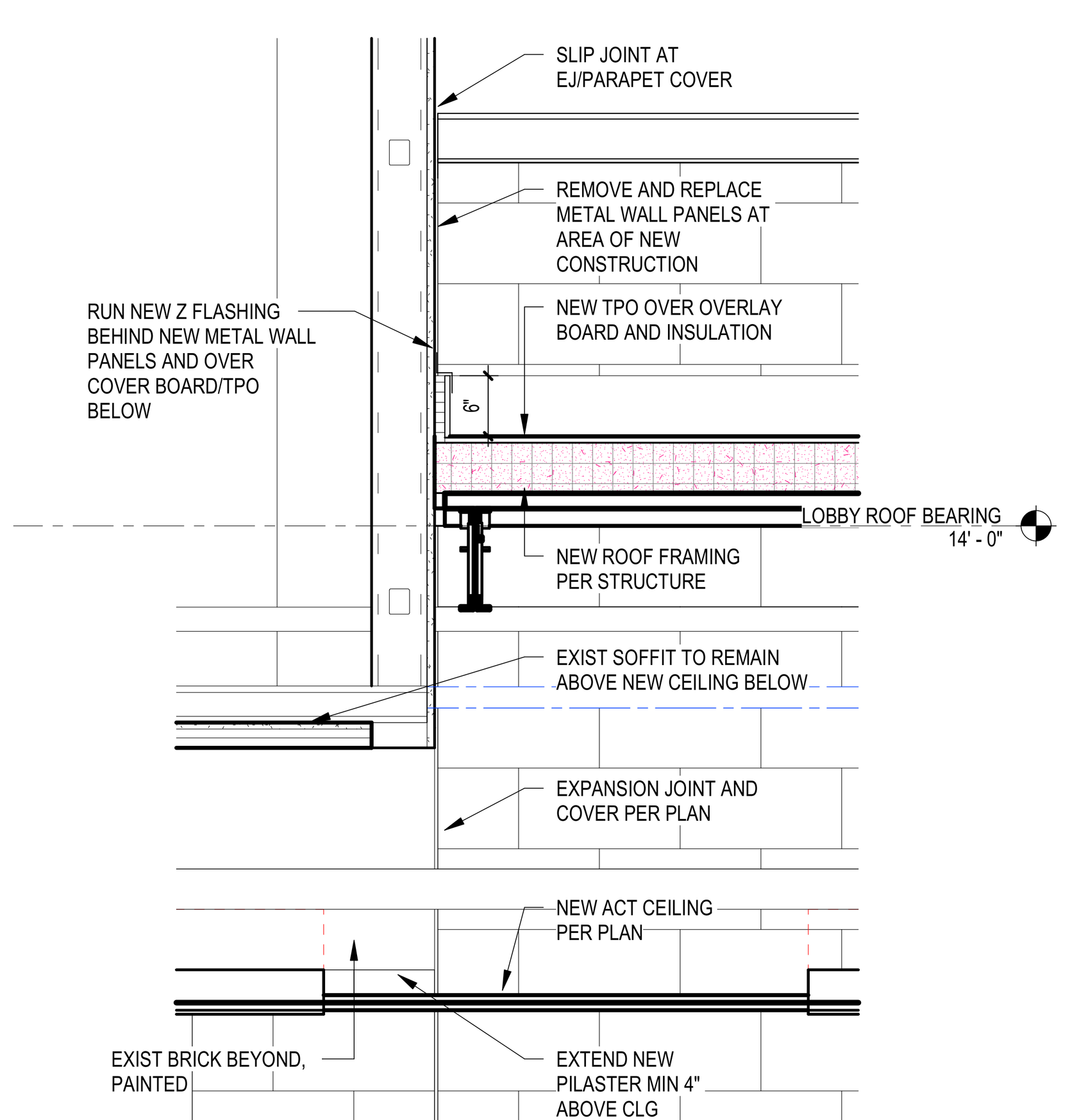
8 A502 **ROOF DETAILS-TPO**
SCALE: 6" = 1'-0"



5 A502 **GYMNASIUM TOP OF WALL DETAIL**
SCALE: 1 1/2" = 1'-0"



4 A502 **ROOF DETAIL-RIDGE**
SCALE: 3" = 1'-0"



1 A502 **NEW ROOF AT EXISTING WALL**
SCALE: 3/4" = 1'-0"

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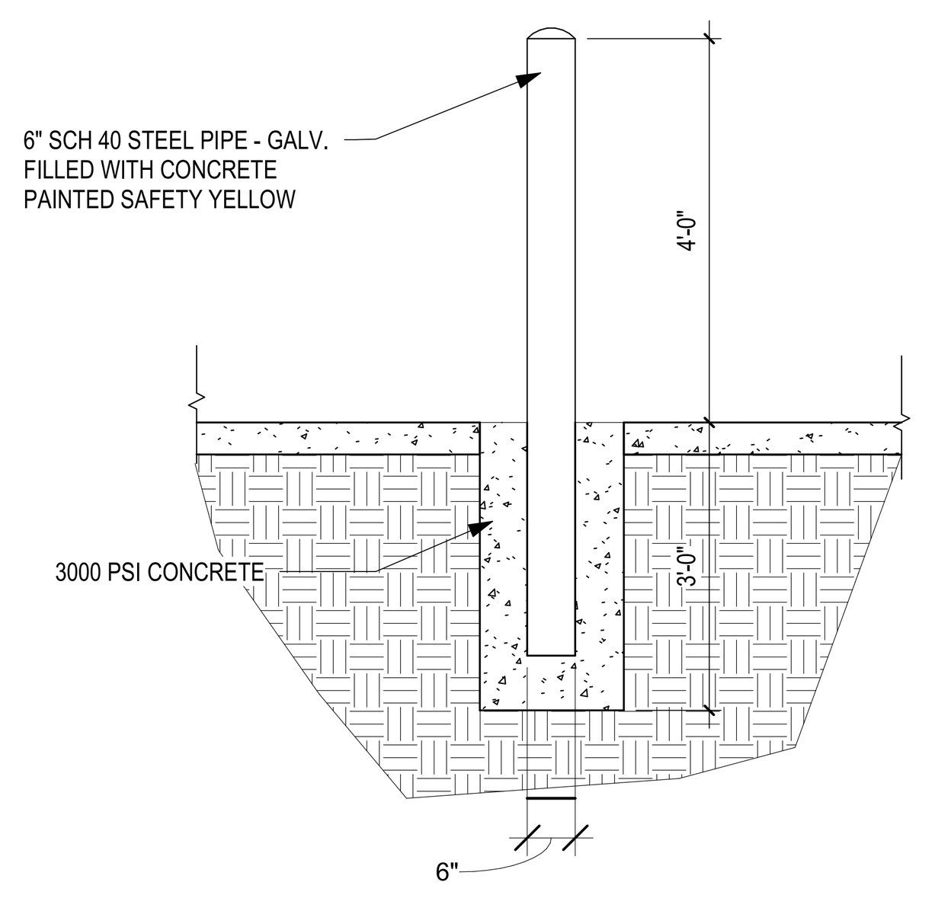
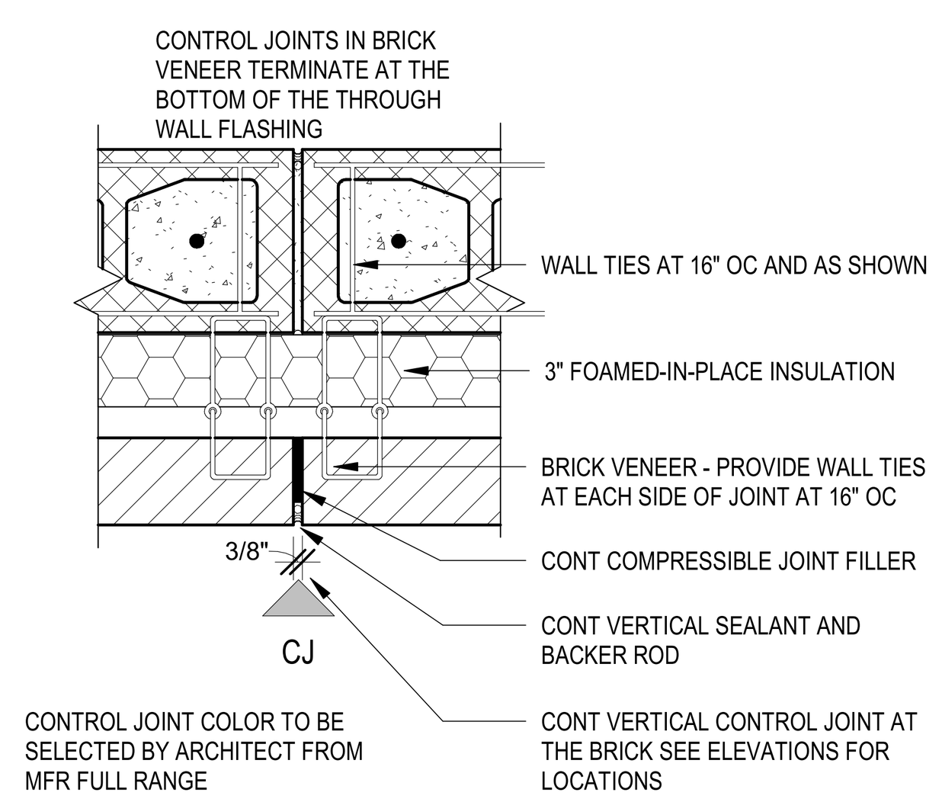
DETAILS-EXTERIOR

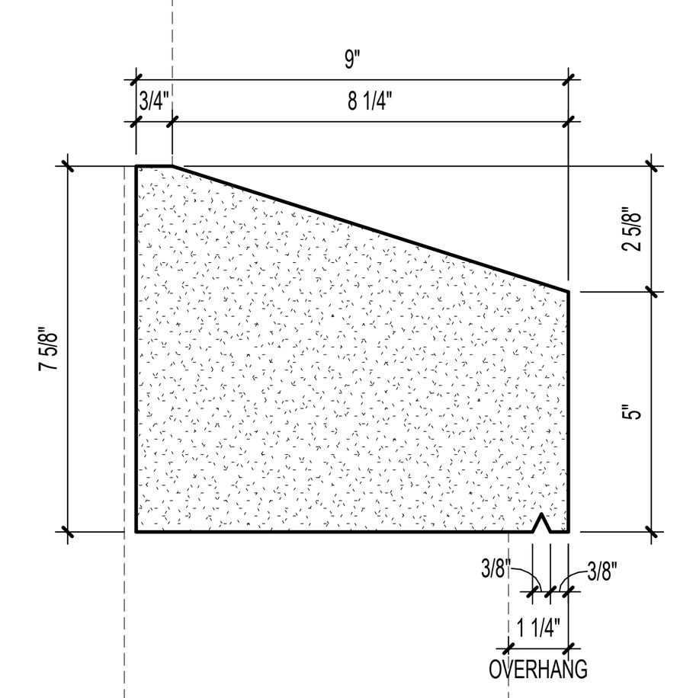
A502



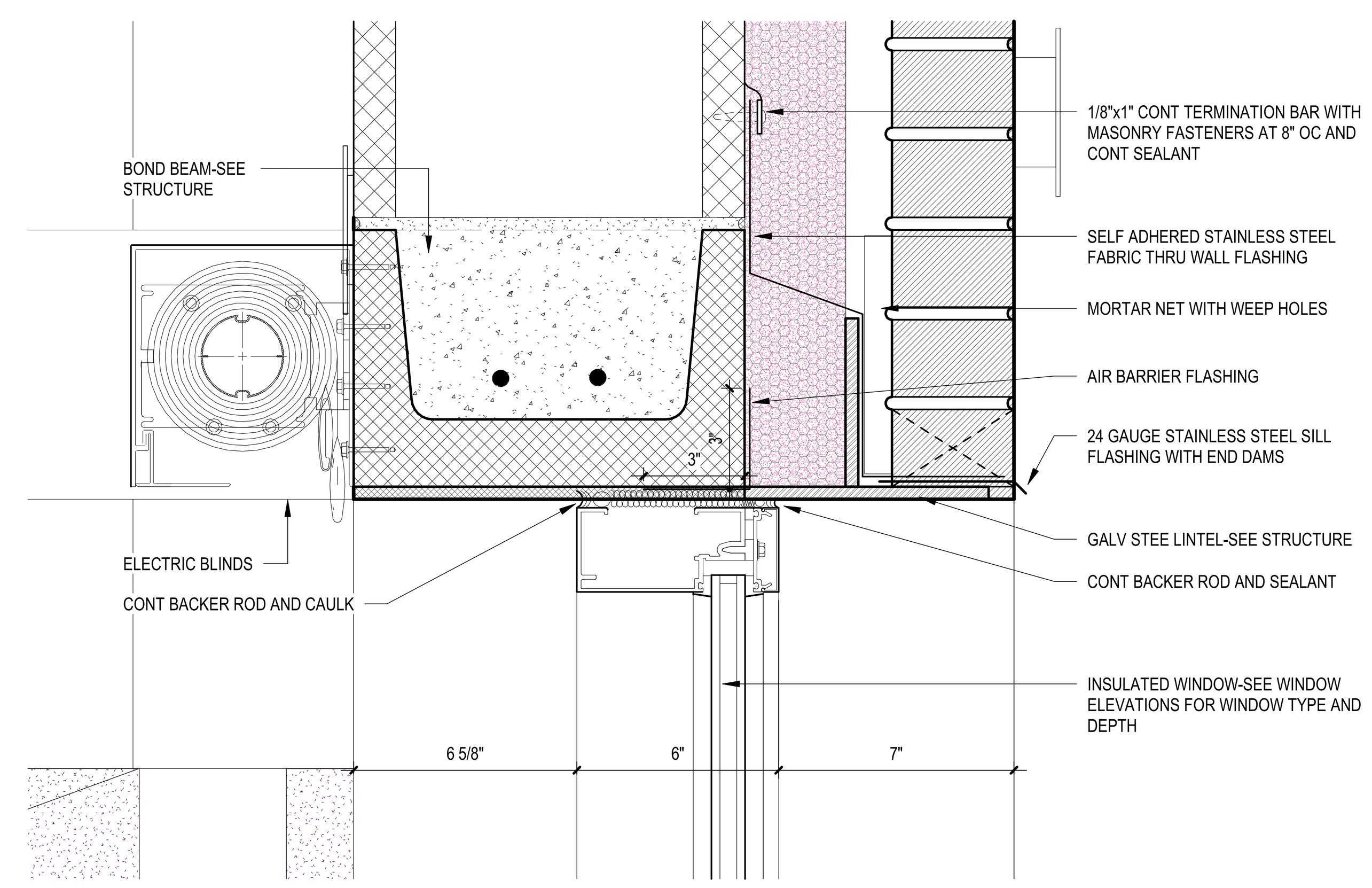
10 A503 **SITE BOLLARD DETAIL**
SCALE: 1/2" = 1'-0"



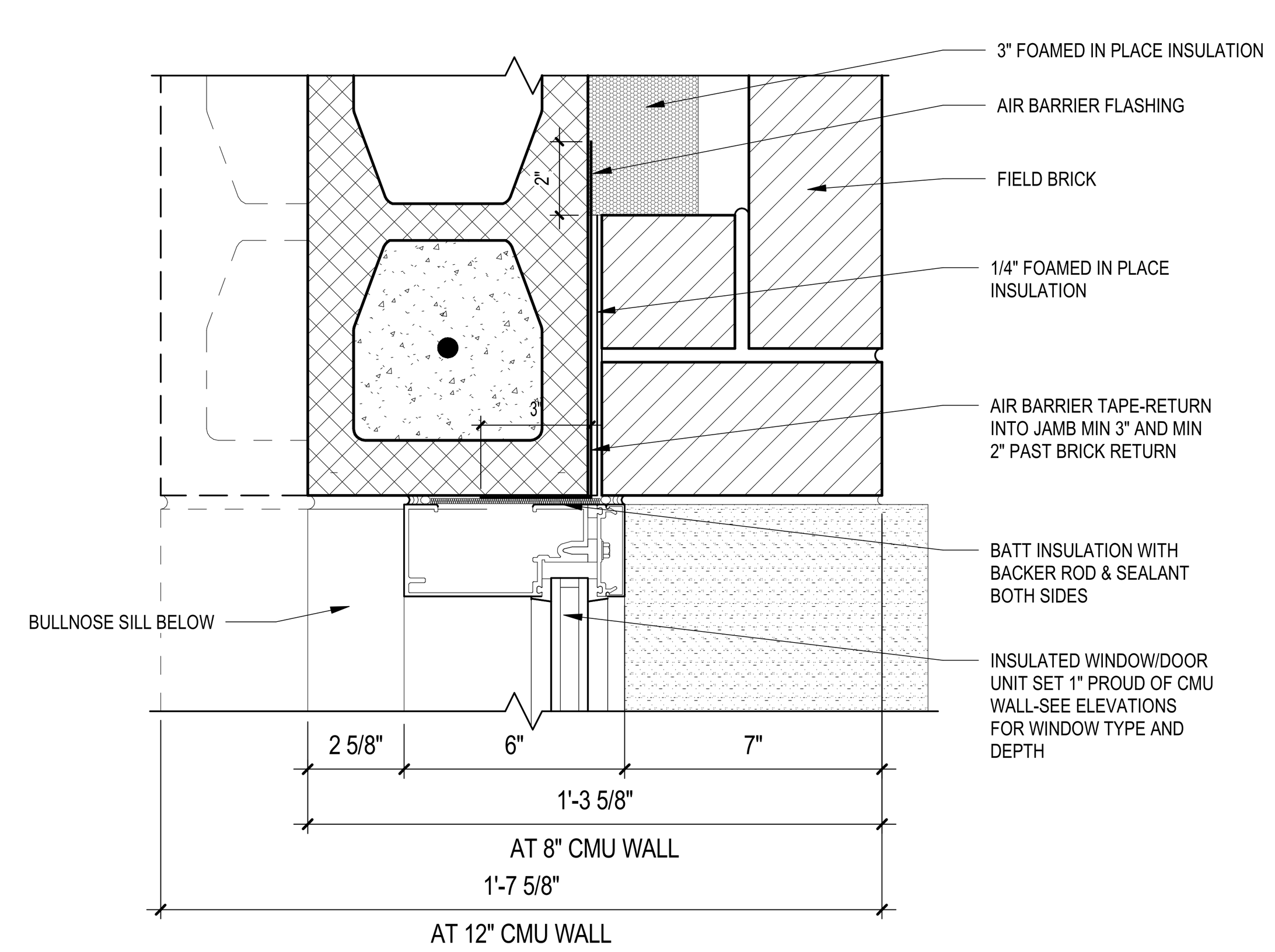
9 A503 **CONTROL JOINT DETAIL (CMU/BRICK VENEER)**
SCALE: 1 1/2" = 1'-0"



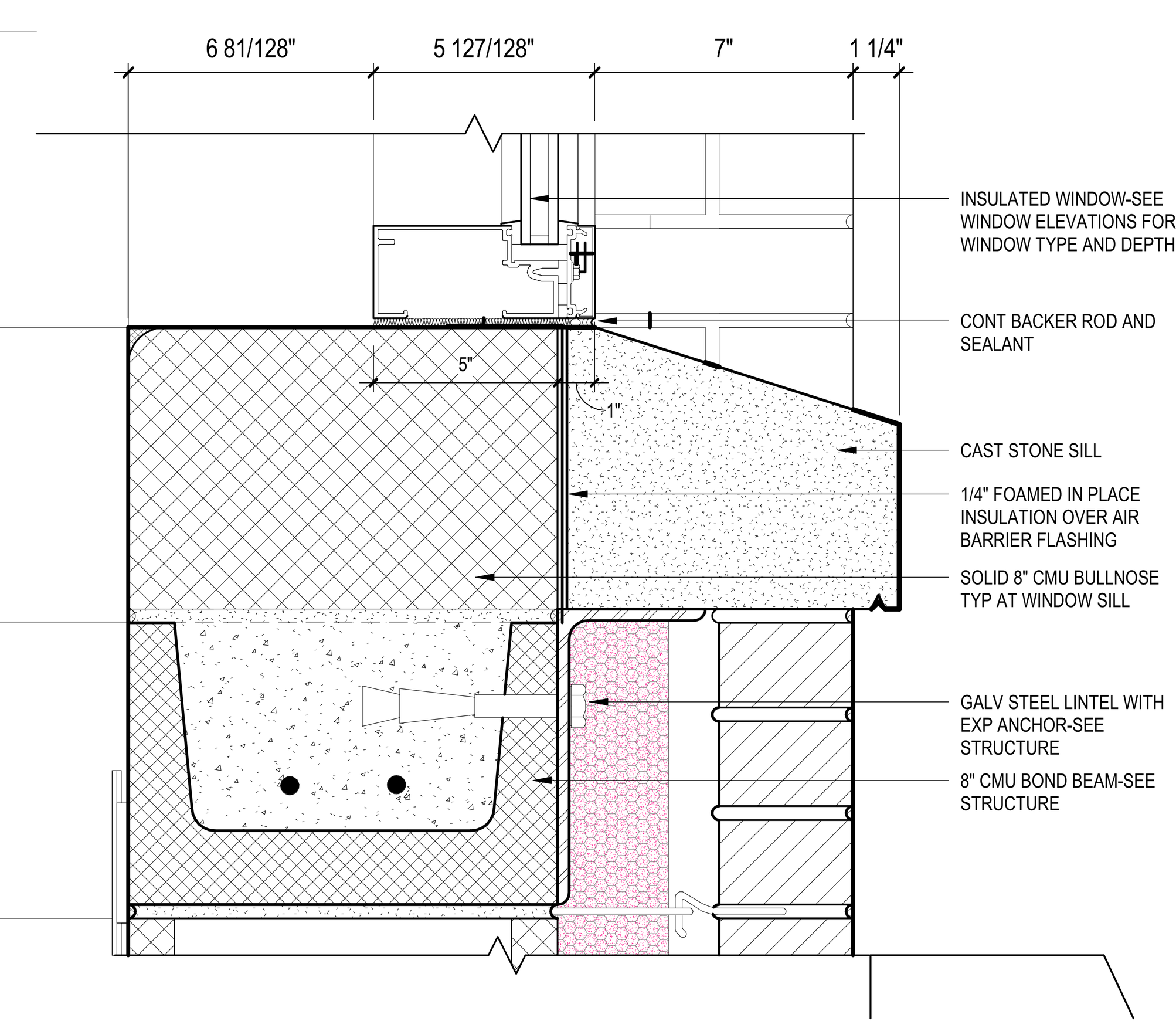
8 A503 **CAST STONE SILL DETAIL**
SCALE: 3" = 1'-0"



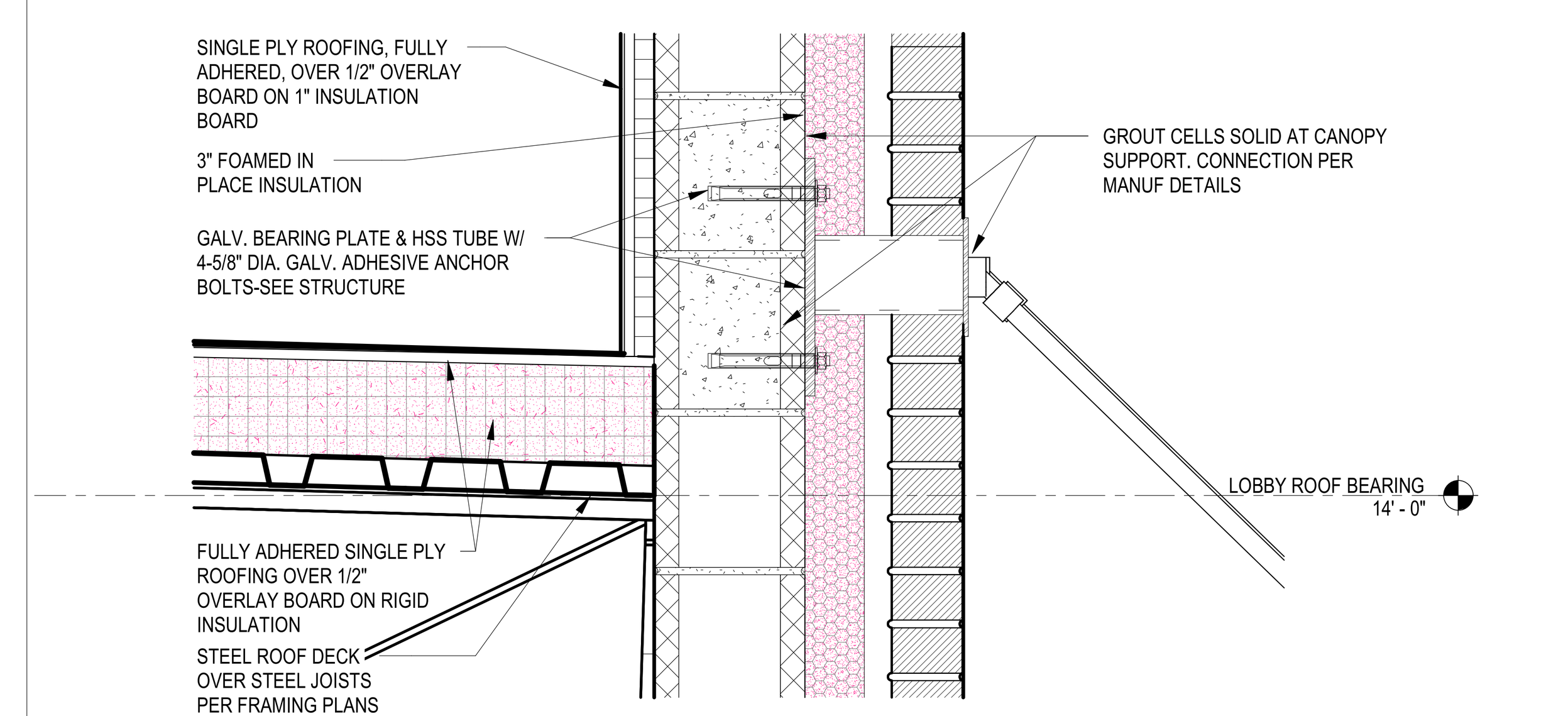
6 A503 **WINDOW HEAD SECTION**
SCALE: 3" = 1'-0"



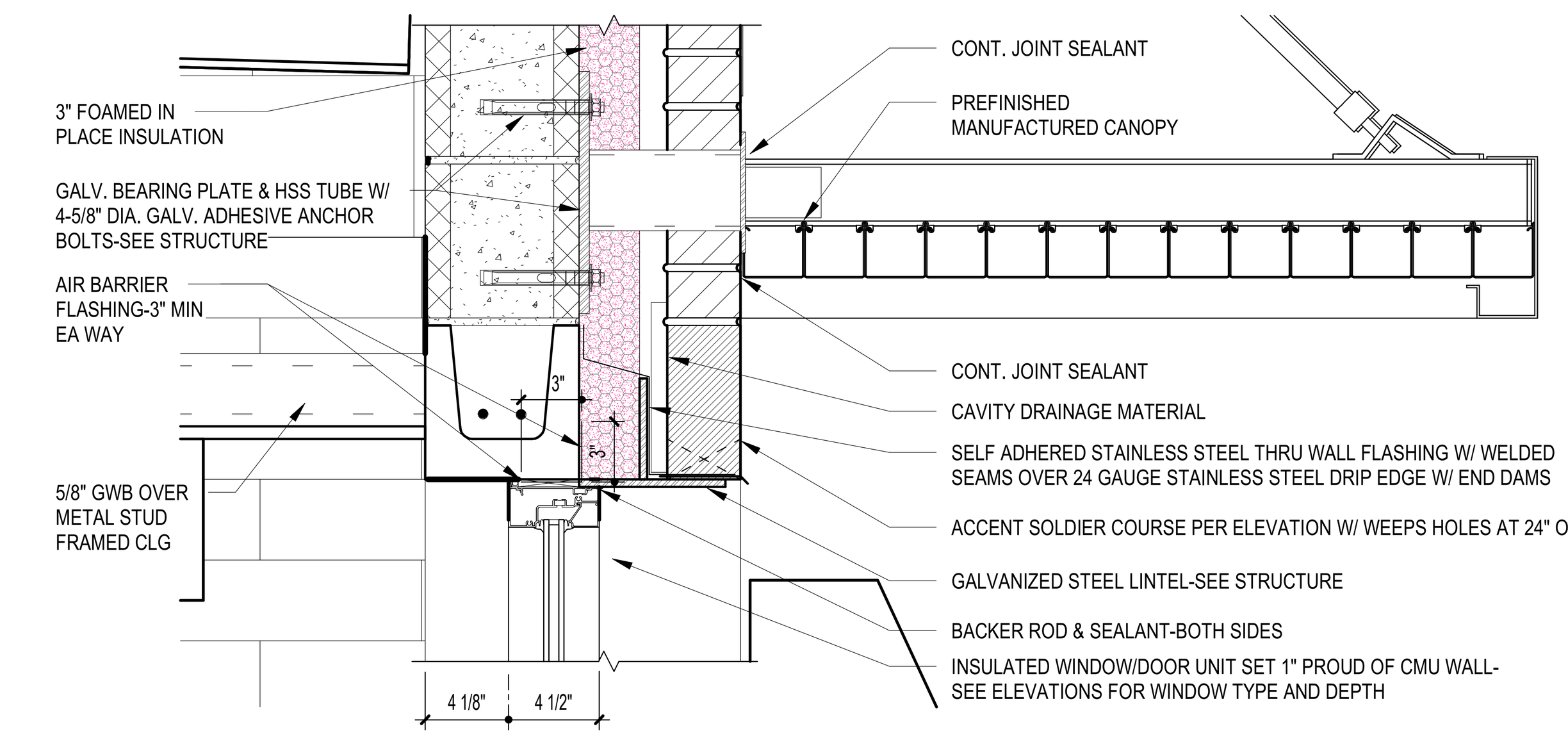
7 A503 **WINDOW JAMB DETAIL**
SCALE: 3" = 1'-0"



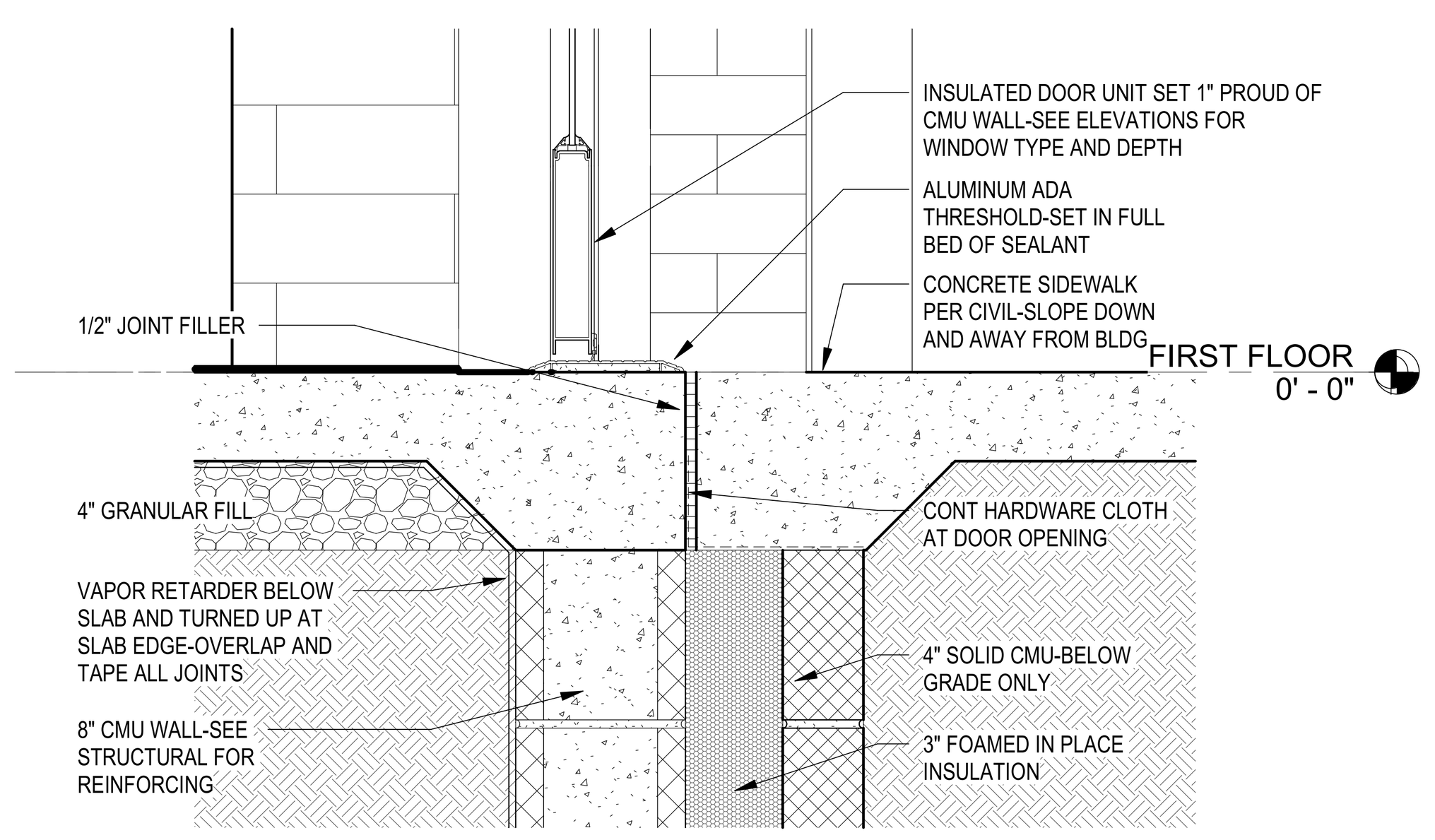
5 A503 **WINDOW SILL DETAIL**
SCALE: 3" = 1'-0"



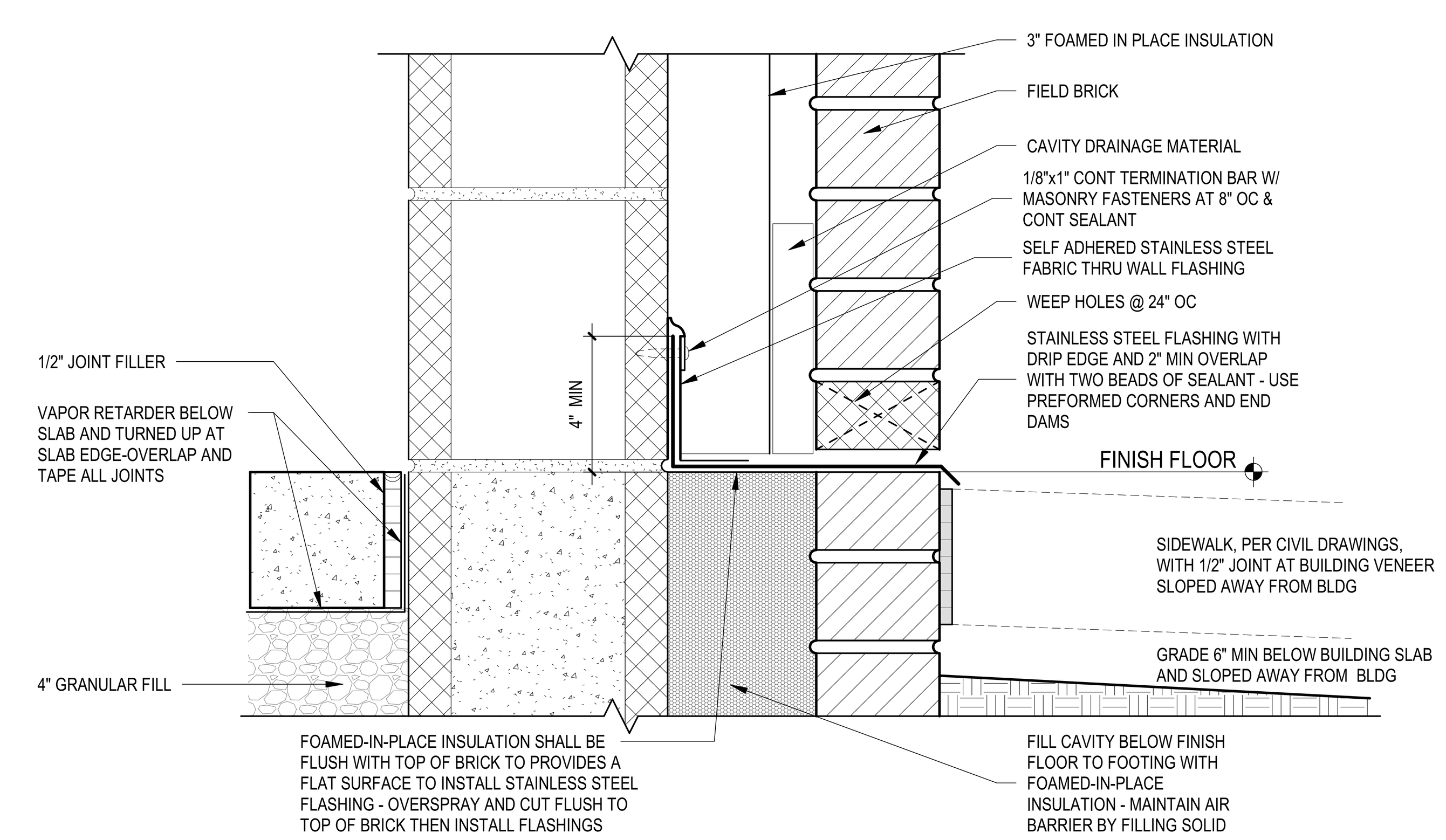
4 A503 **CANOPY DETAIL AT SUPPORT ARM**
SCALE: 1 1/2" = 1'-0"



3 A503 **CANOPY DETAIL AT SUPPORT BEAM/DOOR HEAD**
SCALE: 1 1/2" = 1'-0"



2 A503 **DOOR SILL DETAIL**
SCALE: 1 1/2" = 1'-0"



1 A503 **WALL BASE DETAIL**
SCALE: 3" = 1'-0"

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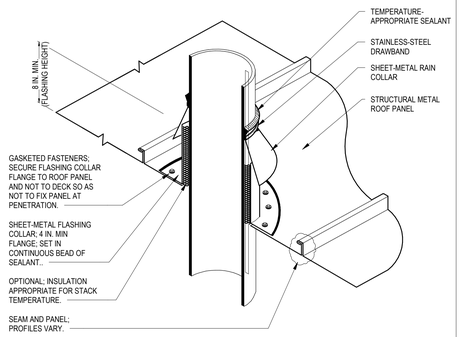
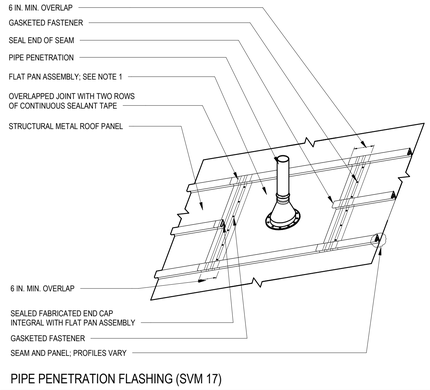
DETAILS-EXTERIOR

A503



NOTE:
1. NRCA STRONGLY RECOMMENDS PENETRATIONS SHOULD NOT INTERFERE WITH PANEL SEAMS OR OCCUR AT TRANSVERSE SEAMS.
2. VENT STACKS AND OTHER PIPES SHOULD HAVE ADEQUATE CLEARANCE ON ALL SIDES FROM WALLS AND OTHER PROJECTIONS TO FACILITATE PROPER FLASHING AND PANEL DRAINAGE.
3. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
4. REFER TO THE NRCA INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.
5. REFER TO NCRA - SVM 18 DETAIL.

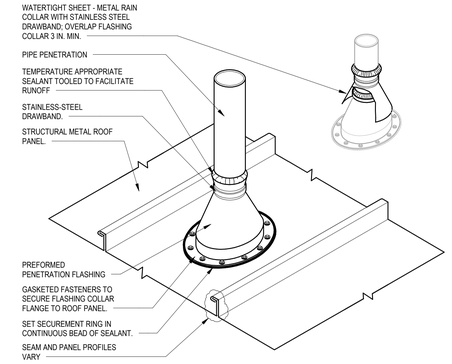
8 A504 SVM PANEL DETAIL (PENETRATION AT STACK VENT)
SCALE: 1" = 1'-0"



NOTE:
1. PROPER STRUCTURAL SUPPORT AND ATTACHMENT IS REQUIRED FOR FLAT PAN ASSEMBLY.
2. WHERE PENETRATIONS INTERSECT SEAMS, THIS DETAIL IS PREFERRED RATHER THAN INSTALLING PREFORMED BOOT THROUGH SEAM.
3. IN FIELD PANELS OVERLAP AT THE PENETRATION, ATTACHMNET OF THE DOWNSLOPE PANEL ALONG ITS UPSLOPE END MAY BE NECESSARY.
4. VENT STACKS AND OTHER PIPES SHOULD HAVE ADEQUATE CLEARANCE ON ALL SIDES FROM WALLS AND OTHER PROJECTIONS TO FACILITATE PROPER FLASHING AND PANEL DRAINAGE.
5. FOR HOT PIPES, SPECIFIC HIGH-TEMPERATURE BOOTS SHOULD BE USED.
6. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
7. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
8. REFER TO NCRA - SVM 17 DETAIL.

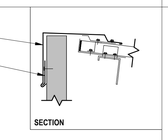
7 A504 SVM PANEL DETAIL (PENETRATION AT PIPE)
SCALE: 1" = 1'-0"

PIPE PENETRATION FLASHING (SVM 17)



NOTE:
1. NRCA RECOMMENDS PENETRATIONS SHOULD NOT INTERFERE WITH PANEL SEAMS OR OCCUR AT TRANSVERSE SEAMS. SEE DETAIL SVM-17.
2. IN FIELD PANELS OVERLAP AT THE PENETRATION, ATTACHMNET OF THE DOWNSLOPE PANEL ALONG ITS UPSLOPE END MAY BE NECESSARY
3. VENT STACKS AND OTHER PIPES SHOULD HAVE ADEQUATE CLEARANCE ON ALL SIDES FROM WALLS AND OTHER PROJECTIONS TO FACILITATE PROPER FLASHING AND PANEL DRAINAGE.
4. FOR HOT PIPES, SPECIFIC HIGH-TEMPERATURE BOOTS SHOULD BE USED.
5. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
6. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
7. REFER TO NCRA - SVM 16 DETAIL.

PIPE PENETRATION FLASHING (SVM 16)

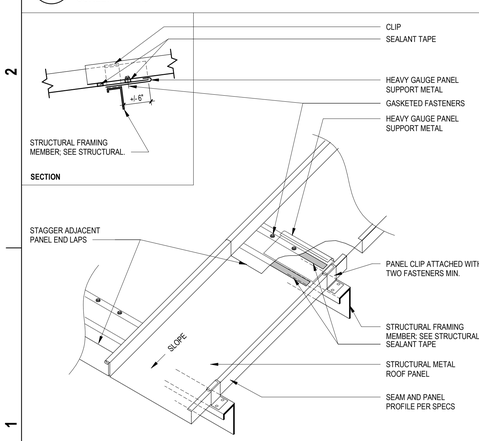


NOTE:
1. SPECIFIC FASTENING AND STRUCTURAL REQUIREMENTS ARE NOT INDICATED AS THEY VARY FROM SYSTEM TO SYSTEM DEPENDING ON PANEL MANUFACTURER'S REQUIREMENTS, WIND ZONE, BUILDING CODE AND WALL CONSTRUCTION.
2. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
3. WHEN THE Z-CLOSURE IS FASTENED THROUGH THE STRUCTURAL FRAMING, THIS FIXES THE PANEL ALONG THE HALF-RIDGE.
4. REFER TO THE ARCHITECTURAL METAL FLASHING SECTION OF THE NRCA ROOFING MANUAL: ARCHITECTURAL METAL FLASHING, CONDENSATION AND AIR LEAKAGE CONTROL, AND REROOFING FOR PERIMETER EDGE-METAL THICKNESS AND CLEAT RECOMMENDATIONS.
5. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.
6. REFER TO NCRA - SVM 08 DETAIL.

6 A504 SVM PANEL DETAIL (HALF RIDGE CAP FLASHING - VENTED)
SCALE: 1" = 1'-0"

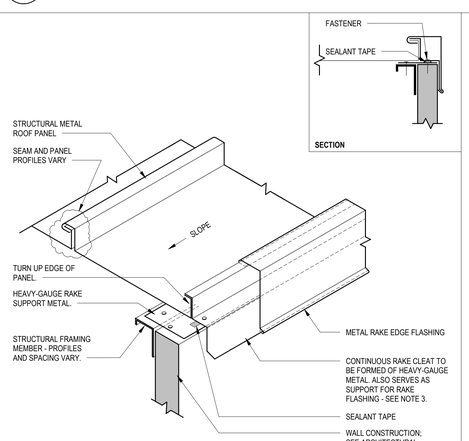
NOTE:
1. SPECIFIC FASTENING AND STRUCTURAL REQUIREMENTS ARE NOT INDICATED AS THEY VARY FROM SYSTEM TO SYSTEM DEPENDING ON PANEL MANUFACTURER'S REQUIREMENTS, WIND ZONE, BUILDING CODE AND WALL CONSTRUCTION.
2. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
3. WHEN THE Z-CLOSURE IS FASTENED THROUGH THE STRUCTURAL FRAMING, THIS FIXES THE PANEL ALONG THE HALF-RIDGE.
4. REFER TO THE ARCHITECTURAL METAL FLASHING SECTION OF THE NRCA ROOFING MANUAL: ARCHITECTURAL METAL FLASHING, CONDENSATION AND AIR LEAKAGE CONTROL, AND REROOFING FOR PERIMETER EDGE-METAL THICKNESS AND CLEAT RECOMMENDATIONS.
5. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.
6. REFER TO NCRA - SVM 07 DETAIL.

5 A504 SVM PANEL DETAIL (HALF RIDGE CAP FLASHING)
SCALE: 1" = 1'-0"

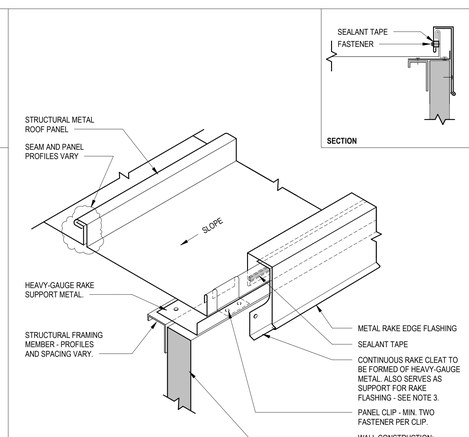


NOTES:
1. SPECIFIC FASTENING AND STRUCTURAL REQUIREMENTS ARE NOT INDICATED AS THEY VARY FROM SYSTEM TO SYSTEM DEPENDING ON PANEL MANUFACTURER'S REQUIREMENTS, WIND ZONE, BUILDING CODE AND WALL CONSTRUCTION.
2. HEAVY-GAUGE PANEL SUPPORT METAL PROFILE AND ATTACHMENT MAY VARY DEPENDING ON PANEL MANUFACTURER'S REQUIREMENTS.
3. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
4. REFER TO NRCA SVM-20.

4 A504 SVM PANEL DETAIL (AT END LAP)
SCALE: 1" = 1'-0"



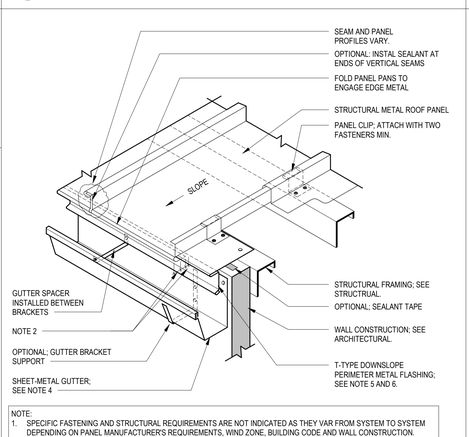
END PANEL



STARTING PANEL

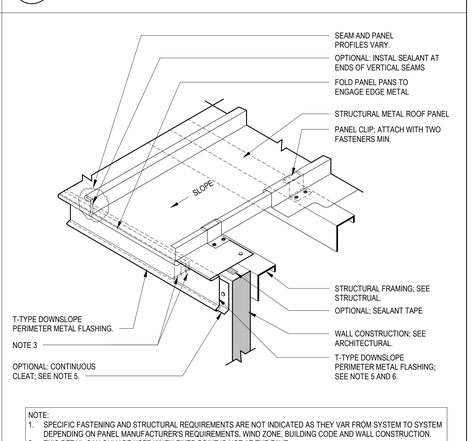
NOTE:
1. SPECIFIC FASTENING AND STRUCTURAL REQUIREMENTS ARE NOT INDICATED AS THEY VARY FROM SYSTEM TO SYSTEM DEPENDING ON PANEL MANUFACTURER'S REQUIREMENTS, WIND ZONE, BUILDING CODE AND WALL CONSTRUCTION.
2. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
3. REFER TO THE ARCHITECTURAL METAL FLASHING SECTION OF THE NRCA ROOFING MANUAL: ARCHITECTURAL METAL FLASHING, CONDENSATION AND AIR LEAKAGE CONTROL, AND REROOFING FOR PERIMETER EDGE-METAL THICKNESS AND CLEAT RECOMMENDATIONS.
4. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.
5. REFER TO NCRA - SVM 04 DETAIL.

3 A504 SVM PANEL DETAIL (RAKE EDGE FLASHING)
SCALE: 1" = 1'-0"



NOTE:
1. SPECIFIC FASTENING AND STRUCTURAL REQUIREMENTS ARE NOT INDICATED AS THEY VAR FROM SYSTEM TO SYSTEM DEPENDING ON PANEL MANUFACTURER'S REQUIREMENTS, WIND ZONE, BUILDING CODE AND WALL CONSTRUCTION.
2. DIMENSIONS SHOULD ACCOMMODATE EXPECTED MOVEMENT AT THE EAVE. REFER TO NRCA SECTION 4.12 FOR INFORMATION ABOUT THERMAL MOVEMENT CONSIDERATIONS.
3. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
4. REFER TO THE ARCHITECTURAL METAL FLASHING SECTION OF THE NRCA ROOFING MANUAL: ARCHITECTURAL METAL FLASHING, CONDENSATION AND AIR LEAKAGE CONTROL, AND REROOFING FOR MORE INFORMATION ABOUT GUTTERS.
5. REFER TO THE ARCHITECTURAL METAL FLASHING SECTION OF THE NRCA ROOFING MANUAL: ARCHITECTURAL METAL FLASHING, CONDENSATION AND AIR LEAKAGE CONTROL, AND REROOFING FOR PERIMETER EDGE-METAL THICKNESS AND CLEAT RECOMMENDATIONS.
6. REFER TO THE INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.
7. REFER TO NCRA - SVM 02 DETAIL.

2 A504 SVM PANEL DETAIL (EAVE FLASHING WITH GUTTER)
SCALE: 1" = 1'-0"



NOTE:
1. SPECIFIC FASTENING AND STRUCTURAL REQUIREMENTS ARE NOT INDICATED AS THEY VAR FROM SYSTEM TO SYSTEM DEPENDING ON PANEL MANUFACTURER'S REQUIREMENTS, WIND ZONE, BUILDING CODE AND WALL CONSTRUCTION.
2. THIS DETAIL CAN ONLY BE USED WHEN FIXED POINT IS NOT AT THE EAVE.
3. DIMENSIONS SHOULD ACCOMMODATE EXPECTED MOVEMENT AT THE EAVE. REFER TO NRCA FOR INFORMATION ABOUT THERMAL MOVEMENT CONSIDERATIONS.
4. INSULATION, VAPOR RETARDER AND THERMAL BLOCKS FOR ROOF SYSTEM ARE NOT SHOWN FOR CLARITY.
5. REFER TO THE NRCA - INTRODUCTION OF THE CONSTRUCTION DETAILS CHAPTER FOR ADDITIONAL INFORMATION.
6. REFER TO NCRA - SVM 01 DETAIL.

1 A504 SVM PANEL DETAIL (EAVE FLASHING)
SCALE: 1" = 1'-0"

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CONSTRUCTION DOCUMENTS

Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY
GYMNASIUM ADDITION
855 Old US Highway 421, Lillington NC 27546

ENERGY STAR PARTNER

No.	Date	Description

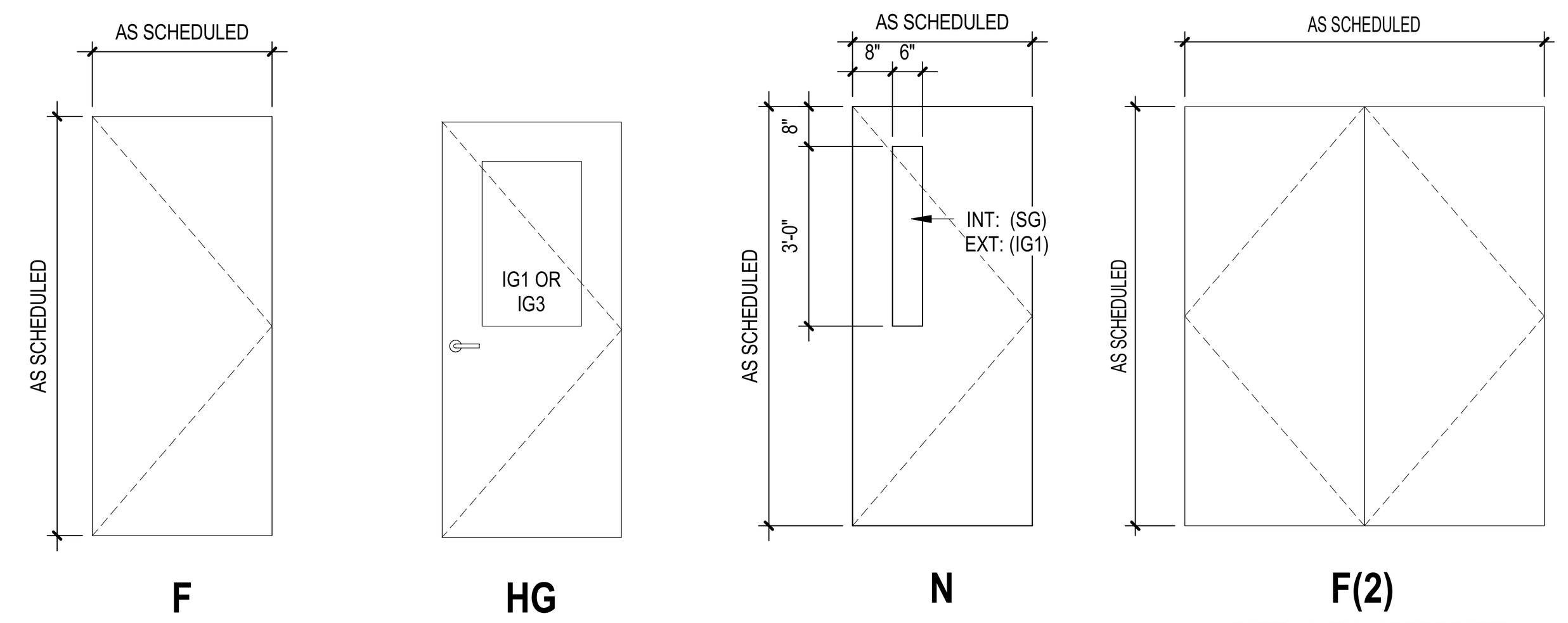
ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JK
CHECKED BY: Checker

DETAILS-SS METAL ROOF

A504

DOOR & FRAME SCHEDULE

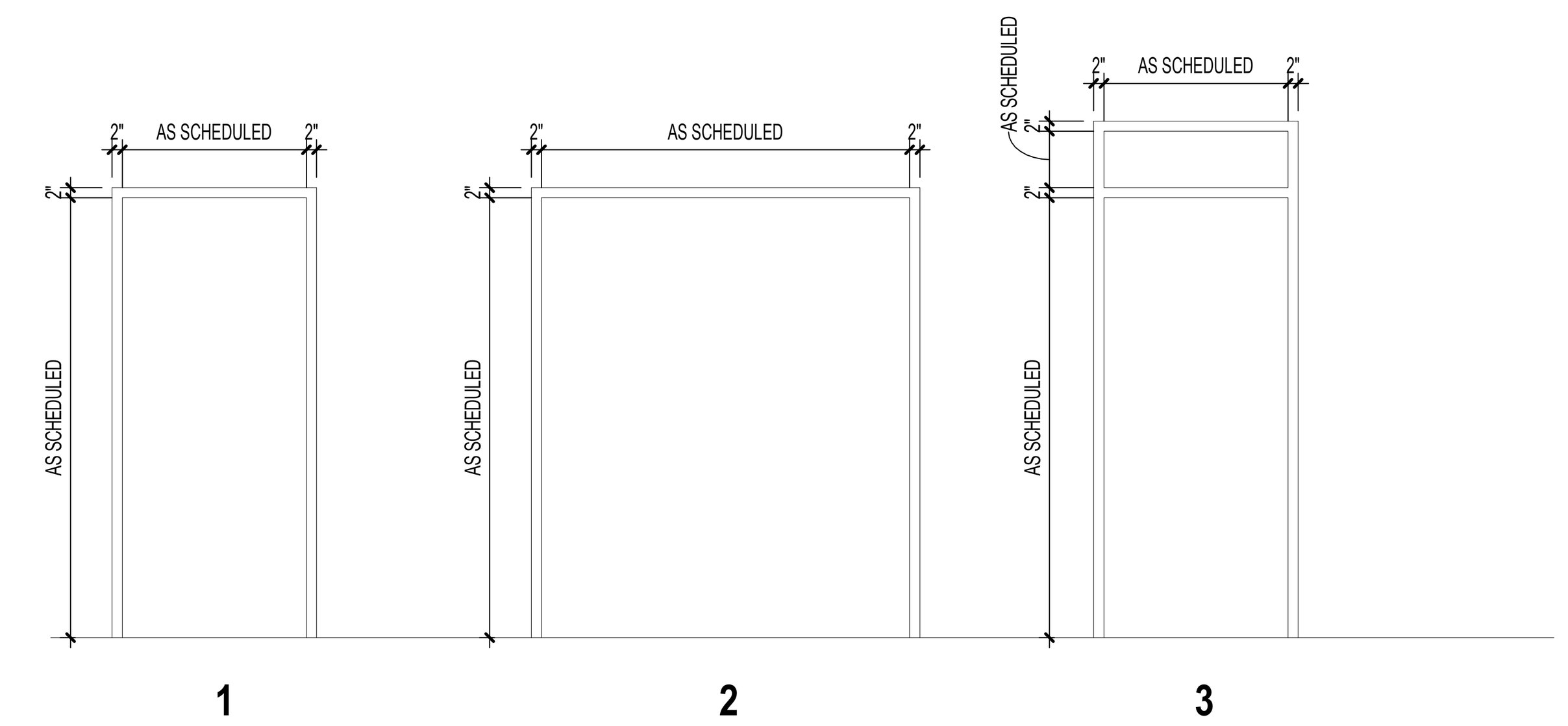
DOOR NO.	ROOM		SIZE			PANEL			FRAME	FIRE RATING	Door Signage	NOTES
	NO.	NAME	W.	H.	T.	TYPE	MATERIAL / FINISH	GLASS	TYPE			
100A	100	GYMNASIUM	6'-0"	7'-2"	1 3/4"	F(2)	IFRP	-	3	0	J	
100B	100	GYMNASIUM	6'-0"	7'-2"	1 3/4"	F(2)	IFRP	-	3	0	J	
100C	100	GYMNASIUM	6'-0"	7'-2"	1 3/4"	F(2)	IFRP	-	3	0	J	
100D	101	LOBBY	6'-8"	7'-2"	1 3/4"	F	WD	N	2	0	A	
100E	101	LOBBY	6'-8"	7'-2"	1 3/4"	F	WD	N	2	0	A	
101A	C101	CORR.	3'-0"	7'-2"	1 3/4"	HG	ALUM	SF2	1	0	J	
101B	C101	CORR.	3'-0"	7'-2"	1 3/4"	HG	ALUM	SF2	1	0	J	
101C	C101	CORR.	6'-8"	7'-2"	1 3/4"	F	HM	-	2	90	A	
101D	101	LOBBY	6'-0"	7'-2"	1 3/4"	HG	IFRP	SF1		0	J	
101E	101	LOBBY	6'-0"	7'-2"	1 3/4"	HG	IFRP	SF1		0	J	
102	102	MEN	3'-0"	7'-2"	1 3/4"	F	WD	-	1	0	C	
103	103	WOMEN	3'-0"	7'-2"	1 3/4"	F	WD	-	1	0	C	
104	104	CUSTODIAN	3'-0"	7'-2"	1 3/4"	F	WD	-	1	0	A	
105	105	OFFICE	6'-0"	7'-4"				-			B	MASONRY OPENING
105A	105A	CLOSET	3'-0"	7'-2"	1 3/4"	F	WD	-	1	0	A	
106	106	EQUIPMENT	6'-8"	7'-2"	1 3/4"	F	WD	-	2	0	A	
107	107	UTIL.	3'-0"	7'-2"	1 3/4"	F	IFRP	-	1	0	A	



*RATED GLAZING AT FIRE RATED DOORS

DOOR PANEL LEGEND

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



DOOR FRAME LEGEND

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

DOOR LOCKSET FUNCTION LEGEND

HARDWARE NOTES:

ENTRY DEADLOCK FUNCTION: DEADBOLT BY KEY OUTSIDE, THUMBTURN INSIDE

BOTH SIDES LOCK FUNCTION: THE INSIDE LEVER IS UNLOCKED BY A KEY AND THE OUTSIDE LEVER IS UNLOCKED BY A KEY. CAN REMAIN UNLOCKED.

STOREROOM FUNCTION: THE INSIDE LEVER IS ALWAYS OPERABLE, THE OUTSIDE LEVER IS ALWAYS LOCKED. ONE MUST ALWAYS HAVE A KEY TO OPEN THE DOOR FROM THE OUTSIDE.

OFFICE FUNCTION: THE INSIDE LEVER IS ALWAYS OPERABLE. THE OUTSIDE LEVER IS LOCKED BY DEPRESSING A BUTTON ON THE INSIDE LEVER. A KEY IS USED TO UNLOCK THE OUTSIDE LEVER FROM THE OUTSIDE WHEN LOCKED.

PRIVACY FUNCTION: THE OUTSIDE LEVER IS LOCKED BY USE OF A PUSH BUTTON ON THE INSIDE LEVER. THE OUTSIDE LEVER CAN BE UNLOCKED (NOT BY A KEY) BY THE USE OF SOME SIMPLE TOOL.

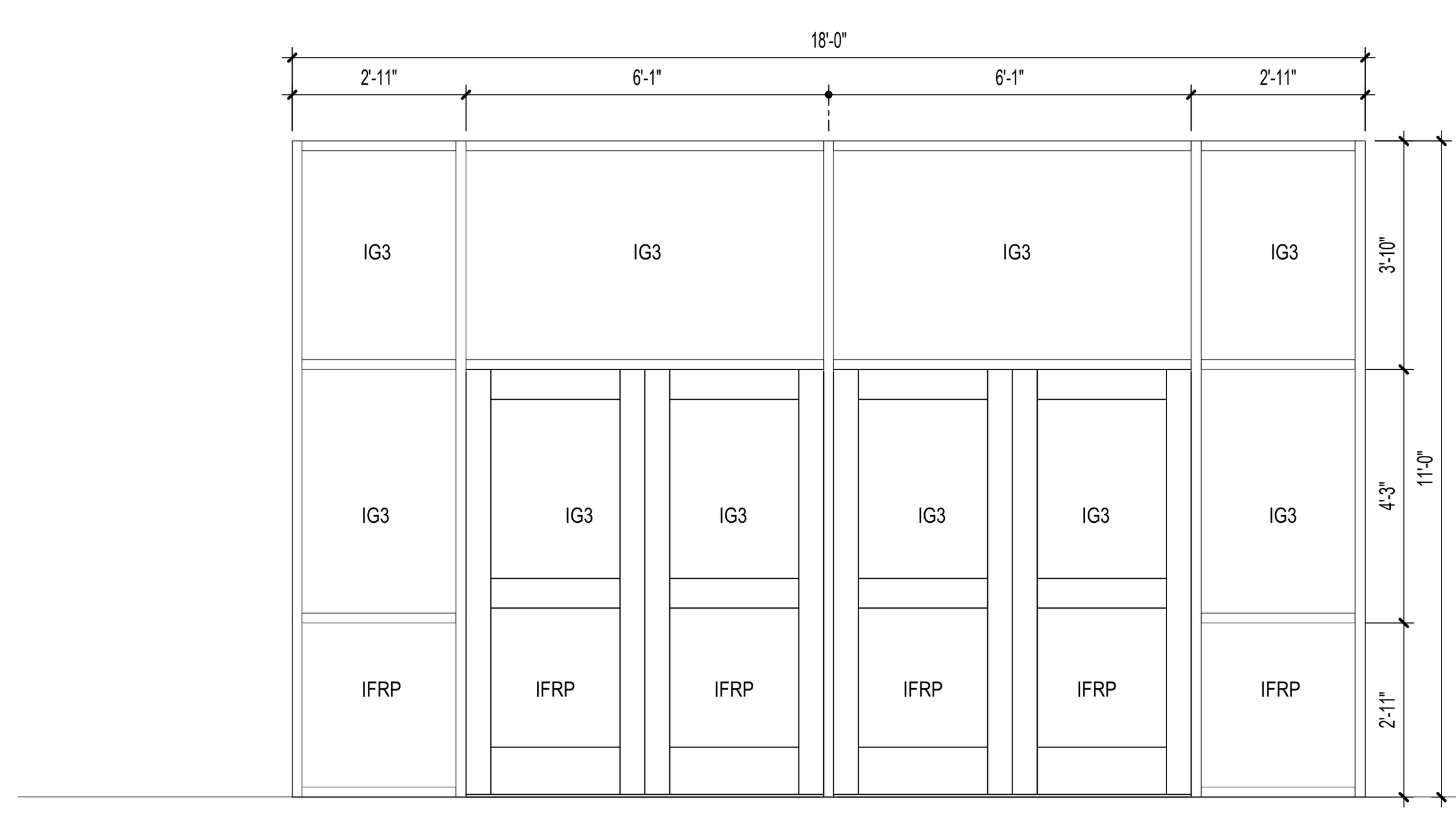
PASSAGE FUNCTION: THE INSIDE AND OUTSIDE LEVERS ARE FREE TO OPERATE AT ALL TIMES.

