VICINITY MAP

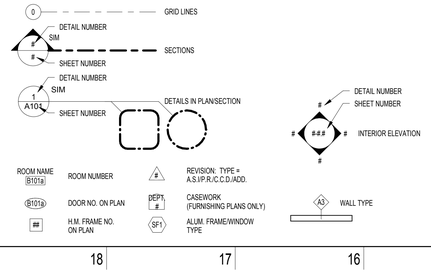
ABBREVIATIONS

Above finished floor	AFF	Footing	FTG	Project	PROJ
Acoustic	ACST	Foundation	FDN	Property	PROP
Accustic Panel Ceiling	APC	Furnish(ed), furniture	FURN	Public Address	PA
Addendum	ADD	Furring	FURR	Quality control	QC
Alternate	ALT	Gage (gauge)	GA	Quality	QUAL
Aluminum	AL	Galvanize(d)	GALV	Quantity	QTY
Angle	L	Galvanized Iron	GALVI	Quarry Tile	QT
Approximate	APPROX	Glazed Wall Tile	GWT	Radius	RAD
Architecture, architectural	ARCH	Grab Bar	GB	Rain Leader	RL
Asbestos	ASB	Grade	GR	Received	RCVD
Asphalt	ASPH	Gravel	GVL	Receptacle	RCPT
Assistant	ASST	Gypsum Wallboard	GWB	Receptionist	RECEPT
Association	ASSN	Gypsum	GYP	Recess(ed)	REC
Automatic	AUTO	Handicapped	HC	Refer, reference	REF
Average	AVG	Hardware	HDW	Refrigerate, refrigerator	REFR
Base plate	BP	Heating ventilating and	HVAC	Reinforce	REINF
Basement	BSMT	air conditioning		Reinforced concrete	RC
Beam	BM	Height	HGT	Remove	RMV
Bearing	BRG	High Point	HPT	Repair	RPR
Bedroom	BR	High Performance	HP	Required	REQD
Benchmark	BM	High Performance Coating	HPC	Revise, revision	REV
Board	BD	Hollow Metal	HM	Right hand	RH
Boiler	BLR	Horizontal	HORIZ	Road	RD
Bottom	BOT	Include(d), inclusive	INCL	Roof Drain	RD
Brick	BRK	Incorporated	INC	Roof	RF
Building line	BL	Information	INFO	Roofing	RFG
Building	BLDG	Inside diameter	ID	Room	RM
Built-up-roof	BUR	Install(ed), installation	INSTL	Rubber tile floor	RTF
Cabinet	CAB	Insulation	INSUL	Rubber	RBR
Carpet	CPT	Interior	INT	Schedule	SCHED
Catalog	CAT	Janitor	JAN	Schematic	SCHEM
Ceiling height	CH	Joint	JT	Section	SECT
Ceiling	CLG	Joist	J, JST	Service	SVCE
Center	CTR	Junction box	JB	"Sheet, sheeting"	SHT
Centerline	CL	Knock down	KD	Shower	SH
Ceramic Tile	CT	Laboratory	LAB	Siding	SDG
Ceramic	CER	Lavatory	LAV	Similar	SIM
Chalkboard	CB	Left Hand	LH	Slope	SL
Clear	CLR	Left	L	Sound-transmission class	STC
Closet	CLO	Length	LG	South	S
Coated	CTD	Level	LVL	Speaker	SPKR
Cold rolled	CR	Light	LT	Specification	SPEC
Column	COL	Machine	MACH	Sprinkler	SPR
Company	CO	Maintenance	MAINT	Square	SQ
Composition	COMP	Manager	MGR	Stainless steel	SS
Concrete Masonry Unit	CMU	Manual	MNL	Standard	STD
Concrete	CONC	Manufacturing	MFG	Standpipe	SP
Construction joint	CJ	Markerboard	MB	Steel	STL
Construction	CONSTR	Masonry opening	MO	Storage	STOR
"Continue, Continuous"	CONT	Masonry	MSNRY	Structural Glazed Facing Tile	SGFT
Corridor	CORR	Master bedroom	MBR	Structural, structure	STRUCT
Countersink	CSK	Material	MATL	Substitute	SUBST
Cubic	CU	Maximum	MAX	Surface	SURF
Curve(d)	CRV	Mechanical	MECH	Suspend(ed)	SUSP
Dampproofing	DP	Membrane	MEMB	Switch	SW
Degree	DEG	Men	M	Symmetrical	SYM
Department(al)	DEPT	Metal	MET, MTL	System	SYS
Detail	DET	Mezzanine	MEZZ	Tackboard	TB
Diagonal	DIAG	Minimum	MIN	Tackstrip	TS
Diameter	DIA	Mirror	MIR	Telephone	TEL
Dimension	DIM	Miscellaneous	MISC	Television	TV
Dishwasher	DW	Mounted	MTD	Temporary	TEMP
Dispenser	DISP	Mounting	MTG	Terrazzo	TER
Door	DR	Necessary	NEC	Thick	THK
Double	DBL	Noise-reduction coefficient	NRC	Through	THRU
Double-hung	DH	Nominal	NOM	Toilet	T
Down	DN	Non Combustible	NC, NONCOM	Tongue and groove	T&G
Downspout	DS	North	N	Top and bottom	T&B
Drain	DR	Not in Contract	NIC	Top chord	TC
Drawing	DWG	Not to scale	NTS	Top of Masonry Parapet	TMP
Each	EA	Not available	NA	Top of Bearing	TOPB
East	E	Number	NO	Top of Steel	T.O.S.
Electric Water Cooler	EWC	Office	OFF	Topping	TOPG
"Electric, electrical"	ELEC	On center	OC	Total	TOT
Elevation	EL	Opening	OPNG	Transformer	XFMR
Elevator	ELEV	Opposite	OPP	Transom	TR
Engineer	ENGR	Outside diameter	OD	Transparent	TRANS
Entrance	ENTR	Overall	OA	Tread	TRD
Equal	EQ	Overhead	OVHD	Threshold	THRESH
Equipment	EQUIP	Page	P	Typical	TYP
Exhaust	EXH	Painted	PTD	Underground	UG
Existing	EXIST	Pair	PR	Underwriters Laboratories	UL
Expansion joint	EXP JT	Panel	PNL	Unfinished	UNF
Exposed	EXP	Partition	PTN	Unit Ventilator	UV
Exterior	EXT	Percent	PCT	Unless Otherwise Noted	UON
Fabricate	FAB	Perforate(d)	PERF	Urinal	UR
Face of Stud	F. OF S.	Permanent	PERM	US Gypsum Company	USG
Fan Coil Unit	FCU	Perpendicular	PERP	Vertical	VERT
Fiberglass-reinforced plastics	FRP	Piece	PC	Vestibule	VEST, V
Finish	FIN	Plastic Laminate	PLAM	Vinyl Reducing Strip	VRS
Finished Floor	FF	Plastic Laminate	PLAS.LAM	Vinyl Composite Tile	VCT
Fire Extinguisher	FE	Plate	PL	Vinyl asbestos tile	VAT
Fire Extinguisher & Cabinet	FEC	Plumbing	PLMB	Wardrobe	WARD
Fire Retardant Treated	FRT	Plywood	PLYWD	Water closet	WC
Fireproof	FPRF	Point	PT	Waterproof	WP
Fixture	FXTR	Polyvinyl chloride	PVC	Weight	WT
Flange	FLG	Precast	PRCST	Welded	WLD
Flashing	FL	Prefabricated	PREFAB	Welded Wire Mesh	WWM
Floor	FL	Preliminary	PRELIM	With	W/
Floor drain	FD	Preparation, prepare	PREP	Without	W/O
Flooring	FLG	Program	PRGM	Women	W
Fluorescent	FLUOR	Projection Screen	PS	Wood	WD
				Wrought Iron	WI

SYMBOLS OF MATERIALS

- EARTH
- GRAVEL
- CONCRETE
- CONCRETE MASONRY UNITS
- SOLID CONCRETE MASONRY UNITS
- BRICK
- WOOD-FINISHED
- WOOD ROUGH
- PLYWOOD
- GYPSUM BOARD
- ACOUSTIC TILE
- STEEL - LARGE SCALE
- ALL METALS - SMALL SCALE
- CAST STONE
- GLASS - LARGE SCALE
- BATT INSULATION
- RIGID INSULATION
- CERAMIC TILE
- CARPET

DRAWING KEY



Garrett College STEM Renovation and Addition
McHenry, MD

Bid Set
February 1, 2017

DESIGN TEAM

GRIMM + PARKER ARCHITECTS	ARCHITECT
SPECS, INC.	CIVIL ENGINEER
ALBAN ENGINEERING, INC.	MEP ENGINEER
COLUMBIA ENGINEERING	STRUCTURAL ENGINEER

LIST OF DRAWINGS

11720 Beltsville Drive
Suite 900
Calverton, MD 20705
Tel: 301.595.1000
www.grimmandparker.com

GRIMM AND PARKER

GP #21620

Garrett College STEM Renovation and Addition
McHenry, MD

TITLE SHEET

DATE	DESCRIPTION

TS

February 1, 2017
Bid Set

GARRETT COLLEGE STEM BUILDING

McHENRY - GARRETT COUNTY - MARYLAND

687 MOSSER ROAD
McHENRY, MARYLAND 21541
TELEPHONE: (301) 387-3000

VICINITY MAP
NOT TO SCALE

GENERAL NOTES:

1. THE GRADING LIMITS SHOWN ON THE PLANS ARE NOT TO BE EXCEEDED. ANY CHANGES IN THE GRADING, EROSION AND SEDIMENT CONTROL PLAN, STORM WATER MANAGEMENT FACILITY OR OTHER SEGMENT OF THE WORK MUST BE REVIEWED AND APPROVED BY THE GARRETT CO. PERMITS AND SCD.
2. CONTRACTOR IS TO PROVIDE ACCESS TO THE ENTIRE PROJECT AREA FOR EMERGENCY SERVICES DURING THE ENTIRE CONSTRUCTION PROCESS INCLUDING FIRE, AMBULANCE AND POLICE.
3. EXISTING UTILITIES:
THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY. NO GUARANTEE IS MADE AS TO THE ACCURACY OF SAID LOCATIONS. SPECS, INC. ASSUMES NO LIABILITY FOR THE LOCATION AND DEPTH OF ANY ABOVE AND BELOW GROUND UTILITIES. CONTRACTOR IS TO FIELD VERIFY THE LOCATION AND DEPTH OF ALL CONCERNED UTILITIES BEFORE THE START OF ANY EARTHWORK AND/OR CONSTRUCTION.
4. SEDIMENT AND EROSION CONTROL DETAILS INDICATED ON THE PLAN AND APPLICABLE PROVISIONS OF ALL CONTRACT DOCUMENTS SHALL BE STRICTLY ENFORCED.
5. THE DESIGN FOR THIS PROJECT HAS INCORPORATED FACILITIES FOR THE ELDERLY AND HANDICAPPED IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL LEGISLATION.
6. WHERE REMOVAL OF AN ITEM IS CALLED FOR IN THE CONTRACT DOCUMENTS, IT SHALL BE INTERPRETED AS TO MEAN "REMOVE AND PROPERLY DISPOSE OF", UNLESS OTHERWISE NOTED TO BE SALVAGED.
7. THE PROPERTY LINES SHOWN ON THIS DRAWINGS ARE APPROXIMATE AND HAVE BEEN INTERPOLATED FROM DEEDS, PLATS AND BEST AVAILABLE INFORMATION. SPECS, INC. ASSUMES NO LIABILITY FOR THE LOCATION AND/OR EXISTENCE OF ANY PROPERTIES, EASEMENTS AND/OR RIGHT OF WAYS.
8. CONTRACTOR SHALL COORDINATE ALL UTILITY CONNECTIONS WITH APPROPRIATE UTILITIES.
9. SEWER AND WATER SERVICE SHALL BE COORDINATED WITH GARRETT CO. UTILITY DIVISION.

ENGINEERS STATEMENT

TO COMPLY WITH THE REQUIREMENTS OF THE MARYLAND GENERAL PERMIT FOR STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY (NPDES NUMBER MDR10, STATE DISCHARGE PERMIT NUMBER 09GP) THE FOLLOWING ITEMS HAVE BEEN ADDRESSED:

1. UTILIZATION OF ENVIRONMENTAL SITE DESIGN.
2. MAINTENANCE OF LIMITS OF DISTURBANCES TO PROTECT NATURAL AREAS.
3. CONTROL OF CONSTRUCTION EQUIPMENT AND VEHICLES.
4. EVALUATION AND APPROPRIATE LIMITS OF SITE CLEARING.
5. EVALUATION AND DESIGNATION OF SITE AREA FOR PHASING OR SEQUENCING.
6. IDENTIFICATION OF SOILS AT HIGH RISK FOR EROSION AND ADVANCED STABILIZATION TECHNIQUES TO BE USED.
7. IDENTIFICATION OF STEEP SLOPES AND DESIGNATION OF LIMITATIONS ON CLEARING ITEMS.
8. EVALUATION AND DESIGNATION OF STABILIZATION REQUIREMENTS AND TIME LIMITS AND PROTECTION MEASURES FOR DISCHARGES TO THE CHESAPEAKE BAY, IMPAIRED WATERS WITH AN ESTABLISHED TOTAL MAXIMUM DAILY LOAD (TMDL).

DESIGNER'S SIGNATURE: ______ DATE: ______

MR. RAYMOND CHARLES RASE, P.E.
PRINTED NAME:

APPROVED FOR SEDIMENT CONTROL
Garrett Soil Conservation District

Signature ______ Signature ______

Title ______ Date ______

Pond 378 Approval: ☐ Yes ☐ No ☐ NA

APPROVED FOR STORM WATER MANAGEMENT
Garrett County Storm water Management

Engineer ______ Date ______

Pond Approval: ☐ Yes ☐ No ☐ NA

GPA# ______

OWNER'S DEVELOPER'S CERTIFICATION

"I/WE HEREBY CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION, AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I HEREBY AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT, COMPLIANCE INSPECTORS."

DATE: ______ PHONE NO: (301) 387-3000 OWNER/DEVELOPER SIGNATURE: ______

ADDRESS: 687 MOSSER ROAD, McHENRY, MD 21541 PRINTED NAME & TITLE: ______

DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, THE 2010 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II AND ACCEPTED STANDARDS OF ENGINEERING PRACTICE.

DATE: ______ PHONE NO.: 301-777-2510 DESIGNER'S SIGNATURE: ______

MD. REGISTRATION NO.: MD. REG. NO. 200457 PRINTED NAME: MR. RAYMOND CHARLES RASE, P.E., P.S.

P.E. (circled), R.L.S., R.L.A. (CIRCLE)

SPECS
CONSULTING ENGINEERS & SURVEYORS
105 SOUTH CENTRE STREET, SUITE 100
CUMBERLAND, MD 21502
301.777.2510 FAX: 301.777.8419
SPECS PROJECT NO. 4671

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 200457, EXPIRATION DATE: SEPTEMBER 2, 2017.

BOARD FOR PROFESSIONAL ENGINEERS NO. 200457 RAYMOND CHARLES RASE STATE OF MARYLAND

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GRIMM AND PARKER

GP# 21620

TITLE SHEET
GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

DATE	DESCRIPTION

C0.0

02.01.2017
BID SET

LIST OF SYMBOLS & ABBREVIATIONS

GENERAL

EXISTING SYMBOL	ITEM DESCRIPTION	PROPOSED SYMBOL
	EXISTING FEATURE	
	PROPOSED FEATURE	
	RIGHT OF WAY LINE OR PROPERTY LINE	
	GUARD RAIL	
	FENCE LINE	
	RAILROAD	
	BASE OR SURVEY LINE	
	UTILITY POLE	
	STREET SIGNS	
	HEDGE AREA	
	BUSHES/TREES	
	INTERMEDIATE CONTOUR	
	INDEX CONTOUR	
	PROPOSED CONTOUR	
	BORE HOLE	
STA. 21+25/RT.5'	STATIONING/OFFSET	STA. 21+25/RT.5'
	LIMIT OF DISTURBANCE	
	DETAIL #/SHEET #	2/C0.1
	SQUARE STEEL BOLLARD	
	PIPE BOLLARD	
	TRAVERSE POINT MARK	
	REVISION MARK AND NUMBER	3
	CONCRETE MONUMENT	
	RIP RAP	
	SWALE AND FLOW DIRECTION	FLOW LINE
	TREE LINE	
	WETLAND	
	BUILDING SETBACK LINE	
	25% SLOPE OR GREATER	
	100 YEAR FLOOD BOUNDARY	
	SOILS BOUNDARY	
GnE	SOILS TYPE	
	BUILDINGS/STRUCTURES	
	ZONING LIMIT LINE	
	OBJECT CENTERLINE	
	SAWCUT LINE	
	GAS VALVE	GV
	GAS METER	GM
	SECTION DETAIL	
	ELEVATION VIEW	
	DETAILED AREA	DETAIL AREA
	BENCHMARK	DESCRIPTION
	STREET LIGHT (LAMP)	
	STREET LIGHT (POLE)	
AC	AIR CONDITIONER	AC
T	TRANSFORMER	T
EXISTING TEXT	MISC. TEXT	PROPOSED TEXT

MISC UTILITY SPECIFIC

EXISTING SYMBOL	ITEM DESCRIPTION	PROPOSED SYMBOL
O/E	OVERHEAD ELECTRIC	O/E
U/E	UNDERGROUND ELECTRIC	U/E
G	UNDERGROUND GAS	G
O/C	OVERHEAD CABLE	O/C
U/C	UNDERGROUND CABLE	U/C
O/T	OVERHEAD TELEPHONE	O/T
U/T	UNDERGROUND TELEPHONE	U/T
O/F	OVERHEAD FIBER OPTIC	O/F
U/F	UNDERGROUND FIBER OPTIC	U/F
O/U	MISC. OVERHEAD UTILITY	O/U

WATERLINE SPECIFIC

EXISTING SYMBOL	ITEM DESCRIPTION	PROPOSED SYMBOL
W	WATER LINE	W
	FIRE HYDRANT	
	GATE VALVE & VALVE BOX	WV
	WATER METER	WM
	HORIZONTAL BEND W/THRUST BLOCK ANCHORAGE	

STORM & SANITARY SPECIFIC

EXISTING SYMBOL	ITEM DESCRIPTION	PROPOSED SYMBOL
SS	SANITARY SEWER	
ST	STORM SEWER	
XI-1	INLET IDENTIFICATION	I-1
XM-1	MANHOLE IDENTIFICATION (STORM)	M-1
	MANHOLE IDENTIFICATION (SANITARY)	S-1
	STANDARD END SECTION	
	MANHOLE	
	GRATED INLET	
	COG INLET	

ABBR.	DESCRIPTION
AB	Anchor Bolt
AC	Acres
ACSM	American Congress on Surveying & Mapping
ACT	Acoustical Ceiling Tile
AD	Access Door
ADA	Americans with Disabilities Act
ADD	Addendum
ADJ	Adjacent
AFF	Above Finish Floor
AL	Aluminum
ALT	Alternate
ALTA	Americal Land Title Association
ANSI	American National Standards Institute
AP	Allegheny Power
APPROX	Approximate
ARCH	Architect
ASTM	American Society for Testing and Materials
BC	Bottom of Curb
BD	Board
BIT	Bituminous
BL	Baseline
BLDG	Building
BLKG	Blocking
BRG	Bearing
BW	Bottom of Wall
C/C	Center to Center
CF/CI	Contractor Furnished/Contractor Installed
C/P	Center Point
CFS	Cubic Feet Per Second
CF	Cubic Feet
CG	Corner Guard
CIP	Cast In Place
CIP	Cast Iron Pipe
CJ	Construction Joint
CTJ	Contraction Joint
CL	Centerline
CLG	Ceiling
CLR	Clear
CMP	Corrugated Metal Pipe
CMU	Concrete Masonry Unit
CO	Clean Out
COL	Column
COMB	Combination
CONC	Concrete
CONT	Continuous
CPT	Carpet
CR	Ceramic Tile
CS	Curb Stop
CY	Cubic Yard
DBL	Double
DI	Drop Inlet
DIA	Diameter
DIFF	Diffuser
DIP	Ductile Iron Pipe
DISP	Dispenser
DN	Down
DS	Down Spout
DWG	Drawing
EA	Each
EF	Exhaust Fan
EIFS	Exterior Insulation and Finish System
EJ	Expansion Joint
ELEC	Electrical or Electric
ELEV	Elevation
EPNL	Electrical Panel
EQ	Equal
EW	Each Way
EWC	Electric Water Cooler
EX	Existing
EXP	Expansion
EXT	Exterior
FA	Fire Alarm
FC	Face of Curb
FC	Finish Ceiling
F'c	Concrete Compression Strength
FEC	Fire Extinguisher Cabinet
FF	Finish Floor
FH	Fire Hydrant
FIN	Finish
FTG	Footing
Fy	Allowable yield stress
GA	Gauge
GALV	Galvanized
GB	Grab bar
GV	Gate Valve
GM	Gas Meter
GWB	Gypsum Wallboard
HGT	Height
HB	Horizontal Bend
H.B.	Hose Bib
HC	Hollow Core
HDPE	High Density Polyethylene Pipe
HDW	Hardware
HM	Hollow Metal
HMA	Hot Mix Asphalt
HORIZ	Horizontal
HP	High Point
HTR	Heater
HVAC	Heating, Ventilation, Air Conditioning
HW	Hot Water
IB	Iron Bar
ID	Inside Diameter
IFF	If and Only If
ILL	Illuminator
INV	Invert
JAN	Janitor
JT	Joint
ksi	Kips per sq in
L	Length
LAT	Lateral
LF	Linear Feet
LNDSCP	Landscape
LOD	Limit of Disturbance
LP	Low Point
LTL	Lintel
LVR	Louver
MAX	Maximum
MC	Medicine Cabinet
MDSHA	Maryland State Highway Administration
MECH	Mechanical
MEP	Mechanical Electrical Plumbing
MFR	Manufacturer
MH	Manhole
MIN	Minimum
MISC	Miscellaneous
MJ	Mechanical Joint
MO	Masonry Opening
MOD	Modified
MTD	Mounted
N/A	Not Applicable
N/E	Northing/Easting
NIC	Not in Contract
NTS	Not To Scale
OA	Overall
OC	On Center
OD	Outside Diameter
OF/OI	Owner Furnished/Owner Installed
OPH	Opposite Hand
OPP	Opposite

ABBR.	DESCRIPTION
PC	Precast Concrete
PC	Point of Curvature
PERF	Perforated
PG	Performance Grade
PG/E	Profile Grade Elevation
PI	Point of Intersection
PL	Property Line
PLT	Plate
PNL	Panel
PNT	Point
P/O	Portion or Part of
PP	Polypropylene
PR	Proposed
PRC	Point of Reverse Curve
PREF	Prefinished
PT	Point of Tangency
PTD	Paper Towel Dispenser
PVC	Polyvinyl Chloride
PVI	Point of Vertical Intersection
PWD	Plywood
QT	Quarry Tile
QTY	Quantity
R	Radius
R.O.W.	Right Of Way
RA	Return Air
RCP	Reflected Ceiling Plan
RCP	Reinforced Concrete Pipe
RAD	Radius
RD	Roof Drain
REC	Recessed
REF	Refrigerator
REG	Register
REINF	Reinforced/Reinforcing
REQ'D	Required
RES	Resilient
REV	Revision
RM	Room
RND	Round
RO	Roof Opening or Rough Opening
SA	Supply Air
SB	Splash Block
SCE	Stabilized Construction Entrance
SCH	Schedule (thickness)
SDR	Standard Dimension Ratio
SECT	Section
SEW	Sewer
SHR	Shower
SHT	Sheet
SIM	Similar
SLP	Slope
SND	Sanitary Napkin Disposal
SPEC	Special
SPKR	Speaker
SQ	Square
SQ FT	Square Feet
SS	Service Sink
SST	Stainless Steel
STA	Station
STD	Standard
STL	Steel
SUSP	Suspended
SV	Sheet Vinyl
S/W	Sidewalk
SY	Square Yard
SYM	Symmetrical
TB	Towel Bar
TC	Top of Curb
TCP	Tera-Cotta or Vitrified Clay Pipe
TEL	Telephone
TG	Top Grate
THK	Thickness
TM_P_	Tax Map/Parcel
TOS	Top of Steel
TR	Top of Rim
TS	Top of Step
TTD	Toilet Tissue Dispenser
TW	Top of Wall
TYP	Typical
VB	Vertical Bend
VB	Valve Box
VB	Vinyl Base
VCW	Vinyl Wall Covering
VERT	Vertical
VIF	Verify in Field
W	Width
W/	With
WM	Water Meter
W/O	With Out
WC	Water Closet
WD	Wood
WSCT	Wainscot
WV	Water Valve
WWF	Woven Wire Fabric
YD	Yard

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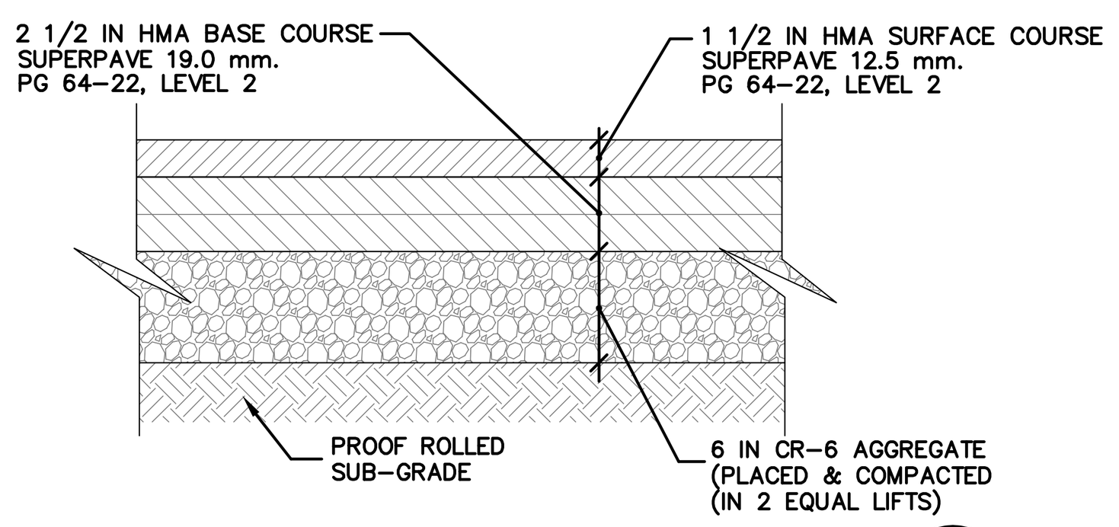
LIST OF SYMBOLS AND ABBREVIATIONS

GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

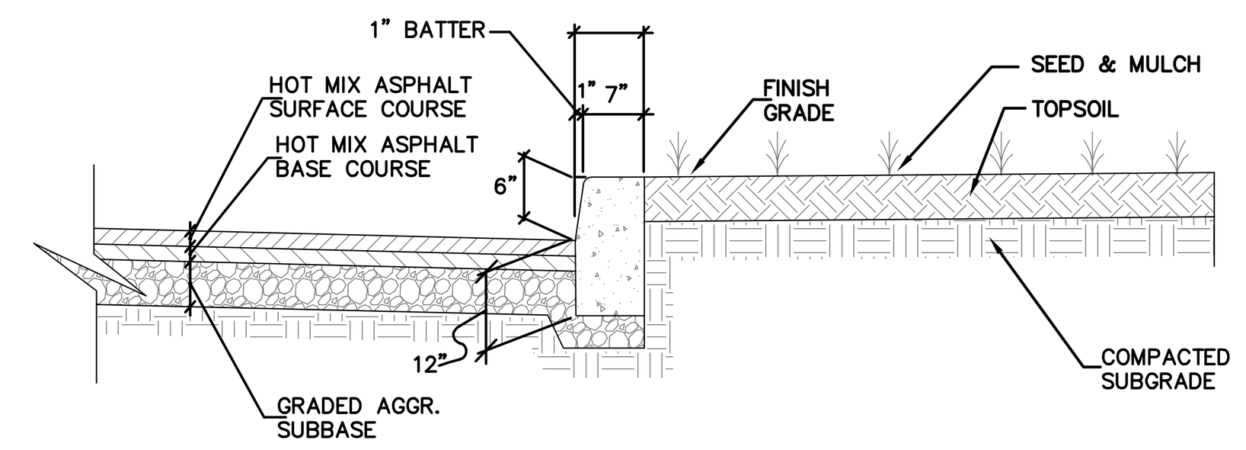
DATE	DESCRIPTION

C0.1

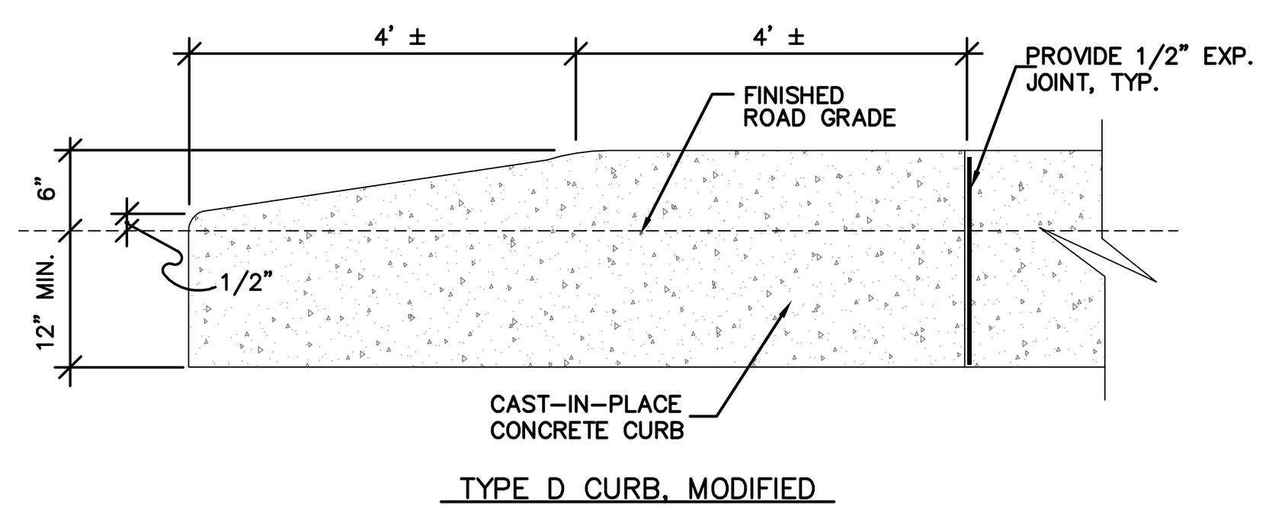
02.01.2017
BID SET



LOW VOLUME PAVEMENT SECTION DETAIL 8
NOT TO SCALE

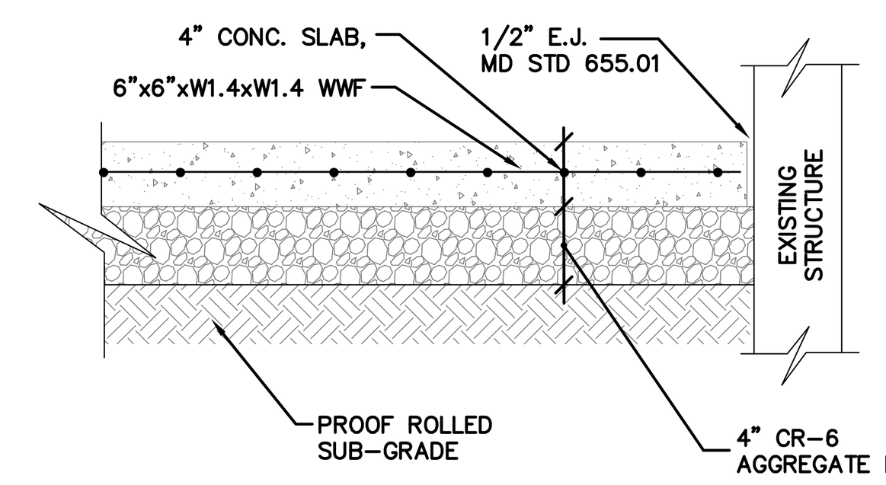


MODIFIED TYPE "D" CURB / GRASS DETAIL 6
NOT TO SCALE
NOTE: NON STANDARD CURB WIDTH

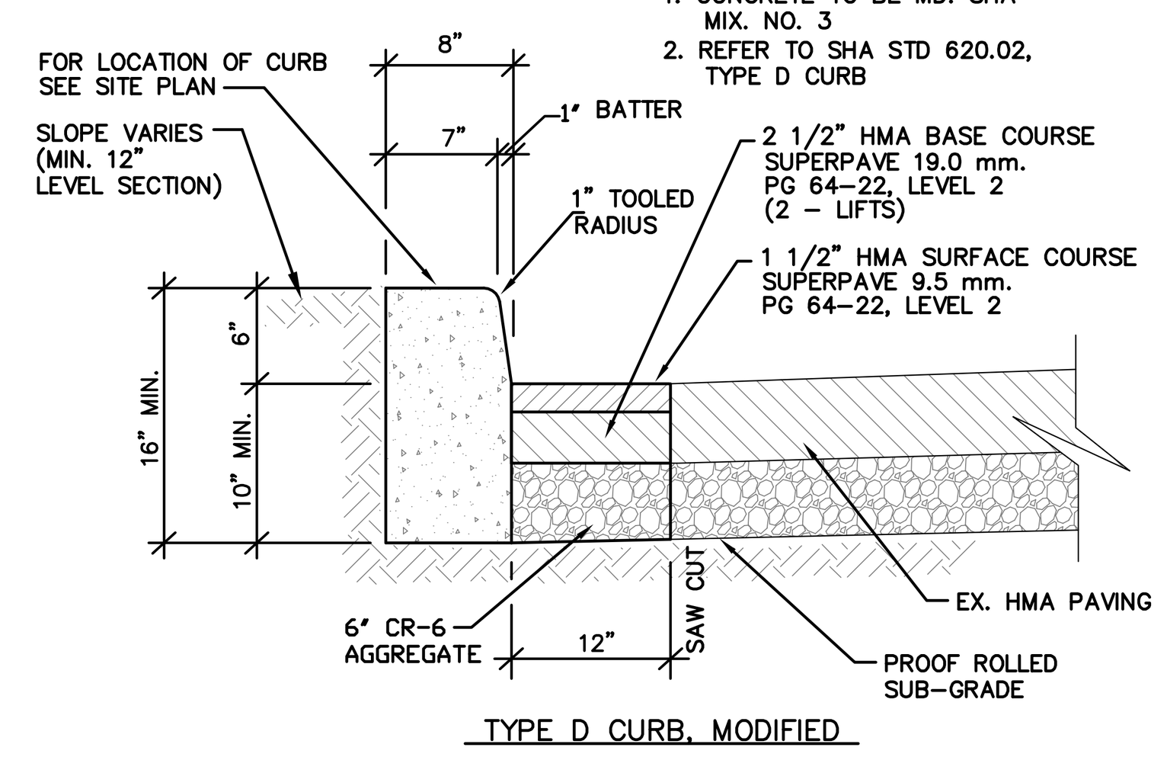


NOSE-DOWN CAST-IN-PLACE CONCRETE CURB DETAIL, TYP. 9
NOT TO SCALE

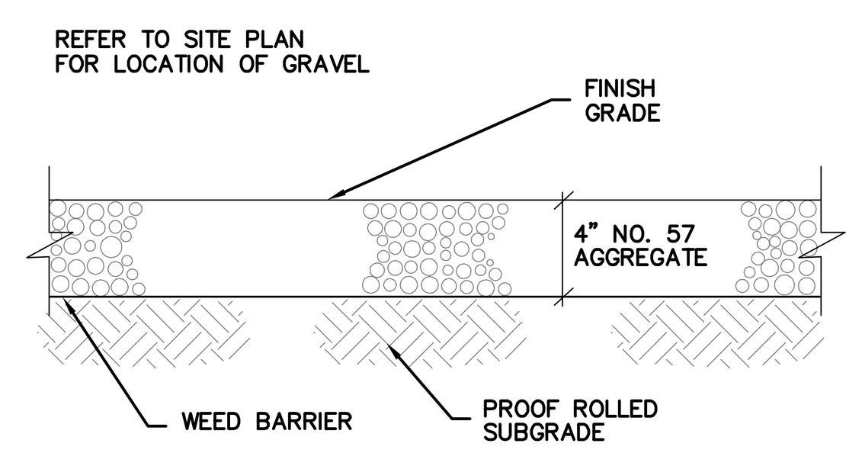
NOTES:
1. PLACE A CONSTRUCTION JOINT EVERY 5' BY SCORING A 3/8" JT. INTO CONC.
2. SURFACE TO BE BRUSHED WITH STIFF BROOM TO ASSURE NON SLIP SURFACE.
3. PROVIDE 1/2" E.J. EVERY 15' BETWEEN SLAB SECTIONS AND ADJACENT TO ALL CONCRETE CURBS, AND BUILDINGS, MD STD 655.01.
4. CONCRETE TO BE MD STD. MIX #3. MIN. 5% TO 8% AIR ENTRAINED.
5. SIDEWALKS SHALL HAVE A CROSS SLOPE OF 1/4" PER FOOT FROM REAR EDGE TO CURB UNLESS SHOWN OTHERWISE.
6. SEAL ALL JOINTS NEXT TO BUILDINGS AND
7. REFER TO PLANS FOR SCORING



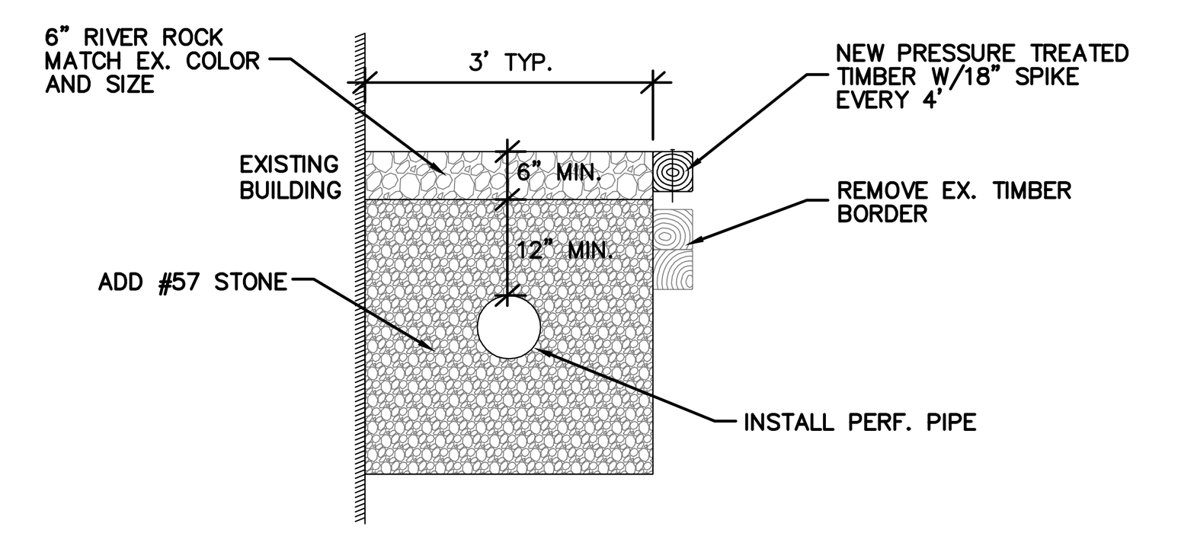
REINFORCED CONCRETE SIDEWALK DETAIL 7
NOT TO SCALE



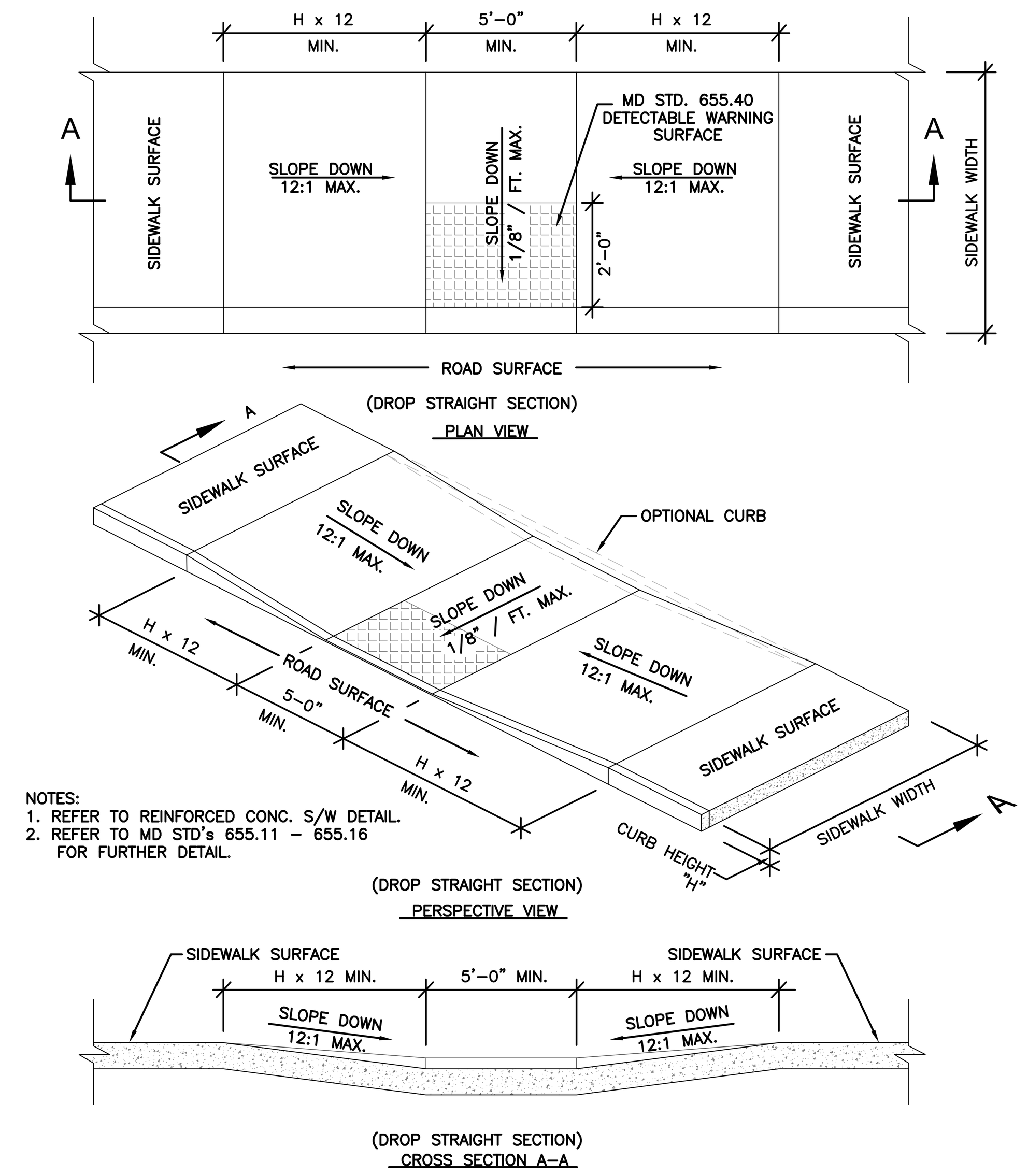
6" CAST-IN-PLACE CURB DETAIL 10
NOT TO SCALE



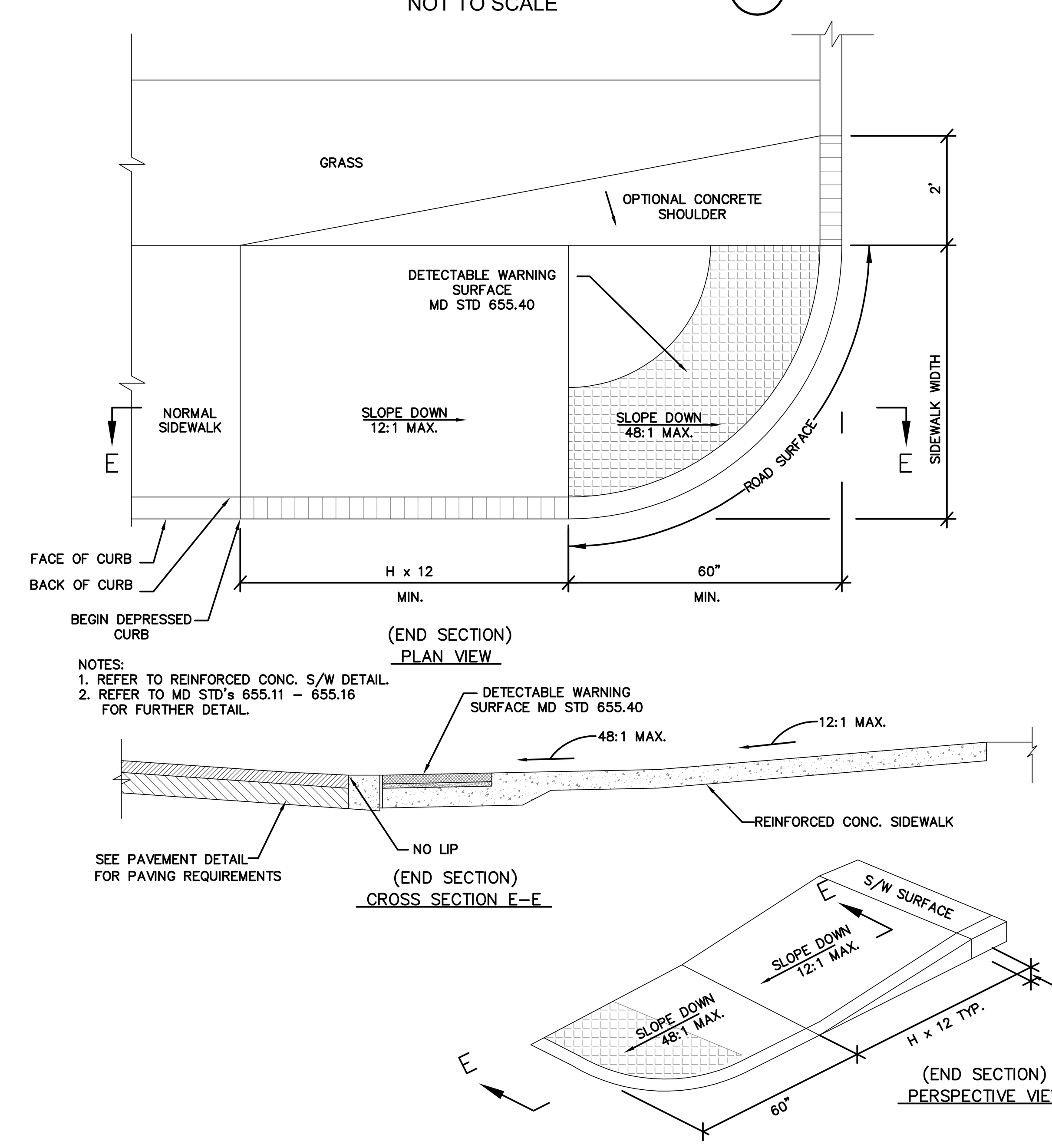
MAINTENANCE AREA GRAVEL SECTION 12
NOT TO SCALE



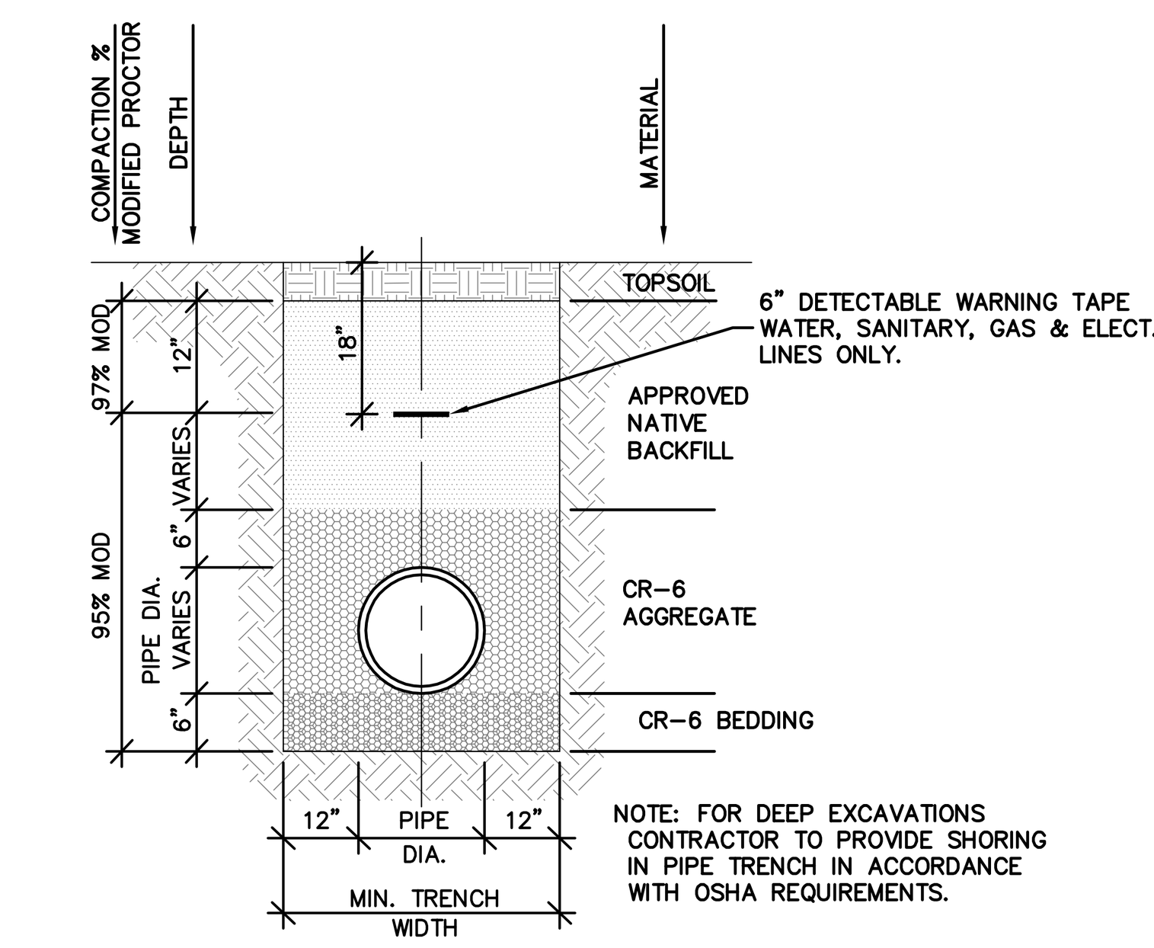
EXISTING GRAVEL REPLACEMENT @ BUILDING 11
NOT TO SCALE



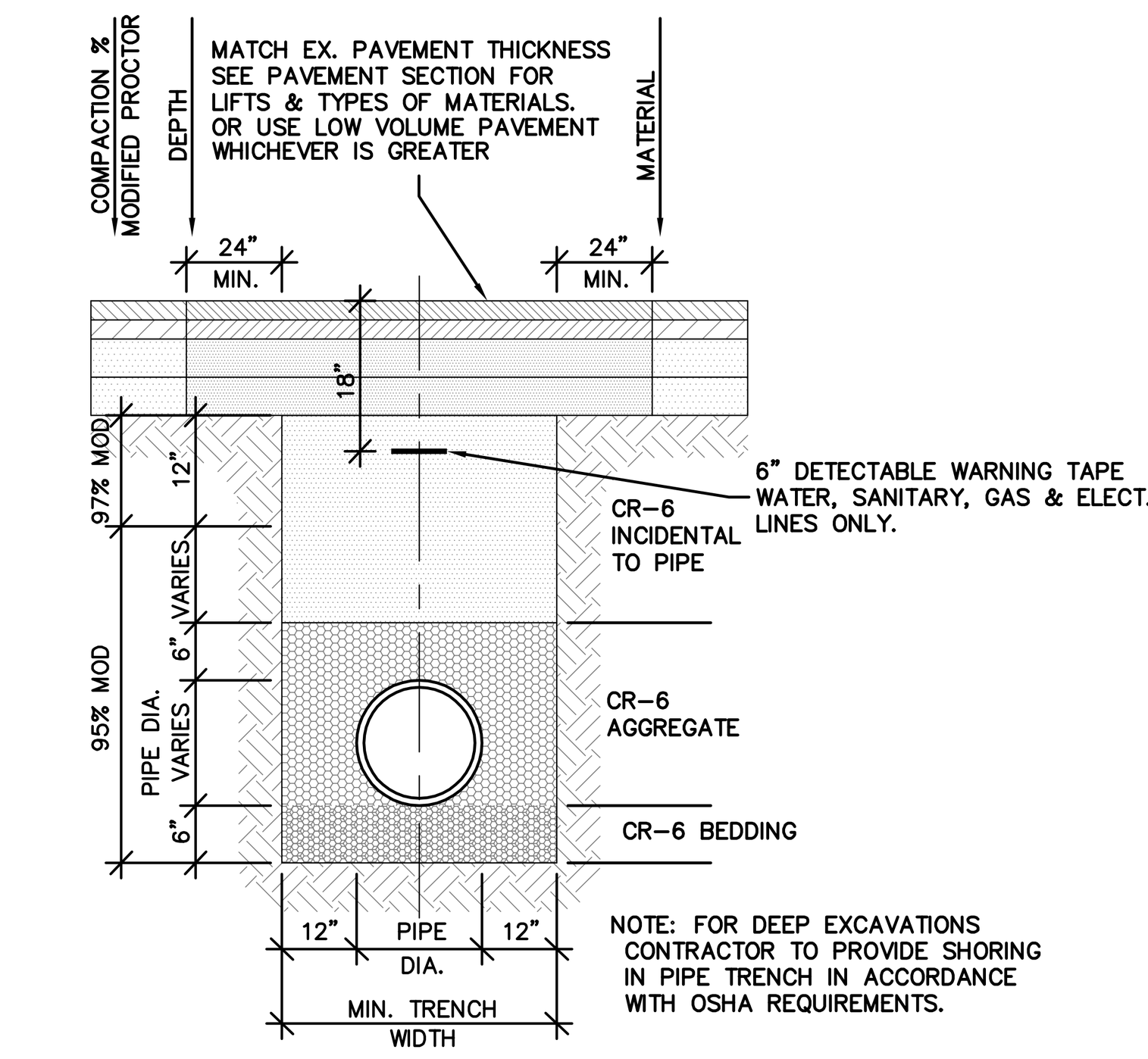
SIDEWALK RAMP, STRAIGHT SECTION 4
NOT TO SCALE



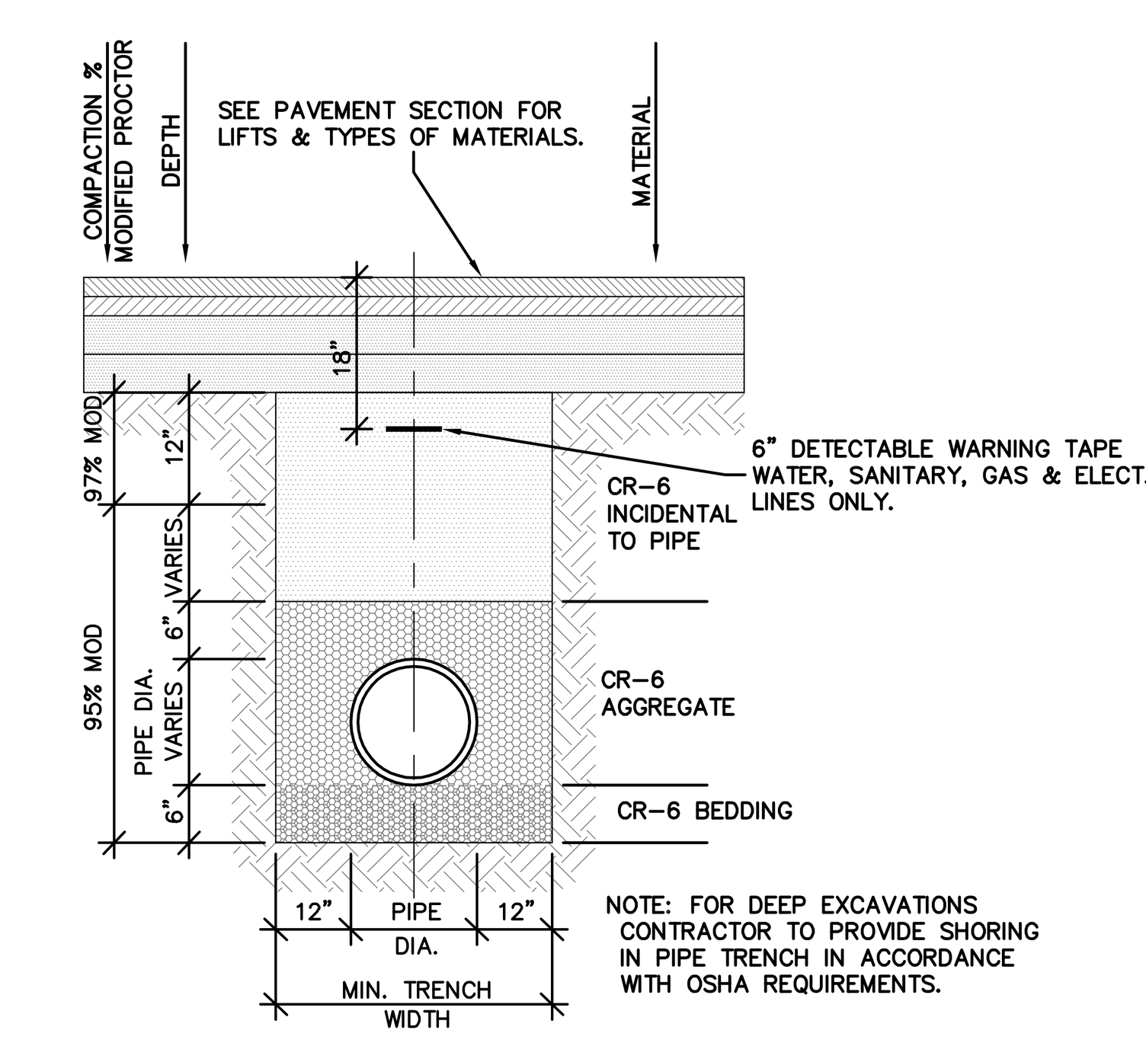
SIDEWALK RAMP, END SECTION 5
NOT TO SCALE



UTILITY TRENCH DETAIL: NON-PAVED AREAS 1
NOT TO SCALE



UTILITY TRENCH DETAIL: EXISTING PAVED AREAS 2
NOT TO SCALE



UTILITY TRENCH DETAIL: NEW PAVED AREAS 3
NOT TO SCALE

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301.777.2510 FAX: 301.777.8419

SPECS PROJECT NO. 4671

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BOARD FOR PROFESSIONAL ENGINEERS NO. 200457 RAYMOND CHARLES RASE STATE OF MARYLAND

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GRIMM AND PARKER

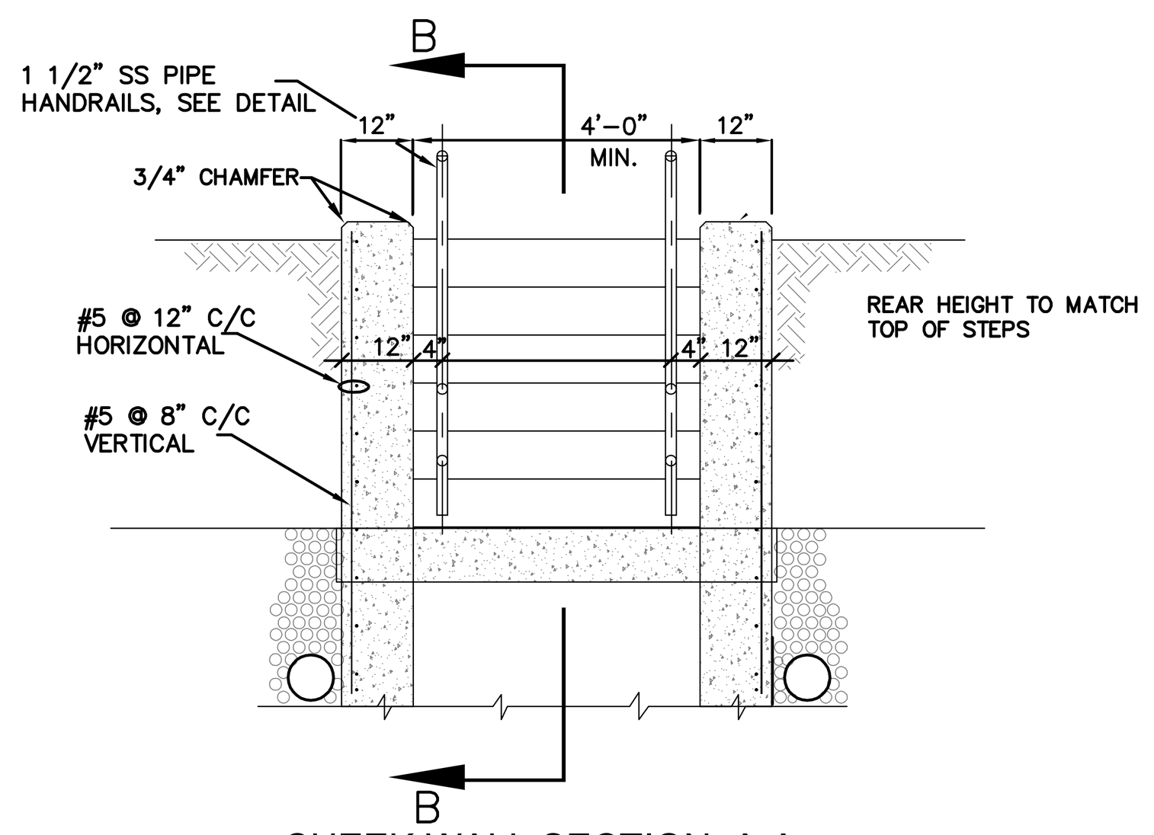
GP# 21620

MISCELLANEOUS CONSTRUCTION DETAILS
GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

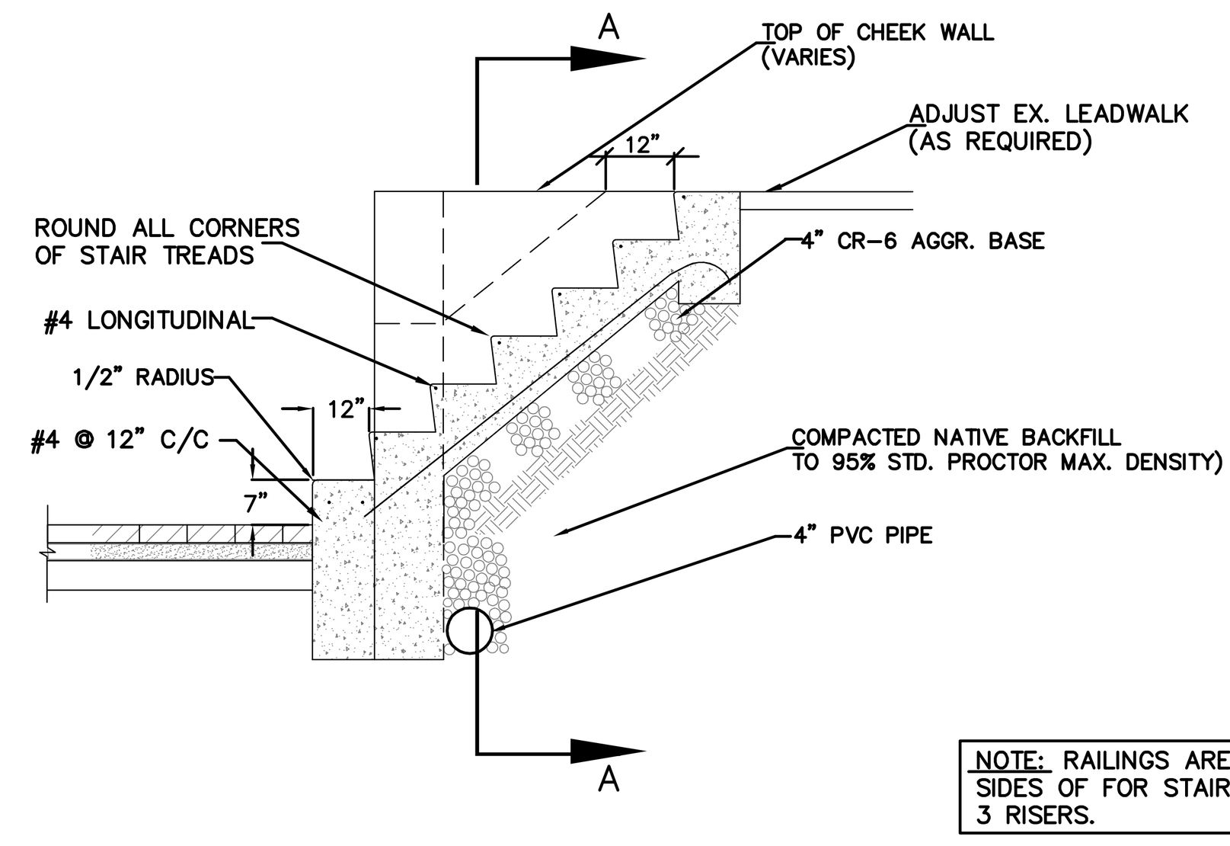
DATE	DESCRIPTION

C0.2

02.01.2017
BID SET

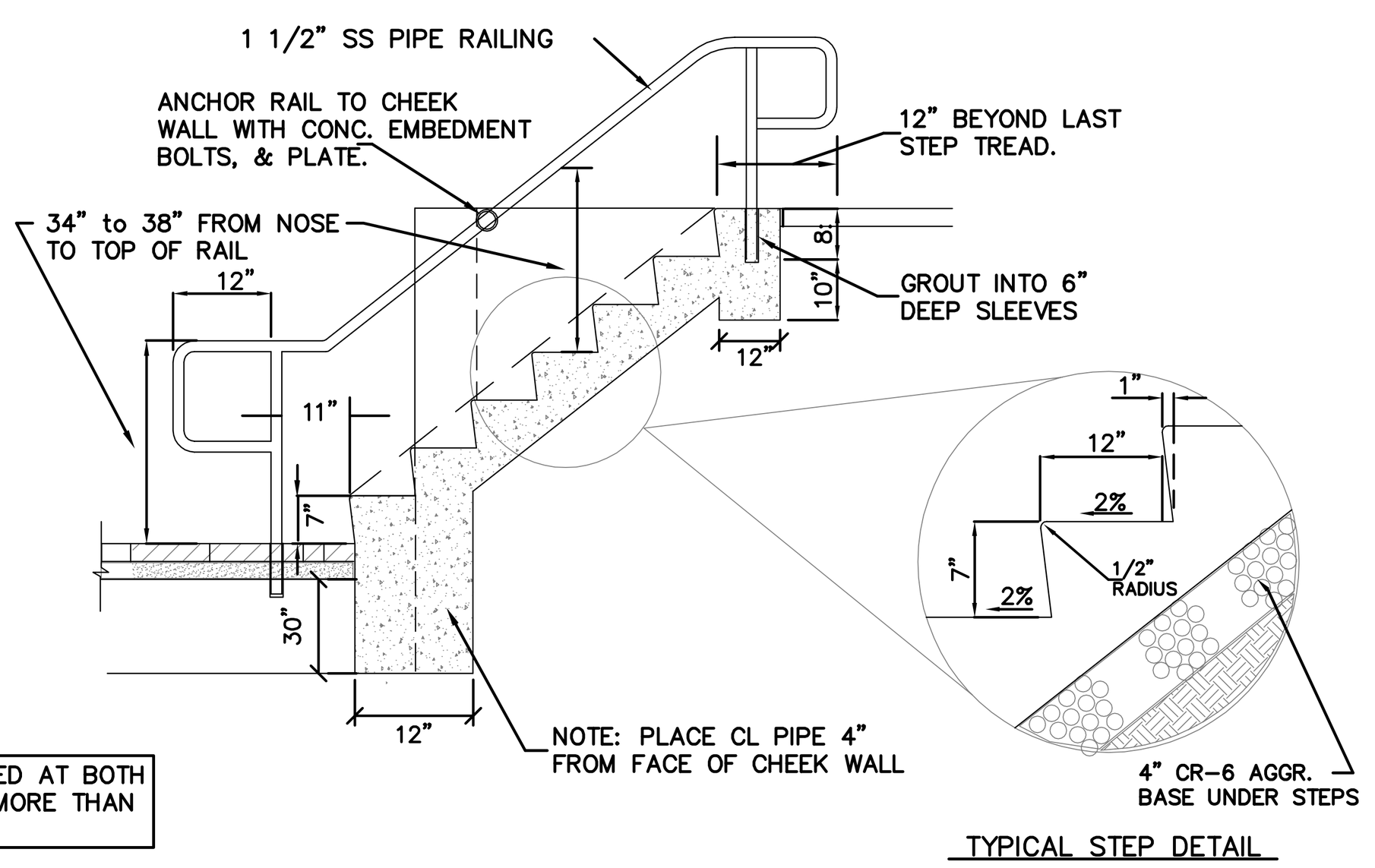


CHEEK WALL SECTION: A-A



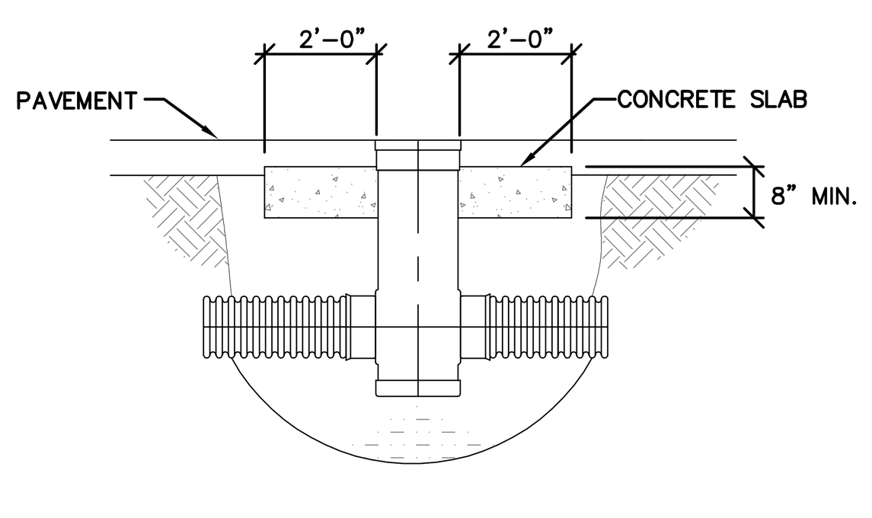
NOTE: RAILINGS ARE REQUIRED AT BOTH SIDES OF FOR STAIRS WITH MORE THAN 3 RISERS.

TYP. SECTION THRU STAIRS (B-B)

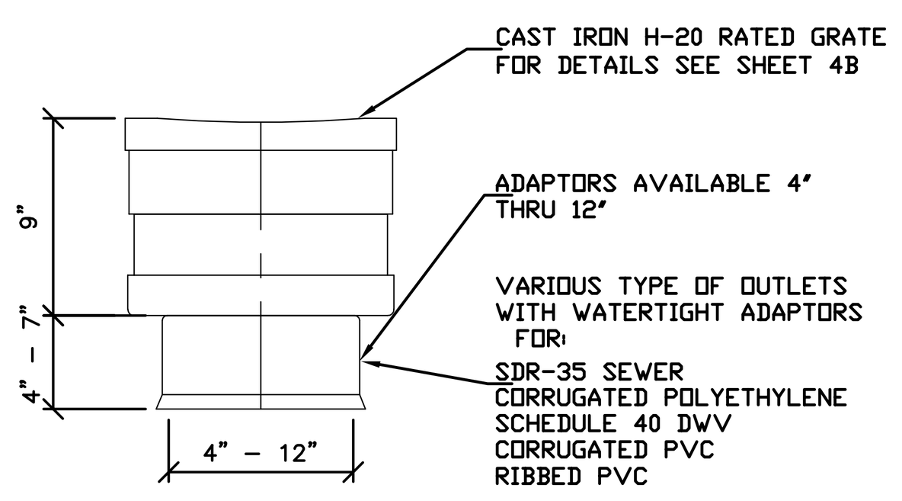


TYPICAL HANDRAIL DETAIL

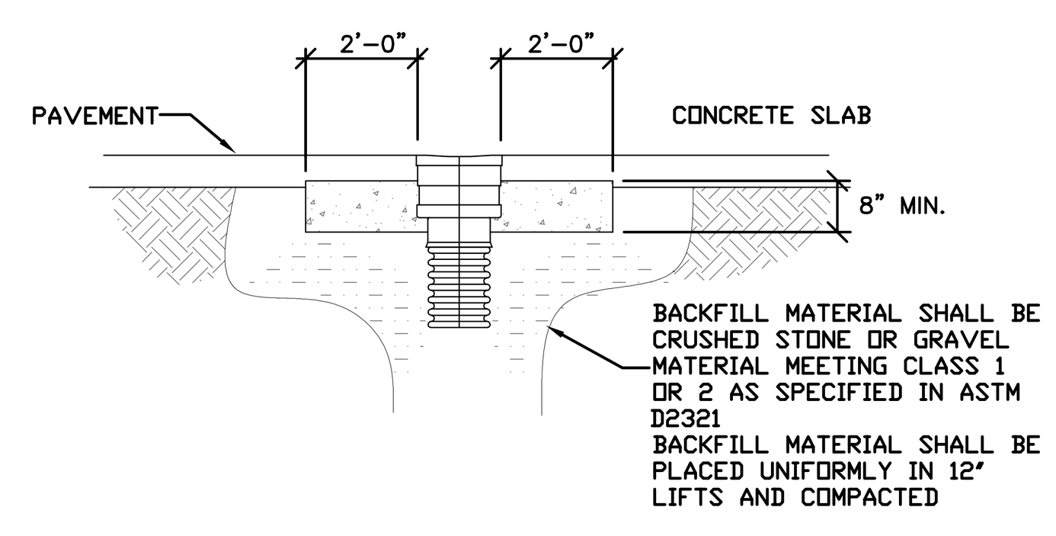
(FOR MORE THAN 3 STEPS)
CONCRETE STEP/WALL DETAILS (2)
NOT TO SCALE



DRAIN BASIN
NOT TO SCALE



INLINE DRAIN
NOT TO SCALE



INLINE DRAIN
NOT TO SCALE

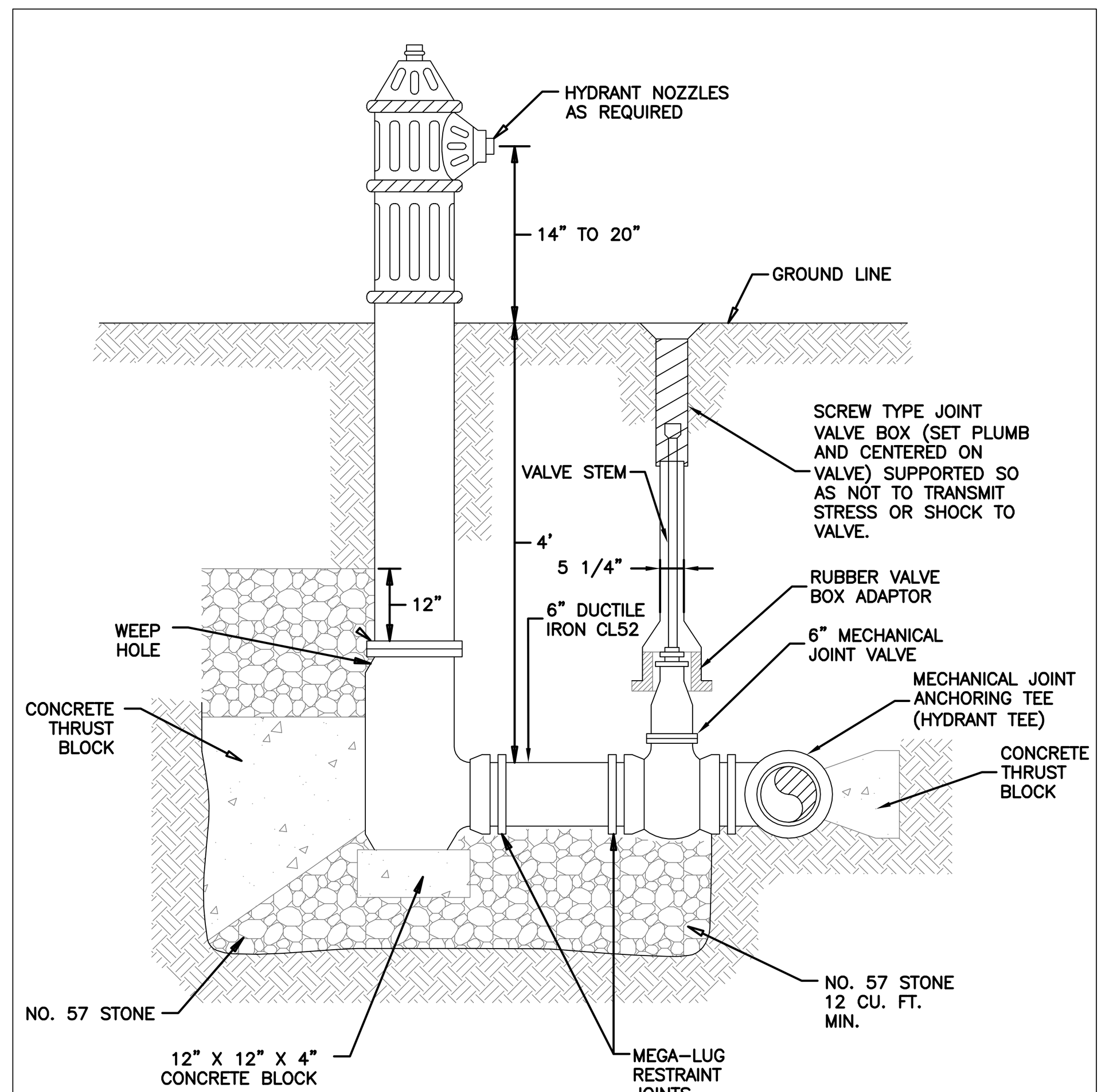
ADS. INLINE DRAIN DETAILS (3)
NOT TO SCALE

EXISTING INLET / MANHOLE REPORT

INLET NO.	T.G. ELEV.	INVERT IN	INVERT OUT	INVERT INLET	REMARKS
XI–1	2597.53	2594.08 (12")	2593.82 (15")	0.00	STORM – BRICK – FAIR CONDITION
XI–2	2597.07	2592.22 (24")	2591.67 (24")	0.00	STORM – CONCRETE – GOOD CONDITION
		2591.82 (15")			
XI–5	2600.55	0.00	2597.09 (24")	0.00	STORM – CONCRETE – GOOD CONDITION

PROPOSED STORM INLET / MANHOLE REPORT

INLET NO.	MD STD NO.	TYPE	T.G. ELEV.	INVERT IN (FROM)		INVERT OUT (TO)		INVERT INLET	REMARKS
I–1	–	24" SQUARE	2598.00	0.00	–	2595.00	(I–2)	0.00	NYLOPLAST DRAIN BASIN
I–2	–	24" SQUARE	2597.70	2594.8	(I–1)	2594.7	(I–3)	0.00	NYLOPLAST DRAIN BASIN
I–3	384.05M	72"ø PC MH	2598.96	2594.0	(I–6)	2591.50	(I–4)	0.00	
				2593.23	(I–2)				
I–4	–	–	0.00	0.00	–	0.00	–	0.00	SEE SHEET C5.0 & C5.1
I–5	–	12" SQUARE	2602.1	0.00	–	2599.0	(I–6)	0.00	NYLOPLAST INLINE DRAIN
I–6	–	12" SQUARE	2602.4	2598.50	(I–5)	2598.40	(I–3)	0.00	NYLOPLAST INLINE DRAIN



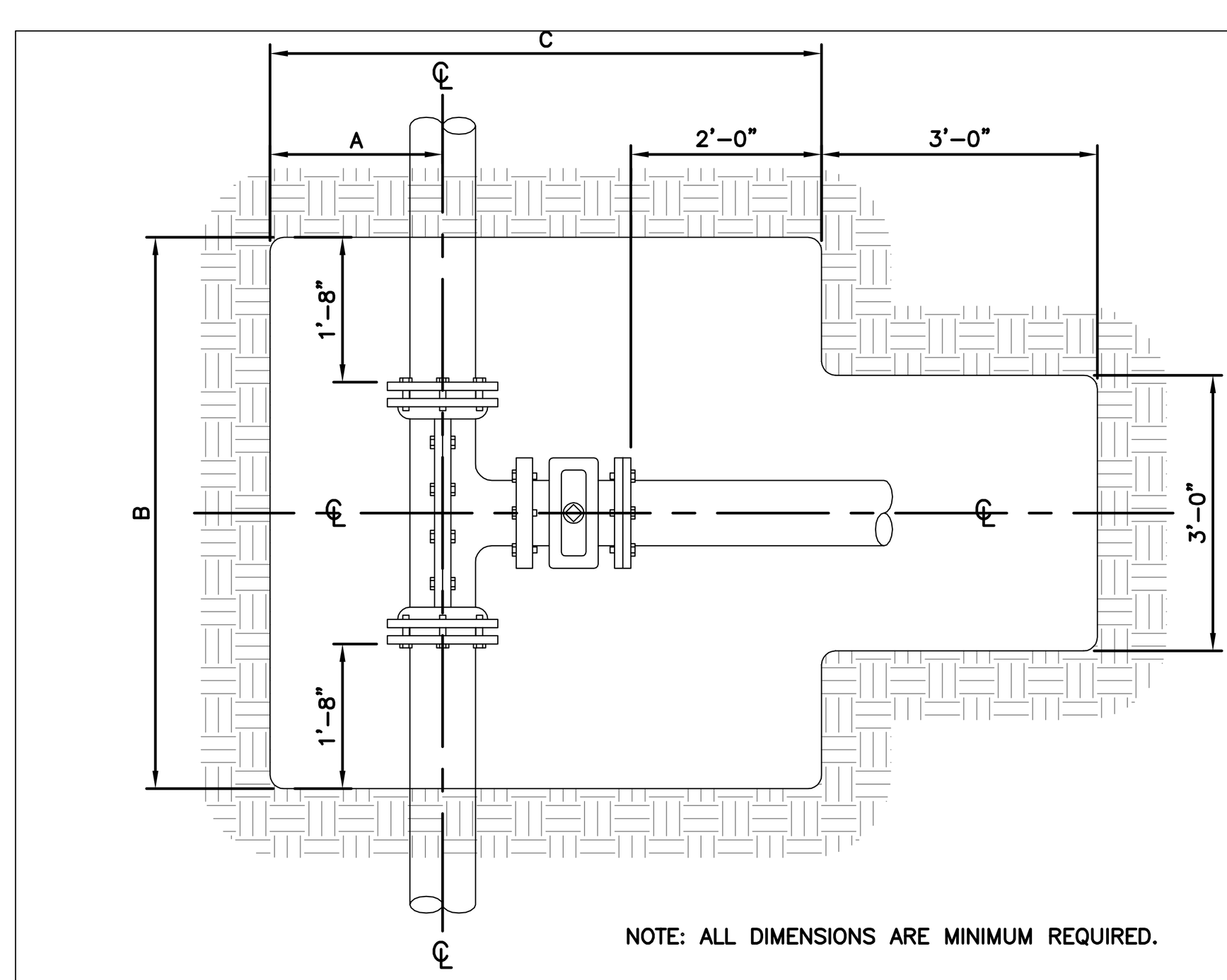
NOTE:

1. HYDRANT SHALL BE AMERICAN FLOW CONTROL/AMERICAN DARLING MODEL B-84-B. HYDRANTS ARE TO MEET AWWA C502 WITH A MINIMUM WORKING PRESSURE OF 200 PSI AND MAIN VALVE OPENING OF 5-1/4 INCHES.
2. USE MEGA-LUG TO RESTRAIN JOINTS.

Department of Public Utilities
Garrett County Sanitary District, Inc.
2008 Maryland Highway, Suite #2, Mtn. Lake Park, Maryland 21550
Tel.: 301-334-6983 • Fax.: 301-334-6984
E-mail: publicutilities@garrettcounty.org

FIRE HYDRANT DETAIL

Standard Detail No. W-04
NOT TO SCALE
JULY 2009



NOTE: ALL DIMENSIONS ARE MINIMUM REQUIRED.

EXCAVATION DIMENSION

MAIN	TAP	A	B	C
4'	4'	1'-3'	4'-9'	4'-10'
6'	4'	1'-4'	4'-9'	4'-11'
6'	6'	1'-4'	4'-10'	5'-4'
8'	4'	1'-5'	4'-11'	5'-2'
8'	6'	1'-5'	4'-11'	5'-2'
8'	8'	1'-5'	5'-1'	5'-2'
10'	4'	1'-6'	5'-3'	5'-5'
10'	6'	1'-6'	5'-3'	5'-8'
10'	8'	1'-6'	5'-3'	5'-9'
10'	10'	1'-6'	5'-3'	5'-10'

EXCAVATION DIMENSION

MAIN	TAP	A	B	C
12'	4'	1'-7'	4'-11'	3'-7'
12'	6'	1'-7'	4'-11'	3'-10'
12'	8'	1'-7'	5'-1'	3'-11'
12'	10'	1'-7'	5'-5'	6'-1'
12'	12'	1'-7'	5'-5'	6'-2'
16'	4'	1'-9'	4'-11'	6'-2'
16'	6'	1'-9'	4'-11'	6'-3'
16'	8'	1'-9'	5'-3'	6'-3'
16'	10'	1'-9'	5'-5'	6'-4'
16'	12'	1'-9'	5'-6'	6'-4'
16'	16'	1'-9'	5'-6'	6'-8'

EXCAVATION DIMENSION

MAIN	TAP	A	B	C
20'	4'	1'-11'	4'-11'	6'-3'
20'	6'	1'-11'	5'-2'	6'-6'
20'	8'	1'-11'	5'-4'	6'-7'
20'	10'	1'-11'	5'-8'	6'-8'
20'	12'	1'-11'	5'-8'	6'-8'
20'	16'	1'-11'	6'-0'	7'-1'
20'	20'	1'-11'	6'-0'	7'-6'
24'	4'	2'-1'	5'-2'	6'-0'
24'	6'	2'-1'	5'-2'	6'-10'
24'	8'	2'-1'	5'-4'	7'-0'
24'	10'	2'-1'	5'-8'	7'-0'
24'	12'	2'-1'	5'-8'	7'-1'
24'	16'	2'-1'	6'-0'	7'-5'
24'	20'	2'-1'	6'-0'	7'-9'

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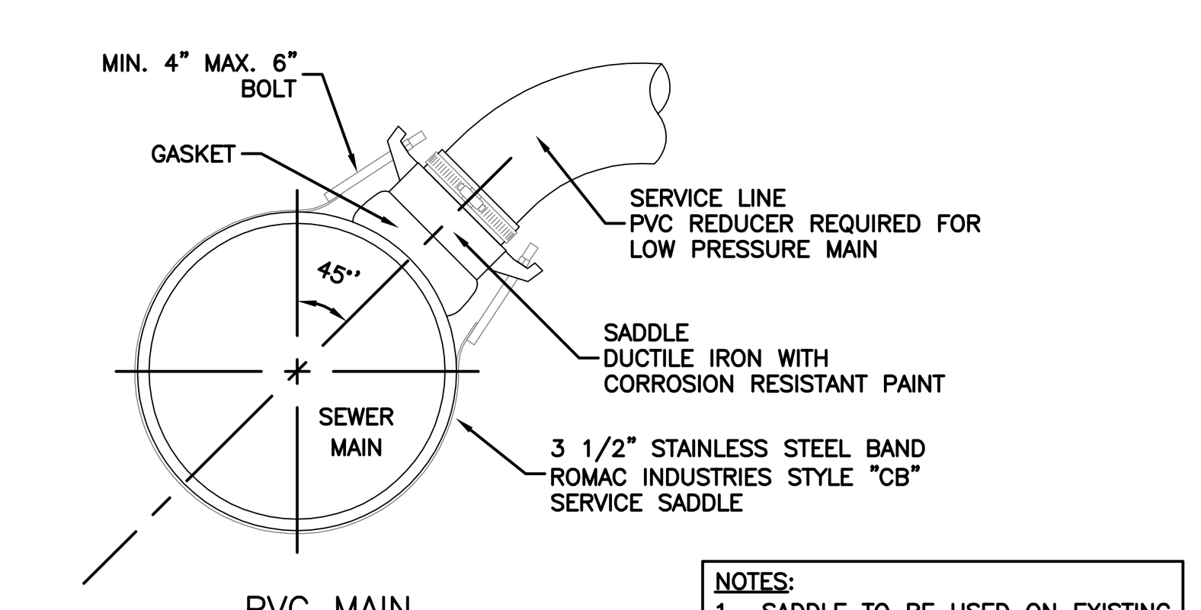
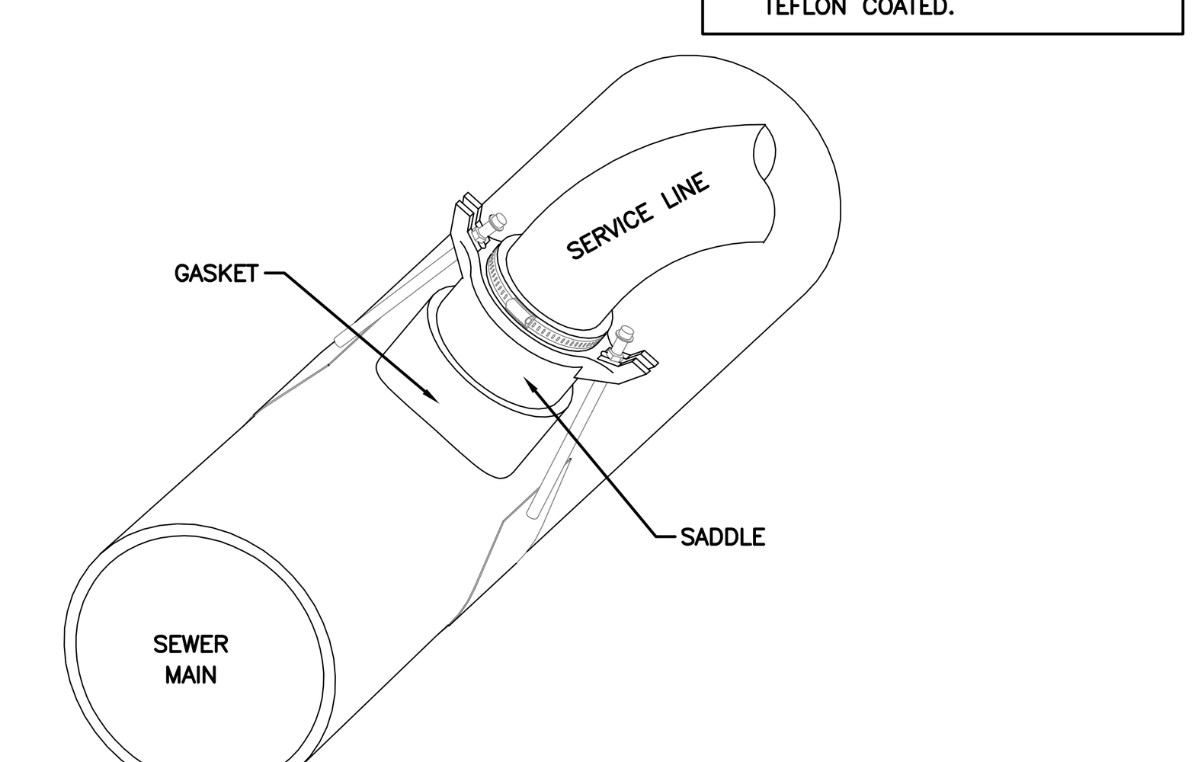
TAPPING VALVE

Standard Detail No. W-07
NOT TO SCALE
SEPTEMBER 2010



PVC MAIN

NOTES:
1. SADDLE TO BE USED ON EXISTING MAINS ONLY. NOT TO BE USED ON NEW CONSTRUCTION.
2. ALL BOLT, NUTS, & WASHERS TO BE 1/2" N.C. ROLL THREAD TEFLON COATED.



PERSPECTIVE VIEW

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SANITARY SEWER LATERAL SADDLE CONNECTION TO EXISTING SEWER MAIN

Standard Detail No. S-08
NOT TO SCALE
SEPTEMBER 2010

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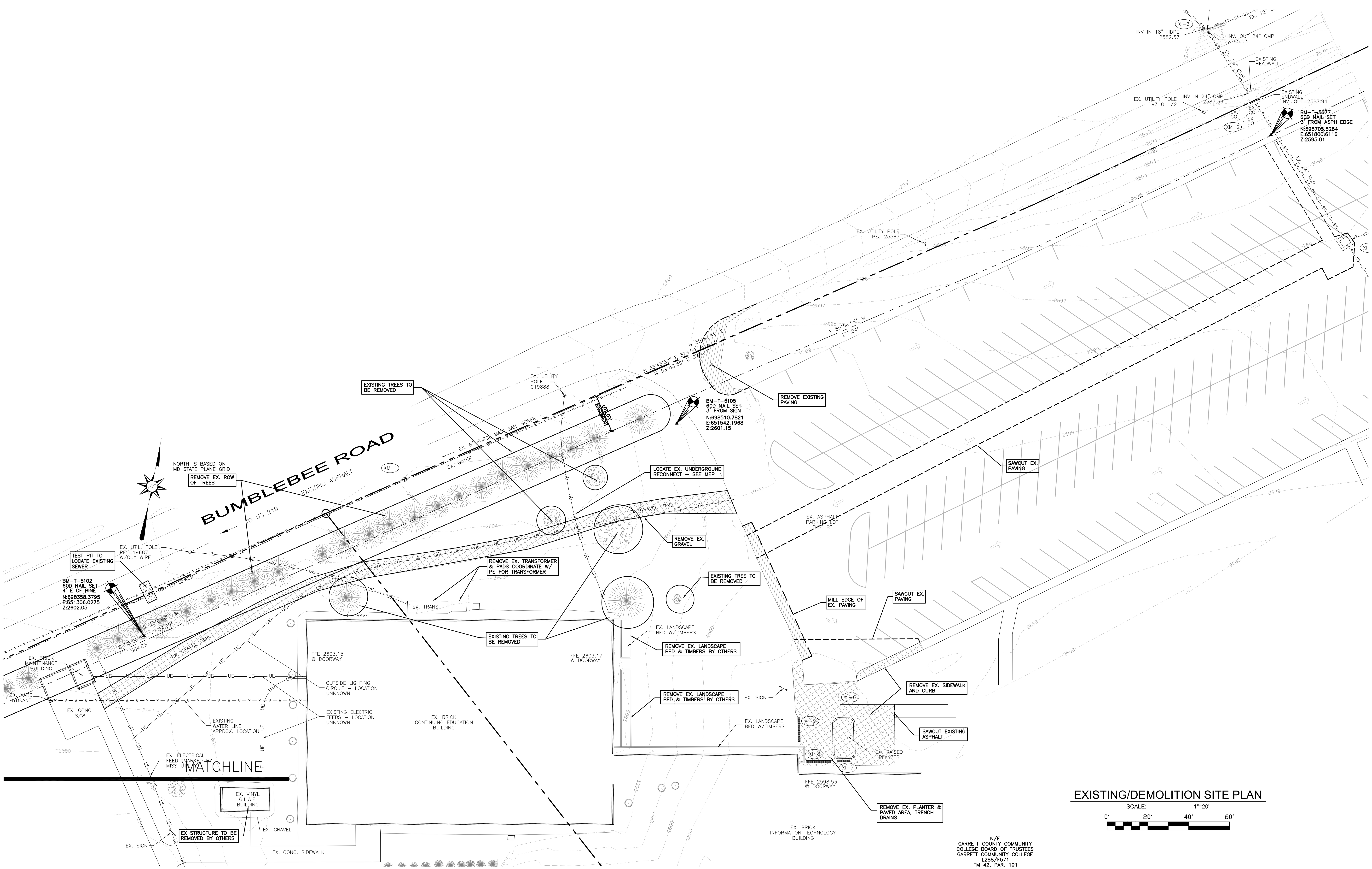
GP# 21620

MISCELLANEOUS CONSTRUCTION DETAILS
GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

DATE	DESCRIPTION

C0.3

02.01.2017
BID SET



EXISTING/DEMOLITION SITE PLAN

SCALE: 1"=20'

0' 20' 40' 60'

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EXISTING/DEMOLITION SITE PLAN

GARRETT COLLEGE STEM RENOVATION AND ADDITION

McHENRY, MD

DATE	DESCRIPTION

C1.0

02.01.2017
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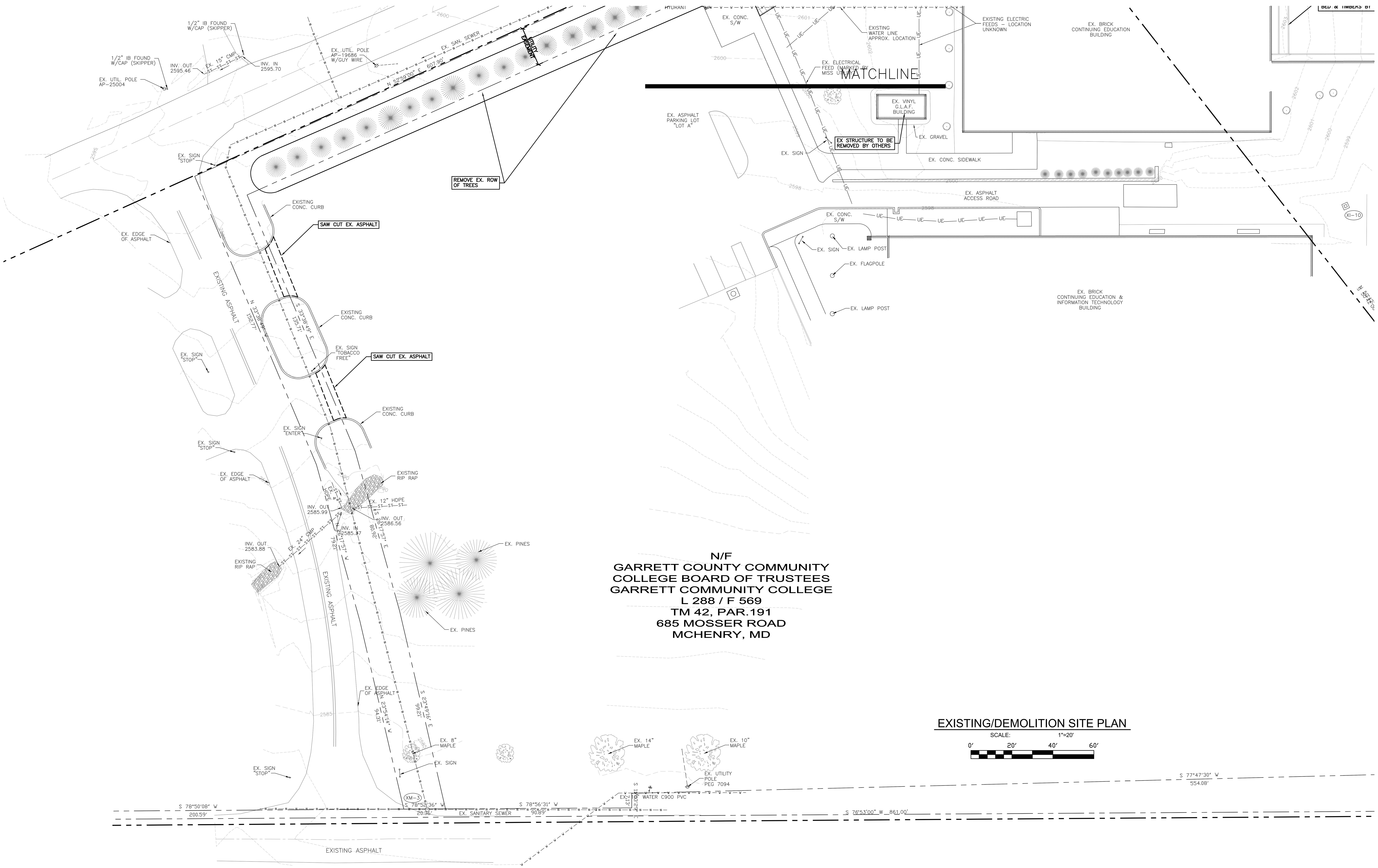

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0' 20' 40' 60'

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EXISTING/DEMOLITION SITE PLAN

GARRETT COLLEGE STEM RENOVATION AND ADDITION

McHENRY, MD

DATE	DESCRIPTION

C1.1

02.01.2017
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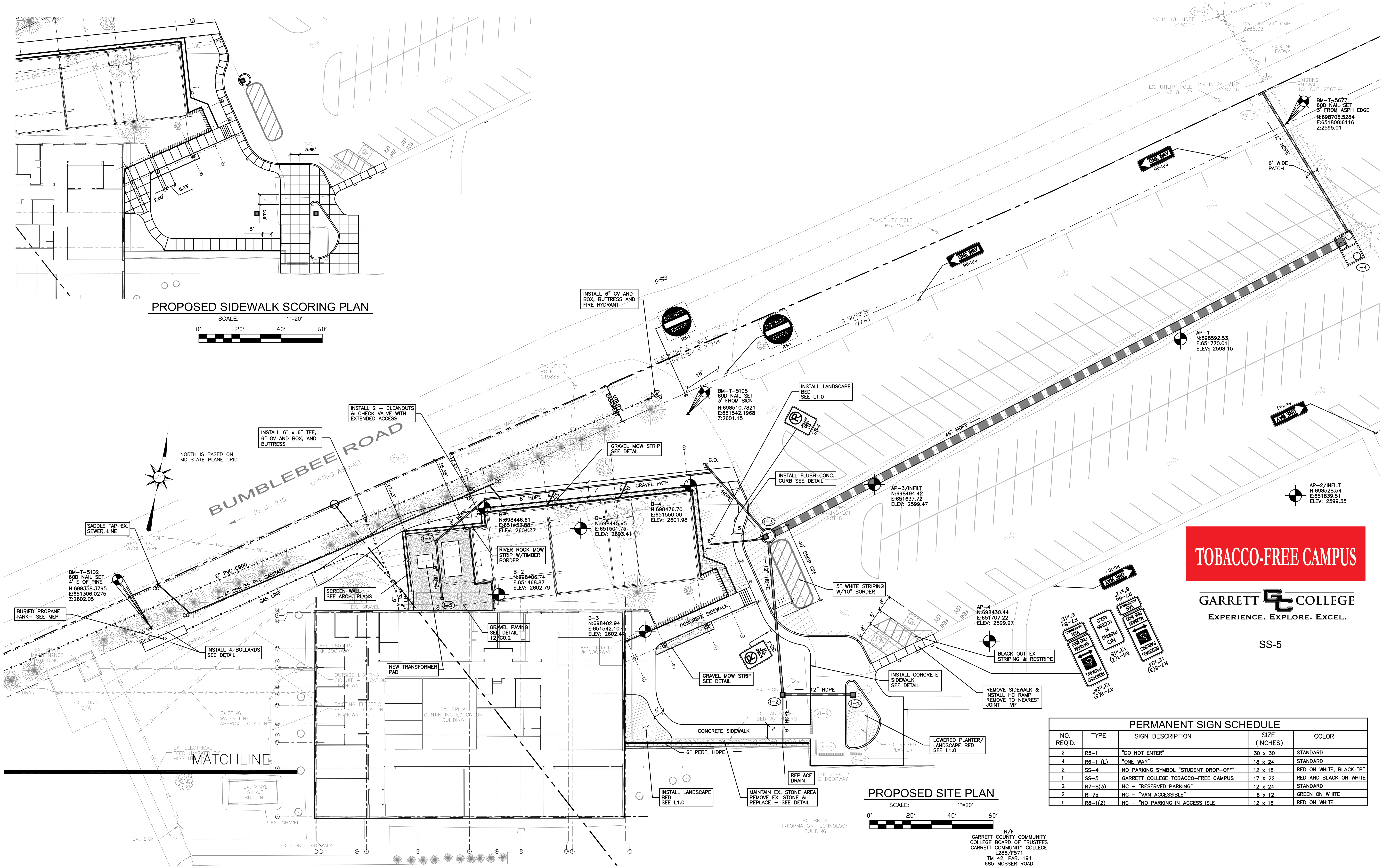

PERMANENT SIGN SCHEDULE

NO. REQ'D.	TYPE	SIGN DESCRIPTION	SIZE (INCHES)	COLOR
2	R5-1	"DO NOT ENTER"	30 x 30	STANDARD
4	R6-1 (L)	"ONE WAY"	18 x 24	STANDARD
2	SS-4	NO PARKING SYMBOL "STUDENT DROP-OFF"	12 x 18	RED ON WHITE, BLACK "P"
1	SS-5	GARRETT COLLEGE TOBACCO-FREE CAMPUS	17 X 22	RED AND BLACK ON WHITE
2	R7-8(3)	HC - "RESERVED PARKING"	12 x 24	STANDARD
2	R-7a	HC - "VAN ACCESSIBLE"	6 x 12	GREEN ON WHITE
1	R8-1(2)	HC - "NO PARKING IN ACCESS ISLE	12 x 18	RED ON WHITE

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PROPOSED SITE PLAN
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McHENRY, MD

DATE	DESCRIPTION

C2.0

02.01.2017
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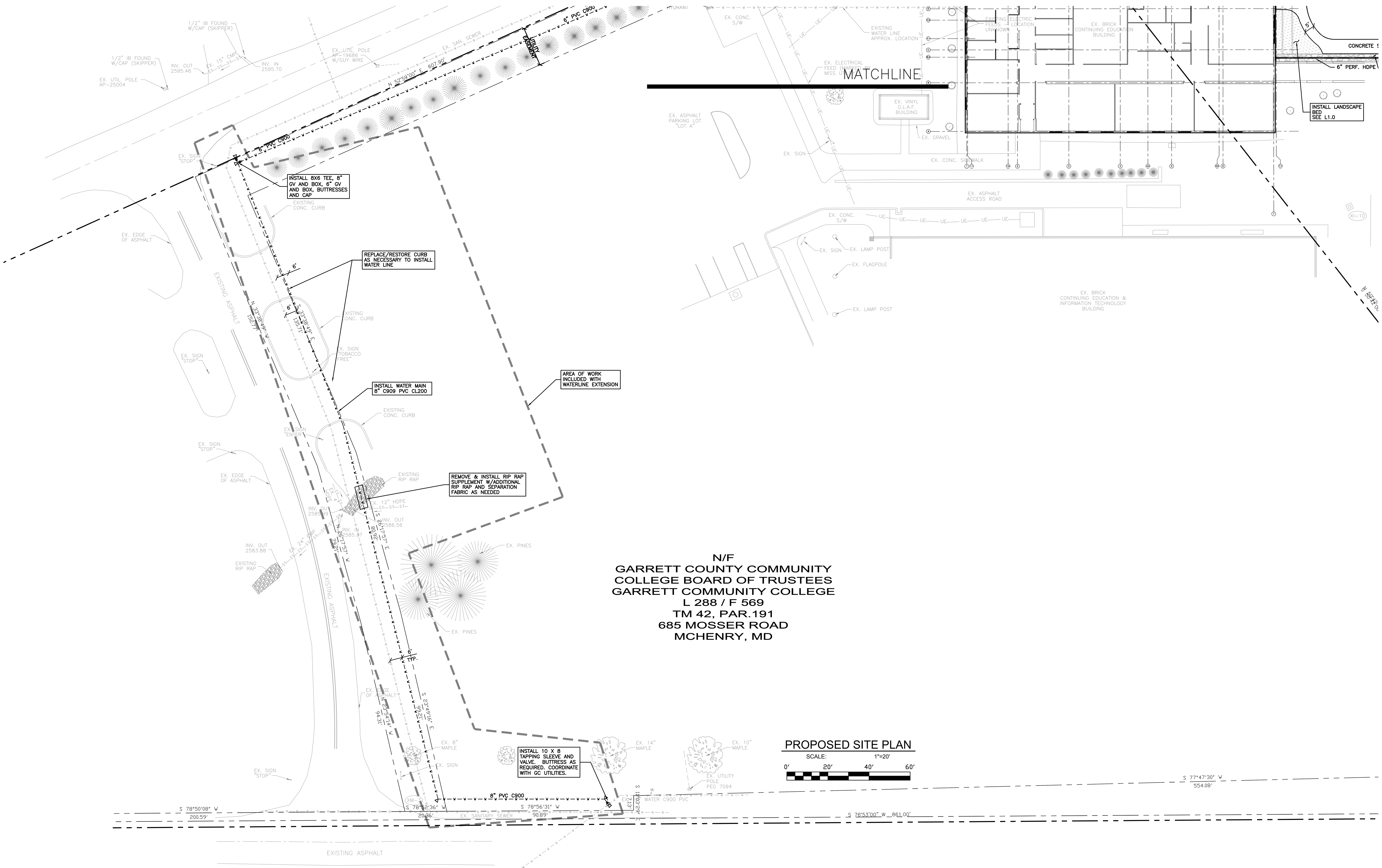

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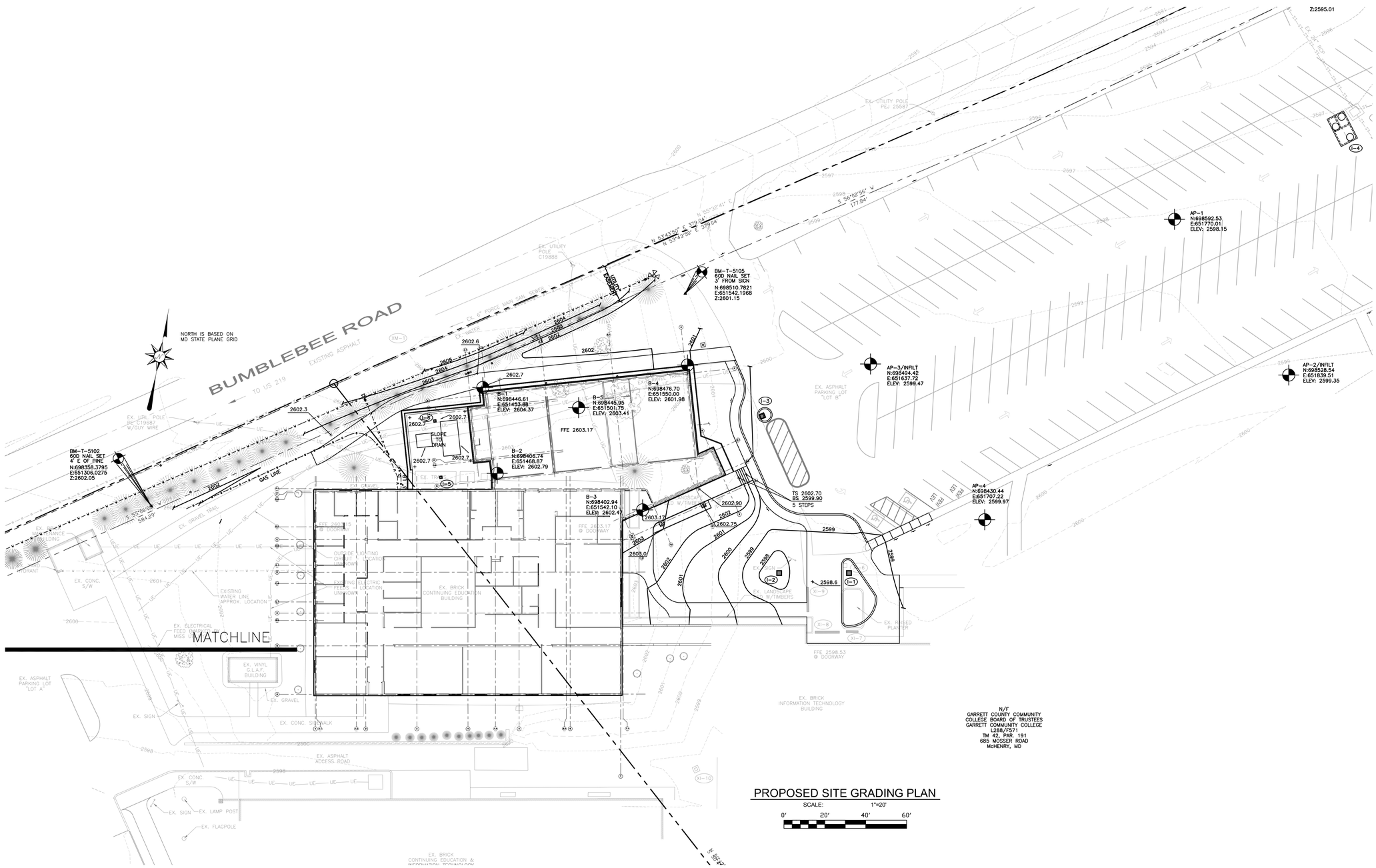

PROPOSED SITE GRADING PLAN

SCALE: 1"=20'

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PROPOSED SITE GRADING PLAN

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McHENRY, MD

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C3.0

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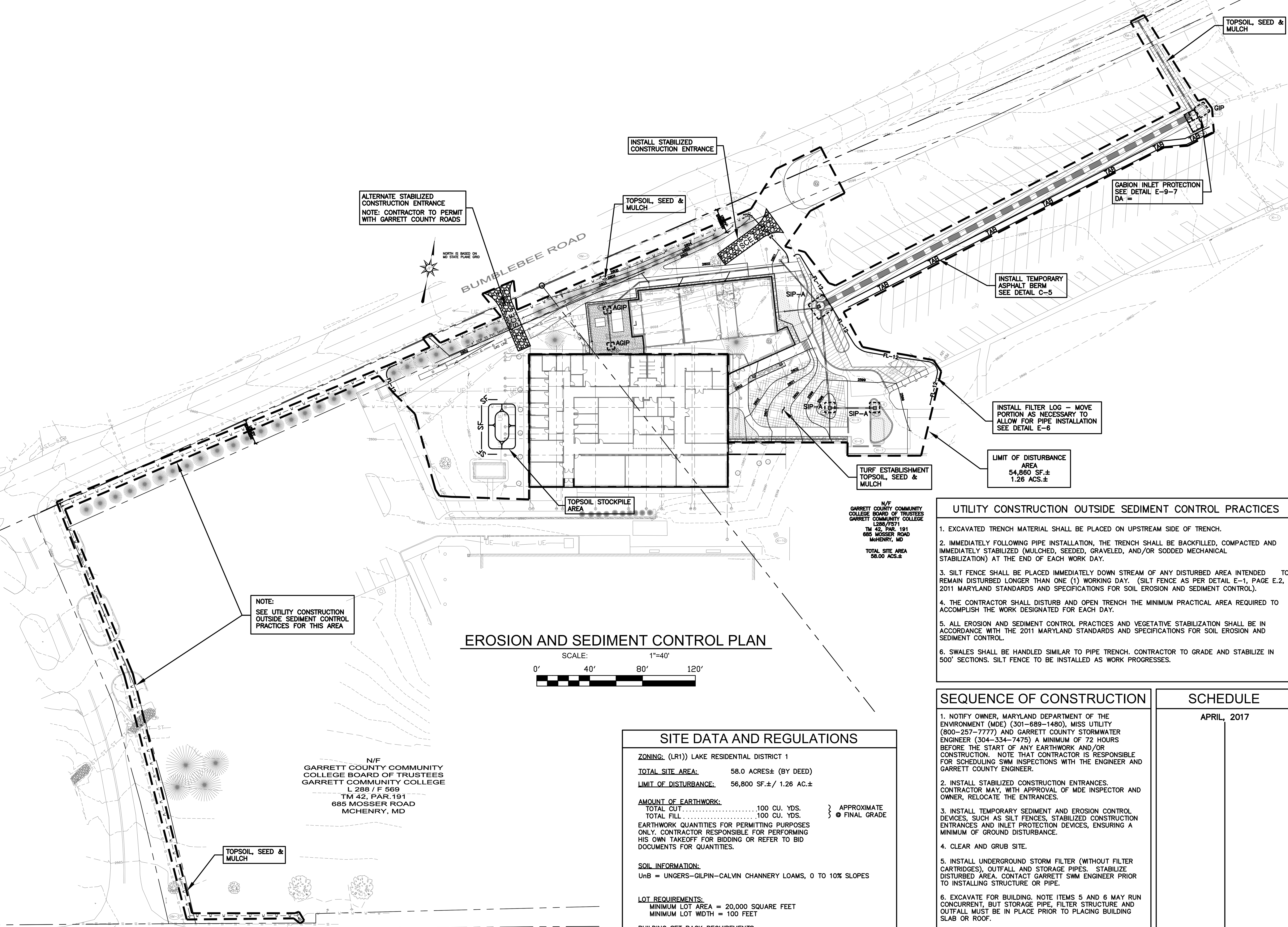
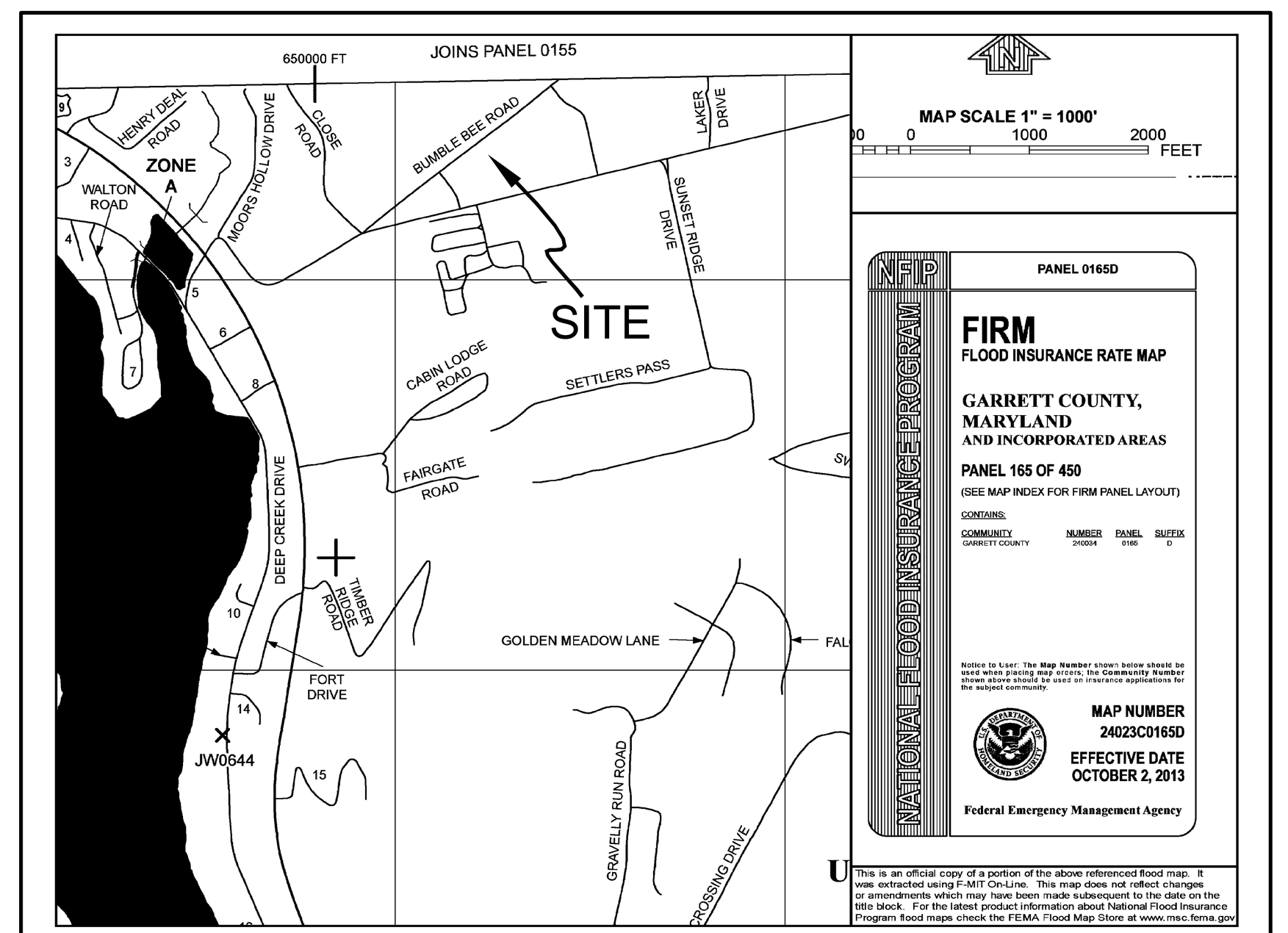


EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1"=40'

0' 40' 80' 120'

VICINITY MAP
SCALE: NOT TO SCALE



FLOOD INSURANCE RATE MAP
SCALE: AS NOTED

SITE DATA AND REGULATIONS

ZONING: (LR1)) LAKE RESIDENTIAL DISTRICT 1

TOTAL SITE AREA: 58.0 ACRES± (BY DEED)

LIMIT OF DISTURBANCE: 56,800 SF.±/ 1.26 AC.±

AMOUNT OF EARTHWORK:
TOTAL CUT......................100 CU. YDS.
TOTAL FILL......................100 CU. YDS.
} APPROXIMATE @ FINAL GRADE

EARTHWORK QUANTITIES FOR PERMITTING PURPOSES ONLY. CONTRACTOR RESPONSIBLE FOR PERFORMING HIS OWN TAKEOFF FOR BIDDING OR REFER TO BID DOCUMENTS FOR QUANTITIES.

SOIL INFORMATION:
UnB = UNGERS–GILPIN–CALVIN CHANNERY LOAMS, 0 TO 10% SLOPES

LOT REQUIREMENTS:
MINIMUM LOT AREA = 20,000 SQUARE FEET
MINIMUM LOT WIDTH = 100 FEET

BUILDING SET BACK REQUIREMENTS:
FRONT = 25 FEET
REAR = 25 FEET
SIDE = 15 FEET

BUILDING HEIGHT REQUIREMENTS:
35 FEET

WETLAND INFORMATION..........WETLANDS NOT FOUND IN PROJECT AREA
FLOODPLAIN INFORMATION.........THIS PROPERTY IS LOCATED OUT OF THE 100–YEAR FLOODPLAIN. FEMA MAP PANEL NO. 24023C165D DATED OCTOBER 2, 2013

UTILITY CONSTRUCTION OUTSIDE SEDIMENT CONTROL PRACTICES

1. EXCAVATED TRENCH MATERIAL SHALL BE PLACED ON UPSTREAM SIDE OF TRENCH.

2. IMMEDIATELY FOLLOWING PIPE INSTALLATION, THE TRENCH SHALL BE BACKFILLED, COMPACTED AND IMMEDIATELY STABILIZED (MULCHED, SEEDED, GRAVELED, AND/OR SODDED MECHANICAL STABILIZATION) AT THE END OF EACH WORK DAY.

3. SILT FENCE SHALL BE PLACED IMMEDIATELY DOWN STREAM OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED LONGER THAN ONE (1) WORKING DAY. (SILT FENCE AS PER DETAIL E–1, PAGE E.2, 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL).

4. THE CONTRACTOR SHALL DISTURB AND OPEN TRENCH THE MINIMUM PRACTICAL AREA REQUIRED TO ACCOMPLISH THE WORK DESIGNATED FOR EACH DAY.

5. ALL EROSION AND SEDIMENT CONTROL PRACTICES AND VEGETATIVE STABILIZATION SHALL BE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

6. SWALES SHALL BE HANDLED SIMILAR TO PIPE TRENCH. CONTRACTOR TO GRADE AND STABILIZE IN 500' SECTIONS. SILT FENCE TO BE INSTALLED AS WORK PROGRESSES.

SEQUENCE OF CONSTRUCTION

1. NOTIFY OWNER, MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) (301–689–1480), MISS UTILITY (800–257–7777) AND GARRETT COUNTY STORMWATER ENGINEER (304–334–7475) A MINIMUM OF 72 HOURS BEFORE THE START OF ANY EARTHWORK AND/OR CONSTRUCTION. NOTE THAT CONTRACTOR IS RESPONSIBLE FOR SCHEDULING SWM INSPECTIONS WITH THE ENGINEER AND GARRETT COUNTY ENGINEER.

2. INSTALL STABILIZED CONSTRUCTION ENTRANCES. CONTRACTOR MAY, WITH APPROVAL OF MDE INSPECTOR AND OWNER, RELOCATE THE ENTRANCES.

3. INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL DEVICES, SUCH AS SILT FENCES, STABILIZED CONSTRUCTION ENTRANCES AND INLET PROTECTION DEVICES, ENSURING A MINIMUM OF GROUND DISTURBANCE.

4. CLEAR AND GRUB SITE.

5. INSTALL UNDERGROUND STORM FILTER (WITHOUT FILTER CARTRIDGES), OUTFALL AND STORAGE PIPES. STABILIZE DISTURBED AREA. CONTACT GARRETT SWM ENGINEER PRIOR TO INSTALLING STRUCTURE OR PIPE.

6. EXCAVATE FOR BUILDING. NOTE ITEMS 5 AND 6 MAY RUN CONCURRENT, BUT STORAGE PIPE, FILTER STRUCTURE AND OUTFALL MUST BE IN PLACE PRIOR TO PLACING BUILDING SLAB OR ROOF.

7. INSTALL REMAINING UTILITIES, BUILDING AND REMAINING PAVEMENT.

8. TOPSOIL, SEED AND MULCH ALL DISTURBED AREAS AS SOON AS POSSIBLE AND AS PRACTICAL. A MINIMUM OF 2" TOPSOIL SHALL BE APPLIED TO DISTURBED AREAS. AREAS LISTED AS TURF SHALL RECEIVE A MINIMUM OF 4" TOPSOIL.

9. INSTALL FILTER MEDIA ONCE SITE IS STABILIZED. CONTACT GARRETT SWM FOR FINAL INSPECTION.

10. CONTACT MDE AFTER SITE IS STABILIZED FOR PERMISSION TO REMOVE TEMPORARY DEVICES. REMOVE DEVICES AND RE–STABILIZE AS NECESSARY.

11. CONTACT ENGINEER FOR AS–BUILT. SUBMIT REDLINES TO ENGINEER.

SCHEDULE

APRIL, 2017

↓

JUNE, 2018

REQUIRED STANDARD EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL MATERIALS DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.

2. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATING CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIME AS PERMANENT STABILIZATION OF EXPOSED SOIL OCCURS.

3. WHEN PROPERTY IS BROUGHT TO FINISHED GRADE DURING THE MONTHS OF NOVEMBER THROUGH FEBRUARY, AND PERMANENT STABILIZATION IS FOUND TO BE IMPRACTICAL, TEMPORARY SEED AND ANCHORED STRAW MULCH SHALL BE APPLIED TO DISTURBED AREAS. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE APPLIED BY APRIL 15 OR EARLIER IF GROUND AND WEATHER CONDITIONS ALLOW.

4. THE SITE'S APPROVED EROSION AND SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE.

5. THE APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS WHICH MAY BE REQUIRED.

6. FOLLOWING INITIAL SOIL DISTURBANCE OR RE–DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN
A) THREE (3) CALENDAR DAYS AS TO SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAT 3 HORIZONTAL TO 1 VERTICAL (3:1): AND
B) SEVEN (7) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

7. THE APPROVAL OF THIS PLAN MAKES NO REPRESENTATION AS TO THE EXISTENCE OR NONEXISTENCE OF ANY UTILITIES AT THIS SITE. IT IS THE RESPONSIBILITY OF THE LANDOWNERS OR OPERATORS AND CONTRACTORS TO ASSURE THAT NO HAZARD EXISTS OR DAMAGE WILL OCCUR TO UTILITIES. IT IS SUGGESTED THAT MISS UTILITY BE CONTACTED AT: 1–800–257–7777.

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR PERMITTING ALL BORROW SPOIL, WASTE & DUMP AREAS.

2. 1 FOOT CONTOUR INTERVAL, 5 FOOT INDEX CONTOUR INTERVALS.

3. ALL AREAS WITH SLOPES 2:1 OR STEEPER SHALL BE STABILIZED WITH NORTH AMERICAN GREEN C125 LONG TERM COCONUT FIBER BLANKET AND CROWN VETCH SEED MIX.

4. CONTRACTOR SHALL SCHEDULE PRECONSTRUCTION MEETING WITH THE MARYLAND DEPARTMENT OF ENVIRONMENT, SOIL CONSERVATION DISTRICT, ENGINEER, AND OWNER.

5. SPECS, INC. ASSUMES NO RESPONSIBILITY OR LIABILITY FOR THE LOCATION AND/OR SIZE OF EXISTING UTILITIES. CONTRACTOR TO VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO THE START OF ANY EARTHWORK OR CONSTRUCTION.

6. SEE SHEET C0.1 FOR SYMBOLS & ABBREVIATIONS LEGEND.

SPECS CONSULTING ENGINEERS
105 SOUTH CENTRE STREET, SUITE 100 CUMBERLAND, MD 21502
301.777.2510 FAX: 301.777.8419
SPECS PROJECT NO. 4671

GRIMM AND PARKER
11720 Beltsville Drive Suite 600 Calverton, MD 20705 Tel 301.595.1000
www.grimmandparker.com

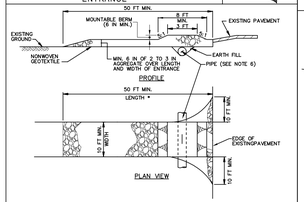
GP# 21620

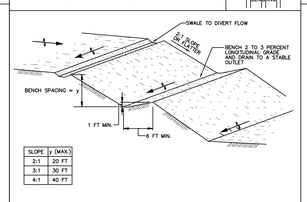
EROSION AND SEDIMENT CONTROL PLAN
GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

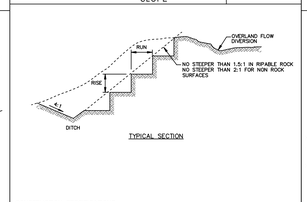
DATE	DESCRIPTION

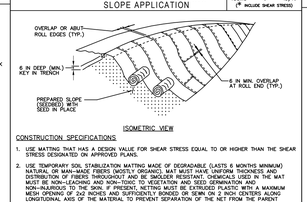
C4.0

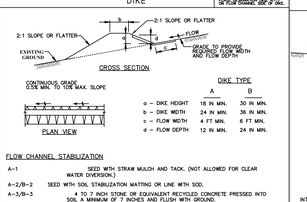
02.01.2017
BID SET

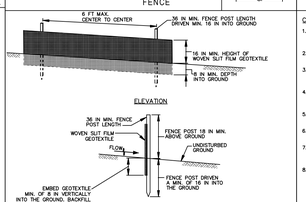


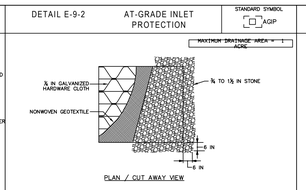


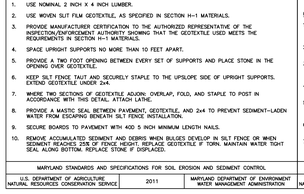


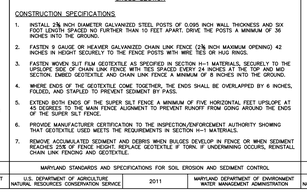


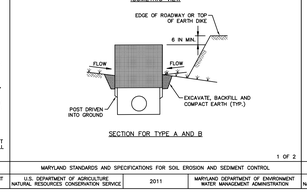


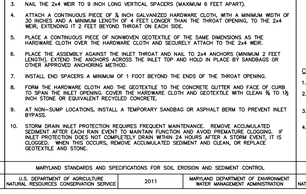


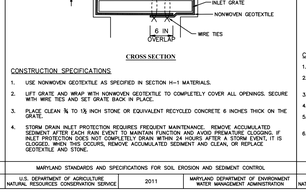












DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL SCE

CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-3-1 BENCHING

STANDARD SYMBOL BENCHING

SLOPE	y (MAX.)
2:1	20 FT
3:1	30 FT
4:1	40 FT

CONSTRUCTION SPECIFICATIONS

1. USE FILL MATERIAL FREE OF BRUSH, RUBBISH, ROCKS, LOGS, STUMPS, BUILDING DEBRIS, AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
2. DO NOT INCORPORATE FROZEN, SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS INTO FILL SLOPES OR STRUCTURAL FILLS. DO NOT PLACE FILL ON A FROZEN FOUNDATION.
3. PLACE ALL FILL IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND THEN COMPACT.
4. COMPACT ALL FILLS AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, OR OTHER RELATED PROBLEMS. COMPACT FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES, CONDUITS, ETC., IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
5. HANDLE SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION IN ACCORDANCE WITH SECTION H–2 SUBSURFACE DRAINS OR OTHER APPROVED METHODS.
6. MAINTAIN LINE, GRADE, AND CROSS SECTION OF BENCHING. STABILIZE IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION CRITERIA OR AS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. INSTALLATION OF EROSION CONTROL MATTING MAY BE NECESSARY IN BENCH/SWALE INVERTS. CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.
7. KEEP ALL BENCHES FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-3-2 SERRATED SLOPE

STANDARD SYMBOL

CONSTRUCTION SPECIFICATIONS

1. DIVERT OVERLAND FLOW FROM THE TOP OF ALL SERRATED CUT SLOPES AND CARRY TO A SUITABLE OUTLET.
2. MAKE SERRATIONS AS THE EXCAVATION PROGRESSES.
3. CONSTRUCT EACH STEP OR SERRATION ON THE CONTOUR. RISE & RUN DIMENSIONS WILL VARY DEPENDING ON THE FINAL SLOPE RATIO. FOR RIPABLE ROCK SURFACES, MAKE TWO FOOT VERTICAL (RISE) AND THREE FOOT HORIZONTAL (RUN) SERRATIONS AT A SLOPE RATIO NO STEEPER THAN 1.5:1. FOR NON ROCK SURFACES, MAKE TWO FOOT VERTICAL (RISE) AND FOUR FOOT HORIZONTAL (RUNS) SERRATIONS AT A SLOPE RATIO NO STEEPER THAN 2:1.
4. KEEP ALL BENCHES FREE OF SEDIMENT DURING ALL PHASES OF CONSTRUCTION.
5. HANDLE SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION IN ACCORDANCE WITH SECTION H–2 SUBSURFACE DRAINS OR OTHER APPROVED METHODS.
6. MAINTAIN LINE, GRADE, AND CROSS SECTION OF SERRATED SLOPES. TEMPORARILY OR PERMANENTLY STABILIZE ALL GRADED, NON ROCK SURFACES IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENTS OR AS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL
TSSMS – * lb/ft²
(* INCLUDE SHEAR STRESS)

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN–MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON–LEACHING AND NON–TOXIC TO VEGETATION AND SEED GERMINATION AND NON–INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL
A–1
PLACE DESIGNATION (e.g. A–1) ON FLOW CHANNEL SIDE OF DIKE.

DIKE TYPE

	A	B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A–1	SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
A–2/B–2	SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
A–3/B–3	4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL ⊢SF⊣

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL ⊢SF⊣

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1⁄16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID–SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-2 SILT FENCE ON PAVEMENT

STANDARD SYMBOL ⊢SFOP⊣

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH X 4 INCH LUMBER.
2. USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS.
3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
4. SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.
5. PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE OPENING OVER GEOTEXTILE.
6. KEEP SILT FENCE TAUT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.
7. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL. ATTACH LATHE.
8. PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT–LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.
9. SECURE BOARDS TO PAVEMENT WITH 40D 5 INCH MINIMUM LENGTH NAILS.
10. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL ⊢SSF⊣

CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON–SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL AGIP

~~MAXIMUM DRAINAGE AREA = 1 ACRE~~

CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-5 TEMPORARY ASPHALT BERM

STANDARD SYMBOL TAB

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT BERM ON AN UNINTERRUPTED, CONTINUOUS GRADE.
2. INSTALL BERM TO CONFORM TO CROSS SECTION DIMENSIONS OF A UNIFORM HEIGHT OF 8 INCHES MINIMUM AND APPROXIMATE WIDTH OF 3½ FEET.
3. PROVIDE OUTLET PROTECTION AS REQUIRED ON PLAN.
4. COMPACT ASPHALT BERM.
5. REPAIR DAMAGED ASPHALT. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.
6. UPON REMOVAL OF ASPHALT BERM, RETURN TO ORIGINAL CONDITIONS OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-7 GABION INLET PROTECTION

STANDARD SYMBOL GIP

MAXIMUM DRAINAGE AREA = 1½ ACRE

CONSTRUCTION SPECIFICATIONS

1. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
2. WRAP 3 FEET x 3 FEET GABION BASKETS (LENGTH VARIABLE) WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS, OVERLAPPING AT THE TOP AND FASTEN THE GEOTEXTILE AT THE TOP OF THE BASKET WITH WIRE FASTENERS (HOG RINGS) AT A MAXIMUM OF 1 FOOT INTERVALS ALONG THE SEAM.
3. AVOID TEARING OR DAMAGING GEOTEXTILE.
4. ENTRENCH GABION BASKETS TO A DEPTH OF 6 INCHES.
5. PLACE AND INTERLOCK GABION BASKETS WITH NO GAPS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR MESH.
7. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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EROSION AND SEDIMENT CONTROL DETAILS

GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

DATE	DESCRIPTION

C4.1

02.01.2017
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B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Figure B.1: Incremental Stabilization – Cut

Figure B.2: Incremental Stabilization – Fill

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

TEMPORARY SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 6a and 5b)					FERTILIZER RATE (10–10–10)	LIME RATE
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS		
	BULBOA RYE	140 lb/ac	3/15–5/31 or 8/1–10/31	1/4" to 1/2"	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)

PERMANENT SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 6a and 5b) – STANDARD LOW MAINTENANCE					FERTILIZER RATE (10–20–20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20	
9M	FORAGER FESCUE LOW ENT.	60 lb/ac	3/15–6/1 or 8/1–10/1	1/4" to 1/2"	45 lb/ac (1 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
	PERENNIAL RYEGRASS	20 lb/ac						
	KENTUCKY BLUEGRASS	40 lb/ac						

SEED MIXTURE (HARDINESS ZONE 6a and 5b) – SLOPES 2.5:1 OR GREATER – LOW MAINT.					FERTILIZER RATE (10–20–20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20	
3Mod	DEERTONGUE	20 lb/ac	3/15–6/1 or 8/1–10/1	1/4" to 1/2"	45 lb/ac (1 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
	COMMON LESPEDAZA	10 lb/ac						
	CANADA WILD RYE	20 lb/ac						
	REDTOP	1 lb/ac						
	ANNUAL RYE	40 lb/ac						

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EROSION AND SEDIMENT CONTROL DETAILS

GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

DATE	DESCRIPTION

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02.01.2017
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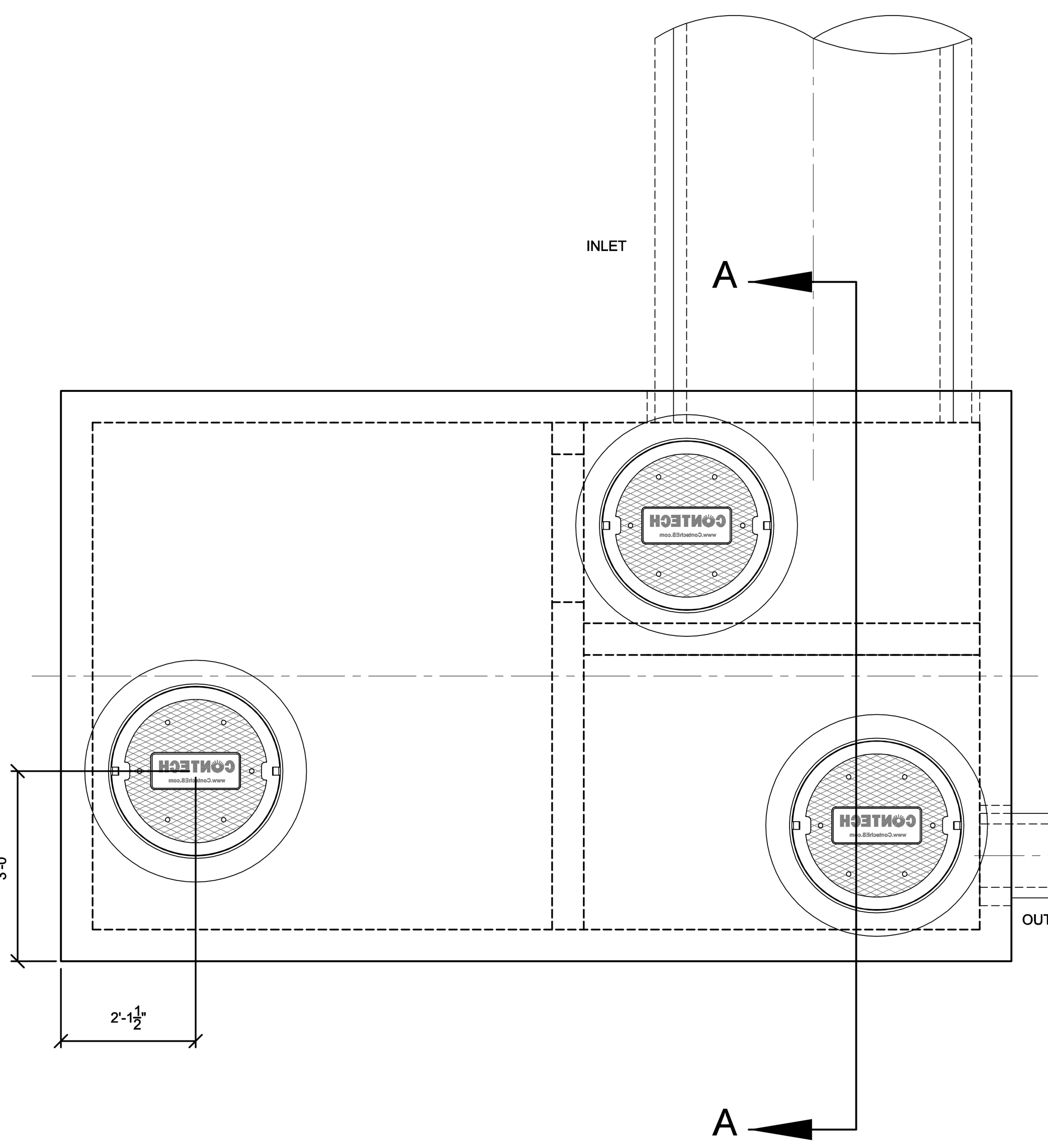
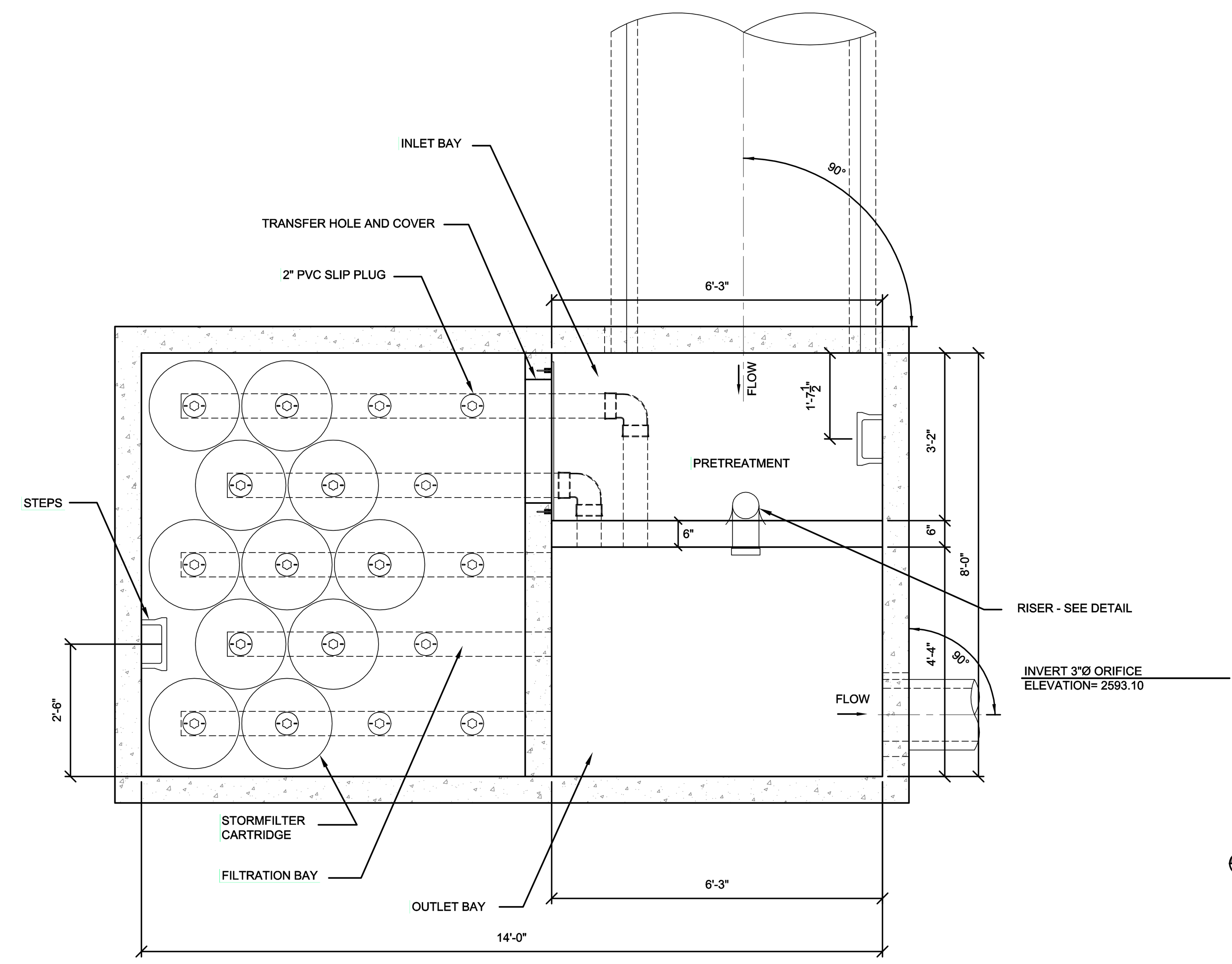
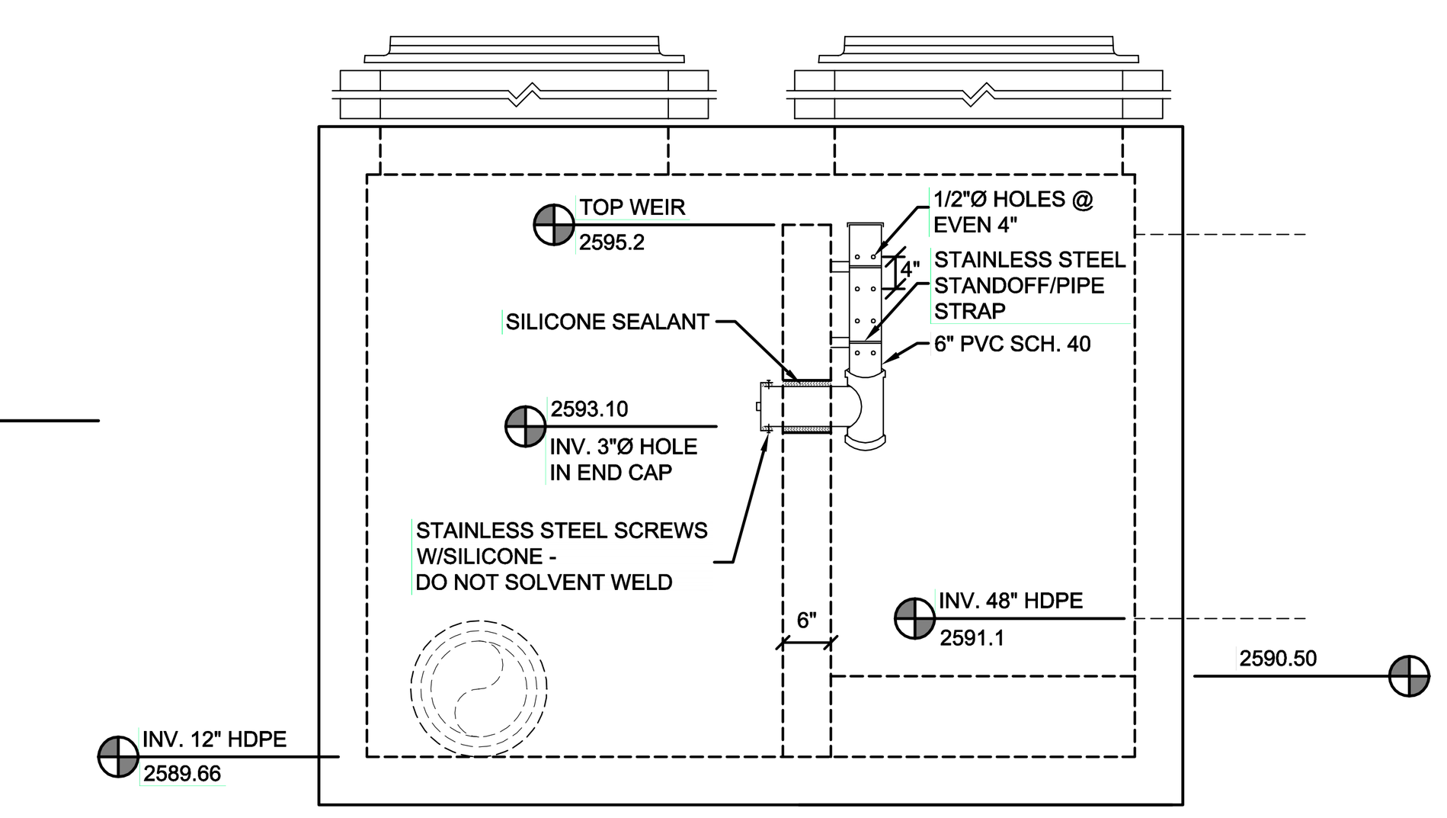


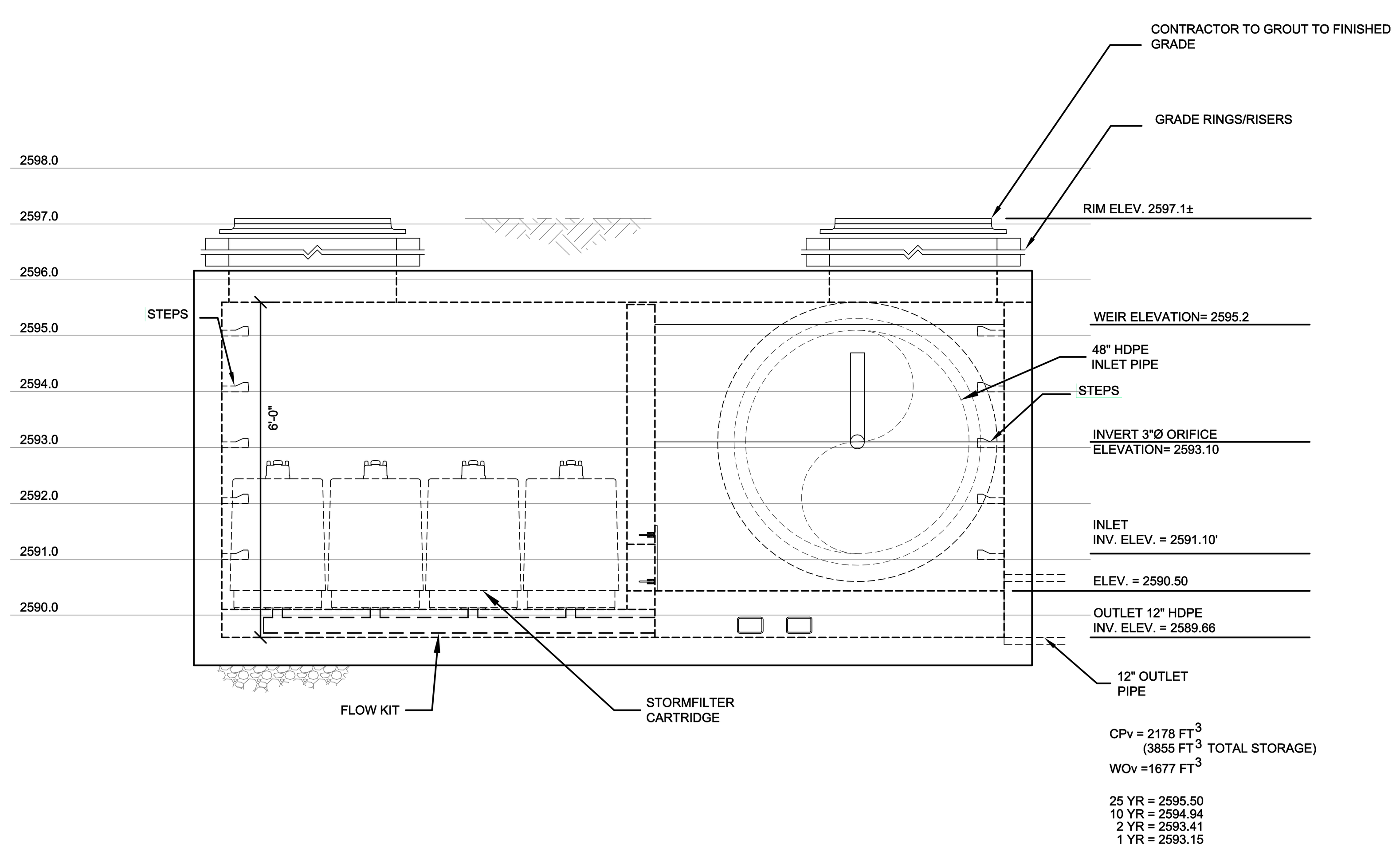
TOP PLAN VIEW



PLAN VIEW



SECTION A-A



CPv = 2178 FT^3
(3855 FT^3 TOTAL STORAGE)
WQv =1677 FT^3

25 YR = 2595.50
10 YR = 2594.94
2 YR = 2593.41
1 YR = 2593.15

ELEVATION

PROPOSED STORM FILTER (1)
SCALE: 1/2"=1'-0"

MAINTENANCE SCHEDULE

FILTER SYSTEM		
Frequency of inspection	Preventative Maintenance	Maintenance Requirements
Seasonally (and after a major storm)		Inspect chambers for debris.
		Remove accumulated sediment from surface of pret–retement chamber when accumulation exceeds one inch.
		If water ponds for more than 48 hours, remove and replace filters.
Annually (and after a major storm)		Check filter chambers.
Biennual		Inspection by filter supplier required. Filters may need replaced.

PROJECT NAME: 4671 GC STEM

AS–BUILT DATA AND INSPECTION CHECKLIST FOR FILTER SYSTEMS
*TO BE COMPLETED BY CERTIFYING ENGINEER – NOTE SUBMIT AS–BUILTS WITHIN 45 DAYS OF FINISHING CONSTRUCTION

FEATURE		DESIGN	*AS–BUILT	CERTIFYING ENGINEER SIGNATURE AND DATE	GCSWM ENGINEER SIGNATURE AND DATE
FILTERS	NUMBER	11			
STORAGE PIPE DIAMETER	SIZE, IN.	48 IN.			
OUTFALL PIPE DIAMETER	SIZE, IN.	12 IN.			
SITE CLEARED					
DIVERSION INSTALLED					
EXCAVATION FOR STORAGE PIPE AND CONTROL STRUCTURE					
STONE BEDDING ON PIPES					
FILTER BOX INSTALLED					
BACKFILL COMPLETE					
PIPE OUTFALL COMPLETE					

MATERIAL LIST - PROVIDED BY CONTECH VAULT STYLE: 80L

COUNT	DESCRIPTION	INSTALLED BY
11	LOW DROP, CSF CARTRIDGE	CONTECH
18	RESTRICTOR DISK (PRP), 7.5 GPM	CONTECH
7	2" PVC SLIP PLUG	CONTECH
1	36" x 14" TRANSFER HOLE COVER	CONTECH
1	JOINT SEALANT	CONTRACTOR
2 PLCS	GRADE RINGS/RISERS	CONTRACTOR
2	Ø30" x 4" EJIW #41600484, OR EQUIVALENT FRAME AND COVER	CONTRACTOR
10	STEPS, P10CTS LANE LADDER, OR EQUIVALENT	CONTECH

SITE DESIGN DATA

WATER QUALITY FLOW RATE	1677 CF
PEAK FLOW RATE	TBD CFS
RETURN PERIOD OF PEAK FLOW	TBD YRS
FILTER MEDIA TYPE	CFS

PERFORMANCE SPECIFICATION
FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7-INCHES**. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **37 SECONDS**.
SPECIFIC FLOW RATE SHALL BE **1 GPM/SF (MAXIMUM).** SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM).**

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING WITH ASTM C-857 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE THE TRANSFER HOLE COVER WHEN THE SYSTEM IS BROUGHT ONLINE.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = T.B.D. LBS.

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PROPOSED STORM FILTER
GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

DATE	DESCRIPTION

C4.3

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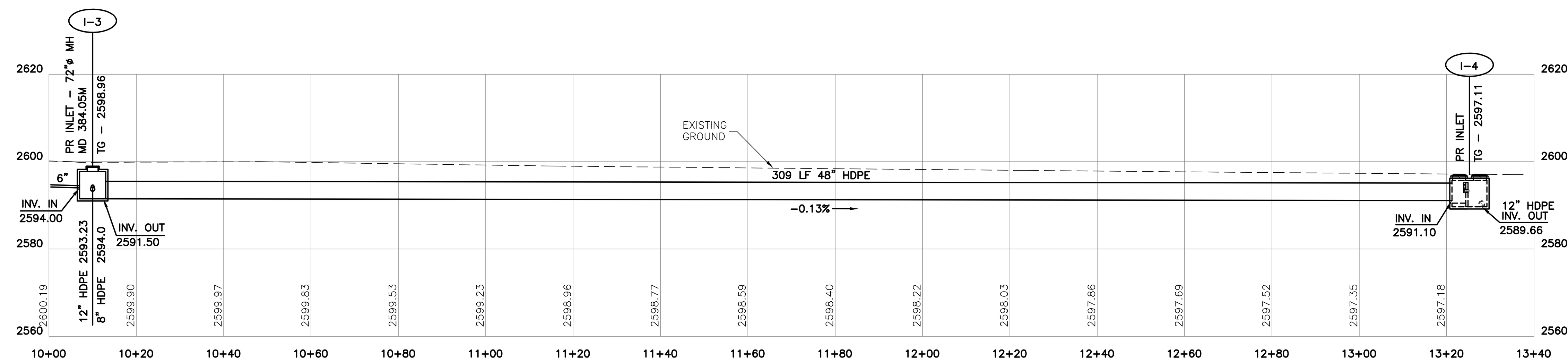
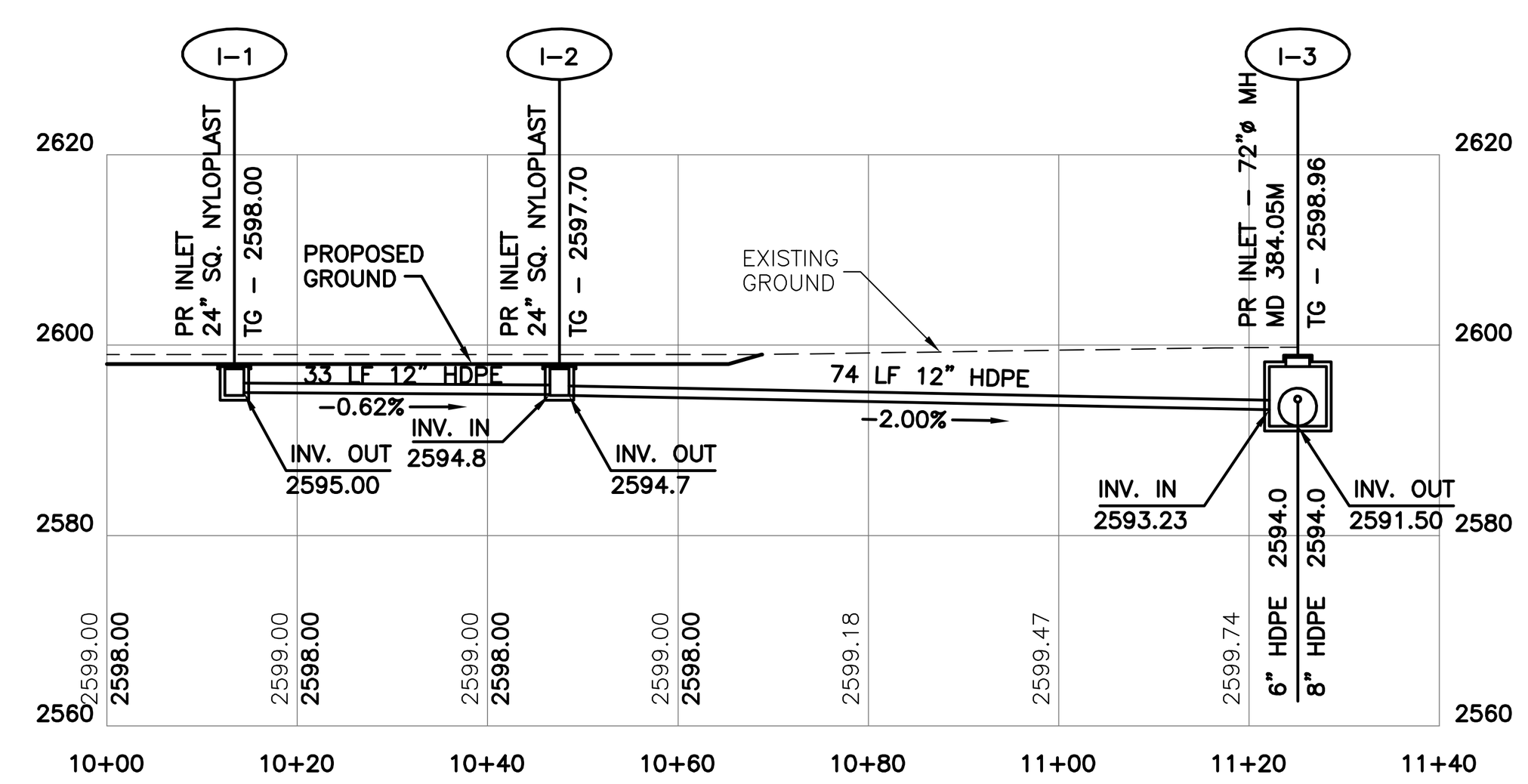


PROPOSED STORM PROFILE I-3 TO I-4 (1)

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

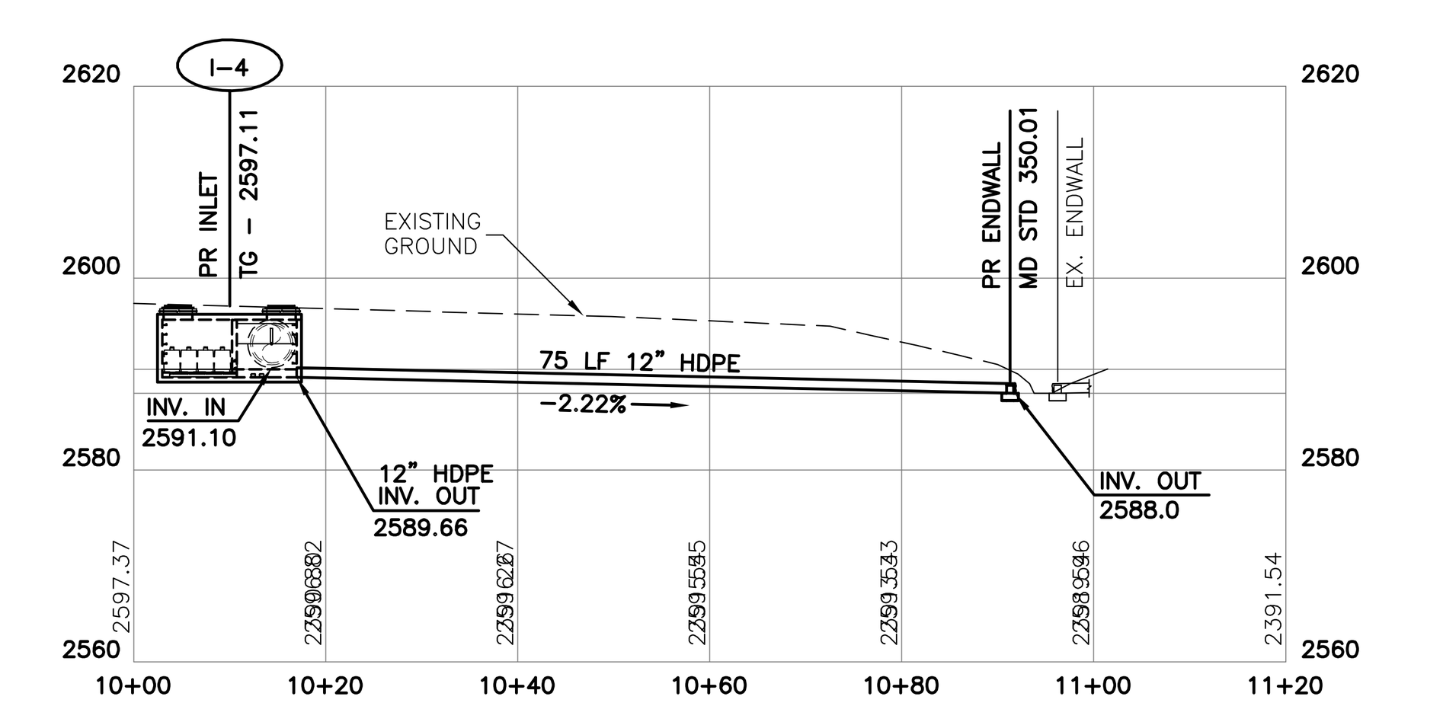
0' 20' 40' 60'



PROPOSED STORM PROFILE I-1 TO I-3 (2)

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

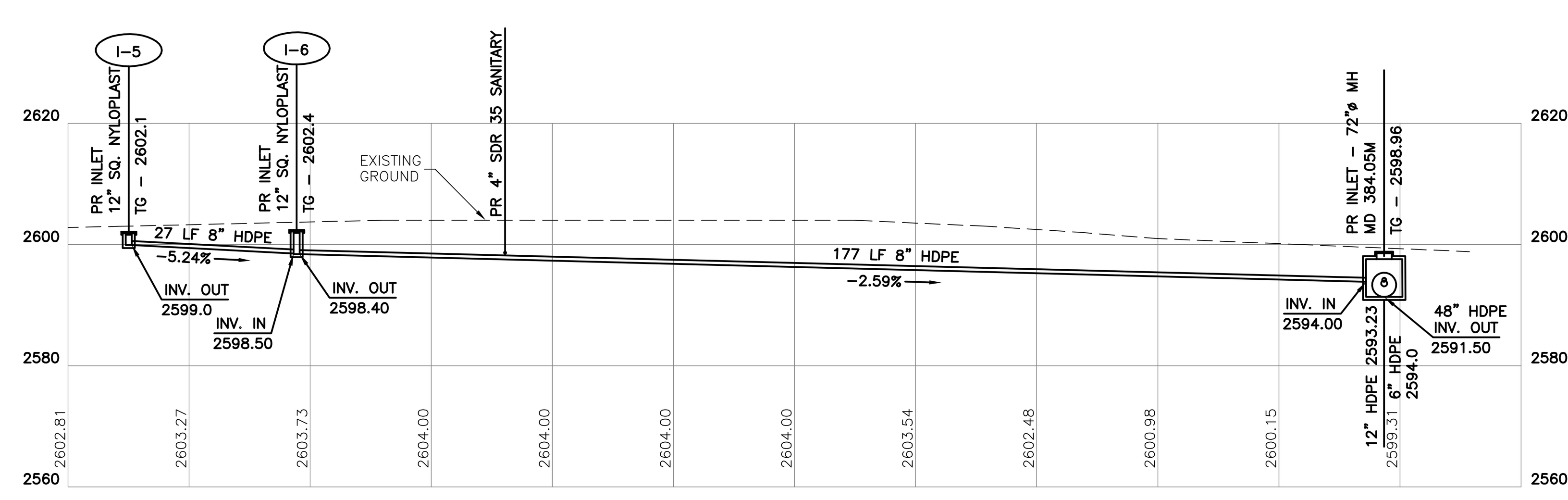
0' 20' 40' 60'



PROPOSED STORM PROFILE I-4 TO HEADWALL (3)

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

0' 20' 40' 60'



PROPOSED STORM PROFILE I-5 TO I-3 (4)

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

0' 20' 40' 60'

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PROPOSED STORM PROFILES

GARRETT COLLEGE STEM RENOVATION AND ADDITION

McHENRY, MD

DATE	DESCRIPTION

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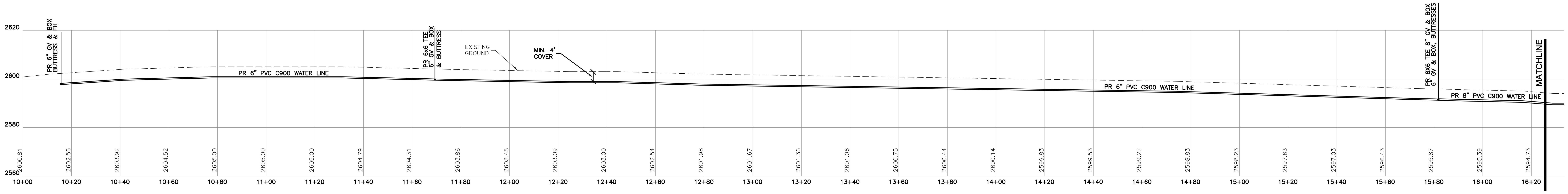
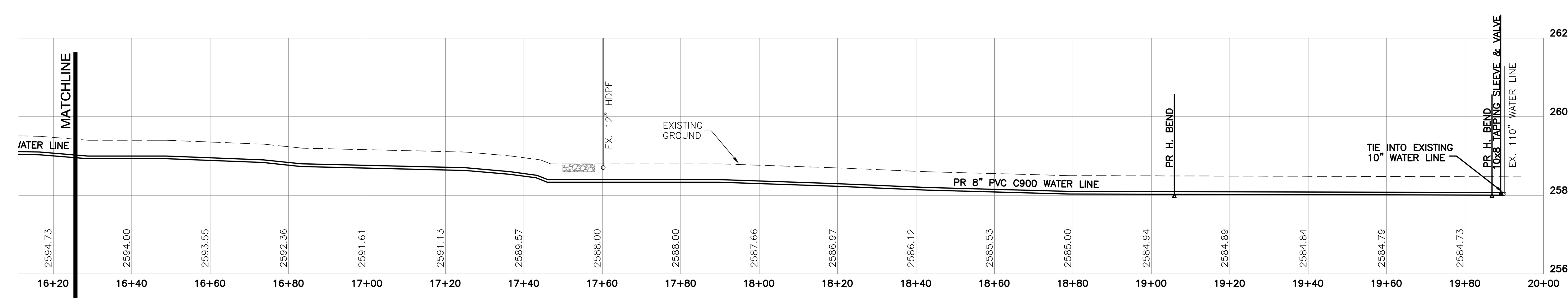
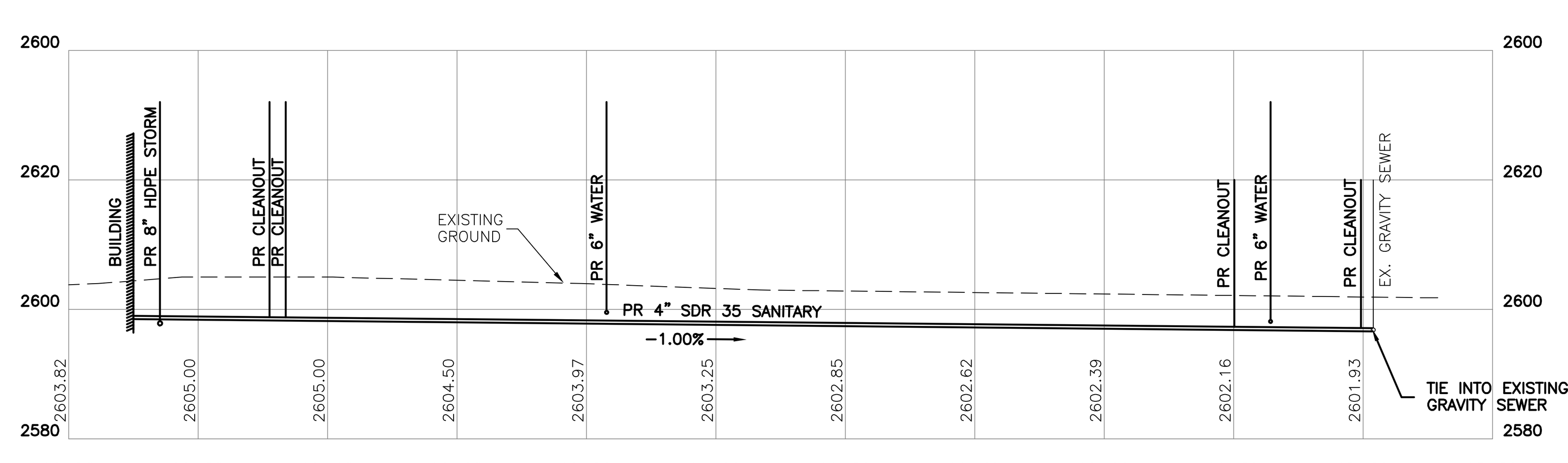


PROPOSED WATER LINE PROFILE (1)

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

0' 20' 40' 60'





PROPOSED SANITARY SEWER PROFILE (2)

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=20'

0' 20' 40' 60'

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PROPOSED UTILITY PROFILES
GARRETT COLLEGE STEM RENOVATION AND ADDITION
McHENRY, MD

DATE	DESCRIPTION

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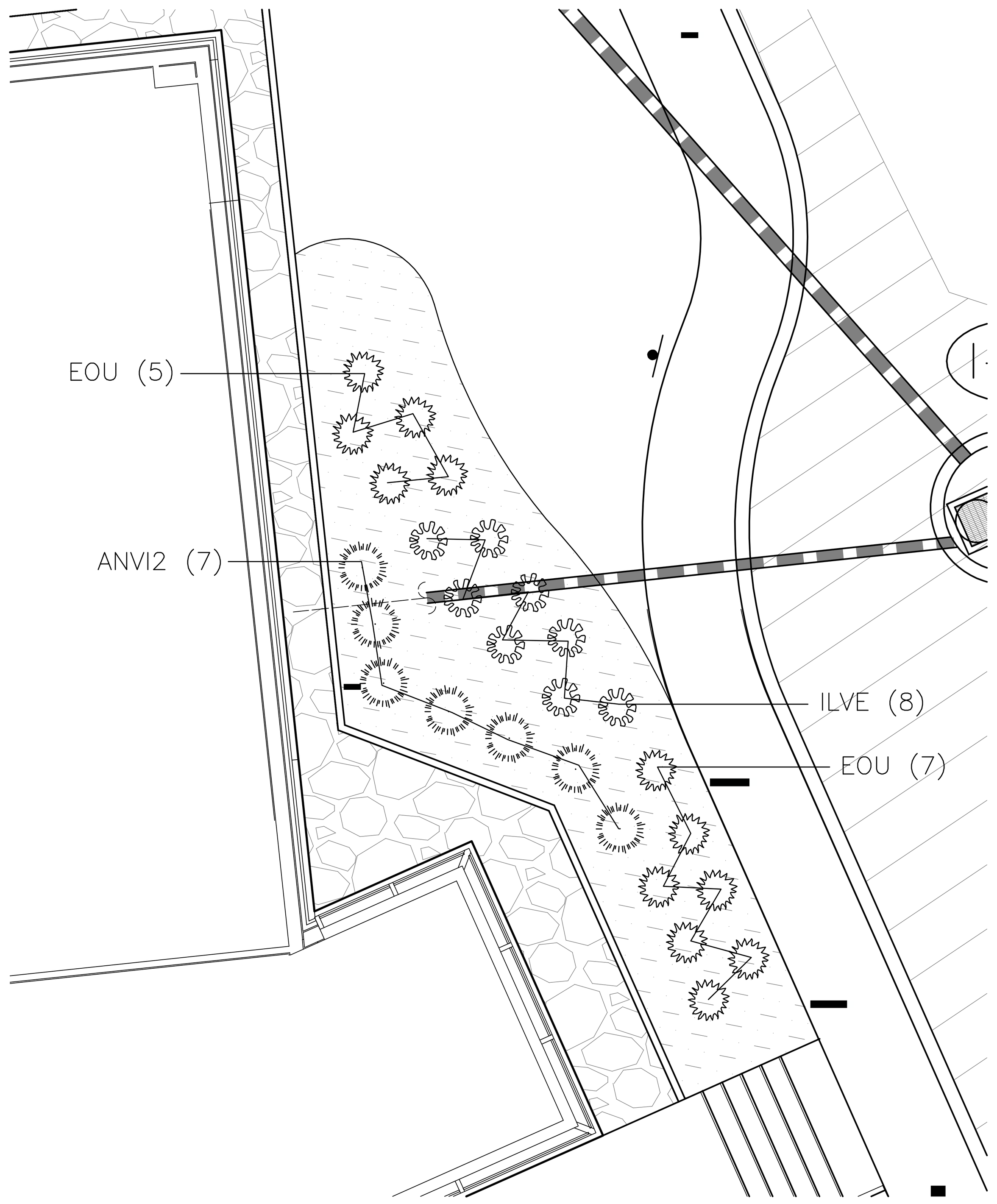
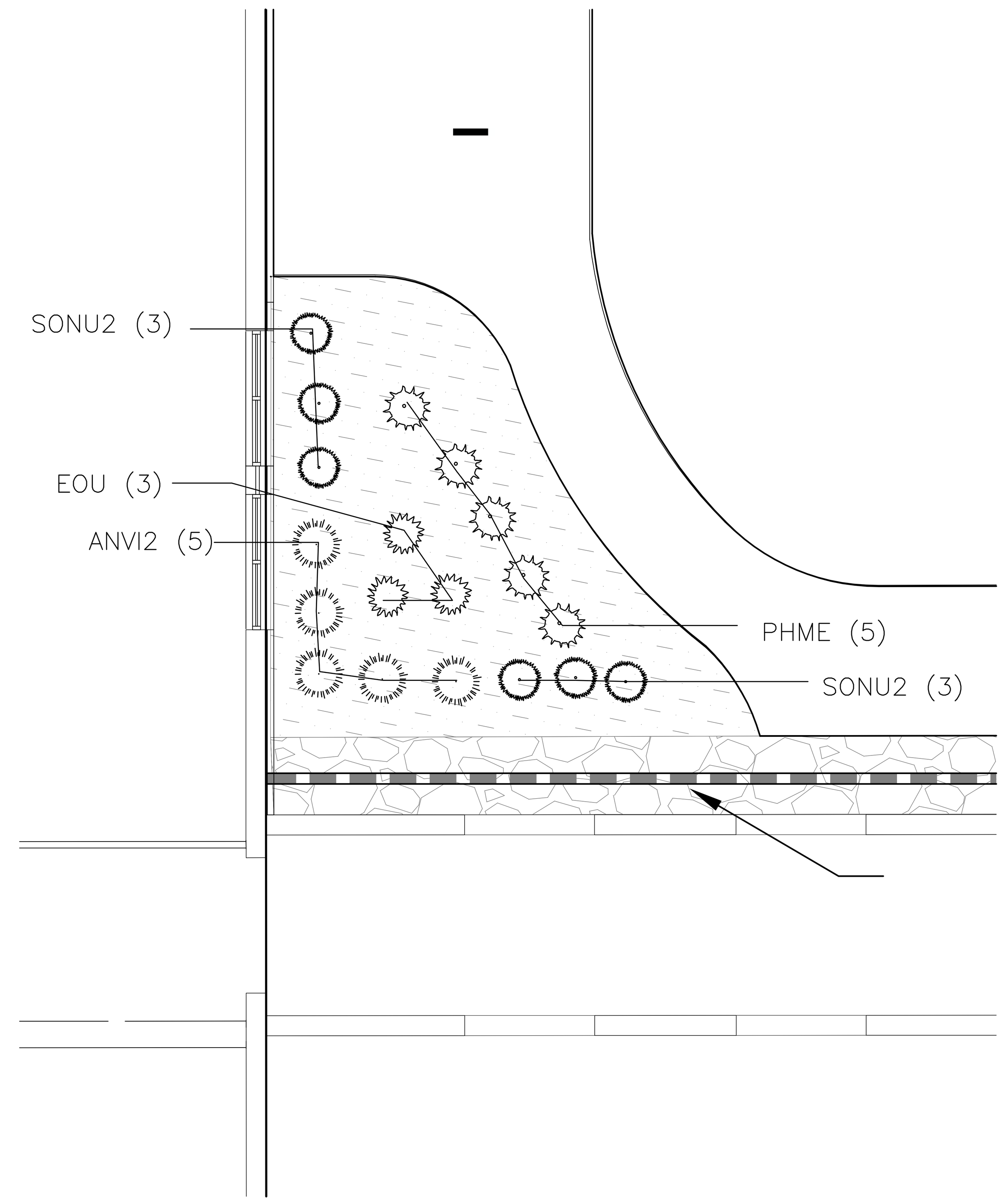


LANDSCAPE AREA 1

SCALE: 1"=5'

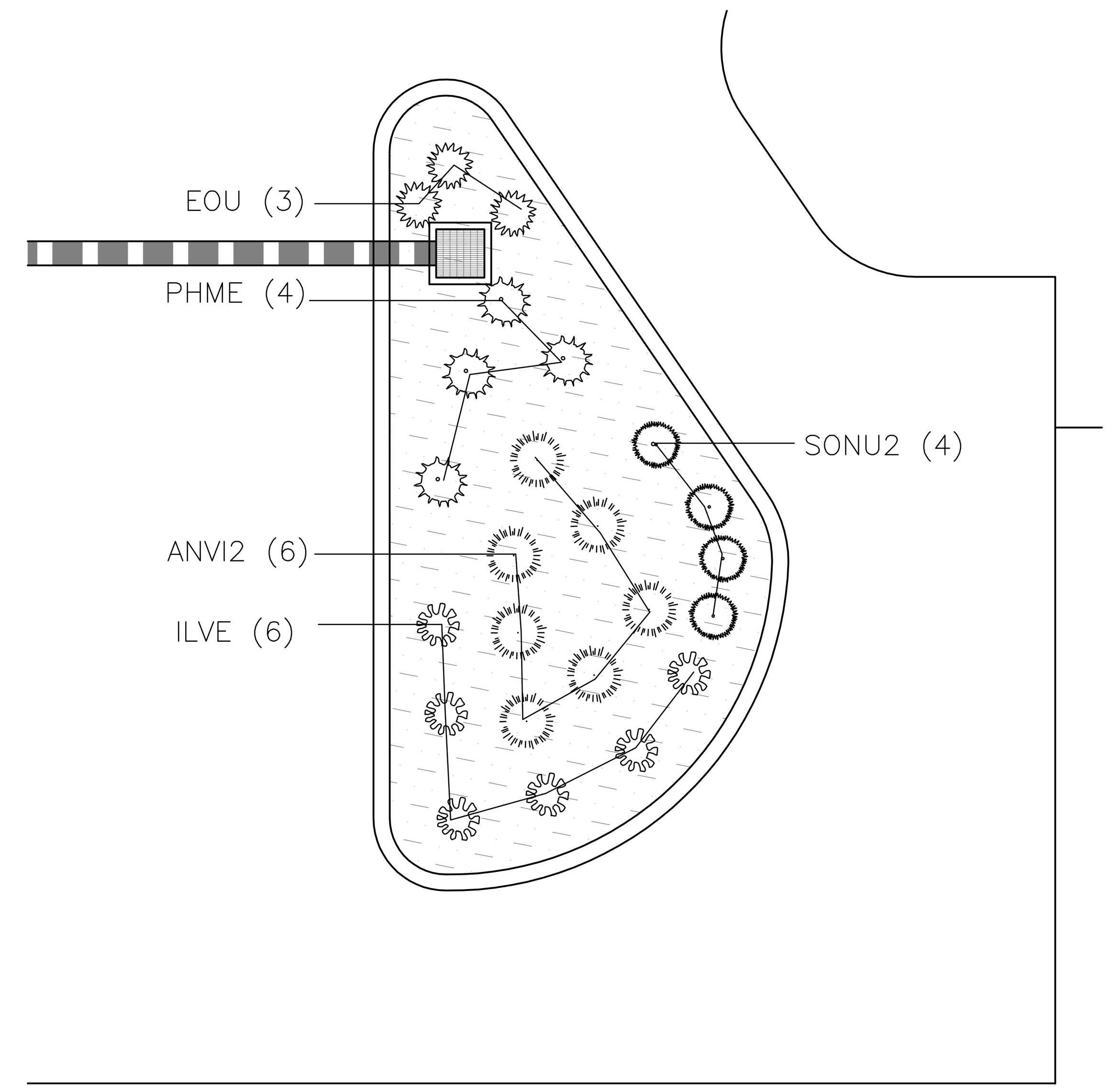
0' 5' 10' 15'



LANDSCAPE AREA 1

SCALE: 1"=5'

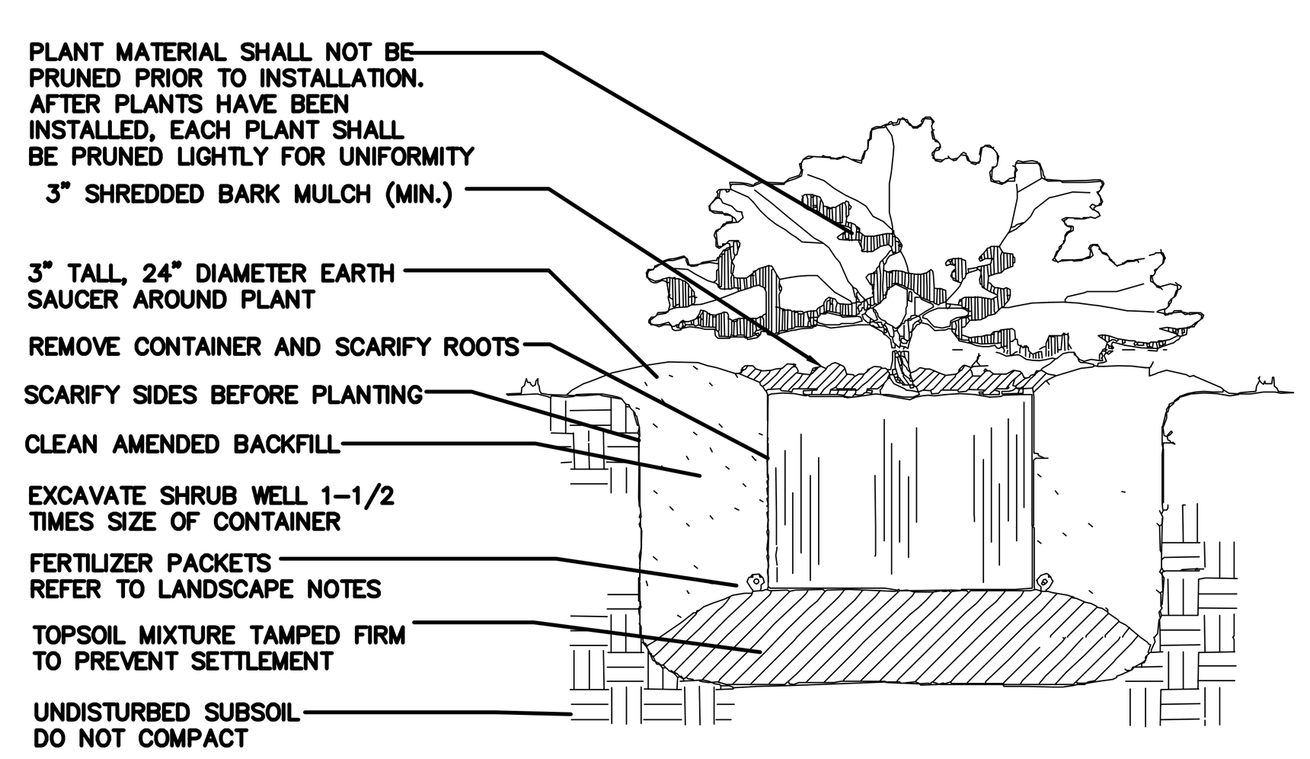
0' 5' 10' 15'



LANDSCAPE AREA 1

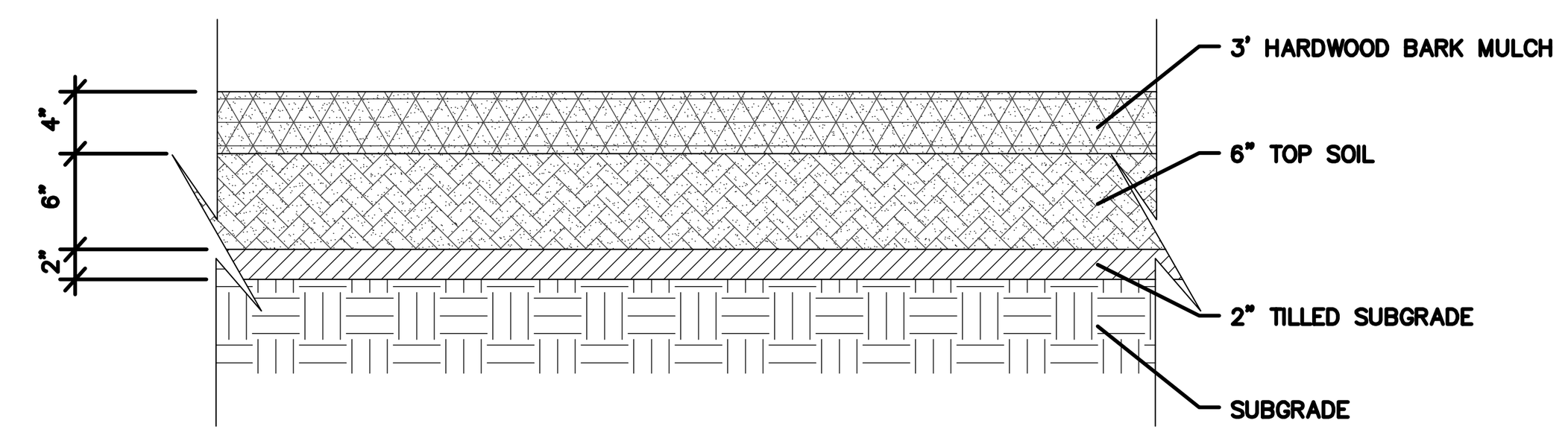
SCALE: 1"=5'

0' 5' 10' 15'



CONTAINER SHRUB PLANTING DETAIL (1)

NOT TO SCALE



PLANTING BED PREP. NOTES:
1). ROTOTILL SUBGRADE TO A DEPTH OF 6 INCHES.
2). PLACE TOPSOIL IN 7"-8" LIFTS TO DEPTH REQUIRED.
3). COMPACT EACH LIFT PER SPECIFICATIONS.
4). PLACE ORGANIC MATERIAL & TILL INTO TOPSOIL. DO NOT COMPACT.
5). PLANT AS PER DETAILS.
6). FERTILIZE AS REQUIRED.
7). PROTECT PREPARED PLANTING BEDS FROM SUBSEQUENT CONSTRUCTION ACTIVITY
8). SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

PLANTING BED PREPARATION DETAIL, TYP. (2)

NOT TO SCALE

LANDSCAPING SCHEDULE

KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
ANVI2	18	Andropogon virginicus	Broomsedge	5 gal. cont.
SONU2	10	Sorghastrum nutans	Indiangrass	5 gal. cont.
EUO	18	Euonymus americanus	Strawberry Bush	12-18"
PHME	9	Photinia melanocarpa	Red Chokeberry	12-18"
ILVE	14	Ilex verticillata	Winterberry holly	12-18"

SPECS CONSULTING ENGINEERS
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CUMBERLAND, MD 21502
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GP# 21620

PROPOSED LANDSCAPING PLAN

GARRETT COLLEGE STEM RENOVATION AND ADDITION

McHENRY, MD

DATE	DESCRIPTION

L1.0

02.01.2017
BID SET

A17 CODE STUDY PLAN - FIRST FLOOR
1/8" = 1'-0"

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

CODE REVIEW

PROJECT NAME AND LOCATION

NAME	STEM RENOVATION AND ADDITION
STREET ADDRESS	687 MOSSER ROAD
COUNTY	GARRETT
CITY, STATE	MCHENRY, MD

PROJECT DESCRIPTION: RENOVATION AND ADDITION OF AN EXISTING ONE STORY CLASSROOM BUILDING

APPLICABLE CODES

Building Code:	INTERNATIONAL BUILDING CODE 2015
Fire Code:	NFPA 101 LIFE SAFETY CODE 2015
Accessibility:	AMERICANS WITH DISABILITY ACT ACCESSIBILITY GUIDELINES (ADAAG) AND MARYLAND ACCESSIBILITY CODE (COMAR.05.02.02 REV. 20002)

BUILDING USE AND CONSTRUCTION CLASSIFICATIONS

			IBC Code	NFPA Code
Use Group:	B	BUSINESS	304.1	6.1.11

Building Area:

LEVEL 1	21323 SF

Proposed Type of Construction:	IBC TYPE IIB
Allowable Building Height:	55'+20' (IBC TABLE 504.3, TABLE 504.4)=75' (MAX ALLOWABLE PER IBC 504.4), 4 Stories
Actual Building Height:	30' MAXIMUM

OCCUPANCY LOADS AND EGRESS REQUIREMENTS

Location Calculated	Area in Sq. Ft.	Sq. Ft. per Person	Occupant Load	Egress Width Required	Egress Width Provided	Number Exits Required	Number Exits Provided
CLASSROOM	904	20	46	32"	33"	1	1
LAB	1304	50	26	32"	33"	1	1
CONFERENCE ROOM	419	15	28	32"	33"	1	1
STUDENT LOUNGE	368	15	25	32"	33"	1	1
OFFICE	461	100	31	32"	33"	1	1

FIRE PROTECTION SYSTEM REQUIREMENTS

	System	IBC Code	Fire Code
Automatic Sprinklers	YES	903.3.1.1	9.7.1
Fire Alarm System	YES	907.2.2	9.6, 14.3.4
Smoke Detection System	NO	--	9.6.2.9
Partial Smoke Detection	YES	--	9.6.5.2 (1)

INTERIOR FINISH REQUIREMENTS
Per IBC Table 803.11

TRAVEL DISTANCE TO EXITS

	IBC Code	Fire Code
Maximum Length of Travel in Fully Sprinklered Building	250' (Table 1017.2)	200' (14.2.6.3)
Maximum Length Common Path of Travel in Fully Sprinklered Building	75' (Table 1006.2.1)	100' (14.2.5.3.1)
Spaces with One Means of Egress, Maximum Travel Distance to an Exit Access Door	75' (Table 1006.2.1)	75' (14.2.5.5 (2))

MINIMUM CORRIDOR WIDTH REQUIREMENTS

	IBC Code	Fire Code
Width	Table 1020.2	14-2.3.2
6 FT., EXIT CORRIDOR		

PANIC HARDWARE
Per IBC Code 1010.1.10 & NFPA 7.2.1.7, 14.2.2.2.2
ALL DOORS SERVING MORE THAN 50 & AT SMOKE BARRIER DOORS

EMERGENCY LIGHTING REQUIREMENTS
Per IBC Code 1008 & NFPA 7.9, 14.2.9
ALL MEANS OF EGRESS

FIRE RATING REQUIREMENTS- STRUCTURAL ELEMENTS/ EGRESS COMPONENTS

	Rating Required	IBC Code	Fire Code
Exterior Bearing Walls	0	TABLE 601, TABLE 602	TABLE A.8.2.1.2
Exterior Non-Bearing Walls	0	TABLE 602	TABLE A.8.2.1.2
Fire Walls	2	TABLE 706.4	TABLE A.8.2.1.2
Interior Bearing Walls	0	TABLE 601	TABLE A.8.2.1.2
Floor/ Ceiling Assemblies	0	TABLE 601	TABLE A.8.2.1.2
Roof/ Ceiling Assemblies	0	TABLE 601	TABLE A.8.2.1.2
Columns	0	TABLE 601	TABLE A.8.2.1.2
Beams	0	TABLE 601	TABLE A.8.2.1.2
Egress Corridors	0	TABLE 1020.1	7.1.3.1, 14.3.6
Shafts (Stairs)	1	1023.2	7.1.3.2.1
Shafts Other than Stairs	1	713.4	8.6.5
Corridor Doors	0	716.5.3, Table 1020.1	14.3.6
Smoke Barrier	1	709.3	8.5
Smoke Partitions	0	710.3	8.4, 14.3.7, 14.3.6 (2)(a)
Smoke Barrier Doors	20 MIN.	710.5.2, 716.5.3	8.5
Mixed Use Separation	1 or Auto Fire Extinguishing System	508, TABLE 508.4	--

EGRESS WIDTH

Width	IBC Code	Fire Code
Egress width at doors and corridors	.15"/OCC. (1005.3.2, Exception 1)	.2"/OCC.(TABLE 7.3.3.1)

NUMBER OF REMOTE EXITS REQUIRED

By Room	IBC Code	Fire Code
Rooms Less Than 50 Occupants	1 Exit (Table 1006.2.1)	--
Rooms with 50 - 500 Occupants	2 Exits (1006.2.1)	--
Rooms with 501 - 1000 Occupants	3 Exits (1006.2.1.1)	--
Rooms with More than 1000 Occupants	4 Exits (1006.2.1.1)	--

By Story	IBC Code	Fire Code
1 - 500 Occupants	2 Exits (Table 1006.3.1)	2 Exits, 14.2.4
501 - 1000 Occupants	3 Exits (Table 1006.3.1)	3 Exits, 7.4.1.2
More than 1000 Occupants	4 Exits (Table 1006.3.1)	4 Exits, 7.4.1.2

REMOTENESS OF EXITS
Life Safety A.7.5.1.3.3 - 1/3 the Length of Maximum Room Diagonal (Credit for Sprinklered Building)
IBC 1007.1.1 Exception 2 - 1/3 the Length of Maximum Room Diagonal (Credit for Sprinklered Building)

MAXIMUM DEAD END DISTANCES

IBC Code	Fire Code
50 FT. (1020.4) Exception 2	50 FT. (14.2.5.2)

NOTES:

1. Mixed use separation walls shall have 45 minute rated opening protectives.
2. All fire separation walls shall comply with Section 708.4 of the 2015 IBC Code. They shall extend from the top of the fire resistance rated floor/ ceiling assembly below to the underside of the floor or roof slab or deck above and shall be securely attached thereto.
3. All fire walls shall comply with Section 706 of the 2015 IBC Code.
4. Elevator shaft to be (2) hour rated - UL# U906
5. Exterior walls indicated to provide (1) hour rating (UL# U906) - At stairs and fire walls where exterior walls form an angle less than 180 degrees, the exterior wall shall be rated at stairs per L.S. 7.2.2.5.2, and at fire walls per IBC 1023.7.
6. Stair enclosures are (1) hour rated.
7. Refer to 1/8" plans & coord. w/ MEP drawings for chases thru floor shown thus enclosure wall around these floor opn'gs. shall be (1) hour rated & shall extend from floor tight to deck above - pack w/ safing insulation rating shall be as follows:
   CMU - U.L. #U906
   Gyp. Bd. - Gypsum Assoc. assembly WP1110
8. Refer to sheet A-3.3 for wall termination details at rated walls.
9. Refer to the Door Schedule for doors with closers required.
10. All rated walls and partitions shall be permanently identified with signs or stenciling as follows:
    a. Identification markings shall be located in accessible concealed floor, floor-ceiling and attic spaces.
    b. Identification markings shall be located within 15'-0" of the end of each wall and at intervals not exceeding 30'-0" measured horizontally along the wall or partition.
    c. Lettering shall not be less than 3" in height with a minimum 3/8" stroke in contrasting color incorporating the following wording: "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS".

SYMBOL KEY

ALLOWABLE # OCC.
REQ'D WIDTH
32" 165
33"
ACTUAL WIDTH
ACTUAL # OCC.

2 HOUR RATING
1 HOUR RATING
SMOKE PARTITION
NFPA 101 SECTION 14.3.6 EXCEPTION #2

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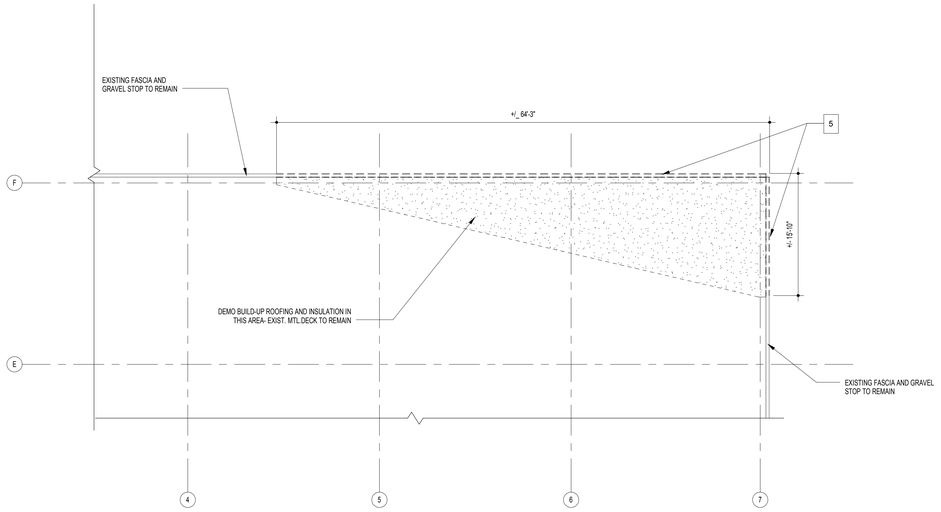
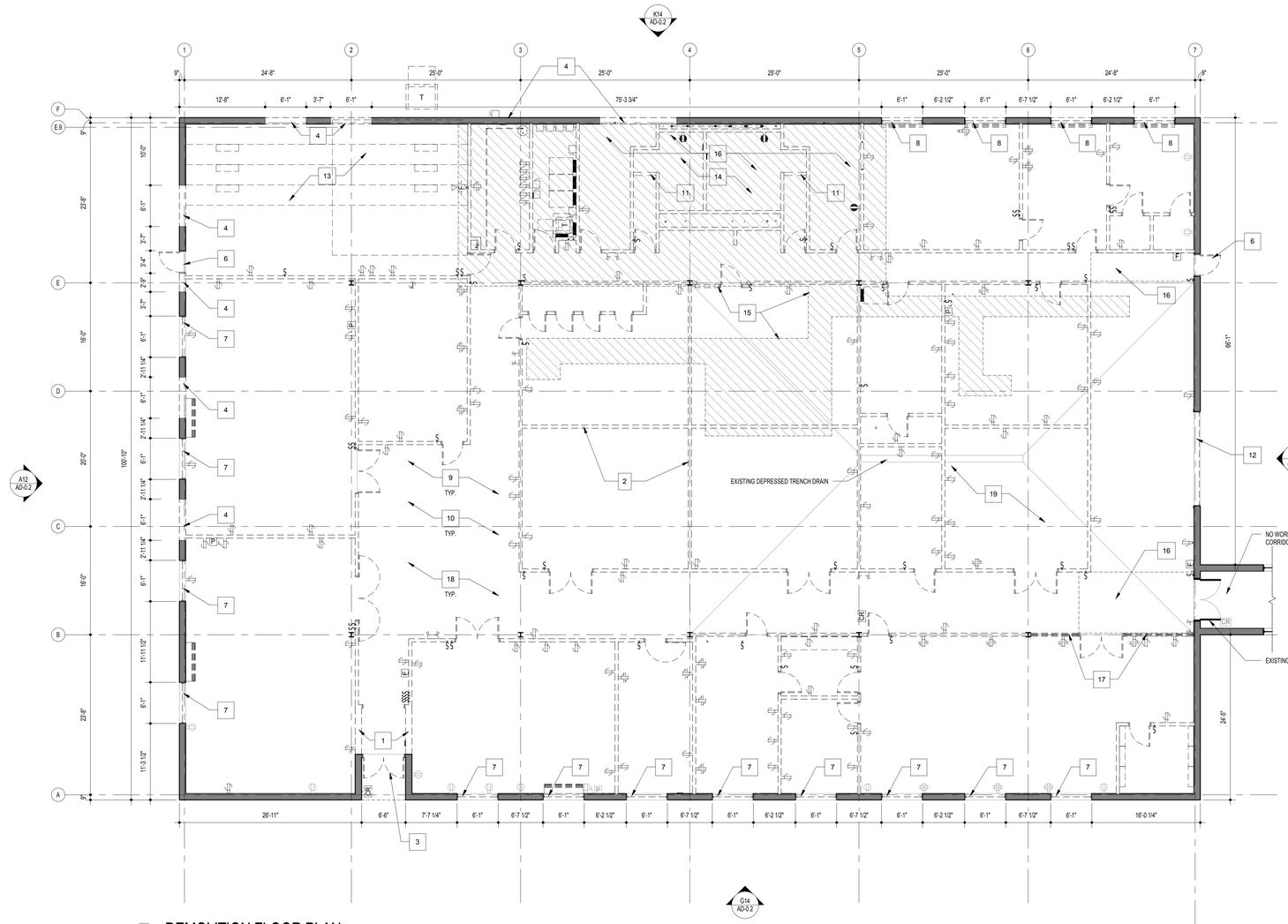
CODE STUDY
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-0.1
February 1, 2017
Bid Set



1 PARTIAL DEMOLITION ROOF PLAN
1/8" = 1'-0"



A17 DEMOLITION FLOOR PLAN
1/8" = 1'-0"

REFER TO MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR ADDITIONAL DEMOLITION INFORMATION

NOTE: ALL EXISTING FLOOR FINISHES, FLOOR BASE, ACOUSTIC TILE CEILINGS, AND DRYWALL CEILINGS ARE TO BE COMPLETELY REMOVED, INCLUDING ALL ADHESIVES AND ACCESSORIES. REMOVE ALL WALL BASE FROM EXISTING BRICK WALLS.
ALL EXISTING BLACKBOARDS, MARKERBOARDS, TACKBOARDS, CLOCKS, COAT HOOKS, PENCIL SHARPENERS AND OTHER WALL MOUNTED ACCESSORIES TO BE REMOVED.
ALL COUNTERS, CASEWORK AND SHELVING TO BE REMOVED.

NOTE: ALL EXISTING STRUCTURAL COMPONENTS TO REMAIN.

FIELD VERIFY ALL DIMENSIONS

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

GENERAL DEMOLITION NOTES

1. ALL WORK SHOWN IS EXISTING TO REMAIN UNLESS NOTED OR INDICATED AS DASHED LINES TO BE REMOVED. THE EXTENT OF DEMOLITION WORK SHALL INCLUDE ALL INCIDENTAL DEMOLITION WORK NECESSARY TO PROPERLY PROVIDE ALL NEW WORK SHOWN AND SPECIFIED, TO INCLUDE MECHANICAL, ELECTRICAL, & PLUMBING ITEMS.
2. DEMOLITION WORK SHOWN IS BASED ON EXISTING DRAWINGS AND INSPECTIONS. THE CONTRACTOR SHALL VISUALLY INSPECT ALL EXISTING CONDITIONS, AND IS RESPONSIBLE FOR PERFORMING THE INDICATED DEMOLITION WORK EVEN IF ACTUAL CONDITIONS DIFFER FROM THESE SHOWN ON THE DRAWINGS.
3. DEMOLITION CONTRACTOR SHALL COORDINATE WITH NEW WORK SECTIONS FOR ADDITIONAL INFORMATION RELATED TO EXTENT OF DEMOLITION.
4. REFER TO ALL OTHER DRAWINGS IN THIS SET FOR INCIDENTAL DEMOLITION WORK NOT NOTED ON THE DEMOLITION PLANS.
5. THE OWNER HAS FIRST RIGHT OF REFUSAL OF ALL SALVAGE ITEMS. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL CONSTRUCTION DEBRIS. DO NOT STOCKPILE DEBRIS ON SITE.
6. ITEMS TO BE DEMOLISHED SHALL BE REMOVED COMPLETELY INCLUDING ALL ANCHORS, HANGERS, FASTENERS, PIPES, CONDUITS, DUCTS, ETC. UNLESS OTHERWISE INDICATED TO BE ABANDONED IN PLACE.
7. CONC. SLAB PATCHES MUST BE FLUSH WITH REMAINING SURFACES TO PERMIT APPLICATION OF FINISHES. PROVIDE WELDED WIRE MESH IN PATCH AREAS LARGER THAN (4) FOUR SQUARE FEET.
8. CONC. SLABS TO REMAIN SHALL BE PATCHED, SCRAPED, LEVELED, AND CLEANED TO PROVIDE SURFACE SUITABLE FOR NEW FINISHES. WHERE RENOVATED AREAS ARE RECEIVING NEW UNDERGROUND MECHANICAL, PLUMBING, ELECTRICAL, OR ADDITIONAL FOUNDATION WORK, SEE MECHANICAL, PLUMBING, ELECTRIC, AS WELL AS ARCHITECTURAL DRAWINGS TO DETERMINE EXTENT OF REQUIRED CUT AND PATCH OF EXISTING SLAB. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CONC. SLAB DEMOLITION AND REPLACEMENT NECESSARY TO INSTALL THE NEW WORK.
9. PARTITIONS SHOWN TO BE REMOVED SHALL BE CONFIRMED BY THE CONTRACTOR AS TO TYPE OF PARTITION AND EXACT LOCATION. COMPLETELY REMOVE PARTITIONS FROM FLOOR TO STRUCTURE ABOVE INCLUDING BASE, ALL FASTENERS, GROUTS, SEALANTS, ETC., UNLESS NOTED OTHERWISE. MASONRY PARTITIONS WHICH EXTEND THROUGH THE SLAB SHALL BE REMOVED TO 8" BELOW FINISH FLOOR. FILL SLAB OPENING WITH CONCRETE FILL TO RECEIVE FINISH FLOOR. WHERE WALLS SCHEDULED TO BE REMOVED SIT ON SLABS, GRIND SLAB TO RECEIVE FINISH FLOOR.
10. REMOVE, PATCH AND REPAIR PORTIONS OF WALL PARTITIONS WHICH CONFLICT WITH NEW WORK TO BE INSTALLED, EVEN IF NOT SPECIFICALLY NOTED TO BE DEMOLISHED ON PLANS.
11. ALL EXISTING STRUCTURE SHALL REMAIN, UNLESS NOTED OTHERWISE.
12. TEMPORARILY SUPPORT ALL BEAMS, LINTELS, PORTIONS OF WALLS ETC., TO BE DISTURBED BY DEMOLITION WORK, UNTIL THEY ARE RE-SUPPORTED BY NEW WORK.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF EXISTING BUILDING ELEMENTS TO REMAIN THROUGHOUT SEQUENCE OF WORK. ANY DAMAGE TO EXISTING BUILDING CONDITIONS SHOWN TO REMAIN SHALL BE RESTORED TO NEW WORK CONDITION AT NO ADDITIONAL COST TO THE OWNER.
14. WHERE FINISHES ARE INDICATED TO BE REMOVED, REMOVAL SHALL INCLUDE ANY GROUT, ADHESIVES, FASTENERS, AND ALL OTHER ITEMS USED TO ATTACH THE FINISHES TO THE SURFACES THAT THEY COVER.
15. ANY FLOOR AREAS DAMAGED BY THE DEMOLITION CONTRACTOR SHALL BE PATCHED TO MATCH EXISTING.
16. WHERE CEILINGS ARE TO BE REMOVED, REMOVE ALL CEILINGS SYSTEMS COMPLETE INCLUDING GRID, TRIM HANGER, CLIPS, ETC. WHERE NEW CEILINGS ARE SPECIFIED, NO DOUBLE CEILINGS PERMITTED. REMOVE ALL ORIGINAL CONCEALED CEILINGS WHERE ENCOUNTERED.
17. ALL EXISTING SURFACES TO REMAIN SHALL BE PROTECTED, PATCHED IF DAMAGED AND CLEANED PRIOR TO APPLICATION OF FINISHES.
18. CONTRACTOR TO PROTECT ALL EQUIPMENT AND OTHER ELEMENTS IN AREA OF NEW OR DEMOLITION WORK.
19. REMOVE ALL CURTAINS AND BLINDS IN AREAS OF RENOVATION OR DEMOLITION, UNLESS NOTED OTHERWISE.
20. REMOVE MECHANICAL, ELECTRICAL AND PLUMBING ITEMS AS NOTED ON MECHANICAL, ELECTRICAL AND PLUMBING PLANS. COORDINATE WITH CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING, FOR ADDITIONAL DEMOLITION NOTES. REMOVAL WORK IS INTENDED TO INCLUDE ALL ASSOCIATED ITEMS SUCH AS ELECTRICAL OUTLETS, SWITCHES, CONDUITS, CONTROLS, PIPING, MOUNTING BLOCKS, ETC., AS NOTED. THE CONTRACTOR SHALL REFER TO ALL CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS FOR PROCEDURES CONCERNING RELATED TRADES IN AREAS WHICH REQUIRE DEMOLITION. REPAIR AND PATCH ANY AREAS DAMAGED DURING REMOVAL WORK.
21. THE FOLLOWING ITEMS ARE TO BE SALAVGED AND TURNED OVER TO THE COLLEGE:
    - DOORS: 1'-4" X 7'-0", 1'-0" X 7'-0"
    - DOOR HARDWARE: HANDLES, PANIC BARS, CLOSURES, STOPS
    - COMMODES & URINALS (INCLUDING FLUSH METERS, CONTROLS, ETC.)
    - MIRRORS
    - TOILET PAPER & PAPER TOWEL DISPENSERS
    - 2 IRON SLOP SINKS
    - FIRE ALARMS: SMOKE DETECTORS, HORN/STROBE, PULL STATIONS
    - HVAC 2 DIFFUSERS
    - WATER FOUNTAIN
    - EM LIGHTS
    - AEDS
    - IT ACCESS POINTS
    - SMARTBOARDS & PROJECTORS
    - CAMERAS
    - CLOCKS
    - WHITE BOARDS & BULLETIN BOARDS
    - ROOM & DIRECTIONAL SIGNS
    - GCC FOUNDATION - TREE OF LEARNING
    - ART WORK
    - VARIOUS FURNITURE

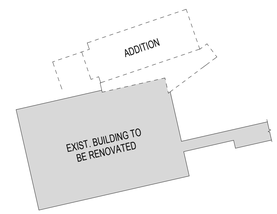
DEMOLITION KEY

- WALL TO BE REMOVED (EXISTING WALLS ARE MOSTLY CMU AND/OR BRICK, W/ SOME STUD & DRYWALL)
- DOOR TO BE REMOVED
- CASEWORK TO BE REMOVED
- APPROXIMATE AREA FOR CONCRETE SLAB TO BE REMOVED FOR INSTALLATION OF NEW PLUMBING WORK.

DEMOLITION KEY NOTES

1. REMOVE ENTIRE WALL STRUCTURE DOWN TO SLAB (INCLUDING MASONRY, DOORS, AND WINDOWS). WHERE WALL PENETRATES SLAB, REMOVE WALL TO 8" BELOW SLAB. PATCH AND LEVEL FLOOR TO RECEIVE NEW FINISHES. CAREFULLY REMOVE MASONRY, SO NEW CAN BE TOOTHED IN.
2. REMOVE HANGING OPERABLE PARTITION, INCLUDING ASSOCIATED FRAMING, SUPPORT MEMBERS, ETC.
3. REMOVE DOOR(S) AND FRAME(S), INCLUDING THRESHOLDS, STOPS, HOLD OPENS, ETC.
4. REMOVE PORTION OF WALL FOR NEW OPENING, LOUVER, OR WINDOW. INSTALL NEW LINTEL PER STRUCTURAL SCHEDULE. SEE NEW WORK PLANS FOR SIZE OF OPENINGS. CAREFULLY REMOVE EXISTING MASONRY SO NEW MASONRY CAN BE TOOTHED-IN.
5. REMOVE PORTION OF ROOF FASCIA AND GRAVEL STOP.
6. REMOVE DOOR(S), FRAME(S) AND CONC. SILL, INCLUDING THRESHOLDS, STOPS, HOLD OPENS, ETC.
7. REMOVE EXISTING WINDOW(S), INCLUDING FRAME, CLIPS, ETC. REMOVE INTERIOR STONE SILL – EXTERIOR SILL TO REMAIN & BE CLEANED.
8. REMOVE WINDOW, SILL & WALL CONSTRUCTION BELOW SILL DOWN TO SLAB.
9. REMOVE ALL FINISHES INCLUDING FLOORING, FIXTURES, CASEWORK, SHELVING, BASE, CHALK & TACK BOARDS, PROJECTION SCREEN, WINDOW TREATMENT, SINKS, PLUMBING FIXTURES, CHASES, MECHANICAL UNITS, ELECTRICAL ITEMS, CEILING & CEILING SUPPORT MEMBERS & ALL BULKHEADS. COORD. W/ M.E.P. FOR ADDITIONAL DEMO.
10. REMOVE ALL FINISH FLOORING & BASE (2 OR MORE LAYERS IN SOME AREAS) INCLUDING ALL ADHESIVES, GROUT, ETC. FROM EXISTING WALLS AND SLAB. PATCH AND LEVEL FOR NEW FLOOR.
11. REMOVE STONE THRESHOLD.
12. REMOVE EXISTING WINDOW(S) INCLUDING FRAME, CLIPS, SILLS (INTERIOR & EXTERIOR), ETC.
13. REMOVE TIERED SEATING PLATFORM, INCLUDING ASSOCIATED FINISHES, FASTENERS, ETC. PATCH AND LEVEL FLOOR TO RECEIVE NEW FINISHES AS REQ'D.
14. REMOVE PLUMBING FIXTURES, ACCESSORIES, TOILET PARTITIONS. WING WALLS AT STALLS, ETC. COORD. W/ M.E.P. FOR ADDITIONAL DEMOLITION. PATCH FLOOR AND WALL FINISHES TO MATCH.
15. REMOVE EXISTING SLAB FOR INSTALLATION OF UNDERSLAB PIPING. COORD. W/ M.E.P. FOR ADDITIONAL DEMOLITION. PATCH AND LEVEL FLOOR TO RECEIVE NEW FINISHES AS REQ'D.
16. REMOVE ALL CERAMIC AND/OR QUARRY TILE & SETTING BED MATERIALS FROM FLOOR AND WALLS IN THIS AREA. PATCH AND LEVEL FOR NEW FLOOR.
17. REMOVE INTERIOR STOREFRONT SYSTEM.
18. REMOVE LIGHTS, CEILING AND CEILING SUPPORT MEMBERS. CEILING REMOVAL INCLUDES ALL BULKHEADS (PLASTER, GYP. BD. OR ACOUS. TILE) U.N.O.
19. IN AREAS OF EXISTING DEPRESSED SLAB, REMOVE FLOOR INFILL TO ORIGINAL SLAB DEPTH. REPLACE WITH NEW CEMENTITIOUS LEVELING COMPOUND.
20. REMOVE EXTERIOR SIGNAGE AND ASSOCIATED FASTENERS.

KEY PLAN



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GP #21620

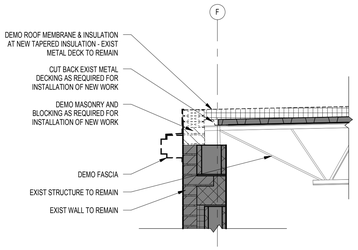
DEMOLITION FLOOR PLAN

Garrett College STEM Renovation and Addition
McHenry, MD

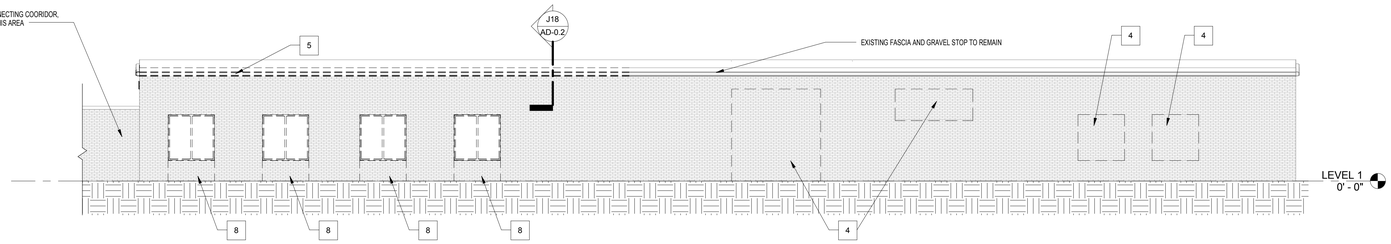
DATE	DESCRIPTION

AD-0.1

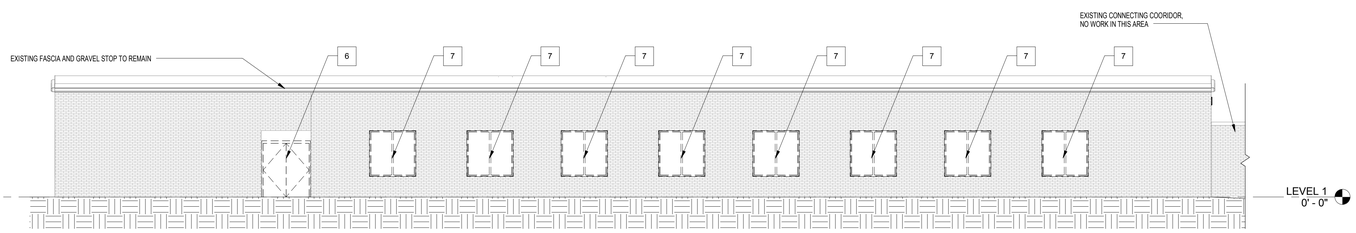
February 1, 2017
Bid Set



J18 PARTIAL DEMO SECTION AT CLERESTORY
3/4" = 1'-0"

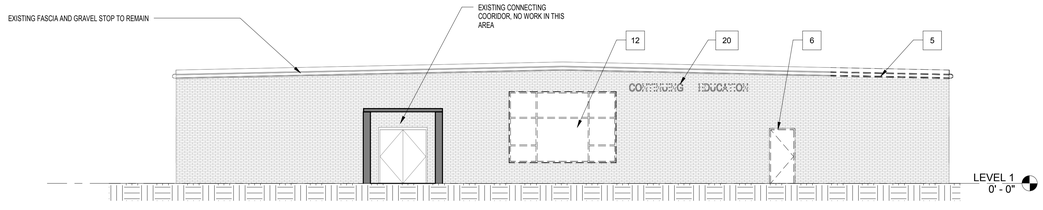


K14 NORTH ELEVATION DEMO
1/8" = 1'-0"

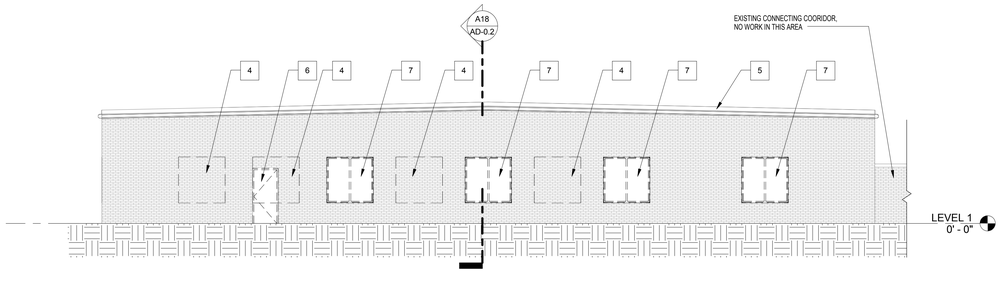


G14 SOUTH ELEVATION DEMO
1/8" = 1'-0"

A18 DEMO SECTION @ EXISTING
3/4" = 1'-0"



D12 EAST ELEVATION DEMO
1/8" = 1'-0"



A12 WEST ELEVATION DEMO
1/8" = 1'-0"

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

GENERAL DEMOLITION NOTES

1. ALL WORK SHOWN IS EXISTING TO REMAIN UNLESS NOTED OR INDICATED AS DASHED LINES TO BE REMOVED. THE EXTENT OF DEMOLITION WORK SHALL INCLUDE ALL INCIDENTAL DEMOLITION WORK NECESSARY TO PROPERLY PROVIDE ALL NEW WORK SHOWN AND SPECIFIED, TO INCLUDE MECHANICAL, ELECTRICAL, & PLUMBING ITEMS.
2. DEMOLITION WORK SHOWN IS BASED ON EXISTING DRAWINGS AND INSPECTIONS. THE CONTRACTOR SHALL VISUALLY INSPECT ALL EXISTING CONDITIONS, AND IS RESPONSIBLE FOR PERFORMING THE INDICATED DEMOLITION WORK EVEN IF ACTUAL CONDITIONS DIFFER FROM THESE SHOWN ON THE DRAWINGS.
3. DEMOLITION CONTRACTOR SHALL COORDINATE WITH NEW WORK SECTIONS FOR ADDITIONAL INFORMATION RELATED TO EXTENT OF DEMOLITION.
4. REFER TO ALL OTHER DRAWINGS IN THIS SET FOR INCIDENTAL DEMOLITION WORK NOT NOTED ON THE DEMOLITION PLANS.
5. THE OWNER HAS FIRST RIGHT OF REFUSAL OF ALL SALVAGE ITEMS. THE CONTRACTOR SHALL PROPERLY DISPOSE OF ALL CONSTRUCTION DEBRIS. DO NOT STOCKPILE DEBRIS ON SITE.
6. ITEMS TO BE DEMOLISHED SHALL BE REMOVED COMPLETELY INCLUDING ALL ANCHORS, HANGERS, FASTENERS, PIPES, CONDUITS, DUCTS, ETC. UNLESS OTHERWISE INDICATED TO BE ABANDONED IN PLACE.
7. CONC. SLAB PATCHES MUST BE FLUSH WITH REMAINING SURFACES TO PERMIT APPLICATION OF FINISHES. PROVIDE WELDED WIRE MESH IN PATCH AREAS LARGER THAN (4) FOUR SQUARE FEET.
8. CONC. SLABS TO REMAIN SHALL BE PATCHED, SCRAPED, LEVELED, AND CLEANED TO PROVIDE SURFACE SUITABLE FOR NEW FINISHES. WHERE RENOVATED AREAS ARE RECEIVING NEW UNDERGROUND MECHANICAL, PLUMBING, ELECTRICAL, OR ADDITIONAL FOUNDATION WORK, SEE MECHANICAL, PLUMBING, ELECTRIC, AS WELL AS ARCHITECTURAL DRAWINGS TO DETERMINE EXTENT OF REQUIRED CUT AND PATCH OF EXISTING SLAB. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CONC. SLAB DEMOLITION AND REPLACEMENT NECESSARY TO INSTALL THE NEW WORK.
9. PARTITIONS SHOWN TO BE REMOVED SHALL BE CONFIRMED BY THE CONTRACTOR AS TO TYPE OF PARTITION AND EXACT LOCATION. COMPLETELY REMOVE PARTITIONS FROM FLOOR TO STRUCTURE ABOVE INCLUDING BASE, ALL FASTENERS, GROUTS, SEALANTS, ETC., UNLESS NOTED OTHERWISE. MASONRY PARTITIONS WHICH EXTEND THROUGH THE SLAB SHALL BE REMOVED TO 8" BELOW FINISH FLOOR. FILL SLAB OPENING WITH CONCRETE FILL TO RECEIVE FINISH FLOOR. WHERE WALLS SCHEDULED TO BE REMOVED SIT ON SLABS, GRIND SLAB TO RECEIVE FINISH FLOOR.
10. REMOVE, PATCH AND REPAIR PORTIONS OF WALL PARTITIONS WHICH CONFLICT WITH NEW WORK TO BE INSTALLED, EVEN IF NOT SPECIFICALLY NOTED TO BE DEMOLISHED ON PLANS.
11. ALL EXISTING STRUCTURE SHALL REMAIN, UNLESS NOTED OTHERWISE.
12. TEMPORARILY SUPPORT ALL BEAMS, LINTELS, PORTIONS OF WALLS ETC., TO BE DISTURBED BY DEMOLITION WORK, UNTIL THEY ARE RE-SUPPORTED BY NEW WORK.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF EXISTING BUILDING ELEMENTS TO REMAIN THROUGHOUT SEQUENCE OF WORK. ANY DAMAGE TO EXISTING BUILDING CONDITIONS SHOWN TO REMAIN SHALL BE RESTORED TO NEW WORK CONDITION AT NO ADDITIONAL COST TO THE OWNER.
14. WHERE FINISHES ARE INDICATED TO BE REMOVED, REMOVAL SHALL INCLUDE ANY GROUT, ADHESIVES, FASTENERS, AND ALL OTHER ITEMS USED TO ATTACH THE FINISHES TO THE SURFACES THAT THEY COVER.
15. ANY FLOOR AREAS DAMAGED BY THE DEMOLITION CONTRACTOR SHALL BE PATCHED TO MATCH EXISTING.
16. WHERE CEILINGS ARE TO BE REMOVED, REMOVE ALL CEILINGS SYSTEMS COMPLETE INCLUDING GRID, TRIM HANGER, CLIPS, ETC. WHERE NEW CEILINGS ARE SPECIFIED, NO DOUBLE CEILINGS PERMITTED. REMOVE ALL ORIGINAL CONCEALED CEILINGS WHERE ENCOUNTERED.
17. ALL EXISTING SURFACES TO REMAIN SHALL BE PROTECTED, PATCHED IF DAMAGED AND CLEANED PRIOR TO APPLICATION OF FINISHES.
18. CONTRACTOR TO PROTECT ALL EQUIPMENT AND OTHER ELEMENTS IN AREA OF NEW OR DEMOLITION WORK.
19. REMOVE ALL CURTAINS AND BLINDS IN AREAS OF RENOVATION OR DEMOLITION, UNLESS NOTED OTHERWISE.
20. REMOVE MECHANICAL, ELECTRICAL AND PLUMBING ITEMS AS NOTED ON MECHANICAL, ELECTRICAL AND PLUMBING PLANS. COORDINATE WITH CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING, FOR ADDITIONAL DEMOLITION NOTES. REMOVAL WORK IS INTENDED TO INCLUDE ALL ASSOCIATED ITEMS SUCH AS ELECTRICAL OUTLETS, SWITCHES, CONDUITS, CONTROLS, PIPING, MOUNTING BLOCKS, ETC., AS NOTED. THE CONTRACTOR SHALL REFER TO ALL CIVIL, STRUCTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS FOR PROCEDURES CONCERNING RELATED TRADES IN AREAS WHICH REQUIRE DEMOLITION. REPAIR AND PATCH ANY AREAS DAMAGED DURING REMOVAL WORK.
21. THE FOLLOWING ITEMS ARE TO BE SALVAGED AND TURNED OVER TO THE COLLEGE:
    - DOORS: 1'-4" X 7'-0", 1'-0" X 7'-0"
    - DOOR HARDWARE: HANDLES, PANIC BARS, CLOSURES, STOPS
    - COMMODES & URINALS (INCLUDING FLUSH METERS, CONTROLS, ETC.)
    - MIRRORS
    - TOILET PAPER & PAPER TOWEL DISPENSERS
    - 2 IRON SLOP SINKS
    - FIRE ALARMS: SMOKE DETECTORS, HORN/STROBE, PULL STATIONS
    - HVAC 2 DIFFUSERS
    - WATER FOUNTAIN
    - EM LIGHTS
    - AEDS
    - IT ACCESS POINTS
    - SMARTBOARDS & PROJECTORS
    - CAMERAS
    - CLOCKS
    - WHITE BOARDS & BULLETIN BOARDS
    - ROOM & DIRECTIONAL SIGNS
    - GCC FOUNDATION - TREE OF LEARNING
    - ART WORK
    - VARIOUS FURNITURE

DEMOLITION KEY

WALL TO BE REMOVED (EXISTING WALLS ARE MOSTLY CMU AND/OR BRICK, W/ SOME STUD & DRYWALL)

DOOR TO BE REMOVED

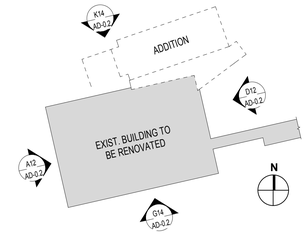
CASEWORK TO BE REMOVED

APPROXIMATE AREA FOR CONCRETE SLAB TO BE REMOVED FOR INSTALLATION OF NEW PLUMBING WORK.

DEMOLITION KEY NOTES

1. REMOVE ENTIRE WALL STRUCTURE DOWN TO SLAB (INCLUDING MASONRY, DOORS, AND WINDOWS). WHERE WALL PENETRATES SLAB, REMOVE WALL TO 8" BELOW SLAB. PATCH AND LEVEL FLOOR TO RECEIVE NEW FINISHES. CAREFULLY REMOVE MASONRY, SO NEW CAN BE TOOTHED IN.
2. REMOVE HANGING OPERABLE PARTITION, INCLUDING ASSOCIATED FRAMING, SUPPORT MEMBERS, ETC.
3. REMOVE DOOR(S) AND FRAME(S), INCLUDING THRESHOLDS, STOPS, HOLD OPENS, ETC.
4. REMOVE PORTION OF WALL FOR NEW OPENING, LOUVER, OR WINDOW. INSTALL NEW LINTEL PER STRUCTURAL SCHEDULE. SEE NEW WORK PLANS FOR SIZE OF OPENINGS. CAREFULLY REMOVE EXISTING MASONRY SO NEW MASONRY CAN BE TOOTHED-IN.
5. REMOVE PORTION OF ROOF FASCIA AND GRAVEL STOP.
6. REMOVE DOOR(S), FRAME(S) AND CONC. SILL, INCLUDING THRESHOLDS, STOPS, HOLD OPENS, ETC.
7. REMOVE EXISTING WINDOW(S), INCLUDING FRAME, CLIPS, ETC. REMOVE INTERIOR STONE SILL – EXTERIOR SILL TO REMAIN & BE CLEANED.
8. REMOVE WINDOW, SILL & WALL CONSTRUCTION BELOW SILL DOWN TO SLAB.
9. REMOVE ALL FINISHES INCLUDING FLOORING, FIXTURES, CASEWORK, SHELVING, BASE, CHALK & TACK BOARDS, PROJECTION SCREEN, WINDOW TREATMENT, SINKS, PLUMBING FIXTURES, CHASES, MECHANICAL UNITS, ELECTRICAL ITEMS, CEILING & CEILING SUPPORT MEMBERS & ALL BULKHEADS. COORD. W/ M.E.P. FOR ADDITIONAL DEMO.
10. REMOVE ALL FINISH FLOORING & BASE (2 OR MORE LAYERS IN SOME AREAS) INCLUDING ALL ADHESIVES, GROUT, ETC. FROM EXISTING WALLS AND SLAB. PATCH AND LEVEL FOR NEW FLOOR.
11. REMOVE STONE THRESHOLD.
12. REMOVE EXISTING WINDOW(S) INCLUDING FRAME, CLIPS, SILLS (INTERIOR & EXTERIOR), ETC.
13. REMOVE TIERED SEATING PLATFORM, INCLUDING ASSOCIATED FINISHES, FASTENERS, ETC. PATCH AND LEVEL FLOOR TO RECEIVE NEW FINISHES AS REQ'D.
14. REMOVE PLUMBING FIXTURES, ACCESSORIES, TOILET PARTITIONS, WING WALLS AT STALLS, ETC. COORD. W/ M.E.P. FOR ADDITIONAL DEMOLITION. PATCH FLOOR AND WALL FINISHES TO MATCH.
15. REMOVE EXISTING SLAB FOR INSTALLATION OF UNDERSLAB PIPING. COORD. W/ M.E.P. FOR ADDITIONAL DEMOLITION. PATCH AND LEVEL FLOOR TO RECEIVE NEW FINISHES AS REQ'D.
16. REMOVE ALL CERAMIC AND/OR QUARRY TILE & SETTING BED MATERIALS FROM FLOOR AND WALLS IN THIS AREA. PATCH AND LEVEL FOR NEW FLOOR.
17. REMOVE INTERIOR STOREFRONT SYSTEM.
18. REMOVE LIGHTS, CEILING AND CEILING SUPPORT MEMBERS. CEILING REMOVAL INCLUDES ALL BULKHEADS (PLASTER, GYP. BD. OR ACOUS. TILE) U.N.O.
19. IN AREAS OF EXISTING DEPRESSED SLAB, REMOVE FLOOR INFILL TO ORIGINAL SLAB DEPTH. REPLACE WITH NEW CEMENTITIOUS LEVELING COMPOUND.
20. REMOVE EXTERIOR SIGNAGE AND ASSOCIATED FASTENERS.

KEY PLAN



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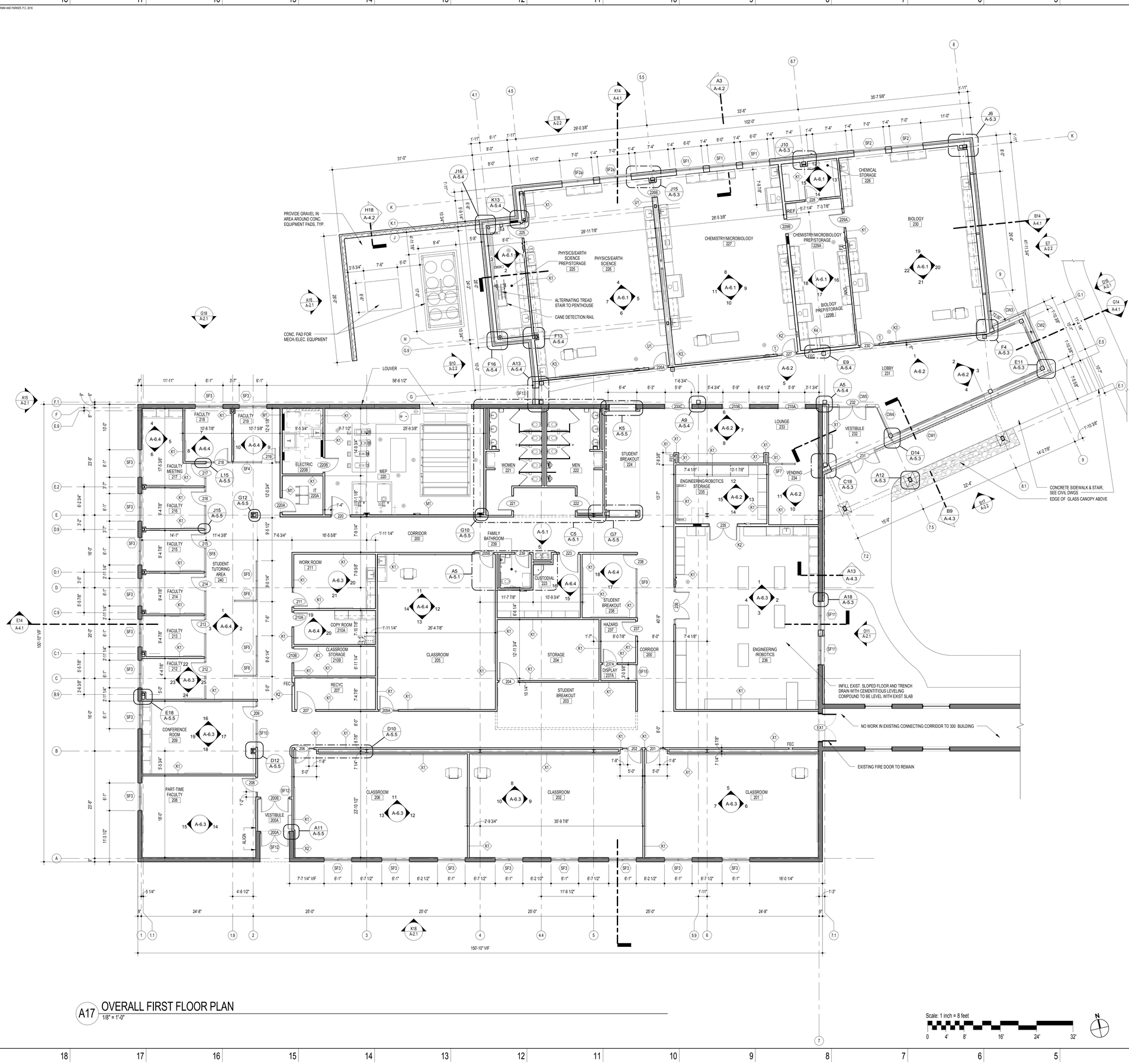
GP #21620

DEMOLITION SECTIONS & ELEVATIONS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

AD-0.2
February 1, 2017
Bid Set



A17 OVERALL FIRST FLOOR PLAN
1/8" = 1'-0"

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

GENERAL NOTES

GENERAL NOTE APPLICABLE TO ALL DRAWINGS - ITEMS AND CONDITIONS DETAILED, NOTED OR OTHERWISE IDENTIFIED ON ONE OF THE SECTIONS OR DETAILS ARE APPLICABLE AND BINDING TO ALL OTHER SECTIONS AND DETAILS FOR IDENTICAL OR SIMILAR CONDITIONS.

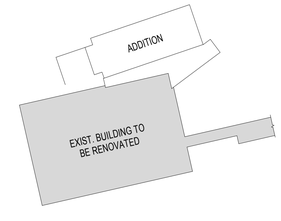
1. ALL CONSTRUCTION AND WORK SHOWN ON THE COMPLETE SET OF DRAWINGS IS ASSUMED TO BE NEW AND FURNISHED AND INSTALLED BY THE CONTRACTOR.
2. IF A CONFLICT EXISTS BETWEEN DRAWINGS (AND/OR SPECIFICATIONS), THE MORE STRINGENT AND MORE COSTLY REQUIREMENT SHALL APPLY. ITEMS SHOWN ON THE DRAWINGS, BUT NOT SPECIFIED, SHALL APPLY AND BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IF AN ITEM IS SHOWN ON THE DRAWINGS, BUT IS NOT INCLUDED IN THE SPECIFICATIONS, PROVIDE ITEM OF A QUALITY LEVEL CONSISTENT WITH THE GENERAL QUALITY LEVEL OF THE CONTRACT REQUIREMENTS. BRING CONFLICTS BETWEEN THE DRAWINGS AND SPECIFICATIONS TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.
3. WRITTEN INFORMATION TAKES PRECEDENT OVER DRAWING LINES. BRING CONFLICTS BETWEEN WRITTEN INFORMATION AND DRAWN LINES TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.
4. IF A CONFLICT EXISTS BETWEEN DRAWINGS OF DIFFERENT SCALES, CONSULT THE ARCHITECT FOR CLARIFICATION.
5. IN THE ABSENCE OF A WRITTEN DIMENSION, OR IN CASE OF DOUBT AS TO THE PROPER MEASUREMENT, CONSULT THE ARCHITECT FOR CLARIFICATION.
6. IF AN AREA OR SPACE IS SHOWN, BUT IS NOT CLEARLY DEFINED OR INDICATED BY NOTES, PROVIDE THE SAME MATERIALS AND FINISHES AS SCHEDULED OR DETAILED FOR AREAS OF SIMILAR USE ELSEWHERE IN THE BUILDING.
7. SECTIONS INDICATED ARE INTENDED TO SHOW THE SPECIFIC CONSTRUCTION WHERE REFERENCED AS WELL AS ESTABLISH THE GENERAL CONSTRUCTION DETAILS FOR SECTIONS THROUGHOUT THE PROJECT WHICH DO NOT HAVE SPECIFIC SECTIONS DRAWN. THE MOST SIMILAR SECTIONS SHALL BE ADAPTED TO ANY SECTIONS NOT DETAILED. ANY SPECIFIC QUESTIONS CONCERNING CONSTRUCTION NOT ADEQUATELY COVERED BY THE ABOVE SHOULD BE DIRECTED TO THE ARCHITECT DURING THE BIDDING.
8. TYPICAL DETAILS THROUGHOUT THE DRAWING SET SHALL APPLY FOR ALL APPLICABLE CONDITIONS EVEN IF NOT SPECIFICALLY SHOWN OR REFERENCED.
9. SEE STRUCTURAL DRAWINGS FOR ACTUAL STRUCTURAL STEEL AND BEARING ELEVATIONS.
10. REFER TO CIVIL SITE PLAN FOR THE LAYOUT OF CONCRETE WALKS, MOW STRIPS, PAVING PATTERNS, ETC. IN THE BUILDING VICINITY. REFER TO CIVIL DRAWINGS FOR THE CONTINUATION OF THIS WORK.
11. UNLESS NOTED OTHERWISE. WALLS SHALL EXTEND TO THE ROOF OR FLOOR DECK ABOVE AND BE SEALED IN ACCORDANCE WITH GENERAL PLAN NOTE #2 ON SHEET A1.1 AND WALL TERMINATION DETAILS ON WALL TYPE SHEET.
12. AT ALL OUTSIDE CORNERS OF INTERIOR CMU WALLS, COLUMN ENCLOSURES, PIPE CHASES OR OTHER WALL PROJECTIONS, PROVIDE MASONRY UNITS AND/OR GLAZED MASONRY UNITS WITH BULLNOSED (ROUNDED) EDGES WITH 1" RADIUS, UNLESS OTHERWISE NOTED OR WHERE SCHEDULED TO RECEIVE CERAMIC TILE. WHERE MASONRY CORNERS ALIGN WITH BULKHEADS, TRANSITION FROM BULLNOSE CORNER UNITS TO SQUARE CORNER UNITS.
13. UNLESS SPECIFICALLY NOTED OTHERWISE, ENCLOSE ALL VERTICAL MECHANICAL PIPES, RAIN LEADERS, ETC. WITH 4" CMU OR GYPSUM BOARD TO MATCH SURROUNDING FINISHES.
14. REFER TO PLANS AND ELEVATIONS FOR LOCATIONS OF CONTROL JOINTS (C.J.) AND EXPANSION JOINTS (E.J.) IN EXTERIOR MASONRY WALLS. IF A CONFLICT EXISTS BETWEEN JOINT LOCATIONS SHOWN ON THE ELEVATIONS AND PLANS, CONSULT THE ARCHITECT FOR CLARIFICATION PRIOR TO CONSTRUCTION. REFER TO FLOOR PLANS FOR LOCATIONS OF CONTROL JOINTS (C.J.) IN INTERIOR MASONRY WALLS.
15. ALL EXTERIOR CAVITY WALLS TO HAVE THRU-WALL FLASHING AT THE BOTTOM OF THE CAVITY WITH WEEP HOLES TO THE OUTSIDE. ALL FLASHING BUILT INTO WALLS SHALL BE LAPPED AND SEALED. REFER TO FLASHING DETAILS INDICATED.
16. REFER TO BUILDING ELEVATIONS AND ELEVATION DETAILS FOR MASONRY PATTERNS.
17. INCLUDE PROJECTIONS, BEAM ENCLOSURES, RECESSES, BULKHEADS, PILASTERS AND SIMILAR ENCLOSURES AS PART OF WALL AND CEILING FINISHES AS SCHEDULED.
18. ALL APPURTENANCES BUILT INTO OR THROUGH WALLS, INCLUDING DOORS, DUCTS, WINDOWS, LOUVERS, GRILLES, MECHANICAL WORK, ETC. SHALL FIT TIGHT AND BE THOROUGHLY SEALED AROUND PERIMETERS. WORK AT EXTERIOR WALLS SHALL BE FLASHED OR OTHERWISE WATERPROOF SEALED.
19. SEE FURNISHING PLANS (A-9 SERIES) FOR CASEWORK, CABINETS, LOCKERS, DISPLAY BOARDS AND CASES AND SIMILAR ITEMS.
20. FIELD CHECK ROUGH AND/OR FINISHED DIMENSIONS FOR ACCURATE FITTING OF CABINETS, COUNTERS, LOCKERS, DOORS, WINDOWS, FIXTURES, SHELVING, GATES AND OTHER INSTALLATIONS PRIOR TO SHOP OR FACTORY FABRICATION. PROVIDE FILLER STRIPS, SCRIBE STRIPS, BASES, CLOSURE FINISHES AND TRIM FOR A COMPLETE INSTALLATION.
21. PROVIDE APPROPRIATE TRANSITION STRIPS AT CHANGES IN FLOOR ELEVATIONS.
22. EACH CONTRACTOR SHALL REFER TO MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS AND BE RESPONSIBLE FOR WORK PERTAINING TO THEIR PARTICULAR TRADE. ALL CONTRACTORS SHALL COORDINATE THE WORK OF ALL TRADES AND FIELD CHECK AGAINST ANY CONFLICTS BETWEEN DRAWINGS. REPORT CONFLICTS TO THE ARCHITECT FOR CLARIFICATION.
23. REFER TO PLUMBING, HVAC AND ELECTRICAL DRAWINGS FOR LOCATIONS AND DESCRIPTIONS OF ACCESS PANELS. LOUVER OPENINGS, VENTILATORS, GRILLES, VALVE CABINETS, FIRE DAMPERS OR OTHER APPURTENANCES AFFECTING WALLS, CEILINGS OR FLOORS. PROVIDE NECESSARY LINTELS, SUPPORT AND ANCHORAGE. SEE STRUCTURAL NOTES FOR LINTEL REQUIREMENTS.
24. REFER TO MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR LOCATIONS OF CONCRETE PADS TO BE PROVIDED BELOW OR AROUND EQUIPMENT.
25. INSTALL ELECTRIC SWITCHES, OUTLETS, THERMOSTATS, CONTROLS, CLOCKS, SPEAKERS, FLAGPOLE HOLDERS AND OTHER WALL-MOUNTED ACCESSORIES IN LOCATIONS WHICH ARE UNOBSTRUCTED BY CABINETS, COUNTERS, RACKS, DISPLAY BOARDS, FIXTURES, SHELVING OR OTHER FURNISHINGS OR EQUIPMENT DESIGNATED FOR SPACES SHOWN ON DRAWINGS. THESE DEVICES ARE SHOWN ON THE ARCHITECTURAL DRAWINGS TO ALERT OTHER SUB-CONTRACTORS OF THEIR PRESENCE. COORDINATE INSTALLATION WITH THE ELECTRICAL DRAWINGS. ADVISE THE ARCHITECT OF CONFLICTS IN LOCATION OR TYPES OF DEVICES SHOWN PRIOR TO INSTALLATION. DO NOT INSTALL WALL-MOUNTED ITEMS ON, THROUGH OR INTO ANY EQUIPMENT UNLESS INDICATED.
26. MOUNT ELECTRIC SWITCHES, THERMOSTATS AND OTHER ELECTRONIC CONTROLS LOCATED IN THE SAME VICINITY AT THE SAME HEIGHT ABOVE FINISHED FLOOR IN A UNIFORM, ORDERLY FASHION UNLESS NOTED OTHERWISE.

GENERAL PLAN NOTES

GENERAL NOTE APPLICABLE TO ALL DRAWINGS - ITEMS AND CONDITIONS DETAILED, NOTED OR OTHERWISE IDENTIFIED ON ONE OF THE SECTIONS OR DETAILS ARE APPLICABLE AND BINDING TO ALL OTHER SECTIONS AND DETAILS FOR IDENTICAL OR SIMILAR CONDITIONS.

1. REFER TO SHEET A-3.3 FOR WALL TYPES AS REFERENCED ON PLANS WITH THE DIAMOND SYMBOL. UNLESS REFERENCED OTHERWISE, ALL INTERIOR GYPSUM BOARD WALLS ARE TYPE K1.
2. UNLESS NOTED OTHERWISE, WALLS SHALL EXTEND TO THE ROOF OR FLOOR DECK ABOVE AND BE SEALED IN ACCORDANCE WITH THE APPROPRIATE WALL TERMINATION DETAILS. REFER TO THE CODE STUDY PLAN FOR IDENTIFICATION OF ALL SMOKE AND FIRE WALL CONDITIONS. PERIMETER CORRIDOR AND LOBBY WALLS SHALL BE BUILT TO RESIST THE PASSAGE OF SMOKE.
3. REFER TO WALL SECTIONS AND DETAILS FOR EXTERIOR WALL TYPES AND CONSTRUCTION.
4. DIMENSIONS ON PLANS ARE FROM FACE OF MASONRY TO FACE OF MASONRY, FACE OF MASONRY TO FACE OF GYPSUM BOARD OR FACE OF GYPSUM BOARD TO FACE OF GYPSUM BOARD.
5. COLUMN GRID LINES ARE FOR REFERENCE ONLY, REFER TO STRUCTURAL DRAWINGS FOR COLUMN LOCATIONS.
6. REFER TO FURNISHING PLANS FOR CASEWORK, MILLWORK DISPLAY BOARDS, SHELVING UNITS, TV MOUNTING BRACKETS, LOCKERS, FURNITURE, ETC. (A-9 SERIES).
7. FEC - INDICATES A FIRE EXTINGUISHER WITH A RECESSED CABINET. FE - INDICATES A FIRE EXTINGUISHER WITH A WALL MOUNTING BRACKET.
8. UNLESS SPECIFICALLY INDICATED OTHERWISE, THE SAME WALL TYPE NEXT TO A DOOR OR OPENING SHALL CONTINUE OVER THE DOOR OR OPENING.
9. PLAN LOCATION OF DOORS AND FRAMES RELATIVE TO THE PLANE OF THE WALL IS DIAGRAMMATIC ONLY. REFER TO THE REFERENCED JAMB AND HEAD CONDITION DETAILS TO DETERMINE ACTUAL PLACEMENT OF DOOR AND FRAME.

KEY PLAN



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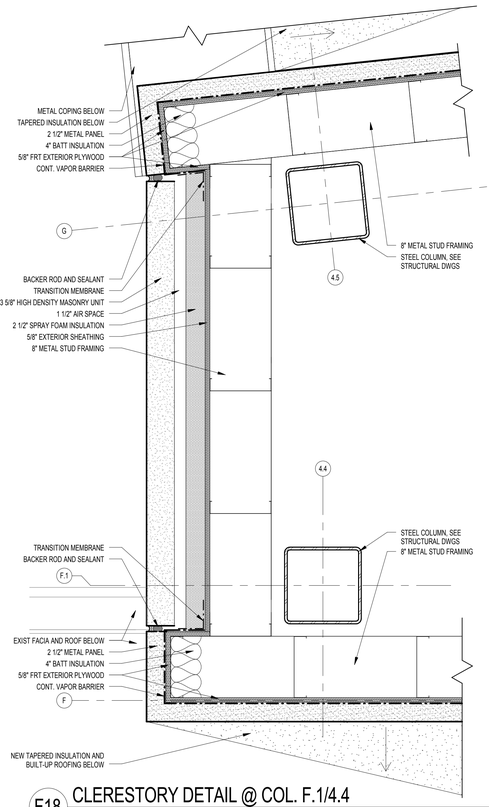
GP #21620

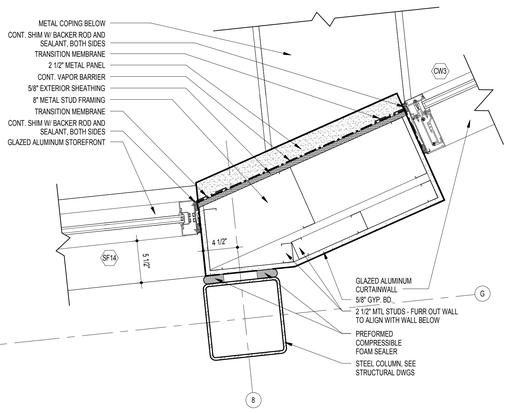
NEW WORK FLOOR PLAN
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

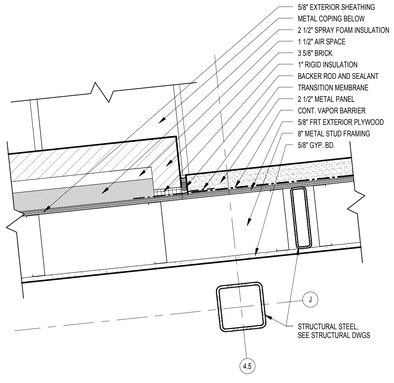
A-1.1
February 1, 2017
Bid Set



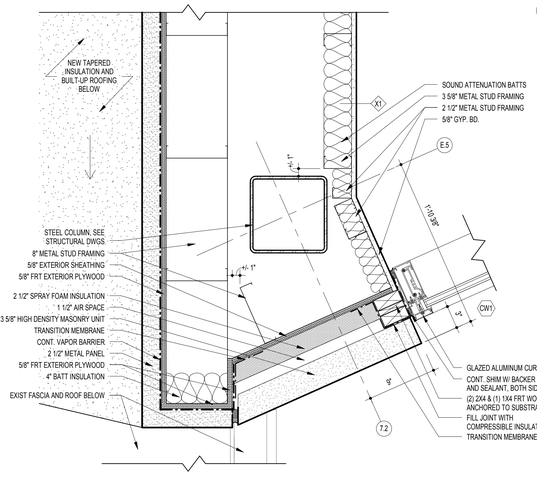
F18 CLERESTORY DETAIL @ COL. F.1/4.4
1 1/2" = 1'-0"



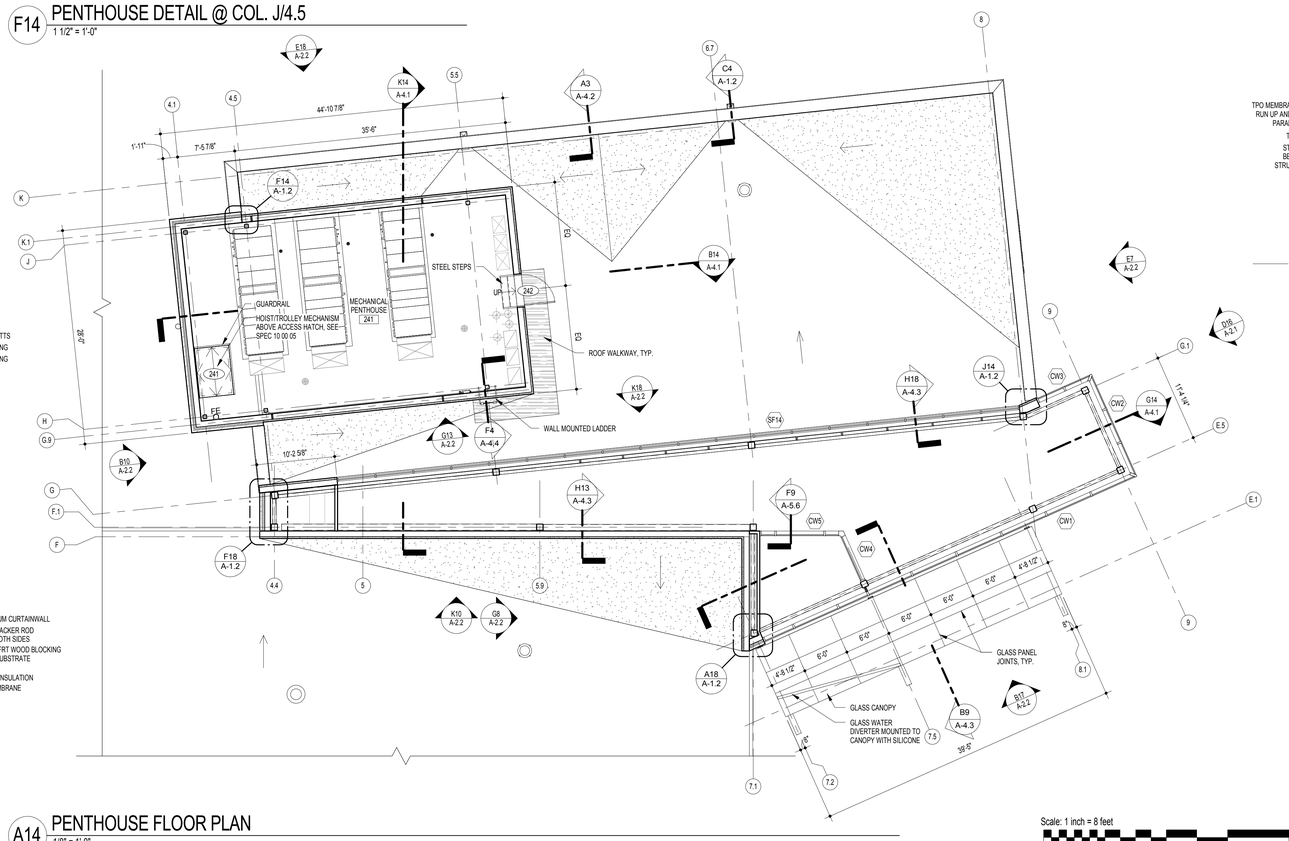
J14 CLERESTORY DETAIL @ COL. G/8
1 1/2" = 1'-0"



F14 PENTHOUSE DETAIL @ COL. J/4.5
1 1/2" = 1'-0"

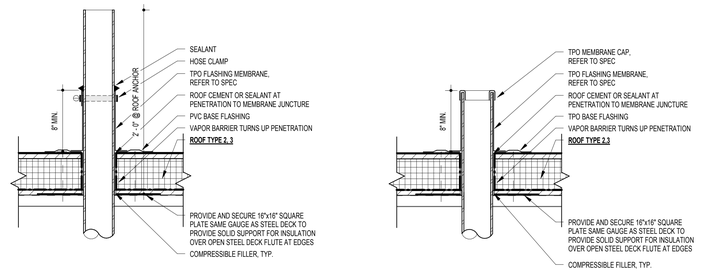


A18 CLERESTORY DETAIL @ COL. E.5/7.2
1 1/2" = 1'-0"



A14 PENTHOUSE FLOOR PLAN
1/8" = 1'-0"

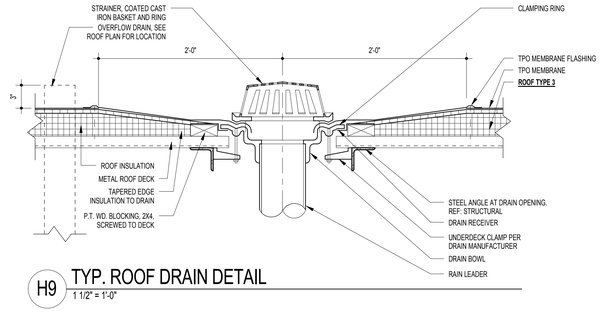
Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'



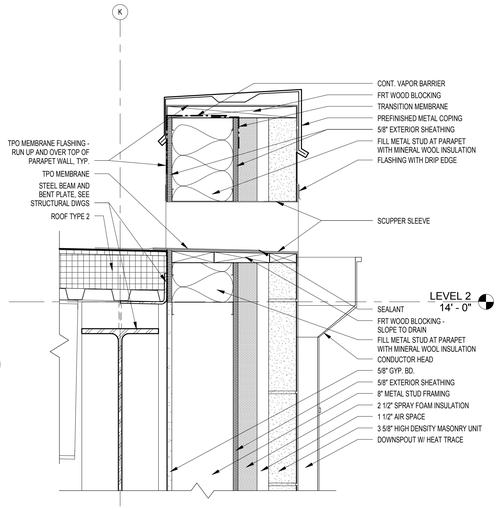
K9 TYP. PIPE FLASHING DETAIL @ ROOF
1 1/2" = 1'-0"

K6 TYP. VENT FLASHING DETAIL @ ROOF
1 1/2" = 1'-0"

EXTEND TPO ROOFING MEMBRANE UNDER ROOF DRAINS CLAMPING RING AND SET ROOF DRAIN ONLY ON DRAIN RECEIVER AND SECURE TO ROOF CONSTRUCTION WITH DECK CLAMP ASSEMBLIES PER ROOFING MANUFACTURER AND ROOF DRAIN MANUFACTURER REQUIREMENTS.
SEE ARCHITECTURAL DRAWINGS FOR PLANS AND LOCATIONS OF DRAIN/ SUMP AREAS. SEE PLUMBING DRAWINGS AND SPECIFICATIONS FOR ROOF DRAIN MODEL NUMBERS AND SIZES.



H9 TYP. ROOF DRAIN DETAIL
1 1/2" = 1'-0"



C4 SCUPPER DETAIL
1 1/2" = 1'-0"

TYPICAL ROOF NOTES

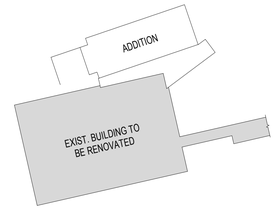
GENERAL NOTE APPLICABLE TO ALL DRAWINGS - ITEMS AND CONDITIONS DETAILED, NOTED OR OTHERWISE IDENTIFIED ON ONE OF THE SECTIONS OR DETAILS ARE APPLICABLE AND BINDING TO ALL OTHER SECTIONS AND DETAILS FOR IDENTICAL OR SIMILAR CONDITIONS.

1. DETAILS INDICATED ARE TYPICAL FOR ALL SIMILAR ROOFING CONDITIONS UNLESS OTHERWISE INDICATED.
2. UNLESS ESS OTHERWISE NOTED, MINIMUM ROOF SLOPE IS 1/4" PER FOOT. PROVIDE TAPERED INSULATION (EVEN IF NOT SHOWN ON THIS PLAN) AS REQUIRED TO MAINTAIN MINIMUM REQUIRED SLOPE TO ROOF DRAINS AND ELIMINATE ANY AREAS OF POTENTIAL STANDING WATER. PROVIDE TAPERED INSULATION (MINIMUM 1/4" PER FOOT SLOPE) AT ALL CRICKETS INDICATED TO DRAINS. COORDINATE HEIGHTS OF ALL FLASHINGS AND EXPANSION JOINT CAPS WITH TAPERED INSULATION TO MAINTAIN MINIMUM DIMENSIONS DETAILED.
3. ALL ROOF PENETRATIONS AND ACCESSORIES (DRAINS, VENTS, ETC.) ARE TO BE INSTALLED AND FLASHED IN COMPLIANCE WITH THE CURRENT EDITIONS OF N.R.C.A. ROOFING AND WATERPROOFING MANUAL AND S.M.A.C.N.A. (ARCHITECTURAL SHEET METAL MANUAL)
4. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ITEMS (INCLUDING UNIT SIZES AND LOCATIONS) NOT SHOWN OR SCHEMATICALLY SHOWN ON ROOF PLANS.
5. CURBS FOR ROOF TOP MECHANICAL EQUIPMENT ARE PROVIDED BY THE MECHANICAL CONTRACTOR. REFER TO TYPICAL CURB FLASHING DETAIL FOR BLOCKING AND FLASHING REQUIREMENTS. PROVIDE ALL BLOCKING NECESSARY TO ACHIEVE LEVEL MECHANICAL CURBS AT ALL LOCATIONS. MAINTAIN MINIMUM 8" FROM TOP OF CURB TO ADJACENT ROOF. PROVIDE TAPERED CRICKETS (MINIMUM 1/2" PER FOOT SLOPE) AROUND ALL MECHANICAL EQUIPMENT CURBS.
6. THE ROOF DRAIN AND MECHANICAL UNIT LOCATIONS SHOWN ON THE ROOF PLAN ARE APPROXIMATE. COORDINATE WITH MECHANICAL AND PLUMBING DRAWINGS FOR EXACT LOCATIONS.
7. PRIOR TO FLASHING OVERFLOW ROOF SCUPPERS AND ROOF DRAIN, ROOFING CONTRACTOR SHALL BE REQUIRED TO CONFIRM MAXIMUM DRAIN PIPE HEIGHT OF 3" ABOVE ROOF IN ACCORDANCE WITH PLUMBING DRAWINGS.
8. START TAPERED INSULATION AT SUMP PLATES. INSULATION SHALL BE TAPERED DOWN FROM ALL (4) SIDES OF INDICATED SUMP. REFERENCE TYPICAL ROOF DRAIN DETAIL A15/A-1.9.
9. IN ACCORDANCE WITH SPECIFICATION SECTION #07620 SHEET METAL, FLASHING AND TRIM, ROOFING CONTRACTOR SHALL BE REQUIRED TO PROVIDE RECEIVER FLASHING TO MASONRY CONTRACTOR FOR INSTALLATION. ROOFER TO SOLDER JOINTS IN STAINLESS STEEL FLASHING.
10. PROVIDE WALKWAY PROTECTION WHERE INDICATED AND AT ALL SIDES OF MECHANICAL ROOF TOP UNITS REQUIRING SERVICE AND AT TOP AND BOTTOM OF ALL ROOF STAIRS.
11. ALL ROOF TOP EQUIPMENT (EXCLUDING PREFINISHED ITEMS) SHALL BE FIELD PAINTED.
12. WHERE INDICATED, REFER TO PLUMBING DRAWINGS FOR RADON PIPE DETAIL. FLASHING SHALL BE IN ACCORDANCE WITH TYPICAL DETAILS.
13. CONTRACTOR IS RESPONSIBLE FOR PROVIDING FRT WOOD BLOCKING AS REQUIRED TO ACCOMMODATE ALL PROFILES OF FINISHED ROOFING INCLUDING AT CRICKETS AND TAPERED INSULATION AT WALLS, PARAPETS AND GRAVEL STOPS. GRAVEL STOPS AT GUTTERS TO BE STAINLESS STEEL WITH SOLDERED JOINTS.
14. COORDINATE HOSE BIB LOCATIONS ON ROOF WITH MEP PLANS.

ROOF SYMBOLS KEY

RD	ROOF DRAIN WITH TAPERED INSULATION - TYP. SUMP SHALL BE 4'-0" X 4'-0"
	DIRECTION OF SLOPE FROM HIGH POINT
T.O.M. 48'-0"	TOP OF MASONRY PARAPET
T.O.S. 48'-0"	TOP OF STEEL
48'-0" J.B.	JOIST BEARING
1 A101 SIM	DETAIL @ TOP OF WALL
1 A101 SIM	DETAIL @ LOW ROOF WALL - FLASHING CONDITION
D.S.	DOWNSPOUT DOWN TO CAST IRON DOWNSPOUT BOOT AT GRADE - SEE CIVIL DRAWINGS FOR CONNECTION
O.S.	OVERFLOW SCUPPER - SEE DETAIL C4/A-1.2
	ROOF WALKWAY - 36" WIDE CAPSHEET ADHERED TO ROOF PER MANUFACTURER'S RECOMMENDATIONS AT LOW SLOPE ROOF
	TAPERED INSULATION

KEY PLAN



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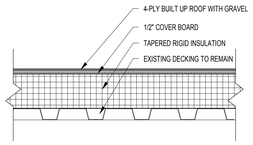
GP #21620

NEW WORK PENTHOUSE PLAN AND ROOF DETAILS

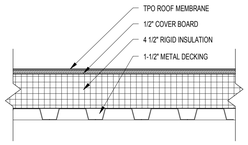
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-1.2
February 1, 2017
Bid Set

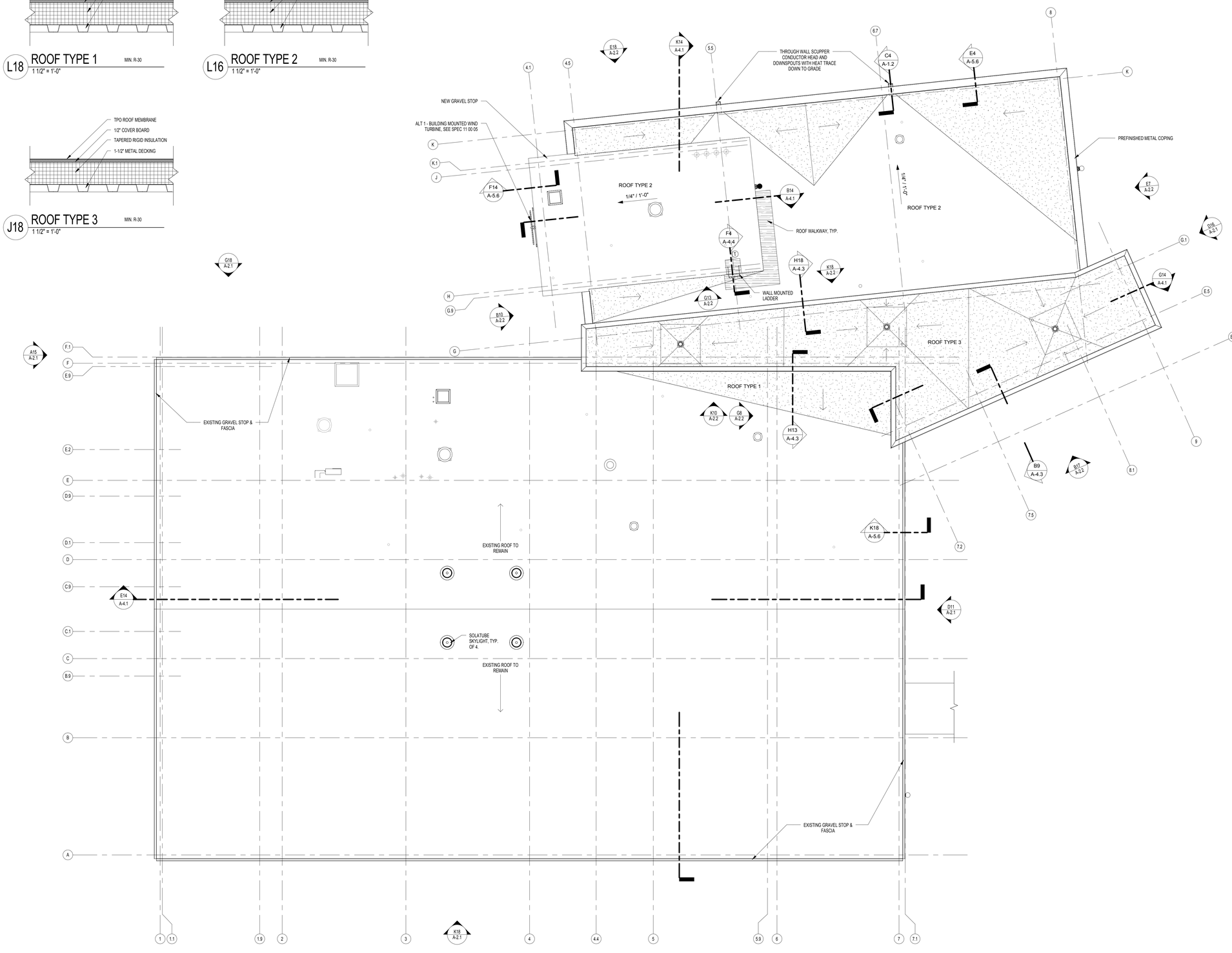


L18 ROOF TYPE 1 — MIN. R-30
1 1/2" = 1'-0"



L16 ROOF TYPE 2 — MIN. R-30
1 1/2" = 1'-0"

J18 ROOF TYPE 3 — MIN. R-30
1 1/2" = 1'-0"



A17 ROOF PLAN
1/8" = 1'-0"

TYPICAL ROOF NOTES

GENERAL NOTE APPLICABLE TO ALL DRAWINGS - ITEMS AND CONDITIONS DETAILED, NOTED OR OTHERWISE IDENTIFIED ON ONE OF THE SECTIONS OR DETAILS ARE APPLICABLE AND BINDING TO ALL OTHER SECTIONS AND DETAILS FOR IDENTICAL OR SIMILAR CONDITIONS.

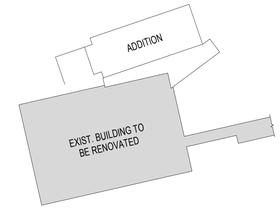
1. DETAILS INDICATED ARE TYPICAL FOR ALL SIMILAR ROOFING CONDITIONS UNLESS OTHERWISE INDICATED.
2. UNLESS OTHERWISE NOTED, MINIMUM ROOF SLOPE IS 1/4" PER FOOT. PROVIDE TAPERED INSULATION (EVEN IF NOT SHOWN ON THIS PLAN) AS REQUIRED TO MAINTAIN MINIMUM REQUIRED SLOPE TO ROOF DRAINS AND ELIMINATE ANY AREAS OF POTENTIAL STANDING WATER. PROVIDE TAPERED INSULATION (MINIMUM 1/4" PER FOOT SLOPE) AT ALL CRICKETS INDICATED TO DRAINS. COORDINATE HEIGHTS OF ALL FLASHINGS AND EXPANSION JOINT CAPS WITH TAPERED INSULATION TO MAINTAIN MINIMUM DIMENSIONS DETAILED.
3. ALL ROOF PENETRATIONS AND ACCESSORIES (DRAINS, VENTS, ETC.) ARE TO BE INSTALLED AND FLASHED IN COMPLIANCE WITH THE CURRENT EDITIONS OF N.R.C.A. ROOFING AND WATERPROOFING MANUAL AND S.M.A.C.N.A. (ARCHITECTURAL SHEET METAL MANUAL)
4. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ITEMS (INCLUDING UNIT SIZES AND LOCATIONS) NOT SHOWN OR SCHEMATICALLY SHOWN ON ROOF PLANS.
5. CURBS FOR ROOF TOP MECHANICAL EQUIPMENT ARE PROVIDED BY THE MECHANICAL CONTRACTOR. REFER TO TYPICAL CURB FLASHING DETAIL FOR BLOCKING AND FLASHING REQUIREMENTS. PROVIDE ALL BLOCKING NECESSARY TO ACHIEVE LEVEL MECHANICAL CURBS AT ALL LOCATIONS. MAINTAIN MINIMUM 8" FROM TOP OF CURB TO ADJACENT ROOF. PROVIDE TAPERED CRICKETS (MINIMUM 1/2" PER FOOT SLOPE) AROUND ALL MECHANICAL EQUIPMENT CURBS.
6. THE ROOF DRAIN AND MECHANICAL UNIT LOCATIONS SHOWN ON THE ROOF PLAN ARE APPROXIMATE. COORDINATE WITH MECHANICAL AND PLUMBING DRAWINGS FOR EXACT LOCATIONS.
7. PRIOR TO FLASHING OVERFLOW ROOF SCUPPERS AND ROOF DRAIN, ROOFING CONTRACTOR SHALL BE REQUIRED TO CONFIRM MAXIMUM DRAIN PIPE HEIGHT OF 3" ABOVE ROOF IN ACCORDANCE WITH PLUMBING DRAWINGS.
8. START TAPERED INSULATION AT SUMP PLATES. INSULATION SHALL BE TAPERED DOWN FROM ALL (4) SIDES OF INDICATED SUMP. REFERENCE TYPICAL ROOF DRAIN DETAIL A15/A-1.9.
9. IN ACCORDANCE WITH SPECIFICATION SECTION #07620 SHEET METAL, FLASHING AND TRIM, ROOFING CONTRACTOR SHALL BE REQUIRED TO PROVIDE RECEIVER FLASHING TO MASONRY CONTRACTOR FOR INSTALLATION. ROOFER TO SOLDER JOINTS IN STAINLESS STEEL FLASHING.
10. PROVIDE WALKWAY PROTECTION WHERE INDICATED AND AT ALL SIDES OF MECHANICAL ROOF TOP UNITS REQUIRING SERVICE AND AT TOP AND BOTTOM OF ALL ROOF STAIRS.
11. ALL ROOF TOP EQUIPMENT (EXCLUDING PREFINISHED ITEMS) SHALL BE FIELD PAINTED.
12. WHERE INDICATED, REFER TO PLUMBING DRAWINGS FOR RADON PIPE DETAIL. FLASHING SHALL BE IN ACCORDANCE WITH TYPICAL DETAILS.
13. CONTRACTOR IS RESPONSIBLE FOR PROVIDING FRT WOOD BLOCKING AS REQUIRED TO ACCOMMODATE ALL PROFILES OF FINISHED ROOFING INCLUDING AT CRICKETS AND TAPERED INSULATION AT WALLS, PARAPETS AND GRAVEL STOPS. GRAVEL STOPS AT GUTTERS TO BE STAINLESS STEEL WITH SOLDERED JOINTS.
14. COORDINATE HOSE BIB LOCATIONS ON ROOF WITH MEP PLANS.

ROOF SYMBOLS KEY

	ROOF DRAIN WITH TAPERED INSULATION - TYP. SUMP SHALL BE 4'-0" X 4'-0"
	DIRECTION OF SLOPE FROM HIGH POINT
T.O.M. 48'-0"	TOP OF MASONRY PARAPET
T.O.S. 48'-0"	TOP OF STEEL
48'-0" J.B.	JOIST BEARING
1 SIM A101	DETAIL @ TOP OF WALL
1 SIM A101	DETAIL @ LOW ROOF WALL - FLASHING CONDITION
D.S.	DOWNSPOUT DOWN TO CAST IRON DOWNSPOUT BOOT AT GRADE - SEE CIVIL DRAWINGS FOR CONNECTION
O.S.	OVERFLOW SCUPPER - SEE DETAIL C4/A-1.2
	ROOF WALKWAY - 36" WIDE CAPSHEET ADHERED TO ROOF PER MANUFACTURER'S RECOMMENDATIONS AT LOW SLOPE ROOF
	TAPERED INSULATION

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

KEY PLAN



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GP #21620

NEW WORK ROOF PLAN

Garrett College STEM Renovation and Addition
McHenry, MD

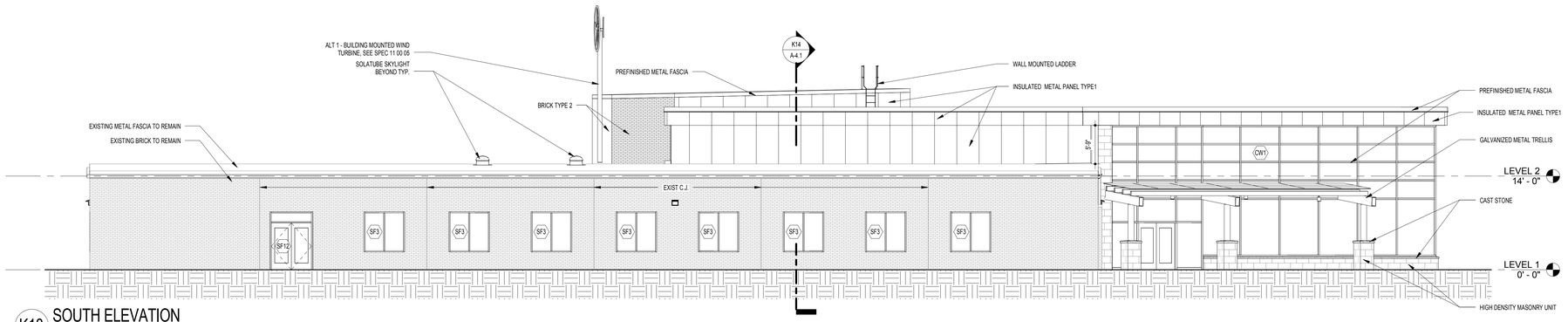
DATE	DESCRIPTION

A-1.3
February 1, 2017
Bid Set

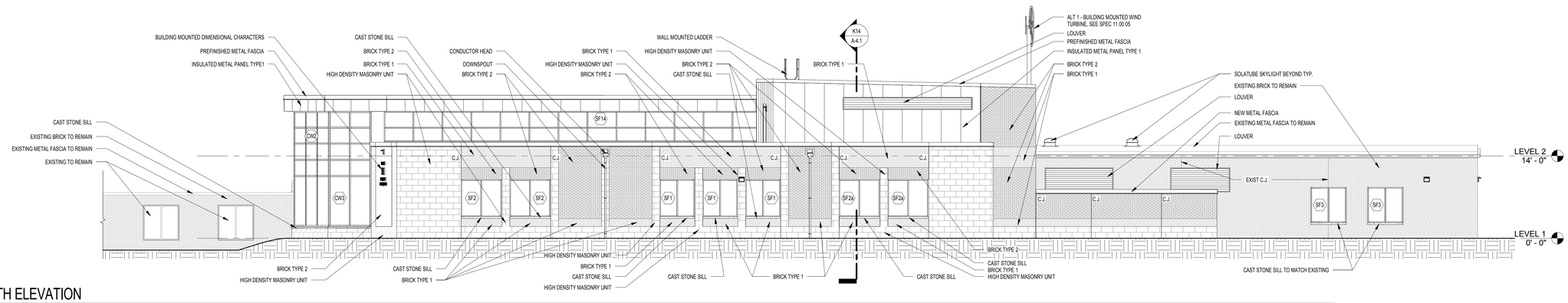
ELEVATION NOTES (NOTES APPLY TO ALL ELEVATION SHEETS)

GENERAL NOTE APPLICABLE TO ALL DRAWINGS - ITEMS AND CONDITIONS DETAILED, NOTED OR OTHERWISE IDENTIFIED ON ONE OF THE SECTIONS OR DETAILS ARE APPLICABLE AND BINDING TO ALL OTHER SECTIONS AND DETAILS FOR IDENTICAL OR SIMILAR CONDITIONS.

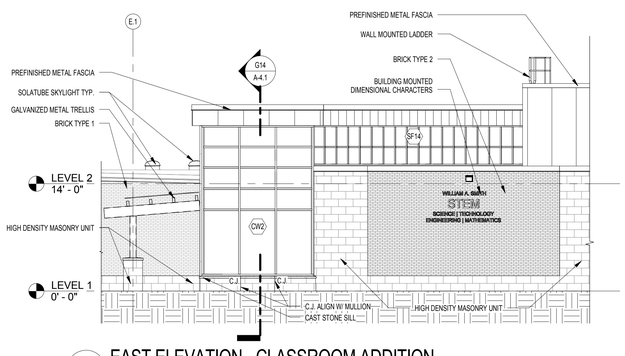
1. REFER TO STRUCTURAL DRAWINGS FOR FOOTING ELEVATIONS.
2. MASONRY BOND PATTERN SHALL BE RUNNING BOND UNLESS OTHERWISE INDICATED. REFER TO LARGE SCALE ELEVATION DETAILS FOR MASONRY PATTERNS, BONDING, SPECIAL SHAPES AND MORTAR COLOR PATTERNS.
3. PROVIDE SEALANT AT ALL INTERSECTIONS OF DISSIMILAR MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS. ALL EXTERIOR SEALANTS TO BE A CUSTOM COLOR SELECTED BY THE ARCHITECT. MORE THAN ONE SEALANT COLOR MAY BE SELECTED FOR USE ALONG THE HEIGHT OF THE SAME JOINT TO MATCH ADJOINING MASONRY OR MORTAR.
4. ALL EXTERIOR EXPOSED STEEL TO BE FIELD PAINTED UNLESS NOTED OTHERWISE. COLOR TO BE SELECTED BY THE ARCHITECT.
5. REFER TO WALL SECTIONS, PLAN DETAILS AND SECTION DETAIL FOR TYPICAL EXTERIOR CONTROL JOINT DETAILS AND NOTES.
6. REFER TO WALL SECTIONS, PLAN DETAILS AND SECTION DETAIL FOR TYPICAL MASONRY DETAILS AND SPECIAL MASONRY SHAPES.
7. REFER TO TYPICAL ROOF FLASHING DETAILS ON SHEET A-2.1 PENTHOUSE/ROOF PLAN FOR FLASHING REQUIREMENTS.



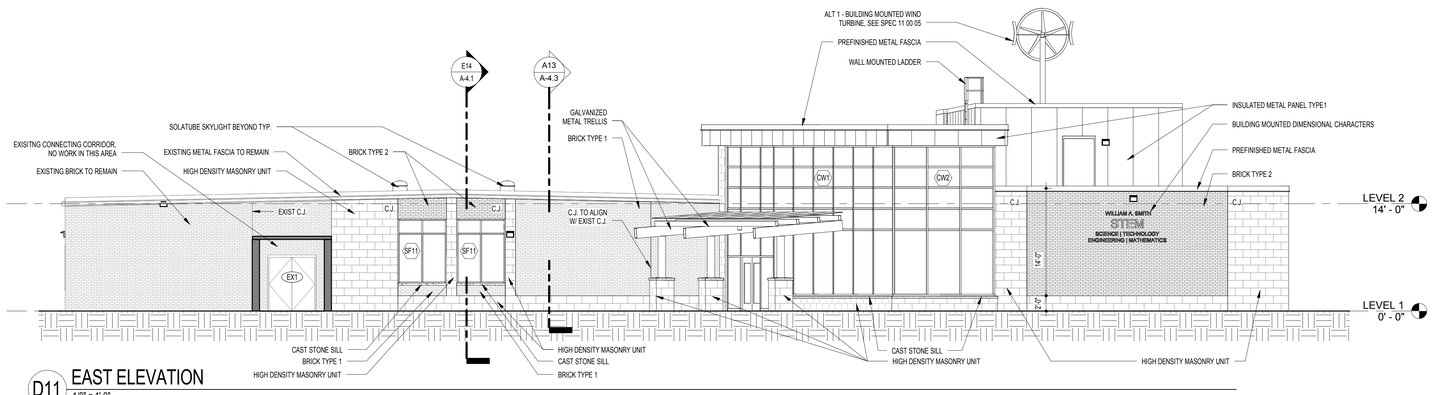
K18 SOUTH ELEVATION
1/8" = 1'-0"



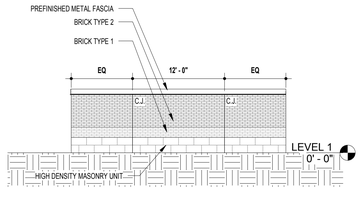
G18 NORTH ELEVATION
1/8" = 1'-0"



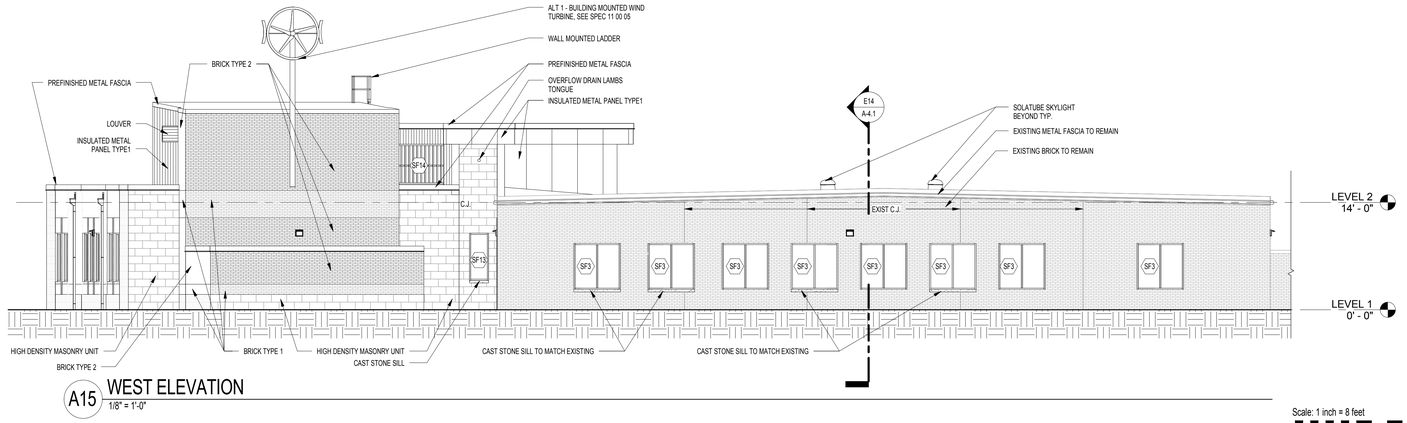
D16 EAST ELEVATION - CLASSROOM ADDITION
1/8" = 1'-0"



D11 EAST ELEVATION
1/8" = 1'-0"

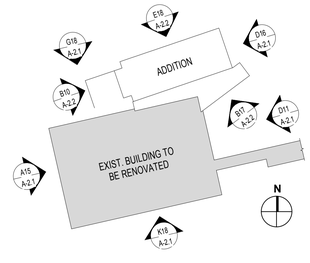


A18 PARTIAL WEST ELEVATION @ SITE WALL
1/8" = 1'-0"



A15 WEST ELEVATION
1/8" = 1'-0"

KEY PLAN



Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

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GP #21620

EXTERIOR ELEVATIONS

Garrett College STEM Renovation and Addition
McHenry, MD

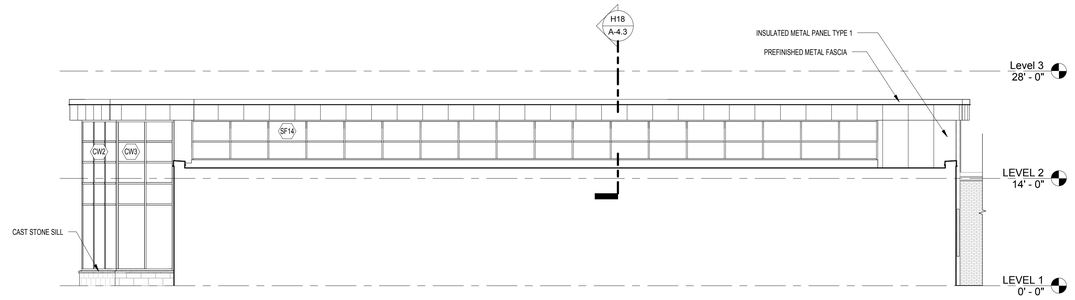
DATE	DESCRIPTION

A-2.1
December 14, 2016
Bid Set

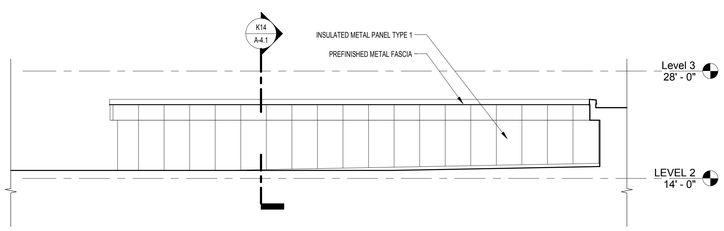
ELEVATION NOTES (NOTES APPLY TO ALL ELEVATION SHEETS)

GENERAL NOTE APPLICABLE TO ALL DRAWINGS - ITEMS AND CONDITIONS DETAILED, NOTED OR OTHERWISE IDENTIFIED ON ONE OF THE SECTIONS OR DETAILS ARE APPLICABLE AND BINDING TO ALL OTHER SECTIONS AND DETAILS FOR IDENTICAL OR SIMILAR CONDITIONS.

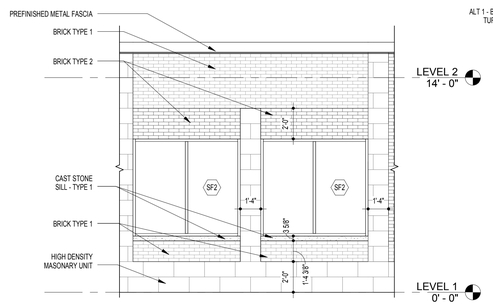
1. REFER TO STRUCTURAL DRAWINGS FOR FOOTING ELEVATIONS.
2. MASONRY BOND PATTERN SHALL BE RUNNING BOND UNLESS OTHERWISE INDICATED. REFER TO LARGE SCALE ELEVATION DETAILS FOR MASONRY PATTERNS, BONDING, SPECIAL SHAPES AND MORTAR COLOR PATTERNS.
3. PROVIDE SEALANT AT ALL INTERSECTIONS OF DISSIMILAR MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS. ALL EXTERIOR SEALANTS TO BE A CUSTOM COLOR SELECTED BY THE ARCHITECT. MORE THAN ONE SEALANT COLOR MAY BE SELECTED FOR USE ALONG THE HEIGHT OF THE SAME JOINT TO MATCH ADJOINING MASONRY OR MORTAR.
4. ALL EXTERIOR EXPOSED STEEL TO BE FIELD PAINTED UNLESS NOTED OTHERWISE. COLOR TO BE SELECTED BY THE ARCHITECT.
5. REFER TO WALL SECTIONS, PLAN DETAILS AND SECTION DETAIL FOR TYPICAL EXTERIOR CONTROL JOINT DETAILS AND NOTES.
6. REFER TO WALL SECTIONS, PLAN DETAILS AND SECTION DETAIL FOR TYPICAL MASONRY DETAILS AND SPECIAL MASONRY SHAPES.
7. REFER TO TYPICAL ROOF FLASHING DETAILS ON SHEET A-2.1 PENTHOUSE/ROOF PLAN FOR FLASHING REQUIREMENTS.



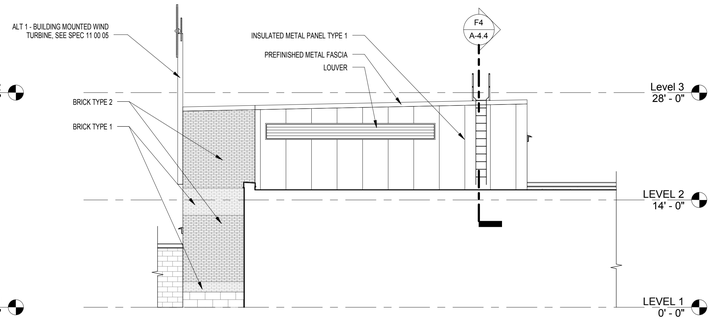
K18 NORTH ELEVATION - LOBBY CLERESTORY
1/8" = 1'-0"



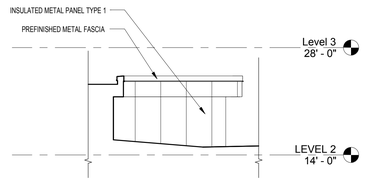
K10 SOUTH ELEVATION - LOBBY CLERESTORY
1/8" = 1'-0"



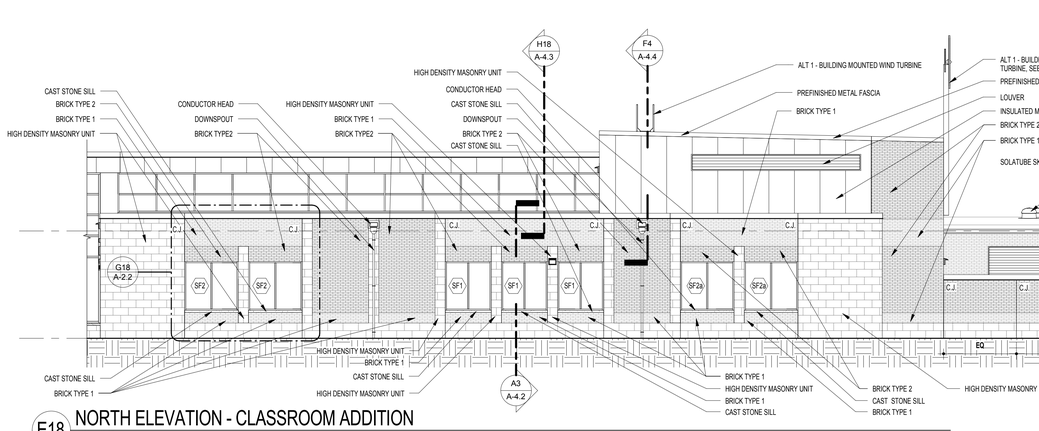
G18 ENLARGED ELEVATION - MASONRY PATTERN
1/4" = 1'-0"



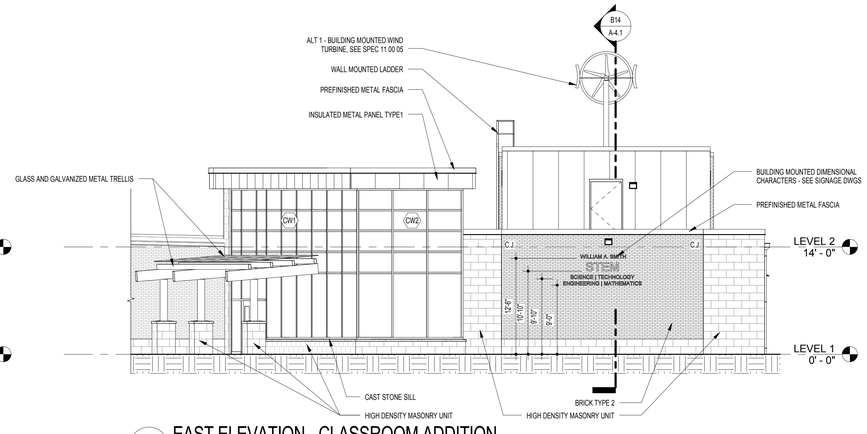
G13 SOUTH ELEVATION - PENTHOUSE
1/8" = 1'-0"



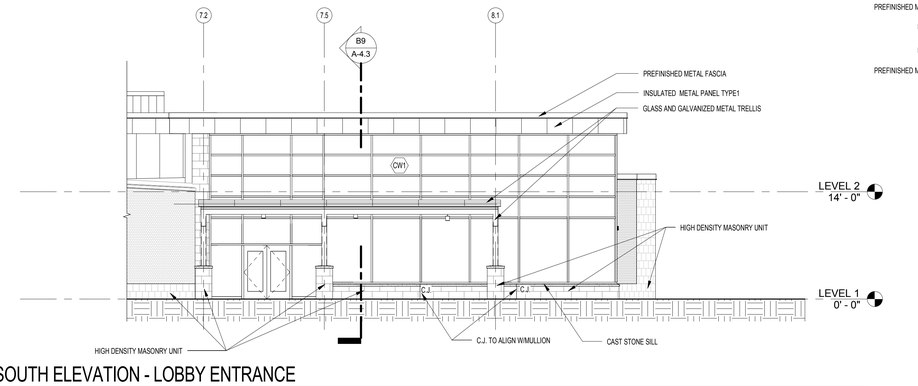
G8 EAST ELEVATION - LOBBY CLERESTORY
1/8" = 1'-0"



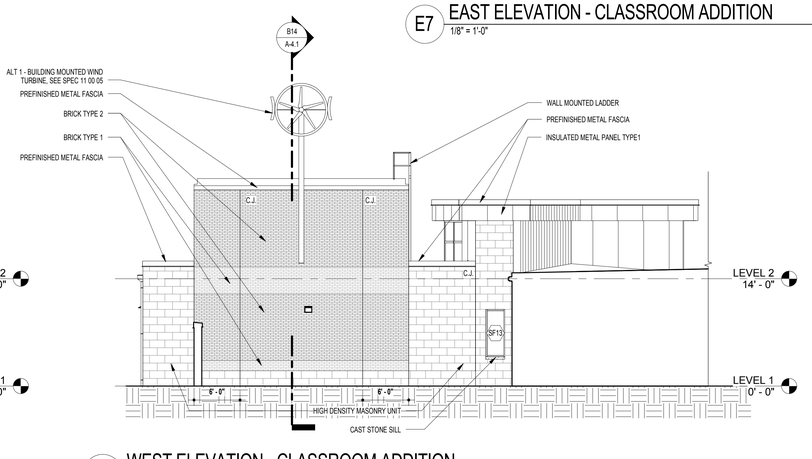
E18 NORTH ELEVATION - CLASSROOM ADDITION
1/8" = 1'-0"



E7 EAST ELEVATION - CLASSROOM ADDITION
1/8" = 1'-0"



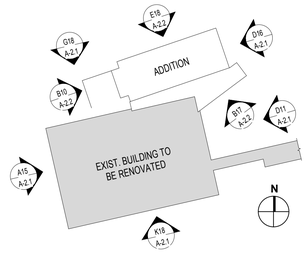
B17 SOUTH ELEVATION - LOBBY ENTRANCE
1/8" = 1'-0"



B10 WEST ELEVATION - CLASSROOM ADDITION
1/8" = 1'-0"

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

KEY PLAN



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G+P GRIMM AND PARKER

GP #21620

EXTERIOR ELEVATIONS

Garrett College STEM Renovation and Addition
McHenry, MD

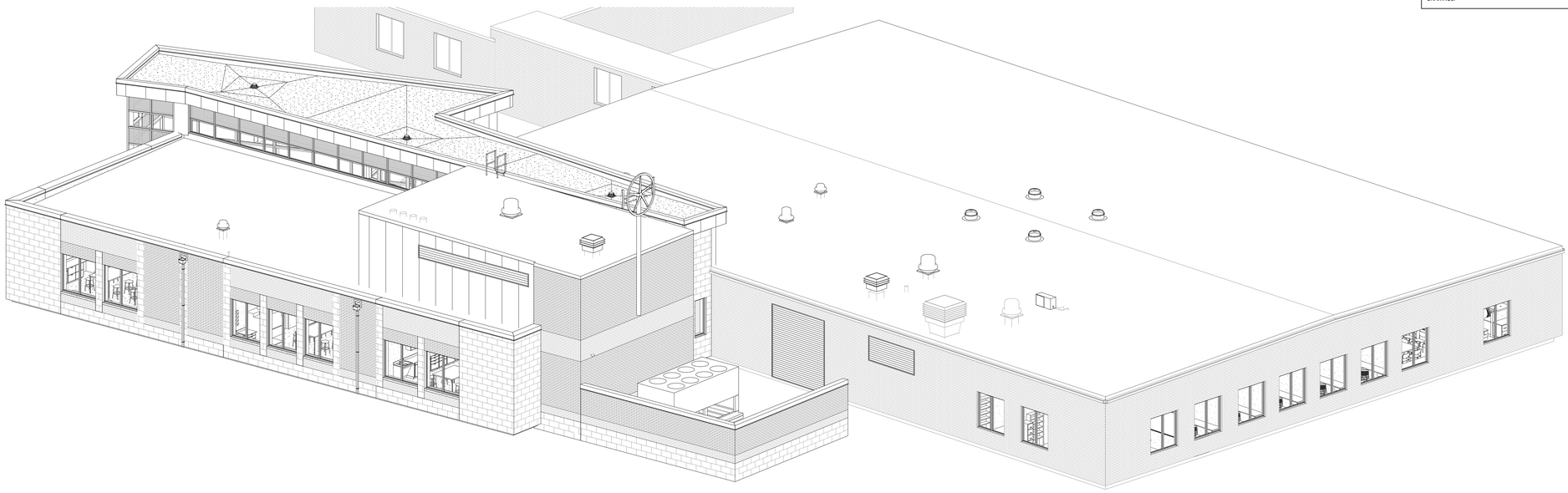
DATE	DESCRIPTION

A-2.2
February 1, 2017
Bid Set

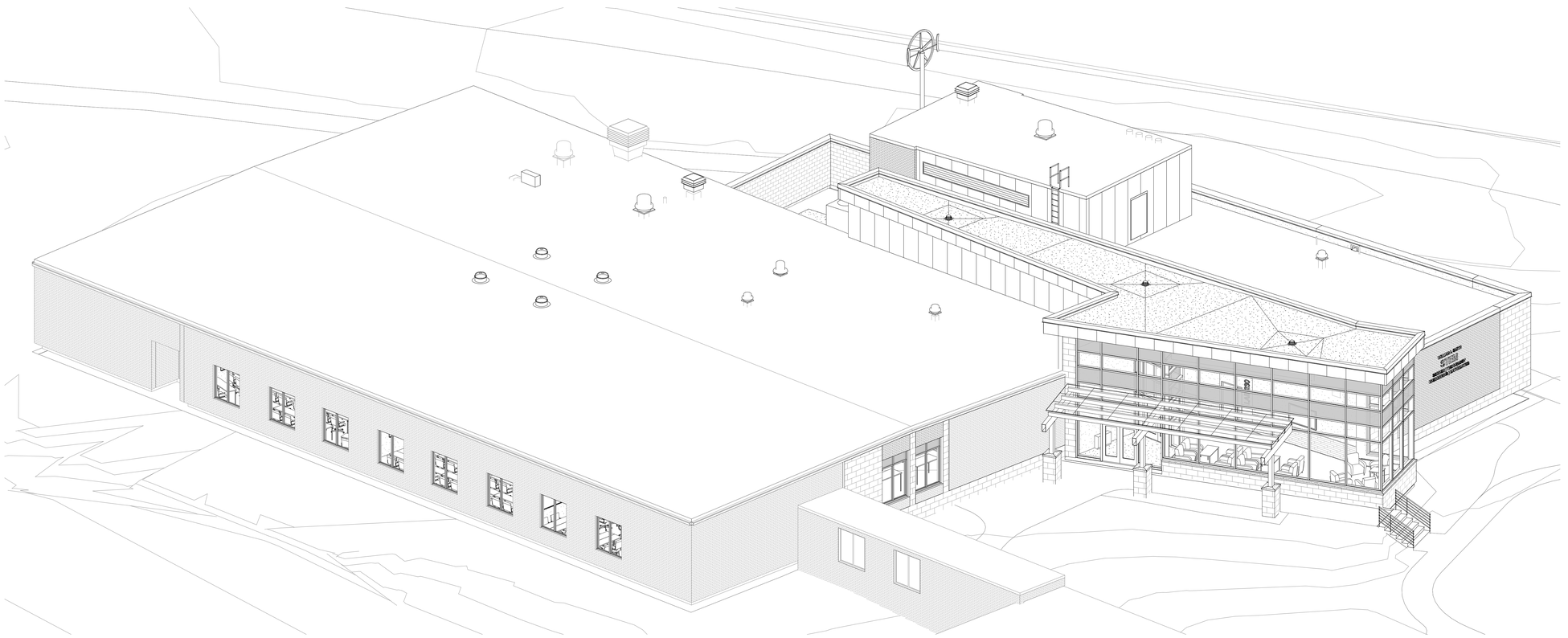
GENERAL VIEW NOTE

THIS AXONOMETRIC OR PERSPECTIVE VIEW IS TO AID IN THE GENERAL VISUALIZATION OF THE PROJECT. SOME ELEMENTS MAY BE MISSING FOR CLARITY.

FOR CONSTRUCTION DETAILS, REFERENCE THE PLANS, SECTIONS, AND ENLARGED DETAILS AS WELL AS ENGINEERING DRAWINGS.



H17 NORTHWEST AXON



A17 SOUTHEAST AXON

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GP #21620

AXONOMETRIC ELEVATIONS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-2.3

February 1, 2017
Bid Set

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LOBBY RENDERING - EAST

LOBBY RENDERING - WEST

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GRIMM AND PARKER

GP #21620

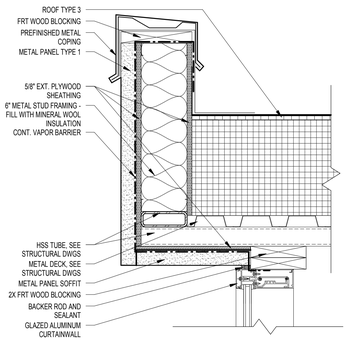
INTERIOR RENDERINGS - LOBBY

Garrett College STEM Renovation and Addition
McHenry, MD

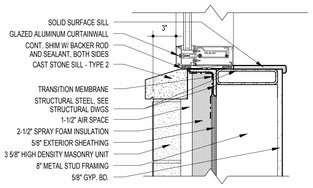
DATE	DESCRIPTION

A-2.4

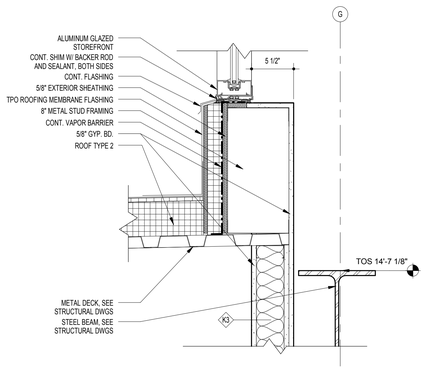
01/14/17
Bid Set



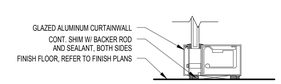
H18 CW HEAD @ ROOF
1 1/2" = 1'-0"



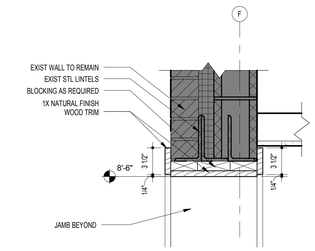
F18 CW SILL @ LOBBY
1 1/2" = 1'-0"



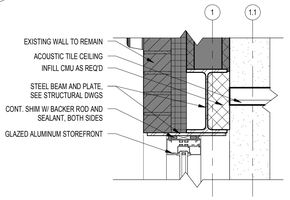
C18 SF SILL @ CLERESTORY
1 1/2" = 1'-0"



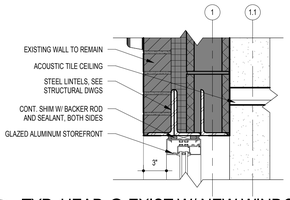
A18 CW SILL @ SLAB
1 1/2" = 1'-0"



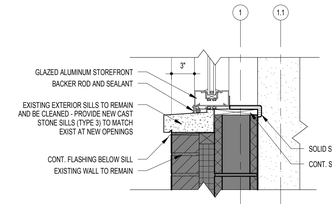
L15 HEAD @ EXISTING WALL OPENING
1 1/2" = 1'-0"



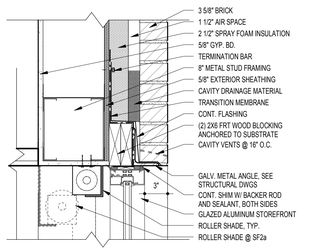
J15 TYP. HEAD @ EXIST WALL W/ NEW WF BEAM
1 1/2" = 1'-0"



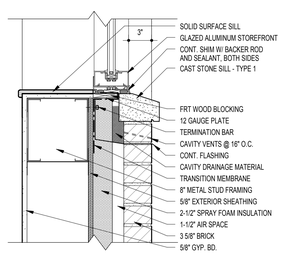
G15 TYP. HEAD @ EXIST W/ NEW WINDOW OPENING
1 1/2" = 1'-0"



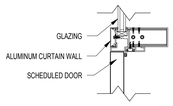
E15 TYP. SILL @ EXIST WALL W/ NEW WINDOW
1 1/2" = 1'-0"



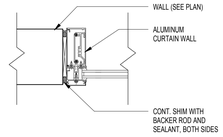
C15 TYP. STOREFRONT HEAD @ ADDITION
1 1/2" = 1'-0"



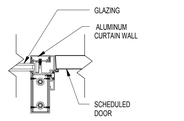
A15 TYP. STOREFRONT SILL @ ADDITION
1 1/2" = 1'-0"



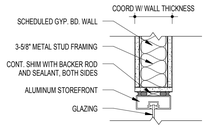
H3 TYP. CW DOOR HEAD/TRANSOM
1 1/2" = 1'-0"



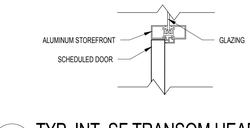
J3A TYP. CW JAMB @ GLAZING
1 1/2" = 1'-0"



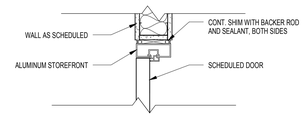
J3 TYP. CW DOOR JAMB
1 1/2" = 1'-0"



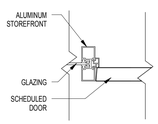
H2B TYP. INT. SF HEAD/JAMB @ GLAZING
1 1/2" = 1'-0"



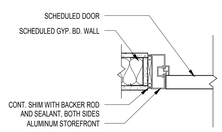
H2A TYP. INT. SF TRANSOM HEAD
1 1/2" = 1'-0"



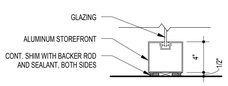
H2 TYP. INT. SF GWB HEAD
1 1/2" = 1'-0"



J2A TYP. INT. SF SIDELITE JAMB
1 1/2" = 1'-0"

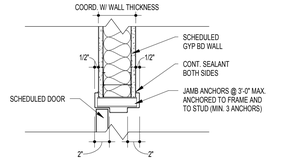


J2 TYP. INT. SF GWB JAMB
1 1/2" = 1'-0"

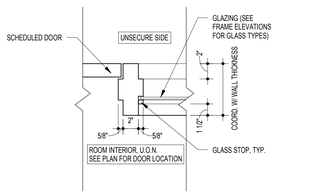


S2 INTERIOR STOREFRONT SILL
1 1/2" = 1'-0"

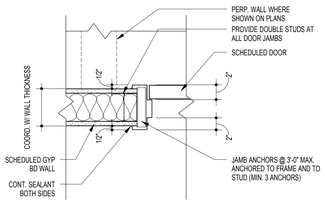
DOOR NO.	DOOR NOMINAL SIZE WIDTH	HEIGHT	THK.	TYPE	MAT'L	FRAME MAT'L	TYPE	SECTIONS JAMB	HEAD	SILL	DOOR LABEL FIRE RATING	HARDWARE SET	REMARKS
200A	6'-0"	7'-0"	1 3/4"	FG	ALUM	ALUM	SF14	A11/A-5.5		S1		01	1,2,7,8,15
200B	6'-0"	7'-0"	1 3/4"	FG	ALUM	ALUM	SF14	J2	H2A/H2B	T1		04	1,2,7,8
201	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T1		15	
202	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T1		15	
204	4'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T3		21	1
205A	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T2		15	
205B	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T2		15	
206	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T1		15	
207	4'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T3		21	1
208	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T1		14	
209	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF10	J2A/H2B	H2	T1		14	
210A	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T2		14	1
210B	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T2		12	1
211	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T2		14	1
212	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF8	J2A/H2B	H2	T1		13	
213	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF8	J2A/H2B	H2	T1		13	
214	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF8	J2A/H2B	H2	T1		13	
215	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF8	J2A/H2B	H2	T1		13	
216	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF8	J2A/H2B	H2	T1		13	
217	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF8	J2A/H2B	H2	T1		13	
218	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF4	J2A/H2B	H2	T1		13	
219	3'-0"	7'-0"	1 3/4"	F	SCWD	ALUM	SF4	J2A/H2B	H2	T1		13	
220	4'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T3		22	1,8,11,12
220A	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T3		08	1,15
220B	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	N/A		06	1,2
221	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T8		20	1,13
222	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T8		20	1,13
223	4'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T3		21	1
225	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T5		16	1
226A	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T6		09	1,15
226B	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T5		19	1,16
227	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T6		09	1,15
228	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T5		11	1
229A	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T5		17	1
229B	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T5		17	1
230	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	2	J1/J1A	H1	T6		09	1,15
231	6'-0"	7'-0"	1 3/4"	FG	ALUM	ALUM	CW10	J3	H3	S1		02	1,2,4,7,15
232	6'-0"	7'-0"	1 3/4"	FG	ALUM	ALUM	CW9	J3	H3	T7		03	1,2,4,7
233A	5'-9"	8'-6"	1 3/4"		N/A	WD	N/A	A5/A-5.4	L15	T8		N/A	CASED OPENING
233B	5'-9"	8'-6"	1 3/4"		N/A	WD	N/A	A5/A-5.4	L15	T8		N/A	CASED OPENING
233C	5'-9"	8'-6"	1 3/4"		N/A	WD	N/A	A5/A-5.4	L15	T8		N/A	CASED OPENING
235	6'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T5		10	1,10
236	6'-0"	7'-0"	1 3/4"	F	SCWD	HM	3	J1/J1A	H1	T2		07	1,10,15
237	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T3		12	1
237A	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T4		21	
238	3'-0"	7'-0"	1 3/4"	FG	ALUM	ALUM	SF9	J2/J2A	H2	T1		13	
239	3'-0"	7'-0"	1 3/4"	F	SCWD	HM	1	J1	H1	T8		18	1,9
241	4'-0"	6'-0"	1 3/4"				1	N/A	N/A	N/A		N/A	FLOOR HATCH
242	4'-0"	7'-0"	1 3/4"	F	HM	HM	1			S1		05	1,7,8
EX1	6'-0"	7'-0"	1 3/4"	F	EX	EX	EX	EX	EX	EX		EX	EXISTING FIRE DOOR TO REMAIN



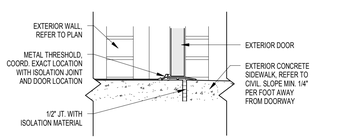
H1 TYP. HM GWB HEAD
1 1/2" = 1'-0"



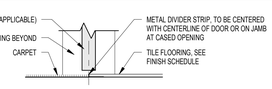
J1A TYP. HM SIDELITE JAMB
1 1/2" = 1'-0"



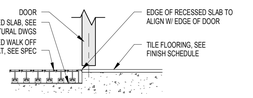
J1 TYP. HM GWB JAMB
1 1/2" = 1'-0"



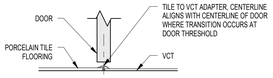
S1 EXTERIOR DOOR SILL
1 1/2" = 1'-0"



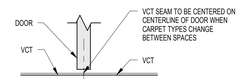
T8 CPT TO PT
1 1/2" = 1'-0"



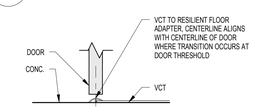
T7 PT TO WM
1 1/2" = 1'-0"



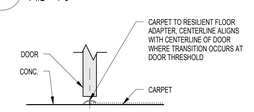
T6 PT TO VCT
1 1/2" = 1'-0"



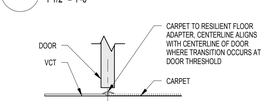
T5 VCT TO VCT
1 1/2" = 1'-0"



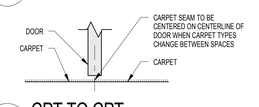
T4 CONC TO VCT
1 1/2" = 1'-0"



T3 CONC TO CPT
1 1/2" = 1'-0"



T2 VCT TO CPT
1 1/2" = 1'-0"



T1 CPT TO CPT
1 1/2" = 1'-0"

TYPICAL DETAILS

DOORS NOT LISTED ON THE SCHEDULE SHALL HAVE THE TYPICAL FINISHES LISTED BELOW:

DOOR:
- WIDTH: 3'-0"
- HEIGHT: 7'-0"
- THICKNESS: 1 3/4"
- TYPE: F
- MATERIAL: SCWD
- DOOR LABEL: NONE

FRAME:
- MATERIAL: HM
- TYPE: 1
- JAMB: J1
- HEAD: H1
- SILL: NONE

TYPICAL DOOR NOTES

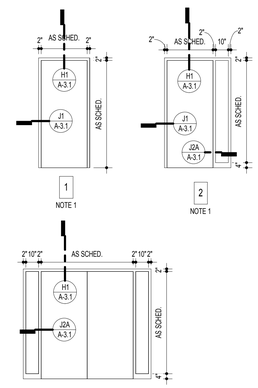
1. COORDINATE AND PROVIDE HARDWARE AS DETAILED IN THE SPECIFICATIONS OR, IF NOT SPECIFIED, PROVIDE HARDWARE OF EQUAL QUALITY TO THAT SPECIFIED, AND MOST SIMILAR IN FUNCTION TO TYPE OF DOOR) REQUIRED FOR DOORS TO OPERATE AND APPEAR AS INTENDED ON DRAWINGS.
2. PROVIDE BRUSHED STAINLESS STEEL KICK PLATES ON PUSH SIDE OF DOORS WITH PUSH BARS AND/OR CLOSER DEVICES. KICK PLATE SHALL BE INSET 1/2" FROM EACH SIDE OF DOOR, AND MAXIMUM 8" HIGH OR 1/2" BELOW EDGE OF GLASS LITE (IF PRESENT).
3. PROVIDE EXPOSED HARDWARE WITH BRUSHED-IN FINISH AND "SILVER" METALLIC IN COLOR (ALUMINUM, CHROME, OR STEEL).
4. WHEN EXPOSED CLEAR FINISHED WOOD DOORS ARE PAIRED, TAKE CARE TO SELECT MATCHING GRAIN TYPE AND COLOR FOR EACH DOOR IN PAIR.
5. IF CONFLICT EXISTS BETWEEN DOOR RATING AS SCHEDULED AND WALL/PARTITION TYPE FIRE RATING AS SHOWN ON PLANS, PROVIDE DOOR(S) WITH THE GREATER FIRE RATING OF THE TWO.
6. VERIFY ALL DIMENSIONS AND CLEARANCES, AND COORDINATE UNDERCUTTING REQUIRED TO CLEAR ADJACENT FLOOR MATERIALS.
7. SEE FRAME ELEVATION SHEETS FOR FRAME TYPES. (BOTH H.M. AND ALUM. STOREFRONT) AND GLASS TYPE KEY.
8. IF A DISCREPANCY EXISTS BETWEEN THE DOOR SCHEDULE REMARKS AND THE HARDWARE SCHEDULE IN THE SPECIFICATIONS, PROVIDE THE HARDWARE NEEDED TO MEET THE MORE STRINGENT OF THE REQUIREMENTS.
9. SEE SPECIFICATIONS FOR SCHEDULED HARDWARE SETS. SEE SPECIFICATIONS FOR HARDWARE SETS INDICATED FOR PACKAGED DOOR SYSTEM.
10. PROVIDE CONTINUOUS WEATHERSTRIPPING AND DOOR BOTTOM SEALS AT EXTERIOR DOORS AS SPECIFIED.

NOTES FOR REMARKS COLUMN

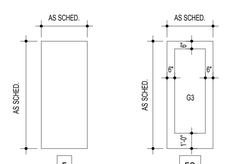
NOTE: NOT ALL NOTES MAY BE USED ON THIS PROJECT. SEE SPECIFICATIONS FOR ADDITIONAL DOOR INFORMATION. REFERENCE SPECIFICATIONS FOR DETAILED HARDWARE REQUIREMENTS.

1. PROVIDE ADA COMPLIANT CLOSER (ONE CLOSER FOR EACH DOOR OF PAIR).
2. PROVIDE PANIC HARDWARE.
3. PROVIDE ALARMED PANIC HARDWARE.
4. PROVIDE ADA AUTOMATIC SWING DOOR OPERATOR WITH PUSH BUTTON CONTROLS AND ASSOCIATED SIGNAGE.
5. PROVIDE DOORS WITH ELECTROMAGNETIC HOLD OPEN DEVICES - CONNECT TO FIRE ALARM SYSTEM TO CLOSE UPON ACTIVATION – SEE ELECTRICAL DRAWINGS.
6. PROVIDE WITH HOLD OPEN FEATURE IN CLOSER.
7. PROVIDE WEATHERSTRIPPING ON ALL SIDES, TOP AND BOTTOM OF DOOR.
8. PROVIDE DOOR WITH INSULATED CORE.
9. PROVIDE HARDWARE WITH PRIVACY SET.
10. PROVIDE FLUSH BOLTS ON INACTIVE LEAF.
11. PROVIDE SOUND SEALS ON TOP AND SIDES WITH DROP SEAL AT DOOR BOTTOM.
12. PROVIDE SOUND RATED DOOR SYSTEM COMPLETE WITH ALL ASSOCIATED HARDWARE - SEE SPECIFICATIONS.
13. PROVIDE WITH PUSH / PULL OPERATION.
14. PROVIDE HARDWARE SO DOORS CAN OPEN 180 DEGREES.
15. PROVIDE WITH CARD READER AND ASSOCIATED HARDWARE.
16. PROVIDE HARDWARE SO DOORS CAN BE LOCKED FROM BOTH DIRECTIONS.

FRAME TYPES (SCALE 1/4" = 1'-0")



DOOR TYPES (SCALE 1/4" = 1'-0")



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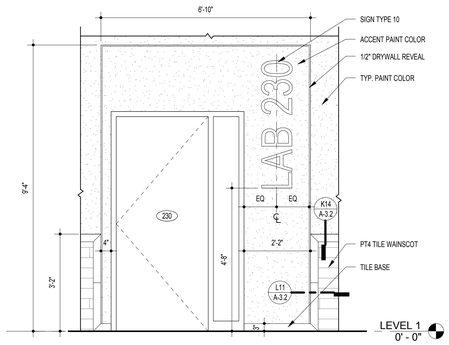
GP #21620

DOOR SCHEDULE

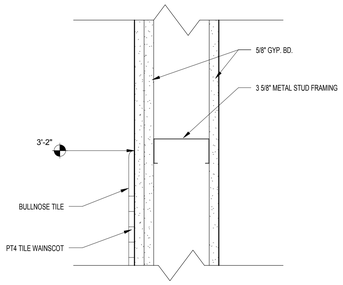
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

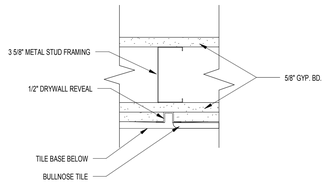
A-3.1
February 1, 2017
Bid Set



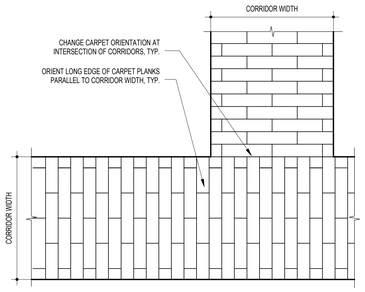
K18 ENLARGED ELEVATION @ LAB DOORS
1/2" = 1'-0"



K14 LOBBY WAINSCOT SECTION DETAIL
3" = 1'-0"



L11 LOBBY WAINSCOT PLAN DETAIL
3" = 1'-0"



G18 CORRIDOR CARPET PATTERN
1/4" = 1'-0"

A17 FLOOR FINISH PLAN
1/8" = 1'-0"

TYPICAL FINISHES

SPACES NOT LISTED ON THE SCHEDULE SHALL HAVE THE TYPICAL FINISHES LISTED BELOW:

FLOORS: CPT
BASE: RST
WALLS: PTD
CEILING: APC

GYP. BD. ABOVE H.M. FRAMES AS INDICATED ON SECTIONS. DETAILS TO RECEIVE SAME TOP COATS AS ADJACENT WALLS UNLESS OTHERWISE NOTED.

FINISH MATERIALS

FLOORS

CONC	CONCRETE WITH HARDENER
CPT	CARPET
PT	PORCELAIN TILE
VCT	VINYL COMPOSITION TILE
WM	WALK-OFF MAT

BASES

NONE	NO BASE
RST	RESILIENT BASE
PT	PORCELAIN TILE

CEILINGS

APC1	COLORED ACOUSTIC PANEL CLG. - 2'X2'
APC2	ACOUSTIC PANEL CLG. - 2'X2'
EXP	EXPOSED CONSTRUCTION - PAINTED
PTD	PAINTED GYPSUM BOARD ON CMU

WALLS

CMU	UNPAINTED C.M.U.
PTD	PAINTED

WALL KEY

WALLS ON FINISH SCHEDULE ARE DENOTED THUS:

A
D A-X.X. B
C

TYPICAL UNLESS OTHERWISE NOTED.

TYPICAL NOTES

1. REFER TO FLOOR PLANS, CEILING PLANS, INTERIOR ELEVATIONS, SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION AND EXTENT OF EACH FINISH WHEN MORE THAN ONE FINISH IS INDICATED FOR ANY SPACE.
2. SEE CEILING PLANS FOR HEIGHTS OF CEILINGS AND LOCATIONS AND HEIGHTS OF BULKHEADS, SOFFITS, ETC.
3. PAINT ALL EXPOSED STEEL LADDERS, LINTELS, HUNG PLATES, HAND AND GUARD RAILS, STAIRS AND STRINGERS.
4. PAINT ALL EXPOSED STEEL COLUMNS, TRUSSES, JOISTS, BEAMS, DECK, AND MISCELLANEOUS BRIDGING, ANGLES, PLATES, ETC.
5. INSTALL PORCELAIN TILE COVE BASE FLUSH WITH FLOOR TILE AND FLUSH WITH PORCELAIN WALL TILE.
6. FIELD PAINT ALL EXPOSED, NON-FACTORY FINISHED STRUCTURAL, MECHANICAL, OR ELECTRICAL COMPONENTS.
7. PROVIDE SEALANT AT INTERSECTIONS OF DISSIMILAR MATERIALS, COMPLYING WITH SPECIFICATIONS.
8. REFER TO INTERIOR ELEVATIONS AND SECTIONS FOR ADDITIONAL FINISH INFORMATION. PROVIDE ALL FINISH MATERIALS SHOWN IN PLANS, ELEVATIONS OR SECTIONS AS NOTED OR DEPICTED ON THE DRAWINGS AND SPECIFICATIONS.
9. BRING CONFLICTS TO THE ARCHITECTS ATTENTION DURING THE BIDDING PERIOD FOR CLARIFICATION.
10. WALL AND CEILING FINISHES SHALL INCLUDE ALL PROJECTIONS, BEAM ENCLOSURES, RECESSES, BULKHEADS, MATERIAL CHANGES, OR OTHER ENCLOSURES.
11. ELECTRICAL OUTLETS, CLOCKS, P.A. SPEAKERS OR OTHER DEVICES SHOWN ON THE ARCHITECTURAL DRAWINGS SERVE TO CALL ATTENTION TO THE PRESENCE OF SUCH DEVICES. NOT ALL DEVICES MAY BE SHOWN ON ARCHITECTURAL DRAWINGS. CONSULT THE OTHER DRAWINGS FOR FURTHER INFORMATION AND ADVISE ARCHITECT OF ANY CONFLICT OF LOCATION OR TYPE OF DEVICES SHOWN. COORDINATE ALL WORK, FINISHES AND DEVICES.
12. PROVIDE MOISTURE RESISTANT GYPSUM BOARD AT TOILET ROOMS, & SERVICE CLOSETS FOR WALLS DESIGNATED AS GYPSUM BOARD WALL TYPES. PROVIDE TILE BACKER BOARD AT WALLS DESIGNATED AS GYPSUM BOARD WALL TYPES WITH TILE FINISH.
13. FIELD PAINT ELECTRICAL PANELS EXCEPT PANELS LOCATED IN ELECTRICAL CLOSETS AND MECHANICAL ROOMS.
14. BRING CONFLICTS BETWEEN THE FINISH SCHEDULE AND MATERIALS SHOWN ON OTHER DRAWINGS (AND/OR SPECIFICATIONS) TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY. IF A CONFLICT EXISTS IN/BETWEEN DRAWINGS (AND/OR SPECIFICATIONS), THE MORE STRINGENT AND MORE COSTLY REQUIREMENT SHALL APPLY.

FLOOR FINISHES

CONC
CPT1
CPT2
CPT3
CPT4
PT1
PT2
VCT
WM

FINISH SCHEDULE

RM. NO.	NAME	COLOR SCHEME	FLOOR	BASE	WALLS A	WALLS B	WALLS C	WALLS D	CLG. MATL.	REMARKS
200	CORRIDOR		CPT2	RST	PTD	PTD	PTD	PTD	APC2/PTD	
200A	VESTIBULE		CPT4	RST	PTD	PTD	PTD	PTD	APC2	
201	CLASSROOM		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
202	CLASSROOM		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
203	STUDENT BREAKOUT		CPT3	RST	PTD	PTD	PTD	PTD	PTD	
204	STORAGE		VCT	RST	PTD	PTD	PTD	PTD	APC2	
205	CLASSROOM		VCT	RST	PTD	PTD	PTD	PTD	APC2	
206	CLASSROOM		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
207	RECYC		CONC	RST	PTD	PTD	PTD	PTD	APC2	
208	PART-TIME FACULTY		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
209	CONFERENCE ROOM		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
210A	COPY ROOM		VCT	RST	PTD	PTD	PTD	PTD	APC2	
210B	CLASSROOM STORAGE		VCT	RST	PTD	PTD	PTD	PTD	APC2	
211	WORK ROOM		VCT	RST	PTD	PTD	PTD	PTD	APC2	
212	FACULTY		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
213	FACULTY		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
214	FACULTY		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
215	FACULTY		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
216	FACULTY		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
217	FACULTY MEETING		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
218	FACULTY		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
219	FACULTY		CPT1	RST	PTD	PTD	PTD	PTD	APC2	
220	MEP		CONC	RST	PTD	PTD	PTD	PTD	EXP	
220A	IT		CONC	RST	PTD	PTD	PTD	PTD	EXP	
220B	ELECTRIC		CONC	RST	PTD	PTD	PTD	PTD	EXP	
221	WOMEN		PT2	PT3	PT3	PT3	PT3	PT3	APC2	
222	MEN		PT2	PT3	PT3	PT3	PT3	PT3	APC2	
223	CUSTODIAL		CONC	RST	PTD	PTD	PTD	PTD	EXP	
224	STUDENT BREAKOUT		CPT3	RST	PTD	PTD	PTD	PTD	APC2	
225	PHYSICS/EARTH SCIENCE PREP/STORAGE		VCT	RST	PTD	PTD	PTD	PTD	EXP	
226	PHYSICS/EARTH SCIENCE		VCT	RST	PTD	PTD	PTD	PTD	APC2	
227	CHEMISTRY/MICROBIOLOGY		VCT	RST	PTD	PTD	PTD	PTD	APC2	
228	CHEMICAL STORAGE		VCT	RST	PTD	PTD	PTD	PTD	APC2	
229A	CHEMISTRY/MICROBIOLOGY PREP/STORAGE		VCT	RST	PTD	PTD	PTD	PTD	APC2	
229B	BIOLOGY PREP/STORAGE		VCT	RST	PTD	PTD	PTD	PTD	APC2	
230	BIOLOGY		VCT	RST	PTD	PTD	PTD	PTD	APC2	
231	LOBBY		PT1	PTD	PTD	PTD	PTD	PTD	APC1/PTD	
232	VESTIBULE		WM	PT1	PTD	PTD	PTD	PTD	APC1	
233	LOUNGE		CPT3	RST	PTD	PTD	PTD	PTD	APC2/PTD	
234	VENDING		VCT	RST	PTD	PTD	PTD	PTD	APC2/PTD	
235	ENGINEERING/ROBOTICS STORAGE		VCT	RST	PTD	PTD	PTD	PTD	APC2	
236	ENGINEERING /ROBOTICS		VCT	RST	PTD	PTD	PTD	PTD	APC2	
237	HAZARD		CONC	RST	PTD	PTD	PTD	PTD	EXP	
237A	DISPLAY		VCT	RST	PTD	PTD	PTD	PTD	APC2	
238	STUDENT BREAKOUT		CPT3	RST	PTD	PTD	PTD	PTD	APC2	
239	FAMILY BATHROOM		PT2	PT3	PT3	PT3	PT3	PT3	APC2	
240	STUDENT TUTORING AREA		CPT3	RST	PTD	PTD	PTD	PTD	APC2	
241	MECHANICAL PENTHOUSE		CONC	RST	PTD	PTD	PTD	PTD	EXP	

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FINISH SCHEDULE AND PLAN

Garrett College STEM Renovation and Addition
McHenry, MD

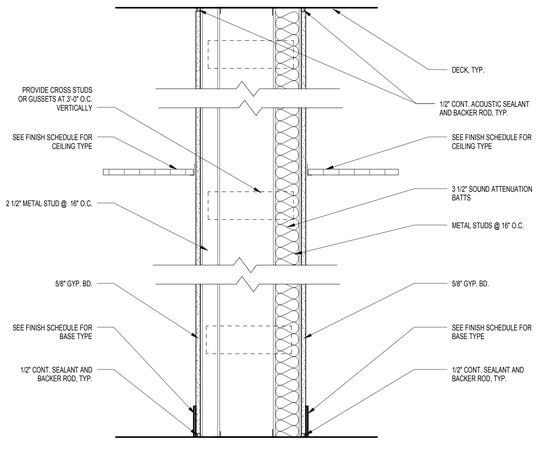
DATE	DESCRIPTION

A-3.2
February 1, 2017
Bid Set

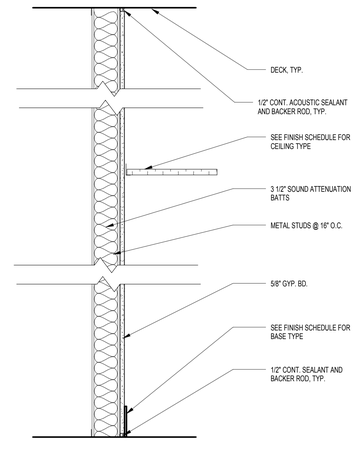
INTERIOR WALL TYPES

(SCALE 1 1/2" = 1'-0")

NOTE: PROVIDE DEFLECTION TRACKS AT TOP OF EACH WALL TO ALLOW FOR UP TO 1" OF ROOF DEFLECTION

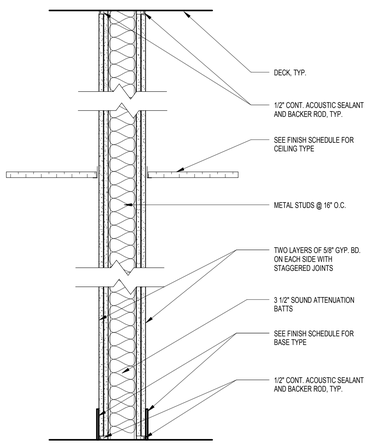


U1 — CHASE WALL - 2 1/2" METAL STUD W/ GYP. BD. ON ONE SIDE - 7" CHASE - 3 5/8" METAL STUD W/ GYP. BD. ON ONE SIDE - TOTAL THICKNESS = 1' 2-3/8"

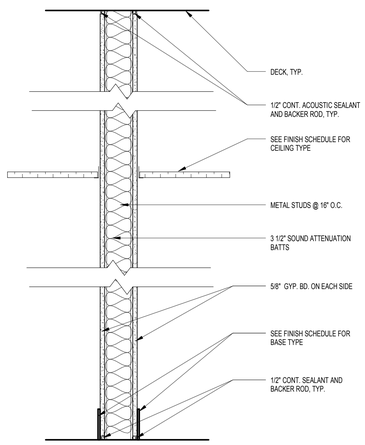


X1 — 3 5/8" METAL STUD W/ GYP. BD. ON ONE SIDE - TOTAL THICKNESS = 4 1/4"

X2 — 2 1/2" METAL STUD W/ GYP. BD. ON ONE SIDE - TOTAL THICKNESS = 3 1/8"



M1 — 3 5/8" METAL STUD W/ TWO LAYERS GYP. BD. ON EACH SIDE - TOTAL THICKNESS = 6 1/8" (STC RATING 55, MIN.) NOTE: STAGGER HORIZ. AND VERT. GYP. BD. JOINTS



K1 — 3 5/8" METAL STUD W/ GYP. BD. ON EACH SIDE - TOTAL THICKNESS = 4 7/8"

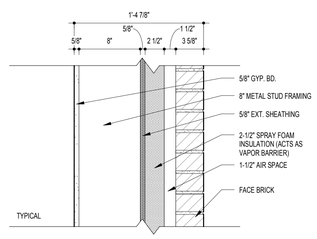
K2 — 6" METAL STUD W/ GYP. BD. ON EACH SIDE - TOTAL THICKNESS = 7 1/4"

K3 — 3 5/8" METAL STUD W/ TWO LAYERS OF GYP. BD. ON ONE SIDE & ONE LAYER ON THE OTHER SIDE - TOTAL THICKNESS = 5 1/2" (STC RATING 50, MIN.)

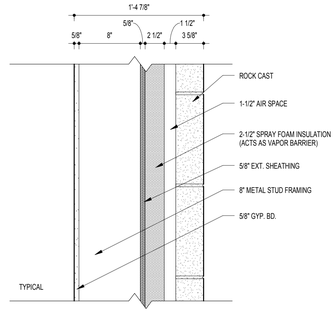
K4 — 6" METAL STUD W/ TWO LAYERS OF GYP. BD. ON ONE SIDE & ONE LAYER ON THE OTHER SIDE - TOTAL THICKNESS = 7 7/8"

EXTERIOR WALL TYPES

(SCALE 1 1/2" = 1'-0")



WALL TYPE 1:



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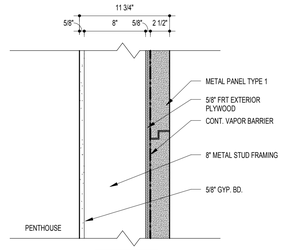

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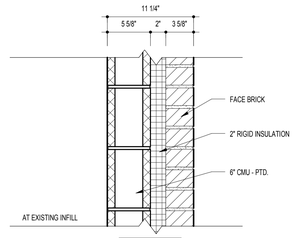
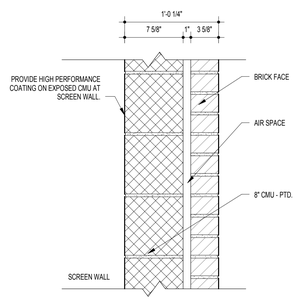
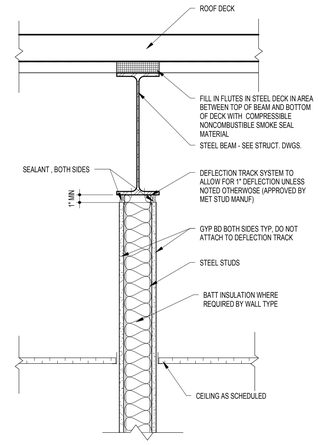


WALL TYPE 4:

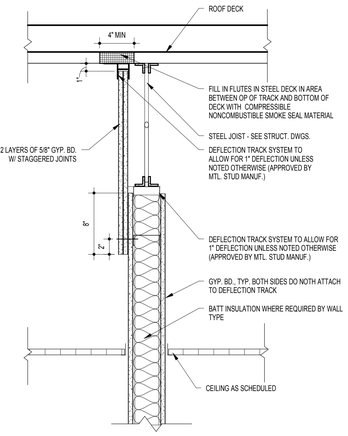


WALL TYPE 5:

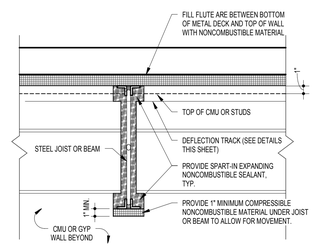
WALL TERMINATION DETAILS



H11 NON-RATED STUD WALL ALIGNED UNDER A BEAM
1 1/2" = 1'-0"



D11 NON-RATED STUD WALL ALIGNED UNDER A JOIST
1 1/2" = 1'-0"



A11 JOIST OR BEAM. PERP. TO WALL
1 1/2" = 1'-0"

TYPICAL WALL TYPE NOTES

GENERAL NOTE APPLICABLE TO ALL DRAWINGS - ITEMS AND CONDITIONS DETAILED NOTED OR OTHERWISE IDENTIFIED ON ONE OF THE SECTIONS OR DETAILS ARE APPLICABLE AND BINDING TO ALL OTHER SECTIONS AND DETAILS FOR IDENTICAL OR SIMILAR CONDITIONS.

1. WALLS SHALL EXTEND FULL HEIGHT FROM FLOOR SLAB TO THE FLOOR OR ROOF DECK ABOVE UNLESS SPECIFICALLY NOTED OTHERWISE.
2. REFER TO THE CODE STUDY AND FLOOR PLANS FOR IDENTIFICATION OF ALL SMOKE AND FIRE WALL CONDITIONS / LOCATIONS. IN ADDITION TO THE REQUIREMENTS INDICATED ON THE CODE STUDY AND FLOOR PLANS, ALL CORRIDOR AND VESTIBULE WALLS SHALL BE BUILT TO RESIST THE PASSAGE OF SMOKE.
3. FIRE WALLS, FIRE SEPARATION WALLS, SMOKE BARRIER WALLS AND WALLS REQUIRED TO RESIST THE PASSAGE OF SMOKE SHALL EXTEND FULL HEIGHT FROM FLOOR SLAB TO THE FLOOR OR ROOF DECK ABOVE AND SHALL BE SEALED TIGHT TO THE DECK OR STRUCTURAL MEMBER WITH AN APPROVED FIRE RESISTIVE JOINT SYSTEM. SEAL ALL PENETRATIONS AND TOPS OF WALLS IN ACCORDANCE WITH SPECIFICATION DIVISION 7 SECTION - FIRE RESISTIVE JOINT SYSTEMS. WALLS AT FIRE AND SMOKE CONDITIONS / LOCATIONS, LISTED ABOVE, SHALL BE BUILT TIGHT TO DUCTS, PIPES AND PENETRATIONS. FILL FLUTES IN FLOOR AND ROOF DECKS AS INDICATED. WHERE WALLS AT FIRE AND SMOKE CONDITIONS / LOCATIONS, LISTED ABOVE, ARE INTERRUPTED BY STRUCTURAL MEMBERS, PROVIDE FIRE RESISTIVE JOINT SYSTEM IN AREAS BETWEEN TOP AND/OR SIDE OF WALL AND STRUCTURAL MEMBER AND BETWEEN DECK ABOVE AND STRUCTURAL MEMBER IN ACCORDANCE WITH APPROVED FIRE RESISTIVE JOINT SYSTEM
4. THESE WALL TYPES ARE GENERAL IN NATURE AND DO NOT COVER EVERY VARIATION THAT MAY OCCUR THROUGHOUT THE PROJECT. SEE WALL SECTIONS AND DETAILS FOR ADDITIONAL INFORMATION.
5. TYPICAL GYPSUM BOARD/STUD WALL PARTITION SHALL BE TYPE K1 UNLESS INDICATED OTHERWISE BY WALL TYPE SYMBOLS, WALL SECTIONS OR OTHER DETAILS.
6. WALL TYPES MAY NOT HAVE BEEN INCLUDED IN THIS SCHEDULE FOR INTERIOR WALL TYPES WHICH ARE COVERED BY WALL SECTIONS.
7. THESE WALL TYPES DO NOT SHOW LATERAL BRACING OR WALL REINFORCING. SEE STRUCTURAL AND OTHER DRAWINGS FOR THAT INFORMATION.
8. SEE FINISH SCHEDULE FOR FINISHES TO BE APPLIED TO THESE WALL TYPES.
9. FURRING CHANNELS AND STUDS SHALL BE 16" O.C. MAXIMUM UNLESS SPECIFICALLY NOTED OTHERWISE.
10. THE GAGE OF ALL METAL STUDS SHALL BE SIZED SO THAT THE DEFLECTION OF THE WALL SHALL NOT EXCEED 1/240 PER ASTM C645 UNLESS A HEAVIER GAGE IS INDICATED ON THE WALL TYPE OR DETAILS.
11. IN ALL WALLS WITH SOUND ATTENUATION BLANKETS OR AN STC RATING LISTED, OUTLETS, SWITCHES, ETC., SHALL NOT BE LOCATED BACK TO BACK. OUTLETS SHALL BE OFFSET AND SEALED. PERIMETERS OF WALLS (AT ADJACENT WALLS, COLUMNS, CEILINGS, ETC.) SHOULD BE SEALED. ADDITIONALLY, WALL PENETRATIONS SHALL BE SEALED WITH APPROPRIATE TYPE OF ACOUSTIC SEALANT.
12. PROVIDE SPACE FOR DEFLECTION OF BEAMS, JOISTS, AND STEEL DECK @ TOP OF ALL WALLS THAT RUN TO THE DECK. FILL GAP WITH NON COMBUSTIBLE, COMPRESSIBLE FILLER ON NON RATED WALLS AND APPROVED FIRE SAFING ON RATED WALLS.
13. PROVIDE 4" HIGH X 18 GA. X LENGTH REQUIRED STEEL PLATE BLOCKING OR 2x FRT WD BLOCKING IN ALL IN ALL STUD WALLS WHERE REQUIRED TO ATTACH CASEWORK, SHELVING, LIGHTS, ELECTRICAL DEVICES, TOILET ACCESSORIES AND ANY OTHER ITEM WHICH REQUIRE SECURE ATTACHMENT TO THE WALLS.
14. IN ROOMS WHERE NO FINISHED CEILING IS PROVIDED, EXTEND ALL CHASE WALLS TO FLOOR OR ROOF DECK ABOVE.
15. PROVIDE CONT. SEALANT AT BASE OF ALL GYP. BD. WALLS (BOTH SIDES), TYPICAL.

TYPICAL WALL TERMINATION NOTES

1. USE THESE TYPICAL WALL TERMINATION DETAILS FOR ALL WALLS INDICATED TO EXTEND TO DECK ABOVE, UNLESS SPECIFICALLY DETAILED OTHERWISE. COORDINATE WITH STRUCTURAL FRAMING PLANS.
2. SEE WALL TYPES FOR ACTUAL WALL CONSTRUCTION.

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GP #21620

WALL TYPES

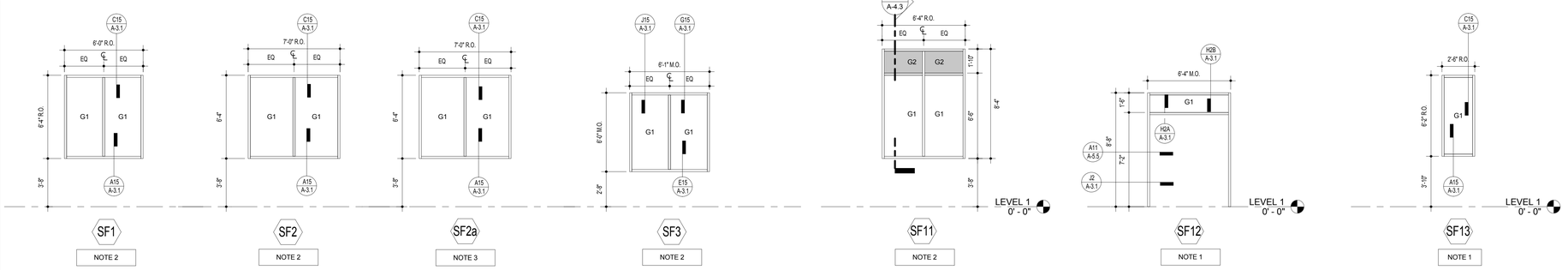
Garrett College STEM Renovation and Addition
McHenry, MD

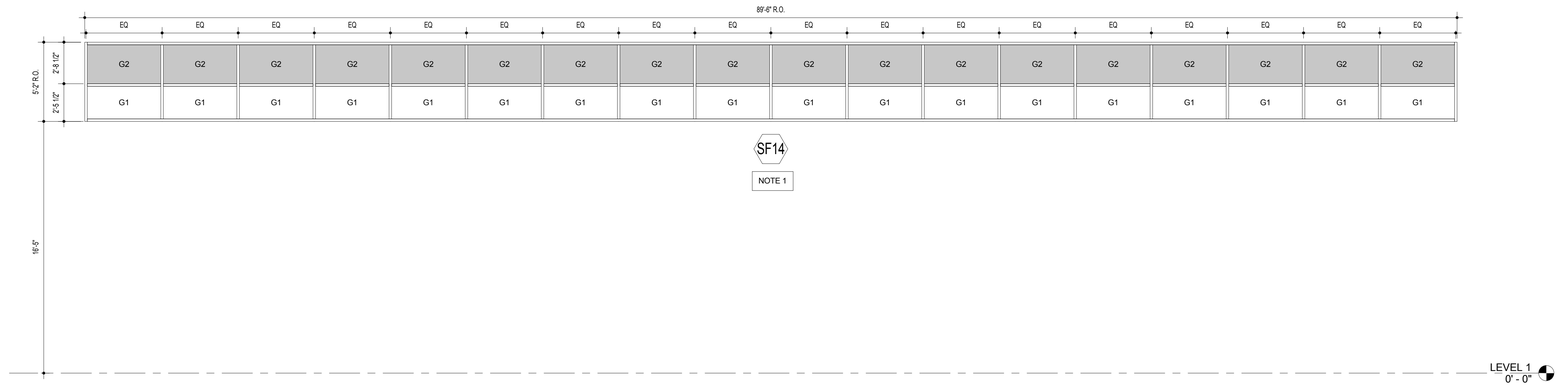
DATE	DESCRIPTION

A-3.3

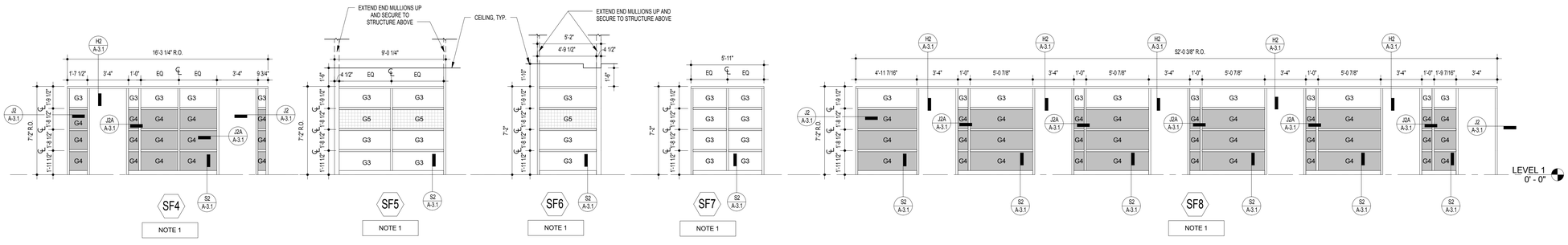
February 1, 2017
Bid Set

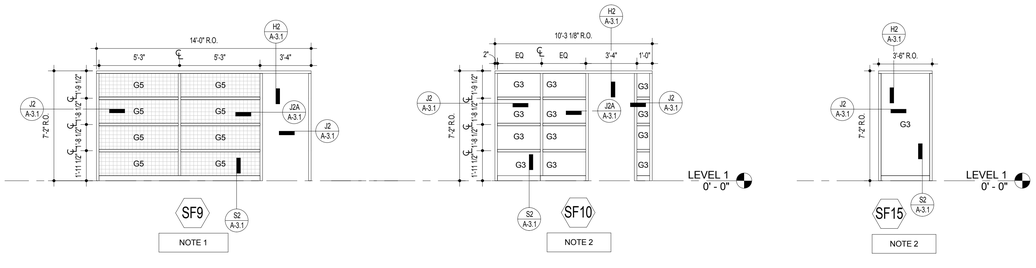
STOREFRONT TYPES - EXTERIOR (SCALE 1/4" = 1'-0")





STOREFRONT TYPES - INTERIOR (SCALE 1/4" = 1'-0")





Scale: 1 inch = 4 feet

0 2' 4' 8' 12' 16'

GENERAL STOREFRONT AND CURTAINWALL NOTES

NOTES APPLY TO ALL FRAME ELEVATION SHEETS

1. VERIFY MASONRY & ROUGH OPENINGS, INCLUDING BUT NOT LIMITED TO STRUCTURAL LINTEL LOCATIONS, PRIOR TO FABRICATION.
2. COORDINATE REQUIRED TOLERANCES IN ALL DIMENSIONS NEEDED TO MANUFACTURE AND INSTALL WINDOWS, STOREFRONT AND CURTAINWALL INCLUDING SUBFRAMES, AS REQUIRED.
3. CONTINUOUSLY SEAL ALL SIDES OF STOREFRONT AND SUBFRAMES ABUTTING DISSIMILAR MATERIALS AT JAMBS, HEADS, AND SILLS, TYPICALLY.
4. PROVIDE APPROPRIATE ANCHORAGE SYSTEM FOR ALL CONDITIONS TO SECURE WINDOWS IN ROUGH OPENINGS. PROVIDE SUBFRAMING AS SHOWN ON DETAILS AND/OR SPECIFIED.
5. SEE HEAD, JAMB, AND SILL DETAIL SHEET FOR MORE INFORMATION.
6. PROVIDE FOR THERMAL EXPANSION AT ALL STOREFRONT SYSTEMS.
7. COORDINATE FRAMES WITH PLAN WHEN MORE THAN ONE CONSTRUCTION DETAIL IS REFERENCED.
8. AS REQUIRED FOR DESIGN LOADING, WINDOW MANUFACTURER SHALL PROVIDE MULLION REINFORCING AND VERTICAL EXTENSIONS UP TO STRUCTURE ABOVE (ATTACHMENT TO STRUCTURE BY MANUFACTURER). SEE SECTIONS AND DETAILS FOR ADDITIONAL WORK RELATING TO STOREFRONT SYSTEM.
9. IDENTIFICATION OF OPENING TYPES AS "CURTAINWALL" OR "STOREFRONT" IS BASED ON SYSTEM REQUIREMENTS OF A PARTICULAR MANUFACTURER. CONTRACTOR IS TO DETERMINE BEST APPLICATION OF PROPOSED MANUFACTURE AND SYSTEM BASED ON PERFORMANCE REQUIREMENTS, SIZE OF OPENING, AND INSTALLATION CONDITION.
10. OVERALL DIMENSIONS OF STOREFRONT ARE APPROXIMATE. CONTRACTOR TO COORDINATE REQUIRED TOLERANCES IN ALL DIMENSIONS NEEDED TO MANUFACTURE AND INSTALL STOREFRONT, INCLUDING SUBFRAMES, AS REQUIRED. CONTRACTOR SHALL VERIFY ACTUAL DIMENSIONS IN THE FIELD WITH THOSE SHOWN ON ALL DRAWINGS, INCLUDING DETAILS SHOWN ON OTHER SHEETS, PRIOR TO FABRICATION.
11. COORDINATE STOREFRONT AND CURTAINWALL SYSTEMS WITH AIR BARRIER TRANSITION MEMBRANE SYSTEM AND MANUFACTURER-RECOMMENDED DETAILS FOR A COMPLETE AIR BARRIER SYSTEM ON NEW CONSTRUCTION AREAS.

GENERAL HOLLOW METAL FRAME NOTES

1. CONTRACTOR SHALL VERIFY ALL MASONRY AND ROUGH OPENINGS WITH HOLLOW METAL FRAME SIZES.
2. CONTRACTOR TO COORDINATE REQUIRED TOLERANCES IN ALL DIMENSIONS NEEDED TO MANUFACTURER AND INSTALL HOLLOW METAL FRAMES. VERIFY ACTUAL DIMENSIONS IN THE FIELD WITH THOSE SHOWN ON ALL DRAWINGS, INCLUDING DETAILS SHOWN ON OTHER SHEETS.
3. CONTINUOUSLY SEAL ALL SIDES OF HOLLOW METAL FRAMES ABUTTING DISSIMILAR MATERIALS AT JAMBS, HEADS, AND SILLS, TYPICALLY (EXCEPT AT DOOR SILLS UNLESS OTHERWISE NOTED).
4. TYPICAL WIDTH OF RETURNS ON HOLLOW METAL FRAMES IS 1 15/16" AT HEADS, JAMBS, AND SILLS. CENTER SECTION OF FRAME VARIES IN WIDTH WITH RESPECTIVE WALL TYPE. SEE PLANS.
5. SEE HEAD, JAMB, AND SILL DETAIL SHEET FOR MORE INFORMATION.
6. FILL ALL HOLLOW METAL (HM) FRAMES ABUTTING MASONRY WITH GROUT. FILL INTERMEDIATE MEMBERS AS SHOWN IN DETAILS (TYPICAL).

GLASS TYPE KEY

G-1 1" INSULATING GLASS
- 1/4" TEMPERED GLASS, EXTERIOR LITE
- 1/2" AIR SPACE
- 1/4" TEMPERED GLASS WITH LOW E COATING

G-2 1" INSULATING GLASS
- 1/4" TEMPERED GLASS, EXTERIOR LITE
- 1/2" AIR SPACE
- 1/4" TEMPERED GLASS WITH TRANSLUCENT WHITE PVB LAYER (ON AIR SPACE SIDE)

G-3 1/4" CLEAR TEMPERED GLASS

G-4 5/16" LAMINATED GLASS
- 1/8" TEMPERED GLASS
- TRANSLUCENT WHITE FILM
- 1/8" TEMPERED GLASS

G-5 1/4" LAMINATED GLASS
- 1/8" TEMPERED GLASS
- PRINTED GRID FILM
- 1/8" TEMPERED GLASS

G-6 13/16" CLEAR LAMINATED CANOPY GLASS

NUMBERED REMARKS

NOTE 1:	PROVIDE NO BLINDS AT THIS FRAME OPENING.
NOTE 2:	PROVIDE MANUAL TRANSLUCENT ROLLER SHADES AT THIS FRAME OPENING.
NOTE 3:	PROVIDE BOTH MANUAL TRANSLUCENT AND BLACK-OUT SHADES AT THIS FRAME OPENING.

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G+P GRIMM AND PARKER

GP #21620

STOREFRONT TYPES

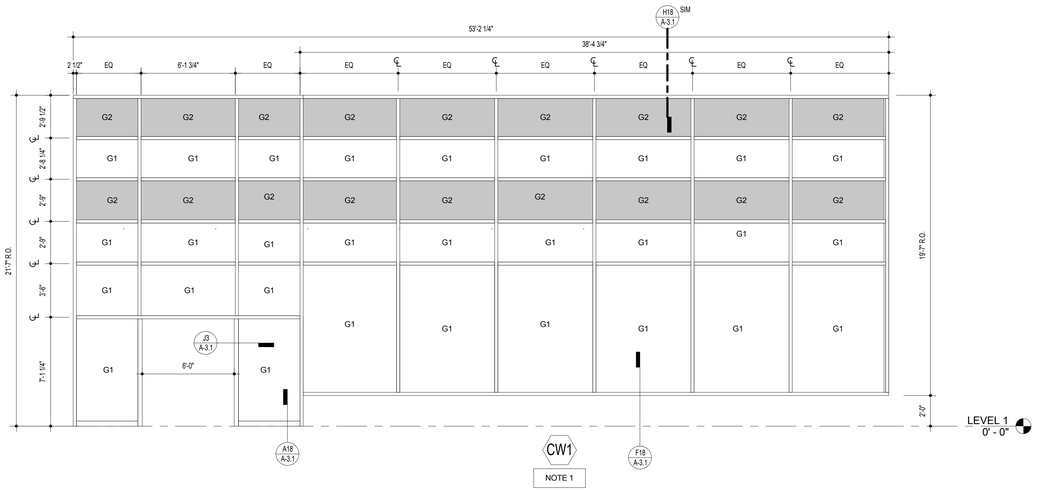
Garrett College STEM Renovation and Addition
McHenry, MD

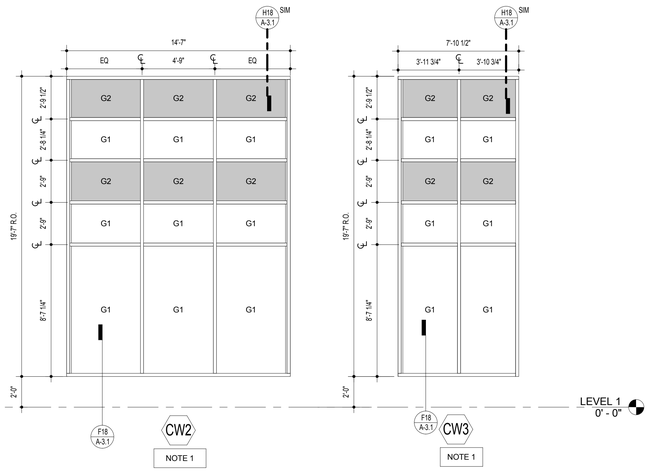
DATE	DESCRIPTION

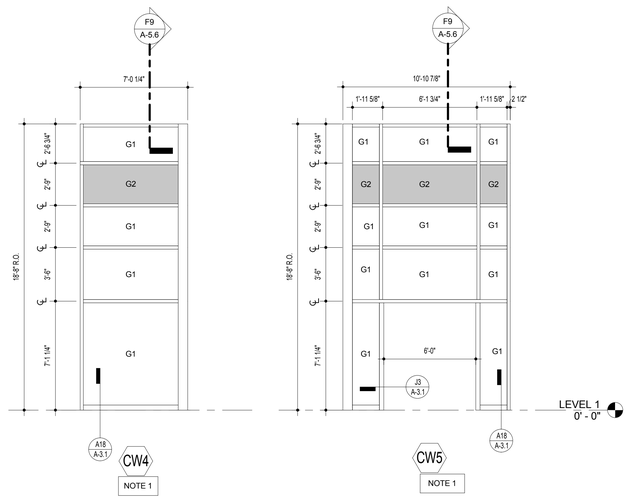
A-3.4

February 1, 2017
Bid Set

CURTAIN WALL TYPES (SCALE 1/4" = 1'-0")







Scale: 1 inch = 4 feet

0 2' 4' 8' 12' 16'

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NOTE 3:	PROVIDE BOTH MANUAL TRANSLUCENT AND BLACK-OUT SHADES AT THIS FRAME OPENING.