HARDWARE ABBREVIATIONS:

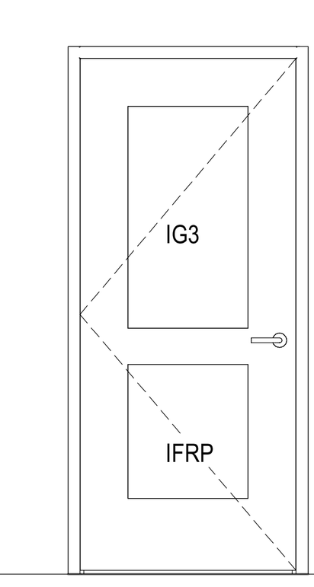
AST ASTRAGAL
CLSR CLOSER
DIA DIAMETER
FB FLUSH BOLT
KP KICK PLATE
OHS OVERHEAD STOP
SS STAINLESS STEEL
WMS WALL MOUNTED STOP
WS WEATHER STRIPPING

GENERAL DOOR NOTES

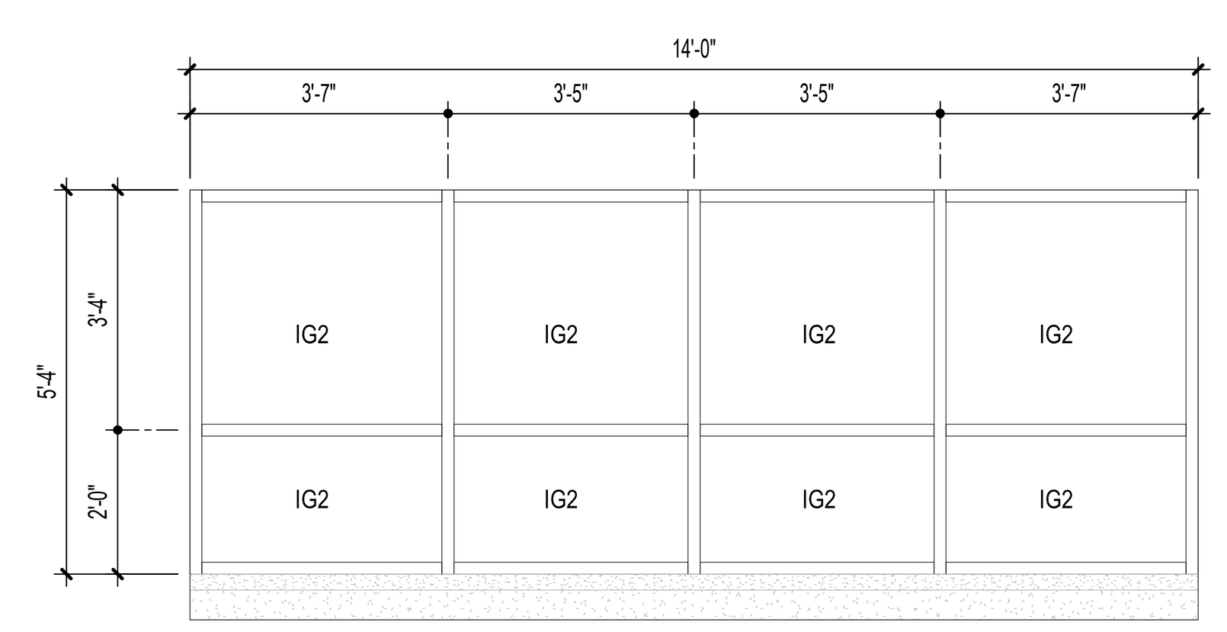
1. PROVIDE AND INSTALL WEATHERSTRIPPING AT ALL EXTERIOR DOORS.
2. PROVIDE AND INSTALL SILENCERS AT ALL H.M. FRAMES.
3. ALL DOUBLE DOORS TO RECEIVE KEYED MULLIONS.
4. ALL HM DOOR FRAMES TO BE PAINTED SW7674-PEPPERCORN.
5. ALL HM DOOR FRAMES TO BE WRAP AROUND. COORDINATE WITH WALL THICKNESS.



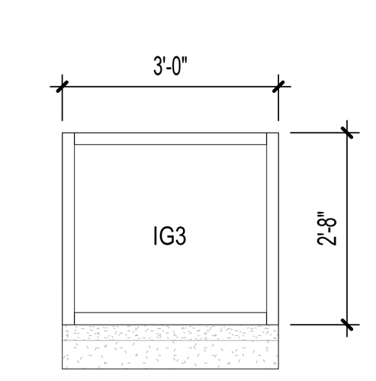
1 A601 **SF1**
SCALE: 3/8" = 1'-0"



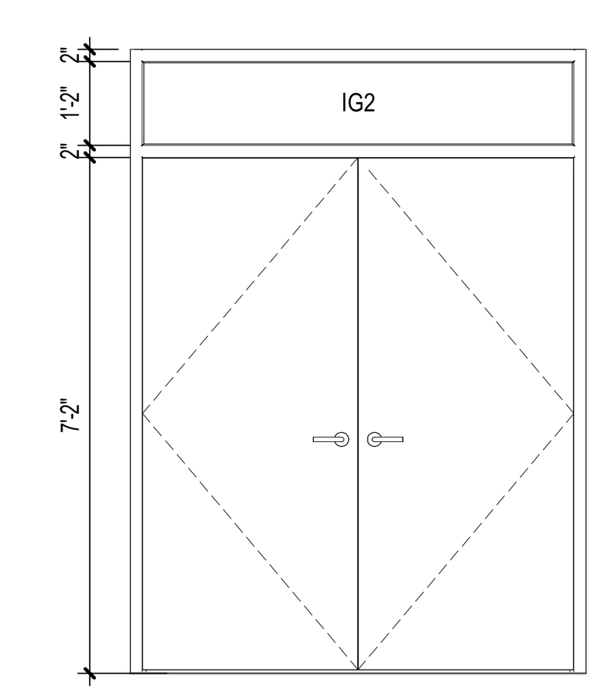
2 A601 **SF2**
SCALE: 3/8" = 1'-0"



3 A601 **SF3**
SCALE: 3/8" = 1'-0"



4 A601 **SF4**
SCALE: 3/8" = 1'-0"



5 A601 **SF5**
SCALE: 3/8" = 1'-0"

GLAZING UNIT TYPES

**COLOR TO BE SELECTED BY ARCHITECT FROM FULL RANGE OF MFR'S COLORS.*

TYPE DESCRIPTION

(NON-INSULATED GLASS)

FG ANNEALED FLOAT GLASS, 1/4" THICK SINGLE PANE, CLEAR.
SG SAFETY GLASS - FULLY TEMPERED, 1/4" THICK SINGLE PANE, MATCH ADJACENT GLASS TINT.
LG LAMINATED SAFETY GLASS, 1/4" THICK SINGLE PANE, CLEAR
MG MIRROR GLASS - FULLY TEMPERED, 1/4" THICK SINGLE PANE
T TEMPERED

(INSULATED GLASS UNITS) - ALL INSULATED GLASS UNITS TO BE TEMPERED

IG2 DOUBLE PANE INSULATED, TRANSLUCENT LAMINATED GLASS UNITS, DIFFUSED (SOUTH, EAST & WEST FACING GLAZING-HIGH GLASS) SEE PARTIAL ELEVATIONS FOR LAMINATE

IG3 DOUBLE PANE INSULATED GLASS UNITS, TINTED AND TEMPERED (SOUTH, EAST & WEST FACING GLAZING-LOW GLASS)

GENERAL WINDOW NOTES

1. IFRP=IFRP INFILL PANEL. COLOR TO MATCH THE DOOR FRAME.

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CONSTRUCTION DOCUMENTS

Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY GYMNASIUM ADDITION
855 Old US Highway 421, Lillington NC 27546

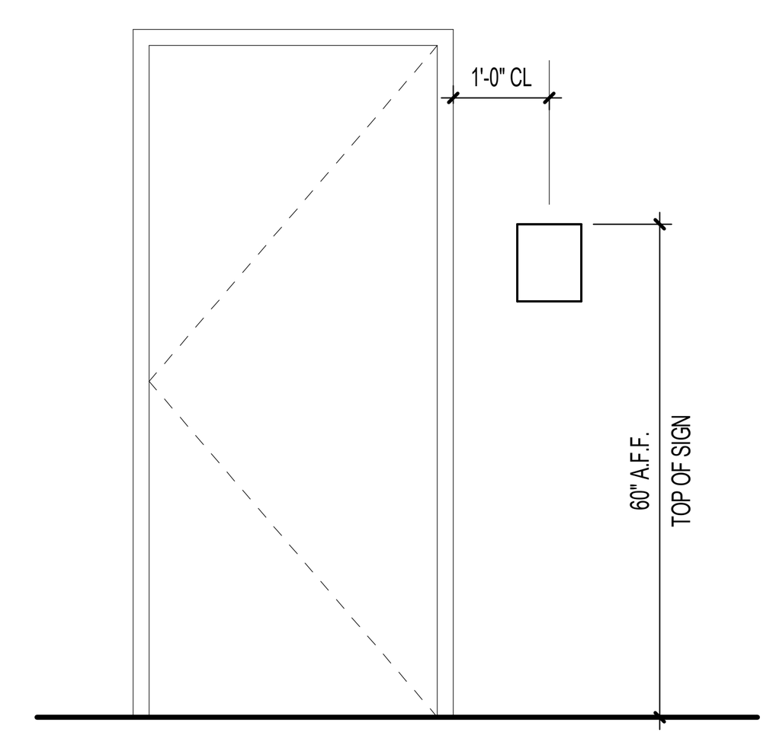
ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JK
CHECKED BY: Checker

DOOR SCHEDULE / SF ELEVATIONS

A601



SIGNAGE NOTES:

1. ROOM SIGNAGE TO BE LOCATED ON THE WALL ADJACENT TO THE STRIKE SIDE OF THE DOOR.
2. MOUNTING LOCATION AND HEIGHT SHOWN IS TYPICAL.
3. VERIFY NON-TYPICAL SIGN LOCATIONS WITH THE ARCHITECT PRIOR TO INSTALLATION.
4. AT DOORS WITH SIDELIGHTS ON THE STRIKE SIDE OF JAMB, USE DOUBLE SIDED TAPE ONLY. PROVIDE A BLANK SOLID SIGN OF SAME COLOR AND SIZE ON OPPOSITE SIDE OF GLASS.
5. COORDINATE ROOM NAME, NUMBER AND DOOR INVENTORY NUMBER WITH USER.
6. PROVIDE SIGNAGE AT ALL INTERIOR DOOR LOCATION. ROOMS WITH MORE THAN ONE ACCESS POINT SHALL REQUIRE SIGNAGE AT EACH LOCATION.
7. TYPICAL FOR ALL DOOR INVENTORY NUMBERS - SHALL HAVE RAISED NUMBERING AND BE BLACK IN COLOR

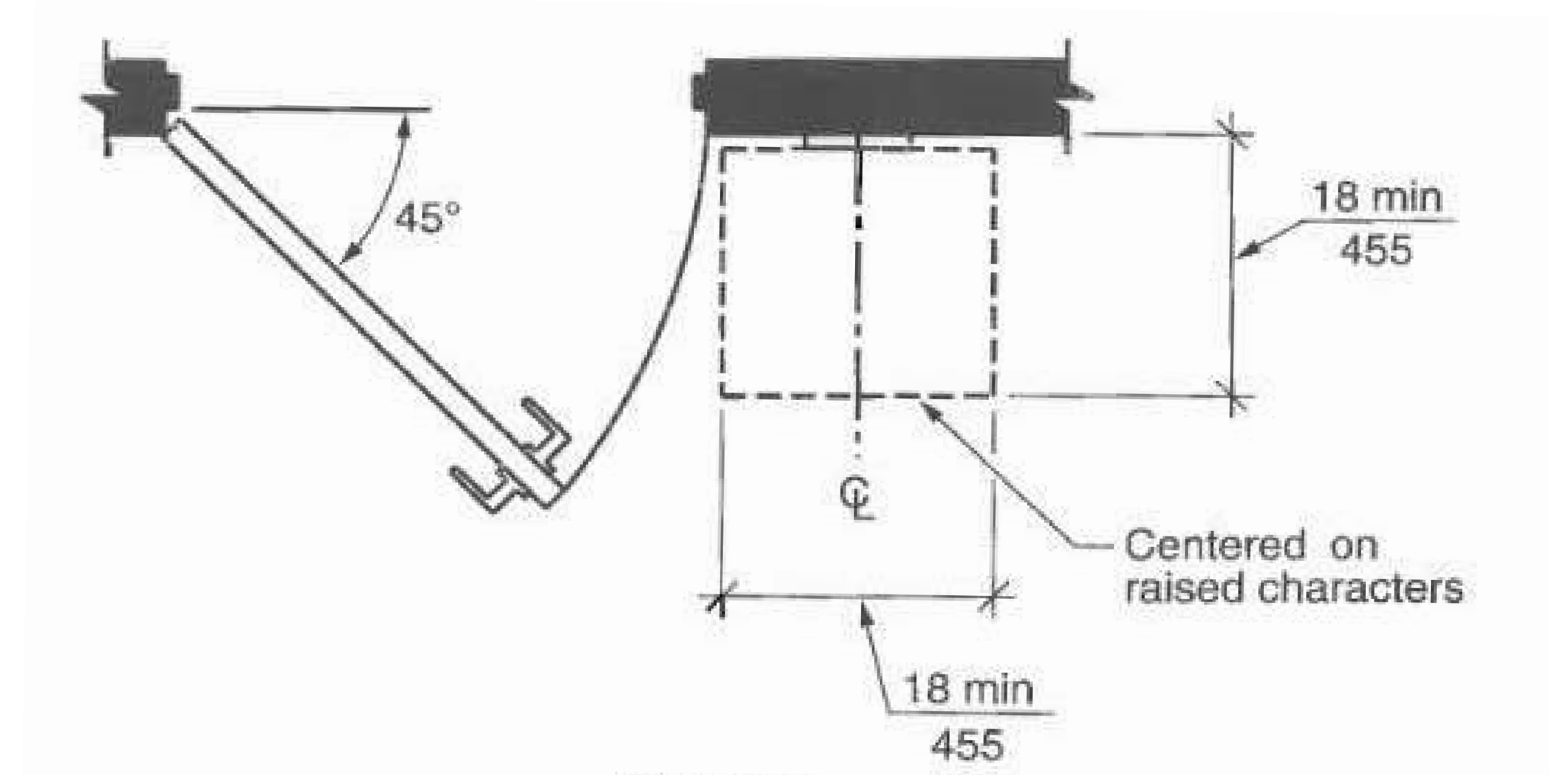
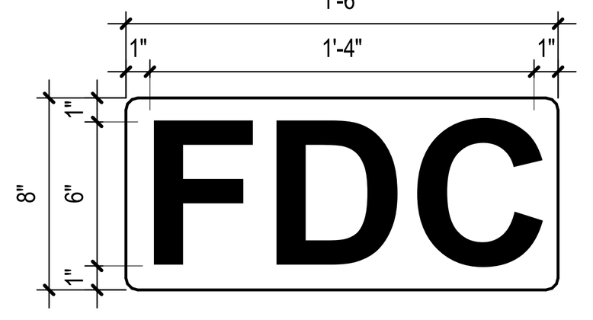


FIGURE 703.3.11
LOCATION OF SIGNS AT DOORS

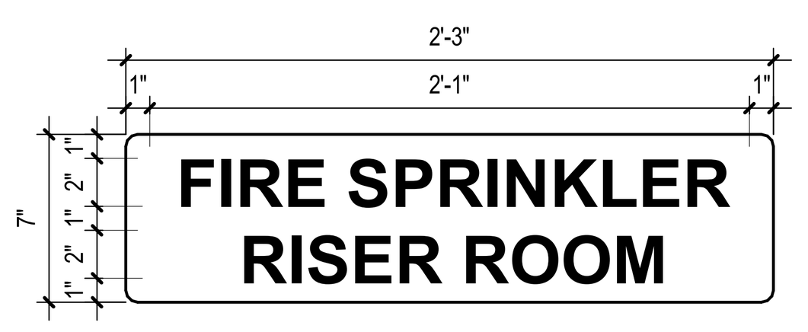
3 / A701 SIGNAGE ADA REQUIREMENTS
SCALE: 3" = 1'-0"

FIRE PROTECTION CONNECTIONS SIGN



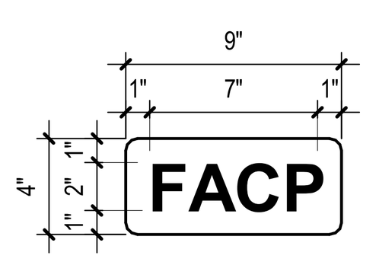
THE FIRE DEPARTMENT CONNECTION SIGN (FDC) WILL CONSIST OF 6" HIGH, 1" LETTER STROKE RED REFLECTIVE LETTERS ON A WHITE BACKGROUND, AND SHALL BE PERMANENTLY ATTACHED IN A VISIBLE LOCATION APPROVED BY THE FIRE MARSHAL.

FIRE SPRINKLER RISER ROOM SIGN / LABEL



THE SPRINKLER ROOM SIGN / LABEL WILL CONSIST OF 2" HIGH, 0.5" LETTER STROKE RED REFLECTIVE LETTERS ON A WHITE BACKGROUND, AND SHALL BE PERMANENTLY ATTACHED TO THE EXTERIOR OF THE DOOR OF THE SPRINKLER RISER ROOM, AT NORMAL EYE LEVEL.

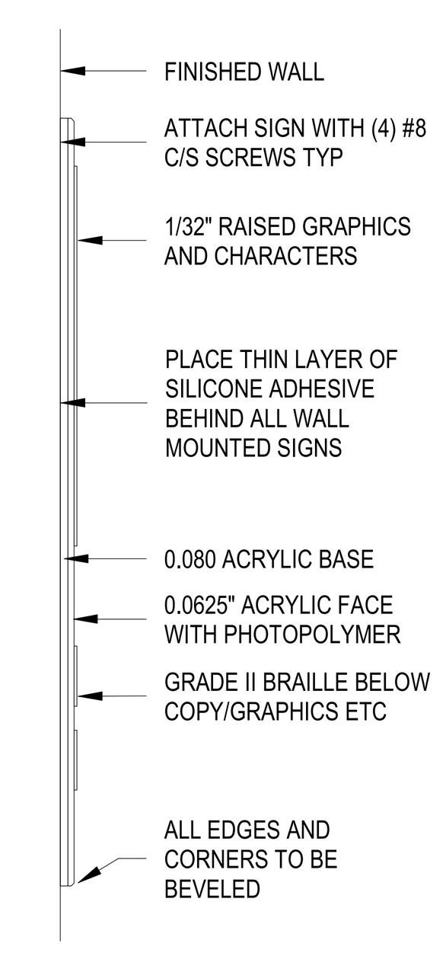
FIRE ALARM CONTROL PANEL SIGN / LABEL



THE FIRE ALARM CONTROL PANEL SIGN / LABEL WILL CONSIST OF 2" HIGH, 0.5" LETTER STROKE RED REFLECTIVE LETTERS ON A WHITE BACKGROUND, AND SHALL BE PERMANENTLY ATTACHED TO THE EXTERIOR OF THE DOOR OF THE ROOM CONTAINING THE FIRE ALARM CONTROL PANEL, AT NORMAL EYE LEVEL.

NOTE:
FIRE SPRINKLER AND FIRE ALARM CONTROL PANEL ROOMS WITH ACCESS FROM ONLY THE INTERIOR OF THE STRUCTURE MAY BE SIGNED / LABELED SO AS NOT TO DETRACT FROM THE INTERIOR DECOR, PROVIDING THE LETTERS ARE A MINIMUM OF 1" AND OF A CONTRASTING COLOR TO THE BACKGROUND, AS APPROVED BY THE FIRE MARSHAL.

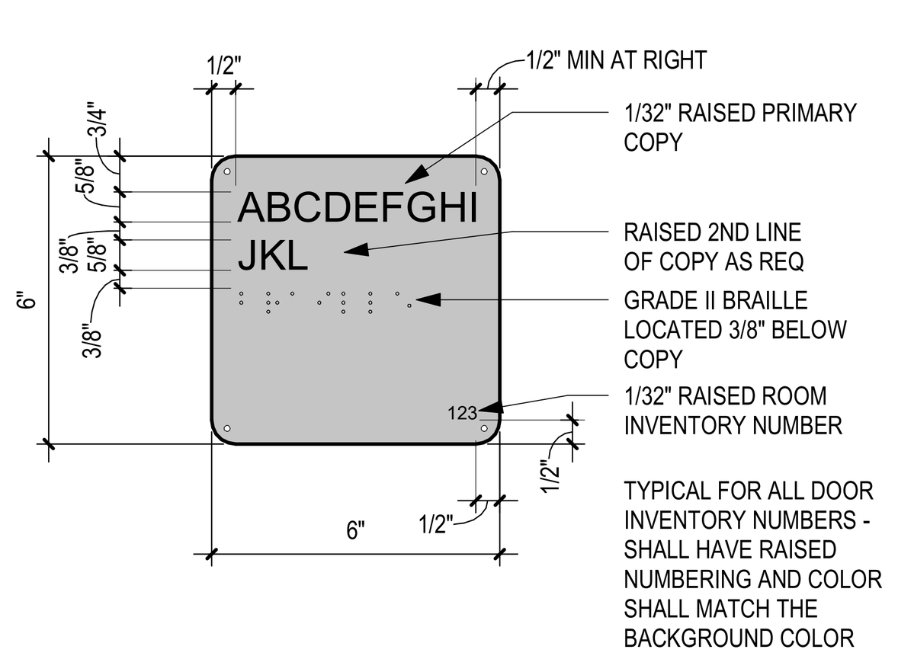
5 / A701 FIRE PROTECTION SIGN TEMPLATES
SCALE: 1 1/2" = 1'-0"



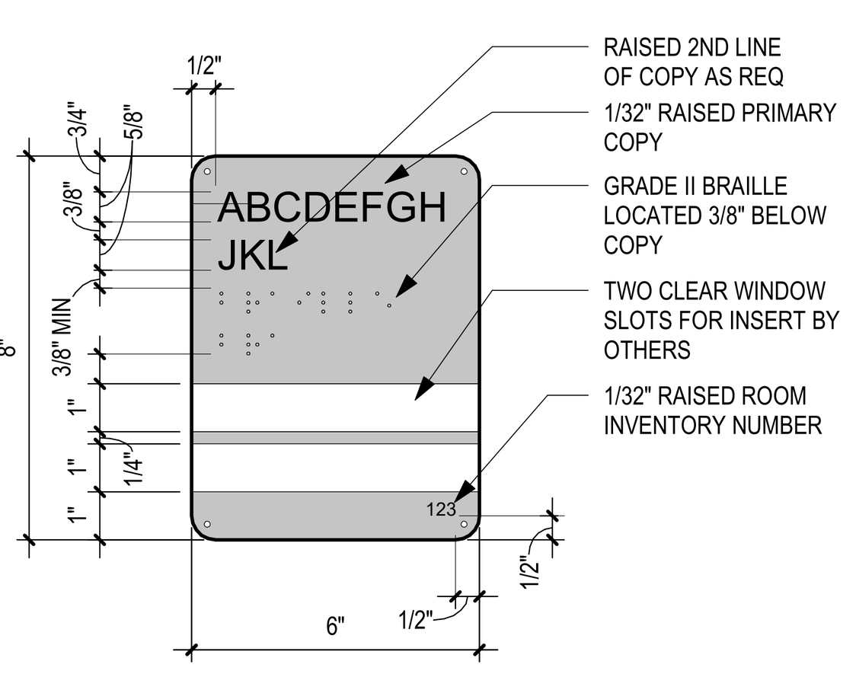
2 / A701 SIGNAGE DETAIL AT WALL
SCALE: 6" = 1'-0"

SIGN FIELD COLOR TO BE MAROON: SW6300-BURGUNDY

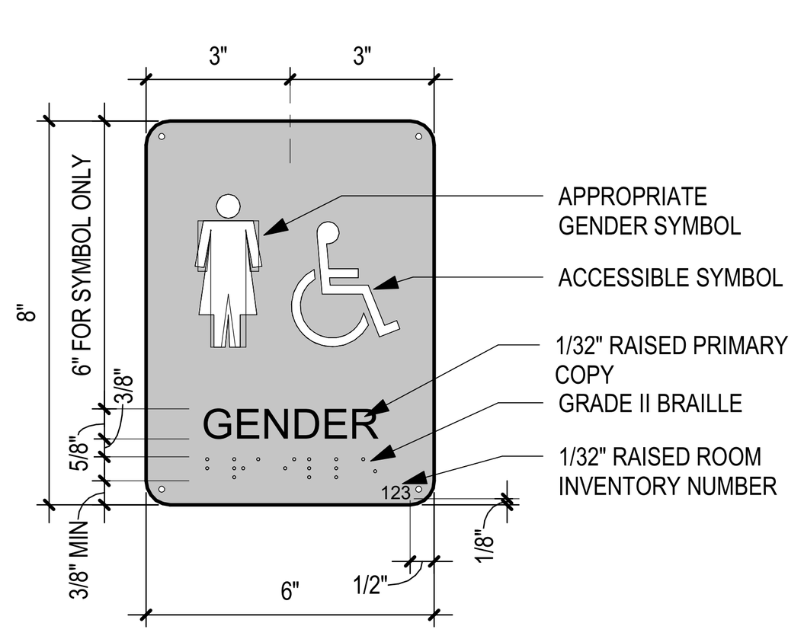
SIGN TYPE A



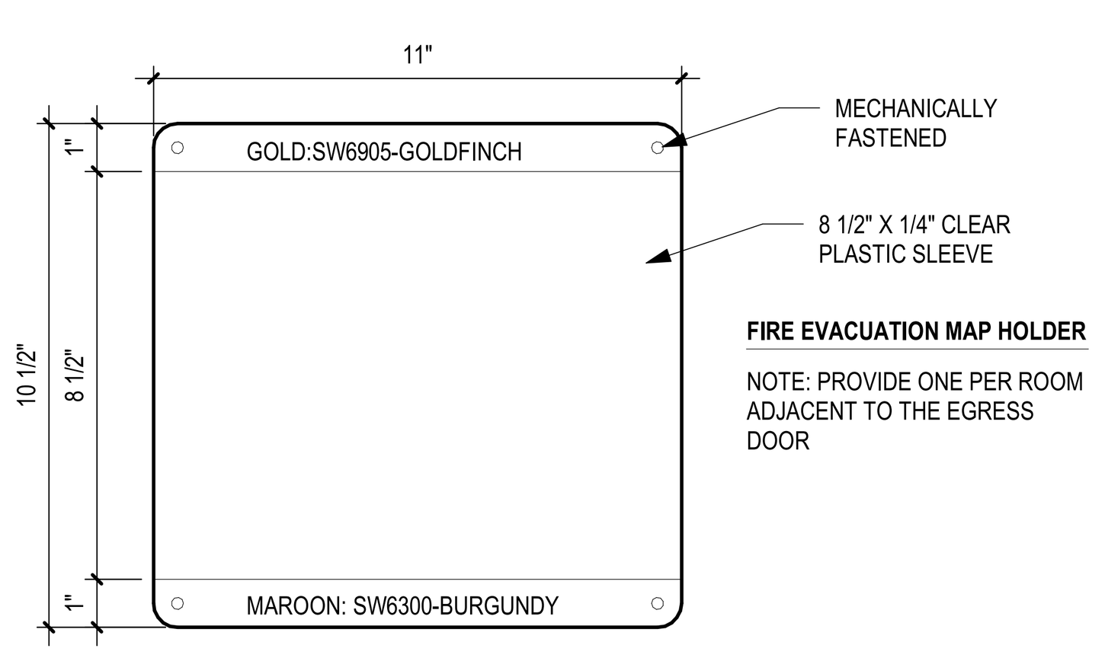
SIGN TYPE B



SIGN TYPE C



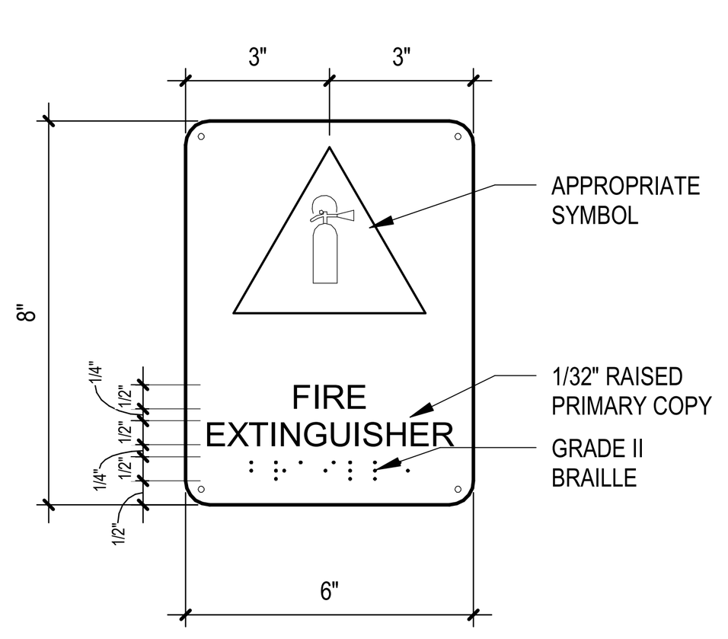
SIGN TYPE FEM



FIRE EVACUATION MAP HOLDER

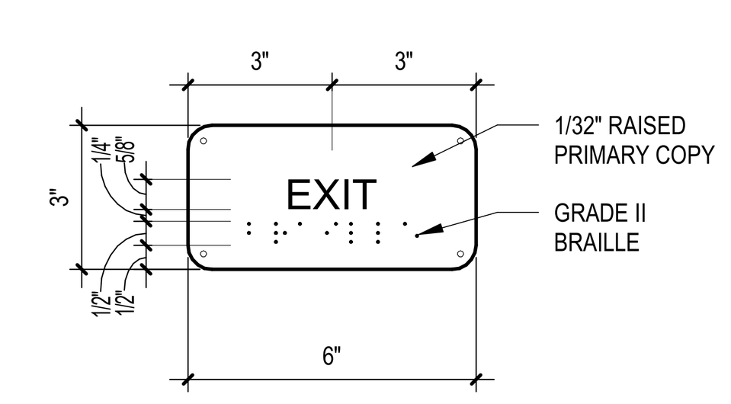
NOTE: PROVIDE ONE PER ROOM ADJACENT TO THE EGRESS DOOR

SIGN TYPE F

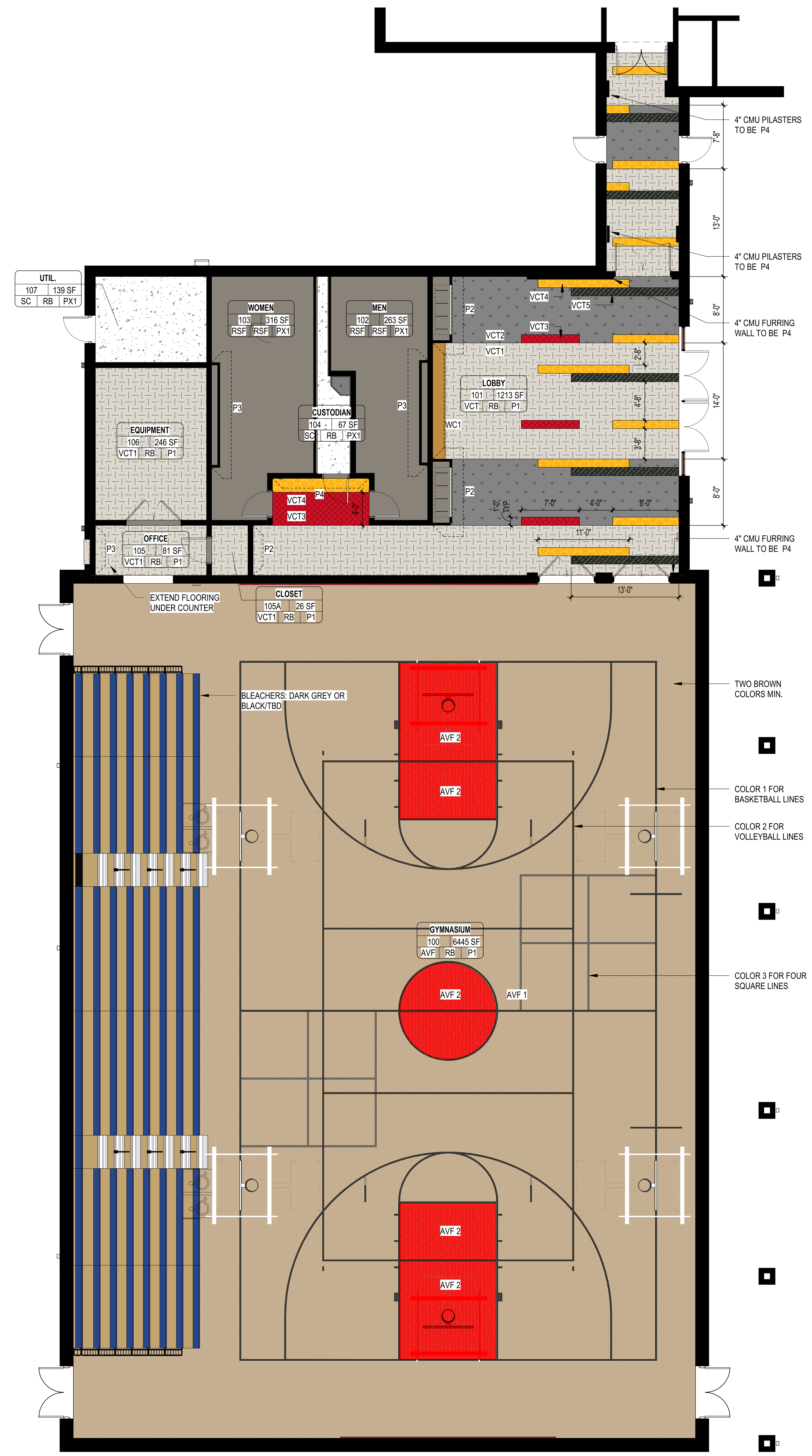


SIGN TYPE J

NCBC 1013.4 TACTILE EXIT SIGNS.
A TACTILE EXIT SIGN STATING "EXIT" AND COMPLYING WITH ICC A117.1 SHALL BE PROVIDED ADJACENT TO EACH DOOR TO AN AREA OF REFUGE, AN EXTERIOR AREA OF ASSISTED RESCUE, AN EXIT STAIRWAY, AN EXIT RAMP, AN EXIT PASSAGEWAY AND THE EXIT DISCHARGE.



4 / A701 SIGNAGE ELEVATIONS
SCALE: 3" = 1'-0"



1 / A701 FIRST FLOOR FINISH PLAN
SCALE: 1/8" = 1'-0"

FINISH FLOOR PATTERN PLAN LEGEND

- **SC** SEALED CONCRETE — TYPICAL ALL SUPPORT/UTILITY SPACES
- **RSF** RESINOUS FLOORING — TYPICAL ALL BATHROOMS
- **VCT1** VINYL COMPOSITION TILE — WHITE: ARMSTRONG COOL WHITE
- **VCT2** VINYL COMPOSITION TILE — GREY: ARMSTRONG STERLING
- **VCT3** VINYL COMPOSITION TILE — RED: ARMSTRONG CRIMSON
- **VCT4** VINYL COMPOSITION TILE — GOLD: ARMSTRONG SUN GOLD
- **VCT5** VINYL COMPOSITION TILE — BLACK: ARMSTRONG CHARCOAL
- **AWF** WOOD ATHLETIC FLOORING
- **RAF** RUBBER ATHLETIC FLOORING

FINISH FLOOR PLAN LEGEND

ROOM FINISH TAG

Name		
101A	150 SF	
TZ-1	RB	PE-1

FLOOR FINISH / BASE FINISH / WALL FINISH

NOTE: FINISH CODES MARKED WITH AN ASTERISK " * " INDICATES MULTIPLE FINISHES IN ROOM; SEE FINISH PLANS AND SCHEDULE FOR MORE INFORMATION.

FINISH TRANSITION — XXX XXX — FINISH 1, FINISH 2

EXTENTS OF ACCENT PAINT — XXX

FINISH ABBREVIATIONS

FLOOR FINISH ABBREVIATIONS

AVF	ATHLETIC VINYL FLOORING (3 BROWN COLORS AND ONE RED COLOR)
RSF	RESINOUS FLOORING
SC	SEALED CONCRETE
VCT	VINYL COMPOSITION TILE

BASE FINISH ABBREVIATIONS

RB	RUBBER BASE
RSF	RESINOUS BASE W/ COVE TRIM

WALL FINISH ABBREVIATIONS

AWP	ACOUTICAL WALL PANELS
GWB	GYPSUM WALL BOARD
PE	PAINT - EGGSHELL
PF	PAINT - FLAT
PS	PAINT - SEMIGLOSS
PX	PAINT - EPOXY
PLAM	PLASTIC LAMINATE
SF	STOREFRONT
SS	STAINLESS STEEL

CEILING FINISH ABBREVIATIONS

ACT	ACOUSTICAL CEILING TILES
EXP	EXPOSED STRUCTURE
GWB	GYPSUM WALLBOARD

MISC. FINISH ABBREVIATIONS

PL	PLASTIC LAMINATE
SSM	SOLID SURFACE MATERIAL
TLP	TOILET PARTITIONS
LKR	LOCKER

GENERAL FINISH NOTES

1. THE INTENT OF THIS DRAWING IS TO SUPPLEMENT INFORMATION CONTAINED IN THE ROOM FINISH SCHEDULE. REFER TO THE FINISH PLANS, FINISH MATERIAL SCHEDULE AND ROOM FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
2. ALL FLOORING TRANSITIONS OCCUR AT THE CENTER OF THE UNDERSIDE OF THE DOOR UNLESS OTHERWISE NOTED.
3. REFER TO INTERIOR ELEVATION SHEET FOR ADDITIONAL FINISH APPLICATIONS.
4. ALL FINISHES LISTED AS "TBD" TO BE SELECTED FROM BASIS OF DESIGN MANUFACTURER'S FULL RANGE OF COLORS.

PAINT NOTES

1. PAINT P1 STANDARD WALL FIELD IN ALL LOCATIONS U.N.O.
2. EPOXY PAINT TYPICAL AT ALL RESTROOMS, JANITOR CLOSETS, AND KITCHEN / SERVING AREAS.
3. SEMIGLOSS PAINT TYPICAL AT ALL CONCRETE MASONRY WALLS AND HOLLOW METAL DOOR FRAMES, U.N.O.
4. EGGSHELL PAINT TYPICAL AT ALL GYPSUM BOARD WALLS U.N.O.
5. FLAT PAINT TYPICAL AT ALL CEILING & BULKHEAD CONDITIONS, U.N.O.
6. PAINT COLORS DESIGNATED AT COLUMN SURROUNDS TO BE APPLIED TO ALL SIDES OF COLUMN UP TO CEILING.
7. PAINT COLORS DESIGNATED AT BULKHEADS TO BE APPLIED TO ENTIRE VERTICAL AND HORIZONTAL FACES, UNLESS NOTED OTHERWISE IN RCP AND ELEVATIONS.

P1	WHITE	SW6070-HERON PLUME
P2	GREY	SW7674-PEPPERCORN
P3	GOLD	SW6905-GOLDFINCH
P4	MAROON	SW6300-BURGUNDY

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Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY GYMNASIUM ADDITION
855 Old US Highway 421, Lillington NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
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CHECKED BY: Checker

FINISH PLAN + SCHEDULE

*A701

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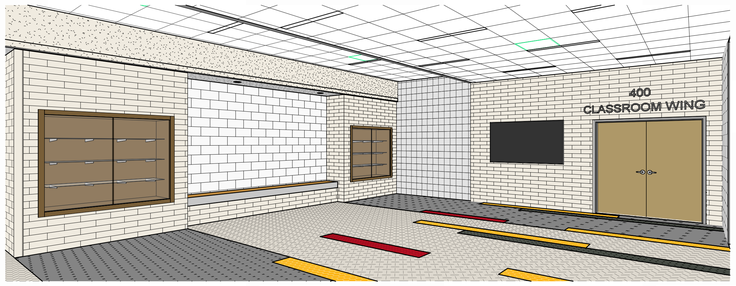
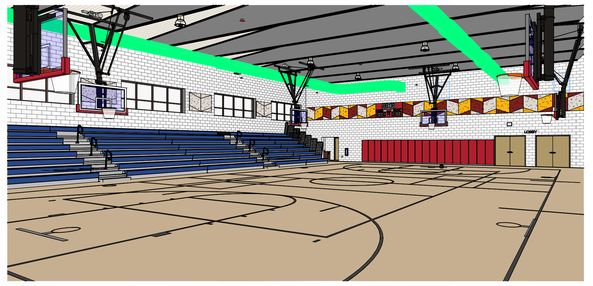


1 A801 **LOBBY PERSPECTIVE**
SCALE:



2 A801 **GYM PERSPECTIVE**
SCALE:

3 A801 **EXTERIOR PERSPECTIVE**
SCALE:

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3D VIEWS

*A801

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FIRE ALARM SPECIFICATIONS

A. SYSTEM SHALL BE A CENTRALIZED, ANALOG, ADDRESSABLE, FULLY ELECTRONICALLY SUPERVISED (INCLUDING AUXILIARY SYSTEMS INTERCONNECT WIRING) SYSTEM LISTED BY UL IN COMPLIANCE WITH ALL APPLICABLE NFPA 72 AND OTHER STANDARDS AS WELL AS THE AMERICAN'S WITH DISABILITIES ACT (ADA). ALL FINAL CONNECTIONS, TESTING AND ADJUSTMENTS SHALL BE PERFORMED BY OR UNDER DIRECT SUPERVISION OF AN AUTHORIZED FACTORY REPRESENTATIVE. SYSTEM SHALL BE SIMPLEX, NOTIFIER, SIEMENS, OR APPROVED EQUAL AS ACCEPTED BY THE ENGINEER. SYSTEM SHALL HAVE A 24HR MINIMUM BATTERY BACKUP.

B. INITIATING DEVICE ACTIVATION SHALL CAUSE OPERATION OF THE PROPER ALARM CIRCUIT IN THE CONTROL PANEL, AND OPERATE ALL AUDIBLE AND VISUAL INDICATING ALARMS. ALL AIR HANDLING UNITS SHALL BE STOPPED UPON ANY ALARM INPUT. EACH AIR HANDLER UNIT SHALL BE PROVIDED WITH A SYSTEM CONTROLLED RELAY TO EFFECT SHUTDOWN. ALL ALARM DEVICES AND LAMPS SHALL CONTINUE TO OPERATE UNTIL THE INITIATING DEVICE IS RESET. SUBSEQUENT ALARMS SHALL RESOUND THE SYSTEM. AN AUDIBLE AND VISUAL SIGNAL SHALL INDICATE SYSTEM TROUBLE. THE CONTROL PANEL SHALL PROVIDE FOR ACTIVATING A UL LISTED CENTRAL STATION SIGNAL FOR NOTIFYING THE FIRE DEPARTMENT.

C. MANUAL STATIONS SHALL BE NON-CODED, WITH DUAL-ACTION PULL AND KEY TYPE RESET, SEMI-FLUSH MOUNTED. COMBINATION LIGHT AND HORN SIGNALS SHALL BE FLUSH MOUNTED. WIRING SHALL BE IN CONDUIT AS PREVIOUSLY SPECIFIED, #14 AWG MINIMUM, THHN. ALL J-BOXES USED FOR THE FIRE ALARM SYSTEM SHALL BE PAINTED RED.

D. SPRINKLER SYSTEM TAMPER SWITCHES SHALL BE CONNECTED INTO A COMMON ZONE WHICH SHALL DISTINGUISH BETWEEN A CONDUIT FAULT AND A CLOSED VALVE. A CLOSED VALVE SHALL BE INDICATED AS AN ALARM CONDITION, BUT WILL NOT ACTIVATE THE AUDIO-VISUAL DEVICES AND SHALL CAUSE A SUPERVISORY SIGNAL TO BE TRANSMITTED TO THE FIRE DEPARTMENT.

E. CONDUCTORS SHALL BE PLENUM-RATED AND INSTALLED IN CONDUIT AND INSTALLED IN COMPLIANCE WITH NFPA 70, ARTICLE 760; IN ADDITION TO WIRING METHODS 300.4.

F. ALL FIRE ALARM WIRING SHALL BE CLASS B.

G. PROVIDE ALL REQUIRED MODULES, POWER EXTENDERS, PROGRAMMING, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM.

H. SUBMIT FIRE ALARM SHOP DRAWINGS CONSISTING OF PRODUCT DATA, TO THE ENGINEER AND FOR APPROVAL.

I. FILL OUT NFPA 72 CERTIFICATION REPORT AND SUBMIT TO ENGINEER AND AUTHORITY HAVING JURISDICTION.

J. WARRANTY - ALL WORK PERFORMED AND ALL MATERIALS AND EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE FREE FROM DEFECTS AND SHALL REMAIN SO FOR A PERIOD OF AT LEAST TWO (2) YEARS FROM THE DATE OF ACCEPTANCE BY THE PROFESSIONAL ENGINEER AND/OR OWNER. THE FULL COST OF MAINTENANCE, LABOR, AND MATERIALS REQUIRED TO CORRECT ANY DEFECT DURING THIS TWO YEAR PERIOD SHALL BE IMMEDIATELY CORRECTED AT NO ADDITIONAL COST TO THE OWNER. ANY DEFECTS THAT RENDER THE SYSTEM INOPERATIVE SHALL BE REPAIRED WITHIN 24 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR. OTHER DEFECTS SHALL BE REPAIRED WITHIN 48 HOURS OF THE OWNER NOTIFYING THE CONTRACTOR.

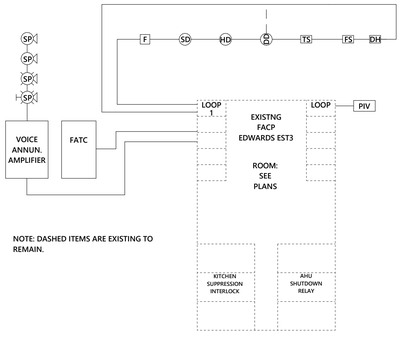
K. AUDIBLE DEVICES WITHIN SLEEPING ROOMS SHALL PROVIDE A SQUARE WAVE 520HZ TONE COMPATIBLE WITH NFPA 72 18.4.5.3.

FIRE ALARM SYSTEM MATRIX — BUILDING SYSTEM OUTPUTS — CENTRAL COMM

	ACTIVATE COMMON ALARM SIGNAL INDICATOR	ACTIVATE AUDIBLE ALARM SIGNAL	ACTIVATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTIVATE AUDIBLE SUPERVISORY SIGNAL	ACTIVATE COMMON TROUBLE SIGNAL INDICATOR	ACTIVATE AUDIBLE TROUBLE SIGNAL	ACTIVATE GENERAL EVACUATION SIGNAL	DISPLAY CHANGE OF STATUS	ACTIVATE EXTERNAL HORNS/STROBES	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION	RETURN ELEVATOR TO ALTERNATE FLOOR	SHUT TRIP AFTER ELEV. REACHES DESIGNATED FLOOR	SHUT DOWN RESPECTIVE HVAC	SHOW CHANGE OF STATUS ON ANNUNCIATOR	SHOW CHANGE OF STATUS ON CENTRAL PANEL	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION
MANUAL FIRE ALARM PULL BOXES	X	X					X	X	X	X						X	X	X		
BUILDING SMOKE DETECTOR	X	X					X	X	X	X						X	X	X		
DUCT SMOKE DETECTOR			X	X				X			X				X	X	X		X	
SPRINKLER WATER FLOW	X	X					X	X	X	X						X	X	X	X	
SPRINKLER TAMPER			X	X				X			X					X	X		X	
1ST FLOOR ELEV. LOBBY SMOKE DET.	X	X					X	X	X	X			X			X	X	X		
UPPER FLR. ELEV. LOBBY SMOKE DET.	X	X					X	X	X	X				X		X	X	X		
HOOD SUPPRESSION SYSTEM	X	X					X	X	X	X						X	X	X		
NOTIFICATION DEVICE SHORT CIRCUIT					X	X		X			X					X	X			
OPEN CIRCUIT					X	X		X			X					X	X			X
GROUND FAULT					X	X		X			X					X	X			X
FIRE ALARM A.C. POWER FAILURE					X	X		X			X					X	X			X
FIRE ALARM SYSTEM LOW BATTERY					X			X			X					X	X			X
BDA SYSTEM			X					X				X				X	X			X
CARBON MONOXIDE DETECTORS	X	X					X	X	X	X						X	X	X		

NFPA FIRE ALARM LEGEND

SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
FATC	PRE-ACTION PANEL - PROVIDED BY SPRINKLER CONTRACTOR
BDA	BI-DIRECTIONAL AMPLIFIER SYSTEM
	ADDRESSABLE CONTROL MONITOR
X	CO DETECTOR
	HEAT DETECTOR/SENSOR. X=TYPE
F	PULLSTATION/FIRE ALARM
	SMOKE DETECTOR/SENSOR (DEFAULT PHOTOELECTRIC TYPE)
DH	FIRE ALARM DOOR HOLDER
RI	FIRE ALARM CEILING MOUNT INDICATOR
DD	RECTANGULAR DUCT SMOKE DAMPER, FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR.
	DUCT SMOKE DETECTOR (NFPA 72, SECTION 17.7.5.5)
	FIRE ALARM SPEAKER, WHITE FINISH
15cd	ADA COMPLIANT WALL MOUNTED FIRE ALARM SPEAKER WITH STROBE LIGHT, 15CD UNLESS OTHERWISE NOTED. WHITE FINISH.**
15cd	FIRE ALARM SPEAKER W/STROBE (CANDELAS), WHITE FINISH

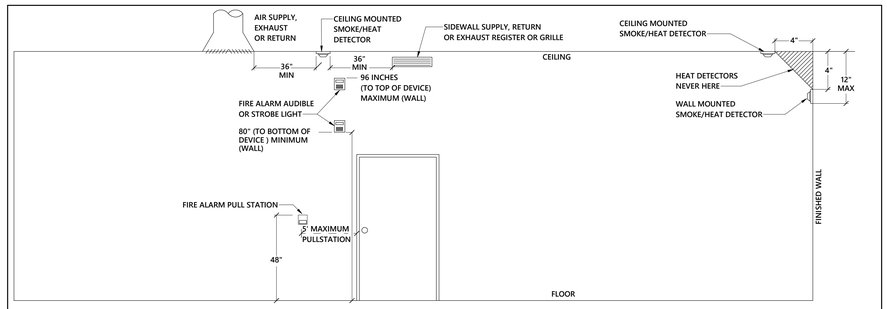


NOTE: DASHED ITEMS ARE EXISTING TO REMAIN.

2 FIRE ALARM RISER DIAGRAM
NOT TO SCALE

FIRE ALARM NOTES

1. EXISTING FACP IS FULLY ANALOG ADDRESSABLE.
2. EXISTING FACP HAS A MINIMUM 24HR. BATTERY BACKUP.
3. EXSTING FACP IS CONNECTED TO A UL APPROVED CENTRAL STATION.
4. ZONE PER NFPA 72, 2013 AND MANUFACTURER'S RECOMMENDATIONS WITH NO ONE ZONE EXCEEDING 15,000 S.F. PER FLOOR.
5. COORDINATE QUANTITY AND LOCATIONS OF DEVICES WITH CONTRACT DRAWINGS.
6. LOCATE SMOKE DETECTOR WITHIN 5' OF THE MAGNETIC HOLD OPEN DOORS. (TYPICAL)
7. LOCATE FIRE ALARM PULL STATION WITHIN 5' OF THE EXIT DOOR.
8. LOCATE SMOKE/HEAT DETECTOR WITHIN 5' OF THE FA EQUIPMENT (FACP, FATC).
9. LOCATION OF CEILING MOUNTED SMOKE/HEAT DETECTOR SHALL BE FIELD COORDINATED PRIOR TO ROUGH IN. THE DETECTOR SHALL BE A MINIMUM OF 2' AWAY FROM LIGHT FIXTURE AND A MINIMUM OF 3' AWAY FROM AIR DISTRIBUTION DEVICES.
10. AUTOMATIC DOOR CLOSING SHALL BE ACCOMPLISHED BY THE ACTIVATION OF THE LOCAL SMOKE DETECTORS AT THAT DOOR. SMOKE DETECTOR ACTIVATION SHALL ALERT THE BUILDING FIRE ALARM SYSTEM. THE FIRE ALARM SYSTEM SHALL CAUSE ALL HOLD OPEN DOORS TO CLOSE UPON ALARM ACTIVATION IN THE BUILDING.
11. ACTIVATION OF AN ALARM ZONE SHALL CAUSE ALL AIR HANDLING EQUIPMENT TO SHUT DOWN (ALL DAMPERS, AIR HANDLERS AND EXHAUST FANS MUST STOP).
12. ACTIVATION OF KITCHEN HOOD SUPPRESSION SYSTEM PROVIDES SIGNAL TO FACP WHICH IN TURN ACTIVATES ALL ANNUNCIATING ZONES & CUTS OFF AHU SUPPLY AIR.
13. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL FLOW, PRESSURE, & TAMPER SWITCHES WITH FIRE PROTECTION CONTRACTOR PRIOR TO INSTALLATION.
14. ALL VISUAL DEVICES WITHIN THE SAME AREA SHALL BE SYNCHRONIZED. IT SHALL BE A THREE BEAT TEMPORAL PATTERN.
15. ALL FIRE ALARM WIRING SHALL BE IN CONDUIT.
16. PROVIDE MULTI-TEMPORAL SOUNDING CAPABILITY AT ALL AUDIO DEVICES FOR EMERGENCY NOTIFICATION FOR NON VOICE SYSTEMS COMPONENTS.
17. THE FIRE ALARM SYSTEM MANUFACTURER SHALL PROVIDE NOTIFICATION APPLIANCE CIRCUIT (NAC) POWER EXTENDERS AS REQUIRED.
18. THE DUCT SMOKE DETECTORS SHALL COMPLY WITH IFC 907.12.
19. THE CIRCUIT FEEDING THE FIRE ALARM PANEL IS DEDICATED FOR THE FIRE ALARM ONLY. BREAKER SHALL BE PROVIDED WITH A LABEL "FIRE ALARM CIRCUIT" AND SHALL BE RED.
20. PROVIDE REMOTE LIGHT FOR DUCT SMOKE DETECTOR ON CEILING WHERE UNIT IS ABOVE CEILING.
21. CONTRACTOR RESPONSIBLE FOR SHOP DRAWINGS AS REQUIRED BY LOCAL AHJ.
22. DUCT DETECTORS SHALL BE VERIFIED WITH THE MECHANICAL DRAWINGS FOR QUANTITY AND LOCATION. TOTAL QUANTITY MINIMUM SHALL BE BASED ON BOTH MECHANICAL SCHEDULES AND MECHANICAL PLAN LOCATIONS AND ELECTRICAL PLANS. WHEN DEVICE QUANTITIES (ELECTRICAL VS. MECHANICAL) ARE IN CONFLICT, PROVIDE THE GREATER QUANTITY OF DETECTORS.



NOTES:
1. LOCATIONS WHERE TV MOUNT IS BACK TO BACK ON SAME WALL, AN OFFSET OF 8-12" WILL BE NEEDED FOR INSTALLATION OF JACK/RECEPTACLE.
2. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE.
3. DEVICES NEXT TO DOOR EXIT SHALL BE WITHIN 8" (MAXIMUM) TYPICAL OF DOOR UNLESS OBSTACLES SUCH AS SIDELITES, ETC.
4. ALL DEVICES ARE TO CENTER LINE OF DEVICE, UNLESS OTHERWISE NOTED.

3 MOUNTING HEIGHTS OF DEVICES - ELEVATION
NOT TO SCALE

FIRE ALARM SHEET INDEX

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SUPPLEMENTARY ADDITION

Harnett County Schools

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No.	Date	Description

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FIRE ALARM LEGEND AND NOTES

FA-001

Sheet No. 1 of 3

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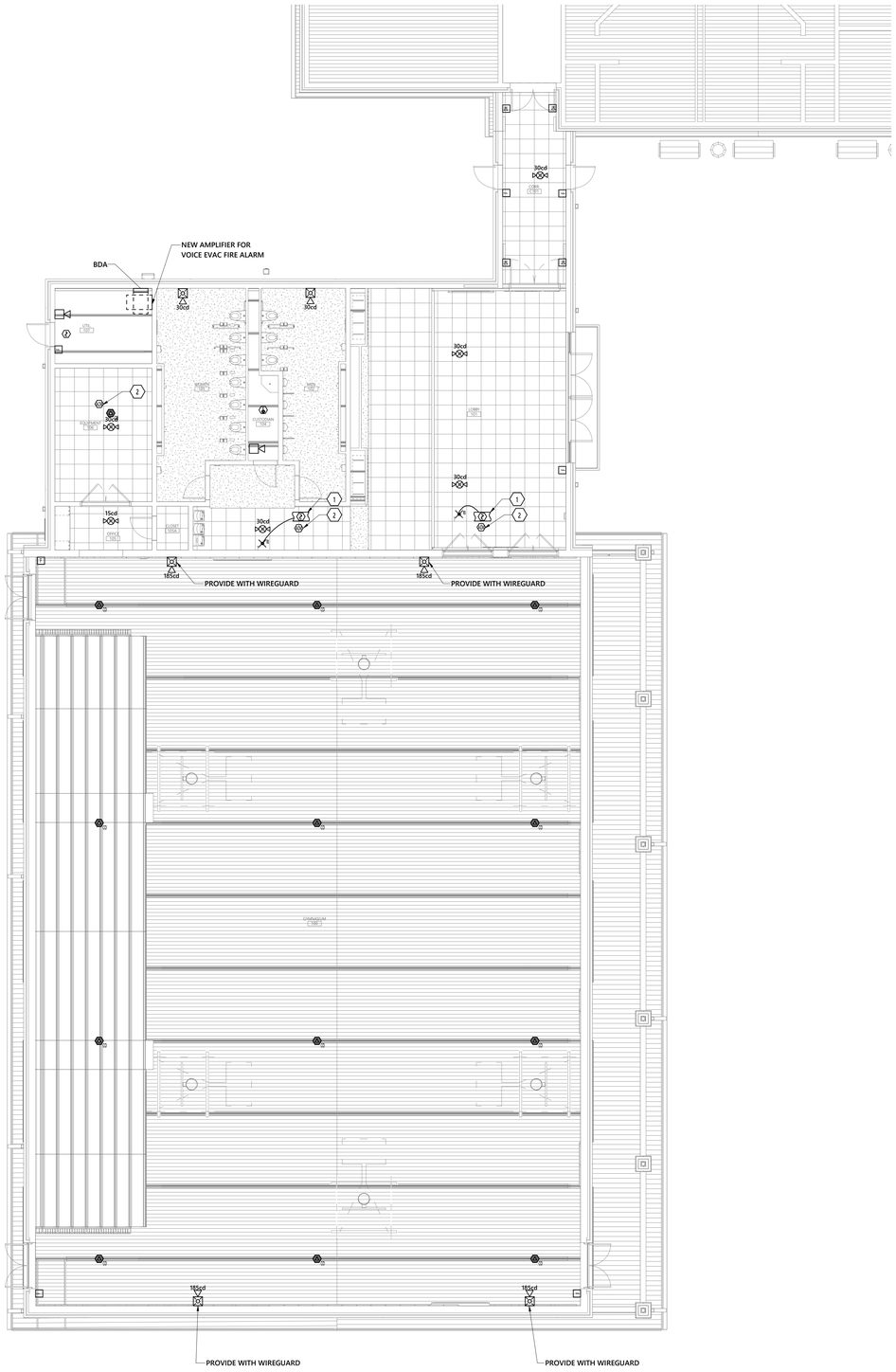
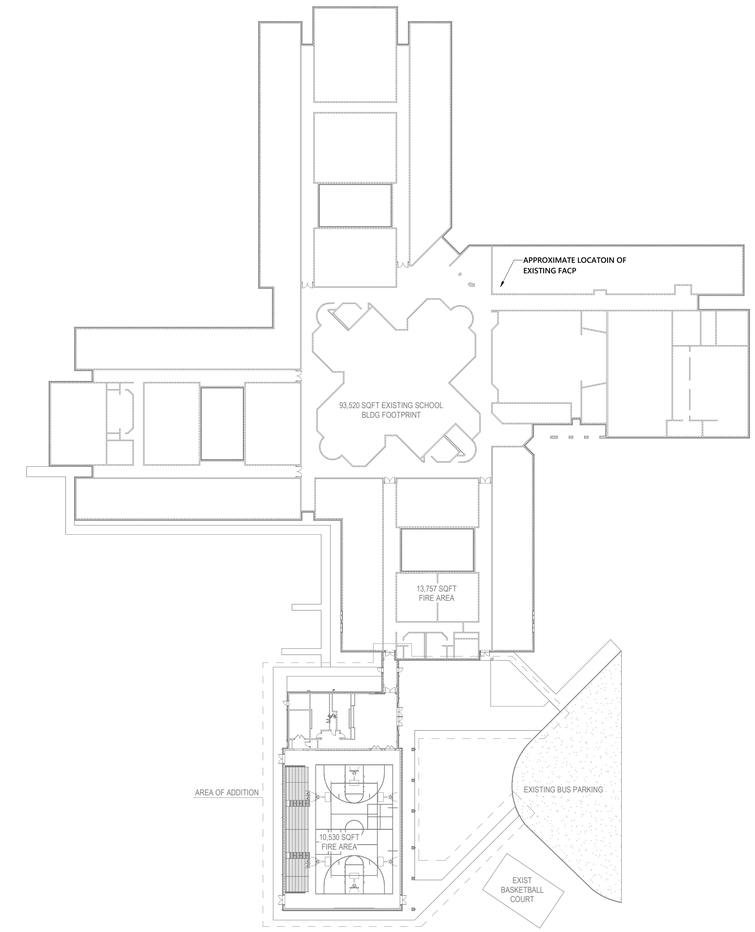


1 ADDITION FIRE ALARM PLAN
1/8" = 1'-0"



2 OVERALL FIRE ALARM PLAN
1" = 40'-0"

WALL LEGEND

SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR WIRING ALL ELECTRICAL ITEMS SHOWN ON THE DRAWINGS, EXCEPT ITEMS LISTED ON SHEET E0.01 GENERAL ELECTRICAL NOTES.

KEYNOTES

1 DUCT DETECTOR FOR MECHANICAL UNIT LOCATED ON ROOF. PROVIDED BY MC, INSTALLED BY FA CONTRACTOR.
2 PROVIDE CONTROL MODULE TO SHUT DOWN ROOFTOP UNIT UPON ALARM.

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ADDITION FIRE ALARM PLAN

FA-101

Sheet No. 2 of 3

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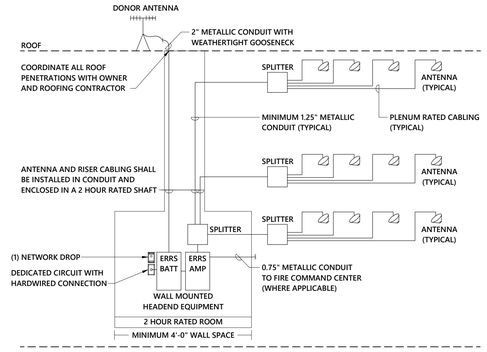

GENERAL NOTES:

A. ELECTRICAL CONTRACTOR SHALL PROVIDE THE COMPLETE SYSTEM COVERING 100% OF THE BUILDING.

B. EMERGENCY RESPONDER RADIO SYSTEM (ERRS) MAY ALSO BE REFERRED TO AS BI-DIRECTIONAL ANTENNA SYSTEM (BDA) OR FIRST RESPONDER DISTRIBUTED ANTENNA SYSTEM.

C. ERRS SYSTEM SURVEY SHALL CONSIST OF TWO PARTS. PART ONE SHALL BE ADMINISTERED AT THE START OF CONSTRUCTION TO DOCUMENT THE AVAILABLE SIGNAL AT THE SITE. PART TWO SHALL BE ADMINISTERED WHEN ALL STEEL, GYPBOARD, AND WINDOWS HAVE BEEN INSTALLED.

D. DETAIL IS DIAGRAMATIC AND ONLY INDICATES MAIN COMPONENTS AND APPROXIMATE LOCATIONS. QUANTITY AND LOCATIONS OF EQUIPMENT ARE DETERMINED BY THE 3RD PARTY DELIGATED DESIGN. SYSTEM DESIGN SHALL BE BASED ON THE ACTUAL CONSTRUCTION OF THE BUILDING. ELECTRICAL CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS WITH VENDOR.

SPECIFICATIONS:

A. ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL, AND TEST A COMPLETE AND OPERATING EMERGENCY RESPONDER RADIO SYSTEM ("SYSTEM"). THE SYSTEM SHALL BE PROVIDED FOR THE PURPOSE OF ASSURING RELIABLE EMERGENCY COMMUNICATIONS.

B. THE REQUIREMENTS ESTABLISHED BY THE AHJ IN EFFECT AT THE TIME OF SYSTEM INSTALLATION SUPERSEDE THE SPECIFICATIONS IN THIS SECTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSURE THE INSTALLED SYSTEM COMPLIES WITH ALL CURRENTLY APPLICABLE LOCAL, NATIONAL AND INDUSTRY CODES AS ADOPTED BY THE AHJ.

C. TWO SETS OF FREQUENCIES ARE TO BE UTILIZED ON THE SYSTEM. THE FOLLOWING FCC-LICENSED FACILITIES ARE TO BE CARRIED ON THE SYSTEM: FCC CALL SIGN, DOWNSTREAM/BASE TO MOBILE FREQUENCY, UPSTREAM/MOBILE TO BASE FREQUENCY AND CHANNEL BANDWIDTH. TRANSMISSIONS ON EACH SET OF FREQUENCIES MUST INDIVIDUALLY MEET THE COVERAGE, MINIMUM SIGNAL AND MINIMUM VOICE QUALITY REQUIREMENTS OF THE AHJ. EQUIPMENT SELECTED FOR THIS SYSTEM MUST BE CAPABLE OF BEING CONFIGURED TO DIFFERENT FREQUENCY PAIRS IN THE 700-800 Mhz PUBLIC SAFETY FREQUENCY BANDS. THESE CHANGES MAY LATER BE NECESSARY DUE TO FUTURE ADDITIONS OR OPTIMIZATION OF RADIO SYSTEMS MAINTAINED BY THE AHJ. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM THE FREQUENCIES IN USE WITH THE AHJ BEFORE PROCEEDING WITH THE SYSTEM INSTALLATION. ALL CABLE AND PASSIVE ELECTRONIC COMPONENTS SHALL HAVE A MINIMUM PASS BAND OF 400-2700 Mhz.

SPECIFICATIONS (CONTINUED):

D. SIGNALS AT OR ABOVE THE MINIMUM LEVELS ARE TO BE RECEIVABLE TO AND FROM 95% OF ALL AREAS WITHIN THE BUILDING. SPACES OR ROOMS DEFINED AS CRITICAL AREAS REQUIRE 99% COVERAGE. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SYSTEM DESIGN AND INSTALLATION THAT PROVIDES ENHANCEMENT ONLY TO THOSE AREAS OF THE BUILDING WHERE EXISTING OFF-AIR SERVICE DOES NOT MEET THE MINIMUM LEVELS AS DESCRIBED IN THE LATEST VERSIONS OF NFPA 72 AND IFC. CARE MUST BE TAKEN IN ENGINEERING A SYSTEM THAT WILL NOT CAUSE INTERFERENCE TO THE AUTHORITY'S RADIO SYSTEM OUTSIDE THE BUILDING AND SHALL NOT CAUSE HARMFUL INTERFERENCE TO OTHER RF SYSTEMS INSIDE THE BUILDING.

E. THE SYSTEM SHALL BE DESIGNED FOR CONTINUOUS, ALWAYS-ON SERVICE. SIX (6) MALFUNCTION ALARMS FOR THE SYSTEM SHALL BE PROVIDED AND CONNECTED TO THE BUILDING FIRE ALARM SYSTEM. CONTRACTOR SHALL PROVIDE 24 HOUR BATTERY BACKUP. BATTERIES SHALL BE CONTAINED IN A NEMA 4 TYPE WATERPROOF CABINET.

F. ALL CABLING, WITH THE EXCEPTION OF RADIATING CABLE AND ANTENNA JUMPER CABLES MEASURING LESS THAN 2 FEET IN LENGTH, SHALL BE INSTALLED IN CONDUIT. ALL EXPOSED CABLE, INCLUDING FLEXIBLE JUMPER CABLES, SHALL BE PLENUM RATED, UTILIZING A JACKET OF NON-HALOGENATED, FIRE RETARDANT POLYOLEFIN.

G. GROUND AND BOND CABLE SHIELDS AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS AND LATEST NFPA 70 NEC REQUIREMENTS. THE DONOR ANTENNA MAST SHALL BE GROUNDED PER LATEST NFPA 70 NEC REQUIREMENTS. GROUNDING BLOCKS AND SURGE PROTECTION SHALL BE PROVIDED FOR OUTSIDE CABLING.

H. SHOP DRAWINGS SHALL BE SUBMITTED AND APPROVED BY THE ENGINEER AND AHJ PRIOR TO INSTALLATION. PROVIDE A SYSTEM BLOCK DIAGRAM INDICATING THE DONOR ANTENNA(S), HEADEND EQUIPMENT, PASSIVE COMPONENTS AND IN-BUILDING ANTENNAS. INCLUDE THE RF LINK BUDGET. PROVIDE A OVERLAY OF THE SYSTEM DESIGN ON BUILDING FLOOR PLAN DRAWINGS AND OVERLAY ON FLOOR PLAN DRAWINGS OF THE PREDICTED SIGNAL STRENGTH WITHIN THE COVERAGE AREA INDICATING, AT A MINIMUM, THE -95 DBM DOWNLINK (BASE TO MOBILE) SIGNAL STRENGTH FOR ALL COVERAGE AREAS.

I. CONTRACTOR SHALL PROVIDE THE FOLLOWING DOCUMENTS AT PROJECT CLOSEOUT: AS-BUILT DRAWINGS IN PDF AND AUTOCAD FORMATS, COVERAGE/ACCEPTANCE TEST RESULTS, DONOR ANTENNA ISOLATION, SPECTRUM ANALYSIS DEMONSTRATING ONLY THE INTENDED FREQUENCIES ARE BEING CARRIED ON THE SYSTEM, SPECTRUM ANALYSIS DEMONSTRATING NO SPURIOUS OSCILLATIONS, PIM OR OTHER INTERMODULATION DISTURBANCES ARE BEING CARRIED ON THE SYSTEM, SIGNAL LEVELS RECEIVED AT THE DONOR ANTENNA, SIGNAL LEVELS AT THE INPUT AND OUTPUT OF THE HEADEND EQUIPMENT, GAIN SETTINGS, OPERATION AND MAINTENANCE MANUAL IN HARDCOPY AND PDF FORMAT AND WARRANTY DOCUMENTS.

J. CONTRACTOR SHALL PROVIDE A ONE YEAR WARRANTY ON PARTS AND LABOR AND PROVIDE A ONE YEAR MAINTENANCE AGREEMENT. MAINTENANCE AGREEMENT SHALL INCLUDE 24/7 EMERGENCY RESPONSE WITHIN TWO HOURS OF NOTIFICATION AND ANNUAL TESTING.

1 EMERGENCY RESPONDER RADIO SYSTEM (ERRS) - DIAGRAMATIC ONLY
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CONSTRUCTION DRAWINGS

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SUPPLEMENTARY ADDITION

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JSD
CHECKED BY: MKG

FIRE ALARM DETAILS

FA-601

Sheet No. 3 of 3

OPTIMA# 24-0045R

SANITARY WASTE & VENT

1. BELOW GRADE PIPING AND JOINTS: PROVIDE SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). INSTALL PLASTIC PIPE BELOW GRADE PER ASTM D2321. FOAM CORE PVC PIPING IS NOT APPROVED.
2. ABOVE GRADE PIPING AND JOINTS: PROVIDE SERVICE WEIGHT CAST IRON NO-HUB PIPE AND FITTINGS (CISPI 301) WITH NEOPRENE GASKET AND STAINLESS STEEL CLAMP JOINTS (CISPI 310) WITH NEOPRENE GASKET / STAINLESS STEEL CLAMP JOINTS (ASTM C1540-15) OR PROVIDE SCHEDULE 40 PVC PIPE AND SOCKET FITTINGS (ASTM D 2665) WITH SOLVENT WELD JOINTS (ASTM D2855). FOAM CORE PIPE IS NOT APPROVED. DO NOT INSTALL PVC PIPING IN RETURN AIR PLENUMS.
3. SLOPE WASTE AND STORM DRAIN PIPING AT 1/4" PER FOOT MINIMUM FOR PIPING 2-1/2" AND SMALLER AND 1/8" PER FOOT MINIMUM FOR PIPING 3" AND LARGER UNLESS NOTED OTHERWISE. SLOPE ALL KITCHEN GREASE WASTE PIPING AT 1/4" PER FOOT MINIMUM.
4. PROVIDE CLEAN-OUTS AT THE BASE OF WASTE STACKS AND AT EVERY TURN IN PIPING IN EXCESS OF 45° AND SPACED WITH-IN 100'-0" APART IN A LOCATION THAT PERMITS ACCESS FOR SERVICE WITHOUT DAMAGE TO THE BUILDING OR FINISHED MATERIALS.
5. PROVIDE FLOOR CLEANOUTS WITH TOPS DESIGNED TO MATCH SPECIFIC FLOOR FINISHES SUCH AS CARPET, TILE, ETC. YARD CLEANOUTS SHALL BE PROVIDED IN AN 18"x18"x6" CONCRETE PAD.
6. WHERE WASTE PIPING IS EXPOSED IN REST ROOM AREAS, PROVIDE CHROME PLATED BRASS PIPING, REMOVABLE P-TRAPS, MATCHING STOPS AND ESCUTCHEONS FOR ALL LAVATORIES.
7. WASTE AND VENT SYSTEMS SHALL BE TESTED AND PROVED WATER TIGHT UNDER A HEAD PRESSURE OF NO LESS THAN 10 FT. THIS PRESSURE SHALL BE HELD FOR A PERIOD OF NO LESS THAN 15 MINUTES.
8. WHERE MECHANICAL ROOM FLOOR DRAINS ARE INSTALLED ABOVE GRADE, PROVIDE 1"THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET ON THE FLOOR DRAIN BODY, THE ASSOCIATED P-TRAP AND HORIZONTAL DRAIN PIPING ABOVE GRADE.
9. INSULATE HORIZONTAL DRAIN PIPING ABOVE GRADE WITH 1" THICK GLASS FIBER INSULATION WITH VAPOR BARRIER AND JACKET.
10. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES SHALL MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS AS TESTED BY ASTM E84 (NFPA 255) METHOD. INSTALL INSULATION CONTINUOUSLY THRU FIRE RATED WALLS AND PIPE HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION.

2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - PLUMBING SUMMARY

C401 METHOD OF COMPLIANCE

- ■ 2018 NCECC CHAPTER 4
- ☐ ASHRAE 90.1-2013 PRESCRIPTIVE
- ☐ ASHRAE 90.1-2013 PERFORMANCE
- ☐ N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- ☐ COMCHECK PROVIDED (2018 NCECC)
- ☐ COMCHECK PROVIDED (90.1-2013)
- ☐ ENERGY MODELING DATA PROVIDED

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- ☐ C406.2 EFFICIENT MECH EQUIPMENT
- ■ C406.3 REDUCED LTG DENSITY
- ☐ C406.4 ENHANCED LTG CONTROLS
- ☐ C406.5 ON-SITE RENEWABLE ENERGY
- ☐ C406.6 DEDICATED OA SYSTEM
- ☐ C406.7 SERVICE WATER HEATING

TABLE C404.2 - MINIMUM PERFORMANCE OF WATER HEATING EQUIPMENT[c]

EQUIPMENT TYPE	SIZE CATEGORY (INPUT)	SUB CATEGORY OR RATING CONDITION	PERFORMANCE REQUIRED a,b	REQ'D EFFICIENCY	SPECIFIED EQPM
WATER HEATER ELECTRIC	≤ 12 kW	RESISTANCE	0.97-0.00132V, EF	*0.94*	*0.96*

a. ENERGY FACTOR (EF) AND THERMAL EFFICIENCY (E_t) ARE MINIMUM REQUIREMENTS. IN THE EF EQUATION V IS THE VOLUME IN GALLONS.
b. STANDBY LOSS (SL) IS THE MAXIMUM BTU/H BASED ON A NOMINAL 70° TEMPERATURE DIFFERENCE BETWEEN STORED WATER AND AMBIENT REQUIREMENTS. IN THE SL EQUATION Q IS THE NAMEPLATE INPUT RATE IN BTU/H. IN THE EQUATIONS FOR ELECTRIC WATER HEATERS, V_r IS THE RATED VOLUME IN GALLONS AND V_m IS THE MEASURED VOLUME IN GALLONS. IN THE SL EQUATION FOR GAS WATER HEATERS AND BOILERS, V IS THE RATED VOLUME IN GALLONS.
c. REFER TO WATER HEATER SCHEDULES FOR SPECIFIED WATER HEATING EQUIPMENT TYPES, CAPACITIES (STORAGE VOLUME) AND ENERGY INPUTS (ELECTRIC AND/OR GAS)

C408 - SYSTEM COMMISSIONING

- ■ PROJECT AREA IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
- ☐ PROJECT AREA IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

DOMESTIC WATER PIPING

1. ABOVE GRADE PIPING AND JOINTS: PROVIDE TYPE 'L' HARD DRAWN SEAMLESS COPPER TUBING (ASTM B 88) AND CAST COPPER ALLOY FITTINGS (ASME B16.18). JOINTS 2" AND SMALLER SHALL BE LEAD FREE 95-5 TIN/SILVER SOLDER JOINTS (ASTM B 32). JOINTS 2-1/2" AND LARGER SHALL BE BCUP SILVER / PHOSPHORUS / COPPER BRAZED JOINTS (AWS A5.8). ALTERNATELY PROVIDE COPPER PIPE AND FITTINGS AS SPECIFIED ABOVE EXCEPT WITH GROOVED ENDS (ASTM B 88, ASME B16.18) AND JOINTS UTILIZING GROOVED MECHANICAL COUPLINGS MEETING (ASTM F1476).
2. INSULATE PIPING ABOVE GRADE (EXCEPT EXPOSED CONNECTIONS TO PLUMBING FIXTURES) WITH GLASS FIBER INSULATION HAVING A VAPOR BARRIER AND JACKET FOT HOT WATER PIPING AND PROVIDE CLOSED CELL ELASTOMERIC INSULATION WITH JACKET FOR COLD WATER PIPING. PIPE INSULATION SHALL HAVE A CONDUCTIVITY NOT EXCEEDING 0.27 BTUH x SQ. FT °F, SEE LIST BELOW FOR INSULATION THICKNESS:
   - PROVIDE 1" THICK INSULATION FOR HW & HWR PIPING SIZES 1/2" THRU 3/4", R-VALUE R7.
   - PROVIDE 1-1/2" THICK INSULATION FOR HW & HWR PIPING SIZES 1" THRU 1-1/4", R-VALUE R12.5.
   - PROVIDE 1-1/2" THICK INSULATION FOR HW & HWR PIPING SIZES 1-1/2" THRU 4", R-VALUE R11.
   - PROVIDE 1" THICK INSULATION FOR CW PIPING SIZES 1/2" THRU 1-1/4", R-VALUE R6.5.
   - PROVIDE 1" THICK INSULATION FOR CW PIPING SIZES 1-1/2" THRU 4", R-VALUE R6.5.
3. PIPING INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES SHALL MEET A FLAME-SPREAD RATING OF 25 OR LESS AND A SMOKE-DEVELOPED RATING OF 50 OR LESS AS TESTED BY ASTM E84 (NFPA 255) METHOD AND SHALL BE PLENUM RATED. PROVIDE PVC INSULATION JACKET FOR EXPOSED PIPING IN MECHANICAL ROOMS. INSTALL INSULATION CONTINUOUSLY THRU FIRE RATED WALLS AND PIPE HANGERS. PROVIDE GALVANIZED STEEL SHIELD BETWEEN PIPE HANGER AND INSULATION.
4. PROVIDE A CHROME FINISH ON EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.
5. PROTECT COPPER PIPING AGAINST CONTACT WITH DISSIMILAR METALS. ALL HANGERS, SUPPORTS, ANCHORS AND CLIPS SHALL BE COPPER OR COPPER PLATED. WHERE COPPER PIPING IS CARRIED ON TRAPEZE HANGERS WITH OTHER PIPING, PROVIDE A PERMANENT ELECTROLYTIC ISOLATION MATERIAL TO PREVENT CONTACT WITH DISSIMILAR OTHER METALS.
6. PROTECT COPPER PIPING AGAINST CONTACT WITH MASONRY. WHERE COPPER IS SLEEVED THROUGH MASONRY, PROVIDE COPPER OR RED BRASS SLEEVES. WHERE COPPER MUST BE CONCEALED IN OR AGAINST MASONRY PARTITIONS, PROVIDE A HEAVY COATING OF ASPHALTIC ENAMEL ON THE COPPER PIPING AND 15# ASPHALT SATURATED FELT BETWEEN THE PIPING AND THE MASONRY PARTITION.
7. PERFORM A PRESSURE TEST ON ALL WATER PIPING. FILL PIPING WITH POTABLE WATER, CAP AND SUBJECT PIPING TO A STATIC WATER PRESSURE OF 50 PSIG ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS OR PRESSURIZE PIPING WITH AIR TO AT LEAST ONE-HUNDRED (100) PSI. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE OBTAINED
8. STERILIZE THE DOMESTIC WATER SYSTEM IN PER THE AMERICAN WATER WORKS ASSOCIATION'S INSTRUCTIONSSPECIFICATIONS AND LOCAL HEALTH DEPARTMENT REGULATIONS.
9. SLOPE WATER PIPING FOR DRAINAGE WITH DRAIN VALVES INSTALLED AT LOW POINTS.
10. BALANCE THE DOMESTIC HOT WATER CIRCULATION SYSTEM TO THE PERFORMANCE SPECIFICATIONS INDICATED ON THE PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.

NATURAL GAS PIPING

1. ABOVE GRADE PIPING AND FITTINGS : PROVIDE SCHEDULE 40 BLACK STEEL PIPING, TYPE S, SEAMLESS, GRADE B (ASTM A 53) AND 150 PSI MALLEABLE BLACK IRON FITTINGS, GRADE 32510, (ASTM B 16.3) OR FORGED STEEL WELDING TYPE FITTINGS (ASTM A234). PROVIDE THREADED JOINTS FOR PIPE 2" AND SMALLER. PROVIDE WELDED JOINTS (ASME B31.9) FOR PIPE 2-1/2" AND LARGER.
2. SPACE GAS PIPING HANGER RODS 7'-0" ON CENTER MAXIMUM AND SPACE TRANSVERSE BRACING 20'-0" ON CENTER MAXIMUM. TRANSVERSE BRACING FOR ONE SECTION MAY ACT AS LONGITUDINAL BRACING FOR THE PIPE SECTION CONNECTED TO IT IF THE BRACING IS INSTALLED WITHIN 24" OF THE ELBOW OR TEE. COORDINATE HANGER LOCATIONS WITH STRUCTURAL DRAWING DETAILS.
3. PROVIDE A.G.A. CERTIFIED SHUT-OFF VALVES MINIMUM, 125 PSI RATED, NON- LUBRICATED PLUG TYPE WITH BRONZE BODY AND BRONZE PLUG, STRAINERS AND REGULATORS (AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER) FOR ALL EQUIPMENT CONNECTED TO THE NATURAL GAS SYSTEM.
4. GAS PRESSURE REGULATORS SHALL COMPLY WITH ANSI Z21.80. REGULATORS SHALL BE CAST IRON OR DIE-CAST ALUMINUM CONSTRUCTION WITH INTERCHANGEABLE ZINC-PLATED STEEL SPRINGS, ZINC-PLATED STEEL DIAPHRAGM PLATE, NITRILE RUBBER SEAT DISC, INTERCHANGEABLE ALUMINUM ORIFICE, AND ULTRAVIOLET-STABILIZED MINERAL FILLED NYLON SEAL PLUG. REGULATOR SHALL BE SINGLE-PORT SELF-CONTAINED WITH ORIFICE NO LARGER THAN REQUIRED AT MAXIMUM PRESSURE INLET AND NO PRESSURE SENSING PIPING EXTERNAL TO THE REGULATOR. PRESSURE REGULATOR SHALL MAINTAIN DISCHARGE PRESSURE SETTING DOWNSTREAM AND NOT EXCEED 150 PERCENT OF DESIGN DISCHARGE PRESSURE AT SHUTOFF. OVERPRESSURE PROTECTION DEVICE SHALL BE FACTORY MOUNTED ON REGULATOR. WHEN USING VENTLESS REGULATORS, MOUNT REGULATOR IN A HORIZONTAL UPRIGHT POSITION. IF VENTED TYPE REGULATORS ARE USED, INSTALL VENT PIPING (FULL SIZE OPENING) FROM GAS PRESSURE REGULATORS TO OUTDOORS AND TERMINATE IN WEATHERPROOF HOOD.
5. PAINT ALL GAS PIPING WITH 2 COATS OF YELLOW ENAMEL PAINT APPLIED WITH A BRUSH (2 MIL THICKNESS MINIMUM). LABEL ALL GAS PIPING ON 5'-0" CENTERS INDICATING THE GAS PRESSURE.
   2 PSI GAS PIPING SHALL BE LABELED "2-PSI GAS"
   LOW PRESSURE GAS PIPING SHALL BE LABELED "GAS"

PLUMBING DEMOLITION NOTES

1. THE PLUMBING CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY EXISTING CONDITIONS AND DETERMINE THE LEVEL OF DEMOLITION REQUIRED AND INCLUDE ALL NECESSARY PRICING IN THEIR BID. ANY DISCREPANCIES NOTED BETWEEN THE DOCUMENTS AND EXISTING CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BIDDING.
2. PLUMBING CONTRACTOR SHALL REMOVE EXISTING PLUMBING FIXTURES AND EQUIPMENT AS INDICATED, INCLUDING ASSOCIATED HOT WATER, COLD WATER, WASTE AND VENT PIPING, UNLESS NOTED OTHERWISE. SEE ARCHITECTURAL DEMOLITION PLAN FOR LOCATIONS.
3. PLUMBING CONTRACTOR SHALL REMOVE UNUSED HW & CW BRANCH PIPING BACK TO WITHIN 12" OF THE MAIN IT CONNECTS, TERMINATE WITH SHUT-OFF VALVE AND CAP.
4. PLUMBING CONTRACTOR SHALL TERMINATE UNUSED BRANCH WASTE PIPING WITH A CLEAN-OUT AT THE MOST REMOTE END OR ABANDONED AND CAPPED WITHIN 12" OF THE MAIN IT CONNECTS. (NO DEAD- ENDS ALLOWED)
5. PLUMBING CONTRACTOR SHALL REMOVE UNUSED VENT BRANCH PIPING BACK TO WITHIN 12" OF THE MAIN IT CONNECTS THEN CAP.
6. PLUMBING CONTRACTOR SHALL VERIFY PROPER OPERATION OF ALL EXISTING EQUIPMENT PRIOR TO BEGINNING WORK. ANY PROBLEMS SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ARCHITECT IMMEDIATELY.
7. WITH THE REMOVAL OF EXISTING WALLS, SOME EXISTING WASTE, VENT, STORM DRAIN, OR DOMESTIC WATER PIPING MAY BE DISCOVERED. ANY EXISTING PIPING DISCOVERED THAT IS ACTIVE SHALL BE OFFSET BY THE P.C. TO NEW WALLS. ANY EXISTING PIPING DISCOVERED THAT IS ABANDONED SHALL BE REMOVED.

PLUMBING GENERAL NOTES

1. PLUMBING WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 NORTH CAROLINA STATE PLUMBING CODE AND WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
2. SCOPE: PROVIDE ALL LABOR, MATERIAL AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL PLUMBING SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE CODES.
3. PERMITS: APPLY AND PAY FOR ALL NECESSARY PERMITS, FEES AND INSPECTIONS REQUIRED BY ANY PUBLIC AUTHORITY HAVING JURISDICTION. ACREAGE CHARGES, FACILITIES CHARGES AND BOND PROPERTY ASSESSMENTS ARE NOT TO BE CONSTRUED TO BE A PART OF THIS CONTRACT.
4. WARRANT THE SYSTEM LABOR, MATERIALS AND EQUIPMENT FOR THE TIME PERIOD SPECIFIED IN THE PROJECT MANUAL. IF NO WARRANTY SECTION IS PROVIDED, THEN WARRANT THE SYSTEM LABOR, MATERIAL AND EQUIPMENT FOR A MINIMUM OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. PRIOR TO TURNING THE COMPLETED SYSTEM OVER TO THE OWNER, REVIEW THE INSTALLATION WITH THE ARCHITECT / ENGINEER AND REPLACE OR REPAIR ANY DEFECTIVE WORKMANSHIP, EQUIPMENT AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.
5. COORDINATE ALL PLUMBING PIPING LOCATIONS, ROUGH-IN LOCATIONS AND EQUIPMENT LOCATIONS WITH OTHER TRADES TO AVOID CONFLICTS AND INTERFERENCES. FINAL PIPING AND EQUIPMENT LOCATIONS SHALL BE A CODE COMPLIANT INSTALLATION FOR ALL TRADES.
6. FIELD VERIFY PROPER OPERATION OF EXISTING SYSTEMS BEFORE STARTING CONSTRUCTION. NOTIFY THE ARCHITECT / ENGINEER OF RECORD OF ANY PROBLEMS OR DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND EXISTING CONDITIONS AND/OR ANY POTENTIAL PROBLEMS OBSERVED BEFORE CONTINUING WORK IN THE AFFECTED AREAS.
7. PLUMBING PLANS SHALL NOT BE SCALED. REFERENCE THE ARCHITECTURAL PLANS FOR DIMENSIONS OF ALL LOCATIONS OF PLUMBING FIXTURES, FLOOR DRAINS, COLUMNS, WALLS, DOORS, ETC.
8. WHERE DISCREPANCIES ARE FOUND IN THE DRAWINGS AND SPECIFICATIONS THE MORE STRINGENT SHALL APPLY. CONTACT ENGINEER FOR CLARIFICATION.
9. ALL PIPING SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
10. ALL VALVES, BACKFLOW PREVENTERS, ETC. SERVING THE DOMESTIC WATER SYSTEM SHALL MEET LEAD FREE STANDARDS PER ANSI/NSF 372 AND NSF 61, ANNEX G.
11. PROVIDE COMPLETE PLUMBING FIXTURES AND EQUIPMENT. INCLUDE SUPPLIES, STOPS, VALVES, FAUCETS, DRAINS, TRAPS, TAIL PIECES, ESCUTCHEONS, ETC. AND INSTALL PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
12. CUT WALLS, FLOORS AND CEILINGS AS REQUIRED FOR INSTALLATION OF PLUMBING WORK. ALL CUTTING SHALL BE HELD TO A MINIMUM. PATCH AND FINISH SURFACES TO MATCH ADJOINING SURFACES.
13. PIPING AND SPECIALTIES SHALL BE LOCATED CONCEALED IN WALLS, PARTITIONS OR ABOVE CEILINGS UNLESS NOTED OTHERWISE. PIPING IN EXPOSED AREAS SHALL BE RUN TIGHT TO UNDERSIDE OF STRUCTURE.
14. PIPE PENETRATIONS THRU WALLS, PARTITIONS AND FLOORS SHALL BE SLEEVED. CORE DRILLING THRU WALLS AND PARTITIONS IS PERMITTED IF PERFORMED IN A NEAT CRAFTSMAN LIKE MANNER. OPENINGS THROUGH WALLS, PARTITIONS, AND FLOORS SHALL BE LARGE ENOUGH FOR PIPE INSULATION TO REMAIN CONTINUOUS. PIPES PENETRATING THRU EXTERIOR WALLS SHALL BE SEALED WATER TIGHT. INSTALL ESCUTCHEONS IN ALL EXPOSED AREAS.
15. PROVIDE ACCESS DOORS FOR ALL SPECIALTIES, VALVES, WATER HAMMER ARRESTORS, TRAP PRIMERS, ETC., CONCEALED BEHIND WALLS OR CEILINGS THAT REQUIRE MAINTENANCE ACCESS.
16. DO NOT INSTALL PIPING IN AREAS SUBJECT TO FREEZING TEMPERATURES. INSTALL PIPING SHOWN IN EXTERIOR WALLS ON THE CONDITIONED SIDE OF THE WALL INSULATION.
17. PIPING, VENTS, ETC. EXTENDING THROUGH EXTERIOR WALLS AND/OR THE ROOF SHALL BE FLASHED AND COUNTER FLASHED IN A WATERPROOF MANNER. COORDINATE FLASHING WITH THE GENERAL CONTRACTOR.
18. PROVIDE A CHROME FINISH FOR ALL EXPOSED PIPING IN REST ROOMS AND OTHER FINISHED AREAS.
19. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
20. REFER TO THE STRUCTURAL PLANS AND DETAILS FOR ACCEPTABLE LOCATIONS TO ATTACH HANGERS AND SUPPORTS TO THE BUILDING STRUCTURE. HANGERS SHALL NOT ATTACH TO THE ROOF DECK.
21. PROVIDE MANUFACTURERS RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE.
22. VALVES AND OTHER PIPING ACCESSORIES REQUIRING ACCESS SHALL BE INSTALLED IN ACCESSIBLE LOCATION NO MORE THAN 18" ABOVE THE CEILING, PROVIDE OFFSETS IN PIPING AS NEEDED.
23. PLUMBING SYSTEMS INCLUDE, BUT ARE NOT LIMITED TO: PLUMBING FIXTURES AND EQUIPMENT, FIRE STOPPING, PIPE IDENTIFICATION, DOMESTIC WATER SYSTEM, SANITARY WASTE AND VENT SYSTEM, NATURAL GAS SYSTEM.

FIRE STOPPING:

1. FIRE STOP ALL PENETRATIONS, BY PIPING OR CONDUITS, OF FIRE RATED WALLS, FLOORS AND PARTITIONS. PROVIDE A DEVICE(S) OR SYSTEM(S) WHICH HAS BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814 AND INSTALL IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE A DEVICE(S) OR SYSTEM(S) WITH AN 'F' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED. REFER TO ARCHITECTURAL PLANS FOR WALL AND FLOOR TYPES.

PIPE IDENTIFICATION:

1. PIPE IDENTIFICATION SHALL MATCH THE FACILITY'S EXISTING STANDARD. IF NO STANDARD EXISTS, THEN THE PIPE IDENTIFICATION SHALL BE IN ACCORDANCE WITH ANSI A13.1.
2. PROVIDE PIPING LABELS FOR ALL PLUMBING PIPING. PIPING LABELS SHALL BE ACRYLIC FACED, WRAP-AROUND TYPE. EACH LABEL SHALL INDICATE THE PIPING CONTENTS, DIRECTION OF FLOW AND SHALL BEAR THE MANUFACTURER'S STANDARD COLOR FOR THE SERVICE INDICATED.

SUBMITTALS:

1. PROVIDE SUBMITTALS BEARING THE CONTRACTORS REVIEW STAMP FOR ALL PLUMBING FIXTURES, PIPING, EQUIPMENT AND ACCESSORIES IN ELECTRONIC FORMAT (PDF).
2. NO PRIVATE LABELED MATERIALS WILL BE ACCEPTED AS EQUALS TO PRODUCTS SPECIFIED HEREIN.
3. THE PLUMBING CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUBSTITUTIONS TO SPECIFIED PLUMBING FIXTURES AND EQUIPMENT INCLUDING BUT NOT LIMITED TO; PROVIDING MAINTENANCE ACCESS CLEARANCE, PIPING, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC. AND ANY MODIFICATIONS TO ASSOCIATED MECHANICAL, ELECTRICAL OR PLUMBING SYSTEMS REQUIRED BY THE EQUIPMENTS INSTALLATION INSTRUCTIONS. ALL COSTS ASSOCIATED WITH SUBSTITUTIONS SHALL BE INCLUDED IN THE ORIGINAL BASE BID.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	CW	COLD WATER PIPING
	HW	HOT WATER PIPING
	HWR	HOT WATER RETURN PIPING
	W	SANITARY WASTE PIPING
	V	SANITARY VENT PIPING
G	G	NATURAL GAS PIPING
	-	PIPING ELBOW DOWN
	-	PIPING ELBOW UP
	-	PIPING CONTINUES
	-	SHUT-OFF VALVE
	-	CHECK VALVE
	-	BALANCING VALVE
	RPZ	REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY
	-	IN-LINE PUMP
	-	PIPING REDUCER
	YCO	YARD CLEANOUT
	WCO	WALL CLEANOUT
	FD	FLOOR DRAIN
	HB	HOSE BIBB / WALL HYDRANT
SA-#	SA-#	SHOCK ARRESTOR - SUFFIX INDICATES PDI SIZE

ADDITIONAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MFG	MANUFACTURER
AFG	ABOVE FINISHED GRADE	PSI	POUNDS PER SQUARE INCH
BFF	BELOW FINISHED FLOOR	T&P	TEMPERATURE AND PRESSURE
CFH	CUBIC FEET PER HOUR	TW	TEMPERED WATER
CLG	CEILING	TYP	TYPICAL
CONT	CONTINUATION	UG	UNDERGROUND
DN	DOWN	VTR	VENT THRU ROOF
GPF	GALLONS PER FLUSH	WC	WATER COLUMN
GPM	GALLONS PER MINUTE	EC	ELECTRICAL CONTRACTOR
HP	HORSE POWER	GC	GENERAL CONTRACTOR
INV	INVERT ELEVATION	MC	MECHANICAL CONTRACTOR
KW	KILOWATT	PC	PLUMBING CONTRACTOR
MBH	1,000 BRITISH THERMAL UNIT / HOUR		

PLUMBING SHEET INDEX

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043866 DANIEL A. PERALTA 07/26/2024

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Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: Author
CHECKED BY: Checker

PLUMBING LEGEND, INDEX, AND NOTES

P-001

PLUMBING SPECIALTIES SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE				SPECIFICATION	REMARKS
		W	V	CW	HW		
CS-x	BALANCING VALVE, THERMOSTATIC, AUTOMATIC, SUFFIX INDICATES PIPE SIZE, SEE FLOOR PLANS	-	-	-	**	EQUIPMENT: CIRCUIT SOLVER CS SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED.	PROVIDE 115°F MODEL
SA-x	SHOCK ARRESTOR, SUFFIX INDICATES PDI SIZE	-	-	x	-	EQUIPMENT: SIOUX CHIEF 650 SERIES, SIZES 1/2" THRU 2", NSF 61 CERTIFIED.	SEE SHOCK ARRESTOR TABLE THIS SHEET
HB1	HOSE BIBB, INTERIOR, EXPOSED, STAINLESS STEEL FACE PLATE, ANTI-SIPHON	-	-	3/4"	-	EQUIPMENT: ZURN Z1333-C-34EL, PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
HB2	HOSE BIBB, EXTERIOR, EXPOSED, STAINLESS STEEL FACE PLATE, FREEZELESS, ANTI-SIPHON	-	-	3/4"	-	EQUIPMENT: ZURN Z1310-34EL, PROVIDE VACUUM BREAKER AND METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
HB3	HOSE BIBB, INTERIOR, EXPOSED, EXTERNAL VACUUM BREAKER, ANTI-SIPHON	-	-	3/4"	-	EQUIPMENT: ZURN Z1341 PROVIDE METAL LOOSE KEY FOR EACH HOSE BIBB	MOUNT 18" AFF
WCO	WALL CLEANOUT, CAST IRON BODY, STAINLESS STEEL WALL PLATE	**	-	-	-	CLEANOUT: ZURN Z-1446-BP, BRONZE PLUG, CLEANOUT SIZE SHALL MATCH PIPE SIZE	GAS / WATER TIGHT
YCO	YARD CLEANOUT, CAST IRON BODY, NICKEL BRONZE TOP, ADJUSTABLE, INSTALLED IN 18"x18"x6" CONCRETE PAD	**	-	-	-	CLEANOUT: ZURN ZN-1400-BP, BRONZE PLUG INSTALL IN 18"x 18"x 6" DEEP CONCRETE PAD	GAS / WATER TIGHT, INSTALL TOP FLUSH WITH FINISHED GRADE
FD1	FLOOR DRAIN, CAST IRON BODY, ROUND NICKEL BRONZE GRATE, ADJUSTABLE	3"	2"	-	-	DRAIN: ZURN ZN-415-B, 6" DIAMETER GRATE P-TRAP: 3" DEEP SEAL	INSTALL TOP FLUSH WITH FINISHED FLOOR. SEE NOTE 1 BELOW.

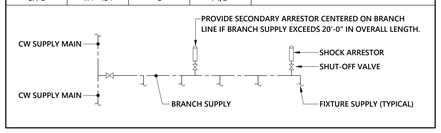
NOTES:
1. PROVIDE WATERLESS INLINE TRAP GUARD FOR EACH FLOOR DRAIN CONFORMING TO ASSE 1072 AND EQUAL TO RECOTORSEAL"SURE-SEAL" MODEL SS3009V. INSTALL TRAP GUARDS IN THE OUTLET OF THE FLOOR DRAIN BODY (NOT IN THE STRAINER).

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
	SHOCK ARRESTOR HOSE BIBBS DRAINS BACKFLOW PREVENTER	SIOUX CHIEF, PPP INC., ZURN, WATTS ZURN, WOODFORD, ZURN, J.R. SMITH ZURN, J.R. SMITH, WADE WILKINS, WATTS, APOLLO

SHOCK ARRESTOR TABLE

DRAWING SYMBOL	FIXTURE UNITS	P.D.I. WH201 DESIGNATION	ARRESTOR SIZE	REMARKS
SA-A	1 - 11	A	1/2"	INSTALL SHOCK ARRESTORS PER THE PLUMBING DRAINAGE INSTITUTE (P.D.I.) GUIDELINES.
SA-B	12 - 32	B	3/4"	
SA-C	33 - 60	C	1"	ACCEPTED MANUFACTURERS: SIOUX CHIEF, WATTS, PPP INC., ZURN
SA-D	61 - 113	D	1-1/4"	
SA-E	114 - 154	E	1-1/2"	



PLUMBING EQUIPMENT SCHEDULE

SYM.	DESCRIPTION	CONN. SIZE		SPECIFICATION	REMARKS
		INLET	OUT		
WH1	WATER HEATER, COMMERCIAL STORAGE TANK, ELECTRIC	3/4"	3/4"	EQUIPMENT: AO SMITH DEL-20 ELEC: 277V, 4.5 kW RECOVERY: 23 GAL. AT 80° RISE.	SET OUTLET TEMPERATURE TO 120°F
ET1	THERMAL EXPANSION TANK 5.1 GALLON CAPACITY	3/4"	-	EQUIPMENT: AMTROL ST-12-C	-
RCP1	CIRCULATION PUMP ALL BRONZE CONSTRUCTION	3/4"	3/4"	PUMP: B&G NBF-22, 1/12 HP, 120V RATED FOR 2 GPM AT 2.5' HEAD	SEE NOTE 1

NOTES:
1. INTERLOCK WITH FULLY ADJUSTABLE AQUASTAT AND 7-DAY, 24 HOUR TIMER.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

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	WATER HEATERS EXPANSION TANKS PUMPS	STATE, LOCHINVAR, BRADFORD WHITE, A.O. SMITH AMTROL, A.O. SMITH, WATTS, WESSLES B&G, TACO, ARMSTRONG

PLUMBING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	CONNECTION SIZE				SPECIFICATION	REMARKS
		W	V	CW	HW		
P1	TOILET ELONGATED, WHITE VITREOUS CHINA, WALL HUNG (1.28 GPF) BATTERY POWERED, SENSOR OPERATED FLUSH VALVE	4"	2"	1-1/4"	-	FIXTURE: ZUR Z5616 FLUSH VALVE: ZURN ZER6000AV-HYD HYDRO POWERED SENSOR, TRUE MECHANICAL OVERRIDE, AND CHEMICAL RESISTANT DIAPHRAGM. SEAT: CHURCH 295SSCT ANTI-MICROBIAL (WHITE)	15" RIM HEIGHT. SEE NOTE 6 BELOW
P1A	TOILET, A.D.A. COMPLIANT ELONGATED, WHITE VITREOUS CHINA, WALL HUNG (1.28 GPF) BATTERY POWERED, SENSOR OPERATED FLUSH VALVE	4"	2"	1-1/4"	-	FIXTURE: ZURN Z5616 FLUSH VALVE: ZURN ZER6000AV-HYD HYDRO POWERED SENSOR, TRUE MECHANICAL OVERRIDE, AND CHEMICAL RESISTANT DIAPHRAGM. SEAT: CHURCH 295SSCT ANTI-MICROBIAL (WHITE)	16.5" RIM HEIGHT. SEE NOTES 5 & 6 BELOW
P2	URINAL WHITE VITREOUS CHINA, CARRIER MOUNTED, (0.5 GPF) BATTERY POWERED, SENSOR OPERATED FLUSH VALVE	2"	2"	3/4"	-	FIXTURE: ZURN Z5755 FLUSH VALVE: ZURN ZER6003AV-HYD HYDRO POWERED SENSOR, TRUE MECHANICAL OVERRIDE, AND CHEMICAL RESISTANT DIAPHRAGM.	SEE NOTE 1 BELOW
P2A	URINAL, A.D.A. COMPLIANT WHITE VITREOUS CHINA, CARRIER MOUNTED, (0.5 GPF) BATTERY POWERED, SENSOR OPERATED FLUSH VALVE	2"	2"	3/4"	-	FIXTURE: ZURN Z5755 FLUSH VALVE: ZURN ZER6003AV-HYD HYDRO POWERED SENSOR, TRUE MECHANICAL OVERRIDE, AND CHEMICAL RESISTANT DIAPHRAGM.	SEE NOTE 1 BELOW
P3A	LAVATORY, A.D.A. COMPLIANT, 20"x18" RECTANGULAR BOWL, WHITE ENAMELED CAST IRON, CARRIER MOUNTED, 4" CENTER SET FAUCET HOLES, SENSOR OPERATED FAUCET (0.5 GPM) VANDAL RESISTANT AERATOR	2"	1-1/2"	1/2"	1/2"	FIXTURE: ZURN Z5844 FAUCET: ZURN ZG6955 GRID DRAIN: ZURN 8743; P-TRAP: ZURN Z-8701 (1-1/4"x1-1/2", 17 GA.) SUPPLIES/STOPS: ZURN 8806-XL-LR-LK	SEE NOTES 2 & 4 BELOW
P4	WATER COOLER, A.D.A. COMPLIANT, STAINLESS STEEL FINISH, SINGLE BOWL, VANDAL RESISTANT, CARRIER MOUNTED, INTEGRAL WATER FILTER	2"	1-1/2"	1/2"	-	FIXTURE: ELKAY LVRCGRN8 ELEC: 260 WATT, 120 VOLT, SINGLE PHASE P-TRAP: ZURN Z-870 (1-1/4"x1-1/2", 17 GA.) SUPPLY/STOP: ZURN 8806-XL-LR-LK	SEE NOTE 3 BELOW
P4A	WATER COOLER & BOTTLE FILLER, A.D.A. COMPLIANT, STAINLESS STEEL FINISH, VANDAL RESISTANT, CARRIER MOUNTED, INTEGRAL WATER FILTER, SENSOR OPERATED BOTTLE FILLER WITH AUTO SHUT-OFF.	2"	1-1/2"	1/2"	-	FIXTURE: ELKAY LVRCGRN8WSK ELEC: 260 WATT, 120 VOLT, SINGLE PHASE P-TRAP: ZURN Z-870 (1-1/4"x1-1/2", 17 GA.) SUPPLY/STOP: ZURN 8806-XL-LR-LK	SEE NOTE 3 BELOW
P6	MOP SINK, 28"x 28"x 12" TERRAZZO BASIN, 6" DROP FRONT WITH STAINLESS STEEL THRESHOLD CAP, 36" HIGH STAINLESS STEEL WALL GUARDS, SERVICE FAUCET, HOSE, MOP HANGER BRACKET.	3"	2"	1/2"	1/2"	FIXTURE: FIAT TSBCR1100, 830AA, 832AA, (2) MSG2828 FAUCET: ZURN Z842M4 WITH INTEGRAL VACUUM BREAKER, DRAIN: 3" STAINLESS STEEL SLOTTED P-TRAP: 3" DEEP SEAL, CAST IRON	PROVIDE CHECK VALVES ON HW AND CW SUPPLIES.

NOTES:
1. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1222-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
2. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED, ADJUSTABLE CONCEALED ARM CARRIER EQUAL TO ZURN Z1231-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND BLOCK WALL, PROVIDE EXTENDED CONCEALED ARM SLEEVES TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
3. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED PLATE STYLE CARRIER EQUAL TO ZURN Z1225-EZ (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.
4. PROVIDE PRE-MANUFACTURED A.D.A. COMPLIANT INSULATION KIT FOR EXPOSED P'TRAP AND SUPPLY TRIM UNDER SINK.
5. PROVIDE LEVER ON WIDE SIDE OF STALL.
6. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT. PROVIDE A FLOOR MOUNTED CARRIER EQUAL TO ZURN Z1203 (-SL) SERIES. WHEN CARRIER IS LOCATED BEHIND A BLOCK WALL, PROVIDE EXTENDED STUD LENGTHS TO COMPENSATE FOR THE BLOCK WALL THICKNESS.

** MATCH PIPE SIZE SHOWN ON PLANS, SEE PLANS.

APPROVED EQUALS: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE MODEL WHICH MOST CLOSELY MATCHES THE SPECIFIED PRODUCT. PROVIDE PRODUCTS MADE BY THE MANUFACTURER'S LISTED.	PRODUCT TYPE:	ACCEPTED MANUFACTURERS:
	VITREOUS CHINA FLUSH VALVES ENAMELED CAST IRON CARRIERS FAUCETS WATER COOLERS SUPPLIES, STOPS HOSE BIBBS UTILITY SINKS	KOHLER, AMERICAN STANDARD, SLOAN SLOAN, ZURN, DELANEY KOHLER, AMERICAN STANDARD, ZURN ZURN, J.R. SMITH, WADE AMERICAN STANDARD, ZURN, CHICAGO ELKAY, HALSEY TAYLOR, HAWS ZURN, MCGUIRE, BRASSCRAFT ZURN, J.R. SMITH, WOODFORD FIAT, FLORESTONE, STERN WILLIAMS

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SUPPLEMENTARY ADDITION

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY

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Lillington, NC 27546

ENERGY STAR PARTNER

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PLUMBING SCHEDULES

P-002

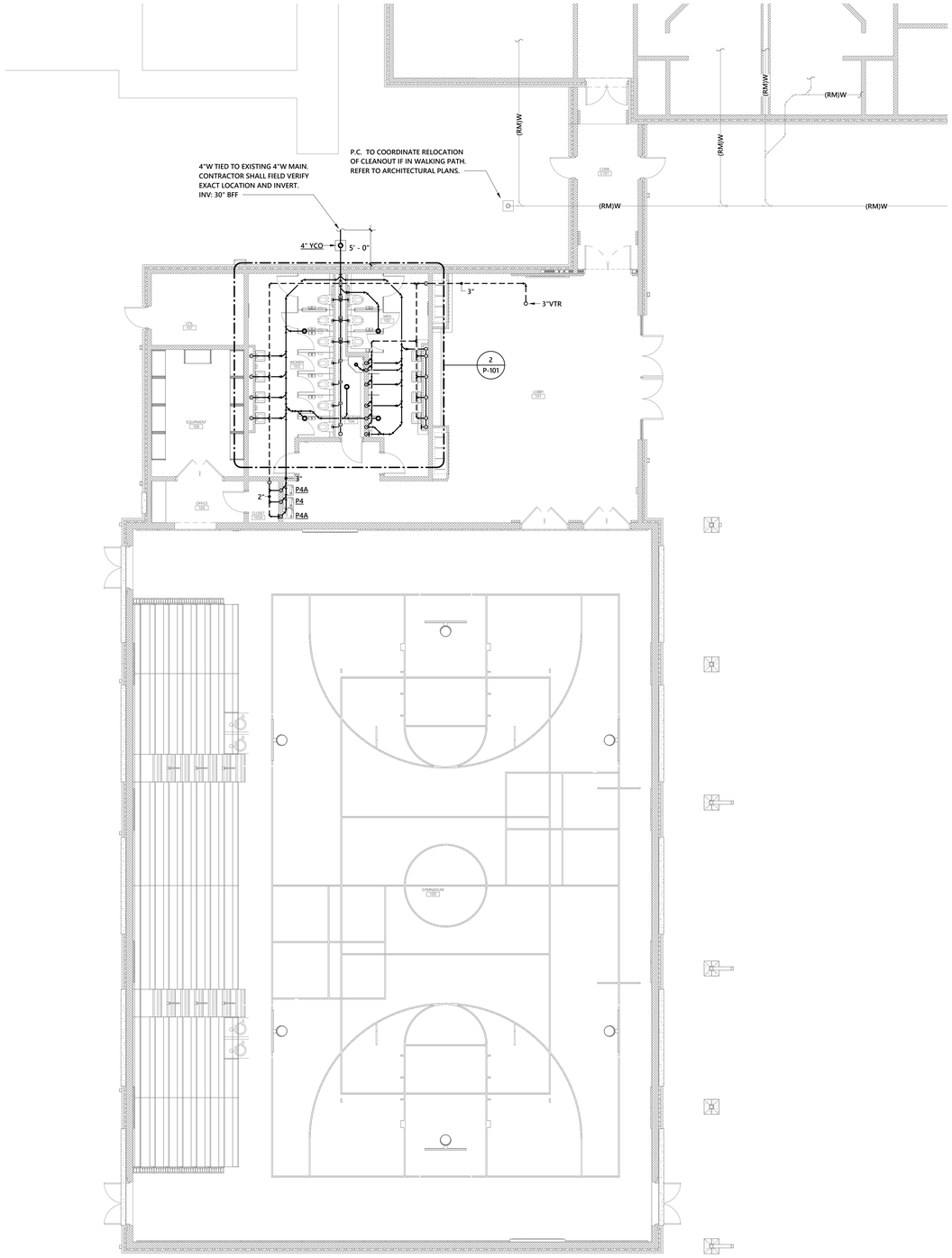
Sheet No. 2 of 11

OPTIMA# 24-0045R

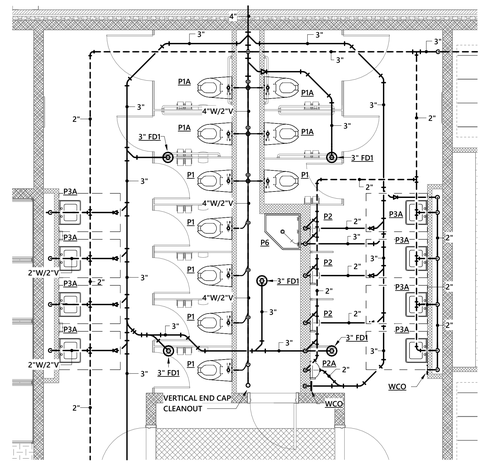
WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

RENOVATION LEGEND ABBREVIATIONS

ER	EXISTING ITEM RELOCATED TO THIS LOCATION.
RL	EXISTING ITEM TO BE RELOCATED.
EX	EXISTING ITEM TO REMAIN.
RP	EXISTING ITEM TO BE REPLACED.
RV	EXISTING ITEM TO BE REMOVED.
RC	RE-CONNECT



1 ADDITION PLUMBING DRAINAGE PLAN
1/8" = 1'-0"



2 ADDITION PLUMBING DRAINAGE PLAN - RESTROOM ENLARGED
1/4" = 1'-0"

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ADDITION PLUMBING DRAINAGE PLAN

P-101

Sheet No. 3 of 11

OPTIMA# 24-0045R

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

1 ADDITION PLUMBING DRAINAGE ROOF PLAN
1/8" = 1'-0"

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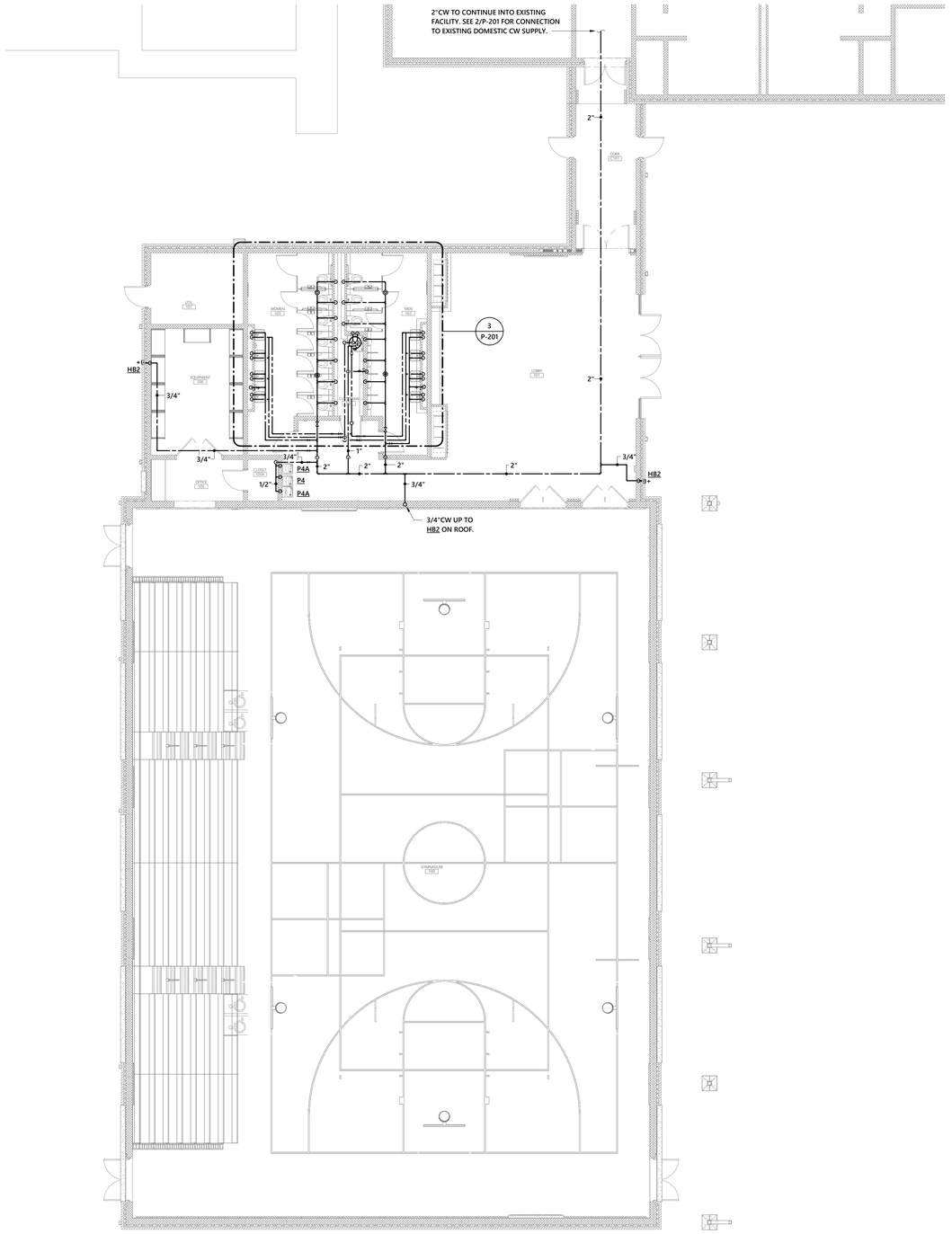
ADDITION ROOF PLUMBING DRAINAGE PLAN

P-102

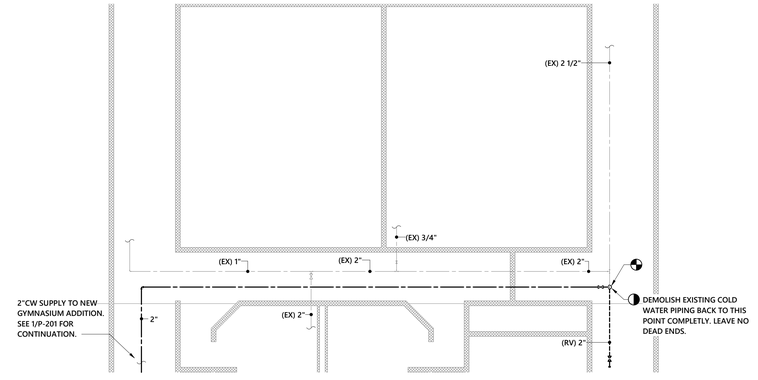
WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

RENOVATION LEGEND ABBREVIATIONS

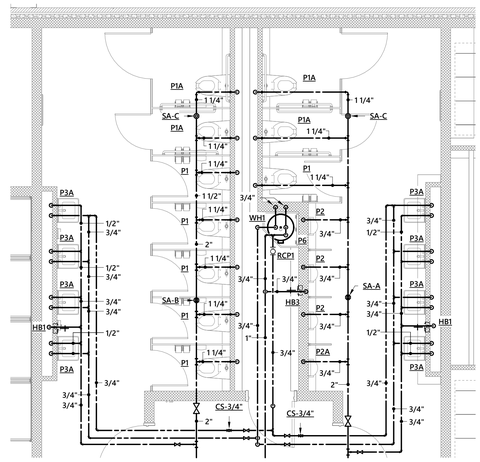
ER	EXISTING ITEM RELOCATED TO THIS LOCATION.
RL	EXISTING ITEM TO BE RELOCATED.
EX	EXISTING ITEM TO REMAIN.
RP	EXISTING ITEM TO BE REPLACED.
RV	EXISTING ITEM TO BE REMOVED.
RC	RE-CONNECT



1 ADDITION PLUMBING SUPPLY PLAN
1/8" = 1'-0"



2 ADDITION PLUMBING SUPPLY PLAN - CONNECTION TO EXISTING DOMESTIC CW SUPPLY
1/8" = 1'-0"



3 ADDITION PLUMBING SUPPLY PLAN - RESTROOM ENLARGED
1/4" = 1'-0"

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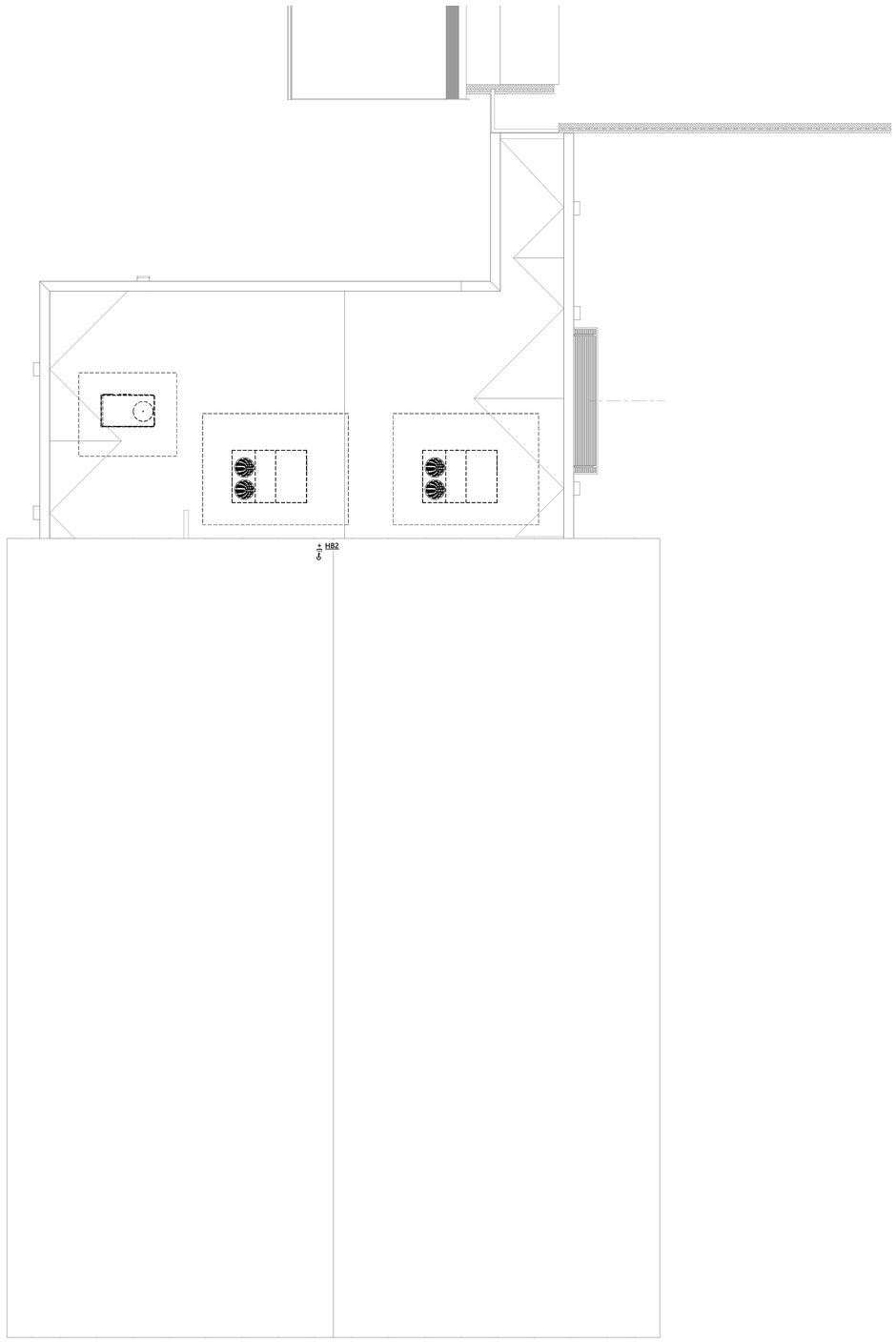
ADDITION PLUMBING SUPPLY PLAN

P-201

Sheet No. 5 of 11

OPTIMA# 24-0045R

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED



1 ADDITION PLUMBING SUPPLY ROOF PLAN
1/8" = 1'-0"

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ADDITION ROOF PLUMBING SUPPLY PLAN

P-202

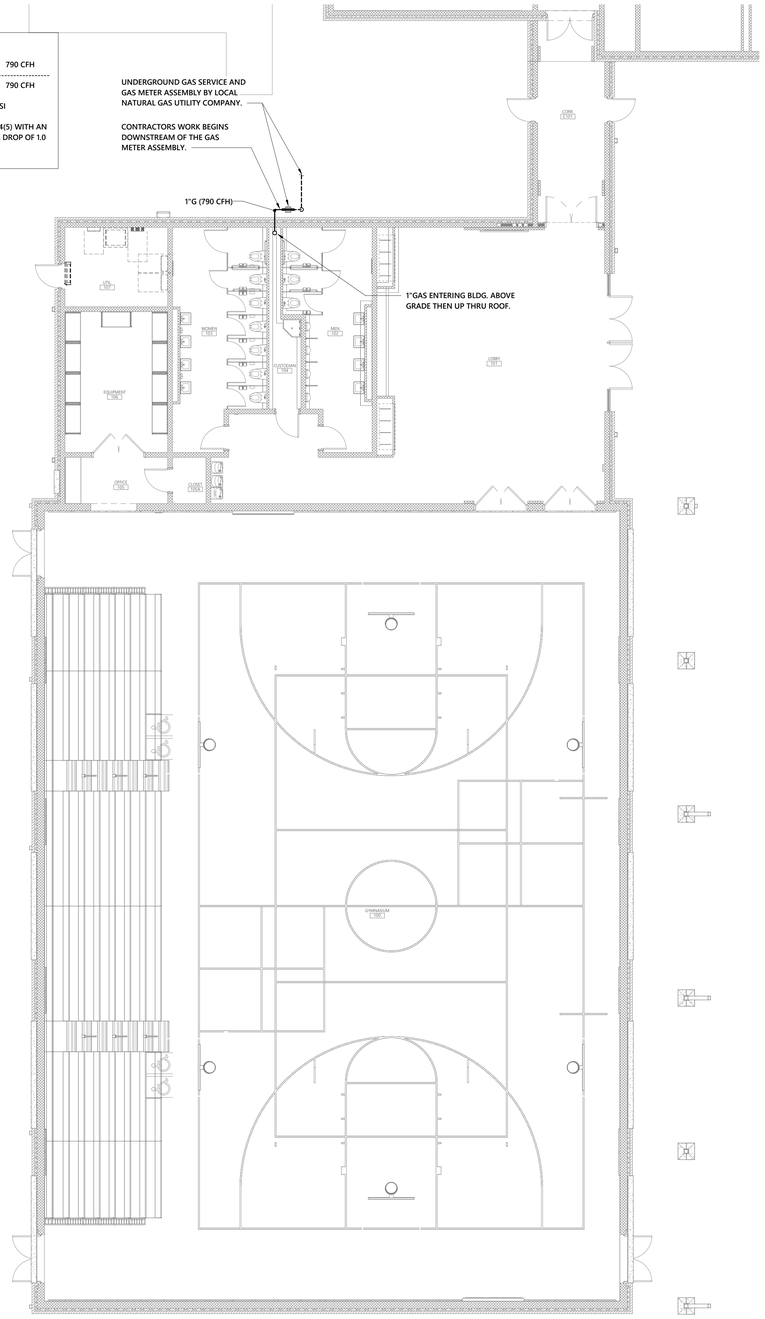
WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

GAS LOAD SUMMARY:

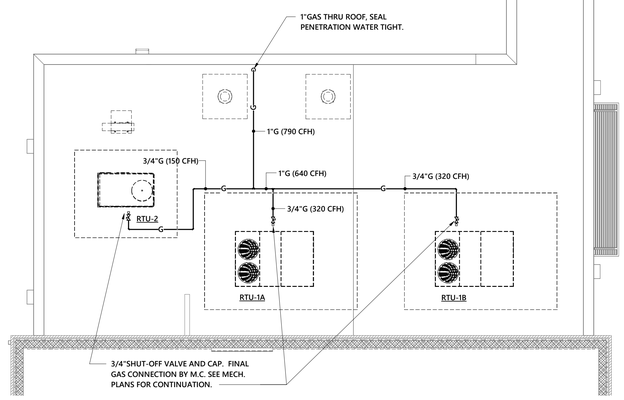
• HVAC ROOF TOP UNITS	790 CFH
TOTAL CONNECTED LOAD	790 CFH

GAS PRESSURE PROVIDED AT METER - 2 PSI

GAS PIPING SIZED PER NCFGC TABLE 402.4(5) WITH AN INLET PRESSURE OF 2 PSI WITH PRESSURE DROP OF 1.0 PSI AT 0.60 SPECIFIC GRAVITY.
(100 FT. PIPE LENGTH EQUILAVENT)



1 ADDITION PLUMBING GAS PLAN
1/8" = 1'-0"



2 ADDITION PLUMBING GAS ROOF PLAN
1/8" = 1'-0"

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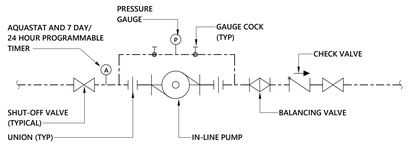
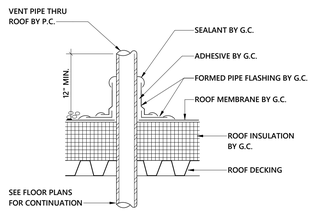
ADDITION PLUMBING GAS PIPING PLANS

P-301

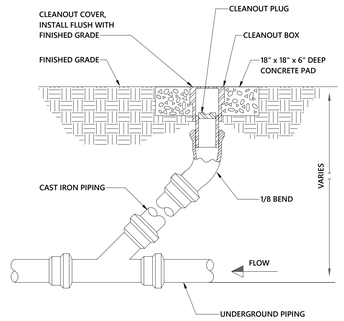


5 HOTWATER RECIRC PUMP DETAIL
NOT TO SCALE

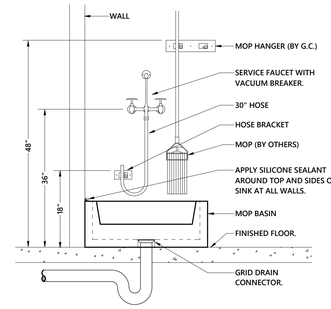


NOTE: SEE FLOOR PLANS FOR LOCATION OF PENETRATIONS

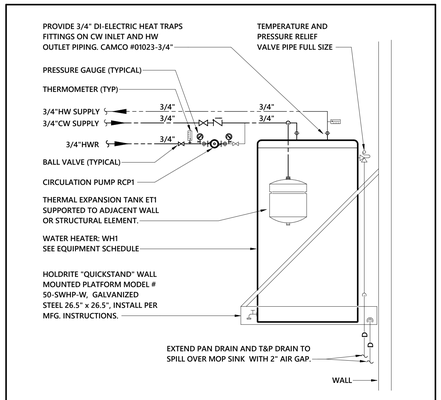
4 VENT THRU ROOF DETAIL
NOT TO SCALE



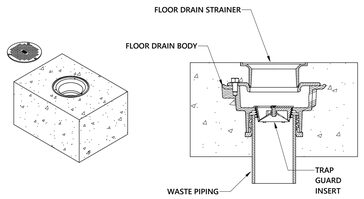
3 YARD CLEANOUT DETAIL
NOT TO SCALE



2 MOP BASIN AND ACCESSORIES
NOT TO SCALE

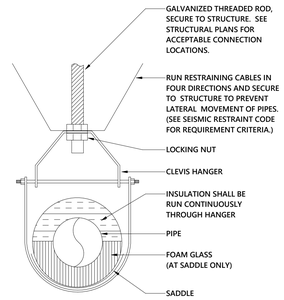


1 WATER HEATER SCHEMATIC - WH1
NO SCALE

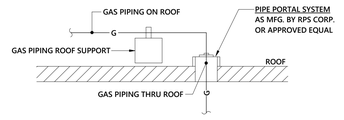


NOTES:
1. REMOVE SCREWS AND STRAINER FROM INSTALLED DRAIN. MAKE SURE DRAIN OUTLET IS CLEAR OF ANY DEBRIS OR OBSTRUCTIONS PRIOR TO INSTALLING THE TRAP GUARD.
2. ALIGN TRAP GUARD WITH THE CENTER OF THE DRAIN ASSEMBLY.
3. PUSH TRAP GUARD INTO BOTTOM OF DRAIN BODY OR OUTLET PIPE UNTIL THE UNDERSIDE OF THE BARRIER TRAP IS FLUSH WITH BOTTOM OF DRAIN OR TOP OF THE PIPE.