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GP #21620

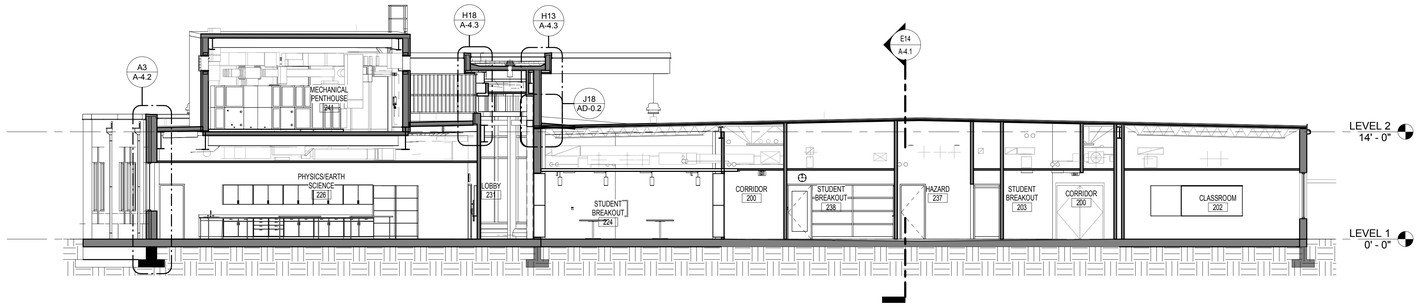
CURTAINWALL TYPES

Garrett College STEM Renovation and Addition
McHenry, MD

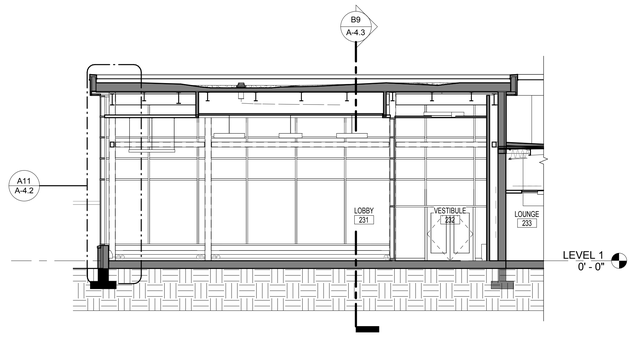
DATE	DESCRIPTION

A-3.5

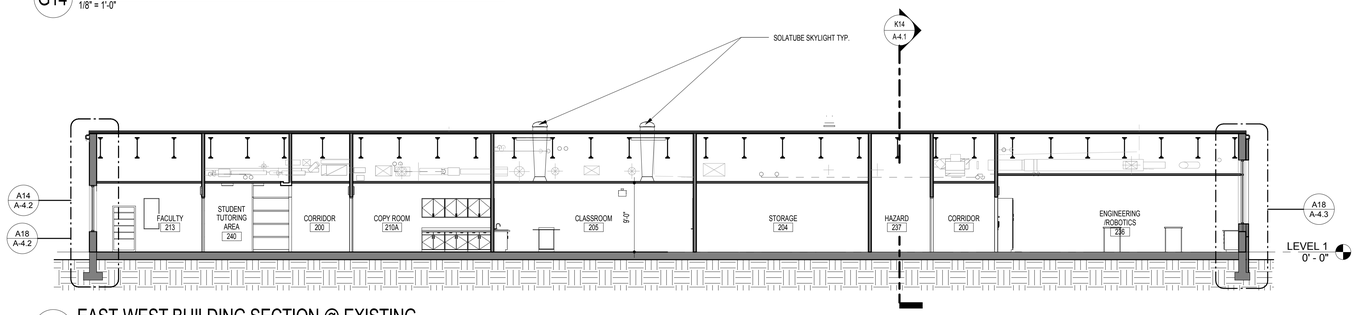
February 1, 2017
Bid Set



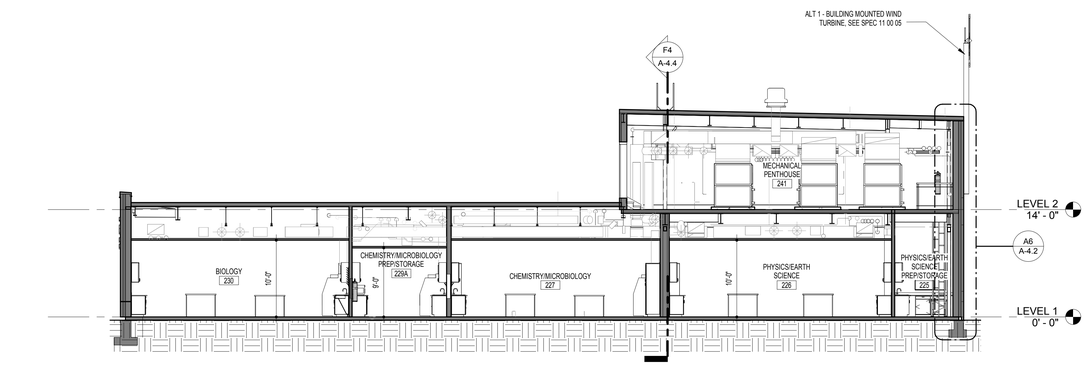
K14 NORTH-SOUTH BUILDING SECTION
1/8" = 1'-0"



G14 EAST - WEST BUILDING SECTION @ ADDITION LOBBY
1/8" = 1'-0"

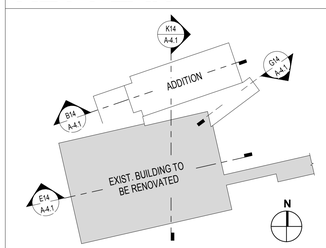


E14 EAST-WEST BUILDING SECTION @ EXISTING
1/8" = 1'-0"



B14 EAST-WEST BUILDING SECTION @ ADDITION
1/8" = 1'-0"

KEY PLAN



Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

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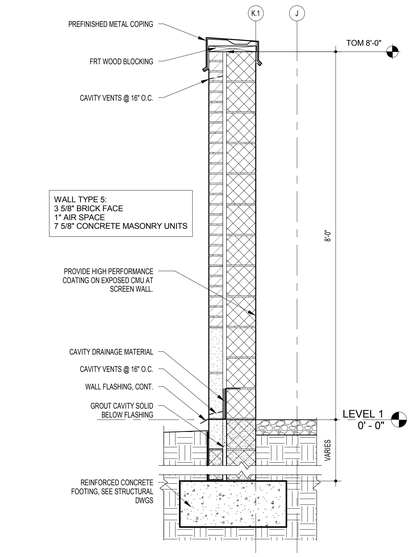
GP #21620

BUILDING SECTIONS

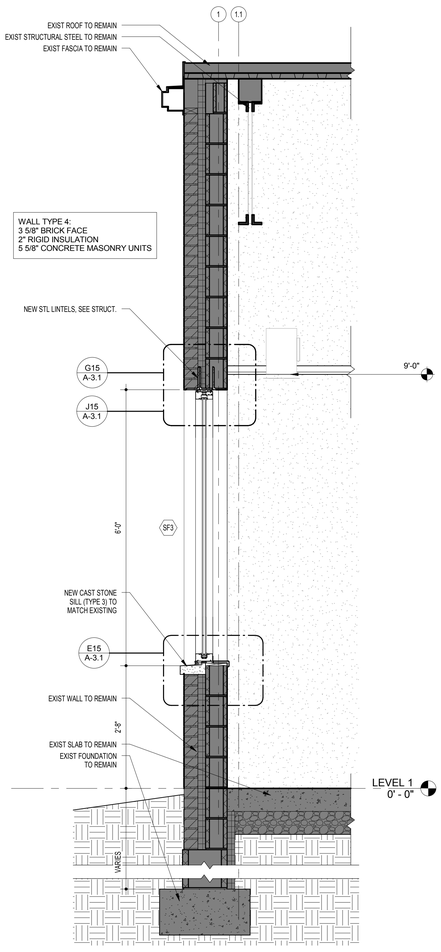
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

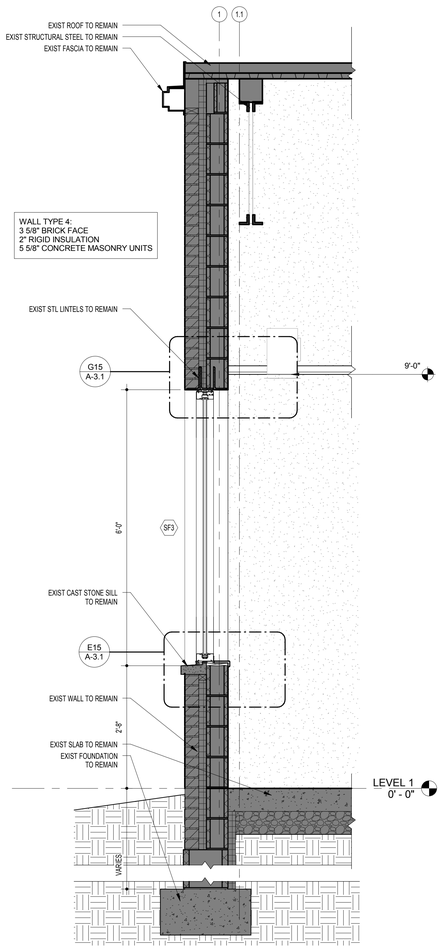
A-4.1
February 1, 2017
Bid Set



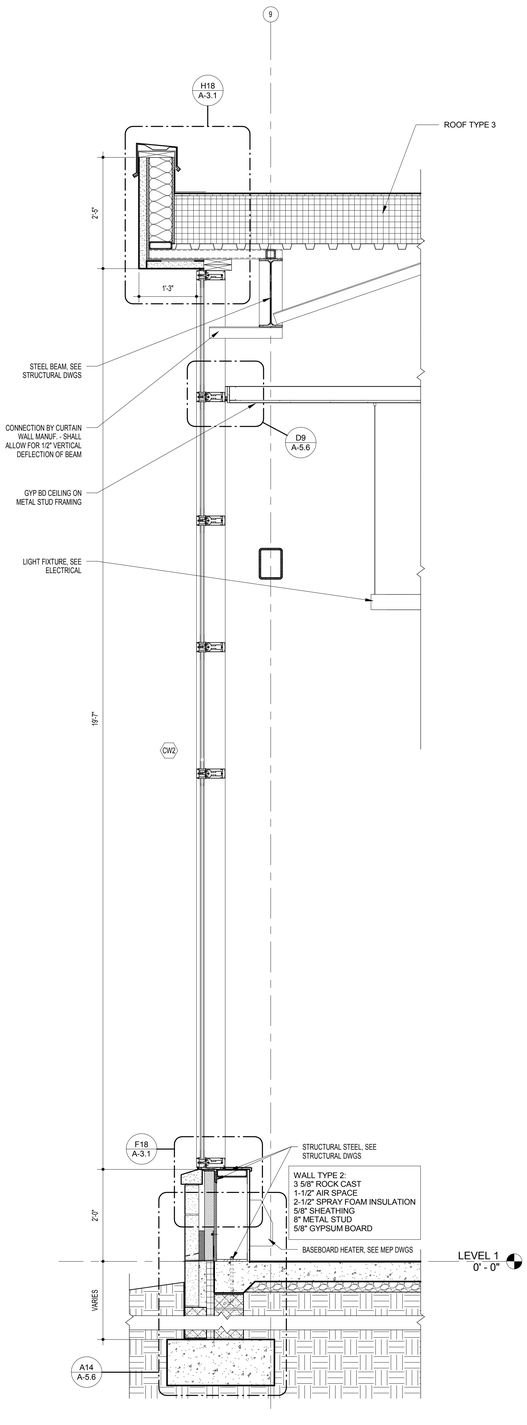
H18 WALL SECTION @ SITE WALL
3/4" = 1'-0"



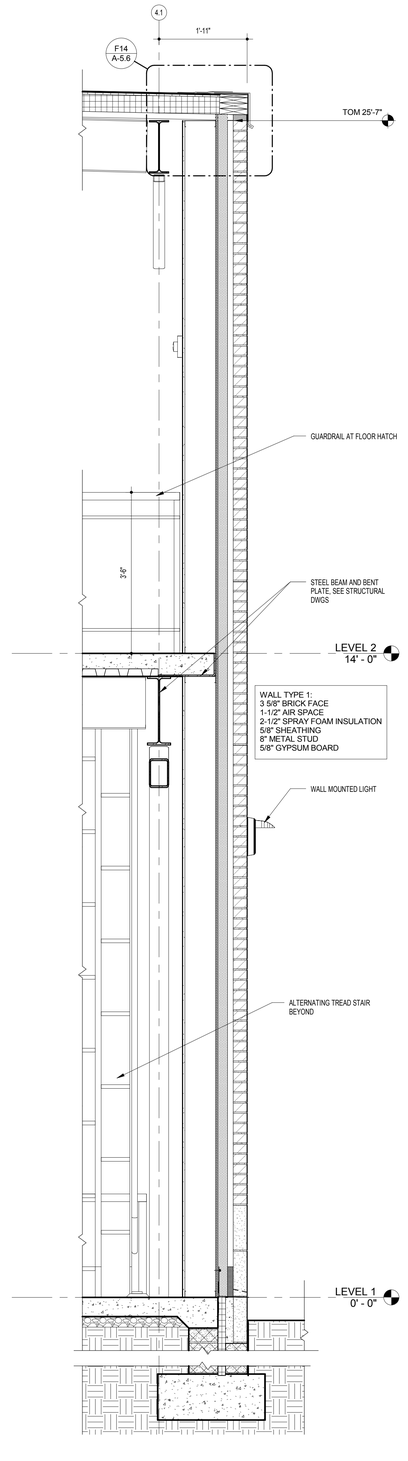
A18 WALL SECTION @ EXISTING W/ NEW OPENING
3/4" = 1'-0"



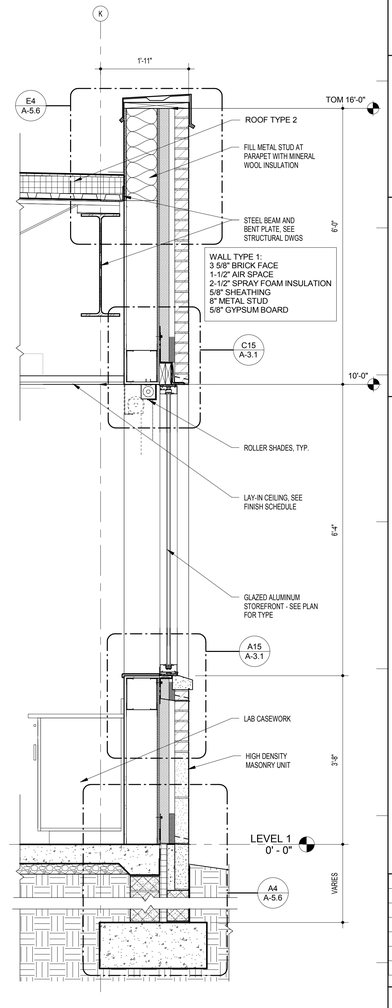
A14 WALL SECTION @ EXISTING W/ EXIST OPENING
3/4" = 1'-0"



A11 TYP. WALL SECTION @ LOBBY
3/4" = 1'-0"



A6 WALL SECTION @ ADDITION
3/4" = 1'-0"



A3 TYP. WALL SECTION @ LAB
3/4" = 1'-0"

SCALE:3/4" = 1'-0"
0 8" 1'-4" 2'-8" 4'-0" 5'-4"

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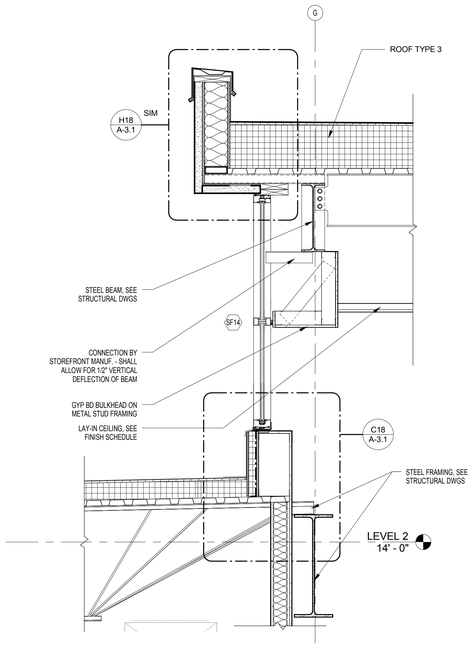
WALL SECTIONS

Garrett College STEM Renovation and Addition
McHenry, MD

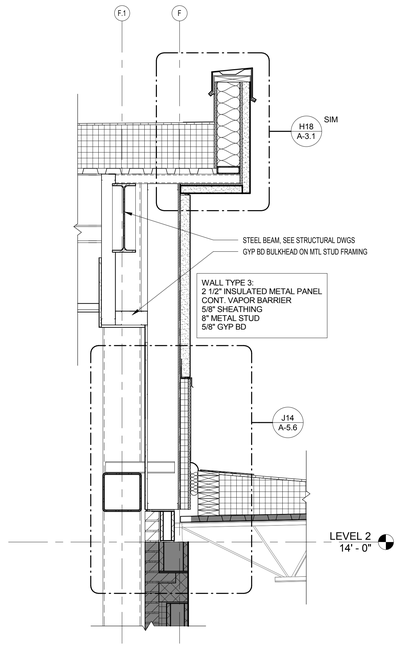
DATE	DESCRIPTION

A-4.2

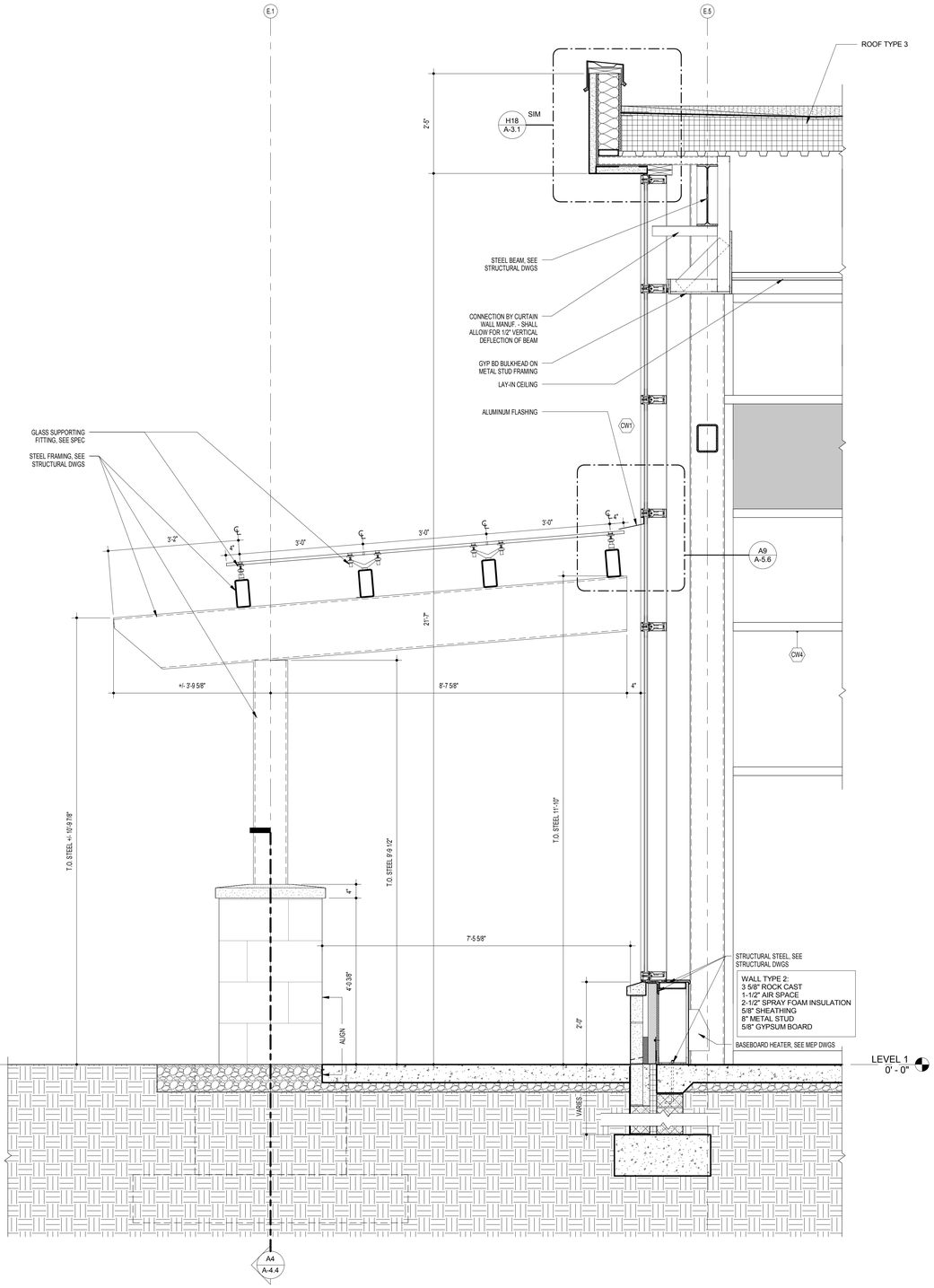
February 1, 2017
Bid Set



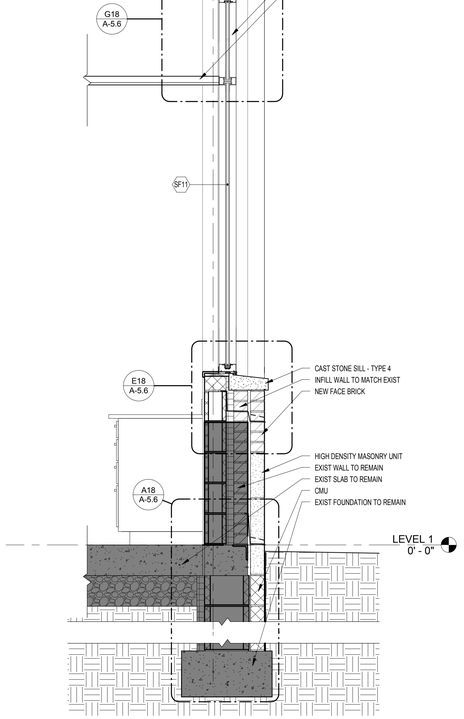
H18 WALL SECTION @ CLERESTORY
3/4" = 1'-0"



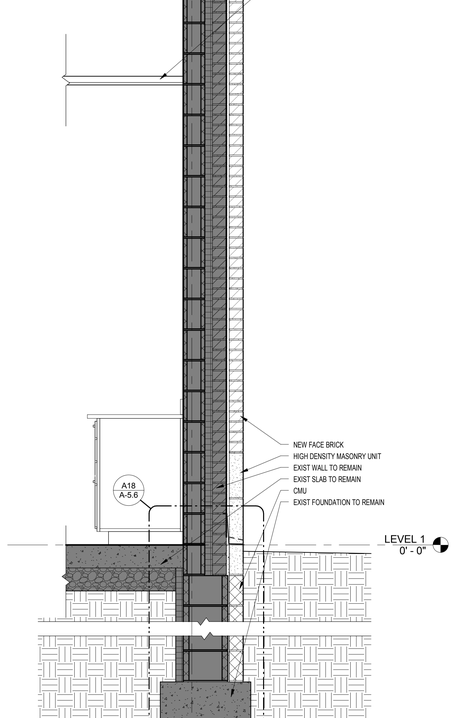
H13 WALL SECTION @ CLERESTORY METAL PANEL
3/4" = 1'-0"



B9 WALL SECTION @ ENTRY CANOPY
3/4" = 1'-0"



A18 WALL SECTION @ WINDOW SF11
3/4" = 1'-0"



A13 WALL SECTION @ EXIST EAST FACADE
3/4" = 1'-0"

SCALE:3/4" = 1'-0"
0 8" 1'-4" 2'-8" 4'-0" 5'-4"

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GP #21620

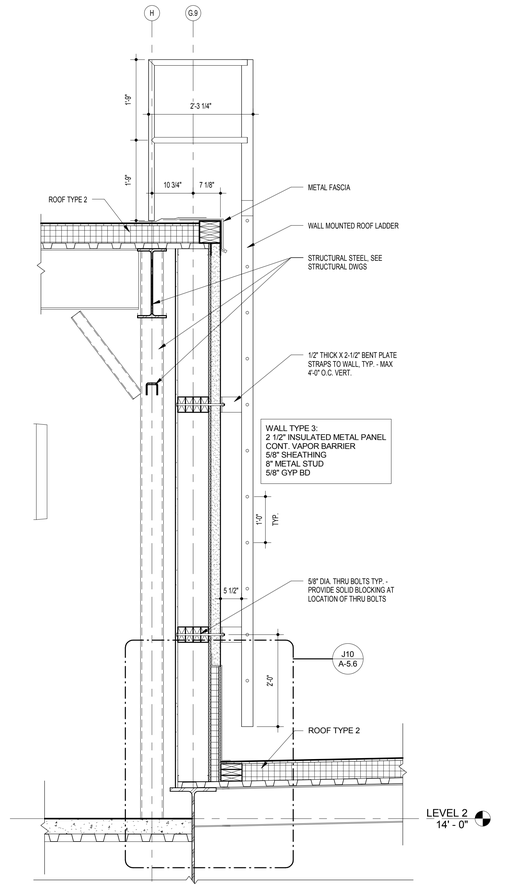
WALL SECTIONS

Garrett College STEM Renovation and Addition
McHenry, MD

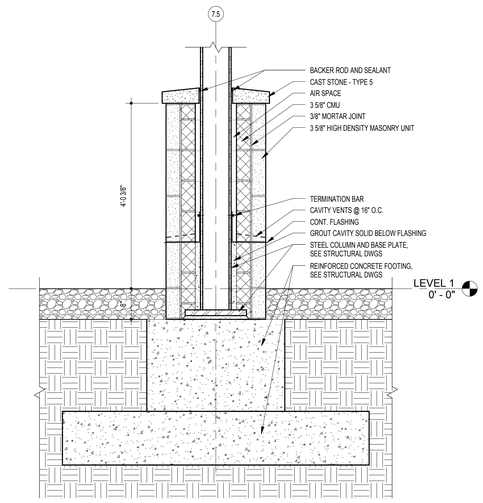
DATE	DESCRIPTION

A-4.3

February 1, 2017
Bid Set



F4 WALL SECTION @ WALL MOUNTED LADDER
3/4" = 1'-0"



A4 CANOPY COLUMN BASE SECTION
3/4" = 1'-0"

SCALE:3/4" = 1'-0"
0 8" 1'-4" 2'-8" 4'-0" 5'-4"

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GP #21620

WALL SECTIONS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-4.4

February 1, 2017
Bid Set

SIGNAGE NOTES

1. SIGNAGE LOCATIONS ARE NOTED ON A-5.2.
2. SEE SPEC FOR INFORMATION REGARDING SIGN TYPES 1 THROUGH 6.
3. NAMES FOR SIGN TYPES 8, 9 AND 10 ARE TO BE DETERMINED AND SUBJECT TO CHANGE. USE THE NUMBER OF CHARACHTERS BELOW FOR THE PURPOSE OF PRICING.
4. NAME SHOWN FOR SIGN TYPE 10 IS FOR ILLUSTRATION PURPOSES ONLY. SEE INTERIOR ELEVATIONS FOR SPECIFIC NAMES.

TOILET ACCESSORIES

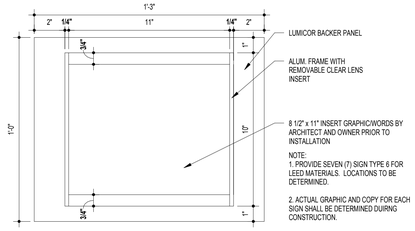
ITEM #	ACCESSORY DESCRIPTION	BOBRICK	A.S.I.	BRADLEY	REMARKS
1	MIRROR	B-165 2436	0620-L		
2	TOWEL DISPENSER				OWNER PROVIDED, CONTRACTOR INSTALLED
3	GRAB BAR - 42	B-6206.99-42	3201P-42	8122-001420	
4	GRAB BAR - 36	B-6206.99-36	3201P-36	8122-001360	
5	TOILET PAPER DISPENSER				OWNER PROVIDED, CONTRACTOR INSTALLED
6	SANITARY NAPKIN DISPOSAL	B-254	0852	4722-15	
7	SOAP DISPENSER				OWNER PROVIDED, CONTRACTOR INSTALLED
8	BABY CHANGING STATION				KOALA KARE PRODUCTS - KB200 HORIZONTAL WALL MOUNTED
9	TOILET SEAT COVER DISPENSER				OWNER PROVIDED, CONTRACTOR INSTALLED

TYPICAL TOILET ROOM NOTES

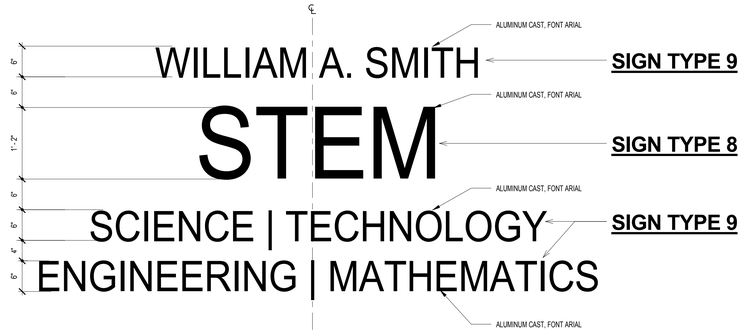
1. CENTERLINES OF ALL TOILETS IN STALLS SHALL BE EQUAL BETWEEN PARTITIONS UNLESS DIMENSIONED OR NOTED OTHERWISE
2. REFER TO PLUMBING PLANS FOR FLOOR DRAIN LOCATIONS IN TOILET ROOMS
3. REFER TO PLUMBING PLANS AND SCHEDULE FOR TOILET FIXTURE TYPE LOCATIONS
4. DIMENSIONS SHOWN IN TOILET PLANS ARE FROM CMU TO CMU (FOR CMU WALLS) OR GYPSUM BOARD TO GYPSUM BOARD (FOR STUD WALLS) FINISH. REFERE TO FINISH SCHEDULE FOR FLOOR, WALL AND CEILING FINISHES.
5. FOR CERAMIC, GLASS, OR PORCELAIN TILE PATTERN, SEE ELEVATIONS
6. CONTRACTOR TO MARK OUT WALLS OF ALL TOILETS AND RESTROOMS FOR REVIEW BY OWNER AND A/E TEAM PRIOR TO WALL ERECTION

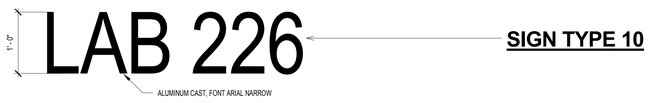
FIXTURE MOUNTING HEIGHTS

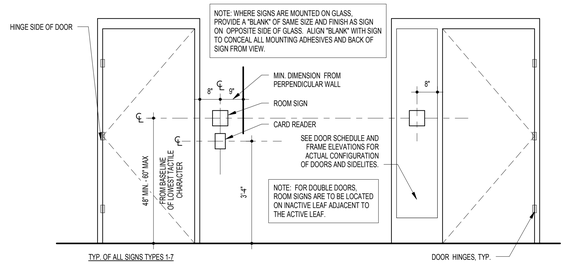
FIXTURE		ADULT ADA	REMARKS
WATER CLOSET	A	18"	TO TOP OF TOILET SEAT
	B	25"	TO CL OF TISSUE DISPENSING POINT
	C	34 1/2"	TO CENTERLINE OF GRAB BAR
URINAL	A	16"	TO TOP OF RIM
LAVATORY	A	33"	TO TOP OF RIM
	B	39"	TO B.O. MIRROR REFLECTIVE SURFACE
	C	40"	TO CENTERLINE OF SOAP DISPENSING POINT
PAPER TOWEL DISP	A	40"	TO CENTERLINE OF TOWEL DISPENSING POINT
	B	40"	TO ELECTRIC EYE OF HAND DRYER
WATER COOLER	A	33"	TO SPOUT OUTLET



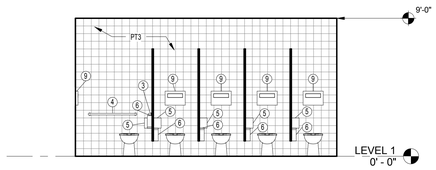
SIGN TYPE 7



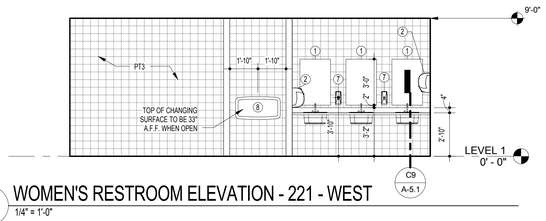




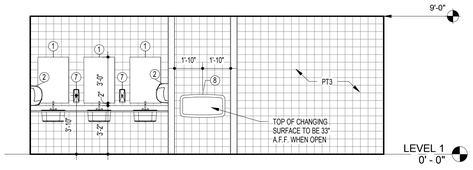
G18 SIGNAGE MOUNTING - TYPES 1 THROUGH 7
1/2" = 1'-0"



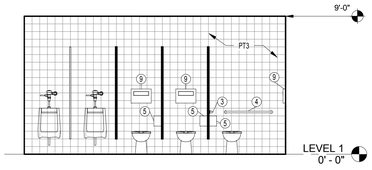
1 WOMEN'S RESTROOM ELEVATION - 221 - EAST
1/4" = 1'-0"



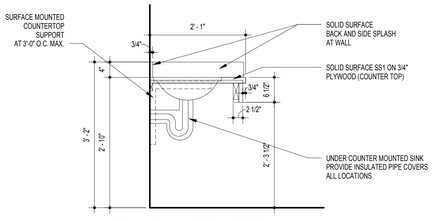
2 WOMEN'S RESTROOM ELEVATION - 221 - WEST
1/4" = 1'-0"



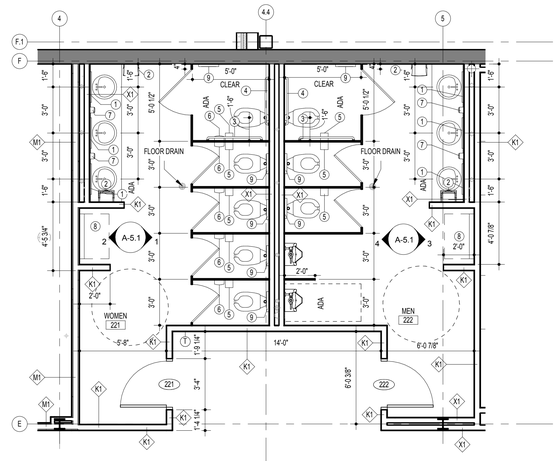
3 MEN'S RESTROOM ELEVATION - 222 - EAST
1/4" = 1'-0"



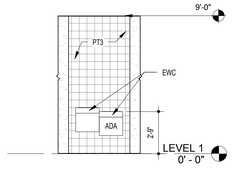
4 MEN'S RESTROOM ELEVATION - 222 - WEST
1/4" = 1'-0"



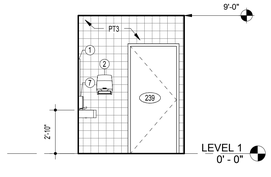
C9 SINK COUNTER DETAIL
3/4" = 1'-0"



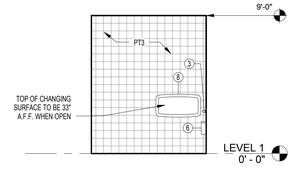
C5 ENLARGED TOILET PLAN
1/4" = 1'-0"



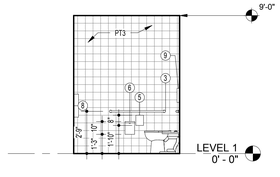
5 WATER FOUNTAIN ELEVATION
1/4" = 1'-0"



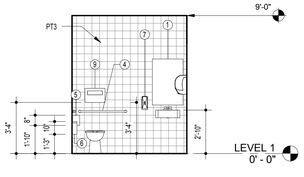
6 FAMILY BATHROOM - 239 - NORTH
1/4" = 1'-0"



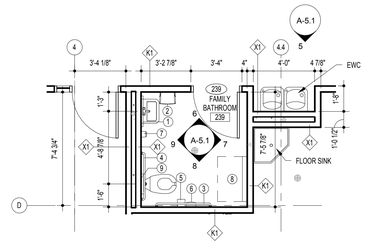
7 FAMILY BATHROOM - 239 - EAST
1/4" = 1'-0"



8 FAMILY BATHROOM - 239 - SOUTH
1/4" = 1'-0"



9 FAMILY BATHROOM - 239 - WEST
1/4" = 1'-0"



A5 ENLARGED FAMILY BATHROOM
1/4" = 1'-0"

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ENLARGED TOILET PLANS, ELEVATIONS & SIGNAGE DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

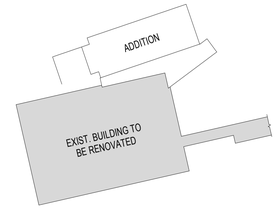
DATE	DESCRIPTION

A-5.1
February 1, 2017
Bid Set

B18 SIGNAGE FLOOR PLAN
1/8" = 1'-0"

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

KEY PLAN



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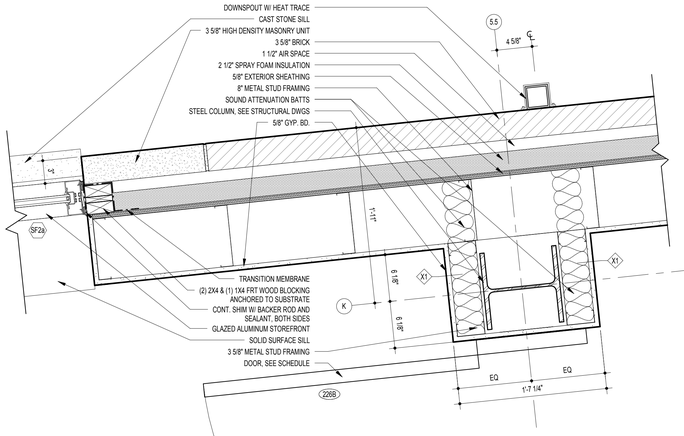
SIGNAGE FLOOR PLAN

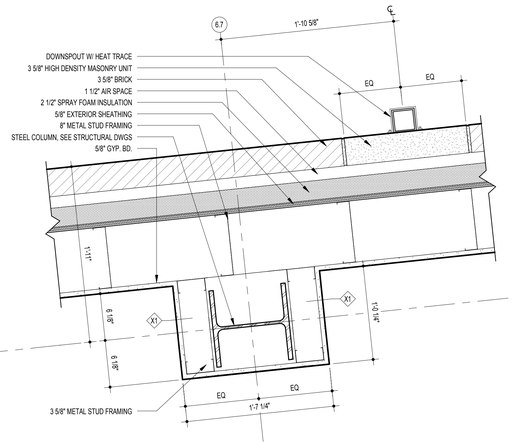
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

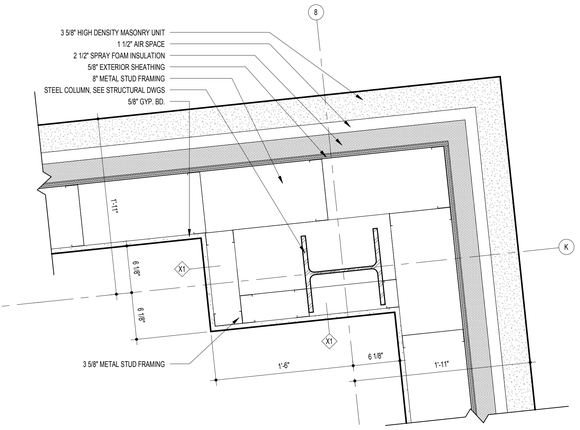
A-5.2
February 1, 2017
Bid Set



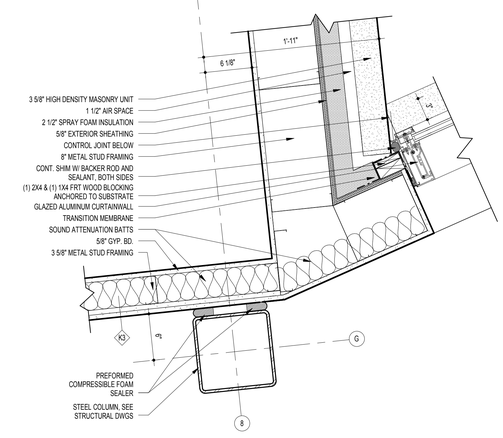
J15 DETAIL @ COL. K/5.5
1 1/2" = 1'-0"



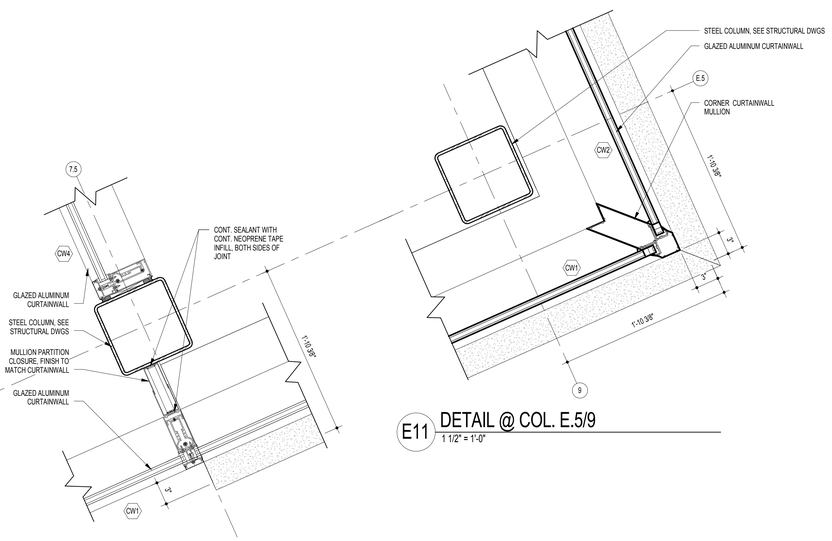
J10 DETAIL @ COL. K/6.7
1 1/2" = 1'-0"



J6 DETAIL @ COL. K/8
1 1/2" = 1'-0"

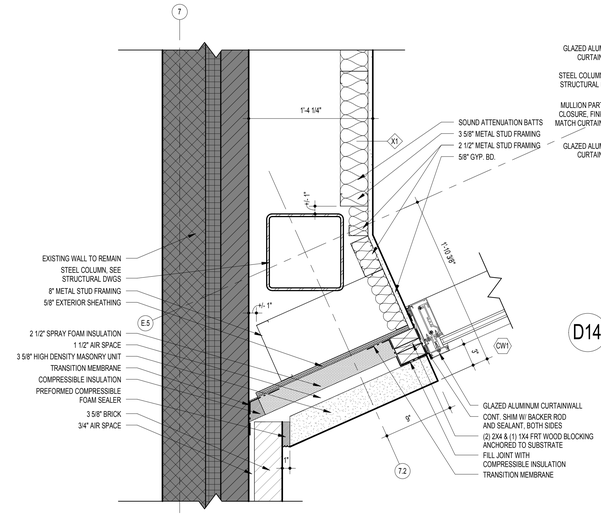


F4 DETAIL @ COL. G/8
1 1/2" = 1'-0"

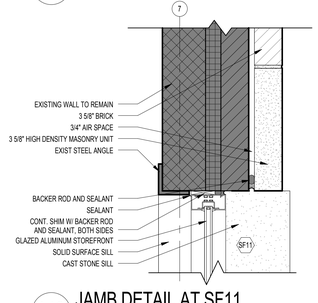


D14 DETAIL @ COL. E.5/7.5
1 1/2" = 1'-0"

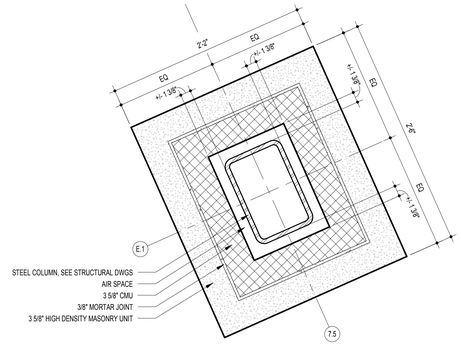
E11 DETAIL @ COL. E.5/9
1 1/2" = 1'-0"



C18 EXPANSION JOINT DEAIL @ COL. E.5/7.2
1 1/2" = 1'-0"



A18 JAMB DETAIL AT SF11
1 1/2" = 1'-0"



A12 TYP. CANOPY COLUMN BASE DETAIL
1 1/2" = 1'-0"

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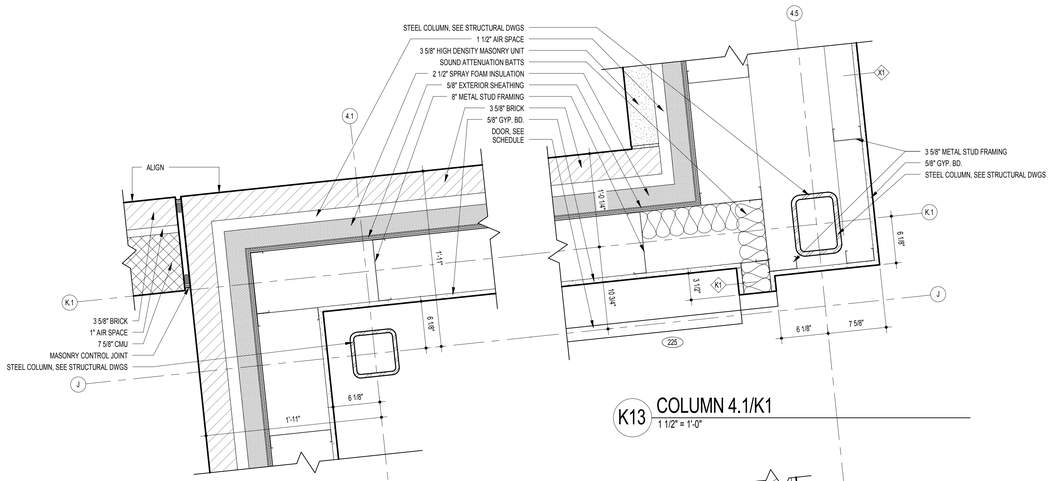
PLAN DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

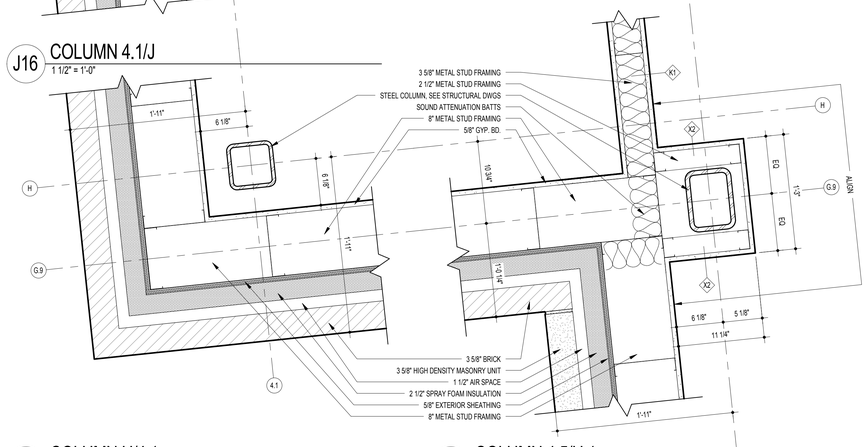
DATE	DESCRIPTION

A-5.3

February 1, 2017
Bid Set

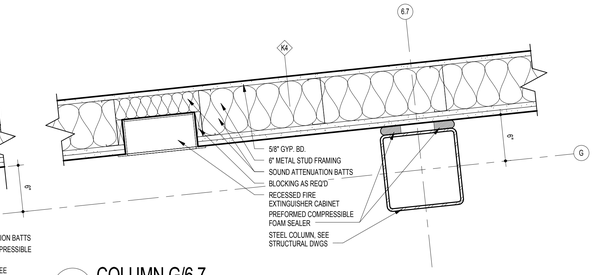


K13 COLUMN 4.1/K1
1 1/2" = 1'-0"



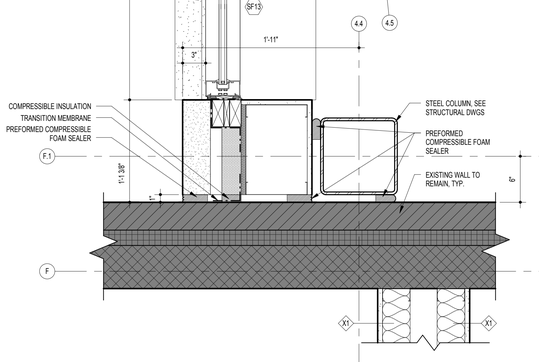
J16 COLUMN 4.1/J
1 1/2" = 1'-0"

F16 COLUMN H/4.1
1 1/2" = 1'-0"

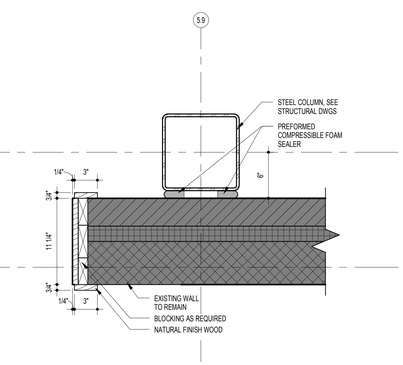


F13 COLUMN 4.5/H.1
1 1/2" = 1'-0"

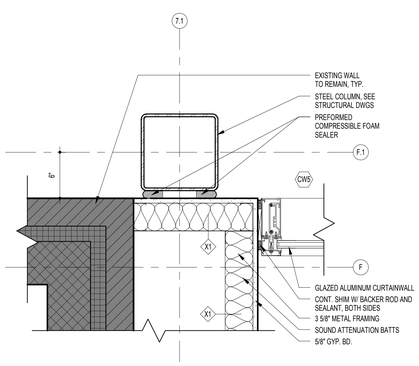
E9 COLUMN G/6.7
1 1/2" = 1'-0"



A13 COLUMN 4.1/G
1 1/2" = 1'-0"



A9 EXISTING WALL OPENING - LOBBY 231
1 1/2" = 1'-0"



A5 COLUMN F1/7.1
1 1/2" = 1'-0"

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PLAN DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-5.4

February 1, 2017
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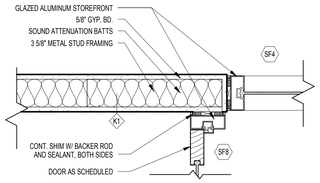
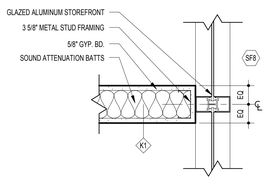
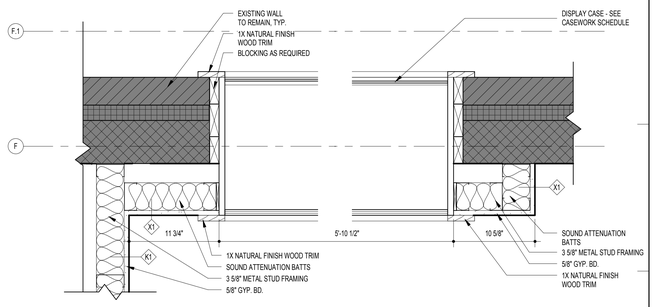


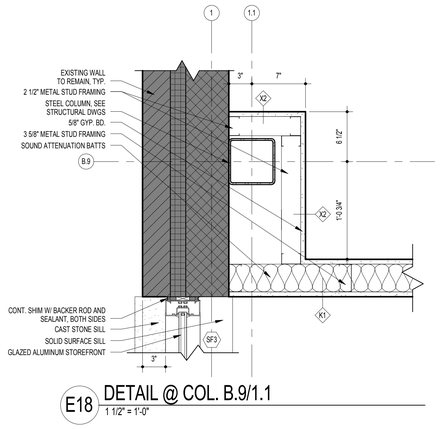
L15 JAMB @ SF4/DOOR 217
1 1/2" = 1'-0"



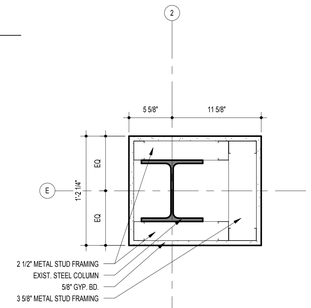
J15 STOREFRONT MULLION @ WALL
1 1/2" = 1'-0"



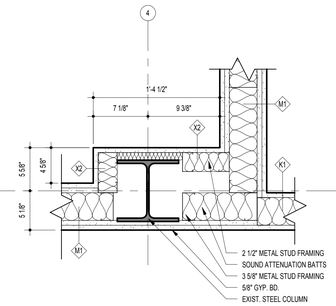
K5 DISPLAY CASE DETAIL @ EXIST WALL
1 1/2" = 1'-0"



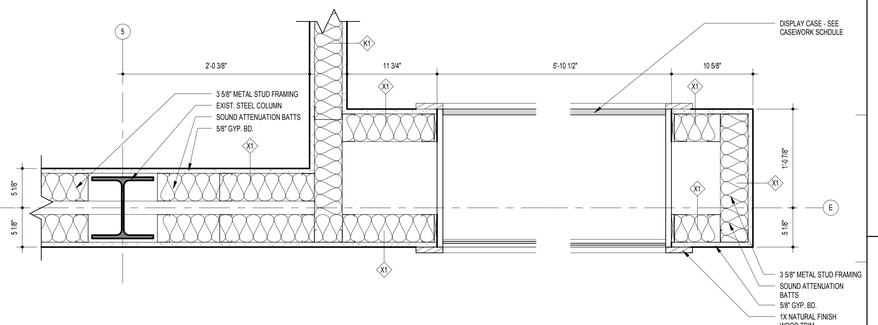
E18 DETAIL @ COL. B.9/1.1
1 1/2" = 1'-0"



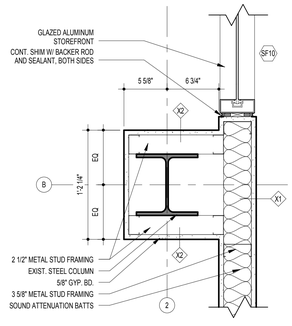
G12 DETAIL @ COL. E/2
1 1/2" = 1'-0"



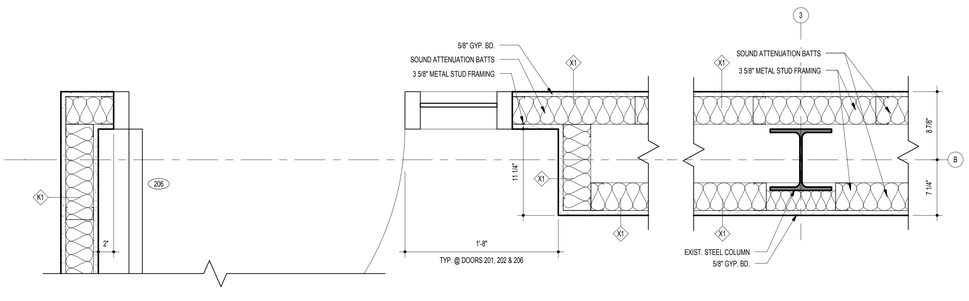
G10 DETAIL @ COL. E/4
1 1/2" = 1'-0"



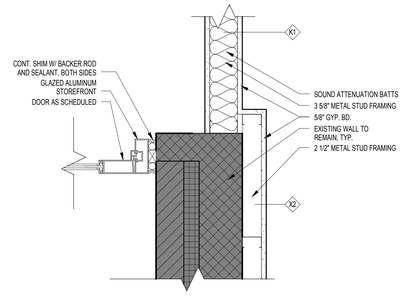
G7 DETAIL @ COL. E/5 & DISPLAY CASE
1 1/2" = 1'-0"



D12 DETAIL @ COL. B/2
1 1/2" = 1'-0"



D10 DETAIL @ COL. B/3
1 1/2" = 1'-0"



A11 JAMB DETAIL @ DOOR 200A
1 1/2" = 1'-0"

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PLAN DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

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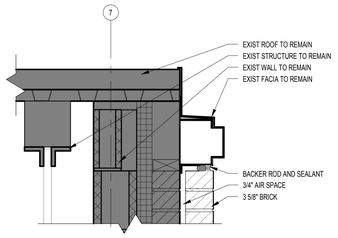
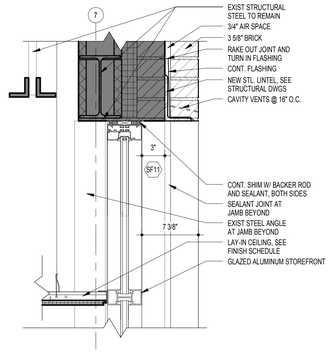
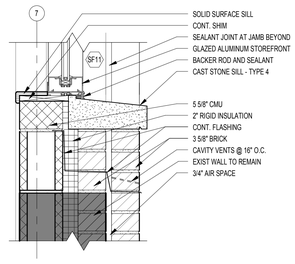
February 1, 2017
Bid Set



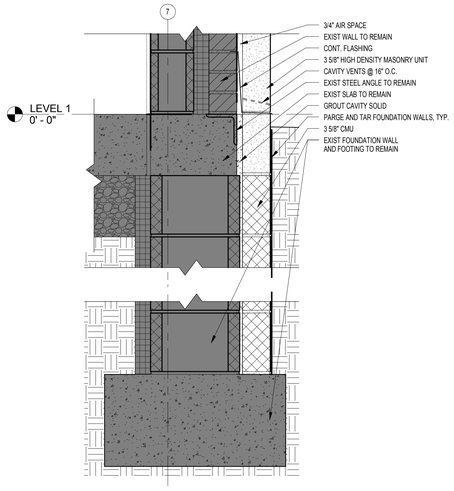
K18 ROOF DETAIL @ EXIST EAST FACADE
1 1/2" = 1'-0"



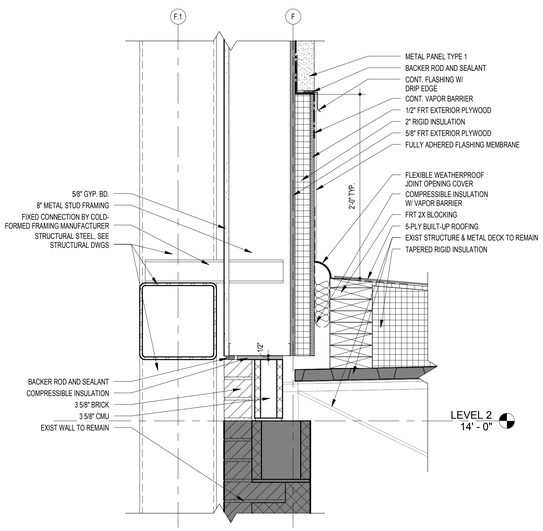
G18 HEAD DETAIL @ SF11
1 1/2" = 1'-0"



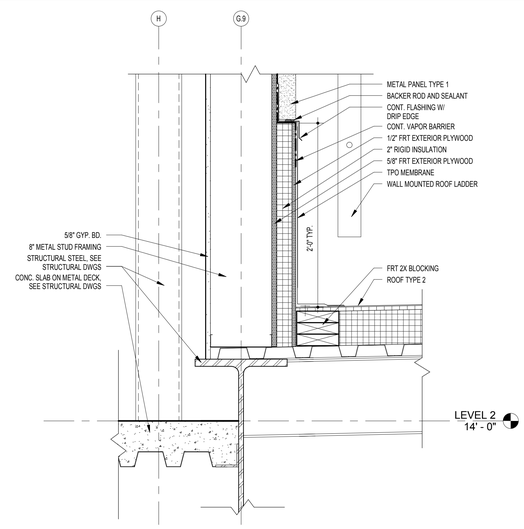
E18 SILL DETAIL @ SF11
1 1/2" = 1'-0"



A18 FOUNDATION DETAIL @ EXIST EAST FACADE
1 1/2" = 1'-0"

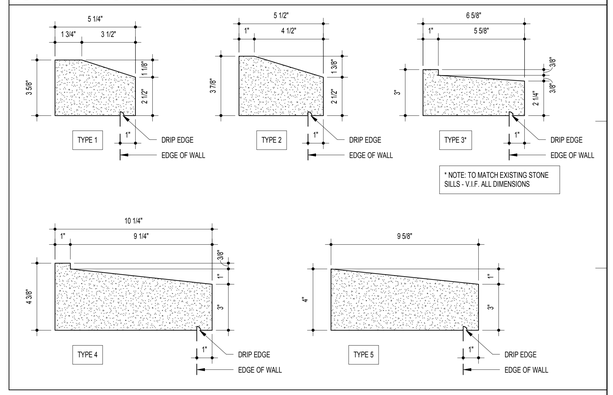


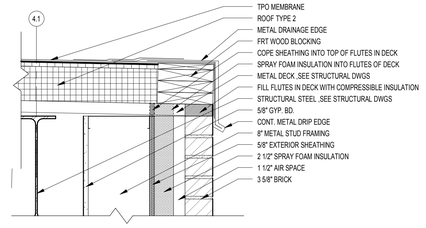
J14 ROOF EXPANSION JOINT DETAIL
1 1/2" = 1'-0"



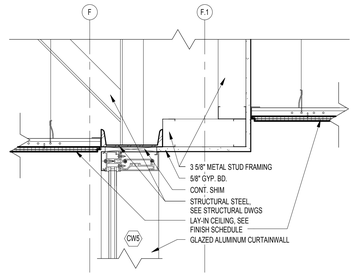
J10 DETAIL @ PENTHOUSE SLAB & LAB ROOF
1 1/2" = 1'-0"

CAST STONE LEGEND

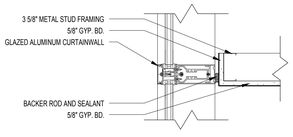




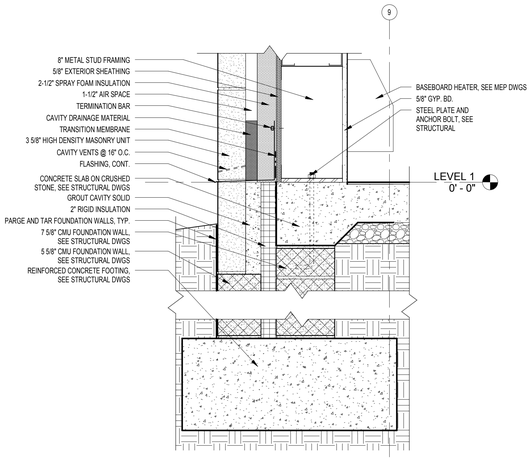
F14 ROOF DETAIL @ WEST END OF PENTHOUSE
1 1/2" = 1'-0"



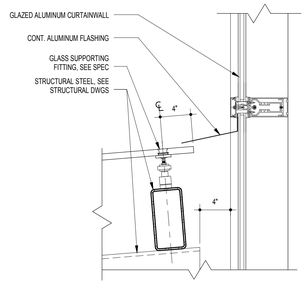
F9 HEAD DETAIL @ INTERIOR CURTAINWALL
1 1/2" = 1'-0"



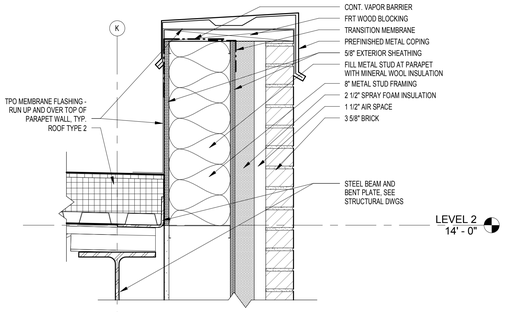
D9 CURTAINWALL TO CEILING DETAIL
1 1/2" = 1'-0"



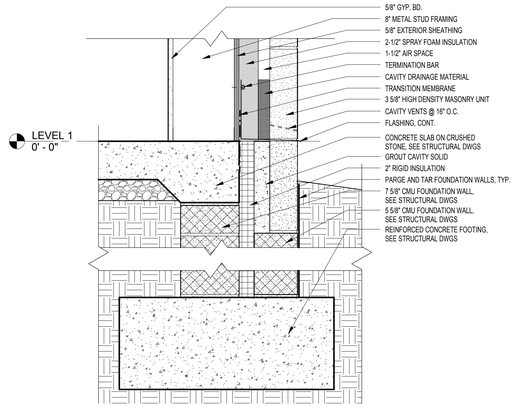
A14 TYP. FOUNDATION DETAIL @ LOBBY
1 1/2" = 1'-0"



A9 CURTAINWALL CANOPY FLASHING DETAIL
1 1/2" = 1'-0"



E4 TYP. PARAPET DETAIL @ ADDITION
1 1/2" = 1'-0"



A4 TYP. FOUNDATION DETAIL @ ADDITION
1 1/2" = 1'-0"

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GP #21620

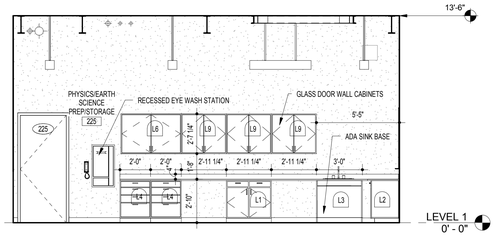
SECTION DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

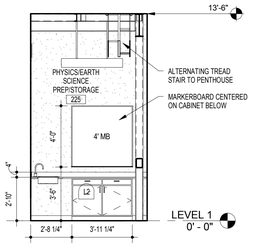
DATE	DESCRIPTION

A-5.6

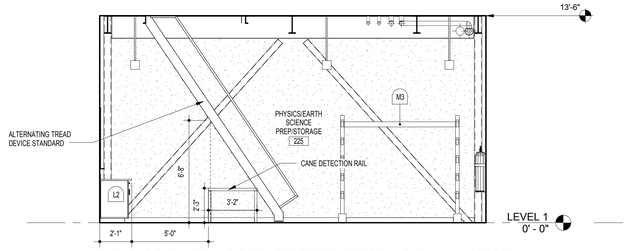
February 1, 2017
Bid Set



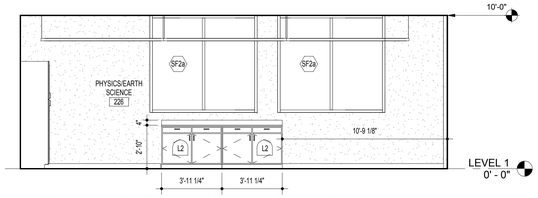
1 PHYSICS/EARTH SCIENCE PREP/STORAGE 225 - EAST
1/4" = 1'-0"



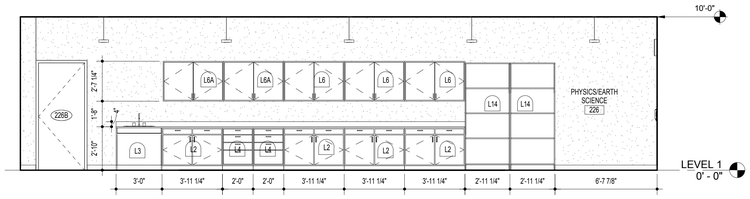
2 PHYSICS/EARTH SCIENCE PREP/STORAGE 225 - SOUTH
1/4" = 1'-0"



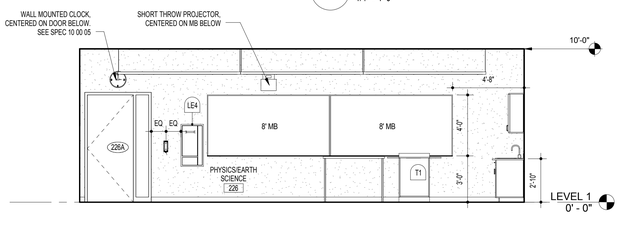
3 PHYSICS/EARTH SCIENCE PREP/STORAGE 225 - WEST
1/4" = 1'-0"



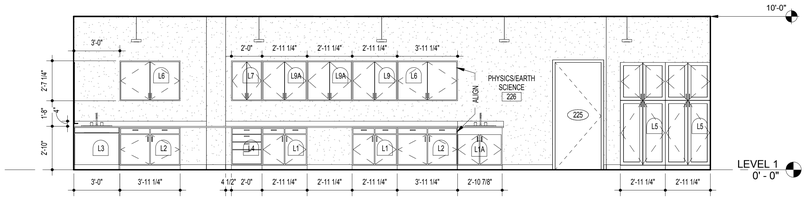
4 PHYSICS/EARTH SCIENCE 226 - NORTH
1/4" = 1'-0"



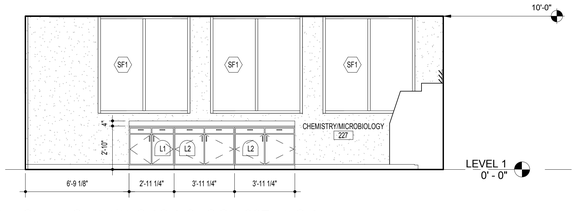
5 PHYSICS/EARTH SCIENCE 226 - EAST
1/4" = 1'-0"



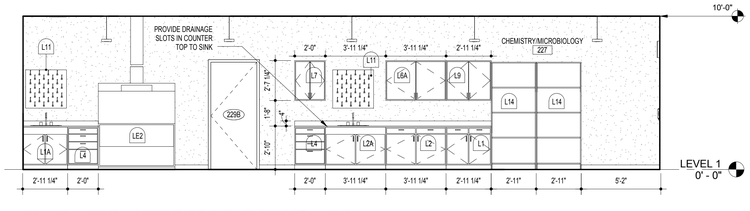
6 PHYSICS/EARTH SCIENCE 226 - SOUTH
1/4" = 1'-0"



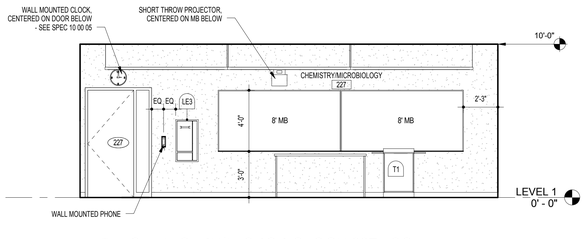
7 PHYSICS/EARTH SCIENCE 226 - WEST
1/4" = 1'-0"



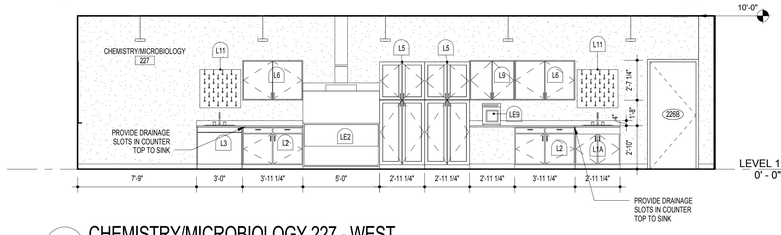
8 CHEMISTRY/MICROBIOLOGY 227 - NORTH
1/4" = 1'-0"



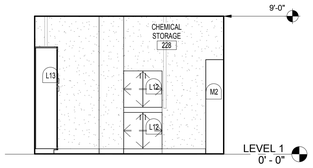
9 CHEMISTRY/MICROBIOLOGY 227 - EAST
1/4" = 1'-0"



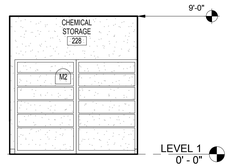
10 CHEMISTRY/MICROBIOLOGY 227 - SOUTH
1/4" = 1'-0"



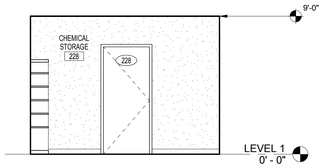
11 CHEMISTRY/MICROBIOLOGY 227 - WEST
1/4" = 1'-0"



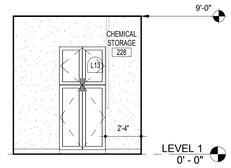
12 CHEMICAL STORAGE 228 - NORTH
1/4" = 1'-0"



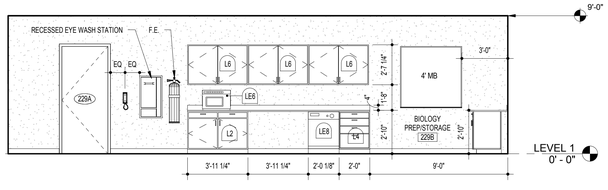
13 CHEMICAL STORAGE 228 - EAST
1/4" = 1'-0"



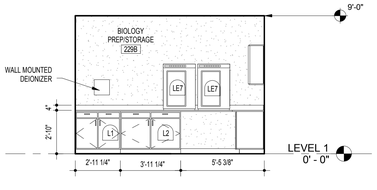
14 CHEMICAL STORAGE 228 - SOUTH
1/4" = 1'-0"



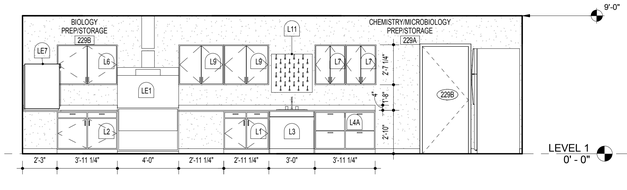
15 CHEMICAL STORAGE 228 - WEST
1/4" = 1'-0"



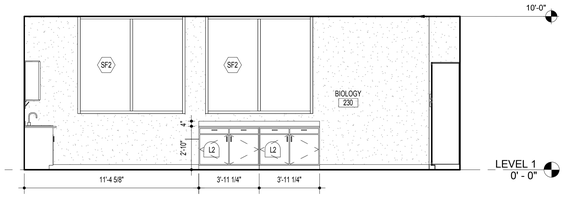
16 BIOLOGY PREP/STORAGE 229 A&B - EAST
1/4" = 1'-0"



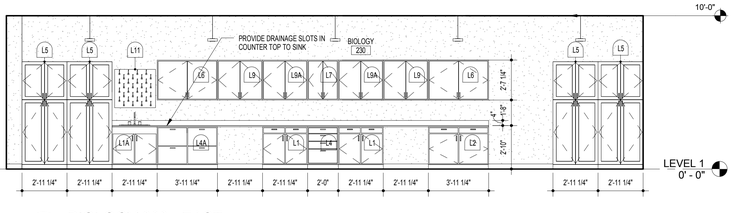
17 BIOLOGY PREP/STORAGE 229 A&B - SOUTH
1/4" = 1'-0"



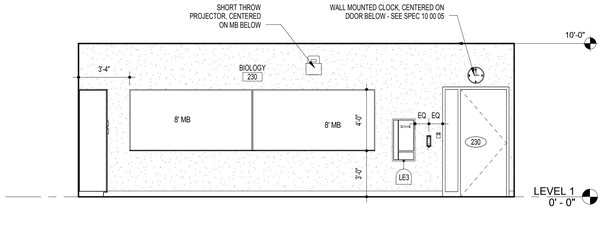
18 BIOLOGY PREP/STORAGE 229 A&B - WEST
1/4" = 1'-0"



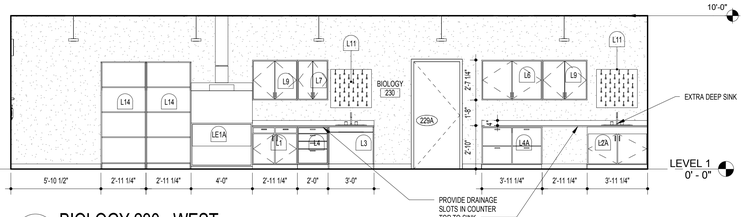
19 BIOLOGY 230 - NORTH
1/4" = 1'-0"



20 BIOLOGY 230 - EAST
1/4" = 1'-0"



21 BIOLOGY 230 - SOUTH
1/4" = 1'-0"



22 BIOLOGY 230 - WEST
1/4" = 1'-0"

Scale: 1 inch = 4 feet
0 2' 4' 8' 12' 16'

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Calverton, MD 20705
Tel: 301.595.1000
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GP #21620

INTERIOR ELEVATIONS

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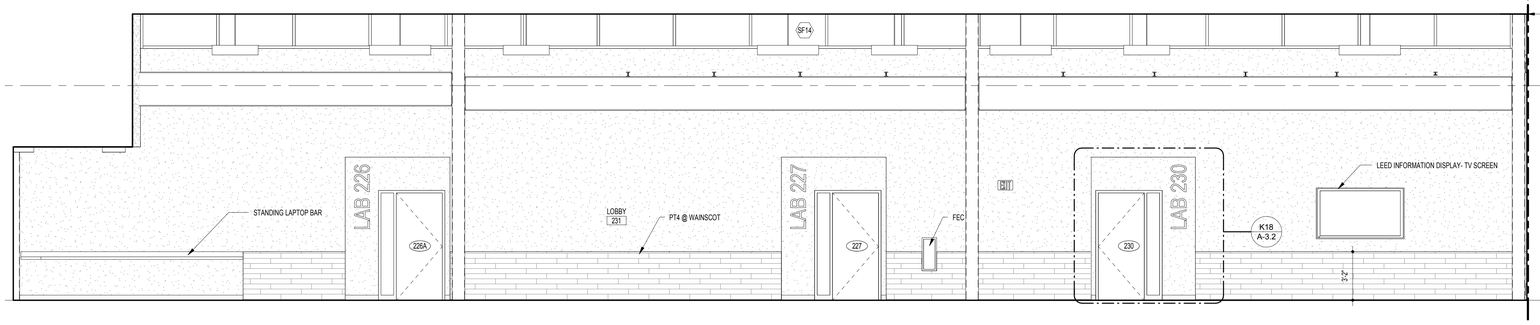
McHenry, MD

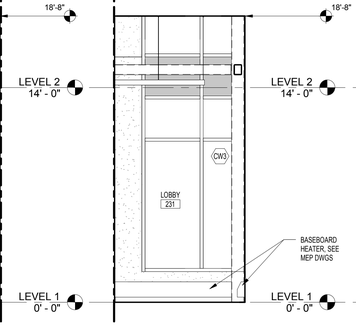
DATE	DESCRIPTION

A-6.1

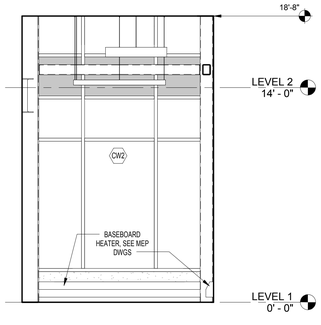
February 1, 2017
Bid Set



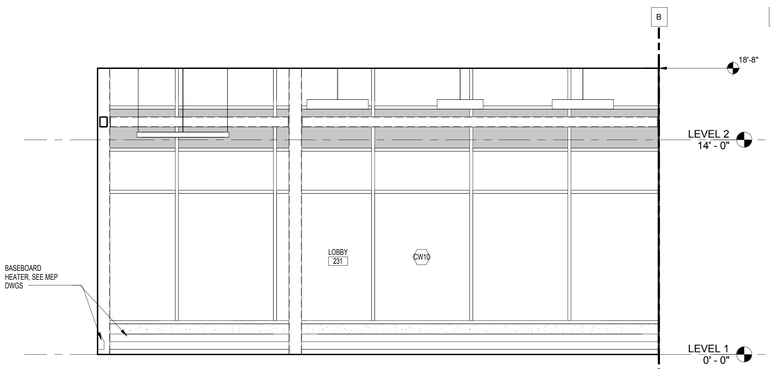
1 LOBBY 231 - NORTH - A
1/4" = 1'-0"



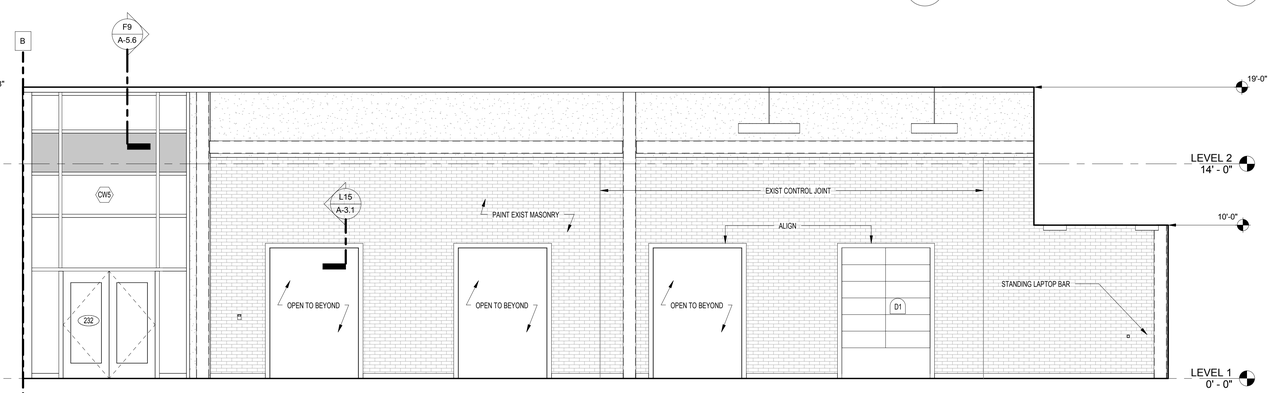
2 LOBBY 231 - NORTH - B
1/4" = 1'-0"



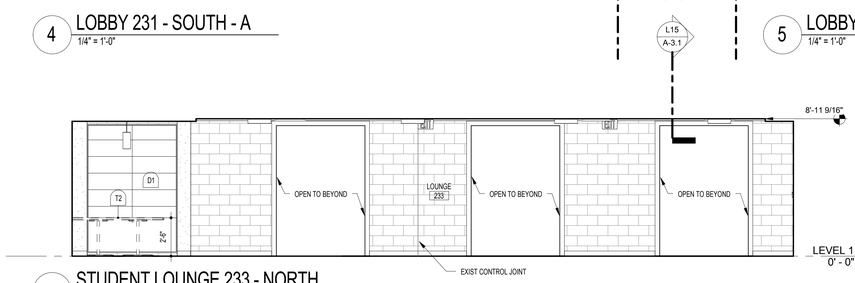
3 LOBBY 231 - EAST
1/4" = 1'-0"



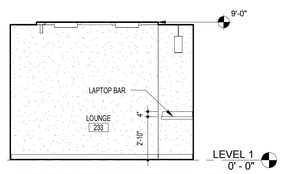
4 LOBBY 231 - SOUTH - A
1/4" = 1'-0"



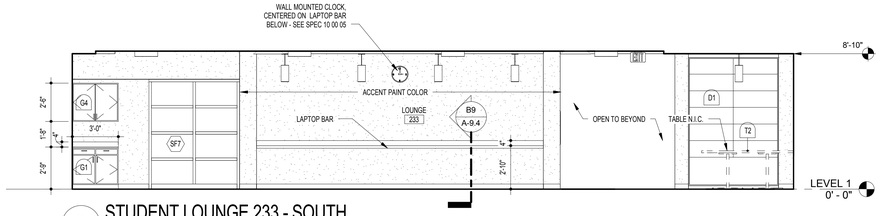
5 LOBBY 231 - SOUTH - B
1/4" = 1'-0"



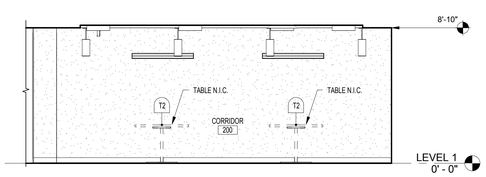
6 STUDENT LOUNGE 233 - NORTH
1/4" = 1'-0"



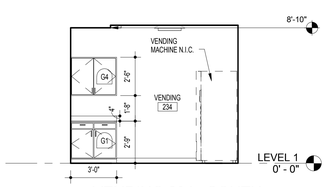
7 STUDENT LOUNGE 233 - EAST
1/4" = 1'-0"



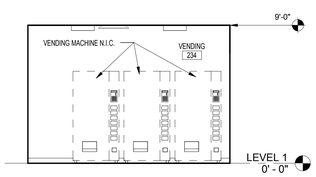
8 STUDENT LOUNGE 233 - SOUTH
1/4" = 1'-0"



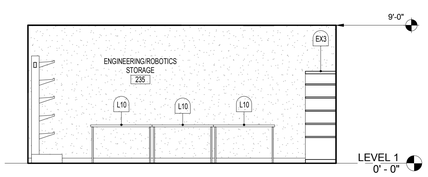
9 STUDENT LOUNGE 233 - WEST
1/4" = 1'-0"



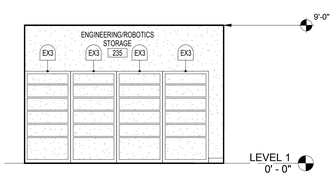
10 VENDING 234 - SOUTH
1/4" = 1'-0"



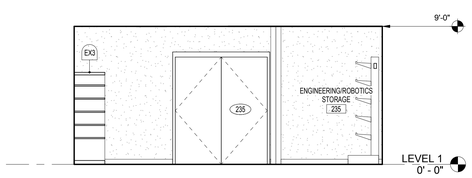
11 VENDING 234 - WEST
1/4" = 1'-0"



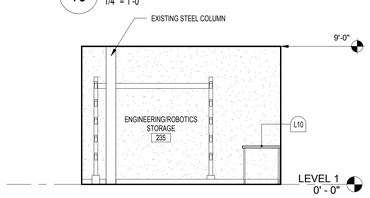
12 ENGINEERING/ROBOTICS STORAGE 235 - NORTH
1/4" = 1'-0"



13 ENGINEERING/ROBOTICS STORAGE 235 - EAST
1/4" = 1'-0"



14 ENGINEERING/ROBOTICS STORAGE 235 - SOUTH
1/4" = 1'-0"



15 ENGINEERING/ROBOTICS STORAGE 235 - WEST
1/4" = 1'-0"

Scale: 1 inch = 4 feet

0 2' 4' 8' 12' 16'

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February 1, 2017
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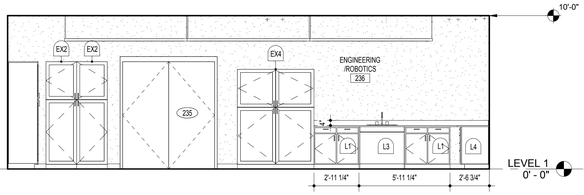
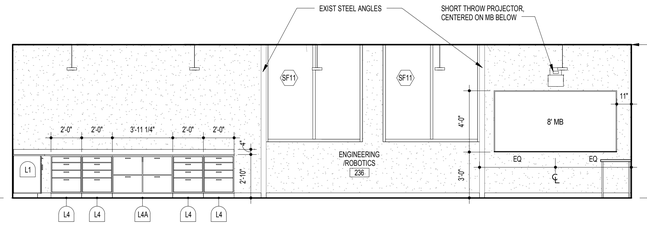
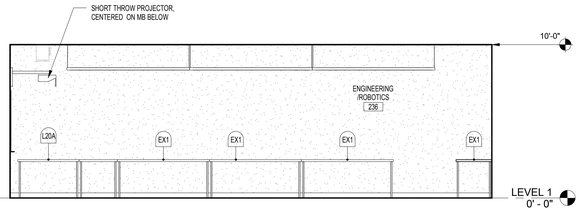


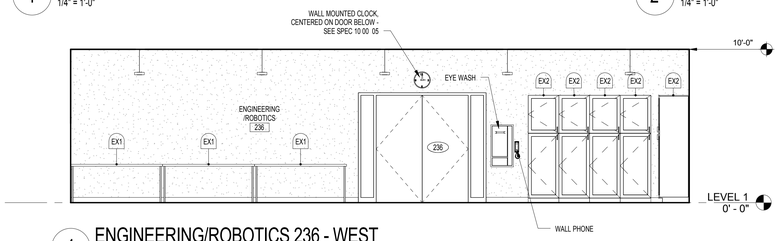
1 ENGINEERING/ROBOTICS 236 - NORTH
1/4" = 1'-0"



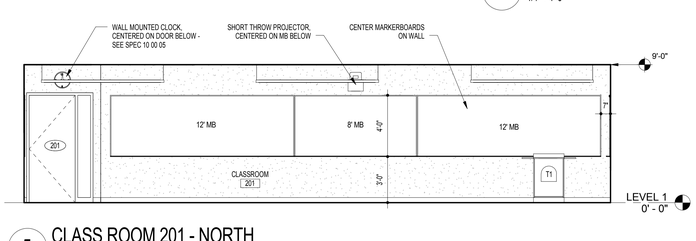
2 ENGINEERING/ROBOTICS 236 - EAST
1/4" = 1'-0"



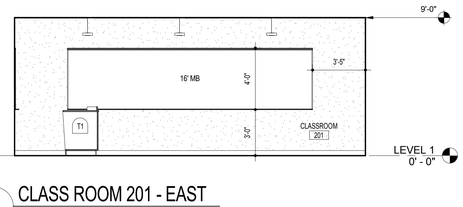
3 ENGINEERING/ROBOTICS 236- SOUTH
1/4" = 1'-0"



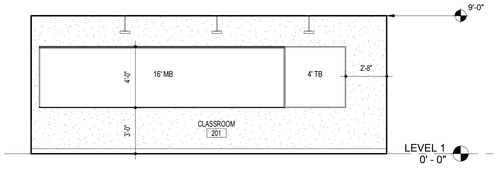
4 ENGINEERING/ROBOTICS 236 - WEST
1/4" = 1'-0"



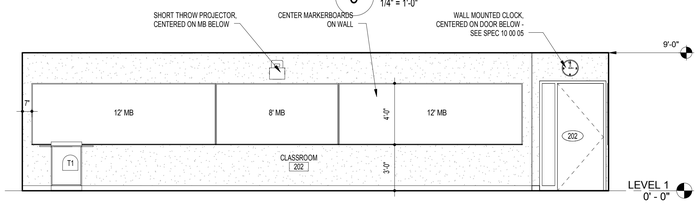
5 CLASS ROOM 201 - NORTH
1/4" = 1'-0"



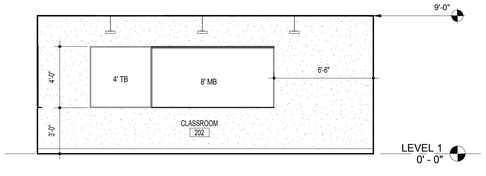
6 CLASS ROOM 201 - EAST
1/4" = 1'-0"



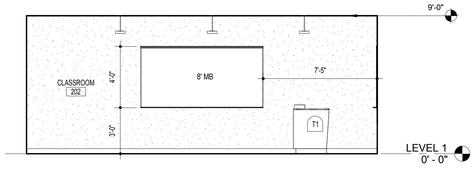
7 CLASS ROOM 201 - WEST
1/4" = 1'-0"



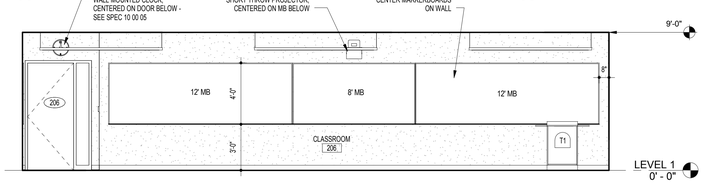
8 CLASSROOM 202 - NORTH
1/4" = 1'-0"



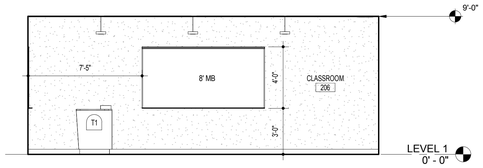
9 CLASSROOM 202 - EAST
1/4" = 1'-0"



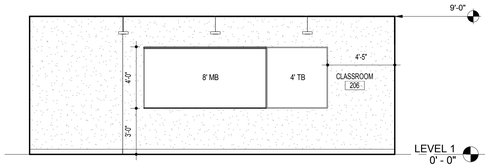
10 CLASSROOM 202 - WEST
1/4" = 1'-0"



11 CLASS ROOM 206 - NORTH
1/4" = 1'-0"



12 CLASSROOM 206 - EAST
1/4" = 1'-0"



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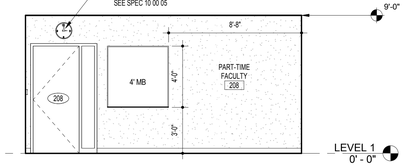
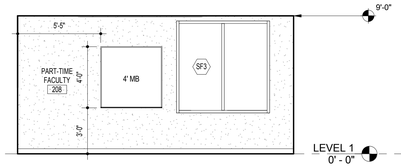
1/4" = 1'-0"



14 FACULTY 208 - EAST
1/4" = 1'-0"



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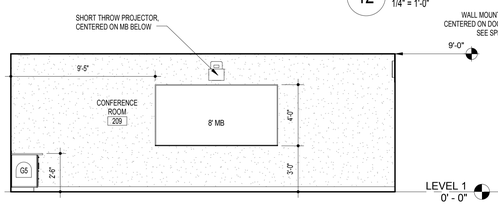
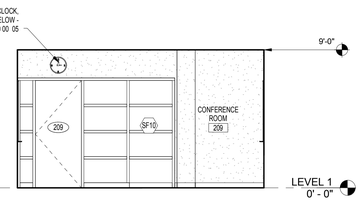
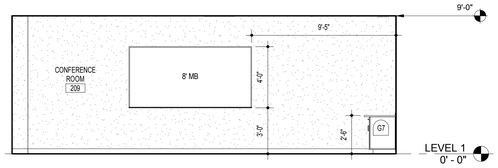
1/4" = 1'-0"



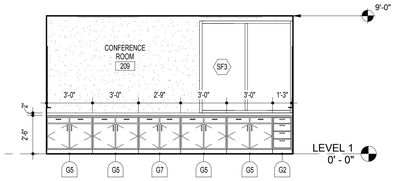
16 CONFERENCE ROOM 209 - NORTH
1/4" = 1'-0"



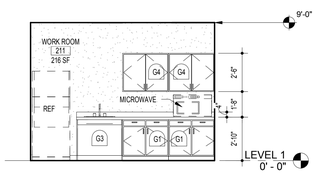
17 CONFERENCE ROOM 209 - EAST
1/4" = 1'-0"



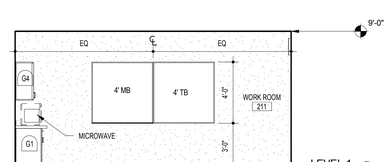
18 CONFERENCE ROOM 209 - SOUTH
1/4" = 1'-0"



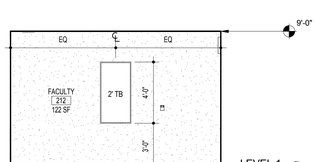
19 CONFERENCE ROOM 209 - WEST
1/4" = 1'-0"



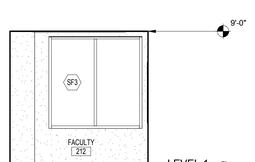
20 WORK ROOM 211 - EAST
1/4" = 1'-0"



21 WORK ROOM 211 - SOUTH
1/4" = 1'-0"



22 FACULTY 212 - NORTH
1/4" = 1'-0"



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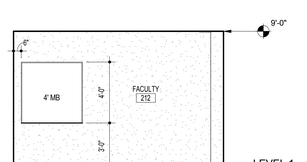
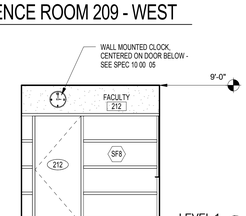
1/4" = 1'-0"



24 FACULTY 212 - SOUTH
1/4" = 1'-0"



25 FACULTY 212 - EAST
1/4" = 1'-0"

Scale: 1 inch = 4 feet

0 2' 4' 8' 12' 16'

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GP #21620

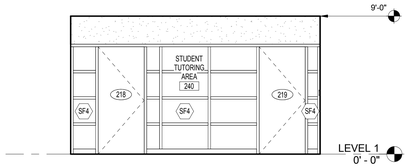
INTERIOR ELEVATIONS

Garrett College STEM Renovation and Addition
McHenry, MD

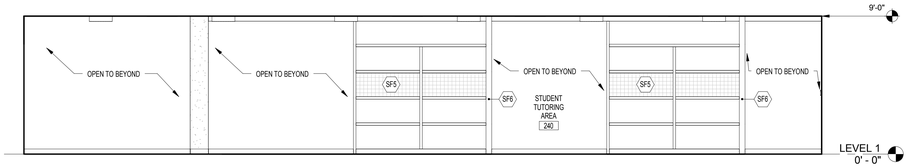
DATE	DESCRIPTION

A-6.3

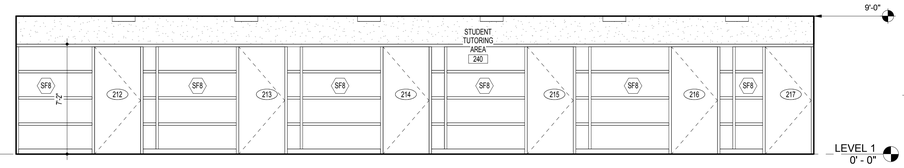
February 1, 2017
Bid Set



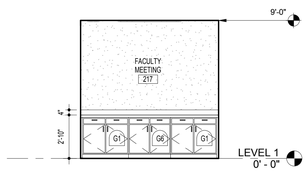
1 STUDENT TUTORING AREA 240 - NORTH
1/4" = 1'-0"



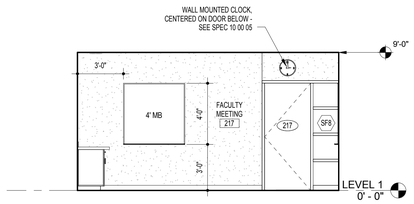
2 STUDENT TUTORING AREA 240 - EAST
1/4" = 1'-0"



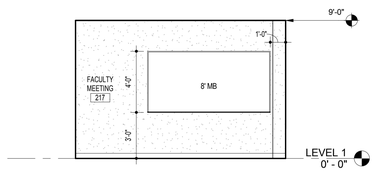
3 STUDENT TUTORING AREA 240 - WEST
1/4" = 1'-0"



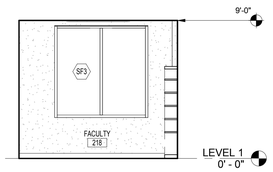
4 FACULTY MEETING ROOM 217 - NORTH
1/4" = 1'-0"



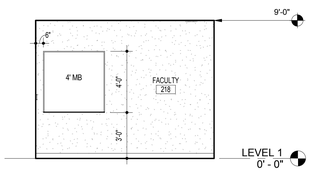
5 FACULTY MEETING ROOM 217 - EAST
1/4" = 1'-0"



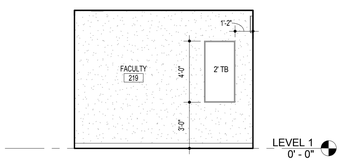
6 FACULTY MEETING ROOM 217 - SOUTH
1/4" = 1'-0"



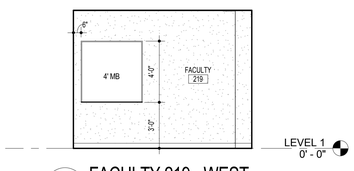
7 FACULTY 218 - NORTH
1/4" = 1'-0"



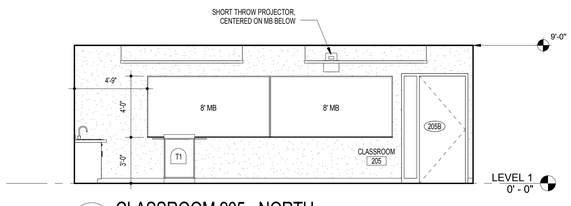
8 FACULTY 218 - WEST
1/4" = 1'-0"



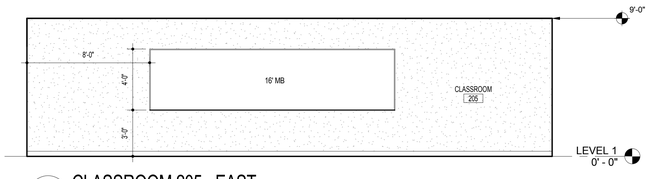
9 FACULTY 219 - EAST
1/4" = 1'-0"



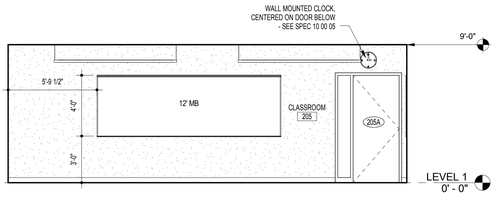
10 FACULTY 219 - WEST
1/4" = 1'-0"



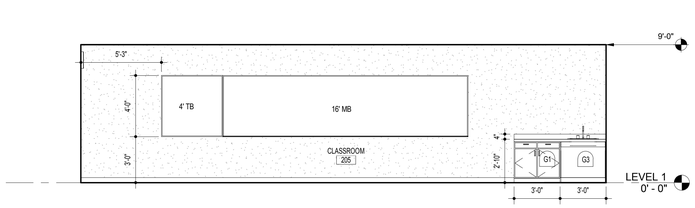
11 CLASSROOM 205 - NORTH
1/4" = 1'-0"



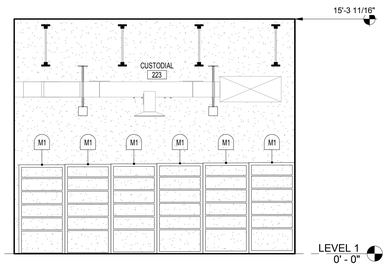
12 CLASSROOM 205 - EAST
1/4" = 1'-0"



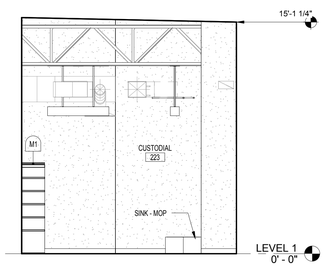
13 CLASSROOM 205 - SOUTH
1/4" = 1'-0"



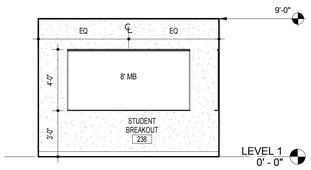
14 CLASSROOM 205 - WEST
1/4" = 1'-0"



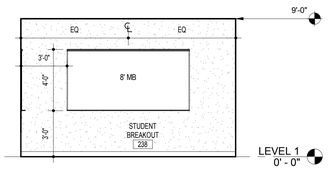
15 CUSTODIAL 223 - SOUTH
1/4" = 1'-0"



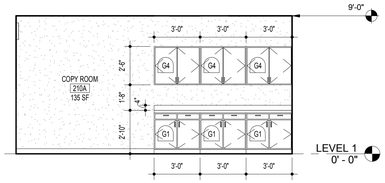
16 CUSTODIAL 223 - WEST
1/4" = 1'-0"



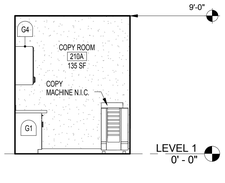
17 STUDENT BREAKOUT 238 - SOUTH
1/4" = 1'-0"



18 STUDENT BREAKOUT 238 - WEST
1/4" = 1'-0"



19 COPY ROOM 210A - NORTH
1/4" = 1'-0"



20 COPY ROOM 210A - EAST
1/4" = 1'-0"

Scale: 1 inch = 4 feet
0 2' 4' 8' 12' 16'

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GRIMM AND PARKER

GP #21620

INTERIOR ELEVATIONS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-6.4

February 1, 2017
Bid Set

RCP NOTES

GENERAL NOTE APPLICABLE TO ALL DRAWINGS - ITEMS AND CONDITIONS DETAILED NOTED OR OTHERWISE IDENTIFIED ON ONE OF THE SECTIONS OR DETAILS ARE APPLICABLE AND BINDING TO ALL OTHER SECTIONS AND DETAILS FOR IDENTICAL OR SIMILAR CONDITIONS.

1. **TYPICAL CEILING HEIGHT SHALL BE 9'-0" UNLESS OTHERWISE INDICATED ON REFLECTED CEILING PLANS.**
2. REFER TO ELECTRICAL DRAWINGS FOR LIGHT PATTERN AND EXIT LIGHT LOCATIONS. NOTIFY ARCHITECT OF DISCREPANCIES PRIOR TO SHOP DRAWINGS.
3. ALL WALLS SHOWN EXTEND TO THE STRUCTURAL DECK (SEE WALL TYPES), AT CORRIDOR CHASE WALLS AND LOCKER FIN WALLS, EXTENDED 4" ABOVE THE CEILING.
4. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR ITEMS NOT SHOWN ON CEILING PLAN: GRILLES, SPEAKERS, SPRINKLERS, HEAT & SMOKE DETECTORS, SHALL BE CENTERED IN TILES UNLESS NOTED OTHERWISE.
5. ALL BULKHEAD DIMENSIONS ARE FROM FINISH FACE OF WALL OR BULKHEAD TO FINISH FACE OF BULKHEAD.
6. PROVIDE 1/2" REVEALS BETWEEN DISSIMILAR MATERIALS ON THE SAME PLANE AT THE CEILINGS.
7. IN AREAS OF EXPOSED CEILINGS, PAINT EXPOSED STRUCTURE, UNDERSIDE OF DECK, SPRINKLER PIPING, CONDUIT AND ALL MISCELLANEOUS OVERHEAD ITEMS, COLORS TO BE SELECTED BY ARCHITECT.

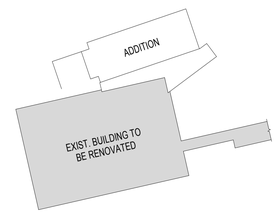
CEILING LEGEND

- 2'X2' ACOUSTIC TILE CEILING (ACT)
- GYPSUM WALLBOARD CEILING
- WALL MOUNTED CLOCK - TYPE 1
- WALL MOUNTED CLOCK - TYPE 2
- 2x4 RECESSED LIGHT FIXTURE
- 2x2 RECESSED LIGHT FIXTURE
- RECESSED CAN LIGHT FIXTURE
- 18" SURFACE MOUNTED CIRCLE
- 36" PENDANT LIGHT FIXTURE
- 48" PENDANT LIGHT FIXTURE
- 72" PENDANT LIGHT FIXTURE
- 60" FAN
- 2 X 2 RETURN
- 2 X 2 SUPPLY
- LINEAR DIFFUSER

A17 REFLECTED CEILING PLAN
1/8" = 1'-0"

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

KEY PLAN



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GP #21620

REFLECTED CEILING PLAN
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-7.1
February 1, 2017
Bid Set

A18 Furniture Plan
1/8" = 1'-0"

Scale: 1 inch = 8 feet
0 4' 8' 16' 24' 32'

GENERAL FURNISHING AND EQUIPMENT NOTES

NOTE: NOT ALL ITEMS INDICATED ON SCHEDULE ARE REPRESENTED IN THIS PROJECT.

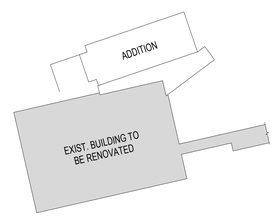
1. ALL CABINET HEIGHTS INCLUDE COUNTERTOPS. DIMENSIONS ARE TO THE NEAREST INCH.
2. DIVISIONS IN CASEWORK ARE SHOWN FOR CLARITY AND DO NOT REPRESENT BREAKS IN THE COUNTERTOP.
3. PROVIDE CONTINUOUS COUNTERTOP OVER ALL SIMILAR HEIGHT CASEWORK, UNLESS OTHERWISE NOTED.
4. MANUFACTURER AND CATALOG NUMBERS ARE FOR REFERENCE AND ILLUSTRATION PURPOSES ONLY. SEE SPECIFICATION FOR FULL CASEWORK REQUIREMENTS.
5. PROVIDE RESILIENT BASE FOR ALL CASEWORK THAT MEETS THE FLOOR ON FRONT AND EXPOSED SIDES AND BACK.
6. DOTTED LINES INDICATE WALL HUNG CABINETS. DIVISIONS OF BASE CABINETS BELOW THE COUNTERTOP, FURNITURE NOT IN THE CONTRACT OR PROJECTION SCREENS -SEE CASEWORK KEY AND SPECIFICATIONS.
7. ALL CABINETS AND DRAWERS TO HAVE CAM LOCKS EXCEPT FOR SINK BASE CABINETS.
8. ALL EXPOSED SURFACES (EXPOSED TO VIEW FROM ANY PERSPECTIVE) TO BE COVERED WITH LAMINATE.
9. ALL CASEWORK WHICH MEETS A WALL AT ONE OR BOTH ENDS, TO BE PROVIDED WITH FILLER PANELS AND SCRIBED TO THE WALL(S) AS REQUIRED.
10. ALL CABINETS AND DRAWERS IN THE KINDERGARTEN ROOMS TO BE PROVIDED WITH RECESSED HANDLES.
11. ALL COUNTERTOP CORNERS SHALL BE 1/2" RADIUSED UNLESS OTHERWISE NOTED.
12. PROVIDE ADEQUATE BLOCKING IN STUD WALLS AND AT CMU WALLS FOR WALL-MOUNTED EQUIPMENT AND FURNISHINGS.
13. CONTRACTOR TO FIELD VERIFY ALL CLEAR OPENINGS PRIOR TO MILLWORK OR CASEWORK FABRICATION.
14. MILLWORK AND CASEWORK DRAWINGS ARE DIAGRAMMATIC IN NATURE TO SHOW DESIGN INTENT. ALL WORK TO BE DONE IN ACCORDANCE WITH SPECIFICATIONS. CONSTRUCTION DETAILS ARE TO BE SUBMITTED IN SHOP DRAWINGS AND ARE SUBJECT TO THE APPROVAL OF THE ARCHITECT.

LEGEND:
MB: MARKER BOARD
TB: TACK BOARD

CASEWORK AND EQUIPMENT SCHEDULE

W	DESCRIPTION	SIZE (INCHES) W	D	H	MANUF.	MODEL #	REMARKS
D1	DISPLAY CASE	70 1/2"	18"	100 1/4"	HELMUT GUENSCHEL	ACCESSION	SEE SPEC 10 00 05
EX1	EXISTING WORK BENCH	72"	28"	30"	EXIST.	EXIST.	TO BE RELOCATED BY GC
EX2	EXISTING TALL STORAGE CABINETS	24"	24"	84"	EXIST.	EXIST.	TO BE RELOCATED BY GC
EX3	EXISTING METAL SHELVING	36"	24"	72"	EXIST.	EXIST.	TO BE RELOCATED BY GC
EX4	EXISTING METAL SHELVING	60"	24"	78"	EXIST.	EXIST.	TO BE RELOCATED BY GC
EX5	EXISTING WORK TABLE	60"	28"	39"	EXIST.	EXIST.	TO BE RELOCATED BY GC
G1	BASE CABINET	36"	21"	32"	STEVENS ADVANTAGE	10432	
G2	BASE CABINET	15"	21"	29"	STEVENS ADVANTAGE	10370	
G3	ADA SINK BASE	36"	21"	33 1/4"	STEVENS ADVANTAGE	10511	
G4	WALL CABINET	36"	14"	30"	STEVENS ADVANTAGE	15129	
G5	BASE CABINET	36"	21"	29"	STEVENS ADVANTAGE	10432	
G6	BASE CABINET	33"	21"	32"	STEVENS ADVANTAGE	10432	
G7	BASE CABINET	33"	21"	29"	STEVENS ADVANTAGE	10432	
L1	BASE CABINET	35 1/4"	22 1/2"	33"	CAMPBELL RHEA	3687D	
L1A	SINK BASE CABINET	35 1/4"	22 1/2"	33"	CAMPBELL RHEA	3755D	
L2	BASE CABINET	47 1/4"	22 1/2"	33"	CAMPBELL RHEA	3687F	
L2A	SINK BASE CABINET	47 1/4"	22 1/2"	33"	CAMPBELL RHEA	3755F	
L3	ADA SINK BASE	36"	22 1/2"	34 1/4"	CAMPBELL RHEA	8760	POINT-OF-USE ACID NEUTRALIZATION BOTTLE TRAPS LOCATED IN ADJACENT CABINET
L4	BASE CABINET WITH DRAWERS	24"	22 1/2"	33"	CAMPBELL RHEA	3618	
L4A	BASE CABINET WITH DRAWERS	47 1/4"	22 1/2"	33"	CAMPBELL RHEA	3726F-M	SEE A-9.3
L5	TALL CABINET	35 1/4"	22 1/2"	84"	CAMPBELL RHEA	5724	
L6	WALL CABINET	47 1/4"	12"	31 1/4"	CAMPBELL RHEA	4722	
L6A	WALL CABINET WITH GLASS DOORS	47 1/4"	12"	31 1/4"	CAMPBELL RHEA	4794	
L7	WALL CABINET	24"	12"	31 1/4"	CAMPBELL RHEA	4712	
L9	WALL CABINET	35 1/4"	12"	31 1/4"	CAMPBELL RHEA	4718	
L9A	WALL CABINET WITH GLASS DOORS	35 1/4"	12"	31 1/4"	CAMPBELL RHEA	4790	
L10	WORK BENCH	48"	30"	30"	ULINE	H-1128-WOOD	
L11	DRYING RACK	32"	1"	30"	CAMPBELL RHEA	6664	
L12	FLAMMABLE STORAGE CABINET - STACKABLE	30"	18 1/2"	32 1/2"	CAMPBELL RHEA	8615	STACKED
L13	ACID/CORROSIVE STORAGE CABINET	36"	18"	84"	CAMPBELL RHEA	8638	
L14	STUDENT STORAGE	35 1/4"	16"	84"	CAMPBELL RHEA	5650	
L15	LAB STUDENT TABLE	96"	48"	36"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L15A	LAB STUDENT TABLE - ADA	96"	48"	34"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L16	LAB STUDENT TABLE	109"	48"	36"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L16A	LAB STUDENT TABLE - ADA	115"	48"	34"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L17	LAB STUDENT TABLE	64"	48"	36"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L17A	LAB STUDENT TABLE - ADA	64"	48"	34"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L18	MOBILE INSTRUCTOR'S DESKS	48"	24"	35 3/4"	CAMPBELL RHEA	7700	
L19	INSTRUCTOR'S DEMONSTRATION TABLE	72"	24"	34"	CAMPBELL RHEA	6012-H	PROVIDE GAS, WATER, & VACUUM
L20A	OPEN FRAME TABLE	48"	24"	30"	CAMPBELL RHEA	6502	
L20B	OPEN FRAME TABLE	72"	30"	30"	CAMPBELL RHEA	6512	
LE1	FUME HOOD	48"	33 1/4"	93 1/4"	CAMPBELL RHEA	8796	SEE A-9.3 - BARRIER FREE; PROVIDE GAS, WATER, & VACUUM
LE1A	FUME HOOD	48"	33 1/4"	93 1/4"	CAMPBELL RHEA	8796	SEE A-9.3 - BARRIER FREE; PROVIDE VENTILATION ONLY
LE2	FUME HOOD	60"	33"	93 1/4"	CAMPBELL RHEA	8798	SEE A-9.3 - BARRIER FREE; PROVIDE GAS, WATER, & VACUUM
LE3	CONCEALED EYE WASH AND DRENCH SHOWER				BRADLEY	S19345HXB	
LE4	CONCEALED EYE WASH				BRADLEY	S19294HB	
LE5	REFRIGERATOR/ FREEZER	26"	35 1/2"	82 5/16"	THERMOFISHER SCIENTIFIC	MC20SS-SAEE-TS	N.I.C - PROVIDED BY OWNER
LE6	AUTOCLAVE	22"	17 1/2"	15 11/16"	BENCHMARK SCIENTIFIC	BIOCLAVE 16 B4000-16	N.I.C - PROVIDED BY OWNER
LE7	INCUBATOR	25 3/16"	29 1/8"	36 3/16"	THERMOFISHER SCIENTIFIC	51028068	N.I.C - PROVIDED BY OWNER
LE8	GLASSWARE WASHER	24 1/8"	27 3/8"	32 7/8"	LABCONCO	4578020	N.I.C - PROVIDED BY OWNER
LE9	DRYING OVEN	14"	12"	17 1/2"	FISHER SCIENTIFIC	S50171	N.I.C - PROVIDED BY OWNER
M1	METAL SHELVING	36"	18"	72"	ULINE	H-3911	
M2	METAL SHELVING	48"	14"	74"	EAGLE GROUP	SS1448G	
M3	BRACE SET COLUMN RACK	96"	24"	84"	JARKE	7366900	
T1	TECHNOLOGY PODIUM	24"	28 3/4"	36 1/2"	SPECTRUM INDUSTRIES	55411-FM-FM-B-36-S1-0-4-TK-0-1-0-1	SEE SPEC 10 00 05
T2	MOD KREATIONS D-SHAPE TABLE	72"	42"	30"	PALMIER	SO-MOD-T	N.I.C - PROVIDED BY OWNER

KEY PLAN



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GP #21620

FURNITURE PLAN
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-9.1
February 1, 2017
Bid Set

CASEWORK AND EQUIPMENT SCHEDULE

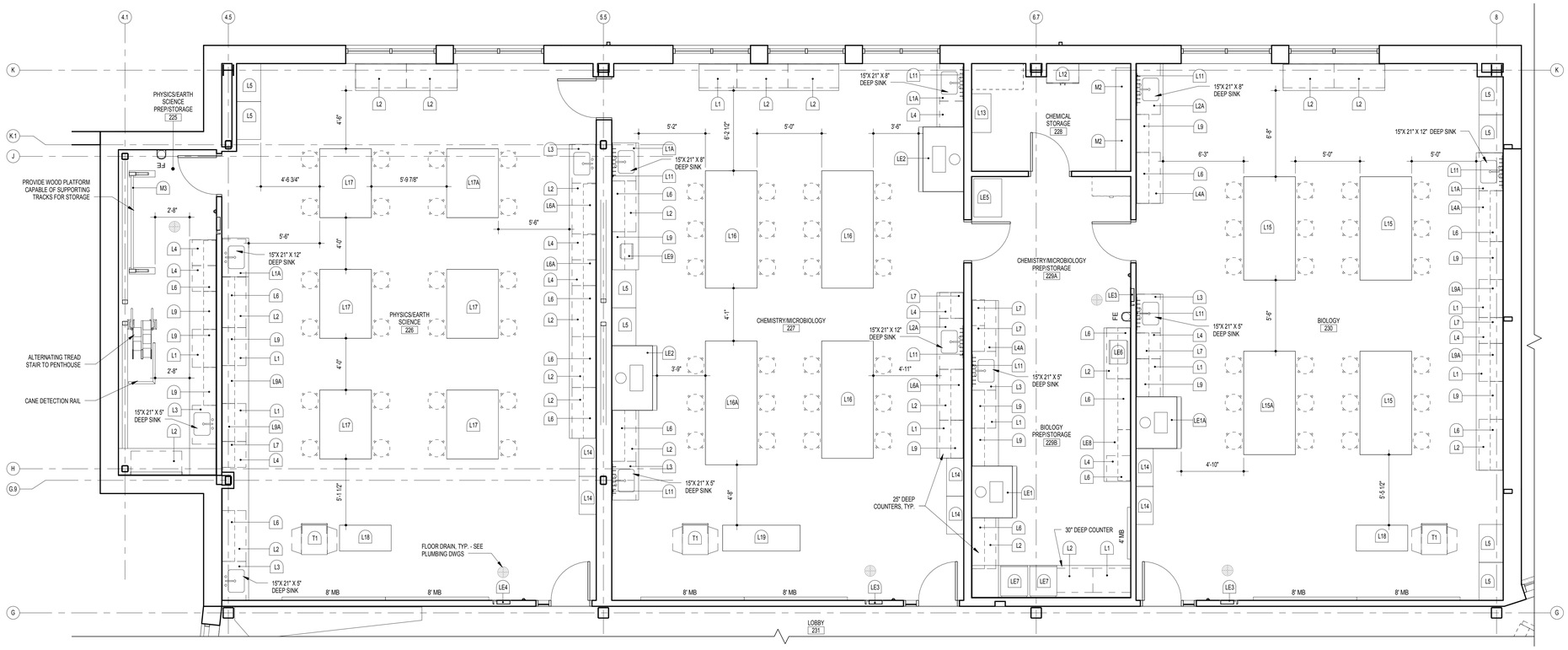
W	DESCRIPTION	SIZE (INCHES) W	D	H	MANUF.	MODEL #	REMARKS
D1	DISPLAY CASE	70 1/2"	18"	100 1/4"	HELMUT GUENSCHEL	ACCESSION	SEE SPEC 10 00 05
EX1	EXISTING WORK BENCH	72"	28"	30"	EXIST.	EXIST.	TO BE RELOCATED BY GC
EX2	EXISTING TALL STORAGE CABINETS	24"	24"	84"	EXIST.	EXIST.	TO BE RELOCATED BY GC
EX3	EXISTING METAL SHELVING	36"	24"	72"	EXIST.	EXIST.	TO BE RELOCATED BY GC
EX4	EXISTING METAL SHELVING	60"	24"	78"	EXIST.	EXIST.	TO BE RELOCATED BY GC
EX5	EXISTING WORK TABLE	60"	28"	39"	EXIST.	EXIST.	TO BE RELOCATED BY GC
G1	BASE CABINET	36"	21"	32"	STEVENS ADVANTAGE	10432	
G2	BASE CABINET	15"	21"	29"	STEVENS ADVANTAGE	10370	
G3	ADA SINK BASE	36"	21"	33 1/4"	STEVENS ADVANTAGE	10511	
G4	WALL CABINET	36"	14"	30"	STEVENS ADVANTAGE	15129	
G5	BASE CABINET	36"	21"	29"	STEVENS ADVANTAGE	10432	
G6	BASE CABINET	33"	21"	32"	STEVENS ADVANTAGE	10432	
G7	BASE CABINET	33"	21"	29"	STEVENS ADVANTAGE	10432	
L1	BASE CABINET	35 1/4"	22 1/2"	33"	CAMPBELL RHEA	3687D	
L1A	SINK BASE CABINET	35 1/4"	22 1/2"	33"	CAMPBELL RHEA	3755D	
L2	BASE CABINET	47 1/4"	22 1/2"	33"	CAMPBELL RHEA	3687F	
L2A	SINK BASE CABINET	47 1/4"	22 1/2"	33"	CAMPBELL RHEA	3755F	
L3	ADA SINK BASE	36"	22 1/2"	34 1/4"	CAMPBELL RHEA	8760	POINT-OF-USE ACID NEUTRALIZATION BOTTLE TRAPS LOCATED IN ADJACENT CABINET
L4	BASE CABINET WITH DRAWERS	24"	22 1/2"	33"	CAMPBELL RHEA	3618	
L4A	BASE CABINET WITH DRAWERS	47 1/4"	22 1/2"	33"	CAMPBELL RHEA	3726F-M	SEE A-9.3
L5	TALL CABINET	35 1/4"	22 1/2"	84"	CAMPBELL RHEA	5724	
L6	WALL CABINET	47 1/4"	12"	31 1/4"	CAMPBELL RHEA	4722	
L6A	WALL CABINET WITH GLASS DOORS	47 1/4"	12"	31 1/4"	CAMPBELL RHEA	4794	
L7	WALL CABINET	24"	12"	31 1/4"	CAMPBELL RHEA	4712	
L9	WALL CABINET	35 1/4"	12"	31 1/4"	CAMPBELL RHEA	4718	
L9A	WALL CABINET WITH GLASS DOORS	35 1/4"	12"	31 1/4"	CAMPBELL RHEA	4790	
L10	WORK BENCH	48"	30"	30"	ULINE	H-1128-WOOD	
L11	DRYING RACK	32"	1"	30"	CAMPBELL RHEA	6664	
L12	FLAMMABLE STORAGE CABINET - STACKABLE	30"	18 1/2"	32 1/2"	CAMPBELL RHEA	8615	STACKED
L13	ACID/CORROSIVE STORAGE CABINET	36"	18"	84"	CAMPBELL RHEA	8638	
L14	STUDENT STORAGE	35 1/4"	16"	84"	CAMPBELL RHEA	5650	
L15	LAB STUDENT TABLE	96"	48"	36"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L15A	LAB STUDENT TABLE - ADA	96"	48"	34"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L16	LAB STUDENT TABLE	109"	48"	36"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L16A	LAB STUDENT TABLE - ADA	115"	48"	34"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L17	LAB STUDENT TABLE	64"	48"	36"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L17A	LAB STUDENT TABLE - ADA	64"	48"	34"	CAMPBELL RHEA	CUSTOM TABLE	SEE A-9.3
L18	MOBILE INSTRUCTOR'S DESKS	48"	24"	35 3/4"	CAMPBELL RHEA	7700	
L19	INSTRUCTOR'S DEMONSTRATION TABLE	72"	24"	34"	CAMPBELL RHEA	6012-H	PROVIDE GAS, WATER, & VACUUM
L20A	OPEN FRAME TABLE	48"	24"	30"	CAMPBELL RHEA	6502	
L20B	OPEN FRAME TABLE	72"	30"	30"	CAMPBELL RHEA	6512	
LE1	FUME HOOD	48"	33 1/4"	93 1/4"	CAMPBELL RHEA	8796	SEE A-9.3 - BARRIER FREE; PROVIDE GAS, WATER, & VACUUM
LE1A	FUME HOOD	48"	33 1/4"	93 1/4"	CAMPBELL RHEA	8796	SEE A-9.3 - BARRIER FREE; PROVIDE VENTILATION ONLY
LE2	FUME HOOD	60"	33"	93 1/4"	CAMPBELL RHEA	8798	SEE A-9.3 - BARRIER FREE; PROVIDE GAS, WATER, & VACUUM
LE3	CONCEALED EYE WASH AND DRENCH SHOWER				BRADLEY	S19345HXB	
LE4	CONCEALED EYE WASH				BRADLEY	S19294HB	
LE5	REFRIGERATOR/ FREEZER	26"	35 1/2"	82 5/16"	THERMOFISHER SCIENTIFIC	MC20SS-SAEE-TS	N.I.C - PROVIDED BY OWNER
LE6	AUTOCLAVE	22"	17 1/2"	15 11/16"	BENCHMARK SCIENTIFIC	BIOCLAVE 16 B4000-16	N.I.C - PROVIDED BY OWNER
LE7	INCUBATOR	25 3/16"	29 1/8"	36 3/16"	THERMOFISHER SCIENTIFIC	51028068	N.I.C - PROVIDED BY OWNER
LE8	GLASSWARE WASHER	24 1/8"	27 3/8"	32 7/8"	LABCONCO	4578020	N.I.C - PROVIDED BY OWNER
LE9	DRYING OVEN	14"	12"	17 1/2"	FISHER SCIENTIFIC	S50171	N.I.C - PROVIDED BY OWNER
M1	METAL SHELVING	36"	18"	72"	ULINE	H-3911	
M2	METAL SHELVING	48"	14"	74"	EAGLE GROUP	SS1448G	
M3	BRACE SET COLUMN RACK	96"	24"	84"	JARKE	7366900	
T1	TECHNOLOGY PODIUM	24"	28 3/4"	36 1/2"	SPECTRUM INDUSTRIES	55411-FM-FM-B-36-S1-0-4-TK-0-1-0-1	SEE SPEC 10 00 05
T2	MOD KREATIONS D-SHAPE TABLE	72"	42"	30"	PALMIER	SO-MOD-T	N.I.C - PROVIDED BY OWNER

GENERAL FURNISHING AND EQUIPMENT NOTES

NOTE: NOT ALL ITEMS INDICATED ON SCHEDULE ARE REPRESENTED IN THIS PROJECT.

1. ALL CABINET HEIGHTS INCLUDE COUNTERTOPS. DIMENSIONS ARE TO THE NEAREST INCH.
2. DIVISIONS IN CASEWORK ARE SHOWN FOR CLARITY AND DO NOT REPRESENT BREAKS IN THE COUNTERTOP.
3. PROVIDE CONTINUOUS COUNTERTOP OVER ALL SIMILAR HEIGHT CASEWORK, UNLESS OTHERWISE NOTED.
4. MANUFACTURER AND CATALOG NUMBERS ARE FOR REFERENCE AND ILLUSTRATION PURPOSES ONLY. SEE SPECIFICATION FOR FULL CASEWORK REQUIREMENTS.
5. PROVIDE RESILIENT BASE FOR ALL CASEWORK THAT MEETS THE FLOOR ON FRONT AND EXPOSED SIDES AND BACK.
6. DOTTED LINES INDICATE WALL HUNG CABINETS. DIVISIONS OF BASE CABINETS BELOW THE COUNTERTOP, FURNITURE NOT IN THE CONTRACT OR PROJECTION SCREENS -SEE CASEWORK KEY AND SPECIFICATIONS.
7. ALL CABINETS AND DRAWERS TO HAVE CAM LOCKS EXCEPT FOR SINK BASE CABINETS.
8. ALL EXPOSED SURFACES (EXPOSED TO VIEW FROM ANY PERSPECTIVE) TO BE COVERED WITH LAMINATE.
9. ALL CASEWORK WHICH MEETS A WALL AT ONE OR BOTH ENDS, TO BE PROVIDED WITH FILLER PANELS AND SCRIBED TO THE WALL(S) AS REQUIRED.
10. ALL CABINETS AND DRAWERS IN THE KINDERGARTEN ROOMS TO BE PROVIDED WITH RECESSED HANDLES.
11. ALL COUNTERTOP CORNERS SHALL BE 1/2" RADIUSED UNLESS OTHERWISE NOTED.
12. PROVIDE ADEQUATE BLOCKING IN STUD WALLS AND AT CMU WALLS FOR WALL-MOUNTED EQUIPMENT AND FURNISHINGS.
13. CONTRACTOR TO FIELD VERIFY ALL CLEAR OPENINGS PRIOR TO MILLWORK OR CASEWORK FABRICATION.
14. MILLWORK AND CASEWORK DRAWINGS ARE DIAGRAMMATIC IN NATURE TO SHOW DESIGN INTENT. ALL WORK TO BE DONE IN ACCORDANCE WITH SPECIFICATIONS. CONSTRUCTION DETAILS ARE TO BE SUBMITTED IN SHOP DRAWINGS AND ARE SUBJECT TO THE APPROVAL OF THE ARCHITECT.

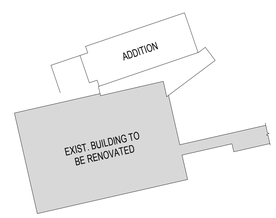
LEGEND:
MB: MARKER BOARD
TB: TACK BOARD



A18 FIRST FLOOR LAB PLAN
1/4" = 1'-0"

Scale: 1 inch = 4 feet
0 2' 4' 8' 12' 16'

KEY PLAN



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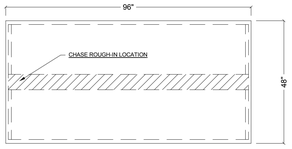
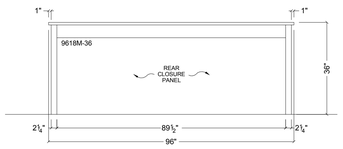
ENLARGED LAB PLANS
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

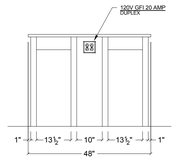
A-9.2
February 1, 2017
Bid Set



PLAN VIEW,TYP.

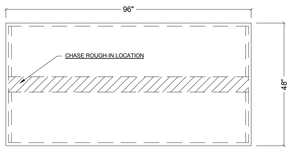


SIDE ELEVATION, TYP.

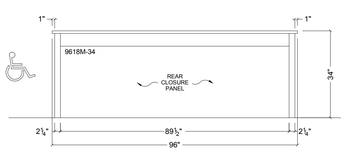


END ELEVATION

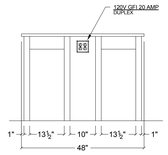
L18 L15 - LAB TABLE
1/2" = 1'-0"



PLAN VIEW,TYP.

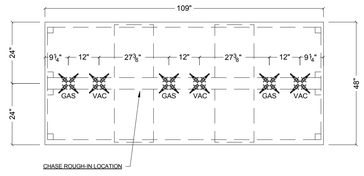


SIDE ELEVATION, TYP.



END ELEVATION,TYP

J18 L15A - ADA LAB TABLE
1/2" = 1'-0"



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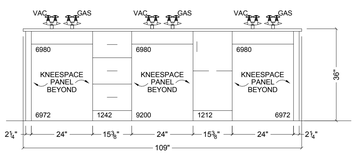

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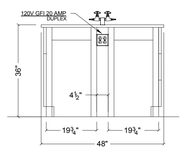
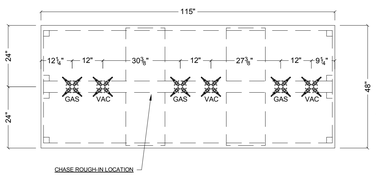
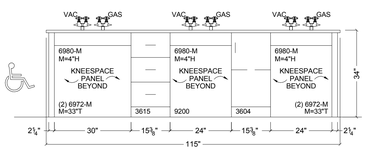


END ELEVATION, TYP.

G18 L16 - LAB TABLE
1/2" = 1'-0"



PLAN VIEW,TYP.



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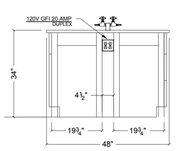
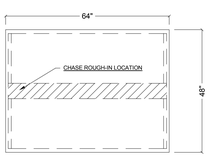
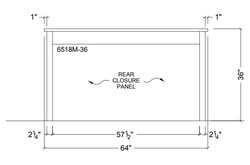


END ELEVATION, TYP.

E18 L16A - ADA LAB TABLE
1/2" = 1'-0"



PLAN VIEW,TYP.



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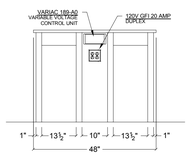
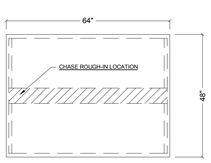
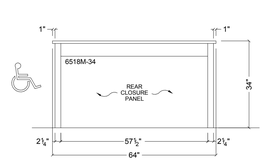


END ELEVATION, TYP.

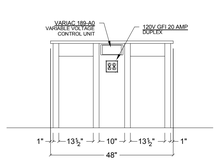
C18 L17 - LAB TABLE DETAIL
1/2" = 1'-0"



PLAN VIEW,TYP.

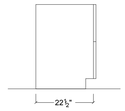


SIDE ELEVATION,TYP.

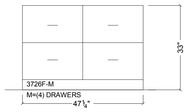


END ELEVATION,TYP.

A18 L17A - ADA LAB TABLE
1/2" = 1'-0"

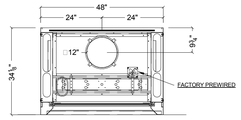


SIDE ELEVATION

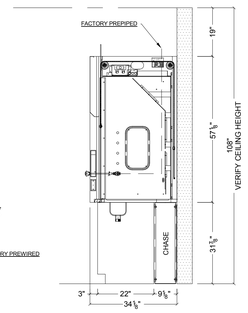


FRONT ELEVATION

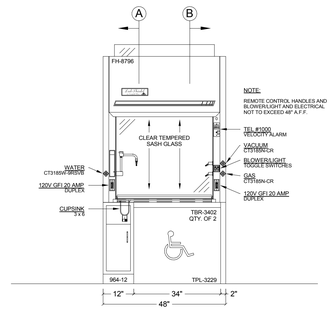
L7 L4A - BASE CABINET WITH DEEP DRAWERS
1/2" = 1'-0"



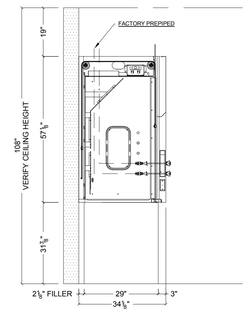
Plan View



Section A

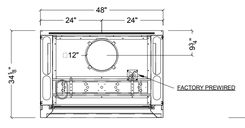


Front Elevation

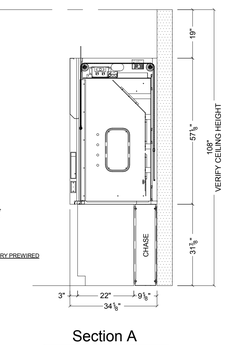


Section B

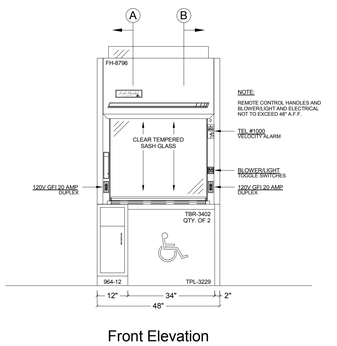
G10 LE1-FUME HOOD
1/2" = 1'-0"



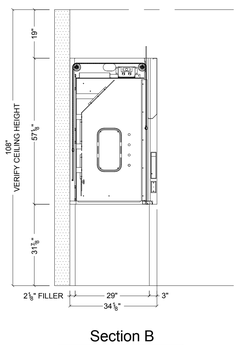
Plan View



Section A

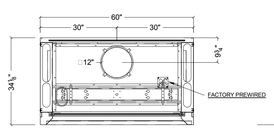


Front Elevation

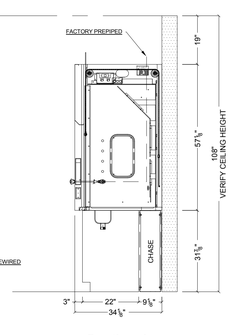


Section B

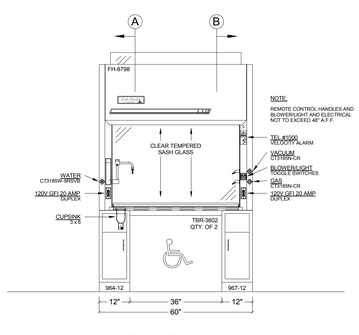
D10 LE1A-FUME HOOD
1/2" = 1'-0"



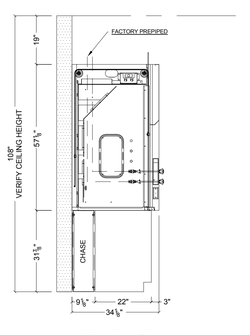
Plan View



Section A



Front Elevation



Section B

A10 LE2-FUME HOOD
1/2" = 1'-0"

11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel: 301.595.1000
www.grimmandparker.com

GRIMM AND PARKER

GP #21620

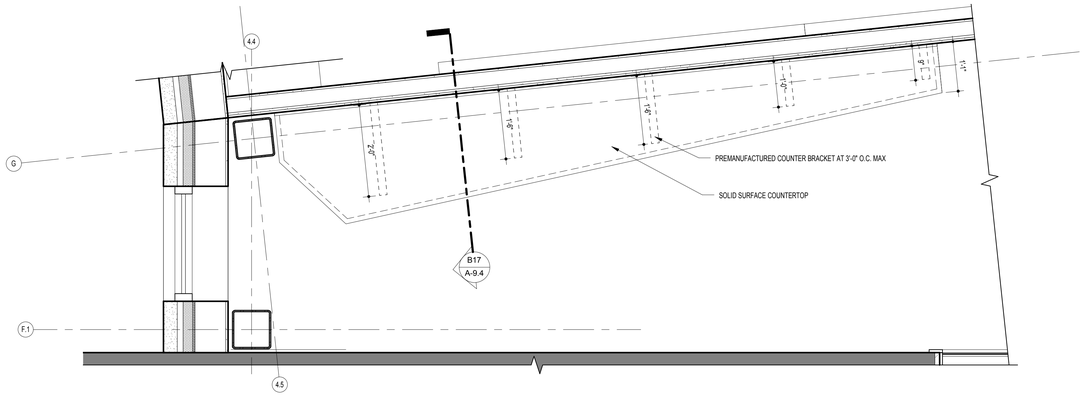
LAB WOOD CASEWORK AND FUME HOODS

Garrett College STEM Renovation and Addition
McHenry, MD

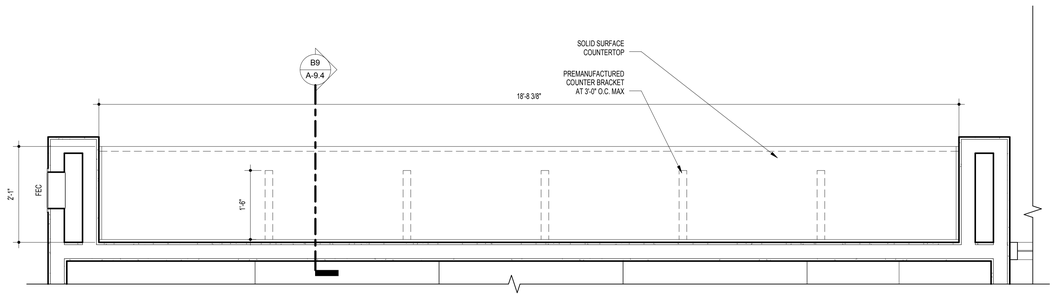
DATE	DESCRIPTION

A-9.3

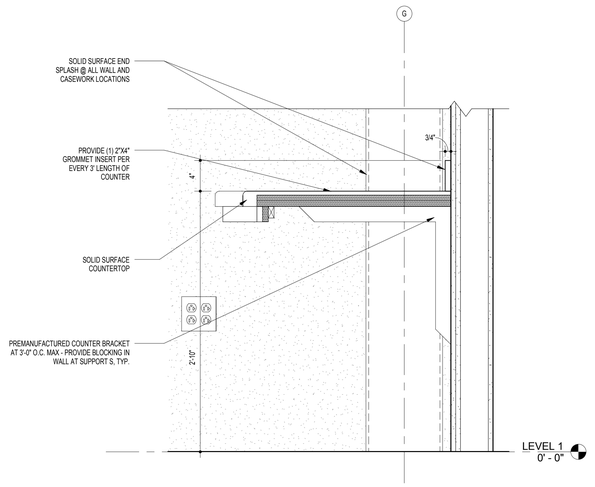
February 1, 2017
Bid Set



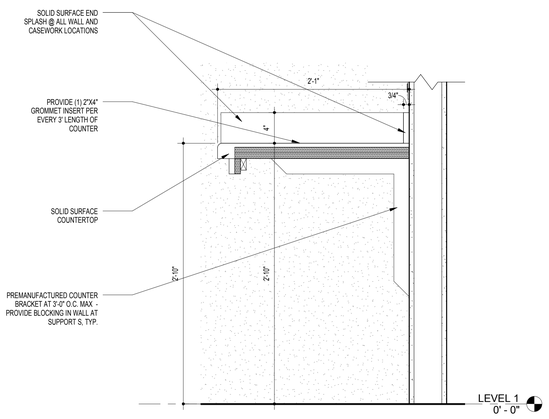
F17 STANDING LAPTOP BAR ENLARGED PLAN
3/4" = 1'-0"



F9 LAPTOP BAR ENLARGED PLAN
3/4" = 1'-0"



B17 DETAIL SECTION - LAPTOP BAR - LOBBY
1 1/2" = 1'-0"



B9 LAPTOP BAR - STUDENT LOUNGE - 233 - DETAIL SECTION
1 1/2" = 1'-0"

G+P
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Calverton, MD 20705
Tel: 301.595.1000
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GP #21620

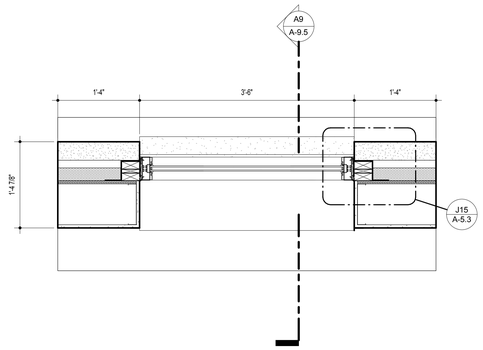
MILLWORK AND DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

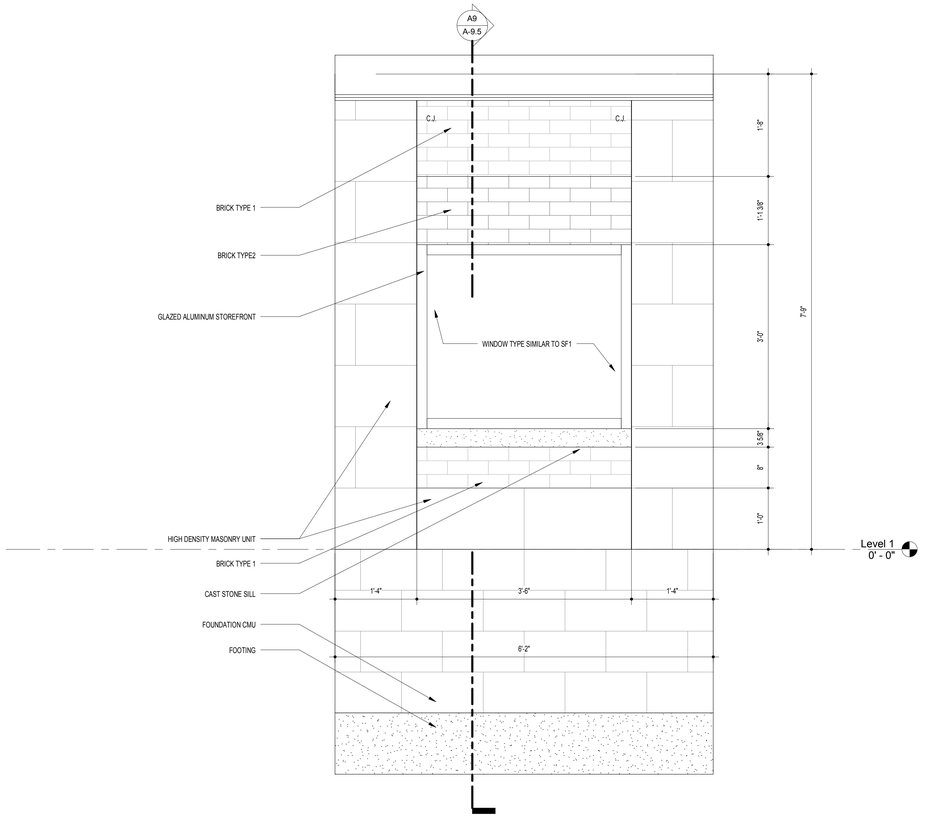
DATE	DESCRIPTION

A-9.4

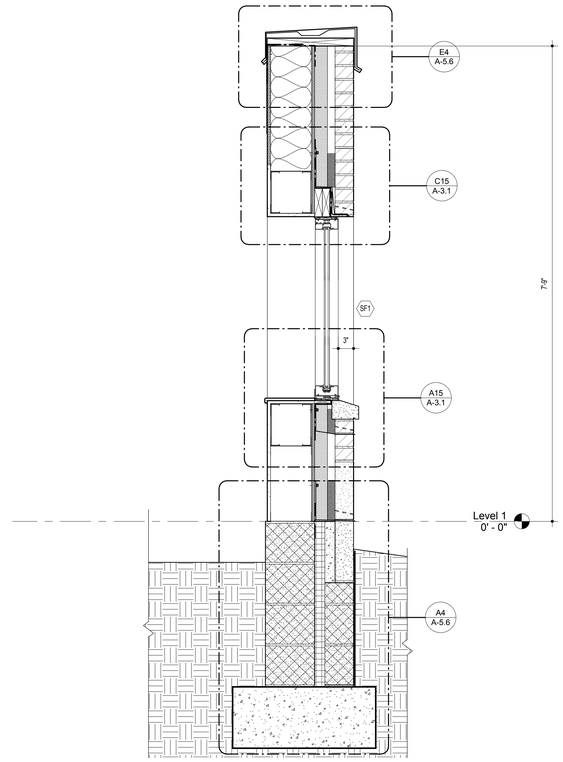
February 1, 2017
Bid Set



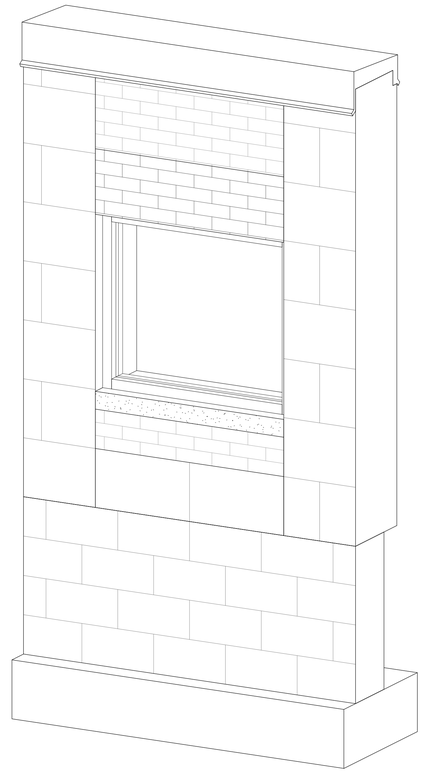
H16 MOCKUP - FLOOR PLAN
1" = 1'-0"



A16 MOCKUP - ELEVATION
1" = 1'-0"



A9 MOCKUP - SECTION
1" = 1'-0"



A4 MOCKUP - AXON

11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel: 301.595.1000
www.grimmandparker.com

GRIMM AND PARKER

GP #21620

MOCKUP WALL - PLAN, ELEVATION & SECTION

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

A-9.5

February 1, 2017
Bid Set

GENERAL NOTES

FOUNDATION AND SLAB ON GRADE:

NOTE: 1
FOOTINGS ARE DESIGNED FOR A BEARING CAPACITY OF 3000 PSF BASED ON THE GEOTECHNICAL REPORT PREPARED BY TRIAD ENGINEERING INC. FOOTINGS SHALL BEAR ON NATURAL UNDISTURBED SOIL 1'-0" BELOW ORIGINAL GRADE OR ON STRUCTURALLY COMPACTED FILL. BOTTOM OF NEW FOOTINGS SHALL BE 3'-8" BELOW FINISHED GRADE. A GEOTECHNICAL ENGINEER REGISTERED IN THE LOCAL JURISDICTION SHALL VERIFY THE SOIL BEARING CAPACITY IN THE FIELD. IF FOUND TO BE LESS THAN THE REQUIRED BEARING PRESSURE, THE FOOTINGS WILL HAVE TO BE REDESIGNED.

NOTE: 2
ALL FILL UNDER SLABS-ON-GRADE SHALL BE COARSE GRANULAR MATERIAL COMPACTED TO 95% OF MAXIMUM DENSITY AT OPTIMUM WATER CONTENT. SLABS-ON-GRADE SHALL BE POURED IN ACCORDANCE WITH ACI 302.1R, "GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION" (LATEST LOCAL APPROVED EDITION). SAW CUT CONTROL JOINTS SUCH THAT TOTAL AREA BOUNDED BY SAW CUTS AND FORMED EDGES DOES NOT EXCEED 400 SQ./FT. AND LONG SIDE TO SHORT SIDE DOES NOT EXCEED A 1.5:1 RATIO. PROVIDE #4 x3'-0" LONG BAR AT MID-DEPTH OF SLAB AT ALL RE-ENTRANT CORNERS AND COLUMN ISOLATION JOINT CORNERS THAT DO NOT HAVE A CONTROL/CONSTRUCTION JOINT TERMINATING.

CONCRETE:

NOTE: 1
ALL CONCRETE, EXCEPT AS NOTED, SHALL BE f'c=4000 PSI NORMAL WEIGHT CONCRETE AT 28 DAYS. ALL CONCRETE EXPOSED TO THE WEATHER SHALL BE f'c=5000 PSI NORMAL WEIGHT CONCRETE AND SHALL BE AIR ENTRAINED FOR EXPOSURE CLASS F2 PER ACI 318, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" (LATEST LOCAL APPROVED EDITION).

NOTE: 2
ALL REINFORCING STEEL SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM DESIGNATION A615 (LATEST LOCAL APPROVED EDITION), GRADE 60. ALL REINFORCING STEEL SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI SP-66, "ACI DETAILING MANUAL" (LATEST LOCAL APPROVED EDITION).

NOTE: 3
ALL SPLICES IN REINFORCING SHALL BE CLASS "B" SPLICES IN ACCORDANCE WITH ACI 318, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" (LATEST LOCAL APPROVED EDITION) EXCEPT AS OTHERWISE NOTED.

NOTE: 4
WELDED WIRE FABRIC (W.W.F.) SHALL HAVE ENDS LAPPED ONE FULL MESH.

NOTE: 5
WALL FOOTING REINFORCING SHALL EXTEND 2'-0" INTO ADJACENT COLUMN FOOTING, UNLESS OTHERWISE NOTED.

NOTE: 6
UNLESS OTHERWISE NOTED ON STRUCTURAL DRAWINGS, PROVIDE CONCRETE PROTECTION FOR REINFORCING AS FOLLOWS:

CAST AGAINST EARTH = 3"
EXPOSED TO EARTH OR WEATHER:
  NO. 6 AND LARGER BARS = 2"
  NO. 5 AND SMALLER BARS = 1 1/2"
NOT EXPOSED TO EARTH OR WEATHER:
  SLABS = 3/4"

NOTE: 7
OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS ARE PRINCIPAL OPENINGS. SEE MEP AND ARCHITECTURAL DRAWINGS FOR HOLES IN SLABS NOT SHOWN.

NOTE: 8
THE GENERAL CONTRACTOR SHALL SUBMIT PLANS SHOWING ALL PENETRATIONS THROUGH THE FRAMED SLABS. THE OPENINGS SHALL BE ACCURATELY LOCATED AND DIMENSIONED.

NOTE: 9
NO OPENINGS SHALL BE MADE THROUGH CONCRETE FRAMED FLOORS, FLOORS ON METAL DECK OR CONCRETE BEAMS UNLESS THESE ARE SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS OR ON THE APPROVED STRUCTURAL SHOP DRAWINGS.

NOTE: 10
CONDUITS IN STRUCTURAL MEMBERS:
a. CONDUITS SHALL ONLY BE PLACED IN THE MIDDLE THIRD OF THE DEPTH OF THE SLAB OR WALL.
b. NO CONDUIT WITH AN OUTSIDE DIAMETER GREATER THAN ONE THIRD OF THE SLAB OR WALL THICKNESS SHALL BE PLACED IN THE SLAB OR WALL.
c. NO CONDUITS SHALL BE PLACED IN THE SLAB OR WALL UNLESS SPECIFICALLY INDICATED ON THE ELECTRICAL DRAWINGS.
d. CONDUITS WHICH CROSS OVER ONE ANOTHER IN A CONCRETE SLAB OR WALL SHALL NOT OCCUPY A TOTAL SPACE AT THE POINT OF CROSSOVER GREATER THAN ONE THIRD THE DEPTH OF THE SLAB OR WALL.
e. FOR CONCRETE ON METAL DECK, THE DEPTH OF THE SLAB SHALL BE CONSIDERED THE TOTAL SLAB THICKNESS.

NOTE: 11
CONSTRUCTION JOINTS IN SLABS SHALL BE LOCATED MIDWAY BETWEEN SUPPORTS. BEFORE FRESH CONCRETE IS POURED AGAINST CONCRETE IN PLACE, THE CONTACT SURFACES SHALL BE THOROUGHLY CLEANED, ALL LAITANCE SHALL BE REMOVED AND THE CONTACT SURFACES SHALL BE THOROUGHLY SLUSHED WITH GROUT CONSISTING OF ONE PART SAND TO ONE PART CEMENT WITH A MINIMUM AMOUNT OF WATER.

NOTE: 12
CONSTRUCTION JOINTS SHALL HAVE THE SURFACE OF THE FIRST POUR ROUGHENED TO 1/4" AMPLITUDE, UNLESS OTHERWISE NOTED.

NOTE: 13
THE CONTRACTOR MUST SUBMIT A CONCRETE DESIGN MIX IN ACCORDANCE WITH ACI 318 (LATEST LOCAL APPROVED EDITION). SUCH DESIGN MIX SHALL BE ACCOMPANIED BY THE APPROPRIATE GRAPHS AND BACKGROUND DATA. CONCRETE DESIGN MIX SHALL INDICATE 7 AND 28 DAY STRENGTHS, CEMENT CONTENT, WATER-CEMENT RATIO, FINE AND COARSE AGGREGATES AND ADMIXTURES FOR EACH DESIGN STRENGTH. THE ADDITION OF WATER AT THE PLANT OR IN THE FIELD GREATER THAN THE SPECIFIED WATER CONTENT IS STRICTLY PROHIBITED.

NOTE: 14
ALL CONCRETE WORK SHALL CONFORM TO THE LATEST LOCAL APPROVED EDITIONS OF THE FOLLOWING ACI AND ASTM DOCUMENTS:

• ACI-301	SPECIFICATIONS FOR STRUCTURAL CONCRETE
• ACI-318	CODE
• ACI-214	COMPRESSIVE TEST
• ACI-306	COLD WEATHER
• ACI SP-66	DETAILING
• ACI-347	FORMWORK
• ACI-305	HOT WEATHER
• ACI-211	PROPORTIONS OF CONCRETE
• ACI-304	PLACING CONCRETE
• ATSM C-94	READY-MIX CONCRETE

NOTE: 15
ALL FIELD AND LAB TESTING OF CONCRETE SHALL CONFORM TO THE LATEST LOCAL APPROVED EDITIONS OF ASTM:

• ASTM C-31	FIELD CYLINDER SPECIMENS
• ASTM C-143	SLUMP TEST
• ASTM C-231	AIR CONTENT (WHEN REQUIRED)
• ASTM C-39	LAB TESTING CYLINDERS
• ASTM C-172	SAMPLING FRESH CONCRETE
• ASTM C-42	HARDENED CORES (WHEN REQUIRED)

TEST RESULTS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE LOCAL JURISDICTION.

NOTE: 16
ALL FORMWORK SHALL BE IN ACCORDANCE WITH ACI 347, "GUIDE TO FORMWORK FOR CONCRETE" (LATEST LOCAL APPROVED EDITION).

NOTE: 17
CONCRETE SLABS ON METAL DECK AND STEEL FRAMING ARE DESIGNED AS UNSHORED. SLABS SHALL BE POURED LEVEL TO THE ELEVATIONS NOTED ON THE PLAN. FOR BIDDING PURPOSES, THE CONCRETE CONTRACTOR SHALL ASSUME AN AVERAGE OF 1/2" ADDITIONAL CONCRETE OVER THE FOOTPRINT OF THE FLOOR TO ACCOUNT FOR DEFLECTION OF THE FRAMING UNDER THE WET LOAD OF THE CONCRETE.

MASONRY:

NOTE: 1
CONCRETE MASONRY SHALL CONFORM TO THE LATEST EDITION OF ASTM SPECIFICATION C90. CONCRETE MASONRY SHALL BE SAMPLED AND TESTED BY THE MASONRY SUPPLIER ACCORDING TO ASTM C140. ALL CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO TMS 402/ACI 530/ASCE 5, "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" (LATEST LOCAL APPROVED EDITION) AND TMS 602/ACI 530.1/ASCE 6, "SPECIFICATION FOR MASONRY STRUCTURES" (LATEST LOCAL APPROVED EDITION).

NOTE: 2
UNLESS OTHERWISE NOTED, CONCRETE MASONRY UNITS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI ON THE NET AREA. ALL BRICK SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3350 PSI ON THE NET AREA.

NOTE: 3
ALL MORTAR SHALL CONFORM TO ASTM C270. MORTAR TO BE USED SHALL BE SAMPLED AND TESTED BY THE BRICK AND MASONRY SUPPLIERS ACCORDING TO ASTM C780 AND RESULTS SUBMITTED TO THE ENGINEER FOR APPROVAL. MORTAR SHALL BE PORTLAND CEMENT/LIME MORTAR TYPE "S" AS A MINIMUM.

NOTE: 4
UNLESS NOTED OTHERWISE, PROVIDE 8" MINIMUM OF BRICK OR 100% SOLID MASONRY CONTINUOUS BELOW ALL JOISTS OR SLAB BEARING LINES. PROVIDE 16" MINIMUM BRICK OR 100% SOLID MASONRY BELOW ALL LINTELS AND/OR MINOR WALL BEARING BEAMS.

NOTE: 5
LOOSE LINTELS FOR OPENINGS IN MASONRY BEARING WALLS SHALL BE AS FOLLOWS FOR EACH 4" WIDTH:
- 0'-0" TO 3'-0" ....3 1/2 "x3 1/2"x5/16"ANGLE
- 3'-1" TO 5'-0" ....4"x3 1/2"x5/16" ANGLE
- 5'-1" TO 6'-0" ....5"x3 1/2"x3/8" ANGLE
- 6'-1" TO 8'-0" ....6"x3 1/2"x3/8" ANGLE

ALL ANGLES SHALL HAVE THEIR SHORT LEG OUTSTANDING AND 6" MINIMUM BEARING.

NOTE: 6
ALL SOLID CMU SHALL BE 100% SOLID BLOCK OR HOLLOW BLOCK WITH CELLS FILLED 100% SOLID WITH F'C=3000 PSI COARSE AGGREGATE GROUT CONFORMING TO ASTM C476. GROUT SHALL BE PLACED IN POUR HEIGHTS NOT TO EXCEED 4'-0" AS CMU CONSTRUCTION PROGRESSES. THE WEBS OF THE MASONRY UNITS SHALL BE FULLY MORTARED AROUND ALL GROUTED CELLS.

NOTE: 7
ALL REINFORCED CELLS IN HOLLOW BLOCK SHALL BE GROUTED 100% SOLID PER NOTE ABOVE.

NOTE: 8
ALL SPLICES IN REINFORCING STEEL FOR MASONRY WALLS SHALL AS FOLLOWS UNLESS NOTED OTHERWISE:
- #4 BAR ----- 2'-8"
- #5 BAR ----- 3'-4"
- #6 BAR ----- 4'-0"

NOTE: 9
REINFORCING BAR POSITIONERS SHALL BE USED TO HOLD BARS IN PROPER LOCATION. POSITIONERS SHALL BE PLACED AT A MAXIMUM VERTICAL SPACING OF 48"o.c.

NOTE: 10
ALL MASONRY ANCHORS SHALL BE INSTALLED IN MASONRY THAT HAS BEEN GROUTED SOLID A MINIMUM OF 8" ABOVE AND BELOW THE ANCHOR AND A MINIMUM OF 8" EACH SIDE OF THE ANCHOR.

NOTE: 17
MASONRY CONSTRUCTION SHALL BE INSPECTED PER TMS 402/ACI 530/ASCE5 , "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES" (LATEST LOCAL APPROVED EDITION) FOR LEVEL B QUALITY ASSURANCE.

NOTE: 18
SHORE EXISTING CONSTRUCTION AS NEEDED DURING REMOVAL OF EXISTING MASONRY FOR INSTALLATION OF LINTELS AT NEW OPENINGS.

STEEL:

NOTE: 1
ALL STEEL JOISTS SHALL CONFORM TO THE SJI STANDARD SPECIFICATIONS IN ALL RESPECTS AND SHALL HAVE BRIDGING IN ACCORDANCE WITH THE SJI SPECIFICATIONS. JOISTS SHALL BE WELDED TO STEEL SUPPORTS PER SJI SPECIFICATIONS. JOISTS SUPPORTED BY A COLUMN SHALL BE WELDED TO THE COLUMN WITH 1/8"x2" LONG FILLET WELD EACH SIDE UNLESS NOTED OTHERWISE.

NOTE: 2
STRUCTURAL STEEL FOR WIDE FLANGE SHAPES SHALL CONFORM TO ASTM SPECIFICATION A992. STRUCTURAL STEEL FOR TUBES SHALL CONFORM TO ASTM SPECIFICATION A500 GRADE B. STRUCTURAL STEEL FOR PIPES SHALL CONFORM TO ASTM SPECIFICATION A53 TYPE E, GRADE B. ALL OTHER STEEL SHALL CONFORM TO ASTM SPECIFICATION A36. MILL TEST REPORTS SHALL BE SUBMITTED TO THE ARCHITECT. ALL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC MANUAL, AISC SPECIFICATION AND AISC CODE OF STANDARD PRACTICE. ALL CONNECTIONS FOR NON-COMPOSITE BEAMS SHALL DEVELOP THE ALLOWABLE UNIFORM LOAD OF THE BEAM. CONNECTIONS FOR COMPOSITE BEAMS SHALL DEVELOP THE REACTION NOTED ON THE PLANS. IN GENERAL, FIELD CONNECTIONS SHALL BE MADE WITH 3/4" DIAMETER A325 BOLTS UNLESS OTHERWISE NOTED AND SHOP CONNECTIONS SHALL BE WELDED.

NOTE: 3
BOLTS, EXCEPT AS NOTED, NEED ONLY BE INSTALLED TO THE "SNUG TIGHT" CONDITION AS DEFINED IN THE RCSC "SPECIFICATION FOR STRUCTURAL JOINTS." BOLTS IN BEAM TO COLUMN CONNECTIONS THAT HAVE SLOTTED HOLES, BOLTS NOTED AS SLIP CRITICAL, AND BOLTS SUBJECT TO DIRECT TENSION SHALL BE FULLY PRE-TENSIONED IN ACCORDANCE WITH THE "SPECIFICATION FOR STRUCTURAL JOINTS" (LATEST LOCAL APPROVED EDITION).

NOTE: 4
WELDS SHALL BE MADE WITH E70XX LOW HYDROGEN ELECTRODES.

NOTE: 5
ALL CONNECTIONS, UNLESS OTHERWISE NOTED, SHALL BE DOUBLE ANGLE, SINGLE ANGLE, SINGLE PLATE, OR THRU PLATE CONNECTIONS PER THE TYPICAL DETAILS OF THE CONTRACT DOCUMENTS. CONNECTIONS SHALL BE SELECTED BY THE STEEL DETAILER BASED ON THE CONNECTION TABLES PROVIDED IN THE TYPICAL DETAILS. LOADS SHOWN IN THE DRAWINGS ARE ASD LOADS UNLESS OTHERWISE NOTED.

NOTE: 6
ALL GROOVE WELDS SHALL BE FULL PENETRATION GROOVE WELDS IN ACCORDANCE WITH ANSI/AWS D1.1, "STRUCTURAL WELDING CODE" (LATEST LOCAL APPROVED EDITION). THESE WELDS SHALL BE MADE ONLY BY OPERATORS QUALIFIED BY PRESCRIBED TESTS IN THE "STRUCTURAL WELDING CODE." ACCEPTANCE SHALL BE SUBJECT TO THE INSPECTION AND REVIEW OF AN INDEPENDENT INSPECTION AGENCY. ALL FULL PENETRATION WELDS SHALL BE ULTRASONICALLY TESTED.

NOTE: 7
HOLES AND OPENINGS REQUIRED IN STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES SHALL BE SHOWN ON THE SHOP DRAWINGS SUBMITTED FOR REVIEW.

NOTE: 8
FIELD MODIFICATION OF THE STRUCTURAL STEEL IS NOT ALLOWED WITHOUT PRIOR REVIEW BY THE ARCHITECT AND STRUCTURAL ENGINEER.

NOTE: 9
WELDING SEQUENCE AND TECHNIQUE SHALL BE SUCH THAT DISTORTION OF STEEL MEMBERS IS MINIMIZED AND UNDUE DISTORTION IS AVOIDED.

STEEL CONTINUED:

NOTE: 10
ALL STRUCTURAL STEEL SHALL BE SHOP PAINTED WITH A RUST INHIBITIVE PRIMER. ALL EXPOSED STEEL AND LINTELS IN EXTERIOR WALLS SHALL BE HOT-DIPPED GALVANIZED. REFER TO ARCHITECTURAL DRAWINGS FOR GALVANIZED STEEL THAT SHALL RECEIVE A PAINTED FINISH COAT.

NOTE: 11
THE SYMBOL [No.] ADJACENT TO A BEAM OR PORTION OF A BEAM DENOTES THE NUMBER OF 3/4" DIAMETER HEADED STUDS TO BE WELDED TO THE TOP OF THE BEAM OR PORTION OF THE BEAM. STUDS SHALL EXTEND 1 1/2" ABOVE THE DECK AFTER INSTALLATION. THE NUMBER OF STUDS HAS BEEN DETERMINED BY ASSUMING THE SHAPE OF THE METAL DECK CAUSES NO REDUCTION IN THE SHEAR CAPACITY OF THE STUDS. IF REQUIRED, THE TOTAL NUMBER OF STUDS, [No.], SHALL BE INCREASED IN ACCORDANCE WITH AISC SPECIFICATIONS TO ALLOW FOR ANY REDUCTION IN SHEAR CAPACITY DUE TO THE METAL DECK CONFIGURATION.

NOTE: 12
TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL THE INSTALLATION OF THE FOLLOWING ITEMS HAS BEEN COMPLETED AND INSPECTED:
- METAL ROOF DECK
- ELEVATED CONCRETE FLOORS
- LATERAL BRACING COMPONENTS INCLUDING ANCHOR BOLTS
- SHEAR WALLS
- MOMENT CONNECTIONS

METAL DECK:

NOTE: 1
FABRICATION AND ERECTION OF ALL METAL DECK SHALL CONFORM TO THE LATEST EDITION OF STEEL DECK INSTITUTE SPECIFICATIONS.

NOTE: 2
FLOOR DECK SHALL BE MADE OF STEEL CONFORMING TO ASTM A653 SS GRADE 50. ROOF DECK SHALL BE MADE OF STEEL CONFORMING TO ASTM A653 SS GRADE 33. GALVANIZED DECK SHALL HAVE COATING DESIGNATION G60.

NOTE: 3
METAL DECK SHALL HAVE THE FOLLOWING MINIMUM SECTION PROPERTIES:
- ROOF DECK -------- I = 0.201 in.^4/ft, S = 0.234 in.^3/ft
- COMPOSITE FLOOR DECK ------- I = 0.559 in.^4, S = 0.495 in.^3

NOTE: 4
ALL METAL DECK HAS BEEN DESIGNED TO BE CONTINUOUS OVER 3 SPANS MINIMUM AND SHALL BEAR AT LEAST 2" ON STEEL SUPPORTS. FOR ONE OR TWO SPAN CONDITIONS, THE CONTRACTOR SHALL PROVIDE SHORING OR FURNISH HEAVIER GAGE DECK AS REQUIRED TO SUPPORT ALL THE APPLICABLE LOADS. THE CONTRACTOR SHALL SUBMIT THE ALTERNATE LAYOUT FOR APPROVAL.

NOTE: 5
DECK SHALL BE WELDED TO SUPPORTING STEEL AT ENDS OF UNITS AND AT ALL INTERMEDIATE SUPPORTS AT 12"o.c., AND AS NOTED ON PLANS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SIDE LAPS SHALL BE WELDED OR SCREWED AT MID SPAN AND AS NOTED ON PLANS.

NOTE: 6
PROVIDE RIDGE AND VALLEY PLATES, REINFORCING CHANNELS, STANDARD CLOSURES, CANT STRIPS, SUMP PANS, FINISH STRIPS, POUR STOPS, AND OTHER ACCESSORIES AS SHOWN ON THE DRAWINGS OR AS REQUIRED.

NOTE: 7
DO NOT HANG ANY EQUIPMENT, LIGHTS, DUCTS, PIPES, ETC., FROM METAL ROOF DECK.

COLD-FORMED METAL FRAMING:

NOTE: 1
GALVANIZED STUDS AND TRACKS, 12, 14, AND 16 GAGE SHALL BE FORMED FROM STEEL THAT CONFORMS TO ASTM A653, GRADE 50. GALVANIZED 18 AND 20 GAGE STUDS TRACKS, AND ALL GALVANIZED BRIDGING, END CLOSURES AND ACCESSORIES SHALL BE FORMED FROM STEEL THAT CONFORMS TO THE REQUIREMENTS OF ASTM A653 GRADE 33.

NOTE: 2
ALL COLD-FORMED METAL FRAMING SHALL BE FORMED FROM STEEL HAVING A G-90 GALVANIZED COATING.

NOTE: 3
FRAMING COMPONENTS MAY BE PRE-ASSEMBLED INTO PANELS PRIOR TO ERECTING. PREFABRICATED PANELS SHALL BE SQUARE WITH COMPONENTS ATTACHED IN A MANNER AS TO PREVENT RACKING. HANDLING AND LIFTING OF PREFABRICATED FRAME PANELS SHALL BE DONE IN A MANNER AS NOT TO CAUSE DISTORTION IN ANY MEMBER.

NOTE: 4
PROVIDE UNIFORM AND LEVEL BEARING SUPPORT FOR THE BOTTOM TRACK.

NOTE: 5
AT TRACK BUTT JOINTS, ABUTTING PIECES OF TRACK SHALL BE BUTT WELDED OR SPLICED TOGETHER.

NOTE: 6
STUDS SHALL BE PLUMBED, ALIGNED, AND SECURELY ATTACHED TO THE FLANGES OR WEBS OF THE TRACKS. THE ENDS OF THE STUDS MUST BEAR AGAINST THE WEB OF BOTH UPPER AND LOWER TRACKS, UNLESS OTHERWISE NOTED.

NOTE: 7
SPLICES IN AXIALLY LOADED STUDS ARE NOT PERMITTED.

NOTE: 8
WALL STUD BRIDGING SHALL BE INSTALLED IN A MANNER TO PROVIDE RESISTANCE TO BOTH MINOR AXIS BENDING AND ROTATION. BRIDGING ROWS SHALL BE EQUALLY SPACED NOT TO EXCEED 4'-0"o.c.

NOTE: 9
TEMPORARY BRACING SHALL BE PROVIDED UNTIL ERECTION OF THE STRUCTURAL SYSTEM IS COMPLETE.

NOTE: 10
SIZES AND GAGES OF COLD-FORMED METAL FRAMING SHOWN ON THE DRAWINGS ARE MINIMUM REQUIREMENTS. FRAMING SHALL BE DESIGNED FOR THE WIND LOADS REQUIRED BY THE LOCAL BUILDING CODE AND SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE LOCAL JURISDICTION. FOR BIDDING PURPOSES, PROVIDE MULTIPLE STUDS AT EACH SIDE OF OPENINGS EQUAL TO ONE-HALF OPENING WIDTH DIVIDED BY THE STUD SPACING.

SUPPORT FOR DUCTWORK, PIPING AND MECHANICAL UNITS:

NOTE: 1
NO MECHANICAL UNITS SHALL BE PLACED ON OR HUNG FROM JOISTS WITHOUT THE APPROVAL OF THE ENGINEER. NO UNITS SHALL BE SUPPORTED FROM THE BOTTOM CHORD OF THE JOIST.

NOTE: 2
DUCTWORK AND PIPING SHALL ONLY BE HUNG FROM THE STEEL FRAMING. AT JOISTS, HANGERS SHALL BE SUPPORTED FROM THE TOP CHORD PANEL POINT AND THE LOAD ON INDIVIDUAL HANGERS SHALL NOT EXCEED 300 POUNDS.

NOTE: 3
PIPE RISERS SHALL BE SUPPORTED FROM THE FLOOR SLAB BELOW WITH A CLAMP OR STANCHION.

NOTE: 4
JOISTS HAVE BEEN DESIGNED FOR A UNIFORM HANGING SPRINKLER LOAD OF 3 PSF. THE SPRINKLER CONTRACTOR SHALL SPACE THE SPRINKLERS SO THAT THE UNIFORM HANGING SPRINKLER LOAD IS NOT EXCEEDED. SPRINKLER LINES 4" AND LARGER THAT RUN PARALLEL WITH THE JOISTS SHALL BE PLACED EVENLY BETWEEN TWO JOISTS. SPRINKLER PIPES SHALL BE HUNG FROM THE TOP CHORD PANEL POINT OF THE JOISTS AND THE LOAD ON EACH INDIVIDUAL HANGER SHALL NOT EXCEED 300 POUNDS.

NOTE: 5
THE MAXIMUM TOTAL HUNG LOAD ON ANY SINGLE JOIST FROM MULTIPLE HANGERS SHALL NOT EXCEED 900 POUNDS.

POST-INSTALLED ANCHORS AND REINFORCING:

NOTE: 1
ANCHORS SHALL BE THE FOLLOWING TYPES MANUFACTURED BY HILTI, INC.:
a. ADHESIVE ANCHORS IN CONCRETE: HILTI HIT-HY200 ANCHORING SYSTEM PER ICC ESR-3187 WITH HILTI HIT-Z THREADED ROD.
b. ADHESIVE ANCHORS IN SOLID GROUTED MASONRY: HILTI HIT-HY70 MASONRY ADHESIVE SYSTEM PER ICC ESR-2682 WITH HILTI HAS-E CONTINUOUSLY THREADED ROD.
c. ADHESIVE ANCHORS IN HOLLOW AND MULTI-WYTHE MASONRY: HILTI HIT-HY70 MASONRY ADHESIVE SYSTEM PER ICC ESR-2682 WITH HILTI HAS-E CONTINUOUSLY THREADED ROD AND APPROPRIATE SIZE SCREEN TUBE.
d. MECHANICAL ANCHORS IN CONCRETE: HILTI KWIK BOLT TZ EXPANSION ANCHOR PER ICC ESR-1917
e. MECHANICAL ANCHORS IN SOLID GROUTED MASONRY: HILTI KWIK BOLT 3 EXPANSION ANCHOR PER ICC ESR-1385

ALTERNATE MANUFACTURERS OR ANCHORS MUST BE SUBMITTED TO THE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO USE. THE CONTRACTOR SHALL PROVIDE SIGNED AND SEALED CALCULATIONS DEMONSTRATING THAT THE PROPOSED SUBSTITUTIONS, BASED ON THEIR SPECIFIC ICC-ES EVALUATION REPORTS, ARE CAPABLE OF ACHIEVING THE PERFORMANCE VALUES EQUAL TO OR GREATER THAN THOSE OF THE ANCHORS SPECIFIED.

NOTE: 2
ADHESIVE ANCHORS AND REINFORCING SHALL NOT BE INSTALLED UNTIL THE CONCRETE OR GROUT HAS BEEN ALLOWED TO CURE FOR 21 DAYS AND HAS ATTAINED 70% OF ITS DESIGN STRENGTH.

NOTE: 3
MECHANICAL ANCHORS SHALL NOT BE INSTALLED UNTIL THE CONCRETE OR GROUT HAS ATTAINED 70% OF ITS DESIGN STRENGTH.

NOTE: 4
ALL POST INSTALLED ANCHORS AND REINFORCING SHALL BE INSTALLED IN DRY HOLES THAT HAVE BEEN DRILLED, CLEANED AND PREPARED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS AND THE RESPECTIVE ICC ES EVALUATION REPORTS.

NOTE: 5
THE CONTRACTOR SHALL ARRANGE FOR AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL THE ANCHORING PRODUCTS SPECIFIED IN THE DRAWINGS. PRIOR TO INSTALLATION OF ANY ANCHORS, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT DOCUMENTED CONFIRMATION FROM THE MANUFACTURER'S REPRESENTATIVE THAT THE CONTRACTOR'S PERSONNEL WHO WILL INSTALL THE ANCHORS HAVE BEEN PROPERLY TRAINED FOR THE SPECIFIED ANCHORS.

NOTE: 6
IN ADDITION TO TRAINING BY THE MANUFACTURER'S REPRESENTATIVE, THE CONTRACTOR'S PERSONNEL WHO WILL INSTALL ADHESIVE ANCHORS IN CONCRETE SHALL BE CERTIFIED BY AN ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM.

NOTE: 7
ALL ANCHORS AND REINFORCING SHALL BE INSTALLED IN ACCORDANCE WITH THE SPACING AND EDGE DISTANCES SHOWN IN THE DRAWINGS. THE CONTRACTOR SHALL INFORM THE ARCHITECT PRIOR TO INSTALLING THE ANCHORS IF THE SPACING AND EDGE DISTANCES SHOWN IN THE DRAWINGS CANNOT BE ACHIEVED. IF THIS IS THE CASE, RE-DESIGN MIGHT BE REQUIRED AND THE ANCHORS SHOULD NOT BE INSTALLED UNTIL APPROVAL HAS BEEN PROVIDED BY COLUMBIA ENGINEERING, INC.

NOTE: 8
DO NOT CUT ANY REINFORCING UNLESS IT IS SPECIFICALLY INDICATED IN THE DRAWINGS OR IS APPROVED BY COLUMBIA ENGINEERING INC.

NOTE: 9
POST INSTALLED ANCHORS AND REINFORCING SHALL ONLY BE USED WHERE SPECIFIED IN THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM COLUMBIA ENGINEERING INC. PRIOR TO INSTALLING POST INSTALLED ANCHORS WHERE CAST IN PLACE ANCHORS ARE MISSING, MISPLACED OR DAMAGED.

NOTE: 10
POST INSTALLED ANCHORS AND REINFORCING SHALL BE PERIODICALLY INSPECTED PER IBC 2012 SECTION 1705 EXCEPT ADHESIVE ANCHORS AND REINFORCING INSTALLED IN A VERTICAL OR OVERHEAD SURFACE SHALL BE CONTINUOUSLY INSPECTED.

RIGGING, HOISTING AND SCAFFOLDING REQUIREMENTS:

NOTE: 1
THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ARCHITECT FOR REVIEW A SITE SPECIFIC PLAN FOR ALL SCAFFOLDING THAT WILL BE INSTALLED ON ROOFS.

NOTE: 2
THE PROPOSED SCAFFOLDING PLAN SHALL BE REVIEWED BY A PROFESSIONAL ENGINEER REGISTERED IN THE LOCAL JURISDICTION. THE PROFESSIONAL ENGINEER SHALL PROVIDE A SIGNED AND SEALED CERTIFICATION STATING THAT THE PROPOSED PLAN WILL NOT DAMAGE OR OVERSTRESS THE STRUCTURE.

NOTE: 3
IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSURE THAT THE LOADS SUPERIMPOSED BY THE SCAFFOLDING SYSTEMS WILL NOT EXCEED THE FOLLOWING LOADS:
- ROOFS = 40 PSF

NOTE: 4
THE CONTRACTOR SHALL PROVIDE PROTECTION FOR ALL FINISHES.

EXISTING CONSTRUCTION:

NOTE: 1
COLUMBIA ENGINEERING INC. HAS PREPARED THESE PLANS BASED ON THE STRUCTURAL INFORMATION SHOWN IN DRAWINGS SC-1 AND A-6 PREPARED BY JACOB J. GZESH DATED 2/28/1978 THE EXISTING MEMBER SIZES ARE NOTED (E) AND ARE SHOWN IN THE PLANS. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING MEMBERS SHOWN IN THE PLANS MATCH EXISTING AS BUILT CONDITIONS PRIOR TO PREPARING SHOP DRAWINGS. IF THE AS BUILT CONDITIONS DO NOT CONFORM TO THE INFORMATION SHOWN IN THE PLANS, OR IF ANY STRUCTURAL MEMBER IS FOUND TO BE IN POOR CONDITION, THE CONTRACTOR SHALL INFORM COLUMBIA ENGINEERING INC. OF THE ACTUAL SIZES AND/OR CONDITION. RE-DESIGN AND ADDITIONAL FRAMING MAY BE REQUIRED IN THAT CASE.

NOTE: 2
ALL NEW PENETRATIONS THROUGH THE EXISTING ROOFS AND WALLS SHALL BE ACCURATELY LOCATED BY THE CONTRACTOR. THE CONTRACTOR SHALL PREPARE SHOP DRAWINGS SHOWING ALL PROPOSED OPENINGS AND SHALL SUBMIT THESE FOR REVIEW AND APPROVAL PRIOR TO CUTTING ANY OPENINGS.

NOTE: 3
NEW PENETRATIONS SHOWN IN THE STRUCTURAL DRAWINGS ARE PRINCIPAL OPENINGS. THE CONTRACTOR SHALL COORDINATE WITH THE ARCHITECTURAL, MEP AND TELECOMMUNICATION DRAWINGS FOR ALL PENETRATIONS.

NOTE: 4
ALL NEW PIPE AND DUCT PENETRATIONS SHALL BE LOCATED BY THE CONTRACTOR TO AVOID SUPPORTING MEMBERS UNDER THE ROOF.

MISCELLANEOUS:

NOTE: 1
ITEMS AND CONDITIONS NOTED OR IDENTIFIED IN SECTIONS AND DETAILS APPLY TO AREAS SIMILAR IN CONDITION TO THOSE DENOTED BY THE SECTION CUT OR DETAIL MARK.

NOTE: 2
THE CONTRACTOR SHALL NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER OF ANY DISCREPANCIES BETWEEN THE STRUCTURAL DOCUMENTS AND ANY OTHER DOCUMENTS OR EXISTING CONDITIONS FOR RESOLUTION PRIOR TO PROCEEDING WITH FABRICATION OR CONSTRUCTION.

NOTE: 3
SHOP DRAWINGS FOR ALL STRUCTURAL ITEMS MUST BE SUBMITTED BY THE CONTRACTOR. IF A CONTRACTOR OR OWNER FAILS TO SUBMIT THE SHOP DRAWINGS, THE FIRM COLUMBIA ENGINEERING, INC., WILL NOT BE RESPONSIBLE FOR THE STRUCTURAL CERTIFICATION AND/OR THE DESIGN OF THE PROJECT.

NOTE: 4
REPRODUCTION OF CONTRACT DOCUMENTS WILL NOT BE ACCEPTED AS SHOP DRAWINGS.

NOTE: 5
SHOP DRAWINGS FOR THE FOLLOWING ITEMS SHALL BE SUBMITTED FOR ARCHITECT/ENGINEER REVIEW:
a. CONCRETE/GROUT MIX DESIGNS
b. CONCRETE/MASONRY REINFORCING STEEL
c. STRUCTURAL STEEL
d. STEEL JOISTS
e. METAL DECK

SEE SPECIFICATIONS FOR ADDITIONAL REQUIRED SUBMITTALS.

NOTE: 6
THE FOLLOWING ITEMS SHALL BE DESIGNED FOR LOADS INDICATED IN THE LOCAL BUILDING CODE:
a. CURTAINWALL SYSTEMS
b. COLD-FORMED FRAMING
c. METAL STAIRS
d. HANDRAILS AND GUARDRAILS
e. LADDERS
f. CANOPIES

SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE LOCAL JURISDICTION AND SUBMITTED FOR REVIEW.

NOTE: 7
ALL SHOP DRAWINGS USED FOR WORK SHALL BEAR THE STAMP OF THE ARCHITECT/ENGINEER, AND SHALL BE MARKED "REVIEWED" OR "REVIEWED AS NOTED."

NOTE: 8
THE BUILDING FRAME IS NOT SELF-SUPPORTING UNTIL THE ENTIRE STRUCTURAL SYSTEM HAS BEEN INSTALLED. TEMPORARY BRACING MUST BE PROVIDED BY THE CONTRACTOR TO SUPPORT THE FRAME UNTIL THE STRUCTURAL SYSTEM HAS BEEN COMPLETED.

NOTE: 9
LOADS GREATER THAN THE DESIGN LIVE LOADS SHALL NOT BE PLACED ON THE STRUCTURE. A CONCRETE STRUCTURE MAY NOT SUPPORT ITS DESIGN LIVE LOADS FOR 28 DAYS, UNLESS THE DESIGN STRENGTH IS ACHIEVED EARLIER BASED ON FIELD CURED CYLINDERS.

NOTE: 10
THE CONTRACTOR SHALL SUPPORT ADJACENT STRUCTURES, UTILITIES, AND EXCAVATIONS. CONTRACTOR SHALL HAVE ALL TEMPORARY FORMWORK, SHEETING, SHORING, UNDERPINNING, ETC., AS PART OF THE CONTRACTOR'S WORK, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE LOCAL JURISDICTION.

NOTE: 11
ALL WORK SPECIFIED HEREIN SHALL BE INSPECTED IN ACCORDANCE WITH IBC CHAPTER 17 (EXCEPTIONS NOTED SHALL NOT BE PERMITTED) AND ALL LOCAL ORDINANCES. INSPECTIONS REQUIRED SHALL BE PER THE STATEMENT OF SPECIAL INSPECTIONS NOTED ON THIS SHEET. THE OWNER SHALL HIRE AN EXPERIENCED, QUALIFIED INSPECTOR TO PERFORM ALL THE REQUIRED INSPECTION WORK. THE ENGINEER WILL NOT PERFORM THE REQUIRED INSPECTION AS A PART OF HIS DESIGN SERVICE. THE ENGINEER MAY VISIT THE SITE TO ASCERTAIN GENERAL CONFORMANCE TO THE CONTRACT DOCUMENTS, AND SUCH VISITS ARE NOT TO BE CONSTRUED AS MEETING INSPECTION REQUIREMENTS.

NOTE: 12
THE GENERAL CONTRACTOR AND ITS SUBCONTRACTORS SHALL HAVE A MINIMUM OF FIVE YEARS EXPERIENCE IN THE CONSTRUCTION OF WORK SIMILAR IN NATURE TO THIS PROJECT.

NOTE: 13
LEGAL USE OF DOCUMENTS
THE PLANS, SPECIFICATIONS AND OTHER INFORMATION CONTAINED IN THESE DRAWINGS (COLLECTIVELY THE "DRAWINGS") WERE PREPARED BY COLUMBIA ENGINEERING, INC. AND ARE INSTRUMENTS OF PROFESSIONAL SERVICES RENDERED AND DELIVERED PURSUANT TO THE TERMS AND CONDITIONS OF A WRITTEN AGREEMENT (THE "AGREEMENT") ONLY TO THE RECIPIENT NAMED THEREIN. ANY USE OF THE DRAWINGS BY ANY PARTY WHICH IS INCONSISTENT WITH THE TERMS AND CONDITIONS OF THE AGREEMENT IS EXPRESSLY PROHIBITED. COLUMBIA ENGINEERING, INC. EXPRESSLY RESERVES ITS COPYRIGHT AND ALL INTELLECTUAL PROPERTY AND OTHER RIGHTS IN THE DRAWINGS. NO PORTION OF THE DRAWINGS ARE TO BE REPRODUCED, CHANGED OR OTHERWISE USED IN ANY FORM OR MANNER WHATSOEVER WHICH IS INCONSISTENT WITH EITHER THE AGREEMENT OR THE PURPOSES FOR WHICH THEY WERE ORIGINALLY PREPARED, NOR ARE THEY TO BE DEEMED ASSIGNED TO ANY PERSON OR ENTITY WITHOUT OBTAINING THE EXPRESS PRIOR WRITTEN PERMISSION AND CONSENT OF COLUMBIA ENGINEERING, INC. THE RECIPIENT OF THE DRAWINGS AGREES TO INDEMNIFY AND HOLD HARMLESS COLUMBIA ENGINEERING, INC., ITS EMPLOYEES, OFFICERS, DIRECTORS AND AGENTS, FROM AND AGAINST ANY AND ALL DAMAGES WHICH ARISE OUT OF OR IN CONNECTION WITH ANY VIOLATION OF THE FOREGOING.

DESIGN CODES:

INTERNATIONAL BUILDING CODE:
IBC 2015

BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE:
ACI 318-14

BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES:
TMS 402-13/ACI 530-13/ASCE 5-13

SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS:
AISC 14TH EDITION

DESIGN LOADS:
IBC RISK CATEGORY II

FLOOR LIVE LOADS:
SLAB ON GRADE ----- 100 PSF

ROOF LOADS:
LIVE LOAD = 40 PSF
GROUND SNOW LOAD, pg = 40 PSF
FLAT ROOF SNOW LOAD, pf = 28 PSF
SNOW EXPOSURE FACTOR, Ce = 1.0
SNOW LOAD IMPORTANCE FACTOR, Is = 1.0
THERMAL FACTOR, Ct = 1.0

SEISMIC DESIGN DATA:
SOIL SITE CLASS C
SEISMIC DESIGN CATEGORY A
SEISMIC IMPORTANCE FACTOR, Ie = 1.0

MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS:
Ss = 0.110
S1 = 0.054

DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS:
Sds = 0.088
Sd1 = 0.062

BASIC SEISMIC FORCE RESISTING SYSTEM:
ORDINARY CONCENTRICALLY BRACED FRAMES, ORDINARY MOMENT FRAMES AND COLD FORMED SHEAR WALLS
RESPONSE MODIFICATION COEFFICIENT, R = 3

SEISMIC RESPONSE COEFFICIENT, Cs = 0.029

ANALYSIS PROCEDURE:
EQUIVALENT LATERAL FORCE PROCEDURE

WIND LOADS:
DESIGN WIND SPEED:
Vult = 115 MPH (3 SECOND GUST)
Vasd = 89 MPH (3 SECOND GUST)

WIND EXPOSURE B
INTERNAL PRESSURE COEFFICIENT, GCpi = +/-0.18

COMPONENTS AND CLADDING:
- ZONE 1 ----- 10 PSF, -23.8 PSF
- ZONE 2 ----- 10 PSF, -39.9 PSF
- ZONE 3 ----- 10 PSF, -61 PSF
- ZONE 4 ----- 23.8 PSF, -25.8 PSF
- ZONE 5 ----- 23.8 PSF, -31.9 PSF

PRESSURES CAN BE REDUCED FOR COMPONENTS WITH TRIBUTARY AREAS GREATER THAN 10 FT^2 BASED ON ASCE 7.