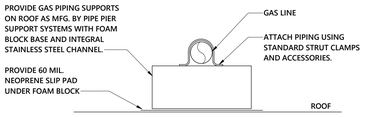
9 FLOOR DRAIN TRAP GUARD DETAIL
NO SCALE



8 PIPE HANGER SCHEMATIC
NOT TO SCALE



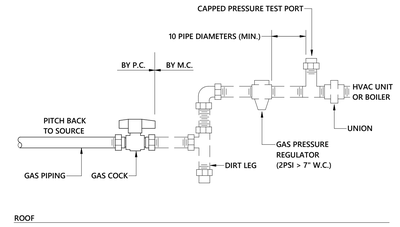
TYPICAL GAS PIPING THRU ROOF DETAIL



NOTES:
1. PROVIDE GAS SUPPORTS ON ROOF AT 8'-0" ON CENTER. PROVIDE ADDITIONAL SUPPORTS AT EQUIPMENT TO PREVENT WEIGHT OF PIPE BEING PLACED ON EQUIPMENT.
2. INSTALL GAS PIPING SUPPORTS AS MANUFACTURED BY PIPE PIER (OR APPROVED EQUAL) ACCORDING TO MANUFACTURER'S INSTRUCTIONS.

TYPICAL GAS PIPING SUPPORT DETAIL

7 TYPICAL GAS PIPING ROOF SUPPORT DETAILS
NOT TO SCALE

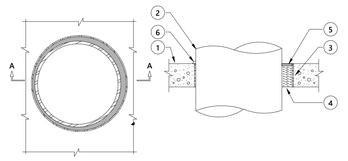


NOTES:
1. PROVIDE DIELECTRIC UNIONS WHERE DISSIMILAR METALS ARE JOINED.
2. GAS PIPING AND SHUT-OFF VALVE SHALL BE BY PLUMBING CONTRACTOR. DIRT LEG, REGULATOR, AND FINAL CONNECTION TO UNIT SHALL BE BY MECHANICAL (HVAC) CONTRACTOR.

6 GAS CONNECTION DETAIL (TO HVAC EQUIPMENT)
NOT TO SCALE

U.L. SYSTEM NO. CAJ1155
METAL PIPE THROUGH A SLEEVE IN CONCRETE WALL OR FLOOR

F RATING = 3-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.



TOP VIEW SECTION A-A

1. FLOOR OR WALL ASSEMBLY: B. U.L. CLASSIFIED CONCRETE BLOCK WALL (MINIMUM 8" BLOCK). A. MINIMUM 4-1/2" THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR.
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 20" DIAMETER STEEL PIPE.
   B. MAXIMUM 6" DIAMETER COPPER PIPE.
   C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER EMT.
3. OPTIONAL: MAXIMUM 22" DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER).
4. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) RECESSED 1/2" FROM TOP OF SLEEVE.
5. MINIMUM 1/2" DEPTH HILTI FS-ONE FIRESTOP SEALANT.
6. A GENEROUS BEAD OF HILTI FS-ONE FIRESTOP SEALANT AROUND OUTER PERIMETER OF STEEL SLEEVE.

NOTES:
1. MAXIMUM DIAMETER OF OPENING = 22".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 1-1/2".

INSTALLATION INSTRUCTIONS FOR UL NO.CAJ1155

STEP 1 - PREPARATION: to application of firestopping materials. All surfaces must be clean, sound, dry and frost free prior

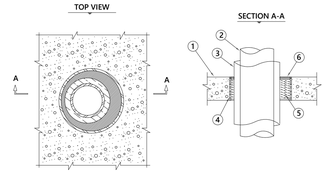
STEP 2 - BACKING MATERIAL: Firmly pack mineral wool around the penetrating item recessing it 1/2" below surface of the sleeve (or both ends of sleeve in wall)

STEP 3 - FIRESTOP SEALANT: Apply the Firestop Sealant over the backing material to a min. depth of 1/2" flush with the end(s) of the sleeve. Wall penetrations require Firestop Sealant installed on both sides. Leave completed seal undisturbed for 48 hours.

11 U.L. SYSTEM NO CAJ-1155 DETAIL
NOT TO SCALE

U.L. SYSTEM NO. CAJ5090
INSULATED METALLIC PIPE THROUGH CONCRETE WALL OR FLOOR

F RATING = 3-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = 4 CFM/SQ. FT.
L RATING AT 400°F = LESS THAN 1 CFM/SQ. FT.



1. CONCRETE FLOOR ASSEMBLY (MINIMUM 4-1/2" THICK)
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING:
   A. MAXIMUM 4" DIAMETER STEEL PIPE.
   B. MAXIMUM 4" DIAMETER COPPER PIPE.
   C. MAXIMUM 4" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER EMT.
3. MAXIMUM 3/4" THICK AB/PVC PIPE INSULATION.
4. OPTIONAL: MAXIMUM 8" DIAMETER STEEL PIPE SLEEVE (SCHEDULE 10 OR HEAVIER).
5. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
6. MINIMUM 1/4" DEPTH HILTI FS-ONE FIRESTOP SEALANT.

NOTES:
1. MAXIMUM DIAMETER OF OPENING = 8-5/8".
2. ANNULAR SPACE = MINIMUM 1/2", MAXIMUM 1-1/2".

INSTALLATION INSTRUCTIONS FOR UL NO.CAJ5090

STEP 1 - PREPARATION: All surfaces must be clean, sound, dry and frost free prior to application of firestopping materials.

STEP 2 - BACKING MATERIAL: Pack mineral wool tightly around the penetrating item to the depth shown in the drawings, and recess it below the top surface of the floor (or both surfaces of a wall) to allow proper space for the firestop material.

STEP 3 - FIRESTOP SEALANT: Apply the Firestop Sealant over the backing material to the depth shown. Wall penetrations require Firestop Sealant on both sides. Leave completed seal undisturbed for 48 hours.

10 U.L. SYSTEM NO CAJ5090 DETAIL
NOT TO SCALE

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07/26/2024

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North Carolina License Number C-0914

SUPPLEMENTARY ADDITION

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: Author
CHECKED BY: Checker

PLUMBING DETAILS

P-501

Sheet No. 8 of 11

OPTIMA# 24-0045R

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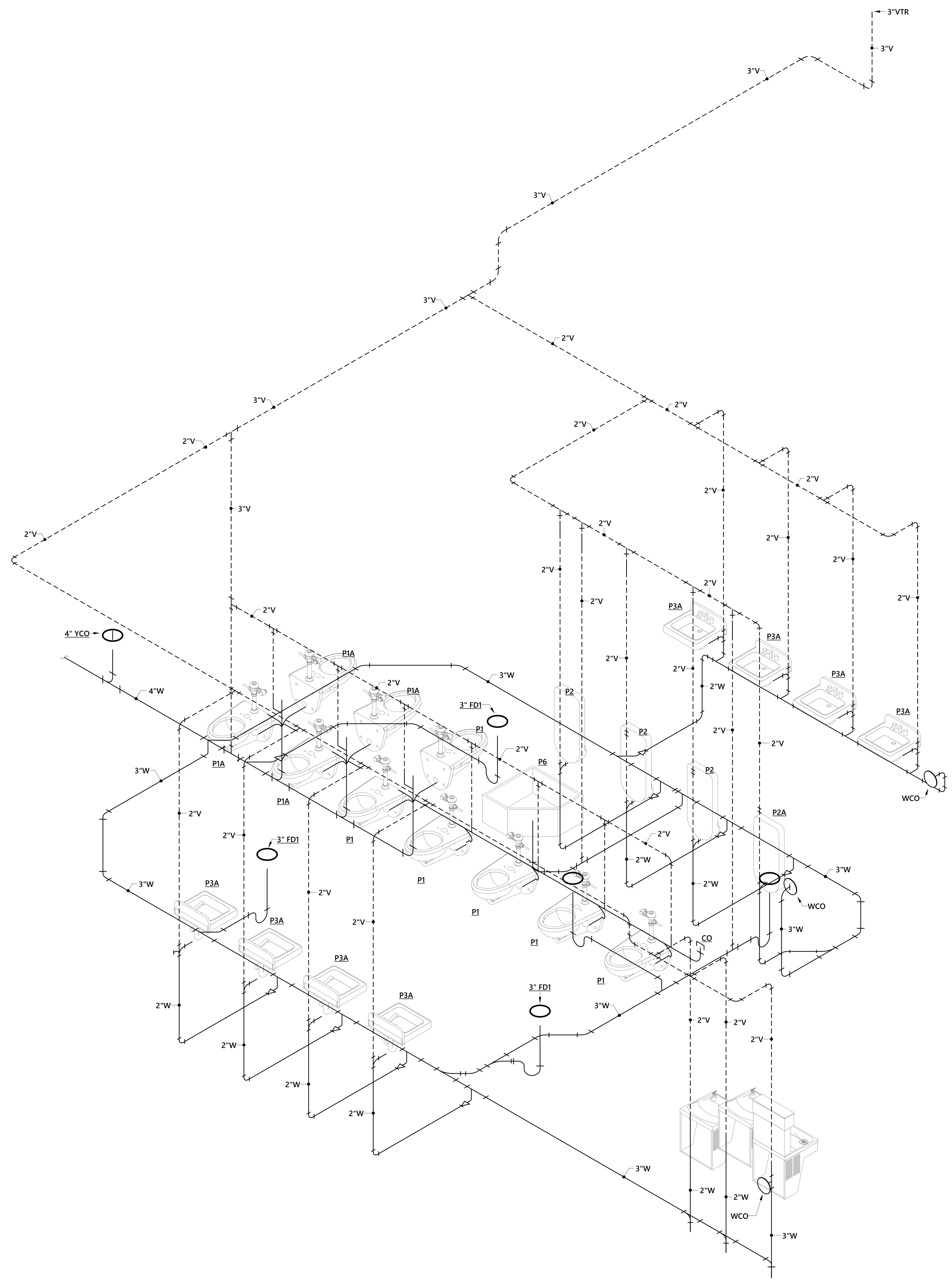

1 RESTROOM WASTE & VENT RISER DIAGRAM

NOT TO SCALE

OPTIMA# 24-0045R

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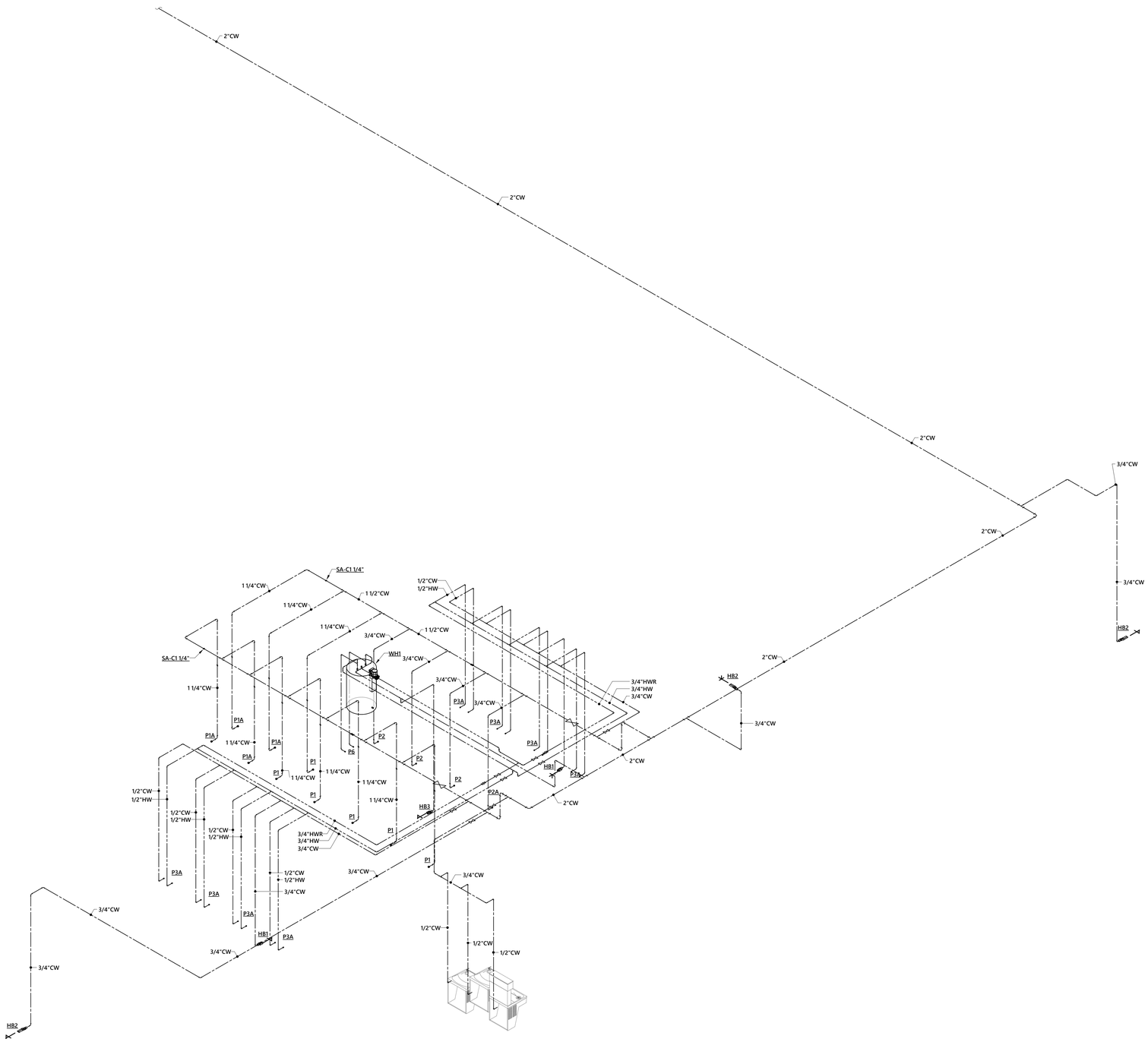
WASTE & VENT RISER DIAGRAMS

P-502



1 **RESTROOM DOMESTIC WATER RISER DIAGRAM**
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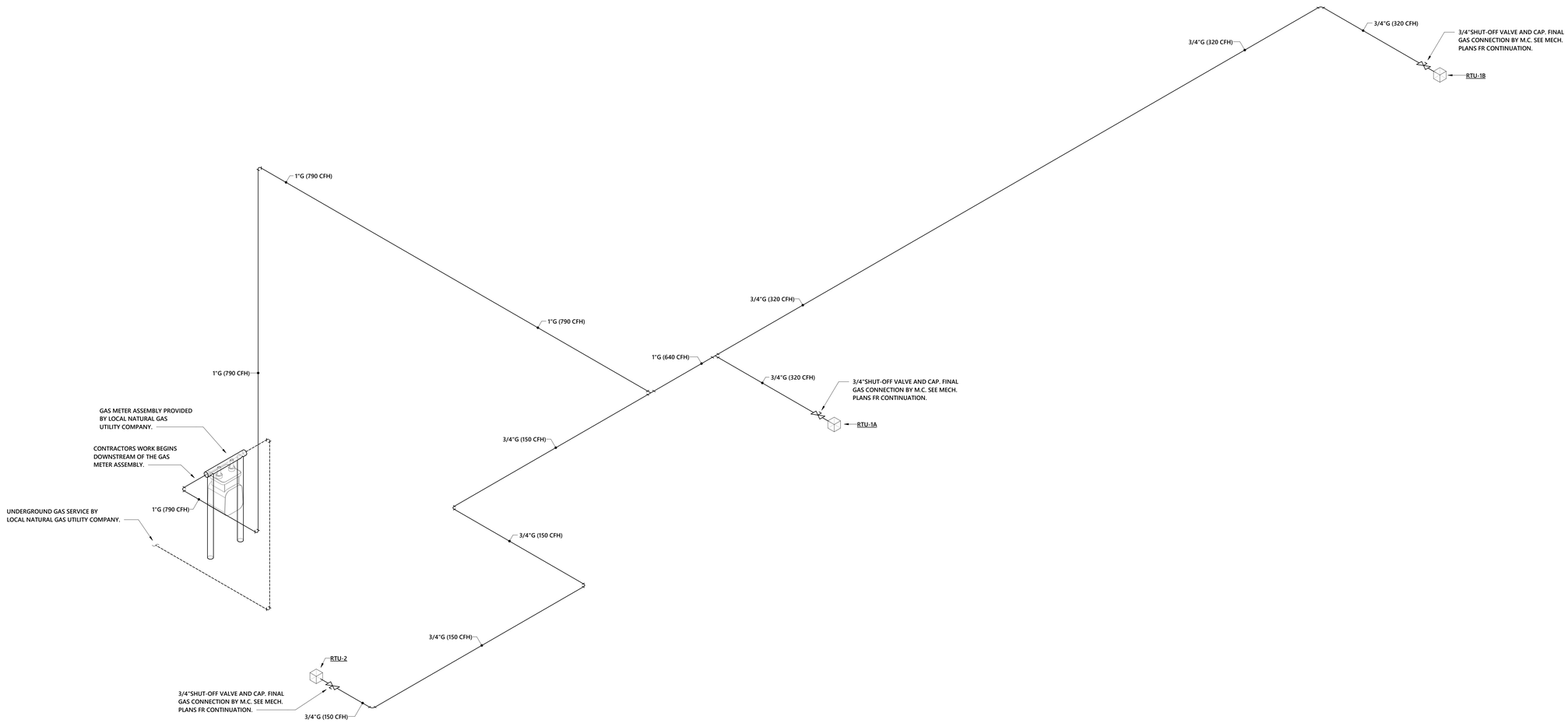
DOMESTIC RISER DIAGRAM

P-503

Sheet No. 10 of 11

OPTIMA# 24-0045R



1 **ADDITION NATURAL GAS PIPING DIAGRAM**
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NATURAL GAS RISER DIAGRAM

P-504

Sheet No. 11 of 11

OPTIMA# 24-0045R

ABBREVIATIONS

Ø	ROUND	LVR	LOUVER
ABV	ABOVE	LWT	LEAVING WATER TEMPERATURE
AC	AIR CONDITIONING	M/A	MIXED AIR
ADD	ADDENDUM	MAX	MAXIMUM
AFF	ABOVE FINISHED FLOOR	MBH	ONE THOUSAND BTU PER HOUR
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MD	MOTORIZED DAMPER
ALT	ALTERNATE	MECH	MECHANICAL
AP	ACCESS PANEL	MFR	MANUFACTURER
ARCH	ARCHITECT/ARCHITECTURAL	MIN	MINIMUM
BFF	BELOW FINISHED FLOOR	MISC	MISCELLANEOUS
BLW	BELOW	MTR	MOTOR
BTU	BRITISH THERMAL UNITS	MU/A	MAKE-UP/AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NOISE CRITERIA
CAP	CAPACITY	NC	NORMALLY CLOSED
CFM	CUBIC FEET PER MINUTE	NIC	NOT IN CONTRACT
CLG	CEILING	NO	NORMALLY OPEN
D	DEGREE	NTS	NOT TO SCALE
DB	DRY BULB	O/A	OUTSIDE AIR
DIA	DIAMETER	PD	PRESSURE DROP
DN	DOWN	PLBG	PLUMBING
EA	EACH	PRESS	PRESSURE
EAT	ENTERING AIR TEMPERATURE	PSI	POUNDS PER SQUARE INCH
ELEC	ELECTRICAL	PSIG	POUNDS PER SQUARE INCH GAUGE
EQUIP	EQUIPMENT	PWR	POWER
EWT	ENTERING WATER TEMPERATURE	R/A	RETURN AIR
E/A	EXHAUST AIR	RH	RELATIVE HUMIDITY
EXIST	EXISTING	RL/A	RELIEF AIR
F	DEGREES FAHRENHEIT	RM	REMAIN
FD	FIRE DAMPER	RPM	REVOLUTIONS PER MINUTE
FL	FLOOR	SF	SQUARE FOOT
FPM	FEET PER MINUTE	S/A	SUPPLY AIR
FT	FOOT/FEET	SF	SQUARE FOOT
GC	GENERAL CONTRACTOR	SD	SMOKE DAMPER
GPM	GALLONS PER MINUTE	SP	STATIC PRESSURE
HP	HORSE POWER	T	THERMOSTAT
HTG	HEATING	TD	TEMPERATURE DROP
HTR	HEATER	TEMP	TEMPERATURE
HW	HOT WATER	TYP	TYPICAL
IN	INCH	VAV	VARIABLE AIR VOLUME
LB	POUND	VENT	VENTILATION
LAT	LEAVING AIR TEMPERATURE	WB	WET BULB
LP	LOW PRESSURE		

EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONING UNIT	EWH	ELECTRIC WATER HEATER
ACC	AIR COOLED CONDENSER	FCU	FAN COIL UNIT
ACCU	AIR COOLING CONDENSING UNIT	FP	FIRE PUMP
AHU	AIR HANDLING UNIT	GI	GREASE INTERCEPTOR
AS	AIR SEPARATOR	GRV	GRAVITY ROOF VENTILATOR
B	BOILER	HWP	HEATING WATER PUMP
CH	CHILLER	HX	HEAT EXCHANGER
CT	COOLING TOWER	HRU	HEAT RECOVERY UNIT
CUH	CABINET UNIT HEATER	PRV	POWER ROOF VENTILATOR
CWP	CONDENSER WATER PUMP	RE	RETURN/EXHAUST FAN
CHWP	CHILLED WATER PUMP	RTU	ROOFTOP UNIT
DBP	DOMESTIC WATER BOOSTER PUMP	SEP	SEWAGE EJECTOR PUMP
DC	DUCT MOUNTED COIL	SF	SUPPLY FAN
DCP	DOMESTIC WATER CIRCULATING PUMP	SP	SUMP PUMP
EF	EXHAUST FAN	UH	UNIT HEATER
EDC	ELECTRIC DUCT COIL	WH	WATER HEATER
ET	EXPANSION TANK		

MECHANICAL DUCT SYMBOLS

	DESCRIPTION
16x8	SQUARE DUCT SIZE TAG (WIDTH x HEIGHT)
16/8	OVAL DUCT SIZE TAG (WIDTH / HEIGHT)
16"Ø	ROUND DUCT SIZE TAG (DIAMETER)
(EX)	EXISTING DUCT TAG
	DUCT BEING DEMOLISHED
S/A	SUPPLY AIR
O/A	OUTDOOR AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
L/A	RELIEF AIR
	SUPPLY AIR DIFFUSER (4-WAY)
	RETURN AIR GRILLE
	RETURN AIR GRILLE WITH SOUND BOOT
	EXHAUST AIR GRILLE
	POINT OF EXISTING TO NEW CONNECTION
	POINT OF DISCONNECT TO EXISTING CONNECTION
M.C.	MECHANICAL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
N.I.C.	NOT IN CONTRACT
(EX)	EXISTING
AFF	ABOVE FINISHED FLOOR
DN	DOWN
UP	UP
X / X	SECTION CUT REFERRING DETAIL NUMBER REFERRING SHEET NUMBER

MECHANICAL ACCESSORIES SYMBOL LEGEND

SYMBOL	DESCRIPTION
T	THERMOSTAT / TEMP SENSOR (4'-0" AFF TO TOP)
H	HUMIDISTAT (4'-0" AFF TO TOP)
DD	RECTANGULAR DUCT SMOKE DAMPER. FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR, CONNECTED TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR.
T CO2	THERMOSTAT W/CO2 SENSING (4'-0" AFF TO TOP)

MECHANICAL PIPING SYMBOLS

SYMBOL	DESCRIPTION
	BUTTERFLY VALVE
	3-PIECE BALL VALVE
	CHECK VALVE
	STRAINER WITH BLOWDOWN VALVE WITH HOSE CONN.
	BALANCING VALVE
	B&G CIRCUIT SETTER
	UNION
	THERMOMETER
P	PRESSURE GAGE & COCK
	GAGE COCK
	FLOW SWITCH
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	STEAM TRAP, F&T
	STEAM TRAP, TB
	CONTROL VALVE
	GAS COCK
	PRESSURE REDUCING/REGULATING VALVE
S	SOLENOID VALVE

MECHANICAL PIPING SYSTEMS LEGEND

SYMBOL	DESCRIPTION
—D—	CONDENSATE DRAINAGE
—G—	NATURAL GAS
—R—	REFRIGERANT

MECHANICAL GENERAL NOTES

SEE SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIREMENTS. THESE GENERAL NOTES ARE INTENDED TO SUPPLEMENT THE SPECIFICATIONS. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED PRIOR TO BIDDING OR THE MORE STRINGENT SHALL APPLY AT THE ENGINEER'S DISCRETION.

1. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS AND REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.
2. ALL EQUIPMENT LISTED IN PROJECT SCHEDULES IS TO BE CONSIDERED DESIGN BASIS EQUIPMENT. ALL COST ASSOCIATED WITH SUBSTITUTED/NON-DESIGN BASIS EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED/NON-DESIGN BASIS EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THIS INCLUDES ANY MODIFICATIONS TO ANY ASSOCIATED MECHANICAL, PLUMBING, OR ELECTRICAL SYSTEMS REQUIRED BY THIS SPECIFIC MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. ALL SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK SHALL BE WRAPPED WITH 2" THICK DUCT WRAP WITH VAPOR BARRIER. INSULATION (INCLUDING FLEXIBLE DUCT INSULATION) SHALL HAVE A MINIMUM INSTALLED R-VALUE OF 6.0. ROOFTOP UNIT RETURN DUCTWORK AND TRANSFER DUCTS SHALL BE LINED WITH 1" THICK FIBERGLASS DUCT LINER FOR ACOUSTICAL PURPOSES. DUCT DIMENSIONS ON PLANS ARE FREE AREA SIZE.
4. SUPPLY AND RETURN DUCTWORK LOCATED OUTSIDE THE BUILDING SHALL BE WRAPPED WITH 3" THICK DUCT WRAP WITH VAPOR BARRIER HAVING A MINIMUM INSTALLED R VALUE OF 8.0. COVER EXTERNAL INSULATION WITH AN ALUMINUM OUTER ENCLOSURE AND SEAL WATER TIGHT.
5. ALL DUCTWORK SHALL BE SEALED PER THE REQUIREMENTS OF THE NORTH CAROLINA INTERNATIONAL MECHANICAL CODE. SEAL MEDIUM PRESSURE SUPPLY DUCTWORK FOR POSITIVE 3" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4. SEAL LOW PRESSURE SUPPLY, RETURN, OUTSIDE AIR, AND EXHAUST DUCTWORK FOR POSITIVE/NEGATIVE 2" PRESSURE CLASS, SMACNA SEAL CLASS A, SMACNA LEAKAGE CLASS 4.
6. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS AND ROOF SHALL BE FLASHED AND COUNTERFLASHED IN A WATERPROOF MANNER.
7. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED WITH THE WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.
8. UPON PROJECT COMPLETION, THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER INSTALLATION INFORMATION INCLUDING RECORD SUBMITTALS (WITH ANY SUBMITTAL REVIEW COMMENTS ADDRESSED) AND O&M MANUALS FOR EACH PIECE OF EQUIPMENT INCLUDING ALL SELECTED OPTIONS, THE NAME AND ADDRESS OF AT LEAST ONE SERVICE AGENCY, FULL CONTROL SYSTEM O&M AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, FULL SEQUENCE OF OPERATION, AND PROGRAMMED SETPOINTS. IN ADDITION, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO HIRE A REGISTERED DESIGN PROFESSIONAL TO COMMISSION THE INSTALLED SYSTEM AND PROVIDE THE OWNER AND CODE REVIEWER A SEALED STATEMENT OF SYSTEM COMMISSIONING (PER 2018 NCECC APPENDIX C1).
9. PROVIDE A ONE YEAR WARRANTY FOR ALL WORK PERFORMED BEGINNING ON THE DAY THE SYSTEM IS COMPLETELY OPERATIONAL AND ACCEPTABLE BY THE OWNER.
10. PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND ALL EQUIPMENT FOR MAINTENANCE AND FILTER REMOVAL.
11. CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED. CONDENSATE DRAINS SHALL BE INSULATED WITH 1/2" THICK ARMAFLEX INSULATION. MINIMUM DRAIN SIZE SHALL BE 3/4". TERMINATE ROOFTOP UNIT DRAINS ON A CONCRETE SPLASHBLOCK.
12. ALL REFRIGERANT PIPE SHALL BE NITROGENIZED ACR COPPER TUBE. SIZE, INSULATE, AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS. REFRIGERANT PIPING INSULATION EXPOSED OUTDOORS SHALL BE COVERED WITH AN OUTER ALUMINUM JACKET.
13. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS OR NOT.
14. INSTALL THE TOP OF ALL THERMOSTATS, SENSORS, AND SWITCHES AT 4'-0" (MAXIMUM) ABOVE FINISH FLOOR. COORDINATE EXACT THERMOSTAT LOCATION WITH OWNER PRIOR TO INSTALLATION. ANY DEVICE ON A PERIMETER WALL SHALL BE MOUNTED ON A FOAM-FILLED ELECTRICAL BOX, WITH ALL GAPS BETWEEN BOX AND WALL SEALED TO PREVENT INFILTRATION.
15. CONTRACTOR SHALL VERIFY LOCATION OF ALL ROOF PENETRATIONS WITH ARCHITECT & OWNER PRIOR TO INSTALLATION.
16. ROOF CURBS SHALL ALLOW A MINIMUM OF 8" ABOVE ROOF INSULATION FOR FLASHING, OR AS INDICATED ON THE DRAWINGS, WHICHEVER IS GREATER. IN ADDITION, ALL ROOF CURBS OR EQUIPMENT SUPPORT RAILS THAT SUPPORT EQUIPMENT, PIPING, CONDUIT, ETC. EXPOSED ON THE ROOF SHALL HAVE SUFFICIENT HEIGHT TO MAINTAIN A MINIMUM OF 18" CLEARANCE BELOW SUPPORTED EQUIPMENT FOR ROOF MAINTENANCE.
17. CONTRACTOR SHALL LOCATE EXHAUST FANS, OUTLETS, AND GAS FLUES A MINIMUM OF 15'-0" FROM ANY OUTSIDE AIR INTAKE.
18. MINIMUM GAS PIPING SIZE SHALL BE 3/4".
19. GAS PIPING SHALL BE INSTALLED TO THE REQUIREMENTS OF THE STATE BUILDING CODE AND NFPA STANDARD NO. 54. ALL PIPING TO BE SUPPORTED BY CLEVIS HANGERS WITH GALVANIZED ROD A MAXIMUM OF 8' ON CENTER. PIPING SHALL BE SUPPORTED BY ROD HANGERS IN THE PIPE RUN 12" OR LESS IN LENGTH FROM THE TOP OF THE PIPE TO THE SUPPORTING STRUCTURE PER THE STATE BUILDING CODE AND ASCE 7.
20. GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN NFPA NO 54. ANY OTHER TEST AS REQUIRED BY THE LOCAL GAS INSPECTION DEPARTMENT OR GAS COMPANY SHALL ALSO BE PERFORMED.
21. NATURAL GAS PIPING AND FITTINGS ABOVE GRADE: SCHEDULE 40 BLACK STEEL PIPING, TYPE S, SEAMLESS, GRADE B (ASTM A 53) AND 150 PSI MALLEABLE BLACK IRON FITTINGS, GRADE 32510, (ASTM B 16.3) OR FORGED STEEL WELDING TYPE FITTINGS (ASTM A234). PROVIDE THREADED JOINTS FOR PIPE 2" AND SMALLER. PROVIDE WELDED JOINTS (ASME B31.9) FOR PIPE 2 1/2" AND LARGER.
22. PROVIDE A.G.A. CERTIFIED SHUT-OFF VALVES MINIMUM, 125 PSI RATED, NON- LUBRICATED PLUG TYPE WITH BRONZE BODY AND BRONZE PLUG, STRAINERS AND REGULATORS (AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER) FOR ALL EQUIPMENT CONNECTED TO THE NATURAL GAS SYSTEM.
23. PAINT ALL GAS PIPING WITH 2 COATS OF YELLOW ENAMEL PAINT APPLIED WITH A BRUSH (2 MIL THICKNESS MINIMUM). PROVIDE PRE-PRINTED LABELS WITH BLACK LETTERING INDICATING THE GAS PRESSURE AND THE WORD "GAS" ON THE PIPE AT 5'-0" CENTERS FOR ALL GAS PIPING.
24. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.
25. DUCTWORK AND PIPING PASSING THROUGH/ABOVE ELECTRICAL ROOMS SHALL BE CLOSELY COORDINATED WITH THE ELECTRICAL CONTRACTOR. DUCTWORK OR PIPING SHALL NOT BE LOCATED ABOVE ELECTRICAL PANELS.
26. EQUIPMENT OPERATED DURING CONSTRUCTION SHALL USE FILTERED MEDIA TO PREVENT CONSTRUCTION DEBRIS FROM ENTERING COILS, DUCTWORK SYSTEMS, AIR TERMINALS ETC. AT COMPLETION OF CONSTRUCTION, MECHANICAL CONTRACTOR SHALL CLEAN ALL SYSTEMS WITH ALL CONTROL DEVICES WIDE OPEN AND REMOVE ANY REMAINING DEBRIS PRIOR TO TEST AND BALANCING. MECHANICAL CONTRACTOR SHALL REPLACE ALL FILTRATION WITH NEW FILTERS AT COMPLETION OF CONSTRUCTION. ANY DUCTWORK, AIR TERMINALS, AND/OR OTHER EQUIPMENT UPSTREAM OF FILTRATION SHALL BE CLEANED THOROUGHLY OF CONSTRUCTION DEBRIS BEFORE HANDING OVER TO OWNER.
27. MECHANICAL CONTRACTOR SHALL PROVIDE PRE-PRINTED COLOR-CODED PIPE LABELS WITH 1-1/2" HIGH LETTERING INDICATING SERVICE AND FLOW DIRECTION. PLASTIC PIPE LABELS UTILIZED IN A RETURN AIR PLENUM SHALL BE LISTED/APPROVED FOR USE IN A RETURN AIR PLENUM. ALL PIPING TO MATCH EXISTING FACILITIES STANDARD (IF APPLICABLE). OTHERWISE, PIPE LABELS SHALL MATCH THE FOLLOWING:

    REFRIGERANT PIPING: YELLOW BACKGROUD, BLACK LETTERING
28. ALL MECHANICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED AS A COMPLETE PACKAGE, NOT THROUGH INDIVIDUAL COMPONENTS OR PARTS. PROVIDE REQUIRED 3RD PARTY FIELD UL LISTING SERVICES AS REQUIRED TO COMPLY.

COORDINATION DRAWINGS

THE MECHANICAL CONTRACTOR SHALL ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL CONTRACTOR). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA (INCLUDING CABLE TRAY) AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND PIPING SYSTEMS, OR PURCHASE OF EQUIPMENT. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS FOR SHOP DRAWINGS AND COORDINATION DRAWINGS:

1, ALL SHOP AND COORDINAGION DRAWINGS WILL BE 1/4" = 1'-O" SCALE
2. DRAWINGS WILL BE ORIGINAL DRAWINGS AND NOT OVERLAYS OF THE CONTRACT/DESIGN
3. COORDINATION DRAWINGS WILL BE DRAWN ON REPRODUCIBLE MATERIAL 48'x36".
4. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
5. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

TESTING, ADJUSTING, AND BALANCING

1. THE MECHANICAL CONTRACTOR SHALL BALANCE ALL MECHANICAL SYSTEMS TO THE PERFORMANCE SPECIFICATIONS INDICATED ON PLANS AND PROVIDE THE ENGINEER WITH THREE COPIES OF A COMPLETE TEST AND BALANCE REPORT. THE REPORT IS TO BE ISSUED A MINIMUM OF TWO WEEKS PRIOR TO PROJECT COMPLETION. THE TEST AND BALANCE REPORT WILL BE SUBJECT TO REVIEW AND APPROVAL BY THE ENGINEER. ANY ADDITIONAL TESTING, ADJUSTING AND BALANCING REQUIRED (AT ENGINEER'S REQUEST) AFTER REVIEW OF THE INITIAL REPORT SHALL BE PROVIDED AT NO ADDITIONAL COST. TEST AND BALANCE REPORT TO BE COMPLETED BY AN INDEPENDENT, CERTIFIED TEST AND BALANCE CONTRACTOR.
2. CONDUCT TESTING AND BALANCING IN ACCORDANCE WITH TECHNICAL PORTIONS OF THE AABC "NATIONAL STANDARDS FOR TESTING AND BALANCING HVAC SYSTEMS", LATEST EDITION.
3. INSTRUMENTS USED FOR BALANCING MUST HAVE BEEN CALIBRATED WITHIN A PERIOD OF SIX (6) MONTHS PRIOR TO BALANCING. SUBMIT SERIAL NUMBERS, AND DATES OF CALIBRATION OF ALL INSTRUMENTS TO BE USED PRIOR TO THE START OF WORK.
4. SET HVAC SYSTEM AIRFLOW AND WATER FLOW RATES WITHIN THE FOLLOWING TOLERANCES:
   - A. SUPPLY, RETURN, AND EXHAUST FANS AND EQUIPMENT WITH FANS: MINUS 5 TO PLUS 10 PERCENT.
   - B. AIR OUTLETS AND INLETS: 0 TO MINUS 10 PERCENT.
5. REFER TO SPECIFICATION SECTION 230593 AND CONTRACT DRAWINGS IN THEIR ENTIRETY FOR ADDITIONAL REQUIREMENTS.

2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - MECHANICAL SUMMARY

C401 METHOD OF COMPLIANCE

- [x] 2018 NCECC CHAPTER 4
- [ ] ASHRAE 90.1-2013 PRESCRIPTIVE
- [ ] ASHRAE 90.1-2013 PERFORMANCE
- [ ] N/A (EXISTING LIGHTING, HVAC, AND DOM. WATER HEATING SYSTEMS TO REMAIN)
- [ ] COMCHECK PROVIDED (2018 NCECC)
- [ ] COMCHECK PROVIDED (90.1-2013)
- [ ] ENERGY MODELING DATA PROVIDED

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- [ ] C406.2 EFFICIENT MECH EQUIPMENT
- [x] C406.3 REDUCED LTG DENSITY
- [ ] C406.4 ENHANCED LTG CONTROLS
- [ ] C406.5 ON-SITE RENEWABLE ENERGY
- [ ] C406.6 DEDICATED OA SYSTEM
- [ ] C406.7 SERVICE WATER HEATING

C301 CLIMATE ZONE

4A - HARNETT COUNTY, NORTH CAROLINA DESIGN CONDITIONS

DESIGN CONDITIONS

EXTERIOR (ASHRAE 90.1-2013 TABLE D-1)

winter dry bulb	18° F.
summer dry bulb	91° F.
summer wet bulb	74° F.

INTERIOR (2018 NCECC SECTION C302.1)

winter dry bulb	72° F.
summer dry bulb	75° F.

C403.2 HEATING & COOLING LOADS AND EQUIPMENT & SYSTEM SIZING

BUILDING HEATING LOAD	171,390 BTUH (peak)
BUILDING COOLING LOAD	537,240 BTUH (peak)
INSTALLED HEATING CAPACITY	639,900 BTUH
INSTALLED COOLING CAPACITY	589,120 BTUH

C403.2.3 & C406.2 - REQUIRED & INCREASED HVAC EQUIPMENT PERFORMANCE

SYSTEM DESCRIPTION - PACKAGED DX ROOFTOP UNITS WITH NATURAL GAS HEAT

- [x] MINIMUM HVAC EQUIP EFFICIENCY COMPLIANCE - TABLE C403.2.3
- [ ] INCREASED HVAC EQUIP EFFICIENCY COMPLIANCE - 10% OVER TABLE C403.2.3

EQUIP TYPE	SIZE CATEGORY (BTUH)	SUBCATEGORY	C403.2.3 MINIMUM EFFICIENCY (a)	10% INCREASED EFF. (a)	DESIGN EFFIC.
TABLE C403.2.3(1) - UNITARY AIR CONDITIONERS AND CONDENSING UNITS					
AIR COND, AIR COOLED	< 65,000 (<= 5 TONS)	SPLIT SYSTEM & SINGLE PACKAGE	13.0 SEER	14.3 SEER	SEE SCHEDULE
a. DEDUCT 0.2 FROM THE REQUIRED EERS AND IEERS FOR UNITS WITH A HEATING SECTION OTHER THAN ELECTRIC RESISTANCE HEAT OR NO HEAT.					
TABLE C403.2.3(2) - ELECTRICALLY OPERATED UNITARY AND APPLIED HEAT PUMPS					
AIR COOLED COOL MODE	>= 65,000 & < 135,000	SPLIT SYSTEM & SINGLE PACKAGE	11.0 EER 12.0 IEER	12.1 EER 13.2 IEER	SEE SCHEDULE
AIR COOLED COOL MODE	>= 240,000	SPLIT SYSTEM & SINGLE PACKAGE	9.5 EER 10.6 IEER	10.4 EER 11.7 IEER	SEE SCHEDULE
a. DEDUCT 0.2 FROM THE REQUIRED EERS AND IEERS FOR UNITS WITH A HEATING SECTION OTHER THAN ELECTRIC RESISTANCE HEAT OR NO HEAT.					
TABLE C403.2.3(4) - WARM AIR FURNACES					
WARM AIR GAS FURN	< 225,000	-	78% AFUE OR 80% Et	86% AFUE OR 88% Et	SEE SCHEDULE
WARM AIR GAS FURN	>= 225,000	MAXIMUM CAPACITY	80% Et	88% Et	SEE SCHEDULE

C403.2.4 THRU C403.2.11

- [x] HVAC SYSTEMS ARE FULLY COMPLIANT WITH THE REQUIREMENTS FOR HVAC SYSTEM CONTROL, VENTILATION, ENERGY RECOVERY, DUCT AND PLENUM INSULATION AND SEALING, PIPING INSULATION, AND SYSTEM COMPLETION.

C403.2.12 - AIR SYSTEM DESIGN AND CONTROL

- [x] ALL FANS INSTALLED ON THE PROJECT ARE 5 HP OR LESS AND ARE EXEMPT FROM THESE REQUIREMENTS.

C403.3 - ECONOMIZERS (PRESCRIPTIVE)

- [x] PROJECT INCLUDES AN AIR OR WATER ECONOMIZER COMPLIANT WITH C403.3
- [ ] PROJECT MEETS AN ECONOMIZER EXCEPTION LISTED IN C403.3

C403.4 - HYDRONIC AND MULTIPLE-ZONE HVAC SYSTEMS CONTROL AND EQUIPMENT (PRESCRIPTIVE)

- [x] PROJECT CONSISTS OF ONLY SINGLE ZONE DX SYSTEMS, EXEMPT FROM THE PRESCRIPTIVE REQUIREMENTS OF C403.4.
- [ ] PROJECT CONSISTS OF HVAC SYSTEMS FULLY COMPLIANT WITH THE PRESCRIPTIVE REQUIREMENTS OF C403.4.

C405.8 - ELECTRICAL MOTORS (MANDATORY REQUIREMENTS).

- [x] ELECTRICAL MOTORS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.8, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE.

C408 - SYSTEM COMMISSIONING

- [ ] PROJECT AREA IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
- [x] PROJECT AREA IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

MECHANICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
M-001	MECHANICAL LEGEND AND NOTES
M-002	MECHANICAL SCHEDULES
M-101	ADDITION MECHANICAL PLAN
M-102	ADDITION ROOF MECHANICAL PLAN
M-501	MECHANICAL DETAILS
M-601	MECHANICAL CONTROL DIAGRAMS

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040316 THOMAS A. LANDEN 07/26/2024

CONSTRUCTION DRAWINGS

optima engineering
150 Fayetteville St., Suite 520, Raleigh, NC 27601
Phone: 919-926-2200 - www.optimaengineering.com
North Carolina License Number C-0914

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24

PROJECT #: 02110.300

DRAWN BY: HFK

CHECKED BY: TAL

MECHANICAL LEGEND AND NOTES

M-001

Autodesk Docs://02110.300 Lillington-Shawtown ES/24-0045R_Lillington-Shawtown ES Addition_MEPFP_R23.rvt
7/25/2024 3:53:52 PM

EQUIVALENT MANUFACTURERS LISTING

LISTING OF MANUFACTURER'S NAME DOES NOT GUARANTEE APPROVAL. ALL EQUIPMENT MUST MEET OR EXCEED QUALITY AND CAPACITIES OF SPECIFIED EQUIPMENT. FINAL APPROVAL WILL BE BASED ON EQUIPMENT SUBMITTALS. ANY MANUFACTURER NOT LISTED BUT WISHING TO BID THIS PROJECT SHALL SUBMIT A WRITTEN REQUEST A MINIMUM OF 7 DAYS PRIOR TO BID DATE OR AS INDICATED IN THE SPECIFICATIONS, ALL EQUIPMENT LISTED IN THE PROJECT SCHEDULE IS TO BE CONSIDERED DESIGN BASIS EQUIPMENT. PRIOR APPROVAL IS REQUIRED FOR ALL MANUFACTURERS NOT LISTED.

(ALPHABETICAL ORDER)
AIR DISTRIBUTION: CARNES, KRUEGER, METAL*AIRE, NAILOR, PRICE, TITUS, TUTTLE & BAILEY
DDC CONTROLS: SCHNEIDER ELECTRIC, AUTOMATED LOGIC CONTROLS, JOHNSON CONTROLS
DUCTLESS SPLIT SYSTEMS: DAIKIN, MITSUBISHI, TRANE
ELECTRIC WALL/UNIT HEATERS: BERKO, MARKEL, MODINE, QMARK, RAYWALL
FANS: COOK, GREENHECK, PENN, TWIN CITY
PACKAGED ROOFTOP UNITS (UNDER 25 TONS): CARRIER, TRANE, YORK/JOHNSON
SPIRAL DUCTWORK: EASTERN SHEET METAL, HAMLIN, LINDAB, UNITED MCGILL

NOTE:
ALL COST ASSOCIATED WITH SUBSTITUTED/NON-DESIGN BASIS EQUIPMENT TO COMPLY WITH BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, PIPING, SHEET METAL, ELECTRICAL, REPLACEMENT OF SYSTEM COMPONENTS, BUILDING ALTERATIONS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COST ASSOCIATED WITH SUBSTITUTED/NON-DESIGN BASIS EQUIPMENT WILL BE APPROVED DURING CONSTRUCTION AND ALL COST WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

ROOFTOP UNIT SCHEDULE (DX COOLING, GAS HEAT, R-410 REFRIGERANT)

SYMBOL	NOMINAL TONS	CFM	DESIGNO.A. (CFM)	OCC. MIN. O.A. (CFM)	SUPPLY FAN E.S.P. (IN. H2O)	COOLING CAPACITY T.C. (BTUH)	COOLING CAPACITY S.C. (BTUH)	EFFICIENCY SEER	EFFICIENCY EER	HEATING CAPACITY INPUT	HEATING CAPACITY OUTPUT	EFFICIENCY AFUE	COMPRESSOR (EA) QTY	COMPRESSOR (EA) RLA	CONDENSER FAN QTY	CONDENSER FAN FLA	SUPPLY FAN HP	POWER SUPPLY MCA	POWER SUPPLY MOCP	POWER SUPPLY VOTAGE	POWER SUPPLY PH	OPERATING WEIGHT	MANUFACTURER	MODEL	ACCESSORIES
RTU-1A	20	8000	1500	750	0.80	247330	194050	13	9.8	320000	259200	81	2	21.3	2	2.2	3.0	54.0	70.0	480	3	2091 lb	TRANE	YSJ240A450M	A,B
RTU-1B	20	8000	1500	750	0.80	247330	194050	13	9.8	320000	259200	81	2	21.3	2	2.2	3.0	54.0	70.0	480	3	2091 lb	TRANE	YSJ240A450M	A,B
RTU-2	7.5	3000	400	400	0.80	94460	73150	14.6	11	150000	121500	81	2	8.2	1	1.5	3.0	21.0	25.0	480	3	1165 lb	TRANE	YSJ090A450M	A,B

NOTES:
1. COOLING CAPACITIES BASED ON 95° AMBIENT, 80/67 ENTERING AIR.
2. PROVIDE ALL UNITS WITH: ROOF CURB, 2" THROWAWAY FILTERS (MERV 8 MINIMUM), ECONOMIZER MOTORIZED OA DAMPER, INTERMITTENT PILOT IGNITION, CONDENSER COIL HAIL GUARDS AND HINGED ACCESS DOORS WITH "TOOL-LESS" ENTRY.
3. ALL UNITS SHALL BE AGA CERTIFIED, U.L. LABELED, AND ASHRAE 90.1 COMPLIANT.
4. PROVIDE EACH UNIT WITH A IONIZATION TYPE SMOKE DETECTOR, INSTALLED IN THE RETURN DUCT WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION. ACTIVATION OF DUCT DETECTOR SHALL ACTIVATE AN AUDIO/VISUAL ALARM IN AN APPROVED LOCATION. DUCT DETECTOR TROUBLE CONDITIONS SHALL ACTIVATE THE VISUAL PORTION OF THE ANNUNCIATOR AND SHALL BE IDENTIFIED AS "AIR DETECTOR TROUBLE". SMOKE DETECTOR AND ALARM SHALL BE FURNISHED, INSTALLED, AND WIRED BY THE MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL PROVIDE POWER WIRING AND ALL ASSOCIATED ACCESSORIES (STEP DOWN TRANSFORMER, ETC.) FOR SMOKE DETECTOR, EITHER FED FROM POWER FEED TO UNIT OR ANOTHER APPROVED POWER SOURCE IN THE AREA.

ACCESSORIES:
A. MODULATING HOT GAS REHEAT (HGRH)
B. LOW LEAKAGE ECONOMIZER

EXHAUST FAN SCHEDULE

	SYMBOL	LOCATION	MANUFACTURER	MODEL NO.	TYPE	CFM	APPROX. ESP	DRIVE TYPE	FAN RPM	SONES	ELECTRICAL DATA WATTS	ELECTRICAL DATA H.P.	ELECTRICAL DATA VOLTAGE-PHASEØ	ACCESSORIES	CONTROL TYPE
	EF-1	ROOF	GREENHECK	G-095-E	DOWNBLAST	525	0.500	DIRECT	1550	9.8	100	0.13	115 V-1Ø	A,B,D,E	2
	EF-2	ROOF	GREENHECK	G-095-E	DOWNBLAST	525	0.500	DIRECT	1550	9.8	100	0.13	115 V-1Ø	A,B,D,E	2
	EF-3	CUSTODIAN 104	GREENHECK	SP-A200	CABINET	125	0.500	DIRECT	763	2.5	30	0.00	115 V-1Ø	A,B,F,G,O	2

EXHAUST FAN SCHEDULE ACCESSORIES:
A. DISCONNECT SWITCH
B. GRAVITY BACKDRAFT DAMPER
C. MOTORIZED BACKDRAFT DAMPER
D. PREFAB, ROOF CURB
E. BIRDSCREEN
F. ACOUSTICAL LINING
G. HANGING BRACKETS WITH VIBRATION ISOLATION
H. WL, WALL LOUVER DISCHARGE
I. RCC OR GRS ROOF CAP (FLAT ROOF) OR RJ ROOF CAP (PITCHED ROOF)
J. WALL MOUNTING COLLAR
K. INLET GAURD
M. 2" WASHABLE ALUMINUM FILTERS
N. MOTORSIDE FAN GUARD
O. EXHAUST GRILLE
P. U.L. 762
Q. VENTED ROOF CURB EXTENSION
R. COMBINATION KITCHEN HOOD FAN CURB
S. INTERLOCK WITH FUME HOOD
T. PROVIDE DRAIN PLUG ACCESSORY
U. ROOF SUPPORT RAILS
V. VFD

EXHAUST FAN SCHEDULE CONTROLS:
1. WALL MOUNTED THERMOSTAT (REVERSE ACTING, SET FOR 80°)
2. INTERLOCK WITH ROOM LIGHT SWITCH (FAN SHALL OPERATE WHEN LIGHT IS ON IF ANY ROOM IS SERVED BY FAN)
3. WALL MOUNTED ON/OFF SWITCH WITH IDENTIFICATION LABEL
4. WALL MOUNTED MUSHROOM PUSH BUTTON SWITCH/STARTER WITH IDENTIFICATION LABEL
5. CONTROLLED BY BUILDING AUTOMATION SYSTEM
6. CONTINUOUS OPERATION
7. CONTROLLED BY THE FACP AND FIREMAN'S MANUAL OVER-RIDE CONTROL PANEL IN FIRE COMMAND ROOM. NO MECHANICAL CONTROL POINTS REQUIRED BY M.C. FOR SMOKE CONTROL FANS

EXHAUST FAN SCHEDULE NOTES:
1. ALL FANS SHALL BE U.L. LISTED AND LABELED AND SHALL BE AMCA CERTIFIED FOR SOUND AND AIR FLOW. ALL FANS INSTALLED INSIDE, ABOVE, OR ADJACENT TO OCCUPIED SPACES SHALL HAVE A MAXIMUM 9.0 INLET SONE LEVEL.
2. ALL FANS SHALL BE SUPPLIED BY ONE MANUFACTURER UNLESS NOTED OTHERWISE.
3. MECHANICAL CONTRACTOR SHALL PROVIDE MAGNETIC STARTER WITH AUXILIARY CONTACTS AS REQUIRED.
4. PROVIDE ALL DIRECT DRIVE FANS WITH SPEED CONTROLLERS.
5. BACKDRAFT DAMPER ON ROOF SUPPLY FANS SHALL BE MOTORIZED.

MECHANICAL VENTILATION SCHEDULE (2018 NCMC)

LOCATION NO.	LOCATION NAME	Occupancy Category	Area	Number of People_OPT	Outdoor Airflow Rate Per Person, Rp	Outdoor Airflow Rate Per Unit Area, Ra	Breathing Zone Outdoor Airflow, Voz	Zone Air Distribution Effectiveness, Ez	Required Outdoor Air Intake Flow, Vot	Fixture Count	EXH Air Flow Rate (cfm/fix)	Exhaust Air FLow Provided (cfm)	Comments
100	GYMNASIUM	Gym, stadium (play area)	4222 SF	0	0.0 CFM	0.30 CFM/SF	1266.71 CFM	1	1267 CFM				
100	GYM SEATING AREA	Spectator areas	1292 SF	194	7.5 CFM	0.06 CFM/SF	1532.49 CFM	1	1532 CFM				
100	CORRIDOR	Corridors	2222 SF	0	0.0 CFM	0.06 CFM/SF	133.33 CFM	1	133 CFM				
RTU-1A and 1B									2933 CFM			0 CFM	
101	LOBBY	Lobbies/prefunction	1003 SF	31	7.5 CFM	0.06 CFM/SF	292.69 CFM	1	293 CFM				
101	LOBBY	Corridors	210 SF	0	0.0 CFM	0.06 CFM/SF	12.58 CFM	1	13 CFM				
102	MEN	Toilets (public)	263 SF					1		7	70	490 CFM	
103	WOMEN	Toilets (public)	316 SF					1		7	70	490 CFM	
104	CUSTODIAN	Janitor closets, trash rooms, recylcing ASHRAE	67 SF					1		1		70 CFM	
105	OFFICE	Office space	81 SF	1	5.0 CFM	0.06 CFM/SF	9.85 CFM	1	10 CFM				
105A	CLOSET	Storage rooms	26 SF	0	0.0 CFM	0.12 CFM/SF	3.16 CFM	1	3 CFM				
106	EQUIPMENT	Storage rooms	246 SF	0	0.0 CFM	0.12 CFM/SF	29.52 CFM	1	30 CFM				
C101	CORR.	Corridors	220 SF	0	0.0 CFM	0.06 CFM/SF	13.19 CFM	1	13 CFM				
RTU-2									361 CFM			1050 CFM	

HEAT PUMP SCHEDULE (AIR COOLED)

SYMBOL	NOMINAL TONNAGE	COOLING COIL TC (BTUH)	COOLING COIL SHC (BTUH)	EFFICIENCY EER	EFFICIENCY SEER	COMPRESSOR LRA	COMPRESSOR RLA	FAN FLA	ELECTRICAL DATA MCA	ELECTRICAL DATA FUSE	ELECTRICAL DATA VOLTAGE	ELECTRICAL DATA PH	REFRIG. TYPE	MANUFACTURER (MITSUBISHI) MODEL	WEIGHT	MATCHING INDOOR UNIT
ODU-1	1.5	18000	12240	9.9	18.5	12.0	7.0	0.5	11.0	28.0	208 V	1	R410A	PUY-A18NKA7(-BS)	99 lb	IDU-1

NOTES:
1. COOLING CAPACITY @ 95 AMBIENT.
2. ALL UNITS SHALL BE U.L. LISTED AND HAVE A MINIMUM SEER OF 13.
3. HEAT PUMP SUPPLEMENTARY ELECTRIC RESISTANCE HEAT SHALL BE PROVIDED WITH CONTROLS TO PREVENT OPERATION WHEN THE REVERSE CYCLE HEAT CAN MEET HEATING LOAD. SUPPLEMENTAL ELECTRIC HEAT SHALL BE ALLOWED TO OPERATE DURING HEAT PUMP DEFROST CYCLE. SUPPLEMENTAL ELECTRIC HEAT SHALL BE LOCKED OUT WHEN THE OUTDOOR TEMPERATURE IS BETWEEN 35°F AND 40°F AND THE INDOOR TEMPERATURE SETPOINT IS INCREASED.
4. MOUNT UNITS ON A 4" THICK CONCRETE PAD AND PROVIDE MANUFACTURER'S RECOMMENDED CLEARANCES AROUND UNITS.
5. PROVIDE UNITS WITH CONDENSER COIL HAIL GUARDS AND LOW AMBIENT CONTROLS.
6. FOR REFRIGERANT LINE APPLICATIONS WITH A TOTAL EQUIVALENT LENGTH BETWEEN 50'-0" AND 175'-0". THE FOLLOWING ACCESSORIES SHALL BE PROVIDED;
   -COMPRESSOR CRANKCASE HEATER
   -FOR HORIZONTAL CONFIGURATION: PROVIDE LIQUID LINE SOLENOID WITHIN 2'-0" OUTDOOR UNIT WITH FLOW ARROW POINTING TOWARD OUTDOOR UNIT. VAPOR LINE SHOULD SLOPE TOWARD INDOOR UNIT.
   -MECHANICAL CONTRACTOR & UNIT MANUFACTURER ARE TO REVIEW INSTALLATION, AND FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR LONG REFRIGERANT LINE APPLICATIONS (AS DEFINED BY UNIT MFGR).

DUCTLESS A/C INDOOR UNIT SCHEDULE

SYMBOL	MANUFACTURER	MODEL NO.	DESIGN AIRFLOW	TOTAL CAPACITY	EAT(db)	EAT(wb)	UNIT WEIGHT	MCA	VOLT	PH	INTERLOCK ID	REMARKS
IDU-1	MITSUBISHI ELECTRIC	PKA-A18HA7	425 CFM	18000 Btu/h	90.0 °F	72.0 °F	29 lb	1.0 A	208 V	1	ODU-1	

DUCTLESS A/C UNIT SCHEDULE NOTES:
1. PROVIDE WITH FACTORY THERMOSTAT
2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
3. SIZE AND INSTALL REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
4. INDOOR UNITS ARE POWERED BY THE CONDENSING UNITS.
5. IN EVERY ROOM SERVED BY A MINI-SPLIT INDOOR UNIT PROVIDE A TEMPERATURE SENSOR INTEGRATED INTO THE BAS WITH HIGH TEMPERATURE ALARM SET AT 80F (ADJ)

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE

SYMBOL	DESCRIPTION	MANUF.	MODEL	MATERIAL	FACE SIZE	NECK SIZE	NECK WIDTH	NECK HEIGHT	INSTALLATION BORDER TYPE	OPTIONS DAMPER DESCRIPTION	NOTES
A	LOUVERED FACE DIFFUSER	Titus	OMNI-AA	ALUMINUM	12x12	6			TYPE 3 (LAY-IN)	---	SUPPLY
B	PLAQUE FACE DIFFUSER	TITUS	OMNI	STEEL	24x24	6			TYPE 3 (LAY-IN)	---	SUPPLY
C	PLAQUE FACE DIFFUSER	TITUS	OMNI-AA	ALUMINUM	24x24	8			TYPE 3 (LAY-IN)	---	SUPPLY
D	PLAQUE FACE DIFFUSER	TITUS	OMNI	STEEL	24x24	8			TYPE 3 (LAY-IN)	---	SUPPLY
F	PLAQUE FACE DIFFUSER	TITUS	OMNI	STEEL	24x24	10			TYPE 3 (LAY-IN)	---	SUPPLY
G	LOUVERED DOUBLE DEFLECTION GRILLE	TITUS	US300FS	ALUMINUM	---	0	18	6	DUCT-MOUNTED	---	SUPPLY
H	PERFORATED DIFFUSER	TITUS	PAR	STEEL	24x24	6			TYPE 3 (LAY-IN)	---	RETURN
J	PERFORATED DIFFUSER	TITUS	PAR	STEEL	24x24	10			TYPE 3 (LAY-IN)	---	RETURN
K	HEAVY DUTY LOUVERED GRILLE	Titus	33RS	STEEL	---		36	48	TYPE 1 (SURFACE)	---	RETURN
L	HEAVY DUTY LOUVERED GRILLE	TITUS	33RL	STEEL	---		32	18	TYPE 1 (SURFACE)	---	RETURN
M	PERFORATED DIFFUSER	TITUS	PAR-AA	ALUMINUM	24x24	10			TYPE 3 (LAY-IN)	---	EXHAUST

AIR DISTRIBUTION SCHEDULE NOTES:
1. ALL CEILING AND WALL MOUNTED DEVICES SHALL BE FURNISHED WITH AN ENAMEL BRIGHT WHITE FINISH UNLESS NOTED OTHERWISE.
2. ALL DEVICES SHALL BE FURNISHED WITH FRAMES SUITABLE FOR THE TYPE OF INSTALLATION REQUIRED.
3. ALL LINEAR DIFFUSERS IN LAY-IN CEILINGS SHALL BE FURNISHED WITH END CAPS. ALL LINEAR DIFFUSERS IN HARD CEILINGS SHALL BE FURNISHED WITH END BORDERS. ALL LINEAR SUPPLY DIFFUSERS SHALL BE PROVIDED WITH INTEGRAL AIRFLOW PATTERN ADJUSTMENT BARS FOR HORIZONTAL/VERTICAL PATTERN ADJUSTMENT AT EACH SLOT.
4. ALL DOUBLE DEFLECTION SUPPLY GRILLES SHALL HAVE DAMPER BLADES ADJUSTED TO PROVIDE AIRFLOW PATTERN INDICATED BY FLOW ARROWS ON PLANS. DAMPERS SHALL BE ADJUSTED TO A 30 DEGREE POSITION UNLESS NOTED OTHERWISE ON PLANS.

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Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY
855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

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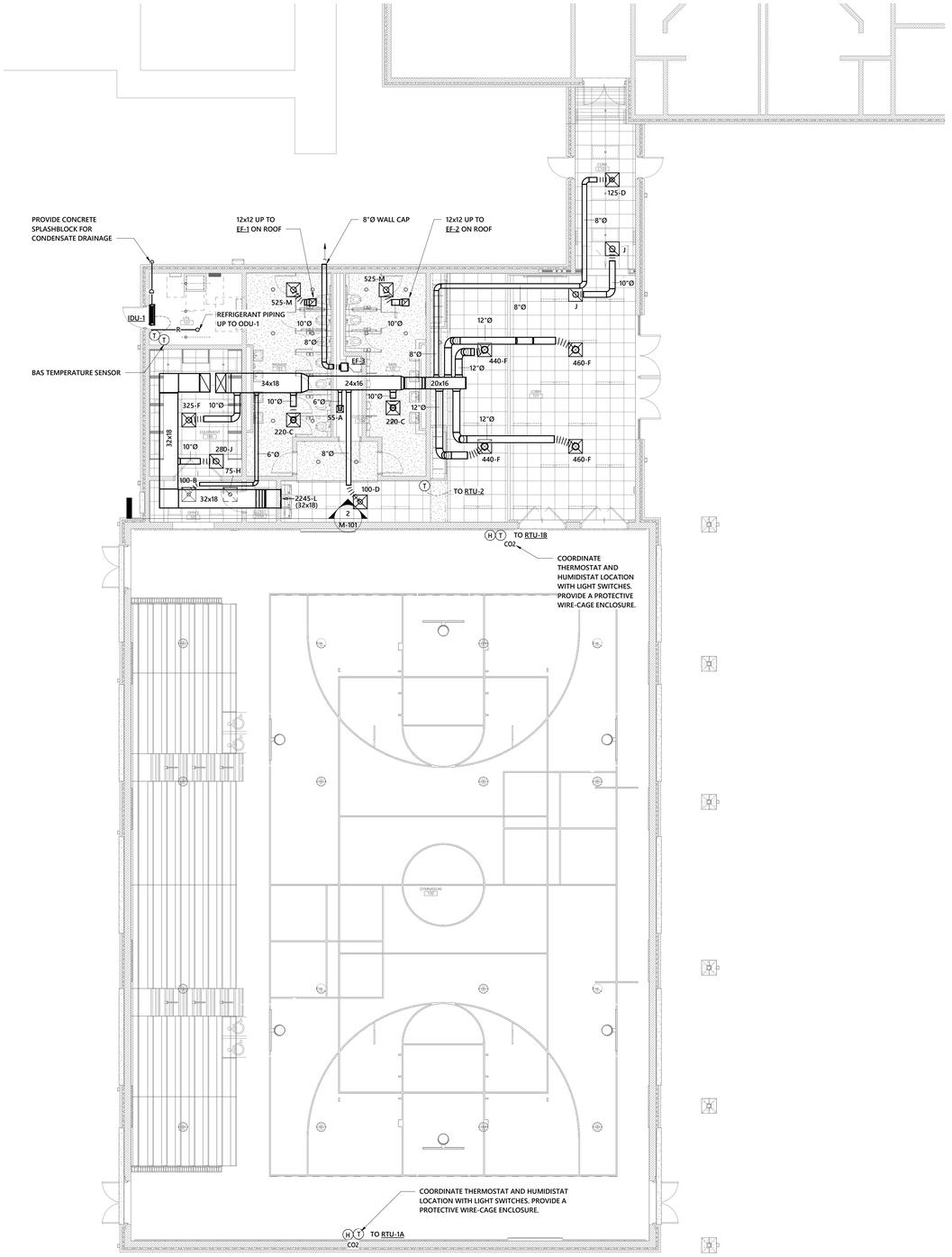
MECHANICAL SCHEDULES

M-002

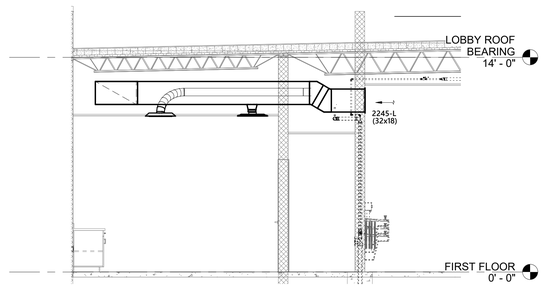
Sheet No. 2 of 6

OPTIMA# 24-0045R

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED



1 ADDITION MECHANICAL PLAN
1/8" = 1'-0"



2 WALL MOUNTED RETURN SECTION
1/4" = 1'-0"

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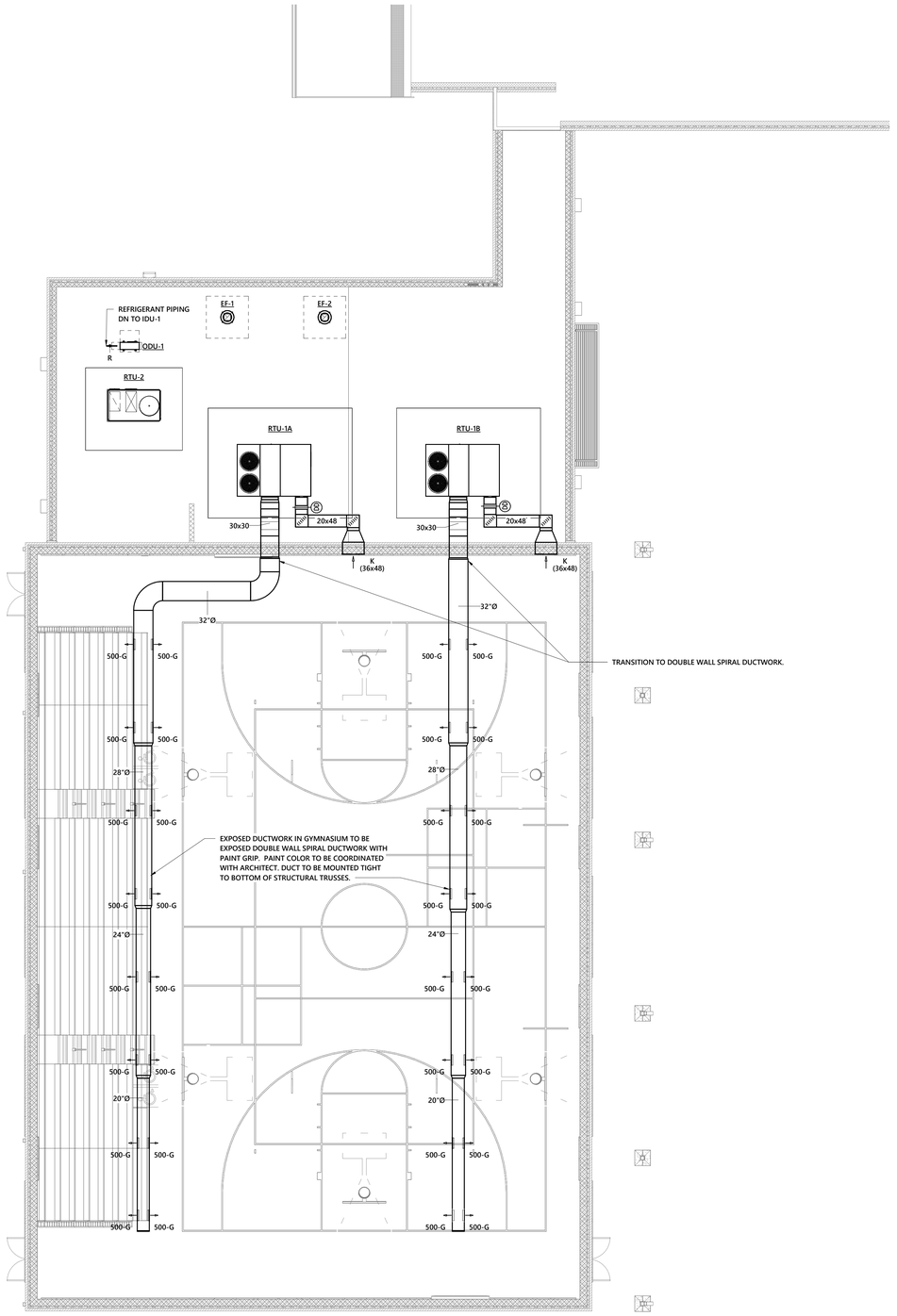
ADDITION MECHANICAL PLAN

M-101

Sheet No. 3 of 6

OPTIMA# 24-0045R

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED



1 ADDITION ROOF MECHANICAL PLAN
1/8" = 1'-0"

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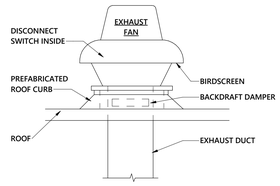
ADDITION ROOF MECHANICAL PLAN

M-102

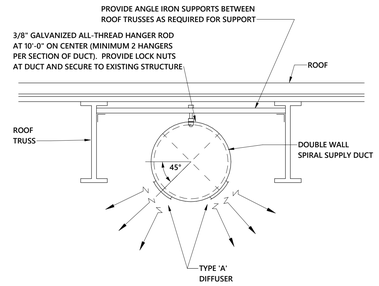
Sheet No. 4 of 6

OPTIMA# 24-0045R



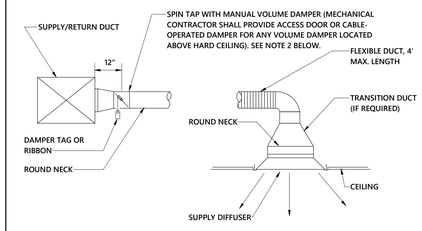
NOTE:
1. SECURED FAN TO CURB WITH NON-FERROUS SCREWS. MIN. 2 PER SIDE, 4-INCHES FROM CORNERS AND MAX, 12- INCHES ON CENTER. PROVIDE EDPM WASHERS FOR BOTH SIDES OF ROOF CURB.

5 EXHAUST FAN ROOF DETAIL
NOT TO SCALE



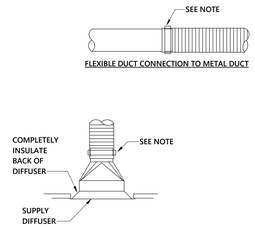
NOTES:
1. DUCTWORK SHALL BE INSTALLED LEVEL, AS HIGH AS POSSIBLE (UNLESS OTHERWISE NOTED).
2. ALL EXPOSED SPIRAL DUCTWORK SHALL BE A SINGLE OR DOUBLE WALL LINDAB SPIROSAFE SELF-SEALING DUCT SYSTEM (OR APPROVED EQUAL). REGISTERS ON SPIRAL DUCT SHALL BE MOUNTED WITHOUT THE USE OF RECTANGULAR REGISTER TAPS, TOP AND BOTTOM FLANGES SHALL MEET FLUSH WITH THE SPIRAL DUCT WALL REGARDLESS OF DUCT DIAMETER.
3. PROVIDE SPIRAL DUCTWORK WITH PAINT GRIP FINISH. SPIRAL DUCT TO BE PAINTED, CONFIRM COLOR WITH ARCHITECT.

4 DBL. DEFL. DIFFUSER MOUNTING ON SPIRAL DUCT
NOT TO SCALE



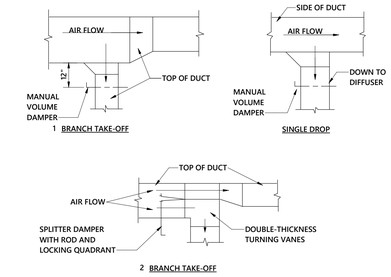
NOTE:
1. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST RUNOUTS.
2. ALL MANUAL VOLUME DAMPERS (FOR INSULATED DUCTWORKS) SHALL BE PROVIDED WITH AN ELEVATED REGULATOR (STAND-OFF) EQUAL TO DURO DYNE SEST SERIES AND FULL-LENGTH SHAFT. STAND SHALL EXTEND A MINIMUM OF 2" BEYOND DUCTWORK WITH EXTENDED TAB/SHAFT.
3. CONTRACTOR TO COORDINATE WITH ARCHITECT FOR DESIRED DAMPER ACCESS STYLE CABLE-OPERATED DAMPER ADJUSTMENT SHALL BE THROUGH AIR TERMINAL. FACE OPERATION (CONCEALED MOUNTING) OR THROUGH CEILING-MOUNTED RECESSED PORTS EQUAL TO MAT RT-CCM.

3 SPIN TAP TO ROUND NECK DIFFUSER
NOT TO SCALE



NOTE:
ALL FLEXIBLE DUCT CONNECTIONS TO SHEET METAL SHALL BE SECURED WITH APPROVED STRAP AND SEALANT.

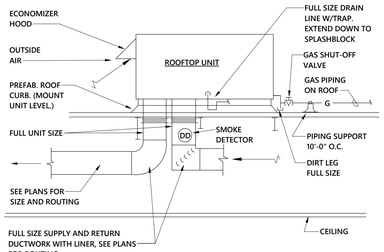
2 FLEX CONNECTION DETAIL
NOT TO SCALE



NOTE:
1. USE BRANCH TAKE-OFF (1) WHEN MAIN AND BRANCH DUCTS ARE DIFFERENT DEPTHS
2. USE BRANCH TAKE-OFF (2) WHEN MAIN AND BRANCH DUCTS ARE SAME DEPTHS
3. MANUAL VOLUME DAMPERS SHALL BE PROVIDED FOR ALL SUPPLY, RETURN AND GENERAL EXHAUST SINGLE DROP DUCT RUNS.

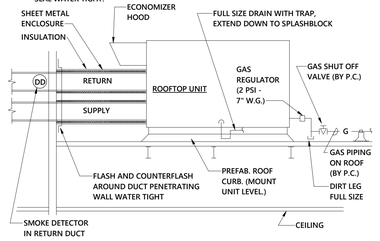
1 DUCTWORK DETAILS
NOT TO SCALE

NOTES:
1. PROVIDE OPENING IN ROOF SIZED FOR SUPPLY AND RETURN DUCTS. ALL OTHER AREAS UNDER UNIT SHALL HAVE ANGLES AND SHEET METAL ACROSS UNDER UNIT WITH BATT INSULATION FILLING VOID.
2. ROOF CURBS SHALL MATCH SLOPE OF ROOF.
3. SMOKE DETECTORS SHALL BE PHOTO-ELECTRIC TYPE WIRED TO SHUT THE UNIT UPON ACTIVATION. SMOKE DETECTORS SHALL BE PROVIDED AND WIRED BY THE ELECTRICAL CONTRACTOR AND INSTALLED IN THE DUCT BY THE MECHANICAL CONTRACTOR.

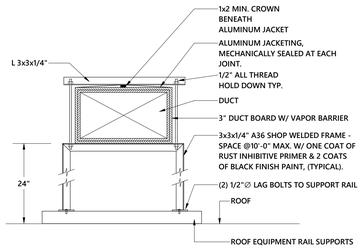


10 RTU - GAS
NOT TO SCALE

NOTES:
1. ALL AREAS UNDER UNIT WITHIN ROOF CURB SHALL BE INSULATED WITH BATT INSULATION FILLING ENTIRE VOID BETWEEN UNIT AND ROOF.
2. ROOF CURB SHALL BE BY UNIT MANUFACTURER. TOP OF CURB SHALL BE INSTALLED LEVEL.
3. SMOKE DETECTOR SHALL BE PHOTO ELECTRIC TYPE WIRED TO SHUT DOWN UNIT WHEN ACTIVATED. SMOKE DETECTOR SHALL BE PROVIDE, INSTALLED IN THE RETURN DUCT, AND WIRED TO SHUT DOWN THE UNIT UPON ACTIVATION BY THE MECHANICAL CONTRACTOR.
4. GAS PIPING AND SHUT-OFF VALVE SHALL BE BY PLBG. CONTR., DIRT LEG, REGULATOR, AND FINAL CONNECTION TO UNIT SHALL BE BY MECH. CONTR.
5. DUCTWORK EXPOSED ON ROOF SHALL BE INSULATED WITH 2" THICK RIGID EXTERNAL FIBERGLASS INSULATION IN ADDITION TO 1" THICK DUCT LINER. COVER EXTERNAL INSULATION WITH AN ALUMINUM OUTER ENCLOSURE AND SEAL WATER TIGHT.

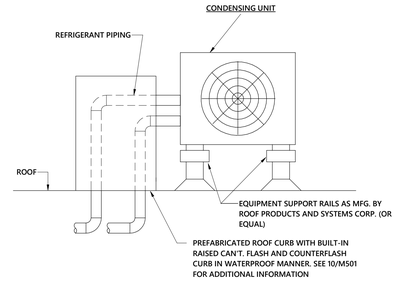


9 RTU - GAS, HORIZONTAL SUPPLY
NOT TO SCALE

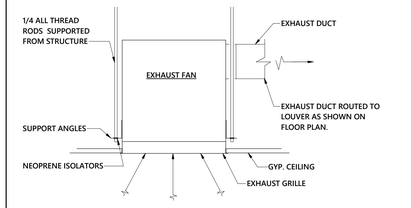


NOTE:
SUPPLY AND EXHAUST DUCTWORK LOCATED OUTSIDE THE BUILDING SHALL BE PROVIDED WITH 3" THICK DUCT BOARD WITH VAPOR BARRIER HAVING A MINIMUM INSTALLED R VALUE OF 8.0. PROVIDE ALL EXTERNAL INSULATION WITH AN ALUMINUM DUCTWORK WEATHERPROOF ENCLOSURE AND SEAL WATER TIGHT. M.C. SHALL SUBMIT SHOP DRAWINGS (FOR ENGINEER'S APPROVAL) DETAILING EXTERIOR DUCTWORK WEATHERPROOFING ASSEMBLY PRIOR TO ORDERING EQUIPMENT.

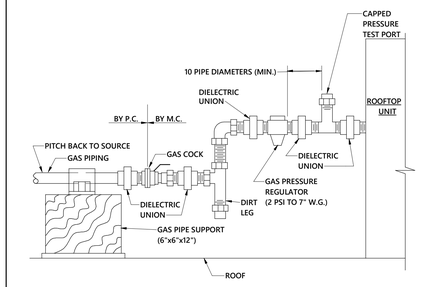
8 DUCTWORK SUPPORT ON ROOF
NO SCALE



7 ROOF - MOUNTED CONDENSING UNIT
NOT TO SCALE



6 CEILING EXHAUST FAN DETAIL
NOT TO SCALE



NOTE:
GAS PIPING AND SHUT-OFF VALVE SHALL BE BY PLBG. CONTR., DIRT LEG, REGULATOR, AND FINAL CONNECTION TO UNIT SHALL BE BY MECH. CONTR.

11 GAS CONNECTION TO RTU (WITH REGULATOR)
NOT TO SCALE

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MECHANICAL DETAILS

M-501

Sheet No. 5 of 6

OPTIMA# 24-0045R

SEQUENCE OF OPERATION

A COMPLETE AND OPERATIONAL DDC CONTROL SYSTEM (BAS) SHALL BE INSTALLED AND TIE INTO THE EXISTING BAS FOR THE SCHOOL IN ACCORDANCE WITH THE SPECIFICATIONS (SECTION 230900) AND AS INTENDED ON THESE PLANS. ALL CONTROL POINTS AND EQUIPMENT SEQUENCES OF OPERATION LISTED IN SPECIFICATION SECTION 230900 SHALL BE CONSIDERED IN ADDITION TO THOSE LISTED HERE. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED PRIOR TO BIDDING OR THE MORE STRINGENT SHALL APPLY. MECHANICAL CONTRACTOR SHALL COORDINATE ALL BAS INTEGRATION REQUIREMENTS WITH EQUIPMENT VENDORS AND CONTROLS CONTRACTOR PRIOR TO PURCHASING EQUIPMENT AND PROVIDE ALL EQUIPMENT WITH COMMUNICATION/INTERFACE CARDS AS REQUIRED FOR SYSTEM INTEGRATION.

DX/GAS ROOFTOP UNITS

AIR HANDLING UNITS SHALL BE STOPPED/STARTED ON A TIME OF DAY SCHEDULE THROUGH THE BAS. THIS SCHEDULE SHALL BE MODIFIED BY A START STOP OPTIMIZATION PROGRAM. UPON PROOF OF AIR FLOW THRU THE SUPPLY FAN, AS SENSED BY A RESPECTIVE CURRENT SENSING RELAY, THE NORMALLY CLOSED OUTSIDE AIR DAMPER SHALL BE ENABLED.

WHILE IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY. WHILE IN THE UNOCCUPIED MODE, THE UNIT SUPPLY FAN SHALL CYCLE WITH HEATING AND COOLING LOADS. UPON A CALL FOR HEATING OR COOLING TO MEET UNOCCUPIED SETPOINTS, THE UNIT FAN SHALL BE STARTED AND THE UNIT SHALL OPERATE AS DESCRIBED BELOW AS REQUIRED BY THE SPACE TEMPERATURE. THE UNIT SHALL OPERATE FOR A MINIMUM OF 30 MINUTES (OR AS REQUIRED TO SATISFY UNOCCUPIED SETPOINT) AND SHALL NOT BE ALLOWED TO RESTART FOR A MINIMUM OF 15 MINUTES FOLLOWING SATISFACTION OF UNOCCUPIED SETPOINT AND SYSTEM SHUTDOWN.

DEMAND CONTROL VENTILATION (RTU-1A AND RTU-1B):
OUTSIDE AIR INTAKE SHALL BE PROVIDED WITH A MOTORIZED DAMPER. ON UNIT START UP, THE OUTSIDE AIR INTAKE DAMPER SHALL REMAIN CLOSED UNTIL THE RETURN AIR TEMPERATURE RISES ABOVE 65° F (ADJ) OR FALLS BELOW 75° F. (ADJ). ONCE RETURN AIR TEMPERATURE IS SATISFIED, THE OUTSIDE AIR DAMPER SHALL OPEN TO THE OCCUPIED MINIMUM SETPOINT. OUTSIDE AIR DAMPERS AND AIR FLOW MONITORING STATIONS SHALL MODULATE AS REQUIRED TO MAINTAIN MINIMUM OUTSIDE AIR FLOW. THE OUTSIDE AIR INTAKE DAMPER SHALL BE CLOSED WHILE UNIT IS IN THE UNOCCUPIED MODE. BAS SHALL BE CAPABLE OF OPENING AND CLOSING OUTSIDE AIR DAMPERS. CO2 SENSOR MOUNTED IN THE RETURN DUCT SHALL MODULATE THE OUTSIDE AIR DAMPER BASED ON CO2 LEVELS IN THE SPACE. DAMPER SHALL MODULATE OPEN FROM THE OCCUPIED MINIMUM SETPOINT OF 800 PPM TO DESIGN MAXIMUM AT 1200 PPM. AN ALARM SHALL BE ACTIVATED IF THE SPACE CO2 LEVEL RISES ABOVE 1500 PPM. SEE AHU SCHEDULE FOR MINIMUM AND DESIGN AIRSIDE ECONOMIZER CYCLE:
DURING THE OCCUPIED PERIOD, WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 68° F AND THE OUTDOOR ENTHALPY IS BELOW THE RETURN AIR ENTHALPY; THE INTERNAL UNIT CONTROLS ECONOMIZER CYCLE SHALL BE ENABLED. UNDER THOSE CONDITIONS, THE OUTDOOR AIR DAMPER AND RETURN AIR DAMPER SHALL MODULATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE SETPOINT.

SMOKE DETECTION & AHU SHUTDOWN:
UPON DETECTION OF SMOKE IN THE AIR HANDLING SYSTEM BY THE DUCT-MOUNTED RETURN AIR SMOKE DETECTOR, AN ALARM CONDITION SHALL BE SENT TO THE BUILDING FIRE ALARM SYSTEM AND ALL AIR HANDLING UNITS SHALL BE SHUTDOWN BY THE BUILDING FIRE ALARM SYSTEM. ALL ASSOCIATED SMOKE DAMPERS SHALL CLOSE. THE BUILDING FIRE ALARM SYSTEM SHALL PROVIDE ONE DIGITAL OUTPUT TO THE BAS TO INDICATE ACTIVATION OR FAILURE OF ANY SMOKE DETECTOR.

MODULATING DAMPER CONTROL:
MODULATING RETURN, RELIEF, AND OUTSIDE AIR DAMPERS SHALL OPERATE IN CONJUNCTION. RELIEF AND OUTSIDE AIR DAMPERS SHALL OPEN TO THE SAME POSITION (BASED ON DEMAND CONTROL VENTILATION OR ECONOMIZER CONTROL), AND RETURN DAMPER SHALL CLOSE TO THE INVERSE POSITION OF THE OUTSIDE AND RELIEF DAMPER SETTINGS.

HUMIDITY CONTROL:
WITH SYSTEM IN OCCUPIED OR UNOCCUPIED MODE, HUMIDITY CONTROL SYSTEM SHALL BE CAPABLE OF BEING ACTIVATED. UNDER NORMAL OPERATION, UNIT SHALL CONTROLLED AS OUTLINED BELOW. PROVIDE HUMIDISTAT AS INDICATED ON PLANS, IF SPACE OR RETURN AIR HUMIDITY REACHES 65% R.H. (ADJ), ALARM SHALL BE SENT AND HUMIDITY CONTROL SEQUENCE SHALL BE ACTIVATED. WHEN SPACE HUMIDITY DROPS BELOW 55% R.H. (ADJ), BAS SHALL DEACTIVATE HUMIDITY CONTROL SEQUENCE. CONTROL OF UNIT SHALL REVERT BACK AS INDICATED BELOW.

CONSTANT VOLUME (CV) ROOFTOP UNITS:

A TEMPERATURE SENSOR SHALL BE UTILIZED TO MAINTAIN SPACE TEMPERATURE. THE DX COMPRESSORS SHALL STAGE AS REQUIRED TO MAINTAIN SETPOINT ON A RISE IN TEMPERATURE ABOVE SPACE SENSOR SETPOINT. AS THE TEMPERATURE SPACE FALLS BELOW SETPOINT, GAS HEAT SHALL BE ENERGIZED IN STAGES TO MAINTAIN SPACE TEMPERATURE. THE TEMPERATURE SENSOR SHALL BE PROVIDED WITH AN OVERRIDE FUNCTION THAT WILL PLACE THE SYSTEM IN THE OCCUPIED MODE FOR A PERIOD OF UP TO 2 HOURS.

SINGLE ZONE VARIABLE VOLUME (SZVAV) AIR HANDLING UNITS:

TEMPERAUTRE SENSOR SHALL BE UTILIZED TO MAINTAIN SPACE TEMPERATURE. THE UNIT SUPPLY FAN SHALL START AT LOW SPEED. ON A RISE IN TEMPERATURE ABOVE SETPOINT, THE DX COMPRESSORS SHALL STAGE ON. ON A CONTINUED RISE IN TEMPERATURE, VARIABLE FREQUENCY DRIVE SHALL INCREASE AIR FLOW TO SATISFY SPACE TEMPERATURE REQUIREMENTS. AS THE SPACE TEMPERATURE DROPS BELOW SETPOINT, THE FAN SPEED SHALL RESET FROM MAXIMUM TO MINIMUM. AS THE SPACE TEMPERATURE CONTINUES TO DROP, THE DX COMPRESSORS SHALL STAGE OFF AND THE GAS HEAT SHALL BE ENERGIZED ON. ON A CONTINUED DROP IN SPACE TEMPERATURE, THE SUPPLY FAN SPEED SHALL INCREASE TO MAINTAIN SETPOINT AND GAS HEAT SHALL STAGE UP. THE TEMPERATURE SENSOR SHALL BE PROVIDED WITH AN OVERRIDE FUNCTION THAT WILL PLACE THE SYSTEM IN THE OCCUPIED MODE FOR A PERIOD OF UP TO 2 HOURS.

GYMNASUIM AIR HANDLING UNIT STAGING (RTU-1A AND RTU-1B. GYMNASIUM SHALL BE STAGED SUCH THAT RTU-1A SHALL ACT AS THE FIRST STAGE OF HEATING AND COOLING, AND LOW OCCUPANCY CONSTANT VENTILATION DURING OCCUPIED TIMES. RTU-1A SUPPLY FAN SHALL RUN CONTINUOUSLY IN THE OCCUPIED MODE AND OPERATE AS A SINGLE ZONE VAV UNIT AS SEQUENCED ABOVE. RTU-1B SHALL ACT AS THE SECOND STAGE OF HEATING, COOLING, DEHUMIDIFICATION, AND VENTILATION, OPERATING AS OUTLINED FOR A SINGLE ZONE VAV UNIT SEQUENCED ABOVE. THERMOSTAT SETPOINTS FOR RTU-1B SHALL BE SET 2° HOTTER/COLDER THAN SETPOINTS FOR PRIMARY UNIT RTU-1A, AND UNIT SHALL ONLY BE ACTIVATED UPON A CALL FOR HEATING AND COOLING FROM THE THERMOSTAT, BY THE CO2 SENSOR INSTALLED IN THE SPACE UTILIZING DEMAND CONTROL VENTILATION AS DESCRIBED IN THE SEQUENCE, OR BY SPACE MOUNTED HUMIDISTAT ACTIVATING THE DEHUMIDIFICATION SEQUENCE.

THERMOSTATS & TEMPERATURE SENSORS

THERMOSTATS AND TEMPERATURE SENSORS SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS, AND PER THE SPECIFICATIONS. THERMOSTATS TO 70°. THERMOSTATS SHALL HAVE A 3° RANGE IN WHICH THEY ARE SATISFIED (IF SET TO 70°, SATISFIED ANYWHERE BETWEEN 68.5° AND 71.5°).
SLIDE BAR SHALL HAVE THE CAPABILITY TO ADJUST THE HEATING AND COOLING SETPOINTS BY 3° IN EITHER DIRECTION, BUT MAINTAIN A MINIMUM 4° SPREAD BETWEEN THE HEATING AND COOLING SETPOINT. UNOCCUPIED SETTINGS SHALL BE 85° COOLING AND 60° HEATING. ALL SETPOINTS SHALL BE VERIFIED WITH THE OWNER BEFORE PROGRAMMING, AND FULLY ADJUSTABLE THROUGH THE BAS.

DUCTLESS SPLIT SYSTEMS:

DUCTLESS SPLIT SYSTEM UNITS SHALL BE PROVIDED WITH STAND ALONE CONTROLS, PROGRAMMABLE THERMOSTATS BY UNIT MANUFACTURER, SEPARATE FROM THE CENTRAL DDC SYSTEM. DDC VENDOR SHALL PROVIDE TEMPERATURE SENSOR FOR THOSE ROOMS THAT WILL ALARM DDC SYSTEM WHEN TEMPERATURE RANGE IS OUT OF LIMITS. INDOOR UNIT FANS SHALL BE STARTED AND STOPPED WITH THERMOSTAT CALL FOR COOLING. UPON A RISE IN SPACE TEMPERATURE ABOVE THERMOSTAT SETPOINT, UNIT COMPRESSOR SHALL ACTIVATE TO SATISFY SPACE CONDITIONS.

MISC. EXHAUST FANS

PROVIDE WALL SWITCHES, WALL THERMOSTATS, INTERLOCKS, ETC. AS INDICATED ON THE FAN SCHEDULE TO CONTROL FANS AS INDICATED ON PLANS. BOILER ROOM AND ELECTRICAL ROOM THERMOSTATS SHALL BE SET AT 85° F. (USER ADJUSTABLE, BAS REMOTE).

INPUT/OUTPUT SUMMARY

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	INPUTS: ANALOG: MEASURED: TEMPERATURE	RELATIVE HUMIDITY	RH	AIR FLOW	WATER FLOW	HERTZ	RPM'S	VOLTS	AMPS	SETPOINT ADJ.	CALC.: ENTHALPY	DEW POINT	EFFICIENCY	INPUTS: BINARY: STATUS	FILTER	CURRENT	FREEZE	AIR FLOW	LEVEL	OVER-RIDE	OUTPUTS: DIGITAL: OFF-ON	OFF-HI-LO	OPEN-CLOSE	OUTPUTS: ANALOG: DMPR. POS.	VALVE POS.	S.TEP. CONTROL	SYSTEM FEATURES: ALARMS: HI ANALOG	LO ANALOG	HI BINARY	LO BINARY	PROOF	SYSTEM FEATURES: PROGRAMS: TIME SCHEDULING	DEMAND LIMITING	DUTY CYCLE	RESET SCHEDS	OPT. START-STOP	ENTHALPY OPT.	SMOKE CNT.	RUN TIME	ALARM INSTRUCT	MAINT. MK. ORD.	GENERAL: COLOR GRAPHIC				SUPPLMENT. NOTES
Air Handling Units																																	X			X				
Return Temp	X																																									
Return RH		X																																							
Return CO2				X																								X													
Smoke Detector																	X																								
OA Damper																									X																
OA Airflow Mon. Station			X																																					
Relief Damper																									X																
Filter Status															X																										
Mixed Air Temp	X																											X												
Freezestat																X												X												
Supply Fan														X						X											X									
Supply Fan VFD Speed								X																																
Supply Temp	X																																						
Space CO2				X																								X											
Space Humidity		X																										X											
Space Temp	X																																						
Over-ride																				X																				
Misc. Points																																						X			
OA Temp	X									X																															
OA CO2				X																																				
Dew Point	X									X																															
Ductless Split Systems	X																											X												
Fire Alarm Status														X																										
Toilet Fans																				X											X									
Misc. Fans																																									See Fan Schedule
Building Dashboard																																									

GENERAL NOTE:

THE POINTS LIST PROVIDED IS INTENDED TO COMMUNICATE THE GENERAL DESIGN INTENT TO THE CONTROLS SUBCONTRACTOR AND IS NOT INTENDED TO BE COMPLETE. IN THE CONTROLS SUBMITTAL, THE SUBCONTRACTOR SHALL FULLY DEVELOP THE POINTS LIST FOR ALL SYSTEMS IDENTIFIED AND SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, AND ALARM POINTS. THE CONTROLS SUBCONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM RUN TIME DELAYS AND DEAD BANDS FROM SETPOINTS TO PREVENT EQUIPMENT FROM SHORT CYCLING WHEN NEAR SETPOINTS. ALL MONITORED POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO HAVING TO TAKE CORRECTIVE ACTIONS OR EQUIPMENT SHUTDOWNS. TRANSMITTERS SHALL INCLUDE OUT-OF-RANGE, FAIL-SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION. CONTROL CONTRACTOR SHALL SPECIFY TO FAIL DE-ENERGIZER, HOLD LAST STATE, OR DEFAULT TO A PREDETERMINED SETPOINT. THESE BASIC FEATURES THAT ARE NECESSARY AND ARE PART OF A COMPLETE CONTROLS INSTALLATION SHALL BE INCLUDED IN THE SCOPE OF SERVICES FOR DELIVERABLES AT NO ADDITIONAL COSTS TO THE OWNER.

CONTROL SYSTEM NOTES

1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. HVAC CONTROLS FOR CLASSROOM ADDITION PROJECT TO BE INTEGRATED INTO THE SCHOOLS EXISTING BAS. ALL POINTS AND EQUIPMENT TO BE ACCESSIBLE FROM THE EXISTING BAS FRONT END AS INDICATED WITH ADDITIONAL GRAPHICS FOR EQUIPMENT AND FLOORPLANS.
3. ALL CONTROL SETPOINTS SHALL BE ADJUSTABLE AND TRENDABLE BY THE USER AND MAINTENANCE DEPARTMENT. INDICATED SCHEDULES AND SETPOINTS SHOULD BE USED FOR ORIGINAL SYSTEM SET-UP. ANY CHANGES IN SETPOINT SETTINGS REQUIRED FOR INTENDED SYSTEM OPERATION SHALL BE APPROVED BY THE ENGINEER AND SHALL BE DISCREETLY INDICATED ON THE AS-BUILT DRAWINGS.
4. CONTRACTOR AND WIRED TO SHUT-DOWN THE UNIT BY THE ELECTRICAL CONTRACTOR, INSTALLED IN THE DUCT BY THE MECHANICAL PHOTOELECTRIC TYPE DUCT SMOKE DETECTORS WILL BE PROVIDED BY THE CONTRACTOR.
5. ELECTRICAL CONTRACTOR SHALL PROVIDE A DEDICATED 120V CIRCUIT IN A J-BOX FOR CONTROL POWER. CONTROLS CONTRACTOR SHALL EXTEND 120V POWER FROM J-BOX TO CONTROL PANELS, DAMPER ACTUATORS, TRANSFORMERS, ETC. AS REQUIRED FOR INSTALLATION OF THE CONTROL SYSTEM. ALL CONTROL TRANSFORMERS SHALL BE SEPARATELY INTERNALLY FUSED OR HAVE MANUAL RESETS.
6. CONTROLS CONTRACTOR SHALL PROVIDE A MINIMUM OF 24 HOURS OF OWNER TRAINING PROVIDED BY A FACTORY CERTIFIED REPRESENTATIVE. COORDINATE THROUGH THE MECHANICAL CONTRACTOR AND CONSTRUCTION MANAGEMENT FIRM.
7. ALL BAS CONTROLLERS ON CHILLERS, BOILERS, PUMPS AND AIR HANDLING UNITS SHALL HAVE MANUAL "ON/OFF" OVERRIDE SWITCHES, EITHER ON THE CONTROLLER OR THE PANEL LOCATED IN THE ROOM. SOFTWARE OVERRIDE ONLY IS NOT ACCEPTABLE.
8. ALL CONTROL AND POWER WIRING SHALL BE PLENUM-RATED WITH A MINIMUM FIRE SPREAD RATING OF 25 AND A MINIMUM SMOKE DEVELOPED RATING OF 50 PER ASTM E84.
9. THE SEQUENCE OF OPERATION AND POINTS LIST IS INTENDED TO COMMUNICATE THE MINIMUM REQUIREMENTS AND GENERAL DESIGN INTENT TO THE CONTROLS CONTRACTOR AND IS NOT INTENDED TO BE A FULLY DEVELOPED OR COMPLETE SEQUENCE OF OPERATION. IN THE CONTROLS SUBMIITTAL THE CONTROLS CONTRACTOR SHALL FULLY DEVELOP THE SEQUENCE OF OPERATIONS FOR ALL SYSTEMS IDENTIFIED AN SHALL PRESENT ALL SETPOINTS, CONTROL PARAMETERS, TIME DELAYS, ALARM POINTS, ETC. AS REQUIRED TO COMPLY WITH THE DESIGN INTENT. THE CONTROLS CONTRACTOR SHALL INCORPORATE STANDARD FEATURES SUCH AS MINIMUM RUN TIME DELAYS AND DEAD BANDS TO PREVENT SHORT CYCLING. ALL MONITORED POINTS SHALL INCLUDE EARLY HIGH/LOW ALARM NOTIFICATIONS PRIOR TO REQUIRED CORRECTIVE ACTIONS OR UNIT SHUT-DOWNS. CONTROL CONTRACTOR SHALL SPECIFY IN THE CONTROL SUBMITTAL FAIL SAFE POSITION FOR OUT OF RANGE, FAIL SAFE POSITIONING FOR OPEN CIRCUITS OR LOSS OF COMMUNICATION.
10. ALARMS THROUGH THE BAS SYSTEM SHALL BE VISIBLE ON THE INDIVIDUAL GRAPHICS THEMSELVES, NOT ONLY ON THE SUMMARY PAGE.
11. LOCATE CONTROL HUBS FOR BAS IN MECHANICAL ROOM UTIL 107. COORDINATE EXACT LOCATION OF PANELS WITH ALL OTHER TRADES AND BUILDING OWNER'S FACILITIES DEPARTMENT PRIOR TO INSTALLATION.

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CONSTRUCTION DRAWINGS

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Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: HFK
CHECKED BY: TAL

MECHANICAL CONTROL DIAGRAMS

M-601

Sheet No. 6 of 6

OPTIMA# 24-0045R

E | D | C | B | A

2018 NORTH CAROLINA ENERGY CONSERVATION CODE

COMMERCIAL ENERGY EFFICIENCY - ELECTRICAL SUMMARY

C401 METHOD OF COMPLIANCE

- [x] 2018 NCECC CHAPTER 4
- [ ] NC SPECIFIC COMCHECK PROVIDED
- [ ] N/A BASED ON PROJECT SCOPE
- [ ] ASHRAE 90.1-2013

C406 ADDITIONAL EFFICIENCY PACKAGE OPTIONS

- [ ] C406.2 EFFICIENT MECH EQUIPMENT
- [ ] C406.5 ON-SITE RENEWABLE ENERGY
- [x] C406.3 REDUCED LTG DENSITY
- [ ] C406.6 DEDICATED OA SYSTEM
- [ ] C406.4 ENHANCED DIGITAL LTG CNTLS
- [ ] C406.7 HI-EFF SERVICE WTR HTG
- [ ] NOT APPLICABLE BASED ON PROJECT SCOPE
- [ ] C406.7.1 WTR HTG LOAD FRACTION

C405.2 - LIGHTING CONTROLS (MANDATORY REQUIREMENTS):

- [x] LIGHTING SYSTEMS ARE PROVIDED WITH CONTROLS AS REQUIRED PER SECTION C405.2, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C405.3 - EXIT SIGNS (MANDATORY REQUIREMENTS):

- [x] INTERNALLY ILLUMINATED EXIT SIGNS DO NOT EXCEED 5 WATTS PER SIDE.
- [ ] NOT APPLICABLE

C405.4 - INTERIOR LIGHTING POWER REQUIREMENTS (PRESCRIPTIVE) (NON-EXEMPT):

- [ ] NOT APPLICABLE PER 2018 NCECC C503.1, EXCEPTION 2.G.

C405.4.1 - TOTAL CONNECTED INTERIOR LIGHTING POWER:

5,510 WATTS SPECIFIED

40 % REDUCTION OF SPECIFIED VS. ALLOWED (APPLICABLE IF C406.1.2 IS SELECTED)

C405.4.2 - TOTAL ALLOWABLE INTERIOR LIGHTING POWER:

METHOD OF COMPLIANCE:

- [x] BUILDING AREA METHOD
- [ ] SPACE-BY-SPACE METHOD

9,180 WATTS ALLOWED

C405.5.1 - EXTERIOR BUILDING LIGHTING POWER (NON-EXEMPT):

- [ ] NOT APPLICABLE

TOTAL CONNECTED EXTERIOR LIGHTING POWER:

1,040 WATTS SPECIFIED

TOTAL ALLOWABLE EXTERIOR LIGHTING POWER:

1,100 WATTS ALLOWED

C405.6 - ELECTRICAL ENERGY CONSUMPTION (DWELLING UNITS):

- [ ] SEPARATE ELECTRICAL METERING HAS BEEN PROVIDED FOR EACH DWELLING UNIT IN GROUP R-2 BUILDINGS.
- [x] NOT APPLICABLE

C405.7 - ELECTRICAL TRANSFORMERS (MANDATORY REQUIREMENTS):

- [x] ELECTRICAL TRANSFORMERS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.7, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C405.8 - ELECTRICAL MOTORS (MANDATORY REQUIREMENTS):

- [x] ELECTRICAL MOTORS HAVE BEEN SPECIFIED TO MEET MINIMUM EFFICIENCY REQUIREMENTS PER C405.8, EXCEPT WHERE EXEMPT.
- [ ] NOT APPLICABLE

C408 - SYSTEM COMMISSIONING:

- [ ] PROJECT AREA IS LESS THAN 10,000 SQUARE FEET AND IS EXEMPT FROM THE SYSTEM COMMISSIONING REQUIREMENTS OF SECTION C408.
- [x] PROJECT AREA IS GREATER THAN 10,000 SQUARE FEET AND REQUIRES SYSTEM COMMISSIONING PER SECTION C408.

TELECOM LEGEND - ELECTRICAL

SYMBOL	DESCRIPTION
	PLYWOOD TELEPHONE BACKBOARD. SIZE AS INDICATED ON RISER.
#	DATA OUTLET. MINIMUM 1 1/4" CONDUIT TO ABOVE NEAREST ACCESSIBLE CEILING FOR J-HOOK SYSTEM OR TO LOCAL CABLE TRAY (WITHIN 6") AS APPLICABLE WITH PULL STRING. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING. SUBSCRIPT NEXT TO OUTLET INDICATES DATA DROPS. IF CABLE QUANTITY AND SERVICE ARE NOT IDENTIFIED, THEN PATHWAY ONLY OR REFER TO TO TECHNOLOGY DRAWINGS FOR CABLE AND ACTIVATION TYPE.
WAP	STRUCTURE MOUNTED JUNCTION BOX FOR WIRELESS ACCESS POINT IN OPEN CEILING APPLICATIONS. 4" SQUARE BOX WITH A TWO-GANG OPENING. STUB 1" EC FROM BOX TO J-HOOKS OR CABLE TRAY ABOVE ACCESSIBLE CEILING. PROVIDE CABLING, TERMINATIONS AND FACEPLATE PER SPECIFICATIONS.
WAP	STRUCTURE MOUNTED JUNCTION BOX FOR WIRELESS ACCESS POINT ON WALL MOUNTED APPLICATIONS. 4" SQUARE BOX WITH A TWO-GANG OPENING. STUB 1" EC FROM BOX TO J-HOOKS OR CABLE TRAY ABOVE ACCESSIBLE CEILING. PROVIDE CABLING, TERMINATIONS AND FACEPLATE PER SPECIFICATIONS.
TV	TV DISPLAY BACKBOX. COORDINATE MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN. SEE DETAIL 8 / SHEET 602 FOR REQUIREMENTS. PROVIDE PULL STRING FOR LOW VOLTAGE CABLING TO ACCESSIBLE CEILING.
TGB	TELECOMMUNICATIONS GROUND BAR.

SYMBOL SCHEDULE POWER

SYMBOL	DESCRIPTION
	WIRING SYSTEM CONCEALED IN WALL OR CEILING.
	WIRING SYSTEM CONCEALED IN OR UNDER SLAB OR UNDERGROUND WHEN SHOWN ON POWER PLANS. UNSWITCHED LEG OF LIGHTING CIRCUIT WHEN SHOWN ON LIGHTING PLANS.
	WIRING SYSTEM LOW VOLTAGE OCCUPANCY SENSOR.
	CONDUIT TURNED DOWN TO FLOOR BELOW.
	CONDUIT TURNED UP TO FLOOR ABOVE.
	BRANCH CIRCUIT HOMERUN TO PANEL.

SYMBOL SCHEDULE POWER LEGEND

SYMBOL	DESCRIPTION
	JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED. 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING.
J	CEILING MOUNT JUNCTION BOX WITH CONNECTION TO EQUIPMENT SERVED
	208/120V SINGLE PHASE PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF.
	208/120V THREE PHASE PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF.
	480Y/277V THREE PHASE PANELBOARD. SEE SCHEDULE FOR MOUNTING. TOP OF PANEL AT 6'-6" AFF.
	480-208Y/120V TRANSFORMER. SEE RISER FOR SIZE. PROVIDE 4" THICK HOUSEKEEPING PAD TO EXTEND 3" ON SIDES, FRONT WITH CHAMFER EDGE AND OSHA COMPLIANT, SAFETY YELLOW, EPOXY PAINT SUITABLE FOR CONCRETE.
42"HD	JUNCTION BOX FOR HAND DRYER CONNECTION; SEE MOUNTING HEIGHTS DETAIL FOR EXACT HEIGHT; SEE ARCH. SHEETS FOR COORDINATION 4" SQUARE BOX WITH A SINGLE-GANG OPENING AND PLASTER RING.
	FUSED HEAVY DUTY DISCONNECT SWITCH. NUMERALS INDICATE SWITCH RATING. NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED. UNSHADED INDICATES NON-FUSED.
$M	FRACTIONAL HORSEPOWER MANUAL MOTOR STARTER, WITH OVERLOAD PROTECTION
$X	ALL THINGS "X" CAN BE: T = TIMER, (0 - 4) HOUR MANUAL TIMER SWITCH, F = FAN SWITCH, VARIABLE SPEED FAN SWITCH

ELECTRICAL FIXTURES LEGEND - COMMERCIAL

SYMBOL	DESCRIPTION
	TAMPER RESISTANT DUPLEX RECEPTACLE, 20 AMP, 120 VOLT COOPER 5362 OR EQUAL.
GFI	TAMPER RESISTANT GROUND FAULT RECEPTACLE. NEMA 5-20R DUPLEX. ALL RECEPTACLES INSTALLED OUTSIDE, WITHIN 6' OF A SINK OR IN A KITCHEN SHALL BE GFCI.
GFI WP	WEATHERPROOF GROUND FAULT RECEPTACLE. NEMA 5-20R DUPLEX, CORROSION RESISTANT, WITH IN-USE COVER.
	QUAD RECEPTACLE. TWO TAMPER RESISTANT NEMA 5-20R DUPLEX RECEPTACLES, OTHERWISE SAME AS DUPLEX RECEPTACLE ABOVE.
EWC	QUAD RECEPTACLE, TWO TAMPER RESISTANT NEMA 5-20R FOR ELECTRIC WATER COOLER TO BE SUPPLIED BY GROUND FAULT BREAKER. COORDINATE LOCATION WITH PLUMBING CONTRACTOR.

EM./LS LIGHTING FIXTURE SYMBOLS AND DEVICES

SYMBOL	DESCRIPTION
	LED FIXTURE WITH EMERGENCY BATTERY DRIVER. PROVIDE 1100 LUMEN INVERTER RATED FOR 90 MINUTE OPERATION. SEE FIXTURE SCHEDULE FOR FIXTURE TYPE, EMERGENCY DEVICE SHALL SUPPLEMENT FIXTURE.

LIGHTING FIXTURES SYMBOLS AND DEVICES LEGEND

SYMBOL	DESCRIPTION
	WALL MOUNTED LED LIGHTING FIXTURE.
	LED LIGHTING FIXTURE. SEE FIXTURE SCHEDULE. SUSPEND FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
	LED STRIP LIGHT FIXTURE
	RECESSED LED OR H.I.D. LIGHTING FIXTURE.
	RECESSED LINEAR LIGHT (TYPE DENOTED IN LIGHTING SCHEDULE)
	SUSPENDED OR PENDANT LIGHT (TYPE DENOTED)
	CEILING MOUNTED EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. 90 MIN BATTERY BACKUP. SEE LIGHTING FIXTURE SCHEDULE.
	WALL MOUNTED EXIT LIGHT WITH ARROWS AND NUMBERS OF FACES AS INDICATED ON PLANS. 90 MIN BATTERY BACKUP. SEE LIGHTING FIXTURE SCHEDULE.
$	SINGLE POLE SWITCH, 20 AMP, 120/277 VOLT, COOPER AH 1221, OR EQUAL BY HUBBELL, LEVITON AND PASS & SEYMOUR.
$K	ADDRESSABLE KEY OPERATED SWITCH
OC DT	CEILING MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGY. SENSOR SWITCH CM PDT 10, WATT STOPPER #DT-300, COOPER OAC-DT OR EQUAL.
$OC	WALL MOUNTED OCCUPANCY SENSOR AND SWITCH. INFRARED TECHNOLOGY WITH NEUTRAL, 120/277V RATED. WATT STOPPER #WS-250, OR EQUAL BY SENSOR SWITCH, AND LEVITON.
PC	ADDRESSABLE PHOTOCELL, EXTERIOR, MOUNT FACING NORTH.
$L1	WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF FOR 1 ZONE OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON.
$P1	WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF WITH DIMMING CONTROL FOR 1 ZONE OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON.
$P4	WALL MOUNTED LOW VOLTAGE ADDRESSABLE LIGHT CONTROL WALL SWITCH ON/OFF WITH DIMMING CONTROL FOR 4 ZONES OF LIGHTING. HUBBELL NXSW SERIES OR EQUAL BY ACUITY NLIGHT OR WATTSTOPPER DLM. PROVIDE ON/OFF LABELS FOR EACH BUTTON.
PP	CEILING MOUNTED OCCUPANCY SENSOR POWER PACK. SENSOR SWITCH PP-20, WATT STOPPER #BZ-100, COOPER SP-20, OR EQUAL.
PP NX	ADDRESSABLE ROOM CONTROLLER W/ 0-10V DIMMING HUBBELL NXRC OR EQUAL BY ACUITY NLIGHT, WATTSTOPPER DLM, OR COOPER GREENGATE
PP NXD	ADDRESSABLE ROOM CONTROLLER W/ 0-10V DIMMING, HUBBELL NXRC OR EQUAL BY ACUITY NLIGHT, WATTSTOPPER DLM, OR COOPER GREENGATE
PP EMD	ADDRESSABLE EMERGENCY ROOM CONTROLLER W/0-10V DIMMING, UL924 LISTED. HUBBELL NXRC-UL924 OR EQUAL BY ACUITY NLIGHT, WATTSTOPPER DLM, OR COOPER GREENGATE

ELECTRICAL SHEET INDEX

SHEET NUMBER	SHEET NAME
E-001	ELECTRICAL LEGEND AND NOTES
E-002	ELECTRICAL SPECIFICATIONS
E-010	OVERALL ELECTRICAL PLAN
E-101	ADDITION LIGHTING PLAN
E-201	ADDITION POWER PLAN
E-301	ADDITION ROOF EQUIPMENT CONNECTIONS PLAN
E-401	ADDITION SPECIAL SYSTEMS PLAN
E-601	ELECTRICAL DETAILS
E-602	ELECTRICAL DETAILS
E-603	ELECTRICAL DETAILS
E-701	ELECTRICAL DIAGRAMS AND PANEL SCHEDULES
E-801	LIGHTING FIXTURE SCHEDULE

SPECIAL SYSTEMS LEGEND

SYMBOL	DESCRIPTION
S	FLUSH-MOUNTED CEILING SPEAKER.
S	WALL-MOUNTED SPEAKER. 3/4" CONDUIT TO LOCAL CABLE TRAY.
S WP	EXTERIOR WEATHERPROOF SPEAKER; SEE DETAIL 7 / SHEET E-602.

SECURITY DEVICES SYMBOL LEGEND - ELECTRICAL

SYMBOL	DESCRIPTION
	CEILING MOUNTED SECURITY CAMERA LOCATION. CAMERA PROVIDED AND INSTALLED BY OTHERS. PROVIDED JUNCTION BOX AS REQUIRED BY OTHERS.
	PTZ CAMERA. WALL MOUNTED. REFER TO ELECTRICAL DRAWINGS FOR JUNCTION BOX AND CONDUIT REQUIREMENTS. FOR X = WP: EXTERIOR WALL MOUNTED PTZ CAMERA. REFER TO DETAILS 9 & 10 / SHEET E-602 FOR REQUIREMENTS.
DC	DOOR CONTACT, MINIMUM 1/2" CONDUIT. PROVIDE SINGLE GANG JUNCTION BOX AND PULL STRING. SEE CARD READER DETAIL FOR ADDITIONAL REQUIREMENTS OF PATHWAYS AND CABLING
MD	SECURITY MOTION DETECTOR. CEILING MOUNTED. REFER TO SPECIFICATIONS AND DETAILS FOR DEVICES AND CABLING REQUIREMENTS. REFER TO ELECTRICAL DRAWINGS FOR JUNCTION BOX AND CONDUIT REQUIREMENTS.

EXISTING/DEMOLITION LEGEND

SYMBOL	DESCRIPTION
	HALFTONE SYMBOL INDICATES EXISTING
	DASHED SYMBOL INDICATES REMOVED
	HATCHED SYMBOL INDICATES REMOVED

ELECTRICAL ABBREVIATIONS LIST

1P	1 POLE (2P, 3P, 4P, ETC.)
A	AMPERE
AC	ABOVE COUNTER OR AIR CONDITIONER
ACLG	ABOVE CEILING
ADO	AUTOMATIC DOOR OPENER
AF	AMP FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AFI	ARC FAULT CIRCUIT INTERRUPTER
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
AMP	AMPERE
AMPL	AMPLIFIER
ANNUN	ANNUNCIATOR
APPROX	APPROXIMATELY
AQ-STAT	AQUASTAT
ARCH	ARCHITECT, ARCHITECTURAL
AS	AMP SWITCH
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BD	BOARD
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CAB	CABINET
CAT	CATALOG
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
COMB	COMBINATION
CMPR	COMPRESSOR
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUATION OR CONTINUOUS
CONTR	CONTRACTOR
CONV	CONVECTOR
CP	CIRCULATING PUMP
CRT	CATHODE-RAY TUBE
CT	CURRENT TRANSFORMER
CTR	CENTER
CU	COPPER
DCP	DOMESTIC WATER CIRCULATING PUMP
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DISC	DISCONNECT
DIST	DISTRIBUTION
DN	DOWN
DPR	DAMPER
DS	SAFETY DISCONNECT SWITCH
DT	DOUBLE THROW
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EP	ELECTRIC PNEUMATIC
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EX	EXISTING
EXH	EXHAUST
EXP	EXPLOSION PROOF
FA	FIRE ALARM
FABP	FIRE ALARM BOOSTER POWER SUPPLY PANEL
FACP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
FIXT	FIXTURE
FLR	FLOOR
FLUOR	FLUORESCENT
FU	FUSE
FUDS	FUSED SAFETY DISCONNECT SWITCH
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTOR
GND	GROUND
GRS	GALVANIZED RIGID STEEL (CONDUIT)
GYP BD	GYPSUM BOARD
HOA	HANDS-OFF-AUTOMATIC SWITCH
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPF	HIGH POWER FACTOR
HT	HEIGHT
HTG	HEATING
HTR	HEATER
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWP	HYDRONIC WATER PUMP
IC	INTERRUPTING CAPACITY
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
INCAND	INCANDESCENT
IR	INFRARED
I/W	INTERLOCK WITH
J-BOX	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KVAR	KILOVOLT-AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LOC	LOCATE OR LOCATION
LT	LIGHT
LTG	LIGHTING
LTNG	LIGHTNING
LV	LOW VOLTAGE
MAX	MAXIMUM
MAG.S	MAGNETIC STARTER
M/C	MOMENTARY CONTACT
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDC	MAIN DISTRIBUTION CENTER
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MFS	MAIN FUSED DISCONNECT SWITCH
MH	MANHOLE
MIC	MICROPHONE
MIN	MINIMUM
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MMS	MANUAL MOTOR STARTER
MOA	MULTIOUTLET ASSEMBLY
MSP	MOTOR STARTER PANELBOARD
MSBD	MAIN SWITCHBOARD
MT	MOUNT
MT.C	EMPTY CONDUIT
MTS	MANUAL TRANSFER SWITCH
MTR	MOTOR, MOTORIZED
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NFDS	NON-FUSED SAFETY DISCONNECT SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
NPF	NORMAL POWER FACTOR
NTS	NOT TO SCALE
OH	OVERHEAD
OL	OVERLOADS
PA	PUBLIC ADDRESS
PB	PULL BOX OR PUSHBUTTON
PE	PNEUMATIC ELECTRIC
PED	PEDESTAL
PF	POWER FACTOR
PH	PHASE
PIV	POST INDICATING VALVE
PNL	PANEL
PP	POWER POLE
PR	PAIR
PRI	PRIMARY
PROJ	PROJECTION
PRV	POWER ROOF VENTILATOR
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE (CONDUIT)
PWR	POWER
QUAN	QUANTITY
RCPT	RECEPTACLE
REQD	REQUIRED
RM	EXISTING TO REMAIN
RSC	RIGID STEEL CONDUIT
RTU	ROOF TOP UNIT
SC	SURFACE CONDUIT
SEC	SECONDARY
SHT	SHEET
SIM	SIMILAR
S/N	SOLID NEUTRAL
SPEC	SPECIFICATION
SPKR	SPEAKER
SP	SPARE
SR	SURFACE RACEWAY
SS	STAINLESS STEEL
SSW	SELECTOR SWITCH
S/S	STOP/START PUSHBUTTONS
STA	STATION
STD	STANDARD
SURF	SURFACE MOUNTED
SW	SWITCH
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
SYS	SYSTEM
TEL	TELEPHONE
TEL/DATA	TELEPHONE/DATA
TERM	TERMINAL
TL	TWIST LOCK
TR	TAMPER RESISTANT
T-STAT	THERMOSTAT
TTC	TELEPHONE TERMINAL CABINET
TV	TELEVISION
TVTC	TELEVISION TERMINAL CABINET
TYP	TYPICAL
UC	UNDER COUNTER
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND
UH	UNIT HEATER
UT	UNDERGROUND TELEPHONE
UTIL	UTILITY
UV	UNIT VENTILATOR OR ULTRAVIOLET
V	VOLT
VA	VOLT-AMPERES
VDT	VIDEO DISPLAY TERMINAL
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOL	VOLUME
W	WATT
W/	WITH
WG	WIRE GUARD
WH	WATER HEATER
W/O	WITHOUT
WP	WEATHERPROOF
XFMR	TRANSFORMER
XFR	TRANSFER
∠	ANGLE
@	AT
△	DELTA
'	FEET
"	INCHES
#	NUMBER
Ø	PHASE
C	CENTER LINE
P	PLATE

DISCONNECT SIZE DESCRIPTION

__A-F__A-__P-__

FRAME SIZE — FUSE SIZE — NUMBER OF POLES — NEMA RATING

COMMISSIONING NOTES

THIS PROJECT INCLUDES A THIRD PARTY COMMISSIONING AGENT CONTRACTED BY THE OWNER. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OWNER'S COMMISSIONING AGENT AND PROVIDE ALL NECCESSARY TIME, MATERIALS, AND PROCEDURES REQUIRED FOR A FULLY COMMISSIONED PROJECT. SEE COMMISSIONING REQUIREMENTS IN THE PROJECT MANUAL FOR FURTHER INFORMATION.