Columbia Engineering Inc.
6210 OLD DOBBIN LANE
COLUMBIA, MARYLAND 21045
T:410-992-99970 F:410-992-0627
columbiaengineering.com

Professional Certification:
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 15568, Expiration Date: 10/18/2017

G+P
GRIMM AND PARKER
11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel: 301.595.1000
www.grimmandparker.com

GP #21620

GENERAL NOTES
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

S-0.1
FEBRUARY 1, 2017
Bid Documents

CEI# 16047

INSPECTION TABLES

STATEMENT OF SPECIAL INSPECTIONS:

NOTE 1:
INSPECTION OR TESTING SHALL BE PROVIDED FOR ALL MATERIAL, COMPONENTS AND WORK LISTED IN THE TABLES BELOW.

NOTE 2:
DEFINITIONS:
a. CONTINUOUS INSPECTION: INDICATES SPECIAL INSPECTOR SHALL BE PRESENT DURING CONTRACTOR PERFORMANCE OF THE TASK.
b. PERIODIC INSPECTION: INDICATES SPECIAL INSPECTOR SHALL PROVIDE INSPECTION OR TESTING OF ALL WORK INDICATED, BUT THAT SPECIAL INSPECTOR IS NOT REQUIRED TO BE PRESENT DURING CONTRACTOR PERFORMANCE OF THE TASK. PERIODIC INSPECTION DOES NOT MEAN RANDOM INSPECTION IS ALLOWED.
c. RANDOM INSPECTION: INDICATES SPECIAL INSPECTOR SHALL PROVIDE INSPECTION OR TESTING, AS NEEDED, TO INSURE PROPER PERFORMANCE OF THE TASK BY THE CONTRACTOR.

SOILS

INSPECTION TASK	TYPE OF INSPECTION
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	PERIODIC
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	PERIODIC
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS.	PERIODIC
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	CONTINUOUS
5. PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.	PERIODIC

CONCRETE

INSPECTION TASK	TYPE OF INSPECTION
1. INSPECTION OF REINFORCING STEEL FOR SIZE, QUANTITY AND PLACEMENT.	PERIODIC
2. INSPECTION OF ANCHORS CAST IN CONCRETE.	PERIODIC
3. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS (FOLLOW MANUFACTURERS WRITTEN INSTALLATION REQUIREMENTS).	CONTINUOUS
4. VERIFY USE OF REQUIRED DESIGN MIX.	PERIODIC
5. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE. FOR LIGHTWEIGHT CONCRETE, PERFORM UNIT WEIGHT TESTS.	CONTINUOUS
6. INSPECTION OF CONCRETE PLACEMENT.	CONTINUOUS
7. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.	PERIODIC
8. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED AND FOR CONFORMANCE WITH FORMWORK DESIGN.	PERIODIC
9. MEASURE F (F) AND F (L) TOLERANCE FOR FLOORS.	PERIODIC

MASONRY

INSPECTION TASK	TYPE OF INSPECTION
1. VERIFICATION OF f'm PRIOR TO CONSTRUCTION	PERIODIC
2. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS	PERIODIC
3. AS MASONRY CONSTRUCTION BEGINS, VERIFY THE FOLLOWING ARE IN COMPLIANCE:	
a. PROPORTIONS OF SITE-PREPARED MORTAR	PERIODIC
b. CONSTRUCTION OF MORTAR JOINTS	PERIODIC
c. LOCATION OF REINFORCEMENT AND CONNECTORS	PERIODIC
4. PRIOR TO GROUTING, VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:	
a. GROUT SPACE	PERIODIC
b. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS	PERIODIC
c. PLACEMENT OF REINFORCEMENT AND CONNECTORS	PERIODIC
d. PROPORTIONS OF SITE-PREPARED GROUT	PERIODIC
e. CONSTRUCTION OF MORTAR JOINTS	PERIODIC
5. VERIFY DURING CONSTRUCTION:	
a. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	PERIODIC
b. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION.	PERIODIC
c. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F) OR HOT WEATHER (TEMPERATURE ABOVE 90°F)	PERIODIC
d. PLACEMENT OF GROUT	CONTINUOUS
6. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	PERIODIC
7. INSTALLATION OF POST INSTALLED ANCHORS.	CONTINUOUS

STEEL - PRIOR TO WELDING

INSPECTION TASK	TYPE OF INSPECTION	
	QC	SI
1. WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE	PERIODIC	PERIODIC
2. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	PERIODIC	PERIODIC
3. MATERIAL IDENTIFICATION (TYPE/GRADE)	RANDOM	RANDOM
4. WELDER IDENTIFICATION SYSTEM	RANDOM	RANDOM
5. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) • JOINT PREPARATION • DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOF FACE, BEVEL) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION) • BACKING TYPE AND FIT (IF APPLICABLE)	RANDOM	PERIODIC
6. CONFIGURATION AND FINISH OF ACCESS HOLES	RANDOM	PERIODIC
7. FIT-UP OF FILLET WELDS • DIMENSIONS (ALIGNMENT, GAPS AT ROOT) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION)	RANDOM	RANDOM
8. CHECK WELDING EQUIPMENT	RANDOM	NONE

NOTES:
QC - DENOTES QUALITY CONTROL PERSONNEL
SI - DENOTES SPECIAL INSPECTOR

STEEL - DURING WELDING

INSPECTION TASK	TYPE OF INSPECTION	
	QC	SI
1. USE OF QUALIFIED WELDERS	RANDOM	RANDOM
2. CONTROL AND HANDLING OF WELDING CONSUMABLES • PACKAGING • EXPOSURE CONTROL	RANDOM	RANDOM
3. NO WELDING OVER CRACKED TACK WELDS	RANDOM	RANDOM
4. ENVIRONMENTAL CONDITIONS • WIND SPEED WITHIN LIMITS • PRECIPITATION AND TEMPERATURE	RANDOM	RANDOM
5. WPS FOLLOWED FOR GROOVE WELDS AND MULTI-PASS FILLET WELDS • SETTINGS ON WELDING EQUIPMENT • TRAVEL SPEED • SELECTED WELDING MATERIALS • SHIELDING GAS TYPE/FLOW RATE • PREHEAT APPLIED • INTERPASS TEMPERATURE MAINTAINED (MINIMUM / MAXIMUM) • PROPER POSITION (F, V, H, OH)	RANDOM	CONTINUOUS
6. WPS FOLLOWED FOR SINGLE - PASS FILLET WELDS • SETTINGS ON WELDING EQUIPMENT • TRAVEL SPEED • SELECTED WELDING MATERIALS • SHIELDING GAS TYPE/FLOW RATE • PREHEAT APPLIED • INTERPASS TEMPERATURE MAINTAINED (MINIMUM / MAXIMUM) • PROPER POSITION (F, V, H, OH)	RANDOM	RANDOM
7. WELDING TECHNIQUES FOR GROOVE WELDS AND MULTI-PASS FILLET WELDS • INTERPASS AND FINAL CLEANING • EACH PASS WITHIN PROFILE LIMITATIONS • EACH PASS MEETS QUALITY REQUIREMENTS	RANDOM	CONTINUOUS
8. WELDING TECHNIQUES FOR SINGLE-PASS FILLET WELDS • INTERPASS AND FINAL CLEANING • EACH PASS WITHIN PROFILE LIMITATIONS • EACH PASS MEETS QUALITY REQUIREMENTS	RANDOM	RANDOM

NOTES:
QC - DENOTES QUALITY CONTROL PERSONNEL
SI - DENOTES SPECIAL INSPECTOR

STEEL - AFTER WELDING

INSPECTION TASK	TYPE OF INSPECTION	
	QC	SI
1. WELDS CLEANED	PERIODIC	PERIODIC
2. SIZE, LENGTH AND LOCATION OF WELDS	PERIODIC	PERIODIC
3. WELDS MEET VISUAL ACCEPTANCE CRITERIA • CRACK PROHIBITION • WELD / BASE-METAL FUSION • CRATER CROSS SECTION • WELD PROFILES • WELD SIZE • UNDERCUT • POROSITY	PERIODIC	PERIODIC
4. ULTRASONICALLY TEST FULL PENETRATION GROOVE WELDS	PERIODIC	PERIODIC
5. ARC STRIKES	PERIODIC	PERIODIC
6. K - AREA (1*)	PERIODIC	PERIODIC
7. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	PERIODIC	PERIODIC
8. REPAIR ACTIVITIES	PERIODIC	PERIODIC
9. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	PERIODIC	PERIODIC

NOTES:
QC - DENOTES QUALITY CONTROL PERSONNEL
SI - DENOTES SPECIAL INSPECTOR
(1*) - DENOTES WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN PERFORMED IN THE K-AREA, VISUALLY INSPECT THE WEB K-AREA FOR CRACKS WITHIN THREE INCHES OF THE WELD.

STEEL - PRIOR TO BOLTING

INSPECTION TASK	TYPE OF INSPECTION	
	QC	SI
1. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	RANDOM	PERIODIC
2. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	RANDOM	RANDOM
3. PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	RANDOM	RANDOM
4. PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	RANDOM	RANDOM
5. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	RANDOM	RANDOM
6. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED	CONTINUOUS	RANDOM
7. PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	RANDOM	RANDOM

NOTES:
QC - DENOTES QUALITY CONTROL PERSONNEL
SI - DENOTES SPECIAL INSPECTOR

STEEL - DURING BOLTING

INSPECTION TASK	TYPE OF INSPECTION	
	QC	SI
1. FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED.	PERIODIC	PERIODIC
2. JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION	RANDOM	RANDOM
3. PRETENSIONED AND SLIP-CRITICAL JOINTS INSTALLED USING ONE OF THE FOLLOWING METHODS: • DIRECT-TENSION-INDICATOR WASHER METHOD • TWIST-OFF TYPE TENSION CONTROL BOLT METHOD	PERIODIC	PERIODIC
4. FASTENERS COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	RANDOM	RANDOM
5. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	RANDOM	RANDOM

NOTES:
QC - DENOTES QUALITY CONTROL PERSONNEL
SI - DENOTES SPECIAL INSPECTOR

STEEL - AFTER BOLTING

INSPECTION TASK	TYPE OF INSPECTION	
	QC	SI
1. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	PERIODIC	PERIODIC

NOTES:
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SI - DENOTES SPECIAL INSPECTOR

STEEL - OTHER

INSPECTION TASK	TYPE OF INSPECTION	
	QC	SI
1. COMPLIANCE OF THE FABRICATED STEEL WITH THE SHOP DRAWINGS	PERIODIC	NONE
2. SETTING OF ANCHOR BOLTS, BEARING PLATES AND EMBEDDED ITEMS PRIOR TO PLACEMENT OF CONCRETE	RANDOM	PERIODIC
3. STRUCTURAL MEMBERS FOR PLUMBNESS, ELEVATION AND ALIGNMENT	RANDOM	PERIODIC
4. COMPLIANCE OF THE ERECTED STEEL FRAME WITH ERECTION DRAWINGS FOR ITEMS SUCH AS BRACES, MEMBER LOCATIONS AND CONNECTION DETAILS	PERIODIC	NONE
5. COMPLIANCE OF THE ERECTED STEEL FRAME WITH CONTRACT DOCUMENTS FOR ITEMS SUCH AS BRACES, MEMBER LOCATIONS AND CONNECTION DETAILS	NONE	PERIODIC

NOTES:
QC - DENOTES QUALITY CONTROL PERSONNEL
SI - DENOTES SPECIAL INSPECTOR

STEEL ELEMENTS OF COMPOSITE CONSTRUCTION PRIOR TO CONCRETE PLACEMENT

INSPECTION TASK	TYPE OF INSPECTION	
	QC	SI
1. PLACEMENT AND INSTALLATION OF STEEL DECK	PERIODIC	PERIODIC
2. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	PERIODIC	PERIODIC
3. DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS	PERIODIC	PERIODIC

NOTES:
QC - DENOTES QUALITY CONTROL PERSONNEL
SI - DENOTES SPECIAL INSPECTOR

STEEL JOISTS

INSPECTION TASK	TYPE OF INSPECTION
1. SETTING OF BEARING PLATES	PERIODIC
2. ALIGNMENT OF JOISTS	PERIODIC
3. INSTALLATION OF BRIDGING	PERIODIC
4. SIZE, LENGTH AND LOCATION OF WELDS	PERIODIC
5. ULTRASONICALLY TEST FULL PENETRATION WELDS	PERIODIC
6. HIGH-STRENGTH BOLTS INSTALLED	PERIODIC

STEEL DECK

INSPECTION TASK	TYPE OF INSPECTION
1. MATERIAL VERIFICATION: a. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. b. MANUFACTURER'S CERTIFIED TEST REPORTS	PERIODIC
2. VERIFY WELDING CONSUMABLES AND FASTENERS TO BE USED.	PERIODIC
3. VERIFY DECK ALIGNMENT AND SUPPORT.	PERIODIC
4. VERIFY FLOOR AND ROOF DECK ATTACHMENT: a. WELDS TO SUPPORTING MEMBERS b. SIDE LAP SCREWS AND WELDS	PERIODIC
5. VERIFY TOUCH-UP GALVANIZATION APPLIED TO WELDS.	PERIODIC

COLD-FORMED STEEL

INSPECTION TASK	TYPE OF INSPECTION
1. VERIFY SIZE AND GAGE OF FRAMING.	PERIODIC
2. VERIFY PLUMBNESS, ALIGNMENT AND PROPER BEARING OF ELEMENTS	PERIODIC
3. VERIFY COLD-FORMED FRAMING IS PROPERLY FASTENED TOGETHER	PERIODIC
4. VERIFY CONNECTIONS TO STRUCTURAL FRAME	PERIODIC
5. VERIFY TOUCH-UP GALVANIZATION IS APPLIED TO WELDS	PERIODIC

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INSPECTION TABLES

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

S-0.2

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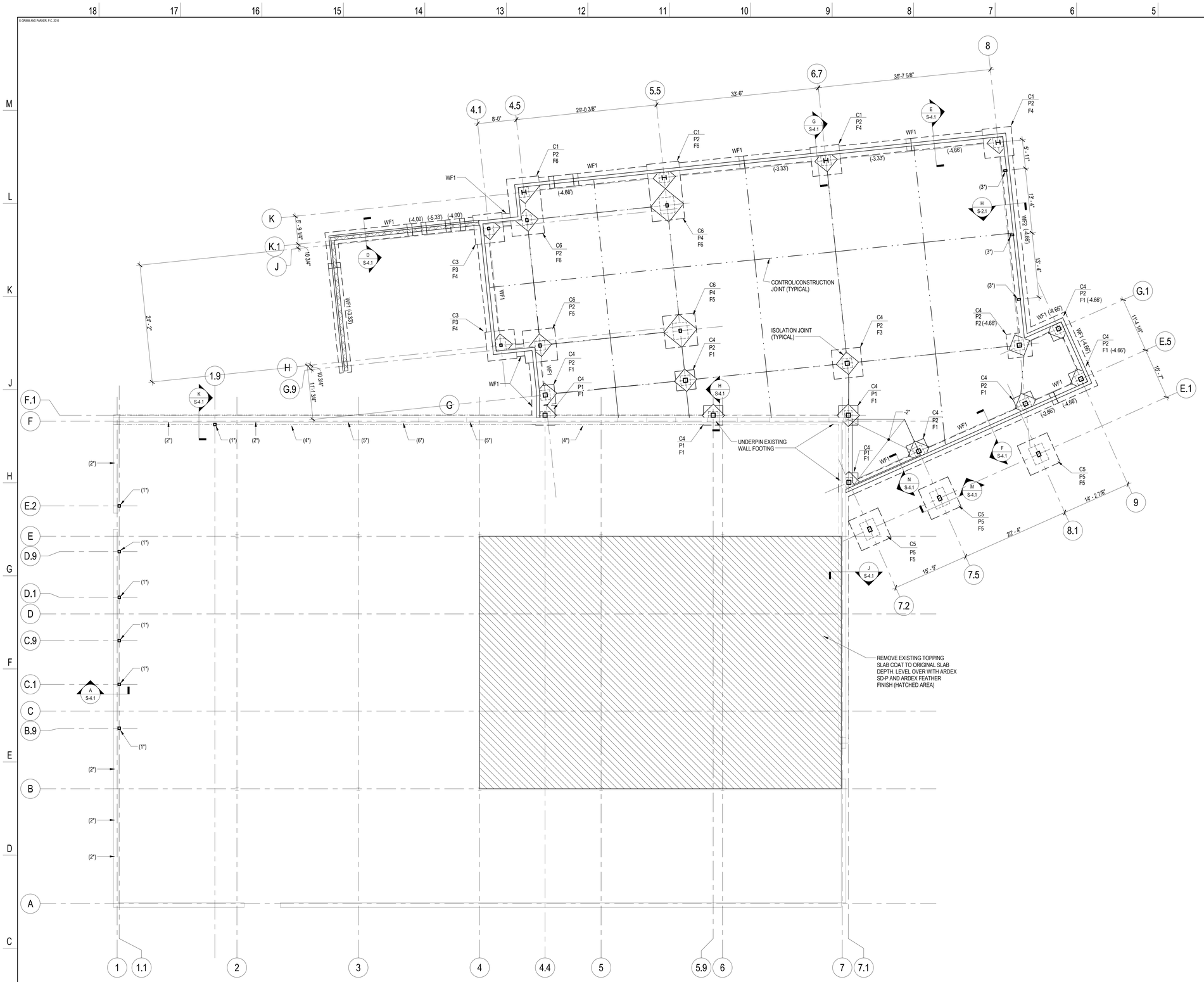

LEGEND:

(1*) HSS 6"x6"x1/4" POST BETWEEN EXISTING WINDOWS

(2*) ADD 2-#5 VERTICAL BARS AT EXISTING CMU. REMOVE FACE OF EXISTING BLOCK AS REQUIRED. GROUT CELLS SOLID WHERE REINFORCING IS ADDED. EXTEND REINFORCEMENT FROM SLAB TO UNDERSIDE OF ROOF DECK

(3*) HSS 8"x4"x1/4" POST WITH 3/4" BASE PLATE WITH (2)-3/4" DIAMETER ANCHOR BOLTS (16" EMBEDMENT, 3" HOOK). SEE S-2.1.

(4*) SEE DETAIL L/S-4.1 WHERE NEW UTILITY LINES CROSS BENEATH EXISTING BUILDING FOOTER. SEE CIVIL/MEP DRAWINGS FOR FINAL LOCATION.

(5*) ADD 3#6 VERTICAL BARS AT JAMB OF NEW LOUVER WITHIN EXISTING CMU. REMOVE FACE OF EXISTING BLOCK AS REQUIRED. GROUT CELLS WHERE REINFORCING IS ADDED. EXTEND REINFORCEMENT FROM SLAB TO UNDERSIDE OF DECK.

(6*) ADD 8#6 VERTICAL BARS BETWEEN NEW LOUVERS WITHIN EXISTING CMU. REMOVE FACE OF EXISTING BLOCK AS REQUIRED. GROUT CELLS WHERE REINFORCING IS ADDED. EXTEND REINFORCEMENT FROM SLAB TO UNDERSIDE OF DECK

FOUNDATION AND SLAB ON GRADE PLAN

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

FOUNDATION AND SLAB ON GRADE NOTES:

1. SLAB ON GRADE UNLESS NOTED OTHERWISE SHALL BE 5" THICK NORMAL WEIGHT CONCRETE REINFORCED WITH 6"x6", W2.1 x W2.1 W.W.F. ON 15 MIL VAPOR BARRIER OVER A 4" LAYER OF No.57 CRUSHED STONE.
2. TOP OF SLAB ON GRADE ELEVATION SHALL BE (DATUM 0.00') UNLESS NOTED OTHERWISE.
3. TOPOF CONCRETE PIER ELEVATION SHALL BE 8" BELOW TOP OF SLAB ON GRADE ELEVATION UNLESS NOTED OTHERWISE THUS: [.....].
4. TOP OF FOOTING ELEVATION SHALL BE 2'-8" BELOW TOP OF SLAB ON GRADE ELEVATION UNLESS NOTED OTHERWISE THUS: (.....). FOOTING ELEVATIONS ARE FOR BID PURPOSES ONLY AND MAY HAVE TO BE FIELD ADJUSTED. LOWER ALL FOOTINGS AS REQUIRED BELOW ALL UTILITY LINES AND INSTALL SLEEVES THROUGH CONCRETE AND MASONRY WALLS.
5. PROVIDE 1-#4 x 3'-0" LONG AT MID-DEPTH OF SLAB ON GRADE AT ALL RE-ENTRANT CORNERS AND COLUMN ISOLATION JOINT CORNERS THAT DO NOT HAVE A CONTROL OR CONSTRUCTION JOINT TERMINATING.

COLUMN SCHEDULE

MARK	SIZE	BASE PLATE	REMARKS
C1	W10x49	20"x14"x1 1/4"	
C2	HSS 6"x6"x3/8"	12"x12"x3/4"	
C3	HSS 6"x6"x1/2"	23"x12"x1"	
C4	HSS 10"x10"x3/8"	18"x18"x1"	11"x18"x1" BASE PLATE AT P1
C5	HSS 12"x8"x5/8"	26"x16"x1 1/2"	
C6	HSS 6"x8"x5/8"	25"x12"x1"	16"x12"x1" BASE PLATE AT LINE 4.5

CONCRETE PIER SCHEDULE

MARK	SIZE	REINFORCEMENT	REMARKS
P1	18"x24"	8-#6 VERTICAL	
P2	24"x24"	8-#6 VERTICAL	
P3	32"x24"	12-#6 VERTICAL	
P4	36"x40"	18-#6 VERTICAL	
P5	36"x44"	18-#6 VERTICAL	

CONCRETE FOOTING SCHEDULE

MARK	SIZE	THICK	REINFORCEMENT
F1	4'-0"x4'-0"	1'-0"	5-#5 EACH WAY BOTTOM
F2	5'-0"x5'-0"	1'-0"	6-#5 EACH WAY BOTTOM
F3	6'-0"x6'-0"	1'-2"	7-#6 EACH WAY BOTTOM
F4	6'-0"x6'-0"	1'-2"	8-#6 EACH WAY TOP AND BOTTOM
F5	6'-8"x6'-8"	1'-2"	8-#6 EACH WAY TOP AND BOTTOM
F6	6'-8"x12'-2"	1'-2"	COMBINED FOOTING 16-#6 EACH WAY TOP AND BOTTOM

CONCRETE WALL FOOTING SCHEDULE

MARK	SIZE	THICK	REINFORCEMENT
WF1	2'-6" CONTINUOUS	1'-0"	3-#5 CONTINUOUS BOTTOM
WF2	2'-6" CONTINUOUS	1'-0"	3-#5 CONTINUOUS TOP & BOTTOM

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FOUNDATION AND SLAB ON GRADE PLAN

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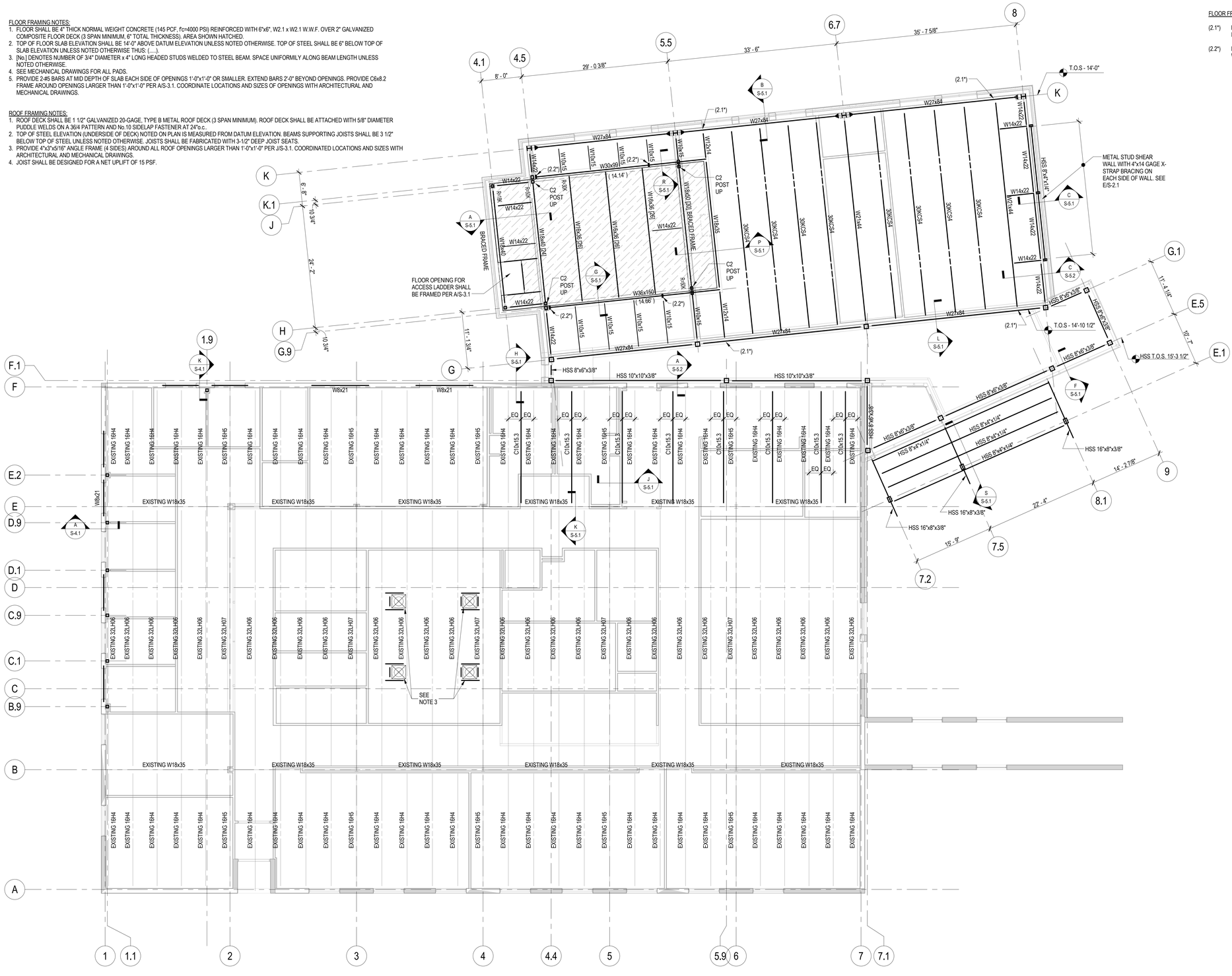
FLOOR FRAMING NOTES:
1. FLOOR SHALL BE 4" THICK NORMAL WEIGHT CONCRETE (145 PCF, f'c=4000 PSI) REINFORCED WITH 6"x6", W2.1 x W2.1 W.W.F. OVER 2" GALVANIZED COMPOSITE FLOOR DECK (3 SPAN MINIMUM, 6" TOTAL THICKNESS). AREA SHOWN HATCHED.
2. TOP OF FLOOR SLAB ELEVATION SHALL BE 14'-0" ABOVE DATUM ELEVATION UNLESS NOTED OTHERWISE. TOP OF STEEL SHALL BE 6" BELOW TOP OF SLAB ELEVATION UNLESS NOTED OTHERWISE THUS: (.....).
3. [No.] DENOTES NUMBER OF 3/4" DIAMETER x 4" LONG HEADED STUDS WELDED TO STEEL BEAM. SPACE UNIFORMLY ALONG BEAM LENGTH UNLESS NOTED OTHERWISE.
4. SEE MECHANICAL DRAWINGS FOR ALL PADS.
5. PROVIDE 2-#5 BARS AT MID DEPTH OF SLAB EACH SIDE OF OPENINGS 1'-0"x1'-0" OR SMALLER. EXTEND BARS 2'-0" BEYOND OPENINGS. PROVIDE C6x8.2 FRAME AROUND OPENINGS LARGER THAN 1'-0"x1'-0" PER A/S-3.1. COORDINATE LOCATIONS AND SIZES OF OPENINGS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.

ROOF FRAMING NOTES:
1. ROOF DECK SHALL BE 1 1/2" GALVANIZED 20-GAGE, TYPE B METAL ROOF DECK (3 SPAN MINIMUM). ROOF DECK SHALL BE ATTACHED WITH 5/8" DIAMETER PUDDLE WELDS ON A 36/4 PATTERN AND No.10 SIDELAP FASTENER AT 24"o.c..
2. TOP OF STEEL ELEVATION (UNDERSIDE OF DECK) NOTED ON PLAN IS MEASURED FROM DATUM ELEVATION. BEAMS SUPPORTING JOISTS SHALL BE 3 1/2" BELOW TOP OF STEEL UNLESS NOTED OTHERWISE. JOISTS SHALL BE FABRICATED WITH 3-1/2" DEEP JOIST SEATS.
3. PROVIDE 4"x3"x5/16" ANGLE FRAME (4 SIDES) AROUND ALL ROOF OPENINGS LARGER THAN 1'-0"x1'-0" PER J/S-3.1. COORDINATED LOCATIONS AND SIZES WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
4. JOIST SHALL BE DESIGNED FOR A NET UPLIFT OF 15 PSF.

FLOOR FRAMING LEGEND:

(2.1*) HSS 3 1/2"x3 1/2"x1/4"x10" LONG FOR DECK SUPPORT ACROSS TOP OF BEAM FLANGE

(2.2*) HSS8"x2"x1/4" POST UP. ATTACH TO PENTHOUSE FLOOR FRAMING BEAM WITH 3/4" BASE PLATE. SEE DETAIL B/S-5.2.



MECHANICAL PENTHOUSE FLOOR AND MAIN ROOF FRAMING PLAN

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

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MECHANICAL PENTHOUSE FLOOR AND MAIN ROOF FRAMING PLAN
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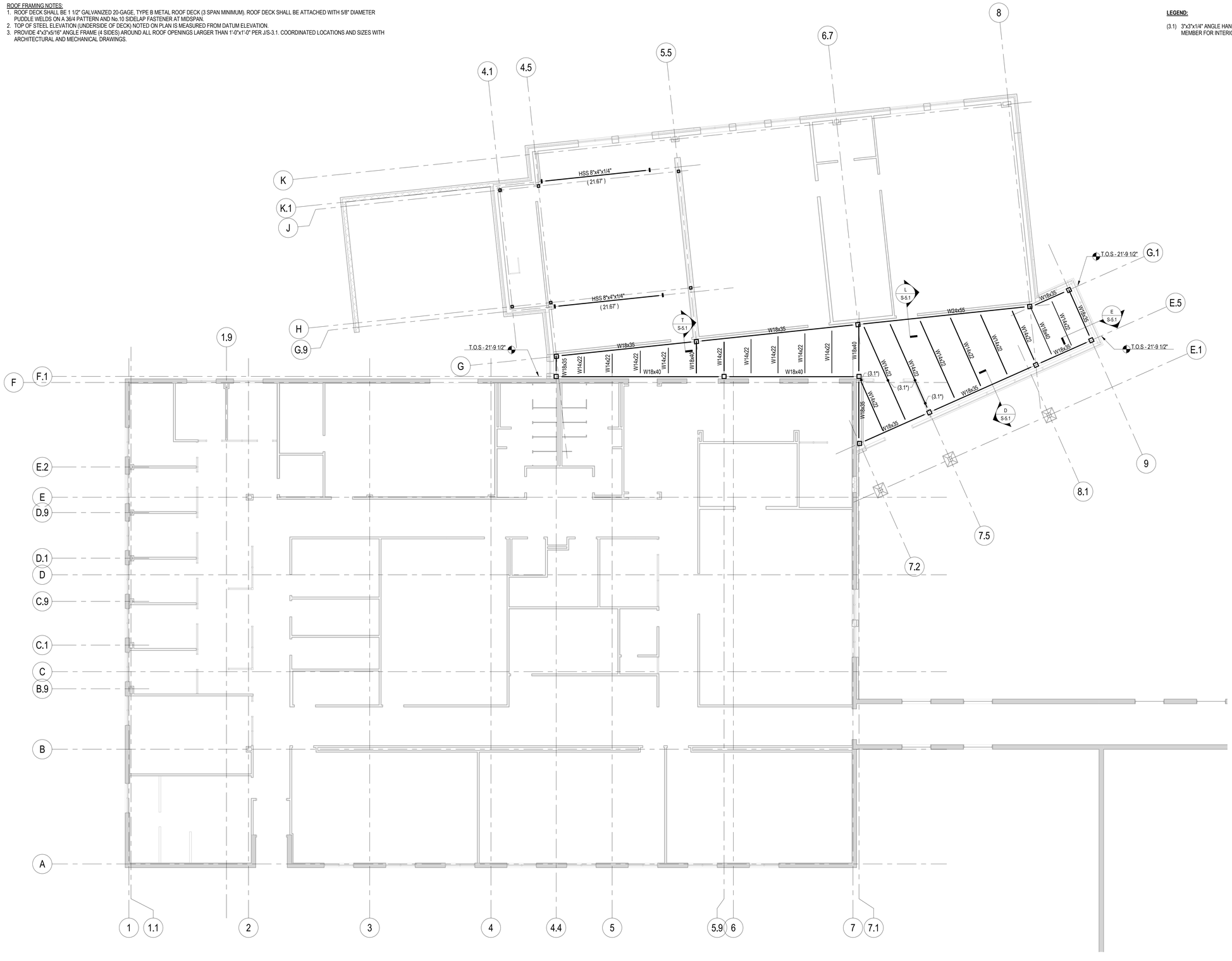
ROOF FRAMING NOTES:
1. ROOF DECK SHALL BE 1 1/2" GALVANIZED 20-GAGE, TYPE B METAL ROOF DECK (3 SPAN MINIMUM). ROOF DECK SHALL BE ATTACHED WITH 5/8" DIAMETER PUDDLE WELDS ON A 36/4 PATTERN AND No.10 SIDELAP FASTENER AT MIDSPAN.
2. TOP OF STEEL ELEVATION (UNDERSIDE OF DECK) NOTED ON PLAN IS MEASURED FROM DATUM ELEVATION.
3. PROVIDE 4"x3"x5/16" ANGLE FRAME (4 SIDES) AROUND ALL ROOF OPENINGS LARGER THAN 1'-0"x1'-0" PER J/S-3.1. COORDINATED LOCATIONS AND SIZES WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.

LEGEND:

(3.1) 3"x3"x1/4" ANGLE HANGER SUPPORT POINTS FOR C8x11.5 BRACING MEMBER FOR INTERIOR CURTAINWALL SYSTEM. SEE DETAIL D/S-5.2.



LOBBY ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"

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LOBBY ROOF FRAMING PLAN

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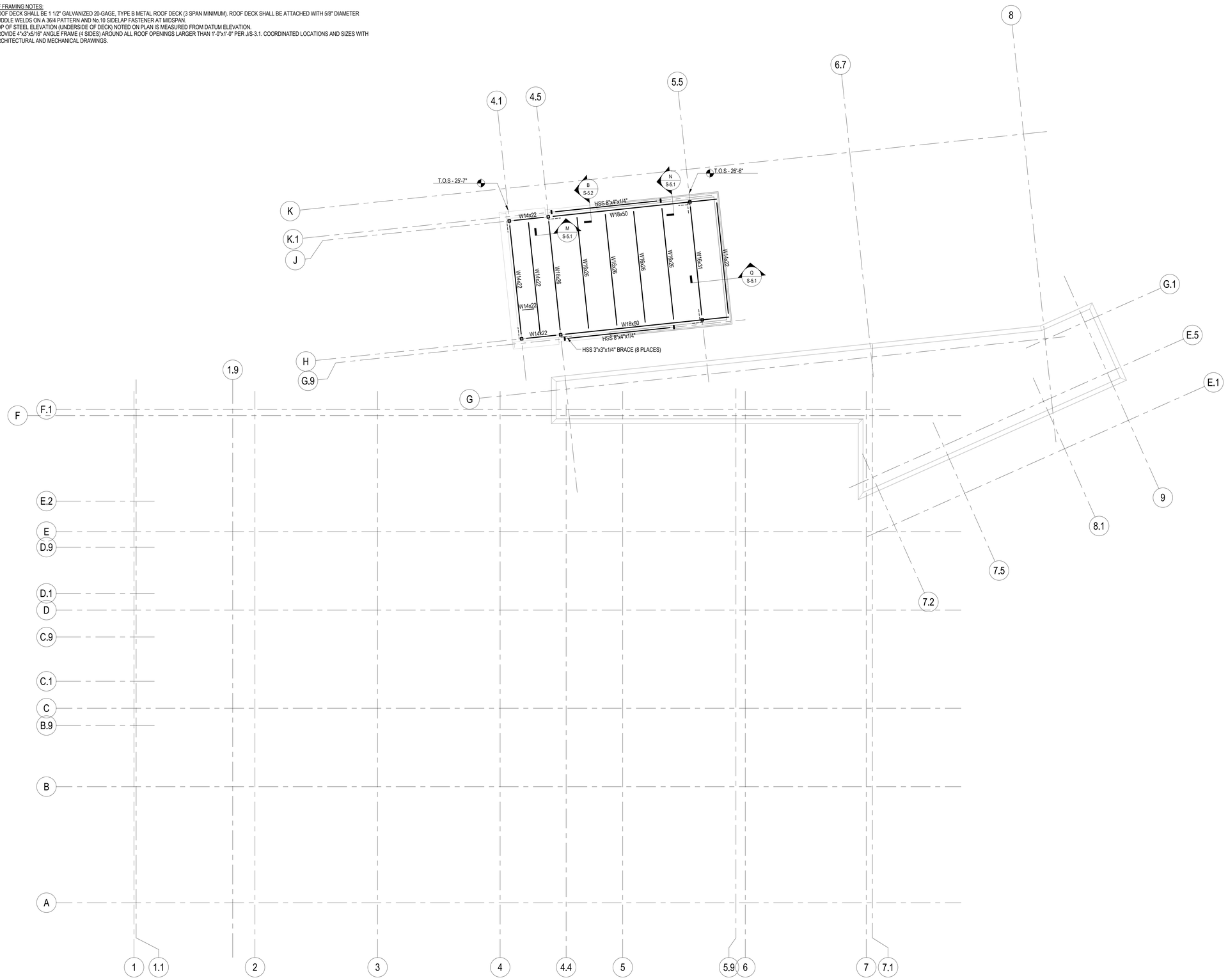
ROOF FRAMING NOTES:
1. ROOF DECK SHALL BE 1 1/2" GALVANIZED 20-GAGE, TYPE B METAL ROOF DECK (3 SPAN MINIMUM). ROOF DECK SHALL BE ATTACHED WITH 5/8" DIAMETER PUDDLE WELDS ON A 36/4 PATTERN AND No.10 SIDELAP FASTENER AT MIDSPAN.
2. TOP OF STEEL ELEVATION (UNDERSIDE OF DECK) NOTED ON PLAN IS MEASURED FROM DATUM ELEVATION.
3. PROVIDE 4"x3"x5/16" ANGLE FRAME (4 SIDES) AROUND ALL ROOF OPENINGS LARGER THAN 1'-0"x1'-0" PER J/S-3.1. COORDINATED LOCATIONS AND SIZES WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.



PENTHOUSE ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"

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PENTHOUSE ROOF FRAMING PLAN
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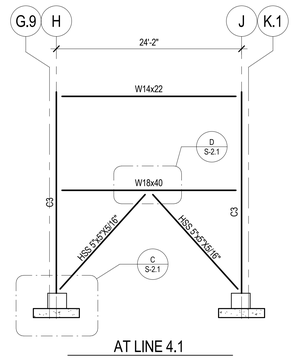
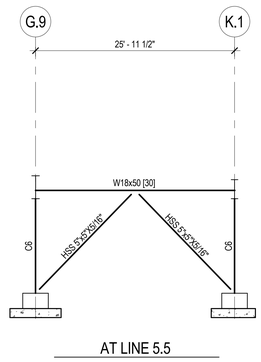
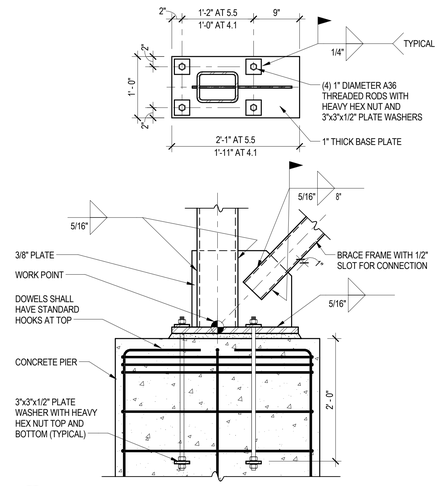


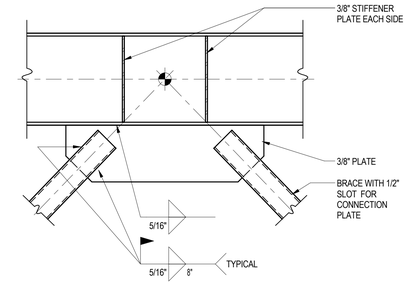
A S-2.1 BRACED FRAME ELEVATION
SCALE: 1/8" = 1'-0"



B S-2.1 BRACED FRAME ELEVATION
SCALE: 1/8" = 1'-0"



C S-2.1 DETAIL
SCALE: 1" = 1'-0"



D S-2.1 DETAIL
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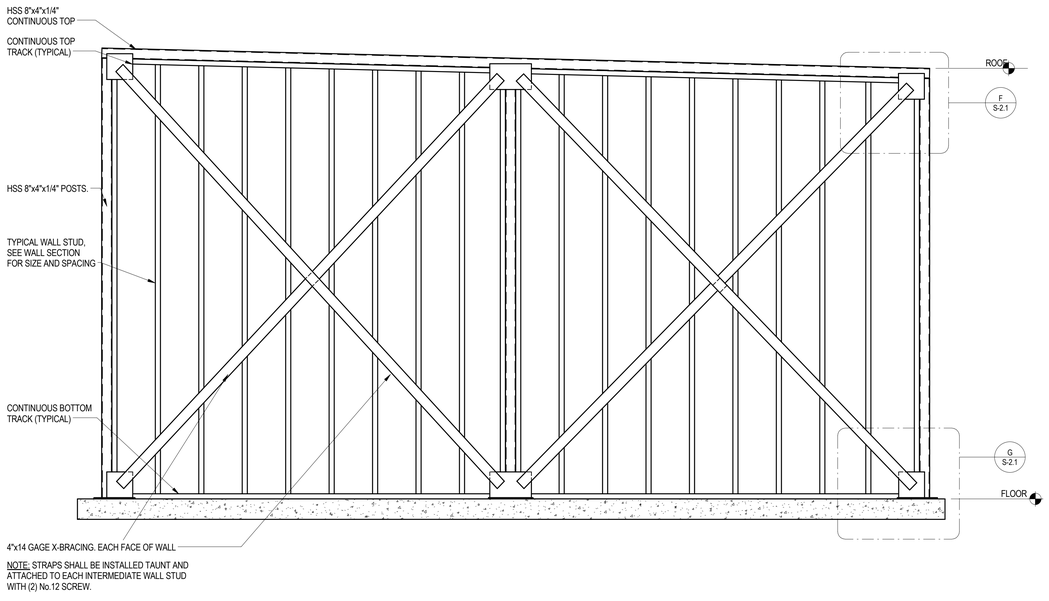
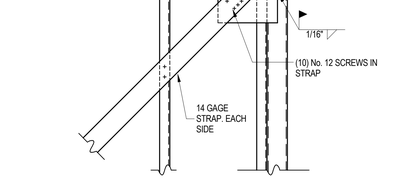
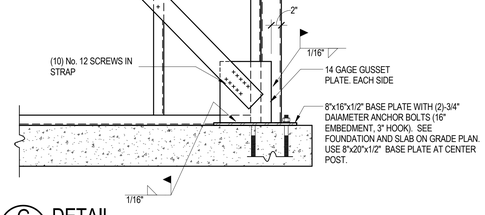


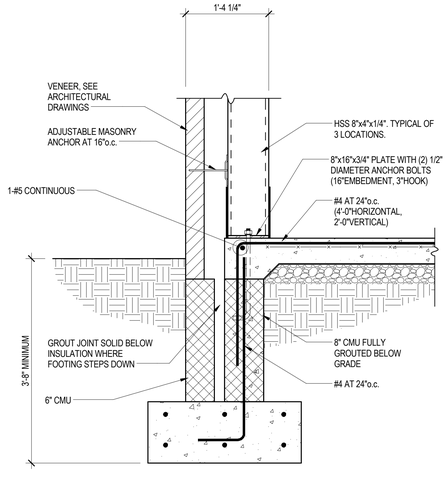
E S-2.1 FRAME ELEVATION AT LINE 8
SCALE: 1/2" = 1'-0"



F S-2.1 DETAIL
SCALE: 1" = 1'-0"



G S-2.1 DETAIL
SCALE: 1" = 1'-0"



H S-2.1 SECTION
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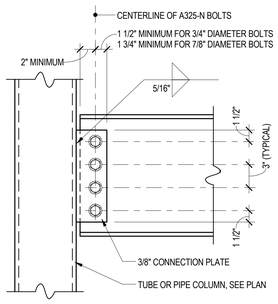
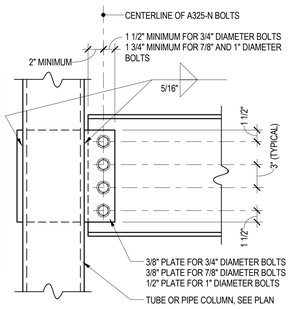
ALLOWABLE CONNECTION CAPACITY		
NUMBER OF BOLTS	3/4" DIAMETER A325-N	7/8" DIAMETER A325-N
2	9.3	11.8
3	18.6	23.5
4	29.8	37.7
5	41.3	52.3
6	52.8	66.7
7	64.2	81.2
8	75.5	95.4
9	86.6	109



NOTES:
1. FOR 3/4" DIAMETER A325-N BOLTS AND BEAM WEB LESS THAN 0.25", REDUCE ABOVE CAPACITY BY Tweb/0.25.
2. FOR 7/8" DIAMETER A325-N BOLTS AND BEAM WEB LESS THAN 0.33", REDUCE ABOVE CAPACITY BY Tweb/0.33.
3. IF BEAM REACTION IS GREATER THAN ABOVE CAPACITY, THROUGH PLATE CONNECTION SHALL BE USED.
4. STANDARD OR SHORT SLOTTED HOLES SHALL BE USED.
5. SINGLE PLATE SHEAR CONNECTION CAN ALSO BE USED TO FRAME BEAMS TO WIDE FLANGE COLUMNS AND BEAM TO GIRDER CONNECTIONS. VERTICAL EDGE DISTANCE, Lev, OF BEAM WEB SHALL BE 1 1/2" MINIMUM.

SINGLE PLATE CONNECTION TO TUBE OR PIPE COLUMN

ALLOWABLE CONNECTION CAPACITY			
NUMBER OF BOLTS	3/4" DIAMETER A325-N	7/8" DIAMETER A325-N	1" DIAMETER A325-N
2	21.2	24.3	32.2
3	31.8	39.2	48.9
4	42.4	52.2	65.3
5	53.0	65.3	81.6
6	63.6	78.3	97.9
7	74.2	91.4	114
8	84.8	104	131
9	95.4	116	147



NOTES:
1. FOR 3/4" DIAMETER A325-N BOLTS AND BEAM WEB LESS THAN 0.25", REDUCE ABOVE CAPACITY BY Tweb/0.25.
2. FOR 7/8" DIAMETER A325-N BOLTS AND BEAM WEB LESS THAN 0.33", REDUCE ABOVE CAPACITY BY Tweb/0.33.
3. FOR 1" DIAMETER A325-N BOLTS AND BEAM WEB LESS THAN 0.44", REDUCE ABOVE CAPACITY BY Tweb/0.44.
4. USE THIS CONNECTION WHEN BEAM REACTION IS GREATER THAN SINGLE PLATE CONNECTION CAPACITY.
5. STANDARD OR SHORT SLOTTED HOLES SHALL BE USED.

THROUGH PLATE CONNECTION TO TUBE OR PIPE COLUMN

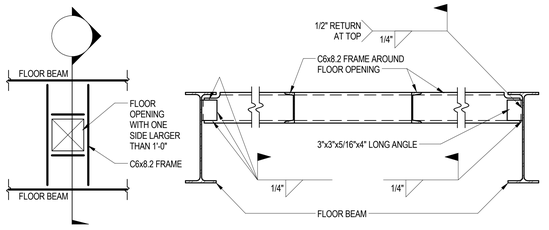
TYPICAL CONNECTION NOTES:

NOTE: 1
MINIMUM LENGTH OF CONNECTION SHALL BE ONE-HALF THE T-DIMENSION OF THE SUPPORTED MEMBER.

NOTE: 2
ALTERNATE CONNECTIONS TO THOSE SHOWN IN THIS DETAIL WILL BE CONSIDERED, PROVIDED THE FOLLOWING REQUIREMENTS ARE MET:

- ALL CONNECTIONS SHALL BE DESIGNED FOR THE ECCENTRICITY BETWEEN THE CENTROID OF THE BOLT GROUP OR WELD AND THE SUPPORTING MEMBER. THE ECCENTRICITY SHALL BE FULLY RESISTED BY THE BOLTS OR WELD, AND NO MOMENT OR TORSION SHALL BE INTRODUCED INTO THE SUPPORTING MEMBER.
- GENERIC DETAILS INDICATING ANGLE/PLATE SIZE, BOLT SIZE AND LOCATION, STANDARD OR SHORT SLOTTED HOLES, EDGE DISTANCES AND WELD SIZE SHALL BE SUBMITTED FOR REVIEW AND ACCEPTANCE PRIOR TO THE DEVELOPMENT OF THE STEEL SHOP DRAWINGS.
- ALLOWABLE CONNECTION CAPACITY TABLES, ALONG WITH SUPPORTING CALCULATIONS, SHALL BE DEVELOPED AND SUBMITTED WITH THE GENERIC DETAILS. THE TABLES AND CALCULATIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE LOCAL JURISDICTION.

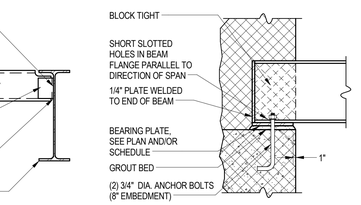
NOTE: 3
STEEL SHOP DRAWINGS THAT HAVE CONNECTIONS WHICH DO NOT CONFORM TO THE CONNECTIONS SHOWN IN THIS DETAIL OR PREVIOUSLY REVIEWED ALTERNATE CONNECTION DETAILS WILL BE REJECTED.



NOTES:
OPENINGS SHOWN ON STRUCTURAL PLANS ARE PRINCIPAL OPENINGS. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR OPENINGS NOT SHOWN.

FLOOR OPENING FRAME DETAIL

A TYPICAL DETAIL — S-3.1 — NOT TO SCALE

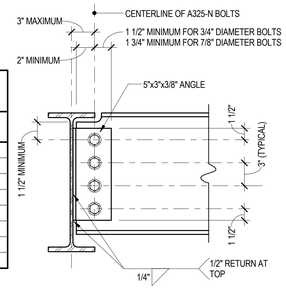


NOTES:
1.) BEAMS SHALL BEAR FULL LENGTH ON BEARING PLATE.
2.) DETAIL SIMILAR FOR CHANNELS AND TUBE SHAPES.

LINTEL BEAM BEARING ON MASONRY WALL

B TYPICAL DETAIL — S-3.1 — NOT TO SCALE

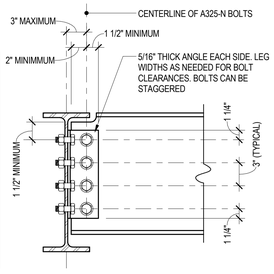
ALLOWABLE CONNECTION CAPACITY			
NUMBER OF BOLTS	3/4" DIAMETER A325-N	7/8" DIAMETER A325-N	WELD
2	9.3	11.8	24.8
3	18.6	23.5	38.9
4	29.8	37.7	52.3
5	41.3	52.3	65.4
6	52.8	66.7	77.8
7	64.2	81.2	89.5
8	75.5	95.4	101
9	86.6	109	112



NOTES:
1. FOR 3/4" DIAMETER A325-N BOLTS AND BEAM WEB LESS THAN 0.25", REDUCE ABOVE CAPACITY BY Tweb/0.25.
2. FOR 7/8" DIAMETER A325-N BOLTS AND BEAM WEB LESS THAN 0.33", REDUCE ABOVE CAPACITY BY Tweb/0.33.
3. IF BEAMS FRAME TO SUPPORTING MEMBER FROM BOTH SIDES AND THE CONNECTION ANGLES ARE LOCATED BACK TO BACK, REDUCE THE WELD CAPACITY BY Tweb/0.38 FOR SUPPORTING MEMBER WEBS LESS THAN 0.38".
4. STANDARD OR SHORT SLOTTED HOLES SHALL BE USED.
5. 4"x3"x3/8" ANGLE CAN BE USED FOR 3/4" DIAMETER BOLTS PROVIDED MINIMUM REQUIRED DIMENSIONS ARE MAINTAINED.

SINGLE ANGLE CONNECTION

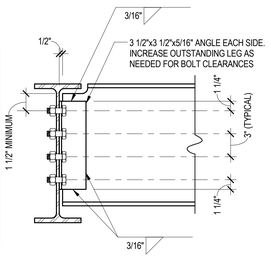
ALLOWABLE CONNECTION CAPACITY			
NUMBER OF BOLTS	3/4" DIAMETER A325-N AT SUPPORTING MEMBER	3/4" DIAMETER A325-N AT SUPPORTED MEMBER	
2	39.6	16.2	
3	60.8	32.2	
4	82.0	51.7	
5	103	71.8	
6	124	91.6	
7	145	111	
8	165	131	
9	185	150	



NOTES:
1. FOR SUPPORTED MEMBER WITH WEB LESS THAN 0.43", REDUCE ABOVE CAPACITY BY Tweb/0.43".
2. IF BEAMS FRAME TO SUPPORTING MEMBER FROM BOTH SIDES, REDUCE THE SUPPORTING MEMBER BOLT CAPACITY BY Tweb/0.36 FOR SUPPORTING MEMBER WEBS LESS THAN 0.36".
3. STANDARD OR SHORT SLOTTED HOLES SHALL BE USED AT ANGLE LEG CONNECTED TO SUPPORTED MEMBER.
4. STANDARD HOLES SHALL BE USED AT ANGLE LEG CONNECTED TO SUPPORTING MEMBER.

BOLTED / BOLTED DOUBLE ANGLE CONNECTION

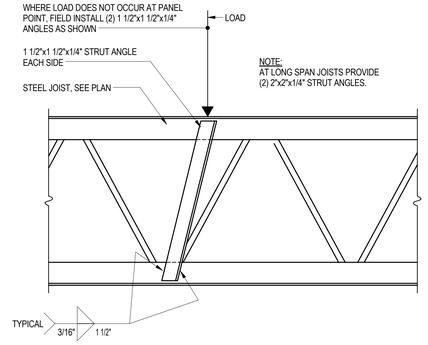
ALLOWABLE CONNECTION CAPACITY		
NUMBER OF BOLTS	3/4" DIAMETER A325-N	WELD
2	39.6	50.2
3	60.8	73.4
4	82.0	94.9
5	103	115
6	124	134
7	145	152
8	165	169
9	185	186



NOTES:
1. REDUCE 3/16" WELD CAPACITY BY Tweb/0.29 FOR BEAM WEB LESS THAN 0.29".
2. IF BEAMS FRAME TO SUPPORTING MEMBER FROM BOTH SIDES, REDUCE THE BOLT CAPACITY BY Tweb/0.36 FOR SUPPORTING MEMBER WEB LESS THAN 0.36".
3. STANDARD HOLES SHALL BE USED.

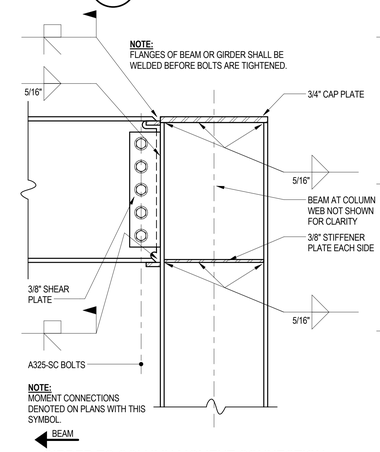
BOLTED / WELDED DOUBLE ANGLE CONNECTION

CONNECTION DETAILS



JOIST LOAD STRUT DETAIL

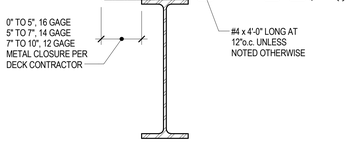
D TYPICAL DETAIL — S-3.1 — NOT TO SCALE



GIRDER TO COLUMN MOMENT CONNECTION

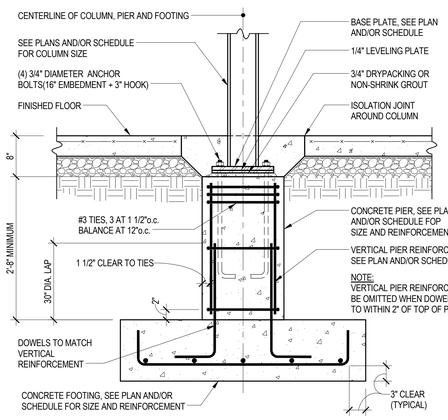
E TYPICAL DETAIL — S-3.1 — NOT TO SCALE

C TYPICAL DETAIL — S-3.1 — NOT TO SCALE



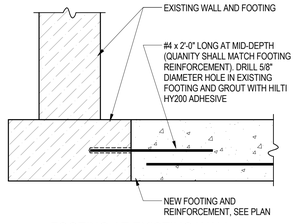
SLAB OPENING AND SLAB PERIMETER

F TYPICAL DETAIL — S-3.1 — NOT TO SCALE



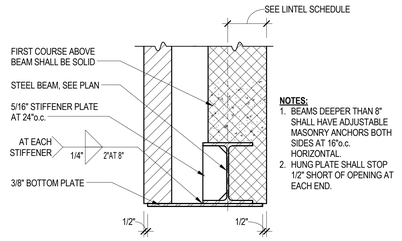
COLUMN, FOOTING AND PIER

L TYPICAL DETAIL — S-3.1 — NOT TO SCALE



FOOTING AT EXISTING WALL

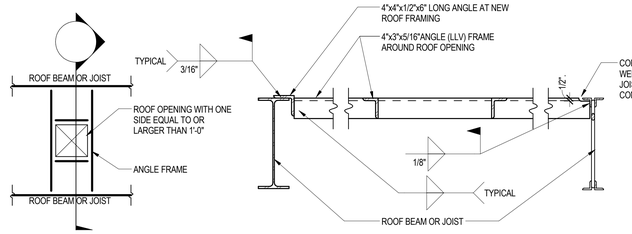
G TYPICAL DETAIL — S-3.1 — NOT TO SCALE



NOTES:
1. BEAMS DEEPER THAN 8" SHALL HAVE ADJUSTABLE MASONRY ANCHORS BOTH SIDES AT 16"o.c. HORIZONTAL.
2. HUNG PLATE SHALL STOP 1/2" SHORT OF OPENING AT EACH END.

BEAM WITH BOTTOM PLATE AT EXTERIOR CAVITY WALL

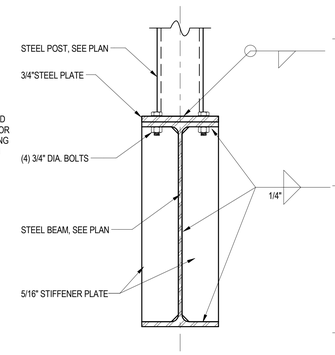
H TYPICAL DETAIL — S-3.1 — NOT TO SCALE



NOTES:
1. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATION OF OPENINGS..
2. PROVIDE ANGLE FRAME AT ALL ROOF DRAINS.

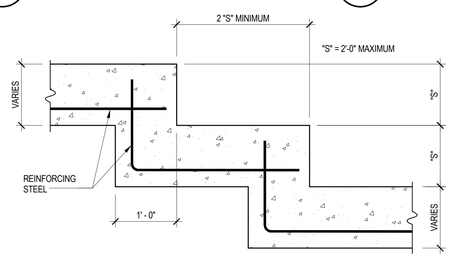
ROOF OPENING FRAME DETAIL

J TYPICAL DETAIL — S-3.1 — NOT TO SCALE



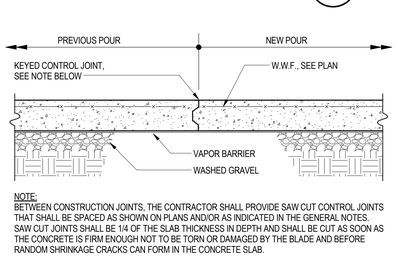
POST ON STEEL BEAM

K TYPICAL DETAIL — S-3.1 — NOT TO SCALE



STEP FOOTING

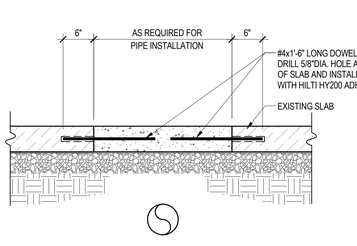
M TYPICAL DETAIL — S-3.1 — NOT TO SCALE



NOTE:
BETWEEN CONSTRUCTION JOINTS, THE CONTRACTOR SHALL PROVIDE SAW CUT CONTROL JOINTS THAT SHALL BE SPACED AS SHOWN ON PLANS AND/OR AS INDICATED IN THE GENERAL NOTES. SAW CUT JOINTS SHALL BE 1/4 OF THE SLAB THICKNESS IN DEPTH AND SHALL BE CUT AS SOON AS THE CONCRETE IS FIRM ENOUGH NOT TO BE TORN OR DAMAGED BY THE BLADE AND BEFORE RANDOM SHRINKAGE CRACKS CAN FORM IN THE CONCRETE SLAB.

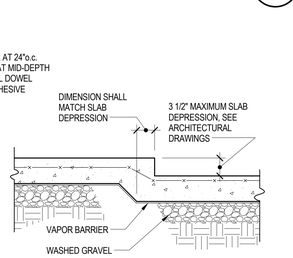
CONSTRUCTION JOINT IN SLAB ON GRADE

N TYPICAL DETAIL — S-3.1 — NOT TO SCALE



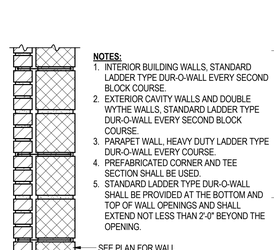
EXISTING SLAB PATCH AT NEW UNDERSLAB PIPE

P TYPICAL DETAIL — S-3.1 — NOT TO SCALE



DEPRESSED SLAB ON GRADE

Q TYPICAL DETAIL — S-3.1 — NOT TO SCALE



NOTES:
1. INTERIOR BUILDING WALLS, STANDARD LADDER TYPE DUR-O-WALL EVERY SECOND BLOCK COURSE.
2. EXTERIOR CAVITY WALLS AND DOUBLE WYTHE WALLS, STANDARD LADDER TYPE DUR-O-WALL EVERY SECOND BLOCK COURSE.
3. PARAPET WALL, HEAVY DUTY LADDER TYPE DUR-O-WALL EVERY COURSE.
4. PREFABRICATED CORNER AND TEE SECTION SHALL BE USED.
5. STANDARD LADDER TYPE DUR-O-WALL SHALL BE PROVIDED AT THE BOTTOM AND TOP OF WALL OPENINGS AND SHALL EXTEND NOT LESS THAN 2'-0" BEYOND THE OPENING.

SEE PLAN FOR WALL THICKNESS AND TYPE

WALL REINFORCING

R TYPICAL DETAIL — S-3.1 — NOT TO SCALE

Columbia Engineering Inc.
6210 OLD DOBBIN LANE
COLUMBIA, MARYLAND 21045
T:410-992-9997 F:410-992-9627
columbiaengineering.com

Professional Certification:
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 15568, Expiration Date: 10/18/2017

GRIMM AND PARKER
11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel: 301.595.1000
www.grimmandparker.com

GP #21620

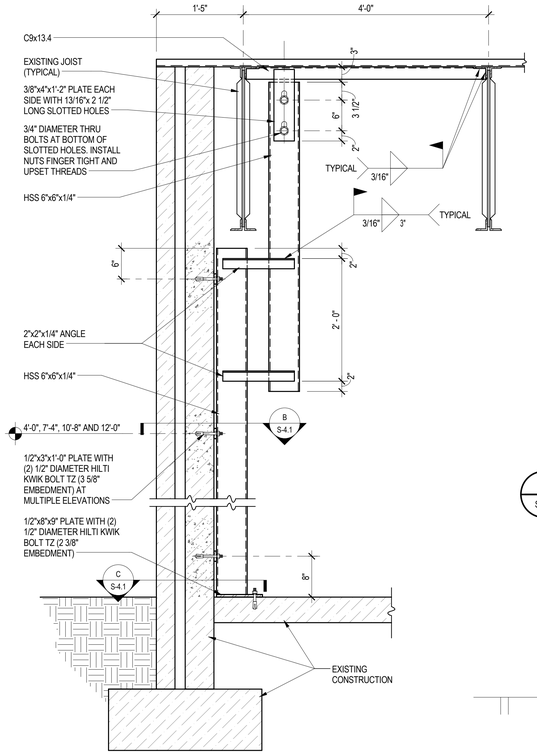
TYPICAL DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

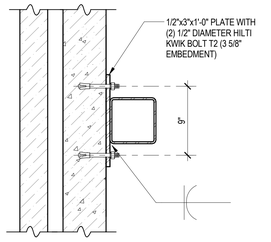
DATE	DESCRIPTION

S-3.1
FEBRUARY 1, 2017
Bid Documents

CEI# 16047



A S-4.1 SECTION
SCALE: 1" = 1'-0"



B S-4.1 SECTION
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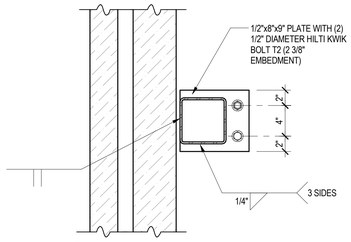

C S-4.1 SECTION
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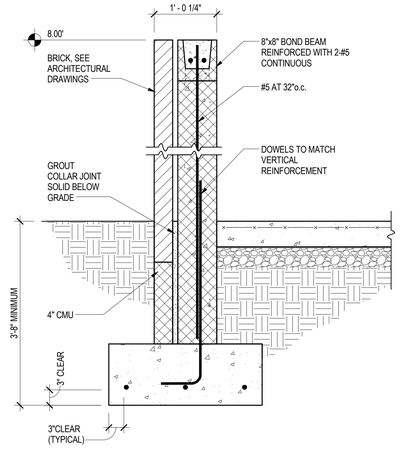

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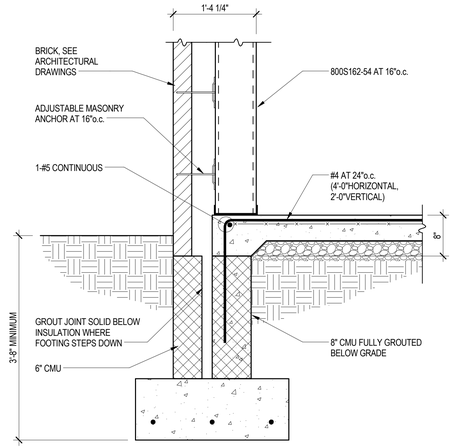

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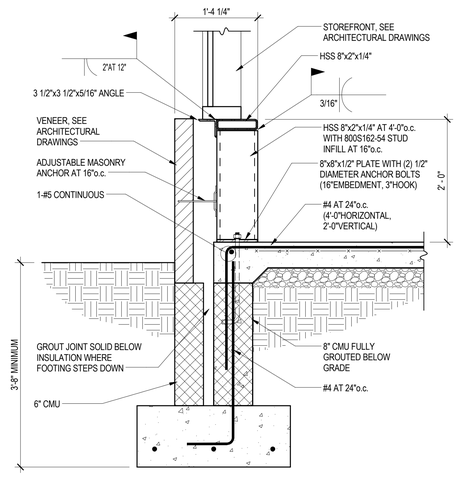

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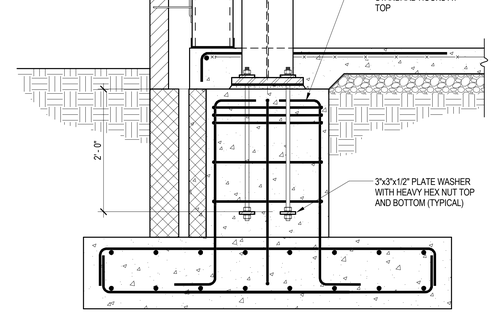

G S-4.1 SECTION
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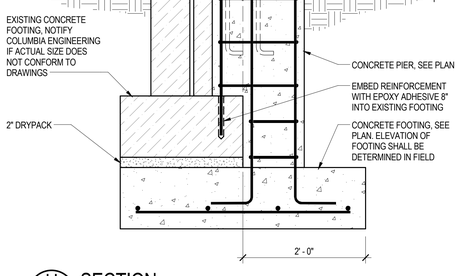

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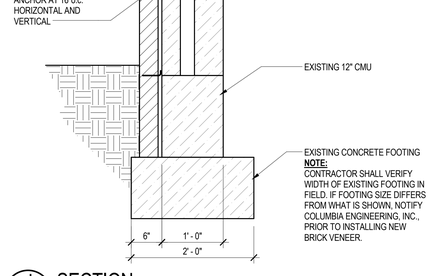

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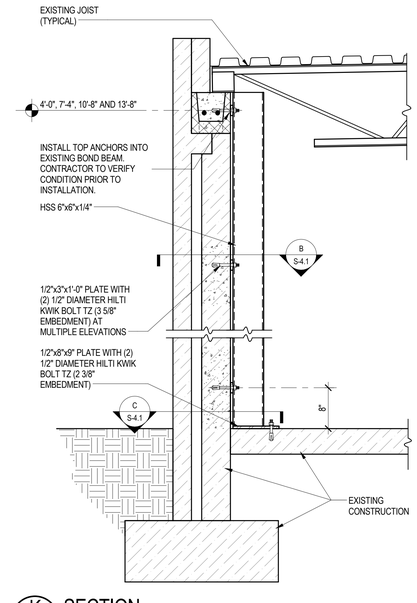
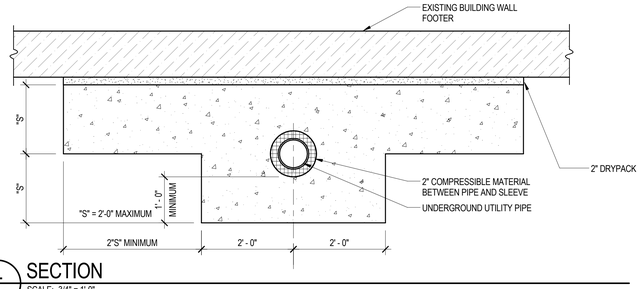
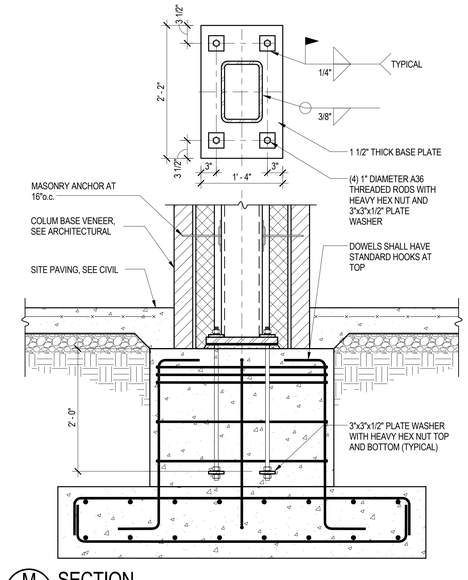


K S-4.1 SECTION
SCALE: 1" = 1'-0"



L S-4.1 SECTION
SCALE: 3/4" = 1'-0"



M S-4.1 SECTION
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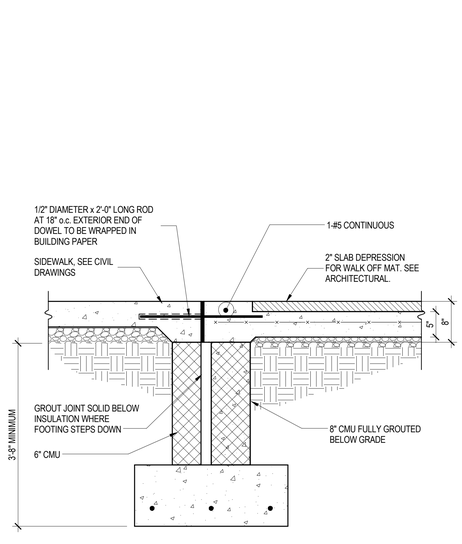


N S-4.1 SECTION
SCALE: 1" = 1'-0"

Columbia Engineering Inc.
6210 OLD DOBBIN LANE
COLUMBIA, MARYLAND 21045
T:410-992-9970 F:410-992-9627
columbiaengineering.com

Professional Certification:
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 15568, Expiration Date: 10/18/2017

GRIMM AND PARKER
11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel: 301.595.1000
www.grimmandparker.com

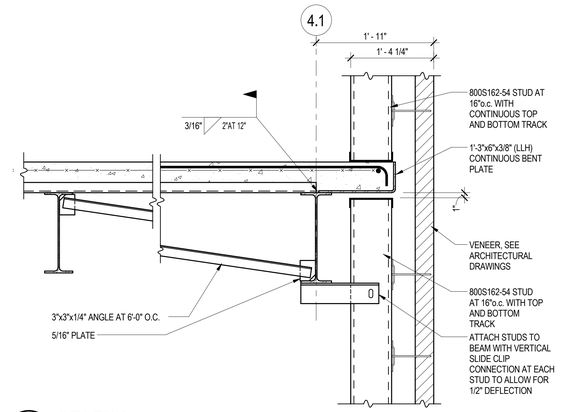
GP #21620

SECTIONS
Garrett College STEM Renovation and Addition
McHenry, MD

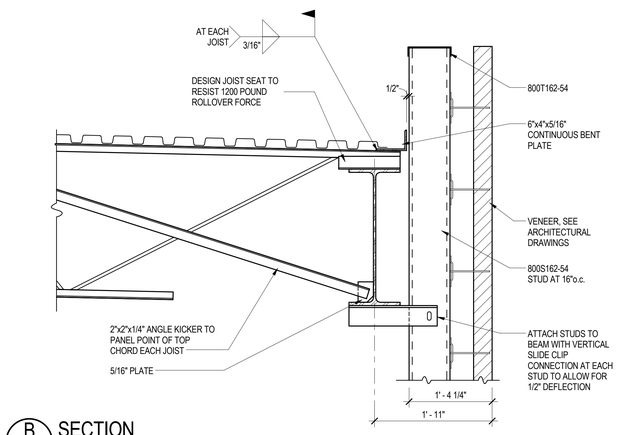
DATE	DESCRIPTION

S-4.1
FEBRUARY 1, 2017
Bid Documents

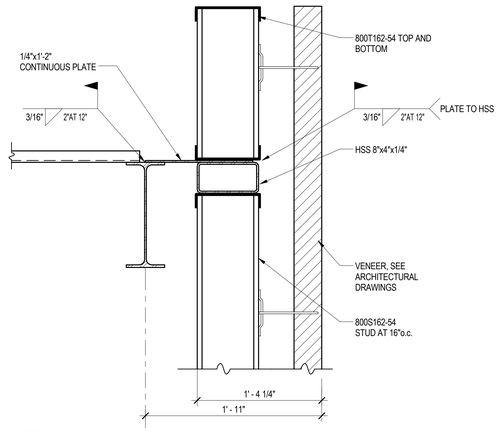
CEI# 16047



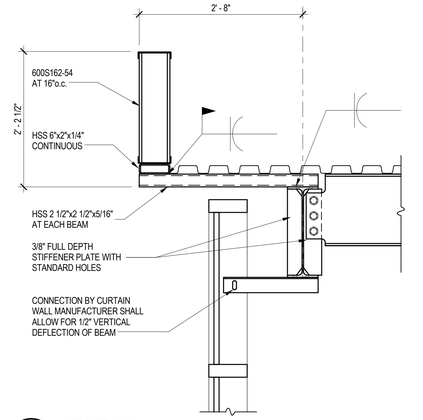
A S-5.1 SECTION
SCALE: 1" = 1'-0"



B S-5.1 SECTION
SCALE: 1" = 1'-0"



C S-5.1 SECTION
SCALE: 1 1/2" = 1'-0"



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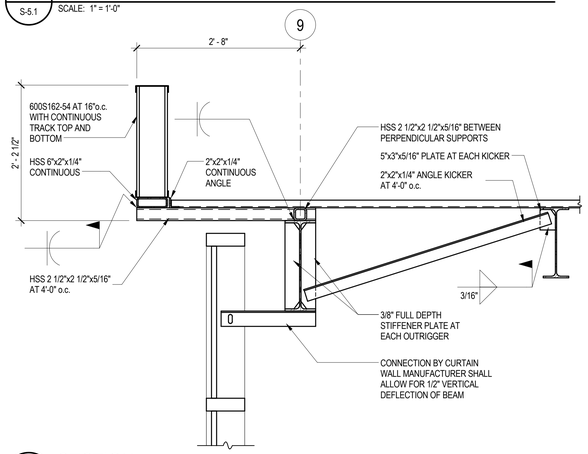

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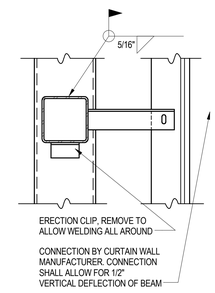

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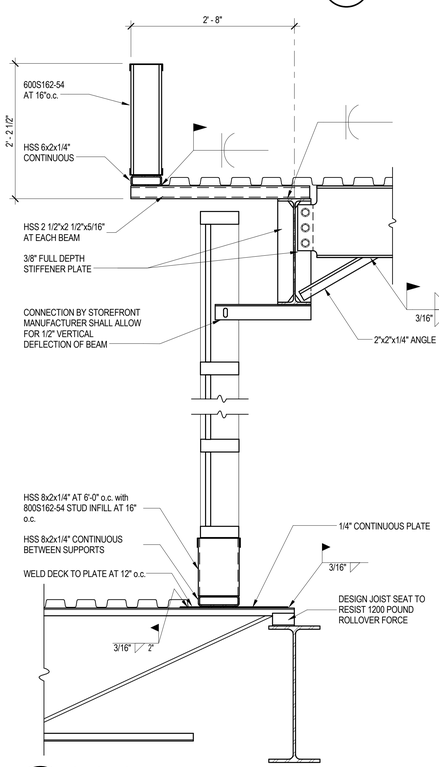

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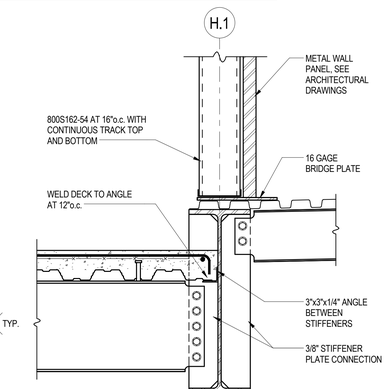

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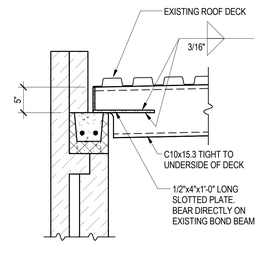

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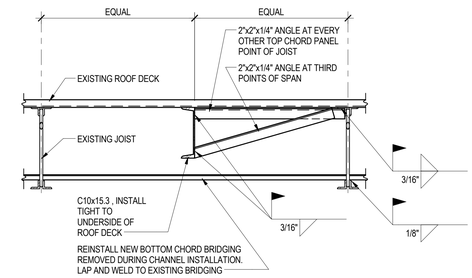
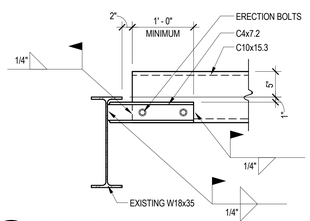
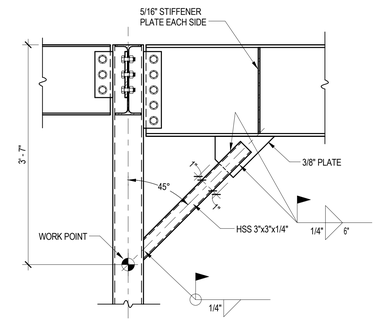
SCALE: 1" = 1'-0"



J S-5.1 SECTION
SCALE: 1" = 1'-0"



K S-5.1 SECTION
SCALE: 1" = 1'-0"



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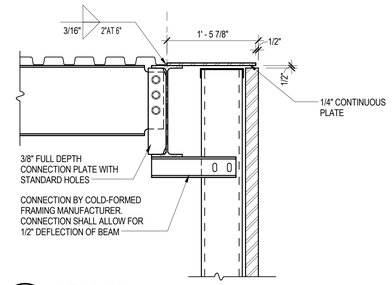
SCALE: 1" = 1'-0"



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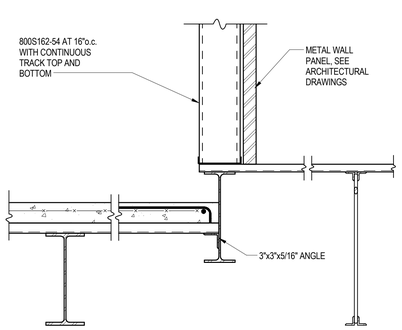
SCALE: 1" = 1'-0"



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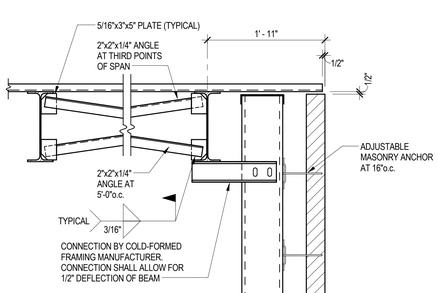
SCALE: 1" = 1'-0"



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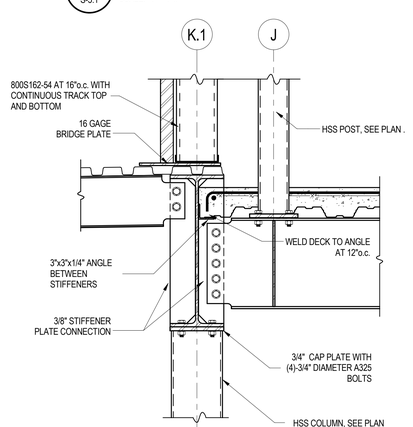
SCALE: 1" = 1'-0"



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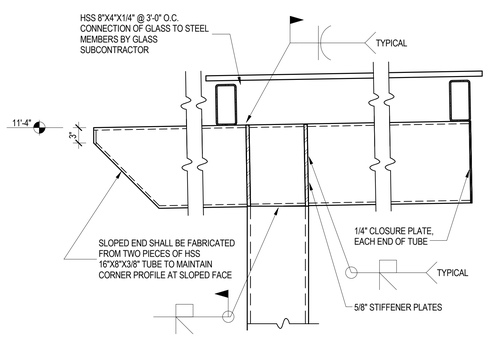

S S-5.1 SECTION
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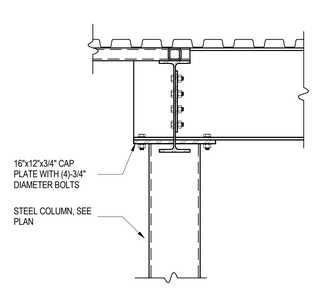

T S-5.1 SECTION
SCALE: 1" = 1'-0"

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columbiaengineering.com

Professional Certification:
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SECTIONS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

S-5.1

FEBRUARY 1, 2017
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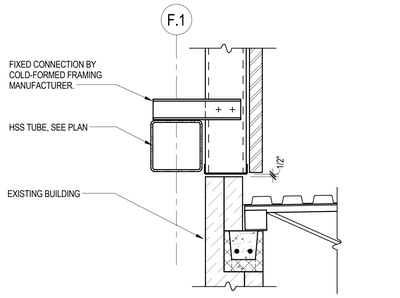
CEI# 16047



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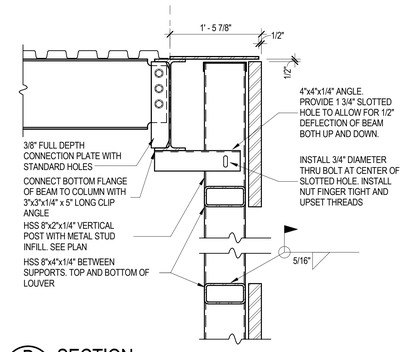

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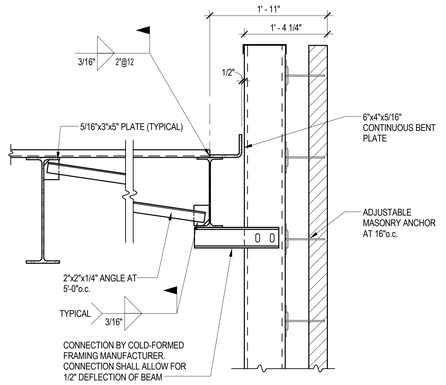

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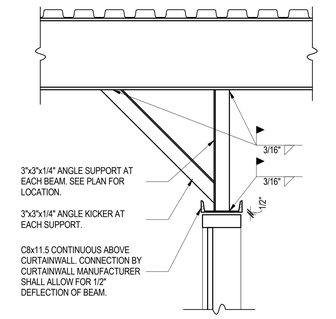

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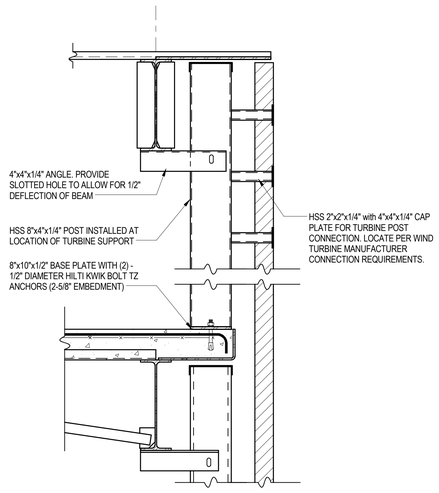

E S-5.2 ALTERNATE 1 - WIND TURBINE
SCALE: 1" = 1'-0"

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SECTIONS

Garrett College STEM Renovation and Addition
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S-5.2

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GENERAL NOTES:

1. PATCH ALL HOLES, PENETRATIONS, ETC. (IN WALLS, FLOORS, ROOF, ETC.) TO MATCH EXISTING MATERIALS, FINISHES, ETC. AND PAINT TO MATCH EXISTING FINISHES. ALL ROOFING WORK SHALL BE PERFORMED BY A CERTIFIED ROOFING CONTRACTOR TO MAINTAIN THE EXISTING WARRANTY IN THE AREAS OF WORK.
2. REMOVE ALL EXISTING DUCT, DIFFUSERS, AIR HANDLING UNITS, HEATING EQUIPMENT, ETC. AND ASSOCIATED PIPING, SUPPORTS, INSULATION, ETC. IN IS ENTIRETY.

DRAWING NOTES:

(1) RX UNIT VENTILATOR, SUPPORTS, PIPING, ETC IN ITS ENTIRETY.

(2) RX AIR HANDLING UNIT, SUPPORTS, PIPING, INSULATION, ETC. IN ITS ENTIRETY.

(3) RX UNIT HEATER, PIPING, CONTROL, ETC. IN ITS ENTIRETY. (TYP)

(4) RX DIFFUSER (TYP)

(5) RX DUCT, INSULATION, HANGERS, ETC. IN ITS ENTIRETY (TYP)

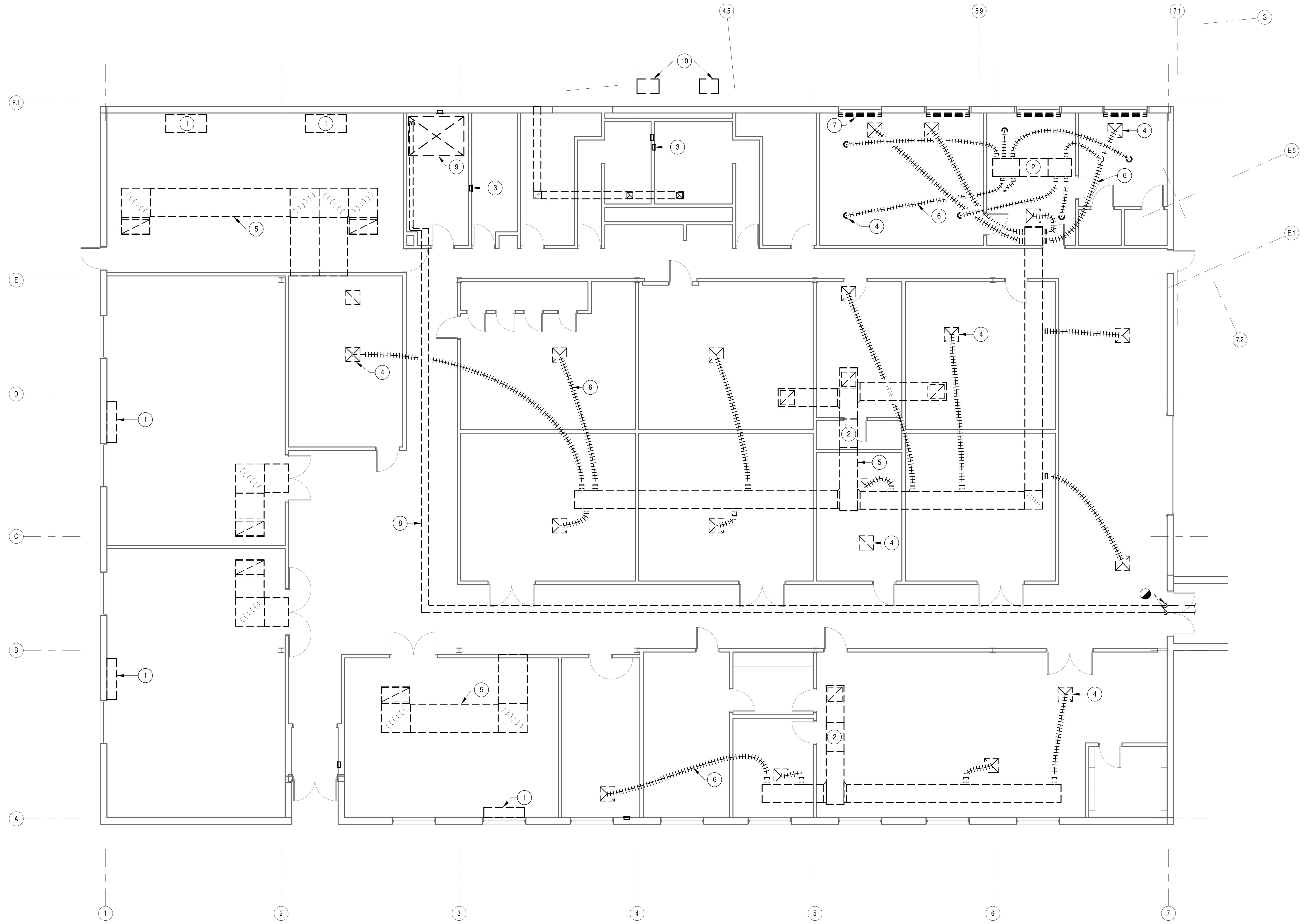
(6) RX FLEX DUCT, INSULATION, HANGERS, ETC. IN ITS ENTIRETY. (TYP)

(7) RX BASEBOARD RADIATION, PIPING, CONTROLS, ETC. IN ITS ENTIRETY. (TYP)

(8) RX HEATING WATER PIPING, VALVES, HANGERS, INSULATION, ETC. IN ITS ENTIRETY.

(9) RX ALL PUMPS, PIPING, HANGERS, SUPPORTS, ETC. IN THIS AREA IN ITS ENTIRETY.

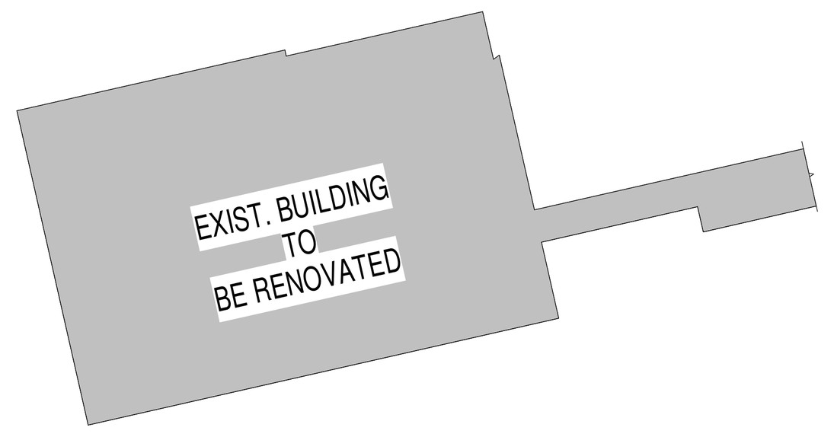
(10) RX EXTERIOR CONDENSING UNITS, REFRIGERANT PIPING, PADS, SUPPORTS, ETC. IN THEIR ENTIRETY. CAPTURE AND DISPOSE OF ALL REFRIGERANT PER LATEST EPA REQUIREMENTS.



FIRST FLOOR - HVAC - DEMOLITION

1/8" = 1'-0"

KEY PLAN



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

8 0 8 16

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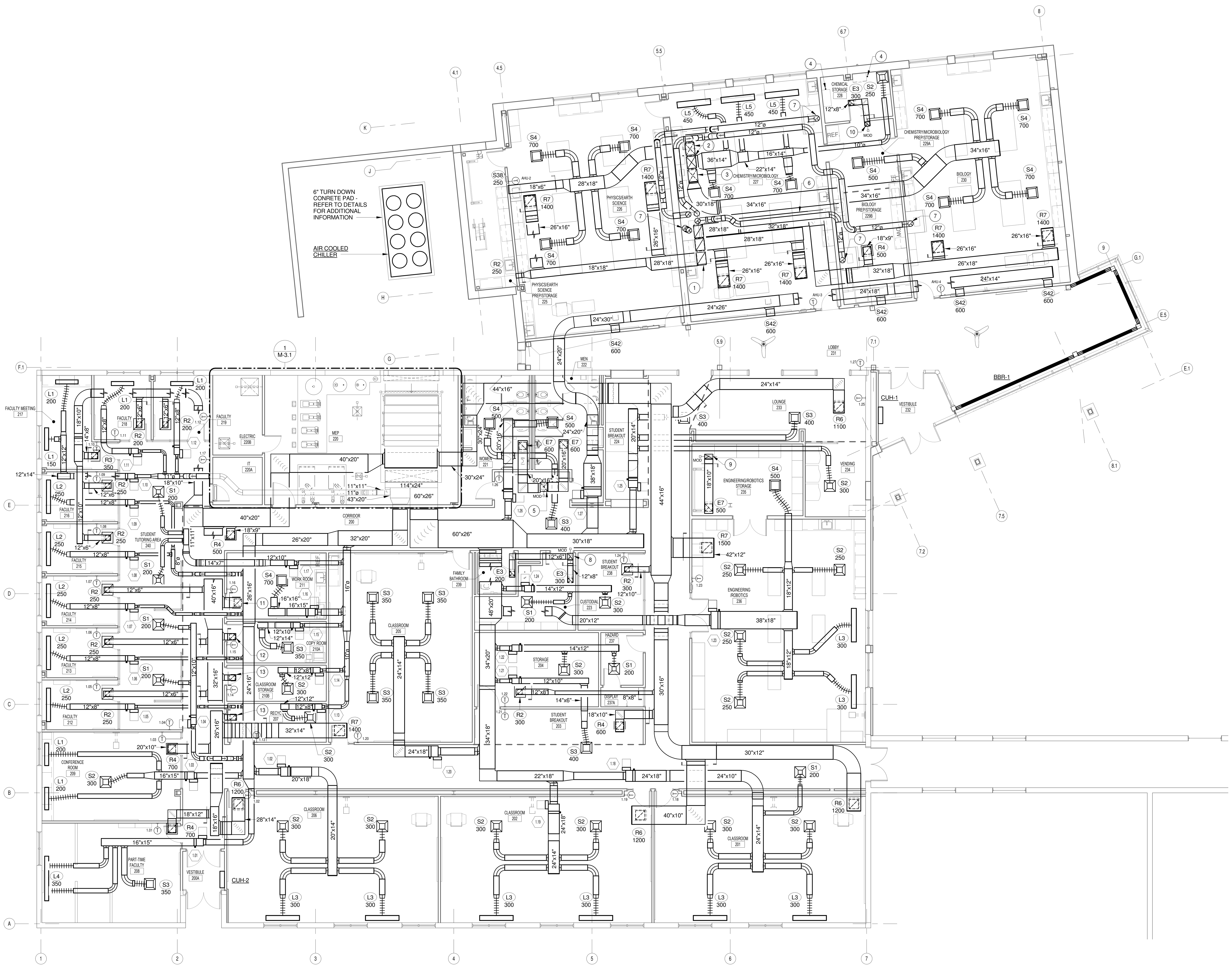
FIRST FLOOR - HVAC - DEMOLITION

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

MD-2.1

February 1, 2017
Bid Set



FIRST FLOOR - HVAC
1/8" = 1'-0"

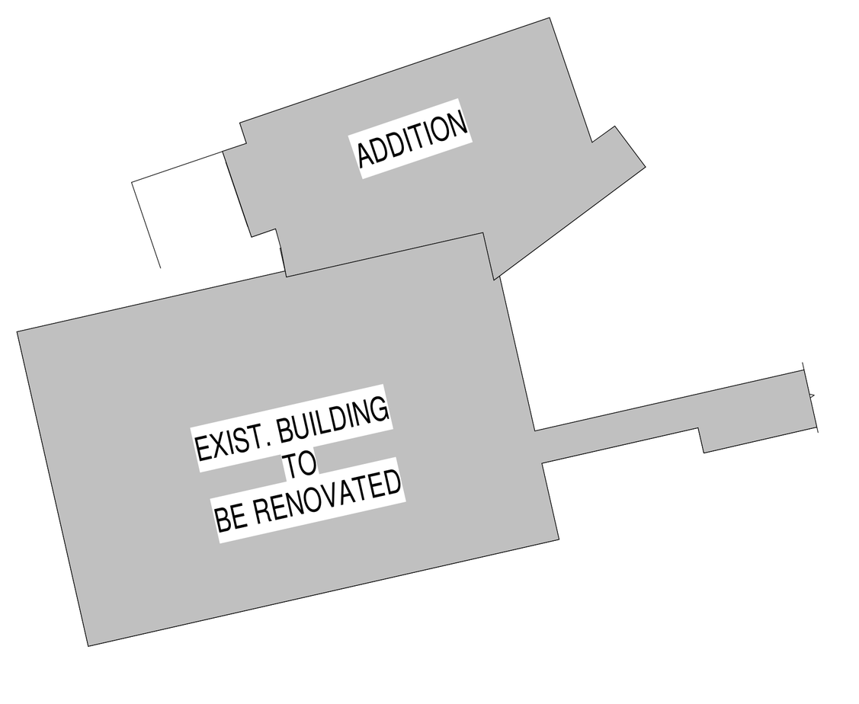
GENERAL NOTES:

1. REFER TO DRAWING M-2.2 FOR HVAC PIPING.

DRAWING NOTES:

1. 28x18 R/A UP TO 26X20 WITH FIRE DAMPER TO PENTHOUSE (TYP OF 3). REFER TO DRAWING M-3.1 FOR MORE INFORMATION.
2. 28x18 S/A UP TO 26X20 WITH FIRE DAMPER TO PENTHOUSE (TYP OF 2). REFER TO DRAWING M-3.1 FOR MORE INFORMATION.
3. 26X20 S/A UP WITH FIRE DAMPER TO PENTHOUSE (TYP OF 2). REFER TO DRAWING M-3.1 FOR MORE INFORMATION.
4. 2" POLYPROPELYNE VENT TO CHEMICAL STORAGE CABINET UP THROUGH ROOF.
5. 20"x16" UP TO 12"x12" E/A DUCT UP TO F-1 ON ROOF.
6. 12" Ø E/A DUCT ABOVE 32"x18" R/A DUCT
7. 2" POLYPROPYLENE VENT TO CHEMICAL STORAGE CABINET UP THROUGH ROOF.
8. 12"x14" UP TO 10"x10" E/A DUCT UP TO F-8 ON ROOF.
9. 18"x10" UP TO 10"x10" E/A DUCT UP TO F-9 ON ROOF.
10. 12"x8" UP TO 10"x10" E/A DUCT UP TO F-10 ON ROOF.
11. R4 RETURN DIFFUSER (700 CFM) UP TO 22"x10" R/A DUCT.
12. R3 RETURN DIFFUSER (350 CFM) UP TO 14"x8" R/A DUCT.
13. R3 RETURN DIFFUSER (300 CFM) UP TO 12"x9" R/A DUCT.

KEY PLAN



SCALE: 1/8" = 1'-0"
8 0 8 16

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FIRST FLOOR - HVAC
Garrett College STEM Renovation and Addition
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M-2.1
February 1, 2017
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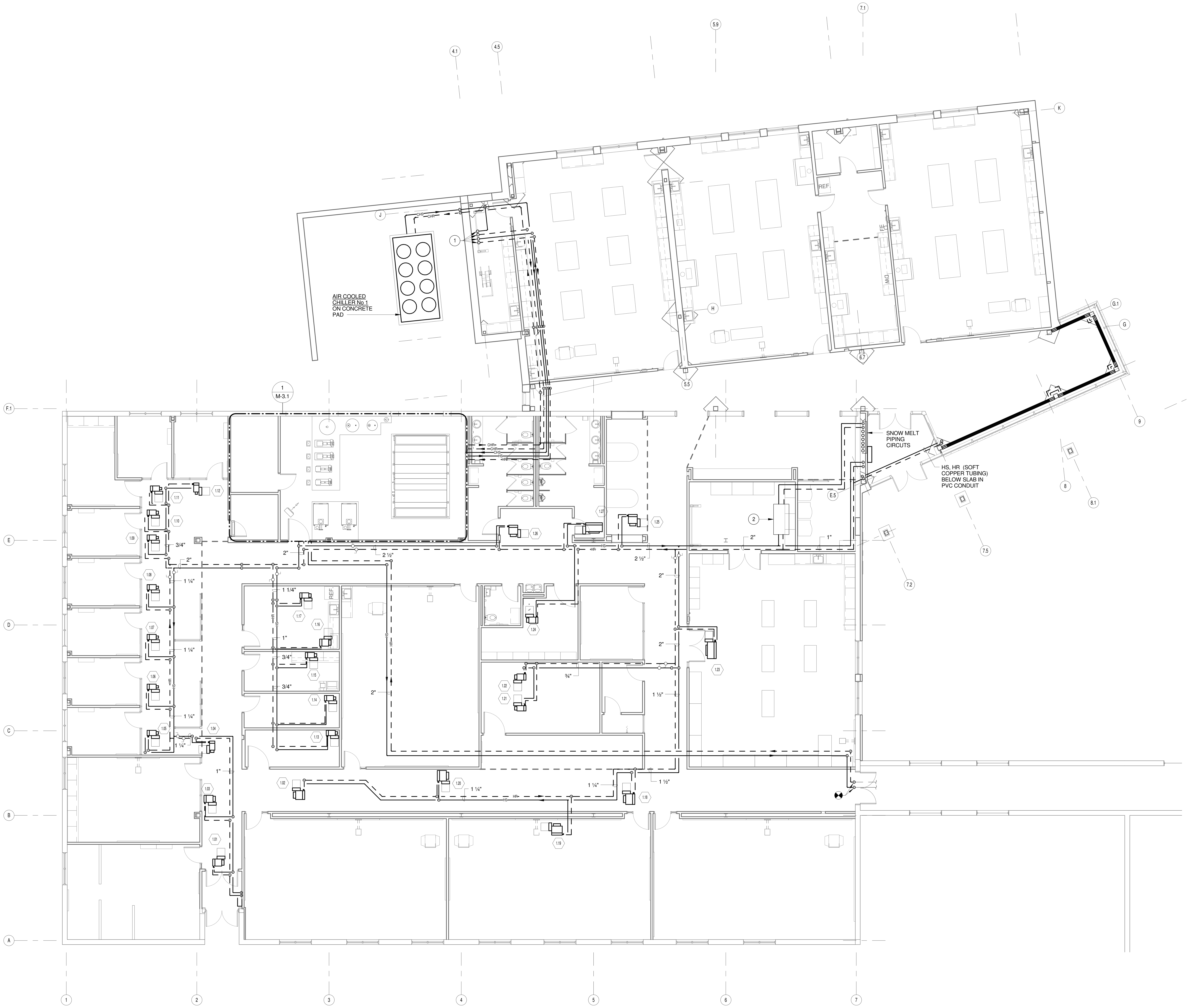
DRAWING NOTES:

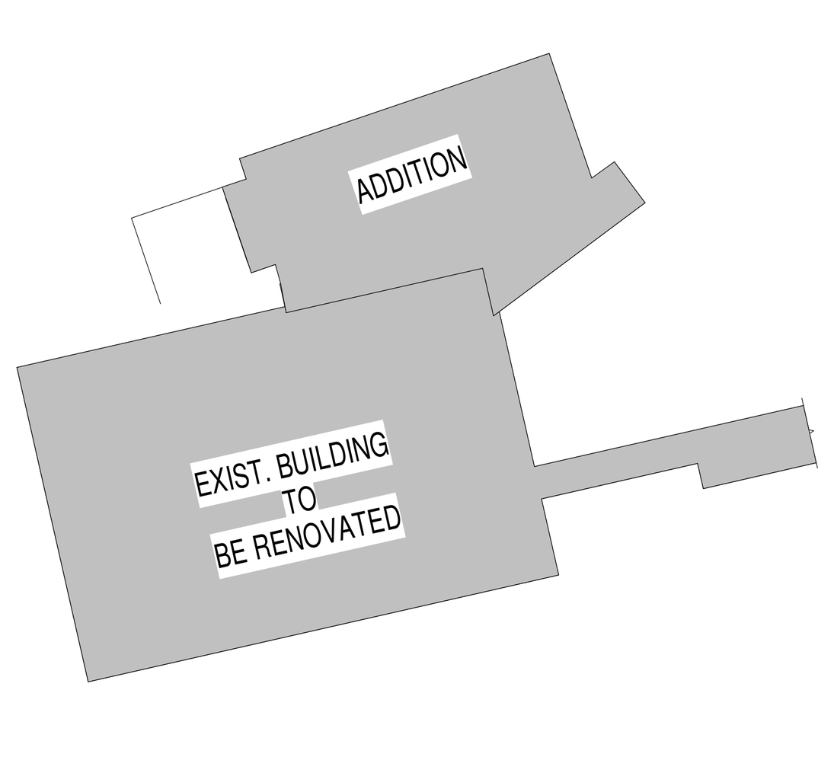
1. 3" CHS, 3" CHR, 2" HS, 2" HR UP TO PENTHOUSE
2. SNOW MELT SYSTEM (PUMP, HX, EXPANSION TANK, GLYCOL FEEDER) AT CEILING UNDER ADD ALTERNATE No 3. REFER TO DETAIL ON DRAWING M-7.4. VALVE AND CAP UNDER BASE BID.



FIRST FLOOR - HVAC - PIPING
1/8" = 1'-0"

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

KEY PLAN



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FIRST FLOOR - HVAC - PIPING

Garrett College STEM Renovation and Addition
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M-2.2

February 1, 2017
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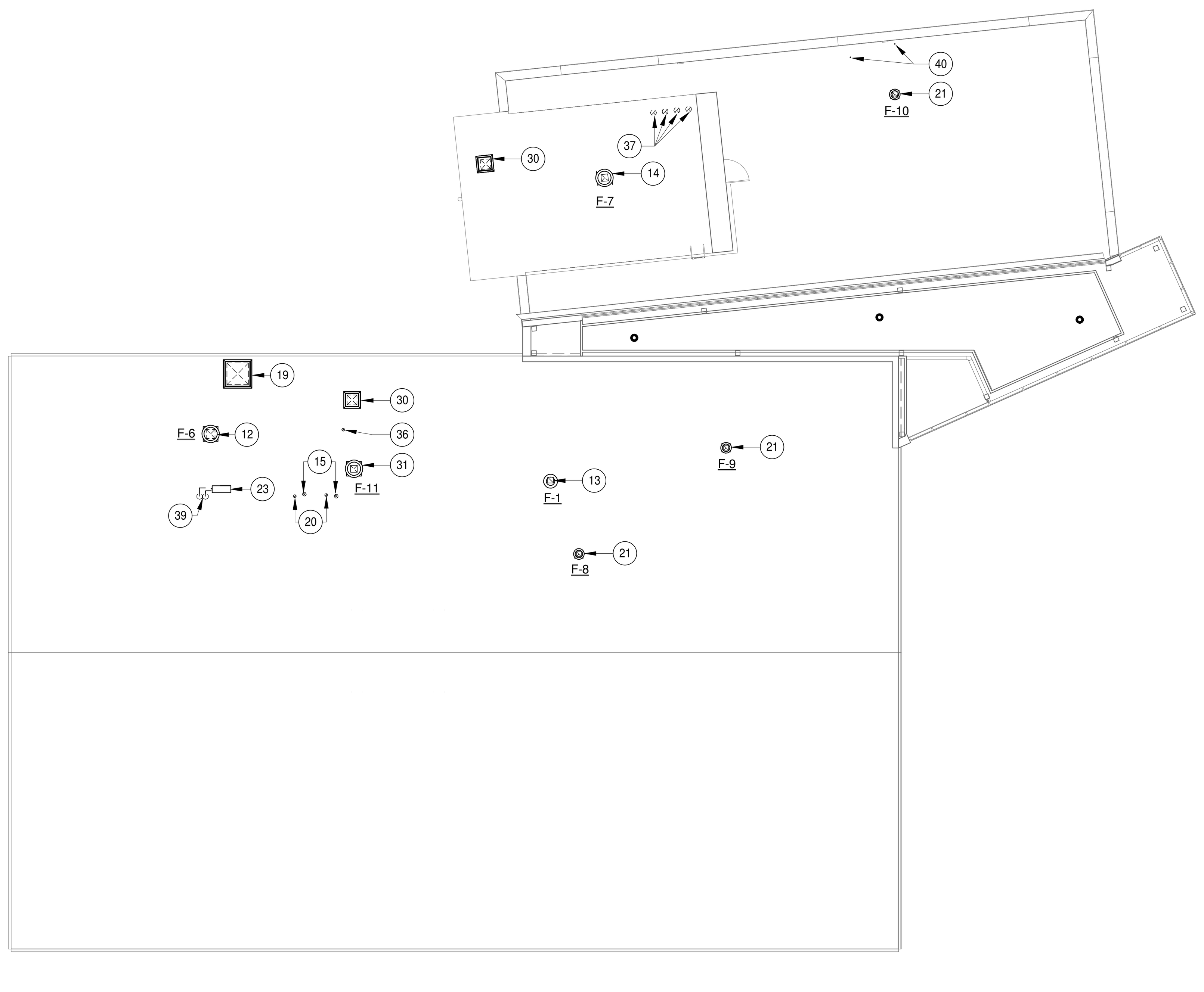
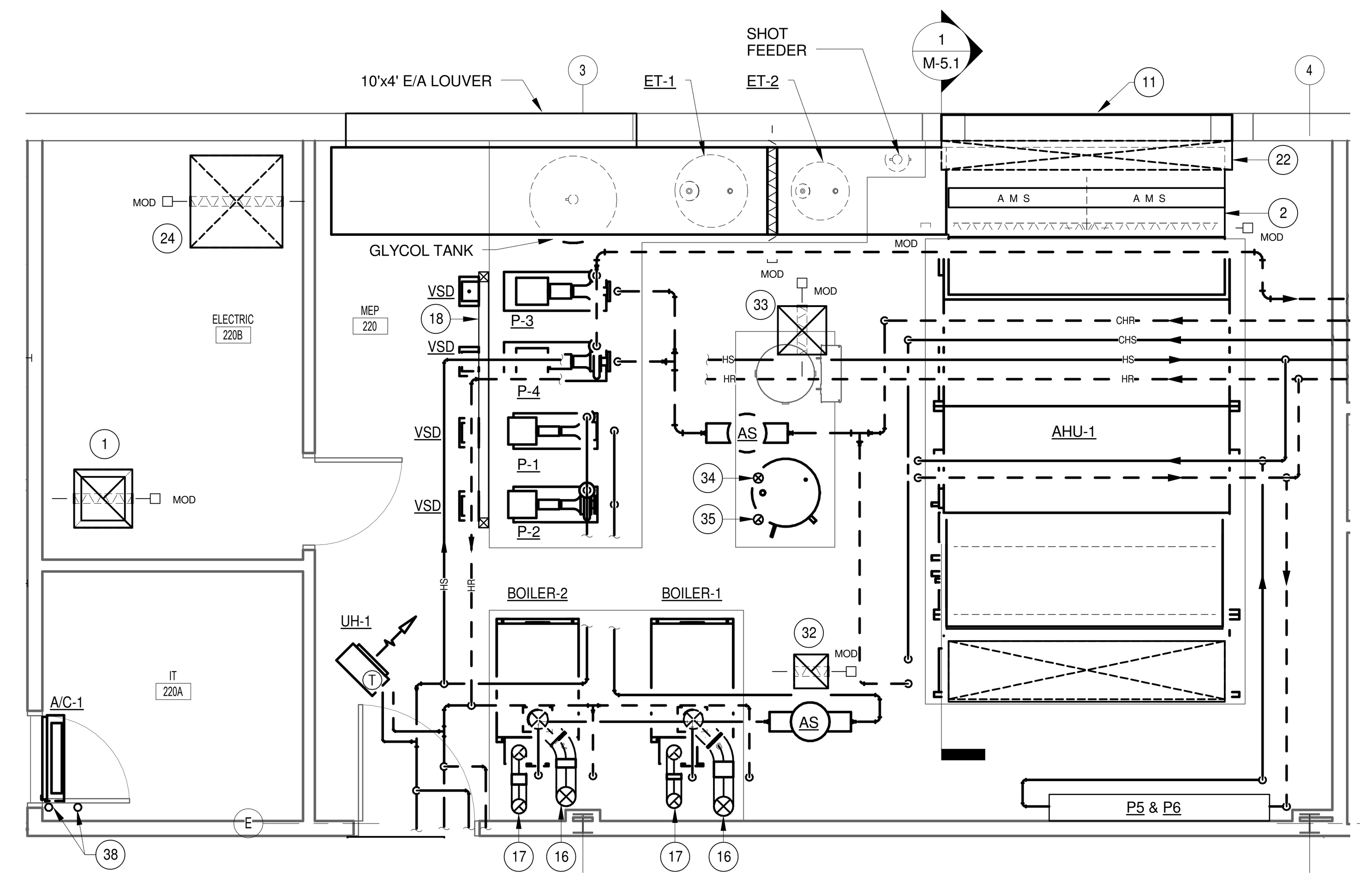


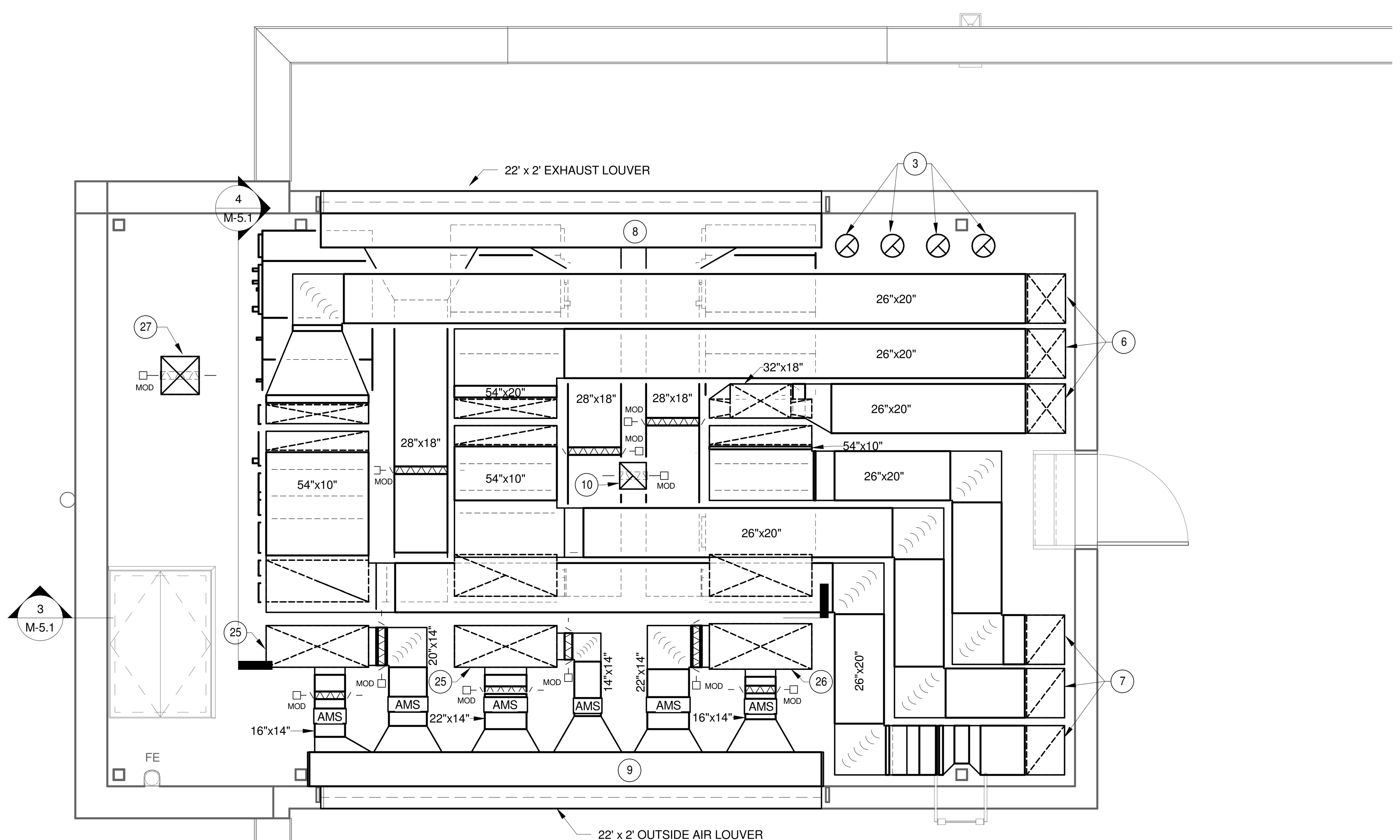
MECHANICAL ROOF PLAN
1/16" = 1'-0"



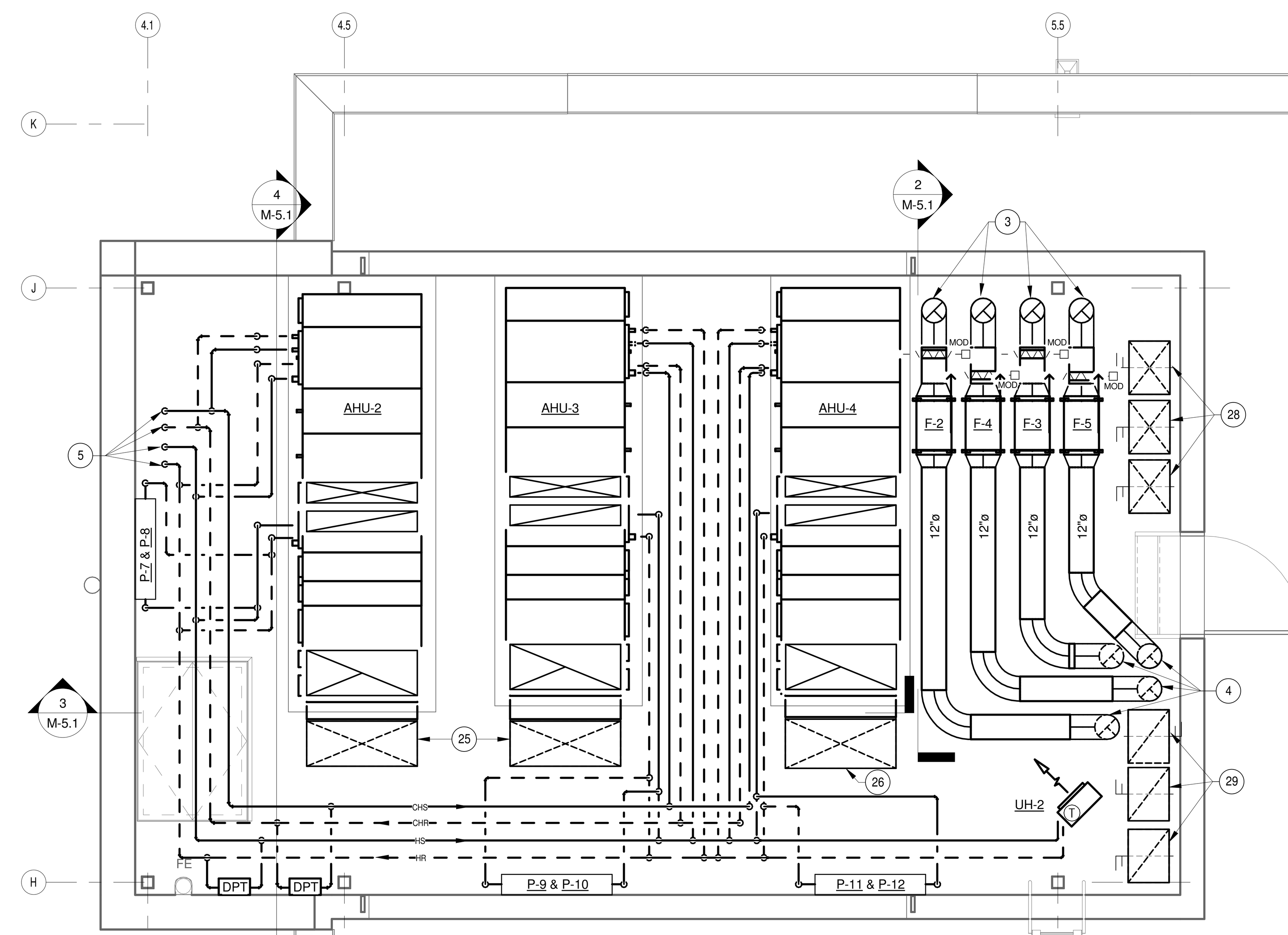
MECHANICAL ROOM 220 - PART PLAN
1/4" = 1'-0"

DRAWING NOTES:

1. 24"x24" OPEN END E/A DUCT W/ 1/2" MESH BIRD SCREEN UP TO F-6 ON ROOF
2. 114"x64" E/A DUCT ABOVE TWO 57"x64" O/A DUCTS WITH AMS AND MOD FOR MINIMUM O/A AND ECONOMIZER O/A
3. (4) 12" Ø E/A DUCTS UP THROUGH ROOF. REFER TO DETAILS FOR ADDITIONAL INFORMATION
4. (4) 12" Ø E/A DUCTS DN TO FIRST FLOOR
5. CHS, CHR, HS, HR DN TO FIRST FLOOR
6. (3) 26"x20" S/A DUCTS DN TO LOWER LEVEL
7. (3) 26"x20" R/A DUCTS DN TO LOWER LEVEL
8. 18"x24" H E/A PLENUM BOX
9. 18"x24" H O/A PLENUM BOX
10. 14"x14" OPEN END E/A DUCT W/ 1/2" MESH BIRD SCREEN UP TO F-7 ON ROOF
11. 11' 6"x12' REMOVABLE O/A LOUVER
12. 18"x18" E/A DUCT DN TO FIRST FLOOR
13. 12"x12" E/A DUCT DN TO FIRST FLOOR
14. 14"x14" E/A DUCT DN TO PENTHOUSE
15. 8" Ø INTAKE DN TO MECHANICAL ROOM
16. BOILER COMBUSTION AIR INTAKE UP TO ROOF. REFER TO THIS SHEET FOR ADDITIONAL INFORMATION
17. BOILER EXHAUST FLUE UP TO ROOF. REFER TO THIS SHEET FOR ADDITIONAL INFORMATION
18. UNISTRUT SUPPORT SYSTEM
19. GRAVITY INTAKE VENT
    5000 CFM @0.25" SP
    44"x44" THROAT @372 FPM
    58"x58"x28" HIGH
    GREENHECK WIH
20. 6" Ø FLUE DN TO MECHANICAL ROOM
21. 10"x10" E/A DUCT DN TO FIRST FLOOR
22. 10'-0" x 1'-0" PLENUM BOX
23. A/C-1 OUTDOOR UNIT
24. 38"x38" OPEN END O/A DUCT W/ 1/2" MESH BIRD SCREEN UP TO GRAVITY INTAKE VENT ON ROOF
25. 54"x22" O/A PLENUM BOX
26. 54"x24" O/A PLENUM BOX
27. 20"x20" OPEN END O/A DUCT W/ 1/2" MESH BIRD SCREEN UP TO GRAVITY INTAKE VENT ON ROOF
28. (3) 26"x20" S/A DUCTS UP TO UPPER LEVEL AND DN TO FIRST FLOOR WITH FIRE DAMPER
29. (3) 26"x20" R/A DUCTS UP TO UPPER LEVEL AND DN TO FIRST FLOOR WITH FIRE DAMPER
30. GRAVITY INTAKE VENT
    1000 CFM @0.25" SP
    20"x20" THROAT @400 FPM
    34"x34"x15" HIGH
    GREENHECK WIH
31. 14"x14" E/A DUCT DN TO FIRST FLOOR
32. 14"x14" OPEN END E/A DUCT W/ 1/2" MESH BIRD SCREEN UP TO F-11 ON ROOF
33. 20"x20" OPEN END O/A DUCT W/ 1/2" MESH BIRD SCREEN UP TO GRAVITY INTAKE VENT ON ROOF
34. HOT WATER GENERATOR COMBUSTION AIR INTAKE UP TO ROOF.
35. HOT WATER GENERATOR EXHAUST FLUE UP TO ROOF
36. 6" Ø COMBINED INTAKE AND EXHAUST DN TO HOT WATER GENERATOR IN MECHANICAL ROOM. REFER TO DETAILS FOR ADDITIONAL INFORMATION
37. (4) 12" Ø E/A DUCTS DN TO PENTHOUSE. REFER TO DETAILS FOR ADDITIONAL INFORMATION
38. ½" RS, ¼ RL UP TO ROOF
39. ½" RS, ¼ RL DN TO IT ROOM
40. 2" POLYPROPELYNE VENT DN TO FIRST FLOOR



MECHANICAL PENTHOUSE 241 - UPPER LEVEL - PART PLAN
1/4" = 1'-0"

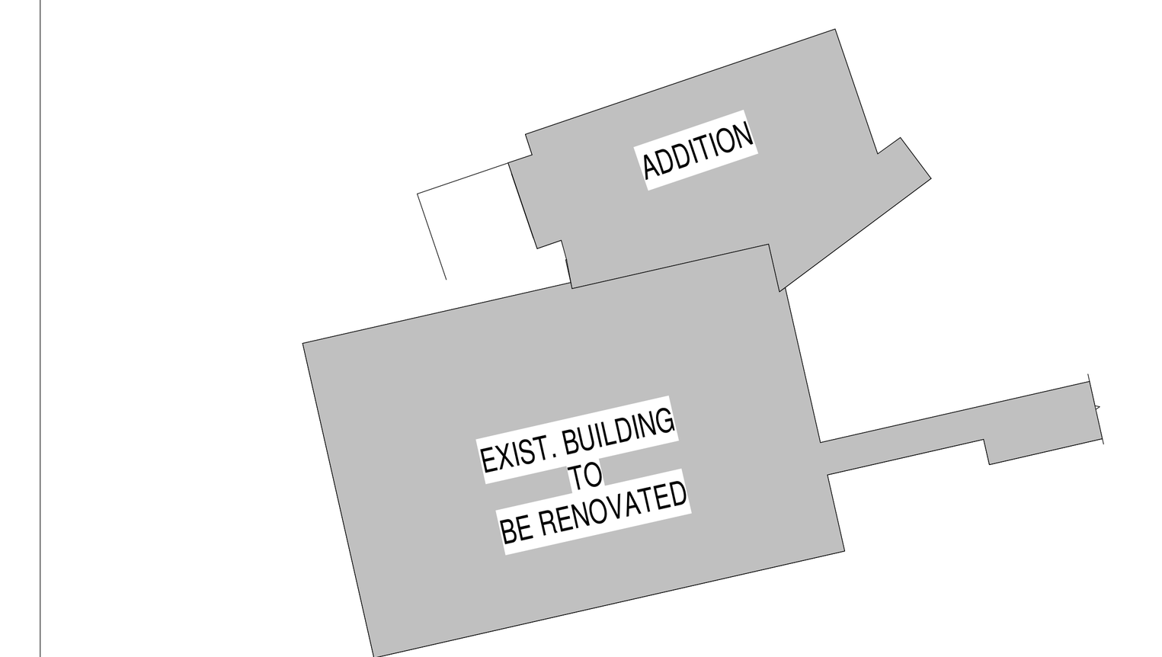


MECHANICAL PENTHOUSE 241 - LOWER LEVEL - PART PLAN
1/4" = 1'-0"
NOTE: REFER TO DRAWING M-7.1 FOR PIPE SIZES

SCALE: 1/16" = 1'-0" (16 8 0 16 32)

SCALE: 1/4" = 1'-0" (4 0 4 8)

KEY PLAN



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MECHANICAL ROOM AND PENTHOUSE FLOOR - PART PLANS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

M-3.1

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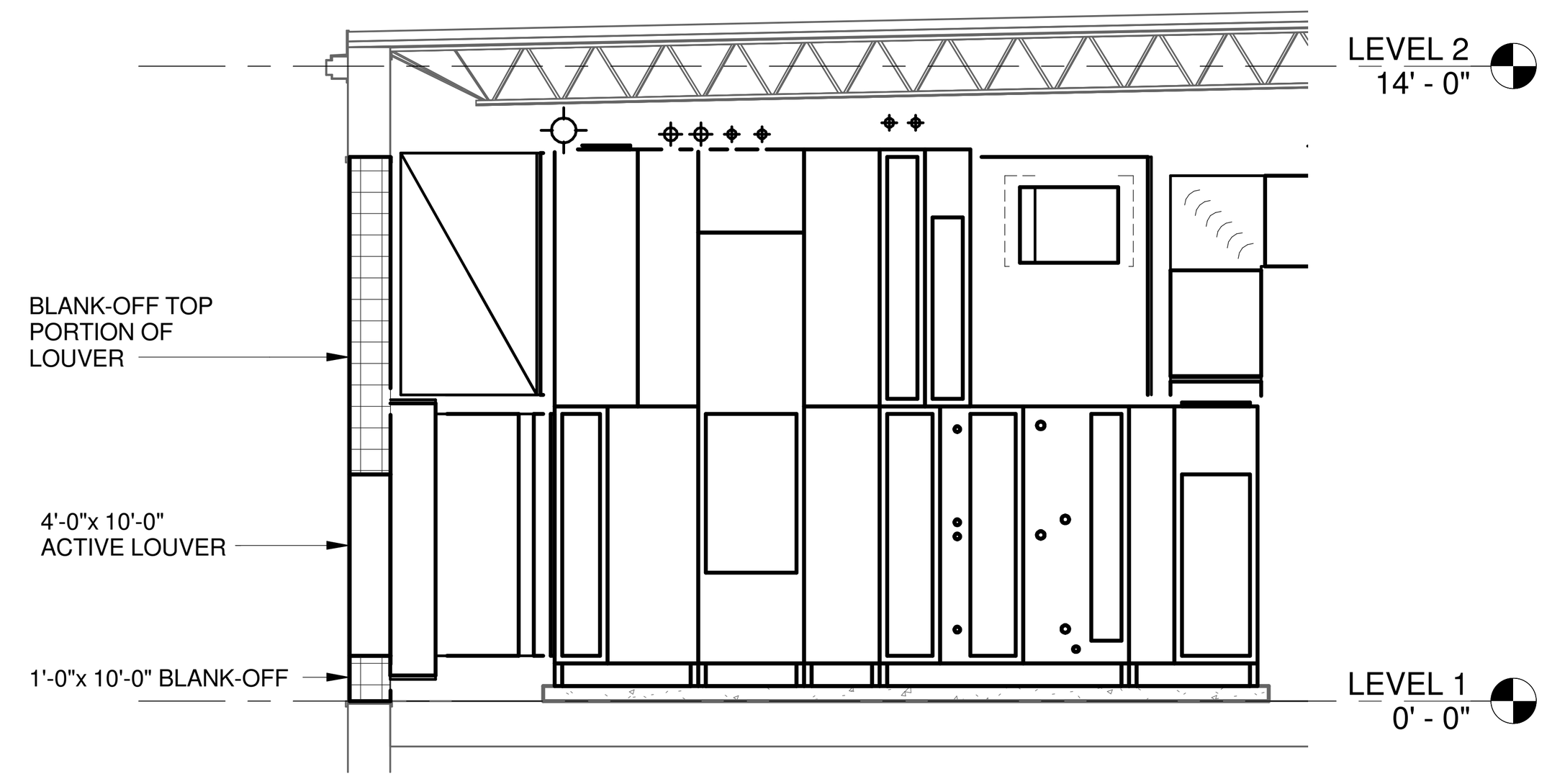
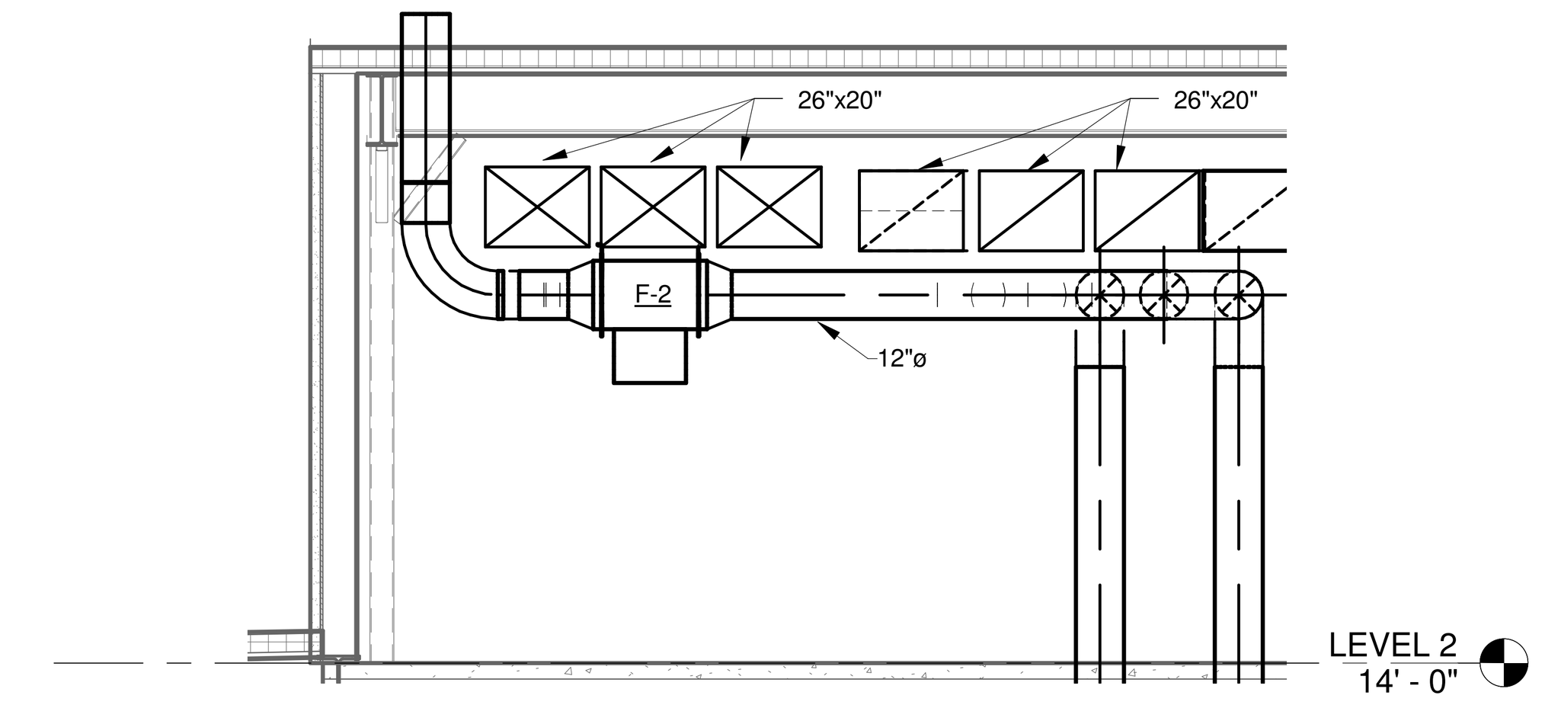
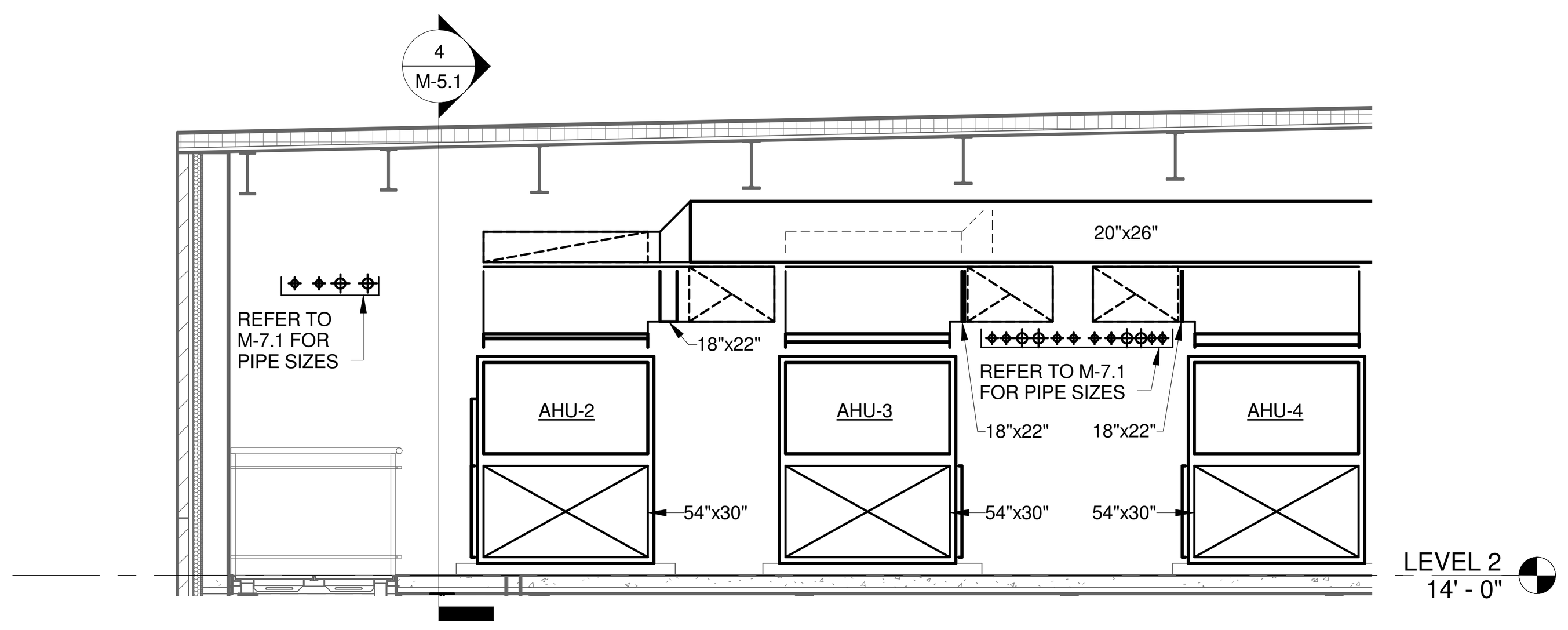


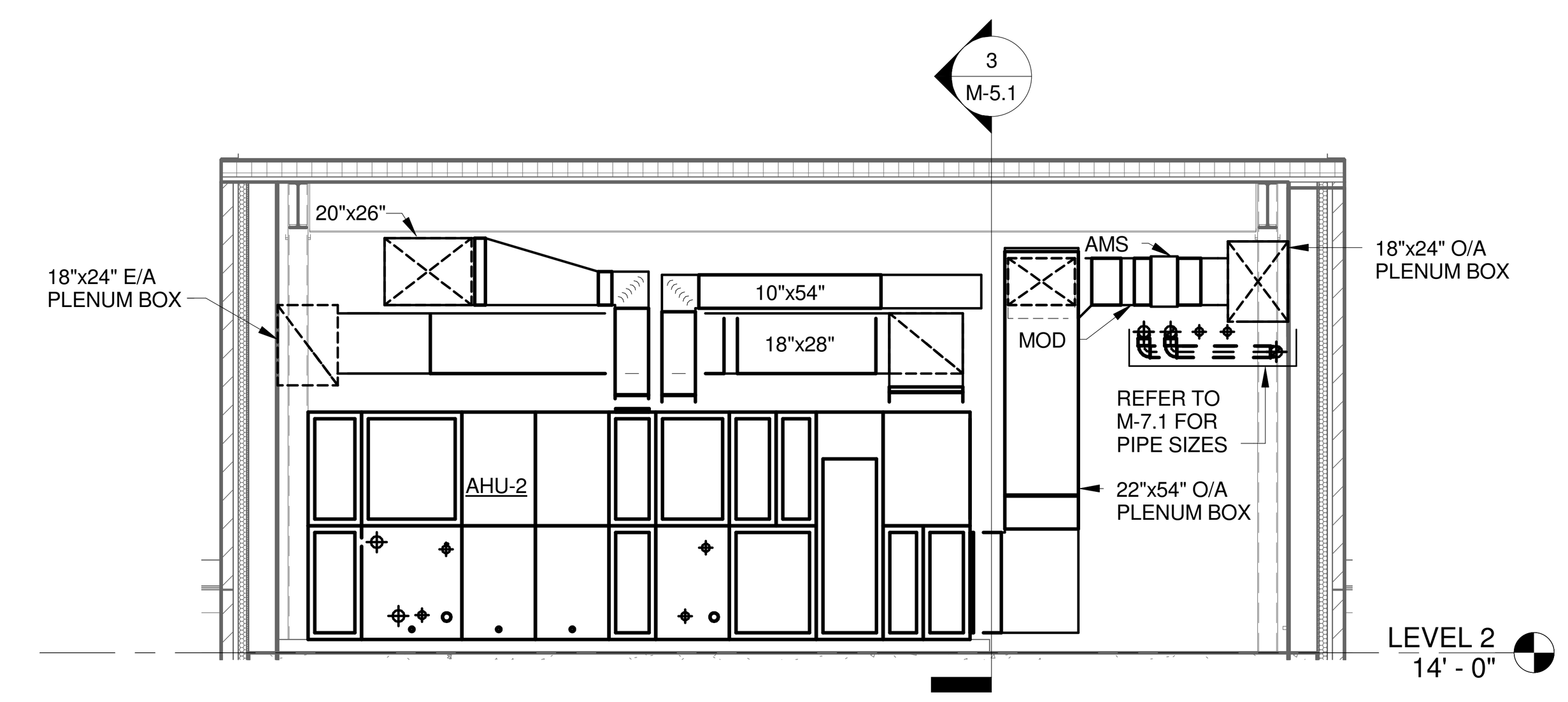
1 M-5.1 AIR HANDLING UNIT No 1 SECTION
1/4" = 1'-0"



2 M-5.1 LAB EXHAUST FANS SECTION
1/4" = 1'-0"



3 M-5.1 PENTHOUSE AHU SECTION
1/4" = 1'-0"



4 M-5.1 AIR HANDLING UNIT No 2 SECTION
1/4" = 1'-0"

SCALE: 1/4" = 1'-0"
4 0 4 8

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MECHANICAL SECTIONS

Garrett College STEM Renovation and Addition
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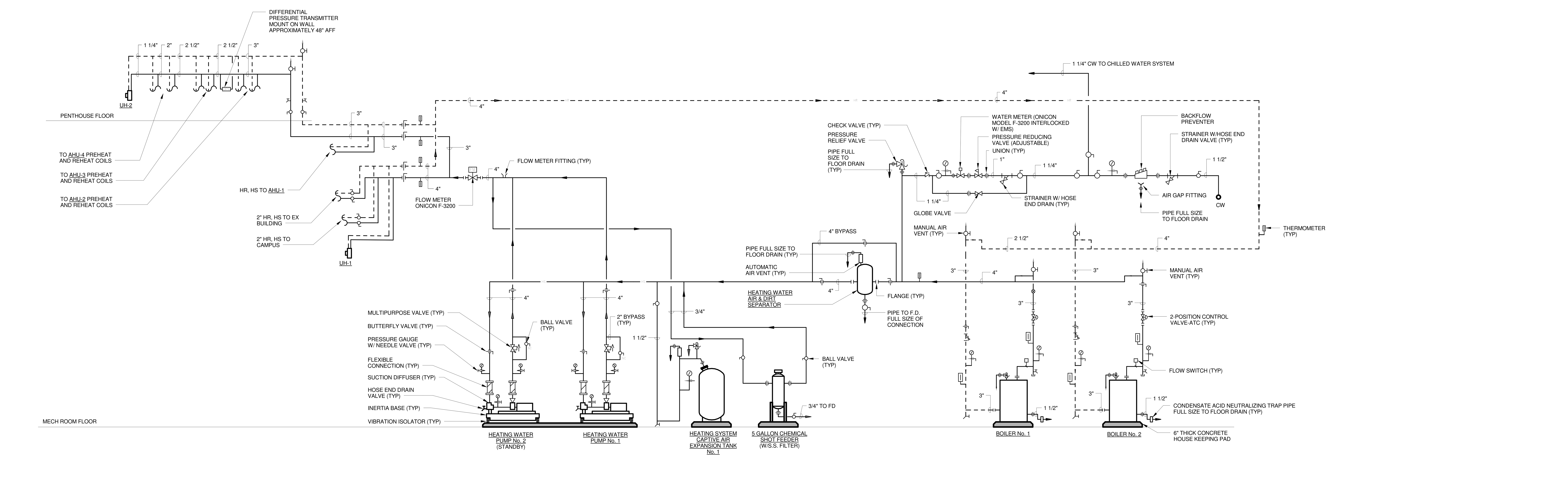
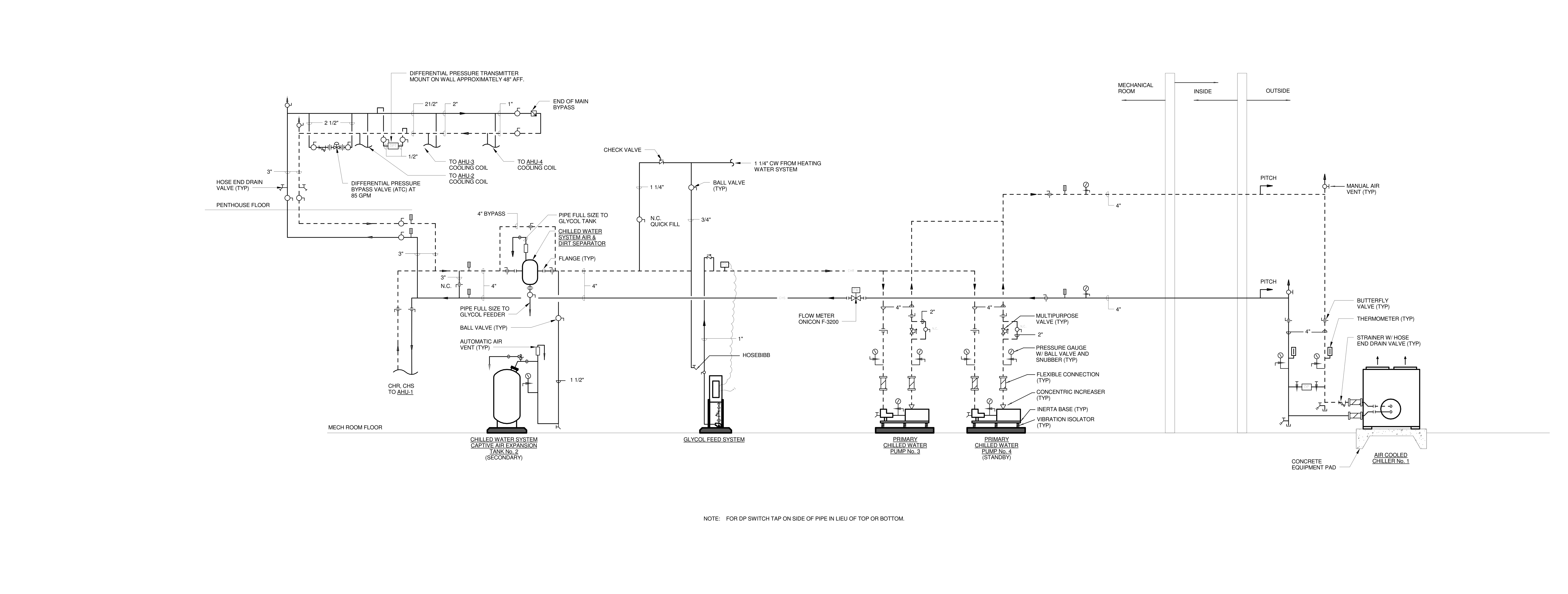


1 HEATING WATER SYSTEM PIPING DETAIL

SCALE: NONE



NOTE: FOR DP SWITCH TAP ON SIDE OF PIPE IN LIEU OF TOP OR BOTTOM.

2 CHILLED WATER SYSTEM PIPING DETAIL

SCALE: NONE

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HEATING & COOLING PLANT PIPING DETAILS

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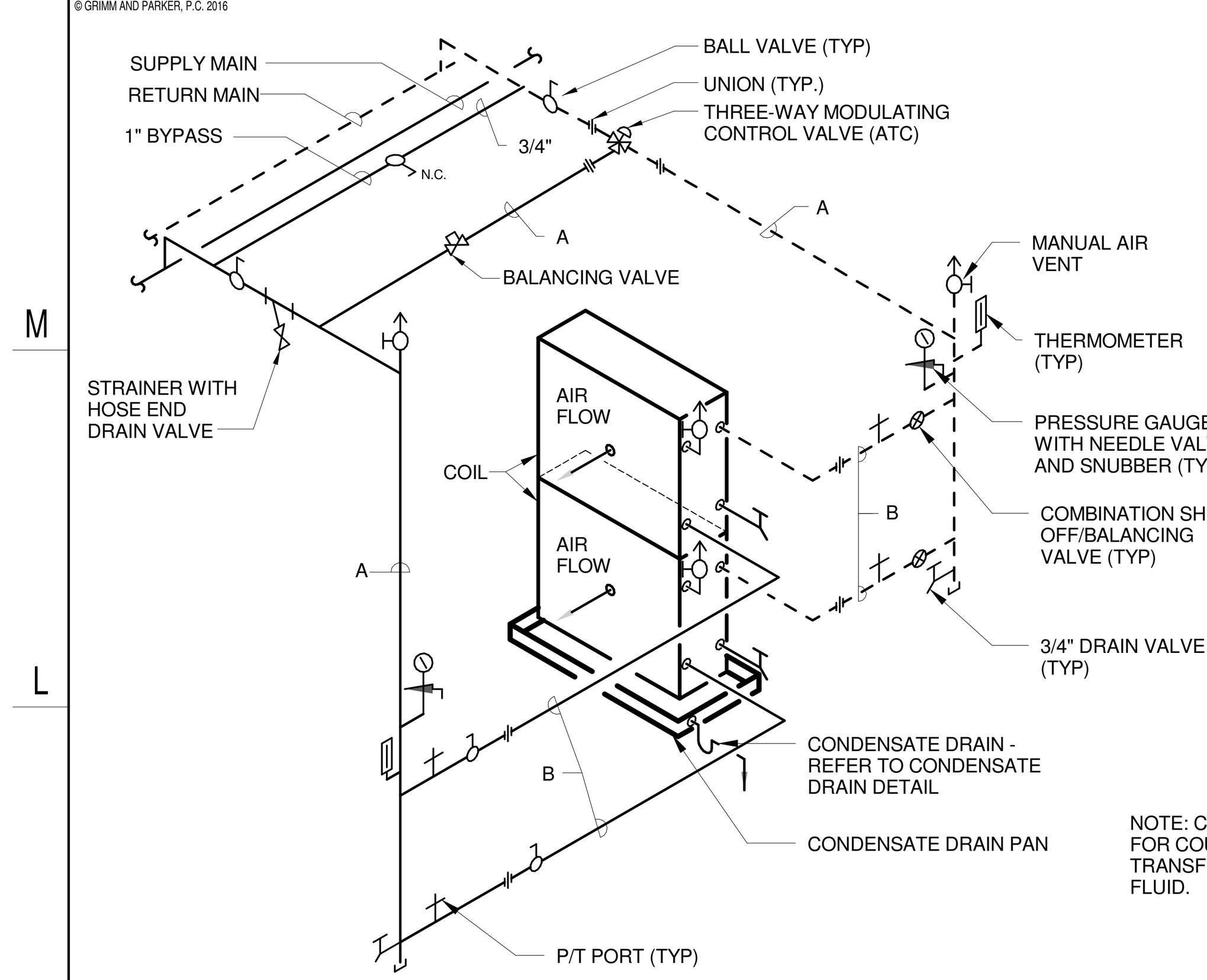
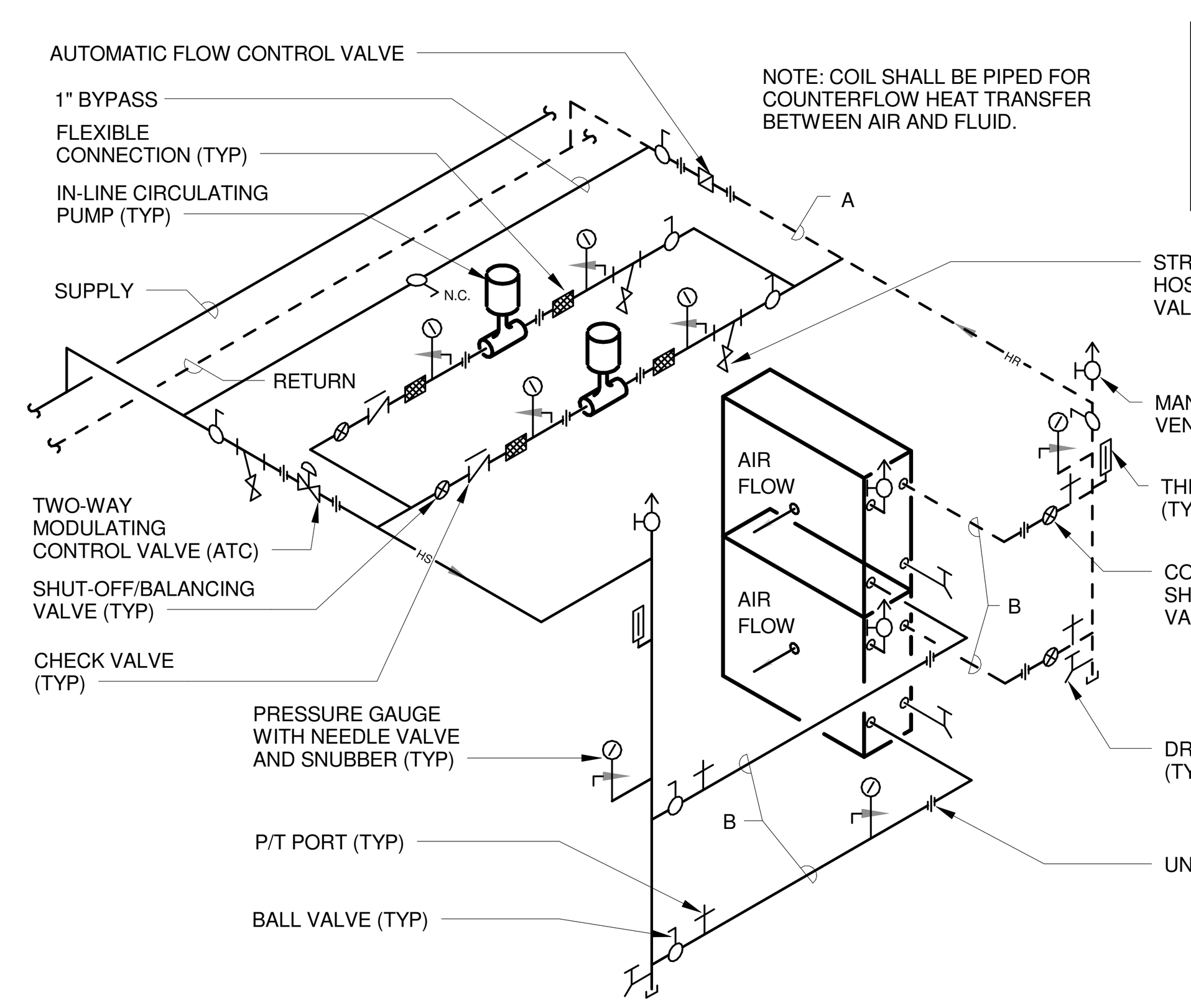


RUN-OUT PIPE SCHEDULE

AHU	PIPE SIZE	
	A	B
1	3"	2 1/2"

3 TYPICAL AHU BANKED COOLING COIL PIPING DETAIL WITH 3-WAY CONTROL VALVE

SCALE: NONE

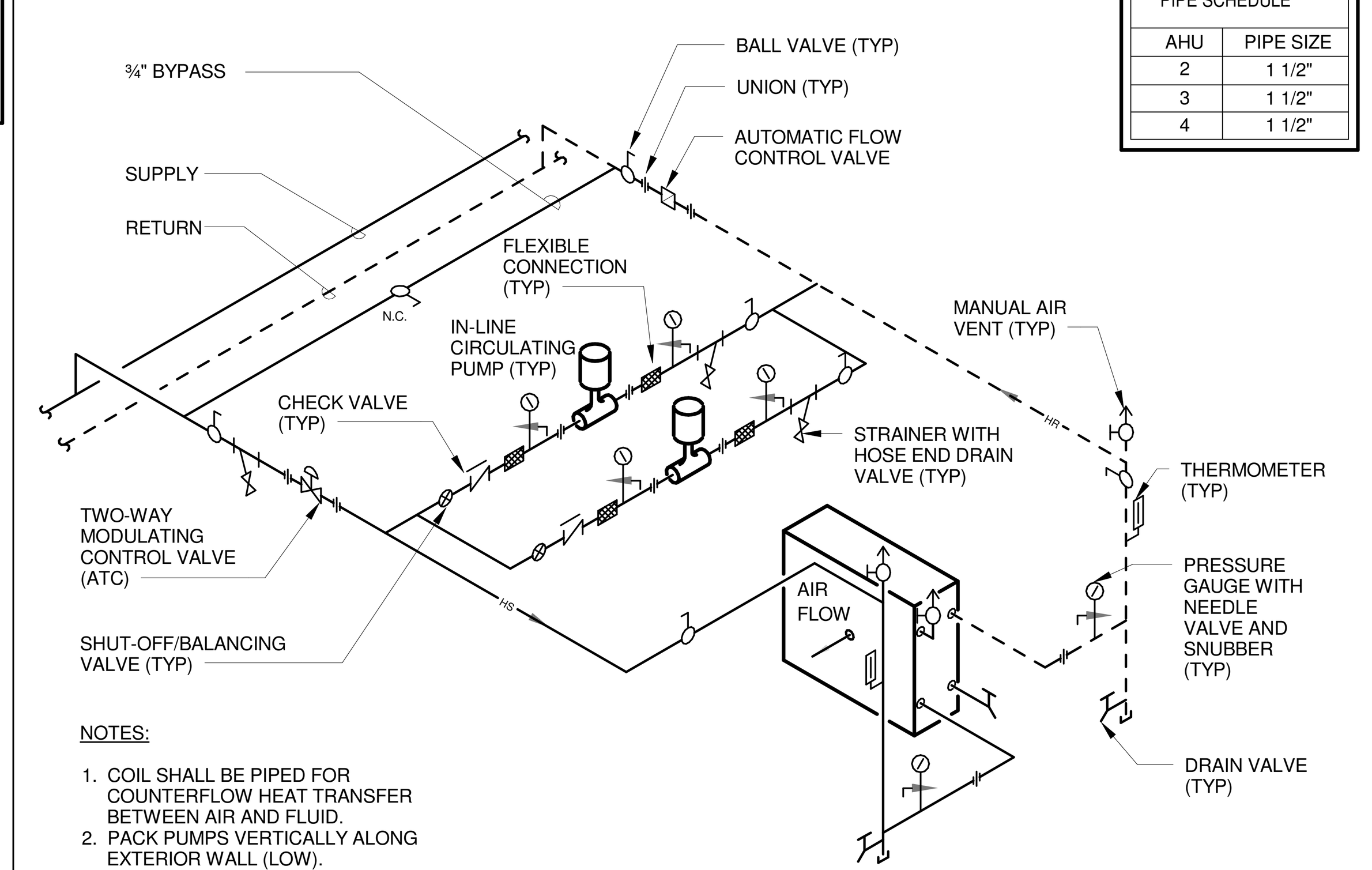


RUN-OUT PIPE SCHEDULE

AHU	PIPE SIZE	
	A	B
1	2"	1 1/2"

4 TYPICAL AHU BANKED PREHEAT COIL PIPING DETAIL WITH 2-WAY CONTROL VALVE

SCALE: NONE

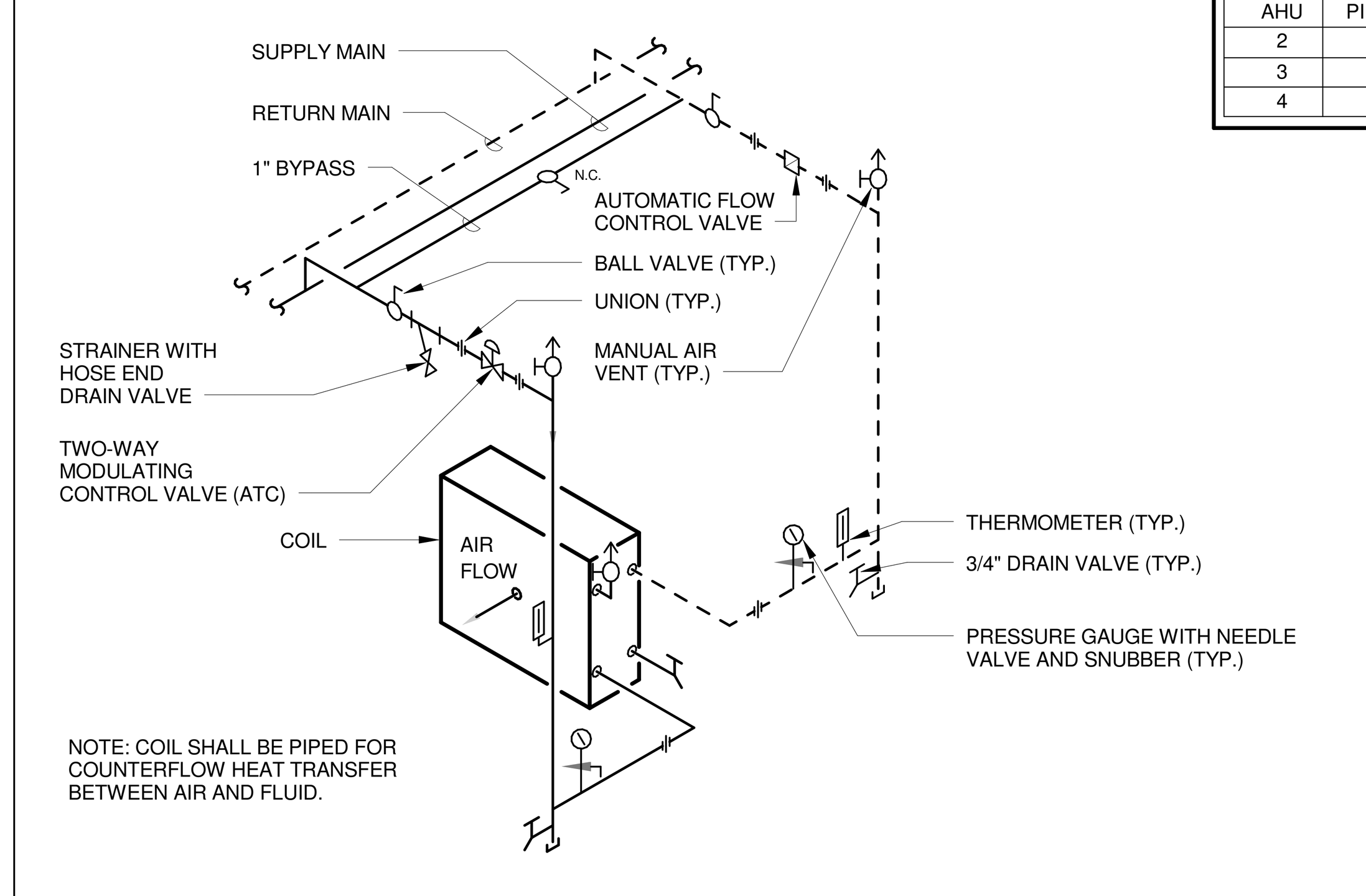


RUN-OUT PIPE SCHEDULE

AHU	PIPE SIZE
2	1 1/2"
3	1 1/2"
4	1 1/2"

5 TYPICAL AHU PREHEAT COIL PIPING DETAIL WITH 2-WAY CONTROL VALVE

SCALE: NONE

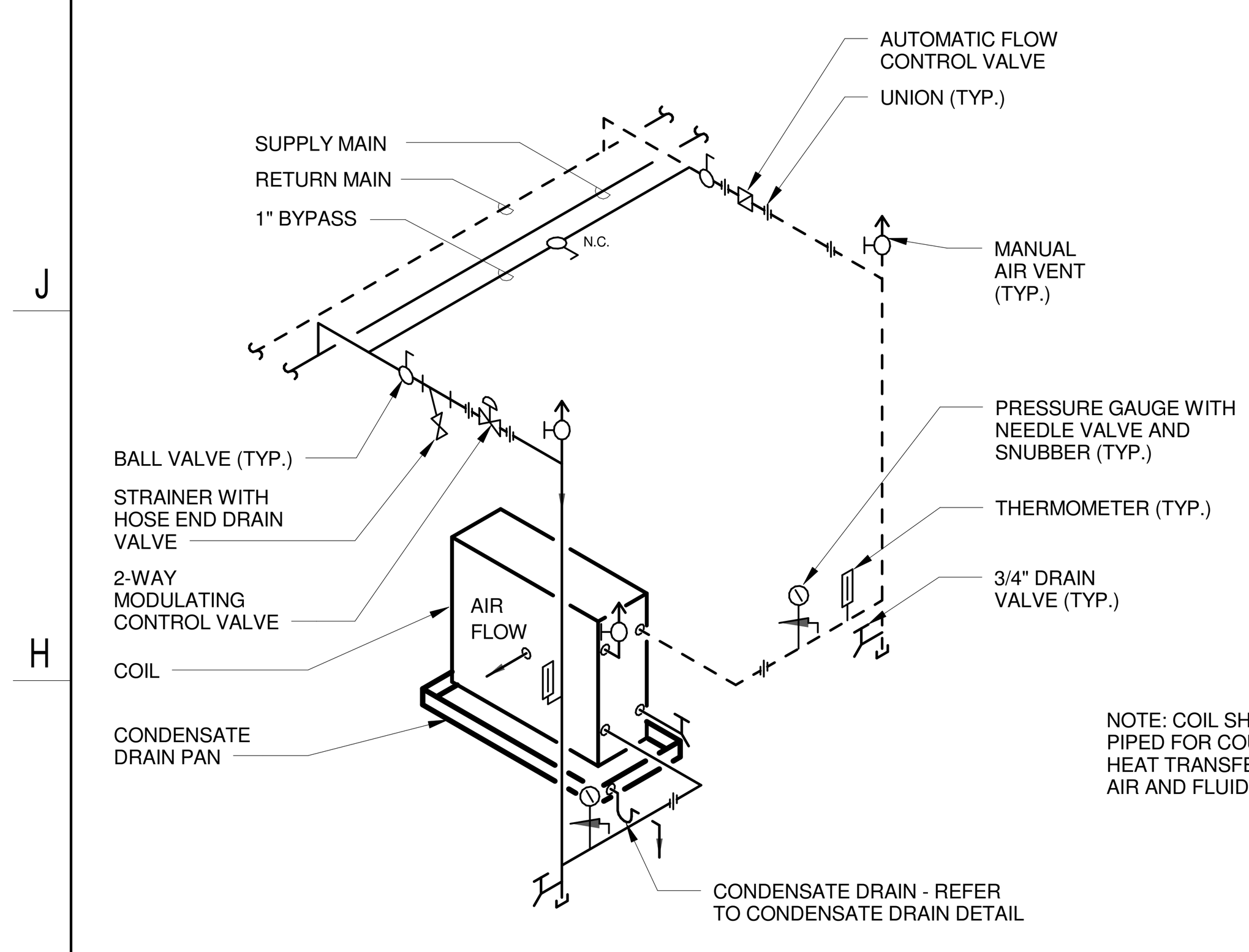


RUN-OUT PIPE SCHEDULE

AHU	PIPE SIZE
2	1 1/2"
3	1 1/2"
4	1 1/2"

6 TYPICAL AHU HEATING COIL PIPING DETAIL WITH 2-WAY CONTROL VALVE

SCALE: NONE



RUN-OUT PIPE SCHEDULE

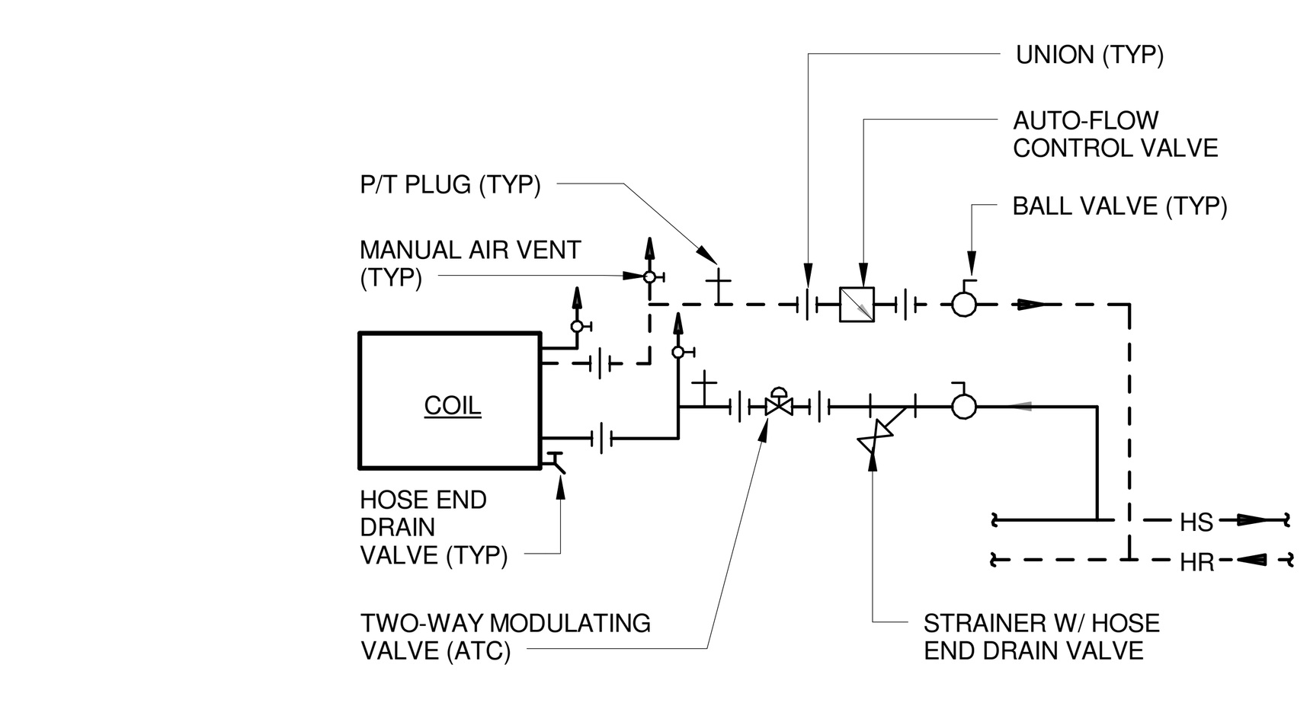
AHU	PIPE SIZE
2	2"
3	2"
4	2"

7 TYPICAL AHU COOLING COIL PIPING DETAIL WITH 2-WAY CONTROL VALVE

SCALE: NONE

RUN-OUT PIPE SCHEDULE

GPM RANGE	PIPE SIZE
0.0 - 3.9	3/4"
4.0 - 6.9	1"
7.0 - 14.9	1 1/4"
15.0 - 24.9	1 1/2"
25.0 - 50.0	2"

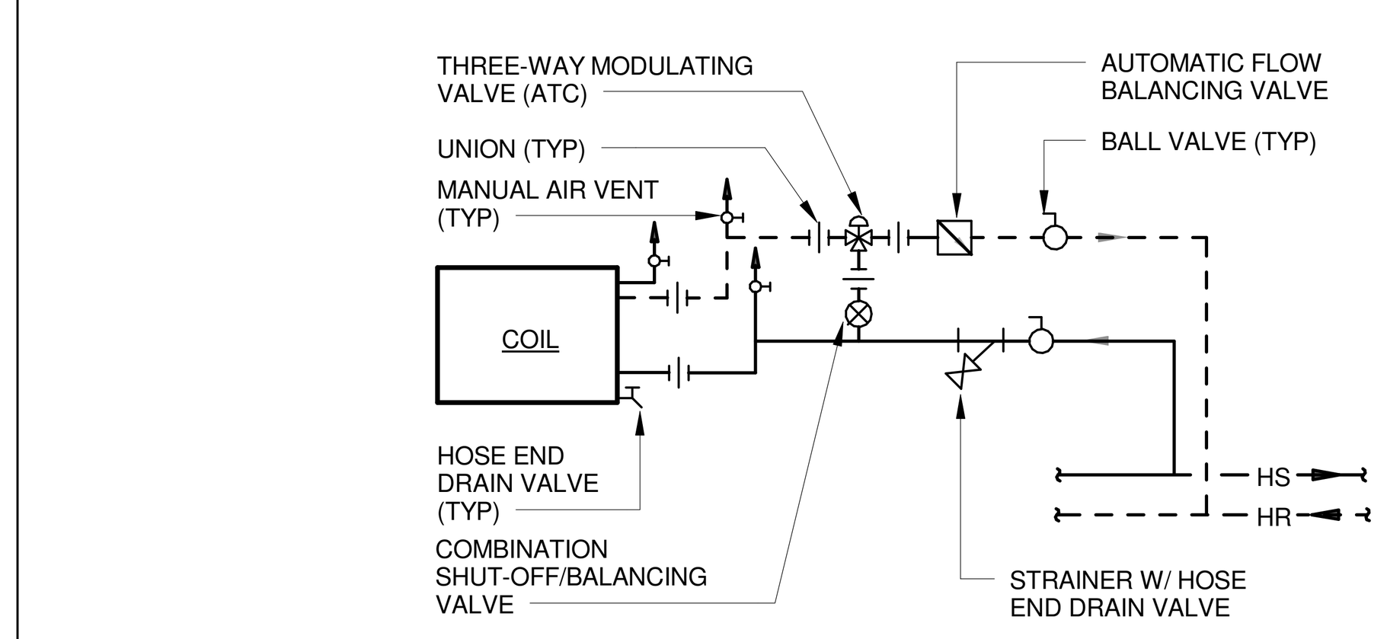


8 TYPICAL TERMINAL CONTROL UNIT HEATING COIL PIPING DETAIL

SCALE: NONE

RUN-OUT PIPE SCHEDULE

GPM RANGE	PIPE SIZE
0.0 - 3.9	3/4"
4.0 - 6.9	1"
7.0 - 14.9	1 1/4"
15.0 - 24.9	1 1/2"
25.0 - 50.0	2"

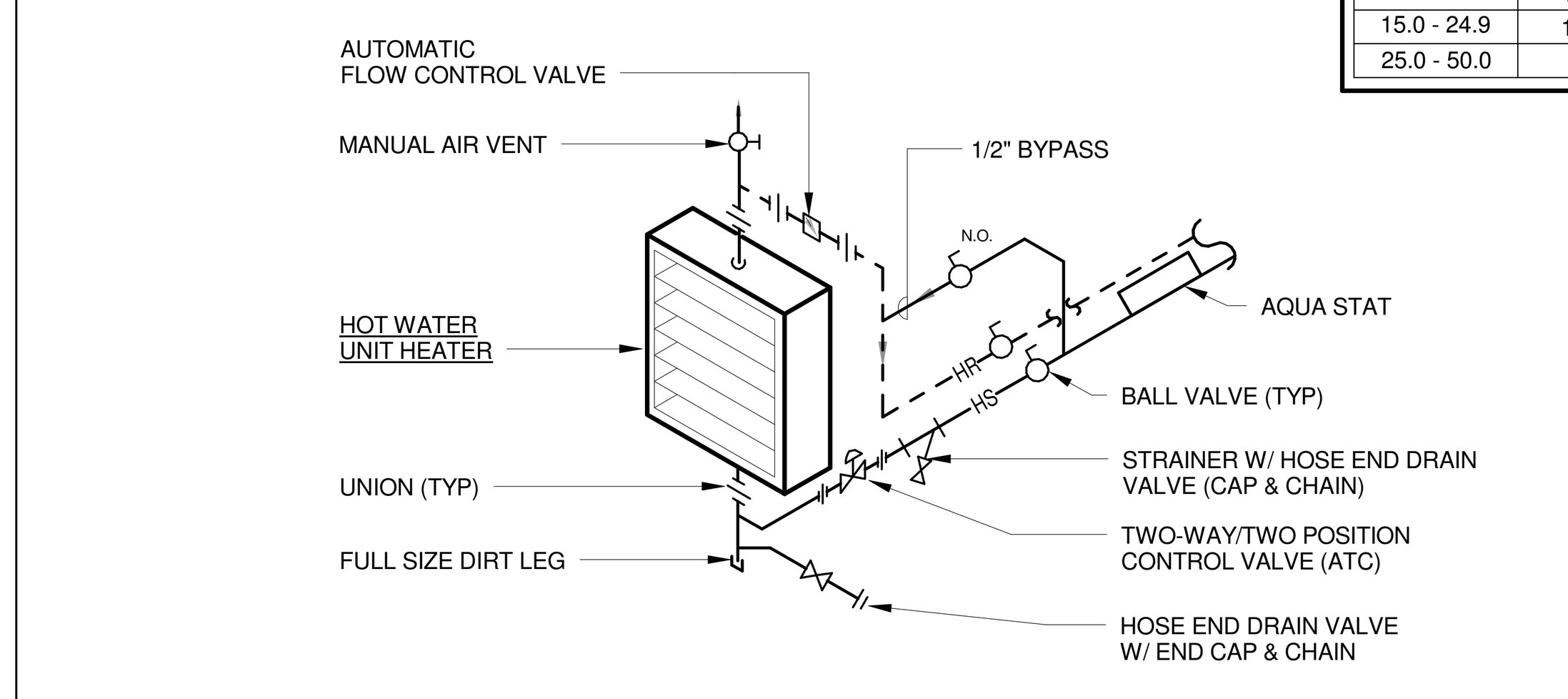


9 TYPICAL CABINET UNIT HEATER PIPING DETAIL

SCALE: NONE

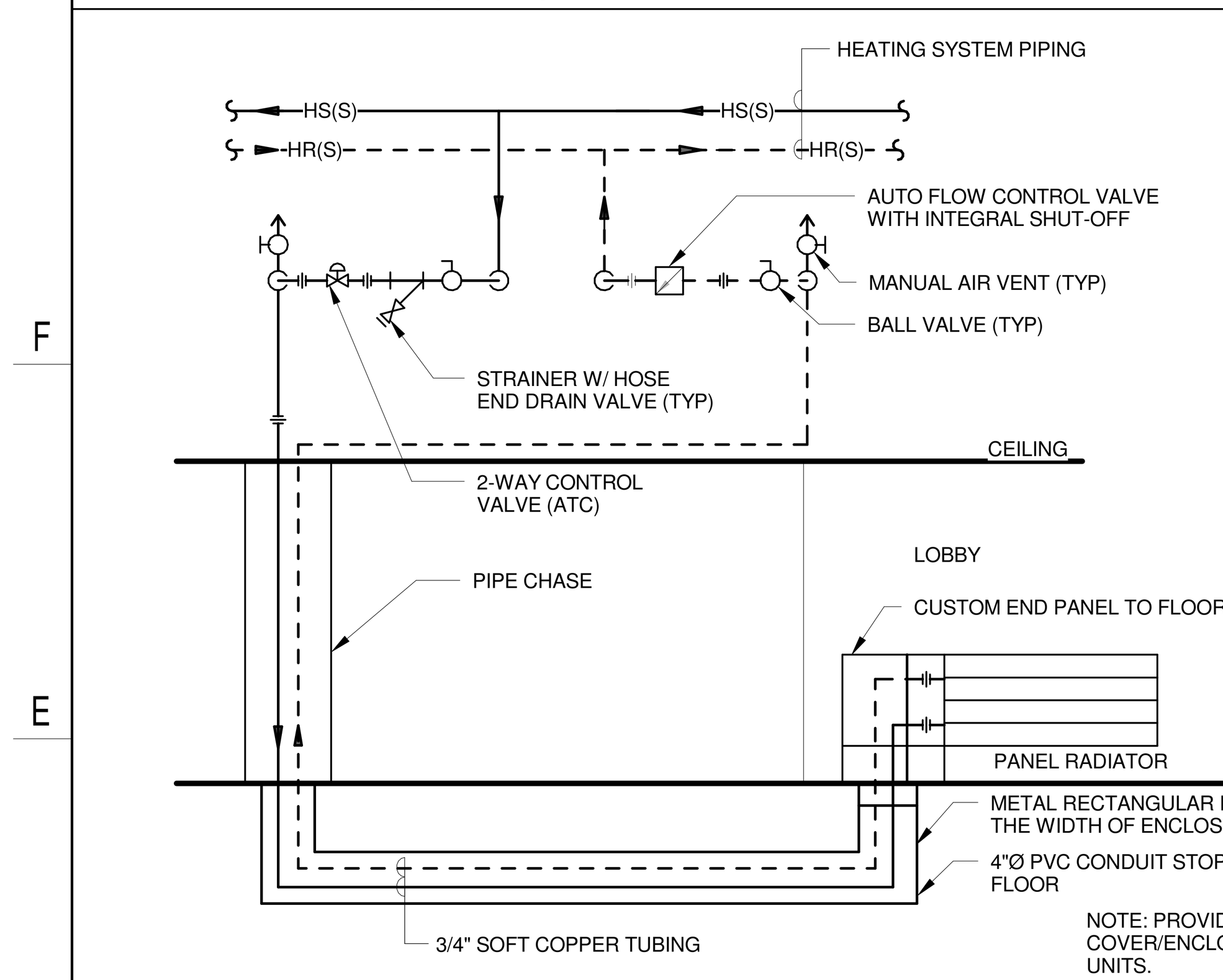
RUN-OUT PIPE SCHEDULE

GPM RANGE	PIPE SIZE
0.0 - 3.9	3/4"
4.0 - 6.9	1"
7.0 - 14.9	1 1/4"
15.0 - 24.9	1 1/2"
25.0 - 50.0	2"



10 TYPICAL HORIZONTAL DISCHARGE HOT WATER UNIT HEATER DETAIL

SCALE: NONE

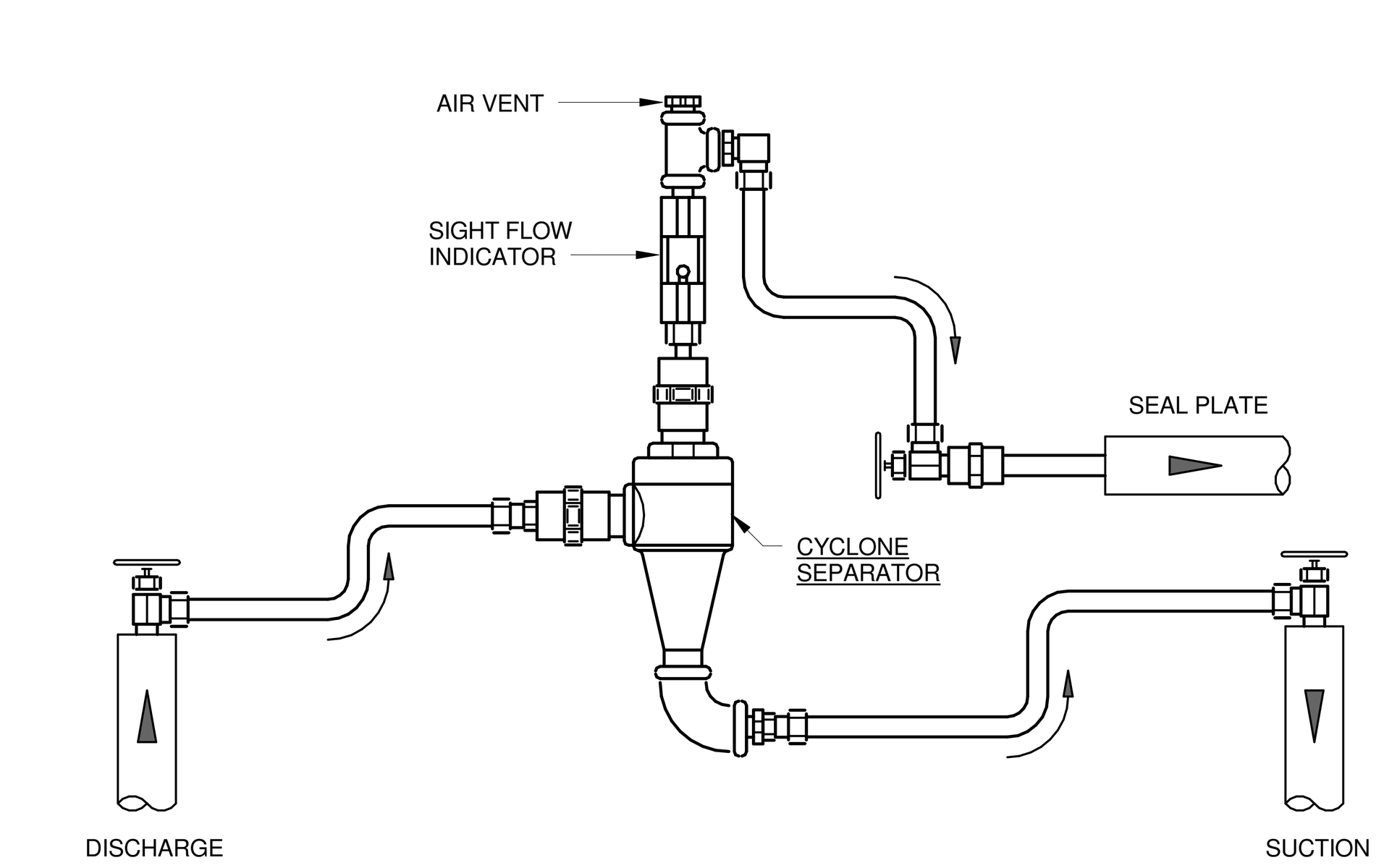


RUN-OUT PIPE SCHEDULE

GPM RANGE	PIPE SIZE
0.0 - 3.9	3/4"
4.0 - 6.9	1"
7.0 - 14.9	1 1/4"
15.0 - 24.9	1 1/2"
25.0 - 50.0	2"

11 TYPICAL BASEBOARD RADIATION PIPING DETAIL WITH 2-WAY CONTROL VALVE

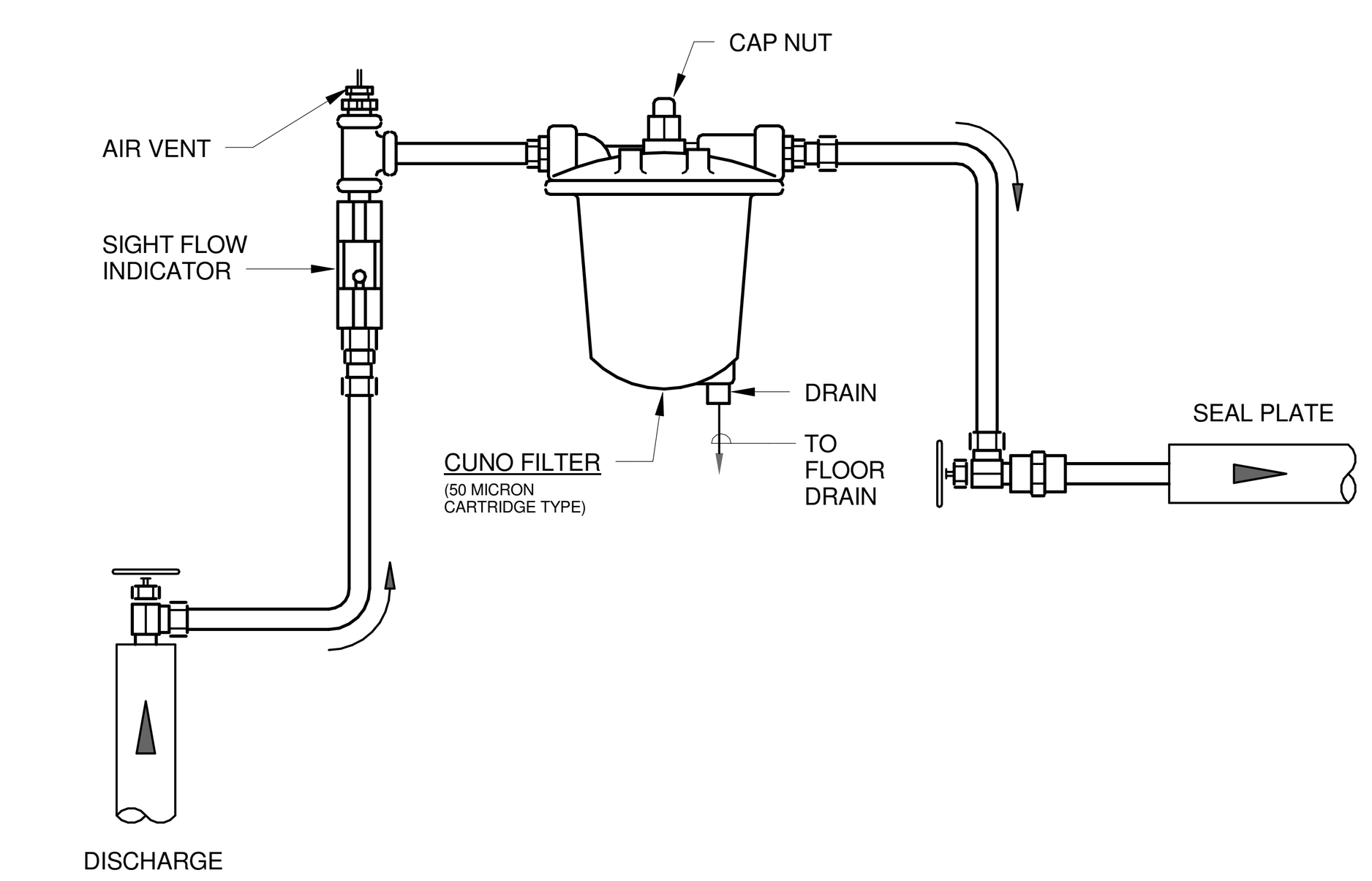
SCALE: NONE



NOTE: FOR USE ON PUMPS >30 PSI.