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CONSTRUCTION DRAWINGS

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JSD
CHECKED BY: MKG

ELECTRICAL LEGEND AND NOTES

E-001

OPTIMA# 24-0045R

Autodesk Docs://02110.300 Lillington-Shawtown ES/24-0045R_Lillington-Shawtown ES Addition_MEPFP_R23.rvt
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1. GENERAL:
   A. THE WORK COVERED BY THESE SPECIFICATIONS CONSISTS OF FURNISHING ALL LABOR, EQUIPMENT, MATERIALS, AND SUPPLIES AS NECESSARY FOR THE COMPLETE AND SATISFACTORY OPERATING ELECTRICAL SYSTEMS AS SHOWN ON THE PLANS.
   B. ALL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA, STATE BUILDING CODE, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
   C. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS AND INSPECTION FEES.
   D. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY THE UNDERWRITER'S LABORATORIES, INC. OR BY A STATE APPROVED THIRD PARTY TESTING AGENCY FOR THE USE INTENDED WHERE A STANDARD FOR SUCH MATERIALS AND USE EXISTS. ALL ITEMS OF THE SAME TYPE AND RATING SHALL BE IDENTICAL AND OF THE SAME MANUFACTURER.
   E. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CATALOG DATA IN ELECTRONIC FORMAT (PDF) FOR ALL ELECTRICAL ITEMS IN THE SCOPE OF WORK, INCLUDING, BUT NOT LIMITED TO, RACEWAYS, BOXES, FITTINGS, CONDUCTORS, LUMINAIRES, LAMPS, BALLASTS, WIRING DEVICES, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, FIRE ALARM, TELECOMMUNICATIONS, ETC. FOR APPROVAL AS APPLICABLE FOR THE PROJECT. ONE COMPLETE SET OF APPROVED SUBMITTALS SHALL BE MAINTAINED AT THE JOB SITE.
   F. ALL COST ASSOCIATED WITH SUBSTITUTED EQUIPMENT TO COMPLY WITH THE BASIS OF DESIGN, INCLUDING PROVIDING MAINTENANCE ACCESS, CLEARANCE, CONDUIT, WIRING, REPLACEMENT OF OTHER SYSTEM COMPONENTS, BUILDING ALTERATIONS, METHODS, ETC., SHALL BE INCLUDED IN THE ORIGINAL BASE BID. NO ADDITIONAL COSTS ASSOCIATED WITH SUBSTITUTED EQUIPMENT WILL BE APPROVED AFTER BIDS HAVE BEEN ACCEPTED AND ALL COSTS WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. CREDITS SHALL BE GIVEN TO THE OWNER WHERE SUCH EQUIPMENT AND METHODS RESULT IN LESS EXPENSE TO THE CONTRACTOR.
   G. ONE COMPLETE SET OF THE LATEST CONSTRUCTION PLANS OF ALL TRADES SHALL BE MAINTAINED AT THE JOB SITE. IN ADDITION, ALL ADDENDUMS, BULLETINS, AND/OR SKETCHES SHALL BE INCORPORATED INTO THE ON-SITE CONSTRUCTION PLANS AS THE JOB PROGRESSES.
   H. COMPLETELY ADEQUATE HOUSING SHALL BE PROVIDED FOR ALL MATERIALS STORED ON JOB SITE. ONLY CONDUIT MAY BE STORED OUTSIDE, BUT NOT IN CONTACT WITH THE GROUND.
   I. THE CONDUIT AND NEUTRAL SYSTEM SHALL BE GROUNDED AT THE MAIN SERVICE EQUIPMENT. GROUNDING ELECTRODE SYSTEM SHALL BE INSTALLED PER NEC 250.
   J. PROVIDE AN INTERSYSTEM BONDING TERMINATION DEVICE AT THE MAIN ELECTRICAL SERVICE PER NEC 250.94.
   K. WIRING SHALL BE TESTED FOR CONTINUITY AND GROUNDS BEFORE BEING ENERGIZED. FAULTY WIRING SHALL BE REPLACED AT NO ADDITIONAL EXPENSE TO THE OWNER.
   L. PROVIDE ALL CUTTING AND PATCHING FOR INSTALLATION OF WORK AND REPAIR ANY DAMAGE DONE.
   M. THE ELECTRICAL CONTRACTOR SHALL CONNECT ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS (UNLESS OTHERWISE NOTED), EXCEPT FOR CONTROL WIRING FOR EQUIPMENT NOT PROVIDED BY THE ELECTRICAL CONTRACTOR. CONTROL WIRING FOR SUCH EQUIPMENT SHALL BE PROVIDED BY THE RESPECTIVE DISCIPLINE.
   N. ALL ELECTRICAL JUNCTION BOXES, SWITCHGEAR, CABLING, VOICE/DATA OUTLETS, LOW VOLTAGE CABINETS, EMERGENCY RECEPTACLES, ETC. SHALL BE LABELED ACCORDING TO PANEL/RACK AND CIRCUIT NUMBER.
   O. UPON COMPLETION OF WORK, CONTRACTOR SHALL PRESENT ENGINEER WITH CERTIFICATE OF APPROVAL FROM LOCAL INSPECTOR AND/OR AUTHORITY HAVING JURISDICTION BEFORE WORK WILL BE APPROVED FOR FINAL PAYMENT.
   P. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS FOR A PERIOD OF ONE YEAR EFFECTIVE THE DATE THE PROJECT IS ACCEPTED BY THE OWNER. ANY IMPERFECT MATERIALS OR WORKMANSHIP SHALL BE REPLACED WITHOUT ADDED COST TO THE PROJECT.
   Q. IT SHALL NOT BE THE INTENT OF ISSUED PLANS AND/OR SPECIFICATIONS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION. THE ELECTRICAL CONTRACTOR IS EXPECTED TO FURNISH AND INSTALL ALL NECESSARY ITEMS FOR A COMPLETE AND OPERATING SYSTEM.
   R. THE WORD "PROVIDE" MEANS THAT THIS CONTRACTOR SHALL FURNISH, FABRICATE, ERECT, CONNECT, AND COMPLETELY INSTALL SYSTEMS IN PROPER OPERATING CONDITION. ALL LABOR, PRODUCT OPTIONS, ACCESSORIES AND INCIDENTAL MATERIALS REQUIRED SHALL BE INCLUDED AS PART OF THIS WORK TO COMPLETE THE INSTALLATION.
   S. THE WORD "CONNECT" MEANS THAT THIS CONTRACTOR SHALL PROVIDE (SEE DEFINITION ABOVE) ALL DISCONNECTING MEANS, OVERCURRENT PROTECTION AND WIRING REQUIRED TO PLACE THE EQUIPMENT AND SYSTEMS IN PROPER OPERATING CONDITION AND TO COMPLY WITH CODE REQUIREMENTS.
   T. CONTRACTOR SHALL COORDINATE THE ROUGH-IN OF ALL OUTLET LOCATIONS WITH ARCHITECTURAL FLOOR PLANS, ELEVATIONS, AND MILLWORK SHOP DRAWINGS PRIOR TO ROUGH-IN.
   U. ELECTRICAL CONTRACTOR SHALL NOT SCALE PLANS. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT LOCATIONS OF ALL EQUIPMENT, UNLESS OTHERWISE NOTED.
   V. CONTRACTOR SHALL TEST ALL "LIFE SAFETY" EQUIPMENT AND SYSTEMS FOR PROPER FUNCTION AND OPERATION. UPON SUCCESSFUL COMPLETION OF TESTS, CONFIRMATION SHALL BE SENT TO THE ENGINEER OF RECORD IN THE FORM OF A LETTER STATING THE TESTS PERFORMED, THE RESULTS, AND THE DATE TESTS WERE SUCCESSFULLY COMPLETE. "LIFE SAFETY" EQUIPMENT AND SYSTEMS CONSIST OF THOSE AS SPECIFIED IN THE STATE BUILDING CODE, THE NATIONAL ELECTRICAL CODE, NFPA 101, AND ANY OTHER LOCAL REQUIREMENTS THAT MAY APPLY.
   W. IF DURING THE COURSE OF WORK, THE CONTRACTOR DISCOVERS A PROBLEM WITH THE PERFORMANCE OF THE INSTALLATION RELATIVE TO THE PLANS AND SPECIFICATIONS, THE NEC, OR OTHER CODES OR REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY BRING THE PROBLEM TO THE ATTENTION OF THE ARCHITECT AND/OR ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK.
   X. WHERE THERE ARE CONFLICTS BETWEEN THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL BRING THE ISSUE TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE EXECUTION OF THE WORK OR ORDERING ANY MATERIALS. NO ADDITIONAL COSTS SHALL BE WARRANTED WITHOUT A CHANGE TO THE PROJECT SCOPE.
   Y. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PROVIDING TEMPORARY POWER AND LIGHTING FOR ALL TRADES. AT NO TIME SHALL EXISTING BUILDING POWER SYSTEMS BE UTILIZED WITHOUT WRITTEN PERMISSION FROM THE OWNER.
   Z. COORDINATE LOCATION AND REQUIREMENTS FOR ELECTRICAL SERVICE WITH THE POWER COMPANY. WHERE MORE THAN ONE SERVICE IS SUPPLIED TO A BUILDING, PROVIDE IDENTIFICATION AT EACH SERVICE PER NEC 230-2(E).
   AA. THE CONTRACTOR SHALL PROVIDE A MINIMUM TWO WEEK NOTICE FOR ANY PLANNED UTILITY OUTAGES. WRITTEN AUTHORIZATION FROM THE OWNER SHALL BE PROVIDED PRIOR TO ANY OUTAGE. ALL PLANNED UTILITY OUTAGES SHALL BE COORDINATED WITH THE OWNER TO OCCUR DURING NON-OPERATING TIMES, INCLUDING NIGHTS, WEEKENDS AND HOLIDAYS. ALL PLANNED UTILITY OUTAGES SHALL INCLUDE PROVISIONS FOR PROPER BACK-UP OF ALL LIFE-SAFETY SYSTEMS AND INCLUDE AN APPROVED FIRE-WATCH PROGRAM AS REQUIRED BY THE LOCAL FIRE MARSHALL.
   BB. EACH BIDDER SHALL VISIT THE JOB SITE PRIOR TO BIDDING TO FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND TO ASCERTAIN THE EXTENT OF WORK REQUIRED. FAILURE TO VISIT SITE SHALL NOT EXCUSE CONTRACTOR FROM PERFORMING REQUIRED WORK NOR SHALL IT BE AN ACCEPTABLE REASON FOR REQUESTING ADDITIONS TO THE CONTRACT.

2. RACEWAY:
   A. CONDUIT SHALL BE MANUFACTURED BY ALLIED, WHEATLAND, REPUBLIC CONDUIT, WESTERN TUBE, OR APPROVED EQUIVALENT.
   B. FOR INTERIOR WORK, CONDUIT SHALL BE ZINC COATED EMT EXCEPT WHERE NOT PERMITTED BY CODE. USE SCHEDULE 40 PVC BELOW CONCRETE SLAB, IN DUCTBANKS, AND FOR EXTERIOR WORK WHERE NOT SUBJECT TO DAMAGE. USE IMC WHERE SUBJECT TO PHYSICAL DAMAGE.
   C. EMT FITTINGS SHALL BE COMPRESSION GLAND TYPE, OF MALLEABLE STEEL. CONNECTORS SHALL HAVE INSULATED THROATS. CAST, SET SCREW, OR INDENTER TYPE FITTINGS ARE NOT ACCEPTABLE. ALL FITTINGS FOR EMT SHALL BE MADE OF STEEL.
   D. ALL RACEWAY SHALL BE RUN CONCEALED, UNLESS OTHERWISE NOTED. FISH ALL NEW OUTLETS IN EXISTING WALLS, WHERE POSSIBLE. ALL RUNS SHALL BE NEAT AND SQUARE.
   E. LOW VOLTAGE CABLING NOT SPECIFIED TO BE INSTALLED IN CONDUIT, SHALL BE INSTALLED IN A CABLE TRAY SYSTEM OR J-HOOK SYSTEM CONSISTING OF MINIMUM 2" DIAMETER HOOKS LOCATED ON 3'-0" CENTERS IN ALL ACCESSIBLE CEILINGS. WHERE THERE ARE INACCESSIBLE CEILINGS, PROVIDE CONDUIT FOR ENTIRE LENGTH OF INACCESSIBILITY.
   F. RACEWAYS USED FOR LOW VOLTAGE SYSTEMS SUCH AS TELECOMMUNICATIONS, FIRE ALARM, SECURITY, CCTV, CONTROLS, AND SIMILAR CONDUITS ABOVE THE CEILING AND BACKBOARD(S) SHALL BE PROVIDED WITH INSULATED THROAT BUSHINGS AT EACH CONDUIT TERMINATION. THESE BUSHINGS SHALL BE BE INSTALLED PRIOR TO PULLING LOW-VOLTAGE CABLES.
   G. RACEWAY PENETRATIONS THROUGH FLOOR SLABS AND FIRE-RATED WALLS SHALL BE FILLED WITH IMPERVIOUS, NON-SHRINK GROUT SUFFICIENTLY TIGHT TO PREVENT THE TRANSFER OF SMOKE, WATER, AND DUST. ROOF PENETRATIONS SHALL BE WITHIN THE EQUIPMENT ROOF CURB.
   H. SUPPORT ALL CONDUIT WITH STRAPS AND CLAMPS.
   I. ALL CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES, WHETHER EXPOSED OR NOT AND SUPPORTED FROM STRUCTURE AND PROPERLY SECURED.
   J. WHERE CONDUITS PASS THROUGH A BUILDING EXPANSION JOINT, PROVIDE GALVANIZED EXPANSION FITTINGS WITH BONDING JUMPERS.
   K. MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR INTERIOR WORK, 1" FOR EXTERIOR WORK.
   L. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
   M. LIQUID-TIGHT METAL CONDUIT SHALL ONLY BE USED FOR FINAL CONNECTIONS TO EQUIPMENT AND ALL OTHER ROTATING AND VIBRATING EQUIPMENT, MAXIMUM LENGTH OF 3'-0".
   N. FLEXIBLE METAL CONDUIT, MINIMUM SIZE 3/8", SHALL ONLY BE USED FOR FINAL CONNECTION TO LIGHTING FIXTURES, MAXIMUM LENGTH OF 6'-0".
   O. PROVIDE PULL BOXES, SUCH THAT NO SINGLE CONDUIT RUN HAS BENDS IN EXCESS OF 360°. PULL BOXES SHALL BE SUITABLE AND APPROVED FOR THE INTENDED USE. WHERE CONDUITS PASS UNDER PAVED AREAS, THEY SHALL BE RGS.
   P. ALL CONDUIT BENDS/ELBOWS EMERGING FROM UNDERGROUND SHALL BE IMC AND SHALL EXTEND A MINIMUM OF 18" BELOW GRADE.
   Q. ALL UNDERGROUND RACEWAYS SHALL BE THOROUGHLY COATED WITH TWO COATS OF ASPHALTUM BITUMASTIC.
   R. ALL CONDUITS INSTALLED UNDERGROUND OR IN CONCRETE SHALL HAVE JOINTS MADE WATERTIGHT BY USE OF POLYETRA-FLUOROETHYLENE TAPE.
   S. THE USE OF AC OR NM CABLE IS NOT PERMITTED.
   T. MC CABLE IS NOT ALLOWED, EXCEPT FOR FINAL CONNECTION TO LIGHT FIXTURES. PER NOT 2,N.

3. OUTLET BOXES:
   A. JUNCTION AND PULL BOXES SHALL BE CODE GAUGE GALVANIZED STEEL. ACCEPTED MANUFACTURERS SHALL BE STEEL CITY (THOMAS & BETTS), RACO, CROUSE-HINDS, APPLETON (EMERSON), OR APPROVED EQUIVALENT.
   B. OUTLET BOXES SHALL NOT BE MOUNTED BACK TO BACK IN COMMON WALLS.
   C. ATTACH EMT WITH CONNECTORS HAVING INSULATED THROAT.
   D. ATTACH BOXES TO STUD WORK USING CADDY BAR STRAPS THAT CONNECT TO TWO ADJACENT STUDS TO PREVENT TWISTING OF BOX IN WALL.
   E. ALL OUTLET BOXES (INCLUDING TELEPHONE, CABLE TV, AND COMPUTER) SHALL HAVE COVER PLATES, BLANK IF NOT USED.
   F. ALL EXTERIOR BOXES SHALL BE WATER-TIGHT.

4. CONDUCTORS:
   A. CONDUCTORS SHALL BE MANUFACTURED BY SOUTHWIRE (SIMPULL), ENCORE (SUPERSLICK), UNITED COPPER (SLK), CERRO (SLP), OR APPROVED EQUAL, "PRE-LUBRICATED" BY THE MANUFACTURER.
   B. ALL CONDUCTORS SHALL BE COPPER, RATED 75° C WET/DRY EXCEPT WHERE OTHERWISE NOTED OR REQUIRED BY U.L. OR OTHER CODES. ALUMINUM CONDUCTOR MAY ONLY BE UTILIZED WHERE NOTED IN THE DRAWINGS.
   C. ALL CONDUCTORS SHALL BE SINGLE INSULATED CONDUCTOR, THHN/THWN-2. SIZES #10 AWG AND SMALLER SHALL BE SOLID, SIZES #8 AWG AND LARGER SHALL BE STRANDED.
   D. BRANCH CIRCUITS SHALL NOT BE SMALLER THAN #12 AWG. CONTROL WIRING MAY BE #14 AWG.
   E. CONDUCTORS SHALL BE COLOR CODED BLACK/RED/BLUE FOR 120/208 VOLT SYSTEMS FOR A, B, AND C PHASES, RESPECTIVELY. NEUTRAL SHALL BE WHITE FOR 120/208 VOLT SYSTEMS. GROUND CONDUCTOR SHALL BE GREEN ON ALL SYSTEMS. ALL CONDUCTOR SIZES SHALL HAVE COLOR-CODED INSULATION. THE USE OF COLORED TAPE ON LARGER WIRE SIZES SHALL NOT BE ALLOWED.
   F. INSULATION SHALL BE DUAL RATED TYPE THHN/THWN-2 FOR FEEDERS AND BRANCH CIRCUITS. FIXTURE TAPS SHALL BE #12 THHN/THWN-2 IN FLEX WITH GREEN #12 AWG GROUNDING CONDUCTOR.
   G. ALL CONDUCTORS SHALL BE IN CONDUIT.
   H. WIRING TO LIGHTING FIXTURES SHALL BE AS REQUIRED BY UL LABEL.
   I. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE ALLOWED.
   J. JOINTS IN #10 AWG AND SMALLER SHALL BE MADE UP WITH CRIMPED CONNECTORS WITH INSULATING CAPS (NO TAPE) OR WIRENUTS (MAXIMUM OF 3 CONDUCTORS UNDER ANY CONNECTOR OR WIRENUT). LARGER WIRE SHALL USE SPLIT BOLTS OR BOLTED CLAMPS.
   K. ALL WIRING LUGS THROUGHOUT THE PROJECT, INCLUDING, BUT NOT LIMITED TO, BREAKERS, PANELBOARD/SWITCHBOARD LUGS, SAFETY SWITCH LUGS, MOTOR STARTER LUGS, TRANSFORMERS LUGS, WIRING DEVICE TERMINALS, AND ALL EQUIPMENT LUGS/TERMINALS SHALL BE RATED FOR USE WITH 75 DEGREE INSULATED CONDUCTORS AT THEIR 75 DEGREE AMPACITY AND SHALL BE SIZED AND SELECTED TO MATCH THE CONDUCTOR SIZE AND MATERIAL.
   L. CIRCUIT JOINTS SHALL NOT BE MADE ON DEVICE TERMINALS.
   M. WIRE WITHIN PANELBOARDS SHALL BE NEATLY TRAINED, SQUARED, BUNCHED, AND TAGGED.
   N. ALL SYSTEM FURNITURE CONNECTIONS SHALL COMPLY WITH NEC 605.
   O. GROUND ALL EQUIPMENT PER NEC ARTICLE 250. BOND WHERE CONDUITS ENTER ENCLOSURES THROUGH CONCENTRIC KNOCKOUTS. ALL FLEX, INCLUDING FIXTURE TAPS, SHALL INCLUDE GREEN GROUNDING CONDUCTOR, #12 AWG MINIMUM. PROVIDE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR IN EACH CONDUIT AND FOR EACH CIRCUIT, SIZED PER NEC 250-122.
   P. ALL CONDUCTORS INSTALLED IN VERTICAL RACEWAYS SHALL BE SUPPORTED AT INTERVALS AS REQUIRED PER NEC 300-19.
   Q. THE ELECTRICAL CONTRACTOR SHALL FOLLOW AND APPLY THE TABLE BELOW, REGARDLESS WHAT THE PANEL SCHEDULE INDICATES, FOR SIZING ALL 120V, 20 AMP BRANCH CIRCUITS (COPPER CONDUCTORS) TO ALLOW A MAXIMUM OF 3% VOLTAGE DROP FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE ON THE BRANCH CIRCUIT AND ACHIEVE A MAXIMUM OF 5% VOLTAGE DROP ACROSS THE ENTIRE BRANCH CIRCUIT:

VOLTAGE	CONDUCTOR LENGTH *	BRANCH CIRCUIT
120	0' - 50'	#12
120	51' - 90'	#10
120	91' - 140'	#8
120	141' - 255'	#6
277	0' - 125'	#12
277	126' - 200'	#10
277	201' - 330'	#8
277	331' - 525'	#6

* - THE LENGTH IS MEASURED FROM THE CIRCUIT BREAKER TO THE FIRST DEVICE WHICH THE BRANCH CIRCUIT SERVES. WHERE THE DISTANCE EXCEEDS ABOVE, CONSULT WITH THE ENGINEER.

5. WIRING DEVICES:
   A. WIRING DEVICES SHALL BE SPECIFICATION GRADE, MINIMUM, EQUAL TO COOPER QUALITY INDICATED BELOW OR AS MANUFACTURED BY HUBBELL, LEGRAND-PASS & SEYMOUR, LEVITON, OR APPROVED EQUAL, UNLESS OTHERWISE NOTED:

      SWITCHES (120V) SHALL BE AS FOLLOWS:

      SINGLE-POLE 20 AMP — SEE SPECIFICATIONS
      THREE-WAY 20 AMP — SEE SPECIFICATIONS
      FOUR-WAY 20 AMP — SEE SPECIFICATIONS
      SINGLE-POLE-KEY 20 AMP — SEE SPECIFICATIONS

      DUPLEX RECEPTACLES SHALL HAVE A NYLON FACE AND SHALL BE AS FOLLOWS:

      20 AMP DUPLEX — SEE SPECIFICATIONS
      20 AMP DUPLEX GFCI — SEE SPECIFICATIONS
      20 AMP DUPLEX TAMPER — SEE SPECIFICATIONS
      20 AMP DUPLEX GFCI-TAMPER — SEE SPECIFICATIONS

      THE PART NUMBERS ABOVE ARE FOR WIRING DEVICE TYPE ONLY. SEE BELOW FOR WIRING DEVICE COLOR AND PLATE MATERIAL/COLOR.

   B. SEE MOUNTING HEIGHT ELEVATION DETAIL FOR STANDARD MOUNTING HEIGHTS OF ALL DEVICES, UNLESS OTHERWISE NOTED.
   C. THE COLOR OF ALL WIRING DEVICES (SWITCHES AND RECEPTACLES) SHALL BE AS DIRECTED BY THE ARCHITECT, UNLESS OTHERWISE NOTED. ALL COVER PLATES SHALL BE 302 STAINLESS STEEL. COVER PLATES IN MASONRY WALLS SHALL BE OVERSIZE TYPE.
   D. EACH DUPLEX RECEPTACLE INDICATED TO BE ON A DEDICATED CIRCUIT SHALL BE 20 AMP TYPE.
   E. ADJACENT DEVICES SHALL HAVE A COMMON WALL PLATE.
   F. WEATHERPROOF COVERS SHALL BE "WHILE-IN-USE" SO PLUGS MAY BE INSTALLED WITHOUT COMPROMISING THE WP FUNCTION. COOPER #WIU-2 DOUBLE-GANG WITH CLEAR COVER OR APPROVED EQUAL.
   G. A MAXIMUM OF 10 GENERAL PURPOSE RECEPTACLES SHALL BE ON EACH BRANCH CIRCUIT.
   H. ALL WALL MOUNTED OCCUPANCY/VACANCY SENSORS/SWITCHES SHALL BE INSTALLED WITH AN EQUIPMENT GROUNDING CONDUCTOR.
   I. GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL SHALL BE PROVIDED FOR ALL LOCATIONS PER NEC 210.8, INSTALLED IN A READILY ACCESSIBLE LOCATION. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE, THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE DEVICE.
   J. ALL GFCI RECEPTACLES SHALL HAVE AUTO-MONITORING / SELF-TEST FUNCTION AND REVERSE LINE-LOAD MISFIRE FUNCTION AND MEET ALL REQUIREMENTS OF UL 943 (LATEST EDITION).
   K. TAMPER-RESISTANT RECEPTACLES SHALL BE PROVIDED FOR ALL AREAS PER NEC 406.12, INCLUDING DWELLING UNITS, GUEST ROOMS AND GUEST SUITES OF HOTELS AND MOTELS, CHILD-CARE FACILITIES, PRESCHOOL AND EDUCATION FACILITIES, BUSINESS OFFICES/CORRIDORS/WAITING ROOMS AND THE LIKE IN CLINICS/MEDICAL/DENTAL OFFICES AND OUTPATIENT FACILITIES, ASSEMBLY OCCUPANCIES INCLUDING PLACES OF AWAITING TRANSPORTATION/GYMNASIUMS/SKATING RINKS/AUDITORIUMS, AND DORMITORIES/STUDENT HOUSING.

6. SUPPORTS:
   A. ALL EQUIPMENT SHALL BE ADEQUATELY SUPPORTED FROM STRUCTURE.
   B. INSERTS IN MASONRY SHALL BE LEAD OR FIBER IN DRILLED HOLES, OR CAST IN PLACE.
   C. NAILS OR POWDER ACTUATED FASTENERS SHALL NOT BE USED.
   D. EMT/IMC/RGS SUPPORTS SHALL BE A MAXIMUM OF 8'-0" APART AND A MAXIMUM OF 3'-0" FROM BOXES.
   E. LIGHTING FIXTURES MOUNTED IN OR ON CEILING SHALL BE SUPPORTED FROM STRUCTURE VIA 12 GAUGE STEEL WIRE. PROVIDE A MINIMUM OF FOUR WIRES, ONE ATTACHED TO EACH CORNER OF LAY-IN FIXTURES. RECESSED DOWNLIGHT FIXTURES SHALL BE SUPPORTED THE SAME. DO NOT SUPPORT RACEWAY OR FIXTURES FROM CEILING GRID OR DUCT WORK. USE U.L. LISTED GRID CLIPS ON ALL LAY-IN FIXTURES.

7. PAINTING:
   A. SUITABLE FINISH COAT SHALL BE PROVIDED FOR ALL EQUIPMENT. PANEL TUBS, COVERS, ETC. SHALL BE PRIMED AND ENAMELED TO BLEND WITH ADJACENT SURFACES, OR SHALL BE MANUFACTURER'S STANDARD COLOR BAKED ENAMEL FINISH, OR AS DIRECTED BY THE ARCHITECT.
   B. CONTRACTOR TO PAINT WHERE EXISTING EXPOSED PANELBOARDS, SURFACE RACEWAY, SURFACE BOXES, ETC. HAVE BEEN REMOVED DURING THE DEMOLITION PHASE, EITHER FOR TEMPORARY WORK OR PERMANENTLY.

8. TELECOMMUNICATIONS:
   A. FURNISH A COMPLETE TELEPHONE CONDUIT SYSTEM AS INDICATED ON THE DRAWINGS.
   B. TELECOMMUNICATION OUTLETS SHALL CONSIST OF A 4" SQUARE DEEP BOX WITH SINGLE GANG PLASTER RING. PROVIDE BLANK PLATE WITH KNOCKOUTS FOR OUTLETS, AS PERMANENT COVERS WILL BE PROVIDED BY A SEPARATE INSTALLER.
   C. PROVIDE MINIMUM 1" RACEWAY, UNLESS OTHERWISE NOTED, FROM EACH BOX TO ABOVE NEAREST ACCESSIBLE CEILING SPACE FOR J-HOOK SYSTEM OR TO CABLE TRAY AS APPLICABLE. PROVIDE MINIMUM 210# TEST NYLON PULL CORD AND NYLON BUSHINGS IN ALL EMPTY RACEWAYS.
   D. PROVIDE RACEWAYS FOR ALL EXTERIOR AND/OR EXPOSED LOCATIONS.
   E. PROVIDE GROUNDING FOR ALL TELEPHONE/DATA SYSTEMS AND EQUIPMENT PER REQUIREMENTS AND SPECIFICATIONS PROVIDED BY THE OWNERS DESIGNATED VENDOR.
   F. ALL LOW-VOLTAGE CABLING SHALL BE PLENUM-RATED.
   G. CONTRACTOR SHALL FURNISH AND INSTALL A #6 AWG GREEN INSULATED COPPER WIRE IN CONDUIT FROM THE MAIN ELECTRICAL GROUNDING BAR TO TELECOMMUNICATIONS GROUNDING BUS BAR.
   H. PROVIDE MOUNTING BACKBOARDS FOR COMMUNICATIONS EQUIPMENT. BACKBOARDS SHALL BE OF 3/4" TYPE AC, EXTERIOR PLYWOOD, PAINTED BOTH SIDES AND ALL EDGES WITH 2 COATS OF GRAY FLAME RETARDANT PAINT.

9. LIGHTING FIXTURES:
   A. TYPES AND MANUFACTURERS ARE SCHEDULED ON THE PLANS. EQUIVALENT FIXTURES BY OTHERS MAY BE SUBMITTED ONLY AS INDICATED ON THE PLANS AND ARE SUBJECT TO THE APPROVAL OF THE OWNER AND ENGINEER.
   B. ALL FIXTURES SHALL BE U.L. LISTED AND LABELED.
   C. DRIVERS SHALL BE AS INDICATED IN THE LIGHTING FIXTURE SCHEDULE OR AS OTHERWISE NOTED.
   D. ALL FIXTURES SHALL BE PROVIDED FOR PROPER VOLTAGE BASED ON THE CIRCUIT ASSIGNMENT INDICATED ON THE PLANS.
   E. CATALOG NUMBERS ARE FOR GENERAL IDENTIFICATION OF FIXTURES ONLY. ALL RELATED PARTS, SUCH AS PLASTER RINGS, JUNCTION BOXES, LOUVERS, SHIELDS, MOUNTING STEMS, CANOPIES, CONNECTORS, STRAPS, NIPPLES, HARDWARE, ACCESSORIES, ETC., TO FIT THEM PROPERLY TO THE CONSTRUCTION, SHALL BE FURNISHED AND INSTALLED BY THIS CONTRACTOR. CONTRACTOR SHALL PROVIDE SUITABLE TRIM AND APPURTENANCES TO MOUNT FIXTURES IN TYPE OF CEILING OR WALL AS SPECIFIED IN ARCHITECTURAL FINISH SCHEDULES REGARDLESS OF CATALOG NUMBER GIVEN.
   F. ALL FIXTURES SHALL BE GROUNDED PER THE NEC.
   G. FIXTURES CONNECTED WITH FLEX TO THE RIGID RACEWAY PORTION OF THE WIRING SYSTEM SHALL CARRY A GREEN BONDING JUMPER WITHIN THE FLEX. THE JUMPER SHALL BE FASTENED TO BOTH THE FIXTURE AND THE RACEWAY SYSTEM WITH A STEEL CITY "G" CLIP OR APPROVED EQUIVALENT. PHASE AND GROUND CONDUCTORS RUN IN FLEX SHALL BE #12 AWG MINIMUM. MAXIMUM FLEX LENGTH SHALL BE 6'-0".
   H. MOUNT ALL FIXTURES PLUMB AND SQUARE WITH ROWS ALIGNED.
   I. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF FIXTURES.
   J. CONTRACTOR SHALL COORDINATE FIXTURE TYPE AND TRIM WITH CEILING CONSTRUCTION AND ADJUST ACCORDINGLY WITHOUT ADDITIONAL EXPENSE.
   K. ALL LIGHTING FIXTURES SHALL BE THERMALLY PROTECTED PER THE NEC.
   L. FIXTURES IN CONTACT WITH INSULATION SHALL BE IC RATED.

10. LIGHTING CONTROLS:
   A. FURNISH AND INSTALL WHERE SHOWN AN ELECTRONIC TIME CONTROLLER AS MANUFACTURED BY TORK (NSI), PARAGON, INTERMATIC, OR APPROVED EQUAL. CONTACTS SHALL BE SPST OR AS INDICATED, RATED 120V AT 20A BALLAST LOAD, AND MINIMUM 30,000 SWITCHING CYCLES. PROVIDE WITH THE NUMBER OF CHANNELS INDICATED (MINIMUM 2 CHANNELS) OR AS REQUIRED TO MEET THE INTENT OF THE DRAWINGS. EACH CHANNEL SHALL BE INDIVIDUALLY PROGRAMMABLE WITH 128 ON-OFF OPERATIONS PER WEEK PLUS FOUR SEASONAL SCHEDULES TO MODIFY THE BASIC PROGRAM AND A HOLIDAY SCHEDULE THAT OVERRIDES THE WEEKLY OPERATION. THE CONTROLLER SHALL BE PROVIDED WITH A PHOTOELECTRIC SENSOR, ASTRONOMIC DIAL, AND A BATTERY BACKED-UP, NON-VOLITILE MEMORY FOR SCHEDULES AND TIME CLOCK.
   B. LIGHTING CONTACTORS SHALL SWITCH LOADS AT THE VOLTAGE AND AMPERE RATING INDICATED AND SHALL HAVE THE NUMBER OF POLES INDICATED ON THE DRAWINGS OR AS REQUIRED. THE CONTACTOR AND CONTACTS SHALL BE CONTINUOUSLY RATED FOR THE LOAD SERVED, INCLUDING TUNGSTEN FILAMENT, INDUCTIVE, AND HIGH-INRUSH BALLAST LOADS.
   C. ALL LIGHTING CONTACTORS SHALL BE ELECTRICALLY HELD AND BE INSTALLED IN A NEMA 1 ENCLOSURE, UNLESS OTHERWISE NOTED.

11. EQUIPMENT IDENTIFICATION:
   A. PROVIDE ENGRAVED PHENOLIC NAMEPLATES FOR ALL ELECTRICAL EQUIPMENT SUPPLIED FOR THE PROJECT, INCLUDING BUT NOT LIMITED TO, WIRING TROUGHS, SAFETY SWITCHES, DISCONNECTS, TRANSFORMERS, PANELBOARDS, SWITCHBOARDS, SWITCHGEARS, MOTOR CONTROL CENTERS (MCC), BUSWAYS, GENERATORS, AUTOMATIC TRANSFER SWITCHES (ATS), UNINTERRUPTIBLE POWER SUPPLY (UPS), POWER DISTRIBUTION UNITS (PDU), FLOOR/REMOTE DISTRIBUTION CABINETS (FDC/RDC), STATIC TRANSFER SWITCHES (STS), ETC. NAMEPLATE SHALL INDICATE THE DEVICE NAME, SYSTEM VOLTAGE (VOLTAGE/PHASE/WIRE), AND UPSTREAM DEVICE AND CIRCUIT. PROVIDE NAMEPLATES FOR CIRCUIT BREAKERS IN SWITCHGEARS, SWITCHBOARDS AND DISTRIBUTION PANELS.
   B. NAMEPLATE COLORS SHALL BE AS FOLLOWS:

      120/208V EQUIPMENT — BLUE SURFACE WITH WHITE CORE
      277/480 EQUIPMENT — BLACK SURFACE WITH WHITE CORE
      FIRE ALARM SYSTEMS — BRIGHT RED SURFACE WITH WHITE CORE
      SECURITY SYSTEMS — BURGUNDY SURFACE WITH WHITE CORE
      TELEPHONE SYSTEMS — ORANGE SURFACE WITH WHITE CORE
      DATA SYSTEMS — BROWN SURFACE WITH WHITE CORE

   C. NAMEPLATES UP TO 8 SQUARE INCHES SHALL NOT BE LESS THAN 1/16" THICK. NAMEPLATES LARGER THAN 8 SQUARE INCHES SHALL NOT LESS THAN 1/8" THICK.
   D. LETTERING HEIGHT SHALL BE 1/2" MINIMUM.
   E. NAMEPLATES SHALL BE ATTACHED WITH SELF-DRILLING/SELF-TAPPING SCREWS, EXCEPT RIVETS SHALL BE USED WHERE END OF SCREW IS NOT PROTECTED. QUANTITY AS FOLLOWS:

      UP TO 5 SQUARE INCHES: 2 SCREWS
      5 TO 12 SQUARE INCHES: 4 SCREWS
      ABOVE 12 SQUARE INCHES: 6 SCREWS

12. DISCONNECTS:
   A. DISCONNECT SWITCHES SHALL BE HEAVY-DUTY TYPE IN NEMA 1 ENCLOSURES, UNLESS OTHERWISE NOTED, FUSED OR NON-FUSED AS INDICATED. SWITCHES SHALL HAVE REJECTION-TYPE FUSE CLIPS. SWITCHES SHALL BE BY EATON, SQUARE-D, GENERAL ELECTRIC, OR APPROVED EQUAL. WHERE FED FROM A LOAD CENTER, GENERAL-DUTY SWITCHES SHALL BE PERMITTED.
   B. FUSES LESS THAN 60A SHALL BE CLASS RK5, DUAL-ELEMENT, TIME-DELAY WITH INDICATION
   C. FUSES GREATER THAN 60A SHALL BE CLASS J, DUAL-ELEMENT, TIME-DELAY WITH INDICATION.
   D. A SET OF 3 SPARE FUSES OF EACH SIZE AND TYPE SHALL BE FURNISHED TO THE OWNER

13. PANELBOARDS:
   A. PANELBOARDS SHALL BE PROVIDED AS MANUFACTURED BY EATON, SQUARE-D, GENERAL ELECTRIC, OR APPROVED EQUAL. ALL NEW EQUIPMENT FOR THE PROJECT SHALL BE BY THE SAME MANUFACTURER. LOAD CENTER TYPE PANELBOARDS SHALL BE USED WHERE THE PANELBOARD SERVES A DWELLING UNIT.
   B. ALL BUSSING, INCLUDING NEUTRAL AND GROUND, SHALL BE COPPER.
   C. ALL BREAKERS SHALL BE AUTOMATIC THERMAL-MAGNETIC TYPE MOLDED CASE BOLT-ON TYPE, CALIBRATED FOR 40 DEGREE C, OR AMBIENT COMPENSATION, UNLESS OTHERWISE NOTED.
   D. PANELS SHALL BE FULLY RATED (AIC). NO SERIES AIC RATINGS ARE ALLOWED.
   E. PANELS SHALL HAVE FULL SIZE EQUIPMENT GROUNDING BARS AND NEUTRAL BARS, EXCEPT WHERE INDICATED TO BE 200%.
   F. ALL PANELBOARD AND BREAKER LUGS SHALL BE SIZED AND RATED PER THE CONDUCTOR SIZE AND MATERIAL.
   G. LIGHTING AND APPLIANCE PANELS (100A-600A) SHALL HAVE FRONT ACCESSIBLE HINGED DOOR-IN-DOOR COVERS WITH DEAD FRONT, SHALL BE 20" WIDE MINIMUM WITH MINIMUM 4" WIDE WIRING GUTTERS.
   H. DISTRIBUTION PANELS (600A-1200A) SHALL HAVE FRONT ACCESSIBLE DEAD FRONT COVERS.
   I. PROVIDE HANDLE LOCK-ON DEVICES FOR ALL CIRCUIT BREAKERS CONNECTED TO EMERGENCY, EXIT, NIGHT LIGHTING, FIRE ALARM, TELEPHONE BOARDS, AND SECURITY SYSTEMS.
   J. BREAKERS USED FOR SWITCHING SHALL BE SWITCHING DUTY (SWD) RATED.
   K. BREAKERS USED FOR HEATING, AIR-CONDITIONING AND/OR REFRIGERATION SHALL BE HACR RATED.
   L. GROUND-FAULT CIRCUIT-INTERRUPTER (GFCI) PROTECTION FOR PERSONNEL SHALL BE PROVIDED FOR ALL LOCATIONS PER NEC 210.8, INSTALLED IN A READILY ACCESSIBLE LOCATION. WHERE A DEVICE LOCATION IS NOT ACCESSIBLE, THE GFCI PROTECTION SHALL BE PROVIDED WITH THE BREAKER SERVING THE DEVICE.
   M. ALL OVERCURRENT DEVICES WHICH COMPRISE THE EMERGENCY SYSTEM OR LEGALLY REQUIRED STANDBY SYSTEM SHALL BE SELECTIVELY COORDINATED. THE ELECTRICAL CONTRACTOR SHALL PROVIDE MANUFACTURER DOCUMENTATION INDICATING COMPLIANCE WITH THE SELECTIVE COORDINATION REQUIREMENTS PER THE NEC.
   O. ALL PANELBOARDS SHALL HAVE METAL DIRECTORY FRAME. FOR EACH PANELBOARD, PROVIDE TYPED CIRCUIT DIRECTORY PER NEC 408.4. SPARE CIRCUIT BREAKERS SHALL BE LABELED SPARE AND IN THE OFF POSITION.
   P. ALL CIRCUIT BREAKERS RATED 1200A OR HIGHER, OR CAPABLE OF BEING RATED 1200A OR HIGHER (I.E. ADJUSTABLE LONG-TIME PICKUP OR REPLACEABLE TRIP/RATING PLUG), SHALL BE PROVIDED WITH AN ENERGY-REDUCING MAINTENANCE SWITCH WITH LOCAL STATUS INDICATOR PER NEC 240.87(B).
   Q. ALL GROUNDING TERMINAL BUSSES OF PANELBOARDS SERVING THE SAME PATIENT VICINITY SHALL BE BONDED TOGETHER WITH 1#10 AWG GREEN INSULATED COPPER GROUNDING CONDUCTOR. THE CONDUCTOR SHALL BE CONTINUOUS EXCEPT THAT IT MAY BE BROKEN AT THE PANELBOARD GROUND BAR IN ORDER TO TERMINATE.

14. FIRE STOPPING:
   A. ALL PENETRATIONS OF RATED ASSEMBLIES SHALL BE SEALED WITH RATED MATERIALS MEETING ASTM E-814.
   B. PROVIDE FIRESTOPPING DEVICE(S) OR SYSTEM(S) WHICH HAVE BEEN TESTED AND LISTED AS COMPLYING WITH ASTM E-814. INSTALL THE DEVICE(S) OR SYSTEM(S) IN ACCORDANCE WITH THE CONDITIONS OF THEIR LISTING. PROVIDE THE APPROPRIATE DEVICE(S) OR SYSTEM(S) WITH AN 'F' RATING EQUAL TO THE RATING OF THE ASSEMBLY BEING PENETRATED.
   C. DEVICE(S) AND/OR SYSTEM(S) SHALL BE BY HILTI, 3M OR EQUIVALENT.

15. SEISMIC:
   A. THE ELECTRICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROVIDING SEISMIC SUPPORT AND BRACING OF ELECTRICAL COMPONENTS TO RESIST THE EFFECTS OF EARTHQUAKES ON THE ELECTRICAL SYSTEM AS WELL AS ANY REQUIRED SPECIAL INSPECTIONS BASED ON THE SPECIFIC GEOGRAPHIC LOCATION AS REQUIRED. THE SEISMIC RESTRAINTS AND SPECIAL INSPECTIONS SHALL MEET ALL APPLICABLE STATE AND LOCAL BUILDING CODE REQUIREMENTS AS WELL AS ASCE-7 REQUIREMENTS.

16. ELECTRICAL COORDINATION WITH OTHER TRADES:
   A. THE ELECTRICAL CONTRACTOR SHALL CONNECT AND/OR PROVIDE FINAL CONNECTIONS TO ALL EQUIPMENT SUPPLIED BY OTHERS APPLICABLE TO THE PROJECT, INCLUDING BUT NOT LIMITED TO, MECHANICAL, PLUMBING, FIRE PROTECTION AND SUPPRESSION, OWNER FURNISHED, KITCHEN, LABORATORY, ETC. UNLESS OTHERWISE NOTED.
   B. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONNECTIONS PRIOR TO ROUGH-IN USING APPROVED CATALOG SHEETS AND SHOP DRAWINGS.
   C. THE ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANUAL MOTOR STARTER SWITCHES, DISCONNECT SWITCHES, RECEPTACLES, ETC. TO MECHANICAL AND PLUMBING EQUIPMENT. ALL STARTERS, OTHER THAN MANUAL STARTER SWITCHES, SHALL BE PROVIDED BY OTHERS, BUT INSTALLED BY THE ELECTRICAL CONTRACTOR.
   D. ALL DISCONNECT SWITCHES AND FUSE SIZES SHALL BE COORDINATED WITH SHOP DRAWINGS PRIOR TO ORDERING OR INSTALLING. ANY EQUIPMENT INSTALLED INCORRECTLY BECAUSE OF LACK OF COORDINATION WILL BE REMOVED AND INSTALLED CORRECTLY AT THE EXPENSE OF THE ELECTRICAL CONTRACTOR.
   E. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT RUNS AND LIGHT FIXTURE LOCATIONS ABOVE THE CEILING WITH OTHER TRADES PRIOR TO INSTALLATION.
   F. ALL DUCT SMOKE DETECTORS SHALL BE PROVIDED AND CONNECTED BY THE ELECTRICAL CONTRACTOR, BUT INSTALLED BY THE MECHANICAL CONTRACTOR.
   G. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY OUTLETS FOR HEAT TAPE CONNECTIONS FOR MECHANICAL SYSTEMS. PROVIDE CLASS B (30mA) GFCI PROTECTION ON THE BREAKER SUPPLYING THE HEAT TAPE.
   H. THE ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER AT EACH HVAC UNIT HAVING A CONTROLS POWER SUPPLY. CIRCUIT(S) SHALL BE DEDICATED 20A SERVING A MAXIMUM OF 10 HVAC UNITS PER CIRCUIT. COORDINATE ALL LOCATIONS WITH THE MECHANICAL CONTRACTOR.

17. DEMOLITION NOTES:
   A. PARTIAL AND TOTAL DEMOLITION OF PORTIONS SHALL BE PERFORMED ALONG WITH ALL NECESSARY MODIFICATIONS TO THAT PORTION OF THE EXISTING BUILDING WHICH SHALL REMAIN SO THAT IT CONTINUES TO FUNCTION UNAFFECTED BY THE DEMOLITION AND ASSOCIATED NEW CONSTRUCTION.
   B. WHERE INCLUDED AS PART OF THE CONTRACT DOCUMENTS, THE DRAWINGS INDICATE THE GENERAL AREAS OF WORK INVOLVED. HOWEVER, THE ELECTRICAL CONTRACTOR SHALL PERFORM WORK OUTSIDE THOSE AREAS SHOWN AS IS NECESSARY TO COMPLY WITH THE INTENT OF THIS SECTION.
   C. THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE EXISTING BUILDING AND WITH THE WORK OF ALL OTHER TRADES AND INCLUDE ALL WORK NECESSARY TO COMPLY WITH THE INTENT OF THE DEMOLITION.
   D. IT SHALL BE UNDERSTOOD THAT FIELD CONDITIONS MAY BE ENCOUNTERED DURING THE EXECUTION OF THIS CONTRACT WHICH WILL REQUIRE EXTENSION OR RELOCATION OF EXISTING SYSTEMS OR EQUIPMENT WHICH ARE NOT SPECIFICALLY SHOWN ON THE DRAWINGS, BUT WHICH ARE REQUIRED TO MEET THE STATED INTENT THAT THE BUILDING CONTINUE TO FUNCTION UNAFFECTED BY THE DEMOLITION AND ASSOCIATED NEW CONSTRUCTION. THE ELECTRICAL CONTRACTOR SHALL INCLUDE SUCH WORK AS WOULD NORMALLY BE EXPECTED IN AN EXISTING BUILDING OF THIS AGE AND TYPE.
   E. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL TOOLS, EQUIPMENT, LABOR, ETC. IN ORDER TO ACCOMPLISH THE DEMOLITION PORTION OF THE PROJECT.
   F. THE DEMOLITION OF CERTAIN AREAS OF THE EXISTING BUILDING SHALL BE PERFORMED BY THE GENERAL CONTRACTOR. IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE GENERAL CONTRACTOR TO DIFFERENTIATE THE SCOPE OF WORK BETWEEN SEPARATE TRADES.
   G. THE ELECTRICAL CONTRACTOR SHALL INCLUDE COORDINATION WITH THE GENERAL CONTRACTOR AND SUCH DEMOLITION OF THE EXISTING ELECTRICAL SYSTEMS AS IS NECESSARY SO THAT THE DEMOLITION WORK OF THE GENERAL CONTRACTOR SHALL NOT DAMAGE THOSE PORTIONS OF THE ELECTRICAL SYSTEMS WHICH ARE TO REMAIN IN SERVICE, ARE TO BE REUSED, OR ARE TO BECOME THE PROPERTY OF THE OWNER.
   H. TURN OVER TO OWNER, UPON REQUEST OR AS NOTED, ITEMS SHOWN AS BEING REMOVED AND NOT REINSTALLED. ITEMS NOT DIRECTED OR REQUESTED TO BE TURNED OVER TO THE OWNER SHALL BE DISPOSED OF BY THE ELECTRICAL CONTRACTOR.
   I. EQUIPMENT OR MATERIALS WHICH ARE TO BE REUSED OR TURNED OVER TO THE OWNER SHALL BE CAREFULLY REMOVED, CLEANED, AND STORED IN A CLEAN AND DRY AREA. SHOULD THE ELECTRICAL CONTRACTOR ENCOUNTER SUCH EQUIPMENT WHICH IS NOT IN SATISFACTORY CONDITION FOR REUSE AND NOT IN WORKING ORDER, THE ELECTRICAL CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER IMMEDIATELY.
   J. DISCONNECT ELECTRICAL SERVICES TO ALL EQUIPMENT REQUIRING REMOVAL. CONDUIT SHALL BE REMOVED BACK TO THE POINT WHERE IT WILL BE CONCEALED AT THE COMPLETION OF THIS CONTRACT. WIRE AND CABLE SHALL BE REMOVED BACK TO THE FIRST OUTLET BOX, CABINET, OR TERMINATION POINT WHICH IS TO REMAIN. CIRCUITS WHICH ARE NOT REUSED SHALL BE REMOVED BACK TO THE SOURCE IN THEIR ENTIRETY.
   K. REMOVE AND REINSTALL CEILINGS IN THE EXISTING BUILDING AS REQUIRED FOR THE WORK. COORDINATE WITH THE GENERAL CONTRACTOR. IN SUCH AREAS, REMOVE AND REINSTALL ALL ELECTRICAL DEVICES WHICH ARE TO REMAIN IN OR ON THE CEILING.
   L. WHERE NEW CEILINGS CONFLICT WITH EXISTING ELECTRICAL WORK WHICH IS TO REMAIN, RELOCATE THE ELECTRICAL WORK INVOLVED TO CLEAR THE NEW CONSTRUCTION.
   M. WHERE NEW WALL OR FLOOR FINISHES CONFLICT WITH EXISTING ELECTRICAL WORK WHICH IS TO REMAIN, RELOCATE THE ELECTRICAL WORK INVOLVED OR PROVIDE BOX EXTENSIONS OR SIMILAR DEVICES AND REINSTALL ON THE NEW FINISH.
   N. WHERE EXISTING BRANCH CIRCUITS AND SYSTEMS ARE INTERRUPTED BY NEW WORK OR SYSTEMS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, ETC.), EXTEND AND RECONNECT THOSE EXECUTION OF THIS CONTRACT, PROVIDE TEMPORARY CONNECTIONS UNTIL FINAL CONNECTIONS ARE COMPLETE.

18. COORDINATION DRAWINGS:
   A. THE MECHANICAL CONTRACTOR SHALL ORGANIZE COORDINATION MEETINGS TO DEVELOP A SET OF DRAWINGS WITH ALL CONTRACTORS (ELECTRICAL, MECHANICAL, PLUMBING, FIRE PROTECTION, IT/DATA, SECURITY AND GENERAL). THE MECHANICAL CONTRACTOR WILL HAVE THE LEAD RESPONSIBILITY FOR THE COORDINATION DRAWINGS. THE MECHANICAL CONTRACTOR SHALL PRODUCE THE ORIGINAL DRAWINGS AND FORWARD THE DRAWINGS TO EACH OF THE OTHER CONTRACTORS FOR THEM TO ADD THEIR SYSTEMS TO THIS SET OF COORDINATION DRAWINGS. THE CONTRACTORS WILL DEVELOP THE DRAWINGS IN THIS ORDER: MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, IT/DATA (INCLUDING CABLE TRAY), SECURITY, AND GENERAL. THIS SHALL ALSO BE THE ORDER OF PRECEDENCE FOR INSTALLATION OF SYSTEMS. ANY RELOCATION OF SYSTEM ROUTINGS WILL BE FOUND IN THE COORDINATION PHASE AND NOTICED BY EACH OF THE CONTRACTORS. THESE DRAWINGS, WHEN COMPLETED, SHALL BE SIGNED OFF BY ALL OF THE ABOVE LISTED PARTIES. DRAWINGS SHALL BE COMPLETED PRIOR TO PURCHASE, FABRICATION OR INSTALLATION OF EQUIPMENT AND/OR SYSTEMS. THE FOLLOWING ITEMS REPRESENT THE MINIMUM REQUIREMENTS FOR SHOP DRAWINGS AND COORDINATION DRAWINGS:
      1. ALL SHOP AND COORDINATION DRAWINGS WILL BE 1/4"=1'-0" SCALE.
      2. DRAWINGS WILL BE ORIGINAL DRAWINGS AND NOT OVERLAYS OF THE CONTRACT/DESIGN DRAWINGS.
      3. COORDINATION DRAWINGS WILL BE DRAWN ON REPRODUCIBLE MATERIAL 48"x36".
      4. COORDINATION DRAWINGS ARE NOT SHOP DRAWINGS AND ARE REQUIRED IN ADDITION TO SHOP DRAWINGS.
      5. ONCE THE COMPLETE COORDINATION DRAWINGS HAVE BEEN COMPILED, THE MECHANICAL CONTRACTOR WILL DISTRIBUTE ONE SIGNED SET TO EACH OF THE FOLLOWING CONTRACTORS: ELECTRICAL, PLUMBING, FIRE PROTECTION, IT/DATA, AND GENERAL. ADDITIONAL SETS WILL BE SENT TO THE OWNER, ARCHITECT, AND ENGINEER.

19. TESTING AND DOCUMENTATION:
   A. TESTING AND DOCUMENTATION SHALL BE PROVIDED AS FOLLOWS:
      1. GFCI EQUIPPED BREAKERS SHALL BE PERFORMANCE TESTED.
      2. LIGHTING CONTROL SYSTEMS SHALL BE TESTED FOR PROPER OPERATION OF SETPOINTS.

20. COMMISSIONING:
   A. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR EQUIPMENT/SYSTEM START-UP AND TESTING. THE ELECTRICAL CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR EQUIPMENT/SYSTEM COMMISSIONING AS DIRECTED BY THE COMMISSIONING AUTHORITY (CxA). THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE COMMISSIONING AUTHORITY AND PROVIDE ALL NECESSARY TIME, EQUIPMENT, MATERIALS, AND PROCEDURES REQUIRED FOR A FULLY COMMISSIONED PROJECT.

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7/26/2024

CONSTRUCTION DRAWINGS

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Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY ADDITION
855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JSD
CHECKED BY: MKG

ELECTRICAL SPECIFICATIONS

E-002

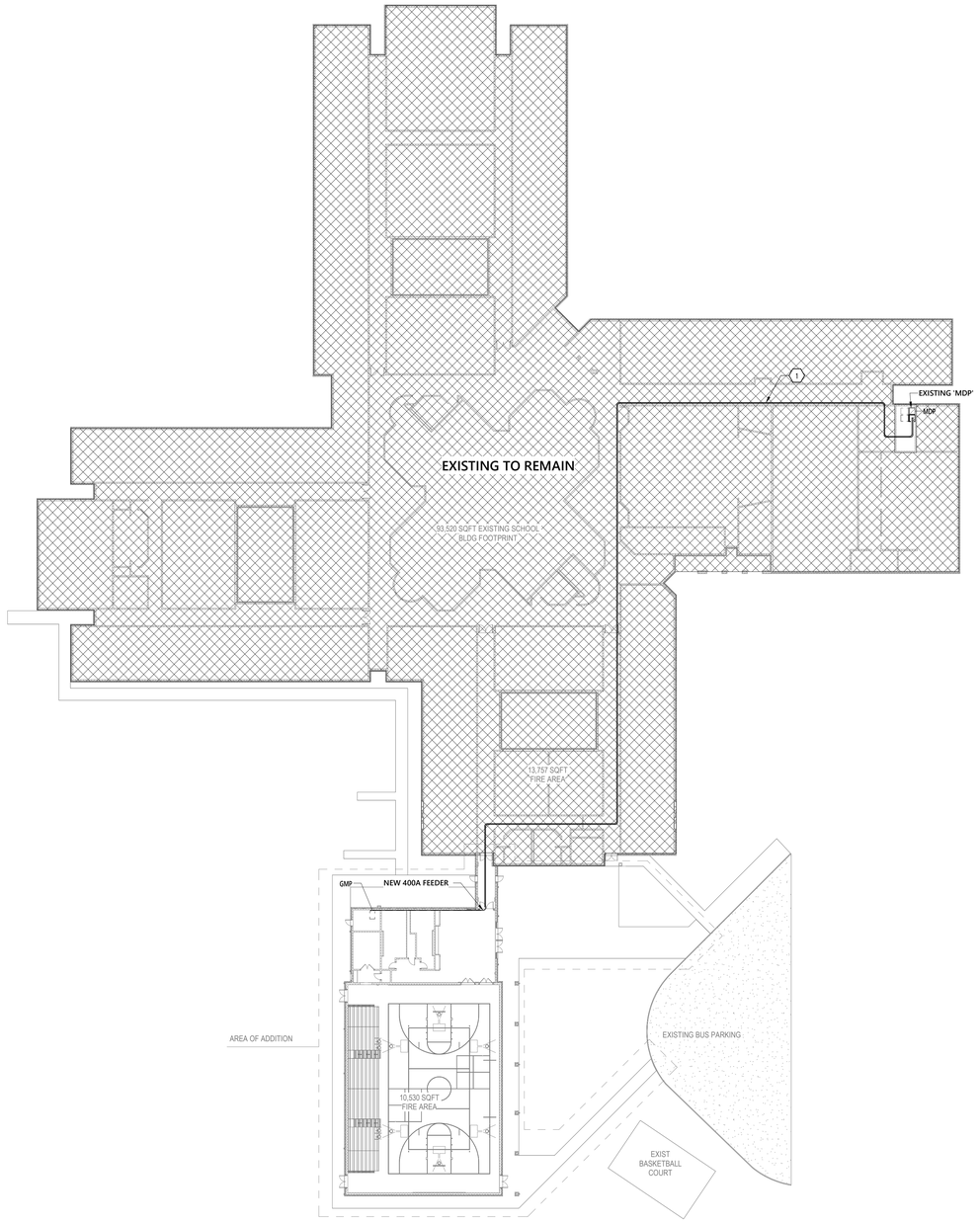
WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

GENERAL NOTES - SITE PLAN

A. ALL LIGHTING AND POWER CONDUCTORS SHALL BE INSTALLED BETWEEN 24" (MINIMUM) AND 36" (MAXIMUM) BELOW FINISHED GRADE.
B. ALL COMMUNICATIONS CONDUIT AND CABLES SHALL BE INSTALLED 36" (MINIMUM) BELOW FINISHED GRADE.
C. ALL CONDUCTORS FOR EXTERIOR LIGHTING AND POWER CIRCUITS SHALL BE #10 AWG MINIMUM.
D. PROVIDE TRANSFORMER BASE AT ALL POLE MOUNTED FIXTURES, TAP 2 LEGS OF THREE PHASE FEEDER (CIRCUITS DENOTED), PROVIDE BALLAST FUSES AT TAP, AND PROVIDE BRANCH CIRCUITS TO FIXTURES.

KEYNOTES

1 G.C. TO COORDINATE CONNECTION TO EXISTING SERVICE WITH SCHOOL ACTIVITIES. PATCH AND REPAIR EXISTING WALLS AND CEILING AS NEEDED TO RUN NEW FEEDER.



1 OVERALL ELECTRICAL PLAN
1" = 30'-0"

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OVERALL ELECTRICAL PLAN

E-010

Sheet No. 3 of 12

OPTIMA# 24-0045R

WALL LEGEND

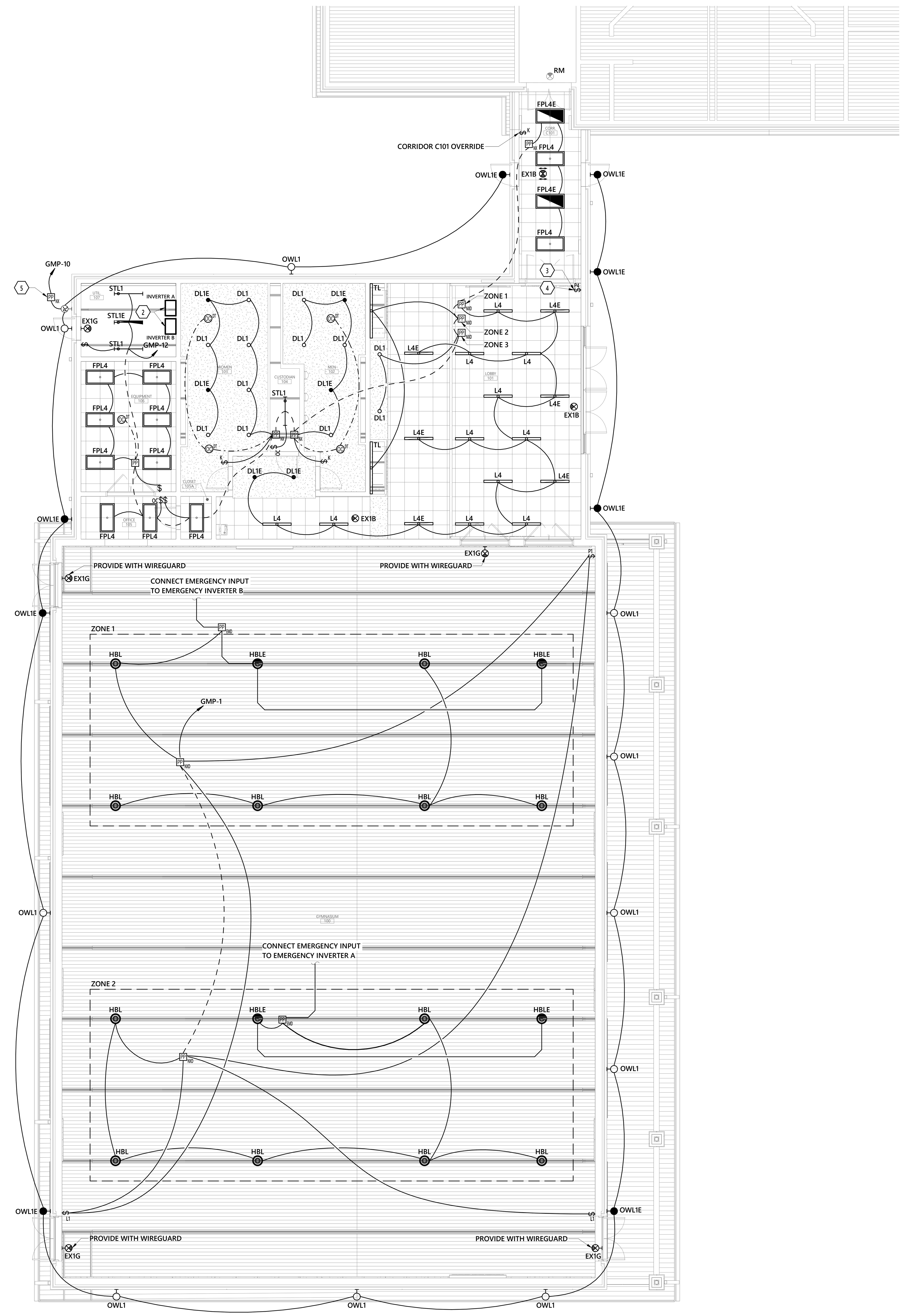
SYMBOL	DESCRIPTION
(1 hr line)	1 HR FIRE RATED
(2 hr line)	2 HR FIRE RATED

GENERAL NOTES - LIGHTING

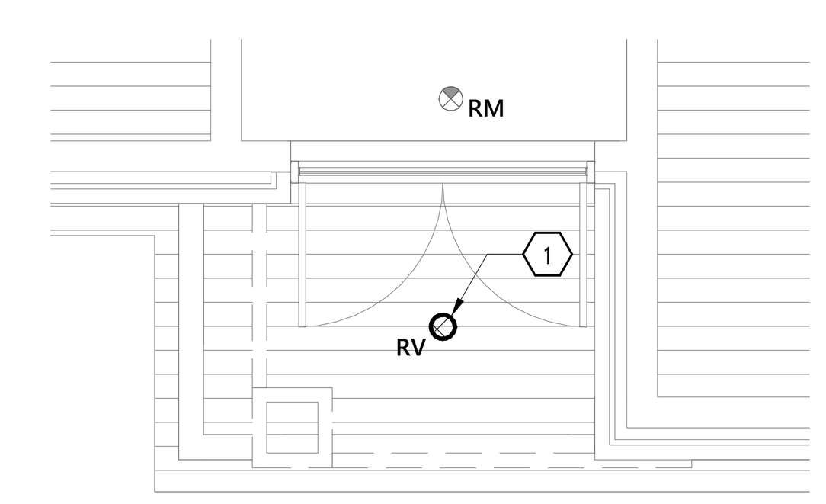
A. ALL RECESSED LIGHTING FIXTURES IN LAY-IN CEILINGS SHALL BE INSTALLED WITH 6'-0" LONG FLEXIBLE METAL CONDUIT.
B. SEE ARCHITECTURAL EXTERIOR ELEVATIONS FOR MOUNTING HEIGHTS OF EXTERIOR LIGHTING FIXTURES.
C. CONNECT EMERGENCY EXIT SIGNS AND THE UNSWITCHED INPUT OF BATTERY PACKS TO LOCAL LIGHTING CIRCUIT, AHEAD OF SWITCHING.
D. CONTRACTOR SHALL MAKE SURE TO MAINTAIN CONTINUITY OF ELECTRICAL DEVICES THAT ARE OUTSIDE AREA OF WORK THAT ARE INTENDED TO MAIN ENERGIZED.
E. MAINTAIN CONTINUITY OF BRANCH CIRCUITRY ASSOCIATED WITH ALL EXISTING LIGHTS TO REMAIN.
F. HATCHED AREAS ARE NOT IN SCOPE OF WORK.

KEYNOTES (#)

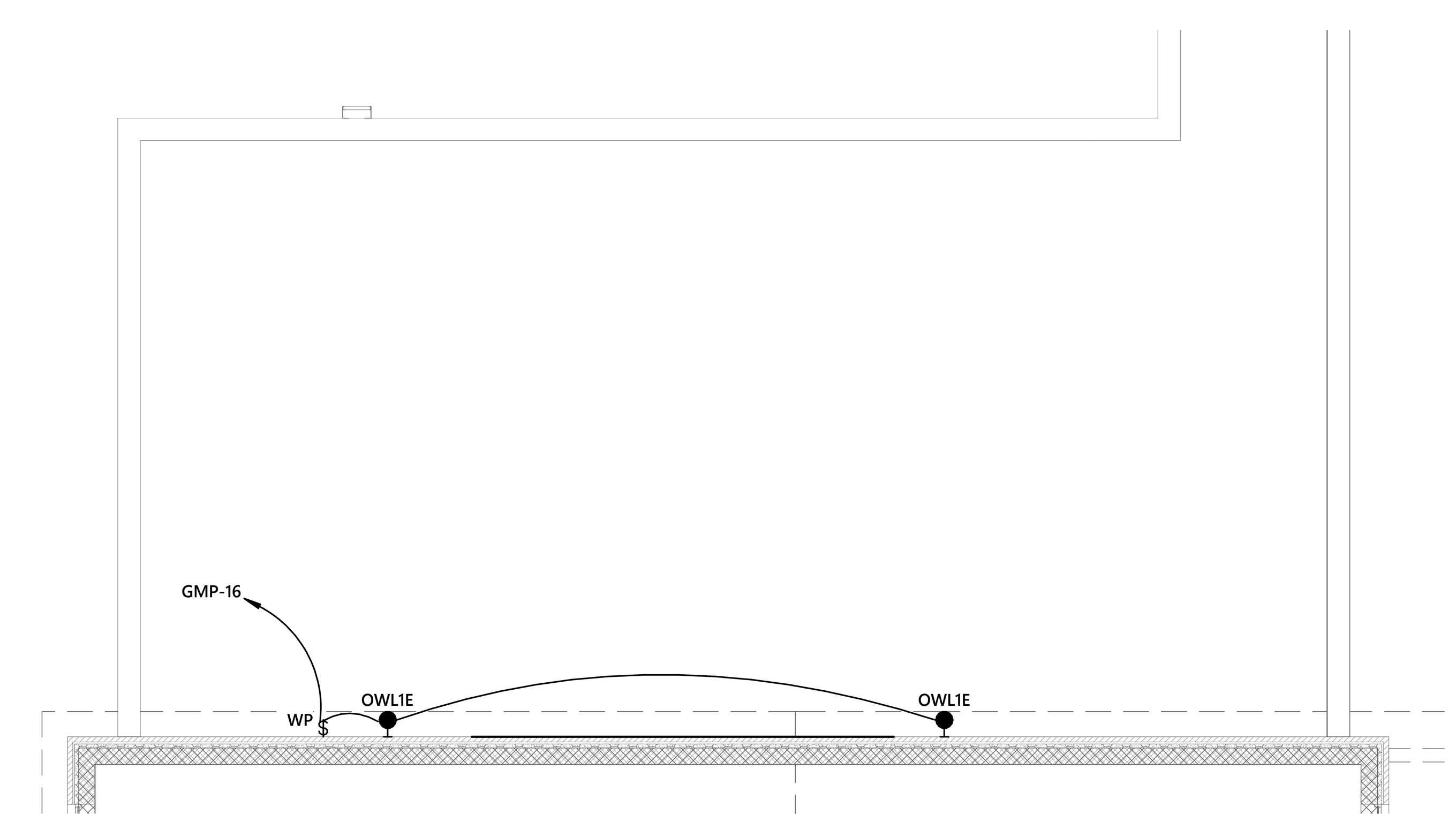
1 DISCONNECT AND REMOVE EXTERIOR LIGHTING FIXTURE. ELECTRICAL CONTRACTOR SHALL RETAIN CIRCUIT CONTINUITY TO ENSURE PROPER OPERATION OF ALL FIXTURES OUTSIDE SCOPE OF WORK WHICH ARE CONNECTED TO EXISTING CIRCUIT.
2 PROVIDE 500VA EMERGENCY INVERTER WITH 90 MINUTES OF BATTERY BACKUP TO PROVIDE EMERGENCY BACKUP POWER FOR GYM HIGH BAY FIXTURES. LIGHTS SHALL BE CONTROLLED BY ADDRESSABLE LIGHTING CONTROL SYSTEM DURING NORMAL OPERATION. UPON POWER FAILURE, LIGHTS SHALL TURN ON AT FULL BRIGHTNESS.
3 3 ZONE OVERRIDE SWITCH. DIMMING CONTROL FOR 3 ZONES IN LOBBY 101:
ZONE 1: TYPE 'L4', 'L4E', AND 'DL1E' FIXTURES IN MAIN LOBBY AREA AND RESTROOM HALLWAY.
ZONE 2: TYPE 'TL' FIXTURES IN TROPHY CASEWORK.
ZONE 3: TYPE 'DL1' FIXTURES IN MAIN LOBBY AREA.
4 PROVIDE LABELS INDICATING ZONES SERVED BY OVERRIDE SWITCH IN LOBBY 101:
ZONE 1: "LOBBY"
ZONE 2: "TROPHY"
ZONE 3: "BENCH"
5 LOCATE POWER PACK IN ELECTRICAL ROOM ADJACENT TO PANEL SERVING EXTERIOR LIGHTING.



1 ADDITION LIGHTING PLAN
1/8" = 1'-0"



2 ENLARGED LIGHTING DEMOLITION PLAN
1/4" = 1'-0"



3 ADDITION LIGHTING PLAN - ROOF
1/8" = 1'-0"

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ENERGY STAR PARTNER

No.	Date	Description

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ADDITION LIGHTING PLAN

E-101

OPTIMA# 24-0045R

Autodesk Docs://02110.300 Lillington-Shawtown ES/24-0045R_Lillington-Shawtown ES Addition_MEPFP_R23.rvt
7/25/2024 5:03:39 PM

WALL LEGEND

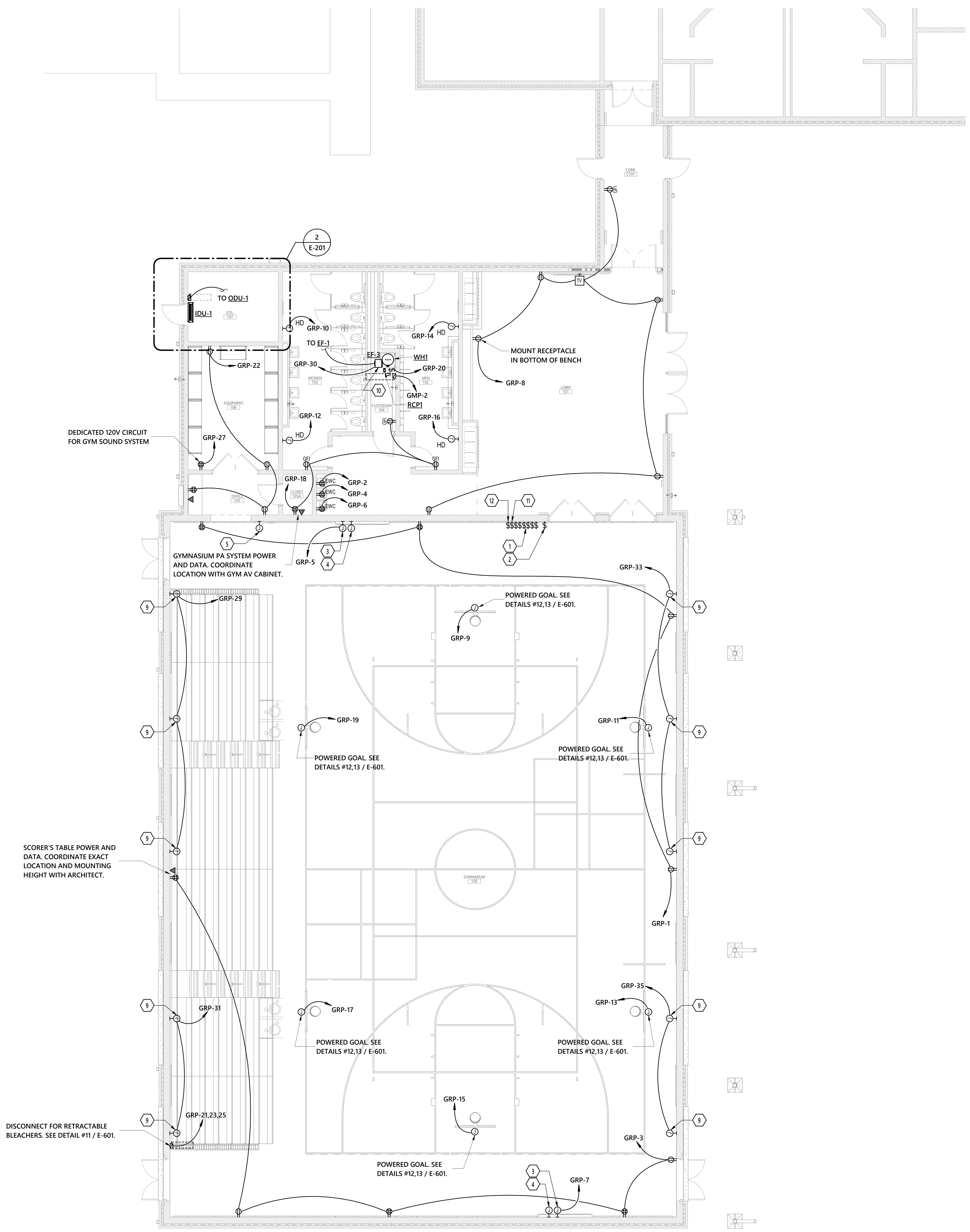
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

GENERAL NOTES

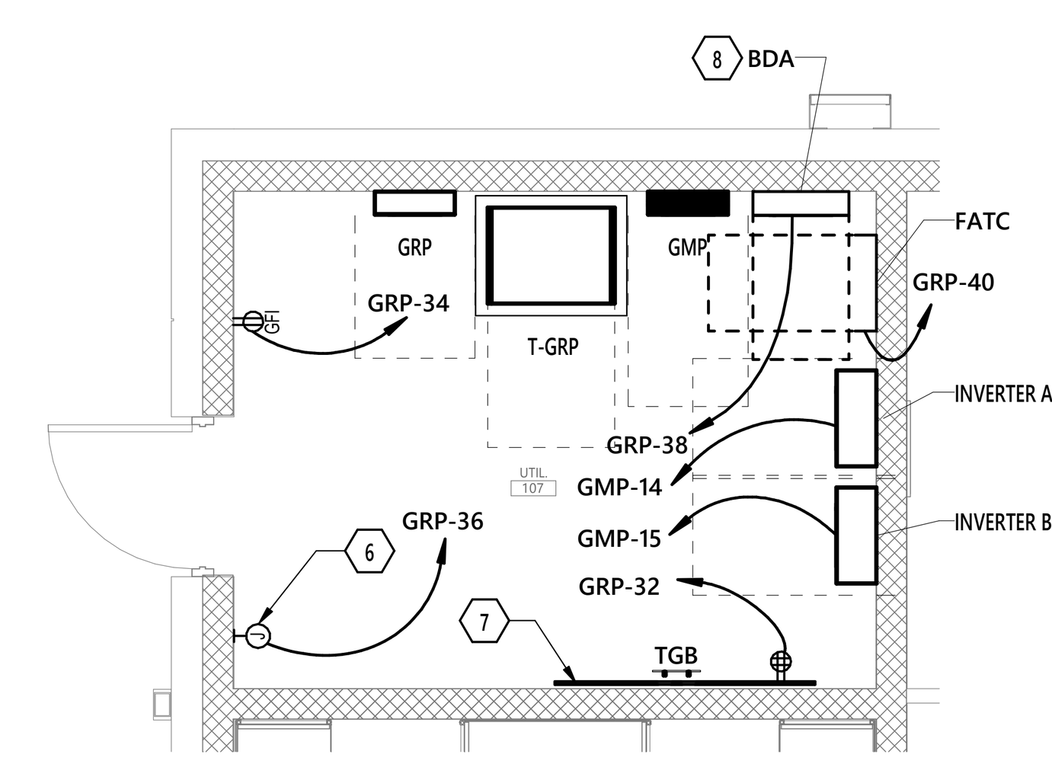
A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATE IN WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIARGAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. COORDINATE EXACT LOCATION OF ALL FLOOR BOXES WITH ARCHITECT AND FURNITURE VENDOR.

KEYNOTES (#)

1 KEYED SWITCH FOR MOTORIZED GOALS. TYPICAL OF 6. SEE DETAILS 12, 13 / SHEET E-601.
2 KEYED IN/OUT/STOP SWITCH FOR MOTORIZED BLEACHER CONTROL. SEE DETAIL 11 / SHEET E-601.
3 120V CONNECTION TO SCOREBOARD. COORDINATE WITH SCOREBOARD INSTALLER PRIOR TO ROUGH-IN.
4 PROVIDE DOUBLE GANG JUNCTION BOX FOR SCOREBOARD. PROVIDE 1-1/2"C FROM JUNCTION BOX TO CONTROLLER JACK LOCATION. COORDINATE WITH SCOREBOARD INSTALLER PRIOR TO ROUGH-IN.
5 SCOREBOARD CONTROLLER JACK. PROVIDE 4" SQUARE BOX WITH A SINGLE GANG OPENING AND PLASTER RING. COORDINATE WITH SYSTEMS CONTRACTOR.
6 PROVIDE 120V CONNECTION FOR MECHANICAL CONTROLS. COORDINATE WITH MECHANICAL CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
7 PROVIDE 3/4" FIRE RETARDANT PLYWOOD BACKBOARD FROM FLOOR TO CEILING INSTALLED VERTICALLY STARTING AT 6" AFF. PAINT WITH TWO COATS OF COLOR WHITE FIRE RETARDANT PAINT.
8 CONRACTOR SHALL FIELD VERIFY EXISITNG CONDITION AND INCLUDE IN BID ALL CONDUCTORS, CABLING, CONDUIT, AND EQUIPMENT FOR A FULLY FUNCTIONING EMERGENCY RESPONDER RADIO AMPLIFICATION SYSTEM.
9 120V CONNECTION FOR GYMNASIUM MOTORIZED SHADES. COORDINATE EXACT REQUIREMENTS WITH SHADE INSTALLER AND ARCHITECT PRIOR TO ROUGH-IN.
10 INTERLOCK FAN WITH LIGHTING CONTROLS IN THIS ROOM. PROVIDE RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.
11 RAISE/LOWER/STOP SWITCH FOR PLAN EAST GYM MOTORIZED SHADES. COORDINATE EXACT REQUIREMENTS WITH SHADE INSTALLER PRIOR TO ROUGH-IN. ROUTE CONDUIT TO SHADE CONTROLLER.
12 RAISE/LOWER/STOP SWITCH FOR PLAN WEST GYM MOTORIZED SHADES. COORDINATE EXACT REQUIREMENTS WITH SHADE INSTALLER PRIOR TO ROUGH-IN. ROUTE CONDUIT TO SHADE CONTROLLER.



1 ADDITION POWER PLAN
1/8" = 1'-0"



2 ENLARGED UTIL. 107 POWER PLAN
1/4" = 1'-0"

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No.	Date	Description

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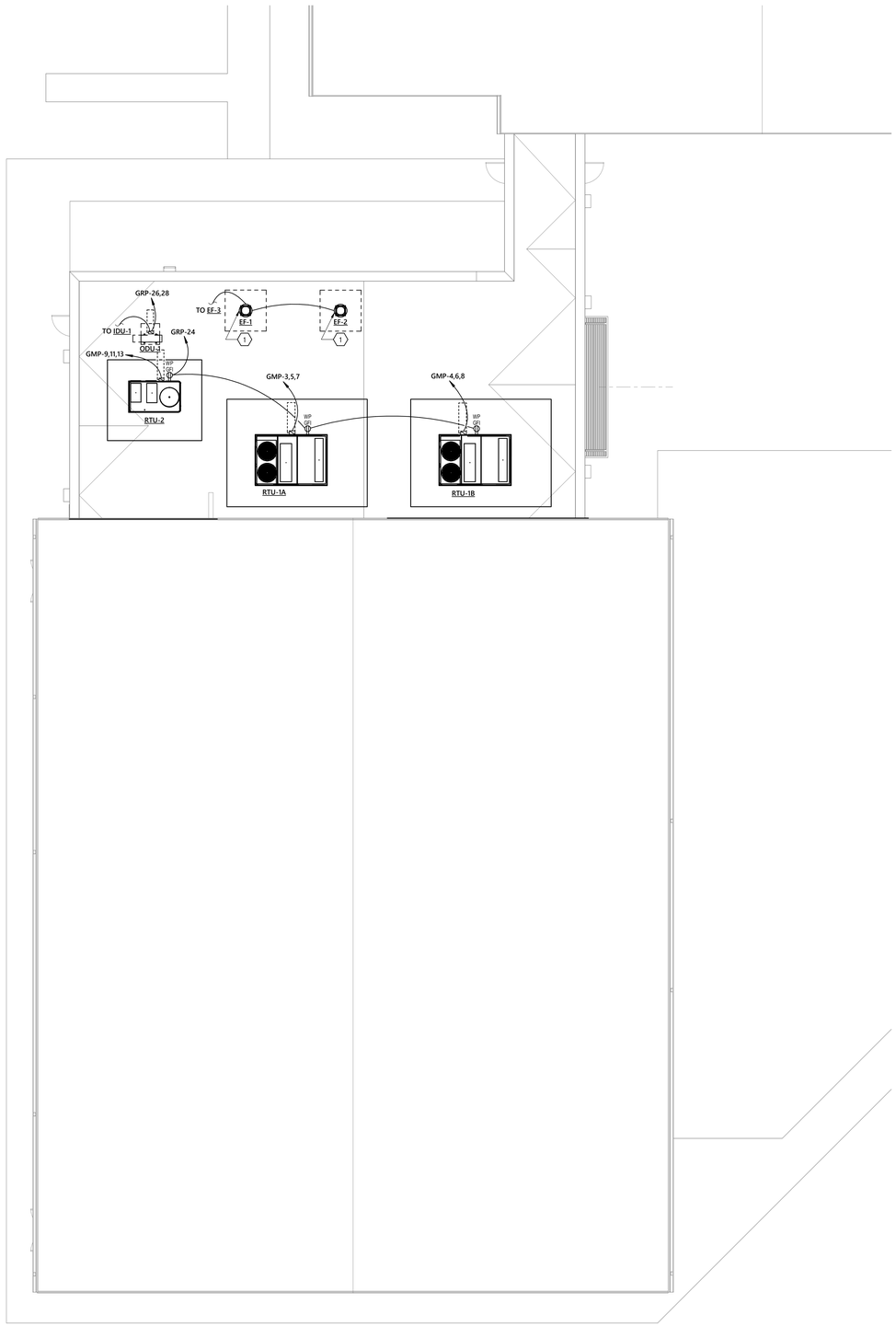
ADDITION POWER PLAN

E-201



1 ADDITION ROOF EQUIPMENT CONNECTIONS PLAN
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

GENERAL NOTES

A. RECEPTACLES AND DATA OUTLETS SHALL NOT BE MOUNTED IN TRIM OF WINDOWS. LOCATE IN WHERE FULL WALL IS AVAILABLE.
B. COORDINATE LOCATION OF ALL FLOOR BOXES IN THE SAME AREA SHALL BE NEATLY ALIGNED AND PARALLEL TO BUILDING LINES.
C. CIRCUIT NUMBERS ARE DIARGAMMATIC. EXACT NUMBERS SHALL BE DETERMINED IN THE FIELD AND REFLECTED ON AS-BUILT DOCUMENTATION BY THE ELECTRICAL CONTRACTOR. THE ASSOCIATED CIRCUIT NUMBERS THAT ARE APPLIED TO EACH DEVICE AND PIECE OF EQUIPMENT INFERS INTERCONNECTING BRANCH CIRCUITRY.
D. WHERE CONNECTED TO A 20A BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
E. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. MINIMUM REQUIREMENTS: 4" HIGH, 4% AIR ENTRAINED, POLYFIBER REINFORCED CONCRETE, 4" WIDER AND 4" LONGER THAN EQUIPMENT TO BE PLACED ON IT. REFER TO ELECTRICAL DETAIL DRAWINGS FOR TRANSFORMER OR SWITCHGEAR PADS THAT MAY EXCEED THESE REQUIREMENTS.
F. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
G. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
H. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUIT INDICATED ON THIS DRAWING ARE PROHIBITED.
I. COORDINATE EXACT LOCATION OF ALL FLOOR BOXES WITH ARCHITECT AND FURNITURE VENDOR.

KEYNOTES

1 INTERLOCK FAN WITH LIGHTING CONTROLS IN THE ROOM BELOW. PROVIDE RELAY TO INTERLOCK 277V LIGHTING CONTROLS WITH 120V FAN.

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ISSUE DATE: 07-26-24
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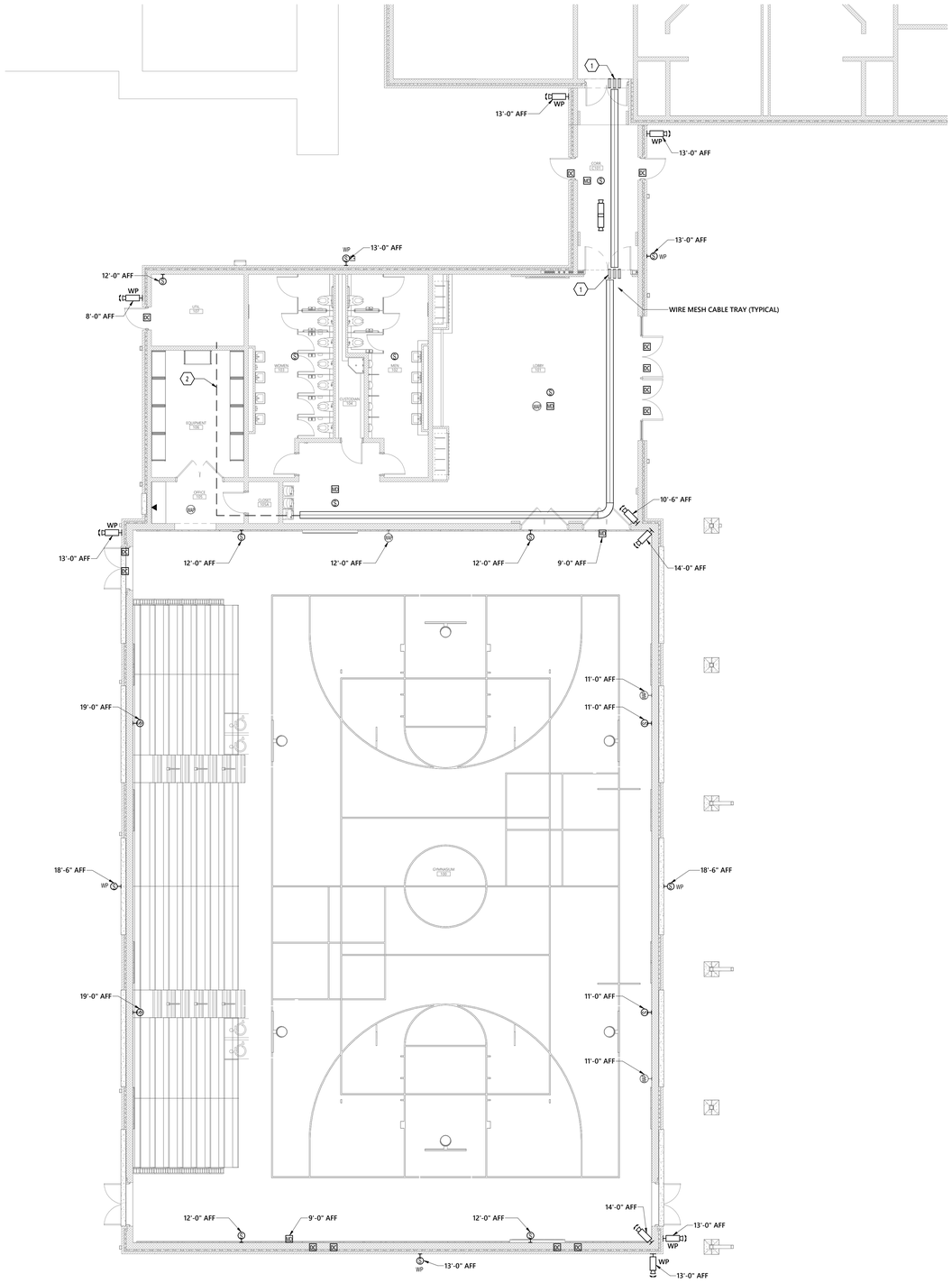
ADDITION ROOF EQUIPMENT CONNECTIONS PLAN

E-301

Sheet No. 6 of 12

OPTIMA# 24-0045R



1 ADDITION SPECIAL SYSTEMS PLAN
1/8" = 1'-0"

WALL LEGEND	
SYMBOL	DESCRIPTION
	1 HR FIRE RATED
	2 HR FIRE RATED

GENERAL NOTES

A. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR WIRING ALL ELECTRICAL ITEMS SHOWN ON THE DRAWINGS, EXCEPT ITEMS LISTED ON SHEET E0.01 GENERAL ELECTRICAL NOTES.

KEYNOTES

1 PROVIDE (3) 4" X 4" EZ-PATH FIRE RATED PATHWAYS THROUGH FIRE RATED WALL. PROVIDE GROUNDING BUSHING FOR ALL PATHWAYS AND CONNECT TO GROUND BUS BAR WITH #6 AWG CONDUCTOR.
2 ROUTE (2) 4" CONDUITS FROM CABLE TRAY TO PLYWOOD BACKBOARD.

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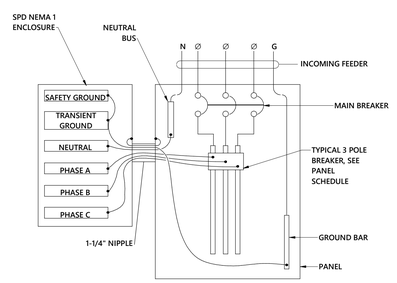
ADDITION SPECIAL SYSTEMS PLAN

E-401

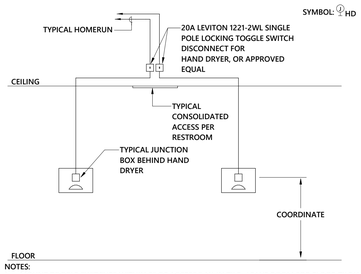
Sheet No. 7 of 12

OPTIMA# 24-0045R



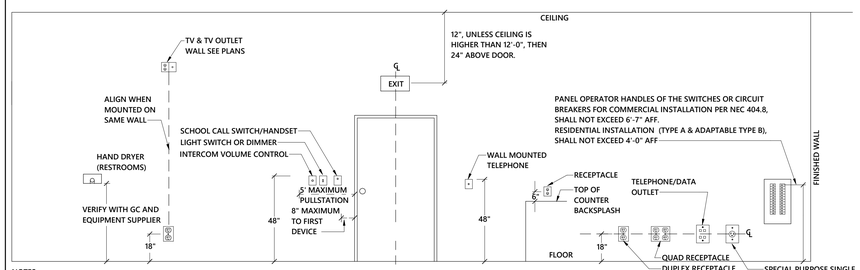
NOTES:
1. ALL WIRING SHALL BE #6 AWG.
2. AVOID SHARP BENDS IN WIRES. ALL WIRE LENGTHS SHALL NOT EXCEED 18" (WHERE POSSIBLE).
3. SEE SPD SPECIFICATION FOR EXACT TYPE FOR LOCATION AS INDICATED ON THE POWER RISER DIAGRAM.

3 SPD CONNECTION DETAIL
NOT TO SCALE



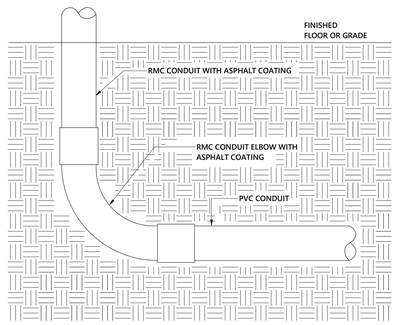
NOTES:
1. MOUNT TOGGLE SWITCHES WITHIN 8" OF ACCESS/LAY-IN TILE. LEAVE ROOM FOR FLOOR TILE/ACCESS PANEL MOVEMENT.
2. PROVIDE ACCESS PANEL FOR NON-ACCESSIBLE CEILING TYPES. COORDINATE WITH G.C. FOR TYPE (MATCH PROJECT ACCESS PANEL TYPES WHEN PROVIDED.) COORDINATE EXACT LOCATION WITH ARCHITECT IN FIELD PRIOR TO CONDUIT ROUGH-IN.
3. TOGGLE SWITCHES TO BE CONSOLIDATED INTO ONE ACCESS LOCATION.
4. SEE PLANS FOR HAND DRYER QUANTITIES AND LOCATIONS.
5. HAND DRYER HEIGHTS AND ASSOCIATED JUNCTION BOXES ARE TO BE COORDINATED WITH ARCHITECTURAL ELEVATIONS.

2 HAND DRYER LAYOUT DETAIL
NO SCALE

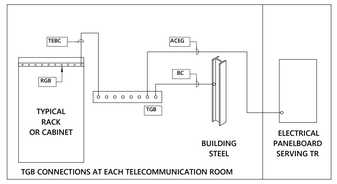


NOTES:
1. LOCATIONS WHERE TV MOUNT IS BACK TO BACK ON SAME WALL, AN OFFSET OF 8-12" WILL BE NEEDED FOR INSTALLATION OF JACK/RECEPTACLE.
2. DEVICES ABOVE COUNTER TOPS SHALL BE A MAXIMUM OF 48" TO TOP OF DEVICE. DEVICES REQUIRED TO BE ADA ACCESSIBLE SHALL BE INSTALLED PER ANSI A117.1.
3. DEVICES NEXT TO DOOR EXIT SHALL BE WITHIN 8" (MAXIMUM) TYPICAL OF DOOR UNLESS OBSTACLES SUCH AS SIDELITES, ETC.
4. DEVICES REQUIRED TO BE ADA ACCESSIBLE SHALL BE INSTALLED PER ANSI A117.1.

1 MOUNTING HEIGHTS OF DEVICES - ELEVATION
NOT TO SCALE



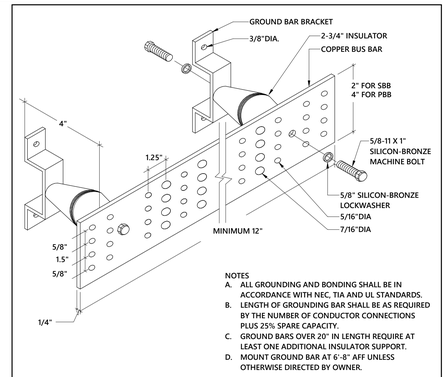
6 CONDUIT TRANSITION DETAIL
NO SCALE



TGB CONNECTIONS AT EACH TELECOMMUNICATION ROOM

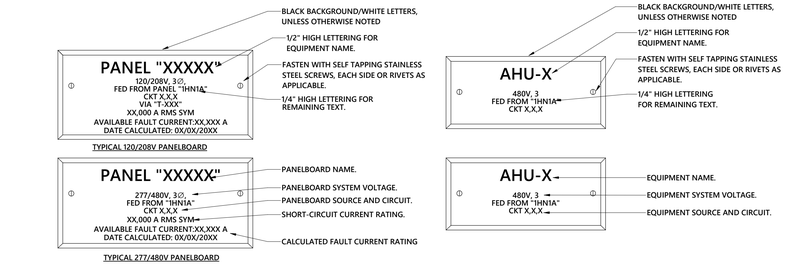
TELECOMMUNICATIONS GROUNDING LEGEND
A. ALL CONDUCTORS SHALL BE GREEN INSULATED OR BARE STRANDED ALL-COPPER CONDUCTORS
B. INSTALLATION SHALL BE PER ANSI/TIA-607-B STANDARDS
TGB TELECOMMUNICATIONS GROUND BAR MOUNTED ON BACKBOARD. BY ELECTRICAL CONTRACTOR.
RGB RACK GROUNDING BUSBAR MOUNTED IN EACH RACK AND/OR CABINET. BY DIVISION 27 CONTRACTOR.
TEBC TELECOMMUNICATIONS EQUIPMENT BONDING CONDUCTOR. MINIMUM #6 AWG GROUND. BY ELECTRICAL CONTRACTOR.
BC BONDING CONDUCTOR. MINIMUM #6 AWG GROUND. BY ELECTRICAL CONTRACTOR.
ACEG ALTERNATING CURRENT EQUIPMENT GROUND. MINIMUM #6 AWG GROUND. BY ELECTRICAL CONTRACTOR.

5 TYPICAL TELECOMMUNICATIONS GROUND BAR CONNECTIONS FOR TELECOMMUNICATIONS ROOM
NO SCALE



NOTES
A. ALL GROUNDING AND BONDING SHALL BE IN ACCORDANCE WITH NEC, TIA AND UL STANDARDS.
B. LENGTH OF GROUNDING BAR SHALL BE AS REQUIRED BY THE NUMBER OF CONDUCTOR CONNECTIONS PLUS 25% SPARE CAPACITY.
C. GROUND BARS OVER 20" IN LENGTH REQUIRE AT LEAST ONE ADDITIONAL INSULATOR SUPPORT.
D. MOUNT GROUND BAR AT 6'-8" AFF UNLESS OTHERWISE DIRECTED BY OWNER.

4 TELECOMMUNICATIONS GROUNDING BAR DETAIL
NO SCALE

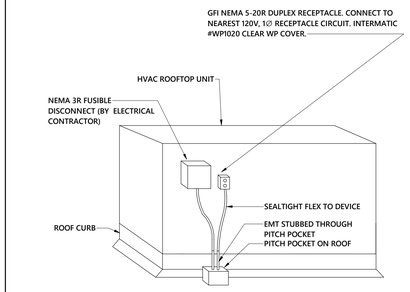


PANELBOARD NAMEPLATES

EQUIPMENT NAMEPLATES

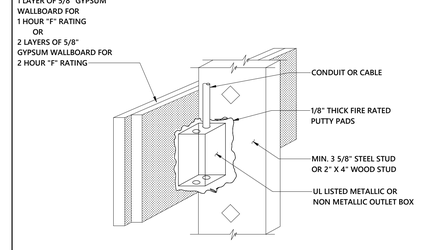
NOTES:
1. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, COLORS, ETC.
2. PROVIDE SHORT-CIRCUIT CURRENT RATING AND AVAILABLE FAULT CURRENT ON EACH NON-DWELLING SERVICE EQUIPMENT NAMEPLATE.

9 TYPICAL NAMEPLATE DIAGRAM
NOT TO SCALE



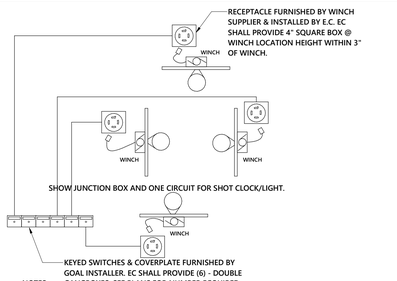
NOTE: TYPICAL FOR ROOF MOUNTED HVAC EQUIPMENT.

8 ROOFTOP RECEPTACLE DETAIL
NOT TO SCALE



NOTES:
1. REQUIRED FOR METALLIC AND NON-METALLIC ELECTRICAL BOXES EXCEEDING 16 SQ. INCHES IN AREA OR MULTIPLE BOXES SERVING SAME SPACE.
2. REQUIRED FOR BACK TO BACK BOXES IN THE SAME STUD CAVITY.
3. REQUIRED FOR BOXES EXCEEDING 100 SQ INCHES TOTAL IN 100 SQ FEET OF WALL AREA.
4. THE USE OF PUTTY PADS ADHERENCE IS AT THE DISCRETION OF THE LOCAL AUTHORITY HAVING JURISDICTION.
5. REFER TO UL LISTING OF WALL FOR ADDITIONAL RESTRICTIONS OR INFORMATION.

7 WALL OUTLET DETAIL
NOT TO SCALE

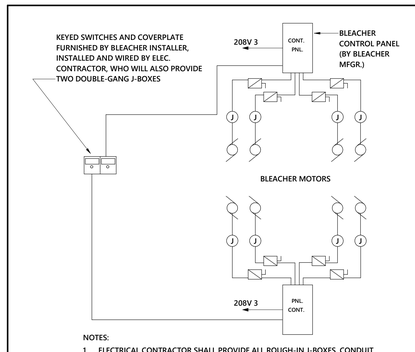


NOTES:
1. EC SHALL PROVIDE ALL ROUGH-IN BOXES CONDUITS & WIRING TO CONNECT THE WINCH RECEPTACLES & KEYED SWITCHES.
2. MINIMUM WIRE SIZE #12 AWG
3. SEE PLANS FOR NUMBER OF GOALS THAT REQUIRE ELECTRIC WINCH CONTROL.
4. PROVIDE 120V CIRCUIT FOR EACH (2) SHOT CLOCKS/LIGHT PROVIDED. SEE PLANS FOR GOAL LOCATIONS. SHOT CLOCKS ARE AT EACH MAIN BASKETBALL GOAL.
5. PROVIDE INTERLOCKING SWITCH SO THAT GOALS LOCATED NEAR BLEACHERS ARE NOT EXTENDED WHEN BLEACHERS ARE EXTENDED. COORDINATE WITH BLEACHER AND BASKETBALL GOAL MANUFACTURER.

13 BASKETBALL GOAL SWITCH RISER
NO SCALE

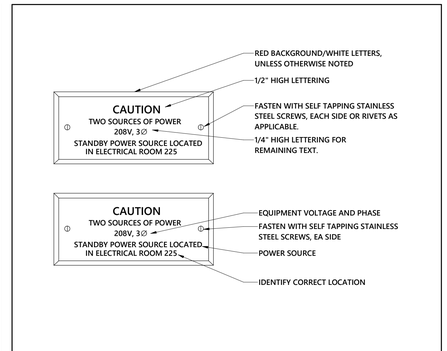
NOTES:
1. KEY SWITCHES AND COVERPLATE SHALL BE FURNISHED BY GOAL INSTALLER. ELEC. CONTRACTOR SHALL PROVIDE AND INSTALL ALL J-BOXES, CONDUIT, AND WIRING.
2. MINIMUM WIRE SIZE SHALL BE #12 AWG.

12 ELECT. BASKETBALL WINCH WIRING DETAIL
NO SCALE



NOTES:
1. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ROUGH-IN J-BOXES, CONDUIT AND WIRING TO CONNECT THE BLEACHER CONTROL PANELS AND KEYED SWITCHES. PROVIDE A 16"X16"X4" MINIMUM J-BOX AT MAIN ROUGH-IN.
2. MINIMUM WIRE SIZE SHALL BE #12 AWG.
3. PROVIDE 3 PHASE DISCONNECT AT EACH PANEL CONTROLLER, 30A/3P.

11 BLEACHER CONNECTION RISER
NO SCALE



10 EMERGENCY POWER NAMEPLATE
NOT TO SCALE

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CONSTRUCTION DRAWINGS

ADDENDUM #1

Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
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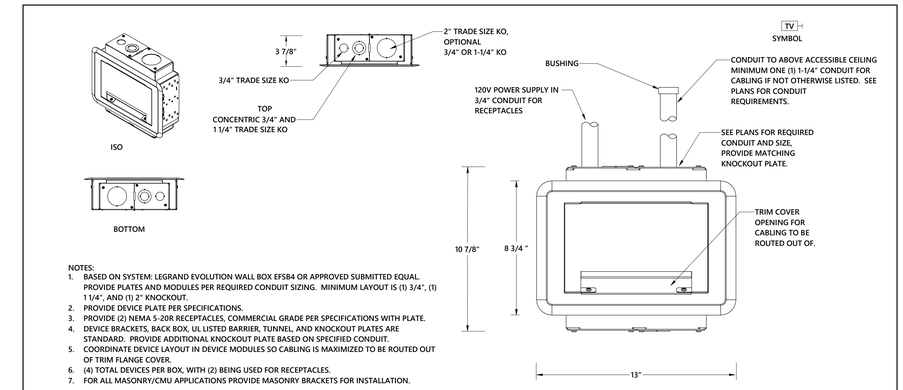
ELECTRICAL DETAILS

E-601

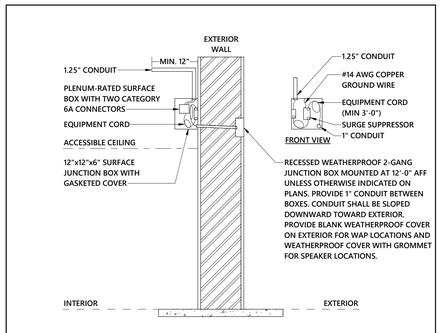
Sheet No. 8 of 12

OPTIMA# 24-0045R



NOTES:
1. BASED ON SYSTEM: LEGRAND EVOLUTION WALL BOX EFSB4 OR APPROVED SUBMITTED EQUAL. PROVIDE PLATES AND MODULES PER REQUIRED CONDUIT SIZING. MINIMUM LAYOUT IS (1) 3/4", (1) 1 1/4", AND (1) 2" KNOCKOUT.
2. PROVIDE DEVICE PLATE PER SPECIFICATIONS.
3. PROVIDE (2) NEMA 5-20R RECEPTACLES, COMMERCIAL GRADE PER SPECIFICATIONS WITH PLATE.
4. DEVICE BRACKETS, BACK BOX, UL LISTED BARRIER, TUNNEL, AND KNOCKOUT PLATES ARE STANDARD. PROVIDE ADDITIONAL KNOCKOUT PLATE BASED ON SPECIFIED CONDUIT.
5. COORDINATE DEVICE LAYOUT IN DEVICE MODULES SO CABLING IS MAXIMIZED TO BE ROUTED OUT OF TRIM FLANGE COVER.
6. (4) TOTAL DEVICES PER BOX, WITH (2) BEING USED FOR RECEPTACLES.
7. FOR ALL MASONRY/CMU APPLICATIONS PROVIDE MASONRY BRACKETS FOR INSTALLATION.

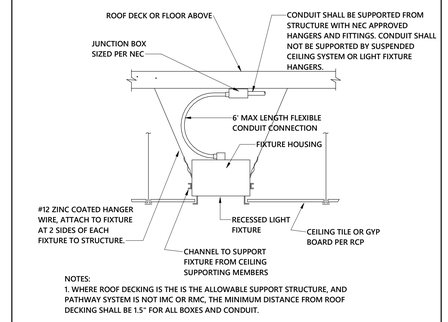
3 TYPICAL TV/MONITOR AND POWER BACK BOX DIAGRAM FOR WALL MOUNTED FLAT SCREEN
NOT TO SCALE



GENERAL NOTES:

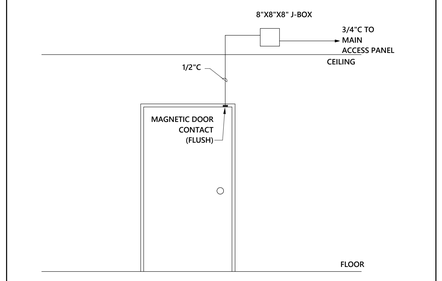
A. SURFACE JUNCTION BOX SHALL BE LOCATED ABOVE ACCESSIBLE CEILING SPACE.
B. ALL DEVICES SHALL BE SECURED INSIDE JUNCTION BOX.

2 EXTERIOR NETWORK DEVICE DETAIL (ACCESSIBLE CEILING)
NOT TO SCALE

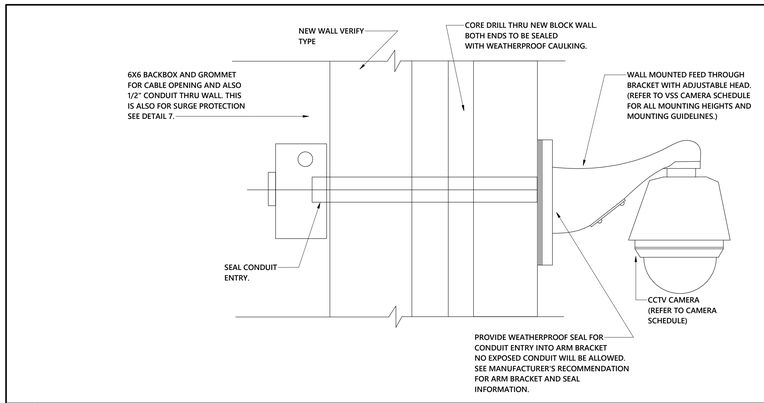


NOTES:
1. WHERE ROOF DECKING IS THE IS THE ALLOWABLE SUPPORT STRUCTURE, AND PATHWAY SYSTEM IS NOT IMC OR RMC, THE MINIMUM DISTANCE FROM ROOF DECKING SHALL BE 1.5" FOR ALL BOXES AND CONDUIT.

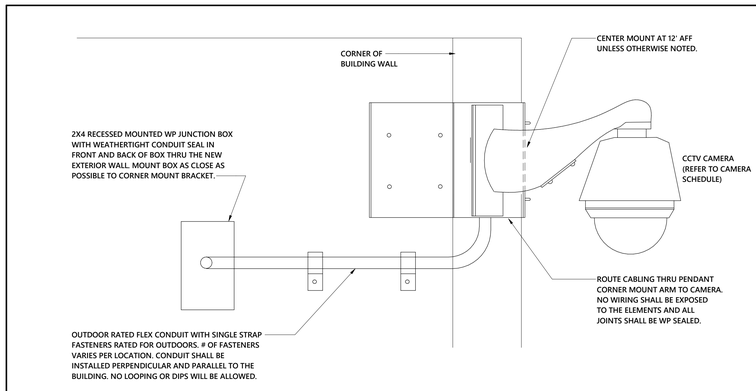
1 TYPICAL RECESSED DOWN LIGHT FIXTURE INSTALLATION DIAGRAM
NOT TO SCALE



6 DOOR CONTACT ONLY
NOT TO SCALE



5 CAMERA MOUNT EXTERIOR WALL
NO SCALE



4 CAMERA MOUNTING FOR EXTERIOR CORNER MOUNT
NO SCALE

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LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

Harnett County Schools

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JSD
CHECKED BY: MKG

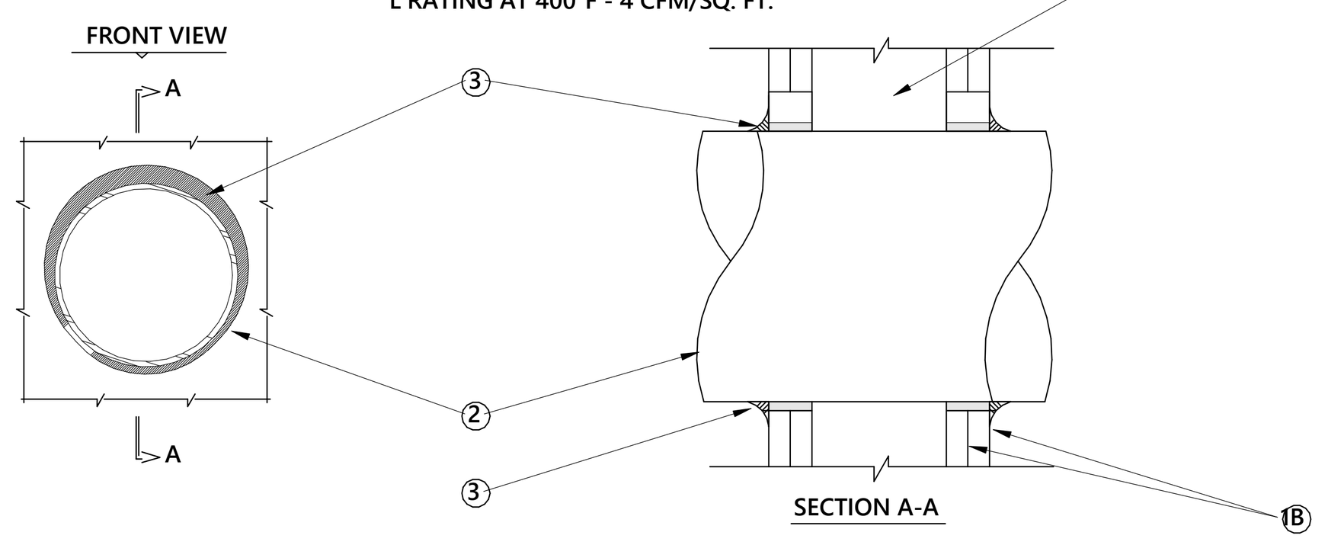
ELECTRICAL DETAILS

E-602

Sheet No. 9 of 12

OPTIMA# 24-0045R

U.L. SYSTEM NO. W-L-1085
F RATING - 1-HR OR 2-HR (SEE ITEM 1B)
T RATING - 0-HR
L RATING AT AMBIENT - LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F - 4 CFM/SQ. FT.



1. WALL ASSEMBLY - THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED 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 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 WALLBOARD TYPE, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIA OF OPENING IS 13-1/4 IN.

DIA OF CIRCULAR OPENING CUT THROUGH GYPSUM WALLBOARD OF EACH SIDE OF WALL ASSEMBLY TO BE MIN 1/4 IN. TO MAX 1/2 IN. LARGER THAN OUTSIDE DIA OF THROUGH PENETRANT (ITEM 2). 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, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE ANNUIAR SPACE BETWEEN THE THROUGH-PENETRANT AND THE PERIPHERY OF THE OPENING SHALL BE MIN 0 IN. TO MAX 1/4 IN. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

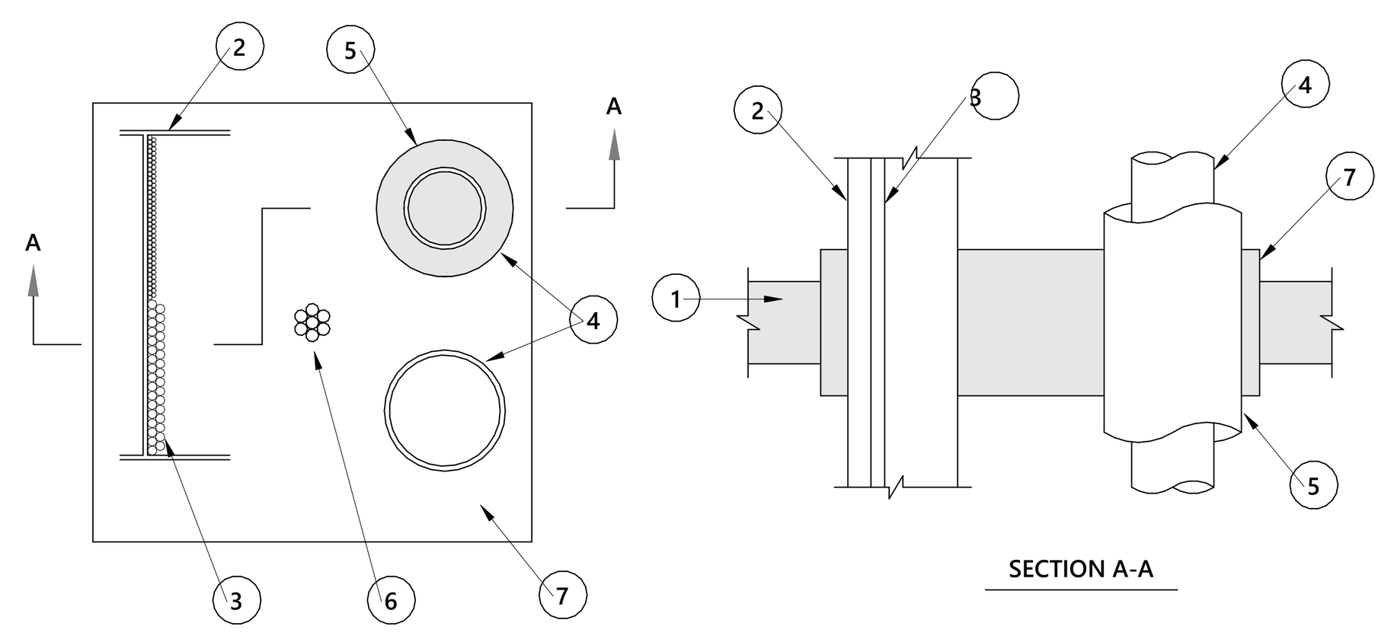
A. STEEL PIPE - NOM 12 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE - NOM 12 IN. DIA (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. CONDUIT - NOM 6 IN. DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT.
D. COPPER TUBING - NOM 5 IN. DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
E. COPPER TUBING - NOM 6 IN. DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. FILL, VOID, OR CAVITY MATERIAL* - SEALANT - FILL MATERIAL TO BE FORCED INTO THE ANNULUS TO MAXIMUM EXTENT POSSIBLE. ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN 1/2 IN. CROWN IS FORMED AROUND THE PENETRATING ITEM AND LAPPING 1/4 IN. BEYOND THE PERIPHERY OF THE OPENING.

HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC - FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
C US
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

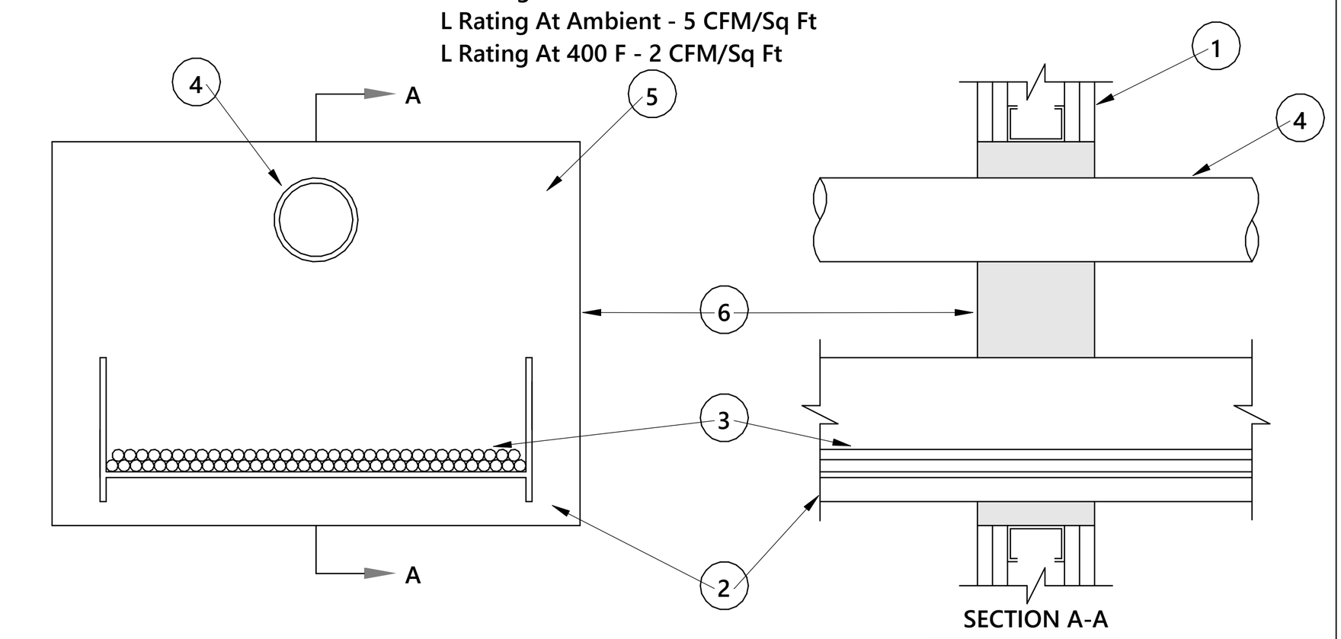
System No. C-AJ-8056
F Rating -- 3 Hr
T Rating -- 0 Hr
L Rating At Ambient -- 5 CFM/sq ft
L Rating At 400 F -- 2 CFM/sq ft



1. FLOOR OR WALL ASSEMBLY -- 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 AREA OF OPENING IS 1296 IN. SQ WITH MAX DIMENSION OF 36 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. CABLE TRAY* -- MAX 18 IN. WIDE BY MAX 6 IN. DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.060 IN. THICK ALUMINUM OR STEEL AND WITH 1-1/2 IN. WIDE BY 1 IN. CHANNEL SHAPE RUNGS SPACED 9 IN. OC OR A 0.029 IN. THICK STEEL SOLID BACK, RESPECTIVELY. ONE CABLE TRAY TO BE INSTALLED IN THE OPENING. THE MAX ANNULAR SPACE BETWEEN THE CABLE TRAYS IS 9 IN. AND BETWEEN THE PERIPHERY OF THE OPENING SHALL BE MIN 1-1/2 IN. TO MAX 4-1/2 IN. CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. CABLES -- AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 30 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY BASED ON A MAX 3 IN. CABLE LOADING DEPTH WITHIN THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR OR FIBER OPTIC CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 300 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 1/C, 350 KCMIL WITH CROSS-LINKED POLYETHYLENE (XLPE) INSULATION AND JACKET.
D. 1/C, 500 KCMIL WITH THERMO PLASTIC INSULATION AND POLYVINYL CHLORIDE (PVC) JACKET.
E. TWENTY FOUR FIBER OPTIC CABLE WITH PVC SUB UNIT AND JACKET.
4. THROUGH-PENETRANTS -- ONE OR MORE PIPE, CONDUIT OR TUBE TO BE INSTALLED WITHIN THE OPENING. THE TOTAL NUMBER OF THROUGH-PENETRANTS IS DEPENDENT ON THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PENETRANTS. ANY COMBINATION OF THE PENETRANTS DESCRIBED BELOW MAY BE USED PROVIDED THAT THE FOLLOWING PARAMETERS RELATIVE TO THE ANNULAR SPACES AND THE SPACING BETWEEN THE PIPES ARE MAINTAINED. THE SPACE BETWEEN PIPES, CONDUITS OR TUBING AND BETWEEN THE PERIPHERY
OF THE OPENING AND THE PIPES OR CONDUITS SHALL BE MIN 1 IN. TO MAX 4-1/2 IN. PIPE, CONDUIT OR TUBE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
A. NOM 6 IN. DIA (OR SMALLER) RIGID GALV STEEL CONDUIT.
B. NOM 4 IN. DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.
C. NOM 4 IN. DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
D. NOM 4 IN. DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.
E. NOM 6 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
F. NOM 6 IN. DIA (OR SMALLER) CAST OR DUCTILE IRON PIPE.
5. PIPE COVERING -- NOM 1-1/2 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.
SEE PIPE AND EQUIPMENT COVERING AND 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 MAY BE USED.
6. CABLES -- MAX 2 IN. DIA TIGHT BUNDLE OF CABLES CENTERED IN OPENING AND RIGIDLY SUPPORTED ON BOTH SURFACES OF FLOOR AND WALL. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 25 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 2/C NO. 10 AWG WITH PVC INSULATION AND JACKET.
D. 3/C NO. 8 AWG ALUMINUM CLAD CABLE WITH CROSS-LINKED POLYETHYLENE (XLPE) INSULATION AND PVC JACKET.
E. TYPE RC - 62 A/U COAXIAL CABLE WITH AIR CORE AND PVC JACKET.
F. 24 FIBER OPTIC CABLE WITH PVC SUB UNIT AND OUTER JACKET.
7. FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. FILL, VOID OR CAVITY MATERIAL* -- FIRE BLOCKS INSTALLED WITH LONG DIMENSION PASSED THROUGH THE OPENING EXTENDING MIN 1-1/2 IN. FROM EACH SURFACE. BLOCKS TO COMPLETELY FILL THE ENTIRE OPENING.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-FIRE BLOCK
B. FILL, VOID OR CAVITY MATERIAL* -- FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES AND BETWEEN CABLES AND CABLE TRAYS TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE SEALANT
C. WIRE MESH (NOT SHOWN) -- WHEN THE ANNULAR SPACE EXCEEDS 4-1/2 IN. TO THE PERIPHERY, A NOM 2 IN. SQ WIRE FENCING SHALL BE USED TO KEEP THE FIRE BLOCKS IN PLACE. THE WIRE FENCING IS FABRICATED FROM MIN NO. 16 SWG (0.060 IN.) GALV STEEL WIRE. THE WIRE IS CUT TO FIT THE CONTOUR OF THE PENETRATING ITEM WITH A MIN 3 IN. LAP BEYOND THE PERIPHERY OF THE OPENING. WIRE FENCING SECURED TO TOP SURFACE OF FLOOR AND BOTH SURFACES OF WALL ASSEMBLY BY MEANS OF 1/4 IN. DIA BY 1 IN. LONG CONCRETE ANCHORS AND 1/4 IN. BY 1-1/2 IN. DIA FENDER WASHERS SPACED MAX 8 IN. OC.
*BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
C US
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

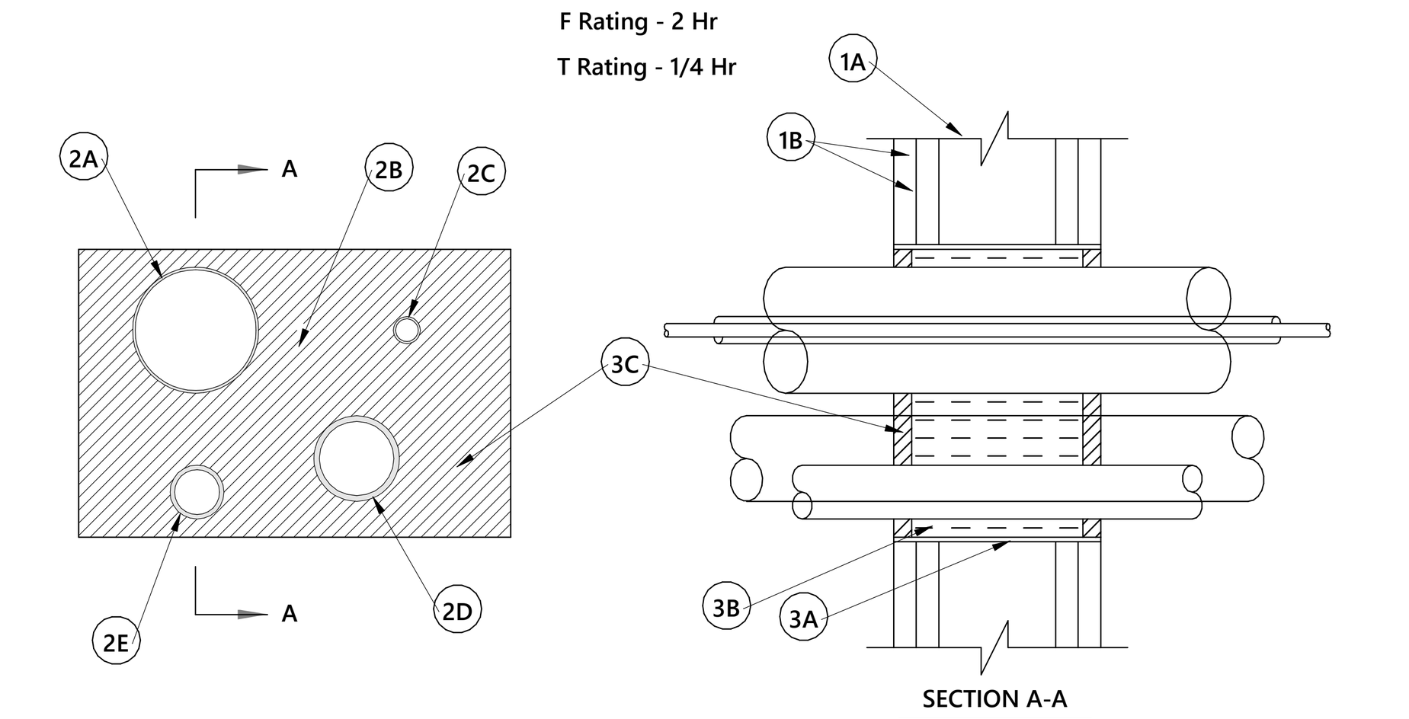
System No. W-L-8013
F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr
L Rating At Ambient - 5 CFM/Sq Ft
L Rating At 400 F - 2 CFM/Sq Ft