12 TYPICAL PUMP SEAL CYCLONE SEPARTOR W/ SIGHT FLOW INDICATOR DETAIL

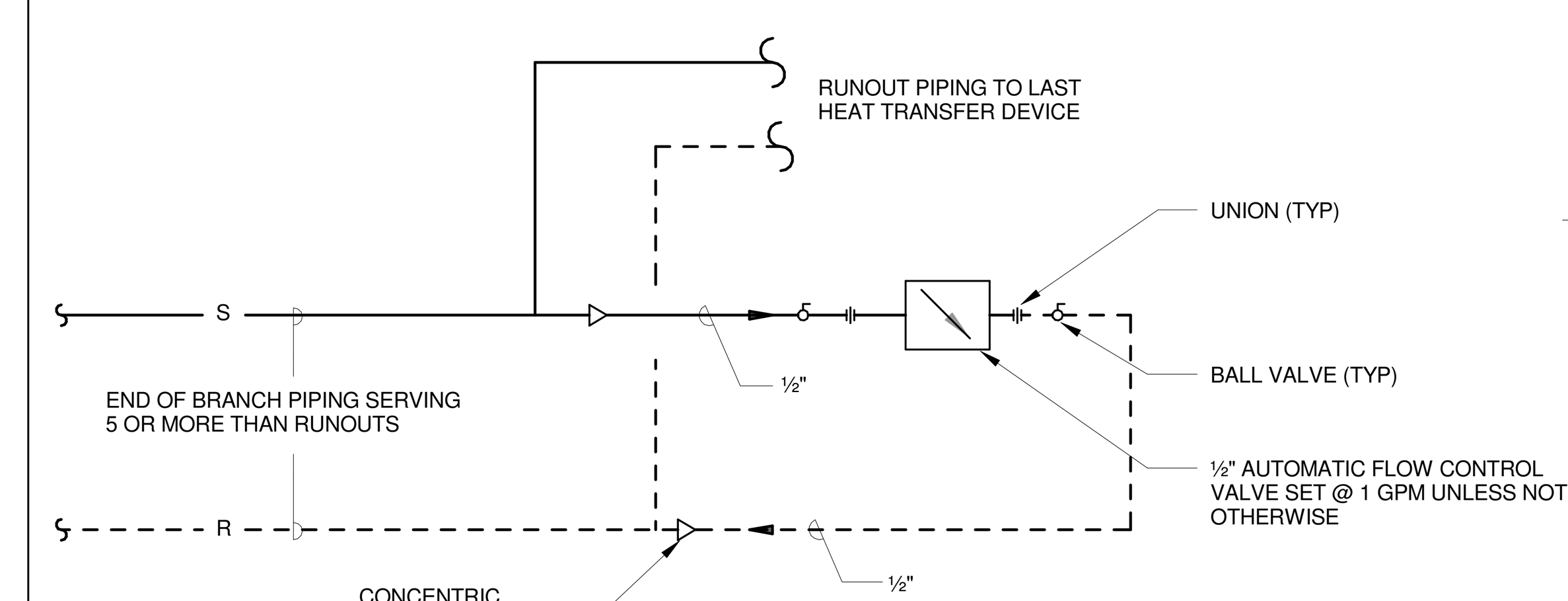
SCALE: NONE



NOTE: FOR USE ON PUMPS≤ 30 PSI

13 TYPICAL PUMP SEAL CUNO FILTER W/SIGHT FLOW INDICATOR DETAIL

SCALE: NONE

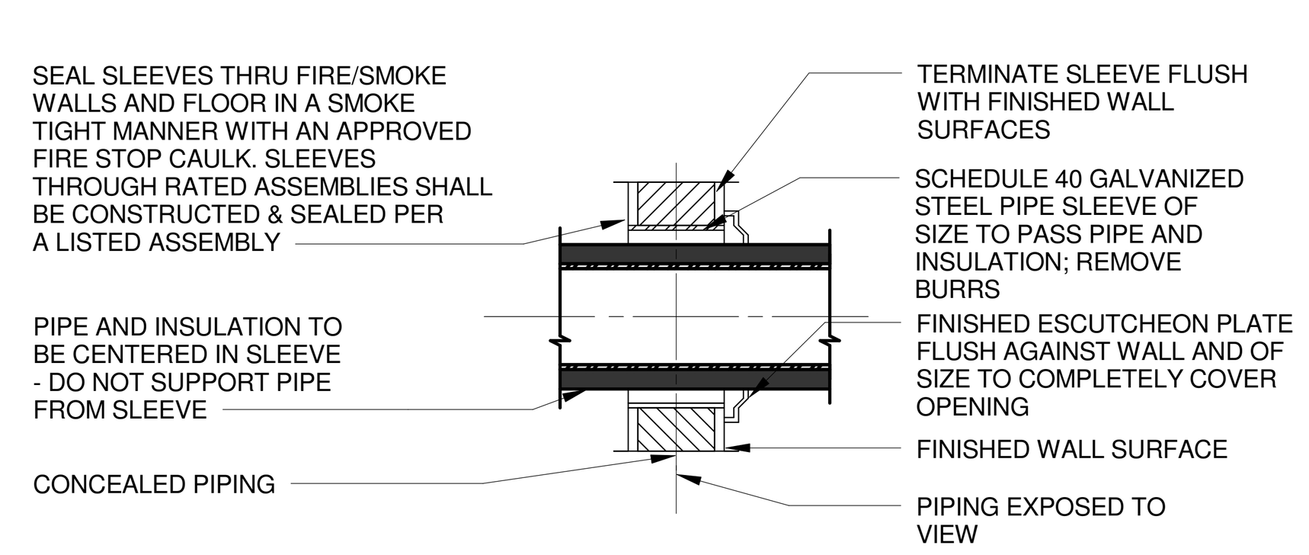


NOTE 1. DETAIL TYPICAL FOR HEATING WATER SYSTEM

2. PROVIDE 1", 5 GPM AUTOMATIC FLOW CONTROL VALVE FOR THE CHILLED WATER SYSTEM

14 TYPICAL LAST RUN OUT BYPASS PIPING DETAIL

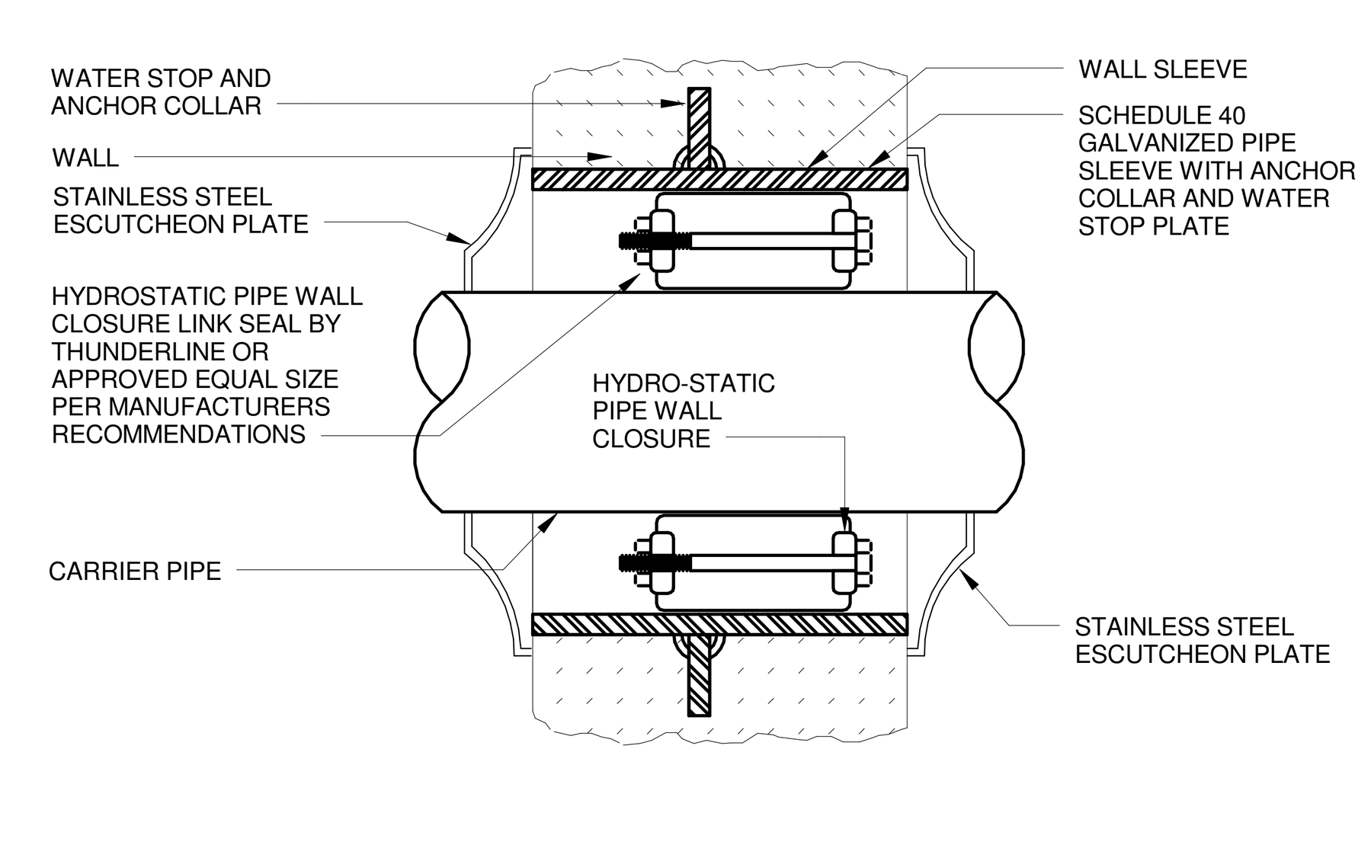
SCALE: NONE



NOTE: FOR INTERIOR FRAME PARTITIONS-PIPE SLEEVES MAY BE FABRICATED FROM GALVANIZED SHEET METAL; ROUND TUBE CLOSED WITH SNAPLOCK JOINT, WELDED SPIRAL SEAMS, OR WELDED LONGITUDINAL JOINT. FABRICATE FROM THE FOLLOWING GAUGES: 3" AND SMALLER, 20 GAUGE; 4" TO 6", 16 GAUGE; OVER 6", 14 GAUGE.

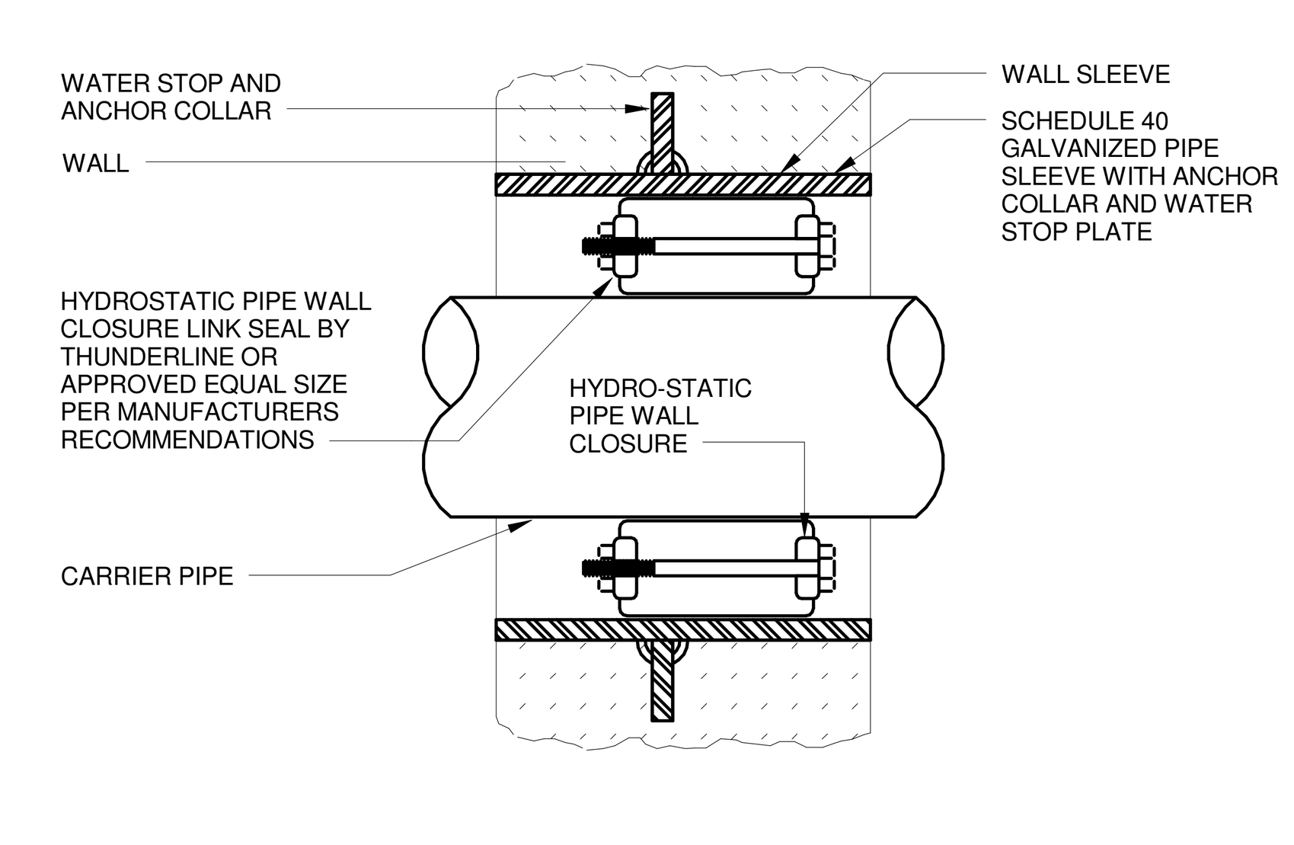
15 TYPICAL PIPE SLEEVE THRU INTERNAL WALL DETAIL

SCALE: NONE



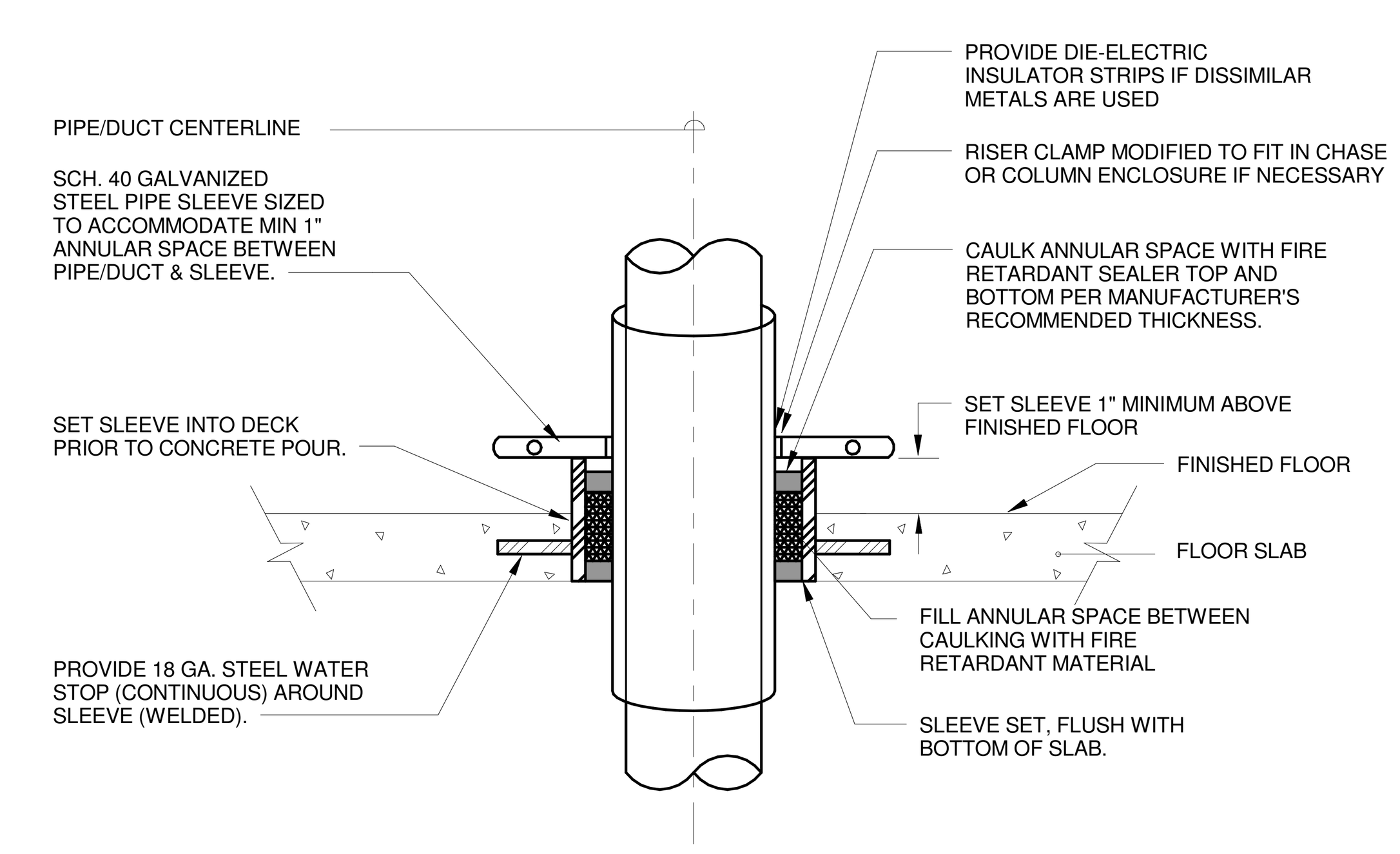
16 TYPICAL PIPE SLEEVE THRU EXTERIOR WALL ABOVE GRADE DETAIL

SCALE: NONE



17 TYPICAL PIPE THRU EXTERIOR WALL PENETRTION SEAL BELOW GRADE DETAIL

SCALE: NONE



18 TYPICAL SLEEVE THRU FLOOR DETAIL

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HEATING & COOLING COIL PIPING DETAILS

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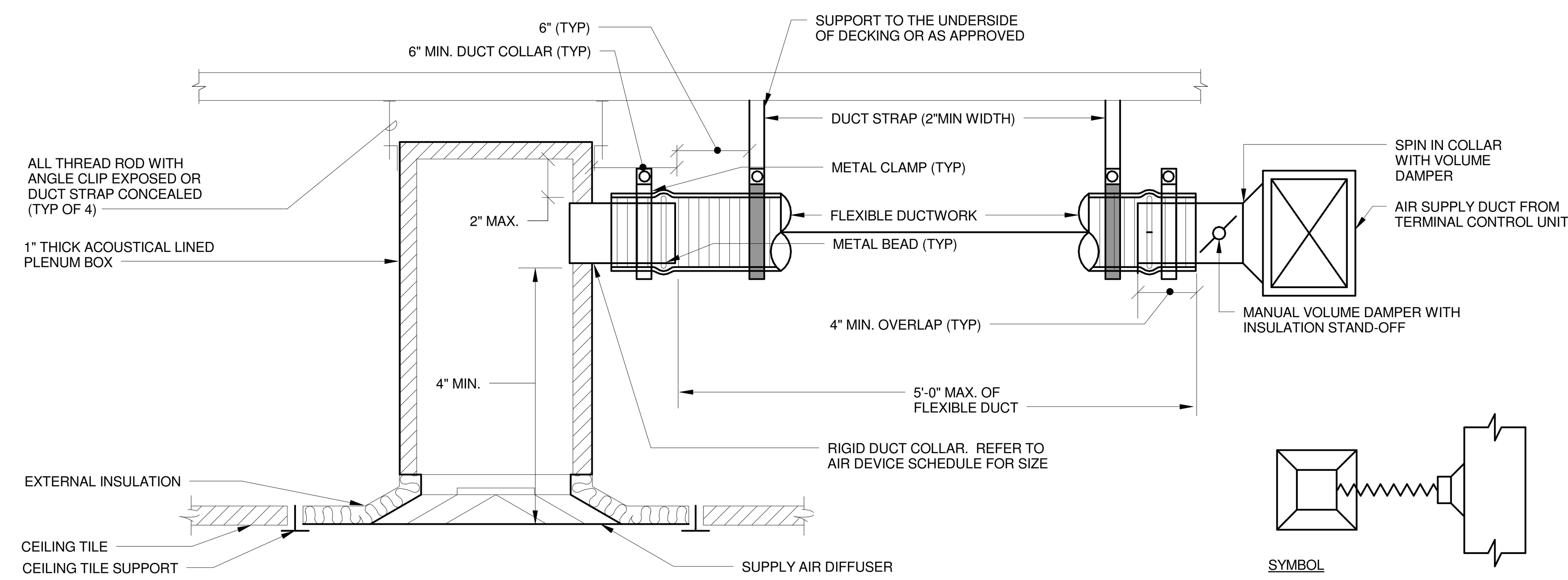
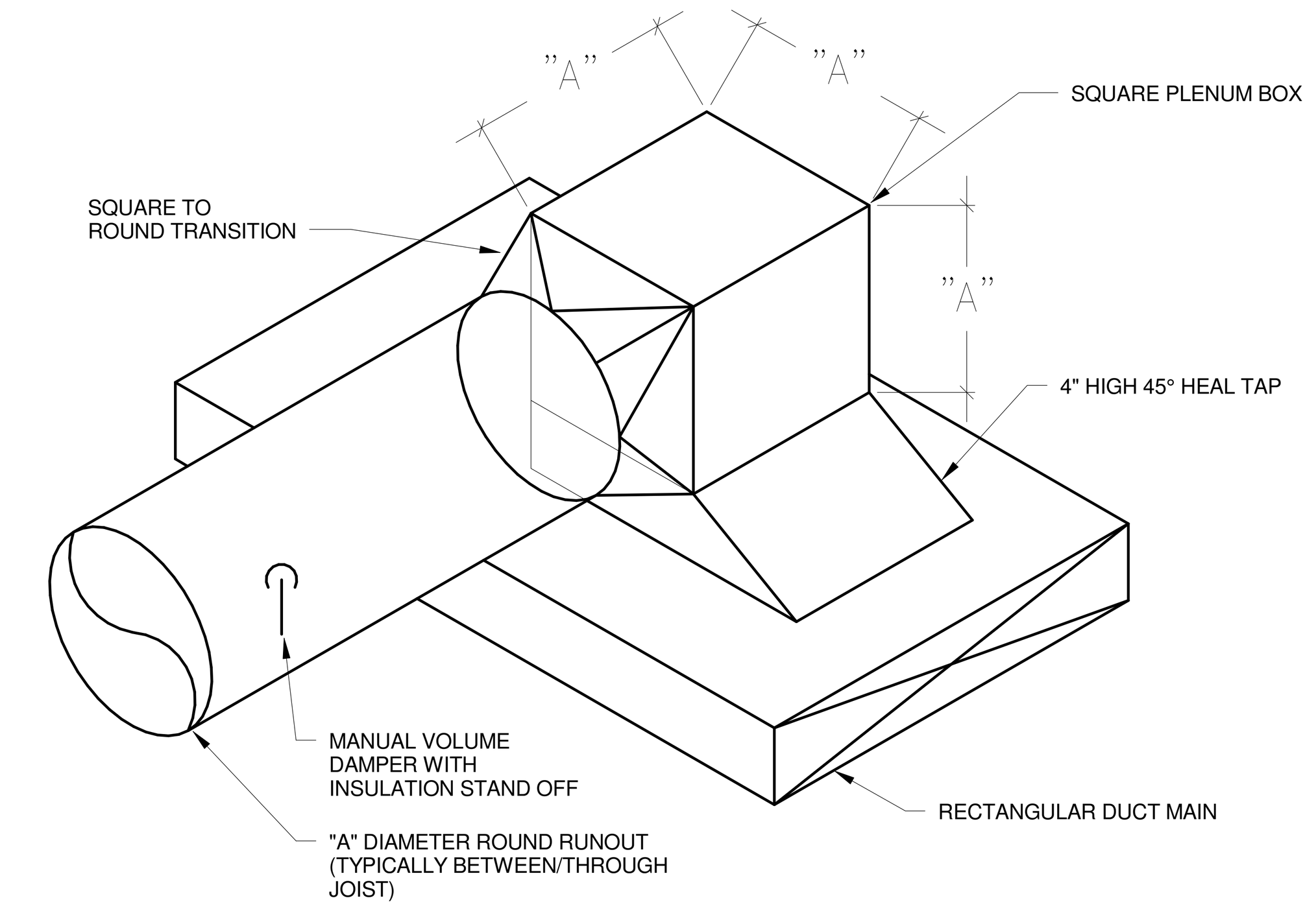


NOTES: 1. STEEL STRAP CLAMP MUST BE POSITIONED BEHIND A BEAD ON THE COLLAR.

CONCEALED CEILING AREA DETAIL

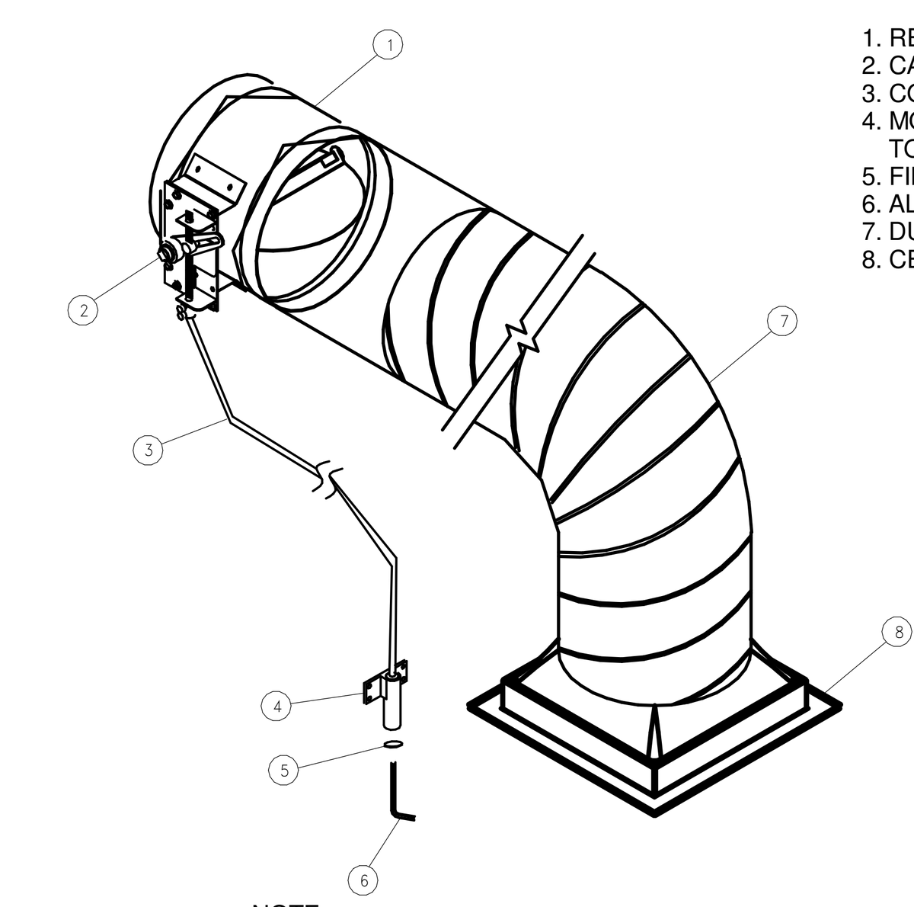
19 TYPICAL SUPPLY AIR DEVICE INSTALLTION DETAIL

SCALE: NONE



20 TYPICAL SUPPLY/RETURN AIR RUNNOUT DETAIL

SCALE: NONE



1. REMOTE CABLE OPERATED BALANCING DAMPER.
2. CABLE CONTROLLED LOCKING QUADRANT
3. CONTROL CABLE
4. MOUNTING BRACKET- INSTALL WITH OPEN END FLUSH TO FINISHED CEILING LINE
5. FINISH CAP
6. ALLEN HEX WRENCH
7. DUCT
8. CEILING DIFFUSER OR GRILLE

NOTE

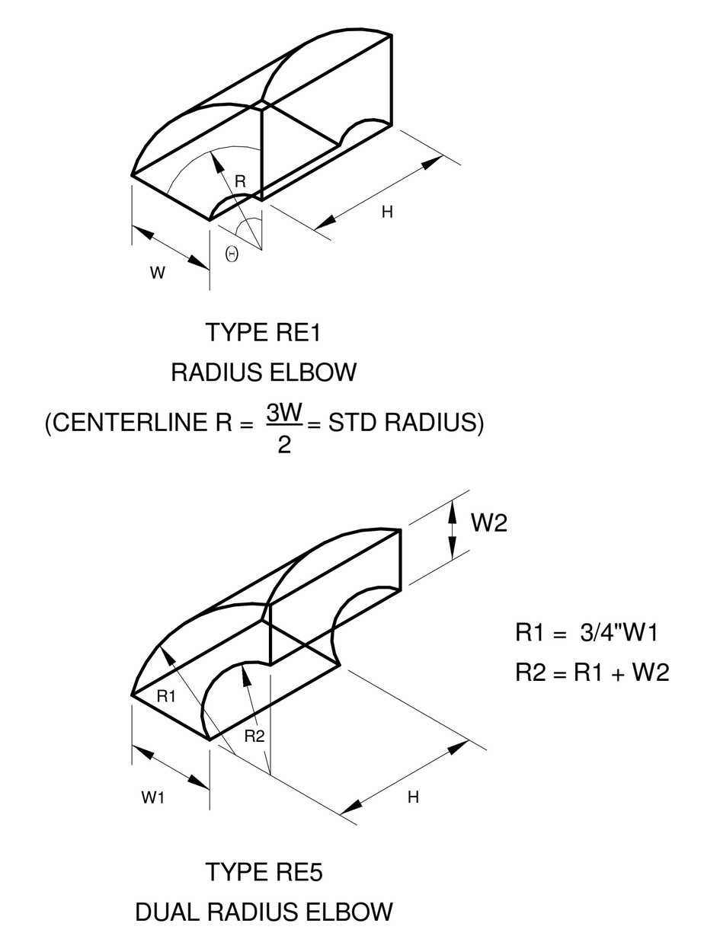
A. COORDIANTE EXACT LOCATION OF CEILING MOUNTED CONCEALED REGULATOR WITH ARCHITECT PRIOR TO INSTALLATION

B. DETAIL IS TYPICAL FOR BOTH ROUND AND SQUARE REMOTE

C. PROVIDE IN LIEU OF CEILING ACCESS DOOR WHERE MANUAL VOLUME DAMPERS ARE INSTALLED ABOVE/INACCESSABLE CEILING SYSTEMS

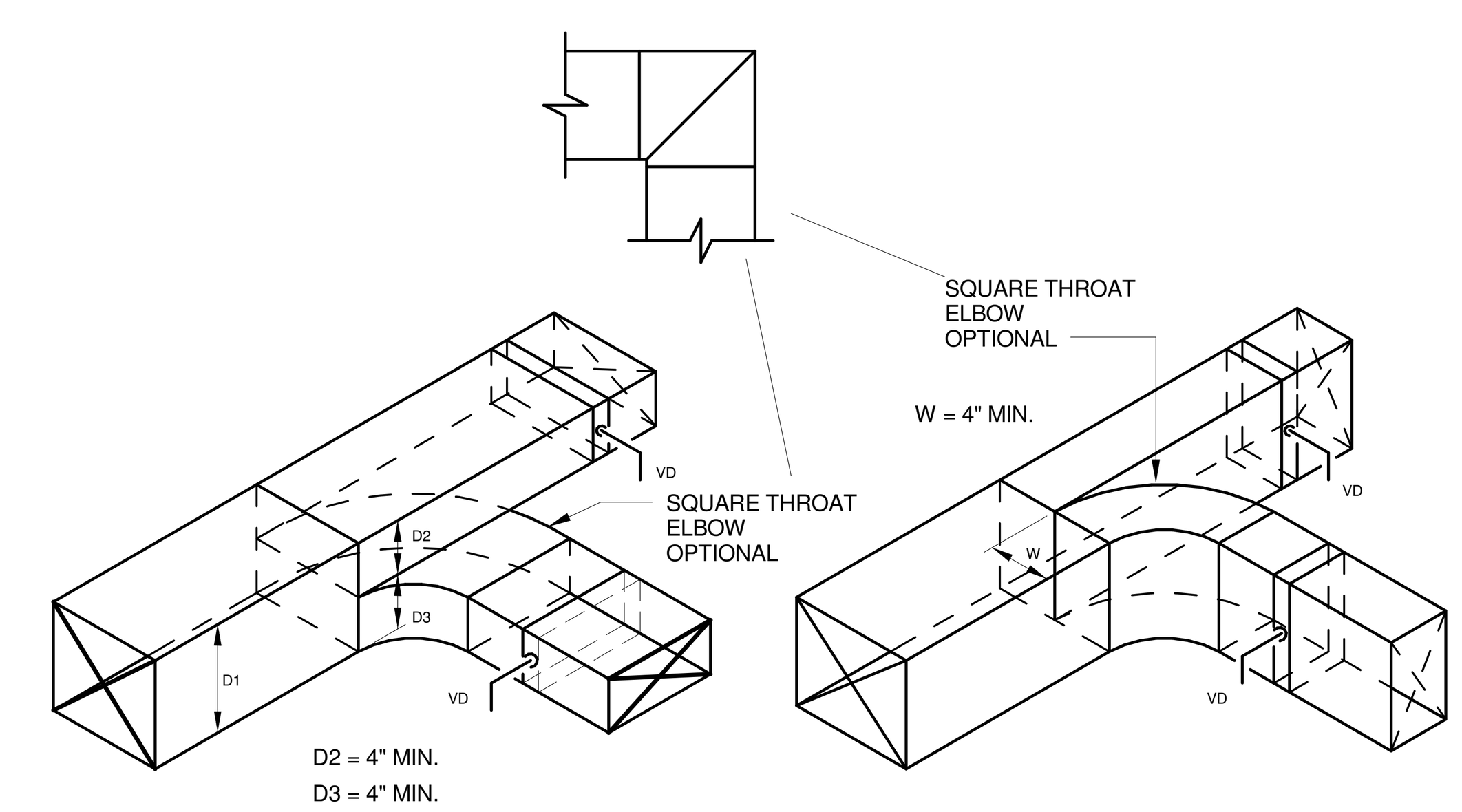
21 TYPICAL REMOTE MANUAL VOLUME DAMPER DETAIL

SCALE: NONE



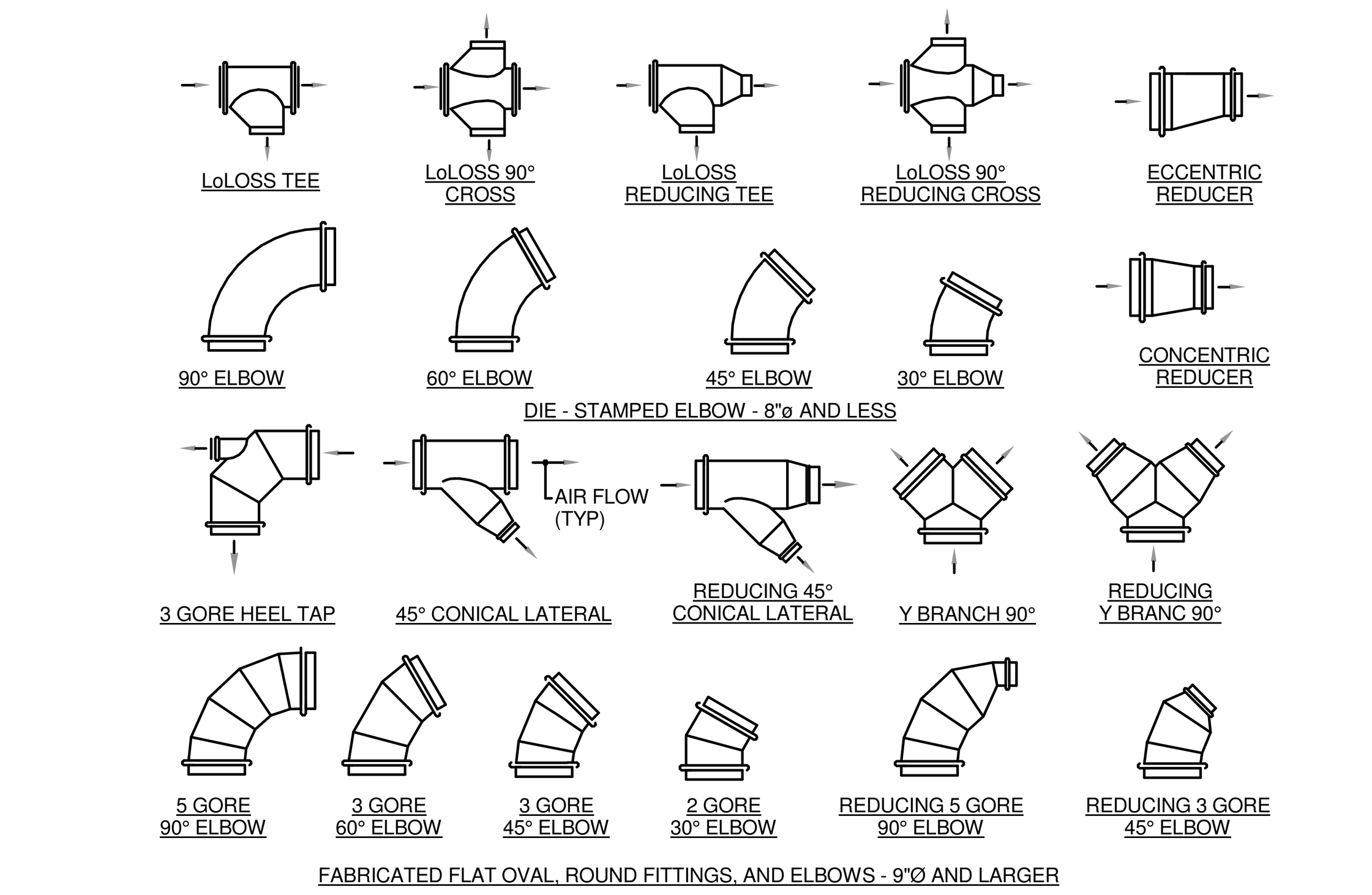
22 TYPICAL RECTANGULAR DUCT CONSTRUCTION DETAIL

SCALE: NONE



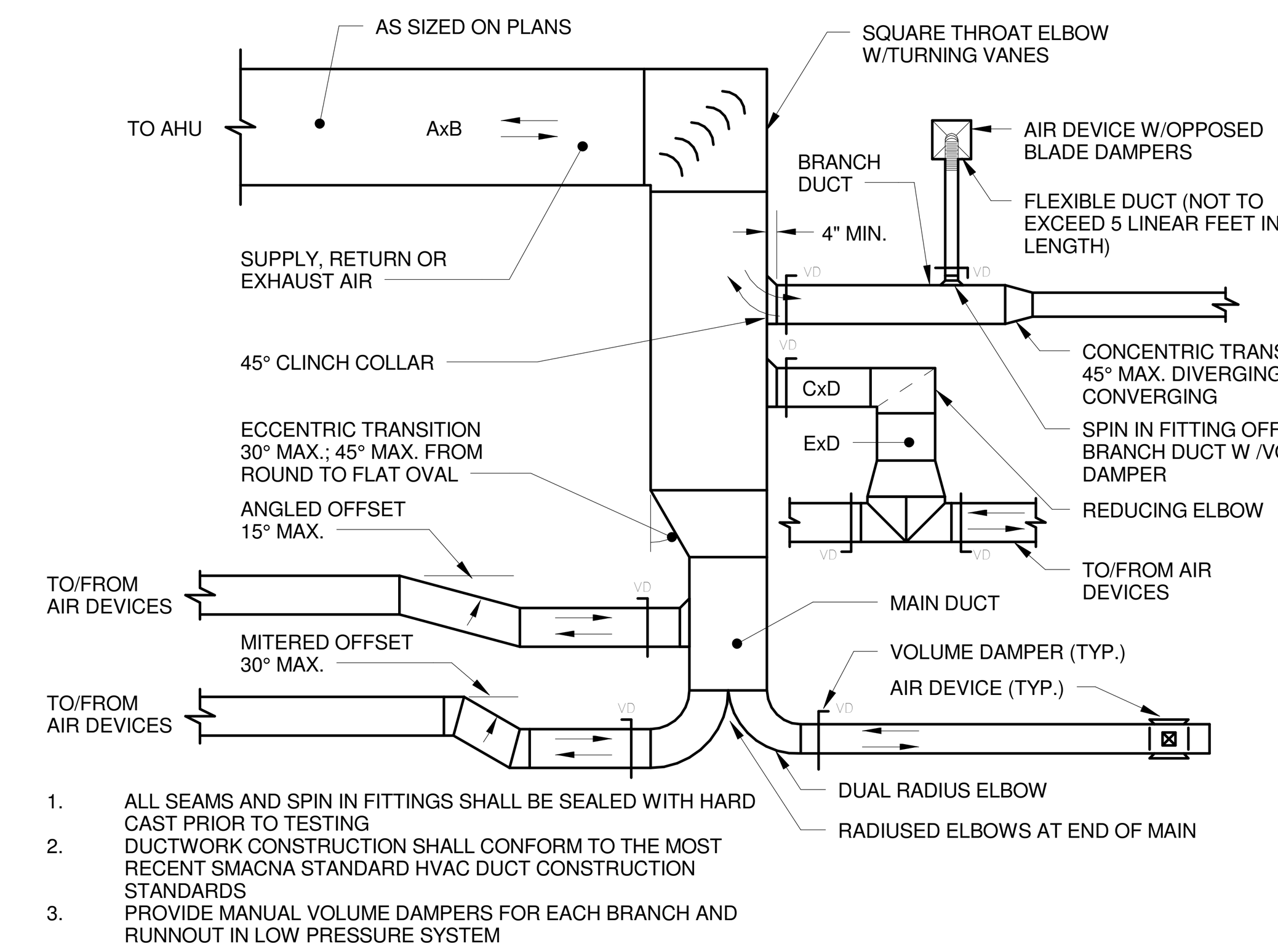
23 PARALLEL FLOW BRANCHES DETAIL

SCALE: NONE



24 TYPICAL DUCT FITTINGS DETAIL

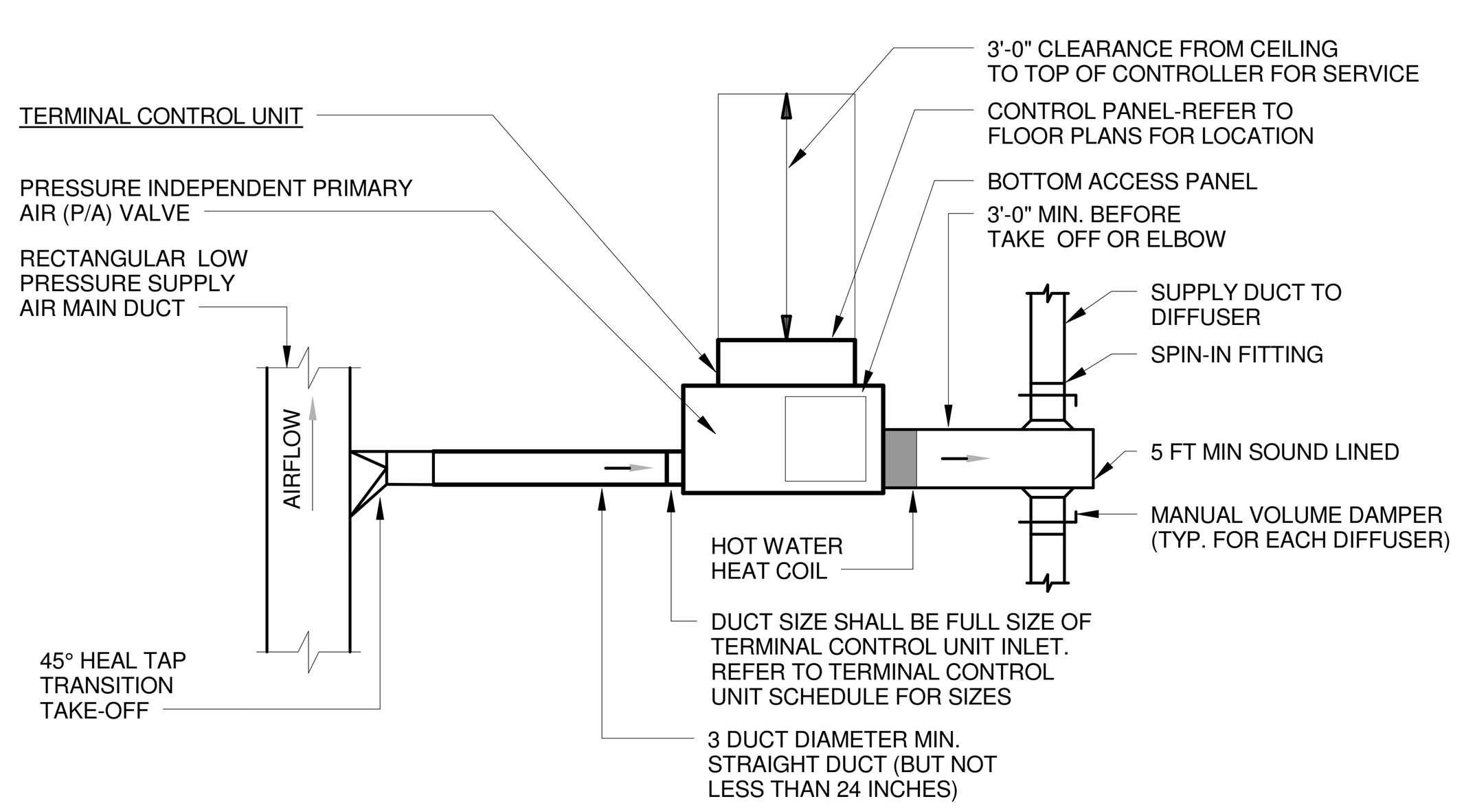
SCALE: NONE



1. ALL SEAMS AND SPIN IN FITTINGS SHALL BE SEALED WITH HARD CAST PRIOR TO TESTING
2. DUCTWORK CONSTRUCTION SHALL CONFORM TO THE MOST RECENT SMACNA STANDARD HVAC DUCT CONSTRUCTION STANDARDS
3. PROVIDE MANUAL VOLUME DAMPERS FOR EACH BRANCH AND RUNNOUT IN LOW PRESSURE SYSTEM

25 TYPICAL SUPPLY, EXHAUST, OR RETURN DUCT OFFSET AND TRANSITION DETAIL

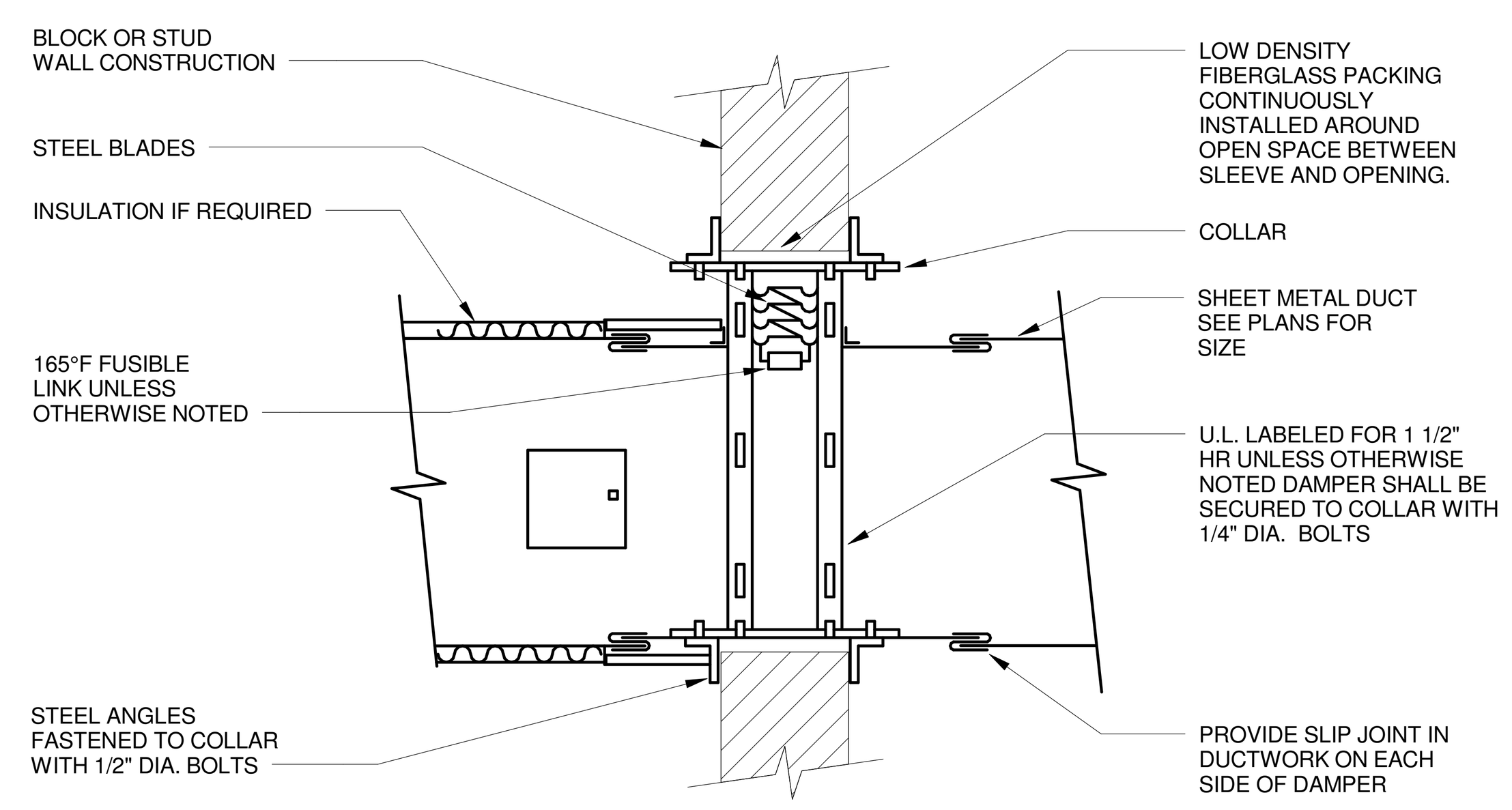
SCALE: NONE



NOTE: 1. INSULATE HEATING COIL INCLUDING "U" TUBE AND ALL HEATING WATER PIPING, VALVES AND FITTINGS WITHIN 36" OF COIL CONNECTION

26 TYPICAL TERMINAL CONTROL UNIT DETAIL

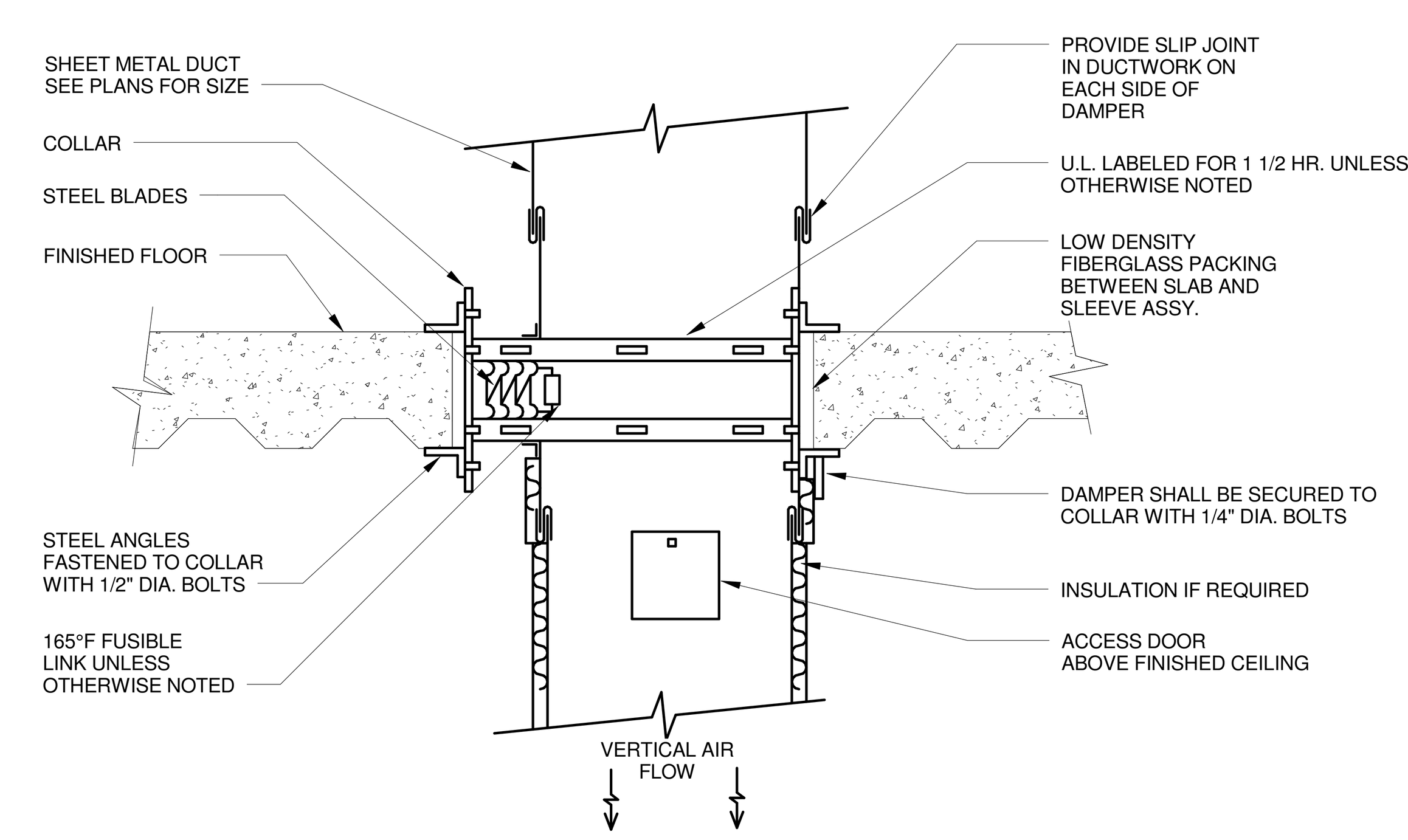
SCALE: NONE



NOTE: INSTALLATION SHALL COMPLY WITH U.L. REQUIREMENTS

27 TYPICAL VERTICAL FIRE DAMPER DETAIL

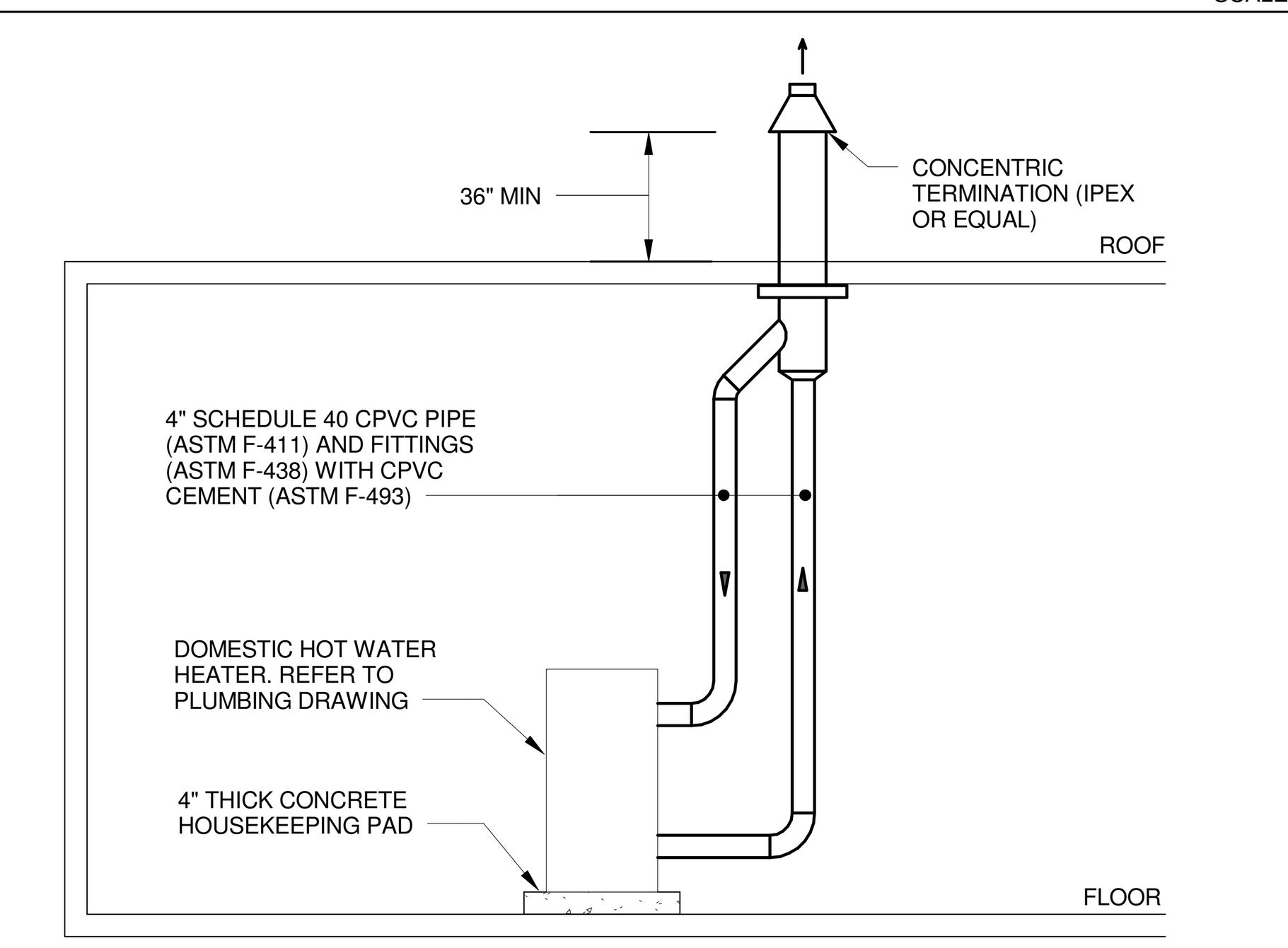
SCALE: NONE



NOTE: INSTALLATION SHALL COMPLY WITH U.L. REQUIREMENTS

28 TYPICAL HORIZONTAL FIRE DAMER DETAIL

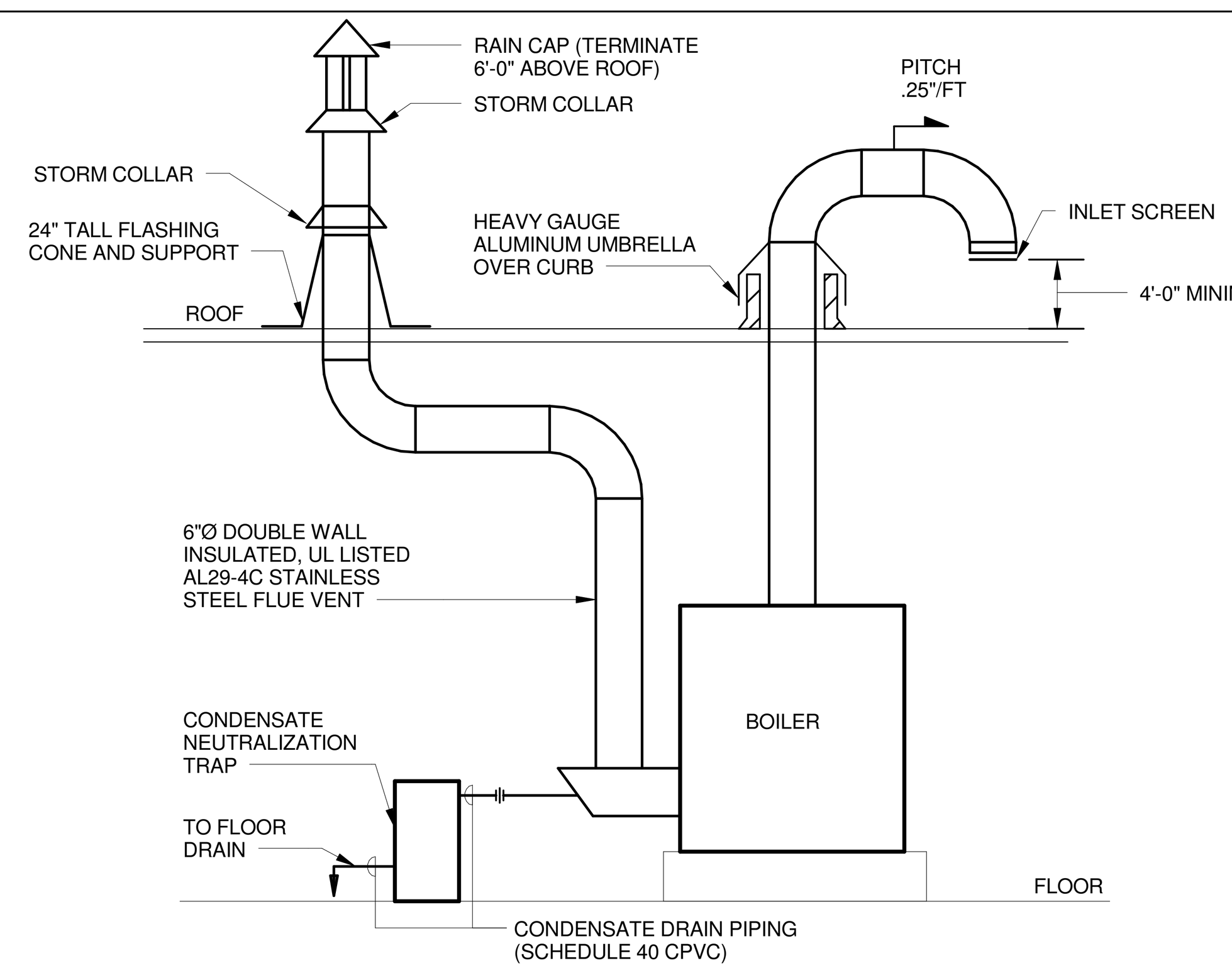
SCALE: NONE



NOTE: INSTALL ALL VENTING PER THE MANUFACTURERS RECOMMENDATIONS

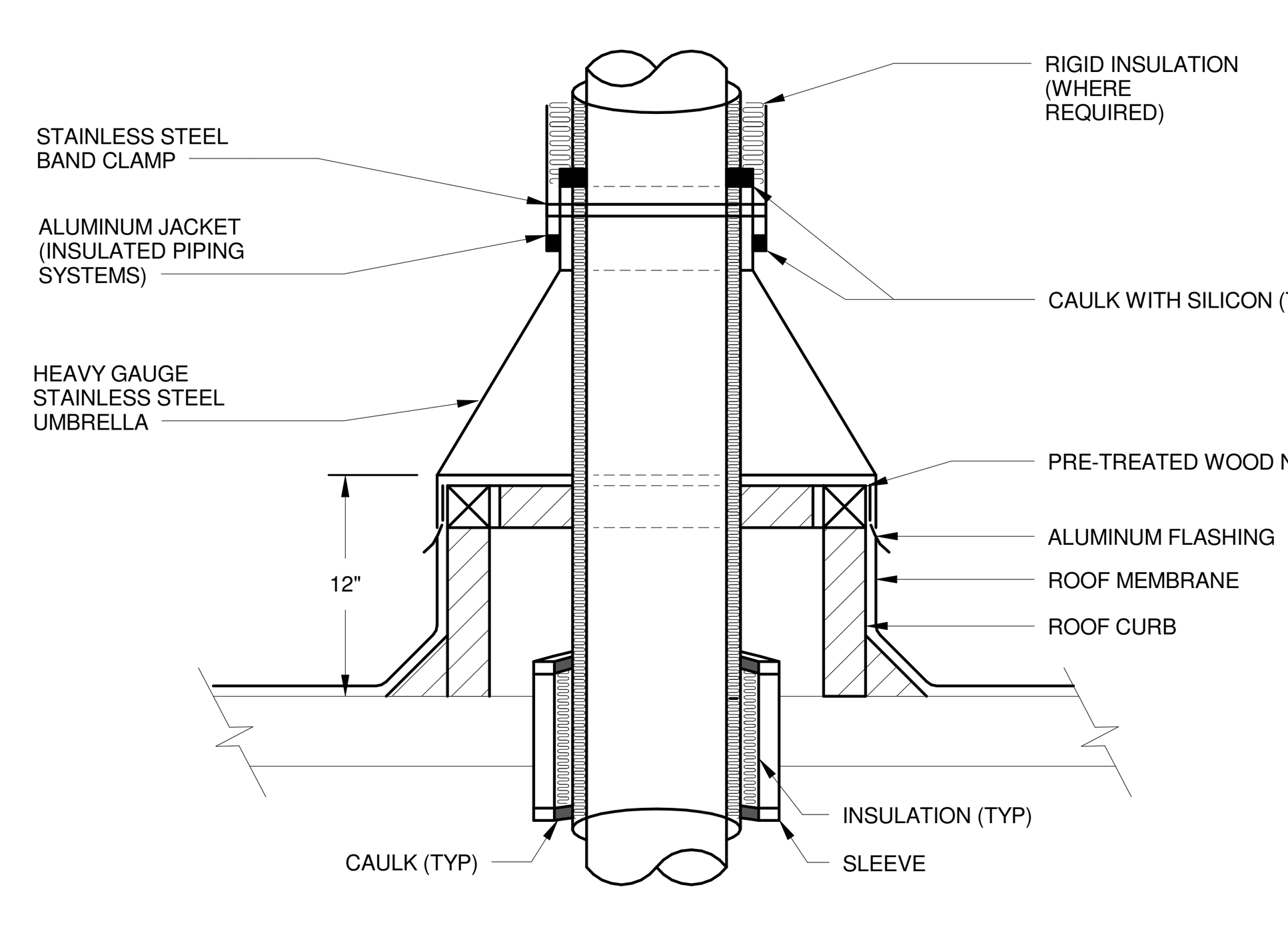
29 TYPICAL DOMESTIC HOT WATER HEATER SEALED COMBUSTION AIR/VENT TERMINAL DETAIL

SCALE: NONE



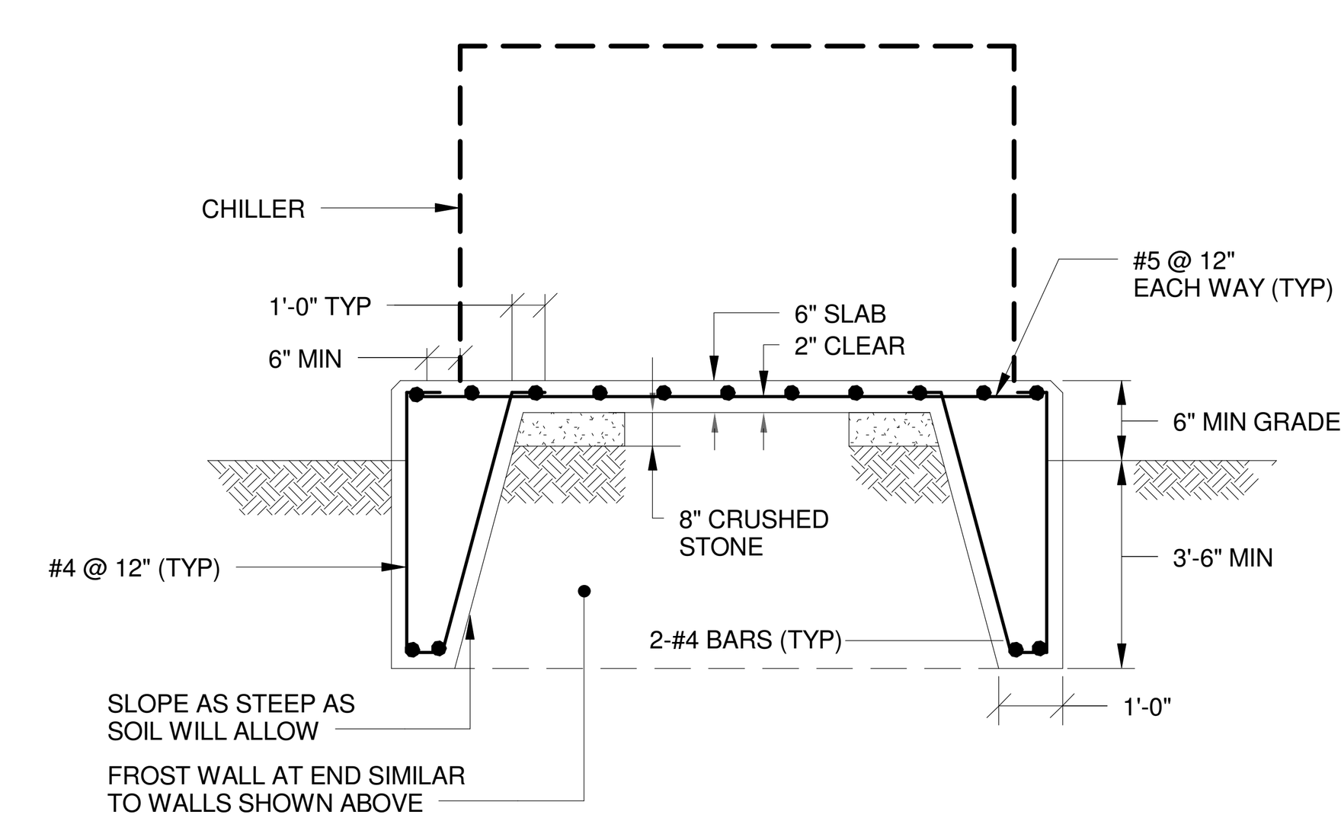
30 TYPICAL BOILER VENT DETAIL

SCALE: NONE



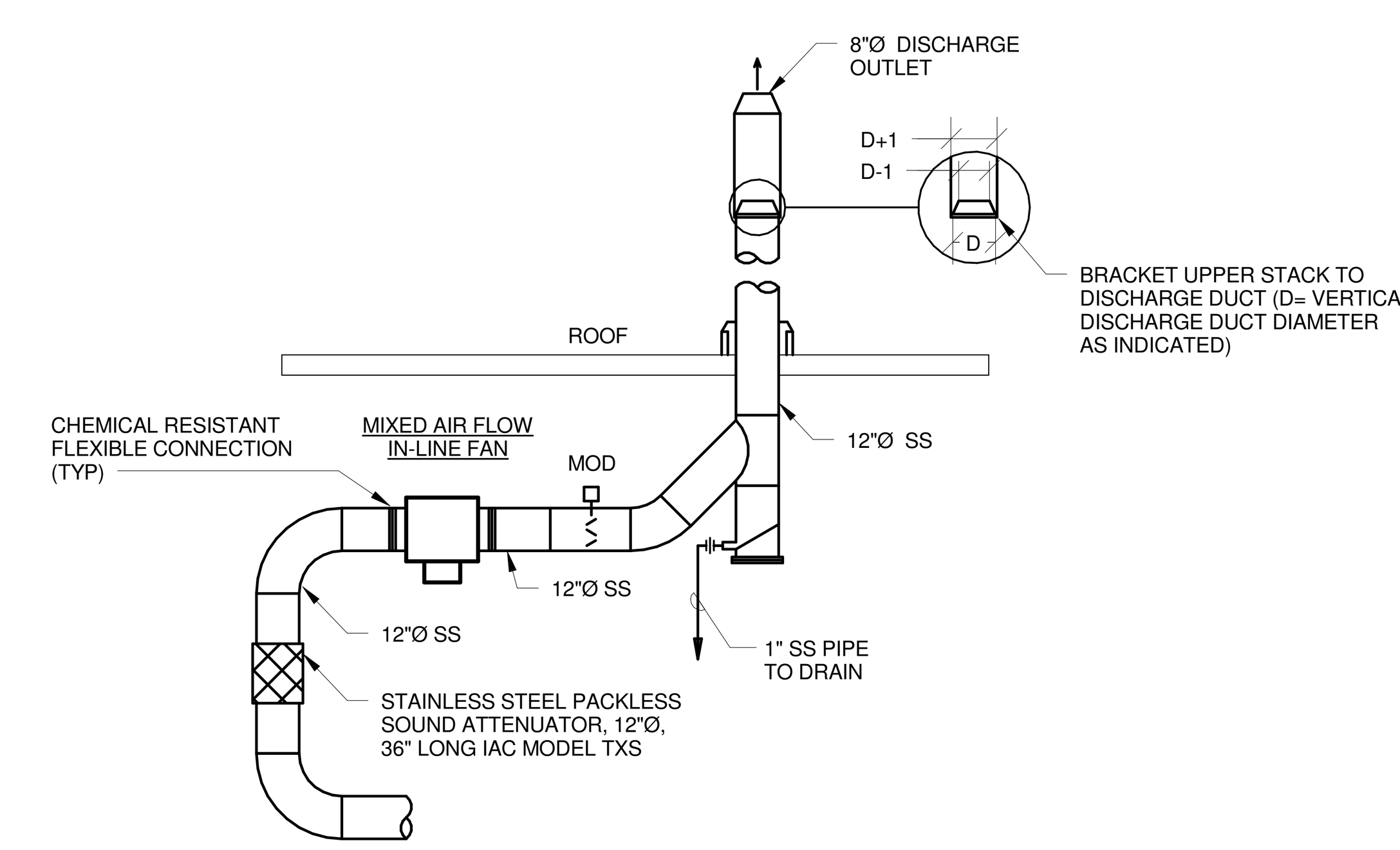
31 TYPICAL PIPE/ DUCT ROOF PENETRATION DETAIL

SCALE: NONE



32 TYPICAL CONCRETE EQUIPMENT PAD DETAIL

SCALE: NONE



33 FUME HOOD EXHAUST DETAIL

SCALE: NONE

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AIR DISTRIBUTION DETAILS

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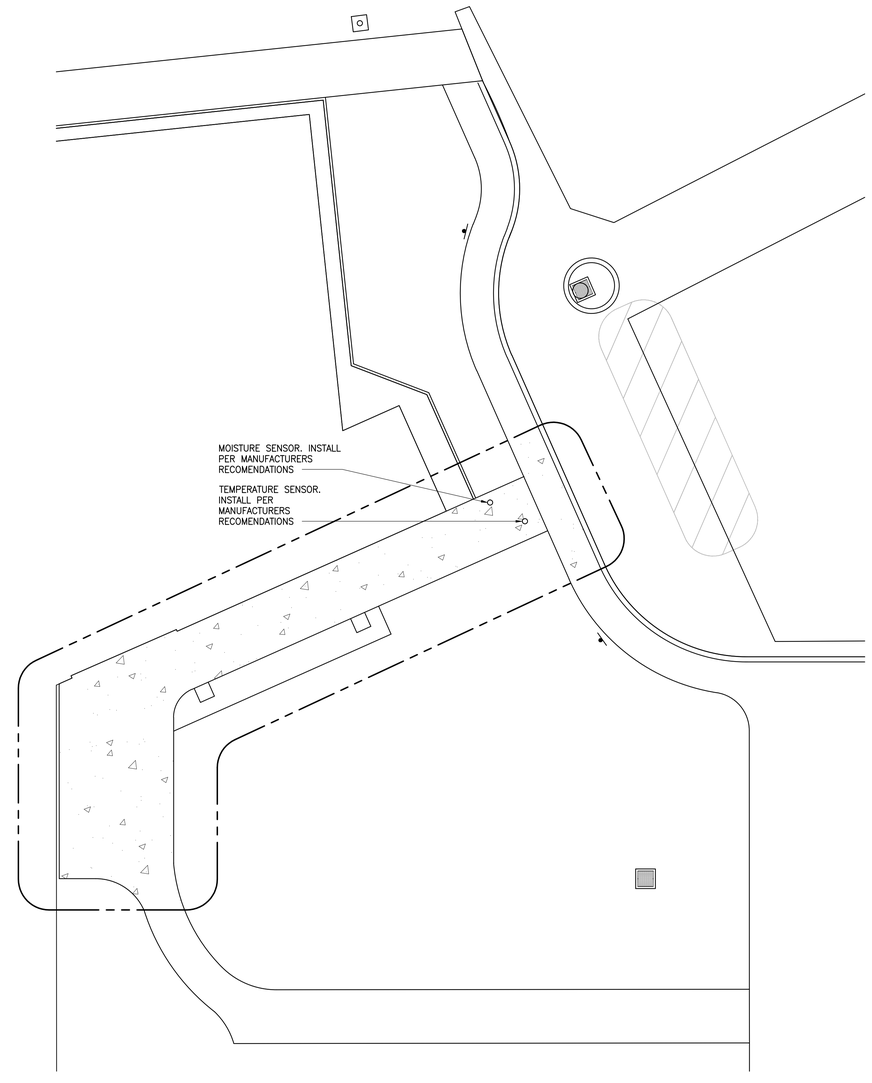


HYDRONIC HEAT SNOW MELTING PART PLAN

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

NOTE: UNDER ADD ALTERNATE No. 3

DESIGN NOTES:

1. HYDRONIC SNOW MELTING SLAB SHALL CONSIST OF RAMPS AND LANDINGS AS OUTLINED/SHOWN. REFER TO ARCHITECTURAL DRAWINGS AND DETAILS FOR ADDITIONAL INFORMATION ON RAMP AND LANDING CONSTRUCTION. THE MANUFACTURER SHALL CONFIRM ALL EQUIPMENT CAPACITY BASED ON AREA SERVED.
2. DESIGN AND INSTALL CIRCUIT PIPING PER MANUFACTURERS (VIEGA) RECOMMENDATIONS.
3. DESIGN PARAMETERS:

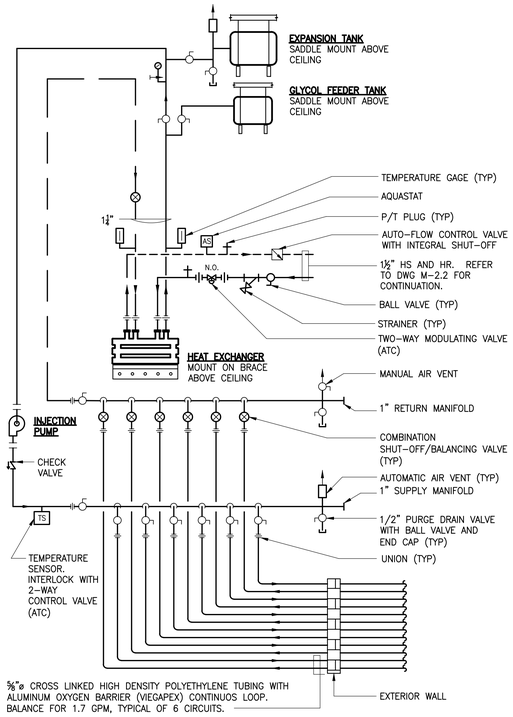
   VIEGA SYSTEM: DESIGN LEVEL TYPE II
   TOTAL SNOW MELT AREA: APROX. 610 FT²
   UNIT HEAT LOAD: 255.7 BTUH/FT²
   WATER TEMPERATURE: 130 °F
   AVG. SPACING: 6 IN.

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

8 0 8 16

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

4 0 4 8

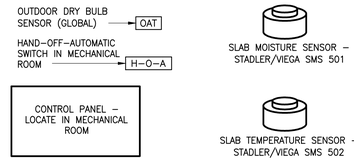


HYDRONIC SNOW MELTING PIPING DETAIL

NOTE: PROVIDE A COMPLETE AND FULLY TURNKEY RAMP RADIANT HEATING SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND CONTROLS COORDINATED WITH THE BUILDING ENERGY MANAGEMENT SYSTEM (JCI).

SEQUENCE OF OPERATION (ELECTRIC/ELECTRONIC)

1. PROVIDE A SYSTEM HAND-OFF-AUTOMATIC (H-O-A) SWITCH. WHEN INDEXED TO THE HAND MODE THE SYSTEM SHALL BE ENERGIZED AND OPERATE THROUGH THE LOCAL CONTROL SYSTEM. WHEN THE SYSTEM SWITCH IS INDEXED TO OFF, THE SYSTEM SHALL BE SHUTDOWN THROUGH THE LOCAL CONTROL SYSTEM. WHEN THE SYSTEM SWITCH IN INDEXED TO THE AUTOMATIC POSITION, THE SYSTEM SHALL BE STARTED AND STOPPED AUTOMATICALLY THROUGH THE CAMPUS ENERGY MANAGEMENT SYSTEM (EMS) BASED ON OUTSIDE AIR TEMPERATURE, MOISTURE SENSOR, AND/OR SLAB TEMPEPERATURE. THE EMS SHALL MONITOR THE H-O-A SWITCH POSITION.
2. ALL SETPOINTS SHALL BE ADJUSTABLE THROUGH SOFTWARE.
3. WHEN OUTSIDE AIR TEMPERATURE IS BELOW 45°F, THE SYSTEM SHALL BE IN HEATING MODE:
   A. WHEN MOISTURE IS SENSED, THE SYSTEM SHALL ACTIVATE. AFTER MOISTURE IS REMOVED, THE SYSTEM SHALL REMAIN ON FOR AN ADDITIONAL 30 MINUTES.
   B. WHEN OUTSIDE AIR TEMPERATURE DROPS 10°F IN ONE HOUR, THE SYSTEM SHALL ACTIVATE FOR A DURATION OF ONE HOUR OR UNTIL MOISTURE IS SENSED.
   C. WHEN SLAB TEMPERATURE IS BELOW 15°F, THE SYSTEM SHALL ACTIVATE UNTIL SLAB TEMPERATURE REACHES 30°F.
   D. WHENEVER ACTIVATED, THE SYSTEM SHALL MAINTAIN A MAXIMUM SLAB TEMPERATURE OF 40°F.
   E. RADIANT HEAT SYSTEM SUPPLY WATER TEMPERATURE SENSOR SHALL MODULATE HEATING WATER CONTROL VALVE TO MAINTAIN 140°F SUPPLY WATER TEMPERATURE. IF RADIANT HEAT SYSTEM SUPPLY WATER TEMPERATURE EXCEEDS 150°F FOR 10 MINUTES, THE RADIANT HEAT SYSTEM PUMP SHALL DE-ENERGIZE AND AN ALARM SHALL ANNUCIATE THRU EMS.
   F. THE SYSTEM SHALL BE LOCKED OUT AND THE HEATING CONTROL VALVE SHALL BE CLOSED WHENEVER OUTSIDE AIR TEMPERATURES ARE ABOVE 45°F.



HYDRONIC SNOW MELTING CONTROL DIAGRAM

EQUIPMENT NOTES:

PLATE AND FRAME HEAT EXCHANGER
156,000 BTUH HEAT TRANSFER
PROPYLENE GLYCOL (40%) - COLD SIDE
- 10.4 GPM FLOW RATE
- 0.94 BTU/LB °F - SPECIFIC HEAT
- 1.03 SPECIFIC GRAVITY
- 0.28 BTU/HR FT °F - THERMAL CONDUCTIVITY
- 1.26 CPS @ AVG. TEMPERATURE - VISCOSITY
- 110°F INLET WATER TEMPERATURE
- 130°F OUTLET WATER TEMPERATURE
- 5 FT. OF HEAD MAX. WPD
- 44 CHANNELS, 0.33 FT/SEC

HEATING WATER - HOT SIDE
- 15.6 GPM FLOW RATE
- 1.00 BTU/LB °F - SPECIFIC HEAT
- 1.00 SPECIFIC GRAVITY
- 0.38 BTU/HR FT °F - THERMAL CONDUCTIVITY
- 0.93 CP @ AVG. TEMPERATURE - VISCOSITY
- 140°F INLET WATER TEMPERATURE
- 120°F OUTLET WATER TEMPERATURE
- 5 FT. OF HEAD MAX. WPD
- 45 CHANNELS, 0.25 FT/SEC

MANUFACTURER: VIEGA HEAT EXCHANGER

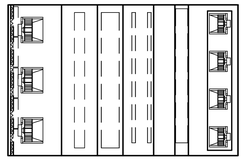
INJECTION PUMP
10.4 GPM, 25' HD
115V/1ø/60Hz
2.0 AMPS, ⅓ HP
BRONZE CONSTRUCTION
SELECTION BASED ON TACO IL0013

EXPANSION TANK
8 GALLON TANK VOLUME
14"ø x 22" HIGH
12 PSIG FILL PRESSURE
30 PSIG OPERATING PRESSURE
CEILING HUNG
SELECTION BASED ON TACO CX30

GLYCOL FEEDER TANK
6.6 GALLON TANK VOLUME
12" X 12" X 16"
115V/1ø/60Hz
0.7 GPM
CEILING HUNG
SELECTION BASED ON AXIOM MF200

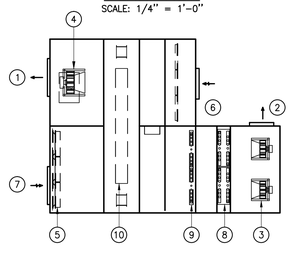
HYDRONIC HEAT THROUGH SLAB

HYDRONIC HEAT AT EXPANSION JOINT DETAIL



PLAN VIEW

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



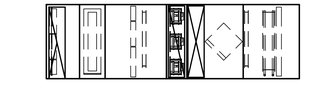
ELEVATION VIEW

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

COMPONENTS:
1. RELIEF AIR CONNECTION
2. SUPPLY AIR CONNECTION
3. SUPPLY AIR FAN
4. RELIEF AIR FAN
5. FILTER
6. RETURN AIR CONNECTION
7. OUTDOOR AIR CONNECTION
8. COOLING COIL
9. HEATING COIL
10. HEAT WHEEL

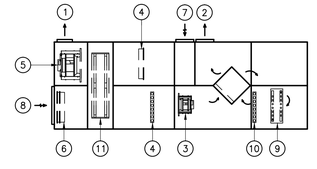
(34) AIR HANDLING UNIT 1 DETAIL

SCALE: ¼" = 1'-0"



PLAN VIEW

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



ELEVATION VIEW

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

COMPONENTS:
1. RELIEF AIR CONNECTION
2. SUPPLY AIR CONNECTION
3. SUPPLY AIR FAN
4. PREHEAT COIL
5. RELIEF AIR FAN
6. FILTER
7. RETURN AIR CONNECTION
8. OUTDOOR AIR CONNECTION
9. COOLING COIL
10. HEATING COIL
11. HEAT WHEEL

(35) AIR HANDLING UNITS 2-4 DETAIL

SCALE: ¼" = 1'-0"

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Tel: 301.595.1000

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GP #21620

MECHAICAL DETAILS

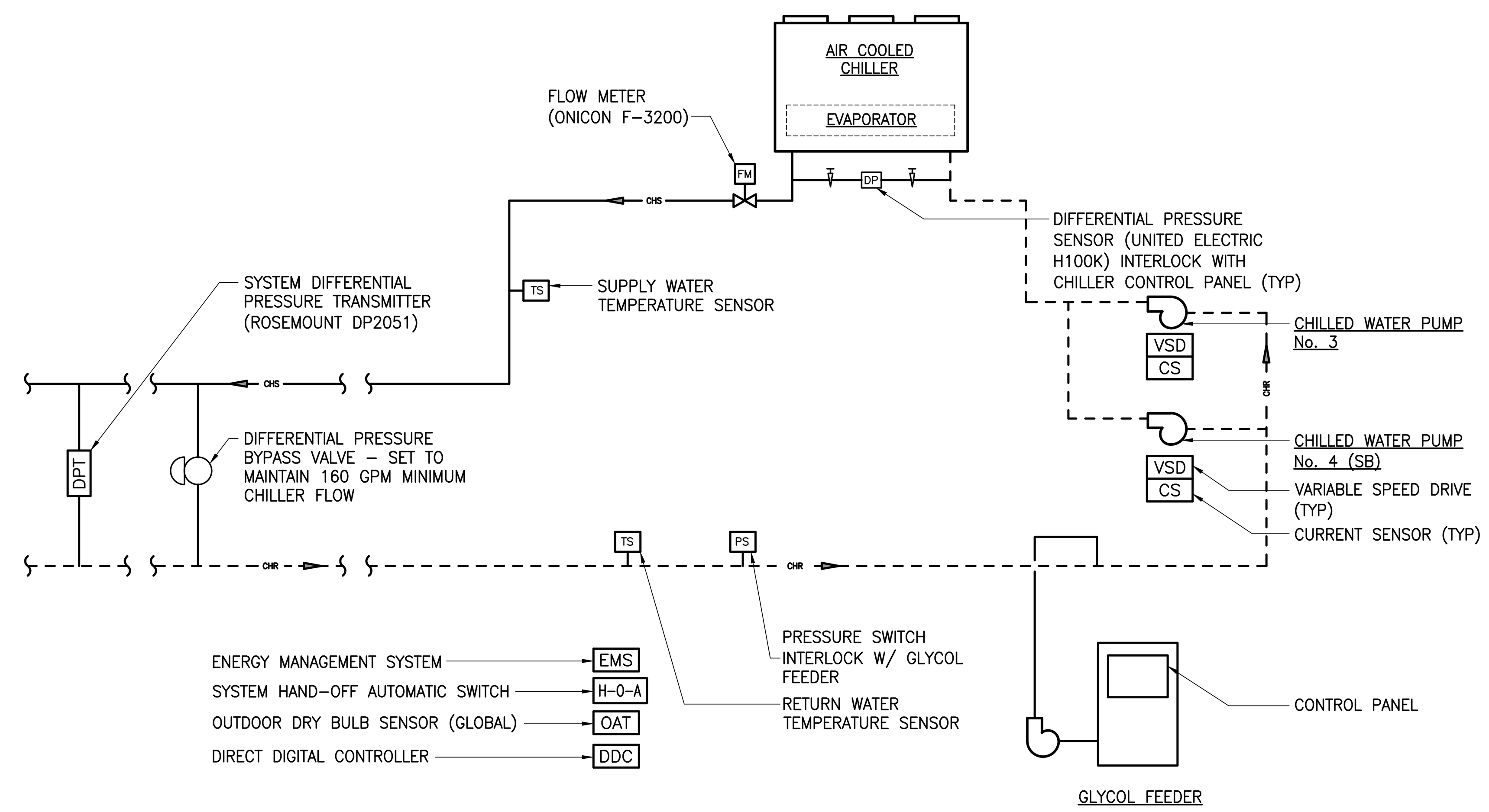
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

M-7.4

February 1, 2017
Bid Set

CHILLED WATER SYSTEM CONTROL DIAGRAM



SCALE: NONE

CHILLED WATER SYSTEM INPUT/OUTPUT SUMMARY

INPUT/OUTPUT SUMMARY FOR CHILLED WATER SYSTEM

BUILDING SYSTEM: CHILLED WATER SYSTEM

LOCATION: MECHANICAL ROOM

INPUT

DESCRIPTION	ANALOG: ROOM TEMPERATURE	ANALOG: CURRENT SENSOR	ANALOG: WATER TEMPERATURE	ANALOG: O.A. TEMPERATURE (GLOBAL)	ANALOG: DIFFERENTIAL PRESSURE	ANALOG: K.W.	ANALOG: FLOW (TOTALIZATION)	ANALOG: BTU (CALCULATED)	ANALOG: REFRIGERANT HEAD	BINARY: FLOW SWITCH	BINARY: STATIC PRESSURE	BINARY: DIFFERENTIAL PRES. SWITCH	BINARY: CURRENT SENSOR	BINARY: SWITCH POSITION INDICATOR	BINARY:
CHILLED WATER SYSTEM							●	●	●						
CHILLER									●			●			
CHILLER INPUT						●									
CHILLED WATER SUPPLY			●												
CHILLED WATER RETURN			●												
CHILLED WATER PUMP P-3		●													
CHILLED WATER PUMP P-4		●													
OUTDOOR DRY BULB				●											
H-O-A SWITCH														●	
SYSTEM DP					●										
BYPASS VALVE															
SYSTEM PRESSURE															

OUTPUTS

DESCRIPTION	ANALOG: MODULATING ACTUATOR	ANALOG: E/P TRANSDUCER	ANALOG: VARIABLE SPEED	ANALOG:	BINARY: CONTROL RELAY	BINARY: SOLENOID	BINARY: START/STOP	BINARY: 2-POSITION DAMPER MOD.	BINARY:	BINARY:	3-POINT FLOATING: ACTUATOR	3-POINT FLOATING: MERCURY RELAY	3-POINT FLOATING: FEED/BLEED SAV	3-POINT FLOATING:
CHILLED WATER SYSTEM							●							
CHILLER							●							
CHILLER INPUT														
CHILLED WATER SUPPLY														
CHILLED WATER RETURN														
CHILLED WATER PUMP P-3			●				●							
CHILLED WATER PUMP P-4			●				●							
OUTDOOR DRY BULB														
H-O-A SWITCH														
SYSTEM DP														
BYPASS VALVE	●													
SYSTEM PRESSURE														

ALARMS / FEATURES / REMARKS

DESCRIPTION	ALARMS: HIGH LIMIT	ALARMS: LOW LIMIT	ALARMS: RUN TIME	ALARMS: MAINTENANCE MESSAGE	ALARMS: TROUBLE MESSAGE	FEATURES: SCHEDULED START/STOP	FEATURES: TEMPERATURE SETBACK/SETUP	FEATURES: OPTIMIZED START (ADAPT.)	FEATURES: DEMAND LIMITING	FEATURES: DUTY CYCLE	FEATURES: VENTILATION DELAY	FEATURES: ECONOMIZER CYCLE (D.B.)	FEATURES: H.W. RESET W/ O.A. TEMP.	FEATURES: VAV CONTROL	FEATURES: REMOTE READ/RESET	FEATURES: TENANT OVERRIDE	FEATURES: COLOR GRAPHICS	FEATURES: POINT LOCKOUT	FEATURES: TREND LOG	REMARKS
CHILLED WATER SYSTEM			●	●		●		●	●								●			
CHILLER				●		●			●						●					REMOTE SUPPLY WATER RESET
CHILLER INPUT	●																			
CHILLED WATER SUPPLY	●	●													●				●	
CHILLED WATER RETURN	●																		●	
CHILLED WATER PUMP P-3			●	●		●		●												
CHILLED WATER PUMP P-4			●	●		●		●												
OUTDOOR DRY BULB																			●	
H-O-A SWITCH																				
SYSTEM DP		●																		
BYPASS VALVE																				
SYSTEM PRESSURE		●																		

NOTE: INTEGRATE AVAILABLE BACNET CHILLER POINTS AVAILABLE FROM THE CHILLER CONTROL PANEL TO THE EMS

SCALE: NONE

CHILLED WATER SYSTEM SEQUENCE OF OPERATION – DDC (ELECTRIC/ELECTRONIC)

1. PROVIDE A SYSTEM HAND-OFF-AUTOMATIC (H-O-A) SWITCH. WHEN INDEXED TO HAND, THE SYSTEM SHALL BE ENERGIZED AND OPERATE THROUGH THE LOCAL CONTROL SYSTEM. WHEN THE SYSTEM SWITCH IS INDEXED TO OFF, THE SYSTEM SHALL BE SHUT-DOWN THROUGH THE LOCAL CONTROL SYSTEM. WHEN THE SYSTEM SWITCH IS INDEXED TO THE AUTOMATIC POSITION, THE SYSTEM SHALL BE STARTED AND STOPPED AUTOMATICALLY THROUGH THE ENERGY MANAGEMENT SYSTEM. THE ENERGY MANAGEMENT SYSTEM SHALL MONITOR THE H-O-A SWITCH POSITION.

2. THE SYSTEM SHALL BE AUTOMATICALLY ENERGIZED WHEN THE SYSTEM IS IN THE OCCUPIED MODE AND WHEN OUTSIDE AIR TEMPERATURE IS 50°F. (ADJUSTABLE THROUGH SOFTWARE) AND ABOVE DURING THE SCHEDULED OCCUPIED MODE AS DEFINED BY THE OWNER (ADJUSTABLE THROUGH SOFTWARE). THE ENERGY MANAGEMENT SYSTEM SHALL SIGNAL THE CHILLER CONTROL PANEL. THE CHILLER CONTROL PANEL SHALL INITIATE THE START-UP OR SHUT-DOWN SEQUENCE.

3. WHEN THE SYSTEM IS STARTED, THE CHILLER CONTROL PANEL SHALL ENERGIZE THE LEAD CHILLED WATER PUMP. PROVIDE CURRENT SENSORS FOR EACH WATER PUMP TO MONITOR STATUS. IF THE LEAD PUMP FAILS TO OPERATE WITHIN 15 SECONDS, THE LAG CHILLED WATER PUMP SHALL BE AUTOMATICALLY ENERGIZED AND AN ALARM SHALL BE INDICATED AT THE CENTRAL CRT. LEAD/LAG PUMP SELECTION SHALL ALTERNATE AFTER EVERY WEEK OF OPERATION (ADJUSTABLE THROUGH SOFTWARE-I.E. DAILY, BI-WEELY) OR SHALL BE BASED ON RUN TIME AS DETERMINED THROUGH THE EMS. PROVIDE A LOCAL/REMOTE SOFTWARE SELECTOR SWITCH FOR LOCAL CONTROL/REMOTE EMS LEAD/LAG PUMP CONTROL.

4. THE CHILLED WATER SYSTEM SHALL VARY SYSTEM FLOW THROUGH PUMP VARIABLE SPEED DRIVE TO MAINTAIN DIFFERENTIAL PRESSURE CONTROLLER SETPOINT. DIFFERENTIAL PRESSURE SETPOINT SHALL BE ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE. DIFFERENTIAL PRESSURE SENSOR/TRANSMITTER SHALL BE INDUSTRIAL GRADE QUALITY INTELLIGENT TYPE, ROSEMOUNT MODEL 2051 DP. PROVIDE A 2 PSIG (ADJUSTABLE) DEAD BAND BETWEEN INCREASING/DECREASING PUMP SPEEDS. DP LOCATION SHALL BE AT THE END OF THE HEATING WATER MAIN IN PENTHOUSE.

5. WHEN EVAPORATOR WATER FLOW HAS BEEN ESTABLISHED AS SENSED BY DIFFERENTIAL PRESSURE SWITCH, THE CHILLER SHALL BE ALLOWED TO START THROUGH ITS INTERNAL CONTROLS. COORDINATE INTERLOCK REQUIREMENTS WITH THE CHILLER CONTROL PANEL.

6. THE CHILLER, THROUGH ITS INTERNAL CONTROLS SHALL MAINTAIN DISCHARGE WATER TEMPERATURE SET POINT, 45°F. THIS SET POINT SHALL BE LOCALLY AND REMOTELY RESETTABLE.

7. CHILLED WATER TEMPERATURE RESET:

   A. PROVIDE A SUPPLY WATER RESET ENABLE-DISABLE SELECTOR SWITCH. WHEN ENABLED THE EMS SHALL CONTROL THE SUPPLY WATER RESET THROUGH AN "OUTSIDE AIR TEMPERATURE- RETURN WATER TEMPERATURE- GREATEST LOAD" SOFTWARE SELECTOR SWITCH.

   B. OUTSIDE AIR: CHILLED WATER SHALL BE RESET BASED ON OUTDOOR AIR TEMPERATURE FROM SUPPLY WATER TEMPERATURE AT 65°F OR HIGHER OUTDOOR AIR TEMPERATURE TO 50°F SUPPLY WATER TEMPERATURE AT 60°F OR LESS.

   C. RETURN WATER: CHILLED WATER SUPPLY TEMPERATURE SHALL BE REST BASED ON RETURN WATER TEMPERATURE TO MAINTAIN 55°F (ADJUSTABLE THROUGH SOFTWARE).

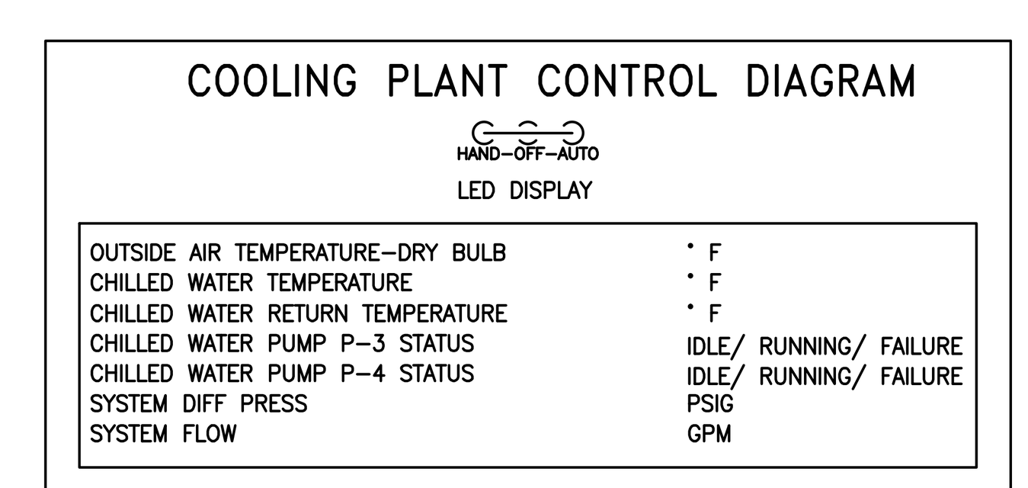
   D. GREATEST LOAD: CHILLED WATER SUPPLY TEMPERATURE SHALL BE RESET BASED ON MONITORING INDIVIDUAL CONTROL VALVE POSITIONS SUCH THAT THE GREATEST LOAD CONTROL VALVE IS OPEN TO 90% (ADJUSTABLE THROUGH SOFTWARE).

8. THE SYSTEM DIFFERENTIAL PRESSURE BYPASS VALVE SHALL MODULATE TO MAINTAIN MINIMUM FLOW THROUGH CHILLER.

9. WHEN THE CHILLER IS STOPPED, EITHER MANUALLY OR AUTOMATICALLY, THE ASSOCIATED PRIMARY CHILLED WATER PUMP SHALL REMAIN ENERGIZED AN ADDITIONAL 5 MINUTES (ADJUSTABLE THROUGH SOFTWARE) AFTER THE CHILLER COMPRESSOR HAS BEEN DE-ENERGIZED.

10. COORDINATE AND INTERLOCK ALL CONTROLS WITH THE CHILLER CONTROL PANEL AND SETPOINTS WITH THE CHILLER MANUFACTURER RECOMMENDATIONS. THE ATC CONTRACTOR SHALL PROVIDE INTERLOCK WIRING AND ALL DEVICES NECESSARY FOR A COMPLETE AND OPERATIONAL SYSTEM.

CHILLED WATER SYSTEM AUTOMATIC TEMPERATURE CONTROL PANEL



STAND ALONE DDC PANEL. LOCATE IN MECH. ROOM

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CHILLED WATER SYSTEM CONTROL DIAGRAM

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

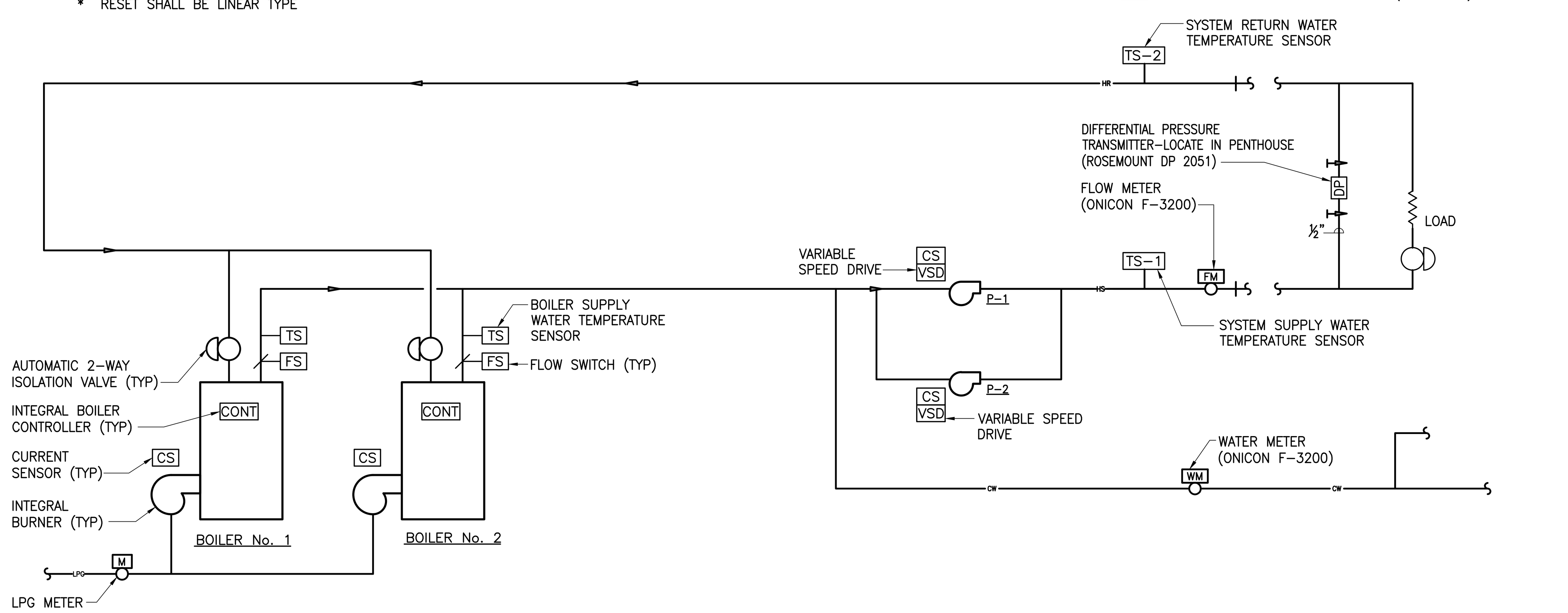
M-8.1

February 1, 2017
Bid Set

SUPPLY WATER RESET SCHEDULE	
OUTSIDE AIR TEMPERATURE	SUPPLY WATER TEMPERATURE
≤ 30°F	140°F
≥ 50°F	120°F

* RESET SHALL BE LINEAR TYPE

OAT — OUTDOOR AIR TEMPERATURE SENSOR (GLOBAL)
EMS — ENERGY MANAGEMENT SYSTEM
DPS — OUTDOOR AIR DEW POINT SENSOR (GLOBAL)
DDC — DIRECT DIGITAL CONTROLLER
ESO — EMERGENCY SHUT-OFF SWITCH (TYP. OF 2)



HEATING WATER CENTRAL PLANT CONTROL DIAGRAM (DDC – ELECTRONIC ACTUATION)

SCALE: NONE

INPUT/OUTPUT SUMMARY FOR HEATING WATER SYSTEM

BUILDING SYSTEM: HEATING WATER SYSTEM

LOCATION: MECHANICAL RM

DESCRIPTION	INPUT – ANALOG								INPUT – BINARY					
	ROOM TEMPERATURE	CURRENT SENSOR	WATER TEMPERATURE	O.A. TEMPERATURE (GLOBAL)	DIFFERENTIAL PRESSURE	MODULATING ACTUATOR POSITION	FLOW (TOTALIZATION)	BTU (CALCULATED)	FLOW SWITCH	STATIC PRESSURE	DIFFERENTIAL PRESSURE SWITCH	STATUS (DP OR CS)	END SWITCH	POSITION INDICATION
HEATING WATER SYSTEM				●				●						
BOILER (TYP)			●						●			●		
HW SUPPLY– SYSTEM (TS–1)			●											
HW RETURN– SYSTEM (TS–2)			●											
PUMP P–1 AND P–2		●												
PUMP SPEED (TYP)														
SYSTEM LOOP DP					●									
BOILER SUPPLY			●											
FLAME FAILURE														
BOILER ROOM	●													
BOILER CONTROL VALVE(S)														
MAKE UP WATER							●							

DESCRIPTION	OUTPUTS – ANALOG						OUTPUTS – BINARY						OUTPUTS – 3-POINT FLOATING					
	MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED (HZ)				CONTROL RELAY	SOLENOID	START/STOP	2-POSITION DAMPER MOD.	2-POSITION POSITION CONTROL VALVE		ACTUATOR	MERCURY RELAY	FEED/BLEED SAV			
HEATING WATER SYSTEM									●									
BOILER (TYP)									●									
HW SUPPLY– SYSTEM (TS–1)																		
HW RETURN– SYSTEM (TS–2)																		
PUMP P–1 AND P–2			●															
PUMP SPEED (TYP)			●															
SYSTEM LOOP DP																		
BOILER SUPPLY																		
FLAME FAILURE																		
BOILER ROOM																		
BOILER CONTROL VALVE(S)											●							
MAKE UP WATER																		

DESCRIPTION	ALARMS						FEATURES																REMARKS
	HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	TROUBLE MESSAGE	FIRE/SMOKE	SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE (D.B.)	H.W. RESET	VAV CONTROL	REMOTE READ/RESET	TENANT OVERRIDE	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	LEAD-LAG CONTROL	DP-RESET	
HEATING WATER SYSTEM							●		●									●					
BOILER (TYP)	●	●	●	●			●		●											●	●		TYP EACH BOILER
HW SUPPLY– SYSTEM (TS–1)	●	●												●		●				●			
HW RETURN– SYSTEM (TS–2)	●	●																		●			
PUMP P–1 AND P–2			●	●			●		●												●		TYP EACH PUMP
PUMP SPEED (TYP)										●						●				●			TYP EACH PUMP
SYSTEM LOOP DP	●	●														●				●		●	TYP EACH SENSOR
BOILER SUPPLY	●																			●			TYP EACH BOILER
FLAME FAILURE				●																●			TYP EACH BURNER
BOILER ROOM	●	●																					
BOILER CONTROL VALVE(S)																							TYPICAL EACH
MAKE UP WATER																							TOTALIZE GALLONS

HEATING WATER CENTRAL PLANT INPUT/OUTPUT SUMMARY

1. HEATING WATER SYSTEM SHALL BE LOCALLY CONTROLLED BY THE BUILDING AUTOMATIC TEMPERATURE CONTROL SYSTEM OR REMOTELY STARTED AND STOPPED THROUGH THE EMS. PROVIDE A HEATING SYSTEM SOFTWARE TYPE ON – AUTOMATIC – OFF SYSTEM SWITCH. WHEN THE SOFTWARE SWITCH IS MANUALLY TOGGLED TO "ON" THE HEATING SYSTEM SHALL BE ENERGIZED. WHEN THE SOFTWARE SWITCH IS MANUALLY TOGGLED TO "OFF" THE HEATING SYSTEM SHALL BE DE-ENERGIZED. WHEN THE SOFTWARE SWITCH IS IN THE "AUTOMATIC" POSITION THE EMS SHALL ENERGIZE/DE-ENERGIZE THE SYSTEM AUTOMATICALLY BASED ON OUTDOOR AIR TEMPERATURE AND/OR IF A DEHUMIDIFICATION MODE IS INITIATED OR LOW SPACE TEMPERATURE OCCURS.

2. WHEN INDEXED TO THE AUTOMATIC MODE THE HEATING SYSTEM SHALL BE ENERGIZED WHENEVER THE OUTSIDE AIR TEMPERATURE IS 65°F OR LESS (ADJUSTABLE THROUGH SOFTWARE). WHENEVER ANY AIR HANDLING SYSTEM IS OPERATING IN THE DEHUMIDIFICATION MODE, THE HEATING SYSTEM SHALL BE OVERRIDDEN AND SHALL AUTOMATICALLY ENERGIZE. SIMILARLY IF ANY SPACE TEMPERATURE SENSORS FALL BELOW 65°F (ADJUSTABLE THROUGH SOFTWARE) WHEN OPERATING IN THE OCCUPIED MODE, THE HEATING SYSTEM SHALL BE OVERRIDDEN AND SHALL AUTOMATICALLY ENERGIZE. WHEN THE SYSTEM IS INDEXED "ON", THE LEAD DISTRIBUTION HEATING WATER PUMP SHALL BE ENERGIZED. IF THE LEAD PUMP FAILS, AS SENSED BY DIFFERENTIAL PRESSURE SENSOR, THE LAG PUMP (STAND-BY) SHALL ENERGIZE AFTER A 15-SECOND TIME DELAY AND AN AUDIBLE AND VISUAL ALARM WITH SILENCE SWITCH SHALL SOUND AN ALARM ON THE ATC PANEL. LEAD/LAG PUMP SELECTION SHALL ALTERNATE AFTER EVERY WEEK OF OPERATION (ADJUSTABLE THROUGH SOFTWARE-I.E. DAILY, BI-WEELY) OR SHALL BE BASED ON RUN TIME AS DETERMINED THROUGH THE EMS. PROVIDE A LOCAL/REMOTE SOFTWARE SELECTOR SWITCH FOR LOCAL CONTROL/REMOTE EMS LEAD/LAG PUMP CONTROL.

3. THE HEATING WATER SYSTEM SHALL VARY SYSTEM FLOW THROUGH PUMP VARIABLE SPEED DRIVE TO MAINTAIN DIFFERENTIAL PRESSURE CONTROLLER SETPOINT. DIFFERENTIAL PRESSURE SETPOINT SHALL BE ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE. DIFFERENTIAL PRESSURE SENSOR/TRANSMITTER SHALL BE INDUSTRIAL GRADE QUALITY INTELLIGENT TYPE, ROSEMOUNT MODEL 2051 DP. PROVIDE A 2 PSIG (ADJUSTABLE) DEAD BAND BETWEEN INCREASING/DECREASING PUMP SPEEDS. DP LOCATION SHALL BE AT THE END OF THE HEATING WATER MAIN IN PENTHOUSE.

4. WHEN THE SYSTEM IS ENERGIZED AND FLOW IS PROVED THE BOILER SHALL BE SEQUENCED BY THE BOILER SEQUENCING CONTROLLER (BACNET). THE BOILERS SHALL BE SEQUENCED IN LEAD LAG FASHION BY THE SEQUENCING PANEL AND SHALL MODULATE THE FIRING RATE THROUGH THEIR BUILT-IN CONTROLS TO MAINTAIN SUPPLY WATER TEMPERATURE SETPOINT. THE HEATING WATER SUPPLY WATER TEMPERATURE SETPOINT SHALL BE RESET BASED ON OUTSIDE AIR TEMPERATURE. THE RESET SCHEDULE SHALL BE 140°F SUPPLY WATER TEMPERATURE AT 30°F AND LOWER OUTSIDE AIR TEMPERATURE AND 120°F SUPPLY WATER TEMPERATURE AT 50°F AND HIGHER OUTSIDE AIR TEMPERATURE. A MANUAL SOFTWARE OVERRIDE SHALL BE PROVIDED TO MAINTAIN A CONSTANT 140°F (ADJUSTABLE THROUGH SOFTWARE) SUPPLY WATER TEMPERATURE. ALL SETPOINTS OF THE RESET SCHEDULE SHALL BE ADJUSTABLE THROUGH SOFTWARE. THE RESET SCHEDULE SHALL OPERATE IN LINEAR FASHION. (1:1 RATIO)

5. WHEN A BOILER IS DEENERGIZED THE AUTOMATIC ISOLATION VALVE SHALL TIME DELAY CLOSED AFTER 5 MINUTES (ADJUSTABLE THROUGH SOFTWARE) TO DISSIPATE RESIDUAL HEAT. WHEN THE HEATING PLANT IS DEENERGIZED AND THE BOILERS ARE COMMANDED OFF, THE SYSTEM CIRCULATING PUMPS SHALL REMAIN ON FOR FIVE (5) MINUTES. THEN WHEN FLOW HAS BEEN PROVEN OFF BY FLOW SWITCH THE AUTOMATIC ISOLATION VALVE SHALL CLOSE. THE LEAD BOILER ISOLATION VALVE SHALL REMAIN OPEN WEATHER THE HEATING PLANT IS ENERGIZED OR DEENERGIZED SO AS NOT TO DEAD END THE PUMP. BOILER(S) SHALL BE OVERRIDEN TO SUCH THAT MAXIMUM RECOMMENDED BOILER FLOW RATE IS NOT EXCEEDED. WHEN THE FLOW RATE EXCEEDS THE MAXIMUM BOILER FLOW RATE THE LAG BOILER SHALL BE OVERRIDDEN TO ENABLE. WHEN THE FLOW RATE FALLS BELOW ITS MAXIMUM FLOW RATE THEN THE BOILER CONTROL PANEL SHALL SEQUENCE THE BOILERS.

6. BOILERS SHALL BE DEENERGIZED WHEN NO FLOW EXISTS. ALL SAFETIES SHALL BE HARD WIRED.

7. THE BOILERS SHALL BE PROVIDED WITH THEIR OWN INDEPENDENT BUILT-IN SEQUENCING CONTROLER INTERLOCKED TO THE BOILERS. COORDINATE BUILDING CONTROLS EMS WITH BOILER MANUFACTURER CONTROLS AND SEQUENCING CONTROLLER INCLUDING PROGRAMING FOR A COMPLETE AND FUNCTIONAL SYSTEM. INTEGRATE ALL BOILER BACNET POINTS INTO THE EMS.

8. WHEN THE BUILDING IS IN THE UNOCCUPIED MODE AS SCHEDULED THROUGH THE EMS AND THE HEATING SYSTEM IS ENERGIZED, THE HEATING WATER SUPPLY SHALL BE RESET TO 110°F (ADJUSTABLE THROUGH SOFTWARE). THE HEATING SYSTEM SHALL BE ENERGIZED IN THE UNOCCUPIED MODE WHENEVER THE OUTSIDE AIR TEMPERATURE IS 50°F (ADJUSTABLE THROUGH SOFTWARE) OR LESS.

9. WHEN THE BUILDING IS IN A WARM-UP MODE, THE SUPPLY WATER TEMPERATURE SHALL AUTOMATICALLY RESET TO 140°F (ADJUSTABLE THROUGH SOFTWARE) REGARDLESS OF OUTSIDE AIR TEMPERATURE UNTIL THE WARM-UP MODE IS COMPLETE AS TIME SCHEDULED THROUGH THE EMS. THIS FEATURE IS ENABLED – DISABLED THROUGH SOFTWARE.

10. PROVIDE AN EMERGENCY BOILER SHUT-DOWN SWITCH AT EACH DOOR WHICH SHALL DE-ENERGIZE BOILERS AND WATER HEATER WHEN INDEXED OFF. COORDINATE REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR.

11. ALL BOILER CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH THE LATEST ASME-CSD-1 REQUIREMENTS AND STATE OF MARYLAND REQUIREMENTS.

12. PROVIDE A CARBON MONOXIDE SENSOR AT EACH PAIR OF BOILERS (TYP. OF 2) AND AT THE DOMESTIC WATER HEATERS. INTERLOCK WITH THE FIRE ALARM SYSTEM.

HEATING WATER CENTRAL PLANT SEQUENCE OF OPERATION

HEATING PLANT CONTROL DIAGRAM

HAND–OFF–AUTO

LED DISPLAY

OUTSIDE AIR TEMPERATURE–DRY BULB	°F
HEATING WATER TEMPERATURE	°F
HEATING WATER RETURN TEMPERATURE	°F
HEATING WATER PUMP P–1 STATUS	IDLE/ RUNNING/ FAILURE
HEATING WATER PUMP P–2 STATUS	IDLE/ RUNNING/ FAILURE
SYSTEM DIFF PRESS	PSIG
SYSTEM FLOW	GPM

STAND ALONE DDC PANEL. LOCATE IN MECH. ROOM

HEATING WATER SYSTEM AUTOMATIC TEMPERATURE CONTROL PANEL

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www.grimmandparker.com
G+P GRIMM AND PARKER

GP #21620

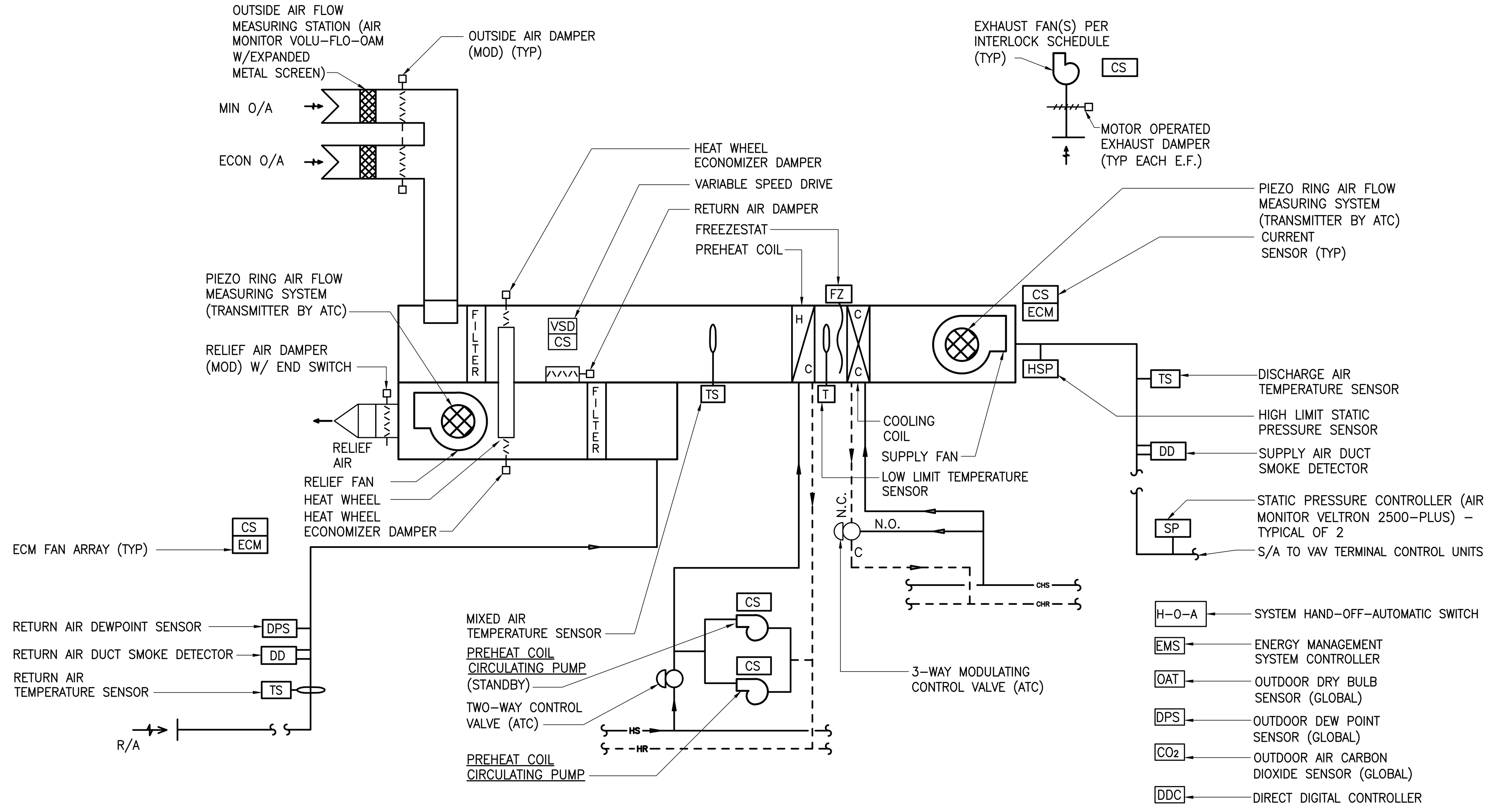
HEATING SYSTEM CONTROL DIAGRAM

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

M-8.2

February 1, 2017
Bid Set



VARIABLE AIR VOLUME AIR HANDLING UNIT CONTROL DIAGRAM (DDC – ELECTRIC/ELECTRONIC ACTUATION)

SCALE: NONE

INPUT/OUTPUT SUMMARY FOR VARIABLE AIR VOLUME AIR HANDLING UNITS

BUILDING SYSTEM: VARIABLE AIR VOLUME

SERVICE: CLASSROOMS AND OFFICES

INPUTS

DESCRIPTION	ANALOG: ROOM CO_2 (PPM)	DUCT TEMPERATURE	WATER TEMPERATURE	O.A. TEMPERATURE (GLOBAL)	HUMIDITY/ENTHALPY	STATIC PRESSURE	VARIABLE SPEED	FLOW	POSITION INDICATION	BINARY: FLOW SWITCH	SWITCH CLOSURE	STATIC PRESSURE	LOW TEMPERATURE CUTOUT	END SWITCH	STATUS
AHU															
COOLING COIL															
O.A. DAMPER (TYP)															
RETURN AIR DAMPER															
MIXED AIR		●													
OUTDOOR AIR				●	●			●							
RETURN AIR		●			●			●							
RETURN FAN							●								●
SUPPLY AIR		●						●							
SUPPLY FAN							●								●
DUCT STATIC PRESSURE (TYP)						●									
HI STATIC (FAN DISCHARGE)						●									
SMOKE (TYP)															
FIRE (EXTERNAL)															
PREHEAT COIL															
PHC CIRC PUMP															●
PHC CIRC PUMP (STANDBY)															●
ECONOMIZER SETPOINT															
EXHAUST FAN (TYP EA)															●
RELIEF AIR DAMPER															
SYSTEM H.O.A. SWITCH															
FREEZE STAT													●		
LOW LIMIT CONTROL															
SPACE CO_2	●														

OUTPUTS

DESCRIPTION	ANALOG: MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED/ECM				BINARY: CONTROL RELAY	SOLENOID	START/STOP	2-POSITION DAMPER MOD.			3-POINT FLOATING: ACTUATOR	MERCURY RELAY	FEED/BLEED SAV			
AHU																		
COOLING COIL	●																	
O.A. DAMPER (TYP)	●																	
RETURN AIR DAMPER	●																	
MIXED AIR																		
OUTDOOR AIR																		
RETURN AIR																		
RETURN FAN			●						●									
SUPPLY AIR																		
SUPPLY FAN			●						●									
DUCT STATIC PRESSURE (TYP)																		
HI STATIC (FAN DISCHARGE)																		
SMOKE (TYP)																		
FIRE (EXTERNAL)																		
PREHEAT COIL	●																	
PHC CIRC PUMP									●									
PHC CIRC PUMP (STANDBY)									●									
ECONOMIZER SETPOINT									●									
EXHAUST FAN (TYP EA)									●	●								
RELIEF AIR DAMPER	●																	
SYSTEM H.O.A. SWITCH																		
FREEZE STAT																		
LOW LIMIT CONTROL																		
SPACE CO_2																		

ALARMS AND FEATURES

DESCRIPTION	ALARMS: HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	SMOKE/FIRE		FEATURES: SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	SUPPLY AIR RESET	VENTILATION DELAY	ECONOMIZER CYCLE	H.W. RESET W/ O.A. TEMP.	VAV CONTROL	REMOTE READ/RESET	TENANT OVERRIDE	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	WARM UP/PULL DOWN	POSITION INDICATION
AHU				●				●	●	●	●	●	●		●			●	●	●	●	
COOLING COIL																						●
O.A. DAMPER (TYP)												●	●									●
RETURN AIR DAMPER												●										●
MIXED AIR		●																		●		
OUTDOOR AIR																				●		
RETURN AIR																				●		
RETURN FAN			●	●			●		●													
SUPPLY AIR																●				●		
SUPPLY FAN			●	●			●		●													
DUCT STATIC PRESSURE (TYP)	●	●														●				●		
HI STATIC (FAN DISCHARGE)	●															●						
SMOKE (TYP)					●																	
FIRE (EXTERNAL)					●																	
PREHEAT COIL																						●
PHC CIRC PUMP			●	●			●		●													
PHC CIRC PUMP (STANDBY)			●	●			●		●													
ECONOMIZER SETPOINT													●			●						
EXHAUST FAN (TYP EA)			●	●			●		●													
RELIEF AIR DAMPER												●										●
SYSTEM H.O.A. SWITCH																						●
FREEZE STAT		●														●				●		
LOW LIMIT CONTROL		●																				
SPACE CO_2																						

VARIABLE AIR VOLUME AIR HANDLING UNIT INPUT/OUTPUT SUMMARY

1. GENERAL:

A. THE AIR HANDLING SYSTEM SHALL BE STARTED AND STOPPED THROUGH A SYSTEM ON–OFF–AUTOMATIC (H–O–A) SWITCH. WHEN INDEXED TO "ON" THE SYSTEM SHALL BE ENERGIZED AND OPERATE UNDER ITS CONTROL SEQUENCE. WHEN INDEXED TO "OFF" THE SYSTEM SHALL DE–ENERGIZE. WHEN INDEXED TO THE "AUTOMATIC" POSITION THE SYSTEM SHALL BE STARTED AND STOPPED THROUGH THE ENERGY MANAGEMENT SYSTEM (EMS). THE H–O–A SYSTEM SWITCH POSITION SHALL BE MONITORED THROUGH THE EMS.

B. SUPPLY FAN SHALL BE REMOTELY STARTED AND STOPPED THROUGH THE EMS BY WAY OF OPTIMUM START/STOP PROGRAM (WITH MANUAL OVERRIDE).

C. RELIEF FAN AND ASSOCIATED EXHAUST FANS SHALL BE INTERLOCKED TO OPERATE WHEN THE SUPPLY FAN OPERATES AND TO BE OFF WHEN THE SUPPLY FAN IS OFF. EXHAUST FAN MOTOR OPERATED DAMPER(S) SHALL BE CLOSED WHENEVER THE EXHAUST FAN IS OFF AND SHALL BE OPEN WHENEVER THE EXHAUST FAN IS ON.

D. WHEN THE UNIT FAN IS OFF, THE OUTSIDE AIR DAMPER(S) AND RELIEF AIR DAMPERS SHALL CLOSE, AND RETURN AIR DAMPER SHALL OPEN; THE PREHEAT COIL VALVE SHALL BE OPEN; THE CHILLED WATER COIL CONTROL VALVE SHALL CLOSE, AND THE RELIEF AIR FAN AND ASSOCIATED EXHAUST FANS SHALL BE OFF. THE HEAT WHEEL SHALL BE DE–ENERGIZED. THE LEAD PREHEAT COIL PUMP SHALL RUN CONTINUOUSLY WHENEVER THE OUTSIDE AIR TEMPERATURE IS 40°F OR LESS WHETHER THE SUPPLY FAN IS ON OR OFF.

E. SUPPLY FAN, EXHAUST AIR FANS AND RELIEF FAN SHALL BE DE–ENERGIZED WHENEVER THE AIR TEMPERATURE DROPS BELOW THE LIMIT OF FREEZESTAT, WHENEVER THE SMOKE DETECTOR(S) SENSES RODUCTS OF COMBUSTION, OR THE HIGH STATIC PRESSURE SENSER REACHES ITS SETPOINT (6" W.C.)

F. ALL SAFETIES AND ASSOCIATED CONTROLS SHALL REMAIN ACTIVE WHETHER THE SYSTEM IS LOCALLY OR REMOTELY CONTROLLED AND/OR MANUALLY OVERRIDDEN.

G. COORDINATE ECM FAN ARRAY AND PIEZO RING INTERFACE REQUIREMENTS WITH AHU MANUFACTURER.

2. OCCUPIED CYCLE:

A. GENERAL:
WHEN THE UNIT SUPPLY FAN IS ENERGIZED TO RUN, THE RELIEF AIR FAN AND EXHAUST AIR FAN(S) SHALL BE ENABLED TO RUN

B. WARM–UP/PULL DOWN:
THE UNIT CONTROL SHALL BE ARRANGED FOR A WINTER TIME MORNING WARM–UP AND SUMMER PULL DOWN COOLING CYCLE. DURING WARM–UP CYCLE THE OUTSIDE AIR DAMPER(S) AND RELIEF AIR DAMPER SHALL REMAIN CLOSED, THE RETURN AIR DAMPER OPEN, VAV BOX PRIMARY AIR VALVE SHALL OPEN TO ITS PRESET MAXIMUM POSITION, AND THE AIR HANDLING UNIT PREHEAT COIL VALVE, AND VAV BOX HEATING COIL VALVES SHALL BE OPEN WIDE UNTIL THE RETURN AIR TEMPERATURE RISES TO 70°F. SIMILARLY FOR PULL DOWN, THE CHILLED WATER VALVE SHALL BE OPEN WIDE UNTIL THE RETURN AIR DROPS TO 75°F. AT THAT POINT, THE MINIMUM OUTSIDE AIR DAMPER SHALL OPEN TO AN ADJUSTABLE MINIMUM POSITION, AND THE PREHEAT COIL OR COOLING COIL CONTROL VALVE SHALL BE PLACED UNDER THE CONTROL OF ITS LEAVING AIR TEMPERATURE SENSOR. THE RELIEF AIR DAMPER SHALL OPEN AND WHEN PROVED OPEN BY DAMPER END SWITCH THE RELIEF AIR FAN AND HEAT WHEEL SHALL BE ENERGIZED . THE EXHAUST AIR FANS SHALL ENERGIZE AND THE ROOM TEMPERATURE SENSORS SHALL CONTROL THE TERMINAL UNIT TO MAINTAIN ITS SETPOINT. OUTSIDE AIR ECONOMIZER CYCLE SHALL REMAIN OFF UNTIL ECONOMIZER MODE IS ENERGIZED. SUPPLY AND RETURN FANS SHALL BE DEMAND LIMITED TO 100% CAPACITY.

C. COOLING:
THE CHILLED WATER COOLING COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN 55°F (ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE) SUPPLY AHU TEMPERATURE.

D. ECONOMIZER CONTROL:

1. PROVIDE A MANUAL SOFTWARE "DISABLED–ENABLE" ECONOMIZER SELECTOR SWITCH THROUGH THE ENERGY MANAGEMENT SYSTEM. WHEN INDEXED TO DISABLED, THE ECONOMIZER CYCLE SHALL BE LOCKED OUT AND THE AIR HANDLING SYSTEM SHALL OPERATE AT MINIMUM OUTDOOR AIR REQUIREMENTS. WHEN INDEXED TO ENABLED, THE USER SHALL BE ABLE TO MANUALLY SELECT "DRYBULB–AUTOMATIC–ENTHALPY" ECONOMIZER CYCLE THROUGH A SOFTWARE SELECTOR SWITCH. THE ECONOMIZER OUTSIDE AIR DAMPER SHALL MODULATE FOR ECONOMIZER AIR CONTROL.

2. DRYBULB ECONOMIZER: WHEN THE SYSTEM SELECTOR SWITCH IS INDEXED TO "DRY BULB ECONOMIZER", THE ECONOMIZER SHALL BE INITIATED WHENEVER THE OUTSIDE AIR DRYBULB TEMPERATURE IS LESS THAN 70°F (ADJUSTABLE THROUGH SOFTWARE WITH MANUAL OVERRIDE). ECONOMIZER CONTROL SHALL MODULATE OUTSIDE AIR, RETURN AIR AND RELIEF AIR DAMPERS TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT OF 55°F (ADJUSTABLE THROUGH SOFTWARE) DOWN TO THE MINIMUM OUTSIDE AIR DAMPER POSITION.

3. ENTHALPY ECONOMIZER: PROVIDE A MANUAL SOFTWARE SELECTOR SWITCH FOR "COMPARATIVE–CONSTANT" ENTHALPY CONTROL. WHEN INDEXED TO COMPARATIVE, ECONOMIZER CYCLE SHALL BE INITIATED WHENEVER OUTSIDE AIR ENTHALPY IS LESS THAN RETURN ENTHALPY AND OUTSIDE AIR DRY BULB TEMPERATURE IS LESS THAN 75°F (ADJUSTABLE THROUGH SOFTWARE). SIMILARLY, WHEN INDEXED TO CONSTANT, ECONOMIZER CYCLE SHALL BE INITIATED WHENEVER OUTSIDE AIR ENTHALPY IS LESS THAN 27.5 BTU PER POUND OF DRY AIR (ADJUSTABLE THROUGH SOFTWARE). ECONOMIZER CONTROL SHALL MODULATE OUTSIDE AIR, RETURN AIR AND RELIEF AIR DAMPERS TO MAINTAIN A MIXED AIR TEMPERATURE OF 55°F (ADJUSTABLE THROUGH SOFTWARE) DOWN TO MINIMUM OUTSIDE AIR POSITION.

4. AUTOMATIC ECONOMIZER: WHEN INDEXED TO THE AUTOMATIC MODE, THE EMS SHALL INITIATE DRY BULB ECONOMIZER CYCLE AS DESCRIBED WHENEVER OUTSIDE AIR TEMPERATURES ARE LESS THAN 55°F AND ENTHALPY ECONOMIZER CYCLE AS DESCRIBED WHENEVER OUTSIDE AIR TEMPERATURES ARE 55°F AND HIGHER. CONSTANT OR COMPARATIVE ENTHALPY ECONOMIZER SHALL BASED ON THE SOFTWARE SELECTOR SWITCH POSITION.

5. ECONOMIZER CYCLES SHALL UTILIZE GLOBAL OUTDOOR AIR DRYBULB TEMPERATURE SENSOR AND GLOBAL DEW POINT SENSOR.

E. HEATING:
A DISCHARGE AIR TEMPERATURE SENSOR SHALL MODULATE THE PREHEAT COIL VALVE TO MAINTAIN 55°F. (ADJUSTABLE AND RESETTABLE) SUPPLY AIR TEMPERATURE. WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 40°F. (ADJUSTABLE), THE LEAD PREHEAT COIL PUMP SHALL BE ENERGIZED TO RUN CONTINUOUSLY WHETHER THE SUPPLY FAN IS ON OR OFF. WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 40°F. THE PREHEAT COIL PUMP SHALL BE DE–ENERGIZED. EACH SET OF PREHEAT COIL PUMPS SHALL BE PROVIDED WITH LEAD/LAG CONTROL SUCH THAT THE LEAD PUMP RUNS CONTINUOUSLY AS SPECIFIED ABOVE. IN THE EVENT OF A LEAD PUMP FAILURE (AS SENSED BY CURRENT SENSOR), THE LAG PUMP SHALL AUTOMATICALLY START AFTER A 15 SECOND TIME DELAY. PROVIDE THROUGH SOFTWARE TO AUTOMATICALLY ALTERNATE LEAD/LAG CONTROL OF PREHEAT COIL PUMPS BASED ON PUMP RUN TIME.

F. SUPPLY FAN SPEED CONTROLLER:
A STATIC PRESSURE SENSOR(S) STRATEGICALLY LOCATED AT THE FAR RUN OF SUPPLY AIR DUCTWORK DOWNSTREAM OF THE AHU SHALL, THROUGH THE DDC CONTROL, MODULATE THE SUPPLY FAN SPEED TO MAINTAIN THE SUPPLY AIR STATIC PRESSURE SETPOINT. WHERE MULTIPLE STATIC PRESSURE SENSORS ARE PROVIDED, THE GREATEST DEMAND REQUIREMENT SHALL CONTROL FAN SPEED. THE DDC SYSTEM SHALL MONITOR ALL TERMINAL CONTROL UNITS PRIMARY AIR DAMPER POSITION. THE CONTROLLING STATIC PRESSURE SENSOR SHALL BE RESET DOWNWARD UNIT THE MOST CRITICAL PRIMARY AIR DAMPER IS OPEN 90% OR GREATER. DURING MORNING WARM–UP/PULL DOWN, THE SUPPLY AND RETURN AIR FANS SHALL BE DEMAND LIMITED TO 100% AIR FLOW. A HIGH LIMIT STATIC PRESSURE SENSOR LOCATED AT AIR HANDLING UNIT DISCHARGE SHALL OVERRIDE SPEED CONTROL SIGNAL WHEN ITS SETPOINT IS REACHED (5 IN. W.C. – ADJUSTABLE) TO MAINTAIN MAXIMUM SUPPLY AIR STATIC PRESSURE.

G. OUTSIDE AIR:
THE SYSTEM SHALL UTILIZE A DEMAND CONTROLLED VENTILATION SEQUENCE OF OPERATION. THE MINIMUM OUTSIDE AIR SHALL BE SET AT 10% (ADJUSTABLE THROUGH SOFTWARE) OF THE MAXIMUM SCHEDULED SUPPLY AIR FLOW RATE. THE MINIMUM OUTSIDE AIR DAMPER SHALL MODULATE OPEN AND AIR FLOW SHALL BE MONITORED THROUGH THE EMS. THE MINIMUM OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN THE MINIMUM OUTSIDE AIR FLOW RATE AND A MAXIMUM OF 1000 PPM BASED ON ANY SPACE CARBON DIOXIDE SENSOR. THE MINIMUM OUTDOOR AIR FLOW RATE SHALL VARY FROM 10% TO THE MINIMUM SCHEDULED OUTDOOR AIR FLOW RATE IF THE O/A FLOW RATE FALLS BELOW ITS MINIMUM SETPOINT THE RETURN AIR DAMPER SHALL BE OVERRIDDEN AND SLOWLY MODULATE CLOSED TO MAINTAIN MINIMUM REQUIRED OUTSIDE AIR FLOW. ECONOMIZER DAMPER SHALL ONLY MODULATE OPEN DURING ECONOMIZER MODE OF OPERATION.

H. RELIEF AIR:
THE RELIEF AIR DAMPER SHALL OPEN WHENEVER OUTSIDE AIR IS BEING INTRODUCED INTO THE BUILDING. WHEN THE RELIEF AIR DAMPER IS PROVEN OPEN BY DAMPER END SWITCH THE RELIEF AIR FAN SHALL BE ENERGIZED AND VARY IN FLOW TO VOLUMETRICALLY TRACK THE OUTDOOR AIR FLOW AS MONITORED BY RELIEF FAN PIEZO ELECTRIC RINGS AND OUTDOOR AIR FLOW MEASURING STATIONS TO MAINTAIN A SLIGHT POSITIVE PRESSURE.

I. SUPPLY AIR RESET:

1. SUPPLY AIR RESET TYPE SHALL BE DETERMINED BY A MANUAL SOFTWARE SELECTOR SWITCH THROUGH THE EMS.

2. OUTSIDE AIR: SUPPLY AIR TEMPERATURE SHALL BE RESET BASED ON OUTSIDE AIR TEMPERATURE. SUPPLY AIR TEMPERATURE SHALL BE 55°F WHENEVER THE OUTSIDE AIR TEMPERATURE IS 60°F OR GREATER AND THE SUPPLY AIR TEMPERATURE SHALL BE RESET UP TO 65°F WHENEVER THE OUTSIDE AIR TEMPERATURE IS 40°F OR LESS. WHENEVER THE OUTSIDE AIR TEMPERATURE IS BETWEEN SETPOINTS (40°F AND 60°F) THE RESET SHALL BE A LINEAR RATIO AND ALL SETPOINTS SHALL BE ADJUSTABLE THROUGH SOFTWARE.

3. GREATEST LOAD: SUPPLY AIR TEMPERATURE SHALL BE RESET UPWARD TO MAINTAIN 90% OPEN PRIMARY AIR DAMPER OF THE CRITICAL TERMINAL CONTROL UNIT AS DETERMINED BY THE DDC SYSTEM (I.E. LOAD ANALYZING SYSTEM).

4. RETURN AIR: SUPPLY AIR SHALL BE RESET BASED ON RETURN AIR TEMPERATURE.

J. TOTAL ENERGY HEAT RECOVERY WHEEL:
WHEN THE SYSTEM IS INDEXED ON AND OUTSIDE AIR IS BEING INTRODUCED THE TOTAL ENERGY HEAT RECOVERY WHEEL SHALL BE ENERGIZED. ENTERING AND LEAVING AIR TEMPERATURES OF SUPPLY AND RELIEF AIR STREAMS SHALL BE MONITORED BY THE EMS. DURING INTERMEDIATE WEATHER CONDITIONS WHEN OUTDOOR AIR TEMPERATURES ARE BETWEEN 60°F (ADJUSTABLE) AND 80°F (ADJUSTABLE), THE WHEEL SHALL ROTATE AT MINIMUM SPEED (¼"RPM) TO MINIMIZE RECOVERY EFFECTIVENESS (I.E. ECONOMIZER CYCLE). WHENEVER THE OUTDOOR AIR IS WARMER THAN THE RETURN AIR THE HEAT WHEEL SHALL BE IN THE COOLING MODE AND OPERATE AT 100% WHEEL SPEED. WHEN THE OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F THE WHEEL SPEED SHALL VARY TO MAINTAIN THE SUPPLY AIR TEMPERATURE SETPOINT AIR TEMPERATURE. HEAT WHEEL SHALL VARY SPEED TO PREVENT FROSTING BASED ON RELIEF AIR DEWPOINT/ FROST TEMPERATURE. COORDINATE SETPOINT WITH HEAT WHEEL MANUFACTURER.

3. UNOCCUPIED CYCLE:

A. SUPPLY FAN, ASSOCIATED RELIEF AND EXHAUST FANS, SHALL BE DE–ENERGIZED. PRIMARY AIR DAMPERS FOR VAV BOXES SHALL BE OPEN. AHU OUTSIDE AIR DAMPERS AND RELIEF AIR DAMPER SHALL BE CLOSED AND RETURN AIR DAMPER SHALL BE OPEN. THE COOLING COIL VALVE SHALL BE CLOSED TO THE COIL. THE PREHEAT COIL VALVE SHALL BE OPEN TO THE COIL. THE VAV BOX SPACE TEMPERATURE SENSOR SHALL BE RESET TO 55°F (ADJUSTABLE THROUGH SOFTWARE). THE VAV BOX HEATING COIL VALVE SHALL BE UNDER CONTROL OF 1B SPACE TEMPERATURE SENSOR AND THE AHU SHALL CYCLE LIKE A RECIRCULATING UNIT HEATER TO MAINTAIN REDUCED TEMPERATURE SETPOINT TO THE MOST CRITICAL SPACE.

B. WHEN IN THE UNOCCUPIED MODE OF OPERATION AND THE OUTSIDE AIR TEMPERATURE FALLS BELOW 20°F (ADJUSTABLE THROUGH SOFTWARE), THE SPACE TEMPERATURE SENSOR(S) SHALL BE RESET TO 70°F (ADJUSTABLE THROUGH SOFTWARE). THE AIR HANDLING UNIT SHALL CYCLE TO MAINTAIN SPACE TEMPERATURE AS PREVIOUSLY DESCRIBED. THIS LOW NIGHT LIMIT MODE OF OPERATION SHALL BE ENABLED/DISABLED BY A MANUAL SOFTWARE SELECTOR SWITCH THROUGH THE EMS.

C. SUMMER/NIGHT UNOCCUPIED CONTROL:
PROVIDE AN "SUMMER/NIGHT UNOCCUPIED TEMPERATURE CONTROL" SEQUENCE OF OPERATION WHERE THE SYSTEM OPERATES AS DESCRIBED IN THE OCCUPIED SEQUENCE OF OPERATION, HOWEVER, THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER AND EXHAUST AIR DAMPER SHALL REMAIN CLOSED, THE RETURN AIR DAMPER SHALL BE FULLY OPEN AND THE ASSOCIATED EXHAUST AND RELIEF FANS SHALL BE DEENERGIZED. THE "SUMMER/NIGHT UNOCCUPIED TEMPERATURE CONTROL" MODE SHALL BE THROUGH A TIME OF DAY SCHEDULE. THIS FEATURE SHALL TYPICALLY BE USED AFTER SCHOOL HOURS UNTIL CUSTODIAL STAFF LEAVE, WEEKENDS AND/OR UNOCCUPIED SUMMER/NON EDUCATIONAL PERIODS WHEN OCCUPIED SPACE TEMPERATURE IS REQUIRED. THIS FEATURE SHALL BE ENABLED/DISABLED THROUGH A SOFTWARE SELECTOR SWITCH.

4. DEHUMIDIFICATION CONTROL:

A. PROVIDE AN "ENABLE–AUTOMATIC–DISABLED" MANUAL SOFTWARE SELECTOR SWITCH FOR DEHUMIDIFICATION CONTROL. WHEN INDEXED TO ENABLED, THE AIR HANDLING UNIT SHALL BE FUNCTIONAL IN A DEHUMIDIFICATION MODE WHENEVER THE SYSTEM IS IN AN "OCCUPIED" MODE OF OPERATION OR "SUMMER NIGHT UNOCCUPIED" MODE OF OPERATION. WHEN INDEXED TO DISABLED THE DEHUMIDIFICATION MODE SHALL BE LOCKED OUT. WHEN INDEXED TO THE AUTOMATIC MODE, THE DEHUMIDIFICATION SYSTEM SHALL AUTOMATICALLY ENABLE WHENEVER RETURN AIR RELATIVE HUMIDITY EXCEEDS 65% RH (ADJUSTABLE THROUGH SOFTWARE).

B. WHEN INDEXED TO THE ENABLED OR AUTOMATIC POSITION, THE DEHUMIDIFICATION SEQUENCE SHALL OPERATE WHENEVER RETURN AIR RELATIVE HUMIDITY EXCEEDS 65% RH. (ADJUSTABLE THROUGH SOFTWARE). THE DEHUMIDIFICATION SEQUENCE SHALL AUTOMATICALLY OVERRIDE THE MECHANICAL COOLING SYSTEM TO MAINTAIN 52°F DISCHARGE AIR TEMPERATURE AND THE ECONOMIZER CYCLE SHALL BE DISABLED. IF THE RELATIVE HUMIDITY LEVEL DOES NOT FALL TO 5% OR MORE BELOW ITS SETPOINT, THE OUTSIDE AIR DAMPER SHALL BE OVERRIDDEN TO CLOSE FOR A MAXIMUM TIME OF 60 MINUTES (ADJUSTABLE THROUGH SOFTWARE), AFTER WHICH IS SHALL RETURN TO ITS MINIMUM POSITION. THE DEHUMIDIFIACTION MODE SHALL RETURN TO NORMAL CONTROL MODE WHENEVER THE RELATIVE HUMIDITY LEVEL FALLS TO 5% RH BELOW ITS HIGH LIMIT SETPOINT. IF ANY SPACE TEMPERATURE SUBCOOLS TO 1B HEATING SETPOINT OR LESS THE HEATING PLANT SHALL BE OVERRIDDEN AND ENERGIZE UNTIL ALL SPACE TEMPERATURES ARE ABOVE THEIR HEATING SETPOINT.

5. NIGHT PURGE CONTROL:

A. PROVIDE AN "ENABLE–AUTOMATIC–DISABLED" MANUAL SOFTWARE SELECTOR SWITCH FOR A NIGHT PURGE SEQUENCE OF OPERATION. WHEN INDEXED TO ENABLED, THE NIGHT PURGE PROGRAM SHALL UTILIZE COOL NIGHTTIME OUTDOOR AIR TO PRECOOL THE BUILDING BEFORE MECHANICAL COOLING IS INDEXED ON. 100% OUTSIDE AIR SHALL BE PROVIDED UNDER THE FOLLOWING CONDITIONS:

1. OUTDOOR AIR IS ABOVE 50°F (ADJUSTABLE THROUGH SOFTWARE)
2. OUTDOOR AIR IS BELOW 75°F (ADJUSTABLE THROUGH SOFTWARE) AND LESS THAN 60% RH (ADJUSTABLE THROUGH SOFTWARE)
3. OUTDOOR AIR DEW POINT IS LESS THAN 60°F (ADJUSTABLE THROUGH SOFTWARE)
4. ALL SPACE TEMPERATURES ARE ABOVE 75°F (ADJUSTABLE THROUGH SOFTWARE)
5. WHEN THE NIGHT PURGE SEQUENCE IS ENERGIZED THE VAV TERMINAL UNIT PRIMARY AIR DAMPERS SHALL OPEN 60% (ADJUSTABLE THROUGH SOFTWARE) OF THEIR MAXIMUM POSITION AND THE AIR HANDLING UNIT SUPPLY AND RETURN FANS SHALL MAINTAIN EQUAL AIR FLOW (I.E. NO VOLUMETRIC DIFFERENCE) AND BE DEMAND LIMITED TO 100% SPEED.

VARIABLE AIR VOLUME AIR HANDLING SEQUENCE OF OPERATION

ALBAN ENGINEERING, INC

11720 Beltsville Drive
Suite 600
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G+P GRIMM AND PARKER

GP #21620

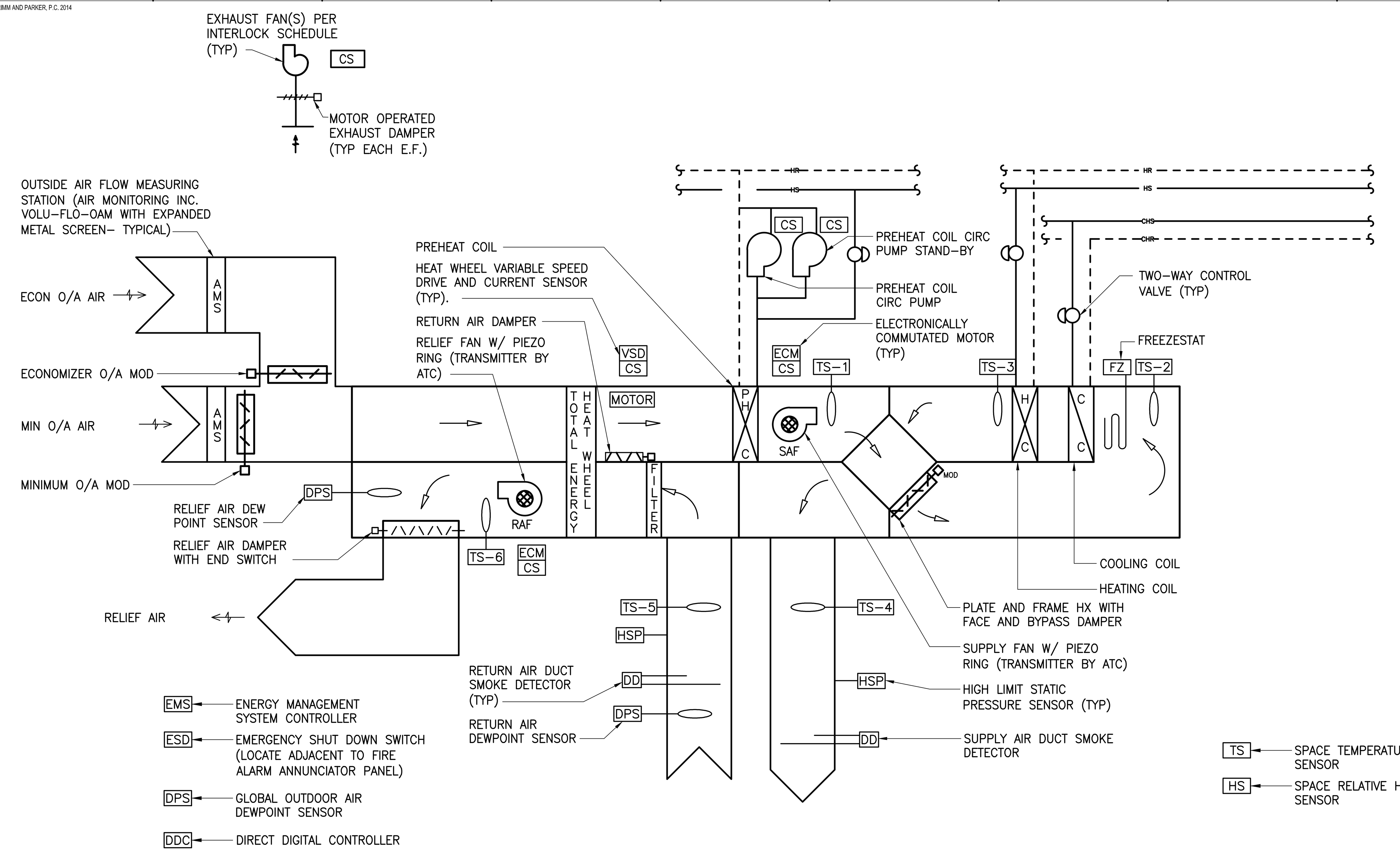
VAV UNIT CONTROL DIAGRAM

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

M-8.3

February 1, 2017
Bid Set



SINGLE ZONE VARIABLE FLOW LABORATORY AIR HANDLING UNIT CONTROL DIAGRAM (DDC–ELECTRIC/ELECTRONIC ACTUATION)

SCALE: NONE

INPUT/OUTPUT SUMMARY FOR DEDICATED OUTDOOR AIR SYSTEM (DOAS)

INPUTS

DESCRIPTION	ANALOG									BINARY					
	ROOM TEMPERATURE	DUCT TEMPERATURE	FLOW RATE	O.A. TEMPERATURE	HUMIDITY (CALCULATED)	STATIC PRESSURE	CURRENT SENSOR	DIFFERENTIAL PRESSURE	POSITION INDICATION	FLOW SWITCH	SWITCH CLOSURE	STATUS	LOW TEMPERATURE CUTOUT	END SWITCH	SWITCH POSITION INDICATOR
AHU												●			
COOLING COIL VALVE									●						
HEATING COIL VALVE									●						
O.A. DAMPER														●	
RELIEF AIR DAMPER														●	
EXHAUST FAN(S)(TYP EACH)							●					●			
OUTSIDE AIR (GLOBAL)				●	●										
SUPPLY AIR, TS-1		●													
SUPPLY AIR, TS-2		●													
SUPPLY AIR, TS-3		●													
SUPPLY AIR, TS-4		●													
RETURN AIR, TS-5		●													
RELIEF AIR, TS-6		●													
LOW LIMIT		●													
FREEZESTAT											●		●		
SUPPLY FAN			●				●					●			
RELIEF FAN			●				●					●			
WARM-UP/PULL DN															
SMOKE (SUPPLY & RETURN)											●				
H-O-A SWITCH															●
TOTAL ENERGY WHEEL							●					●			
SENSIBLE HX DAMPER									●						
FILTER – SUPPLY								●							
FILTER – RELIEF								●							
FIRE (EXTERNAL)															
SUPPLY AIR HIGH STATIC															
RETURN AIR/ EXHAUST AIR LOW STATIC															

OUTPUTS

DESCRIPTION	ANALOG						BINARY						3-POINT FLOATING					
	MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED				CONTROL RELAY	SOLENOID	START/STOP	2-POSITION DAMPER MOD.			ACTUATOR	MERCURY RELAY	FEED/BLEED SAV			
AHU									●									
COOLING COIL VALVE	●																	
HEATING COIL VALVE	●																	
O.A. DAMPER										●								
RELIEF AIR DAMPER										●								
EXHAUST FAN(S)(TYP EACH)									●									
OUTSIDE AIR (GLOBAL)																		
SUPPLY AIR, TS-1																		
SUPPLY AIR, TS-2																		
SUPPLY AIR, TS-3																		
SUPPLY AIR, TS-4																		
RETURN AIR, TS-5																		
RELIEF AIR, TS-6																		
LOW LIMIT																		
FREEZESTAT																		
SUPPLY FAN			●						●									
RELIEF FAN			●						●									
WARM-UP/PULL DN									●									
SMOKE (SUPPLY & RETURN)																		
H-O-A SWITCH																		
TOTAL ENERGY WHEEL			●						●									
SENSIBLE HX DAMPER	●																	
FILTER – SUPPLY																		
FILTER – RELIEF																		
FIRE (EXTERNAL)																		
SUPPLY AIR HIGH STATIC																		
RETURN AIR/ EXHAUST AIR LOW STATIC																		

ALARMS / FEATURES

DESCRIPTION	ALARMS						FEATURES														
	HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	SMOKE/FIRE	SMOKE PURGE	SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	STATIC PRESSURE RESET	DEMAND LIMITING	VENTILATION DELAY	ECONOMIZER CYCLE (D.B.)	H.W. RESET W/ O.A. TEMP.	VAV CONTROL	REMOTE READ/RESET	LEAD/LAG CONTROL	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	WARM UP/PULL DOWN
AHU				●			●	●	●		●	●			●			●	●	●	●
COOLING COIL VALVE																					
HEATING COIL VALVE																					
O.A. DAMPER																					
RELIEF AIR DAMPER																					
EXHAUST FAN(S)(TYP EACH)			●	●			●		●												
OUTSIDE AIR (GLOBAL)																				●	
SUPPLY AIR, TS-1																●				●	
SUPPLY AIR, TS-2		●														●				●	
SUPPLY AIR, TS-3		●														●				●	
SUPPLY AIR, TS-4	●															●				●	
RETURN AIR, TS-5																				●	
RELIEF AIR, TS-6																				●	
LOW LIMIT		●																		●	
FREEZESTAT		●																		●	
SUPPLY FAN			●	●			●		●												
RELIEF FAN			●	●			●		●			●									
WARM-UP/PULL DN							●		●												●
SMOKE (SUPPLY & RETURN)					●																
H-O-A SWITCH																					
TOTAL ENERGY WHEEL			●	●			●		●												
SENSIBLE HX DAMPER																					
FILTER – SUPPLY				●																	
FILTER – RELIEF				●																	
FIRE (EXTERNAL)					●																
SUPPLY AIR HIGH STATIC	●									●											
RETURN AIR/ EXHAUST AIR LOW STATIC		●								●											

SINGLE ZONE VARIABLE FLOW LABORATORY AIR HANDLING UNIT INPUT/OUTPUT SUMMARY

1. **GENERAL:**
   A. THE AIR HANDLING SYSTEM SHALL BE STARTED AND STOPPED THROUGH A SYSTEM ON-OFF-AUTOMATIC (H-O-A) SOFTWARE SWITCH. WHEN INDEXED TO "ON", THE SYSTEM SHALL BE ENERGIZED AND OPERATE UNDER ITS CONTROL SEQUENCE. WHEN INDEXED TO "OFF", THE SYSTEM SHALL DE-ENERGIZE. WHEN INDEXED TO "AUTOMATIC", THE SYSTEM SHALL BE STARTED AND STOPPED THROUGH THE ENERGY MANAGEMENT SYSTEM (EMS). THE H-O-A SYSTEM SWITCH POSITION SHALL BE MONITORED THROUGH THE EMS. A MANUAL FIRE DEPARTMENT OVERRIDE SWITCH SHALL OVERRIDE THIS CONTROL TO DE-ENERGIZE THE UNIT.

   B. SUPPLY FAN SHALL BE STARTED AND STOPPED BY THE EMS SYSTEM BY WAY OF OPTIMIZED START-STOP SEVEN DAY TIME SCHEDULE PROGRAM, AN UNOCCUPIED LOW SPACE TEMPERATURE LIMIT CONTROL OR BY SPACE PUSH BUTTON OVERRIDE (2-HOUR). RELIEF AIR FAN SHALL BE INTERLOCKED TO OPERATE WITH THE SUPPLY AIR FAN.

   C. WHEN THE UNIT FAN IS OFF, THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL CLOSE; RETURN AIR DAMPER SHALL OPEN, PREHEAT COIL VALVE OPEN; THE CHILLED WATER VALVE SHALL CLOSE; THE RELIEF AIR FAN SHALL DE-ENERGIZE; AND THE HEAT RECOVERY WHEEL SHALL DE-ENERGIZE. THE HEATING COIL CONTROL VALVE SHALL BE CONTROLLED BY ITS DISCHARGE AIR TEMPERATURE SENSOR TS-3.

   D. SUPPLY AND RELIEF AIR FANS SHALL BE DE-ENERGIZED WHENEVER THE AIR TEMPERATURE DROPS BELOW THE LIMIT OF FREEZESTAT OR WHENEVER THE SUPPLY OR RETURN AIR SMOKE DETECTOR SENSES PRODUCTS OF COMBUSTION. SMOKE DETECTORS SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR, MOUNTED AND INSTALLED BY THE MECHANICAL CONTRACTOR. INTERLOCK WIRING FOR UNIT SHUT-DOWN SHALL BE BY THE ATC CONTRACTOR. INTERLOCK WIRING TO THE FIRE ALARM SYSTEM SHALL BE BY THE ELECTRICAL CONTRACTOR.

   E. ALL SAFETIES AND ASSOCIATED CONTROLS SHALL REMAIN ACTIVE WHETHER THE UNIT IS LOCALLY OR REMOTELY CONTROLLED AND/OR MANUALLY OVERRIDDEN.

   F. HEAT RECOVERY DEVICES SHALL BE CONTROLLED BY THE ATC CONTRACTOR

   G. HIGH STATIC PRESSURE SENSORS SHALL LIMIT FAN SPEED TO +3" (ADJ.) SUPPLY AIR PRESSURE AND -2" (ADJ.) RETURN AIR PRESSURE. THE AHU SHALL SHUT DOWN IF THESE HIGH LIMIT SETPOINTS ARE EXCEEDED.

   H. SUPPLY AND RELIEF AIR FANS SHALL BE ECM TYPE AND PROVIDED WITH PIEZO RINGS FOR AIRFLOW MEASURING BY THE AHU MANUFACTURER. THE ATC CONTRACTOR SHALL PROVIDE THE TRANSMITTER AND CONTROL THE SPEED OF THE FANS.

   I. EXHAUST FAN AIRFLOW RATE VALUES SHALL BE PROGRAMMED INTO THE EMS BASED ON THE LAB AIRFLOW CONTROL SUMMARY SCHEDULE.

   J. ALL DEWPOINT SENSORS SHALL BE VAISALA HMT120/130 WITH RELATIVE HUMIDITY, DEW POINT/ FROST POINT, WET BULB TEMPERATURE, ENTHALPY, ABSOLUTE HUMIDITY, MIXING RATIO VAPOR PRESSURE AND SATURATION VAPOR PRESSURE AS REQUIRED FOR HEAT WHEEL CONTROL. PROVIDE OUTDOOR INSTALLATION KIT AND RADIATION SHIELD.

2. **OCCUPIED MODE:**
   A. GENERAL:
   WHEN INDEXED TO ON, THE EMS SHALL ENERGIZE THE SUPPLY FAN. WHEN WARM UP OR PULL DOWN MODE OF OPERATION IS COMPLETE THE MINIMUM OUTSIDE AIR DAMPER SHALL OPEN AND THE RETURN AIR DAMPER SHALL CLOSE TO ITS ASSOCIATED POSITION. THE RELIEF AIR DAMPER SHALL OPEN AND WHEN PROVED BY DAMPER END SWITCH, THE RELIEF FAN SHALL BE ENERGIZED, THE HEAT RECOVERY WHEEL SHALL BE ENABLED, THE ECONOMIZER CYCLE SHALL BE ENABLED AND THE UNIT SHALL OPERATE IN ITS OCCUPIED MODE.

   B. WARM UP/PULL DOWN:
   THE UNIT CONTROL SHALL BE ARRANGED FOR A WINTER TIME MORNING WARM-UP AND SUMMER PULL DOWN COOLING CYCLE. DURING WARM-UP CYCLE THE OUTSIDE AIR DAMPER(S) AND RELIEF AIR DAMPER SHALL REMAIN CLOSED, THE RELIEF AIR FAN SHALL BE DE-ENERGIZED, THE RETURN AIR DAMPER OPEN, AND THE AIR HANDLING UNIT PREHEAT COIL VALVE AND HEATING COIL VALVES SHALL BE OPEN WIDE UNTIL THE SPACE AIR TEMPERATURE RISES TO 70°F. SIMILARLY FOR PULL DOWN, THE CHILLED WATER VALVE SHALL BE OPEN WIDE UNTIL THE SPACE AIR DROPS TO 75°F.

   C. TOTAL ENERGY HEAT RECOVERY WHEEL:
   WHEN THE SYSTEM IS INDEXED ON THE TOTAL ENERGY HEAT RECOVERY WHEEL SHALL BE ENERGIZED. ENTERING AND LEAVING AIR TEMPERATURES OF SUPPLY AND RELIEF AIR STREAMS SHALL BE MONITORED BY THE EMS. DURING INTERMEDIATE WEATHER CONDITIONS WHEN OUTDOOR AIR TEMPERATURES ARE BETWEEN 60°F (ADJUSTABLE) AND 80°F (ADJUSTABLE), THE WHEEL SHALL ROTATE AT MINIMUM SPEED (¼"RPM) TO MINIMIZE RECOVERY EFFECTIVENESS (I.E. ECONOMIZER CYCLE). WHENEVER THE OUTDOOR AIR IS WARMER THAN THE RETURN AIR THE HEAT WHEEL SHALL BE IN THE COOLING MODE AND OPERATE AT 100% WHEEL SPEED. WHEN THE OUTSIDE AIR TEMPERATURE IS LESS THAN 60°F THE WHEEL SPEED SHALL VARY TO MAINTAIN THE SPACE AIR TEMPERATURE SETPOINT.

   FROSTING OF THE WHEEL WILL OCCUR WHENEVER THE EXHAUST AIR LEAVING THE HEAT WHEEL IS SATURATED. THE OUTSIDE AIR DEWPOINT SENSOR SHALL MONITOR/ CALCULATE THE HUMIDITY RATIO VERSUS THE DRY BULB TEMPERATURE AND CALCULATE THE SATURATION AIR CONDITION LINE. THE EXHAUST AIR PROCESS LINE SHALL BE DETERMINED BY THE OUTDOOR AIR TEMPERATURE CALCULATED AT 95% RH AND THE RETURN AIR TEMPERATURE AND RELATIVE HUMIDITY. WHEN THE EMS CALCULATES THE EXHAUST AIR PROCESS LINE INTERSECTS THE SATURATION AIR LINE THE HEAT RECOVERY WHEEL SHALL SLOW DOWN TO MAINTAIN THE EXHAUST AIR DRY BULB TEMPERATURE IS 2°F (ADJ) ABOVE THE INTERSECTION POINT OF THE TWO LINES. IF THE LEAVING AIR TEMPERATURE REMAINS BELOW THIS CONDITION FOR 15 MINUTES (ADJUSTABLE THROUGH SOFTWARE) THE HEAT WHEEL SHALL BE DE-ENERGIZED FOR 30 MINUTES (ADJUSTABLE THROUGH SOFTWARE). THE HEAT WHEEL SHALL BE RE-ENERGIZED AFTER THIS TIME PERIOD WHEN THE EXHAUST AIR TEMPERATURE RISES ABOVE THE CALCULATED SETPOINT TEMPERATURE.

   D. COOLING/DEHUMIDIFICATION:
   THE COOLING COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN 75°F (ADJUSTABLE THROUGH SOFTWARE) SPACE AIR TEMPERATURE SETPOINT. WHEN SPACE RELATIVE HUMIDITY REACHES ITS SETPOINT 60% RH (ADJUSTABLE THROUGH SOFTWARE) THE COOLING SYSTEM SHALL BE OVERRIDDEN AND OPERATE IN A DEHUMIDIFICATION MODE. THE CHILLED WATER COIL SHALL FULLY OPEN TO 100% FLOW AND THE SENSIBLE HEAT RECOVERY DEVICE FACE AND BYPASS DAMPER SHALL MODULATE TO REHEAT SUPPLY AIR TO MAINTAIN SPACE TEMPERATURE SETPOINT. WHEN THE SPACE RELATIVE HUMIDITY FALLS TO 50% RH (ADJUSTABLE THROUGH SOFTWARE) THE DEHUMIDIFICATION MODE SHALL BE DE-ENERGIZED AND THE SYSTEM SHALL OPERATE UNDER ITS NORMAL SEQUENCE OF OPERATION. IF THE SPACE TEMPERATURE FALLS TO ITS HEATING SETPOINT THE CENTRAL HEATING PLANT SHALL BE OVERRIDDEN TO ENERGIZE AND MODULATE THE UNITS HEATING COIL TO MAINTAIN SPACE SETPOINT TEMPERATURE.

   E. SENSIBLE PLATE TYPE HEAT EXCHANGER:
   THE SENSIBLE HEAT DEVICE SHALL ONLY BE UTILIZED WHEN THE SYSTEM IS INDEXED TO ON AND WHEN IN THE COOLING/DEHUMIDIFICATION MODE WHEN REHEAT IS NEEDED. THE SENSIBLE HEAT RECOVERY DEVICE SHALL BE PLACED IN BYPASS DURING THE WINTER MODE OF OPERATION. THE HEAT EXCHANGER SHALL MODULATE ITS FACE AND BYPASS DAMPER TO PROVIDE THE NECESSARY REHEAT TO MAINTAIN THE SPACE TEMPERATURE SET POINT OF 75°F (ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE). ENTERING AND LEAVING AIR TEMPERATURES OF SUPPLY AND RELIEF AIR STREAMS SHALL BE MONITORED BY THE EMS.

   F. PREHEAT:
   A DISCHARGE AIR TEMPERATURE SENSOR SHALL MODULATE THE HEATING COIL VALVE TO MAINTAIN 55°F (ADJUSTABLE AND RESETTABLE) SUPPLY AIR. WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 40°F. (ADJUSTABLE), THE LEAD PREHEAT COIL PUMP SHALL BE ENERGIZED TO RUN CONTINUOUSLY WHETHER THE SUPPLY FAN IS ON OR OFF. WHEN THE OUTSIDE AIR TEMPERATURE IS ABOVE 40°F. THE PREHEAT COIL PUMP SHALL BE DE-ENERGIZED. EACH SET OF PREHEAT COIL PUMPS SHALL BE PROVIDED WITH LEAD/LAG CONTROL SUCH THAT THE LEAD PUMP RUNS CONTINUOUSLY AS SPECIFIED ABOVE. IN THE EVENT OF A LEAD PUMP FAILURE (AS SENSED BY CURRENT SENSOR), THE LAG PUMP SHALL AUTOMATICALLY START AFTER A 15 SECOND TIME DELAY. PROVIDE THROUGH SOFTWARE TO AUTOMATICALLY ALTERNATE LEAD/LAG CONTROL OF PREHEAT COIL PUMPS BASED ON PUMP RUN TIME.

   G. LOW LIMIT CONTROL:
   WHENEVER THE LOW LIMIT TEMPERATURE SENSOR TS-2 REACHES ITS SETPOINT OF 40°F (ADJ THRU SOFTWARE) THE PREHEAT COIL VALVE SHALL BE COMMANDED FULLY OPEN, WHETHER THE UNIT IS ENERGIZED OR NOT.

   H. HEATING:
   WHENEVER THE UNIT IS INDEXED TO ON AND THE SPACE TEMPERATURE IS LESS THAN 70°F (ADJUSTABLE THROUGH SOFTWARE), THE HEATING COIL VALVE SHALL MODULATE TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT (ADJUSTABLE AND RESETTABLE THROUGH SOFTWARE). THE SENSIBLE PRECOOL/REHEAT HEAT RECOVERY DEVICE SHALL HAVE FACE AND BYPASS DAMPER FULL OPEN TO THE BYPASS.

   I. ECONOMIZER CONTROL:
      1. PROVIDE A MANUAL SOFTWARE "DISABLED-ENABLE" ECONOMIZER SELECTOR SWITCH THROUGH THE ENERGY MANAGEMENT SYSTEM. WHEN INDEXED TO DISABLED, THE ECONOMIZER CYCLE SHALL BE LOCKED OUT AND THE AIR HANDLING SYSTEM SHALL OPERATE AT MINIMUM OUTDOOR AIR REQUIREMENTS. WHEN INDEXED TO ENABLED, THE USER SHALL BE ABLE TO MANUALLY SELECT "DRYBULB-AUTOMATIC-ENTHALPY" ECONOMIZER CYCLE THROUGH A SOFTWARE SELECTOR SWITCH

      2. DRYBULB ECONOMIZER: WHEN THE SYSTEM SELECTOR SWITCH IS INDEXED TO "DRY BULB ECONOMIZER", THE ECONOMIZER SHALL BE INITIATED WHENEVER THE OUTSIDE AIR DRYBULB TEMPERATURE IS LESS THAN 70°F (ADJUSTABLE THROUGH SOFTWARE WITH MANUAL OVERRIDE). ECONOMIZER CONTROL SHALL MODULATE ECONOMIZER OUTSIDE AIR, RETURN AIR AND RELIEF AIR DAMPERS TO MAINTAIN MIXED AIR TEMPERATURE SETPOINT OF 55°F (ADJUSTABLE THROUGH SOFTWARE) DOWN TO THE MINIMUM OUTSIDE AIR DAMPER POSITION.

      3. ENTHALPY ECONOMIZER: PROVIDE A MANUAL SOFTWARE SELECTOR SWITCH FOR "COMPARATIVE-CONSTANT" ENTHALPY CONTROL. WHEN INDEXED TO COMPARATIVE, ECONOMIZER CYCLE SHALL BE INITIATED WHENEVER OUTSIDE AIR ENTHALPY IS LESS THAN RETURN ENTHALPY AND OUTSIDE AIR DRY BULB TEMPERATURE IS LESS THAN 75°F (ADJUSTABLE THROUGH SOFTWARE). SIMILARLY, WHEN INDEXED TO CONSTANT, ECONOMIZER CYCLE SHALL BE INITIATED WHENEVER OUTSIDE AIR ENTHALPY IS LESS THAN 27.5 BTU PER POUND OF DRY AIR (ADJUSTABLE THROUGH SOFTWARE). ECONOMIZER CONTROL SHALL MODULATE ECONOMIZER OUTSIDE AIR, RETURN AIR AND RELIEF AIR DAMPERS TO MAINTAIN A MIXED AIR TEMPERATURE OF 55°F (ADJUSTABLE THROUGH SOFTWARE) DOWN TO MINIMUM OUTSIDE AIR POSITION.

      4. AUTOMATIC ECONOMIZER: WHEN INDEXED TO THE AUTOMATIC MODE, THE EMS SHALL INITIATE DRY BULB ECONOMIZER CYCLE AS DESCRIBED WHENEVER OUTSIDE AIR TEMPERATURES ARE LESS THAN 50°F AND ENTHALPY ECONOMIZER CYCLE AS DESCRIBED WHENEVER OUTSIDE AIR TEMPERATURES ARE 50°F AND HIGHER. CONSTANT OR COMPARATIVE ENTHALPY ECONOMIZER SHALL BASED ON THE SOFTWARE SELECTOR SWITCH POSITION.

      5. ECONOMIZER CYCLES SHALL UTILIZE GLOBAL OUTDOOR AIR DRYBULB TEMPERATURE SENSOR AND GLOBAL DEW POINT SENSOR.

   J. OUTSIDE AIR:
   PROVIDE AN OUTSIDE AIR FLOW MEASURING STATION TO MONITOR MINIMUM AND ECONOMIZER OUTDOOR AIR FLOW RATES AND TOTALIZE THROUGH THE EMS.

   K. SUPPLY FAN SPEED CONTROL:
   THE SUPPLY FAN SHALL MAINTAIN THE MINIMUM AIR FLOW RATES AS INDICATED ON THE MECHANICAL SCHEDULE.

      1. COOLING: WHEN OPERATING AT THE MINIMUM AIR FLOW RATE THE COOLING COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINT DOWN TO 58°F SUPPLY AIR TEMPERATURE (ADJUSTABLE THROUGH SOFTWARE). WHEN THE SPACE TEMPERATURE RISES ABOVE ITS SETPOINT THE SUPPLY FAN SHALL SLOWLY INCREASE IN SPEED TO MAINTAIN ITS SPACE TEMPERATURE SETPOINT WHILE MAINTAINING 58°F OR LESS SUPPLY AIR TEMPERATURE. IF SPACE TEMPERATURE INCREASES ABOVE ITS SETPOINT TEMPERATURE AND THE SUPPLY FAN IS AT MAXIMUM AIR FLOW THE CHILLED WATER COIL CONTROL VALVE SHALL MODULATE UP TO 100% TO MAINTAIN SPACE TEMPERATURE.

      2. HEATING: WHEN OPERATING AT THE MINIMUM AIR FLOW RATE THE HEATING COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINT UP TO 95°F (ADJUSTABLE THROUGH SOFTWARE). WHEN THE SPACE TEMPERATURE FALLS BELOW ITS SETPOINT THE SUPPLY FAN SHALL SLOWLY INCREASE IN SPEED TO MAINTAIN ITS SPACE TEMPERATURE SETPOINT WHILE MAINTAINING 95°F SUPPLY AIR TEMPERATURE. IF SPACE TEMPERATURE FALLS BELOW ITS SETPOINT TEMPERATURE AND THE SUPPLY FAN IS AT MAXIMUM AIR FLOW THE HEATING WATER COIL CONTROL VALVE SHALL MODULATE UP TO 100% TO MAINTAIN SPACE TEMPERATURE.

   L. RELIEF FAN SPEED CONTROL:
   THE RELIEF AIR FAN SHALL VARY IN SPEED TO MAINTAIN THE SCHEDULED FLOW RATES AND SLIGHT NEGATIVE SPACE PRESSURE.

      1. THE RELIEF AIR FAN SHALL VOLUMETRICALLY TRACK THE OUTSIDE AIR FLOW MINUS 100 CFM (ADJUSTABLE) AND THE SCHEDULED FUME HOOD FANS ARE ENERGIZED. REFER TO THE LAB AIR FLOW CONTROL SUMMARY SCHEDULE FOR ADDITIONAL INFORMATION.

3. **UNOCCUPIED MODE:**
   A. SUPPLY FAN SHALL BE DE-ENERGIZED, OUTSIDE AIR AND RELIEF AIR DAMPERS SHALL BE CLOSED, RETURN AIR DAMPER OPEN, AND THE RELIEF AIR FAN SHALL BE DE-ENERGIZED. THE HEAT RECOVERY WHEEL SHALL BE DE-ENERGIZED IN THE UNOCCUPIED MODE WHETHER THE UNIT IS ENERGIZED OR NOT. THE PLATE HEAT EXCHANGER SHALL HAVE THE DAMPER OPEN TO THE BYPASS. THE COOLING COIL VALVE SHALL BE CLOSED TO THE COIL AND THE PREHEAT COIL VALVE SHALL BE OPEN TO THE COIL. THE HEATING COIL VALVE SHALL MODULATE TO MAINTAIN 95°F DISCHARGE AIR TEMPERATURE.

   B. THE SPACE TEMPERATURE SENSORS SHALL BE RESET TO 55°F (ADJ THRU SOFTWARE). THE AHU SHALL CYCLE LIKE A RECIRCULATING UNIT HEATER TO MAINTAIN REDUCED TEMPERATURE SETPOINT.

LAB AIR FLOW CONTROL SUMMARY SCHEDULE

AHU#	SERVICES	MIN OUTSIDE AIR CFM	ECON OUTSIDE AIR CFM	EXHAUST FAN		RELIEF AIR CFM		SUPPLY AIR	
				MODE	CFM	MIN CFM	ECO CFM	MIN CFM	MAX CFM
2	PHYSICS/ EARTH SCIENCE RM 226	1400	1700	N/A	N/A	1500	3200	2000	3100
3	CHEMISTRY/ MICROBIOLOGY RM 227	1900	1100	OFF	0	2000	3100	2000	3000
				F-2 OR F-3 ON	1000	1000	2100		
				F-2 & F-3 ON	2000	OFF	1100		
4	BIOLOGY & BIOLOGY PREP RMS 230 & 229B	1400	1900	OFF	0	1500	3400	2000	3300
				F-4 OR F-5 ON	750	750	2650		
				F-4 & F-5 ON	1500	OFF	1900		

NOTE: 1. MAINTAIN APPROXIMATELY 100 CFM NEGATIVE PRESSURE IN EACH ZONE

SINGLE ZONE VARIABLE FLOW LABORATORY AIR HANDLING UNIT SEQUENCE OF OPERATION

ALBAN ENGINEERING, INC.

GRIMM AND PARKER
11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel: 301.595.1000
www.grimmandparker.com

GP #21620

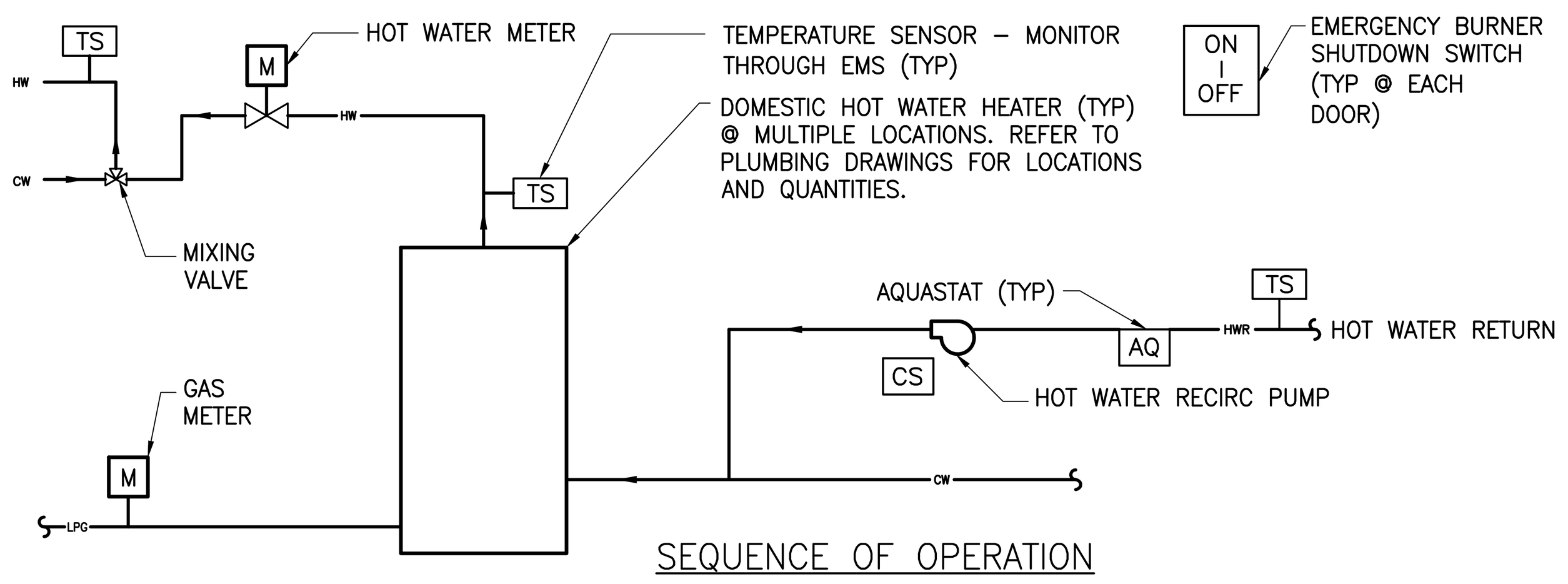
LAB AHU CONTROL DIAGRAM

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

M-8.4

February 1, 2017
Bid Set

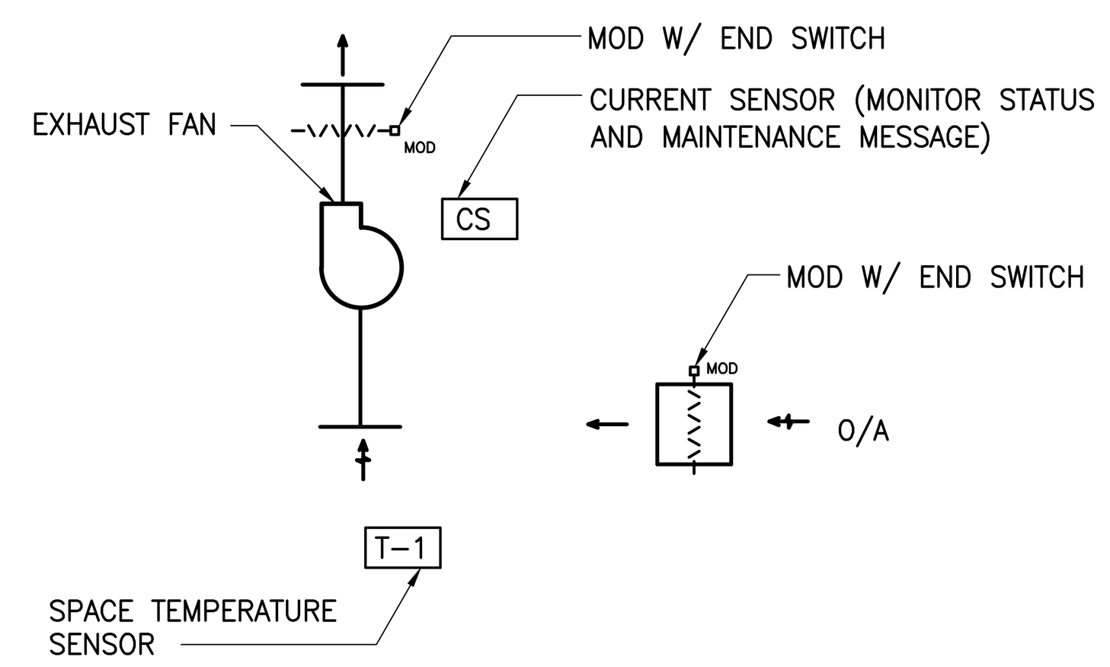


SEQUENCE OF OPERATION

1. WHENEVER RECIRCULATING WATER TEMPERATURE FALLS BELOW ITS SETPOINT (130F – ADJUSTABLE) AS SENSED BY AQUASTAT, THE RECIRCULATION PUMP SHALL BE ENERGIZED TO RUN. PUMP SHALL BE DE–ENERGIZED WHENEVER THE TEMPERATURE IS ABOVE ITS SETPOINT TEMPERATURE (140F – ADJUSTABLE).
2. INTERLOCK EMERGENCY SHUT–DOWN SWITCH WITH BURNER TO SHUT DOWN WHEN SWITCH IS INDEXED TO OFF.
3. PROVIDE ALL INTERLOCKS PER ASME–CSD–1 AND STATE OF MARYLAND BOILER AND PRESSURE VESSEL SAFETY ACT AND REGULATIONS.
4. PROVIDE START–STOP (OCCUPIED–UNOCCUPIED) SCHEDULE OF RECIRC. PUMPS, MONITOR THE DISCHARGE WATER TEMPERATURE AND ALARM ON HIGH TEMPERATURE. PROVIDE STATUS AND PUMP FAILURE ALARM THROUGH THE EMS.
5. THE EMS SHALL DETERMINE THE OCCUPIED/UNOCCUPIED (START/STOP) MODE OF THE HOT WATER HEATER SYSTEM

TYPICAL DOMESTIC HOT WATER HEATER RECIRCULATION CONTROL DIAGRAM (DDC)

SCALE: NONE

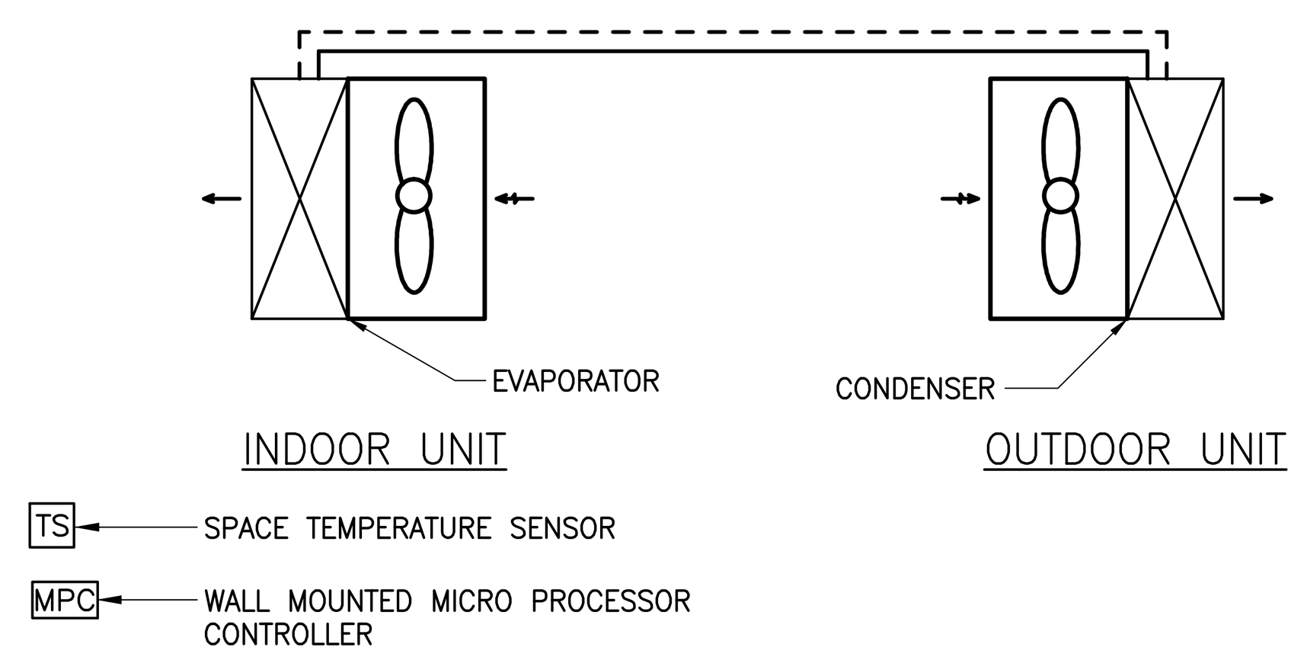


SEQUENCE OF OPERATION

1. WHENEVER SPACE TEMPERATURE REACHES 95°F AS SENSED BY SPACE THERMOSTAT, THE OUTSIDE AIR DAMPER SHALL OPEN AND EXHAUST AIR DAMPER SHALL OPEN AND EXHAUST FAN SHALL BE ENERGIZED TO RUN. WHEN SPACE THERMOSTAT IS SATISFIED, EXHAUST FAN SHALL BE DE–ENERGIZED, ASSOCIATED EXHAUST DAMPER SHALL CLOSE AND OUTSIDE AIR DAMPER SHALL CLOSE.

TYPICAL PENTHOUSE AND MECH/ELECT EQUIPMENT ROOM VENTILATION AIR CONTROL DIAGRAM

SCALE: NONE

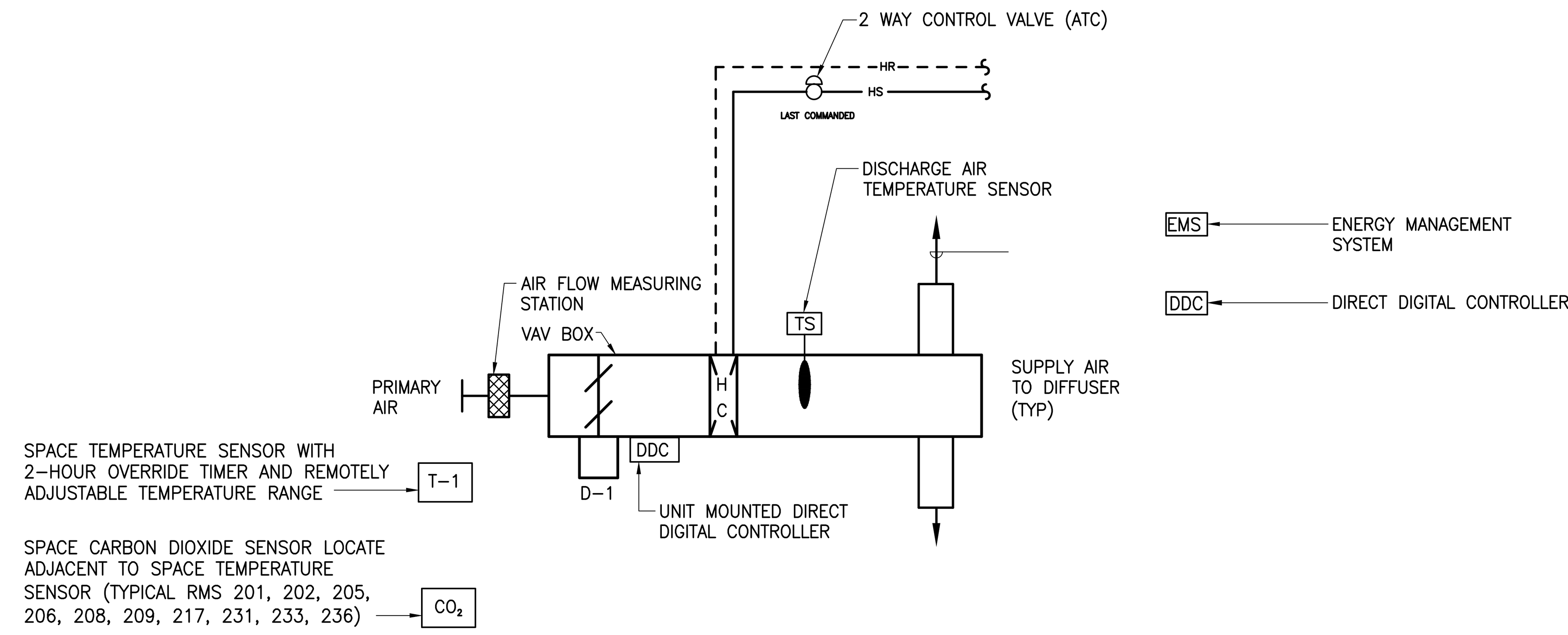


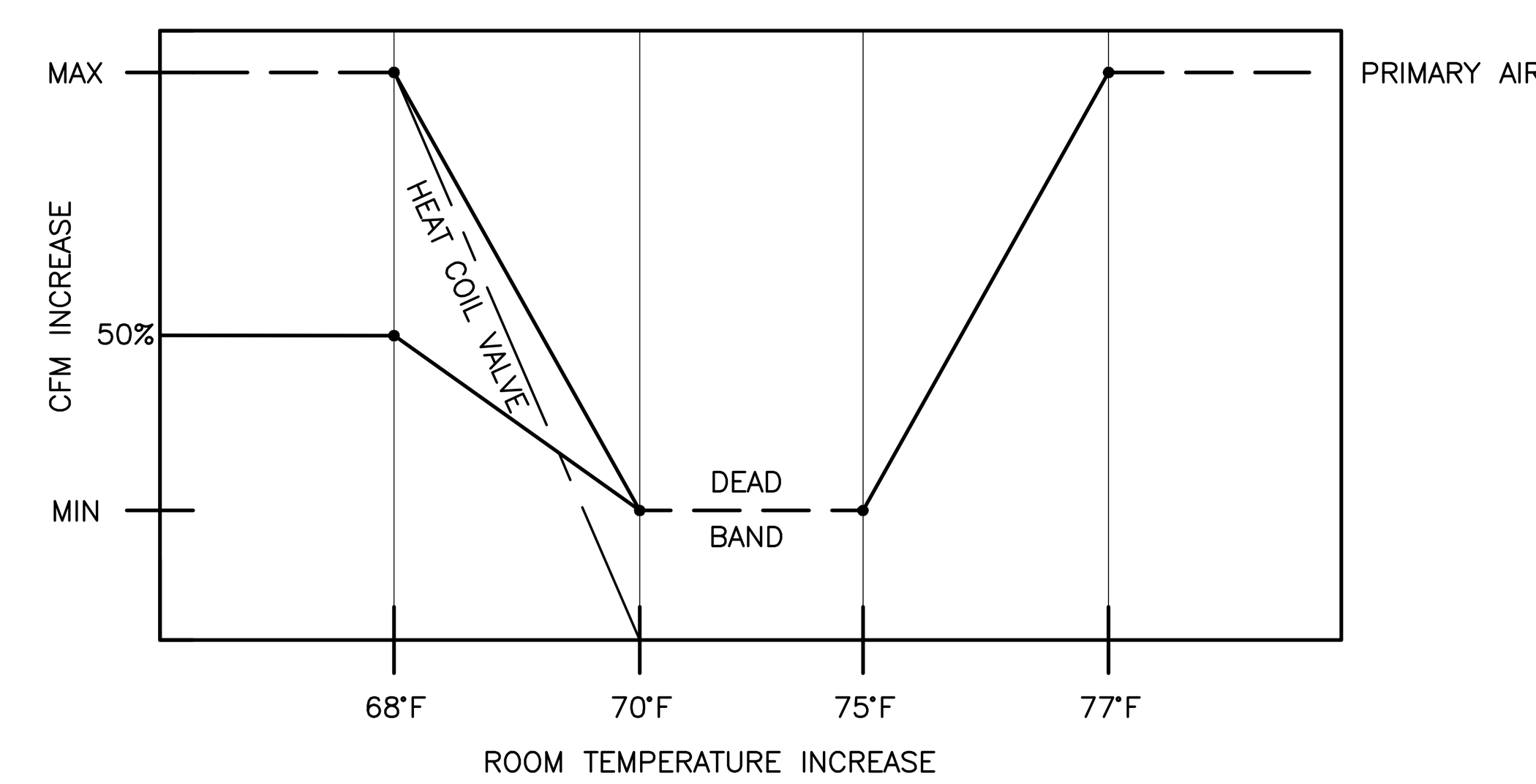
SEQUENCE OF OPERATION

1. MICRO PROCESSOR CONTROLLER SHALL SEQUENCE INDOOR A/C UNIT TO MAINTAIN 70°F (ADJUSTABLE).
2. SPACE TEMPERATURE SENSOR SHALL MONITOR SPACE TEMPERATURE AND SEND AN ALARM TO THE EMS WHEN A HIGH TEMPERATURE SETPOINT LIMIT (80°F – ADJUSTABLE THROUGH SOFTWARE) IS REACHED.

TYPICAL DUCTLESS SPLIT A/C UNIT CONTROL DIAGRAM

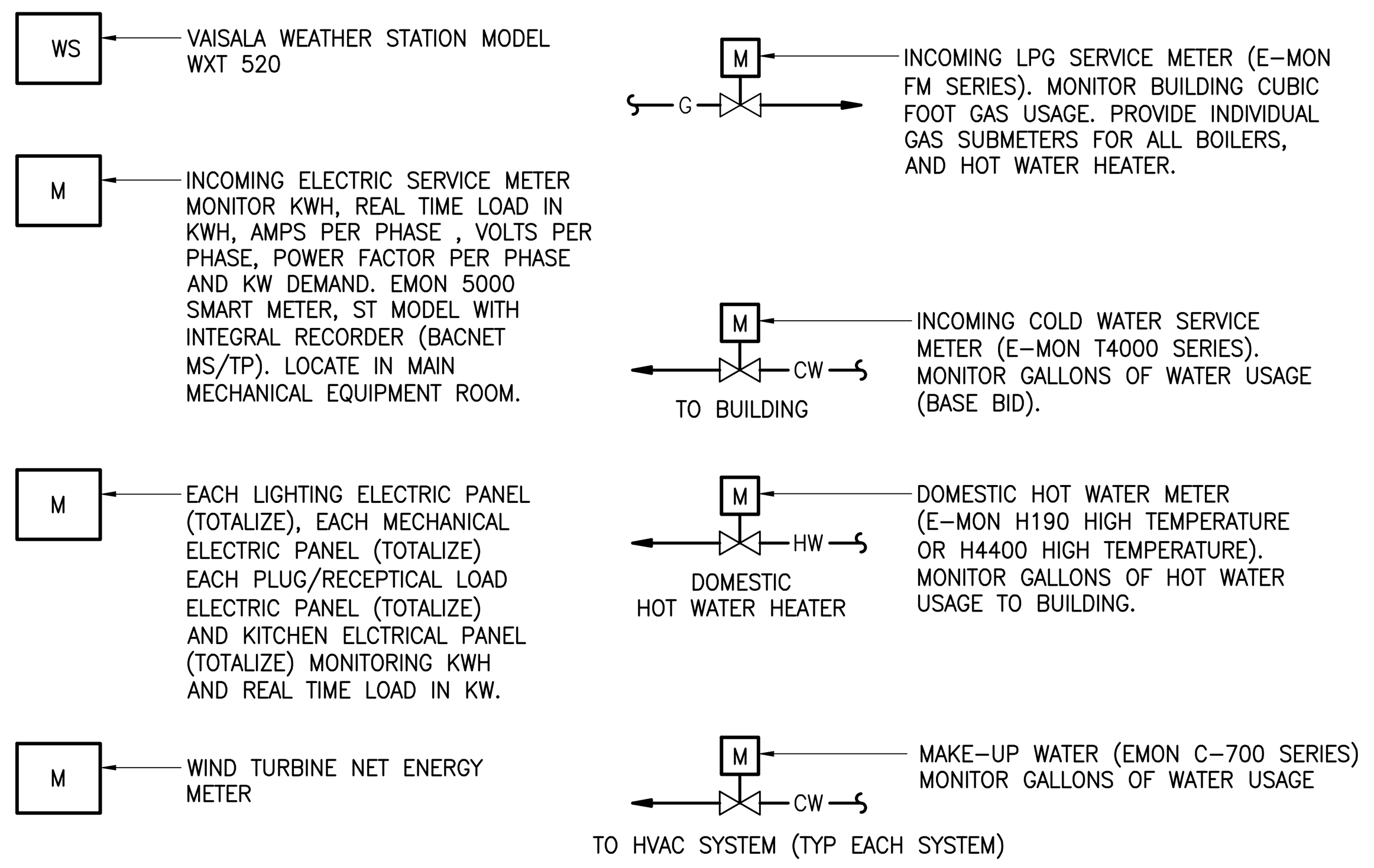
SCALE: NONE





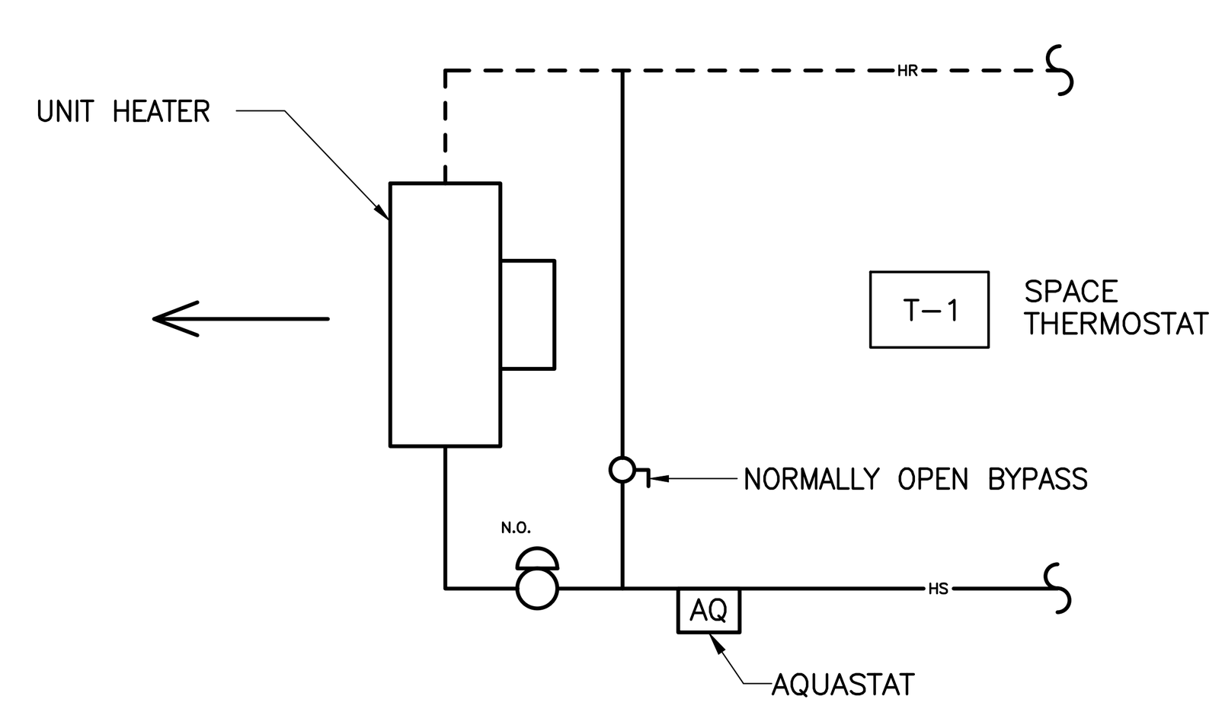
TYPICAL VARIABLE AIR VOLUME (VAV) TERMINAL CONTROL UNIT (TCU) WITH HEAT COIL CONTROL DIAGRAM (DDC–ELECTRIC/ELECTRONIC ACTUATION)

SCALE: NONE



SUBMETER SYSTEM (EMON)

SCALE: NONE



SEQUENCE OF OPERATION

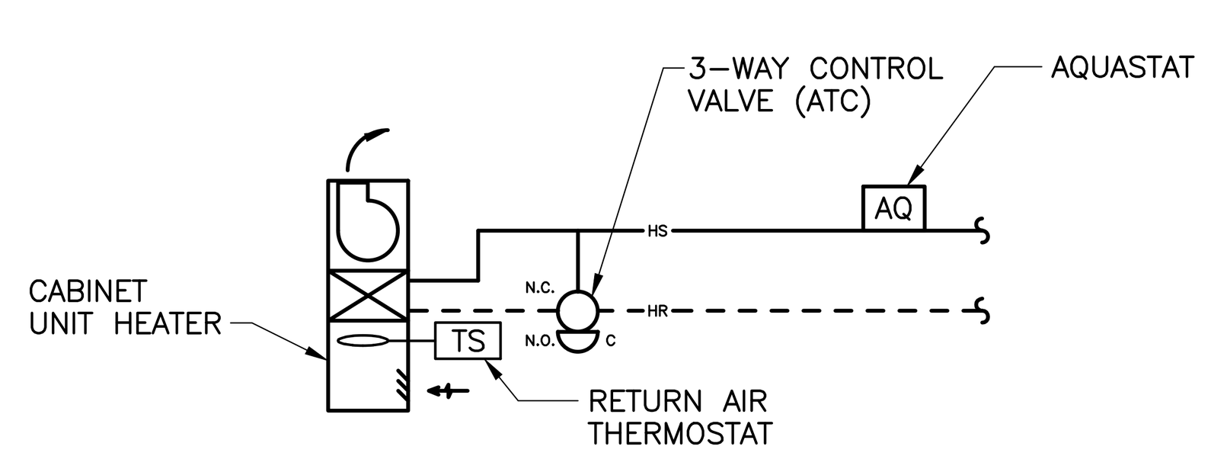
1. SPACE THERMOSTAT SHALL CYCLE UNIT FAN AND OPEN TWO–WAY TWO POSITION CONTROL VALVE WHEN HOT WATER FLOW IS SENSED BY STRAP ON AQUASTAT TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 65°F (ADJUSTABLE).

TYPICAL UNIT HEATER CONTROL DIAGRAM

SCALE: NONE

1. WARM–UP CONTROL:
   A. WHEN THE SYSTEM IS INDEXED FROM UNOCCUPIED TO OCCUPIED CYCLE, THE FLOW CONTROLLER SHALL RESET TO ITS MAXIMUM PRIMARY AIR FLOW SETTING. WARM SUPPLY AIR SHALL BE DELIVERED CONTINUOUSLY DURING WARM–UP PERIOD. HEAT COIL CONTROL VALVE SHALL FULLY OPEN FOR FULL HEATING. THE AHU OUTSIDE AIR AND EXHAUST AIR DAMPER SHALL REMAIN CLOSED, RETURN AIR DAMPER REMAIN OPEN, AND THE PREHEAT COIL VALVE SHALL BE 100% OPEN. WHEN RETURN AIR TEMPERATURE REACHES 70 DEGREES F, THE SYSTEM SHALL GO TO THE OCCUPIED MODE. SIMILARLY DURING MORNING PULL DOWN, THE TERMINAL AIR UNITS PRIMARY AIR DAMPER SHALL FULLY OPEN TO THEIR MAXIMUM SETPOINT AND COOL PRIMARY AIR SHALL BE DELIVERED BY THE AHU UNTIL THE RETURN AIR TEMPERATURE REACHES 75°F, THEN THE SYSTEM SHALL GO TO THE OCCUPIED MODE. IF INDIVIDUAL SPACES REACH ITS OCCUPIED SETPOINT BEFORE THE AIR HANDLING UNIT HAS COMPLETED ITS WARM–UP/PULL DOWN CYCLE, THE VAV BOX SHALL MODULATE TO MAINTAIN ITS OCCUPIED SETPOINT TEMPERATURE TO PREVENT OVERHEATING/COOLING OF INDIVIDUAL SPACES.
2. OCCUPIED CYCLE:
   A. THE TERMINAL UNIT SHALL BE DIRECTLY INTERLOCKED WITH THE CENTRAL AIR HANDLING UNIT SYSTEM.
   B. COOLING:
   THE TERMINAL CONTROL UNITS PRIMARY AIR DAMPER SHALL MODULATE FROM MINIMUM TO MAXIMUM AIR FLOW TO MAINTAIN 75°F (ADJUSTABLE THROUGH SOFTWARE) SPACE TEMPERATURE SETPOINT.
   C. HEATING:
   WHEN TERMINAL CONTROL UNIT PRIMARY AIR DAMPER IS AT MINIMUM FLOW AND SPACE TEMPERATURE DECREASES, HEATING COIL AND PRIMARY AIR DAMPER SHALL, IN UNISON, MODULATE OPEN TO MAINTAIN 70°F (ADJUSTABLE THROUGH SOFTWARE). THE PRIMARY AIR DAMPER SHALL BE LIMITED TO 50% OPEN WHEN THE ECONOMIZER OR MECHANICAL COOLING IS PROVIDED. THE PRIMARY AIR DAMPER SHALL BE ALLOWED TO OPEN TO 100% MAXIMUM FLOW WHEN THE AHU IS AT MINIMUM OUTSIDE AIR AND NO MECHANICAL COOLING IS PROVIDED.
3. UNOCCUPIED CYCLE:
   A. TERMINAL BOX PRIMARY AIR DAMPER SHALL BE NORMALLY OPEN AND ALL TEMPERATURE SENSORS SHALL BE RESET TO THE UNOCCUPIED TEMPERATURE SETTING 55°F (ADJUSTABLE THROUGH SOFTWARE) WHILE THE CENTRAL AIR HANDLING UNIT REMAINS OFF. WHENEVER ANY OF THE TEMPERATURE SENSORS REACH THE UNOCCUPIED SETPOINT, THE AIR HANDLING UNIT SHALL CYCLE LIKE A RECIRCULATING UNIT HEATER TO MAINTAIN MINIMUM UNOCCUPIED TEMPERATURE SETPOINT
   FOR ROOMS WITH BASEBOARD RADIATION, THE SPACE TEMPERATURE SENSOR SHALL MODULATE THE BBR VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT. IF THE SPACE TEMPERATURE FALLS 2°F (ADJUSTABLE THROUGH SOFTWARE) BELOW SETPOINT TEMPERATURE, THE CENTRAL AIR HANDLING UNIT SHALL BE ENERGIZED AND CYCLED AS DESCRIBED HEREINBEFORE.
4. SPACE OVERRIDE
   A. EACH TEMPERATURE SENSOR SHALL BE PROVIDED WITH A LOCAL 2–HOUR OVERRIDE TIMER TO MAINTAIN THE OCCUPIED TEMPERATURE SETTINGS.
   B. ALL TEMPERATURE SENSORS SHALL BE INTERLOCKED WITH THE AHU SUCH THAT IF ANY VAV BOX IS IN OVERRIDE, THE AIR HANDLING SYSTEM IS ENERGIZED TO RUN.
   C. THIS FEATURE SHALL BE ENABLED/DISABLED THROUGH THE EMS.
5. TEMPERATURE SENSORS
   A. EACH TEMPERATURE SENSOR SHALL HAVE AN INDIVIDUAL PROGRAMMED TEMPERATURE RANGE ADJUSTABLE THROUGH THE EMS.
   B. WHEN IN THE UNOCCUPIED MODE OF OPERATION AND THE OUTSIDE AIR TEMPERATURE FALLS BELOW 20°F (ADJUSTABLE THRU SOFTWARE) THE SPACE TEMPERATURE SENSOR(S) SHALL BE RESET TO THEIR OCCUPIED SETPOINT TEMPERATURE. THE AHU SHALL CYCLE AS PREVIOUSLY DESCRIBED IN PARAGRAPH 3A. THIS FEATURE SHALL BE ENABLED/DISABLED BY A MANUAL SOFTWARE SELECTION SWITCH THROUGH THE EMS.

SEQUENCE OF OPERATION (DDC–ELECTRIC/ELECTRONIC ACTUATION)

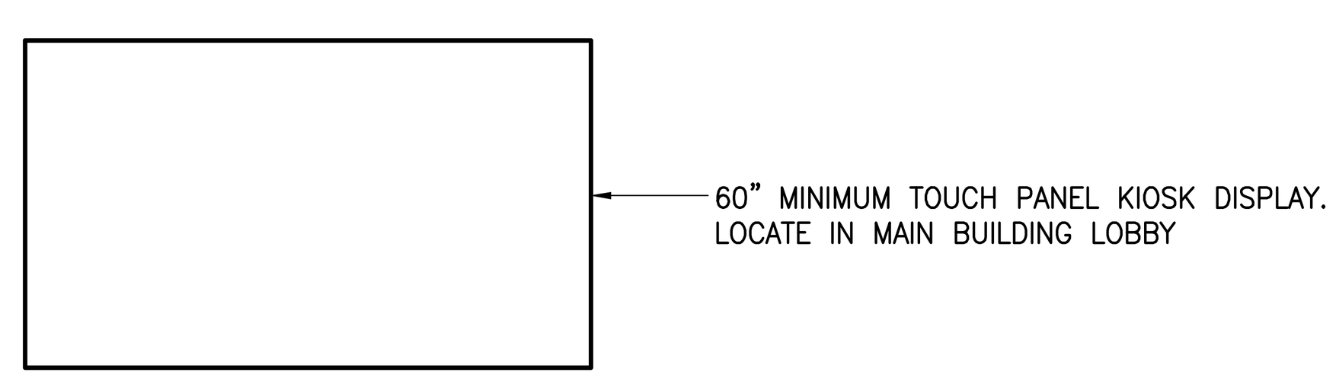


SEQUENCE OF OPERATION

1. FAN: WHENEVER HEATING WATER IS AVAILABLE AS DETERMINED BY DDC, THE FAN SHALL RUN CONTINUOUSLY. WHENEVER HOT WATER IS NOT AVAILABLE THE FAN SHALL BE OFF.
2. THREE–WAY MODULATING CONTROL VALVE SHALL VARY WATERFLOW THROUGH THE UNITS HEATING COIL TO MAINTAIN RETURN AIR TEMPERATURE OF 65°F (ADJ).
3. THREE–WAY CONTROL VALVE SHALL FAIL OPEN TO THE COIL.

TYPICAL CABINET UNIT HEATER CONTROL DIAGRAM

SCALE: NONE



NOTE:
1. ALL SUBMETERS SHALL BE MONITORED BY THE LOCAL BUILDING AUTOMATIC TEMPERATURE CONTROL SYSTEM. THE ATC CONTRACTOR SHALL PROVIDE THE SUBMETERING SYSTEM IN A FULLY TURNKEY FASHION. THROUGH THE ENERGY MANAGEMENT SYSTEM CALCULATE AND TOTALIZE BTU'S SAVED BY HEAT RECOVERY WHEELS AND MONITOR OUTDOOR AIR FLOW FOR EACH UNIT WITH AN OUTDOOR AIR CONNECTION (EXCEPT KITCHEN MAKE-UP AIR UNIT). INCLUDE BTU SUBMETER FOR ENERGY SAVED FOR THE SOLAR DOMESTIC WATER PREHEAT SYSTEM.
2. DASHBOARD SYSTEM SHALL BE MANUFACTURED LUCID, IS BY INTEGRATED WITH THE EMS AND EMON SUBMETERS AND CONTAINS ALL GRAPHICS, FOR WEATHER STATION, GAS, WATER, AND ENERGY USAGE.

DASHBOARD SYSTEM – ADD ALTERNATE No. 2

SCALE: NONE

INPUT/OUTPUT SUMMARY FOR VARIABLE AIR VOLUME TERMINAL UNITS WITH HEAT COIL

BUILDING SYSTEM: VARIABLE AIR VOLUME TERMINAL UNITS

INPUTS

DESCRIPTION	ANALOG: ROOM TEMPERATURE	DUCT TEMPERATURE	WATER TEMPERATURE	O.A. TEMPERATURE (GLOBAL)	CARBON DIOXIDE (PPM)	STATIC PRESSURE	DIFF. PRESSURE	FLOW	POSITION INDICATION	BINARY: FLOW SWITCH	SWITCH CLOSURE	STATIC PRESSURE	LOW TEMPERATURE CUTOUT	END SWITCH	DIFFERENTIAL PRESSURE SWITCH
TERMINAL UNIT				●				●	●						
TEMP SENSOR	●														
SUPPLY AIR		●						●							
HEATING COIL VALVE															
PRIMARY AIR								●							
SPACE CARBON DIOXIDE					●										

OUTPUTS

DESCRIPTION	ANALOG: MODULATING ACTUATOR	E/P TRANSDUCER	VARIABLE SPEED				BINARY: CONTROL RELAY	SOLENOID	START/STOP	2–POSITION DAMPER MOD.			3–POINT FLOATING: ACTUATOR	MERCURY RELAY	FEED/BLEED SAV			
TERMINAL UNIT	●								●									
TEMP SENSOR																		
SUPPLY AIR																		
HEATING COIL VALVE	●																	
PRIMARY AIR	●																	
SPACE CARBON DIOXIDE																		

ALARMS

DESCRIPTION	HIGH LIMIT	LOW LIMIT	RUN TIME	MAINTENANCE MESSAGE	SMOKE/FIRE	LIQUID DETECTION
TERMINAL UNIT						
TEMP SENSOR	●	●				
SUPPLY AIR						
HEATING COIL VALVE						
PRIMARY AIR						
SPACE CARBON DIOXIDE	●					

FEATURES

DESCRIPTION	SCHEDULED START/STOP	TEMPERATURE SETBACK/SETUP	OPTIMIZED START (ADAPT.)	DEMAND LIMITING	DUTY CYCLE	VENTILATION DELAY	ECONOMIZER CYCLE	H.W. RESET W/ O.A. TEMP.	VAV CONTROL	REMOTE READ/RESET	TENANT OVERRIDE	COLOR GRAPHICS	POINT LOCKOUT	TREND LOG	WARM UP/PULL DOWN
TERMINAL UNIT	●		●	●					●	●	●	●			●
TEMP SENSOR		●								●	●			●	●
SUPPLY AIR										●				●	
HEATING COIL VALVE															
PRIMARY AIR															
SPACE CARBON DIOXIDE														●	

VARIABLE AIR VOLUME TERMINAL CONTROL UNIT INPUT/OUTPUT SUMMARY

SCALE: NONE

ALBAN ENGINEERING, INC.
www.albanengineering.com

11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel: 301.595.1000
www.grimmandparker.com
G+P
GRIMM AND PARKER

GP #21620

MISCELLANEOUS CONTROL DIAGRAMS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

M-8.5

February 1, 2017
Bid Set

AIR HANDLING UNIT SCHEDULE

AHU Nº	SERVICE	LOCATION	SUPPLY FAN MCA	SUPPLY FAN MOCP	SUPPLY FAN QTY	SUPPLY FAN TYPE	SUPPLY FAN MAX ESP	SUPPLY RPM MAX	SUPPLY STD. AIR CFM MIN	SUPPLY STD. AIR CFM MAX	RETURN/RELIEF FAN MCA	RETURN/RELIEF FAN MOCP	RETURN/RELIEF FAN QTY	RETURN/RELIEF FAN TYPE	RETURN/RELIEF FAN MAX ESP	RETURN/RELIEF RPM MAX	RETURN/RELIEF STD. AIR CFM MIN	RETURN/RELIEF STD. AIR CFM MAX
1	GENERAL CLASSROOMS & OFFICES	MECH RM	34	35	8	AFPF	2.5	3119	5000	20000	26	30	3	AFPF	0.5	2500	5000	20000
2	PHYSICS/EARTH SCIENCE 226	PENTHOUSE	10	15	1	AFPF	1.0	2468	2000	3100	6	15	1	AFPF	1.0	1885	1500	3200
3	CHEMISTRY/MICROBIOLOGY 227	PENTHOUSE	10	15	1	AFPF	1.0	2468	2000	3000	6	15	1	AFPF	1.0	1885	2000	3100
4	BIOLOGY 230	PENTHOUSE	10	15	1	AFPF	1.0	2468	2000	3300	6	15	1	AFPF	1.0	1885	1500	3400

AHU Nº	COOLING COIL SYSTEM CONDITION (40% PROPYLENE GLYCOL): EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	MAX FACE VEL (FPM)	MAX A.P.D (IN H20)	SENS. CAP. (MBH)	TOTAL CAP. (MBH)	EWT (°F)	LWT (°F)	MAX W.P.D (FT H20)	GPM 10°F ΔT
1	76	64	54	54	500	0.70	468	570	45	55	15	115
2	80	67	54	54	500	0.70	90	116	45	55	12	30
3	80	67	54	54	500	0.70	107	168	45	55	12	37
4	84	70	54	54	500	0.70	102	148	45	55	12	33

AHU Nº	PRE-HEATING COIL SYSTEM CONDITION: EAT DB (°F)	LAT DB (°F)	EWT (°F)	LWT (°F)	GPM 20°F ΔT	MAX FACE VEL (FPM)	MAX A.P.D (IN H20)	MAX W.P.D (IN H20)	TOTAL CAP. (MBH)
1	0	50	140	120	27	500	0.30	5.0	270
2	0	50	140	123	20	500	0.30	5.0	168
3	0	50	140	124	20	500	0.30	5.0	162
4	0	50	140	121	20	500	0.30	5.0	184

AHU Nº	HEATING COIL SYSTEM CONDITION: EAT DB (°F)	LAT DB (°F)	EWT (°F)	LWT (°F)	GPM	MAX FACE VEL (FPM)	MAX A.P.D (IN H20)	MAX W.P.D (IN H20)	TOTAL CAP. (MBH)	OUTSIDE AIR MIN CFM	OUTSIDE AIR MAX CFM	OUTSIDE AIR %	ELECTRICAL CHARAC. V/ø/Hz	WEIGHT (lbs)	EMER. POWER	SYSTEM TYPE	BASED ON DAIKIN
1	–	–	–	–	–	–	–	–	–	5000	20000	25	480/3/60	8,500	NO	VAV	MODEL CAH044GDCM
2	50	100	140	123	20	500	0.30	5.0	168	1400	3100	45	480/3/60	6,000	NO	SZVF	MODEL CAC008GHCC
3	50	100	140	124	20	500	0.30	5.0	162	1900	3000	63	480/3/60	6,000	NO	SZVF	MODEL CAC008GHCC
4	50	100	140	121	20	500	0.30	5.0	184	1400	3300	43	480/3/60	6,000	NO	SZVF	MODEL CAC008GHCC

NOTES:
1. VAV = VARIABLE AIR VOLUME / SZVF = SINGLE ZONE VARIABLE FLOW.
2. ESP = EXTERNAL STATIC PRESSURE BASED ON PRESSURE REQUIRED AT AHU DUCT CONNECTION.
3. FC = FORWARD CURVED, BIAF = BACKWARD INCLINED AIR FOIL (DOUBLE WIDTH, DOUBLE INLET).
4. AFPF = AIRFOIL PLENUM FAN (SINGLE WIDTH, SINGLE INLET).
5. ALL FANS SHALL BE DIRECT DRIVE TYPE WITH UTILIZING MOTORS WITH DISCONNECT SWITCH PER FAN ARRAY.
6. PREFILTERS SHALL BE 2" THICK MERV 8 FARR 30/30 OR AS APPROVED EQUAL, 500 FPM MAX FACE VELOCITY.
7. FINAL FILTERS SHALL BE 4" THICK MERV 13 FARR OPTI-PAC OR AS APPROVED EQUAL, 500 FPM MAX FACE VELOCITY.
8. FOR TOTAL STATIC PRESSURE CALCULATIONS USE MEDIAN (CLEAN/DIRTY) FITLER AIR PRESSURE DROPS.
9. PREHEAT COILS ARE SIZED BASED ON NO HEAT RECOVERY CAPACITY (I.E. FAILED OR FROST CONTROL MODE).
10. PREHEAT COIL CAPACITY FOR AHU-1 IS BASED ON MINIMUM OUTSIDE AIR FLOW. FACE VELOCITY AND AIR PRESSURE DROP IS BASED ON MAXIMUM SUPPLY AIR FLOW.
11. PREHEAT AND REHEAT COILS FOR AHU-2 THRU AHU-4 IS BASED ON 100% OUTSIDE AIR (PURGE MODE) AT MAXIMUM SUPPLY AIR FLOW RATE (NO HEAT RECOVERY).

HEAT RECOVERY DEVICE SCHEDULE

SERVICES AHU №	MAX A.P.D (IN W.C)	MAX FACE VELOCITY (FPM)	ELECTRICAL MOTOR HP	ELECTRICAL V/ø/Hz
1	0.85	580	0.75	115/1/60
2	0.75	600	0.25	115/1/60
3	0.75	600	0.25	115/1/60
4	0.75	600	0.25	115/1/60

SERVICES AHU №	ENTHALPY HRD SUMMER SUPPLY: DEVICE CFM (ENTERING)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	SUMMER EXHAUST: DEVICE CFM (ENTERING)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)
1	5000	95	78	81	68	5000	75	62	89	74
2	3100	95	78	80	67	3200	75	62	89	74
3	3000	95	78	80	67	3100	75	62	89	74
4	3300	95	78	80	67	3400	75	62	89	74

SERVICES AHU №	ENTHALPY HRD WINTER SUPPLY: DEVICE CFM (ENTERING)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	WINTER EXHAUST: DEVICE CFM (ENTERING)	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)
1	5000	10	9	56	50	5000	75	62	29	29
2	3100	10	9	55	50	3200	75	62	25	25
3	3000	10	9	55	50	3100	75	62	25	25
4	3300	10	9	55	50	3400	75	62	25	25

SERVICES AHU №	SENSIBLE HEAT RECOVERY DEVICE (PLATE TYPE): SENSIBLE HEAT RECOVERY DEVICE	MAX A.P.D (IN. W.C.)	MAX FACE VELOCITY (FPM)	SUMMER SUPPLY (BEFORE COOLING COIL): DEVICE CFM	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	SUPPLY (AFTER COOLING COIL): DEVICE CFM	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	REMARKS
1	–	–	–	–	–	–	–	–	–	–	–	–	–	60"Ø WHEEL
2	PLATE	0.80	500	3100	80	67	63	61	3100	54	54	71	59	46"Ø WHEEL
3	PLATE	0.80	500	3000	80	67	63	61	3000	54	54	71	59	46"Ø WHEEL
4	PLATE	0.80	500	3300	80	67	63	61	3300	54	54	71	59	46"Ø WHEEL

NOTES:
1. DEVICE ENTERING CFM INDICATED IS UPSTREAM OF HEAT RECOVERY DEVICE AND EXCLUDES PURGE VOLUME.
2. PROVIDE VARIABLE SPEED DRIVES FOR ALL ENTHALPY HEAT RECOVERY DEVICES.
3. PLATE TYPE HEAT RECOVERY DEVICE IS IN A WRAP-AROUND POSITION.

LINEAR SLOT DIFFUSER SCHEDULE

№	DUTY	CFM PER L.F.	CFM TOTAL	№ OF SLOTS	SLOT WIDTH (IN)	TOTAL LENGTH (FT)	COLAR OR INLET SIZE (ø)	MAX N.C.	PLENUM SIZE (SOUND LINED)	BASED ON (TITUS)
L1	SUPPLY	50	200	3	3/4	4	10	18	8"x14"	ML-38
L2	SUPPLY	42	250	3	3/4	6	10	18	10"x14"	ML-38
L3	SUPPLY	50	300	4	3/4	6	10	18	10"x14"	ML-38
L4	SUPPLY	44	350	3	3/4	8	2@ 10	18	10"x14"	ML-38
L5	SUPPLY	75	450	5	3/4	6	10	18	12"x14"	ML-38

NOTES: REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION.

DUCTLESS SPLIT SYSTEM SCHEDULE

Nº	SERVICE	LOCATION EVAPORATOR	LOCATION CONDENSER	MAX CFM	REFRIGERANT TYPE	COOLING CAPACITY (BTUs)	MAX CAPACITY FULL LOAD (TONS)	INDOOR CONDITIONS EAT DB (°F)	INDOOR CONDITIONS EAT WB (°F)	OUTDOOR EAT DB (°F)	ELECTRICAL V/ø/Hz	ELECTRICAL MOCP	ELECTRICAL EMERGENCY POWER	INDOOR UNIT SIZE (L X W X H)	OUTDOOR UNIT MAX OPERATING WT (LBS)	BASED ON MITSUBISHI EVAPORATOR	BASED ON MITSUBISHI CONDENSER
AC-1	IT 220A	IT 220A	ROOF	425	410A	18000	1.5	80	67	95	208/1/60	15	NO	39"X10"X14"	90	PKA-A18GA	PUY-A18NHA

NOTES:
1. BASED ON MITSUBISHI ELECTRIC MR. SLIM WITH ADVANCED MICROPROCESSOR CONTROLLER, OR EQUAL OF DAIKIN INVERTER DRIVEN COMPRESSOR R410A REFRIGERANT AND DEHUMIDIFICATION MODE, 165' REFRIGERANT LINE LENGTH, 100' LIFT
2. LOW AMBIENT CONTROL (COOLING TO 0°F OUTDOOR AIR TEMPERATURE) AND WIND BAFFLE.

EXPANSION TANK SCHEDULE

ET №	SERVICE	MOUNTING	FILL PRESSURE (PSIG)	Operating Pressure (PSIG)	TANK VOLUME (GALLONS)	SIZE (DIA X HT)	BASED ON (BELL & GOSSETT)
1	HEATING WATER	VERTICAL	18	30	211	30x82	B-800
2	CHILLED WATER	VERTICAL	18	30	132	24x78	B-500

VARIABLE AIR VOLUME TERMINAL CONTROL UNIT SCHEDULE

UNIT	INTERLOCK	SERVICE	INLET SIZE	OUTLET SIZE (HxW)	PRIMARY AIR (CFM) MIN CLG	MAX CLG	MIN HTG	MAX HTG	MAX APD (in. H2O)	TERMINAL HEAT COIL TOTAL CAP	EAT (°F)	LAT (°F)	EWT (°F)	LWT (°F)	GPM	COIL ROW	MAX WPD (ft. H2O)	BASED ON TITUS
1.01	AHU-1	PART-TIME FACULTY 208	12	16x15	175	700	175	700	0.2	30.2	55	95	140	120	3.5	2	1.7	ESV-12
1.02	AHU-1	CLASSROOM 206	14	20x18	300	1200	300	1200	0.2	45.4	55	90	140	120	5.0	2	1.1	ESV-14
1.03	AHU-1	CONFERENCE ROOM 209	12	16x15	175	700	175	700	0.1	26.5	55	90	140	120	3.0	2	0.7	ESV-12
1.04	AHU-1	CORRIDOR SW 200	8	12x10	100	400	100	400	0.2	13.0	55	85	140	120	1.5	2	0.4	ESV-08
1.05	AHU-1	FACULTY 212	6	12x8	65	250	65	250	0.1	9.5	55	90	140	120	1.2	2	0.3	ESV-06
1.06	AHU-1	FACULTY 213	6	12x8	65	250	65	250	0.1	9.5	55	90	140	120	1.2	2	0.3	ESV-06
1.07	AHU-1	FACULTY 214	6	12x8	65	250	65	250	0.1	9.5	55	90	140	120	1.2	2	0.3	ESV-06
1.08	AHU-1	FACULTY 215	6	12x8	65	250	65	250	0.1	9.5	55	90	140	120	1.2	2	0.3	ESV-06
1.09	AHU-1	FACULTY 216	6	12x8	65	250	65	250	0.1	9.5	55	90	140	120	1.2	2	0.3	ESV-06
1.10	AHU-1	FACULTY MEETING 217	7	12x10	90	350	90	350	0.2	15.1	55	95	140	120	2.0	2	0.7	ESV-07
1.11	AHU-1	FACULTY 218	5	12x8	50	200	50	200	0.1	7.6	55	90	140	120	1.0	2	0.2	ESV-05
1.12	AHU-1	FACULTY 219	5	12x8	50	200	50	200	0.1	7.6	55	90	140	120	1.0	2	0.2	ESV-05
1.13	AHU-1	RECYC 207	6	12x8	75	300	75	300	0.2	9.7	55	85	140	120	1.1	2	0.3	ESV-06
1.14	AHU-1	CLASSROOM STORAGE 210B	6	12x8	75	300	75	300	0.2	9.7	55	85	140	120	1.1	2	0.3	ESV-06
1.15	AHU-1	COPY ROOM 210A	7	12x10	90	350	90	350	0.1	11.3	55	85	140	120	1.5	2	0.4	ESV-07
1.16	AHU-1	WORK ROOM 211	12	16x15	175	700	175	700	0.1	22.7	55	85	140	120	2.5	2	0.5	ESV-12
1.17	AHU-1	CORRIDOR NW 200	8	12x10	100	400	100	400	0.2	13.0	55	85	140	120	1.5	2	0.4	ESV-08
1.18	AHU-1	CLASSROOM 201	16	24x18	350	1400	350	1400	0.3	60.5	55	95	140	120	6.5	2	2.0	ESV-16
1.19	AHU-1	CLASSROOM 202	16	24x18	300	1200	300	1200	0.2	51.8	55	95	140	120	5.5	2	1.5	ESV-16
1.20	AHU-1	CLASSROOM 205	16	24x18	350	1400	350	1400	0.2	45.4	55	85	140	120	5.0	2	1.5	ESV-16
1.21	AHU-1	STUDENT BREAKOUT 203	8	12x10	100	400	100	400	0.2	13.0	55	85	140	120	1.5	2	0.4	ESV-08
1.22	AHU-1	STORAGE 204	10	14x12	125	500	125	500	0.1	16.2	55	85	140	120	2.0	2	0.4	ESV-10
1.23	AHU-1	ENGINEERING/ROBOTIC 236	24x16	38x18	500	2000	500	2000	0.1	75.6	55	90	140	120	8.0	2	2.3	ESV-40
1.24	AHU-1	STUDENT BREAKOUT 238	10	14x12	125	500	125	500	0.1	16.2	55	85	140	120	2.0	2	0.4	ESV-10
1.25	AHU-1	LOUNGE 233	14	20x18	275	1100	275	1100	0.1	35.6	55	85	140	120	4.0	2	0.7	ESV-14
1.26	AHU-1	MEN + WOMEN 222 + 221	14	20x18	350	1400	350	1400	0.3	52.9	55	90	140	120	5.5	2	2.9	ESV-14
1.27	AHU-1	LOBBY 231	24x16	38x18	750	3000	750	3000	0.4	129.6	55	95	140	120	13.0	3	4.7	ESV-40

PUMP SCHEDULE

UNIT P-X	AREA SERVED	GPM	FT OF HEAD	MOTOR HP	MOTOR RPM	MOTOR V/ø/Hz	MOTOR TYPE	EMER. POWER	SIZE (SxDxø)	REMARKS	BASED ON (BELL&GOSSETT)
P-1	HEATING WATER	300	80	10	1750	460/3/60	VSD	NO	2½x2	BASE MOUNTED END SUCTION	3EB
P-2	HEATING WATER (STANDBY)	300	80	10	1750	460/3/60	VSD	NO	2½x2	BASE MOUNTED END SUCTION	3EB
P-3	CHILLED WATER	215	80	7½	1750	460/3/60	VSD	NO	3x2	BASE MOUNTED END SUCTION	2BD
P-4	CHILLED WATER (STANDBY)	215	80	7½	1750	460/3/60	VSD	NO	3x2	BASE MOUNTED END SUCTION	2EB
P-5	AHU-1 PREHEAT	27	20	1/2	3700	208/1/60	ECM	NO	1½x1½	WETROTOR CIRCULATOR	XL55-45
P-6	AHU-1 PREHEAT (STANDBY)	27	20	1/2	3700	208/1/60	ECM	NO	1½x1½	WETROTOR CIRCULATOR	XL55-45
P-7	AHU-2 PREHEAT	20	20	1/6	3500	115/1/60	ECM	NO	1½x1½	WETROTOR CIRCULATOR	XL36-45
P-8	AHU-2 PREHEAT (STANDBY)	20	20	1/6	3500	115/1/60	ECM	NO	1½x1½	WETROTOR CIRCULATOR	XL36-45
P-9	AHU-3 PREHEAT	20	20	1/6	3500	115/1/60	ECM	NO	1½x1½	WETROTOR CIRCULATOR	XL36-45
P-10	AHU-3 PREHEAT (STANDBY)	20	20	1/6	3500	115/1/60	ECM	NO	1½x1½	WETROTOR CIRCULATOR	XL36-45
P-11	AHU-4 PREHEAT	20	20	1/6	3500	115/1/60	ECM	NO	1½x1½	WETROTOR CIRCULATOR	XL36-45
P-12	AHU-4 PREHEAT (STANDBY)	20	20	1/6	3500	115/1/60	ECM	NO	1½x1½	WETROTOR CIRCULATOR	XL36-45

NOTES:
1. SB - STAND BY, CS=CONSTANT SPEED, VSD = VARIABLE SPEED DRIVE, ECM = ELECTRONICALLY COMMUTATED MOTOR
2. PRIMARY CHILLED WATER PUMPS ARE BASED ON 40% PROPYLENE GLYCOL

BASEBOARD RADIATION SCHEDULE

UNIT BBR-X	AREA SERVED	TOTAL CAP (BTU)	BTUH/LF	EWT (°F)	LWT (°F)	ACTIVE ELEM (FT)	GPM	No. ROWS	MOUNTING HT. AFF (in)	ENCLOSURE WIDTH. (in)	ENCLOSURE HT. (in)	BASED ON
1	LOBBY	20000	450	140	130	45	5	4	4	2	11.5	RUNTAL UFLT-4

NOTES:
1. WHEN PRESENT, BBR ENCLOSURE TO SPAN ENTIRE LENGTH OF EXTERIOR WALL UNLESS OTHERWISE NOTED. ACTIVE ELEMENT SHALL BE LOCATED DIRECTLY UNDER WINDOW. PROVIDE END CAPS WHERE ENCLOSURE DOES NOT TERMINATE AT WALL. PROVIDE TRIM CORNERS AROUND COLUMNS ETC TO ENCLOSE CONNECTING PIPING AND MATCH ENCLOSURE.
2. MOUNTING HEIGHT IS DISTANCE FROM FLOOR TO THE BOTTOM OF THE ENCLOSURE.
3. CAPACITY IS BASED ON 65°F ENTERING AIR TEMPERATURE.
4. PROVIDE ALL END CAPS, ACCESS DOORS, CORNERS, WALL SLEEVES, WALL SUPPORTS ETC..
5. ARCHITECT SHALL SELECT CUSTOM COLOR.
6. MEASURE ALL LENGTHS PRIOR TO FABRICATION.
7. PROVIDE 3/4" PIPING CONNECTIONS.

BOILER SCHEDULE

Nº	SERVICE	FUEL SOURCE TYPE	FUEL SOURCE PRESSURE (PSIG)	FUEL SOURCE INPUT (MBH)	FUEL SOURCE GAS MAIN TYPE	FLOW RATE (GPM) MIN	FLOW RATE (GPM) MAX	MAX WPD (FT of H20)	EWT (°F)	LWT (°F)	RELIEF SETTING (PSIG)	VENT CONNECTIONS EXHAUST FLUE	VENT CONNECTIONS COMBUSTION FLUE	ELECTRICAL V/ø/Hz	ELECTRICAL FLA	ELECTRICAL EMERGENCY POWER	SIZE (L X W X H)	BASED ON FULTON
1	HEATING LOOP	LPG	1	1500	CSD-1/IRI	10	150	5	120	140	60	6" DIA	8" DIA	120/1/60	20	NO	50x28x68	EDR-1500
2	HEATING LOOP	LPG	1	1500	CSD-1/IRI	10	150	5	120	140	60	6" DIA	8" DIA	120/1/60	20	NO	50x28x68	EDR-1500

NOTES:
1. PROVIDE AUTOMATIC ISOLATION VALVES FOR EACH BOILER
2. PROVIDE ACID NEUTRALIZATION TRAP FOR EACH BOILER
3. 3200 LBS MAXIMUM BOILER OPERATING WEIGHT
4. 25 MINIMUM CIRCUIT AMPS
5. PROVIDE HYDRO-LEVEL 550 SECOND LOW WATER CUT-OFF
6. BACNET INTEGRATION TO JOHNSON CONTROLS EMS INCLUDING BOILERS START-STOP, STATUS, LEAD-LAG AND GENERAL ALARM RELAYS
7. EXHAUST VENT MATERIAL SHALL BE AL 29-4C. INTAKE VENT MATERIAL SHALL BE SCHEDULE 40 PVC

ALBAN ENGINEERING, INC.

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GP #21620

MECHANICAL SCHEDULES

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

M-9.1

February 1, 2017
Bid Set

FAN SCHEDULE

UNIT F-X	AREA SERVED	INTERLOCK	LOCATION	CHARACTERISTICS MAX CFM	ESP (IN H2O)	FRPM	DRIVE TYPE	MOTOR HP	MOTOR TYPE	ELECTRICAL V/ø/Hz	ELECTRICAL EMERGENCY POWER	TYPE	BASED ON (GREENHECK)
1	TOILET ROOMS 221, 222	AHU-1	ROOF	1200	0.50	1137	DIRECT	0.25	ECM	115/1/60	NO	POWER ROOF VENTILATOR	G-133-RG
2	CHEMISTRY/MICROBIO FUME HOOD 227	SWITCH/ AHU-3	PENTHOUSE	1000	1.50	2060	BELT	0.50	ODP	480/3/60	NO	IN-LINE MIXED FLOW	QEI-9-II
3	CHEMISTRY/MICROBIO FUME HOOD 227	SWITCH/ AHU-3	PENTHOUSE	1000	1.50	2060	BELT	0.50	ODP	480/3/60	NO	IN-LINE MIXED FLOW	QEI-9-II
4	BIOLOGY PREP FUME HOOD 229B	SWITCH/ AHU-4	PENTHOUSE	750	1.50	1874	BELT	0.50	ODP	480/3/60	NO	IN-LINE MIXED FLOW	QEI-9-II
5	BIOLOGY FUME HOOD 230	SWITCH/ AHU-4	PENTHOUSE	750	1.50	1874	BELT	0.50	ODP	480/3/60	NO	IN-LINE MIXED FLOW	QEI-9-II
6	ELECTRICAL EQUIPMENT ROOM 220B	TSTAT	ROOF	5000	0.25	1333	BELT	1.50	ODP	480/3/60	NO	POWER ROOF VENTILATOR	G-180-VGD
7	PENTHOUSE 241	TSTAT	ROOF	1000	0.25	772	BELT	0.50	ODP	480/3/60	NO	POWER ROOF VENTILATOR	G-180-VGD
8	FAMILY BATHROOM 239, CUSTODIAL 223	AHU-1	ROOF	500	0.375	1309	DIRECT	1/6	ECM	115/60/1	NO	POWER ROOF VENTILATOR	G-095-VG
9	ENGINEERING/ ROBOTICS STORAGE 235	AHU-1	ROOF	500	0.25	1154	DIRECT	1/6	ECM	115/60/1	NO	POWER ROOF VENTILATOR	G-095-VG
10	CHEMICAL STORAGE 228	AHU-2	ROOF	300	0.25	983	DIRECT	1/6	ECM	115/60/1	NO	POWER ROOF VENTILATOR	G-095-VG
11	MECHANICAL ROOM 220	TSTAT	ROOF	1000	0.25	772	BELT	0.50	ODP	480/3/60	NO	POWER ROOF VENTILATOR	G-180-VGD

NOTES: 1. TSTAT=THERMOSTAT; SW=SWITCH; SP=STATIC PRESSURE, TD=WITH 15 MINUTE TIME DELAY
2. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH FOR ALL EXHAUST FANS, COORDINATING REQUIREMENTS AND INTERLOCKS WITH ELECTRICAL
3. REFER TO CONTROL DIAGRAMS FOR SPECIFIC SEQUENCES OF OPERATION AND INTERLOCK ARRANGEMENTS

UNIT HEATER SCHEDULE

UNIT UH-X	AREA SERVED	SUPPLY FAN CFM	AMPS	RPM	ELEC CHAR v/ø/Hz	EMERGENCY POWER	HOT WATER SYSTEM CONDITION TOTAL CAP (MBH)	EAT (°F)	EWT (°F)	LWT (°F)	GPM	MAX WPD (ft. H_2O)	TYPE	BASED ON (VULCAN)
1	MECHANICAL ROOM	900	1.3	1050	115/1/60	NO	24.8	60	140	120	5	1	HORIZONTAL	HV-60
2	PENTHOUSE	1100	1.3	1050	115/1/60	NO	29.4	60	140	120	6	1	HORIZONTAL	HV-72

NOTES: 1. PROVIDE A TOGGLE TYPE DISCONNECT SWITCH FOR ALL UNITS.

CABINET UNIT HEATER SCHEDULE

UNIT CUH-X	AREA SERVED	SUPPLY FAN CFM	AMPS	RPM	ELEC CHAR v/ø/Hz	EMERGENCY POWER	HOT WATER SYSTEM CONDITION TOTAL CAP (MBH)	EAT (°F)	EWT (°F)	LWT (°F)	GPM	MAX WPD (ft. H_2O)	TYPE	BASED ON (VULCAN)
1	MAIN LOBBY VESTIBULE 232	600	2.1	1050	115/1/60	NO	33.4	60	140	120	5	2	FLOOR MOUNTED	MODEL C6
2	VESTIBULE 200A	250	1.4	1090	115/1/60	NO	12.9	60	140	120	1.5	1	FLOOR MOUNTED	MODEL C2

NOTES: 1. PROVIDE CUSTOM COLOR AS SELECTED BY ARCHITECT
2. ALL HOT WATER HEATING COILS SHALL BE HIGH CAPACITY TYPE.
3. ALL DUCTED UNITS SHALL BE PROVIDED WITH A HIGH STATIC (0.4" W.C.) MOTOR AND DUCT COLLARS.
4. ALL UNITS SHALL BE PROVIDED WITH A DPST DISCONNECT SWITCH.

1. CHILLER NO. 1

CHARACTERISTICS ARE TYPICAL FOR EACH
AIR COOLED SCROLL TYPE
DIFFERENTIAL PRESSURE SENSOR FOR EVAPORATOR
WATER INTERLOCKS
ASHRAE 90.1-2013 COMPLIANT

ACCEPTABLE MANUFACTURERS: DAIKEN TRANE, CARRIER

SELECTION BASED ON DAIKEN AGZ100E
100 TONS NOMINAL CAPACITY BASED ON
REFRIGERANT R-410A
95°F AMBIENT AIR TEMPERATURE
1.23 KW/TON, 113 KW
9.8 EER EFFICIENCY
15.5 IPLV EER

EVAPORATOR:
- 40% PROPYLENE GLYCOL
- 52.0°F EWT, 42°F LWT
- 91.7 TONS CAPACITY @ FULL LOAD
- 2-PASS, 0.00010 FOULING FACTOR
- 200 GPM EVAPORATOR (160 GPM MINIMUM) @ 15 FT. MAX. WPD

ELECTRICAL CHARACTERISTICS:
- ACROSS THE LINE START
- 204 MCA
- 250 MAX AMP FUSE SIZE
- 460V/3Ø/60HZ
- SINGLE POINT POWER CONNECTION WITH CIRCUIT PROTECTION

UNIT DIMENSIONS & WEIGHT:
- 150" LENGTH
- 88" WIDTH
- 99" HEIGHT
- 5,000 LBS. MAX. OPERATING WEIGHT

2. GLYCOL FEEDWATER UNIT

10 GPM @ 30PSI
1/2 MOTOR @ 115V/1ø/60HZ
55 GALLON CAPACITY
30" ø X 58" HIGH
LOW WATER CUT OFF,
ALARM CONTACT, Y STRAINER, ISOLATION
VALVES, CHECK VALVE, PRESSURE CONTROLS
AND EXPANSION TANK
BELL AND GOSSETT MODEL GMU - 30

AIR DEVICE SCHEDULE

No. (Sx)	CFM MAX	NECK SIZE	COLLAR ø SIZE	MAX NC	TYPE (SEE SPEC.)
SUPPLY AIR DEVICE					
S1	200	9x9	8"ø	18	TITUS TDV
S2	325	12x12	10"ø	18	TITUS TDV
S3	485	15x15	12"ø	18	TITUS TDV
S4	700	18x18	14"ø	18	TITUS TDV
S5	100	6x6	6"ø	18	TITUS TDCA
S6	170	9x9	8"ø	18	TITUS TDCA
S7	325	12x12	10"ø	18	TITUS TDCA
S8	485	15x15	12"ø	18	TITUS TDCA
S9	700	18x18	14"ø	18	TITUS TDCA
S10	100	6x6	–	18	TITUS TDCA
S11	170	9x9	–	18	TITUS TDCA
S12	325	12x12	–	18	TITUS TDCA
S13	485	15x15	–	18	TITUS TDCA
S14	700	18x18	–	18	TITUS TDCA
S15	125	6x6	6"ø	18	TITUS TDC
S16	230	9x9	8"ø	18	TITUS TDC
S17	400	12x12	10"ø	18	TITUS TDC
S18	600	15x15	12"ø	18	TITUS TDC
S19	800	18x18	14"ø	18	TITUS TDC
S20	1000	21x21	16"ø	18	TITUS TDC
S21	125	6x6	–	18	TITUS TDC
S22	230	9x9	–	18	TITUS TDC
S23	400	12x12	–	18	TITUS TDC
S24	600	15x15	–	18	TITUS TDC
S25	800	18x18	–	18	TITUS TDC
S26	1000	21x21	–	18	TITUS TDC
S27	200	12x12/8"ø	–	18	TITUS TDC
S28	50	12x12/6"ø	–	18	TITUS TDC
S29	270	10"ø	–	18	TITUS XC-310
S30	390	12"ø	–	18	TITUS XC-310
S31	500	14"ø	–	25	TITUS XC-310
S32	800	18"ø	–	25	TITUS XC-310
S33	1000	20"ø	–	25	TITUS XC-310
S34	2000	30"ø	–	25	TITUS XC-310
S35	2800	36"ø	–	25	TITUS XC-310
S36	150	8x6	–	18	TITUS 300RS
S37	200	12x6	–	18	TITUS 300RS
S38	315	18x6	–	18	TITUS 300RS
S39	350	12x10	–	18	TITUS 300RS
S40	450	24x6	–	18	TITUS 300RS
S41	550	18x10	–	18	TITUS 300RS
S42	675	18x12	–	18	TITUS 300RS
S43	725	24x10	–	18	TITUS 300RS
S44	850	24x12	–	18	TITUS 300RS
S45	950	24x14	–	18	TITUS 300RS
S46	950	36x10	–	18	TITUS 300RS
S47	1100	36x12	–	18	TITUS 300RS
S48	1300	42x12	–	18	TITUS 300RS
S49	1700	36x18	–	18	TITUS 300RS
S50	2000	42x18	–	18	TITUS 300RS
S51	150	12x4	–	18	TITUS S300FS
S52	200	12x6	–	18	TITUS S300FS
S53	475	36x6	–	18	TITUS S300FS
S54	450	18x8	–	18	TITUS S300FS
S55	675	18x12	–	18	TITUS S300FS
S56	850	24x12	–	18	TITUS S300FS
S57	950	30x12	–	18	TITUS S300FS
S58	1000	36x12	–	18	TITUS S300FS
S59	1570	24"ø	–	25	TITUS XC-310
RETURN AIR DEVICE					
R1	100	6x6	–	18	TITUS 350RL
R2	300	10x10	–	18	TITUS 350RL
R3	450	12x12	–	18	TITUS 350RL
R4	800	16x16	–	18	TITUS 350RL
R5	1000	18x18	–	18	TITUS 350RL
R6	1300	20x20	–	18	TITUS 350RL
R7	1660	22x22	–	18	TITUS 350RL
R8	3300	46x22	–	18	TITUS 350RL
R9	500	24x6	–	18	TITUS 350RL
R10	650	27x8	–	18	TITUS 350RL
R11	150	8x6	–	18	TITUS 350RL
R12	3300	46x22	–	18	TITUS 350RL
R13	900	22x10	–	18	TITUS 50F
R14	1900	22x22	–	18	TITUS 50F
R15	4000	46x22	–	18	TITUS 50F
R16	1600	20x20	–	18	TITUS 50FF
R17	3400	42x20	–	18	TITUS 50FF
R18	700	24x12	–	18	TITUS 33RS
R19	1200	24x24	–	18	TITUS 33RS
R20	1700	36x24	–	18	TITUS 33RS
R21	2600	36x36	–	18	TITUS 33RS
R22	3100	42x36	–	18	TITUS 33RS
R23	3500	48x36	–	18	TITUS 33RS
R24	3600	42x42	–	18	TITUS 33RS
R25	4650	48x48	–	18	TITUS 33RS
R26	910	24x12	–	18	TITUS 350RL
R27	685	22x10	–	18	TITUS 350RL
R28	2750	32x32	–	18	TITUS 350RL
R29	1610	36x12	–	18	TITUS 350RL
R30	5500	42x38	–	18	TITUS 350RL
EXHAUST AIR DEVICE					
E1	100	6x6	–	18	TITUS 350RL
E2	150	8x6	–	18	TITUS 350RL
E3	300	12x8	–	18	TITUS 350RL
E4	325	10x10	–	18	TITUS 350RL
E5	450	12x12	–	18	TITUS 350RL
E6	750	18x12	–	18	TITUS 350RL
E7	800	16x16	–	18	TITUS 350RL
E8	900	24x12	–	18	TITUS 350RL
E9	1050	18x18	–	18	TITUS 350RL
E10	1300	20x20	–	18	TITUS 350RL
E11	1550	22x22	–	18	TITUS 350RL
E12	1750	30x18	–	18	TITUS 350RL
E13	2450	42x18	–	18	TITUS 350RL
E14	2750	42x20	–	18	TITUS 350RL
E15	3300	46x22	–	18	TITUS 350RL

NOTES:
1. ALL SUPPLY AIR DIFFUSERS SHALL BE 4-WAY BLOW UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
2. ALL SUPPLY AIR REGISTERS SHALL BE DOUBLE DEFLECTION WITH FRONT BLADES PARALLEL TO THE SHORT DIMENSION (VERTICAL).
3. PROVIDE 24x24 OR 48x24 MODULE FOR ALL LAY-IN SUPPLY, RETURN AND EXHAUST AIR DEVICES. TRIM MODULE AS NECESSARY TO FIT INTO GRID IF LESS THAN 24x24 OR 48x24 IS AVAILABLE.
4. EGGCRATE REGISTERS SHALL HAVE ½"x½"x1" DEEP ALUMINUM CORES.
5. EXHAUST REGISTERS CONNECTED TO STAINLESS STEEL DUCTWORK SHALL BE CONSTRUCTED OF STAINLESS STEEL.
6. FOR SUPPLY AIR DEVICES CONNECTED TO THE BOTTOM OF BRANCH DUCTS (ie SERVING MORE THAN ONE AIR DEVICE) PROVIDE DAMPER WITH GRID, TITUS AG-65 OR EQUAL.
7. NOT ALL AIR DEVICES SCHEDULED MAY BE USED.
8. COLLAR SIZE REFERS TO RUNNOUT CONNECTION TO SOUND LINED PLENUM BOX FABRICATED BY THE SHEET METAL CONTRACTOR CONNECTING TO THE DIFFUSER NECK. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
9. PROVIDE AIR EXTRACTOR FOR ALL SIDEWALL SUPPLY REGISTERS.
10. PROVIDE ALUMINUM CONSTRUCTION FOR ALL AIR DEVICES LOCATED IN LOCKER ROOMS, KITCHEN, ROOMS WITH SHOWERS AND ALL SCIENCE LABS.
11. ALL TDCA TYPE DIFFUSERS SHALL BE PROVIDED WITH ADJUSTABLE VANES, ACCESSIBLE FROM THE DIFFUSER FACE, WITH THE DISCHARGE PATTERN SET TO THE VERTICAL POSITION.

MECHANICAL LEGEND

SYMBOL	ABBREV	DEFINITION
	SA	SUPPLY AIR DUCT UP, DOWN
	RA	RETURN AIR DUCT UP, DOWN
	EA	EXHAUST AIR DUCT UP, DOWN
	OA	OUTSIDE AIR DUCT UP, DOWN
		RECT. TO ROUND TRANSITION
		FLEXIBLE CONNECTION (DUCTWORK)
		FLEXIBLE DUCT
	VD	MANUAL VOLUME DAMPER
	FD	FIRE DAMPER
	MOD	MOTOR OPERATED DAMPER
	SD	SMOKE DAMPER
	CD	COMBINATION FIRE/SMOKE DAMPER
	SL	ACOUSTICAL DUCT LINING
		DUCT TRANSITION
R		CHANGE IN ELEVATION RISE (R); DROP (D)
AMS	AMS	AIR MONITORING STATION
		SOUND ATTENUATOR
DD	DD	DUCT SMOKE DETECTOR
		ELBOW W/TURNING VANES
		RADIUS ELBOW
AIR FLOW		RETURN AIR REGISTER W/BOOT
T	T'STAT	THERMOSTAT
		GATE VALVE
		GLOBE VALVE
		BALL VALVE
		BALANCING VALVE
		MULTI-PURPOSE VALVE
		CHECK VALVE
		BUTTERFLY VALVE
		3-WAY MODULATING VALVE (ATC)
		2-WAY MODULATING VALVE (ATC)
	PRV	PRESSURE REDUCING VALVE
		NEEDLE VALVE
		PRESSURE RELIEF OR SAFETY VALVE
	HED	HOSE END DRAIN VALVE
		STRAINER W/HOSE END DRAIN VALVE & CAP
		COMBINATION BALANCING/SHUT-OFF VALVE
		AUTOMATIC AIR VENT
		MANUAL AIR VENT
		FLOW METER FITTING
		UNION
		FLANGE
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		FLEXIBLE CONNECTION (PIPING)
		THERMOMETER
		PRESSURE GAUGE W/NEEDLE VALVE
T		TEMPERATURE SENSOR
		PIPE ALIGNMENT GUIDE
		PIPE ANCHOR
	F&T	FLOAT AND THERMOSTATIC TRAP
		PIPE-TURN DOWN
		PIPE-TURN UP
		PIPE-TURN DOWN (DOUBLE LINE PIPE)
		PIPE-TURN UP (DOUBLE LINE PIPE)
		PIPE TEE UP
		PIPE TEE DOWN
		END CAP
		DIRECTION OF FLOW
		CONNECT TO EXISTING
		DEMOLITION ENDS HERE
#		DRAWING NOTE DESIGNATION
#		AIR DEVICE DESIGNATION
#		EQUIPMENT BOX DESIGNATION

SYMBOL	ABBREV	DEFINITION
	AD	ACCESS DOOR
	AFF	ABOVE FINISHED FLOOR
	AFPF	AIRFOIL PLENUM FAN
	AHU	AIR HANDLING UNIT
	AMS	AIR MONITORING STATION
	AP	ACCESS PANEL
	APD	AIR PRESSURE DROP
	ATC	AUTOMATIC TEMPERATURE CONTROL
	BBR	BASEBOARD RADIATION
	BHP	BOILER HORSEPOWER
	BHP	BRAKE HORSEPOWER
	BTU	BRITISH THERMAL UNIT
	C	CLOSED
	CAP	CAPACITY
	CAV	CONSTANT AIR VOLUME
	CFM	CUBIC FEET PER MINUTE
	CONV	CONVECTOR
	CW	DOMESTIC COLD WATER
	CUH	CABINET UNIT HEATER
	DB	DRY BULB
	DB	DECIBEL
ø	DIA	DIAMETER
	DIFF	DIFFUSER
	DWG	DRAWING
	EAT	ENTERING AIR TEMPERATURE
	EF	EXHAUST FAN
	EFF	EFFICIENCY
	ELECT. CHAR.	ELECTRICAL CHARACTERISTICS
	EMS	ENERGY MANAGEMENT SYSTEM
	ERV	ENERGY RECOVERY VENTILATOR
	ESP	EXTERNAL STATIC PRESSURE
	EX	EXISTING
	EXH	EXHAUST
	ETR	EXISTING TO REMAIN
	E/W	EACH WAY
	EWT	ENTERING WATER TEMPERATURE
	F	FAN
	°F	DEGREES FAHRENHEIT
	FCU	FAN COIL UNIT
	FPM	FEET PER MINUTE
	FT H_2O	FEET WATER GAUGE
	FTR	FINNED TUBE RADIATION
	FZ	FREEZESTAT
G	G	NATURAL GAS
	GPM	GALLONS PER MINUTE
	HT	HEIGHT
	HW(x°)	DOMESTIC HOT WATER (TEMP.)
	HWR(x°)	DOMESTIC HOT WATER RECIRC. (TEMP.)
	HWG	HOT WATER GENERATOR
	HZ	HERTZ
	IN H_2O	INCHES WATER GAUGE
	KW	KILOWATT
	LAT	LEAVING AIR TEMPERATURE
	LBS	POUNDS
	LF	LINEAR FOOT
	LWT	LEAVING WATER TEMPERATURE
	MAX	MAXIMUM
	MBH	BTU PER HOUR (THOUSAND)
	MIN	MINIMUM
	NC	NOISE CRITERIA
	N.C.	NORMALLY CLOSED
	No.	NUMBER
	N.O.	NORMALLY OPEN
	OAF	OUTSIDE AIR FAN
	O/C	ON CENTER
	OED	OPEN END DUCT
	P	PUMP
	PA	PRIMARY AIR
	PD	PRESSURE DROP
	PSI	POUNDS PER SQUARE INCH
	RAF	RETURN AIR FAN
	REG	REGISTER
	REQ'D	REQUIRED
	RPM	REVOLUTIONS PER MINUTE
	RX	REMOVE EXISTING
	SAF	SUPPLY AIR FAN
SAN	SAN	SANITARY
	SB	STAND-BY
	SENS	SENSIBLE
SP	SP	SPRINKLER PIPING
	SP	STATIC PRESSURE
	SQ	SQUARE
	STD	STANDARD
	SWT	SUPPLY WATER TEMPERATURE
	TEMP	TEMPERATURE
	TONS	TONS OF REFRIGERATION
	V	VENT
	V	VOLTS
	VEL	VELOCITY
	VSD	VARIABLE SPEED DRIVE
	W/	WITH
	WB	WET BULB
	WG	WATER GAUGE
	WPD	WATER PRESSURE DROP
	ΔT	TEMPERATURE DIFFERENCE
	%	PERCENT
	φ	ELECTRICAL PHASE

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GP #21620

MECHANICAL EQUIPMENT NOTES & LEGEND

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

M-9.2

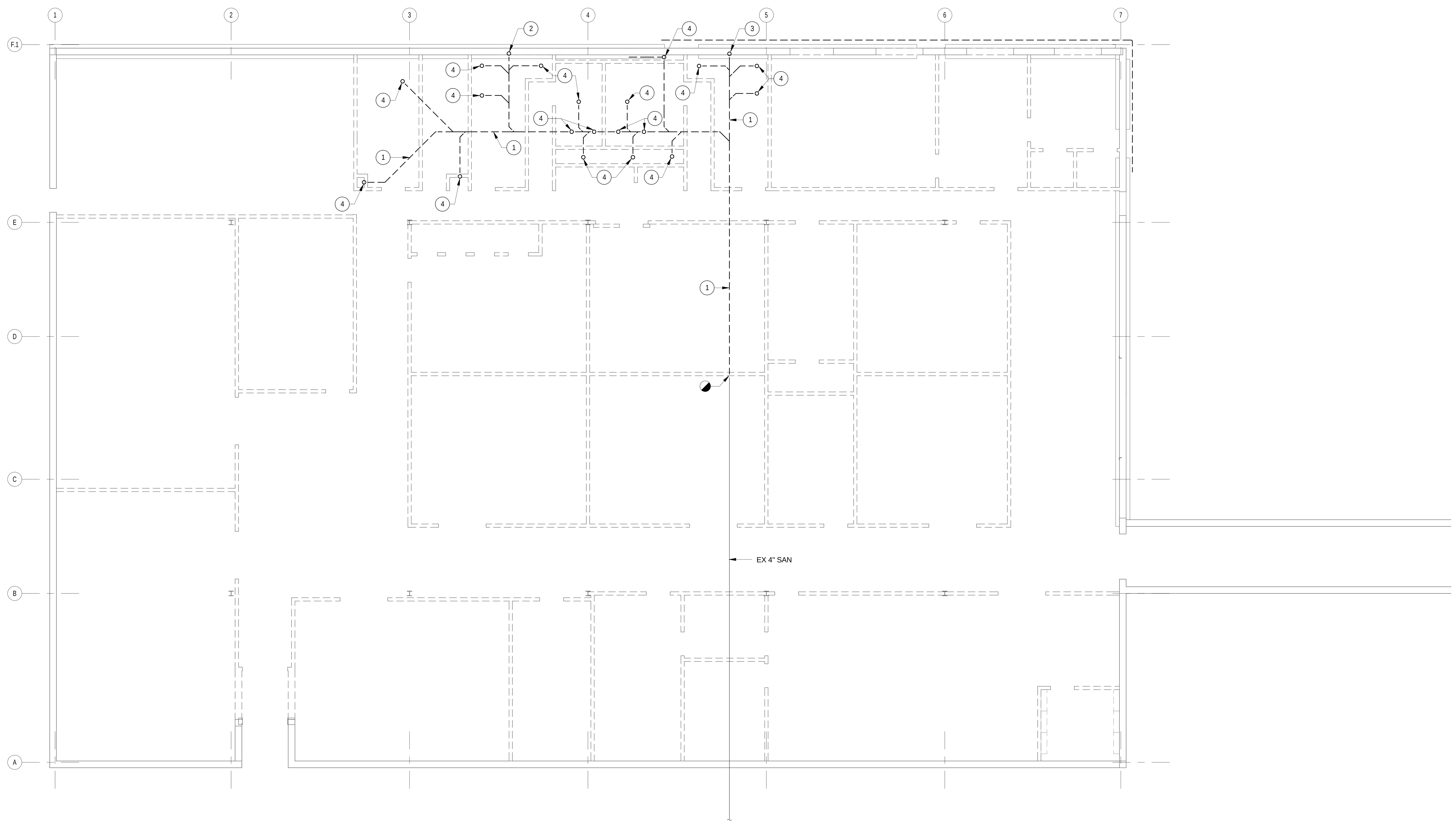
February 1, 2017
Bid Set

GENERAL NOTES:

1. PATCH ALL HOLES, PENETRATIONS, ETC. (IN WALLS, FLOORS, ROOF, ETC.) TO MATCH EXISTING MATERIALS, FINISHES, ETC. AND PAINT TO MATCH EXISTING FINISHES. ALL ROOFING WORK SHALL BE PERFORMED BY A CERTIFIED ROOFING CONTRACTOR TO MAINTAIN THE EXISTING WARRANTY IN THE AREAS OF WORK.

DRAWING NOTES:

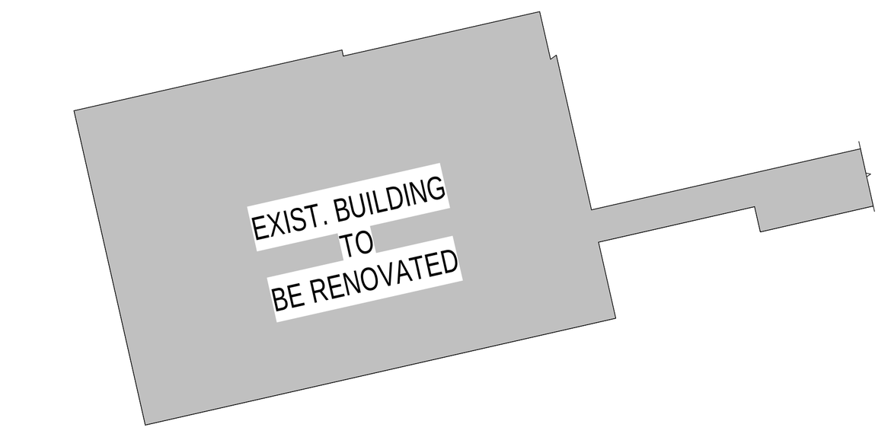
1. RX SANITARY PIPING BELOW SLAB AS INDICATED.
2. RX VENT PIPING UP AS INDICATED.
3. RX VENT PIPING TO WALL. EXISTING VENT PIPING IN WALL SHALL BE CUT AND CAPPED ON BOTH ENDS AND ABANDONDED IN PLACE.
4. RX SANITARY PIPING UP TO PLUMBING FIXTURE IN IT'S ENTIRETY.



FOUNDATION - DEMOLITION
1/8" = 1'-0"
FFE: 2603.17' ±

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

KEY PLAN



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FOUNDATION - DEMOLITION
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

PD-0.1
February 1, 2017
Bid Set

GENERAL NOTES:

1. PATCH ALL HOLES, PENETRATIONS, ETC. (IN WALLS, FLOORS, ROOF, ETC.) TO MATCH EXISTING MATERIALS, FINISHES, ETC. AND PAINT TO MATCH EXISTING FINISHES. ALL ROOFING WORK SHALL BE PERFORMED BY A CERTIFIED ROOFING CONTRACTOR TO MAINTAIN THE EXISTING WARRANTY IN THE AREAS OF WORK.

DRAWING NOTES:

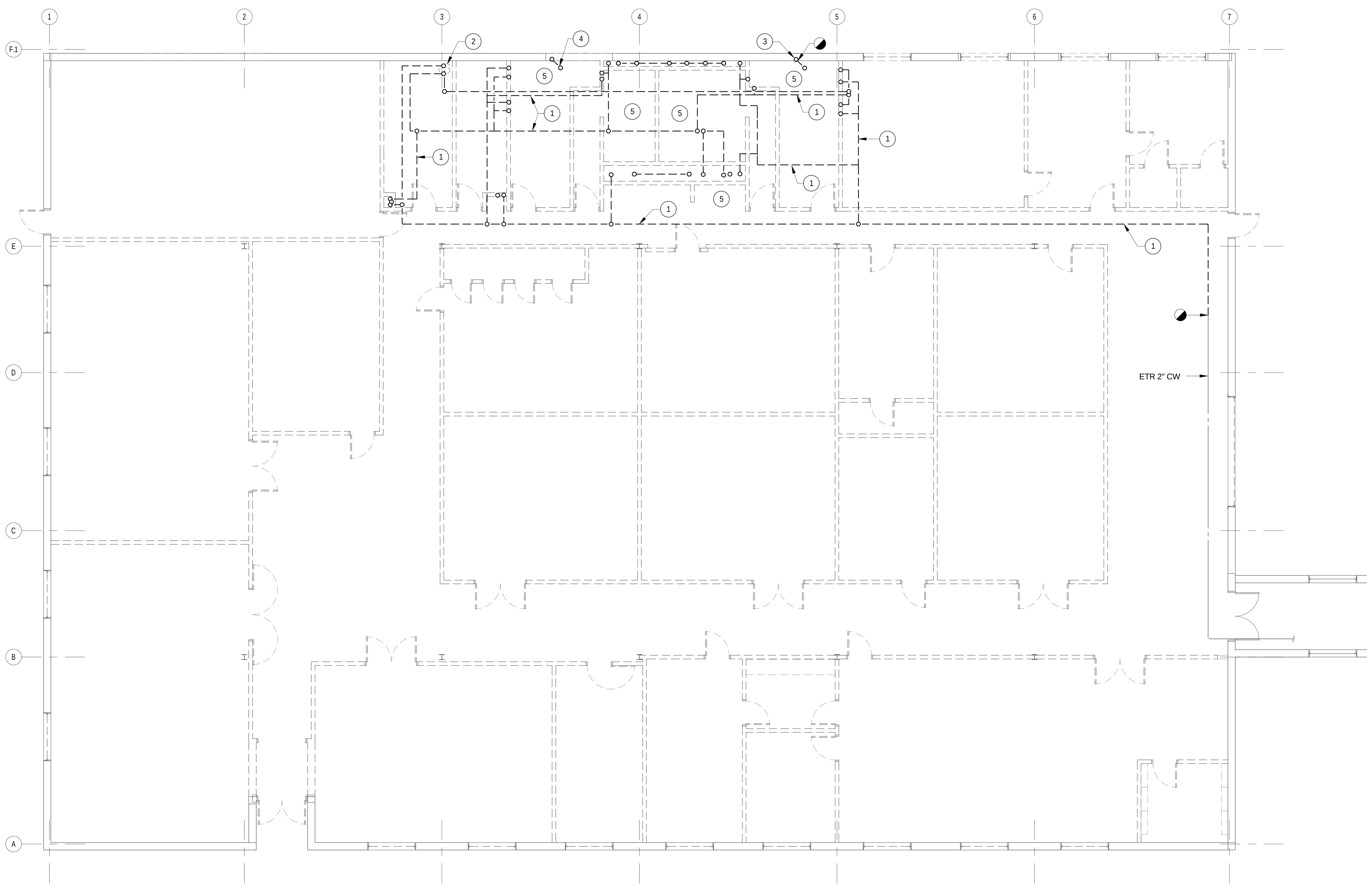
(1) RX DOMESTIC WATER PIPING, INSULATION, SUPPORTS, VALVES ETC. IN IT'S ENTIRETY.

(2) RX ELECTRIC WATER HEATER AND ALL ASSOCIATED PIPING, INSULATION, SUPPORTS, EQUIPMENT PAD, ETC. IN IT'S ENTIRETY.

(3) RX VENT PIPING TO WALL AND THROUGH ROOF. EXISTING VENT PIPING IN WALL SHALL BE CUT AND CAPPED ON BOTH ENDS AND ABANDONDED IN PLACE.

(4) RX VENT PIPING THROUGH ROOF

(5) RX PLUMBING FIXTURE(S) AND ALL ASSOCIATED PIPING, VALVES, SUPPORTS, ETC. IN IT'S ENTIRETY.

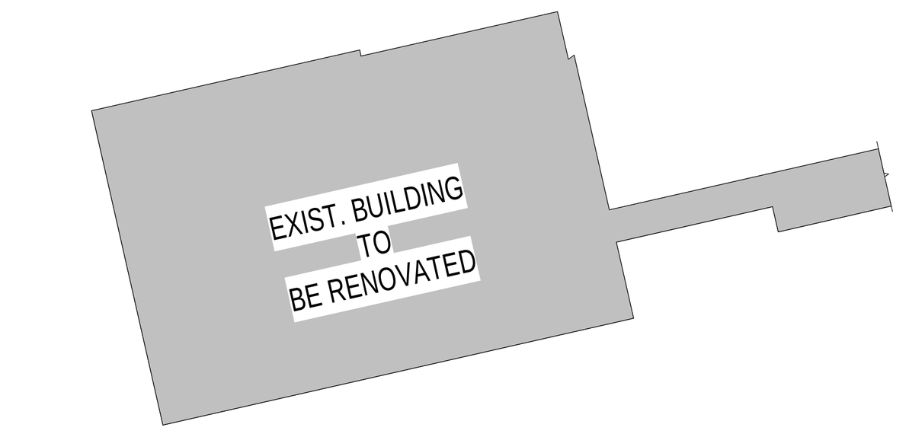


FIRST FLOOR - DEMOLITION
1/8" = 1'-0"
FFE: 2603.17' ±

N

SCALE: 1/8" = 1'-0"
8 0 8 16

KEY PLAN



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GP #21620

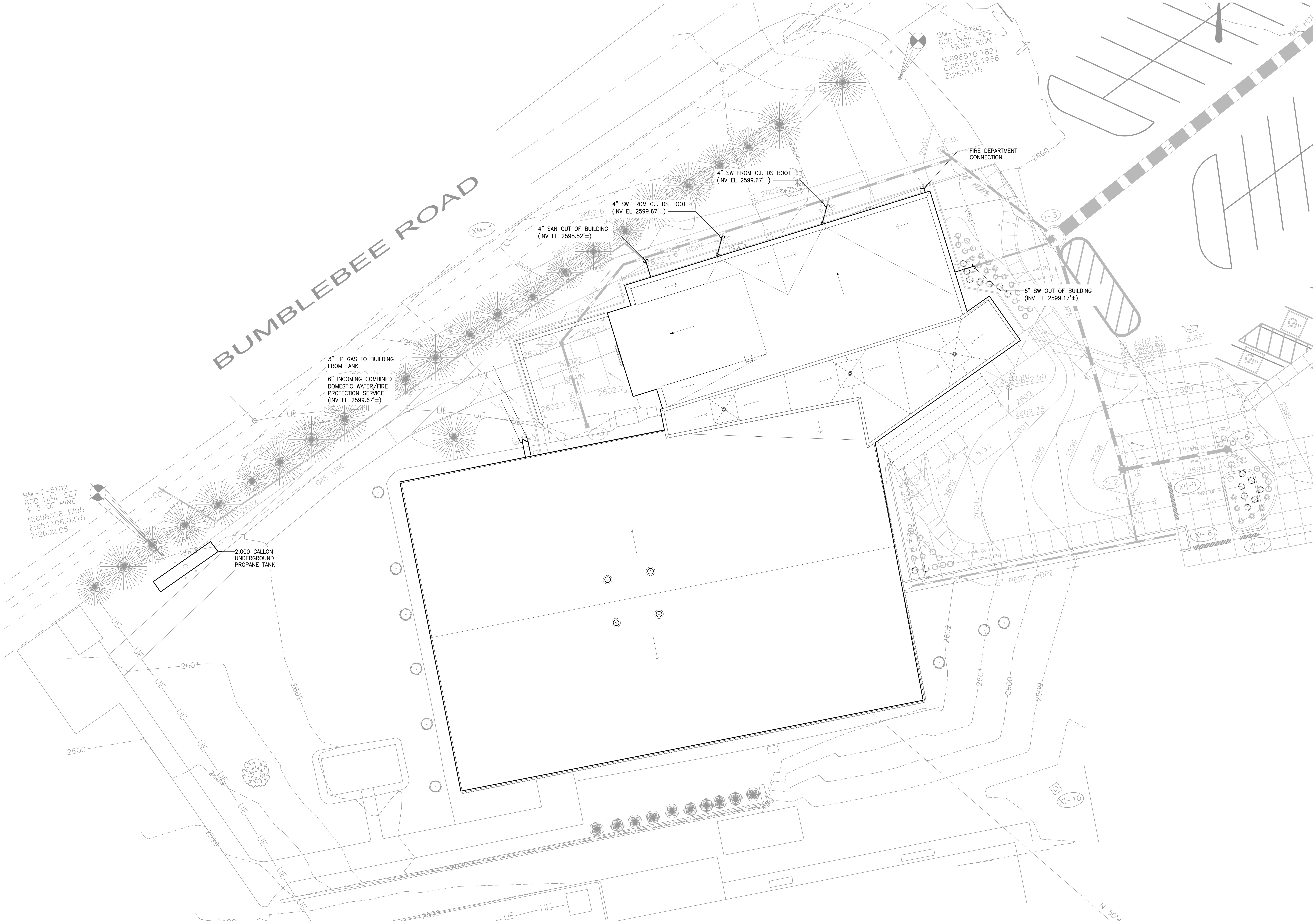
FIRST FLOOR - DEMOLITION

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

PD-2.1

February 1, 2017
Bid Set



SITE PLAN – PLUMBING

SCALE: 1"=10'-0"

FFE: 2603.17'±

SCALE: 1" = 10'-0"

10 0 10 20

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SITE PLAN - PLUMBING

Garrett College STEM Renovation and Addition

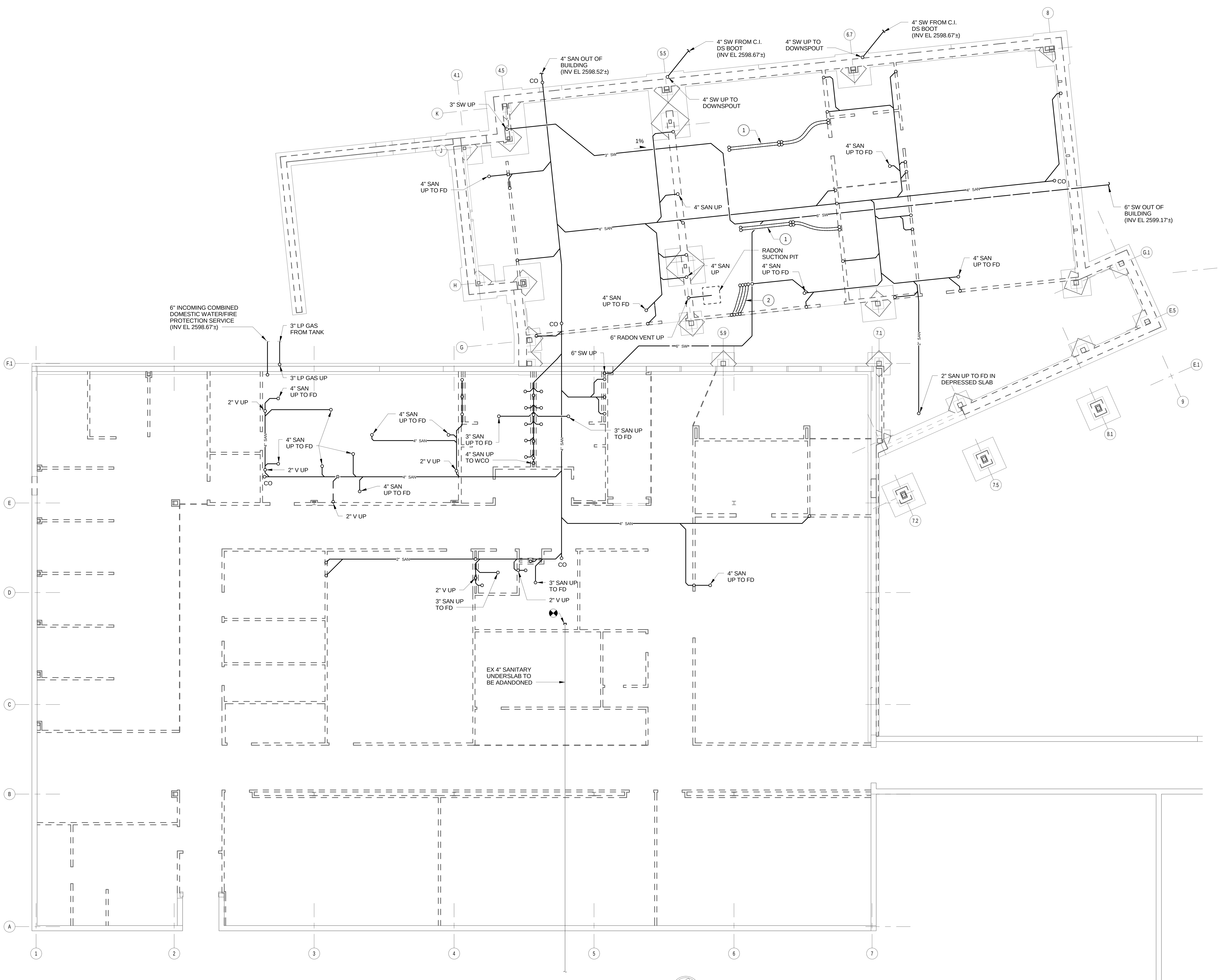
McHenry, MD

DATE	DESCRIPTION

PS-0.1

February 1, 2017

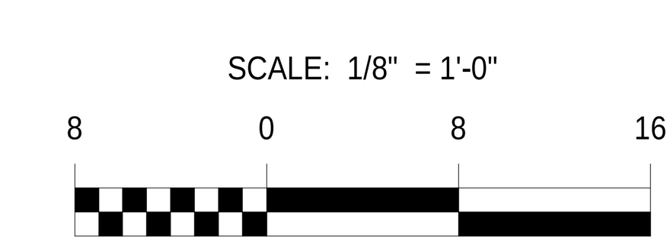
Bid Set



FOUNDATION - PLUMBING

1/8" = 1'-0"

FFE: 2603.17' ±



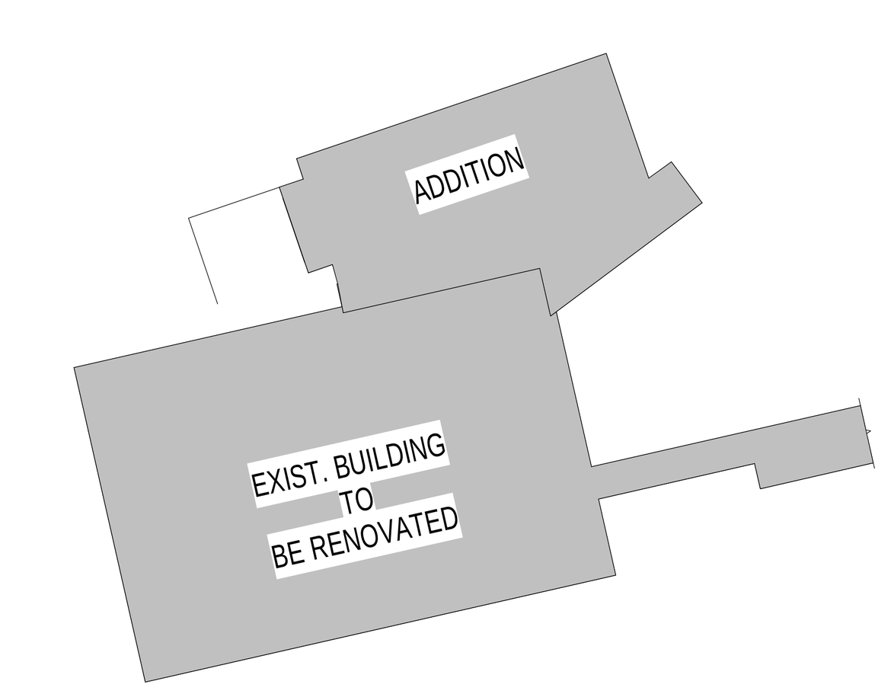
GENERAL NOTES:

1. PATCH ALL HOLES, PENETRATIONS, ETC. (IN WALLS, FLOORS, ROOF, ETC.) TO MATCH EXISTING MATERIALS, FINISHES, ETC. AND PAINT TO MATCH EXISTING FINISHES. ALL ROOFING WORK SHALL BE PERFORMED BY A CERTIFIED ROOFING CONTRACTOR TO MAINTAIN THE EXISTING WARRANTY IN THE AREAS OF WORK.

DRAWING NOTES:

1. LP GAS & VACUUM TO STUDENT LAB TABLES IN SEPERATE 3" PVC CONDUIT BELOW SLAB. PIPING SHALL BE SOFT COPPER TUBING, TYPE 'L' AND NO JOINTS.
2. CW, HW, LP GAS & VACUUM PIPING TO TEACHER'S DEMONSTRATION TABLE. CW & HW PIPING SHALL BE IN 4" PVC CONDUIT BELOW SLAB. CW & HW PIPING SHALL BE SOFT COPPER TUBING, TYPE 'L' WITH 1/2" ARMAFLEX INSULATION AND NO JOINTS. LP GAS & VACUUM IN SEPERATE 3" PVC CONDUIT BELOW SLAB. PIPING SHALL BE SOFT COPPER TUBING, TYPE 'L' AND NO JOINTS.

KEY PLAN



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FOUNDATION - PLUMBING

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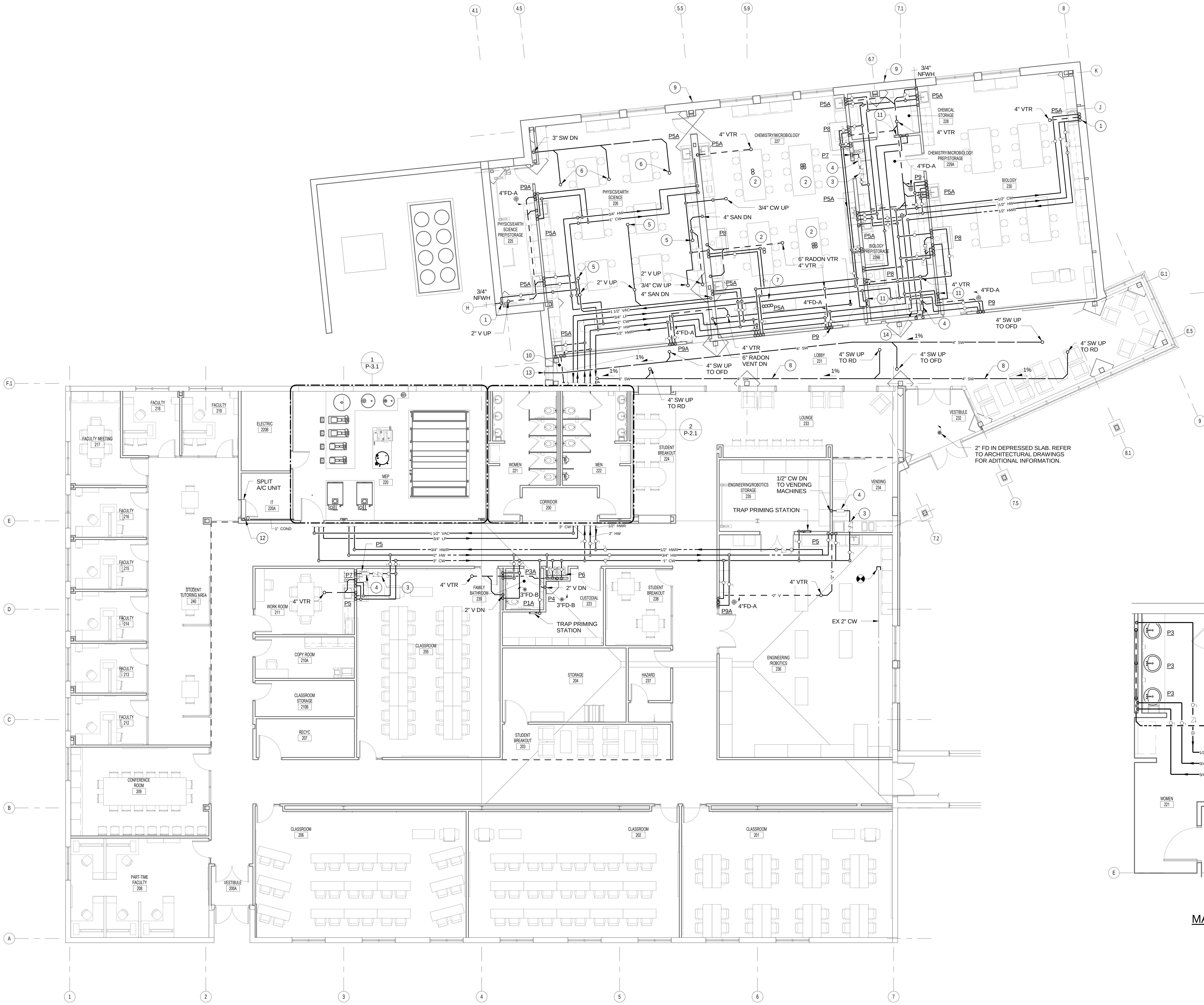


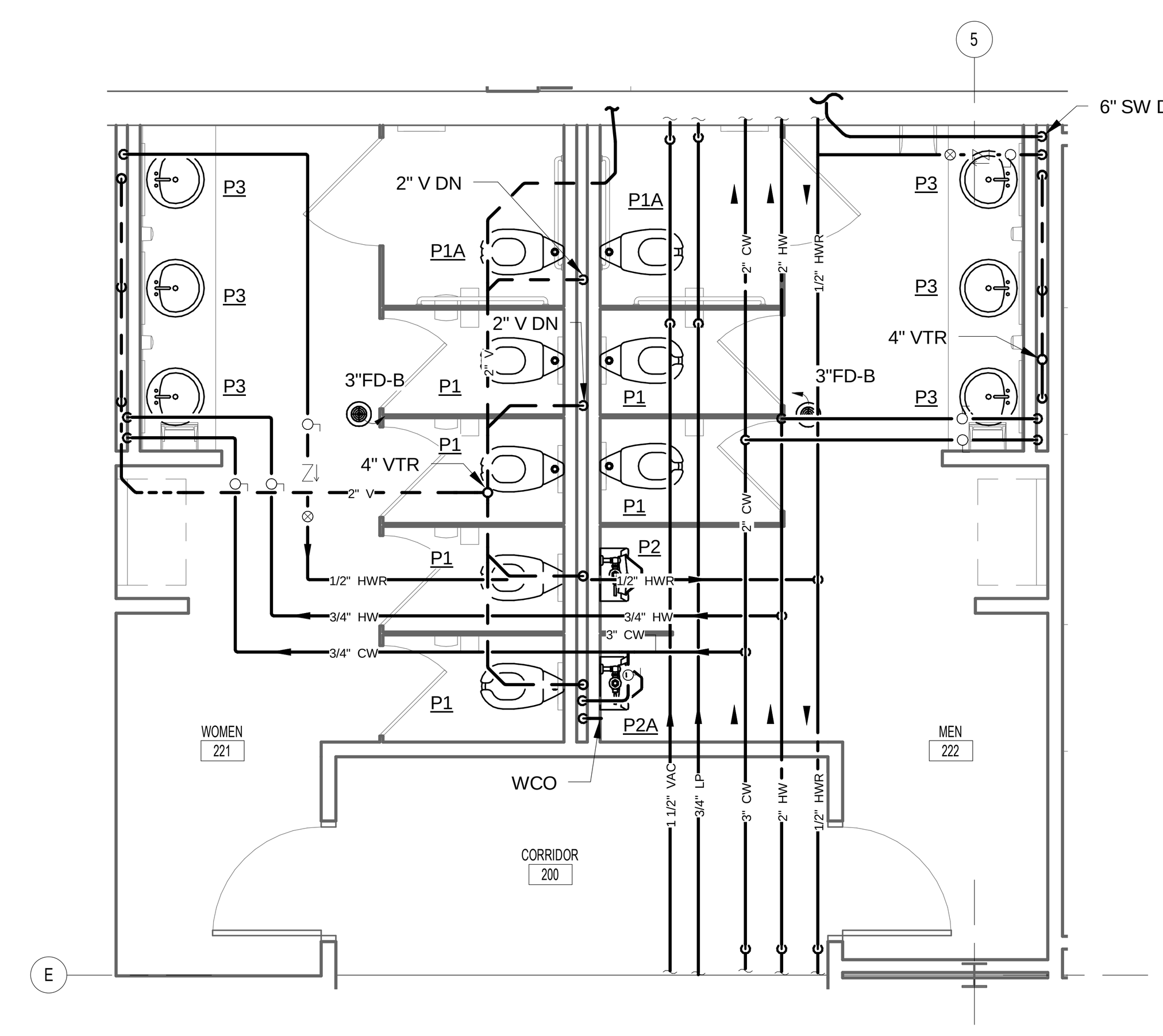
FIRST FLOOR - PLUMBING
1/8" = 1'-0"
FFE: 2603.17' ±

GENERAL NOTES:

1. PATCH ALL HOLES, PENETRATIONS, ETC. (IN WALLS, FLOORS, ROOF, ETC.) TO MATCH EXISTING MATERIALS, FINISHES, ETC. AND PAINT TO MATCH EXISTING FINISHES. ALL ROOFING WORK SHALL BE PERFORMED BY A CERTIFIED ROOFING CONTRACTOR TO MAINTAIN THE EXISTING WARRANTY IN THE AREAS OF WORK.

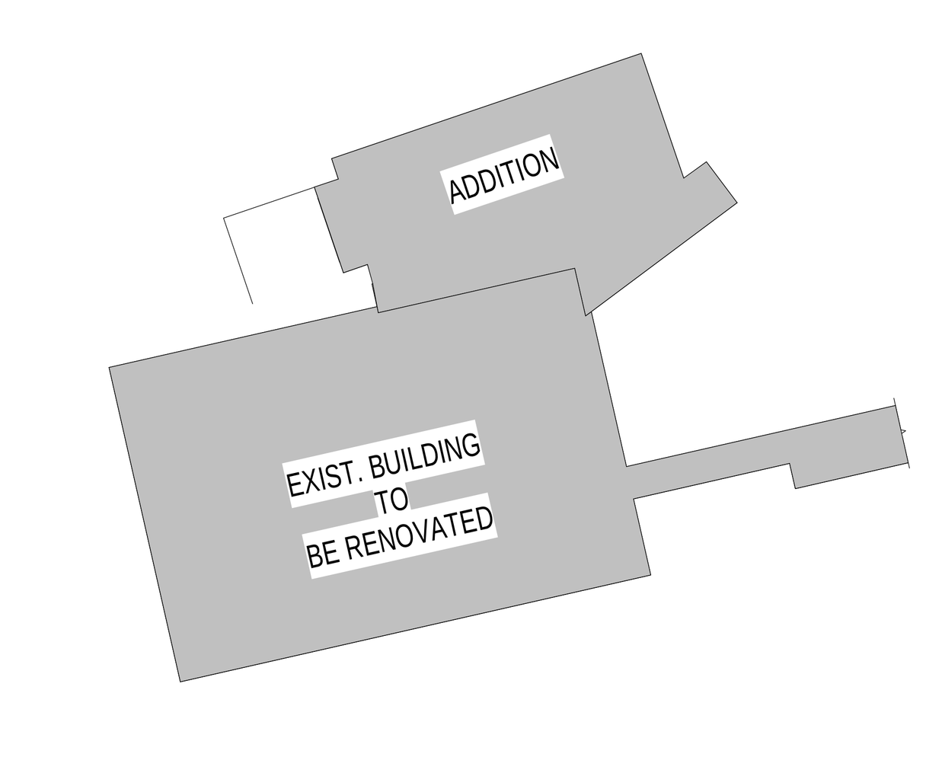
DRAWING NOTES:

1. PIPING IN WALL SHALL BE INSTALLED WITH 2" INSULATION
2. LP GAS AND VACUUM TO STUDENT WORKTABLES. VACUUM AND GAS TURRETS SHALL BE CHICAGO FAUCET MODEL 984
3. WATTS 7-SERIES BACKFLOW PREVENTER
4. INLINE FILTER
5. 4" SANITARY PIPING UP TO FLOOR DRAIN
6. 3" STORM WATER PIPING UP TO OPEN HUB DRAIN
7. CW, HW, LP GAS AND VACUUM TO STUDENT WORKTABLES. VACUUM AND GAS TURRET SHALL BE CHICAGO FAUCET MODEL 982
8. INSTALL STORM WATER PIPING AS HIGH AS POSSIBLE, TIGHT TO UNDERSIDE OF STRUCTURE.
9. DOWNSPOUT DOWN TO C.I. BOOT. PROVIDE ELECTRIC HEAT TRACE ALONG ENTIRE LENGTH OF DOWNSPOUT. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
10. CW, HW, VACUUM, LP GAS, VENT AND STORM WATER PIPING THAT IS SERVING ADDITION IS TO BE LOCATED WITH-IN SOFFIT. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
11. MANUAL LP GAS SHUT-OFF VALVE BOX
12. SPLIT A/C SYSTEM TERMINAL UNIT CONDENSATE DRAIN TRAP. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
13. 6" OVERFLOW NOZZLE THROUGH WALL. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION.
14. CABINET STILL
COUNTER MOUNTED
2 GAL/HR
MODEL 210 BY BARNSTEAD
FURNISHED BY OWNER, INSTALLED BY CONTRACTOR.



MAIN TOILET ROOMS - PART PLAN
1/4" = 1'-0"
FFE: 2603.17' ±

KEY PLAN



SCALE: 1/4" = 1'-0"
4 0 4 8

SCALE: 1/8" = 1'-0"
8 0 8 16

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FIRST FLOOR - PLUMBING
Garrett College STEM Renovation and Addition
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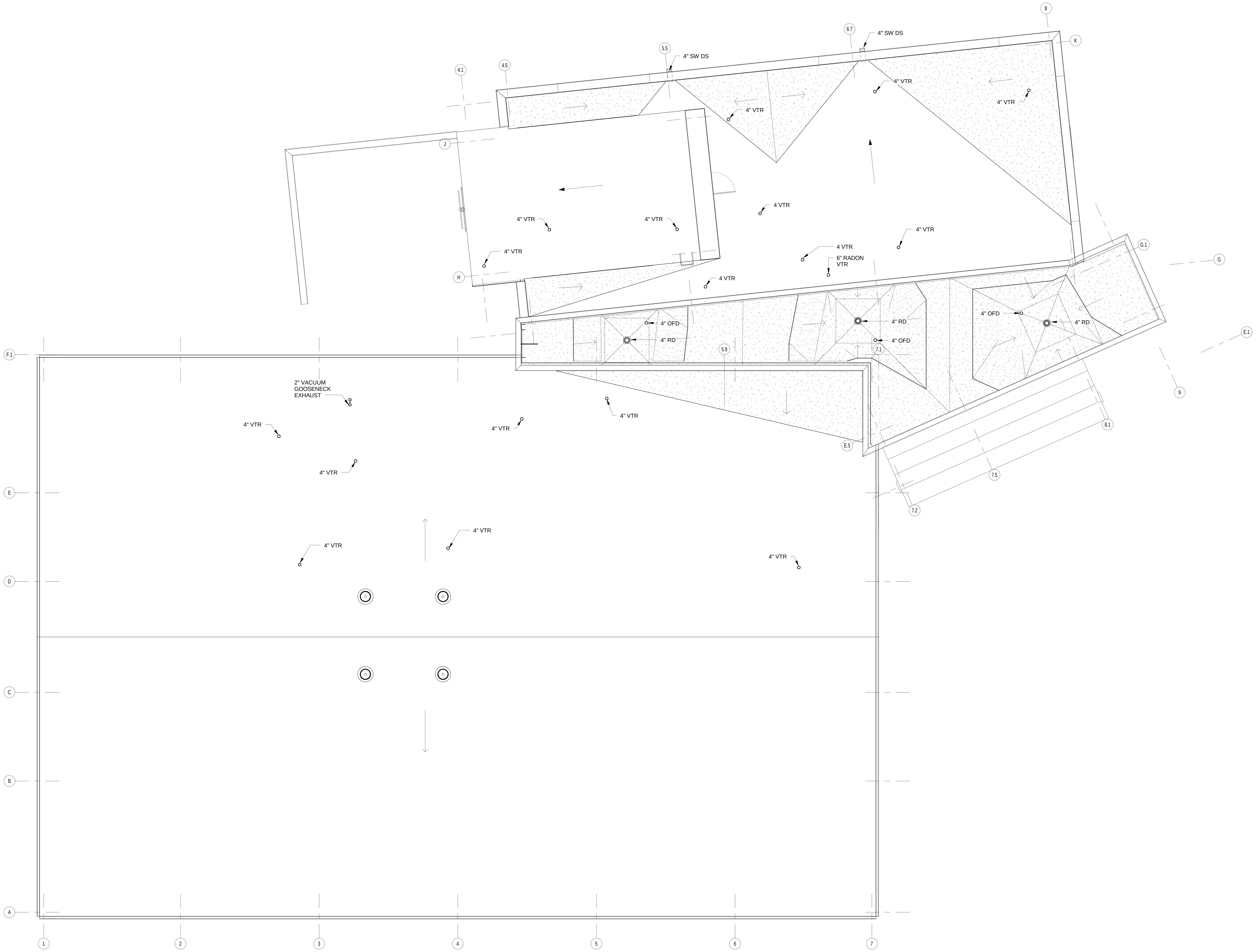
GENERAL NOTES:

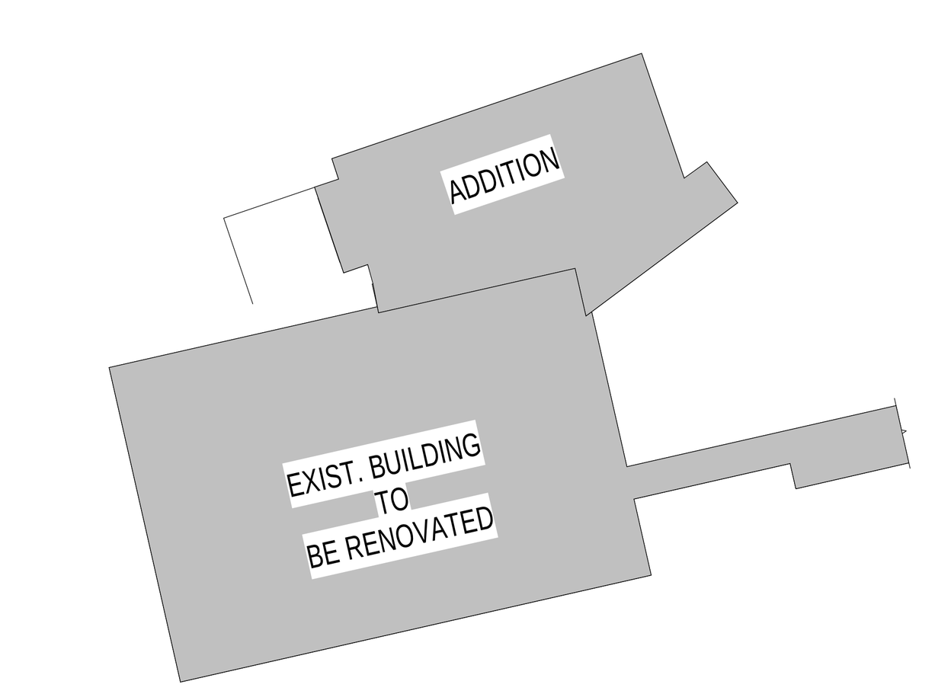
1. PATCH ALL HOLES, PENETRATIONS, ETC. (IN WALLS, FLOORS, ROOF, ETC.) TO MATCH EXISTING MATERIALS, FINISHES, ETC. AND PAINT TO MATCH EXISTING FINISHES. ALL ROOFING WORK SHALL BE PERFORMED BY A CERTIFIED ROOFING CONTRACTOR TO MAINTAIN THE EXISTING WARRANTY IN THE AREAS OF WORK.



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

SCALE: 1/8" = 1'-0"
8 0 8 16

KEY PLAN



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ROOF PLAN - PLUMBING
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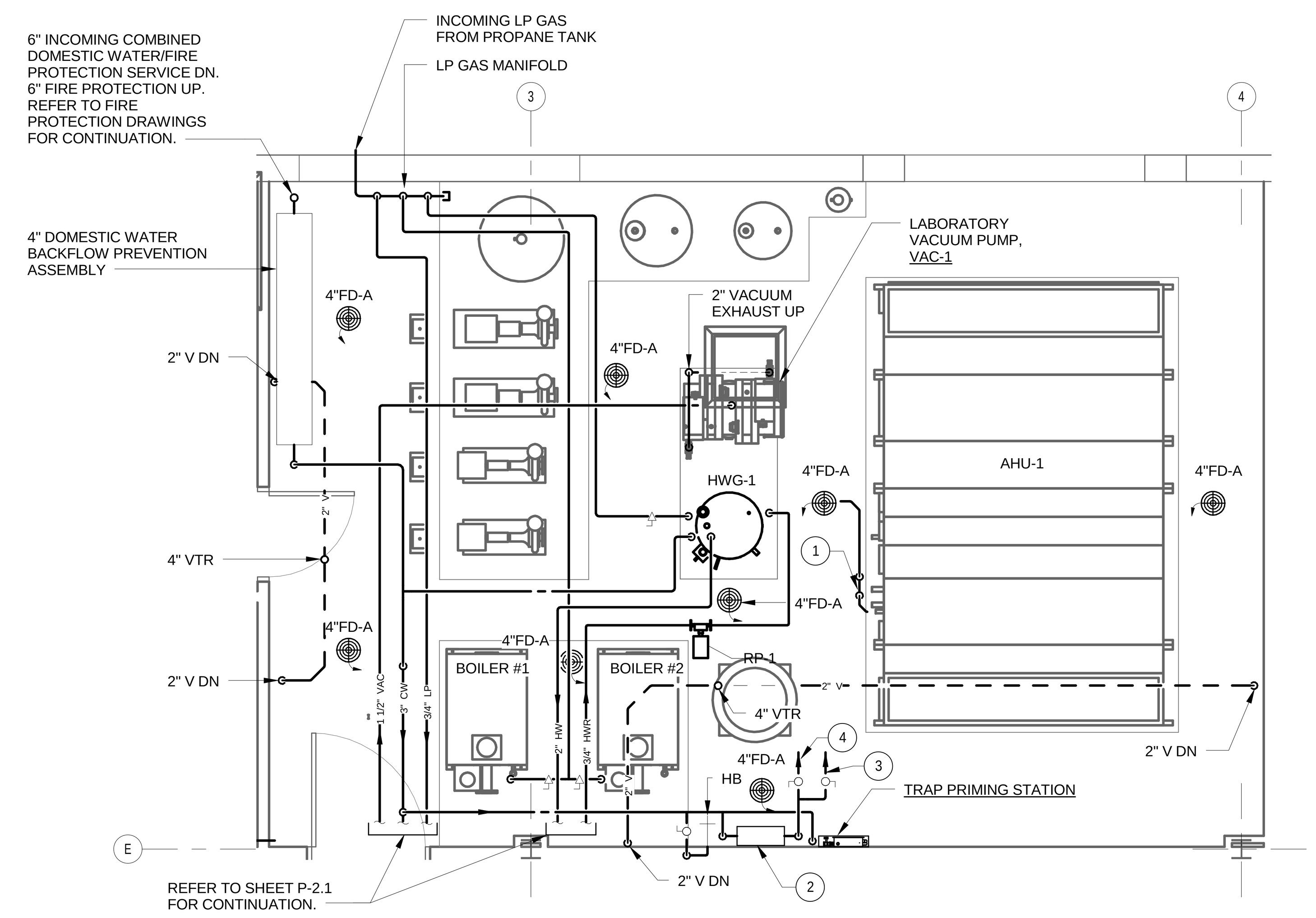
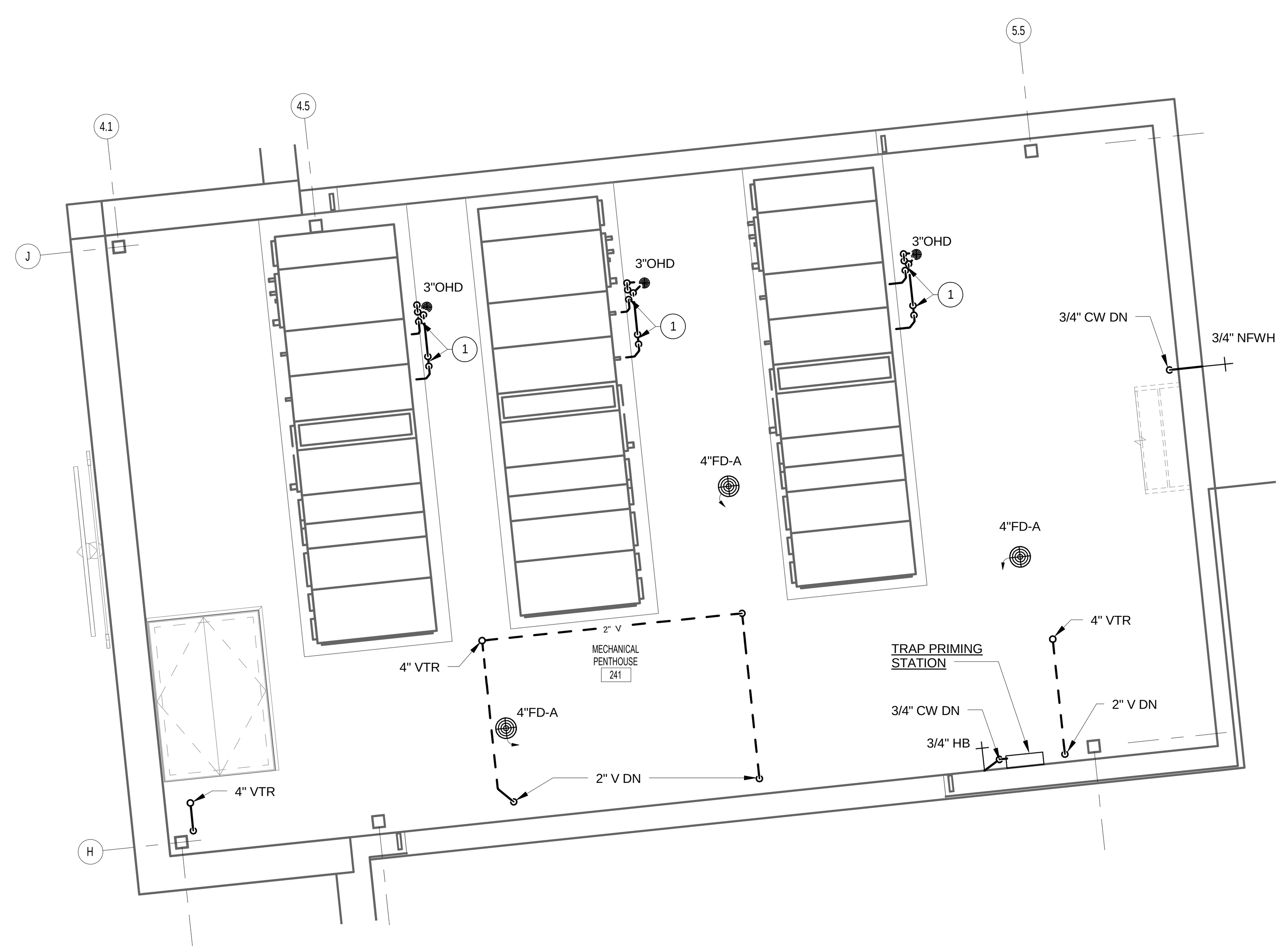


MECHANICAL ROOM - PART PLAN
1/4" = 1'-0"



PENTHOUSE FLOOR - PART PLAN
1/4" = 1'-0"

GENERAL NOTES:

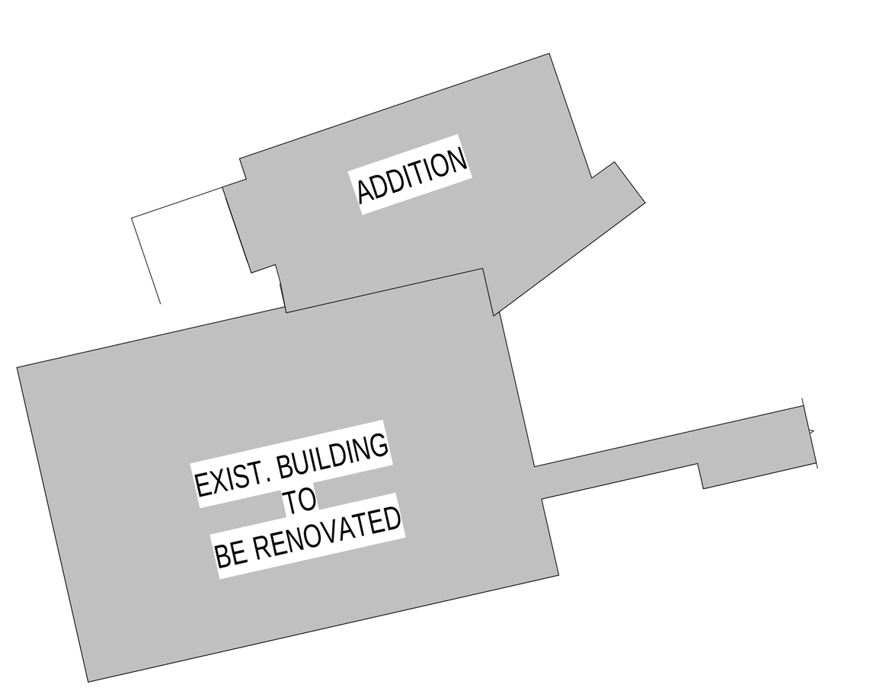
1. PATCH ALL HOLES, PENETRATIONS, ETC. (IN WALLS, FLOORS, ROOF, ETC.) TO MATCH EXISTING MATERIALS, FINISHES, ETC. AND PAINT TO MATCH EXISTING FINISHES. ALL ROOFING WORK SHALL BE PERFORMED BY A CERTIFIED ROOFING CONTRACTOR TO MAINTAIN THE EXISTING WARRANTY IN THE AREAS OF WORK.

DRAWING NOTES:

1. AIR HANDLING UNIT CONDENSATE DRAIN TRAP. REFER TO DETAILS FOR ADDITIONAL INFORMATION.
2. 1-1/2" MECHANICAL MAKE-UP WATER BACKFLOW PREVENTER.
3. 1-1/2" MECHANICAL MAKE-UP WATER TO CHILLED WATER SYSTEM. REFER TO MECHANICAL DRAWINGS FOR CONTINUATION.
4. 1-1/2" MECHANICAL MAKE-UP WATER TO HEATING WATER SYSTEM. REFER TO MECHANICAL DRAWINGS FOR CONTINUATION.

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

KEY PLAN



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MECHANICAL ROOM AND PENTHOUSE FLOOR - PART PLANS

Garrett College STEM Renovation and Addition
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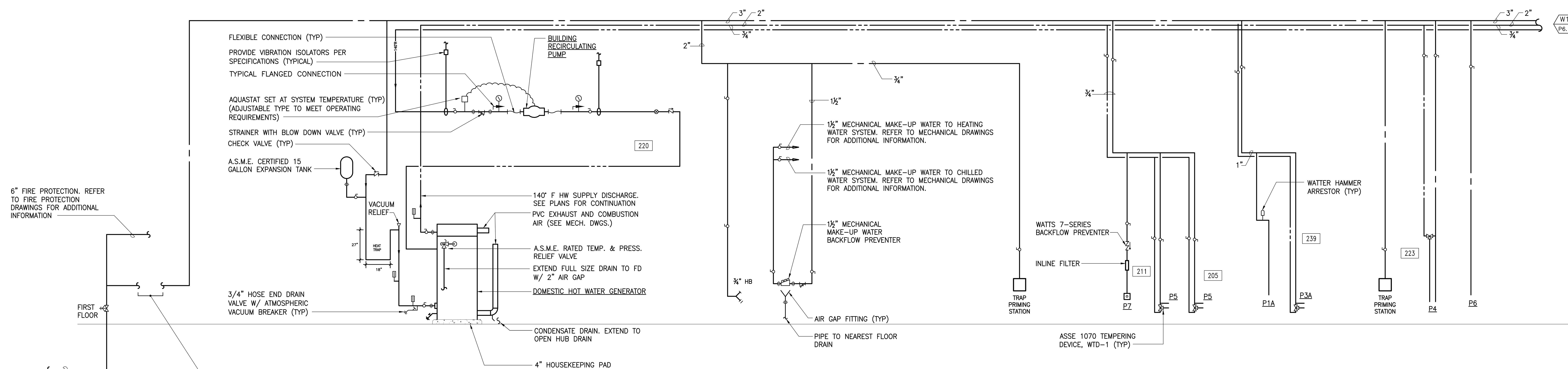
DATE	DESCRIPTION

P-3.1

February 1, 2017
Bid Set

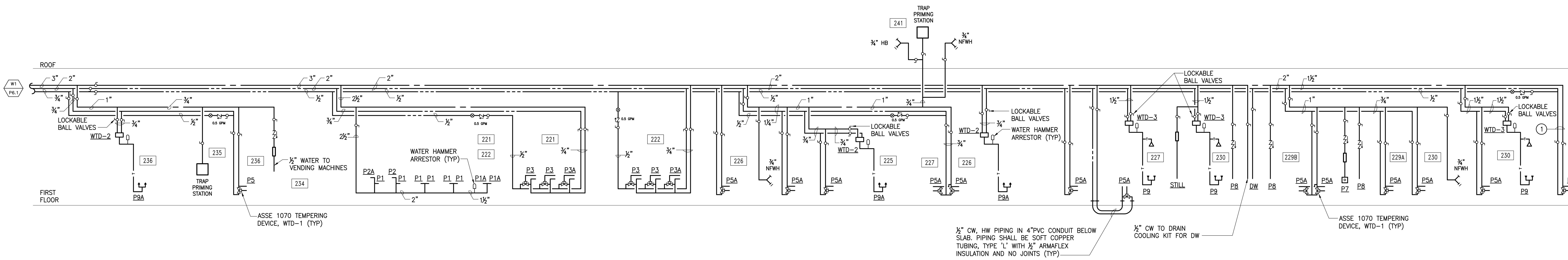
DRAWING NOTES:

1. PIPING IN WALL SHALL BE INSTALLED WITH 2" INSULATION. REFER TO FLOOR PLANS FOR LOCATION.



DOMESTIC WATER RISER DIAGRAM

SCALE: NOT TO SCALE



DOMESTIC WATER RISER DIAGRAM

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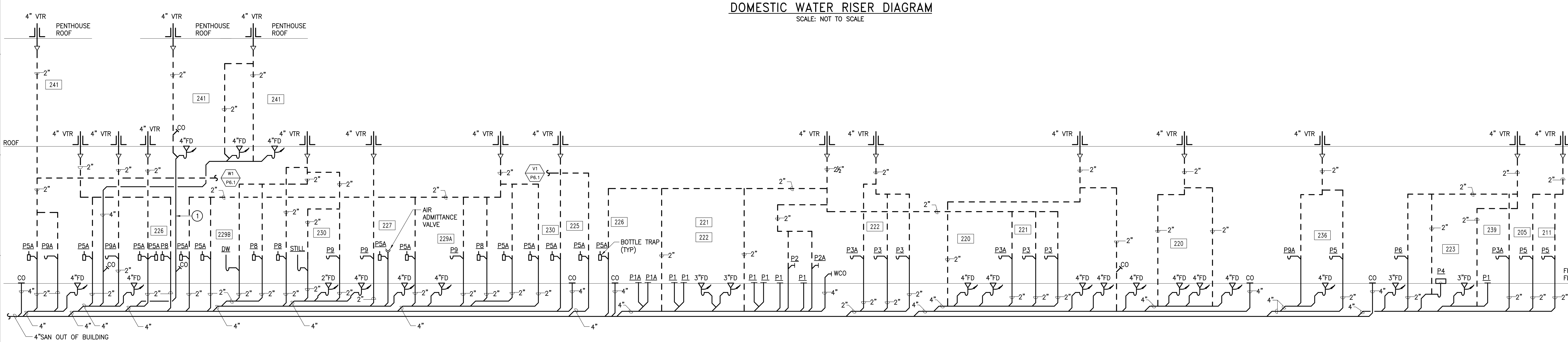

SANITARY/VENT RISER DIAGRAM

SCALE: NOT TO SCALE

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DOMESTIC WATER & SANITARY/VENT RISER DIAGRAMS

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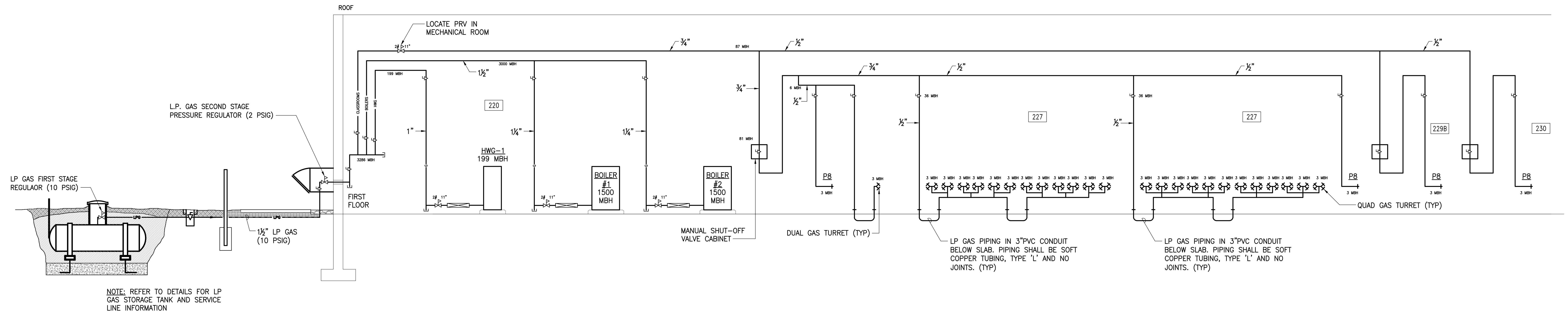
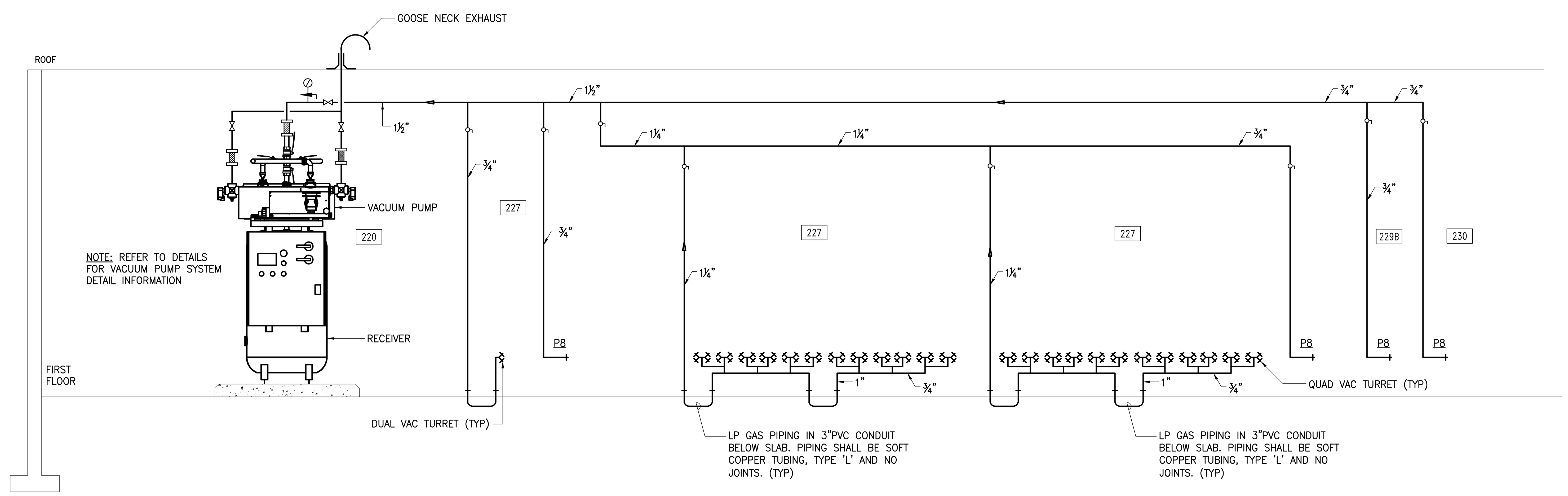


LIQUIFIED PETROLEUM GAS RISER DIAGRAM

SCALE: NOT TO SCALE

NOTES:
1. THE CONTRACTOR SHALL VERIFY ALL CAPACITIES AND PIPE SIZES
2. PAINT ALL GAS PIPING YELLOW
3. GAS PIPING SIZED PER 2015 IFGC TABLE 402.4(27) & 402.3(28)



VACUUM SYSTEM RISER DIAGRAM

SCALE: NOT TO SCALE

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LP GAS & VACUUM SYSTEM RISER DIAGRAMS

Garrett College STEM Renovation and Addition
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DATE	DESCRIPTION

P-6.2

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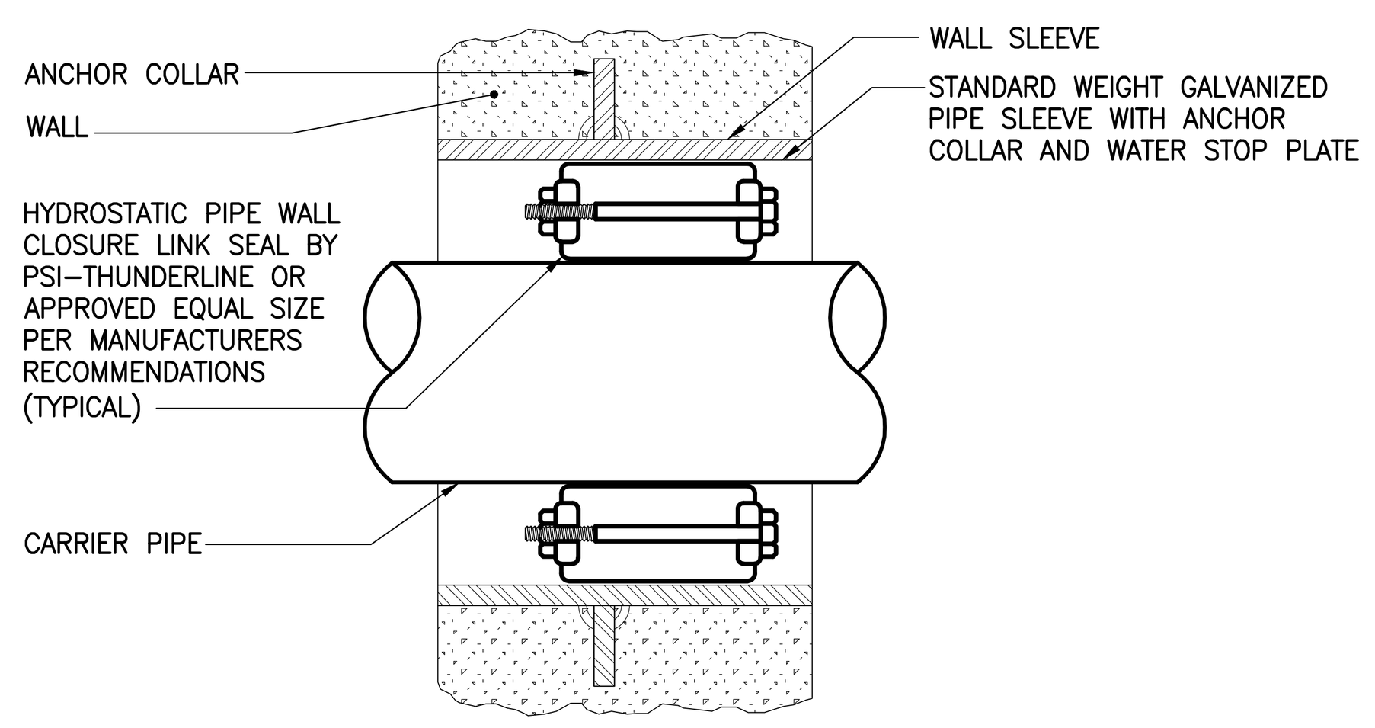
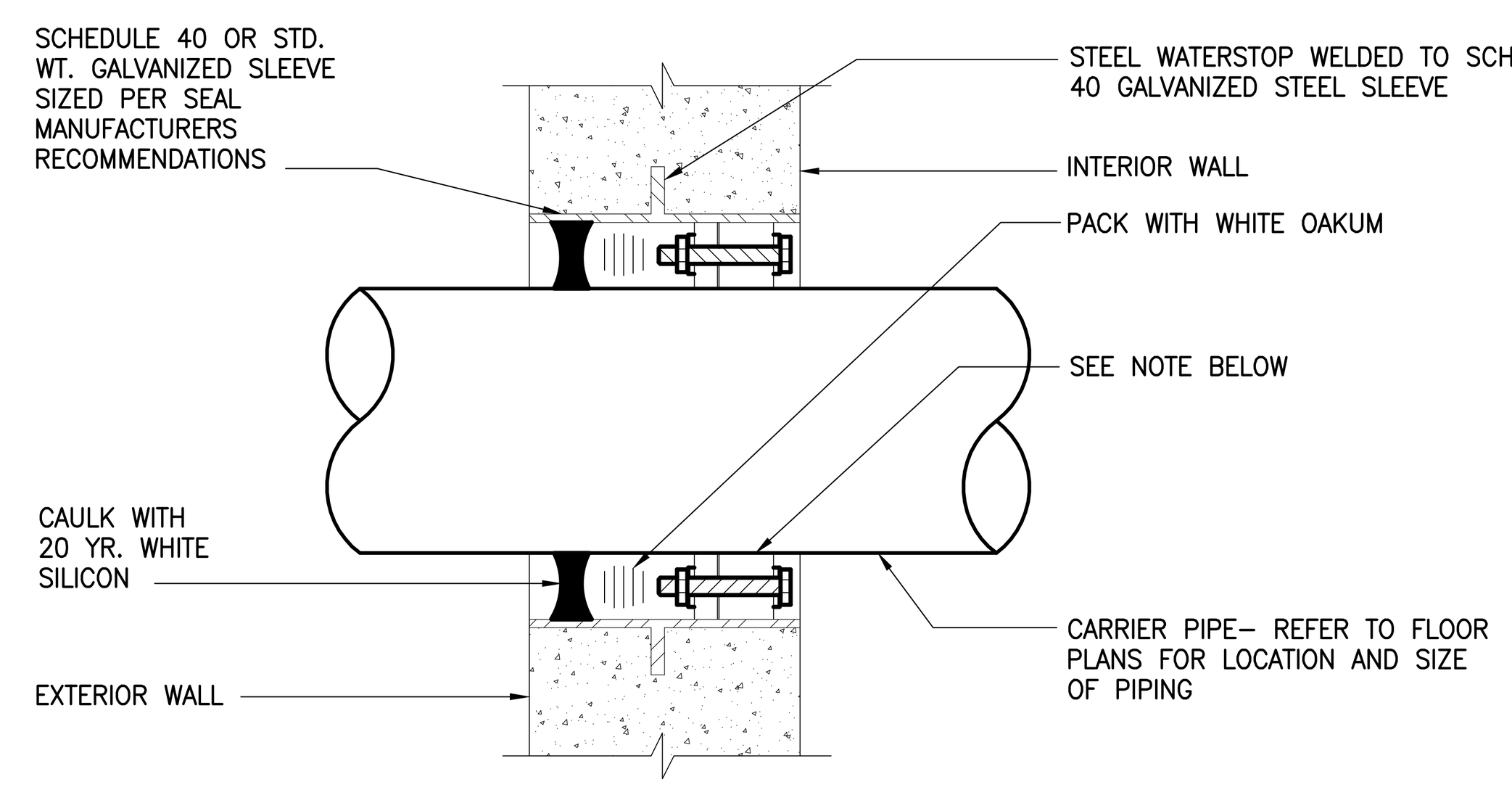
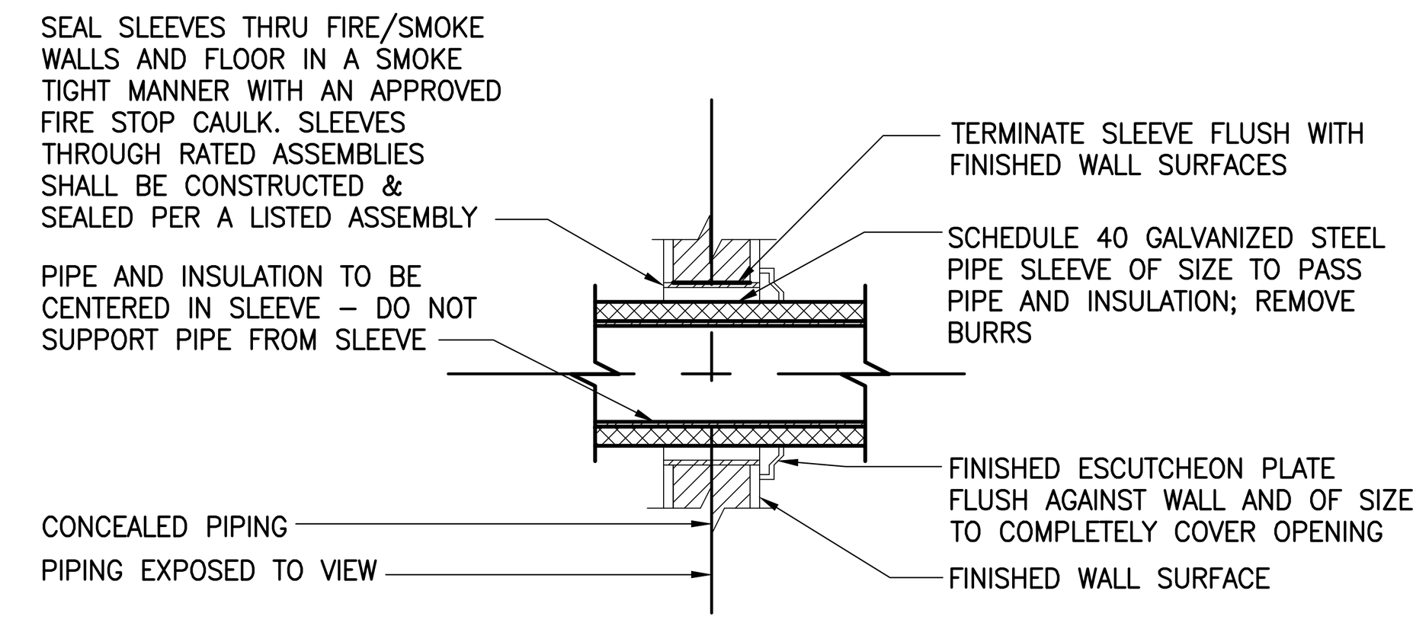


(1) TYPICAL PIPE THRU EXTERIOR WALL PENETRATION SEAL BELOW GRADE DETAIL — SCALE: NONE



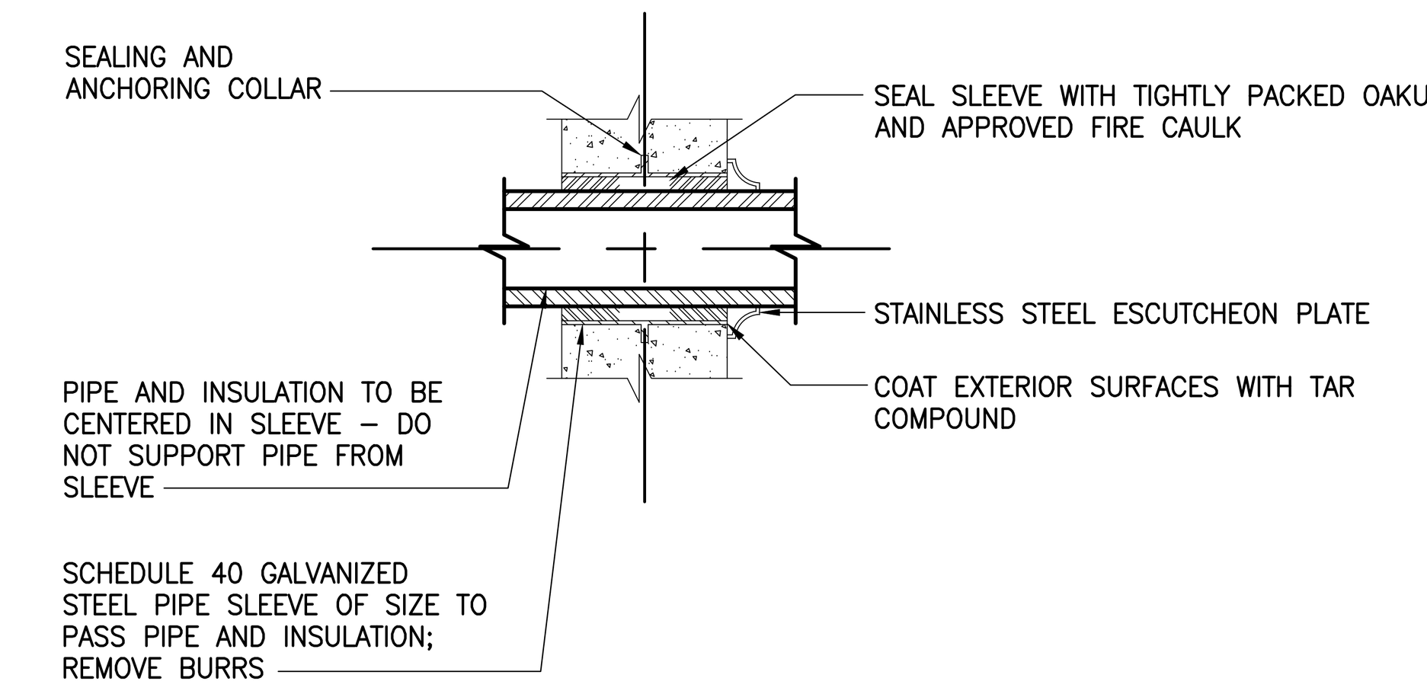
NOTE:
SEAL ASSEMBLY SHALL BE MODULAR MECHANICAL TYPE CONSISTING OF INTERLOCKING RUBBER LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN THE CARRIER PIPING AND THE SLEEVE. BOLTS SHALL BE STAINLESS STEEL WITH DELRIN PLASTIC PRESSURE PLATES.

(2) TYPICAL WATERTIGHT SLEEVE THRU EXTERIOR WALL DETAIL — SCALE: NONE

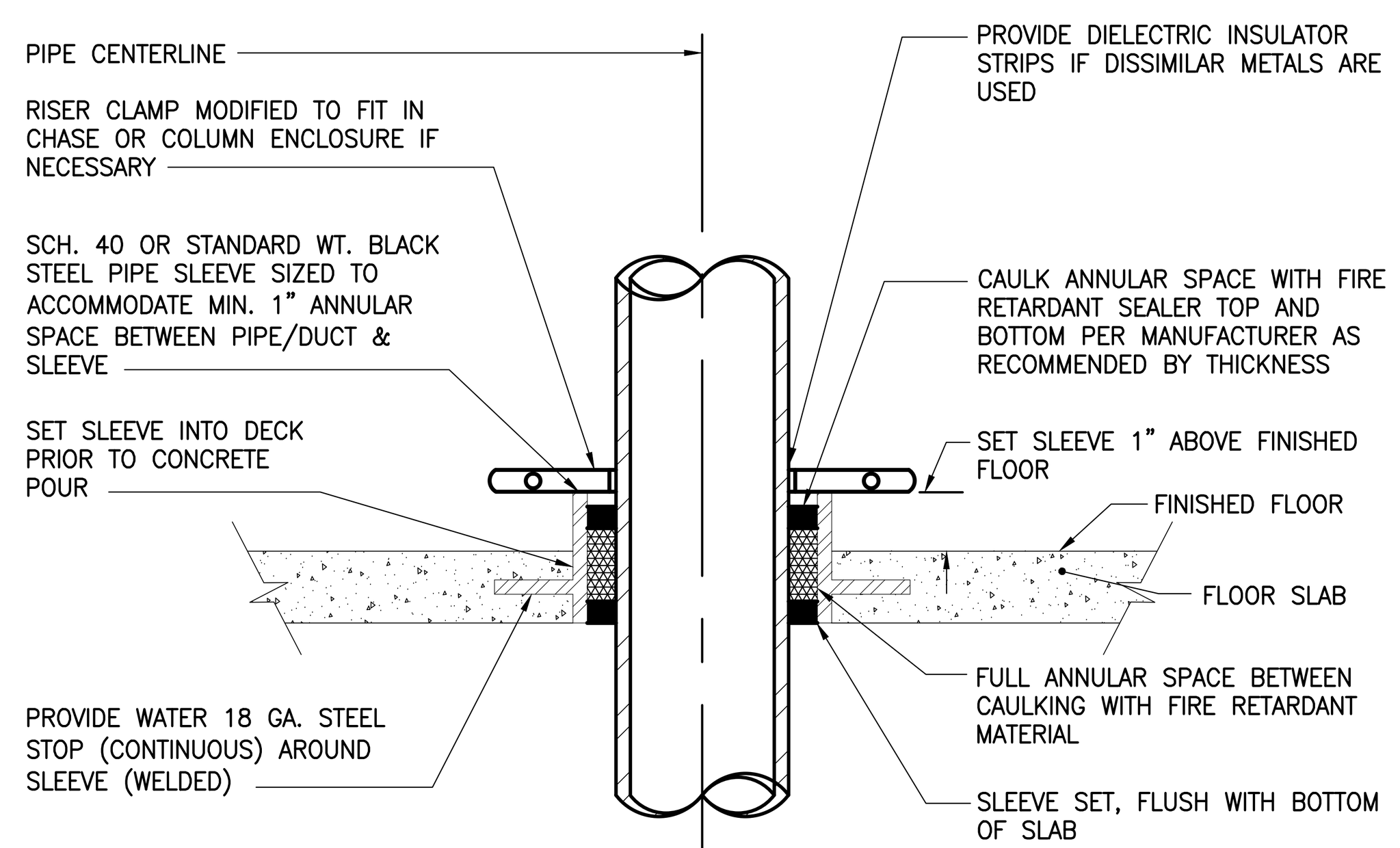


NOTE:
FOR INTERIOR FRAME PARTITIONS–PIPE SLEEVES MAY BE FABRICATED FROM GALVANIZED SHEET METAL; ROUND TUBE CLOSED WITH SNAPLOCK JOINT, WELDED SPIRAL SEAMS, OR WELDED LONGITUDINAL JOINT. FABRICATE FROM THE FOLLOWING GAUGES: 3" AND SMALLER, 20 GAUGE; 4" TO 6", 16 GAUGE; OVER 6", 14 GAUGE.

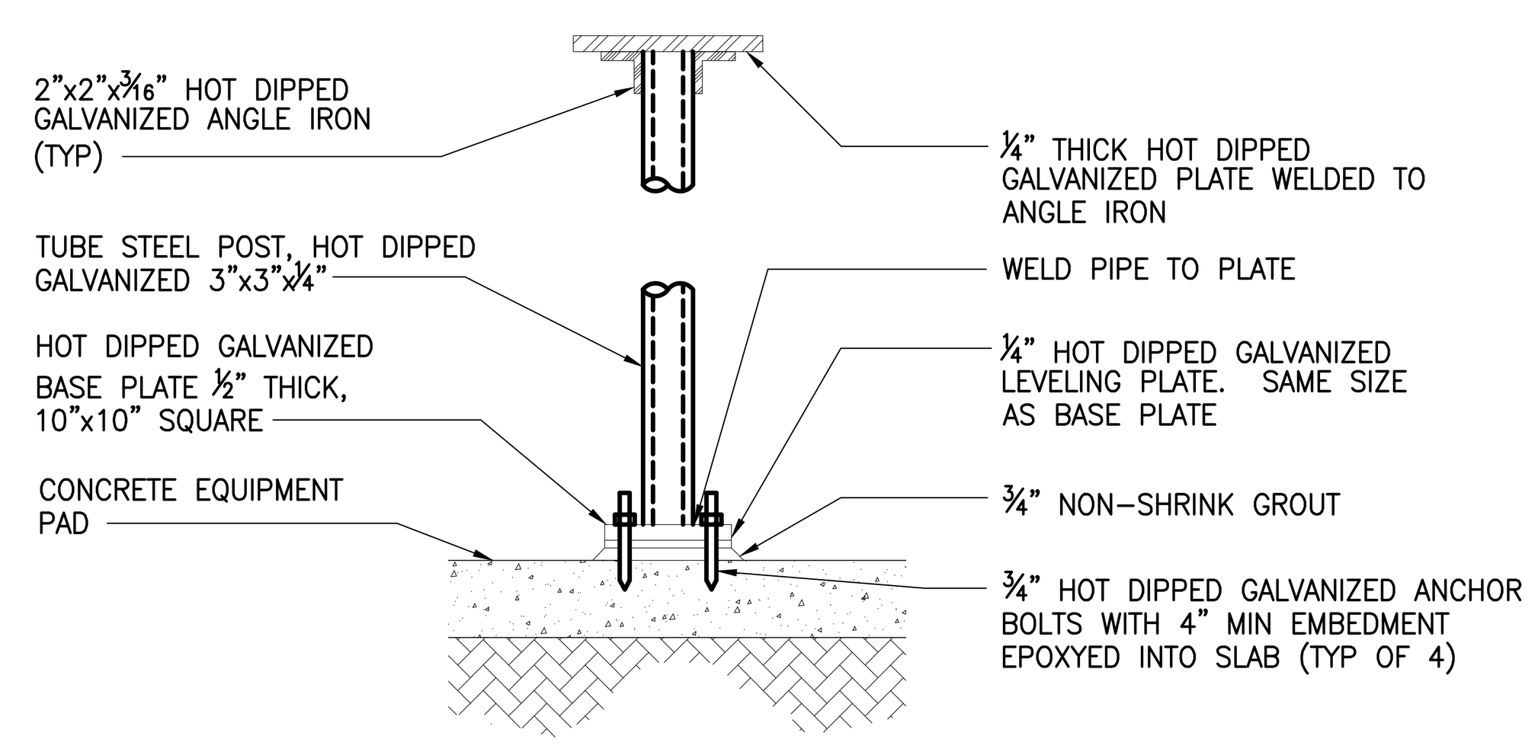
(3) TYPICAL PIPE SLEEVE THRU INTERNAL WALL DETAIL — SCALE: NONE



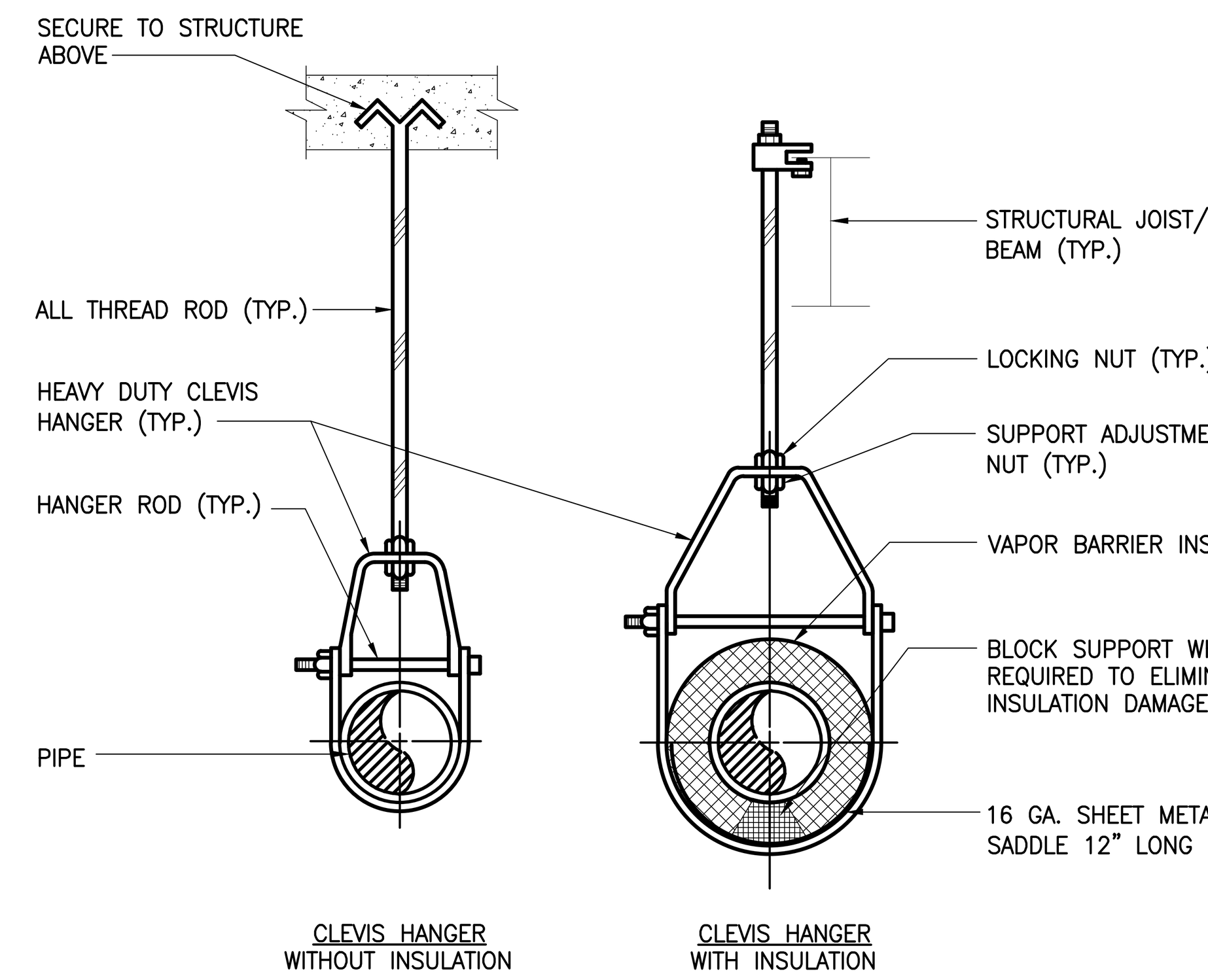
(4) TYPICAL PIPE SLEEVE THRU EXTERIOR WALL ABOVE GRADE DETAIL — SCALE: NONE



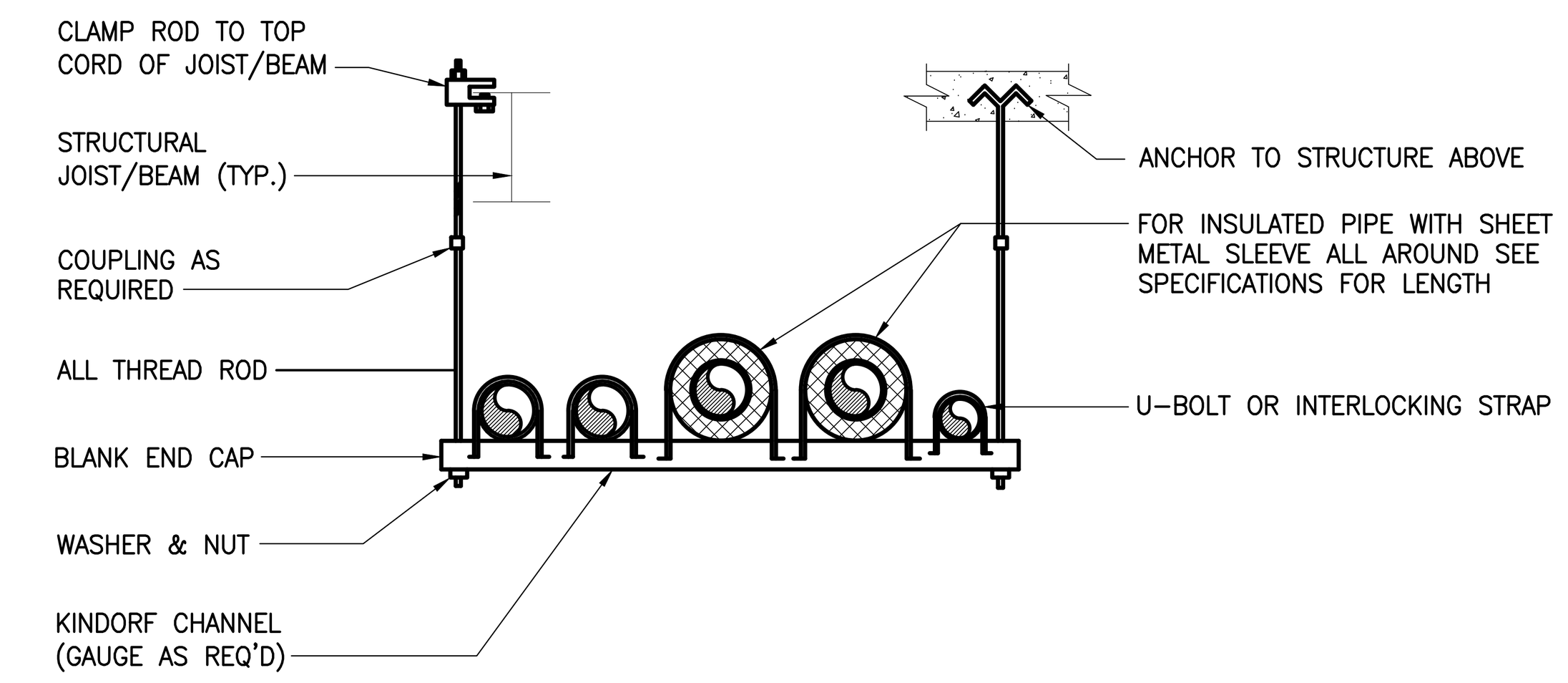
(5) TYPICAL SLEEVE THROUGH FLOOR DETAIL — SCALE: NONE



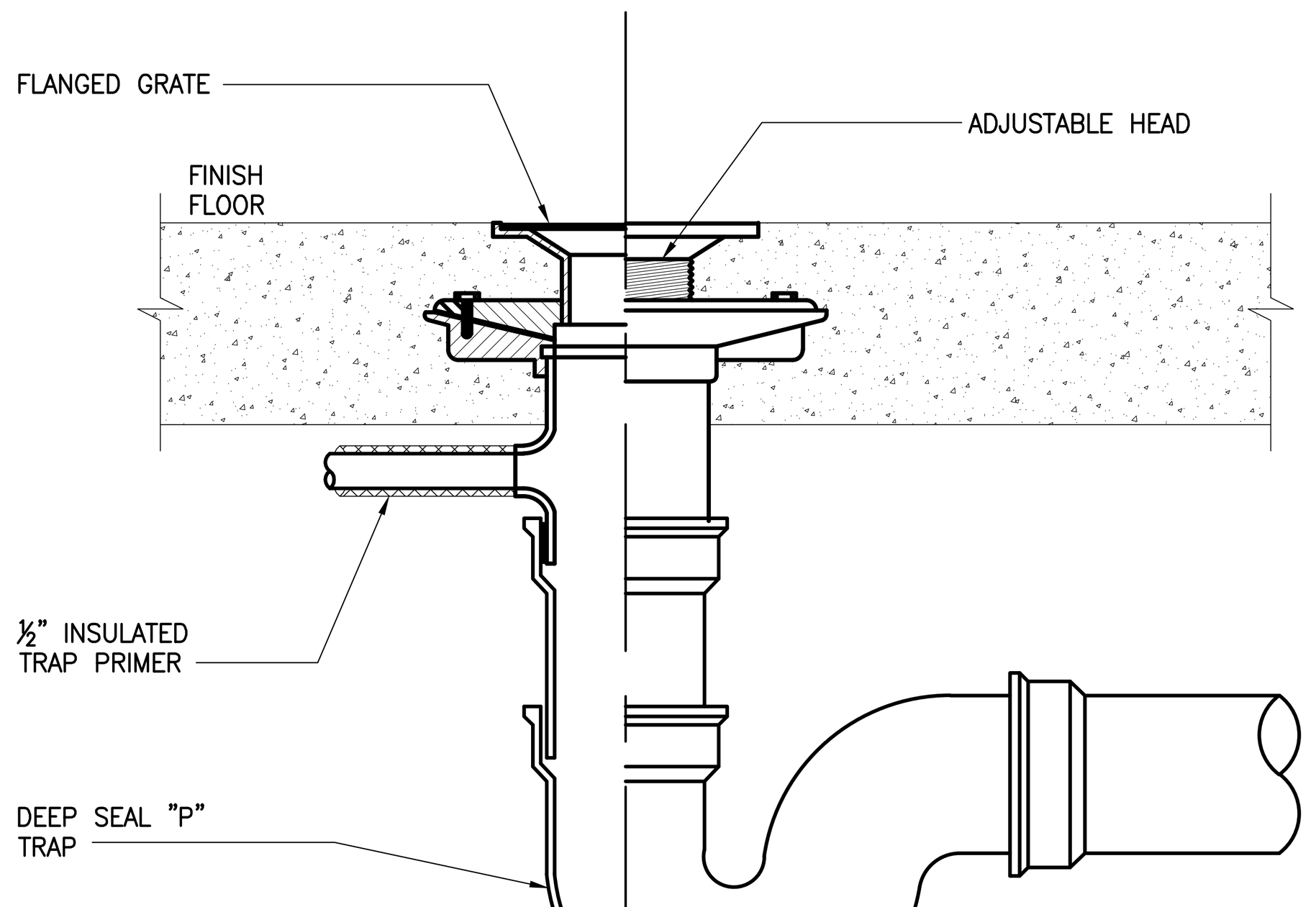
(6) TYPICAL PIPE SUPPORT DETAIL — SCALE: NONE



(7) TYPICAL PIPE SUPPORT DETAIL — SCALE: NONE

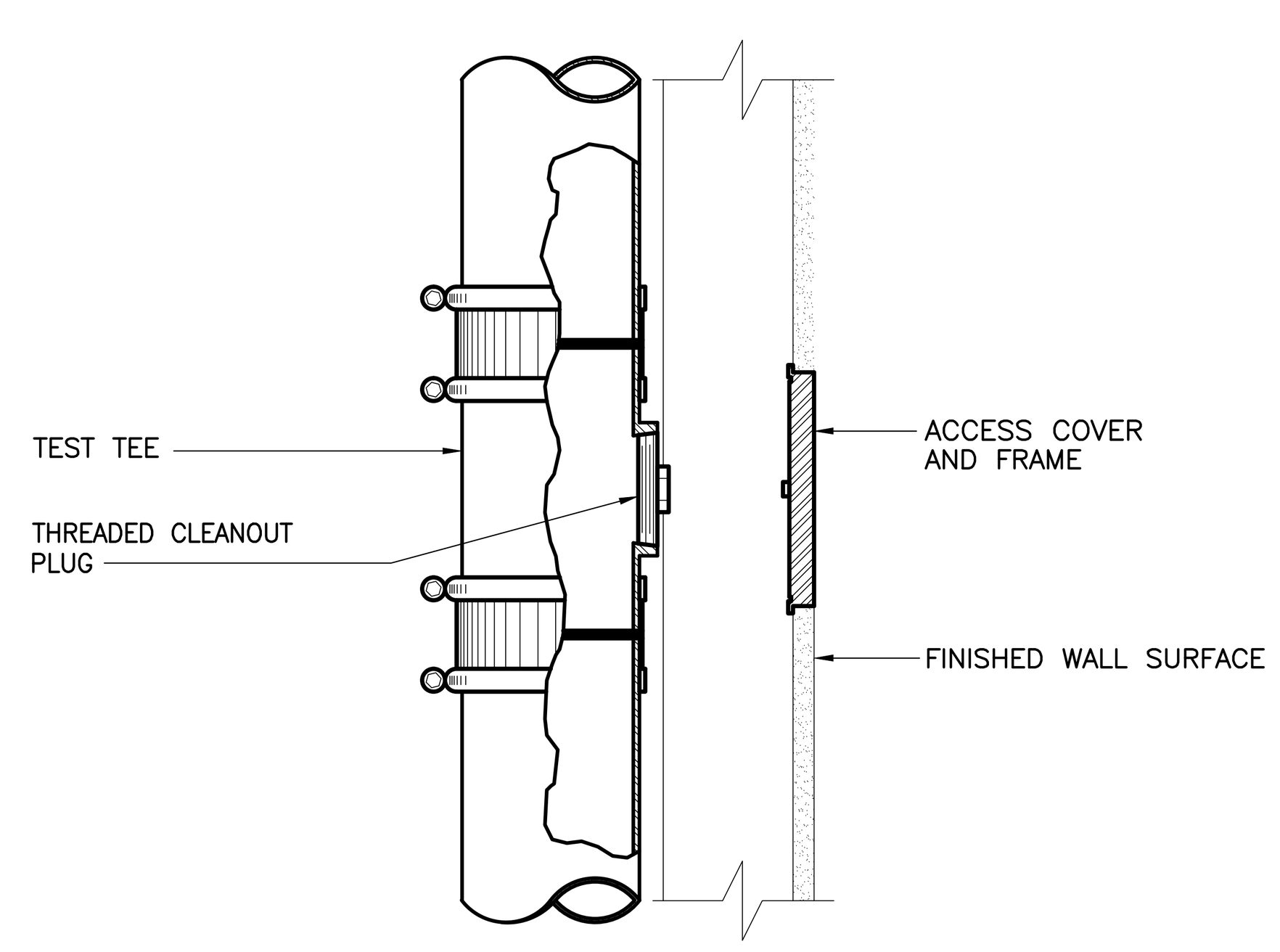


(8) TYPICAL TRAPEZE PIPE SUPPORT DETAIL — SCALE: NONE

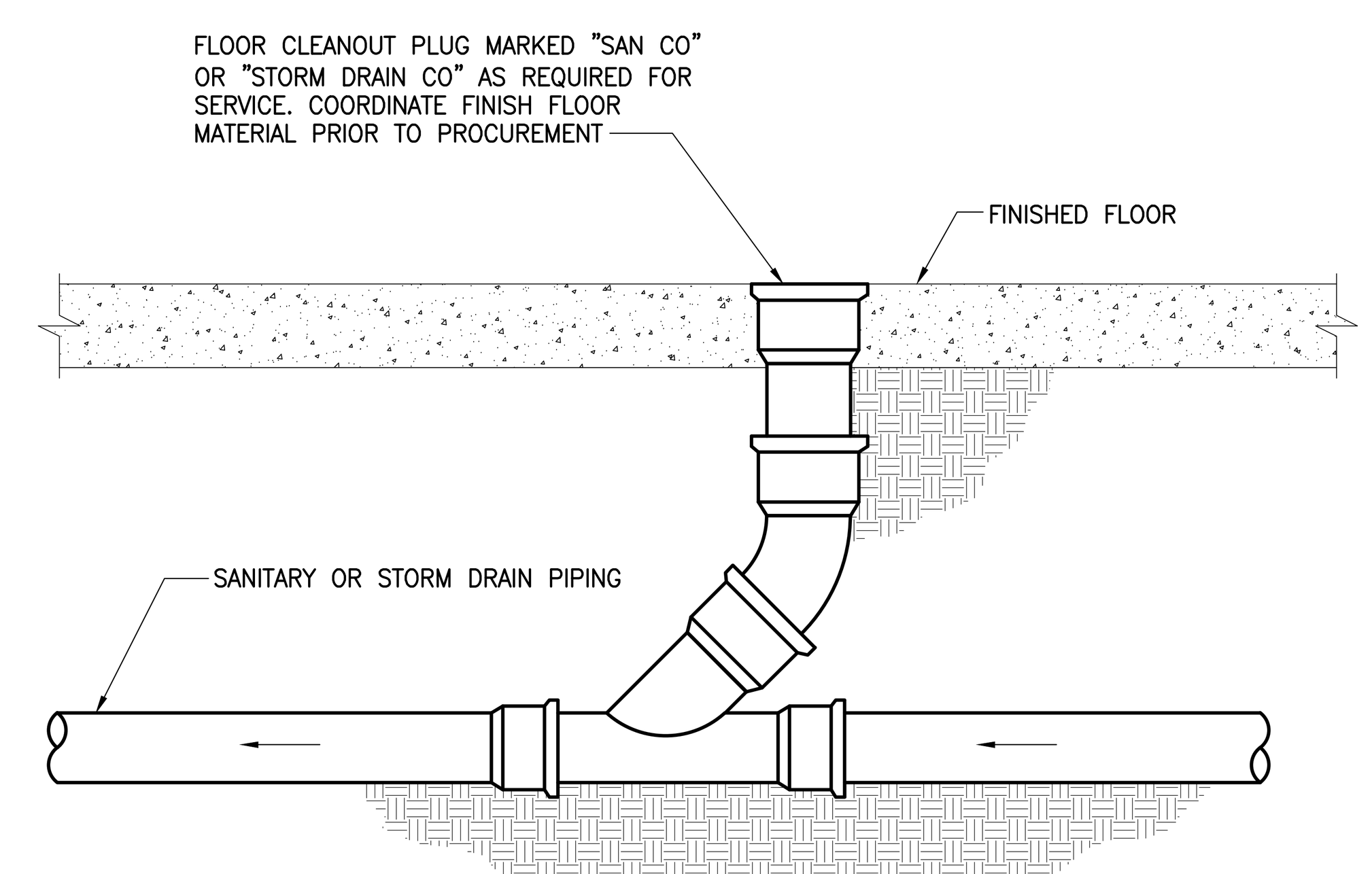


NOTES:
1. REFER TO MECHANICAL SPECIFICATION FOR PIPING MATERIALS.