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 IN. (51 MM) BY 4 IN. (102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC. ADDITIONAL STUDS INSTALLED TO COMPLETELY FRAME THE OPENING.
B. GYPSUM BOARD* — 5/8 IN. (16 MM) THICK, 4 FT (1219 MM) 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 AREA OF OPENING IS 352 SQ IN. (2271 SQ CM) WITH MAX DIMENSION OF 22 IN. (559 MM) WIDE. 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. CABLE TRAY* — MAX 18 IN. (457 MM) WIDE BY MAX 6 IN. (152 MM) DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.065 IN. (1.65 MM) THICK ALUMINUM OR 0.060 IN. (1.52 MM) THICK STEEL AND WITH 1-1/2 IN. (38 MM) WIDE BY 1 IN. (25 MM) CHANNEL SHAPE RUNGS SPACED 9 IN. (229 MM) OC OR A 0.029 IN. (0.74 MM) THICK STEEL SOLID BACK, RESPECTIVELY. ONE CABLE TRAY TO BE INSTALLED IN THE OPENING. THE MAX ANNULAR SPACE BETWEEN THE CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1 IN. (25 MM) TO MAX 7 IN. (178 MM) CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. CABLES — AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 30 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND PVC JACKET.
B. 100 PAIR - NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 1/C, 750 KCMIL (OR SMALLER) WITH PVC INSULATION AND JACKET.
4. THROUGH-PENETRANTS — ONE OR MORE PIPE OR TUBE TO BE INSTALLED WITHIN THE OPENING. THE TOTAL NUMBER OF THROUGH-PENETRANTS IS DEPENDENT ON THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PENETRANTS. ANY COMBINATION OF THE PENETRANTS DESCRIBED BELOW MAY BE USED PROVIDED THAT THE FOLLOWING PARAMETERS RELATIVE TO THE ANNULAR SPACES AND THE SPACING BETWEEN THE PIPES ARE MAINTAINED. THE SPACE BETWEEN THE PIPE OR TUBE AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1-1/2 IN. (38 MM) TO MAX 9-1/4 IN. (235 MM). PIPE OR TUBE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NON-METALLIC OR METALLIC PIPES, OR TUBES MAY BE USED:
A. POLYVINYL CHLORIDE (PVC) PIPE — MAX 3 IN. (76 MM) DIA SCHEDULE 40 SOLID CORE PVC PIPE (OR SMALLER) FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEM.
B. STEEL PIPE — NOM 6 IN. (152 MM) DIA (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE.
C. CONDUIT — NOM 4 IN. (102 MM) DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR 6 IN. (152 MM) DIA STEEL CONDUIT.
D. COPPER PIPE — NOM 4 IN. (102 MM) DIA (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
E. COPPER TUBE — NOM 4 IN. (102 MM) DIA (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE.
4A. PIPE COVERING — (NOT SHOWN) NOM 1-1/2 IN. (38 MM) THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) (56KG/M3) 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. SEE PIPE AND EQUIPMENT COVERING AND 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 MAY BE USED.
5. CABLES — MAX 1-1/2 IN. (38 MM) DIA TIGHT BUNDLE OF CABLES INSTALLED WITHIN THE OPENING AND RIGIDLY SUPPORTED ON BOTH SURFACES OF WALL. THE SPACE BETWEEN THE CABLES AND PERIPHERY OF THE OPENING SHALL RANGE FROM 1-3/16 IN. (30.2 MM) MIN TO A MAX OF 1-1/2 IN. (38 MM). ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF CABLES MAY BE USED:
A. 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET.
B. 25 PAIR — NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. TYPE R GU/59 COAXIAL CABLE WITH PVC OUTER JACKET.
D. 24 FIBER OPTIC CABLE WITH PVC SUB UNIT AND OUTER JACKET.
6. FIRESTOP SYSTEM — THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. FILL, VOID OR CAVITY MATERIAL* FIRE BLOCKS FOR WALLS INCORPORATING MAX 3-5/8 IN. (92 MM) STEEL STUDS OR MAX 2 (51 MM) BY 4 IN. (102 MM) WOOD STUDS, FIRE BLOCK INSTALLED WITH 5 IN. (127 MM) DIMENSION PROJECTING THROUGH AND CENTERED IN OPENING. FOR WALLS CONSTRUCTED OF LARGER STEEL OR WOOD STUDS, FIRE BLOCK INSTALLED WITH LONG DIMENSION PASSING THROUGH AND CENTERED IN OPENING. BLOCKS MAY OR MAY NOT BE CUT FLUSH WITH BOTH SURFACES OF WALL. WHEN MULTIPLE LAYERS OF GYPSUM BOARD ARE USED, BLOCKS MAY BE RECESSED 1/2 IN. (13 MM) FROM SURFACE OF WALL. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS 657 FIRE BLOCK
B. FILL, VOID OR CAVITY MATERIAL* — SEALANT OR PUTTY - FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES, BETWEEN CABLES AND CABLE TRAYS, AROUND EACH PENETRANT AND WHERE OBVIOUS VOIDS ARE OBSERVED TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE SEALANT, CP 618 PUTTY STICK OR CP620 FIRE FOAM *BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
C US
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

System No. W-L-8004
F Rating - 2 Hr
T Rating - 1/4 Hr



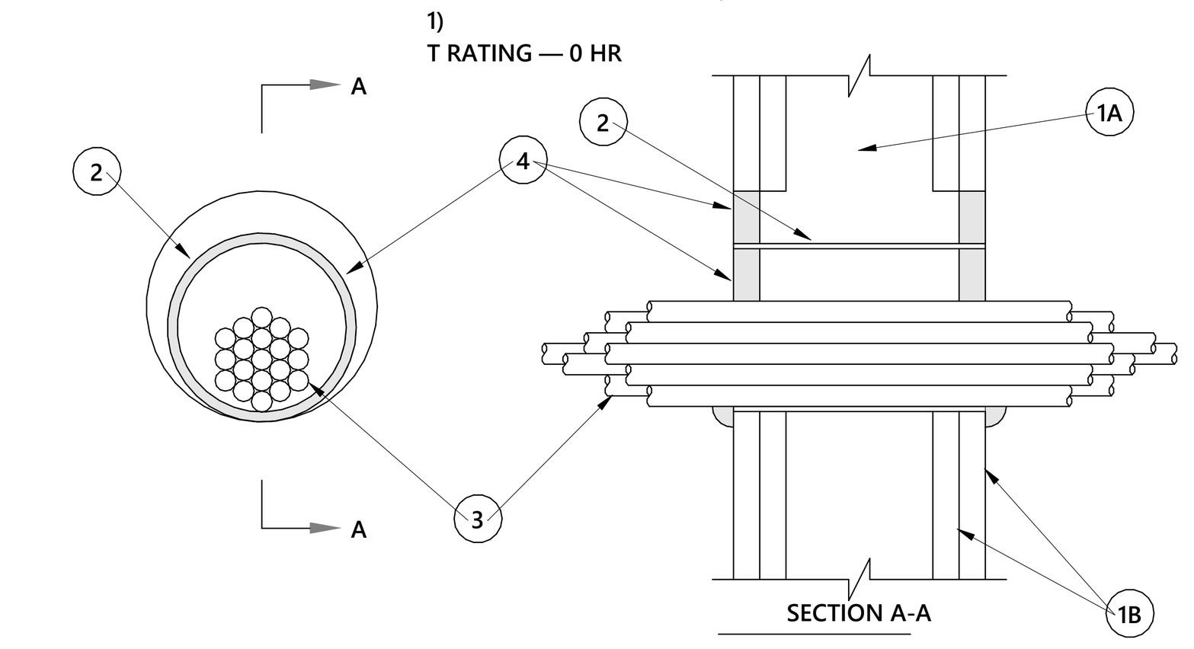
1. WALL ASSEMBLY THE FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE
CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL
U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE
DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. STUDS WALL 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.
ADDITIONAL FRAMING (NOT SHOWN) MAY BE INSTALLED AROUND THE PERIMETER OF
THE OPENING IN LIEU OF THE STEEL WIRE MESH (ITEM NO. 3A).
B. GYPSUM BOARD* TWO LAYERS OF NOM 5/8 IN. THICK GYPSUM WALLBOARD, AS
SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX AREA OF OPENING
IS 96 SQ IN. WITH MAX DIMENSION OF 12 IN. MAX WIDTH OF OPENING IN WOOD
STUD WALLS IS LIMITED TO 12 IN.
2. THROUGH PENETRANTS THE FOLLOWING TYPES AND SIZES OF PIPES, CONDUITS, TUBING
OR CABLES MAY BE USED:
A. NOM 3 IN. DIA (OR SMALLER) ELECTRICAL METALLIC TUBING (EMT).
B. MAX 25 PAIR -- NO. 24 AWG (OR SMALLER) TELEPHONE CABLE WITH POLYVINYL
CHLORIDE (PVC) INSULATION AND JACKET.
C. MAX 3/C WITH GROUND -- NO. 10 AWG (OR SMALLER) TYPE NM CABLE WITH
PVC INSULATION AND JACKET.
D. NOM 2 IN. DIA (OR SMALLER) SCHEDULE 40 PVC PIPE FOR USE IN CLOSED
(PROCESS OR SUPPLY) PIPING SYSTEMS ONLY.
E. MAX 300 KCMIL (OR SMALLER) POWER CABLE WITH PVC INSULATION AND NYLON
JACKET. THE THROUGH PENETRATING ITEMS TO BE RIGIDLY SUPPORTED ON BOTH
SIDES OF WALL ASSEMBLY AND LOCATED AS SHOWN IN THE TABLE BELOW:

ITEM NO.	MAX DISTANCE BETWEEN ADJACENT PEN. ITEM IN.	MIN DISTANCE BETWEEN ADJACENT PEN. ITEM IN.	MAX DISTANCE FROM THROUGH OPENING IN.	MIN DISTANCE FROM THROUGH OPENING IN.
2A	7-7/16	1-11/16	7-7/16	1/2
2B	7-7/16	1-11/16	7-7/16	1/2
2C	7-7/16	1-11/16	7-7/16	1/2
2D	7-7/16	1-11/16	7-7/16	1/2
2E	7-7/16	1-11/16	7-7/16	1-1/2

3. FIRESTOP SYSTEM THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. STEEL WIRE MESH NO. 8 STEEL WIRE MESH HAVING A MIN 1 IN. LAP ALONG THE
LONGITUDINAL SEAM. LENGTH OF STEEL WIRE MESH TO BE 4-3/4 IN., CENTERED
AND FORMED TO FIT PERIPHERY OF THROUGH OPENING. STEEL WIRE MESH IS NOT
REQUIRED WHEN ADDITIONAL FRAMING MEMBERS (ITEM NO. 1A) ARE USED.
B. PACKING MATERIAL MIN 4.0 IN. THICKNESS OF MIN 3.5 PCF MINERAL WOOL BATT
INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL
TO BE RECESSED FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE
REQUIRED THICKNESS OF FILL MATERIAL.
C. FILL, VOID OR CAVITY MATERIAL* - SEALANT MIN 1/2 IN. THICKNESS OF FILL MATERIAL
APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.
HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC - FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARKING

HILTI FIRESTOP SYSTEMS
C US
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

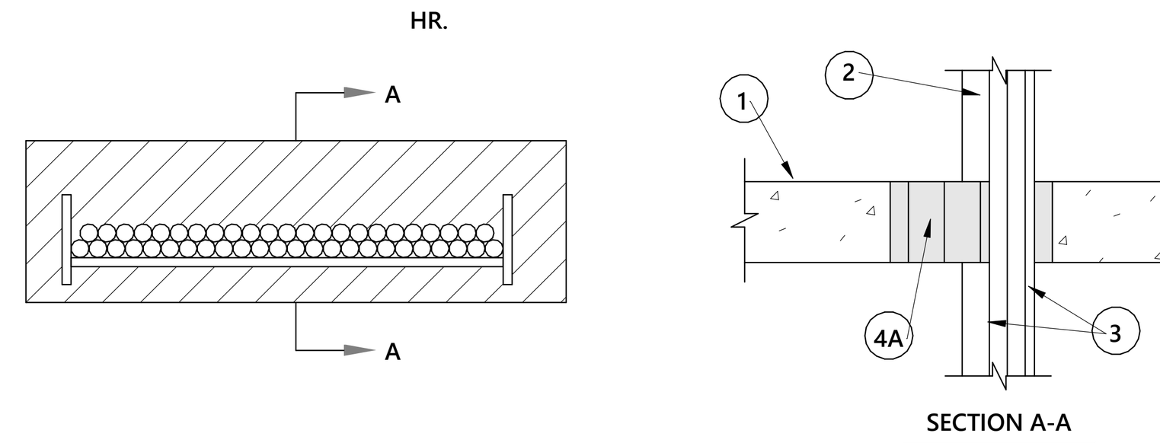
SYSTEM NO. W-L-3065
F RATINGS — 1 AND 2 HR (SEE ITEM 1)
T RATING — 0 HR



1. WALL ASSEMBLY — THE 1 OR 2 FIRE-RATED GYPSUM WALLBOARD/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 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. (51 BY 102 MM) LUMBER SPACED 16 IN. (406 MM) OC. STEEL STUDS TO BE MIN 2-1/2 IN. (64 MM) WIDE AND SPACED MAX 24 IN. (610 MM) OC.
B. GYPSUM BOARD* — NOM 5/8 IN. (16 MM) THICK GYPSUM BOARD, 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 U300, U400 OR V400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIA OF OPENING IS 5-1/2 IN. (138 MM) WHEN SLEEVE (ITEM 2) IS EMPLOYED. MAX DIA OF OPENING IS 4 IN. (102 MM) WHEN SLEEVE (ITEM 2) IS NOT EMPLOYED.
THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY.
2. METALLIC SLEEVE — (OPTIONAL) - NOM 4 IN. (102 MM) DIA (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT) OR SCHEDULE 5 (OR HEAVIER) STEEL PIPE OR MIN 0.016 IN. THICK (0.41 MM, NO. 28 GA) GALV STEEL SLEEVE INSTALLED FLUSH WITH WALL SURFACES. THE ANNULAR SPACE BETWEEN STEEL SLEEVE AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (0 MM, POINT CONTACT) TO MAX 1 IN. (25MM). WHEN SCHEDULE 5 STEEL PIPE OR EMT IS USED, SLEEVE MAY EXTEND UP TO 18 IN. (457 MM) BEYOND THE WALL SURFACES.
3. CABLES — AGGREGATE CROSS-SECTIONAL AREA OF CABLE IN OPENING TO BE MAX 45 PERCENT OF THE CROSS-SECTIONAL AREA OF THE OPENING. THE ANNULAR SPACE BETWEEN THE CABLE BUNDLE AND THE PERIPHERY OF THE OPENING TO BE MIN 0 IN. (0 MM, POINT CONTACT) TO MAX 1 IN. (25 MM) CABLES TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR CABLES MAY BE USED:
A. MAX 7/C NO. 12 AWG WITH POLYVINYL CHLORIDE (PVC) INSULATION AND JACKET.
B. MAX 25 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC INSULATION AND JACKET.
B1. MAX 4 PR NO. 22 AWG CAT 5 OR CAT 6 COMPUTER CABLES.
C. TYPE RG/U COAXIAL CABLE WITH POLYETHYLENE (PE) INSULATION AND PVC JACKET HAVING A MAX OUTSIDE DIAMETER OF ½ IN. (13 MM).
C1. MAX RG 6/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
D. MULTIPLE FIBER OPTICAL COMMUNICATION CABLE JACKETED WITH PVC AND HAVING A MAX OD OF 5/8 IN. (16 MM).
E. THROUGH PENETRATING PRODUCTS*— MAX THREE COPPER CONDUCTOR NO. 8 AWG . METAL-CLAD CABLE+. AFC CABLE SYSTEMS INC
F. MAX 3/C (WITH GROUND)(OR SMALLER) NO. 8 AWG COPPER CONDUCTOR CABLE WITH PVC INSULATION AND JACKETING.
G. MAX 3/4 IN. (19 MM) DIA COPPER GROUND CABLE WITH OR WITHOUT A PVC JACKET.
H. FIRE RESISTIVE CABLES* - MAX 1-1/4 IN. (32 MM) DIA SINGLE CONDUCTOR OR MULTI CONDUCTOR TYPE MI CABLE. A MIN 1/8 IN. (3 MM) SEPARATION SHALL BE MAINTAINED BETWEEN MI CABLES AND ANY OTHER TYPES OF CABLE.
I. MAX 4/C WITH GROUND 300KCMIL (OR SMALLER) ALUMINUM SER CABLE WITH PVC INSULATION AND JACKET.
J. THROUGH PENETRATING PRODUCT* - ANY CABLES, METAL-CLAD CABLE+ OR ARMORED CABLE+ CURRENTLY CLASSIFIED UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY.
SEE THROUGH PENETRATING PRODUCT (XHLY) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
4. FILL, VOID OR CAVITY MATERIAL*— SEALANT OR PUTTY — FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH EACH END OF THE STEEL SLEEVE OR WALL SURFACE. FILL MATERIAL INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL. A MIN 5/8 IN. (16 MM) THICKNESS OF SEALANT IS REQUIRED FOR THE 1 OR 2 HR F RATING . AN ADDITIONAL 1/2 IN. (13 MM) DIA BEAD OF FILL MATERIAL SHALL BE APPLIED AROUND THE PERIMETER OF SLEEVE ON BOTH SIDES OF THE WALL WHEN SLEEVE EXTENDS BEYOND SURFACE OF WALL.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP601S, CP606, FS-ONE SEALANTS OR CP618 PUTTY
*BEARING THE UL CLASSIFICATION MARK
+BEARING THE UL LISTING MARK

HILTI FIRESTOP SYSTEMS
DRAWING ORIGINATION DATE: 03-21, 2011
C US
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

SYSTEM NO. C-AJ-4035
F RATING - 3 HR.
T RATING = 0 HR.

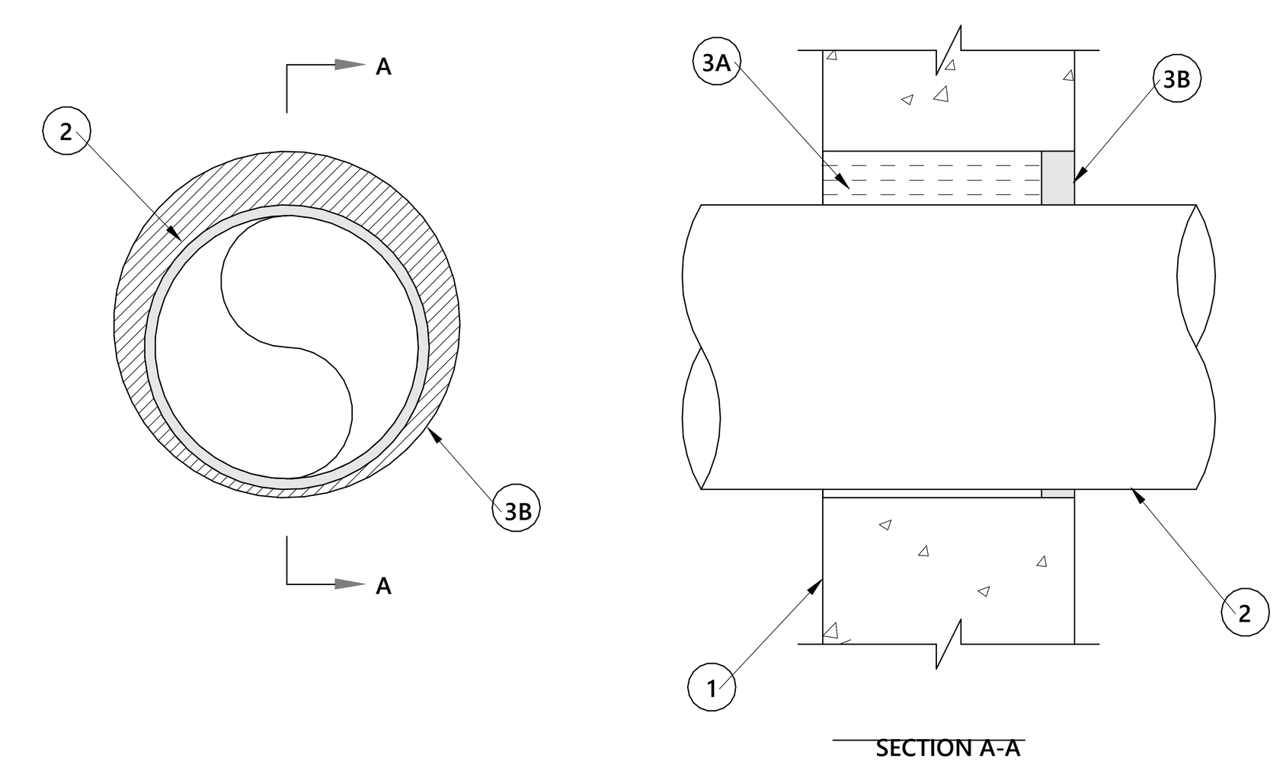


1. FLOOR OR WALL ASSEMBLY MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX AREA OF OPENING IS 270 SQ IN WITH MAX DIMENSION OF 30 IN.
SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. CABLE TRAY* MAX 24 IN. WIDE BY MAX 4 IN. DEEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHAPED SIDE RAILS FORMED OF 0.10 IN. THICK ALUMINUM OR 0.060 IN. THICK GALV STEEL AND WITH 1-1/2 IN. WIDE BY 1 IN. CHANNEL SHAPE RUNGS SPACED 9 IN. OC OR A 0.029 IN. THICK STEEL SOLID BACK, RESPECTIVELY. THE ANNULAR SPACE BETWEEN THE CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 1 IN. TO MAX 4 IN. CABLE TRAY TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. CABLES AGGREGATE CROSS-SECTIONAL AREA OF CABLES IN CABLE TRAY TO BE MAX 40 PERCENT OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY. ANY COMBINATION OF THE FOLLOWING TYPES AND SIZES OF COPPER CONDUCTOR OR FIBER OPTIC CABLES MAY BE USED:
A. 1/C, 500 KCMIL WITH THERMOPLASTIC INSULATION AND PVC JACKET.
B. 300 PAIR -- NO. 24 AWG CABLE WITH PVC INSULATION AND JACKET.
C. 24 FIBEROPTIC CABLE WITH PVC SUBUNIT AND JACKET.
D. THREE 1/C NO. 12 AWG WIRE, INSULATED WITH POLYVINYL CHLORIDE, IN A NOMINAL 3/4 IN. FLEXIBLE METAL CONDUIT.
4. FIRESTOP SYSTEM THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:
A. FILL, VOID OR CAVITY MATERIAL* FIRE BLOCKS INSTALLED WITH THE LONG DIMENSION PLACED HORIZONTALLY WITHIN THE OPENING, FLUSH WITH BOTTOM OF FLOOR ASSEMBLIES. BLOCKS TO COMPLETELY FILL THE ENTIRE WIDTH OF OPENING OF WALL ASSEMBLIES.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-FIRE BLOCK
B. FILL, VOID OR CAVITY MATERIAL* -SEALANT ON PUTTY- NOT SHOWN FILL MATERIAL TO BE FORCED INTO INTERSTICES OF CABLES AND BETWEEN CABLES AND CABLE TRAYS TO MAX EXTENT POSSIBLE ON BOTH SURFACES OF THE PENETRATION.
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE SEALANT OR CP618 FIRESTOP PUTTY STICK (NOTE: L RATING ONLY WHEN FS-ONE SEALANT IS USED)
*BEARING THE UL CLASSIFICATION MARK

HILTI FIRESTOP SYSTEMS
C US
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

SYSTEM NO. W-J-1088

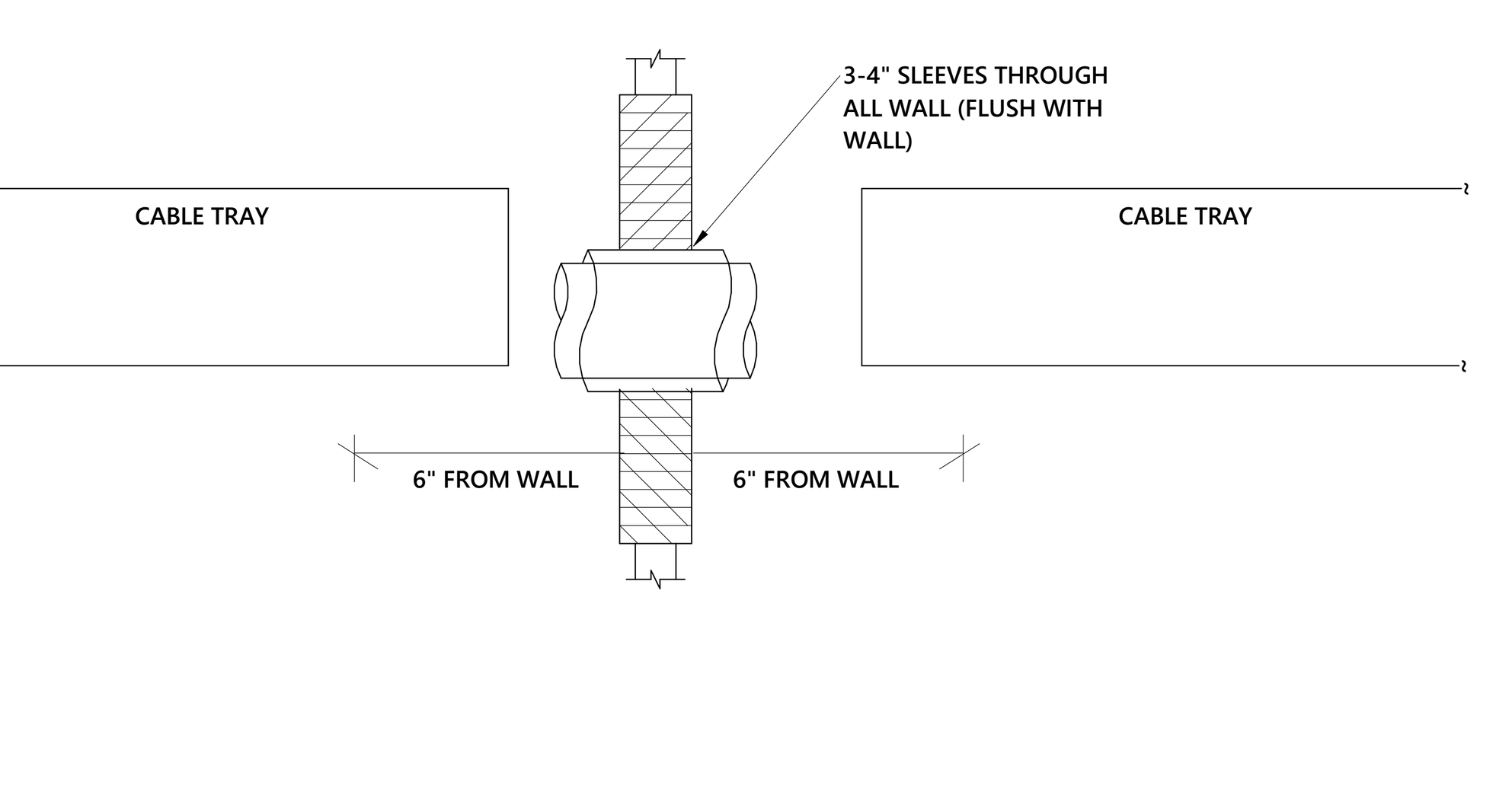
ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F RATING - 1 AND 2 HR (SEE ITEM 3)	F RATING - 1 AND 2 HR (SEE ITEM 3)
T RATING - 0 HR	FT RATING - 0 HR
	FH RATING - 1 AND 2 HR (SEE ITEM 3)
	FTH RATING - 0 HR



1. WALL ASSEMBLY — MIN 3-3/4 IN. (95 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600-2400 KG/M3) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAMETER OF OPENING 10-1/2 IN. (267 MM). SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. THROUGH-PENETRANTS — ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. AN ANNULAR SPACE OF MIN 1/4 IN. TO MAX 1-5/8 IN. (41 MM) IS REQUIRED WITHIN FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
A. STEEL PIPE — NOM 8 IN. (203 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
B. IRON PIPE — NOM 8 IN. (203 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
C. CONDUIT — NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT) OR 6 IN. DIAM STEEL CONDUIT.
D. COPPER TUBING — NOM 4 IN. (102 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
E. COPPER PIPE — NOM 4 IN. (102 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
F. FLEXIBLE STEEL CONDUIT+ — NOM 2 IN. (51 MM) DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT.
SEE FLEXIBLE METAL CONDUIT (DXUZ) CATEGORY IN THE ELECTRICAL CONSTRUCTION EQUIPMENT DIRECTORY FOR NAMES OF MANUFACTURERS.

HILTI FIRESTOP SYSTEMS
C US
REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

CABLE TRAY WALL INTERSECTION DETAIL



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CONSTRUCTION DRAWINGS

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Harnett County Schools
LILLINGTON-SHAWTOWN ELEMENTARY ADDITION
855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JSD
CHECKED BY: MKG

ELECTRICAL DETAILS

E-603

PANEL: GMP

VOLTAGE: 480Y/277 3Ø | **FED FROM:** MDP
MOUNTING: SURFACE | **MAIN TYPE:** MCB
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20 IN. WIDE
MAIN: 400 A | **WIRE:** 4 | **AIC:** 42 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
L	GYM 100 LIGHTS	12	20 A	1	1	3.88	4.50		1	2	25 A	-	WH1 (NOTE 9)	WH
				3			14.97	14.97		4				
C	RTU-1A (NOTE 9)	-	70 A	5	3			14.97	14.97	3	6	70 A	-	RTU-1B (NOTE 9)	C
				7		14.97	14.97				8				
				9			5.82	0.94	1	10	20 A	12	EXTERIOR LIGHTS	LE
C	RTU-2 (NOTE 9)	-	25 A	11	3			5.82	1.63	1	12	20 A	12	ADDITION LIGHTS	L
				13		5.82	0.50			1	14	15 A	12	INVERTER A	MS
MS	INVERTER B	12	15 A	15	1		0.50	0.10		1	16	20 A	12	ROOFTOP LIGHTS	LE
	SPACE ONLY	-	--	17	1			--	--	1	18	--	-	SPACE ONLY	
	SPACE ONLY	-	--	19	1	--	--			1	20	--	-	SPACE ONLY	
	SPACE ONLY	-	--	21	1		--	--		1	22	--	-	SPACE ONLY	
	SPACE ONLY	-	--	23	1			--	--	1	24	--	-	SPACE ONLY	
	SPACE ONLY	-	--	25	1	--	--			1	26	--	-	SPACE ONLY	
	SPACE ONLY	-	--	27	1		--	--		1	28	--	-	SPACE ONLY	
	SPACE ONLY	-	--	29	1			--	--	1	30	--	-	SPACE ONLY	
	SPACE ONLY	-	--	31	1	--	--			1	32	--	-	SPACE ONLY	
	SPACE ONLY	-	--	33	1		--	--		1	34	--	-	SPACE ONLY	
	SPACE ONLY	-	--	35	1			--	--	1	36	--	-	SPACE ONLY	
	SPACE ONLY	-	--	37	1	--	12.73			1	38				
	SPACE ONLY	-	--	39	1		--	13.17		3	40	100 A	NOTE 8	T-GRP	F
	SPACE ONLY	-	--	41	1				--	11.67	42				

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	5.51 kVA	125.00%	6.89 kVA
LE	LIGHTING - EXTERIOR	1.04 kVA	125.00%	1.31 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	109.55 kVA	100.00%	109.55 kVA
V	VENTILATION	0.23 kVA	100.00%	0.23 kVA
M	MOTORS	0.00 kVA	0.00%	0.00 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	8.12 kVA	100.00%	8.12 kVA
WH	WATER HEATER	4.50 kVA	100.00%	4.50 kVA
MS	MISC.	27.92 kVA	100.00%	27.92 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

TOTAL KVA...	156.88 kVA	TOTAL PER PHASE: (CONNECTED)	
TOTAL KVA (DEMAND):	158.51 kVA	207.8 A	183.0 A	177.1 A
TOTAL AMP....	189 A		
TOTAL AMP. (DEMAND):	191 A	**TOTAL AMP. (DEMAND) x 125%**	238.3 A

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE "ALL MODES" SPD (40kA / MODE, 80kA / PHASE).
8. SEE RISER DIAGRAM / THIS SHEET FOR WIRE & CONDUIT SIZE.
9. REFER TO MECHANICAL SCHEDULES / SHEET E-701 FOR WIRE SIZE.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

PANEL: GRP

VOLTAGE: 208Y/120 3Ø | **FED FROM:** T-GRP
MOUNTING: SURFACE | **MAIN TYPE:** MCB
ENCLOSURE: NEMA1 | **PHASE:** 3 | **TYPE:** 20 IN. WIDE
MAIN: 225 A | **WIRE:** 4 | **AIC:** 10 KAIC

LC Abbr	Load Served	Wire	Trip	Ckt No	Pole	A	B	C	Pole	Ckt No	Trip	Wire	Load Served	LC Abbr
R	GYM 100 REC	12	20 A	1	1	1.08	0.50		1	2	20 A	12	LOBBY 101 EWC (NOTE 7)	R
R	GYM 100 REC	12	20 A	3	1		1.44	0.50	1	4	20 A	12	LOBBY 101 EWC (NOTE 7)	R
MS	GYM 100 SCOREBOARD	12	20 A	5	1			1.00	0.50	1	6	20 A	12	LOBBY 101 EWC (NOTE 7)	R
MS	GYM 100 SCOREBOARD	12	20 A	7	1	1.00	1.44			1	8	20 A	12	LOBBY 101 REC	R
MS	GYM 100 POWERED GOAL	12	20 A	9	1		1.50	1.00		1	10	20 A	12	WOMEN 103 HAND DRYER (NOTE 10)	MS
MS	GYM 100 POWERED GOAL	12	20 A	11	1			1.50	1.00	1	12	20 A	12	WOMEN 103 HAND DRYER (NOTE 10)	MS
MS	GYM 100 POWERED GOAL	12	20 A	13	1	1.50	1.00			1	14	20 A	12	MEN 102 HAND DRYER (NOTE 10)	MS
MS	GYM 100 POWERED GOAL	12	20 A	15	1		1.50	1.00		1	16	20 A	12	MEN 102 HAND DRYER (NOTE 10)	MS
MS	GYM 100 POWERED GOAL	12	20 A	17	1			1.50	0.90	1	18	20 A	12	RR 102/103 REC	R
MS	GYM 100 POWERED GOAL	12	20 A	19	1	1.50	0.06			1	20	20 A	-	RCP1 (NOTE 11)	MS
				21			1.50	0.90		1	22	20 A	12	EQUIPMENT 106 REC	R
MS	GYM 100 BLEACHERS	10	30 A	23	3			1.50	0.54	1	24	20 A	12	ROOF REC	R
				25		1.50	1.15			2	26	30 A	-	ODU-1 (NOTE 11)	C
MS	GYM 100 SOUND SYSTEM	12	20 A	27	1		0.50	1.15			28				
MS	GYM 100 MOTORIZED SHADES	12	20 A	29	1			1.50	0.23	1	30	20 A	-	EF-1, EF-2, EF-3 (NOTE 11)	V
MS	GYM 100 MOTORIZED SHADES	12	20 A	31	1	1.00	0.50			1	32	20 A	12	UTIL. 107 TBB REC	R
MS	GYM 100 MOTORIZED SHADES	12	20 A	33	1		1.50	0.18		1	34	20 A	12	UTIL. 107 REC	R
MS	GYM 100 MOTORIZED SHADES	12	20 A	35	1			1.00	0.50	1	36	20 A	12	UTIL. 107 MECHANICAL CONTROLS	MS
Sp...	SPARE	-	20 A	37	1	0.00	0.50			1	38	20 A	12	BDA (NOTE 12)	MS
Sp...	SPARE	-	20 A	39	1		0.00	0.50		1	40	20 A	12	FATC (NOTE 12)	MS
Sp...	SPARE	-	20 A	41	1			0.00	0.00	1	42	20 A	-	SPARE	Sp...

	LOAD	Connected Load	Demand Factor	Estimated Demand
L	LIGHTS	0.00 kVA	0.00%	0.00 kVA
LE	LIGHTING - EXTERIOR	0.00 kVA	0.00%	0.00 kVA
H	HEATING	0.00 kVA	0.00%	0.00 kVA
C	COOLING	2.29 kVA	100.00%	2.29 kVA
V	VENTILATION	0.23 kVA	100.00%	0.23 kVA
M	MOTORS	0.00 kVA	0.00%	0.00 kVA
K	KITCHEN	0.00 kVA	0.00%	0.00 kVA
R	RECEPTACLES	8.12 kVA	100.00%	8.12 kVA
WH	WATER HEATER	0.00 kVA	0.00%	0.00 kVA
MS	MISC.	26.92 kVA	100.00%	26.92 kVA
S	Spare	0.00 kVA	0.00%	0.00 kVA
E	ELEVATOR	0.00 kVA	0.00%	0.00 kVA
LD	LAUNDRY	0.00 kVA	0.00%	0.00 kVA
EV	EV CHARGING	0.00 kVA	0.00%	0.00 kVA

TOTAL KVA...	37.56 kVA	TOTAL PER PHASE: (CONNECTED)	
TOTAL KVA (DEMAND):	37.56 kVA	107.4 A	111.1 A	97.3 A
TOTAL AMP....	104 A		
TOTAL AMP. (DEMAND):	104 A	**TOTAL AMP. (DEMAND) x 125%**	130.3 A

NOTES:
1. BREAKER FRAME SHALL BE AS REQ'D PER PANEL AIC RATING.
2. SHALL BE FULLY RATED - SERIES RATINGS NOT ALLOWED.
3. ALL BUSSING, INCL GND AND NEUTRAL, SHALL BE COPPER.
4. ALL INCOMING PANEL & BRKR LUGS SHALL MATCH FEEDERS.
5. PROVIDE HINGED DOOR-IN-DOOR WITH OUTER DOOR LOCK.
6. PROVIDE METAL DIRECTORY FRAME.
7. PROVIDE CLASS A GFI (6mA-PERSONNEL) BRKR (250' MAX).
8. PROVIDE PANEL WITH FEED-THRU LUGS.
9. LOAD TOTAL INCLUDES FEED-THRU SECTION.
10. PROVIDE BREAKER CAPABLE OF BEING LOCKED IN THE OPEN POSITION. PROVISIONS FOR LOCKING SHALL REMAIN IN PLACE WITH OR WITHOUT THE LOCK INSTALLED.
11. REFER TO MECHANICAL SCHEDULES / SHEET E-701 FOR WIRE SIZE.
12. PROVIDE BREAKER WITH HANDLE LOCK ON DEVICE.

LOAD CLASSIFICATION ABBREVIATIONS (CONT.)
F - FEEDER FOR DOWN STREAM PANEL. LOADS ARE INCLUDED IN THE PANEL LOAD SUMMARY.

EXISTING SWITCHBOARD: MDP

VOLTAGE: 480Y/277 3Ø | **MAIN TYPE:** MCB | **MANUFACTUR...** SQUARE D
MOUNTING: FLOOR | **PHASE:** 3 | **TYPE:** QED
MAIN: 2000 A | **WIRE:** 4 | **AIC:** 65 KAIC

MAIN CB NOTES:

CKT/ID	LOAD SERVED	FRAME	TRIP	POLE	FEEDER	NOTES	Load
1	CHILLER CH-1	200 A	200 A	3			0.0 kVA
2	PANEL 'AH'	225 A	225 A	3			0.0 kVA
3	PANEL 'BH'	150 A	150 A	3			0.0 kVA
4	PANEL 'CH'	150 A	150 A	3			0.0 kVA
5	TRANFORMER T-1	450 A	450 A	3			0.0 kVA
6	SPARE	100 A	100 A	3			0.0 kVA
7	PANEL 'GH'	225 A	225 A	3			0.0 kVA
8	CHILLER CH-2	500 A	500 A	3			0.0 kVA
9	PANEL 'DH'	150 A	150 A	3			0.0 kVA
10	PANEL 'EH'	150 A	150 A	3			0.0 kVA
11	PANEL 'FH'	225 A	225 A	3			0.0 kVA
12	TRANSFORMER T-2	225 A	225 A	3			0.0 kVA
13	SPARE	225 A	225 A	3			0.0 kVA
14	**PANEL 'GMP'**	**400 A**	**400 A**	**3**	**NOTE 2**		156.9 kVA

SWITCHBOARD NOTES:
1. BOLD TEXT INDICATES NEW WORK. PROVIDE ACCORDINGLY.
2. REFER TO RISER DIAGRAM FOR WIRE SIZE.

FEEDER SCHEDULE FOR ALUMINUM CONDUCTORS

FEEDER AMPS	WIRE SIZE TEMP 75°C (AL)
400 A	(2) 4-250 KCMIL, 1#1 G, 3"C

NOTES:
1.) FOR TERMINATIONS RATED 100A OR LESS, THE ELECTRICAL CONTRACTOR SHALL VERIFY THE TERMINATIONS ARE LISTED FOR 75°C. WHERE 100A OR LESS RATED TERMINATIONS ARE LISTED 60°C, THE ELECTRICAL CONTRACTOR SHALL USE THE 60°C FEEDER LISTED IN THE TABLE.
2.) WHERE ALUMINUM CONDUCTORS ARE ALLOWED BY THE ENGINEER, THE CONTRACTOR SHALL MAKE EVERY PROVISION TO INSTALL ALUMINUM CONDUCTORS CORRECTLY, INCLUDING TERMINATIONS IN PANELBOARDS, DISCONNECTS, ETC. ALL TERMINALS SHALL BE LISTED SUITABLE FOR ALUMINUM. APPLY OXIDE INHIBITING PASTE TO ALUMINUM CONDUCTORS AT TERMINATIONS.

DRY-TYPE TRANSFORMER SCHEDULE

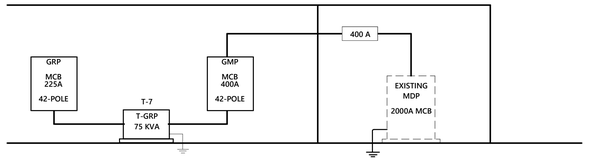
TRANSFORMER	VOLTAGE		KVA	PRIMARY			SECONDARY			
TYPE	PRIMARY	SECONDARY	RATING	FLA	BREAKER	WIRE & CONDUIT	FLA	BREAKER	WIRE & CONDUIT	SERVICE GROUND
T-7	480 V	208Y/120	75	90.2	100	3#1/0, 1#4G, 2"C	208	225	4-300KCMIL, 1#1/0G., 3"C.	#2, 1"C

NOTE 1. HOUSEKEEPING PADS SHALL HAVE OSHA COMPLIANT, SAFETY YELLOW, EPOXY PAINT SUITABLE FOR CONCRETE. 2. ALL CONDUCTORS BASED ON ALUMINUM.

MDP LOAD SUMMARY

EXISTING PK LOAD PER MDP USER INTERFACE	-	608 KVA
LIGHTING KVA @ 125% DEMAND	-	8.20 KVA
RECEPTACLES @ 100% DEMAND	-	8.12 KVA
COOLING @ 100% DEMAND	-	109.55 KVA
VENTILATION @ 100% DEMAND	-	0.23 KVA
WATER HEATERS @ 100% DEMAND	-	4.5 KVA
MISC. LOAD @ 100% DEMAND	-	27.92 KVA

TOTAL KVA = 766.5 KVA
923 AMPS @ 277/480 3-PHASE
ON EXISTING 2000A SERVICE



NOTES:
1. ALL WIRE SIZES ARE SHOWN FOR ALUMINUM MATERIAL, UNLESS OTHERWISE NOTED.

1 POWER RISER DIAGRAM
NOT TO SCALE

ROOFTOP UNIT SCHEDULE (DX COOLING, GAS HEAT, R-410 REFRIGERANT)

SYMBOL	NOMINAL TONS	COMPRESSOR (EA)		CONDENSER FAN		SUPPLY FAN		COMB. FAN	RELIEF FAN		POWER SUPPLY				DISCONNECT SIZE	CONDUIT & CONDUCTOR SIZE
		QTY	RLA	QTY	FLA	HP	FLA	FLA	QTY	FLA	MCA	MOCP	VOTAGE	PH		
RTU-1A	20	2	21.3	2	2.2	3.0	0.0	0.0	0	0	54.0	70.0	480	3	100A/F70A-3P-3R	4#4, 1#8G., 1-1/4"C.
RTU-1B	20	2	21.3	2	2.2	3.0	0.0	0.0	0	0	54.0	70.0	480	3	100A/F70A-3P-3R	4#4, 1#8G., 1-1/4"C.
RTU-2	7.5	2	8.2	1	1.5	3.0	0.0	0.0	0	0	21.0	25.0	480	3	30A/F25A-3P-3R	4#10, 1#10G., 3/4"C.

DUCTLESS INDOOR UNIT SCHEDULE

ID	ELECTRICAL DATA			INTERLOCK ID	DISCONNECT SIZE	CONDUIT & CONDUCTOR SIZE
	MCA	VOLTAGE	PH			
IDU-1	1.0 A	208 V	1	ODU-1	30A/F15A-2P-1	3#12, 1#12G., 3/4"C.

DUCTLESS OUTDOOR UNIT SCHEDULE

ID	ELECTRICAL DATA				DISCONNECT SIZE	CONDUIT & CONDUCTOR SIZE
	MCA	MOCP	VOLTAGE	PH		
ODU-1	11.0 A	28.0 A	208 V	1	30A/FPN-2P-3R	3#10, 1#10G., 3/4"C.

FAN SCHEDULE

ID	ELECTRICAL DATA				DISCONNECT SIZE	CONDUIT & CONDUCTOR SIZE
	WATTS	H.P.	VOLT	PH		
EF-1		0.13 hp	115 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-2		0.13 hp	115 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.
EF-3	30 W	0.00 hp	115 V	1	PROVIDED BY MC	2#12, 1#12G., 3/4"C.

PLUMBING EQUIPMENT SCHEDULE

SYM.	DESCRIPTION	DISCONNECT SIZE	CONDUIT & CONDUCTOR SIZE
WH1 TYP. OF 1	WATER HEATER, ELECTRIC ELEC: 277V; SINGLE PHASE; 4.5KW	30A/F25A-2P-1	2#10, 1#10G., 3/4"C.
RCP1	CIRCULATION PUMP ELEC: 120V, 1/12HP	MOTOR RATED SWITCH	2#12, 1#12G., 3/4"C.

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LILLINGTON-SHAWTOWN ELEMENTARY ADDITION
855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JSD
CHECKED BY: MKG

ELECTRICAL DIAGRAMS AND PANEL SCHEDULES

E-701

Sheet No. 11 of 12

OPTIMA# 24-0045R

LIGHTING SEQUENCE OF OPERATION

A COMPLETE AND OPERATIONAL LIGHTING CONTROL SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS (SECTION 260923 AND 260943) AND AS INTENDED ON THESE PLANS. ALL CONTROL POINTS AND EQUIPMENT SEQUENCES OF OPERATION LISTED IN SPECIFICATION SECTION 260923 SHALL BE CONSIDERED IN ADDITION TO THOSE LISTED HERE. IN THE EVENT THAT THE VERBIAGE IS IN CONFLICT OR CONTRADICTS THE REQUIREMENTS LISTED HERE, THE QUESTION SHALL BE ASKED PRIOR TO BIDDING OR THE MORE STRINGENT SHALL APPLY.

SYSTEM DESCRIPTION:
LIGHTING CONTROLS ARE BASED ON ETHERNET CONNECTED DEVICES THAT HAVE INDIVIDUAL ADDRESS LOCATIONS FOR PROGRAMMING AND CONTROL. INDEPENDENT OF THE ETHERNET BASED CONTROLS ARE STAND ALONE OCCUPANCY SENSORS. THESE SHALL BE INDEPENDENT AND NOT TIED INTO THE BAS/SYSTEM SOFTWARE.

SENSORS:
1. CEILING MOUNTED OCCUPANCY AND VACANCY SENSORS SHALL OPERATE AS PART OF THE ETHERNET BASED SYSTEM AND AS STAND ALONE CONTROLS AS SHOWN ON THE PLANS.
2. WALL MOUNTED NON SWITCH TYPE OCCUPANCY/VACANCY SENSORS SHALL OPERATE AS PART OF THE ETHERNET BASED SYSTEM.
3. ALL OCCUPANCY SENSORS SHALL BE PROGRAMMED FOR AUTOMATIC ON (FULL LEVELS) AND AUTOMATIC OFF.
4. ALL VACANCY SENSORS SHALL BE PROGRAMMED FOR MANUAL ON AND AUTOMATIC OFF.
5. 'LARGE PUBLIC SPACES SHALL BE OCCUPANCY BASED WHERE PROVIDED WITH A SENSOR.

TIMER SETTINGS:
A. WALL SWITCH PASSIVE INFARED: 2 MINUTES FOR INDIVIDUAL RESTROOMS AND STORAGE ROOMS.
B. CLASSROOM VACANCY: 15 MINUTES.
C. WALL SWITCH VACANCY SENSORS OFFICES: 5 MINUTES.
D. OTHER SPACES NOT LISTED: 30 MINUTES.

BAS INTEGRATION:
A. EXTERIOR LIGHTING ZONES, TIME SCHEDULE AND PHOTOCELL CONTROL.
B. INTERIOR LIGHTING:
- CORRIDORS
- CLASSROOMS
- OFFICES

COMMISSIONING AND COORDINATION OF BAS:
1. BAS CONTROL SHALL BE THE PRIORITY SYSTEM WITH LOCAL OVERRIDES.
2. LIGHTING SYSTEM SHALL ALSO BE INDEPENDENTLY CONTROLLED BY A SOFTWARE BASED SYSTEM.
3. LIGHTING SYSTEM IS CONNECTED TO THE BAS VIA BACNET PROTOCOL OR EQUAL. COORDINATE LANGUAGE REQUIREMENTS WITH MECHANICAL CONTROLS CONTRACTOR SUPPLYING BUILDING AUTOMATION SYSTEM.

LIGHTING COORDINATION AND QUALITY CONTROL:
1. ELECTRICAL CONTRACTOR SHALL HAVE A PRE-CONSTRUCTION MEETING WITH CONTROLS SUPPLIER PRIOR TO CONDUIT ROUGH-IN TO VERIFY BOXES, CONDUIT PATHS, AND GENERAL LIGHTING CONTROL STRATEGY FOR INSTALLATION.
2. ELECTRICAL CONTRACTOR SHALL HAVE A POST-SUBMITTAL MEETING WITH BAS CONTROLS SUPPLIER TO IDENTIFY LINE AND LOW VOLTAGE ROUTING, INTENT OF LIGHTING CONTROL DESIGN, AND GENERAL CONSTRUCTION STRATEGIES.

EXTERIOR LIGHTING CONTROL:
A. EXTERIOR LIGHTING CONTROL IS VIA SCHEDULED TIME CONTROL AND PHOTOCELL.

OTHER SYSTEM INTEGRATION:
1. UPON A FIRE ALARM EVENT, ALL CORRIDOR ZONES SHALL SWEEP ON.

TIME SCHEDULES:
A. TIME SCHEDULES ARE TO BE DETERMINED BY THE OWNER. THIS SHALL BE COORDINATED AND DIRECTED BY OWNER AND INPUT BY THE LIGHTING PROGRAMMER AND THE BAS PROGRAMMER. SEE THE BELOW INITIAL SETTING UNTIL OWNER HAS GIVEN INPUT.
B. INITIAL TIME SCHEDULES SHALL BE:
MONDAY - FRIDAY: 6 AM ON, 7 PM OFF
SATURDAY: 8 AM ON, 4 PM OFF
SUNDAY: OFF

INDIVIDUAL AREAS INTENT OF CONTROL:
- MAIN CORRIDORS/HALLWAYS: TIME SCHEDULE ZONED. MANUAL LOW VOLTAGE OVERRIDE IN LOCAL CORRIDOR. CORRIDOR SWITCHES SHALL BE LOCKED OUT (PUBLIC AREAS) DURING "NORMAL OPERATING HOURS."
- GROUP RESTROOMS: ON/OFF WALL SWITCH VACANCY SENSORS (PASSIVE INFARED). OCCUPANCY SENSORS SHALL OPERATE NORMAL AND EMERGENCY FIXTURES IN THIS AREA.
- INDIVIDUAL RESTROOMS: ON/OFF WALL SWITCH VACANCY SENSORS (PASSIVE INFARED).
- UTILITY ROOMS, ETC.: ON/OFF WALL SWITCH OCCUPANCY SENSORS.
- STORAGE ROOMS: ON/OFF WALL SWITCH VACANCY SENSORS (PASSIVE INFARED).
- GYM: TIME SCHEDULE ZONED. ON/OFF WITH FULL DIMMING. EMERGENCY RATED RELAYS FOR SWITCHED EMERGENCY APPLICATION OF ON/OFF DIMMING. EMERGENCY IS ZONED WITH LOCAL NORMAL ZONE.

LIGHTING SYSTEM NOTES:
1. SYSTEM ARCHITECTURE SHALL BE DESIGNED BY RESPECTIVE CONTROLS PROVIDER.
2. SYSTEM IS BASED ON NX DISTRIBUTED INTELLIGENCE, BY HUBBELL. ALL ALTERNATIVE MANUFACTURERS SHALL PROVIDE EQUIPMENT TO MEET THE DESIGN INTENT. (GRAPHIC WALL PODS FOR EXAMPLE.) APPROVED EQUALS: WATTSTOPPER DLM, COOPER GREENGATE, OR ACUITY NLIGHT.
3. SEE VENDOR DRAWINGS/DETAILS FOR ALL 0-10V DIMMING WIRING.
4. PROVIDE DEVICE LAYOUT AS PART OF LIGHTING CONTROL SUBMITTAL. INCLUDE ALL DEVICE LOCATIONS, CABLING, EQUIPMENT, ETC.

FIXTURE NOTES:
A. ARCHITECT TO APPROVE ALL EXTERIOR FIXTURE LOCATIONS. E.C. TO MARK OFF LOCATIONS WITH TEMPORARY "CHALK" OUTLINE AND PLAN FOR ARCHITECT ON-SITE APPROVAL OF LOCATIONS BEFORE INSTALLATION. E.C. TO CONTACT ARCHITECT WITH (1) WEEK PRIOR NOTICE.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP	MINIMUM LUMENS	TOTAL FIXURE WATTAGE	DRIVER	VOLTAGE	MANUFACTURER	MODEL	REMARKS
DL1	6" RECESSED LED DOWNLIGHT	LED	2,000	19.7 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	277V	GOTHAM PATHWAY JUNO COOPER SPECTRUM	EVO6 20 AR LS MVOLT APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	6" APERATURE MINIMUM 2000 LUMEN PACKAGE MINIMUM 10% DIMMING CLEAR SPECULAR
DL1E	SAME AS TYPE 'DL1' EXCEPT PROVIDE WITH 90 MINUTE BATTERY BACKUP	LED	2,000	19.7 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	277V	GOTHAM PATHWAY JUNO COOPER SPECTRUM	EVO6 20 AR LS MVOLT E10WCP APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	6" APERATURE MINIMUM 2000 LUMEN PACKAGE MINIMUM 10% DIMMING CLEAR SPECULAR PROVIDE WITH 10W CONSTANT POWER EMERGENCY DRIVER
EX1B	THERMOPLASTIC EXIT SIGN	LED	5	1.0 W	INTEGRAL LED DRIVER	UNIV	LITHONIA HUBBELL JUNO COOPER PHILLIPS	QUANTUM LQM S W R 120/277 EL N APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	NICKEL CADMIUM BATTERY EXIT SIGN 90 MINUTE OPERATION SEE PLANS FOR FACE STYLE UL LISTED FOR DAMP LOCATIONS RED
EX1G	WALL MOUNTED THERMOPLASTIC EXIT SIGN	LED	5	1.0 W	INTEGRAL LED DRIVER	UNIV	LITHONIA HUBBELL JUNO COOPER PHILLIPS	QUANTUM LQM S W R 120/277 EL N APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	NICKEL CADMIUM BATTERY EXIT SIGN 90 MINUTE OPERATION SEE PLANS FOR FACE STYLE UL LISTED FOR DAMP LOCATIONS RED PROVIDE WITH WIREGUARD
FPL4	2X4 LED FLAT PANEL	LED	4,000	38.0 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	277V	LITHONIA H.E. WILLIAMS CORONET	CPX 2X4 4000LM MIN10 APPROVED EQUAL APPROVED EQUAL	4000 MINIMUM LUMENS UL LISTED DAMP LOCATIONS
FPL4E	SAME AS TYPE 'FPL4' EXCEPT PROVIDE WITH 90 MINUTE BATTERY BACKUP	LED	4,000	38.0 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	277V	LITHONIA H.E. WILLIAMS CORONET	CPX 2X4 4000LM MIN10 E10WLCP APPROVED EQUAL APPROVED EQUAL	4000 MINIMUM LUMENS UL LISTED DAMP LOCATIONS PROVIDE WITH 10W CONSTANT POWER EMERGENCY DRIVER
HBL	12" LED HIGH BAY (LOW PROFILE)	LED	31,200	240.0 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	UNIV	TGS LIGHTING LITHONIA HUBBELL	CHB-P 240W 40K WD U D SM W WG SQ APPROVED EQUAL APPROVED EQUAL	SURFACE MOUNT BRACKET DIFFUSING ACRYLIC, WIRE GUARD MINIMUM 31200 LUMENS WIDE OUTPUT MINIMUM 10% DIMMING
HBLE	SAME AS TYPE 'HBL' EXCEPT CONNECTED TO EMERGENCY INVERTER	LED	31,200	240.0 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	UNIV	TGS LIGHTING LITHONIA HUBBELL	CHB-P 240W 40K WD U D SM W WG SQ APPROVED EQUAL APPROVED EQUAL	SURFACE MOUNT BRACKET DIFFUSING ACRYLIC, WIRE GUARD MINIMUM 31200 LUMENS WIDE OUTPUT MINIMUM 10% DIMMING
L4	4' RECESSED LINEAR LED	LED	3,500	30.0 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	UNIV	CORONET APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	LSR4 4 _ HIGH UNV DB W FL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	COORDINATE MOUNTING WITH ARCHITECT PRIOR TO ROUGH-IN
L4E	SAME AS TYPE 'L4' EXCEPT PROVIDE WITH 90 MINUTE BATTERY BACKUP	LED	3,500	30.0 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	UNIV	CORONET APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	LSR4 4 _ HIGH UNV DB W FL EMPCK APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	COORDINATE MOUNTING WITH ARCHITECT PRIOR TO ROUGH-IN PROVIDE WITH 90 MINUTE BATTERY BACKUP
OWL1	WALL PACK TRAPEZOID LED	2-MODULE LED	6,000	47.0 W	INTEGRAL LED DRIVERS (2)	277V	LITHONIA HUBBELL JUNO PHILLIPS	WDGE3 LED P1_RFT MVOLT APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	COORDINATE FINISH WITH ARCHITECT MINIMUM 6000 LUMENS WET LOCATION LISTED
OWL1E	SAME AS TYPE 'OWL1' EXCEPT PROVIDE WITH 90 MINUTE BATTERY BACKUP	2-MODULE LED	6,000	47.0 W	INTEGRAL LED DRIVERS (2)	277V	LITHONIA HUBBELL JUNO PHILLIPS	WDGE3 LED P1_RFT MVOLT E15WH APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	COORDINATE FINISH WITH ARCHITECT MINIMUM 6000 LUMENS WET LOCATION LISTED PROVIDE WITH 90 MINUTE BATTERY BACKUP
STL1	4 FT. LED STRIP	LED	5,000	40.0 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	277V	LITHONIA COLUMBIA CREE COOPER DAY-BRITE	CLX LED L48 5000LM SEF FDL MVOLT GZ10 _K 80CRI APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	PROVIDE CHAIN FOR PENDANT MOUNTING PROVIDE WIRE GUARD 4000 MINIMUM LUMENS LENSED
STL1E	4 FT. LED STRIP	LED	4,000	40.0 W	INTEGRAL LED DRIVER (STANDARD 0-10V DIMMING)	277V	LITHONIA COLUMBIA CREE COOPER DAY-BRITE	CLX LED L48 5000LM SEF FDL MVOLT GZ10 _K 80CRI E10WLCP APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL APPROVED EQUAL	PROVIDE CHAIN FOR PENDANT MOUNTING PROVIDE WIRE GUARD 4000 MINIMUM LUMENS LENSED PROVIDE WITH 90 MINUTE BATTERY BACKUP
TL	CASEWORK LED TAPE LIGHT	LED		30.0 W	REMOTE LED DRIVER	UNIV	NOVA FLEX LIGHTING WAC LIGHTING LED LINEAR	PRO SERIES W/ REMOTE DIMMABLE POWER SUPPLY W/ SURFACE MOUNTED CHANNEL WITH DOT FREE LENSE APPROVED EQUAL APPROVED EQUAL	CONTRACTOR TO FIELD VERIFY LENGTH PROVIDE REMOTE DRIVER AND SURFACE MOUNTED CHANNEL WITH DOT FREE LENSE. COORDINATE INSTALLATION WITH CASEWORK VENDOR PRIOR TO ROUGH-IN MINIMUM 200 LUMENS PER FOOT PROVIDE SEAMLESS ILLUMINATION ALONG THE LENGTH OF THE CASEWORK 3.0 W/FT MAXIMUM

LIGHTING FIXTURE SCHEDULE NOTES:
1. ALL FIXTURES SHALL BE LED UNLESS OTHERWISE SPECIFIED. COLOR TEMPERATURE SHALL BE 3500K UNLESS OTHERWISE NOTED.
2. LED DRIVERS SHALL BE PROVIDED FROM PER MANUFACTURER RECOMMENDATION. AS PART OF THIS RECOMMENDATION COORDINATE THE REQUIRED WAVE OUTPUT SO THEY ARE COMPATIBLE. THIS INCLUDES EMERGENCY DRIVERS.
3. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT FIXTURE LOCATIONS.
4. FIXTURES IN FIRE RATED CEILING SHALL BE PROVIDED WITH FIRE RATED TENTS AS REQUIRED.
5. SUSPEND ALL FOUR CORNERS WITH WIRE TO STRUCTURE. DO NOT ALLOW GRID ALONE TO SUPPORT FIXTURE.
6. FIXTURES WITH EMERGENCY BATTERY PACKS SHALL BE SUPPLIED WITH 1100 LUMEN INVERTERS.
7. PROVIDE INTEGRAL SURGE PROTECTION ON ALL EXTERIOR LED DRIVER FIXTURE TYPES.
8. DIMMING OF FIXTURES SHALL BE WITH A SWITCH AS RECOMMENDED BY THE DRIVER MANUFACTURER.
9. THE CONTRACTOR SHALL VERIFY THE LEAD TIME OF ALL PRODUCTS SPECIFIED IN THIS SCHEDULE AT THE TIME OF PACKAGE QUOTE.
10. DURING THE BID PROCESS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DELIVERY/SCHEDULING ISSUES.
11. NO SUBSTITUTIONS WILL BE ALLOWED DUE TO LACK OF COORDINATION OF DELIVERY DATES AND CONSTRUCTION SCHEDULE AFTER BID.
12. ALL EXPEDITED EXPENSES SHALL BE THE RESPONSIBILTY OF THE CONTRACTOR.
13. FIXTURES TO BE INSTALLED IN CEILINGS, INDICATED ON ARCHITECTURAL PLANS AS HAVING INSULATION IN CONTACT WITH CEILING SURFACE, SHALL BE IC RATED BY MANUFACTURER.
14. LED DRIVERS LOCATED IN UNCONDITIONED SPACES SHALL BE RATED FOR 90 DEGREES F.
15. PROVIDE 90 MINUTE EMERGENCY BATTERY BACK UP. EMERGENCY BACK UP SHALL BE BASED ON TYPE OF FIXTURE, LED DRIVER, BALLAST, ETC. EMERGENCY BACKUP SHALL BE DUAL INPUT FOR BOTH SWITCHING AND CHARGING. PROVIDE UNSWITCHED "HOT" FROM LOCAL CIRCUIT UNLESS OTHERWISE INDICATED ON PLANS. PROVIDE WITH INDICATOR LIGHT. INSTALL LED INDICATOR ON LIGHT FIXTURE UNLESS DECORATIVE. DECORATIVE FIXTURES SHALL HAVE INDICATOR PLACED AT LOCAL CEILING. BODINE, PHILLIPS, POWER SENTRY OR EQUAL.
16. PROVIDE EMERGENCY RELAY BASED ON MINIMUM BODINE GLCD-208 OR EQUAL. SEE PLANS FOR INTENT. PROVIDE EMERGENCY GENERATOR/INVERTER CIRCUIT AND SWITCH LEG NORMAL CIRCUIT. SEE DETAIL.
17. POLES PROVIDED FOR LED FIXTURES SHALL BE METAL, REGARDLESS OF SPECIFICATION FOR GROUNDING PURPOSES.

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Harnett County Schools

LILLINGTON-SHAWTOWN ELEMENTARY ADDITION

855 Old US Highway 421
Lillington, NC 27546

ENERGY STAR PARTNER

No.	Date	Description

ISSUE DATE: 07-26-24
PROJECT #: 02110.300
DRAWN BY: JSD
CHECKED BY: MKG

LIGHTING FIXTURE SCHEDULE

E-801

Sheet No. 12 of 12

OPTIMA# 24-0045R