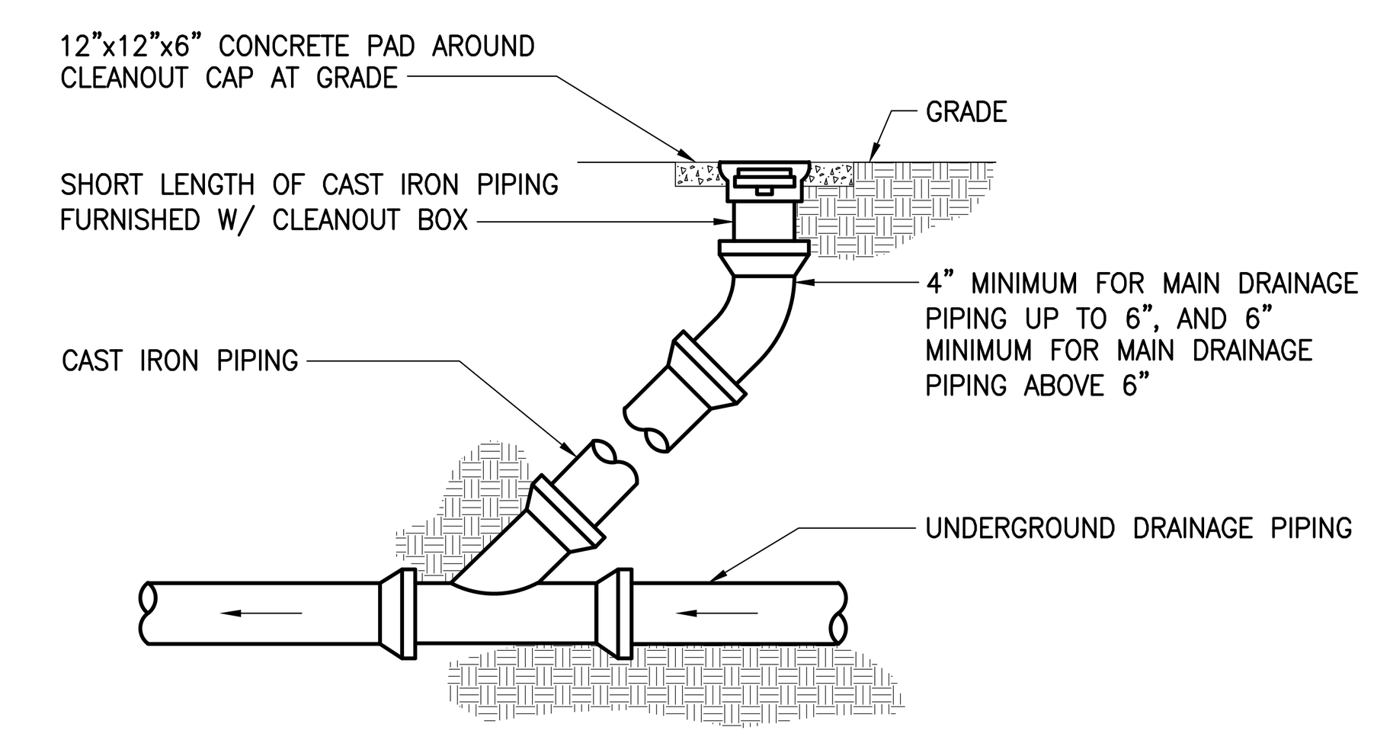
(9) TYPICAL FLOOR DRAIN DETAIL — SCALE: NONE



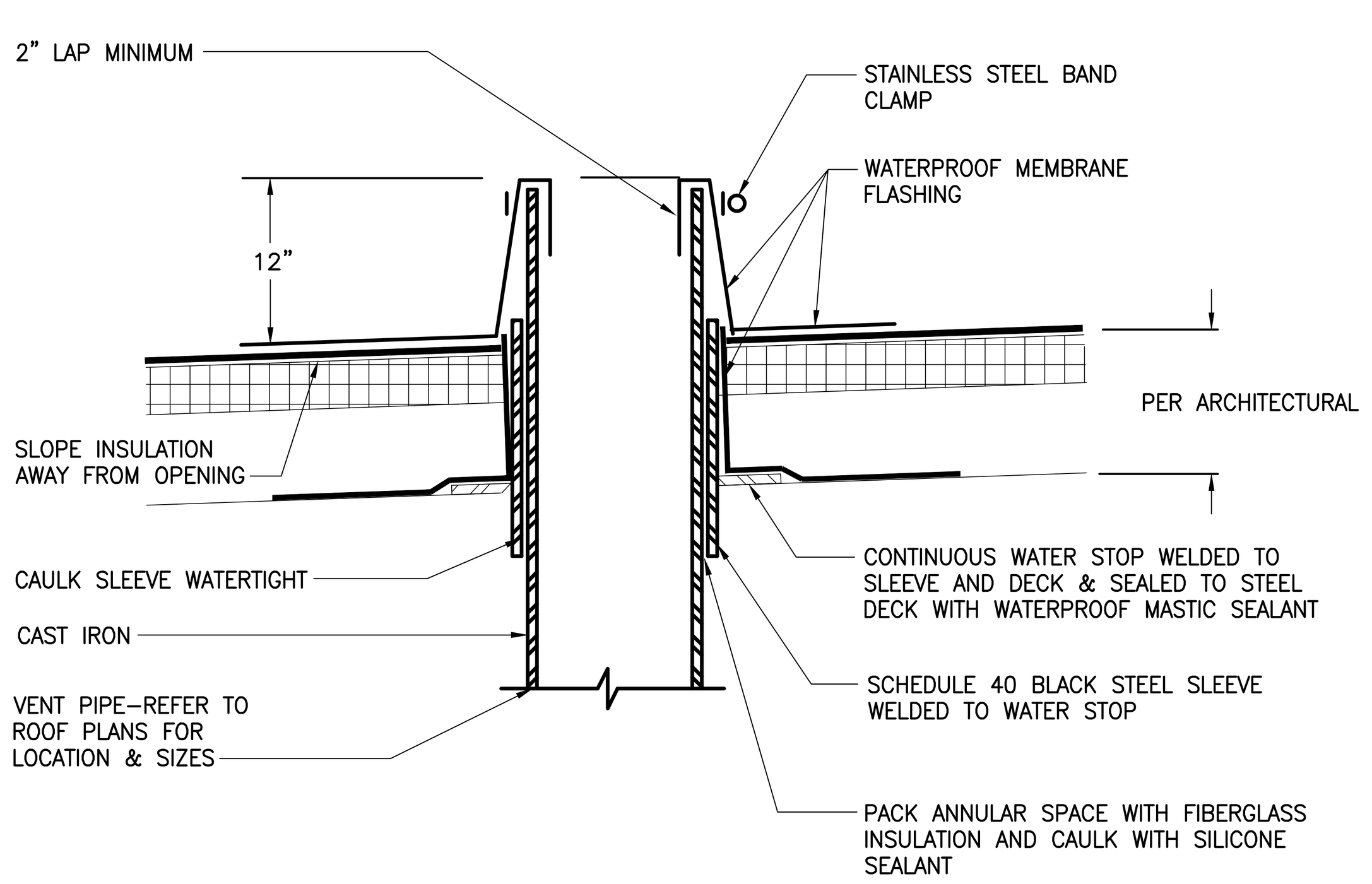
(10) TYPICAL INTERIOR WALL CLEANOUT W/ ACCESS COVER DETAIL — SCALE: NONE



(11) TYPICAL FLOOR CLEANOUT — SCALE: NONE

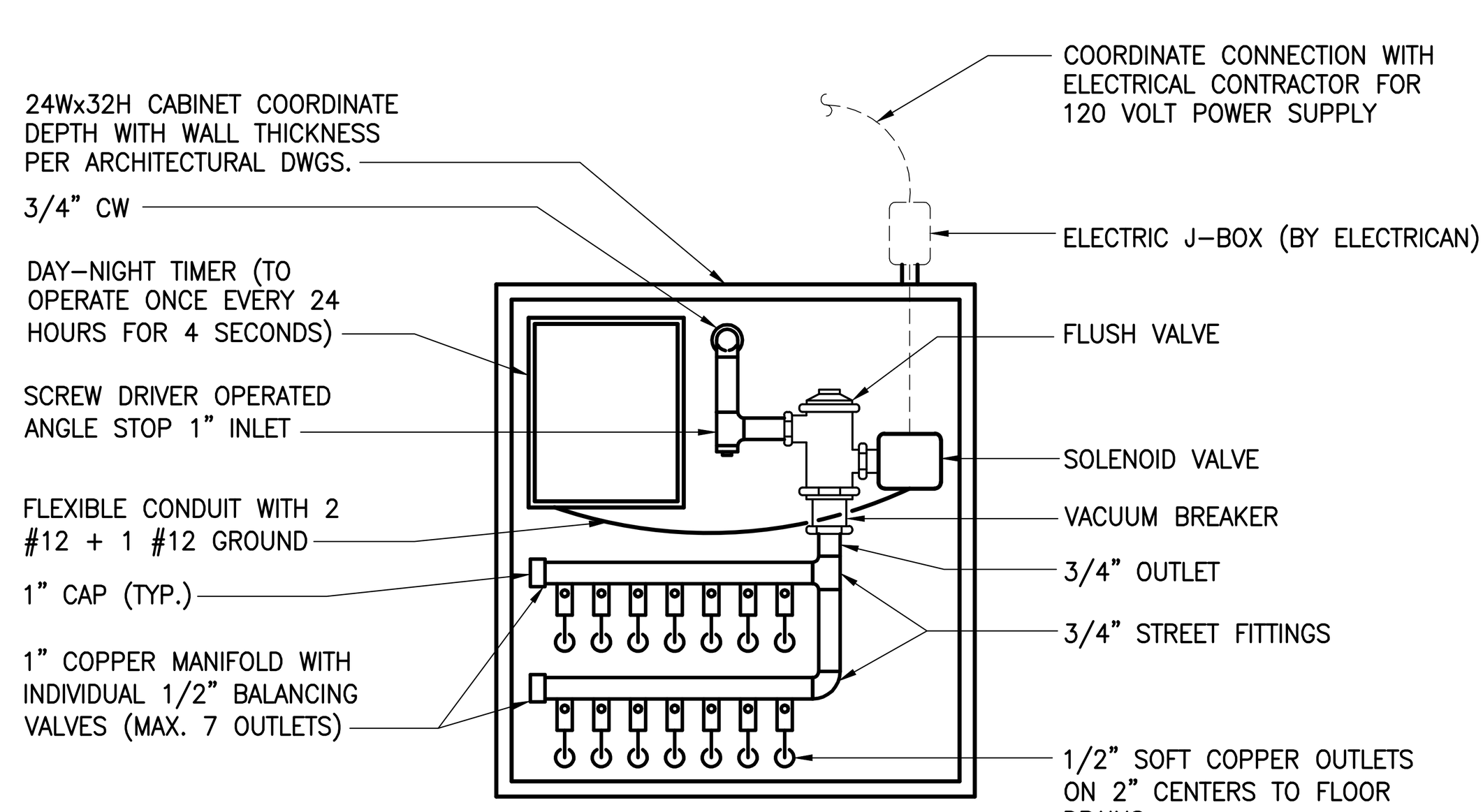


(12) TYPICAL EXTERIOR CLEANOUT DETAIL — SCALE: NONE



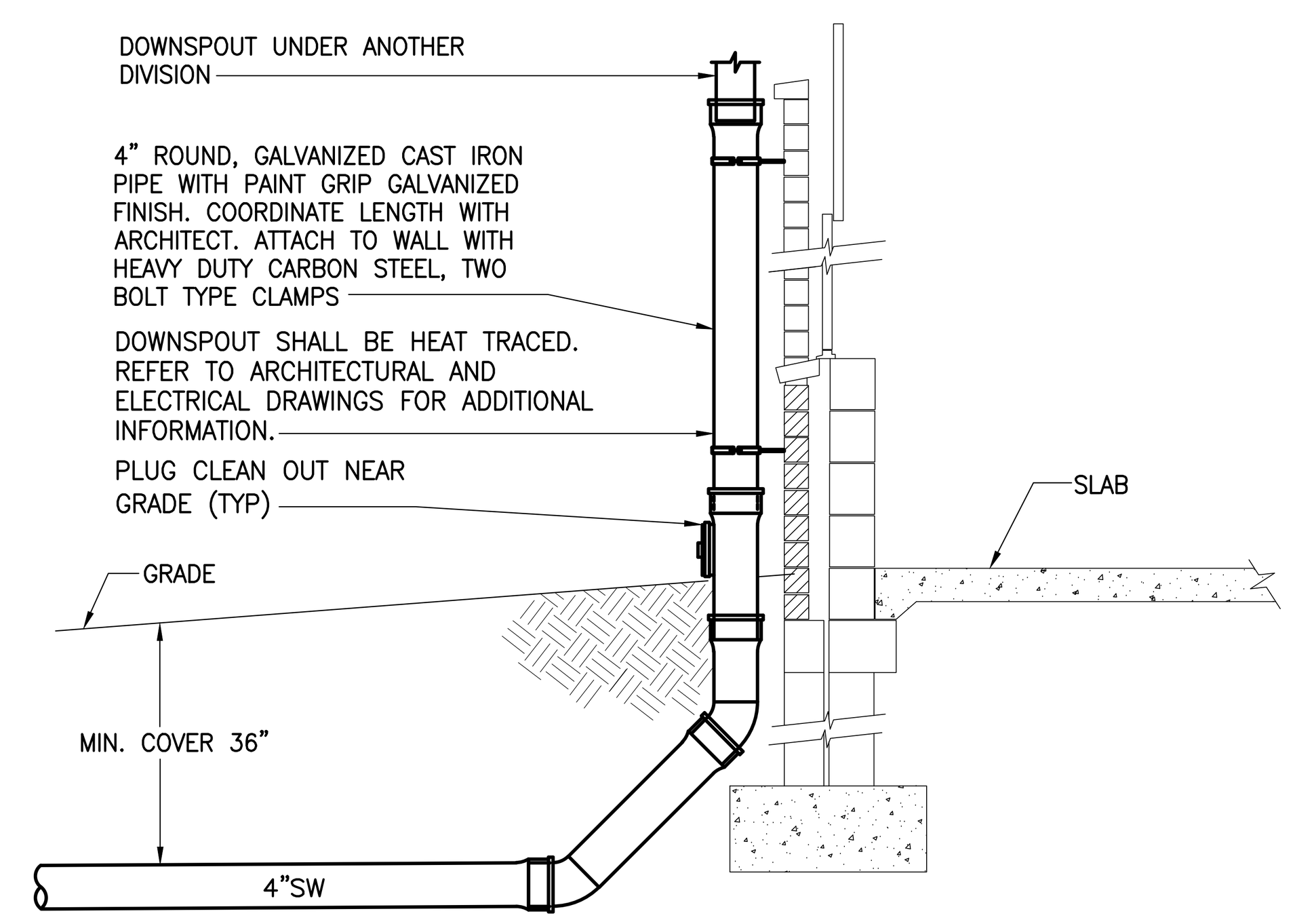
NOTE: ON SLOPING METAL ROOF INSTALLATION, CLAMP VENT PIPE TO UNISTRUT SUPPORT ATTACHED TO ROOF STRUCTURE.

(13) TYPICAL SANITARY VENT THRU ROOF DETAIL — SCALE: NONE



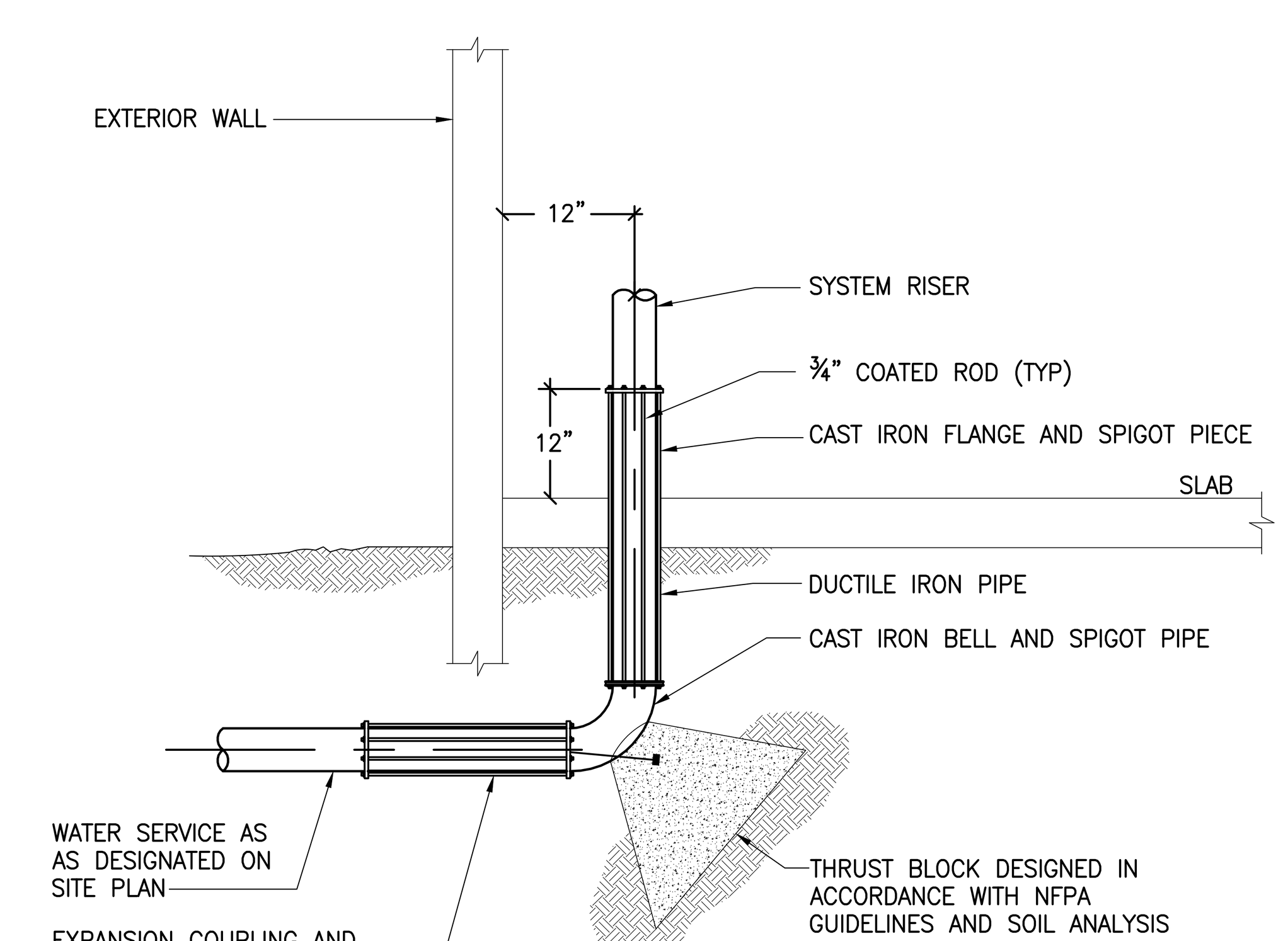
NOTES:
1. TOTAL NUMBER OF OUTLETS SHALL BE DETERMINED BY THE NUMBER OF FLOOR DRAINS PRIMED WITHIN THE IMMEDIATE AREA. BOTTOM OF TRAP PRIMING STATION SHALL BE 60" MINIMUM ABOVE FINISHED FLOOR.
2. TRAP PRIMING LINES SHALL BE INSULATED FROM TRAP PRIMING STATION TO RECEPTOR.

(14) TYPICAL TRAP PRIMING STATION DETAIL — SCALE: NONE



NOTE: REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

(15) TYPICAL RAIN LEADER DOWNSPOUT BOOT INSTALLATION DETAIL — SCALE: NONE



(16) THRUST BLOCK DETAIL — SCALE: NONE

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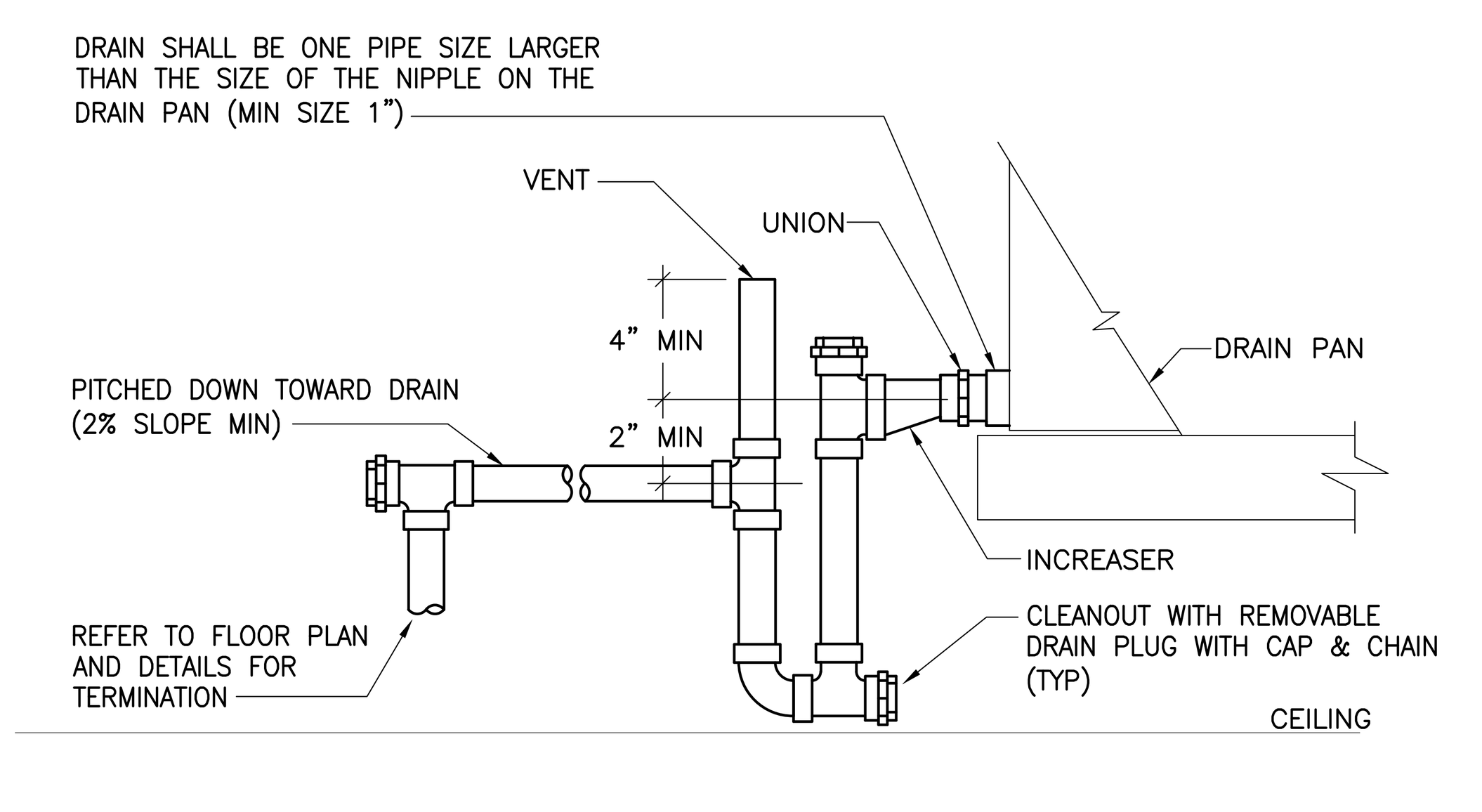
PIPING AND SUPPORT DETAILS
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

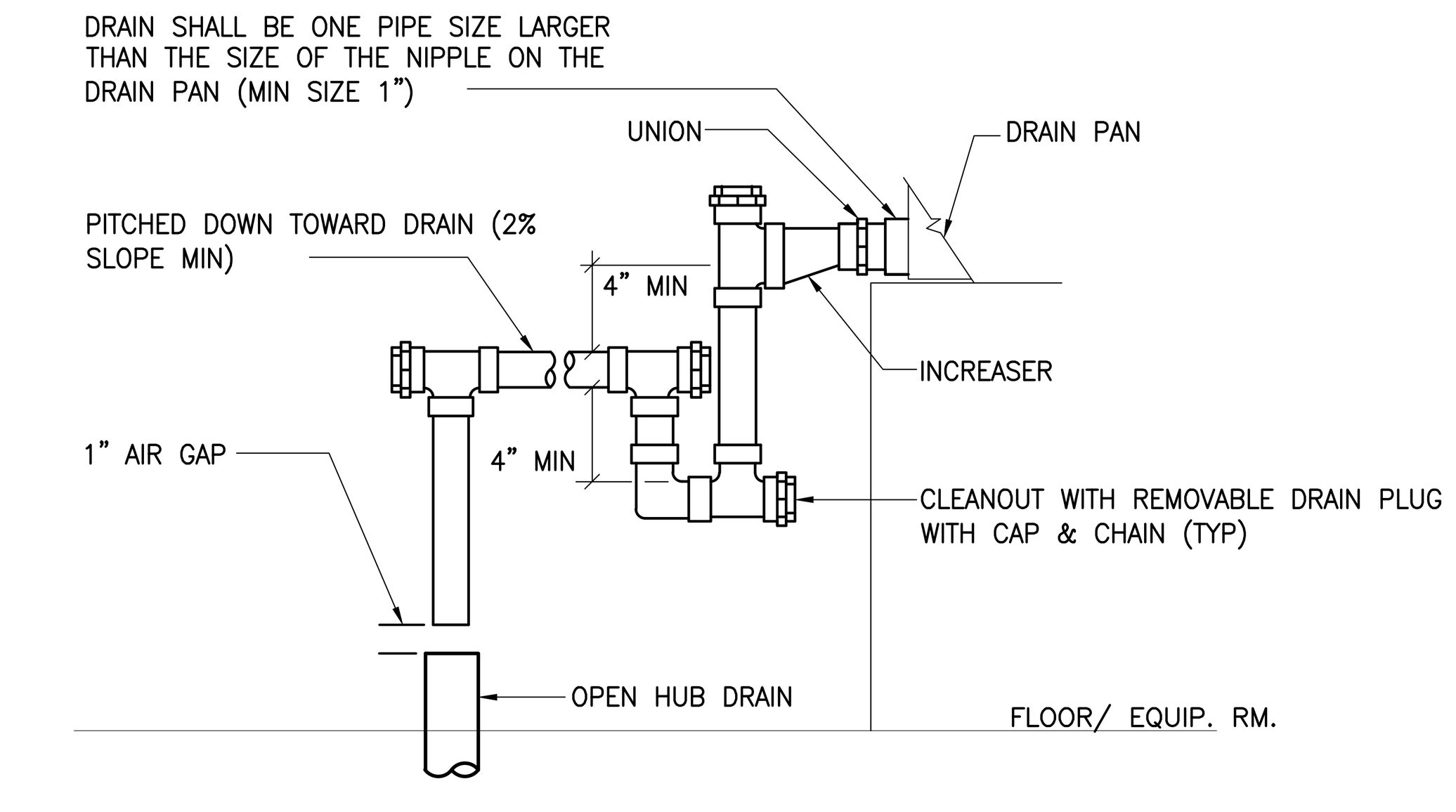
P-7.1

February 1, 2017
Bid Set



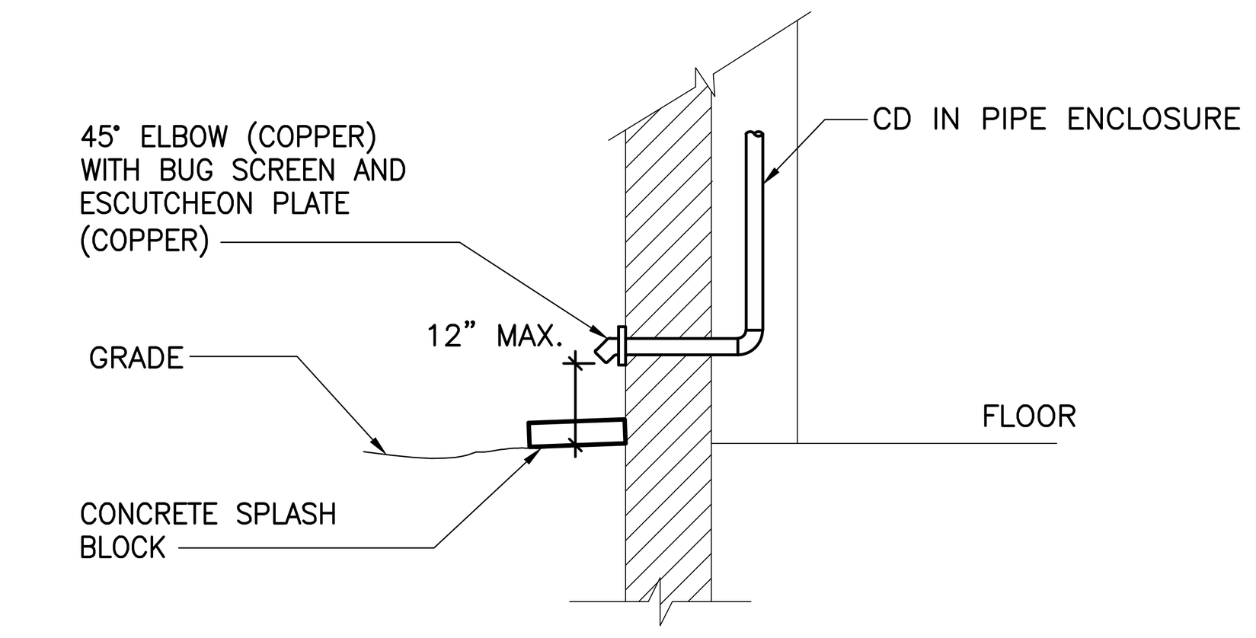
NOTES:
1. COORDINATE DISTANCE OFFSETS WITH EQUIPMENT PRESSURE DIFFERENTIALS.
2. COORDINATE ARRANGEMENT TO ALLOW ACCESS TO ALL CLEANOUTS.

(17) TYPICAL TERMINAL UNIT CONDENSATE DRAIN TRAP DETAIL — SCALE: NONE

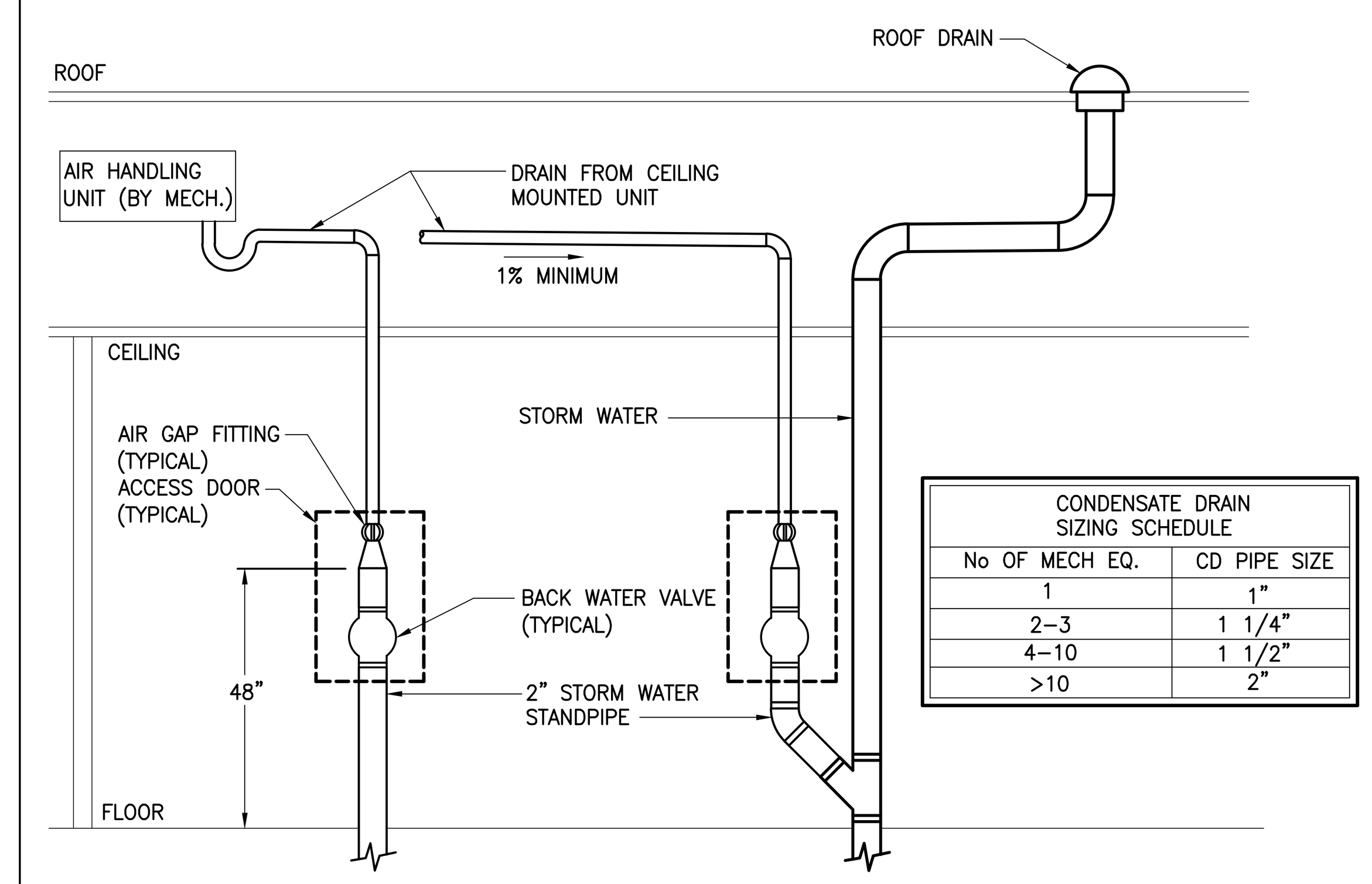


NOTES:
1. COORDINATE DISTANCE OFFSETS WITH EQUIPMENT PRESSURE DIFFERENTIALS.
2. COORDINATE ARRANGEMENT TO ALLOW ACCESS TO ALL CLEANOUTS.

(18) TYPICAL INDOOR AHU CONDENSATE DRAIN TRAP DETAIL — SCALE: NONE

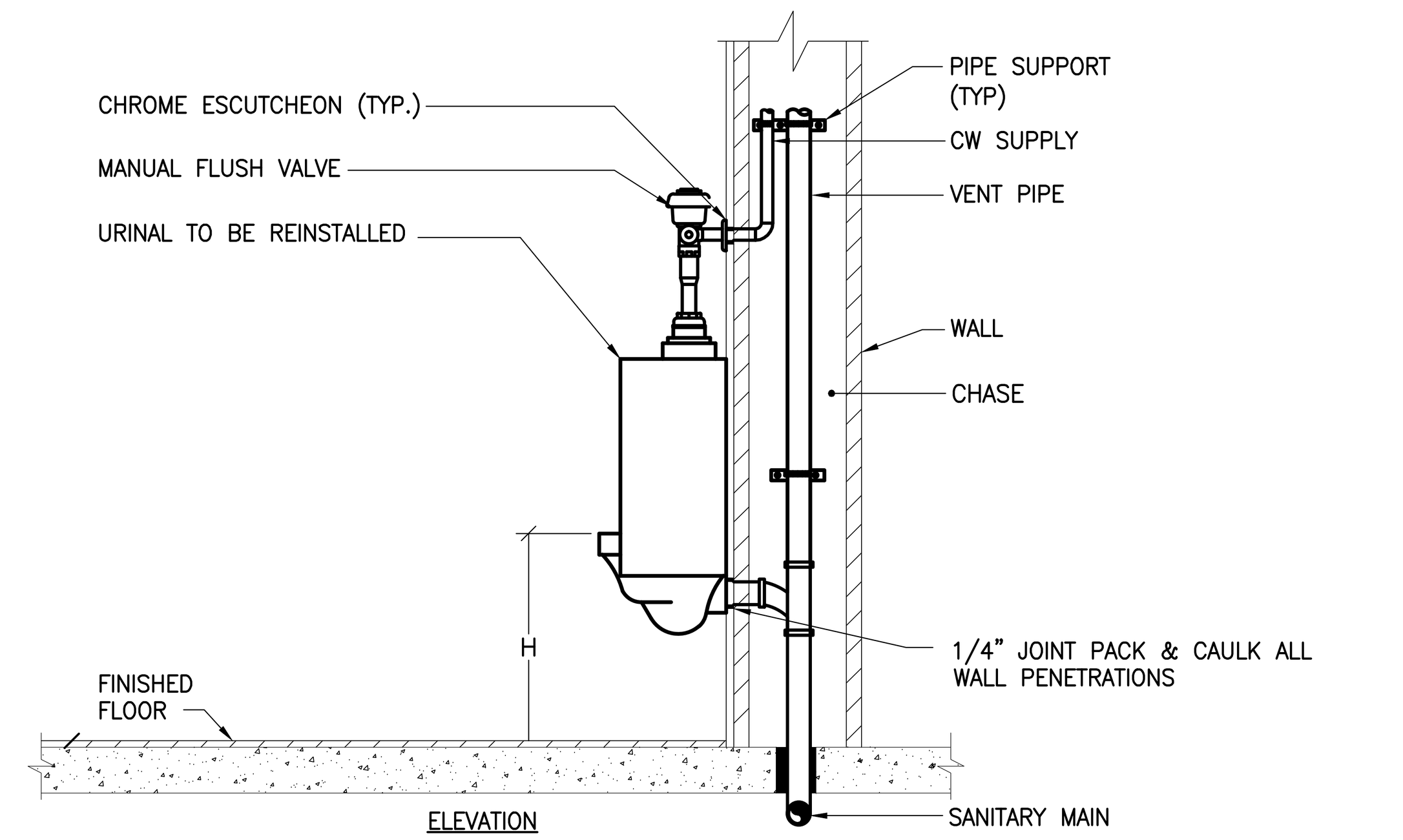


(19) TYPICAL CONDENSATE DRAIN AT GRADE DETAIL — SCALE: NONE



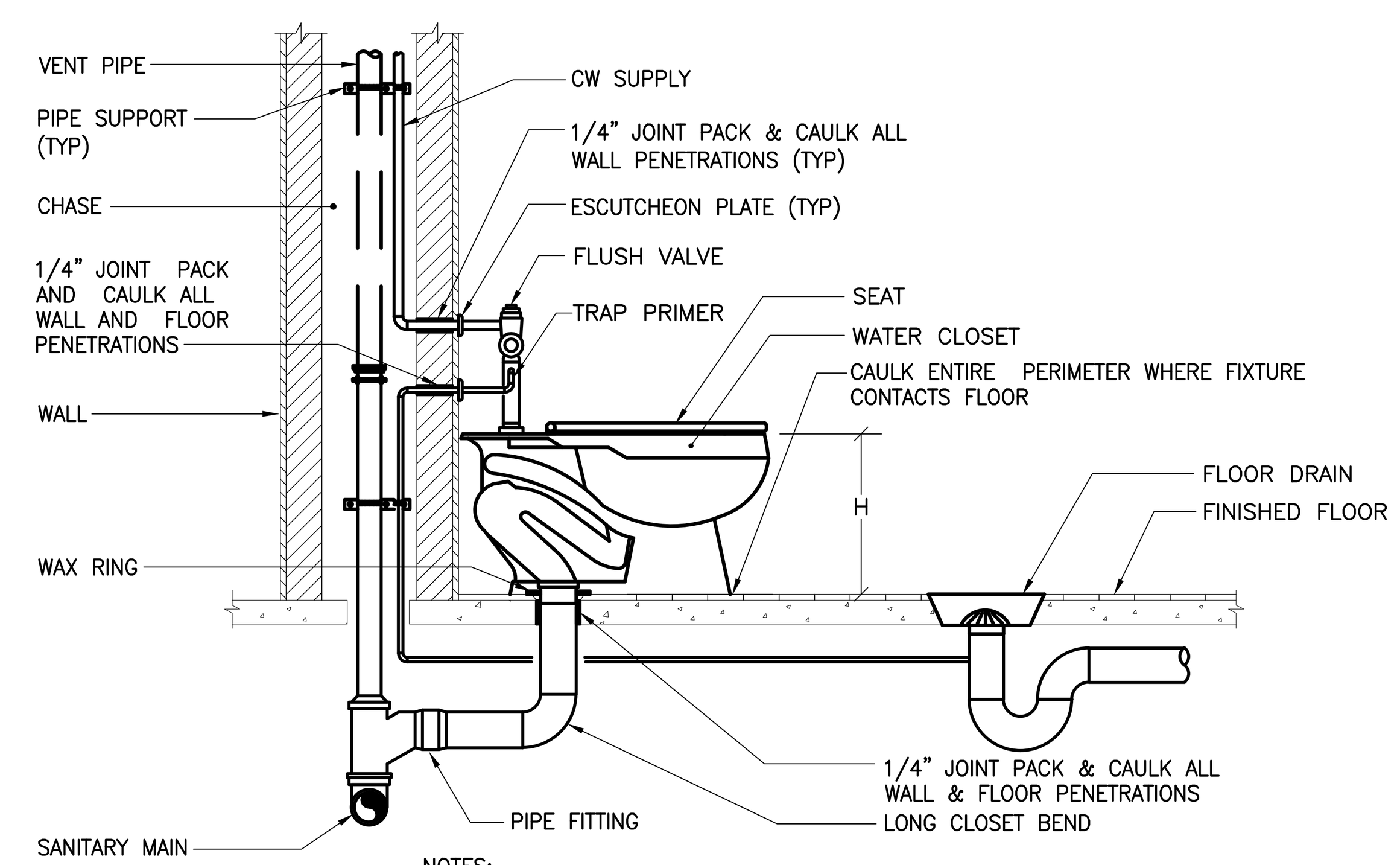
CONDENSATE DRAIN SIZING SCHEDULE	
No OF MECH EQ.	CD PIPE SIZE
1	1"
2–3	1 1/4"
4–10	1 1/2"
>10	2"

(20) TYPICAL CONDENSATE DRAIN STANDPIPE DETAIL — SCALE: NONE



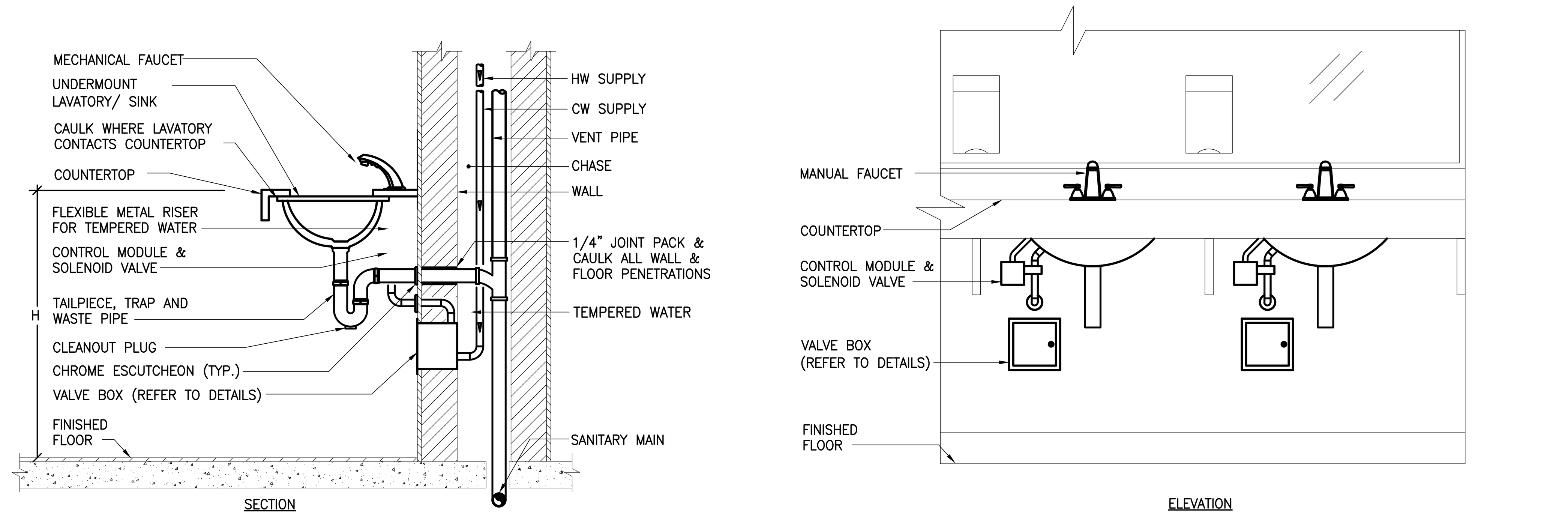
NOTES:
1. FOR CONTINUATION OF PIPING SEE PLANS.
2. H = AS REQUIRED PER PLUMBING CODE.

(21) TYPICAL URINAL (MANUAL FLUSH VALVE) DETAIL — SCALE: NONE



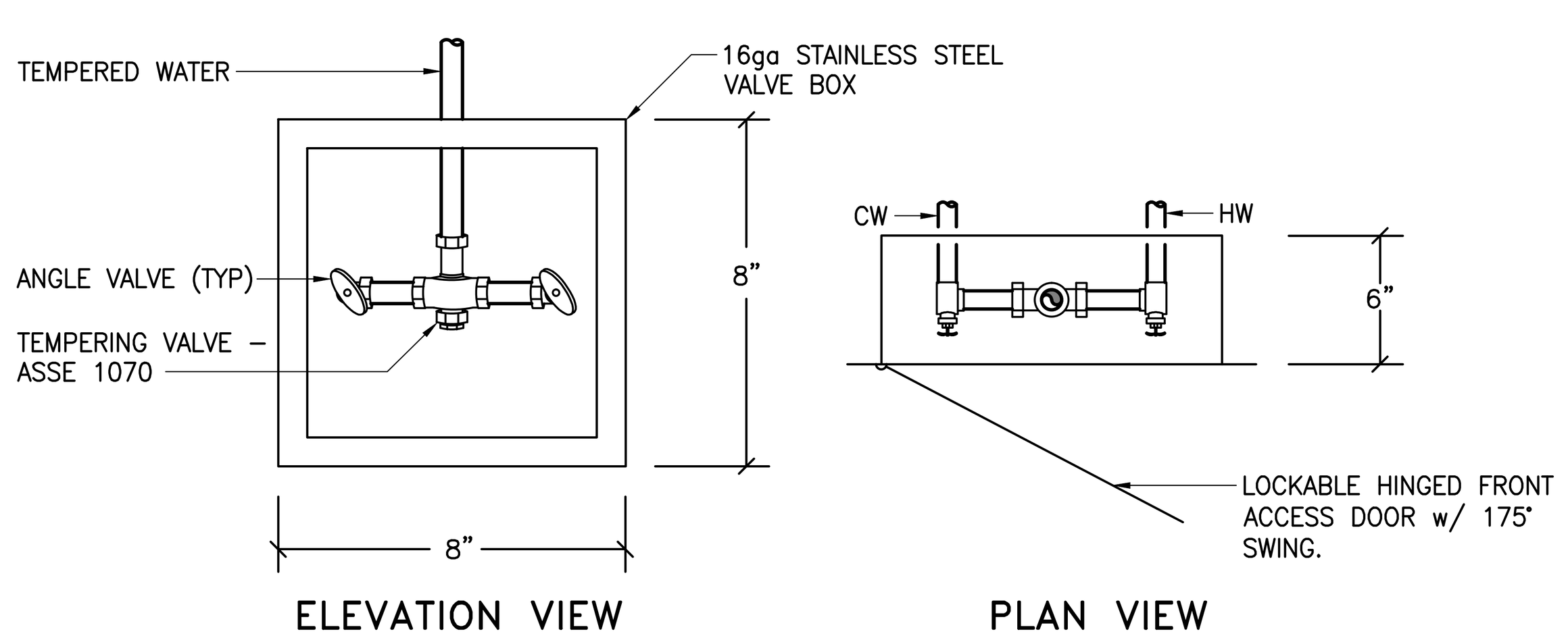
NOTES:
1. FOR CONTINUATION OF PIPING SEE PLANS
2. H = AS REQUIRED PER PLUMBING CODE

(22) FLOOR MOUNTED WATER CLOSET (MANUAL FLUSH VALVE) DETAIL — SCALE: NONE



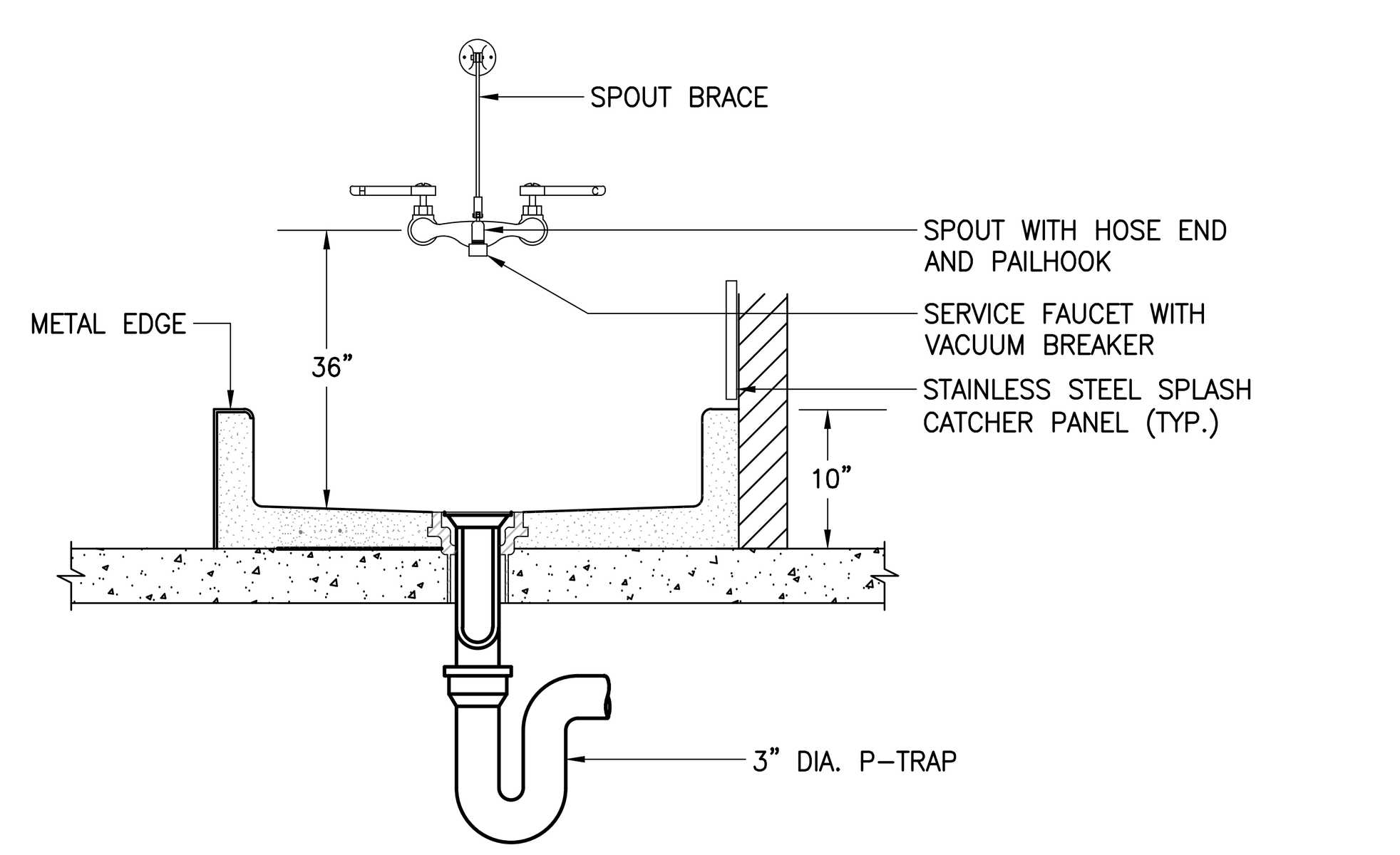
NOTES:
1. FOR CONTINUATION OF PIPING SEE PLANS.
2. H = AS REQUIRED PER PLUMBING CODE.

(23) TYPICAL COUNTER MOUNTED LAVATORY (MECHANICAL FAUCET) DETAIL — SCALE: NONE

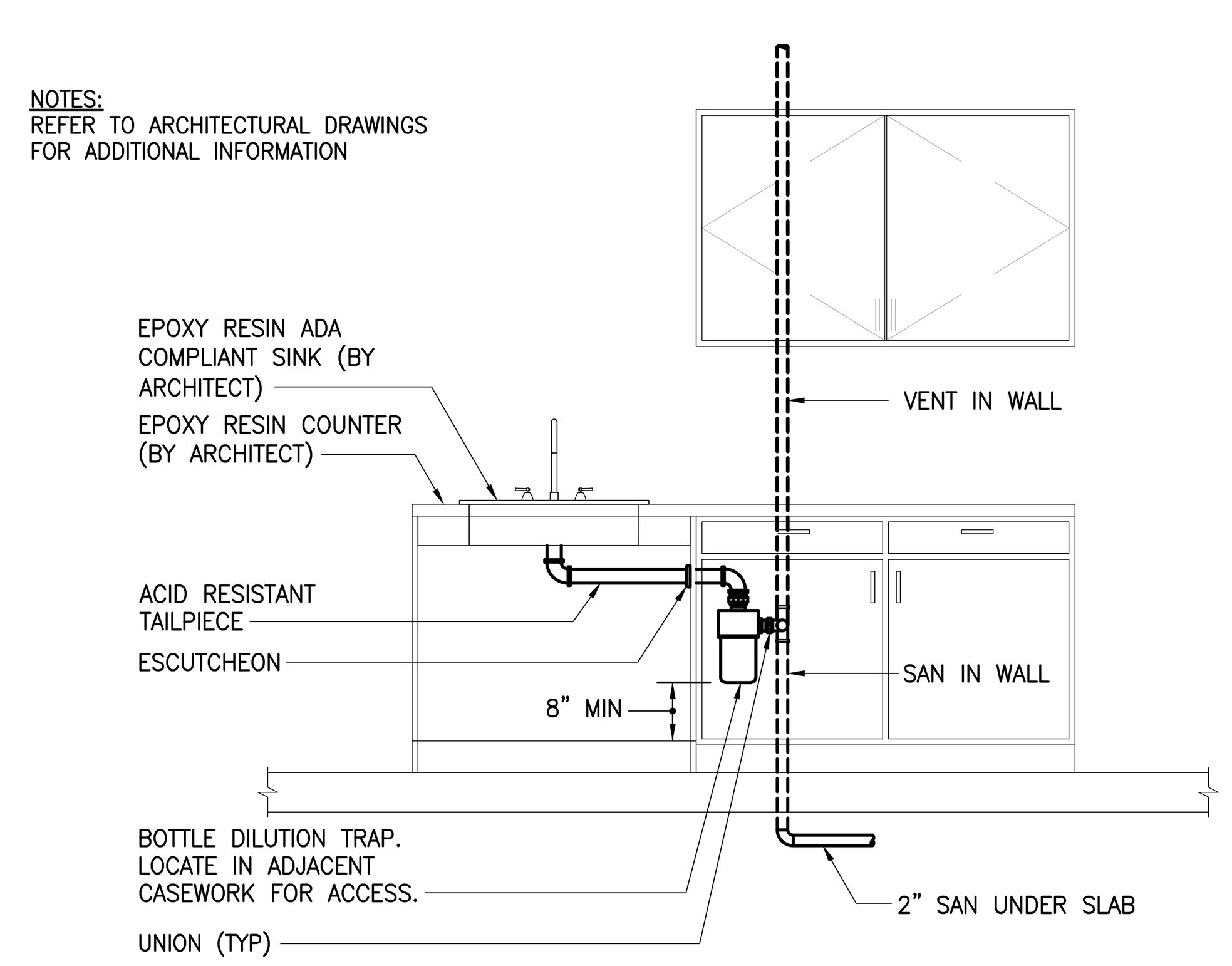


NOTES:
1. REFER TO RISER DIAGRAMS FOR PIPE SIZING
2. INSTALL VALVE BOX PER MANUFACTURERS RECOMMENDATIONS

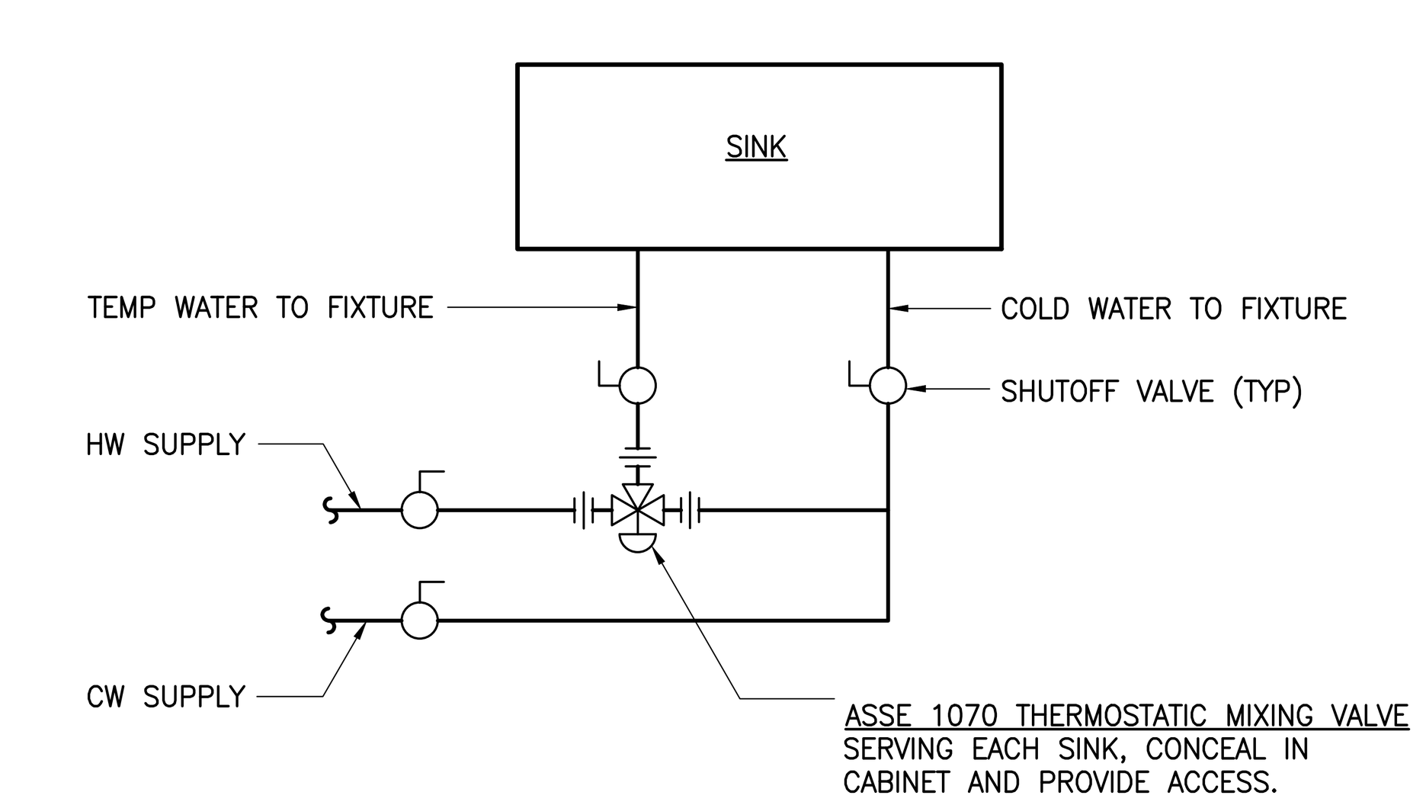
(24) TYPICAL ASSE 1070 TEMPERING VALVE BOX DETAIL — SCALE: NONE



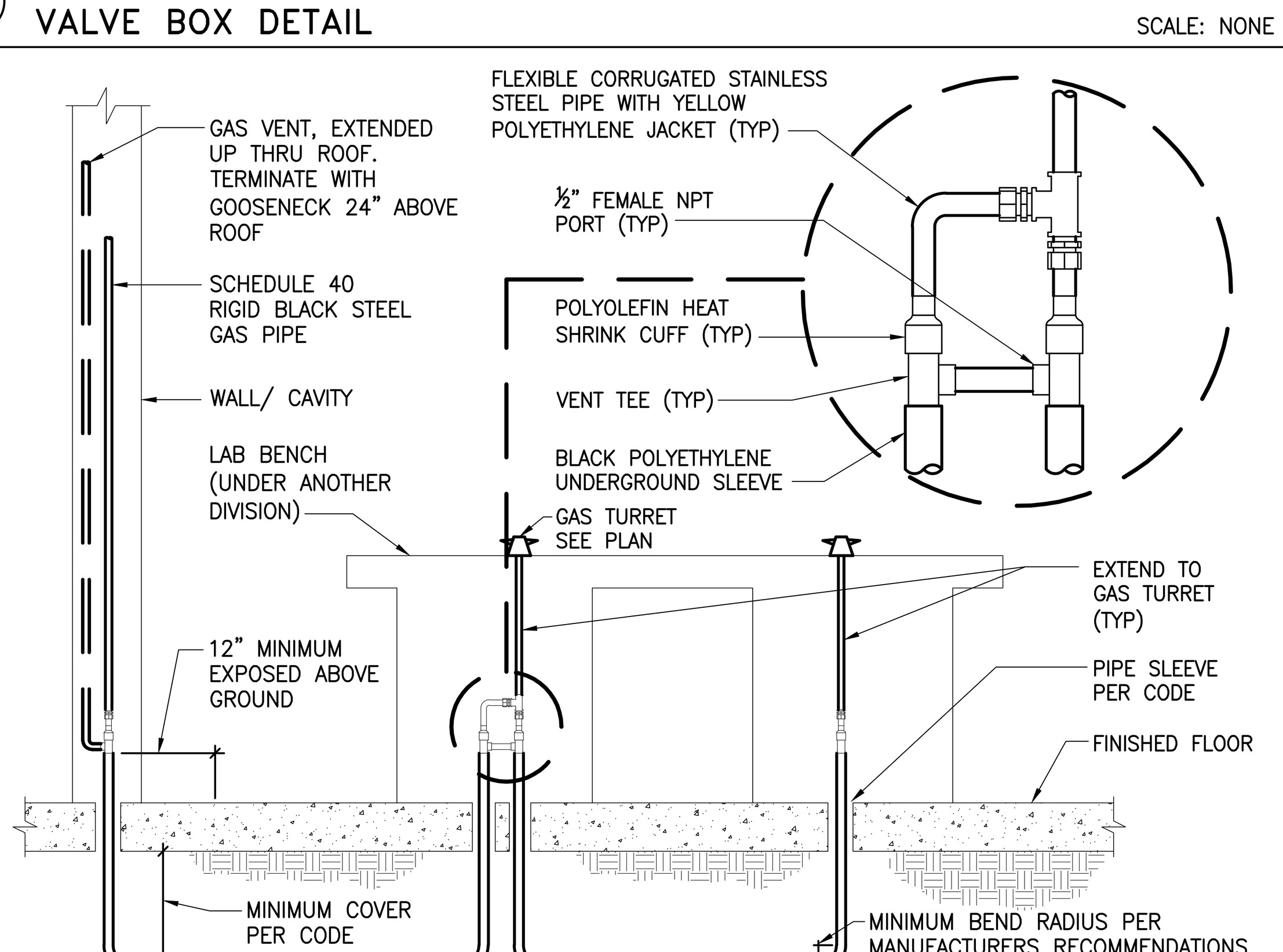
(25) TYPICAL FLOOR MOUNTED MOP SINK DETAIL — SCALE: NONE



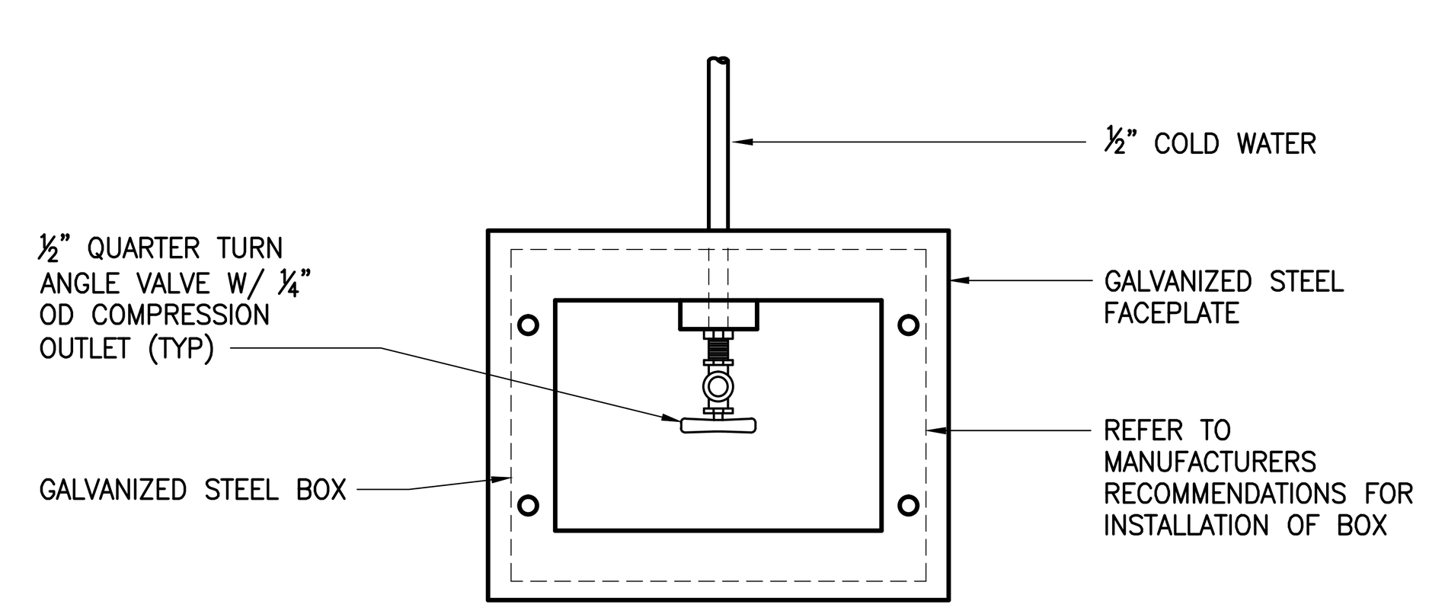
(26) TYPICAL ADA LAB SINK BOTTLE TRAP DRAIN DETAIL — SCALE: NONE



(27) SINK ASSE 1070 MIXING VALVE INSTALLATION DETAIL — SCALE: NONE

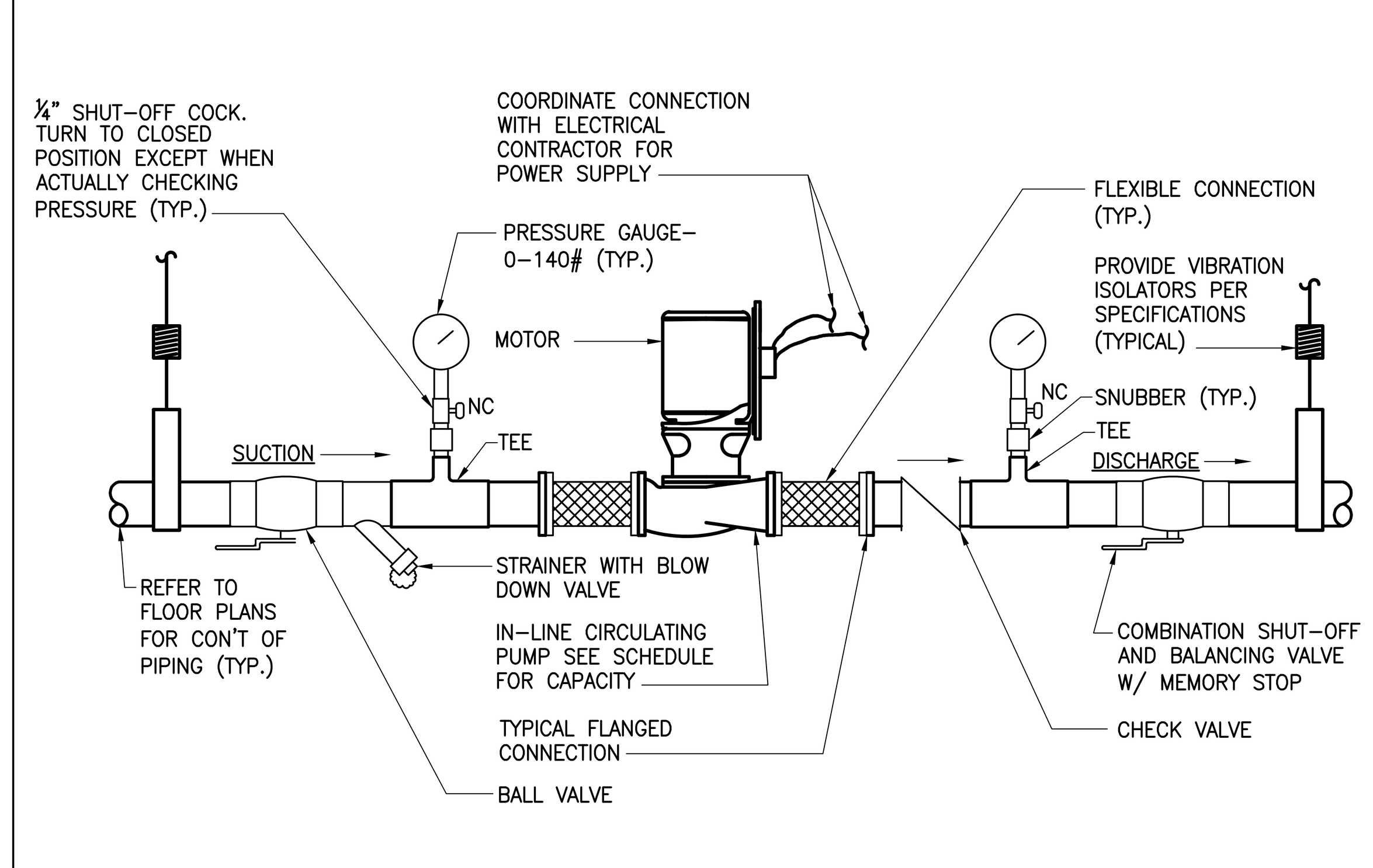


(28) TYPICAL UNDER SLAB FLEXIBLE GAS MULTIPLE OUTLET PIPING DETAIL — SCALE: NONE

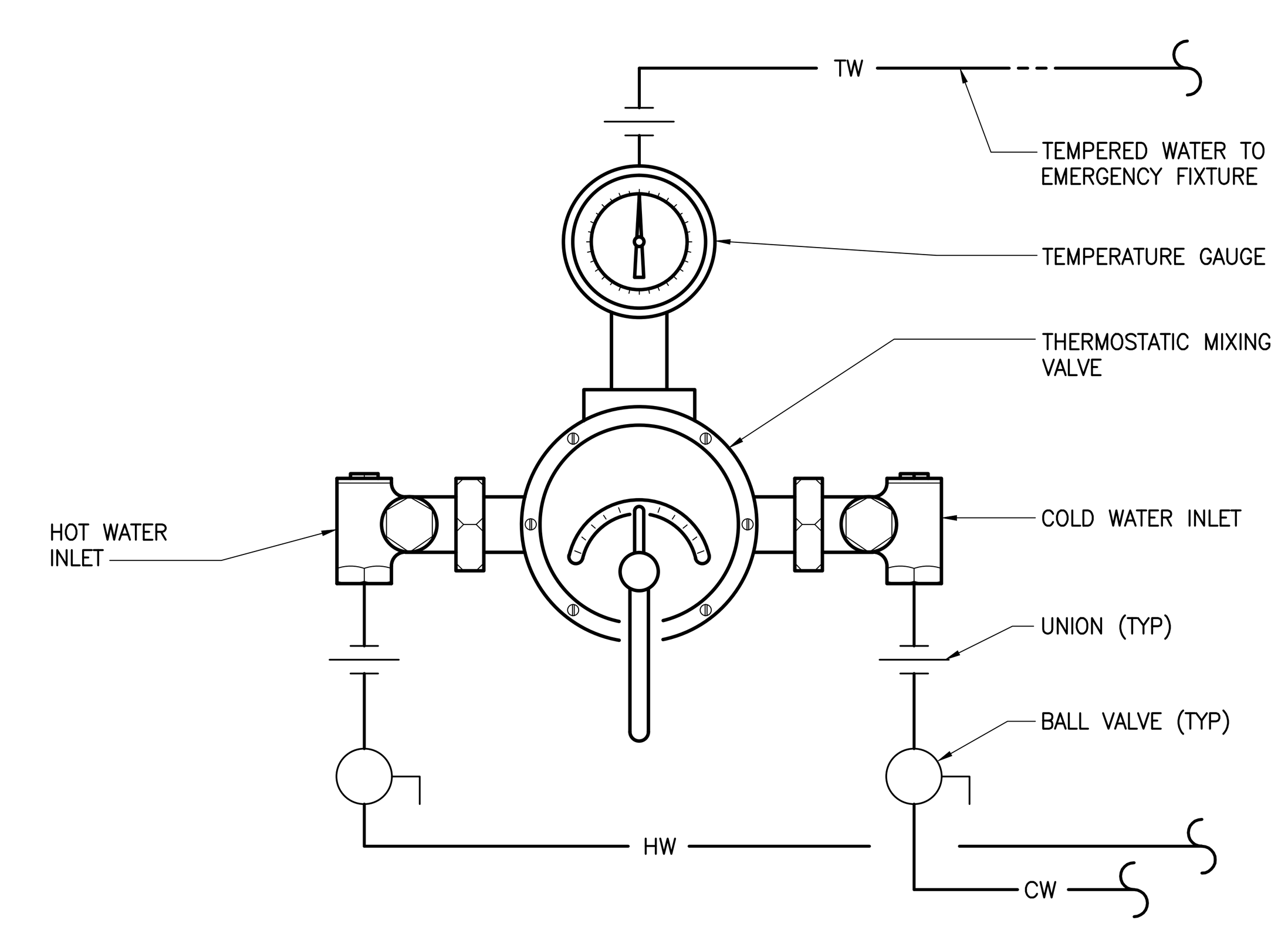


NOTES:
CONTRACTOR SHALL PROVIDE AN UP FEED OR DOWN FEED ICE MACHINE BOX AS INDICATED ON DRAWINGS.

(29) ICE MAKER CONNECTOR BOX DETAIL — SCALE: NONE



(30) IN-LINE HOT-WATER RECIRCULATING PUMP DETAIL — SCALE: NONE



(31) TYPICAL EMERGENCY WATER MIXING VALVE DETAIL — SCALE: NONE

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 400, HUNT VALLEY, MD 21030
www.albanengineering.com

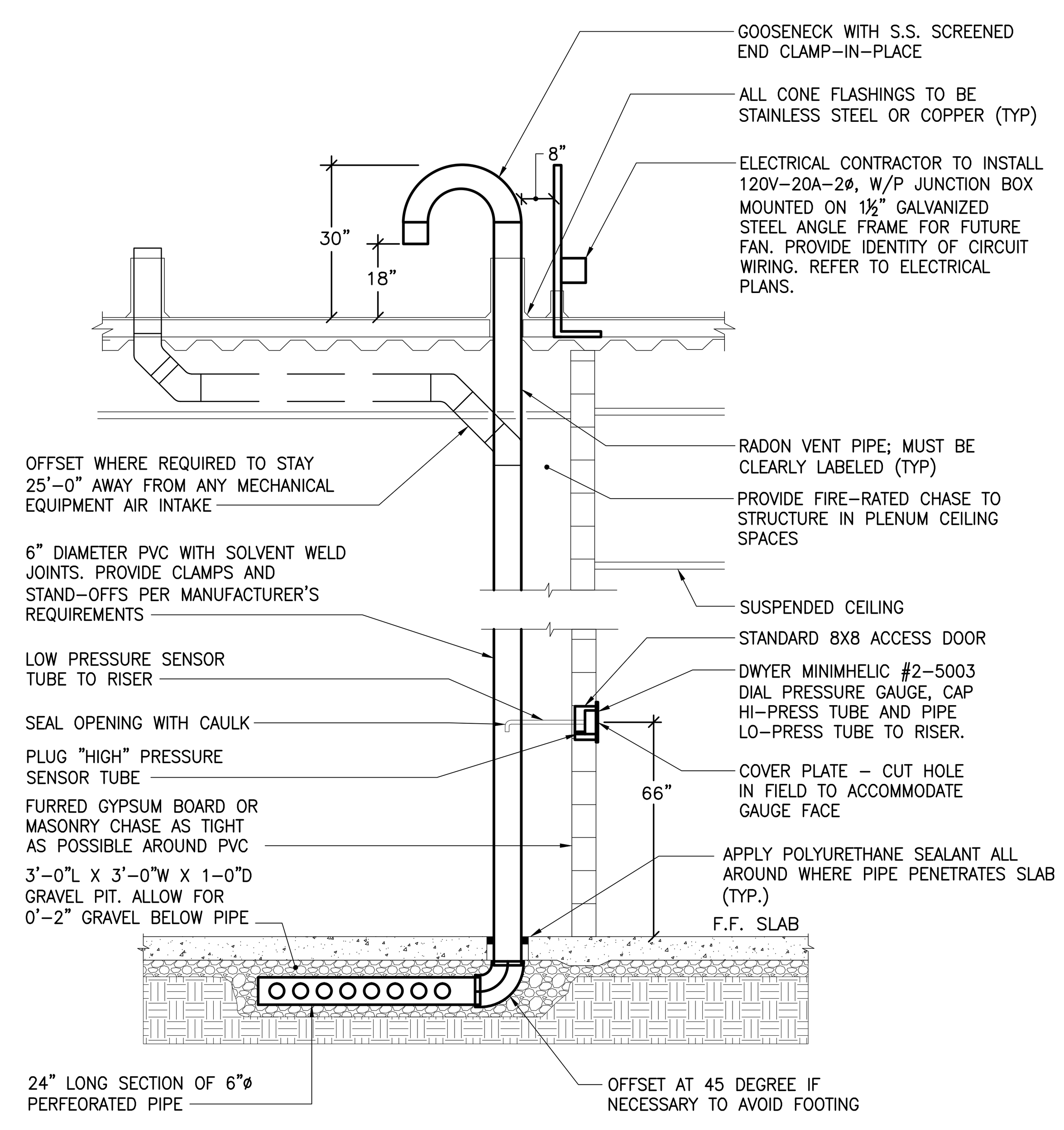
11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel. 301.595.1000
www.grimmandparker.com
G+P GRIMM AND PARKER

GP #21620

PLUMBING FIXTURE AND EQUIPMENT DETAILS
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

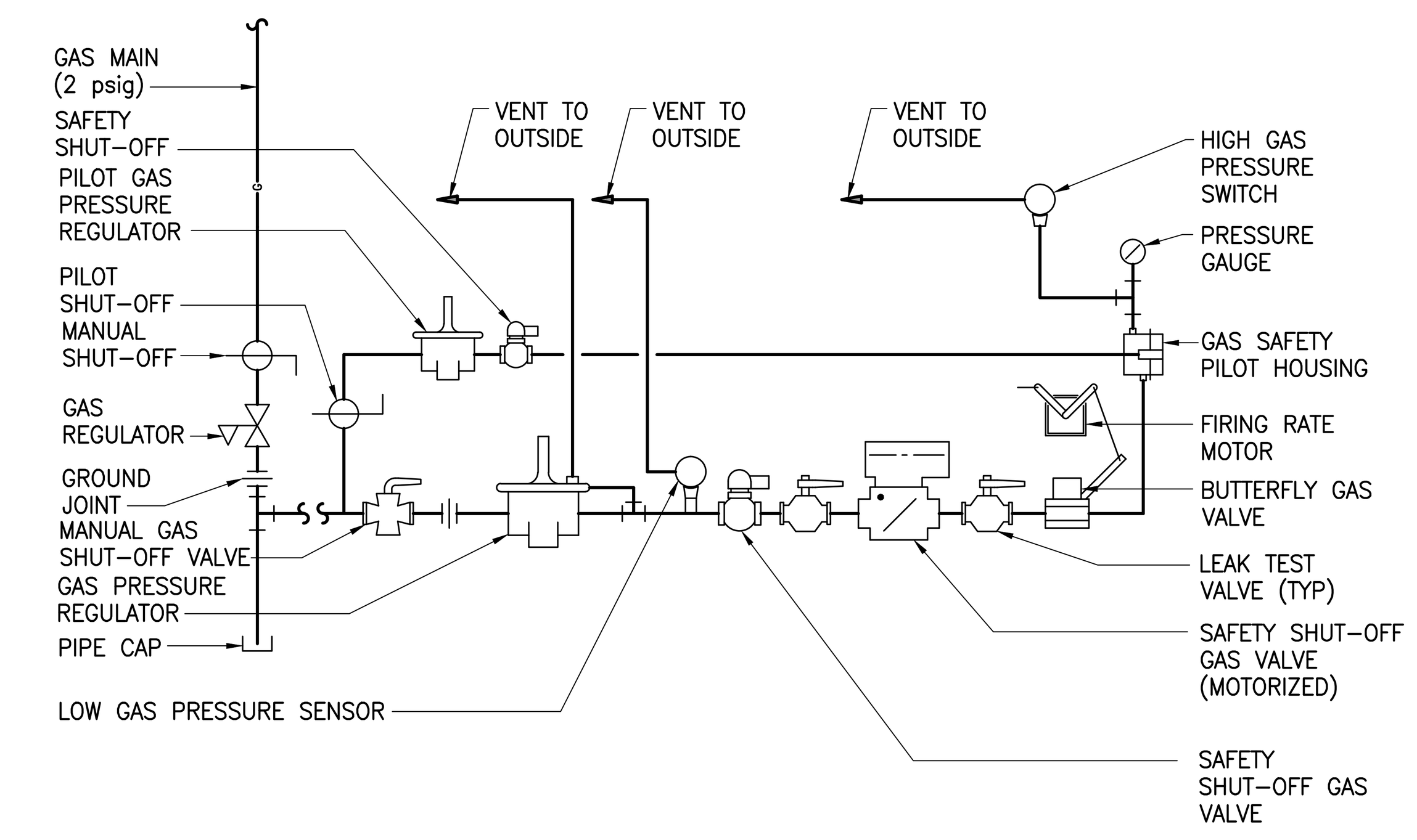
P-7.2
February 1, 2017
Bid Set



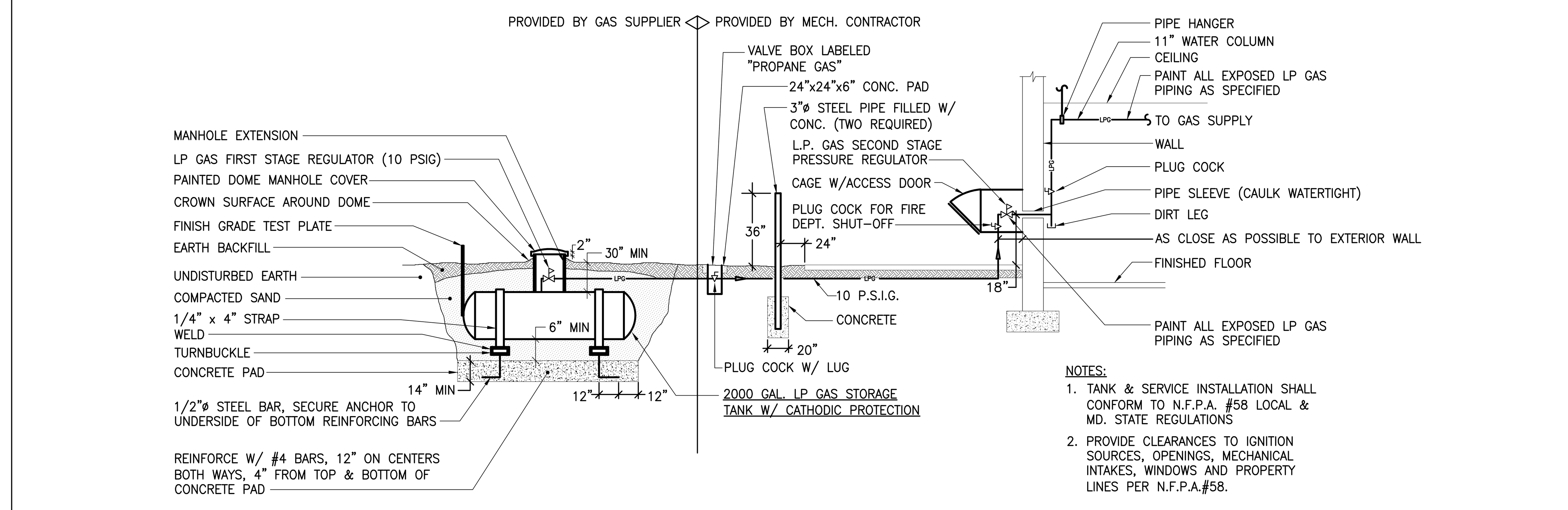
NOTES:

1. PIPE, FITTINGS, JOINTS, ETC. SHALL MEET ALL LOCAL PLUMBING CODES AND REQUIREMENTS FOR PVC PIPE. BENDS SHALL NOT EXCEED 45 DEGREES.

32 RADON VENT PIPING DETAIL — SCALE: NONE



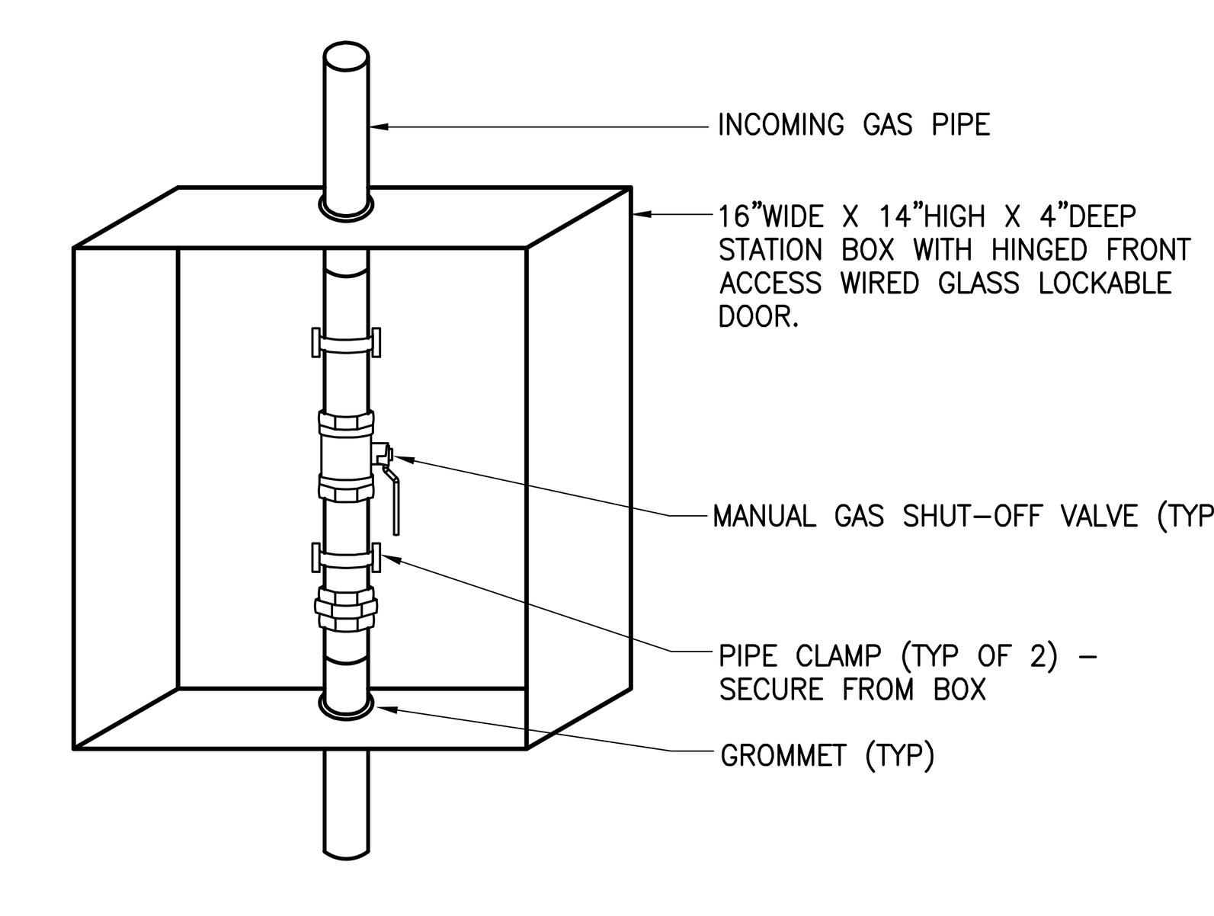
33 I.R.I GAS TRAIN DETAIL — SCALE: NONE



NOTES:

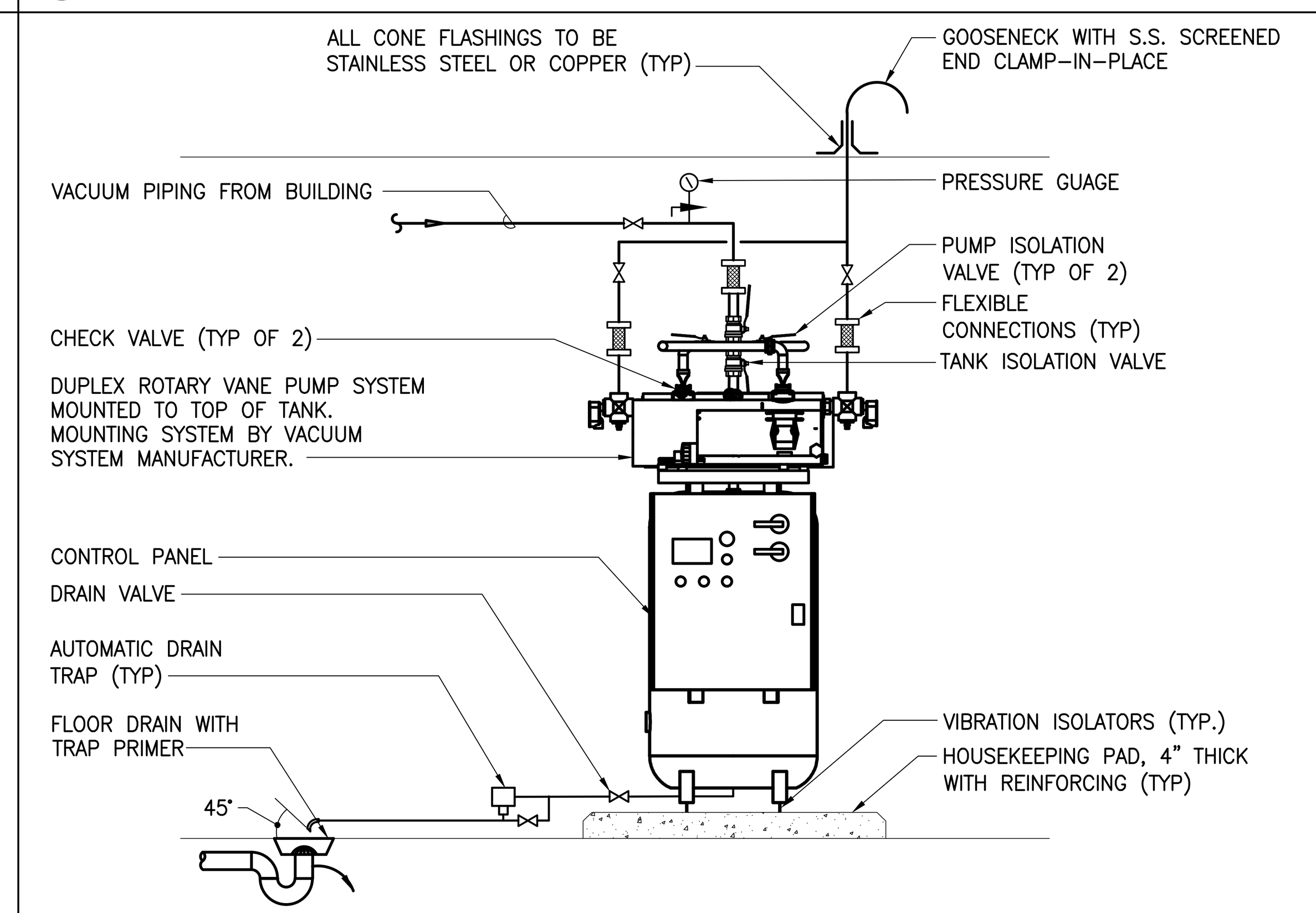
1. TANK & SERVICE INSTALLATION SHALL CONFORM TO N.F.P.A. #58 LOCAL & MD. STATE REGULATIONS
2. PROVIDE CLEARANCES TO IGNITION SOURCES, OPENINGS, MECHANICAL INTAKES, WINDOWS AND PROPERTY LINES PER N.F.P.A.#58.

34 LP UNDERGROUND GAS STORAGE TANK AND SERVICE LINE DETAIL — SCALE: NONE

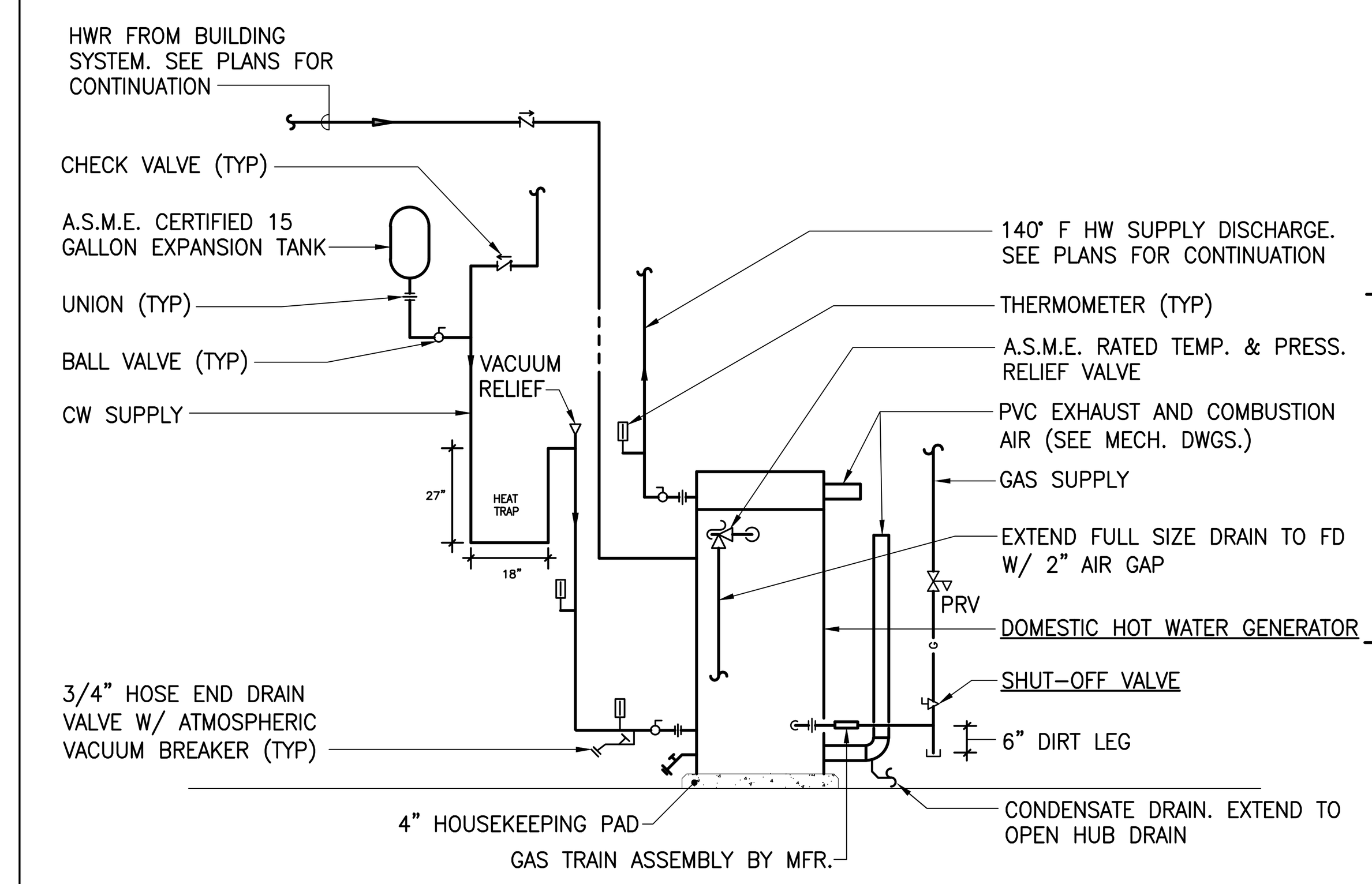


ELEVATION VIEW

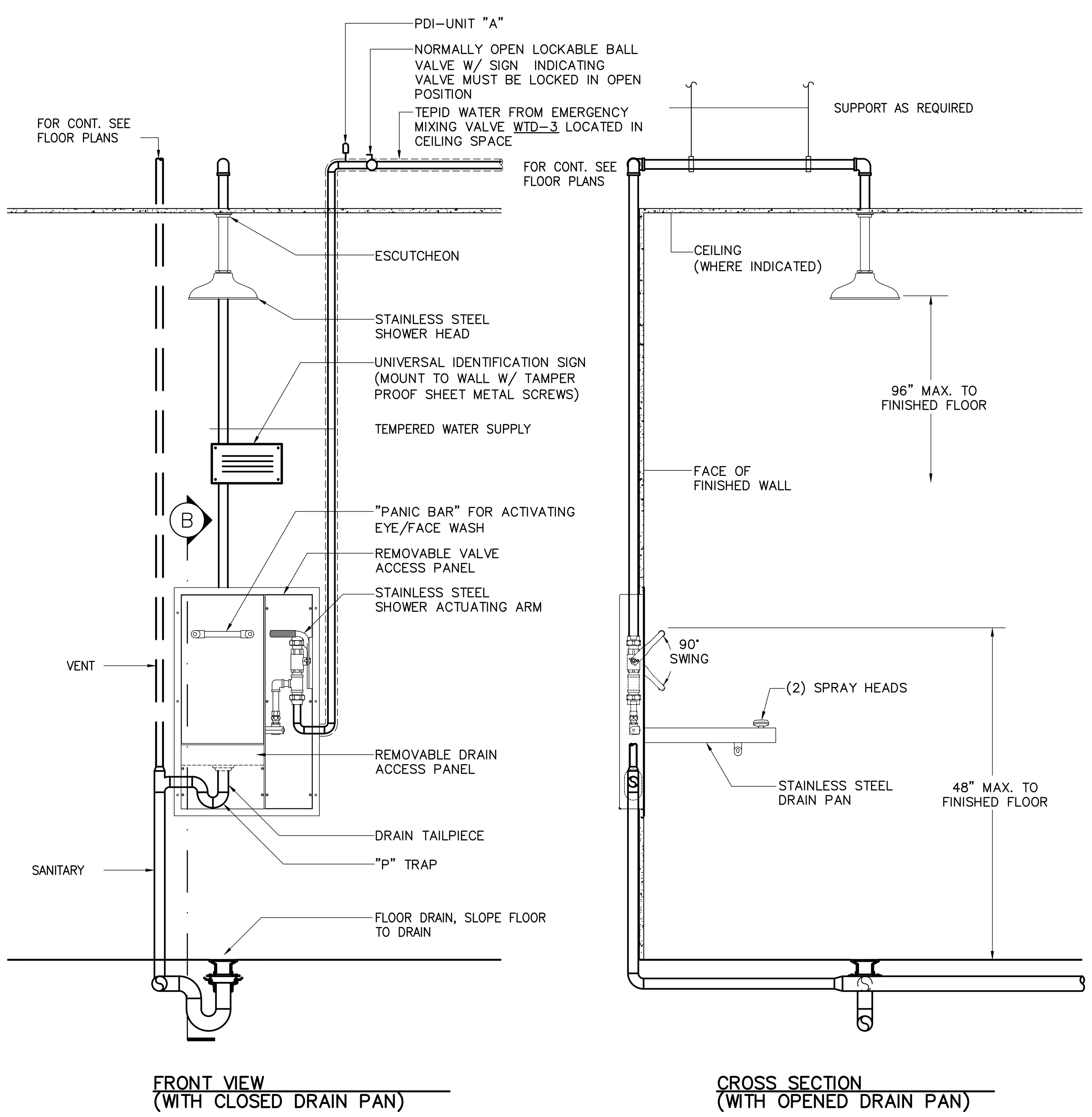
35 TYPICAL GAS ENERGENCY VALVE CABINET DETAIL — SCALE: NONE



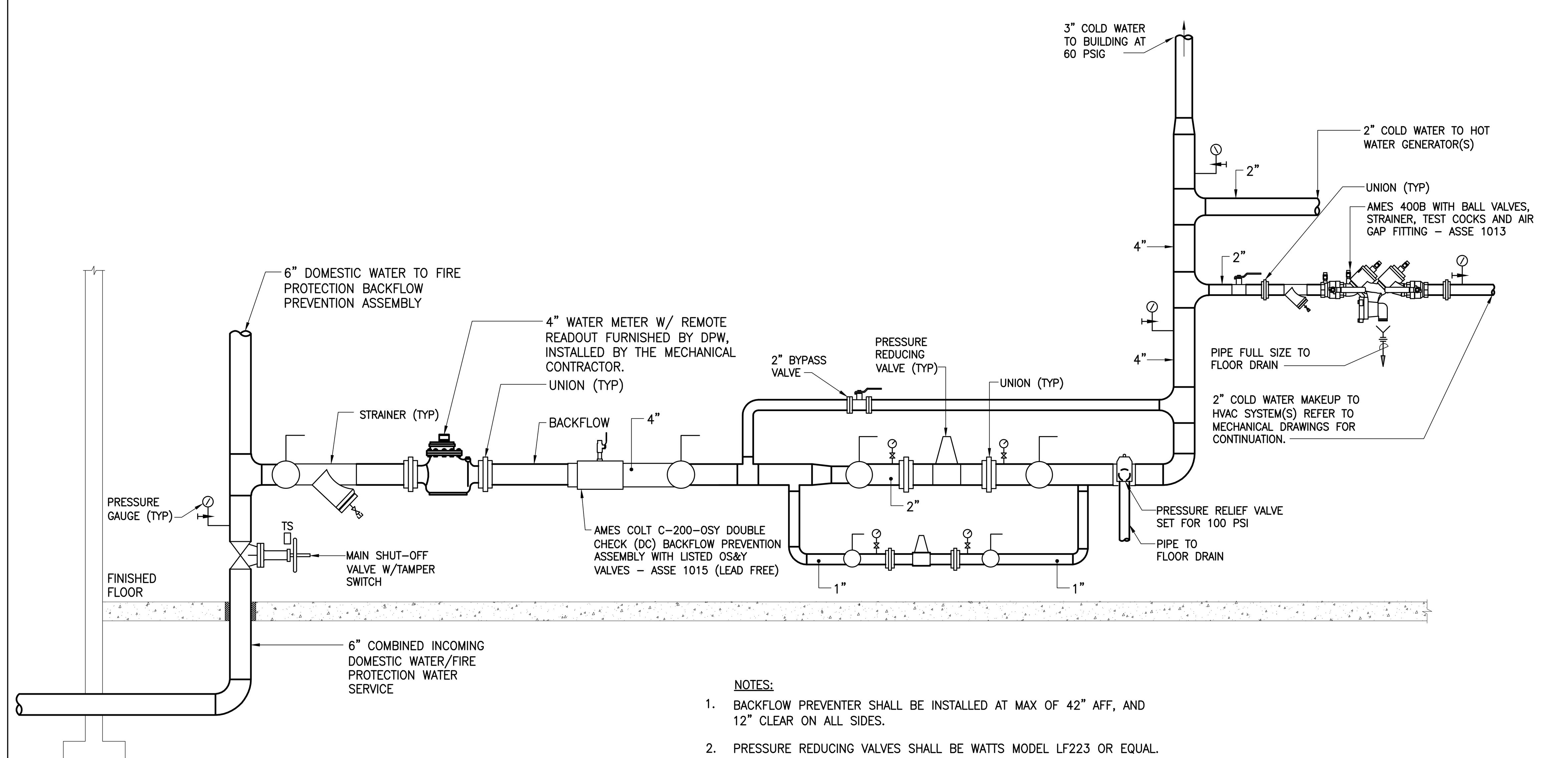
36 VACUUM PUMP SYSTEM PIPING DETAIL



37 TYPICAL GAS FIRED HOT WATER GENERATOR PIPING DETAIL — SCALE: NONE



38 EMERGENCY RECESSED SHOWER/EYEWASH STATION



NOTES:

1. BACKFLOW PREVENTER SHALL BE INSTALLED AT MAX OF 42" AFF, AND 12" CLEAR ON ALL SIDES.
2. PRESSURE REDUCING VALVES SHALL BE WATTS MODEL LF223 OR EQUAL.

39 INCOMING WATER SERVICE & FIRE PROTECTION SYSTEM PIPING DETAIL — SCALE: NONE

ALBAN ENGINEERING, INC
www.albanengineering.com

11720 Beltsville Drive
Suite 600
Calverton, MD 20705
Tel. 301.595.1000
www.grimmandparker.com

G+P GRIMM AND PARKER

GP #21620

MISCELLANEOUS PLUMBING DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

P-7.3

February 1, 2017
Bid Set

PLUMBING FIXTURE SCHEDULE

DESIG.	FIXTURE	ROUGH-IN CONNECTION C.W.	ROUGH-IN CONNECTION H.W.	ROUGH-IN CONNECTION SAN.	ROUGH-IN CONNECTION VENT	FIXTURE UNIT VALUES C.W.	FIXTURE UNIT VALUES H.W.	FIXTURE UNIT VALUES SAN.	GPM FLOW RATE	FLUSH VALVE (FV)	TOILET SEAT (TS)	LAVATORY FAUCET (LF)	SINK FAUCET (SF)	WATER TEMPERING DEVICE (WTD)	REMARKS
P1	WATER CLOSET	1"	---	4"	2"	10	---	4	1.28 GPF	FV-1	TS-1	---	---	---	ADULT STANDARD; FLOOR MOUNTED, BOTTOM OUTLET
P1A	WATER CLOSET	1"	---	4"	2"	10	---	4	1.28 GPF	FV-1	TS-1	---	---	---	ADULT ADA ACCESSIBLE; FLOOR MOUNTED, BOTTOM OUTLET
P2	URINAL (W/H)	3/4"	---	2"	1½"	---	---	4	---	---	---	---	---	---	
P2A	URINAL (W/H)	3/4"	---	2"	1½"	---	---	4	---	---	---	---	---	---	ADA ACCESSIBLE
P3	LAVATORY	1/2"	1/2"	1½"	1½"	1.5	1.5	1	0.5	---	---	LF-1	---	WTD-1	ADULT ADA ACCESSIBLE; UNDER COUNTER MOUNTED
P3A	LAVATORY (W/H)	1/2"	1/2"	1½"	1½"	1.5	1.5	1	0.5	---	---	LF-1	---	WTD-1	ADULT ADA ACCESSIBLE
P4	MOP SINK	3/4"	3/4"	3"	1½"	2.25	2.25	2	4.0	---	---	---	SF-1	WTD-1	
P5	COUNTER SINK	1/2"	1/2"	1½"	1½"	1.5	1.5	2	0.5	---	---	---	SF-2	WTD-1	
P5A	COUNTER SINK (SCIENCE LAB)	1/2"	1/2"	1½"	1½"	1.5	1.5	2	2.2	---	---	---	SF-3	WTD-1	SINK INTEGRAL TO COUNTER W/ BOTTLE TRAP
P6	ELECTRIC WATER COOLER	1/2"	---	1½"	1½"	.25	---	.5	---	---	---	---	---	---	ADA ACCESSIBLE, SIDE-BY-SIDE
P7	ICE MAKER BOX	1/2"	---	---	---	1	---	---	---	---	---	---	---	---	
P8	FUME HOOD	1/2"	---	1½"	1½"	1.5	1.5	2	2.2	---	---	---	SF-3	WTD-1	CW ONLY WITH BFP; W/ 1/2" LP GAS & VACUUM CONN & BOTTLE TRAP
P9	EMERGENCY STATION	---	1¼"	1½"	1½"	---	---	---	---	---	---	---	---	WTD-3	TEMPERED WATER; TEMP. WTD-2 ABOVE CLG
P9A	EYE/FACE WASH	---	1/2"	1½"	1½"	---	---	---	---	---	---	---	---	WTD-2	TEMPERED WATER; TEMP. WTD-2 IN BASE CAB; DECK MOUNTED

NOTES:

1) W/H = WALL HUNG
2) LOCATE ROUGH IN FOR HANDICAPPED TOILETS SO THAT FLUSH VALVE HANDLE IS IN THE WIDE SIDE OF THE STALL
3) SLAB ON GRADE FIXTURE DRAINS SHALL BE 2" MINIMUM.
4) PROVIDE DISHWASHER DRAIN CONNECTION AND WATER CONNECTION WHERE DISHWASHERS ARE LOCATED ADJACENT TO SINKS.

PUMP SCHEDULE

NO.	SERVICE	LOCATION	GPM	FT. OF HEAD	HP	RPM	ELECT. CHAR. V/ø/Hz	TYPE	REMARKS (BASED ON)
RP-1	140° HOT WATER RECIRCULATION	MECHANICAL RM	2.5	15	1/8	3250	120/1/60	IN-LINE CIRCULATOR	TACO MODEL IL0011

PLUMBING EQUIPMENT NOTES

1. HOT WATER GENERATOR (HWG)

HOT WATER GENERATOR SHALL BE ULTRA HIGH EFFICIENCY, GAS FIRED TYPE.
ASME TANK RATED FOR 150 PSI WORKING PRESSURE
WITH A.G.A. RATED T & P VALVE.
TANK CAPACITY: 100 GALLONS
BURNER CAPACITY: 199,000 BTUH
RECOVERY RATE: 233 GPH @ 100°F RISE
120v/1 PH/60Hz, UNIT SHALL BE UL LISTED
AND SHALL MEET OR EXCEED ASHRAE/IES-90.1-2007
BASIS OF DESIGN PVI CONQUEST MODEL 20 L 100A-GCL

2. WATER TEMPERING DEVICE

TEMPERING VALVE #1 (WTD-1):
LEAD FREE, ASSE 1070 COMPLIANT, TEMPERATURE LIMITING TEMPERING DEVICE SHALL BE PROVIDED ON ALL SINKS AND LAVATORIES HOT WATER SUPPLY CONNECTIONS. VALVE SHALL BE COMPARABLE TO POWERS MODEL LFE480 OR EQUAL BY APOLLO AND WILKINS VALVE.

WATER TEMPERING DEVICE #2 (WTD-2)
(EMERGENCY EYE/FACE WASH) TEMPER 140°F INCOMING WATER TO 85°F OUTGOING FOR EMERGENCY EYEWASH. MOUNT UNIT IN BASE CABINET OR IN WALL WITH ACCESS PANEL. COMPARABLE TO POWERS MODEL ES150 OR EQUAL BY LAWLER OR BRADLEY.

TEMPERING VALVE #3 (WTD-3):
(EMERGENCY STATION) TEMPER 140°F WATER TO 85°F OUTGOING FOR EMERGENCY SHOWER/EYE WASH AND FACE STATION. COMPARABLE TO POWERS MODEL ETV200 OR EQUAL BY LAWLER OR BRADLEY.

3. VACUUM PUMP SYSTEM (VAC-1)

VACUUM PUMP:
TYPE: DUPLEX OIL-LUBRICATED ROTARY VANE VACUUM PUMP
CAPACITY: 17 SCFM, 47 ACFM
PUMP RPM: 1700
MOTOR HORSEPOWER: 3.0 HP
ELECTRICAL CHARACTERISTICS: 208V/3PH/60HZ
FULL LOAD AMPS (BOTH PUMPS RUNNING): 29A

RECEIVER TANK:
ASME RATED STEEL TANK
CAPACITY: 80 GALLON
PRESSURE RATING: 200 PSI MINIMUM.

VACUUM PUMP SYSTEM BASED ON AMICO MODEL V-RVL-D-080P-TS-N-030-MS

PLUMBING NOTES:

A. COORDINATE NEW WORK BETWEEN ALL DISCIPLINES.

B. CONTRACTOR SHALL VERIFY SIZE AND LOCATION OF ALL EXISTING PIPING PRIOR TO REMOVING OR MAKING CONNECTION THERETO. COORDINATE NEW WORK WITH EXISTING TO REMAIN BETWEEN ALL DISCIPLINES.

C. CONDENSATE FROM MECHANICAL EQUIPMENT COILS SHALL BE PIPED TO THE STORM DRAIN SYSTEM PIPING UNLESS OTHERWISE INDICATED ON DRAWINGS.

D. REFER TO SECTIONS ON ARCHITECTURAL AND MECHANICAL DRAWINGS FOR PIPE ROUTING THROUGH THE FACILITY.

E. COORDINATE PLUMBING PIPING ENCLOSURES WITH ARCHITECTURAL DRAWINGS PRIOR TO SETTING PIPING BELOW SLABS.

F. COORDINATE ALL FLOOR, SINK AND TRENCH DRAIN LOCATIONS WITH MECHANICAL EQUIPMENT PLACEMENT PRIOR TO SETTING SUCH DRAINS. DRAINS SHALL BE LOCATED AS CLOSE TO EQUIPMENT DRAIN POINTS AS POSSIBLE.

G. FIELD VERIFY PIPING MATERIALS AND SIZES PRIOR TO CONNECTION THERETO.

H. PROVIDE SHUTOFF VALVES IN DOMESTIC WATER SYSTEM BRANCH LINES SERVING TWO OR MORE FIXTURES.

I. INSTALL PIPING SO VALVES ARE ACCESSIBLE.

J. ALL COMPONENTS OF THE DOMESTIC WATER SYSTEM SHALL BE NSF-61 CERTIFIED

K. WHERE HOT AND COLD WATER PIPING DROPS INTO PIPE CHASE, THE SIZE SHOWN FOR THE PIPE DROPS SHALL BE USED TO THE LAST FIXTURE.

L. ITEMS SUCH AS ACCESS DOORS, RISE AND DROPS IN PIPING, ETC., ARE INDICATED ON THE DRAWINGS FOR CLARITY OR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS. THE CONTRACTOR IS RESPONSIBLE FOR THESE ITEMS AS REQUIRED ELSEWHERE IN THE CONTRACT DOCUMENTS.

M. ALL PLUMBING FIXTURES SHALL HAVE A MINIMUM AIR GAP FROM THE LOWEST END OF A POTABLE WATER OUTLET TO THE FLOOD RIM OR LINE OF THE FIXTURE INTO WHICH IT DISCHARGES. THE AIR GAP SHALL BE A MINIMUM OF TWICE THE EFFECTIVE OPENING OF A POTABLE WATER OUTLET UNLESS THE OUTLET IS A DISTANCE LESS THAN 3 TIMES THE EFFECTIVE OPENING AWAY FROM A WALL OR SIMILAR VERTICAL SURFACE IN WHICH CASE THE MINIMUM REQUIRED AIR GAP SHALL BE 3 TIMES THE EFFECTIVE OPENING OF THE OUTLET.

N. FIXTURES SUBJECT TO INTERMITTENT OR CONTINUOUS PRESSURE BACK-SIPHONAGE SHALL BE PROVIDED WITH A BACKFLOW PREVENTION DEVICE, (ASSE PER AHJ).

O. FIXTURES WHICH DISCHARGE INDIRECTLY INTO A FLOOR DRAIN OR FLOOR SINK SHALL DISCHARGE WITH AN AIR GAP EQUAL TO TWICE THE DIAMETER OF THE FIXTURE DISCHARGE PIPE.

P. INSULATE ALL HORIZONTAL SECTIONS OF EXISTING AND NEW STORM WATER AND STORM WATER OVERFLOW PIPING.

Q. COORDINATE ALL DEMOLITION AND CONSTRUCTION ACTIVITIES WITH HAZARDOUS MATERIALS DRAWINGS, SPECIFICATIONS SECTION 02082, THE ASBESTOS CONTAINING MATERIAL SURVEY AND LEAD BASED PAINT SCREENING REPORT, AND ALL SUBSEQUENTLY REFERENCED SECTIONS OF THE SPECIFICATIONS. THE CONTRACTOR IS REQUIRED TO IDENTIFY, ABATE, PROPERLY HANDLE AND DISPOSE OF ALL HAZARDOUS MATERIALS NECESSARY TO COMPLETE CONTRACT WORK: INCLUDING BUT NOT LIMITED TO ASBESTOS, LEAD, PCB LIGHT BALLASTS, FLUORESCENT LIGHT BULBS, AND THERMOSTATS WITH MERCURY SWITCHES.

R. ALL PIPING NOT INDICATED IN CHASES SHALL BE LOCATED ABOVE CEILING AS HIGH AS POSSIBLE. COORDINATE ROUTING OF PIPING WITH OTHER DISCIPLINES.

S. PROVIDE SINK TAILPIECE WITH DISHWASHER DRAIN CONNECTION AND PROVIDE HOT WATER SUPPLY CONNECTION TO DISHWASHER AT REQUIRED LOCATIONS AS INDICATED PER ARCHITECTURAL DRAWINGS. INSTALL PLUMBING UTILITIES AS REQUIRED PER MANUFACTURERS RECOMMENDATIONS.

T. PROVIDE WATER HAMMER ARRESTORS WHERE QUICK CLOSING VALVES ARE INSTALLED. INSTALLATION AND QUANTITY SHALL BE PER MANUFACTURERS RECOMMENDATIONS. WATER HAMMER ARRESTORS SHALL BE ACCESSIBLE FOR MAINTENANCE.

U. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. REPAIR ALL DAMAGES OCCASIONED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

V. FOR PLUMBING FIXTURES BEING REMOVED AND NO NEW FIXTURE IS INDICATED TO BE PROVIDED AT THE SAME LOCATION, REMOVE PIPING TO THE POINT OF CONCEALMENT AND REPAIR WALL, CEILING OR FLOOR TO MATCH EXISTING.

W. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR PROTECTING ALL DRAINS DURING THE CONSTRUCTION AND RETURNING THEM FREE FLOWING AND IN WORKING CONDITION. CONTRACTOR SHALL GUARANTEE ALL DRAINS FOR AT LEAST 90 DAYS AFTER OCCUPATION OF THE BUILDING.

X. IF SITE WORK PIPING IS INSTALLED AT THE SAME TIME PLUMBING CONTRACTOR IS INSTALLING PIPING, THE PLUMBING CONTRACTOR SHALL MAKE THE CONNECTION TO THE SITE PLUMBING.

Y. PRIOR TO BEGINNING PHASE WORK, CONTRACTOR SHALL SCOPE AND VIDEOTAPE ALL EXISTING SANITARY AND STORM WATER PIPING TO REMAIN BELOW SLAB FOR PIPING 3" AND ABOVE.

- CONTRACTOR SHALL NOTIFY OWNER/ ARCHITECT OF CLOGGED, BROKEN, BELLIED OR COLLAPSED PIPING, OR CONDITION WHERE GRAVITY FLOW IS NOT MAINTAINED.
- UPON COMPLETION OF EACH PHASE WORK, CONTRACTOR SHALL RE-SCOPE AND VIDEOTAPE THE SANITARY AND STORM WATER PIPING SYSTEMS.
- CONTRACTOR SHALL ROD CLEAN AND FLUSH ALL EXISTING SANITARY AND STORM WATER PIPING.

LEGEND

SYMBOLS

SYMBOL	DEFINITION
	COLD WATER
	TEMPERED WATER (110°)
	TEMPERED WATER RETURN (110°)
	140° DOMESTIC HOT WATER
	140° DOMESTIC HOT WATER RETURN
T	TEMPERED WATER
F	FIRE LINE
SP	SPRINKLER LINE
	SANITARY
	VENT
	STORM WATER
PD	PUMPED DISCHARGE
COND	CONDENSATE DRAIN
	FOUNDATION DRAIN
AW	ACID RESISTANT WASTE
AV	ACID RESISTANT VENT
G	COMPRESSED AIR
	BALL VALVE
	PIPING BELOW GRADE OR SLAB
	BUTTERFLY VALVE
	UNION
	GATE VALVE
	GLOBE VALVE
	BALANCING VALVE
	PLUG VALVE
	REDUCED PRESS. BACKFLOW PREVENTER
	PRESSURE REDUCING VALVE
	CHECK VALVE
	DOUBLE DETECTOR CHECK VALVE
	BACKWATER VALVE
	FLOOR CLEANOUT
	WALL CLEANOUT
	PIPE UP
	PIPE UP & DOWN
	PIPE DOWN
	SIGHT GLASS
	FLOAT VALVE
	FLOOR DRAIN
	FLOOR DRAIN WITH TRAP PRIMER
	FLOOR SINK
(#)	ROOF DRAIN (W/ SQ.FT INDICATED)
	TRAP (ELEVATION)
	VENT THROUGH ROOF (ELEVATION)
	VENT THROUGH ROOF (PLAN)
	MIXING VALVE
	METER (FLUID OR GAS)
"	INCHES
'	FEET
	HOSE BIBB (PLAN)
	NON-FREEZE WALL HYDRANT
	HOSE BIBB (ELEV.)
	HOSE END DRAIN
TS	OUTSIDE STEM & YOKE VALVE
TS	NON-RISING STEM & YOKE
FS	FLOW SWITCH
TS	TAMPER SWITCH
PS	PRESSURE SWITCH
	FIRE DEPT HOSE CONNECTION
FS	FLOOR CONTROL VALVE ASSEMBLY
	'Y' STRAINER
	WATER HAMMER ARRESTOR
	ACCESS PANEL
	POINT OF CONN. TO SITE UTILITIES
	SQUARE FOOTAGE
	DUPLEX GAS OUTLET
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	FLEXIBLE CONNECTION
	CAPPED PIPE
	BLIND FLANGE
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
	BLOW DOWN VALVE (W/HOSE END)
	PRESSURE/TEMP. RELIEF VALVE
ΔP	PRESSURE DIFFERENCE
ΔT	TEMPERATURE DIFFERENCE
	CENTER LINE
	THERMOMETER
	PRESSURE GAUGE W/ NEEDLE VALVE
Ø	DIAMETER (OR ELECTRICAL PHASE)
	BACK WATER VALVE W/ ACCESS COVER
	SOLENOID VALVE
%	SLOPE OF PIPE (WITH % OF SLOPE SHOWN)
	DIRECTION OF FLOW
	FUNNEL CONNECTION @ FLOOR DRAIN
S-A-1	SANITARY/WATER RISER DESIGNATION

NOTE: NOT ALL SYMBOLS MAY BE USED.

ABBREVIATIONS

ABBREV.	DEFINITION
140°	140° DOMESTIC HOT WATER
140°R	140° DOMESTIC HOT WATER RETURN
AAV	AUTOMATIC AIR VENT
ABV	ABOVE
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
ANC	ANCHOR
AP	ACCESS PANEL
APPROX	APPROXIMATE
AQ	AQUASTAT
AV	ACID VENT
AW	ACID WASTE
BDV	BLOW DOWN VALVE
BF	BLIND FLANGE
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOP	BOTTOM OF PIPE
BOTT	BOTTOM
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
BWV	BACK WATER VALVE W/ ACCESS COVER
CAP	CAPACITY
CD, COND	CONDENSATE DRAIN
CI	CAST IRON
CLG	CEILING
CO	CLEANOUT
CONN	CONNECT
CONC	CONCRETE
CU FT	CUBIC FEET
CW	COLD WATER
CX	CONNECT TO EXISTING
DDC	DOUBLE DETECTOR CHECK VALVE
DFU	DRAINAGE FIXTURE UNITS
DIA	DIAMETER
DISH	DISCHARGE
DN	PIPE DOWN
DS	DOWN SPOUT W/BOOT
DST	DEEP SEAL TRAP
DW	DISHWASHER
DWG	DRAWING
ELEC	ELECTRIC
ELEV	ELEVATION
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
F	FIRE LINE
FC	FUNNEL CONNECTION @ FD
FCO	FLOOR CLEANOUT
FCVA	FLOOR CONTROL VALVE ASSEMBLY
FD	FLOOR DRAIN
FDV	FIRE DEPT. HOSE CONNECTION
FS	FLOW SWITCH
FT	FEET
FT.HD	FEET OF HEAD
G	GAS
GA	GAUGE
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HED	HOSE END DRAIN
HOR	HORIZONTAL
HP	HORSEPOWER
HT	HEAT TRAP
HW	HOT WATER (140°F)
HWR	HOT WATER RETURN (140°F)
HYD	HYDRAULIC
IN	INCHES
I.E.	INVERT ELEVATION
IW	INDIRECT WASTE
LOC	LIMIT OF CONTRACT
MAV	MANUAL AIR VENT
NFGH	NON-FREEZE GROUND HYDRANT
NFWH	NON-FREEZE WALL HYDRANT
NRS	NON-RISING STEM & YOKE
OHD	OPEN HUB DRAIN
O,S,&Y	OUTSIDE STEM & YOKE VALVE
P	PRESSURE
PCOND	PUMPED CONDENSATE
PD	PUMPED DISCHARGE
PH	PIPE HANGER
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSAN	PUMPED SANITARY
PSC	PUMPED STEAM CONDENSATE
RD	ROOF DRAIN
RL	RAIN LEADER
SAN, S	SANITARY
SC	STEAM CONDENSATE
SCH	SCHEDULE
SP	SPRINKLER LINE
STD	STANDARD
SW	STORM WATER
T	TEMPERATURE
TD	TRENCH DRAIN
TS	TAMPER SWITCH
TW	TEMPERED WATER
TWR	TEMPERED WATER RETURN
UP	PIPE UP
UP&DN	PIPE UP & DN
V	VENT
VAC	VACUUM
VB	VACUUM BREAKER
VTR	VENT THROUGH ROOF
WCO	WALL CLEANOUT
WHA	WATER HAMMER ARRESTOR
WSFU	WATER SUPPLY FIXTURE UNITS
TD	TRENCH DRAIN

NOTE:
NOT ALL ABBREVIATIONS MAY BE USED.

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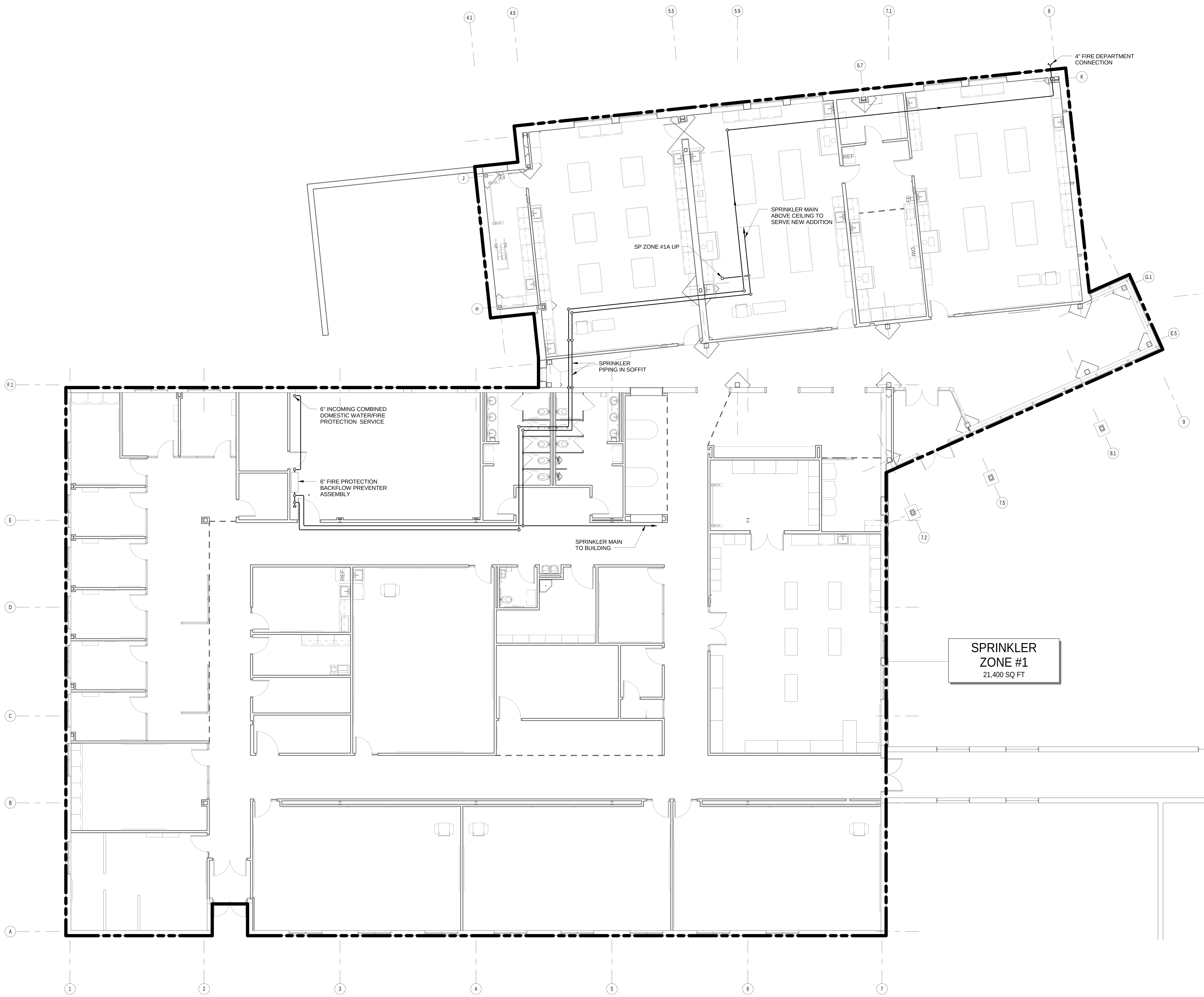
PLUMBING SCHEDULES, NOTES & LEGEND
Garrett College STEM Renovation and Addition
McHenry, MD

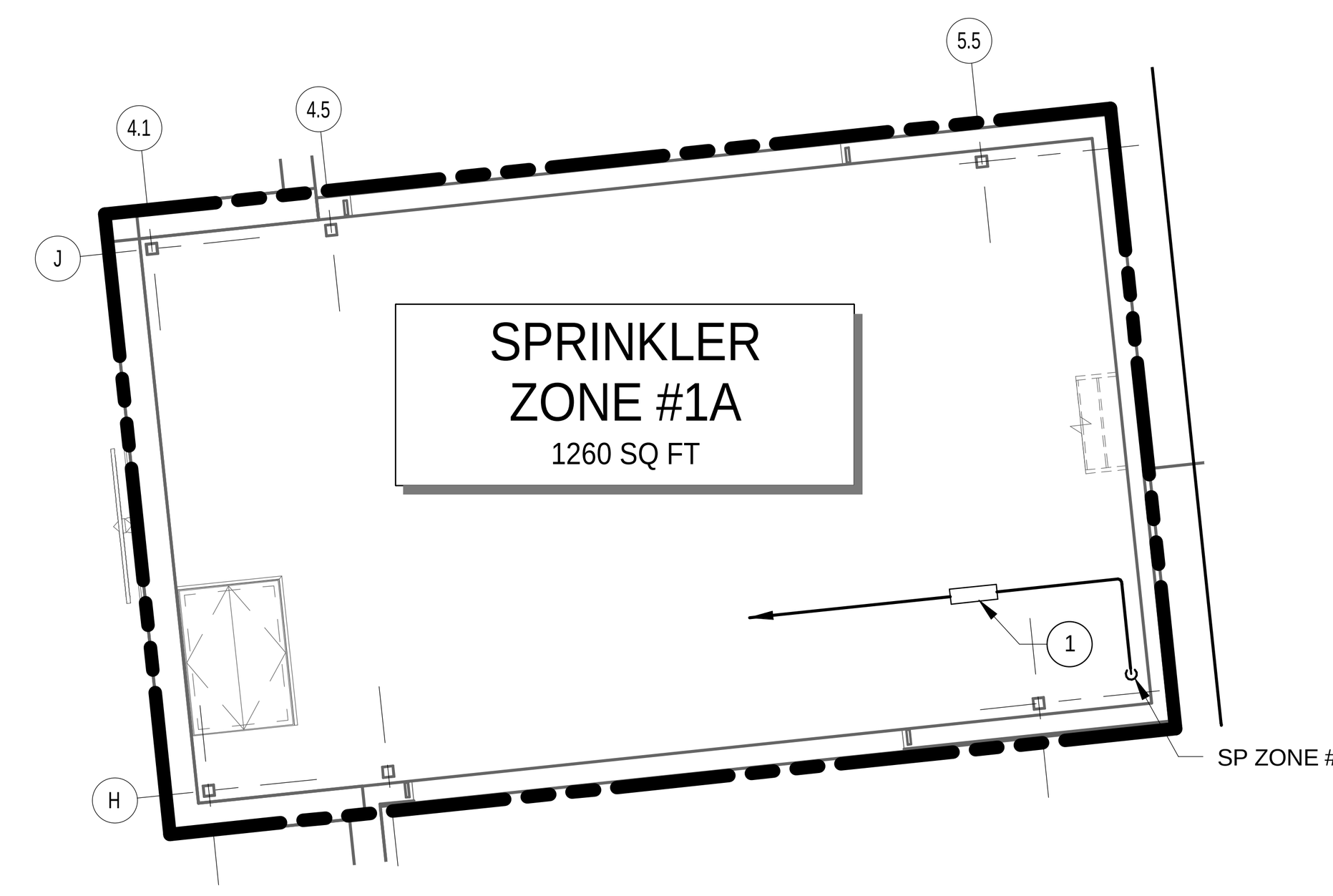
DATE	DESCRIPTION

P-9.1

February 1, 2017
Bid Set



FIRST FLOOR PLAN - FIRE PROTECTION
1/8" = 1'-0"



PENTHOUSE FLOOR - FIRE PROTECTION
1/8" = 1'-0"

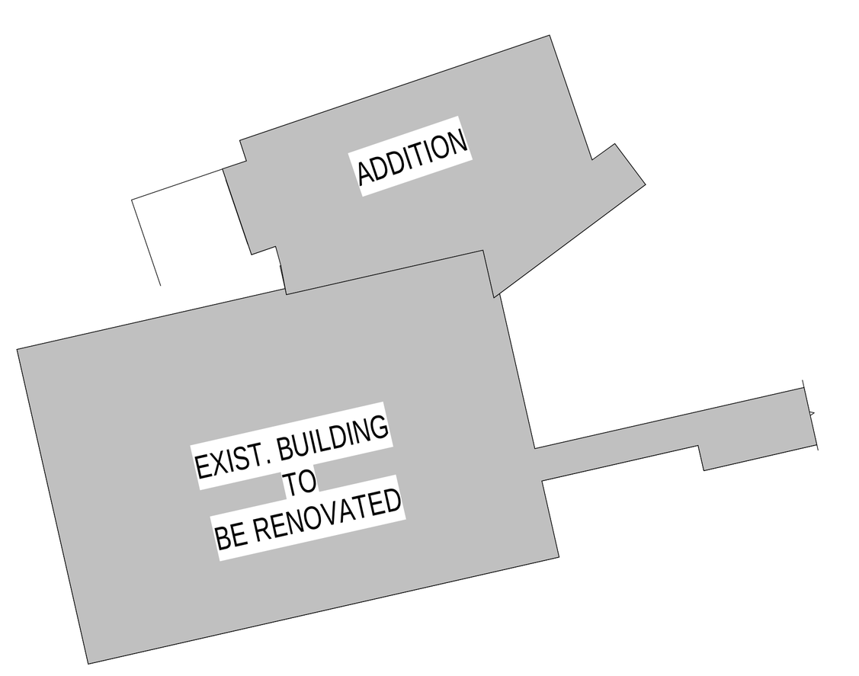
GENERAL NOTES:

1. THE FIRE SPRINKLER SYSTEM INSTALLER(S) SHALL PROVIDE A NEW AUTOMATIC SPRINKLER SYSTEM FOR THE ENTIRE BUILDING AS INDICATED. THE AUTOMATIC SPRINKLER SYSTEM SHALL BE INSTALLED IN FULL ACCORDANCE WITH THE REQUIREMENTS OF NFPA 13, LOCAL AND STATE AUTHORITIES AND THE SPECIFICATIONS.

DRAWING NOTES:

(1) HORIZONTAL SPRINKLER ZONE CHECK VALVE. REFER TO FIRE PROTECTION DETAILS FOR ADDITIONAL INFORMATION.

KEY PLAN



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

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FIRST FLOOR PLAN & PENTHOUSE FLOOR - FIRE PROTECTION
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

FP-2.1

February 1, 2017
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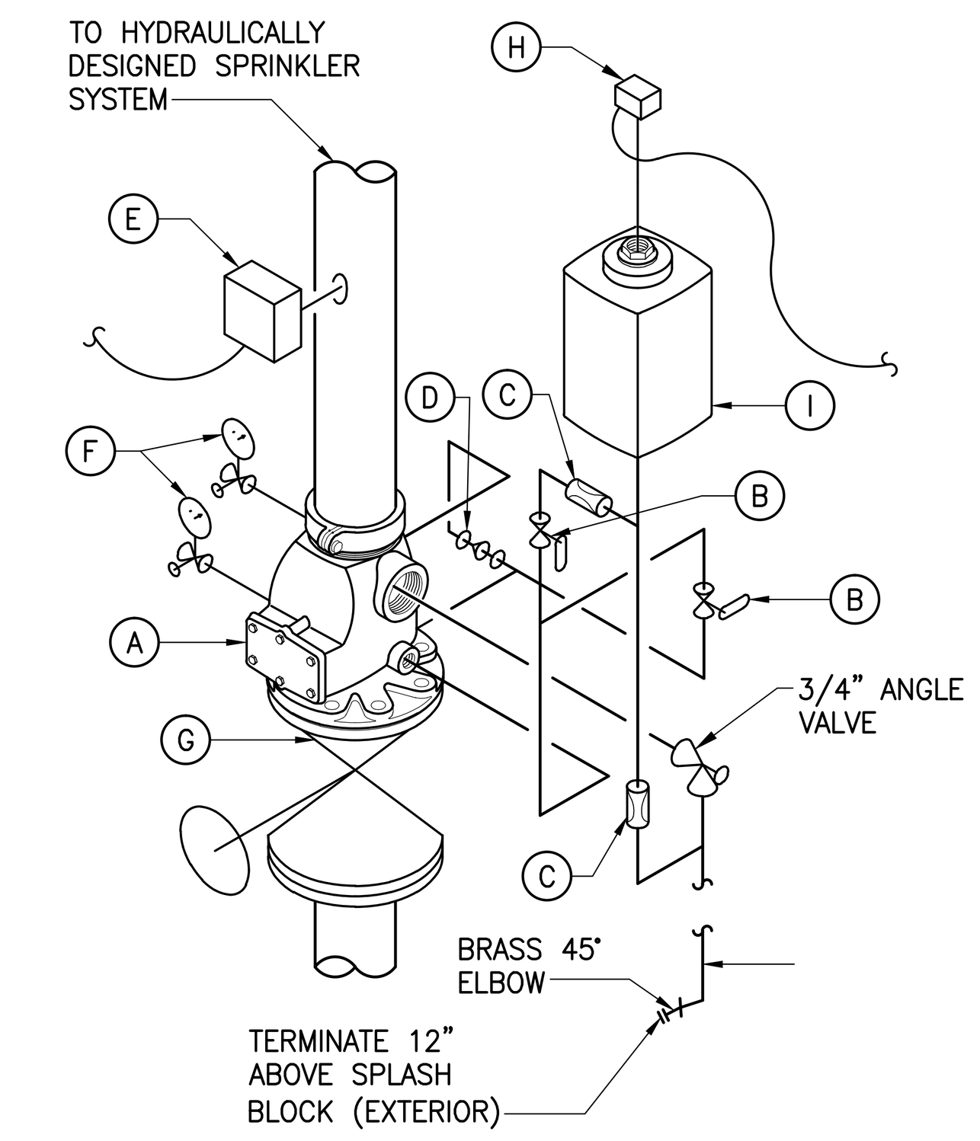
DETAIL LEGEND:

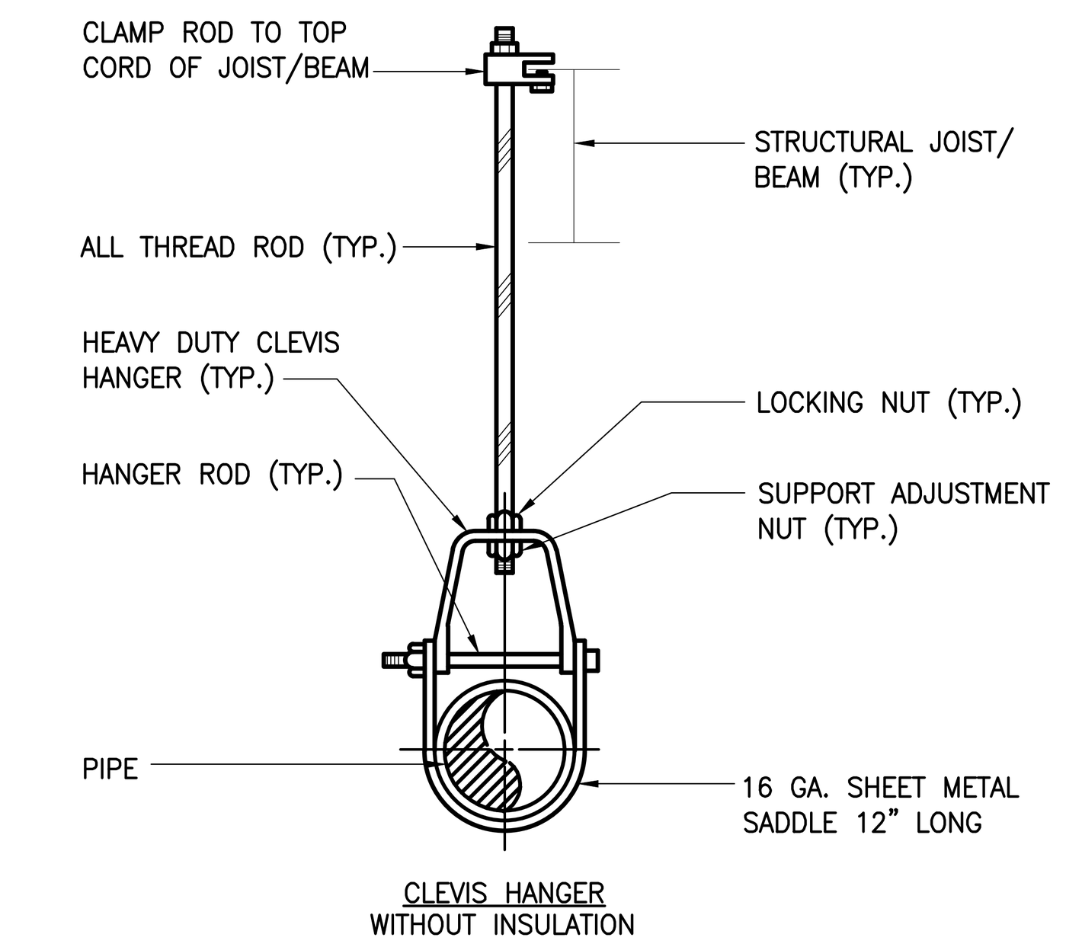
- (A) VERTICAL ALARM CHECK VALVE SIZED IN ACCORDANCE WITH HYDRAULIC CALCULATIONS FOR FLOWS OF ZONE COVERAGE
- (B) ALARM TEST AND SHUT OFF VALVES (LOCKING HANDLE)
- (C) RESTRICTION OFFICE
- (D) SWING CHECK VALVE
- (E) PADDLE TYPE FLOW SWITCH
- (F) PRESSURE GAUGE WITH NEEDLE VALVE & SNUBBER
- (G) O,S&Y GATE VALVE WITH TAMPER SWITCH
- (H) ELECTRIC PRESSURE SWITCH WIRED TO ANNUNCIATOR SYSTEM (ALARM CONDITION)
- (I) RETARDING CHAMBER WITH 60 SECOND DELAY

DETAIL NOTES:

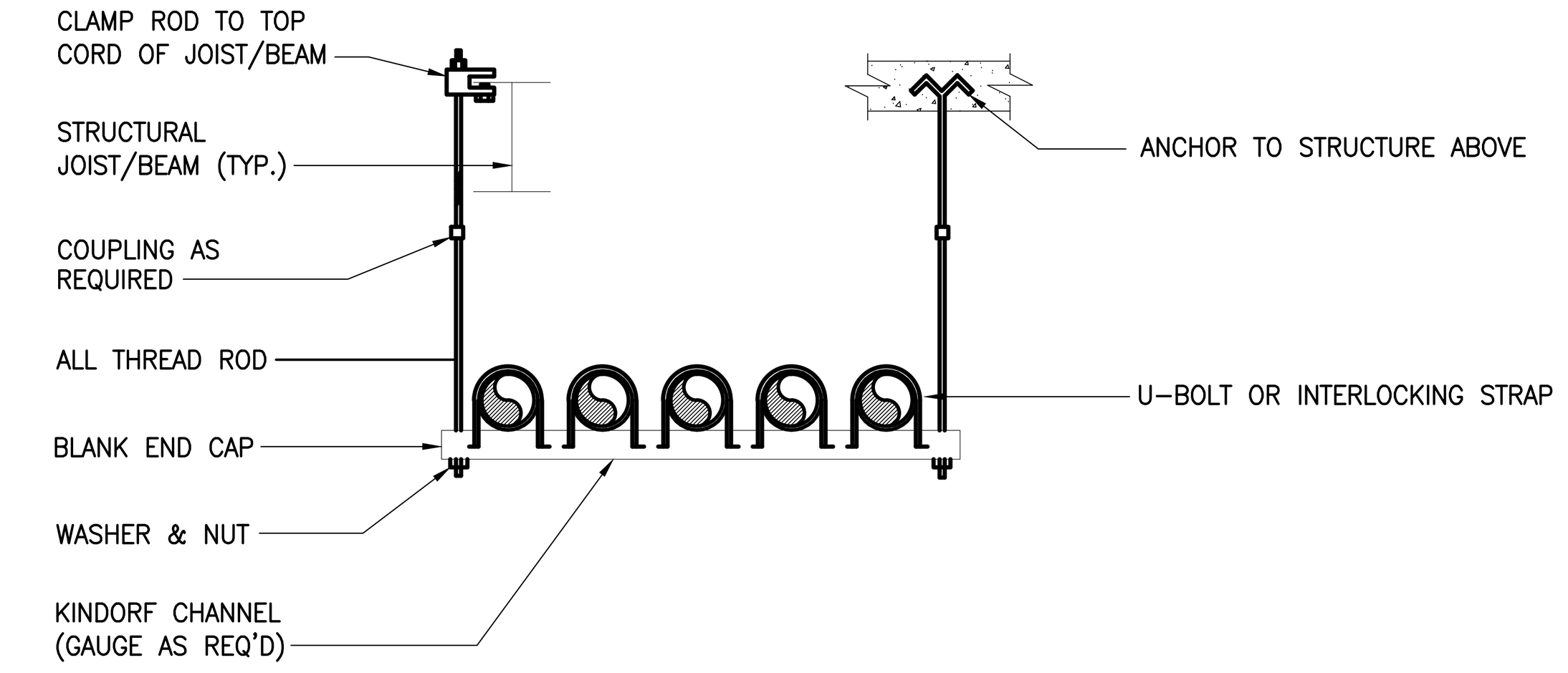
1. INSTALL DEVICES PER MANUFACTURERS STANDARD RECOMMENDATIONS AND IN ACCORDANCE WITH APPLICABLE NFPA STANDARDS.
2. COORDINATE WITH DIVISION 16000 AND BUILDING EMS.



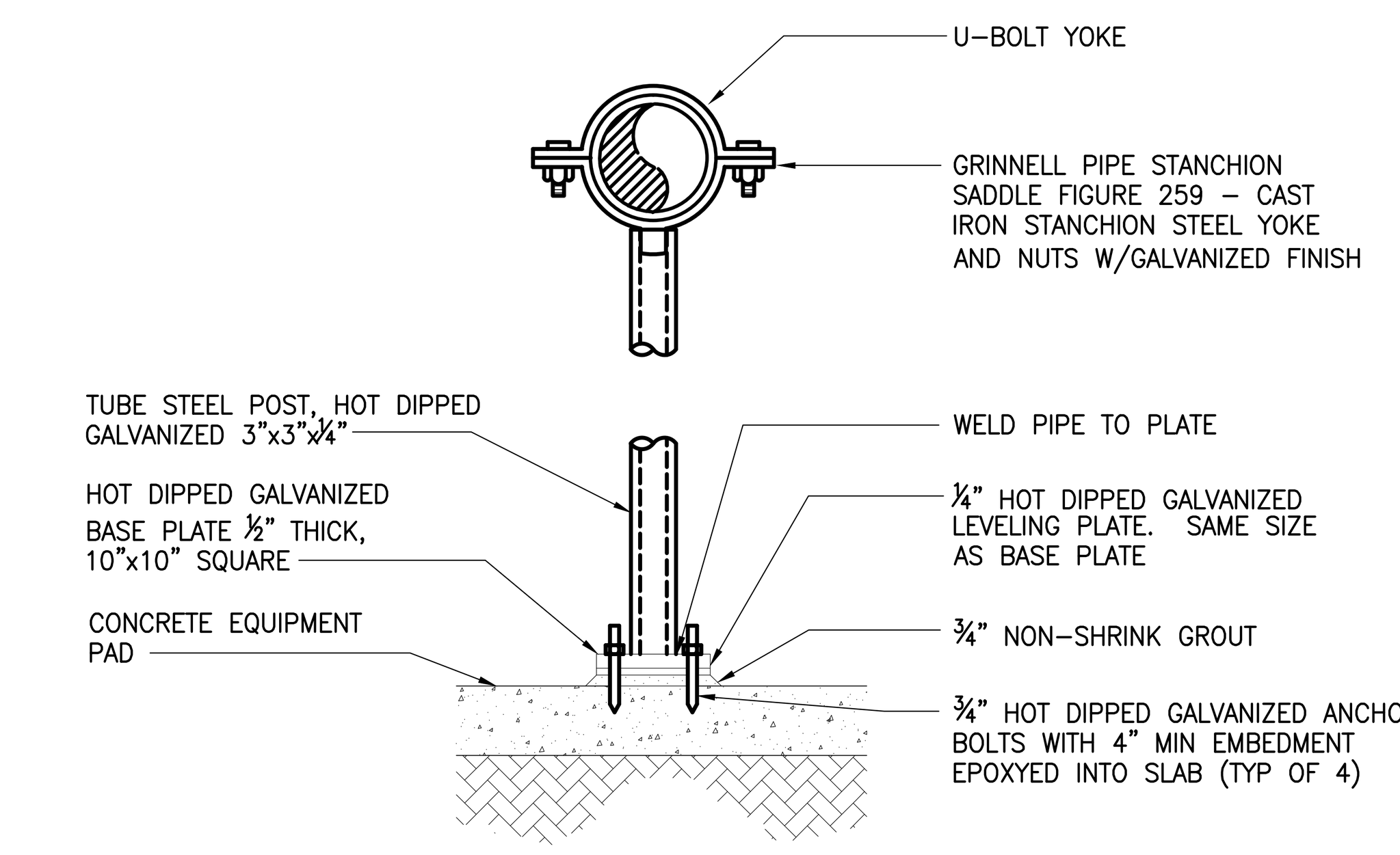
(1) SPRINKLER ALARM VALVE ASSEMBLY DETAIL — SCALE: NONE



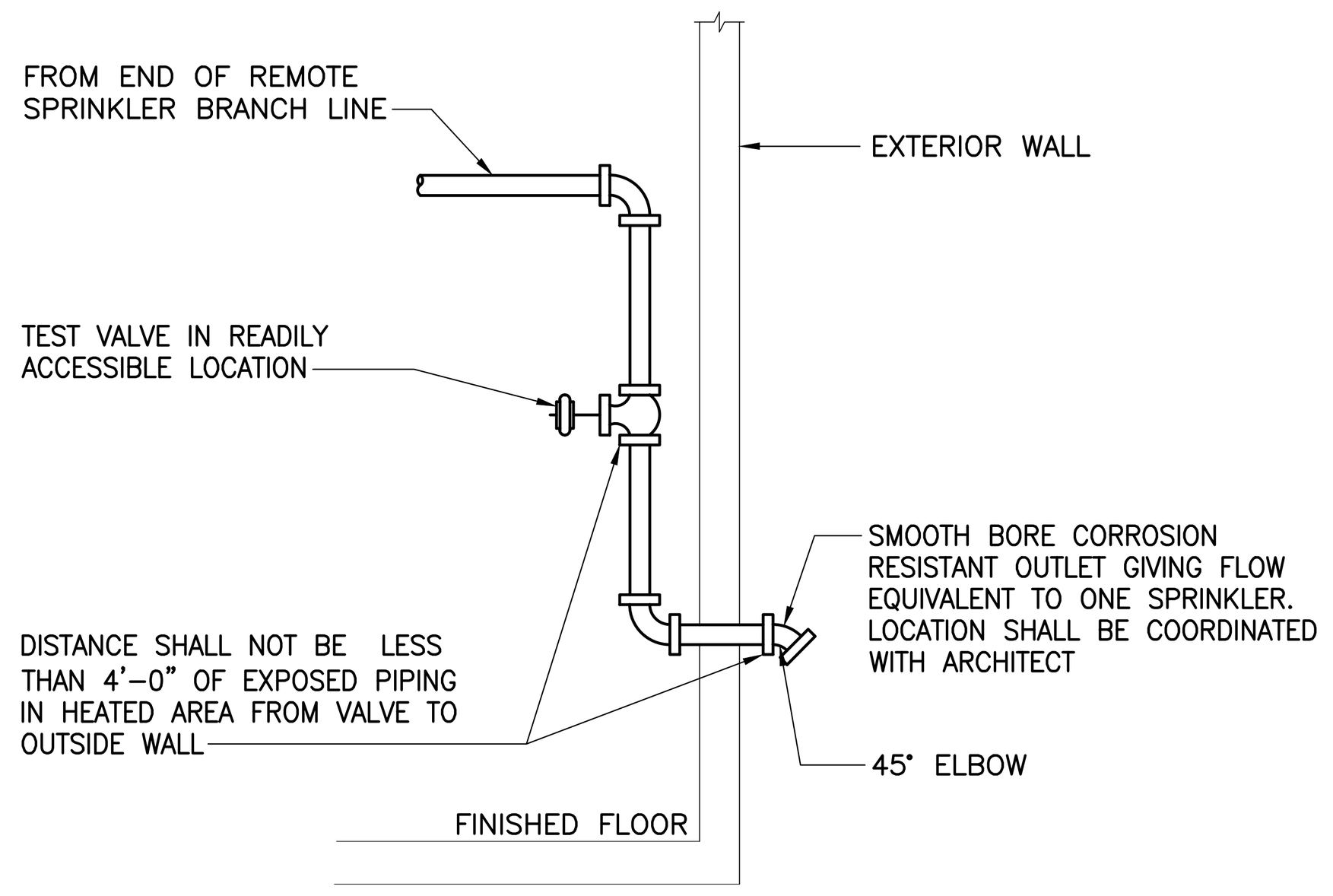
(2) TYPICAL PIPE SUPPORT DETAIL — SCALE: NONE



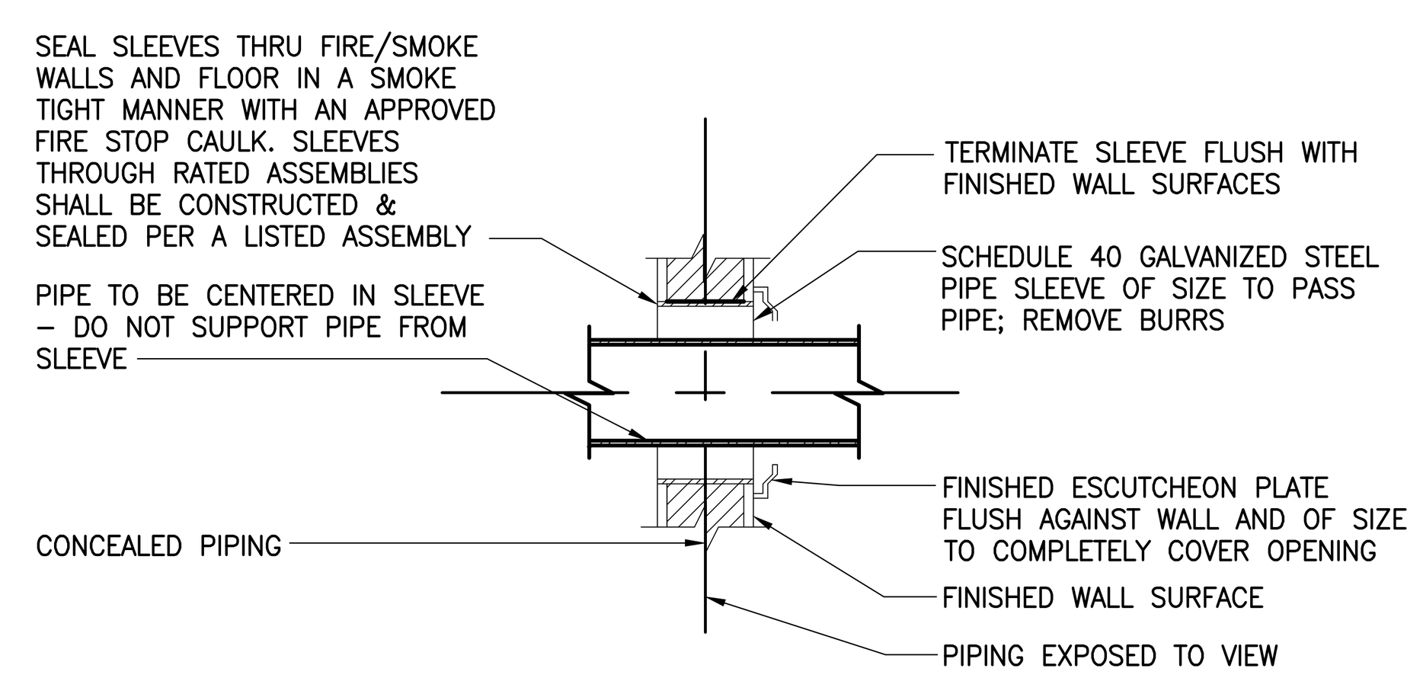
(3) TYPICAL TRAPEZE PIPE SUPPORT DETAIL — SCALE: NONE



(4) TYPICAL PIPE SUPPORT DETAIL — SCALE: NONE

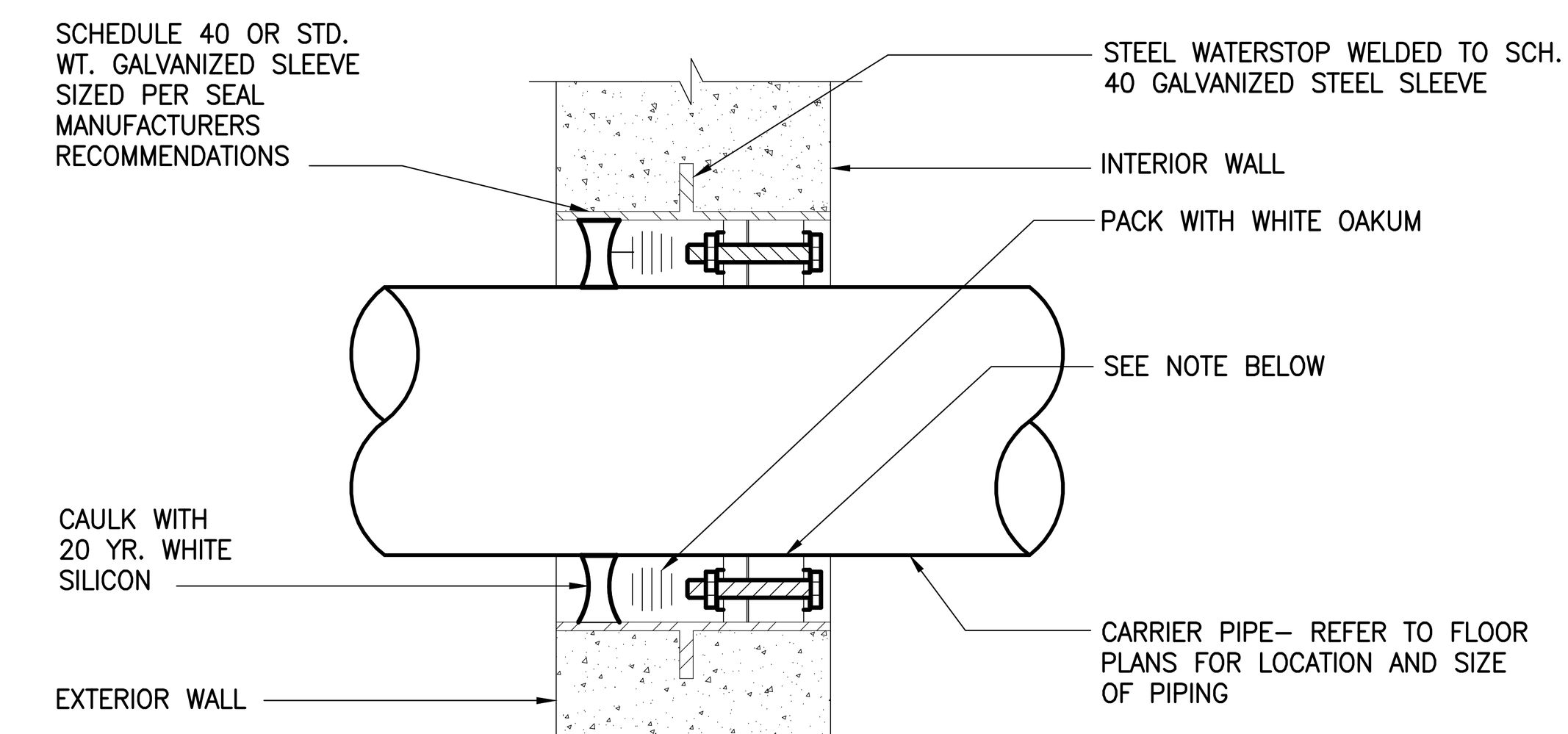


(5) TYPICAL SPRINKLER TEST PIPE DRAIN CONNECTION DETAIL — SCALE: NONE



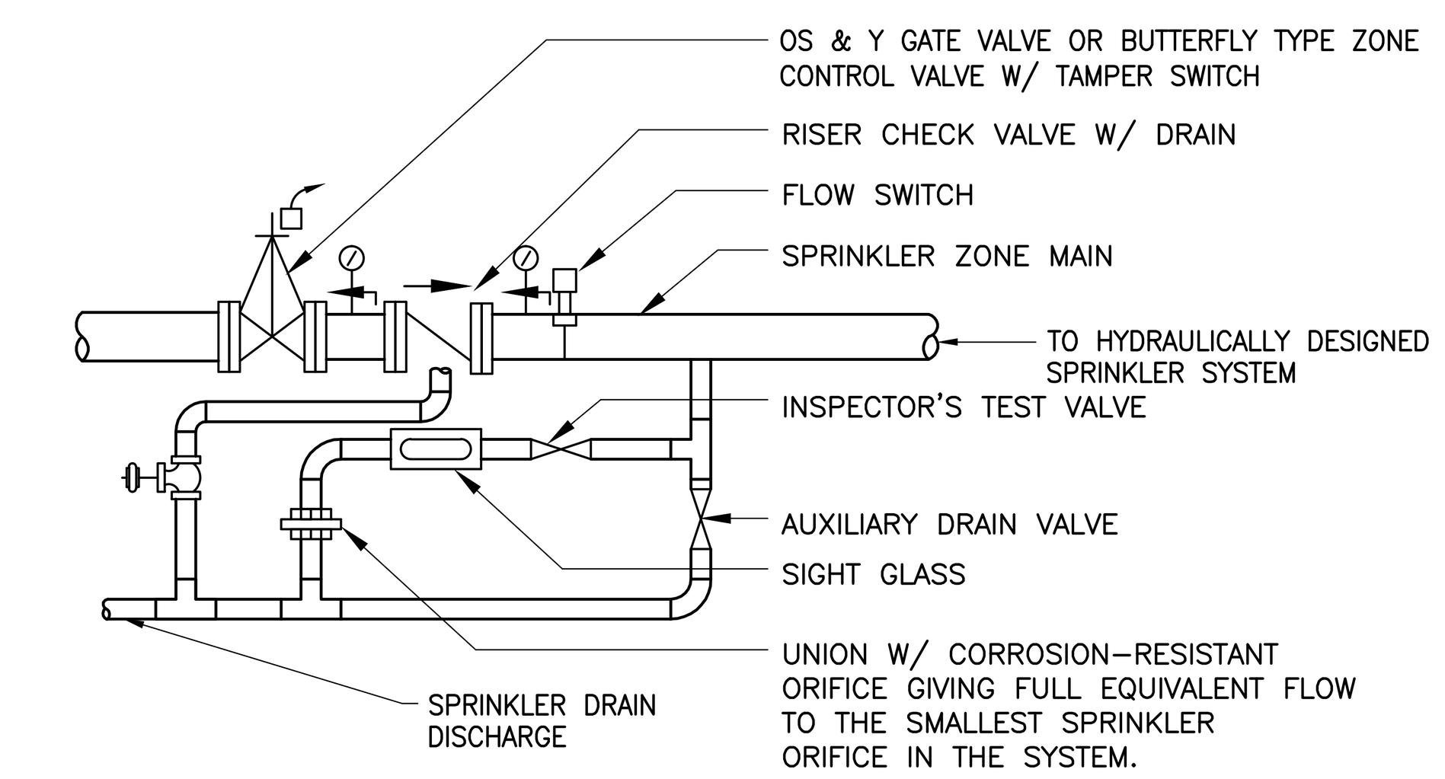
NOTE:
FOR INTERIOR FRAME PARTITIONS—PIPE SLEEVES MAY BE FABRICATED FROM GALVANIZED SHEET METAL; ROUND TUBE CLOSED WITH SNAPLOCK JOINT, WELDED SPIRAL SEAMS, OR WELDED LONGITUDINAL JOINT. FABRICATE FROM THE FOLLOWING GAUGES: 3" AND SMALLER, 20 GAUGE; 4" TO 6", 16 GAUGE; OVER 6", 14 GAUGE.

(6) TYPICAL PIPE SLEEVE THRU INTERNAL WALL DETAIL — SCALE: NONE



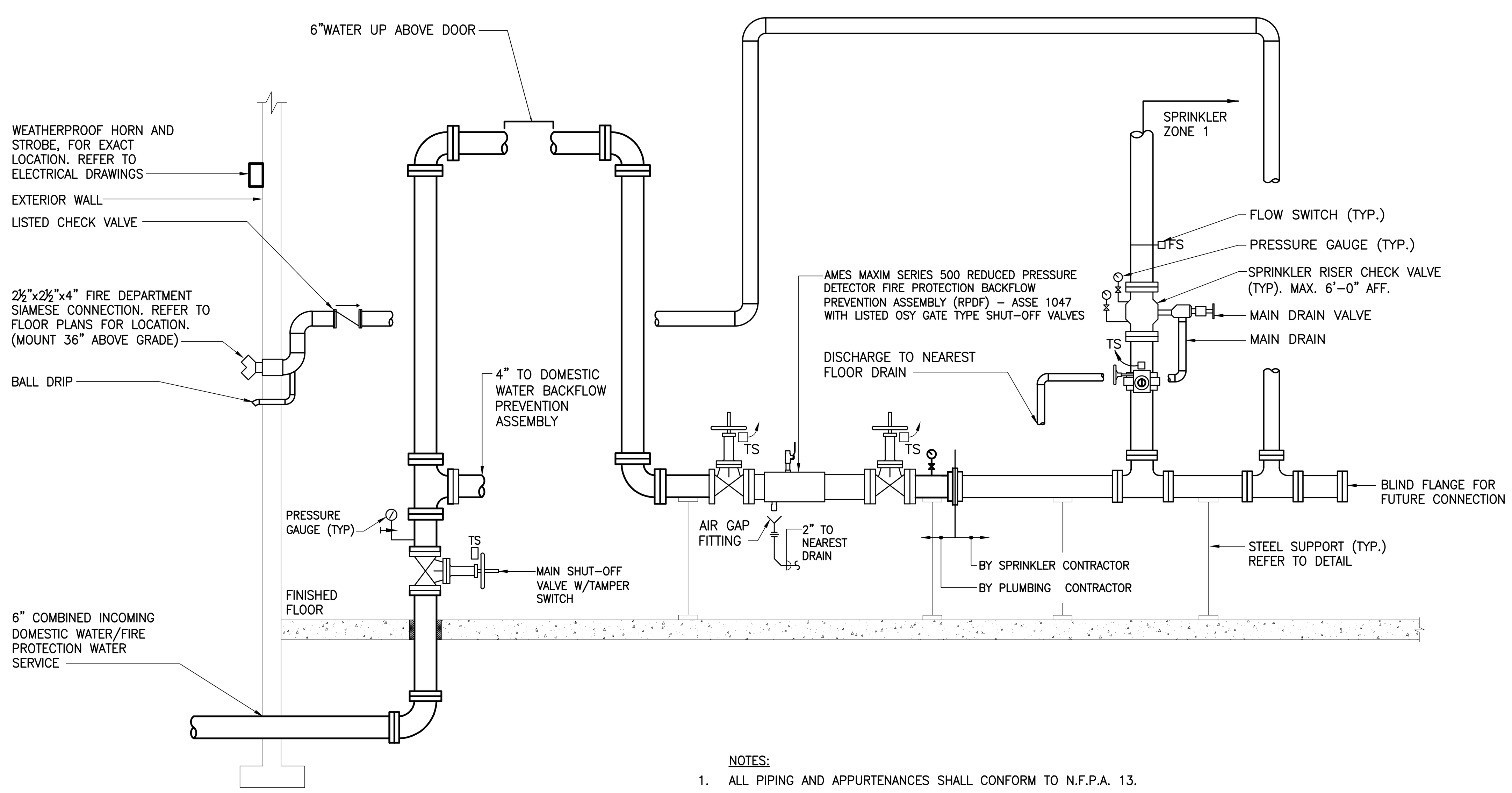
NOTE:
SEAL ASSEMBLY SHALL BE MODULAR MECHANICAL TYPE CONSISTING OF INTERLOCKING RUBBER LINKS SHAPED TO CONTINUOUSLY FILL THE ANNULAR SPACE BETWEEN THE CARRIER PIPING AND THE SLEEVE. BOLTS SHALL BE STAINLESS STEEL WITH DELRIN PLASTIC PRESSURE PLATES.

(7) TYPICAL WATERTIGHT SLEEVE THRU EXTERIOR WALL DETAIL — SCALE: NONE



NOTE:
1. IN LIEU OF FABRICATING INSPECTOR'S TEST AND DRAIN ASSEMBLY CONTRACTOR MAY USE MANUFACTURED SINGLE TEST/DRAIN ASSEMBLY.
2. PROVIDE IN ALL PENTHOUSE SPRINKLER SUBZONES

(8) TYPICAL HORIZONTAL ZONE CHECK VALVE PIPING DETAIL — SCALE: NONE



NOTES:
1. ALL PIPING AND APPURTENANCES SHALL CONFORM TO N.F.P.A. 13.
2. INSTALLATION OF PIPING CLEARANCE REQUIREMENTS SHALL CONFORM TO THE FIRE MARSHAL.
3. BACKFLOW PREVENTER SHALL BE INSTALLED AT MAX OF 42" AFF, AND 12" CLEAR ON ALL SIDES.

(9) INCOMING FIRE PROTECTION SERVICE PIPING DETAIL — SCALE: NONE

(10) NOT USED — SCALE: NONE

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FIRE PROTECTION DETAILS
Garrett College STEM Renovation and Addition
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DATE	DESCRIPTION

FP-7.1

February 1, 2017
Bid Set

ELECTRICAL LEGEND:

(MOUNTING HEIGHTS ARE TO CENTERLINE OF DEVICE UON)

GENERAL NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE DRAWINGS OF ALL OTHER TRADES ON THE PROJECT. ELECTRICAL OR SYSTEMS CONNECTIONS INDICATED ON ARCHITECTURAL, MECHANICAL, CIVIL, STRUCTURAL, KITCHEN AND ALL OTHER DRAWINGS WHICH ARE PART OF THIS PROJECT, SHALL BE CONSIDERED A PART OF THIS CONTRACT AND SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR AT NO EXTRA COST TO THE OWNER.
2. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC IN NATURE AND AS SUCH SHALL NOT BE SCALED. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF DEVICES AND EQUIPMENT AND DIMENSIONAL INFORMATION PRIOR TO ROUGH-IN. COORDINATE LOCATIONS OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN OF SERVICE EQUIPMENT AND WIRING.
3. COORDINATE MOUNTING HEIGHTS OF ALL DEVICES WITH ARCHITECTURAL PLANS, SECTIONS, ELEVATIONS AND CASEWORK DRAWINGS.
4. COORDINATE WALLS THAT ARE TO REMAIN AND NEW WALLS WITH ARCHITECTURAL PLANS. NEW DEVICES TO BE PLACED ON EXISTING WALL SHALL BE SURFACE MOUNTED VIA WIREMOLD.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT ROUTING OF WIRING AND CONDUITS AND SHALL BE RESPONSIBLE FOR SIZING ALL BRANCH CIRCUIT WIRING TO LIMIT VOLTAGE DROP TO 3%. CONTRACTOR SHALL SIZE CONDUIT TO ACCOMMODATE WIRING PER NEC. 20 AMPERE CIRCUITS SHALL BE SIZED AS FOLLOWS:

20 AMPERE CIRCUITS				
120 VOLT		277 VOLT		MINIMUM CONDUIT SIZE
WIRING LENGTH	WIRE SIZE	WIRING LENGTH	WIRE SIZE	
0' – 60'	#12	0' – 130'	#12	3/4"
60' – 100'	#10	130' – 210'	#10	3/4"
100' – 150'	#8	210' – 340'	#8	3/4"
150' – 240'	#6	340' – 540'	#6	3/4"
OVER 240'	#4	OVER 540'	#4	1"

NOTES:
BRANCH CIRCUITS IN PANELBOARDS WITH 200% RATED NEUTRAL BUS AND ALL DIMMED LIGHTING CIRCUITS & ECM MOTORS SHALL HAVE DEDICATED NEUTRAL CONDUCTORS.

WIRING AND CONDUIT SIZES INDICATED IN PANEL SCHEDULES ARE MINIMUM ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT WIRING AND CONDUIT SIZES. CONTRACTOR SHALL PROVIDE SPLICE BLOCKS AND REDUCING PINS AS REQUIRED TO TERMINATE WIRING AND MAKE FINAL CONNECTIONS.

6. ELECTRICAL BOXES IN FIRE RATED PARTITIONS SHALL NOT EXCEED 16 SQUARE INCHES IN AREA (IF 4"x4"), SHALL BE MADE OF STEEL, AND SHALL BE SUCH THAT THE CUMULATIVE AREA OF BOX "CUTOUTS" IN THE FIREWALL DOES NOT EXCEED 100 SQUARE INCHES PER 100 SQUARE FEET OF WALL AREA. ELECTRICAL BOXES ON OPPOSITE SIDES OF THE SAME FIREWALL SHALL BE SEPARATED BY A HORIZONTAL AND VERTICAL DISTANCE OF NOT LESS THAN 24 INCHES. THE ELECTRICAL CONTRACTOR SHALL MAKE MINOR ADJUSTMENTS, AS NECESSARY, TO ELECTRICAL BOX LOCATIONS TO ENSURE COMPLIANCE WITH THIS REQUIREMENT SINCE BOX LOCATIONS ARE TYPICALLY NOT DIMENSIONED ON THE DRAWINGS. CONSULT ARCHITECT IF CLARIFICATION IS REQUIRED.
7. ALL CONDUIT SHALL BE CONCEALED IN WALLS, FLOORS, ABOVE CEILING OR THROUGH MILLWORK. AT TIMES CONDUIT ROUTING IS SHOWN FOR CLARITY AND IN NO WAY PROVIDES THE CONTRACTOR ABILITY TO NOT PROVIDE CONCEALED CONDUIT AT ANY POINT OTHER POINT NOT SHOWN IN THE BUILDING. REFER TO SPECIFICATIONS FOR CONDUIT & WIRING REQUIREMENTS BASED ON APPLICATION.

DEMOLITION NOTES:

1. DEMOLITION DRAWING IS DIAGRAMMATIC IN NATURE; NO ATTEMPT HAS BEEN MADE TO SHOW ALL EXISTING ELECTRICAL WORK. IN AREAS INDICATED TO BE RENOVATED. ALL EXISTING ELECTRICAL WORK IS TO BE REMOVED UNLESS OTHERWISE NOTED. WHEN AN ITEM IS INDICATED TO BE REMOVED, REMOVE ALL ASSOCIATED ELECTRICAL WORK BACK TO POINT OF SOURCE.
2. WHERE WORK PASSES THROUGH THE RENOVATION AREA TO SERVE OTHER PORTIONS OF THE BUILDING, OR WORK IN THE RENOVATION AREA INDICATED TO REMAIN, IT SHALL BE SUITABLY RELOCATED AND THE SYSTEMS RESTORED TO NORMAL, COORDINATE ANY OUTAGES WITH OWNER 7 DAYS IN ADVANCE.
3. WORK INDICATED TO REMAIN SHALL BE SUITABLY PROTECTED AGAINST DAMAGE.
4. TURN OVER ALL CIRCUIT BREAKERS, CONTACTORS, MOTOR STARTERS THAT ARE IN GOOD CONDITION TO OWNER. CONTACT OWNER FOR VERIFICATION IF ITEMS ARE IN QUESTIONABLE CONDITION.
5. COORDINATE ALL DEMOLITION AND CONSTRUCTION ACTIVITIES WITH THE OWNER TO MINIMIZE DISRUPTION OF THE NORMAL DAILY FUNCTIONING OF THE OWNERS OCCUPIED AREAS.
6. REFER TO ARCHITECTURAL FLOOR PLANS FOR EXISTING WALLS. ALL NEW DEVICES LOCATED ON EXISTING WALLS SHALL BE FISHED TO BE INSTALLED CONCEALED AND FLUSH TO THE WALL; IF FISHING CANNOT OCCUR PROVIDE APPROPRIATE SERIES WIREMOLD TO SURFACE MOUNT DEVICES.
7. ALL REMOVED DEVICE WALL PENETRATIONS SHALL BE PATCHED AND PAINTED TO MATCH EXISTING WALL COLOR OR WALL COLOR PER ARCHITECT'S DIRECTION.
8. DISPOSE OF ALL PCB CONTAINING FLUORESCENT AND HID BALLASTS IN ACCORDANCE WITH EPA, DOT, STATE AND LOCAL REGULATIONS. IF THE PCP CONTENT IS NOT STATED ON THE BALLAST LABEL, THE BALLAST LABEL SHALL BE HANDLED AS A PCB BALLAST. DISPOSE OF ALL FLUORESCENT, INCANDESCENT, AND HID LAMPS IN ACCORDANCE WITH EPA, DOT, STATE AND LOCAL REGULATIONS.

LIGHTING

- A1 / C — 2'X4' AND 1'X4' LIGHTING FIXTURE; UPPER CASE LETTER INDICATES FIXTURE TYPE; LOWER CASE LETTER INDICATES SWITCH
- STRIP LIGHTING FIXTURE; TYPE AS NOTED
- LIGHTING FIXTURE; WALL MOUNTED, CEILING MOUNTED; TYPE AS NOTED
- INDICATES LIGHTING FIXTURE WITH EMERGENCY BATTERY.
- EXIT SIGN; CEILING MOUNTED, WALL MOUNTED 6" ABOVE DOOR; SHADING INDICATED ILLUMINATED FACE, DIRECTIONAL ARROWS AS INDICATED

SWITCHES (MOUNTING HEIGHTS ARE TO TOP OF DEVICE)

- S_{LV} — LINE VOLTAGE SWITCH; DUAL LOAD UON. SUBSCRIPT INDICATES FIXTURES CONTROLLED. MOUNT AT 48" AFF UON.
- $S^{\#LV}$ — LOW VOLTAGE SWITCH; # INDICATES NUMBER OF BUTTONS; MOUNT AT 48" AFF UON.
- S^{K} — KEYED LIGHT TOGGLE SWITCH; MOUNT AT 48" AFF; SUBSCRIPT INDICATES FIXTURES CONTROLLED.
- VOX / VOS — VACANCY SENSOR, LOW VOLTAGE, DUAL TECHNOLOGY CEILING, WALL MOUNTED AT 8'-0" AFF UON.
- VOS_A — VACANCY SENSOR, LINE VOLTAGE, DUAL TECHNOLOGY SINGLE POLE, WALL SWITCH TYPE: MOUNT 4'-0" AFF.
- VOS_H — VACANCY SENSOR, LOW VOLTAGE WITH POWER PACK, ULTRASONIC, LONG VIEW SENSOR, CEILING MOUNTED.
- RC — ROOM CONTROLLER
- LS — LIGHT SENSOR

OUTLETS

- C1A–1_EWC — DUPLEX RECEPTACLE; 2P, 3W, 20A, 125V, NEMA 5-20R; MOUNT AT 18" AFF UON; SUBSCRIPTS: EWC – ELECTRIC WATER COOLER; CIRCUIT NUMBER INDICATES BRANCH CIRCUIT CONNECTION; REFER TO SPECIFICATIONS & THIS DWG FOR WIRE AND CONDUIT REQUIREMENTS.
- USB RECEPTACLE; 2P, 3W, 20A, 125V, NEMA 5-20R; MOUNT AT 18" AFF UON.
- SPECIAL RECEPTACLE; AS NOTED; MOUNT AT 18" AFF UON.
- DUPLEX/DOUBLE DUPLEX RECEPTACLE; 2P, 3W, 20A, 125V, NEMA 5-20R; GROUND FAULT CIRCUIT INTERRUPTER; MOUNT AT 18" AFF UON.
- DUPLEX/DOUBLE DUPLEX RECEPTACLE; 2P, 3W, 20A, 125V, NEMA 5-20R; WEATHERPROOF AND WEATHER RESISTANT, GROUND FAULT INTERRUPTER; MOUNT AT 18" AFF UON.
- DOUBLE DUPLEX RECEPTACLE; 2P, 3W, 20A, 125V, NEMA 5-20R; MOUNT AT 18" AFF UON.
- SLASH INDICATES DEVICE TO BE MOUNTED AT 42" AFF OR 6" ABOVE COUNTER UON.
- CR — DOUBLE DUPLEX CORD REEL; CEILING MOUNTED
- C#1 — CONTACTOR; SIZE AS NOTED; IN NEMA 1 ENCLOSURE UON; MOUNT IN JUNCTION BOX ABOVE ACCESSIBLE CEILING SPACE AS REQUIRED.

TELECOMMUNICATIONS

- $\nabla\nabla^{C}$ — DATA OUTLET; RJ45 MODULAR JACK; MOUNT AT 18" AFF UON (SINGLE UON), C – MOUNT AT 42"
- ▼ — TELEPHONE OUTLET; RJ45 MODULAR JACK; MOUNT AT 18" AFF UON (SINGLE UON), C – MOUNT AT 42"
- V — VIDEO DROP; SEE DETAILS FOR CONFIGURATION, MOUNT AT 60" AFF UON
- D — DUPLEX DROP; SEE DETAILS FOR CONFIGURATION, MOUNT AT 18" AFF UON
- T — TEACHER DATA DROP; SEE DETAILS FOR CONFIGURATION, MOUNT AT 18" AFF UON
- A — ADMIN DATA DROP; SEE DETAILS FOR CONFIGURATION, MOUNT AT 18" AFF UON
- P^{H} — PROJECTOR DROP; SEE DETAILS FOR CONFIGURATION, MOUNT ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. PROVIDE EPSON BRIGHTLINK 585Wi INTERACTIVE WXGA 3LCD PROJECTOR.
- WIRELESS ACCESS POINT OUTLET: CEILING MOUNTED ,WALL MOUNTED AT 8'-0" AFF UON – (2) 4 PAIR CAT6A CABLE TERMINATED IN MALE RJ4 CONNECTOR, ABOVE CEILING WITH 10' SLACK CABLE.
- M — POLYCOM CEILING MICROPHONE

CONDUIT

- HOMERUN TO PANELBOARD; REFER TO PANEL SCHEDULES FOR MINIMUM WIRE AND CONDUIT SIZES
- BRANCH CIRCUIT CONDUIT AND WIRING CONCEALED IN CEILING OR WALL SPACE, OR SURFACE MOUNTED WHERE NO CEILING OR WALL SPACE EXISTS; REFER TO PANEL SCHEDULES FOR MINIMUM WIRE AND CONDUIT SIZES
- BRANCH CIRCUIT CONDUIT AND WIRING IN SLAB, UNDER FLOOR OR UNDERGROUND; REFER TO PANEL SCHEDULES FOR MINIMUM WIRE AND CONDUIT SIZES

SOUND

- S SX — LOCAL SOUND SYSTEM SPEAKER; CEILING MOUNTED, WALL MOUNTED AT 7'-6" AFF UON

POWER

- PANELBOARD; RECESSED, SURFACE MOUNTED; MOUNT AT 6'-6" AFF TO TOP OF PANEL.
- S^{E} — SINGLE POLE MANUAL MOTOR STARTING SWITCH WITH HOA SWITCH; MOUNT AT 48" AFF IN NEMA 1 ENCLOSURE UON
- MOTOR; AS NOTED
- SAFETY DISCONNECT SWITCH; FUSED, NONFUSED IN NEMA 1 ENCLOSURE UON; MOUNT AT 48" AFF UON; RATING AND FUSING AS NOTED
- ENCLOSED CIRCUIT BREAKER IN NEMA 1 ENCLOSURE UON; MOUNT AT 5'-6" TO TOP AFF UON; SIZE AS NOTED
- COMBINATION TYPE MOTOR STARTER; FVNR WITH CONTROL XFMR, RED AND GREEN INDICATING LIGHTS, HOA SELECTOR SWITCH AND CIRCUIT BREAKER DISCONNECT SWITCH IN NEMA 1 ENCLOSURE UON; MOUNT AT 5'-6" TO TOP AFF UON
- JUNCTION BOX; CEILING, WALL MOUNTED
- EPO PUSHBUTTON, UON; MOUNT 48" AFF UON (TOP OF DEVICE)
- SPD — SURGE PROTECTION DEVICE
- T — TRANSFORMER
- PUSHBUTTON CONTROLLER; MOUNT AT 48" AFF UON (TOP OF DEVICE).

FIRE ALARM

- F — FIRE ALARM PULL STATION; MOUNT AT 48" AFF
- DD — DUCT TYPE SMOKE DETECTOR; PROVIDE EACH DUCT DETECTOR WITH REMOTE TEST SWITCH. REFER TO DETAIL 8/E6.3 FOR MORE INFORMATION.
- RT — REMOTE TEST SWITCH.
- COMBINATION FIRE ALARM VOICE EVAC SPEAKER/STROBE LIGHT; CANDELA RATING AS INDICATED; WALL MOUNTED 6'-8" AFF TO BOTTOM OR 6" BELOW CEILING, WHICHEVER IS LOWER
- CEILING MOUNTED FIRE ALARM VOICE EVAC SPEAKER STROBE LIGHT; CANDELA RATING AS INDICATED
- P — CEILING MOUNTED FIRE ALARM VOICE EVAC SPEAKER
- CEILING MOUNTED FIRE ALARM HORN/STROBE LIGHT
- CEILING MOUNTED FIRE ALARM HORN/STROBE LIGHT
- CEILING MOUNTED FIRE ALARM STROBE LIGHT; CANDELA RATING AS INDICATED
- HD — HEAT DETECTOR
- TS — SPRINKLER SYSTEM VALVE TAMPER SWITCH
- FS — SPRINKLER SYSTEM FLOW SWITCH
- MM — MONITOR MODULE
- CO — CARBON MONOXIDE DETECTOR
- CM — CONTROL MODULE

SECURITY

- WP — VIDEO SURVEILLANCE CAMERA UON, CEILING MOUNTED, WALL MOUNTED WITH CAT 6A DATA DROP IN 3/4" CONDUIT TO ACCESSIBLE CEILING SPACE TO MDF ROOM. EXTERIOR CAMERAS MOUNT AT 140" AFF UON. WALL MOUNTED INTERIOR CAMERAS MOUNT AT 108" AFF UON. WP SUBSCRIPT INDICATES WEATHERPROOF; FOR INTERIOR, PROVIDE AXIS M3044-V WITH 64GB SD CARD. FOR EXTERIOR, PROVIDE AXIS P3224-LVE WITH 64GB SD CARD. 360 SUBCRIPT INDICATES AXIS M3007-PV TO BE PROVIDED.
- DUAL TECHNOLOGY MOTION DETECTOR; ARROW INDICATES AIMING DIRECTION. CEILING/WALL MOUNTED 80" AFF
- CR — CARD READER; MOUNT AT 48" AFF (TO TOP OF DEVICE).
- DC — DOOR CONTACT

MISCELLANEOUS

- (1) — REFERENCE TO DRAWING NOTE
- #/E#.# — DETAIL REFERENCE: DETAIL NUMBER/DRAWING NUMBER
- CEILING FAN; PROVIDE BIG ASS FANS HAIKU I-SERIES 60" WITH ASSOCIATED WALL SWITCH, ARCHITECT TO SELECT FINISH; MOUNT AT 15'-7 1/4" AFF

ABBREVIATIONS:

A	AMPERE, AMPERES
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
CATV	CABLE TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
C	CONDUIT
CB	CIRCUIT BREAKER
DWG	DRAWING
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
ELV	ELECTRONIC LOW VOLTAGE
EPO	EMERGENCY POWER OFF
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EX	EXISTING
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPERES
FSS	FUSED SAFETY SWITCH
G	GROUND
GFEP	GROUND FAULT EQUIPMENT PROTECTION
GFI	GROUND FAULT INTERRUPTING
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HWH	HOT WATER HEATER GENERATOR
IDF	INTERMEDIATE DISTRIBUTION FRAME
IMC	INTERMEDIATE METAL CONDUIT
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT-AMPERES
KW	KILOWATT
LRA	LOCKED ROTOR AMPERES
MCA	MINIMUM CIRCUIT AMPERES
MCB	MAIN CIRCUIT BREAKER
MDF	MAIN DISTRIBUTION FRAME
MLO	MAIN LUGS ONLY
MPOP	MAIN POINT OF PRESENCE
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
MH	MOUNTING HEIGHT/MANHOLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NF/SS	NONFUSED SAFETY SWITCH
NO	NUMBER
OC	ON CENTERS
P	POLE, POLES
ø	PHASE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
RAF	RETURN AIR FAN
RGS	RIGID GALVANIZED STEEL
RX	REMOVE EXISTING
TYP	TYPICAL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UH	UNIT HEATER
V	VOLT, VOLTS
VR	VANDALL RESISTANT
WP	WEATHERPROOF
W	WATTS, WIRE, WIRES
XFMR	TRANSFORMER
TTB	TELEPHONE TERMINAL BOARD
UTP	UNSHIELDED TWISTED PAIR
UON	UNLESS OTHERWISE NOTED

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GP #21620

ELECTRICAL LEGEND, ABBREVIATIONS, AND CONVENTIONS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-0.1

February 1, 2017
Bid Set

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	MODEL	VOLTAGE	WATTAGE	LAMP	MOUNTING DESCRIPTION	COMMENTS
A	2' x 4' RECESSED LED TROFFER WITH IMPACT-MODIFIED ACRYLIC PRISMATIC REFRACTOR; RUGGED ONE-PIECE COLD-ROLLED STEEL REFLECTOR ASSEMBLY; RIGID STRUCTURE WITH BALLAST BOX AND END PLATES; L90 @ 60,000 HOURS	LITHONIA	2RTL4-30L-EZ1-LP840	277 V	30 W	LED, 4000K, 3191 LUMENS	RECESSED	
A1	2' x 4' RECESSED LED TROFFER WITH IMPACT-MODIFIED ACRYLIC PRISMATIC REFRACTOR; RUGGED ONE-PIECE COLD-ROLLED STEEL REFLECTOR ASSEMBLY; RIGID STRUCTURE WITH BALLAST BOX AND END PLATES; L90 @ 60,000 HOURS	LITHONIA	2RTL4-40L-EZ1-LP840	277 V	38 W	LED, 4000K, 4305 LUMENS	RECESSED	
AE	SAME AS TYPE A EXCEPT WITH INTEGRAL EMERGENCY BATTERY	LITHONIA	2RTL4-30L-EZ1-LP840-EL14L	277 V	30 W	LED, 4000K, 3191 LUMENS	RECESSED	
B	2' x 2' RECESSED LED TROFFER WITH IMPACT-MODIFIED ACRYLIC PRISMATIC REFRACTOR; RUGGED ONE-PIECE COLD-ROLLED STEEL REFLECTOR ASSEMBLY; RIGID STRUCTURE WITH BALLAST BOX AND END PLATES; L90 @ 60,000 HOURS	LITHONIA	2RTL2-33L-EZ1-LP840	277 V	35 W	LED, 4000K, 3736 LUMENS	RECESSED	
C	2' x 4' RECESSED VOLUMETRIC LED TROFFER WITH RUGGED, ONE-PIECE COLD-ROLLED STEEL COATED POLYESTER; SINGLE CLEAR ACRYLIC DIFFUSER; L90 @ 60,000 HOURS	LITHONIA	2VTL4-30L-ADP-EZ1-LP840	277 V	30 W	LED, 4000K, 3677 LUMENS	RECESSED	
CE	SAME AS TYPE C EXCEPT WITH INTEGRAL EMERGENCY BATTERY	LITHONIA	2VTL4-30L-ADP-EZ1-LP840-EL14L	277 V	30 W	LED, 4000K, 3677 LUMENS	RECESSED	
D	2' x 2' RECESSED VOLUMETRIC LED TROFFER WITH RUGGED, ONE-PIECE COLD-ROLLED STEEL COATED POLYESTER; SINGLE CLEAR ACRYLIC DIFFUSER; L90 @ 60,000 HOURS	LITHONIA	2VTL2-20L-ADP-EZ1-LP840	277 V	20 W	LED, 4000K, 2241 LUMENS	RECESSED	
DE	SAME AS TYPE D EXCEPT WITH INTEGRAL EMERGENCY BATTERY	LITHONIA	2VTL2-20L-ADP-EZ1-LP840-EL14L	277 V	20 W	LED, 4000K, 2241 LUMENS	RECESSED	
EXIT SIGN	LED EXIT SIGN WITH DIE-CAST ALUMINUM CONSTRUCTION; UNIVERSAL MOUNTING, CHEVRON STYLED DIRECTIONAL ARROWS; SINGLE OR DOUBLE FACED; AND NICKEL CADIUM BATTERY	LITHONIA	LQC-W-*-R-ELN	277 V	5 W	LED	UNIVERSAL	REFER TO FLOOR PLANS FOR LOCATION OF SINGLE/DOUBLE FACED AND/OR DIRECTION OF CHEVRON ARROWS.
F	8' x 9" SUSPENDED LINEAR DIRECT/INDIRECT LED FIXTURE; ONE-PIECE 20 GAUGE STEEL HOUSING WITH 5" DIE-CAST END CAPS; 0.10" THICK ACRYLIC LENS; L90 @ 61,000 HOURS	FOCAL POINT	FV4LS-FL40-875LF-40K-1C-UNV-LD1-C24-8'	277 V	58 W	LED, 4000K, 7000 LUMENS	SUSPENDED	MOUNTED WITH TOP OF FIXTURE 12" FROM CEILING; ARCHITECT TO SELECT FINISH
F1	8' x 9" SUSPENDED LINEAR DIRECT/INDIRECT LED FIXTURE; ONE-PIECE 20 GAUGE STEEL HOUSING WITH 5" DIE-CAST END CAPS; 0.10" THICK ACRYLIC LENS; L90 @ 61,000 HOURS	FOCAL POINT	FV4LS-FL70-1125LF-40K-1C-UNV-LD1-C24-8'	277 V	72 W	LED, 4000K, 9000 LUMENS	SUSPENDED	MOUNTED WITH TOP OF FIXTURE 18" FROM CEILING; ARCHITECT TO SELECT FINISH
F1E	SAME AS TYPE F1 EXCEPT WITH INTEGRAL EMERGENCY BATTERY	FOCAL POINT	FV4LS-FL70-1125LF-40K-1C-UNV-LD1-C24-EM-8'	277 V	72 W	LED, 4000K, 9000 LUMENS	SUSPENDED	MOUNTED WITH TOP OF FIXTURE 18" FROM CEILING; ARCHITECT TO SELECT FINISH
F2	WALL MOUNTED DIRECT/INDIRECT LED FIXTURE WITH FROSTED LENS; ONE-PIECE 20 GAUGE STEEL HOUSING WITH 5" DIE-CAST END CAPS; 0.10" THICK ACRYLIC LENS; L90 @ 61,000 HOURS	FOCAL POINT	FV4LW-FL-875LF-1C-UNV-LD1-WM-4'	277 V	30 W	LED, 4000K, 3500 LUMENS	WALL	ARCHITECT TO SELECT FINISH
FE	SAME AS TYPE F EXCEPT WITH INTEGRAL EMERGENCY BATTERY	FOCAL POINT	FV4LS-FL40-875LF-40K-1C-UNV-LD1-C24-EM-8'	277 V	58 W	LED, 4000K, 7000 LUMENS	SUSPENDED	MOUNTED WITH TOP OF FIXTURE 12" FROM CEILING
G1	36" DIAMETER CYLINDRICAL FIXTURE; FORMED METAL CONSTRUCTION AND SATIN ICE POLYMER LENS; STANDARD THERMOSET POLYESTER POWDER COAT PAINT; L70 @ 50,000 HOURS	SPI LIGHTING	AIP11423-L86.0W-*-120-277V-3500K-OAH	277 V	86 W	LED, 3500K, 7543 LUMENS	PENDANT	MOUNT AT 16'-0" AFF TO BOTTOM OF FIXTURE; ARCHITECT TO SELECT FINISH
G1E	SAME AS TYPE G1 EXCEPT WITH INTEGRAL EMERGENCY BATTERY	SPI LIGHTING	AIP11423-L86.0W-*-120-277V-3500K EMI-OAH	277 V	86 W	LED, 3500K, 7543 LUMENS	PENDANT	MOUNT AT 16'-0" AFF TO BOTTOM OF FIXTURE; ARCHITECT TO SELECT FINISH
G2	48" DIAMETER CYLINDRICAL FIXTURE; FORMED METAL CONSTRUCTION AND SATIN ICE POLYMER LENS; STANDARD THERMOSET POLYESTER POWDER COAT PAINT; L70 @ 50,000 HOURS	SPI LIGHTING	AIP11424-L114.7W-*-120-277V-3500K-OAH	277 V	115 W	LED, 3500K, 10,057 LUMENS	PENDANT	MOUNT AT 16'-0" AFF TO BOTTOM OF FIXTURE; ARCHITECT TO SELECT FINISH
G3	72" DIAMETER RING FIXTURE; SEAMLESS ONE PIECE MOLDED DIFFUSER; FULLY ENCLOSED TOP SURFACE; METAL TRIM ON OUTER DIAMETER; L70 @ 100,000 HOURS	OCL	GL2-P1EM-72-MW-*-LED1/35K-UNV-DM1	277 V	115 W	LED, 3500K, 12,075 LUMENS	PENDANT	MOUNT AT 14'-0" AFF TO BOTTOM OF FIXTURE; ARCHITECT TO SELECT FINISH
H	3" x 4' LED LENSED STRIPLIGHT; CODE-GAUGED COLD ROLLED STEEL; MULTISTAGE IRON PHOSPHATE PRETREATMENT; UL DAMP LOCATION LISTED; L70 @ 60,000 HOURS	LITHONIA	ZL2N-L48-3000LM-MDD-MVOLT-40K-80CRI-WH	277 V	41 W	LED, 4000K, 3173 LUMENS	SUSPENDED	
H1	3" x 4' LED LENSED STRIPLIGHT; CODE-GAUGED COLD ROLLED STEEL; MULTISTAGE IRON PHOSPHATE PRETREATMENT; UL DAMP LOCATION LISTED; L70 @ 60,000 HOURS	LITHONIA	ZL2N-L48-3000LM-MDD-MVOLT-40K-80CRI-WH	277 V	41 W	LED, 4000K, 3173 LUMENS	WALL	MOUNT AT 7'-6" AFF UON
H1E	SAME AS TYPE H1 EXCEPT WITH INTEGRAL EMERGENCY BATTERY	LITHONIA	ZL2N-L48-3000LM-MDD-MVOLT-40K-80CRI-BSL722-WH	277 V	41 W	LED, 4000K, 3173 LUMENS	WALL	MOUNT AT 7'-6" AFF UON
H2	3" x 2' LED LENSED STRIPLIGHT; CODE-GAUGED COLD ROLLED STEEL; MULTISTAGE IRON PHOSPHATE PRETREATMENT; UL DAMP LOCATION LISTED; L70 @ 60,000 HOURS	LITHONIA	ZL2N-L24-2000LM-MDD-MVOLT-40K-80CRI-WH	277 V	32 W	LED, 4000K, 2249 LUMENS	WALL	MOUNT AT 6'-4" AFF UON
HE	SAME AS TYPE H EXCEPT WITH INTEGRAL EMERGENCY BATTERY	LITHONIA	ZL2N-L48-3000LM-MDD-MVOLT-40K-80CRI-BSL722(270V)-WH	277 V	41 W	LED, 4000K, 3173 LUMENS	SUSPENDED	
J	13-3/4"W x 6-3/8"H x 10"D WALL MOUNTED LED FIXTURE WITH TWO PIECE DIE-CAST ALUMINUM HOUSING; INTEGRAL HEAT SINK FINS; IP65 RATED, WET LISTED, INTEGRAL SURGE SUPPRESSION; TYPE 2 MEDIUM DISTRIBUTION	LITHONIA	DSXW1 LED-10C-530-40K-T2M-MVOLT-DMG-HS-SPD	277 V	20 W	LED, 4000K, 2102 LUMENS	WALL	MOUNT AT 10'-0" AFF UON
JE	SAME AS TYPE J EXCEPT WITH INTEGRAL EMERGENCY BATTERY	LITHONIA	DSXW1 LED-10C-530-40K-T2M-MVOLT-DMG-ELCW-HS-SPD	277 V	20 W	LED, 4000K, 2102 LUMENS	WALL	MOUNT AT 10'-0" AFF UON
L	6.7" x 38" RECESSED LED FIXTURE WITH FORMED METAL CONSTRUCTION; FROSTED ACRYLIC LENS; THERMOSET POLYESTER POWDER COAT PAINT; L70 @ 50,000 HOURS	SPI LIGHTING	AIC10480-L43.0W-*-UNV-4000K	277 V	43 W	LED, 4000K, 1760 LUMENS	RECESSED	
LE	SAME AS TYPE L EXCEPT WITH INTEGRAL EMERGENCY BATTERY	SPI LIGHTING	AIC10480-L43.0W-*-UNV-4000K EMI	277 V	43 W	LED, 4000K, 1760 LUMENS	RECESSED	
M	2' DIAMETER LED SURFACE RING FIXTURE WITH ALUMINUM HOUSING; DIRECT LIGHTING WITH INDIRECT ILLUMINATED RING AROUND FIXTURE;	VOIGT LIGHTING	VR724L-4500L 4K-DI/ID-OP-SU-*-277-DIM MOD	277 V	44 W	LED, 4000k, 4500 LUMENS	SURFACE	MOD = INDIRECT GLOW RING; ARCHITECT TO SELECT FINISH
ME	SAME AS TYPE M EXCEPT WITH INTEGRAL EMERGENCY BATTERY	VOIGT LIGHTING	VR724L-4500L 4K-DI/ID-OP-SU-*-277-DIM MOD BAT-1	277 V	44 W	LED, 4000k, 4500 LUMENS	SURFACE	MOD = INDIRECT GLOW RING; ARCHITECT TO SELECT FINISH
N	4" DIAMETER LED TRANSLUCENT CYLINDER OVER A WHITE CASE GLASS CYLINDER PENDANT FIXTURE; 80 CRI	TECH LIGHTING	700-MP-ECP-*-*-LEDS830	277 V	8 W	LED, 3000K, 500 LUMENS	PENDANT	MOUNT AT 7'-0" AFF TO BOTTOM OF FIXTURE; ARCHITECT TO SELECT FINISH
PE	4' DIAMETER RECESSED DIRECT LED WITH LENS; FROSTED ACRYLIC DIFFUSER; TWO-PIECE 20 GAUGE STEEL REFLECTOR AND HOUSING; L90 @ 61,000 HOURS	FOCAL POINT	FSDL-44-FLXP-17000L-35K-1C-UNV-LD1-U-WH	277 V	185 W	LED, 3500K, 17,000 LUMENS	RECESSED	
R	1-3/8"W x 13/16"D x 3' LONG SINGLE CIRCUIT TRACK WITH EXTRUDED ALUMINUM HOUSING, MILLED GROUNDING BAR, CONTINUOUSLY CRIMPED CONDUCTORS, WHITE FINISH AND UL LISTED	AMERLUX	GES SERIES	120 V	240 W		CEILING, SURFACE	PROVIDE ALL APPURTENANCES FOR A COMPLETE SYSTEM; PROVIDE 2 AMP CURRENT LIMITER; ELV DIMMER TYPE MUST BE COORDINATED WITH TRACK LIGHTING MANUFACTURER TO ENSURE FLICKER FREE DIMMING DOWN TO 10%. VISUAL STYLE OF DIMMER SWITCH SHALL BE APPROVED BY ARCHITECT. SHOP DRAWING SUBMITTAL SHALL HAVE VERIFICATION OF COORDINATION AND STYLE OF DIMMER SWITCH FOR APPROVAL
R1	NOMINAL 4-1/4"W x 4-11/16"D x 3" DIAMETER LED TRACK HEAD WITH COMPLETE DIE CAST CONSTRUCTION; NO EXPOSED WIRING; 0-180 DEGREE TILT; 360 DEGREE ARTICULATION; 97 CRI; NARROW FLOOD DISTRIBUTION; WHITE FINISH; ENERGY STAR RATED; ELV DIMMING	AMERLUX	HORNET-HP-A14-18-LED-WT-TN1-120-NF-3000-97-AH(WITH RECTILINEAR SPREAD LENS)	120 V	18 W	LED, 3000K, 97CRI WITH 92 R9 VALUE MIN.		
T	NOMINAL 6" RECESSED LED DOWNLIGHT WITH SEMI SPECULAR CLEAR REFLECTOR; LIGHT ENGINE AND DRIVER ACCESSIBLE THROUGH APERTURE; L70 @ 60,000 HOURS	GOTHAM LIGHTING	EVO-40-20-6AR-MD-LSS-277	277 V	23 W	LED, 4000K, 2000 LUMENS	CEILING, RECESSED	
UE	6" SURFACE MOUNTED LED CYLINDER; CNC MACHINED ALUMINUM WITH STAINLESS STEEL HARDWARE; TGIC POLYESTER FINISH; UL LISTED FOR WET LOCATIONS; L80 @ 50,000 HOURS; WITH EMERGENCY BATTERY	V2 LIGHTING GROUP	C4SM-DVW-30834051-*	277 V	29 W	LED, 4000K, 3000 LUMENS	CEILING, SURFACE	MOUNT TO BOTTOM OF STRUCTURE; ARCHITECT TO SELECT FINISH

GENERAL NOTES:

1. PROVIDE ALL 0-10V DIMMING DRIVERS PREWIRED WITH ISOLATED LEADS. WHEN A DIMMING DRIVER IS PROVIDED BUT ONLY CALLED FOR STATIC OPERATION, CAP 0-10V LEADS AND LEAVE IN PLACE, ENSURE LUMINAIRE STILL OPERATES AT 100% OUTPUT.
2. COORDINATE LIGHTING FIXTURES INDICATED ON DRAWINGS WITH ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS. VERIFY CEILING CONSTRUCTION IN ALL AREAS WITH ARCHITECTURAL DRAWINGS AND PROVIDE ALL MOUNTING FRAMES/HARDWARE AS REQUIRED FOR A COMPLETE INSTALLATION SUITABLE FOR THE CEILING TYPE.
3. IN SPRINKLERED AREAS, MAINTAIN ADEQUATE SPACING BETWEEN FIXTURES AND SPRINKLER HEADS PER COUNTY FIRE MARSHAL REQUIREMENTS.
4. ALL DIMMING DRIVERS OR DIMMING BALLASTS SHALL BE COORDINATED WITH DIMMER/DIMMING SYSTEM TO ENSURE FLICKER FREE DIMMING DOWN TO 10% UNLESS SPECIFIED TO LOWER PERCENTAGE IN LIGHT FIXTURE SCHEDULE.
5. RECESSED LINEAR RUNS UP TO 12FT IN LENGTH SHALL BE PROVIDED AS ONE CONTINOUS HOUSING. LENSING SHALL BE ONE CONTINOUS LENS FOR ANY RUN UP TO 8FT IN LENGTH. THERE WILL BE NO GAP OR LIGHT LEAK WHERE TWO LENS MERGE TOGETHER. IN ADDITION, NO MORE THAN 1/32" MAXIMUM SPACE BETWEEN END OF HOUSING AND LENS.
6. WHERE RECESSED LINEAR RUNS ARE SHOWN WITH NORMAL AND EMERGENCY POWER, HOUSING AND LENSING SHALL BE CONTINUOUS.

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GP #21620

LIGHTING FIXTURE SCHEDULE

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-0.2

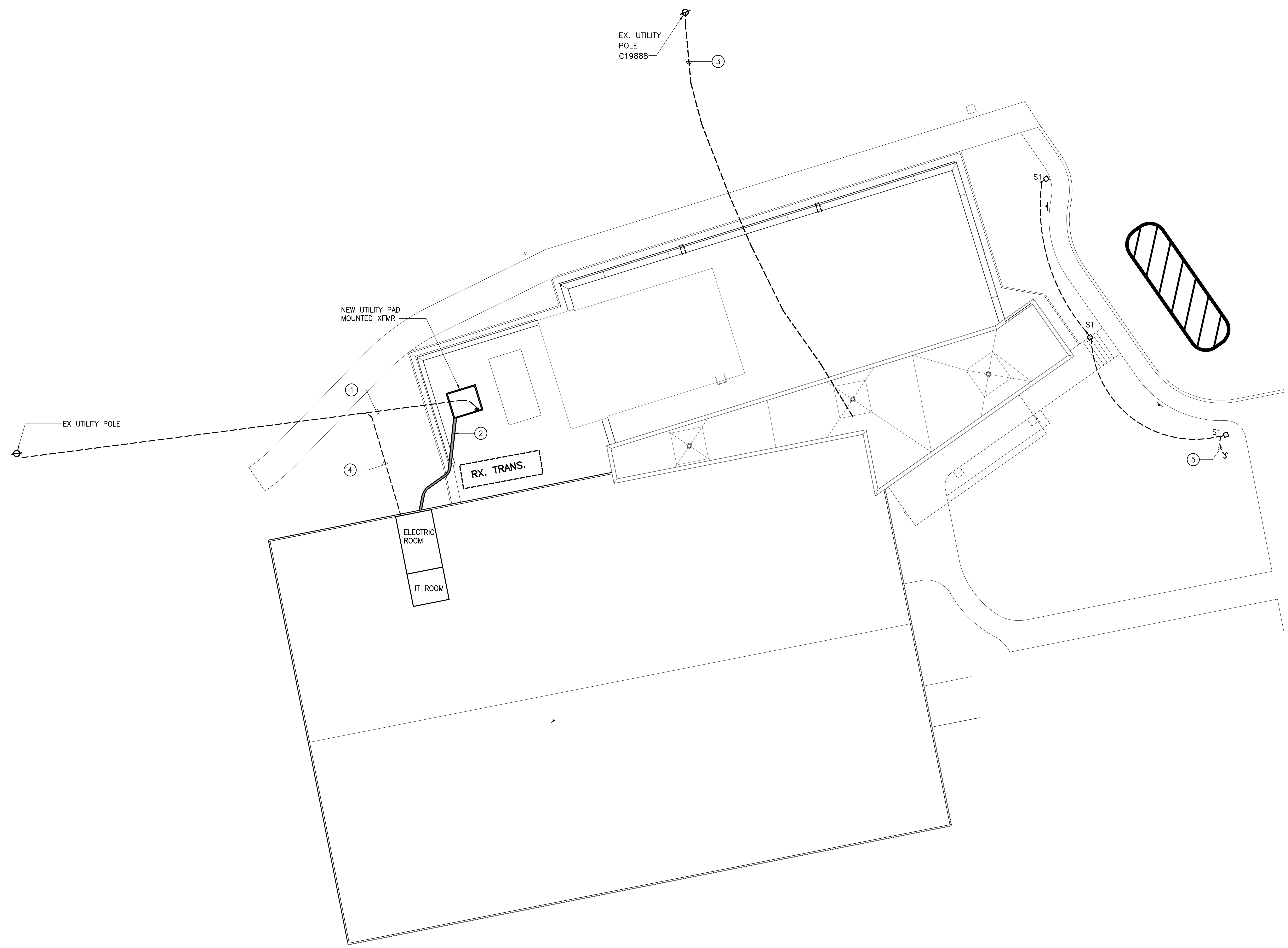
February 1, 2017
Bid Set

GENERAL NOTES:

1. PAINT CONDUIT RUNNING ALONG EXTERIOR WALLS TO MATCH SURROUNDINGS.

DRAWING NOTES:

1. (2) 5" DIRECT BURIED CONDUITS FOR PRIMARY FEEDER.
2. SECONDARY DUCTBANK.
3. ABANDON EXISTING CABLE LINE.
4. (2) 2" DIRECT BURIED CONDUITS FOR CABLE LINE.
5. CONNECT TO NEAREST EXISTING SITE LIGHTING CIRCUIT.



SITE PLAN – ELECTRICAL
SCALE: 1"=10'-0"

EXTERIOR LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	CATALOG NO.	VOLTS	INPUT WATTS	LAMP	MOUNTING	REMARKS
S1	33"L x 13"W x 7.5"H AREA STYLE LED LUMINAIRE; ALUMINUM HOUSING WITH INTEGRAL HEAT SINK FINS; T3M DISTRIBUTION TYPE; 70 MINIMUM CRI; 10kV SURGE PROTECTION; IP65 RATED; UL LISTED FOR WET LOCATIONS; DLC LISTED	LITHONIA	DSX1 LED-40C-530-40K-T3M-MVOLT-SPA-*	277	99	LED, 4000K	POLE	FINISH TO BE SELECTED BY ARCHITECT
S-POLE	POLE SHALL BE 15 FEET, 4" SQUARE STRAIGHT - FINISH PAINT OVER GALVANIZED STEEL; SIZED FOR PROPER EPA OF LUMINAIRE(S) ATTACHED; POLES SHALL NOT BE SIZED FOR BANNER ATTACHMENTS	LITHONIA					REFER TO POLE BASE DETAIL IN ELECTRICAL DETAILS	FINISH TO BE SELECTED BY ARCHITECT; FOR WIND LOADING REFER TO SPECIFICATION SECTION 265613

SCALE: 1" = 10'-0"

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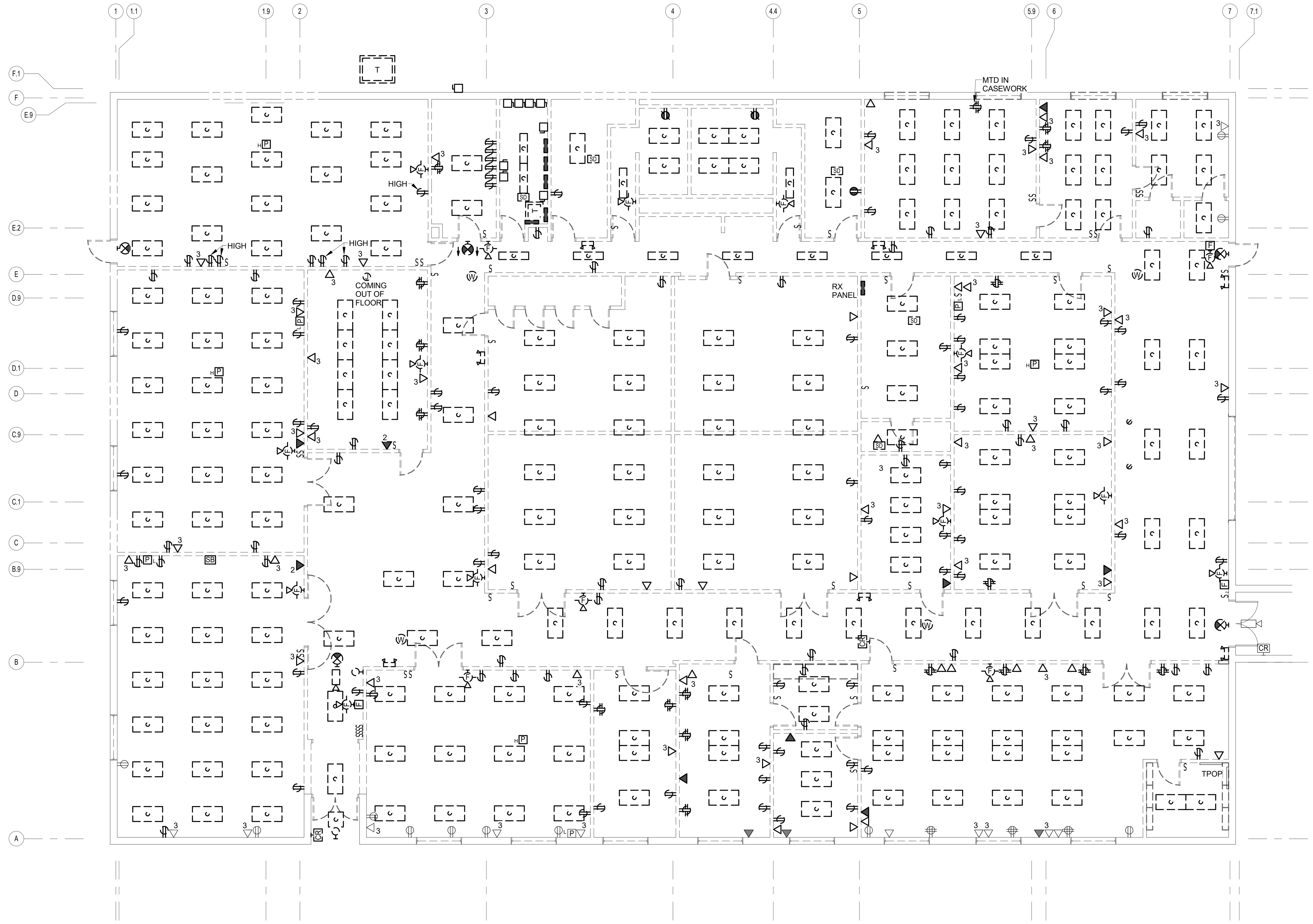
SITE PLAN - ELECTRICAL
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

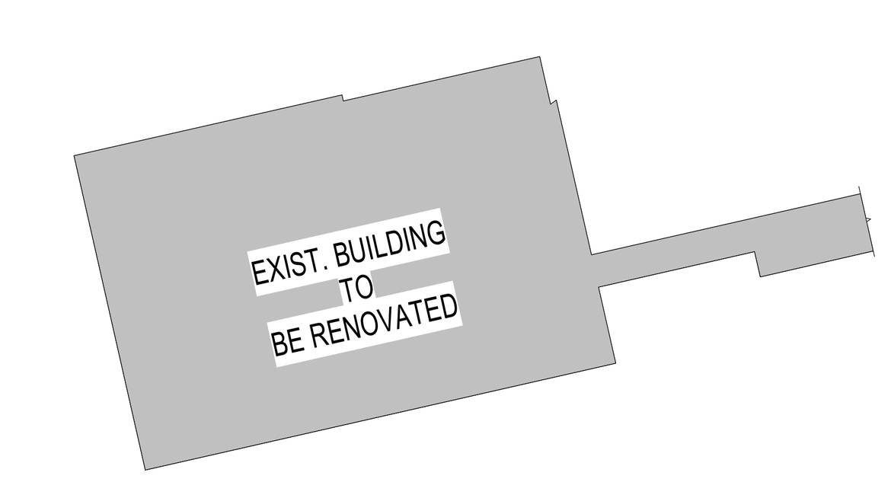
E-0.3
February 1, 2017
Bid Set



FIRST FLOOR - ELECTRICAL - DEMOLITION
1/8" = 1'-0"

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

KEY PLAN



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GP #21620

FIRST FLOOR - ELECTRICAL - DEMOLITION

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

ED-1.1

February 1, 2017
Bid Set

FIRST FLOOR - POWER & SPECIAL SYSTEMS
1/8" = 1'-0"

GENERAL NOTES:

1. REFER TO MECHANICAL EQUIPMENT CONNECTION SCHEDULE ON DRAWING E7.3 FOR ADDITIONAL INFORMATION.

DRAWING NOTES:

(1) MOUNT RECEPTACLE 4" ABOVE BASEBOARD HEATER TO CENTER OF DEVICE AND ORIENTED HORIZONTALLY.

(2) MAKE ALL CONNECTIONS TO FUME HOOD AND INTERLOCK CONNECTIONS TO FAN AS REQUIRED.

(3) MOUNT TO SUIT EQUIPMENT. REFER TO PANELBOARD SCHEDULES FOR MORE INFORMATION

(4) MOUNT INSIDE CABINETRY TO SUIT POLYCOM REALPRESENCE GROUP 310 CODEC (PROVIDED BY EC).

(5) NEMA 5-15R.

(6) IT RACKS. COORDINATE EXACT LOCATION WITH OWNER. ONE RACK TO BE PROVIDED BY OWNER.

(7) NEMA L5-30R.

(8) MOUNTED IN CASEWORK. COORDINATE WITH CASEWORK CONTRACTOR AND APPROVED SHOP DRAWINGS. (TYPICAL FOR LAB TABLES).

(9) DIMMER SWITCH FOR SOLATUBES. FURNISHED WITH SOLATUBE, INSTALLED BY E.C.

(10) MAKE CONNECTION TO SOLATUBE.

(11) SWITCH/CONTROLLER FOR TWO (2) CEILING FANS IN LOBBY TO BE CONTROLLED SIMULTANEOUSLY. COORDINATE EXACT LOCATION WITH OWNER.

(12) MAKE ALL CONNECTIONS TO CONTROL PANEL FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.

(13) COORDINATE POWER LOCATION WITH MECHANICAL CONTRACTOR.

(14) PROVIDE WITH GFCI RECEPTACLES.

(15) MAKE CONNECTION TO TRAP PRIMING STATION.

(16) MAKE CONNECTION TO SECURITY SYSTEM PANEL.

(17) MAKE CONNECTION TO CONTACTOR CB FOR EMERGENCY SHUT-OFF OF BOILER.

(18) PROVIDE POLYCOM EAGLEEYE IV CAMERA WITH WIDE ANGLE LENS AND UNIVERSAL MOUNTING SHELF. REFER TO ONE-LINE DIAGRAM IN DETAILS.

(19) NEMA 4X ENCLOSURE JUNCTION BOX FOR HEAT TRACE. INSTALL PER MANUFACTURERS RECOMMENDATIONS.

(20) PROVIDE FESTO 189-A BASIC POWER STATION. (TYPICAL FOR LAB TABLES IN THIS ROOM ONLY. TOTAL OF 13).

(21) UNDER ALTERNATE 2, MOUNT TO SUIT ENERGY DASHBOARD. VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION. UNDER BASE BID, MOUNT AT 18" AFF.

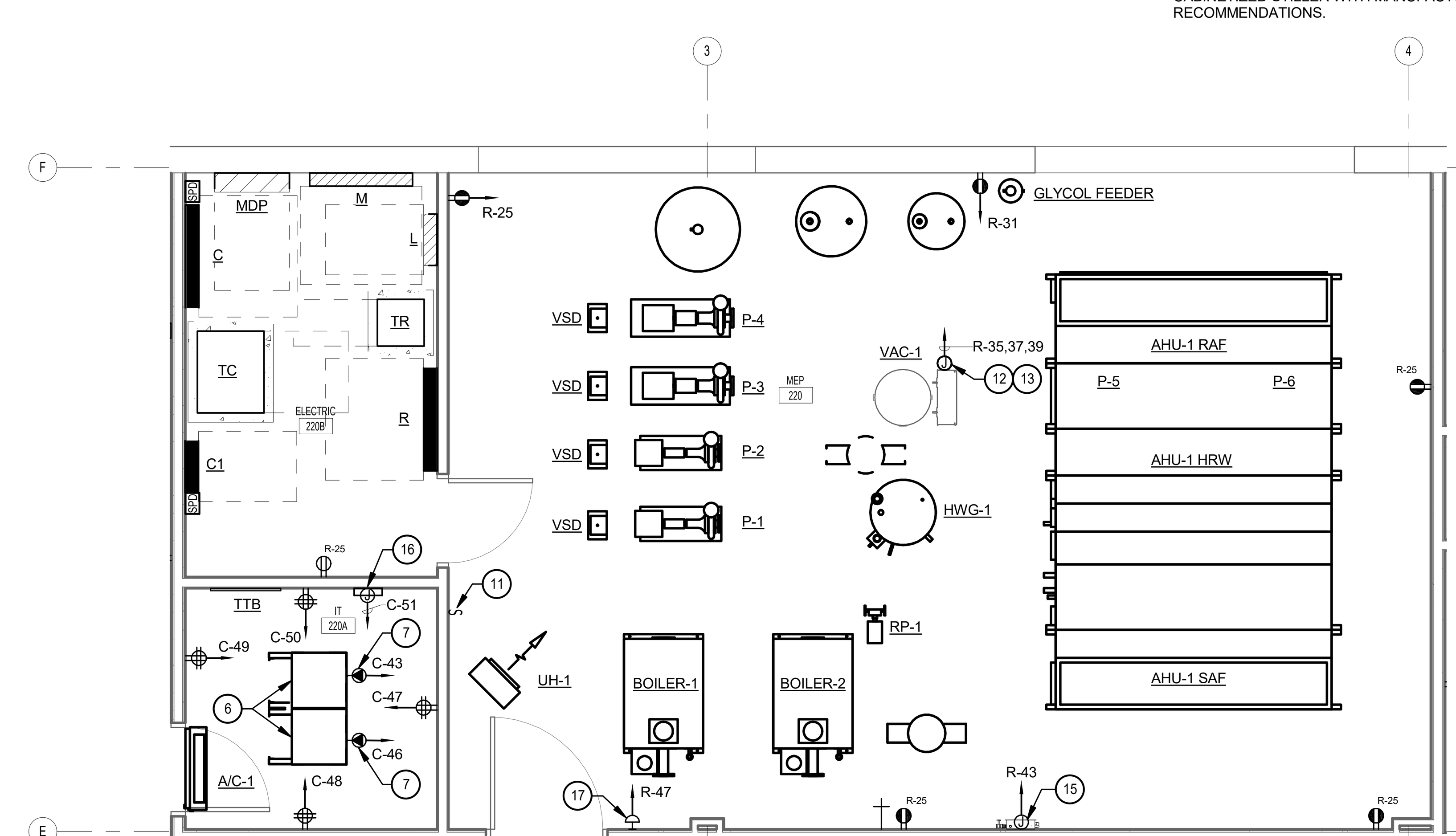
(22) PROVIDE WALL PHONE OUTLET AND MOUNT TO SUIT EMERGENCY PHONE.

(23) REFER TO DETAIL 11/E-6.1 FOR DETAILED INFORMATION.

(24) PROVIDE WITH GFCI DOUBLE DUPLEX RECEPTACLE.

(25) UNDER ALTERNATE 3, INJECTION PUMP FOR ICE/SNOW MELT SYSTEM ABOVE CEILING IN THIS ROOM. REFER TO MECHANICAL EQUIPMENT CONNECTION SCHEDULE ON E7.3 FOR MORE INFORMATION. ALSO PROVIDE DUPLEX RECEPTACLE ABOVE CEILING FOR SYSTEM FEEDER AND CONNECT TO CIRCUIT R-71. REFER TO PANELBOARD SCHEDULE ON E7.1 FOR MORE INFORMATION.

(26) COORDINATE ELECTRICAL CONNECTIONS FOR CABINETIZED STILLER WITH MANUFACTURER RECOMMENDATIONS.

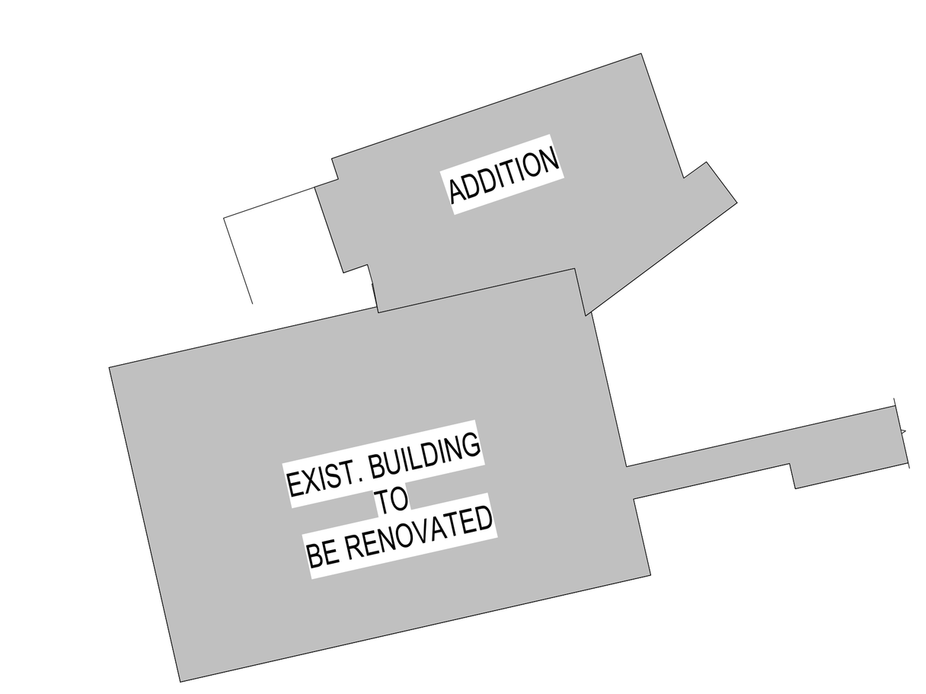


2 E-1.1 PART PLAN - ELECTRICAL & IT & MECHANICAL ROOM
1/4" = 1'-0"

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

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

KEY PLAN



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GP #21620

FIRST FLOOR - POWER & SPECIAL SYSTEMS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-1.1

February 1, 2017
Bid Set

GENERAL NOTES:

1. CONNECT ALL EXIT SIGNS TO LIGHTING CIRCUIT SERVING SAME AREA.
2. COORDINATE STEMS OF LIGHTING FIXTURES IN LOBBY 231 TO NOT BE IN CONFLICT WITH CEILING FANS.
3. EXTERIOR WALL PACKS AND CANOPY LIGHTING TO BE CONTROLLED VIA PHOTOCELL ON, TIMECLOCK OFF.
4. REFER TO DWG E-6.3 AND E-7.4 FOR ADDITIONAL INFORMATION ON CONTROLS AND CONTROLS SEQUENCE.

DRAWING NOTES:

(1) FOR PRE-FABRICATED DISPLAY CASE LIGHTING. COORDINATE EXACT POWER LOCATION POINT WITH DISPLAY CASE MANUFACTURER PRIOR TO ROUGH-IN. IN ADDITION, PROVIDE TOGGLE SWITCH FOR LOCALIZED CONTROL/DISCONNECT. COORDINATE SWITCH LOCATION WITH DISPLAY CASE MANUFACTURER AND ARCHITECT.

(2) LOCALIZED DAYLIGHT ZONE.

(3) ALL LIGHTING FIXTURES IN THIS ROOM SHALL BE IN A SINGLE DAYLIGHT ZONE CONTROLLED BY THE LIGHT SENSOR.

(4) MOUNT AT 14'-8" AFF.

(5) TYPE 'R1' FIXTURE (TYPICAL FOR 2).

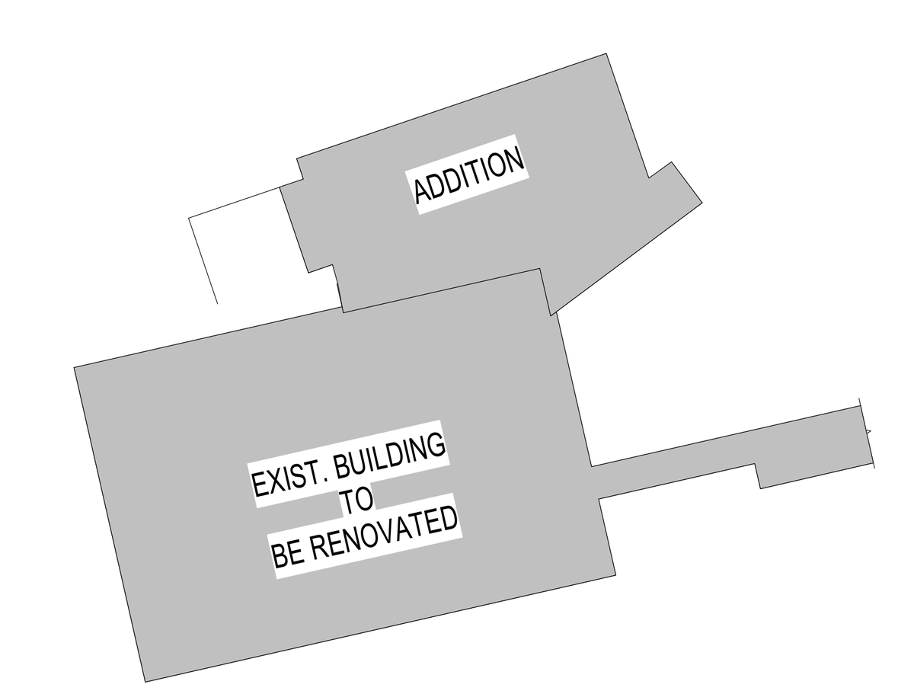
(6) ELV DIMMER FOR TYPE 'R' TRACK LIGHTING.

(7) VERIFY THAT SENSOR COVERAGE DOES NOT EXTEND PAST GLASS ON EAST WALL OF THIS ROOM INTO THE CORRIDOR WHEN CURTAIN IS CLOSED. SENSOR ONLY TO BE TIED INTO FIXTURE TYPES 'T' IN THIS ROOM.

FIRST FLOOR - LIGHTING
1/8" = 1'-0"

SCALE: 1/8" = 1'-0"
8 0 8 16

KEY PLAN



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FIRST FLOOR - LIGHTING
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-2.1
February 1, 2017
Bid Set

GENERAL NOTES:

1. REFER TO SCHEMATIC FIRE ALARM RISER DIAGRAM ON DRAWING E5.1 FOR LOCATION OF NEW FACP.

DRAWING NOTES:

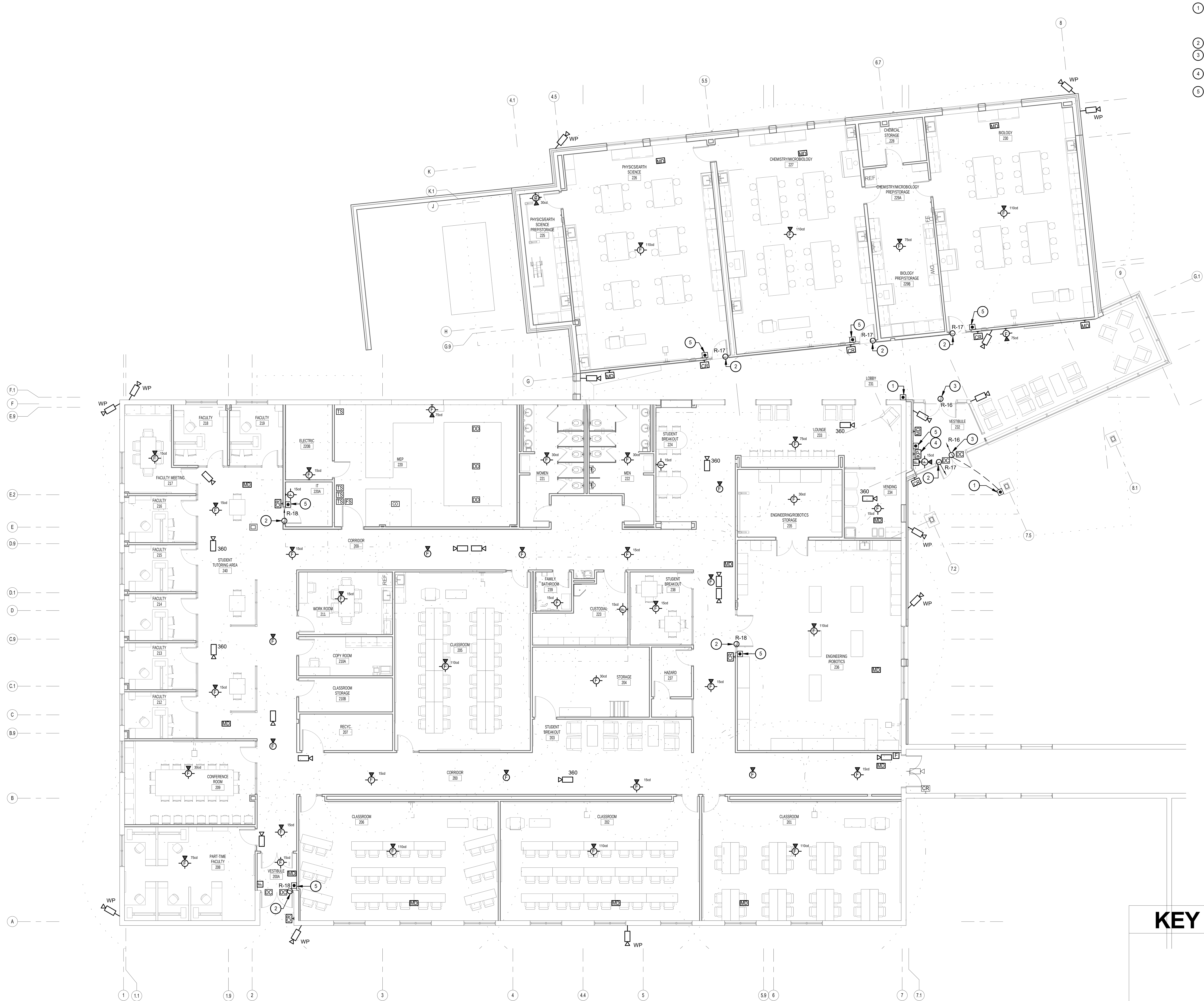
(1) ADA PUSHBUTTON. MAKE CONNECTIONS TO CONTROL ALL DOORS IN VESTIBULE 232. TIE INTO SECURITY SYSTEM SO DOORS ONLY OPEN WITH VALID CARD READ WHEN ACCESS CONTROL IS IN USE. COORDINATE EXACT LOCATION WITH OWNER.

(2) MOUNT TO SUIT ACCESS POWER SUPPLY.

(3) MOUNT TO SUIT ADA POWER SUPPLY. MAKE CONNECTION TO ADA PUSHBUTTONS AS REQUIRED.

(4) VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.

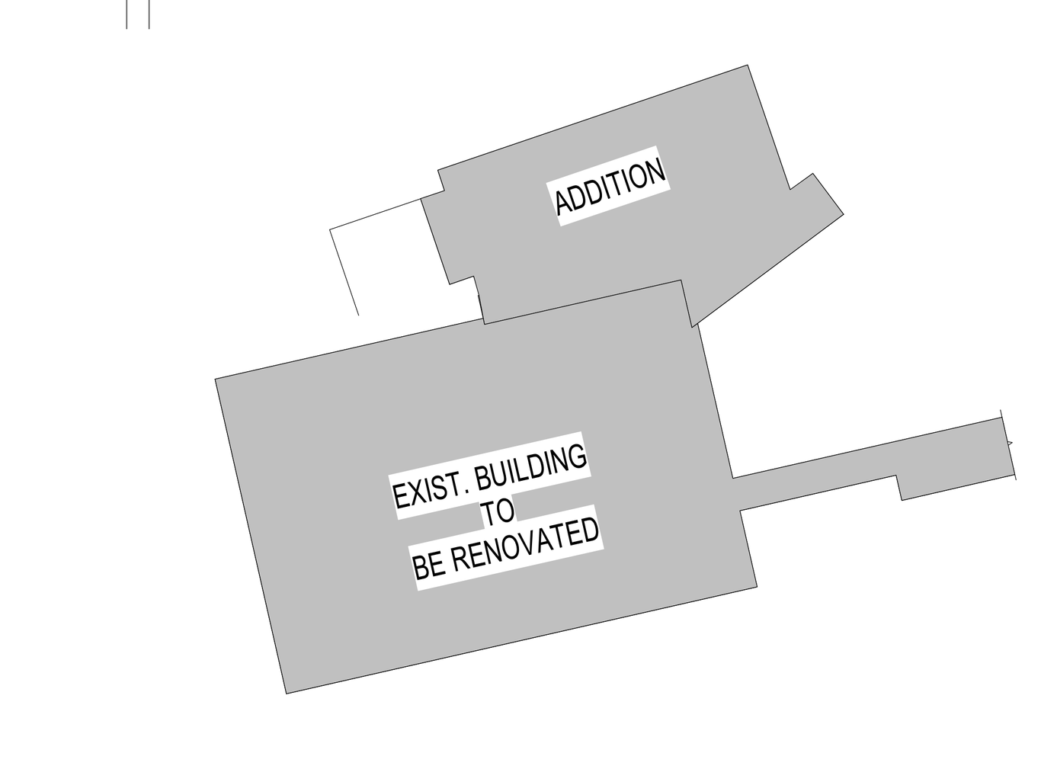
(5) REQUEST TO EXIT BUTTON.



FIRST FLOOR - FIRE ALARM & SECURITY
1/8" = 1'-0"

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

KEY PLAN



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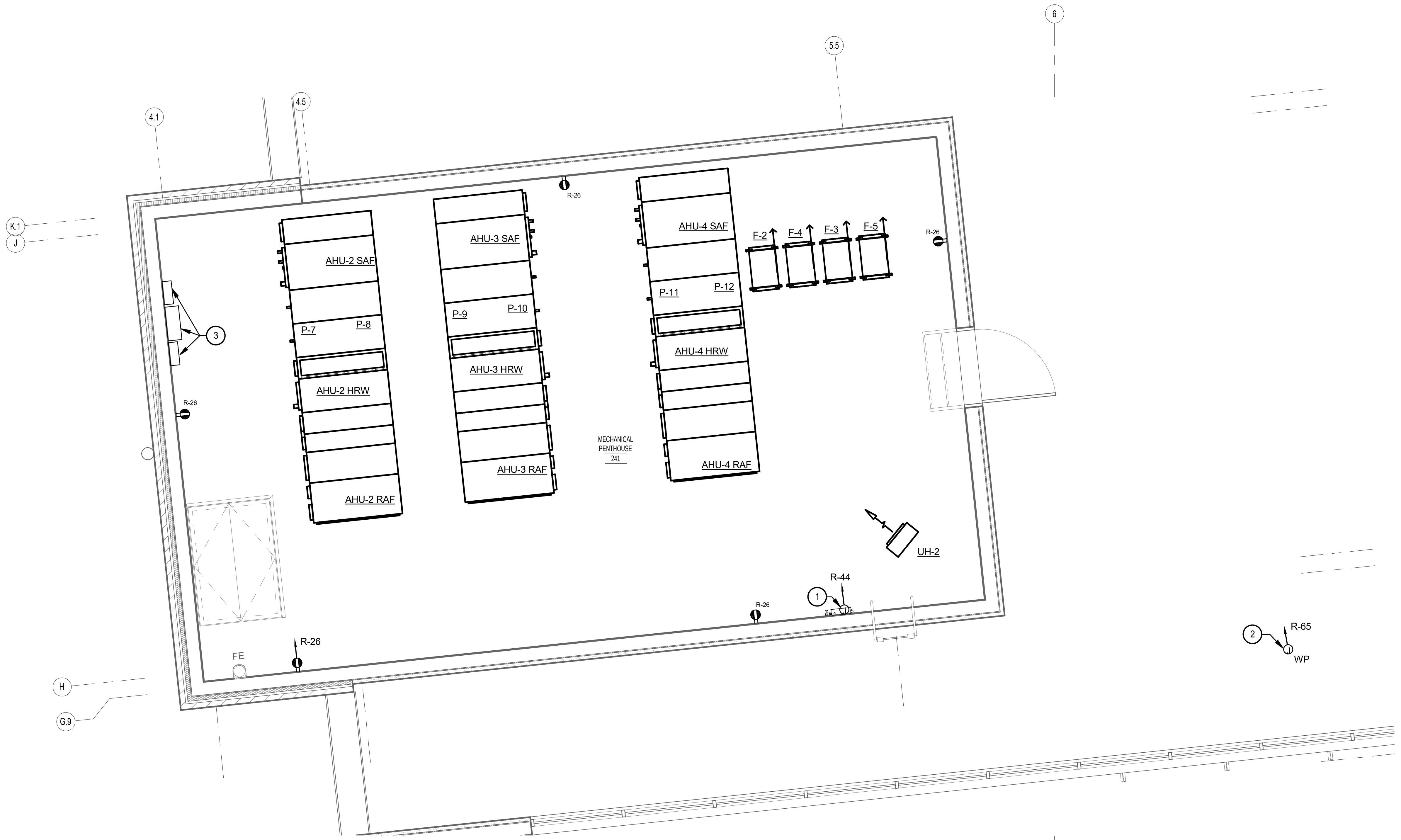
FIRST FLOOR - FIRE ALARM & SECURITY
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-3.1
February 1, 2017
Bid Set



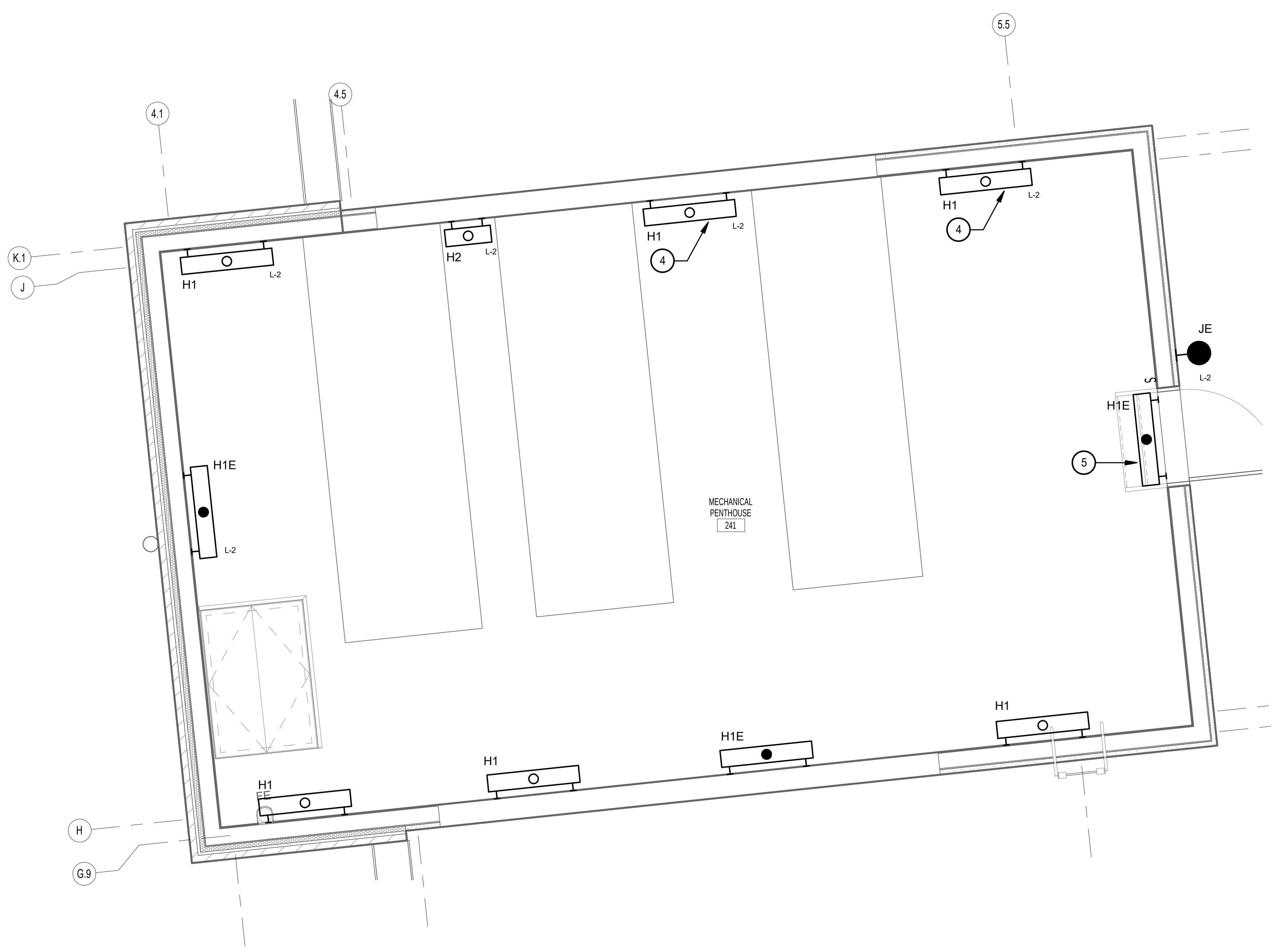
PART PLAN - PENTHOUSE - POWER & SPECIAL SYSTEMS
1/4" = 1'-0"

GENERAL NOTES:

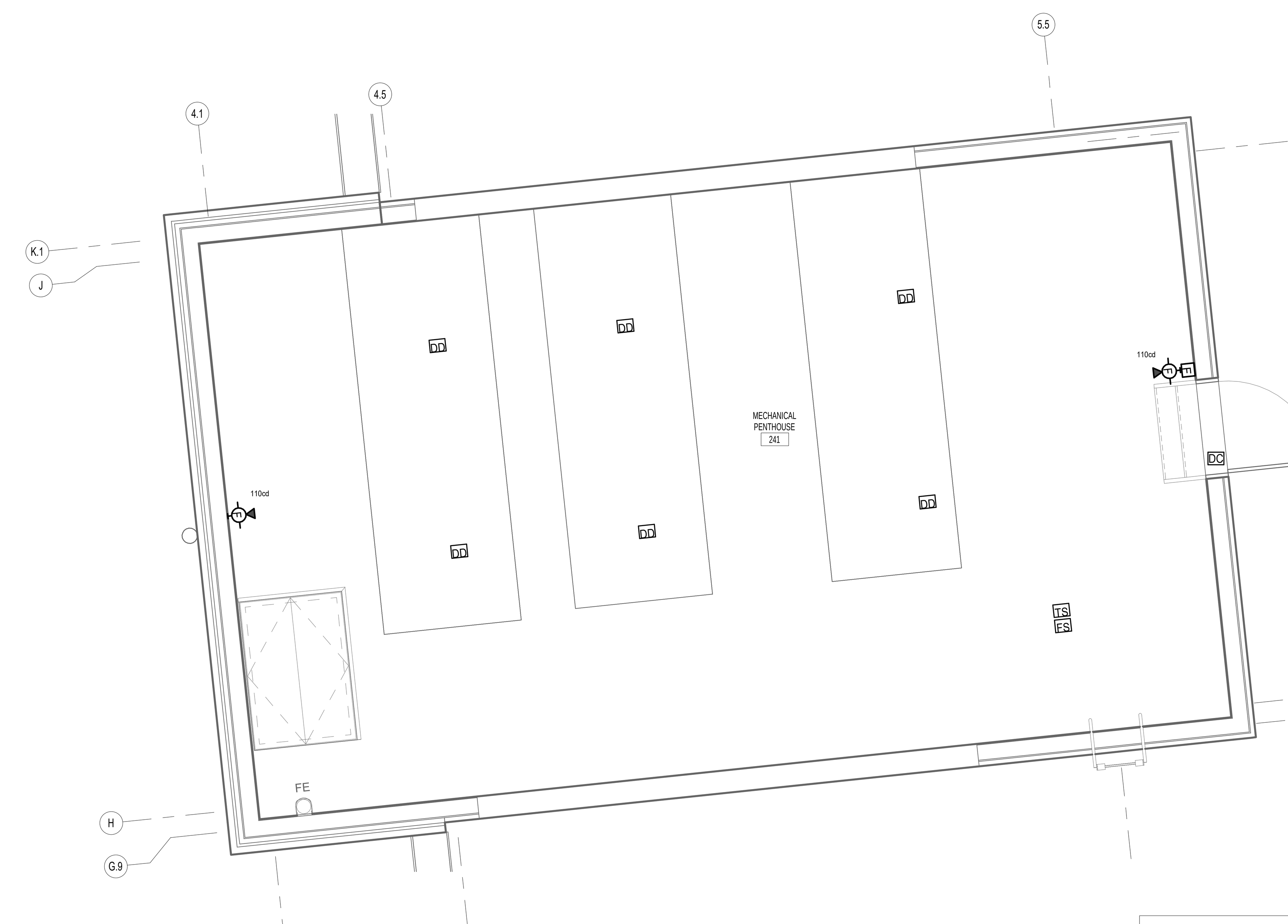
1. REFER TO MECHANICAL EQUIPMENT CONNECTION SCHEDULE ON DRAWING E7.3 FOR ADDITIONAL INFORMATION.
2. COORDINATE MOUNTING OF LIGHTING FIXTURES WITH ALL OTHER TRADES PRIOR TO ROUGH-IN (DUCTWORK, PIPING, ETC.). NOTIFY ARCHITECT OF MODIFICATIONS FOR APPROVAL PRIOR TO ROUGH-IN.

DRAWING NOTES:

(1) MAKE CONNECTION TO TRAP PRIMING STATION.
(2) MOUNT TO SUIT RADON VENT.
(3) UNDER ADD ALTERNATE #1, DC ISOLATER, INVERTER, AND AC ISOLATOR FOR SWIFT WIND ENERGY SYSTEM TURBINE. REFER TO DWG E-6.4 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
(4) MOUNT AT 6'-4" AFF.
(5) MOUNT AT 9'-6" AFF.



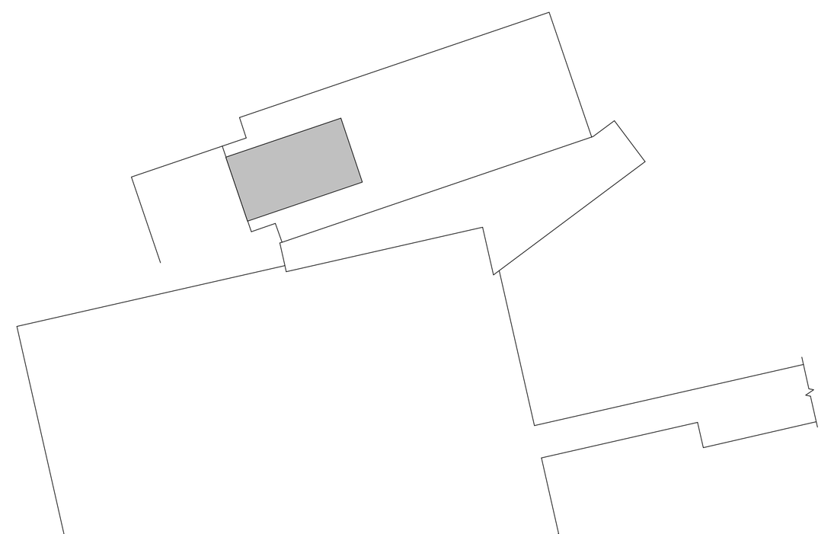
PART PLAN - PENTHOUSE - LIGHTING
1/4" = 1'-0"



PART PLAN - PENTHOUSE - FIRE ALARM & SECURITY
1/4" = 1'-0"

SCALE: 1/4" = 1'-0"
4 0 4 8

KEY PLAN



DATE	DESCRIPTION

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PENTHOUSE PART PLANS - ELECTRICAL
Garrett College STEM Renovation and Addition
McHenry, MD

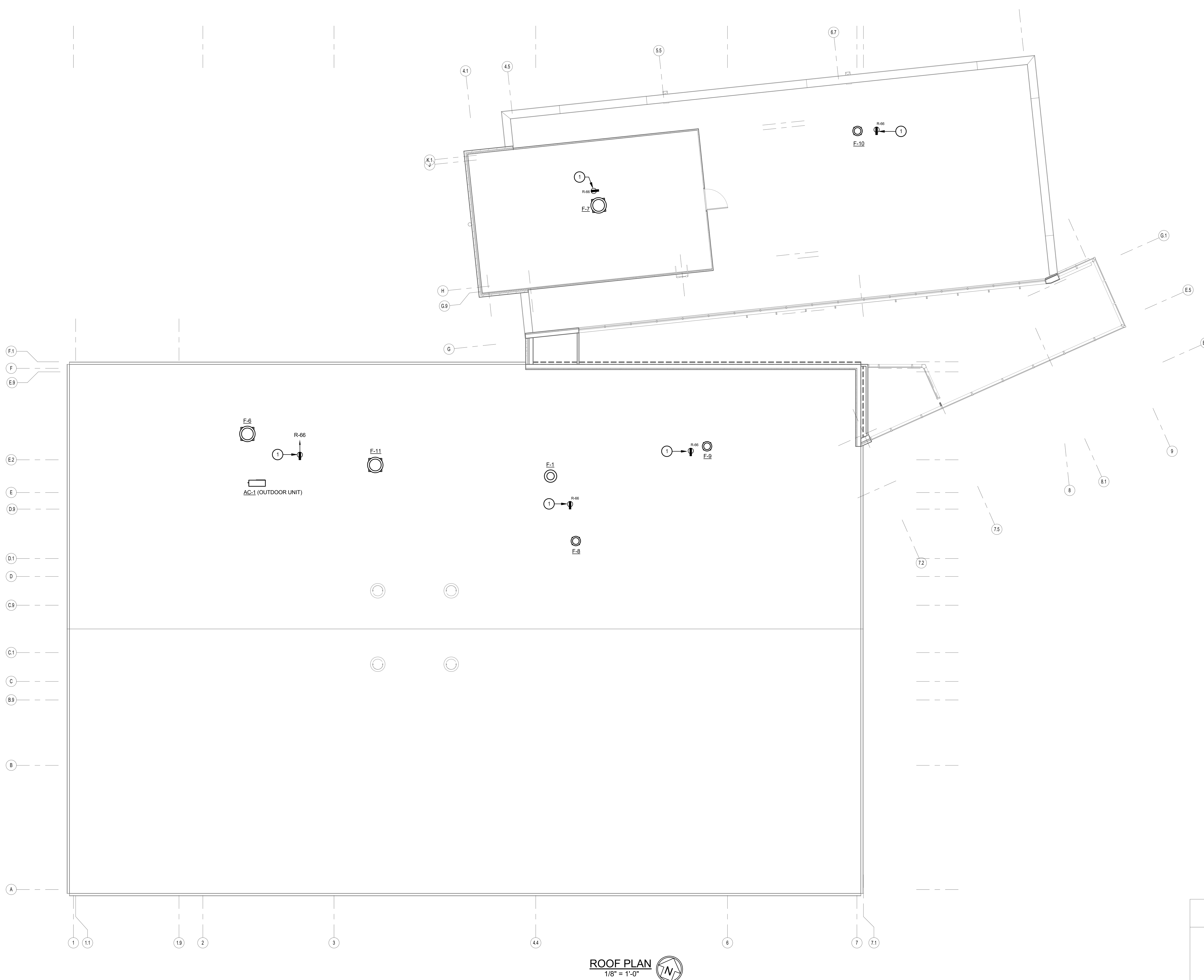
E-4.1
February 1, 2017
Bid Set

GENERAL NOTES:

1. REFER TO MECHANICAL EQUIPMENT CONNECTION SCHEDULE ON DRAWING E7.3 FOR ADDITIONAL INFORMATION.

DRAWING NOTES:

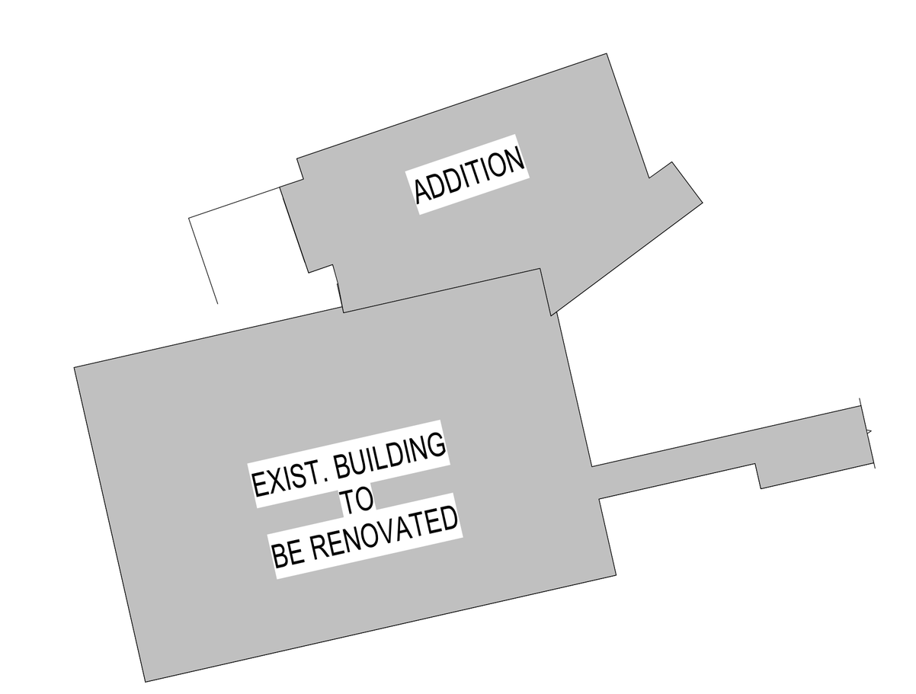
(1) MOUNT TO KINDORF SUPPORT.



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

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

KEY PLAN



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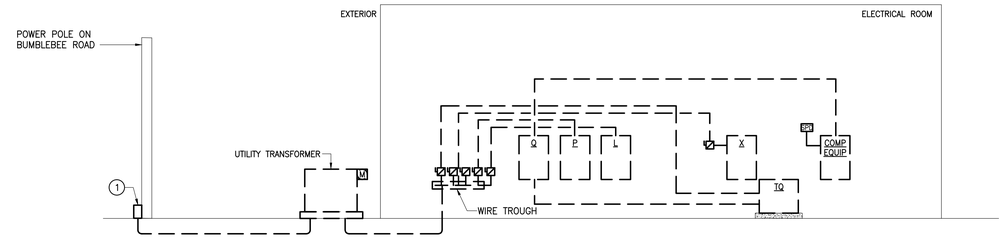
ROOF PLAN

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-4.2

01/27/17
Bid Set

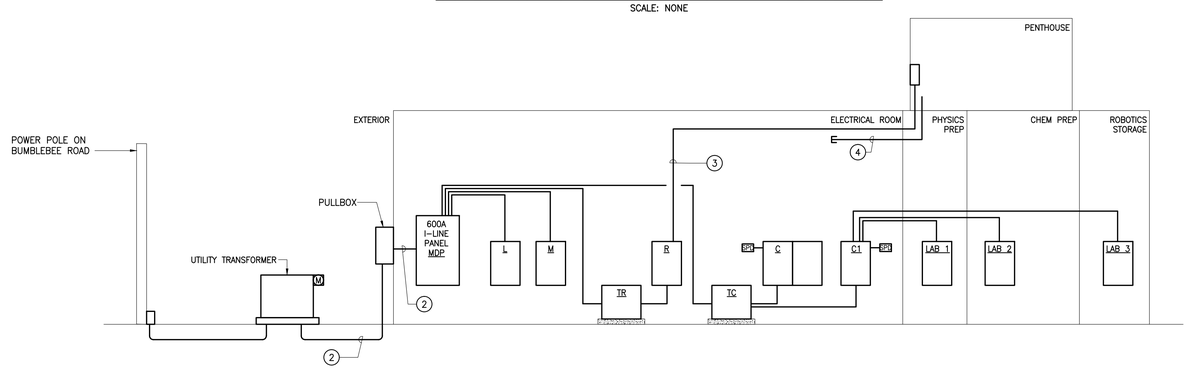


SCHEMATIC POWER RISER DIAGRAM – DEMOLITION

SCALE: NONE

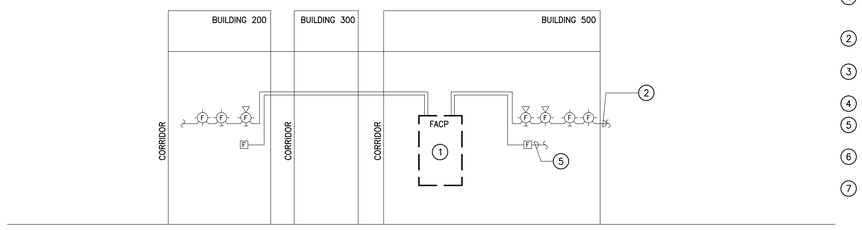
DRAWING NOTES: (FOR SCHEMATIC POWER RISER DIAGRAMS)

1. RX RISER LINE GUARD FACING TOWARDS BUMBLEBEE ROAD AND RELOCATE AWAY FROM ROAD FOR NEW SERVICE.
2. SECONDARY DUCTBANK. PROVIDE 2 SETS OF (4–350KCMIL + #1GW IN 2–1/2"C).
3. UNDER ADD ALTERNATE #1, 2#12+#12GW IN 3/4"C TO WIND TURBINE INVERTER AT PENTHOUSE.
4. PROVIDE 2–4"C FOR FUTURE PV INSTALLATION.



SCHEMATIC POWER RISER DIAGRAM

SCALE: NONE

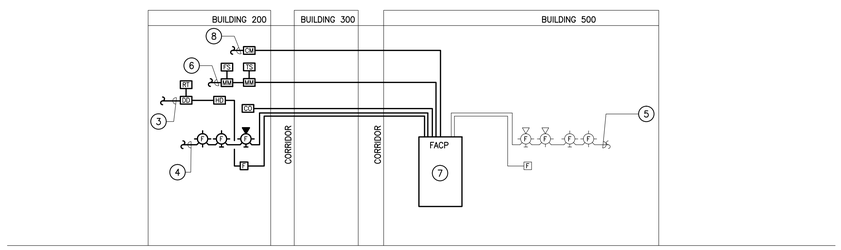


SCHEMATIC FIRE ALARM RISER DIAGRAM – DEMOLITION

SCALE: NONE

DRAWING NOTES: (FOR SCHEMATIC FIRE ALARM RISER DIAGRAMS)

1. RX EDWARDS SYSTEMS TECHNOLOGY EST–2 FIRE ALARM CONTROL PANEL LOCATED IN MECHANICAL ROOM 527 OUTSIDE LIBRARY IN BUILDING 500.
2. TO ADDITIONAL NOTIFICATION DEVICES ON REST OF CAMPUS.
3. TO ADDIITONAL ALARM INITIATING DEVICES IN BUILDING 200.
4. TO ADDITIONAL NOTIFICATION DEVICES IN BUILDING 200.
5. TO ADDITIONAL ALARM INITIATING DEVICES ON REST OF CAMPUS.
6. TO ADDITIONAL SPRINKLER SYSTEM DEVICES IN THIS ZONE.
7. EDWARDS SYSTEMS TECHNOLOGY EST–3 FIRE ALARM CONTROL PANEL. RECONNECT ALL EXISTING DEVICES FROM OTHER BUILDINGS THAT WERE CONNECTED TO DEMOLISHED EST–2 PANEL. FIRE ALARM CABINET SHALL BE SIZED ACCORDINGLY TO ACOMMODATE FUTURE AMPLIFIERS & BOOSTER POWER SUPPLIES IN THE PANEL.



SCHEMATIC FIRE ALARM RISER DIAGRAM

SCALE: NONE

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SCHEMATIC POWER & FIRE ALARM RISER DIAGRAMS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-5.1

February 1, 2017
Bid Set

COLOR CODE FOR CAT6A WIRE:

- BLUE – DATA
- WHITE – TELEPHONE
- GREEN – WAP
- ORANGE – SECURITY CAMERA

GENERAL NOTES:

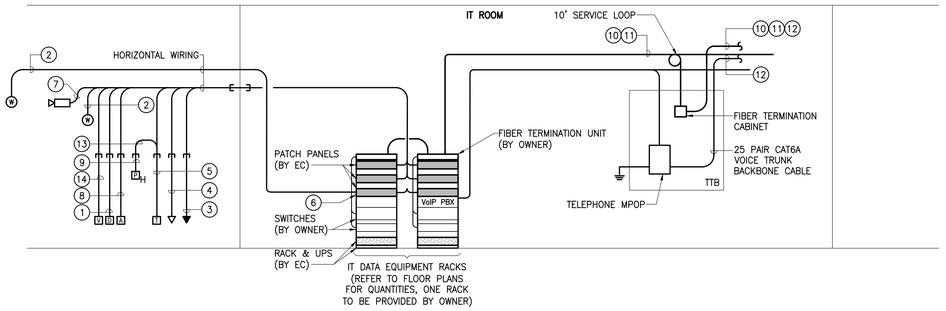
(FOR SCHEMATIC COMMUNICATIONS SYSTEM RISER DIAGRAM)

1. REFER TO DETAILS FOR ADDITIONAL INFORMATION ON DATA OUTLET CONFIGURATIONS.
2. TERMINATE WAP DROPS ON DEDICATED PATCH PANEL(S).
3. TERMINATE SECURITY CAMERA ON DEDICATED PATCH PANEL(S).
4. REFER TO FLOOR PLANS FOR LOCATIONS AND DEVICE COUNTS.
5. ALL EXTERIOR DEVICES SHALL BE PROVIDED WITH SURGE PROTECTION AT WALL PENETRATION.

DRAWING NOTES:

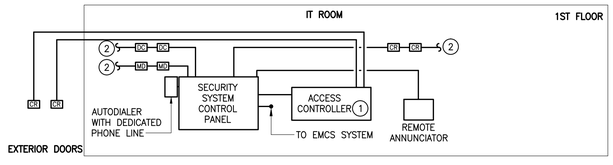
(FOR SCHEMATIC COMMUNICATIONS SYSTEM RISER DIAGRAMS)

1. (2) 4PR CAT6A CABLES FOR DATA FROM OUTLET TO IDF IN 1"C TO CEILING SPACE ABOVE.
2. (2) CAT6A CABLES WITH 10' SERVICE LOOPS.
3. (1) 4PR CAT6A CABLE FOR VOICE FROM OUTLET TO IDF IN 1"C TO CEILING SPACE ABOVE.
4. (1) 4PR CAT6A CABLE FOR DATA FROM OUTLET TO IDF IN 1"C TO CEILING SPACE ABOVE.
5. (1) 4PR CAT6A CABLE FOR VOICE, (2) 4PR CAT6A CABLES FOR DATA IN 1"C TO CEILING SPACE ABOVE AND 1–1/4"C FOR A/V CABLING TO PROJECTOR.
6. DEDICATED PATCH PANEL FOR WIRELESS AP IN ENGINEERING/ROBOTICS LAB.
7. (1) 4PR CAT6A CABLE FOR SECURITY CAMERA FROM OUTLET TO IDF IN 1"C TO CEILING SPACE ABOVE.
8. (1) 4PR CAT6A CABLE FOR VOICE, (2) 4PR CAT6A CABLES FOR DATA IN 1"C TO CEILING SPACE ABOVE.
9. 1–1/4"C FOR A/V CABLING FROM TEACHER DROP WITH PULLSTRINGS.
10. 12 STRAND 50MICRON OM3 FIBER OPTIC CABLE IN DEDICATED INNERDUCT.
11. PROVIDE (1) 1–1/2" AND (2)1–1/4" INNERDUCT IN EACH 4" CONDUIT.
12. BACK TO MDF ROOM IN BUILDING 300, APPROXIMATELY 400' AWAY.
13. PROJECTOR A/V CABLING: HDMI CABLE, S–VIDEO, AND VGA CABLE BETWEEN PROJECTOR AND TEACHER DROP. COORDINATE LENGTHS AND PROVIDE CABLE BUNDLE WITH PRE–TERMINATED CONNECTIONS IN CONDUIT.
14. (1) 4PR CAT6A CABLE FOR DATA, (1) HDMI CABLE IN 1"C TO CEILING SPACE ABOVE.



SCHEMATIC COMMUNICATIONS SYSTEM RISER DIAGRAM

SCALE: NONE



SCHEMATIC SECURITY SYSTEM RISER DIAGRAM

SCALE: NONE

GENERAL NOTES:

1. PROVIDE ALL WIRING AND CONDUIT PER SYSTEM MANUFACTURER'S RECOMMENDATIONS. REFER TO FLOOR PLANS FOR EXACT QUANTITIES.

DRAWING NOTES:

1. MAKE CONNECTION TO FIRE ALARM SYSTEM CONTROL MODULE AS REQUIRED FOR DOOR TO UNLOCK UPON FIRE ALARM.
2. TO OTHER DEVICES IN ZONE.

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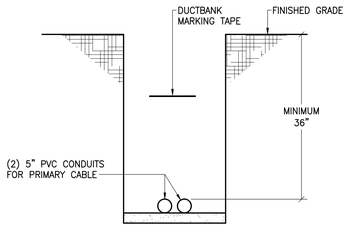
SCHEMATIC TELECOMMUNICATIONS AND SECURITY RISER DIAGRAMS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-5.2

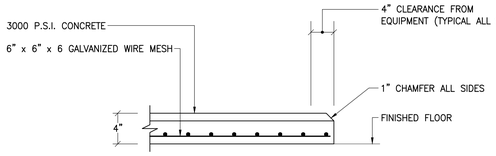
February 1, 2017
Bid Set



NOTE: COORDINATE EXCAVATION OF TRENCH AND INSTALLATION OF CONDUITS WITH UTILITY COMPANIES IN ADVANCE. MAINTAIN 5'–0" FROM GAS/WATER UTILITIES

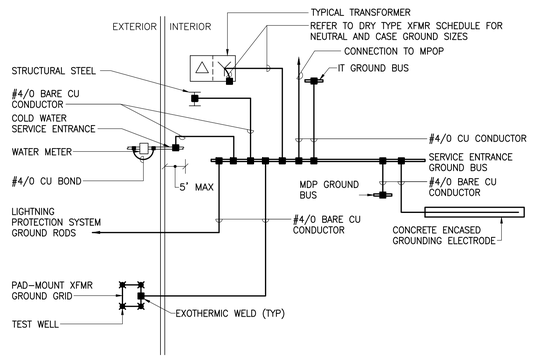
1 INCOMING SERVICES TRENCH

SCALE: NONE



2 CONCRETE HOUSEKEEPING PAD

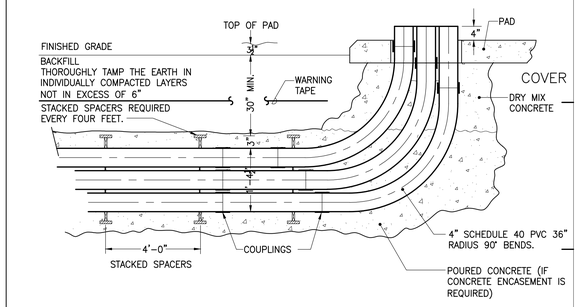
SCALE: NONE



ALL GROUNDING SHALL COMPLY WITH NEC.

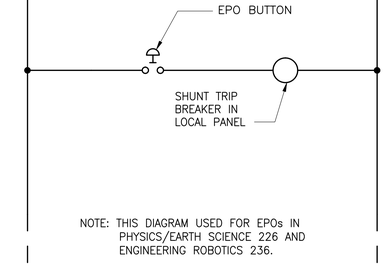
3 PARTIAL GROUNDING SINGLE LINE SCHEMATIC DIAGRAM

SCALE: NONE



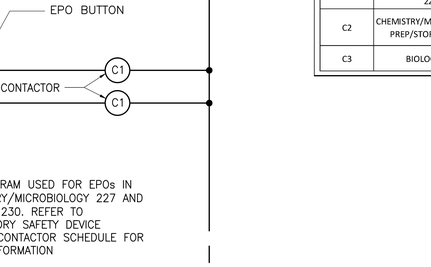
4 TURNING CONDUIT INTO TRANSFORMER PADS

SCALE: NONE



5 GROUNDING ROD

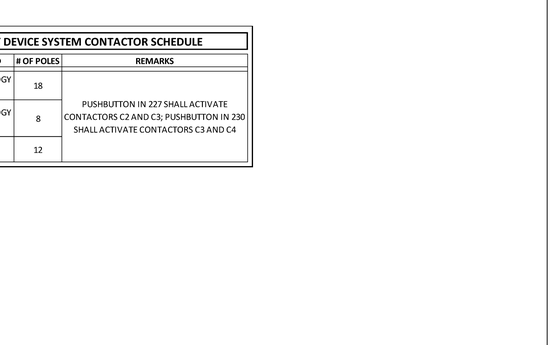
SCALE: NONE



6 DIRECT BURIED PVC CONDUIT

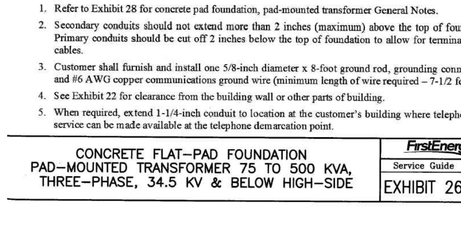
SCALE: NONE

GENERAL NOTES:
A. BUS BARS OVER 20" IN LENGTH, PROVIDE ONE ADDITIONAL INSULATOR SUPPORT.



7 GROUNDING BUS BAR

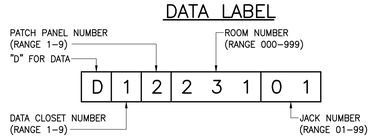
SCALE: NONE



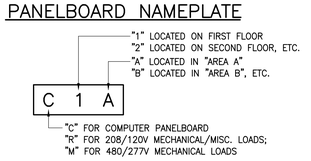
8 SECONDARY DUCTBANK

SCALE: NONE

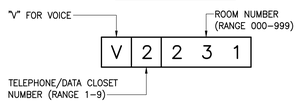
DATA LABEL

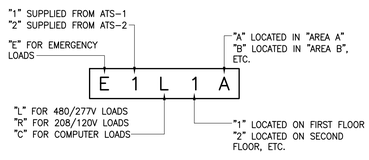


PANELBOARD NAMEPLATE



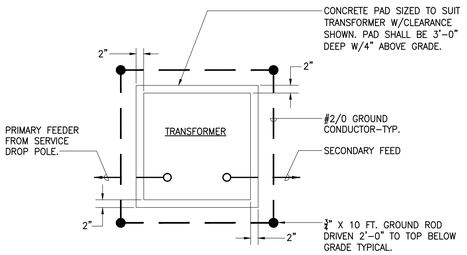
VOICE LABEL





9 OUTLET LABELING/PANELBOARD NAMEPLATE IDENTIFICATION SCHEME

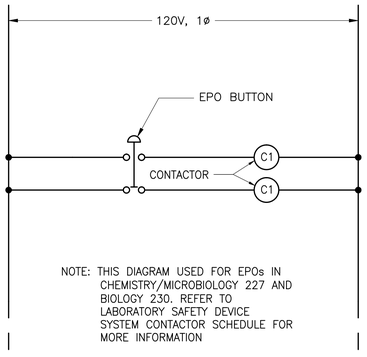
SCALE: NONE



10 TYPICAL SERVICE TRANSFORMER GROUNDING AND PAD

SCALE: NONE

NOTE: THIS DIAGRAM USED FOR EPOs IN PHYSICS/EARTH SCIENCE 226 AND ENGINEERING ROBOTICS 236.



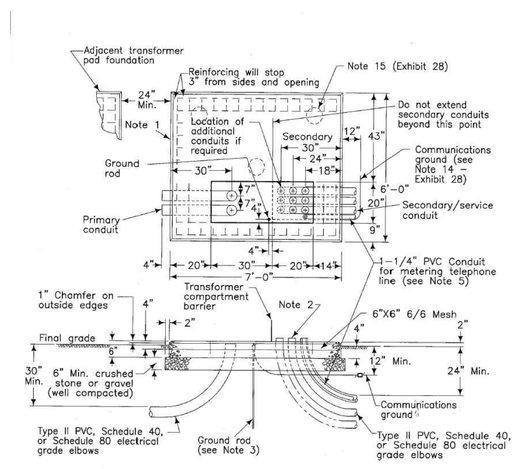
NOTE: THIS DIAGRAM USED FOR EPOs IN CHEMISTRY/MICROBIOLOGY 227 AND BIOLOGY 230. REFER TO LABORATORY SAFETY DEVICE SYSTEM CONTACTOR SCHEDULE FOR MORE INFORMATION

LABORATORY SAFETY DEVICE SYSTEM CONTACTOR SCHEDULE

CONTACTOR	ROOMS/AREA SERVED	# OF POLES	REMARKS
C1	CHEMISTRY/MICROBIOLOGY 227	18	PUSHBUTTON IN 227 SHALL ACTIVATE CONTACTORS C2 AND C3; PUSHBUTTON IN 230 SHALL ACTIVATE CONTACTORS C3 AND C4
C2	CHEMISTRY/MICROBIOLOGY PREP/STORAGE 229A	8	
C3	BIOLOGY 230	12	

11 EMERGENCY POWER OFF CONTROL DIAGRAMS

SCALE: NONE



NOTES:

1. Refer to Exhibit 28 for concrete pad foundation, pad-mounted transformer General Notes.
2. Secondary conduits should not extend more than 2 inches (maximum) above the top of foundation. Primary conduits should be cut off 2 inches below the top of foundation to allow for terminating the cables.
3. Customer shall furnish and install one 5/8-inch diameter x 8-foot ground rod, grounding connections, and #6 AWG copper communications ground wire (minimum length of wire required – 7-1/2 feet).
4. See Exhibit 22 for clearance from the building wall or other parts of building.
5. When required, extend 1-1/4-inch conduit to location at the customer's building where telephone line service can be made available at the telephone demarcation point.

CONCRETE FLAT–PAD FOUNDATION PAD–MOUNTED TRANSFORMER 75 TO 500 KVA, THREE–PHASE, 34.5 KV & BELOW HIGH–SIDE

FirstEnergy. Service Guide REV. 0 EXHIBIT 26 DATE 8/14

12 TYPICAL 3 PHASE TRANSFORMER PAD DIMENSION DETAIL

SCALE: NONE

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www.grimmandparker.com

GP #21620

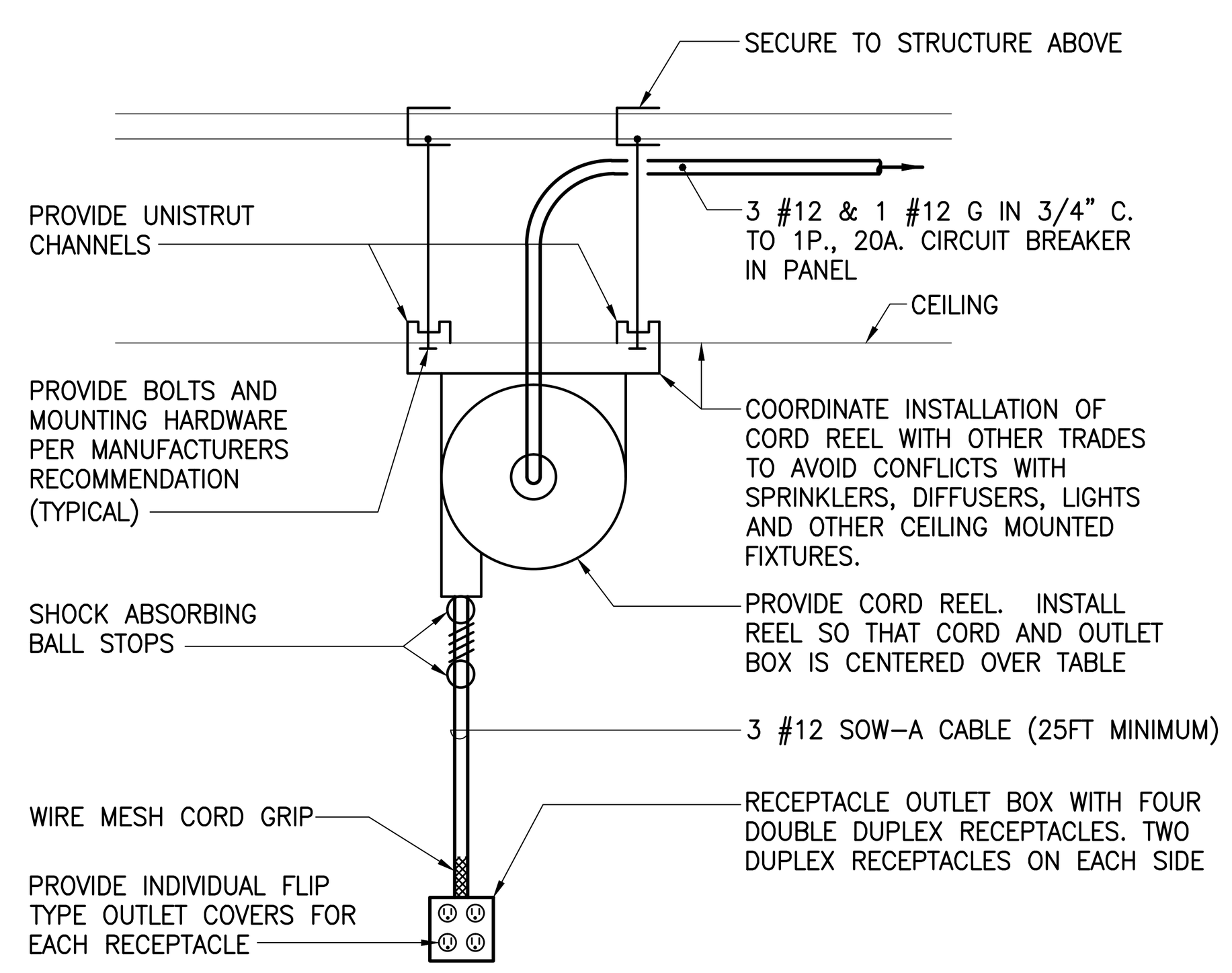
ELECTRICAL DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

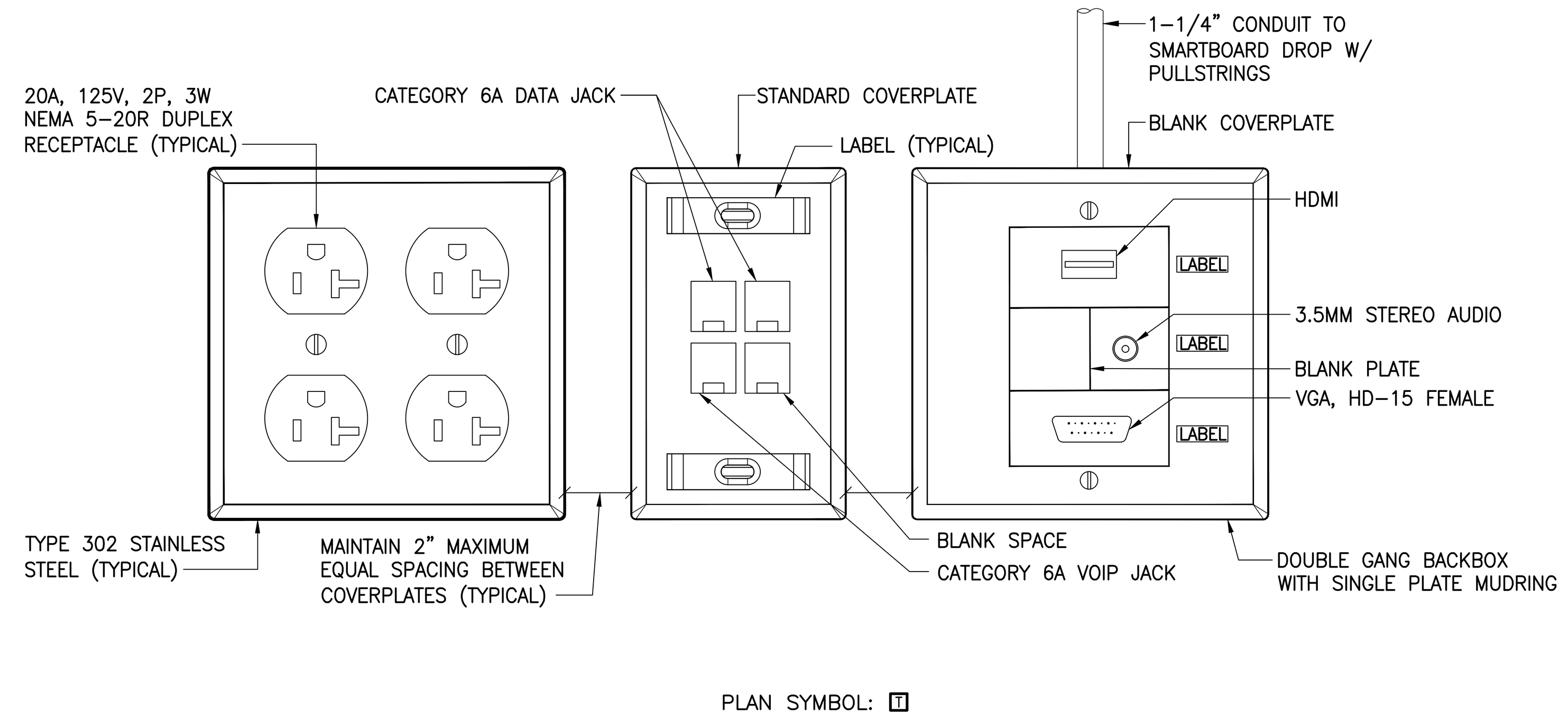
DATE	DESCRIPTION

E-6.1

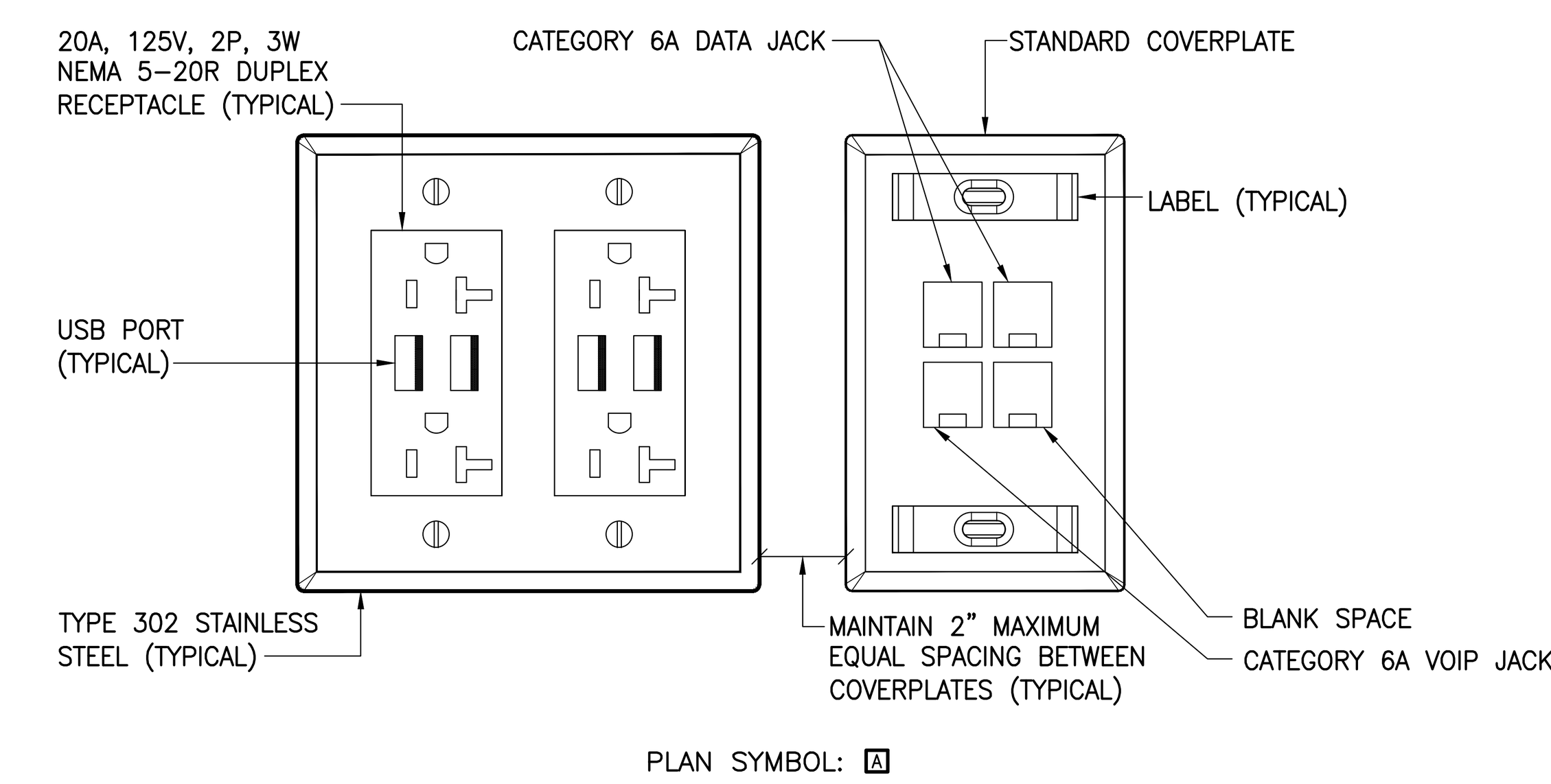
February 1, 2017
Bid Set



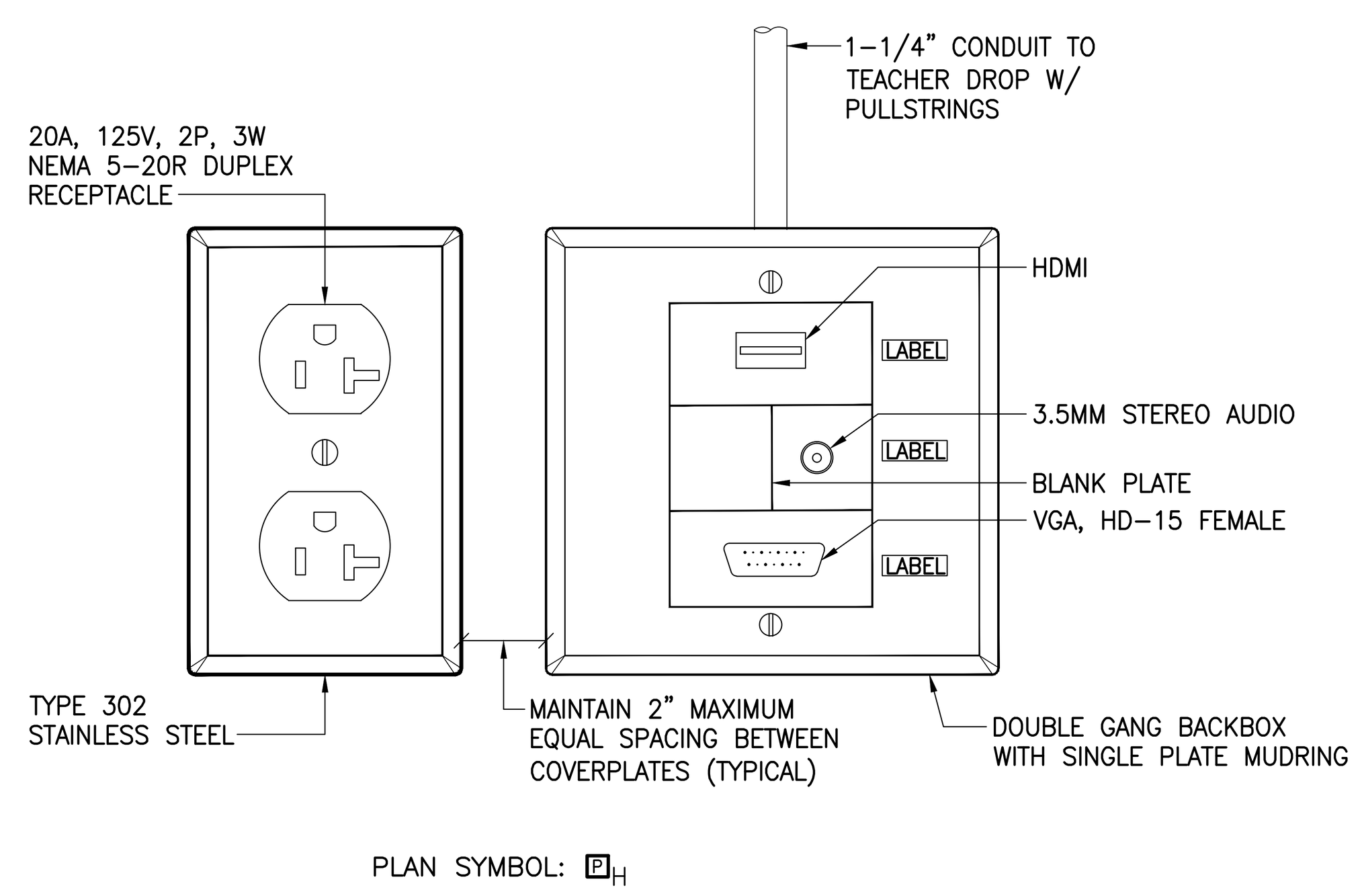
(1) POWER CORD REEL — SCALE: NONE



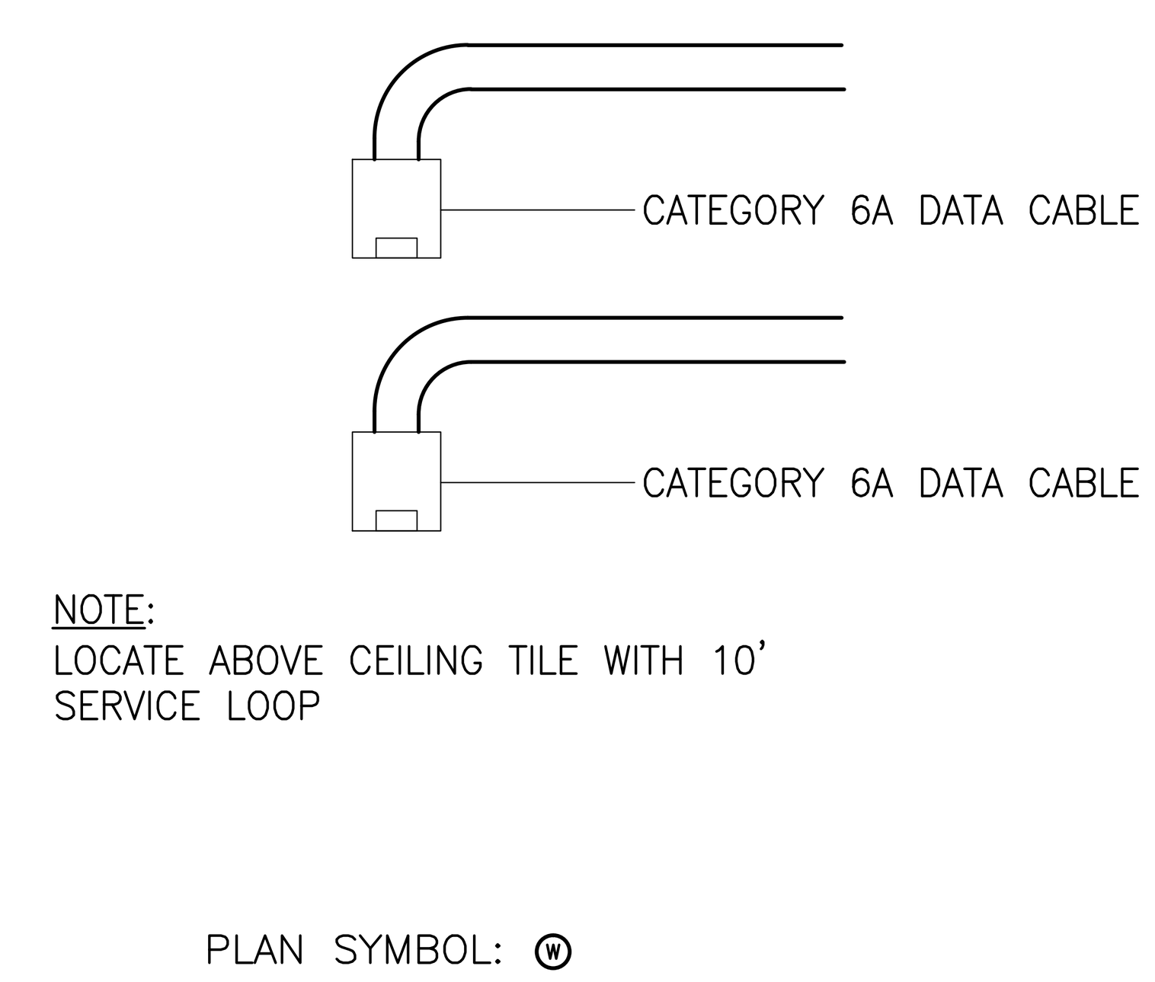
(2) TEACHER DROP — SCALE: NONE



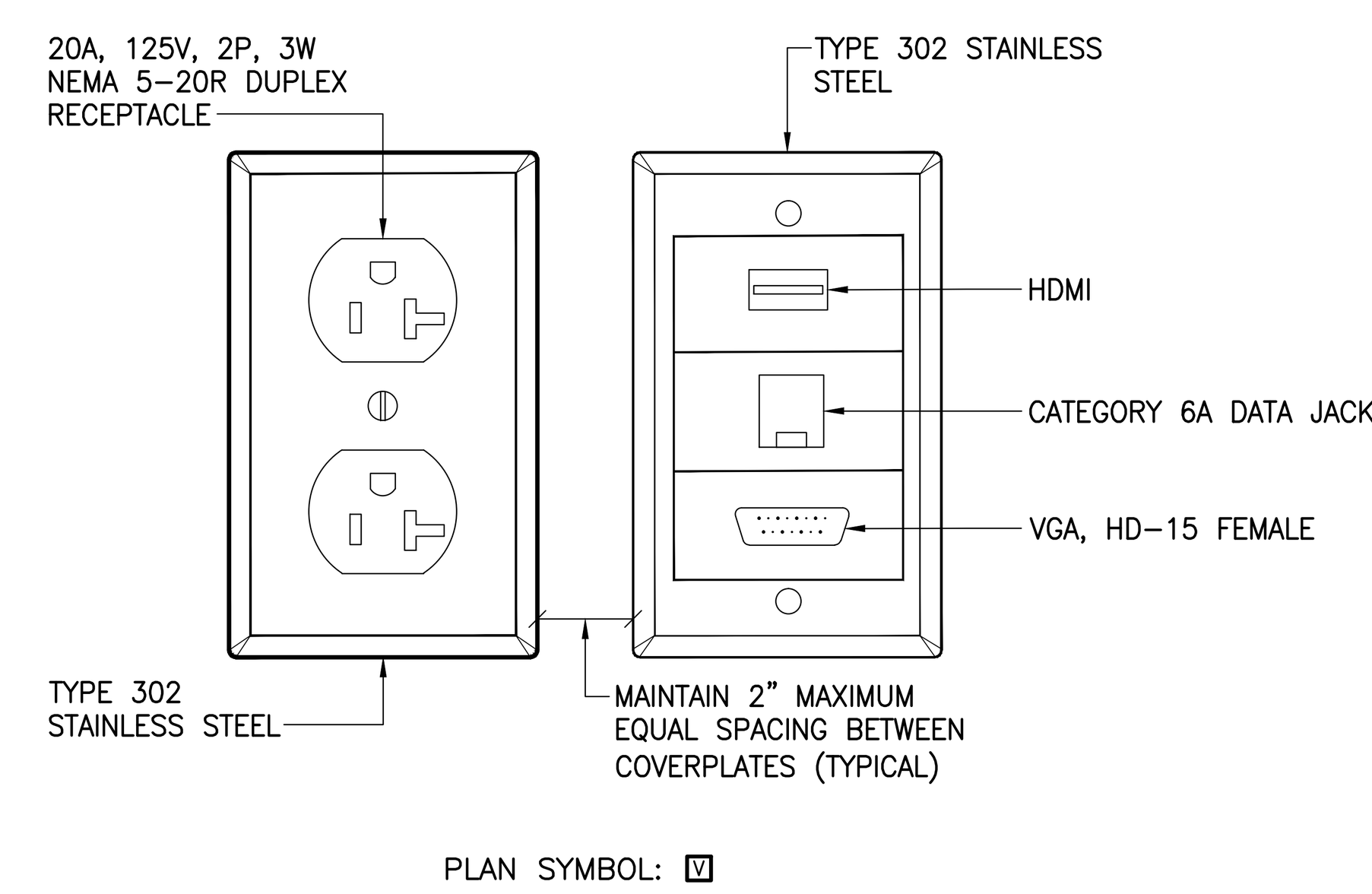
(3) ADMINISTRATION DROP — SCALE: NONE



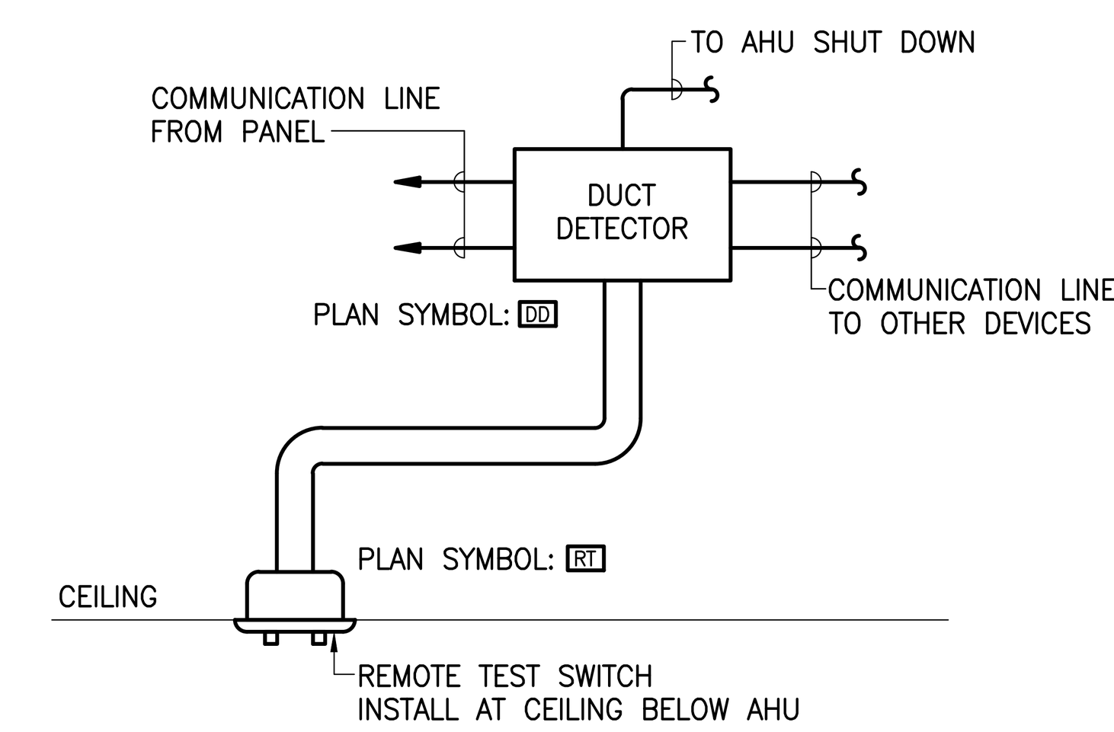
(4) PROJECTOR DROP — SCALE: NONE



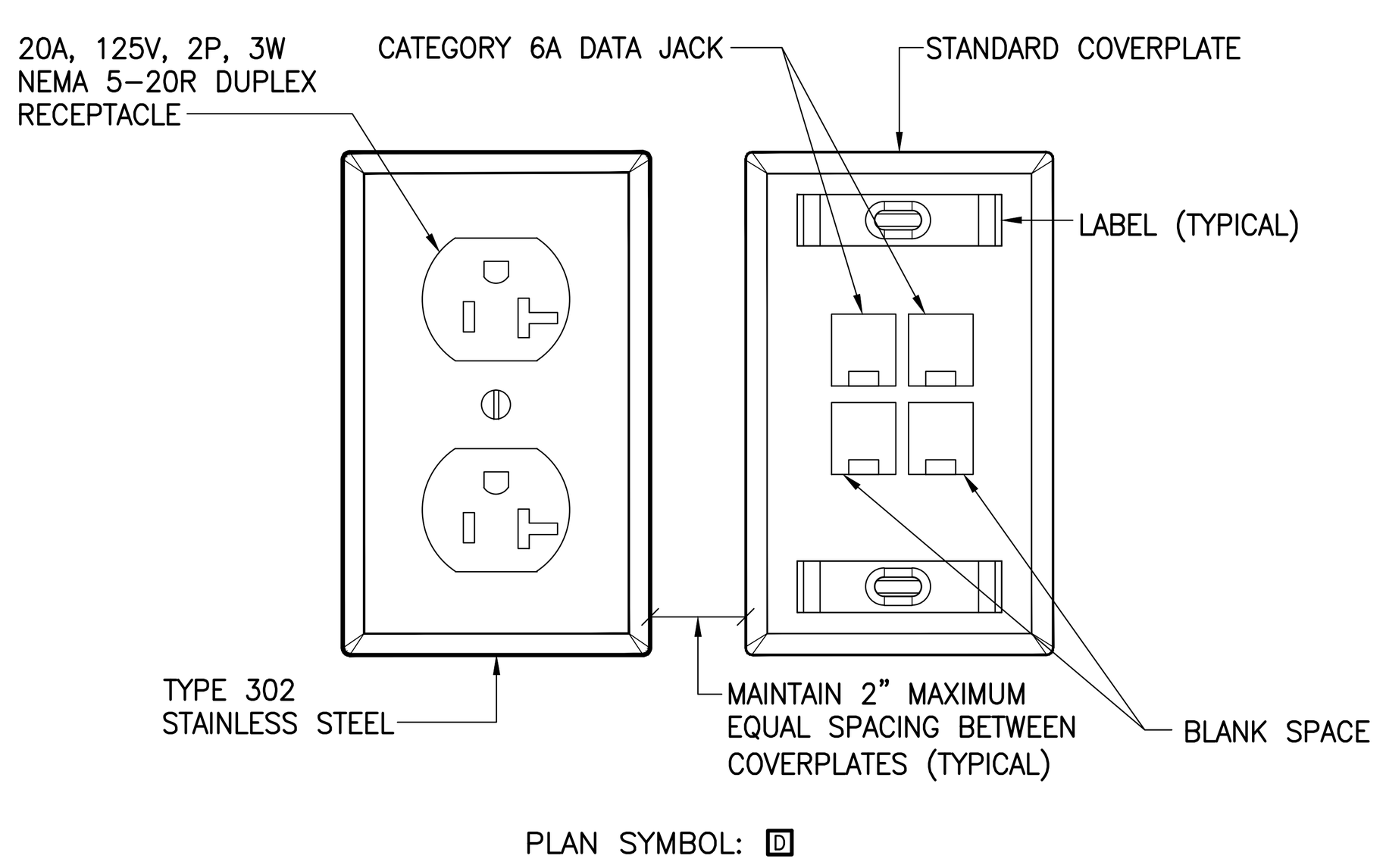
(5) WIRELESS ACCESS POINT — SCALE: NONE



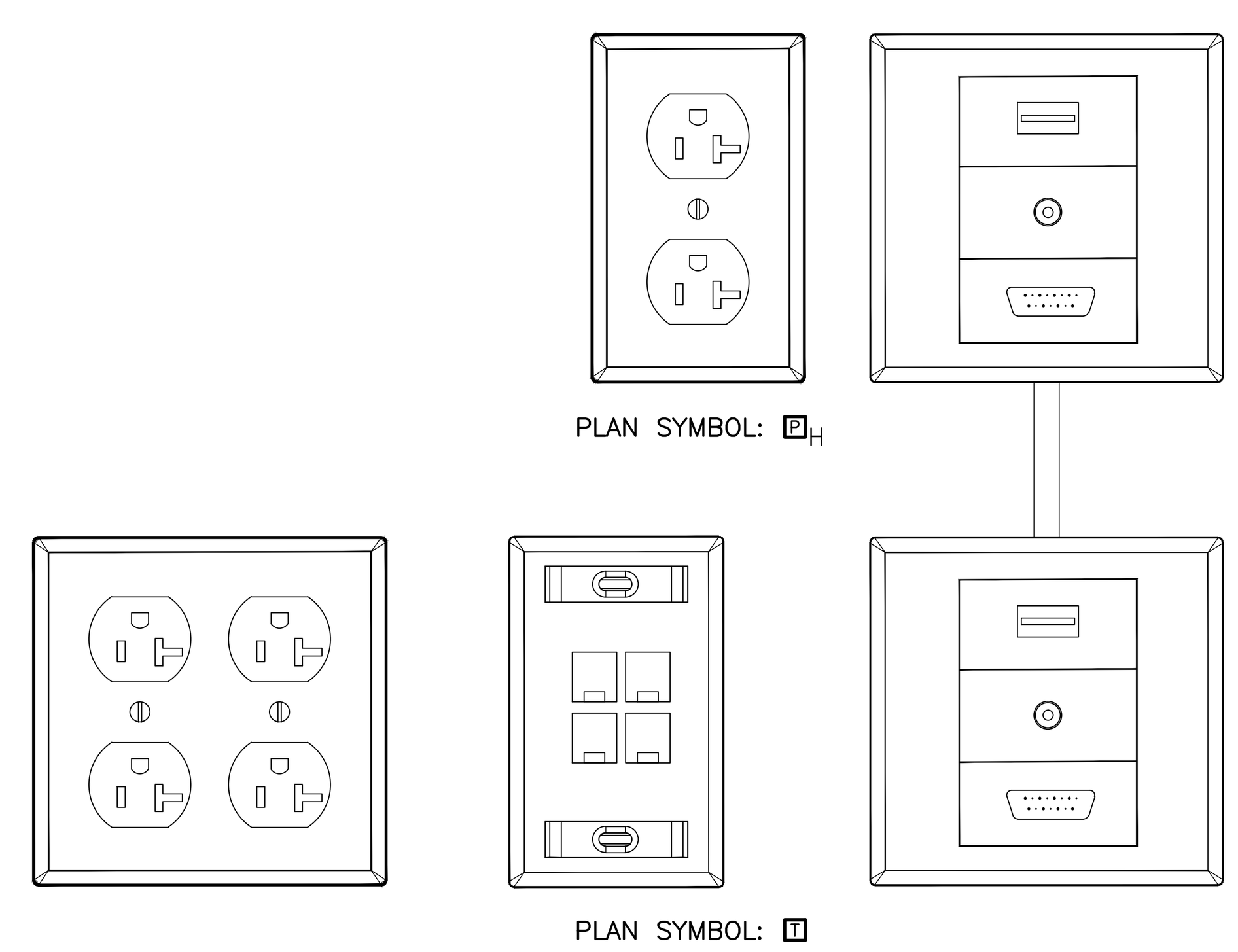
(6) VIDEO DROP — SCALE: NONE



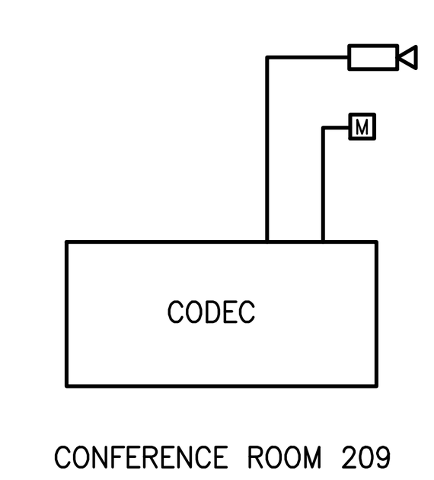
(7) DUCT DETECTOR WIRING DIAGRAM — SCALE: NONE



(8) DUPLEX DROP — SCALE: NONE



(9) TEACHER AND PROJECTOR ELEVATION — SCALE: NONE



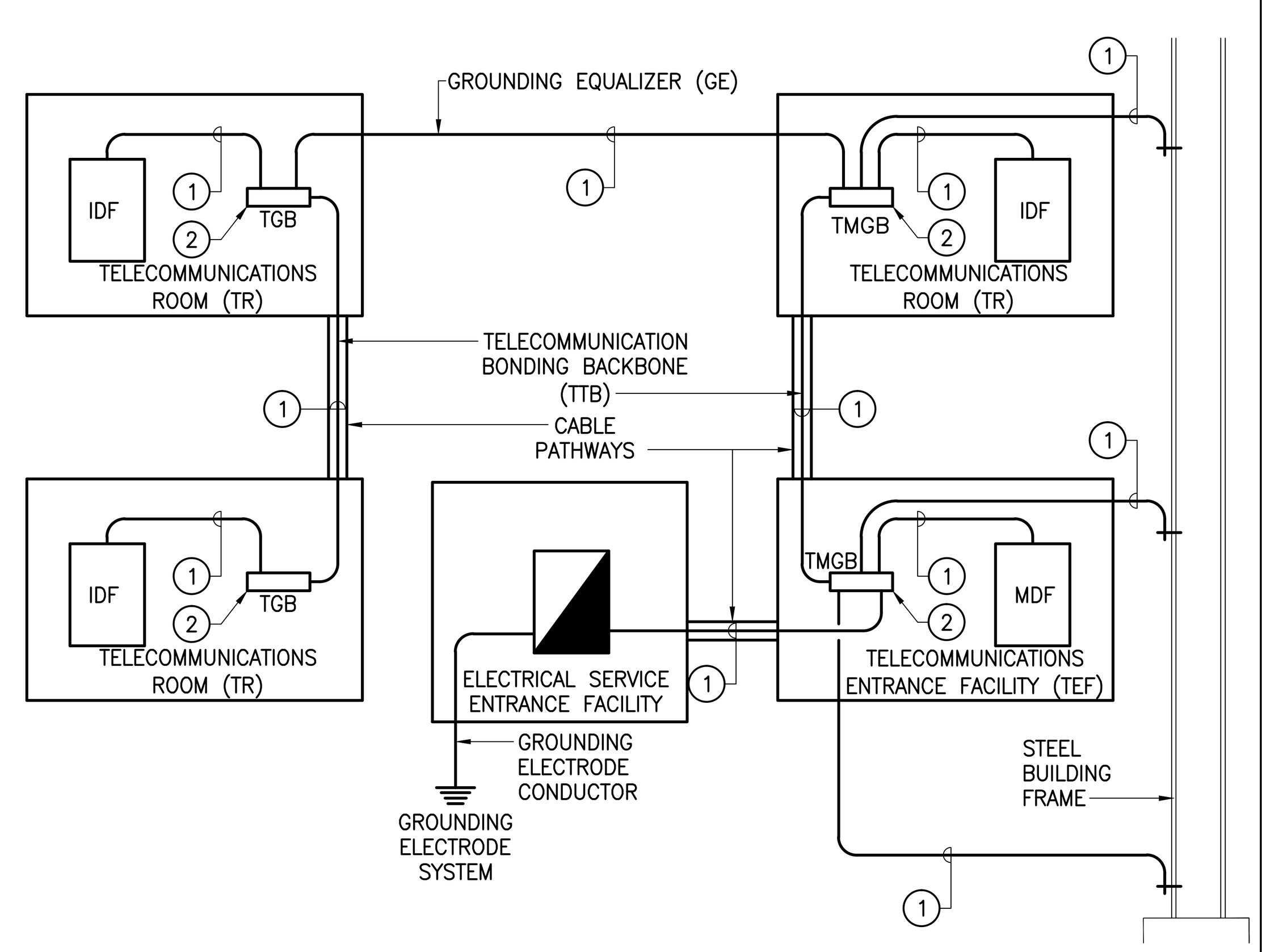
(10) POLYCOM SYSTEM ONE-LINE DIAGRAM — SCALE: NONE

DRAWING NOTES:

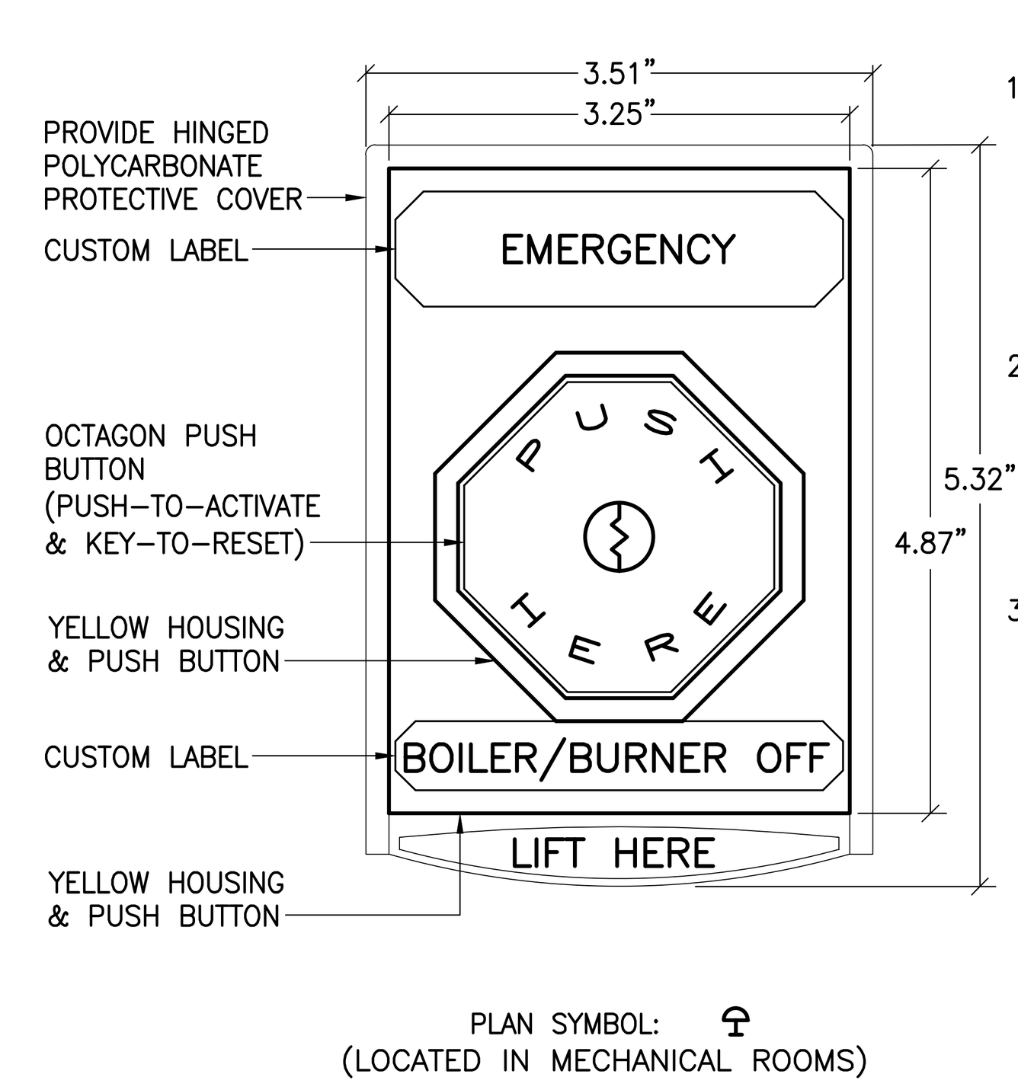
1. PROVIDE #4/0 GREEN INSULATED COPPER GROUND WIRE.
2. PROVIDE 12" COPPER BUSBAR.
3. ALL WORK SHALL COMPLY TO APPLICABLE CODES AND THE LATEST VERSION OF ANSI/TIA/EIA-607 COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS.

LEGEND

TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
	TELECOMMUNICATIONS PANELBOARD
	BONDING CONDUCTOR
	MECHANICAL CONNECTION
TBB:	TELECOM BONDING BACKBONE
TGB:	TELECOM GROUNDING BUSBAR
TMGB:	TELECOM MAIN GROUNDING BUSBAR



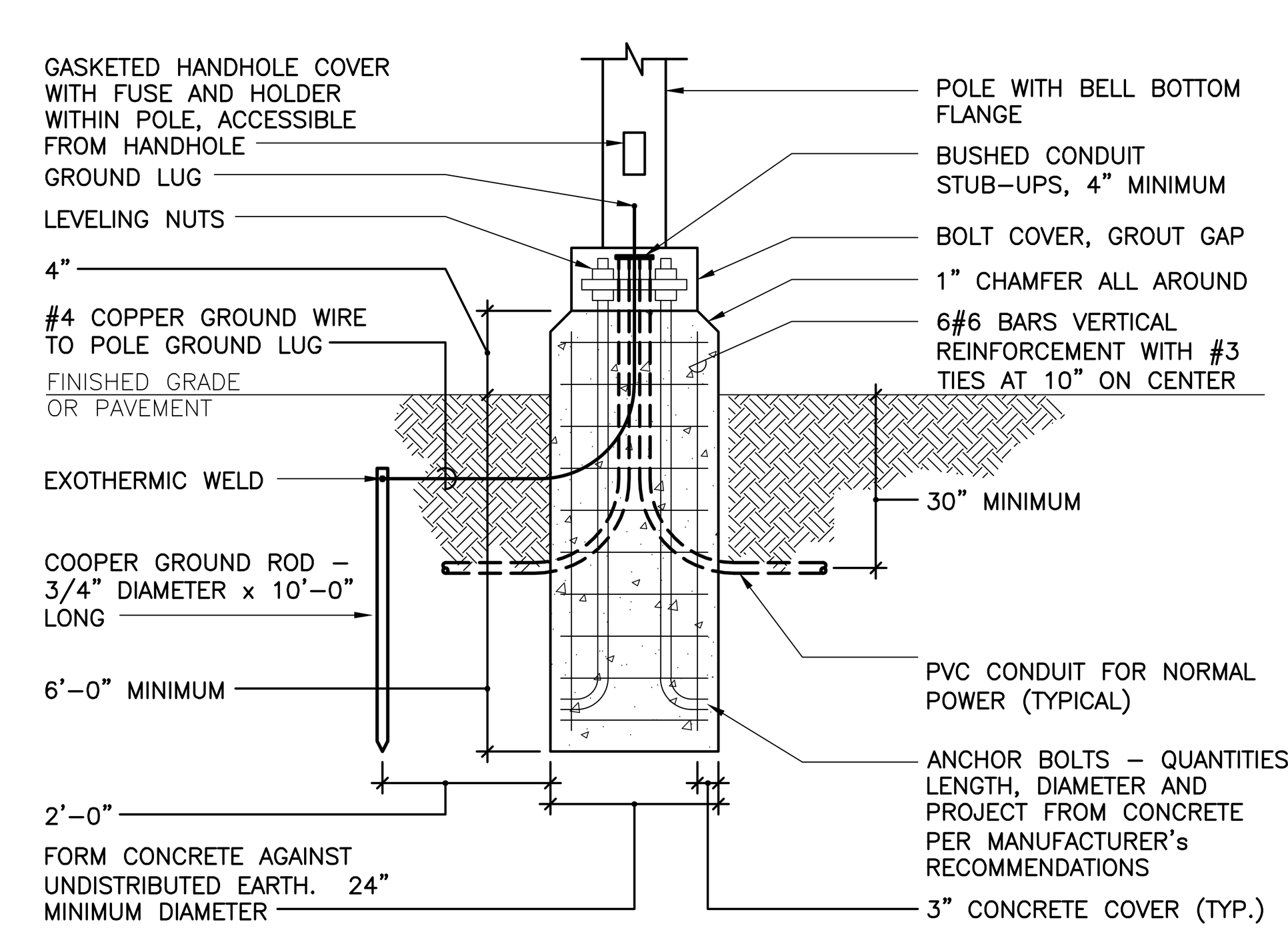
(11) TELECOMMUNICATIONS GROUND & BONDING SYSTEM WIRING DIAGRAM (3) — SCALE: NONE



NOTES:

1. EMERGENCY PUSHBUTTON SHALL BE MAINTAINED TYPE WITH (1) N.O. AND (1) N.C. CONTACTS WITH PROTECTIVE COVER. "STOPPER STATION SHIELD" BY SAFETY TECHNOLOGY INTERNATIONAL, INC.
2. REMOTE SHUTDOWN PUSHBUTTON SHALL COMPLY WITH ASME CSD-1-1992 "CONTROLS AND SAFETY DEVICES FOR AUTOMATICALLY FIRED BOILERS".
3. PROVIDE DEDICATED 3/4" CONDUIT WITH CONTROL WIRING FROM SHUTDOWN PUSHBUTTON TO ASSOCIATED EQUIPMENT CONTROL PANEL.

(12) REMOTE BOILER SHUTDOWN PUSHBUTTON — SCALE: NONE



NOTES:

1. ALL REINFORCING STEEL TO BE ASTM A615, GRADE 60 EXCEPT TIES, TIES SHALL BE GRADE 40.
2. PROVIDE 1-1/4" CONDUIT MINIMUM TO EACH POLE FOR NORMAL POWER WIRING.

(13) POLE BASE AND FOUNDATION DETAIL — SCALE: NONE

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GP #21620

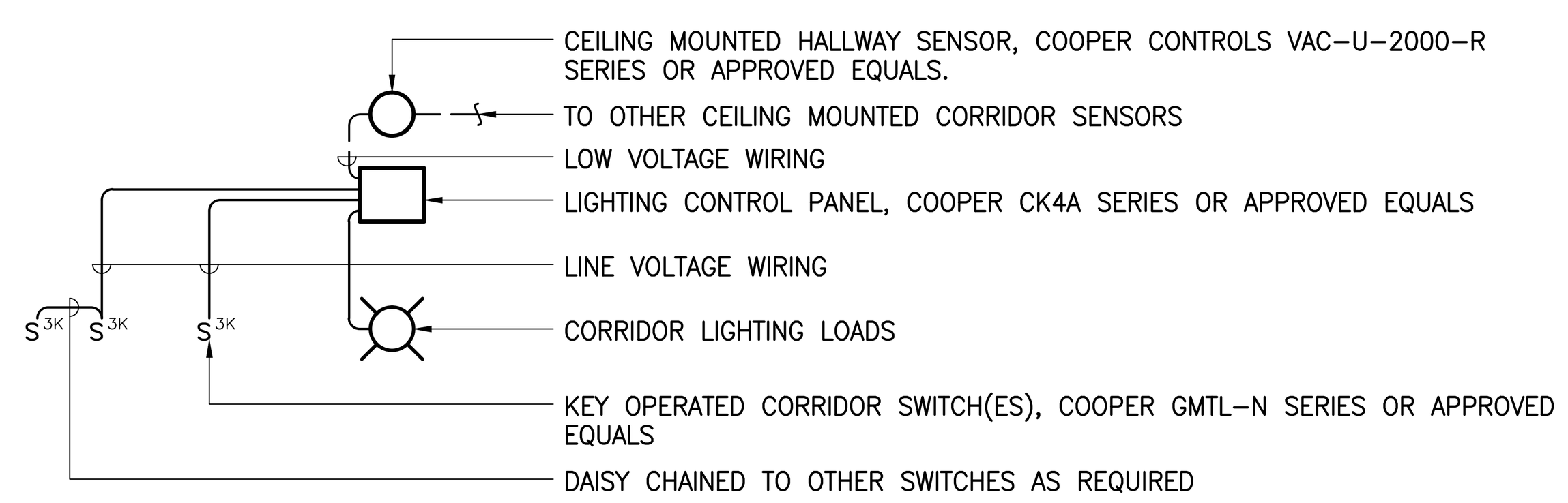
ELECTRICAL DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-6.2

February 1, 2017
Bid Set



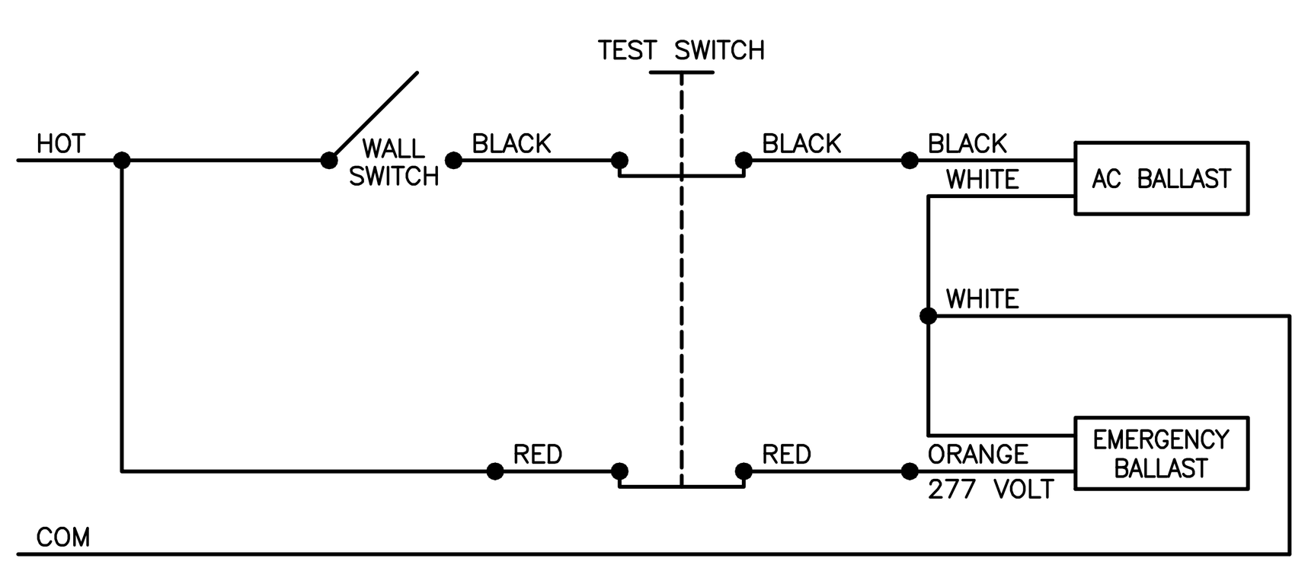
WIRING DIAGRAM – TYPICAL CORRIDORS

NOT TO SCALE

SEQUENCE OF OPERATION:

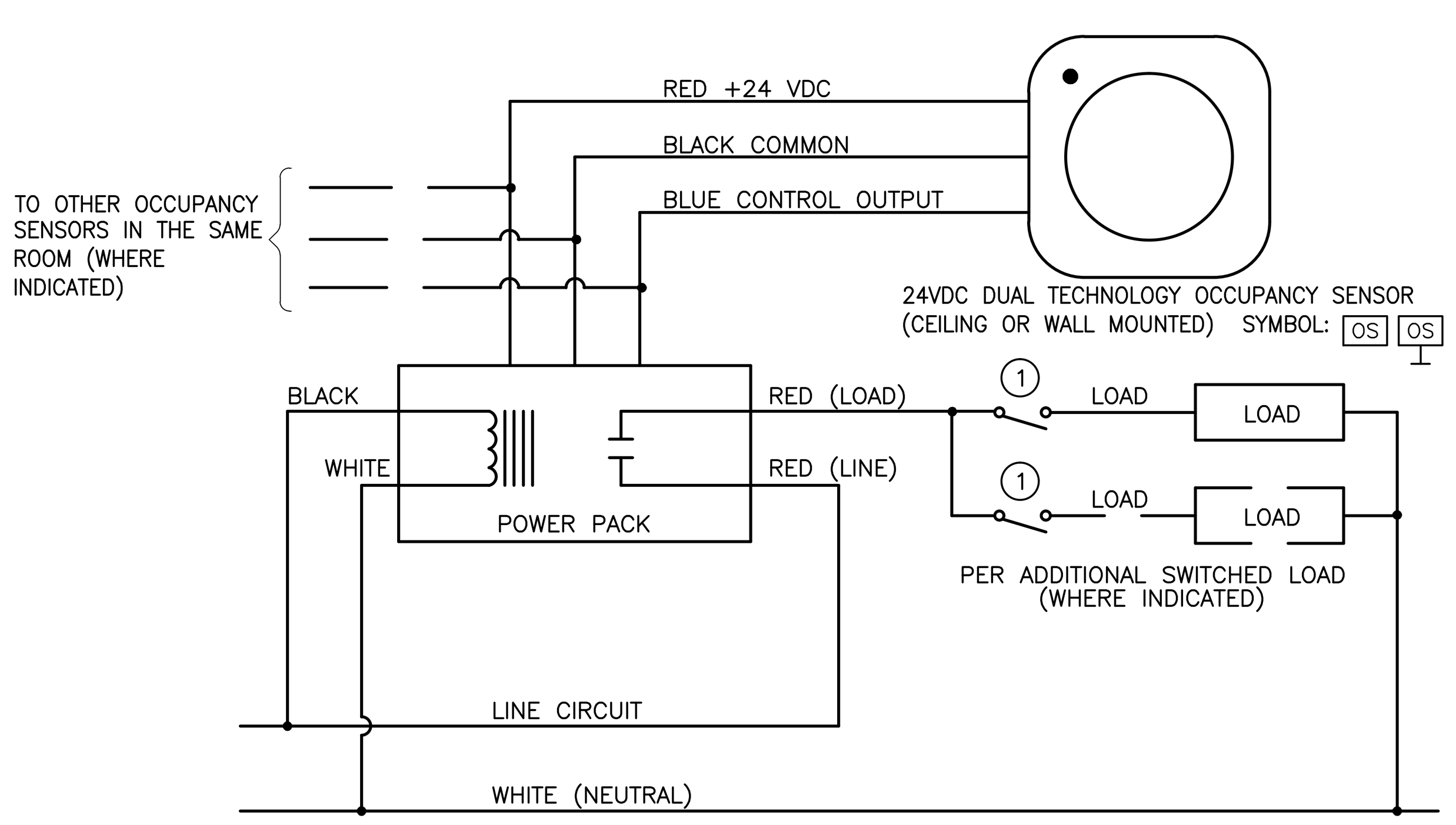
1. MANUAL KEYED ON
2. CEILING MOUNTED SENSOR(S) FOR DETECTION OF OCCUPANCY (100%)
3. AUTO FULL–OFF VIA NETWORK COMMAND OR MANUAL KEYED OFF [WHEN SYSTEM IS TURNED OFF VIA NETWORK COMMAND, SYSTEM SHALL RETURN TO NORMAL OPERATION VIA NETWORK COMMAND]

NOTE:
COORDINATE LIGHTING CONTROL PANEL LOCATION WITH MANUFACTURER RECOMMENDATION FOR MAXIMUM RUN LENGTH TO EACH SWITCH.



INTEGRAL EMERGENCY BALLAST WIRING DIAGRAM

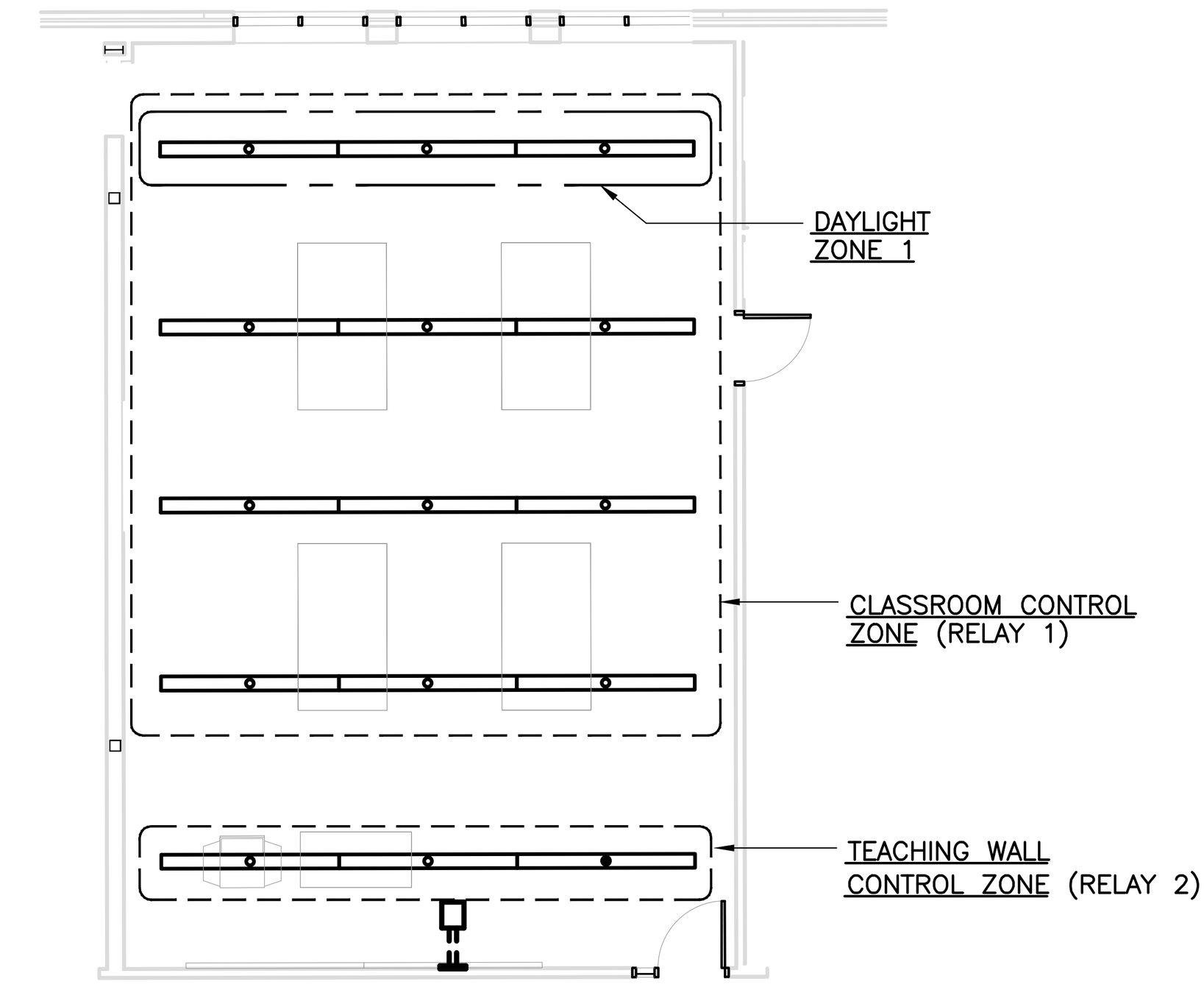
NOT TO SCALE

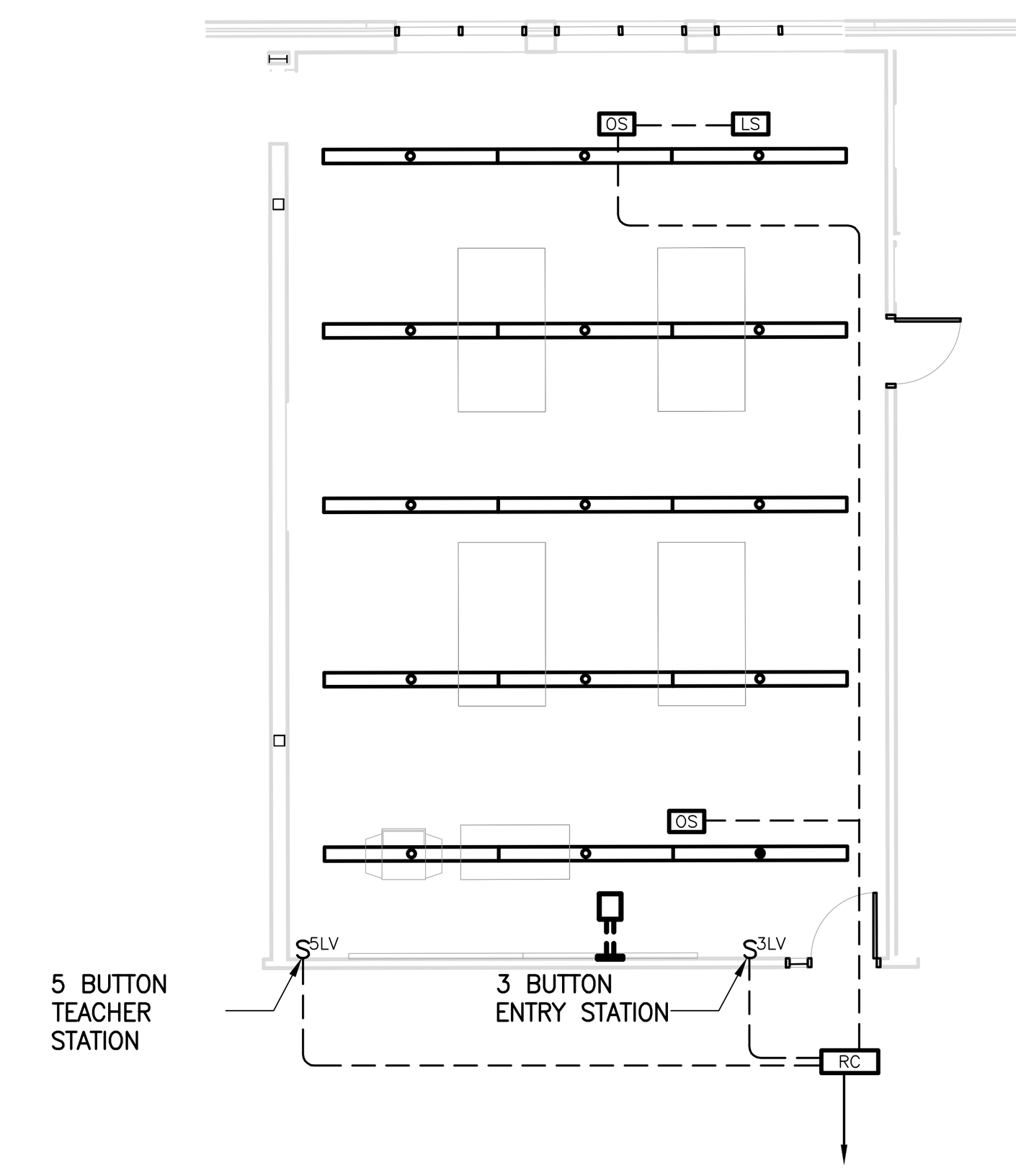


NOTE:
1. ONE TOGGLE SWITCH FOR EACH LOAD.

OCCUPANCY SENSOR WIRING DIAGRAM

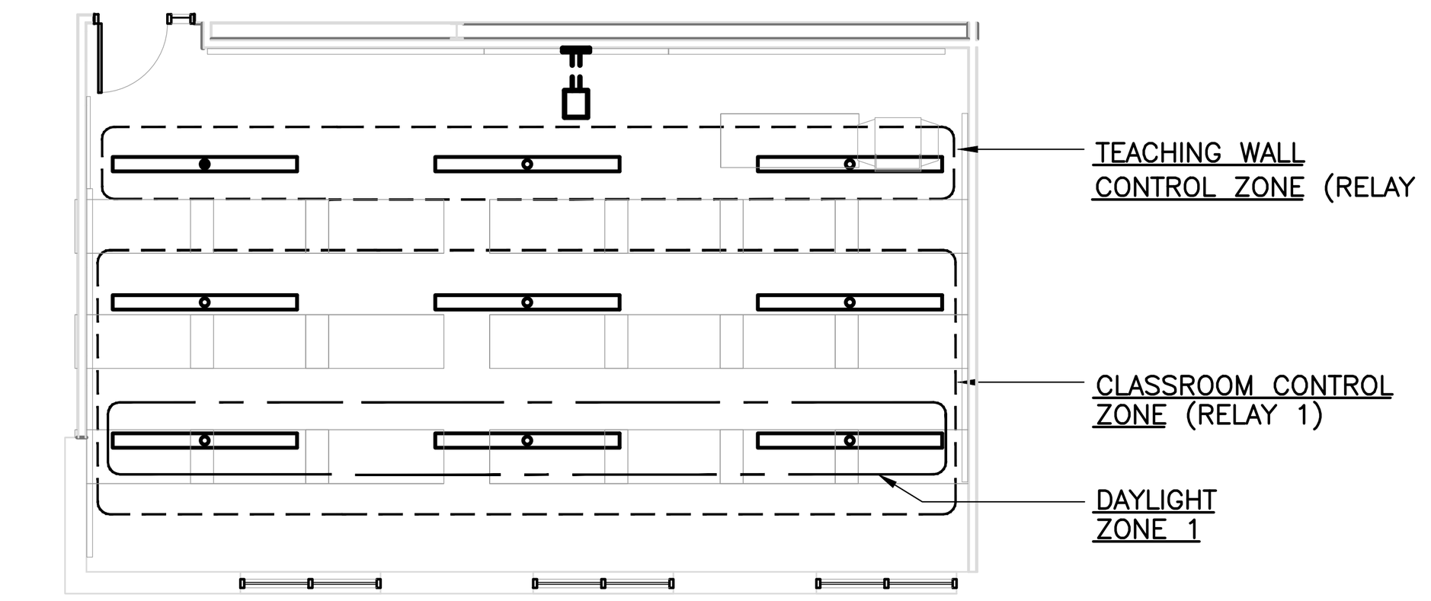
NOT TO SCALE

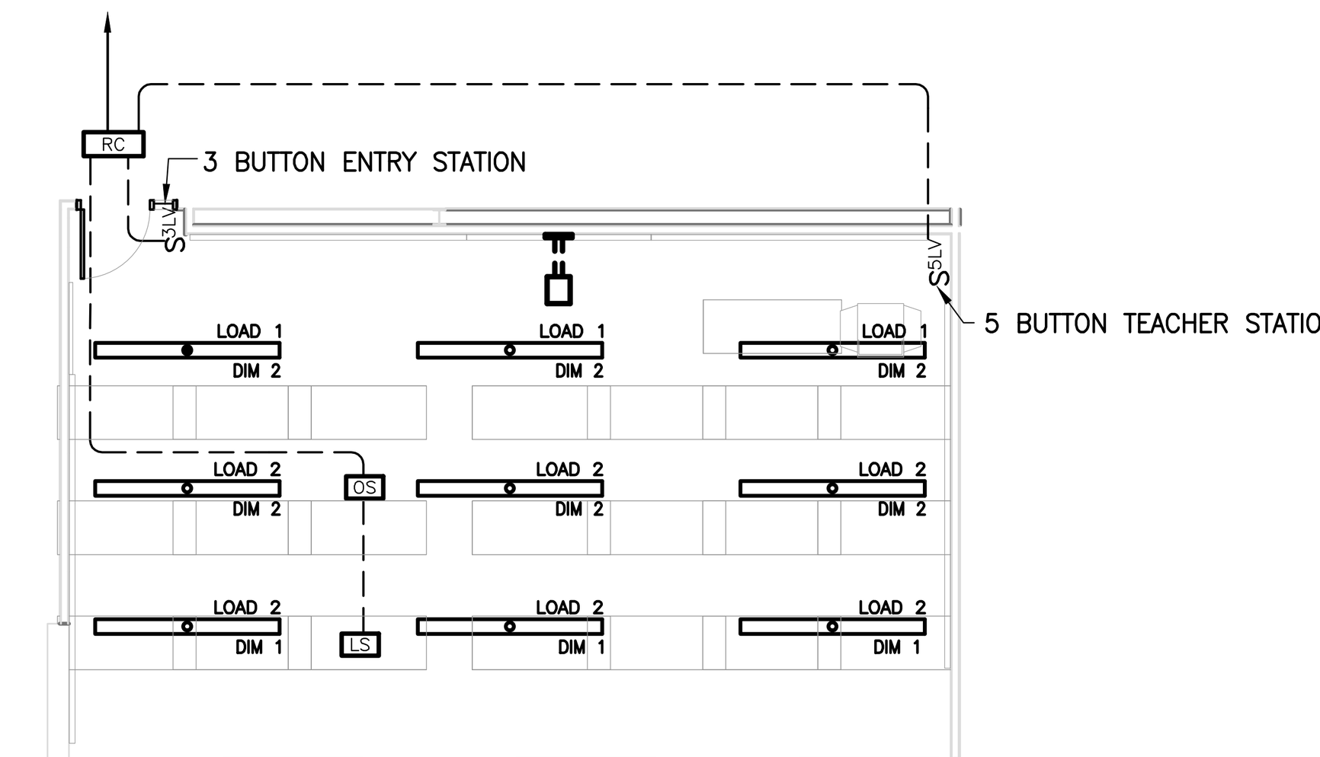




WIRING DIAGRAM – TYPICAL LAB

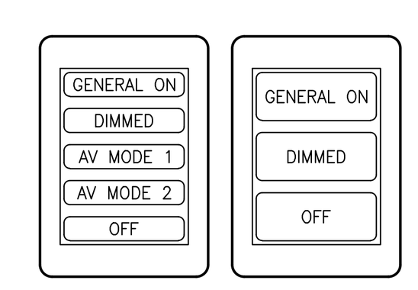
NOT TO SCALE





WIRING DIAGRAM – TYPICAL CLASSROOM

NOT TO SCALE



NOTES FOR WIRING DIAGRAMS:

1. BASIS OF DESIGN SHALL BE ACUITY BRANDS nLIGHT
2. ONE LIGHTING CONTROL PANEL WILL CONTROL A MAXIMUM OF TWO CLASSROOMS/LABS.
3. LIGHTING CONTROL PANEL SHALL BE MOUNTED IN CORRIDOR NEAR ENTRY DOOR OF CLASSROOM/LAB ABOVE CEILING, IN ACCESSIBLE CEILING SPACE. IDENTIFICATION PLATE WILL BE PLACED ON THE CEILING OR OVER DOOR TO IDENTIFY THE LOCATION OF CONTROL PANEL IN ROOM (VERIFY PLATE TYPE AND LOCATION WITH ARCHITECT AND OWNER REPRESENTATIVE PRIOR TO INSTALLATION).
4. MANUFACTURER TO SUBMIT SHOP DRAWINGS SHOWING LOCATION OF ALL SENSORS AND ASSOCIATED COVERAGE PATTERNS.
5. LIGHTING CONTROL PANEL SHALL BE TIED TO A CENTRAL LOCATION IN THE SCHOOL USING LIGHTING SOFTWARE INSTALLED ON A COMPUTER IN THE CUSTODIAN OFFICE (VERIFY LOCATION WITH OWNER REPRESENTATIVE). AN ETHERNET INTERFACE MODULE WILL BE INSTALLED IN THE MAIN TELECOM ROOM TO CONNECT TO THE SCHOOL'S DATA NETWORK. THE LIGHTING SOFTWARE WILL BE SETUP ON THE CHIEF CUSTODIAN'S COMPUTER TO COMMUNICATE WITH THE LIGHTING CONTROL PANELS. LIGHTING CONTROL PANELS SHALL BE NETWORKED TOGETHER IN ORDER TO TROUBLESHOOT THE SYSTEM VIA WEB–BASED SOFTWARE OR DIAL–UP CONNECTION.
6. LIGHTING CONTROLS IN A TYPICAL CLASSROOM/LAB WILL CONSIST OF A RELAY–BASED LIGHTING CONTROL PANEL, WIRED LOW–VOLTAGE CEILING MOUNTED DUEL TECH VACANCY SENSOR(S), DAY LIGHT SENSOR (IF REQUIRED), THREE BUTTON ENTRY STATION (AT ROOM ENTRANCE), FIVE BUTTON TEACHER STATION (AT TEACHER'S DESK)
   - A. TWO CONTROL ZONES IN A TYPICAL CLASSROOM/LAB:
     CLASSROOM
     TEACHING WALL
   - B. THREE BUTTON ENTRY STATION:
     GENERAL ON (100%)
     DIMMED (50%)
     OFF
   - C. FIVE BUTTON TEACHER STATION:
     GENERAL ON (100%)
     DIMMED (50%)
     AV MODE 1 (CLASSROOM ZONE AT 100%, TEACHING WALL ZONE OFF).
     AV MODE 2 (CLASSROOM ZONE AT 50%, TEACHING WALL OFF).
     OFF
7. THE BASIS OF DESIGN CALLS FOR A LIGHTING CONTROL PANEL WITH AN INTEGRAL UL 924 RELAY. WHEN NORMAL POWER FAILS, THE LIGHTING CONTROL PANEL'S UL 924 RELAY AUTOMATICALLY CLOSES AND DISCONNECTS THE 0–10V CONTROLS ALLOWING THE FIXTURE(S) DOWNSTREAM OF THE LIGHTING CONTROL PANEL IF BEING DIMMED UNDER NORMAL POWER, TO DEFAULT TO FULL POWER.

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GP #21620

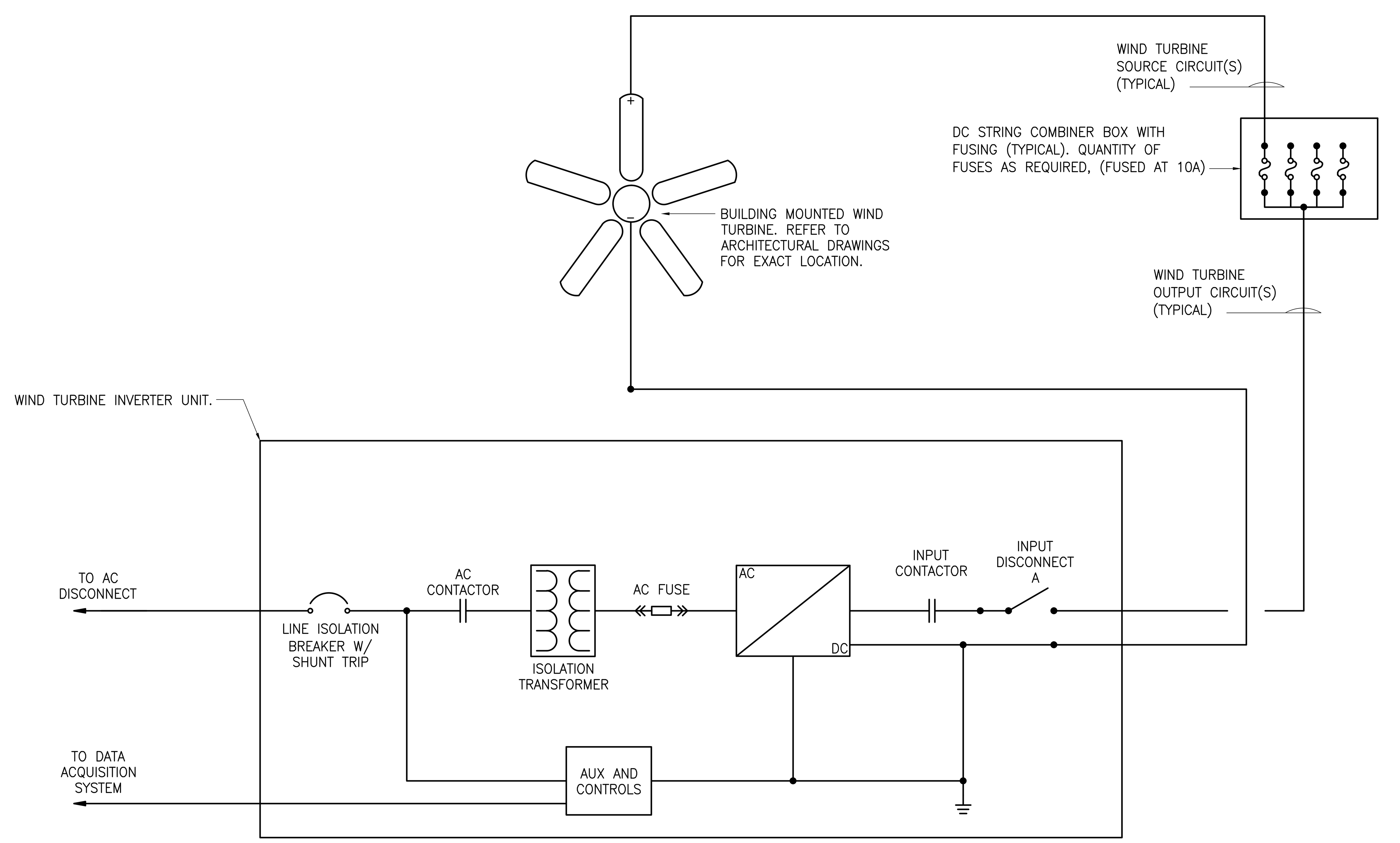
ELECTRICAL DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

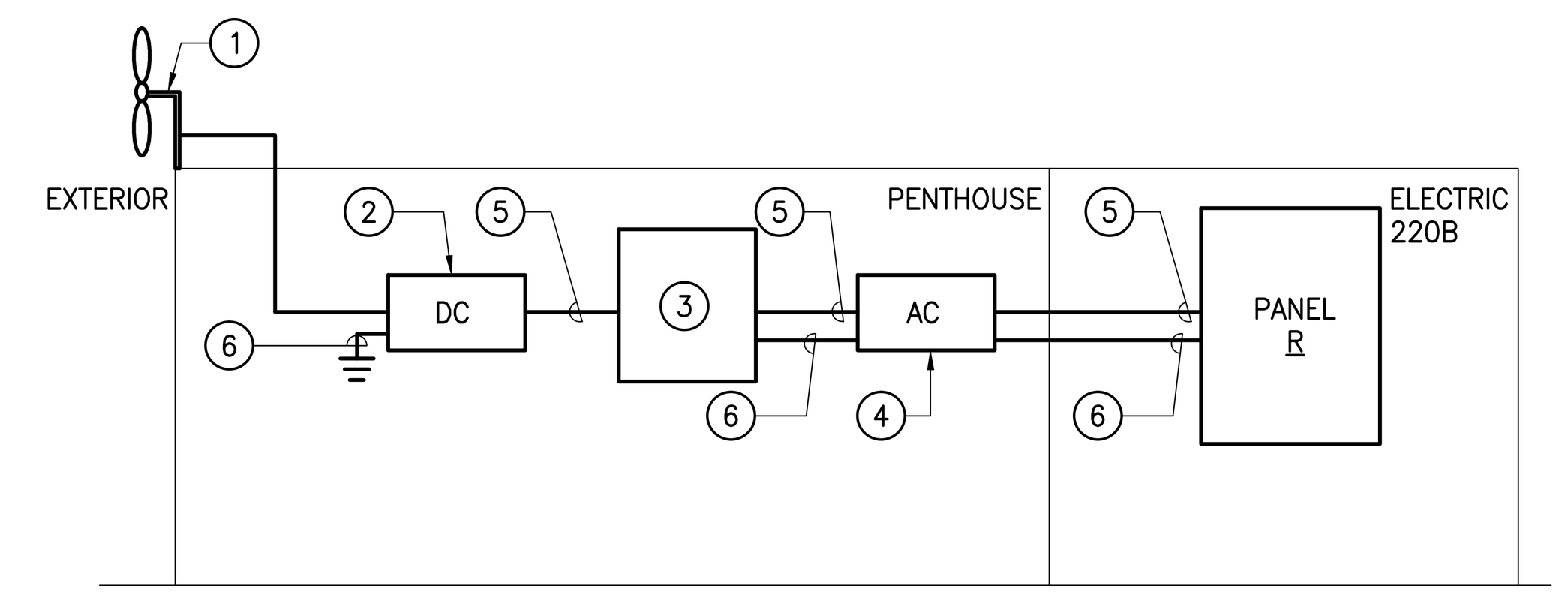
E-6.3

February 1, 2017
Bid Set



(1) ADD ALTERNATE #1 – WIND TURBINE INVERTER TYPICAL WIRING DIAGRAM

SCALE: NONE



DRAWING NOTES: (FOR THIS DETAIL ONLY)

1. BUILDING MOUNTED WIND TURBINE. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION.
2. DC ISOLATOR. REFER TO DETAIL THIS SHEET FOR WIRING SCHEMATIC.
3. WIND TURBINE INVERTER. REFER TO DETAIL THIS SHEET FOR WIRING DIAGRAM.
4. AC ISOLATOR.
5. WIRING SIZING FOR THE DC SIDE TO BE #12 MINIMUM. VERIFY EXACT WIRE SIZE WITH MANUFACTURER REQUREMENTS.
6. #6 GROUND WIRE. VERIFY EXACT WIRE SIZE WITH MANUFACTURER REQUIREMENTS.

(2) ADD ALTERNATE #1 – WIND TURBINE SYSTEM RISER DIAGRAM

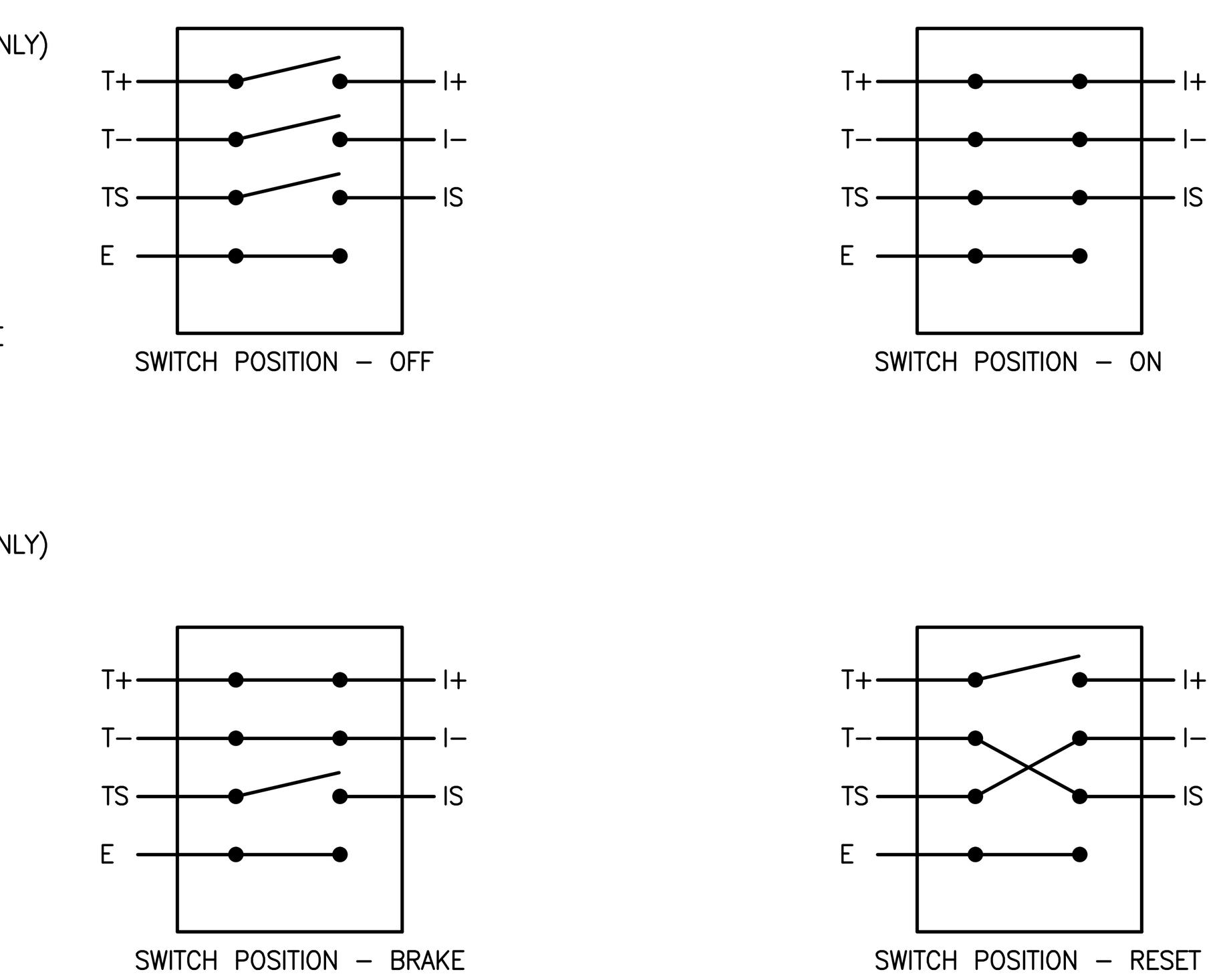
SCALE: NONE

ABBREVIATIONS: (FOR THIS DETAIL ONLY)

T+	TURBINE POSITIVE	BROWN
T–	TURBINE NEGATIVE	GREY
I+	INVERTER POSITIVE	BROWN
I–	INVERTER NEGATIVE	GREY
TS	TURBINE SIGNAL	BLACK W/YELLOW SLEEVE
G	GROUND	GREEN + YELLOW

GENERAL NOTES: (FOR THIS DETAIL ONLY)

1. THE DC ISOLATOR SHOULD BE INSTALLED SO THAT IT IS ACCESSIBLE TO THE UNIT BUT AS CLOSE TO THE TURBINE AS POSSIBLE.
2. THE DC ISOLATOR MUST BE SUPPLIED BY RDST LTD.



(3) ADD ALTERNATE #1 – DC ISOLATOR WIRING SCHEMATIC

SCALE: NONE

(4) NOT USED

SCALE: NONE

(5) NOT USED

SCALE: NONE

(6) NOT USED

SCALE: NONE

(7) NOT USED

SCALE: NONE

(8) NOT USED

SCALE: NONE

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GP #21620

ELECTRICAL DETAILS

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-6.4

February 1, 2017
Bid Set

Switchboard: MDP

Location: ELECTRIC 220B **Volts:** 480/277 Wye **A.I.C. Rating:** 22kAIC
Supply From: **Phases:** 3 **Mains Type:**
Mounting: Surface **Wires:** 4 **Mains Rating:** 600 A
Enclosure: Type 1 **MCB Rating:** 600 A

Notes:

CKT	Circuit Description	P	Frame	CB	# of Sets	# of Conductors		Gnd	C	Load	Remarks
1	C & C1 (VIA TC)	3	400 A	300 A	1	4	350kcmil	#4	2-1/2"	97.1 kVA	
2	L	3	100 A	60 A	1	4	#4	#10	1-1/4"	13.2 kVA	
3	M	3	400 A	300 A	1	4	350kcmil	#4	2-1/2"	182.7 kVA	
4	R (VIA TR)	3	225 A	225 A	1	4	#4/0	#4	2-1/2"	55.1 kVA	
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

Total Conn. Load: 349.5 kVA
Total Amps: 420 A

Legend:

Notes:

GENERAL NOTES:

1. ONLY PROVIDE CIRCUIT R-19 UNDER ALTERNATE 1. UNDER BASE BID, PROVIDE 3 POLE SPACE.
2. ONLY PROVIDE CIRCUITS R-67 AND R-71 UNDER ALTERNATE 3. UNDER BASE BID, PROVIDE 1 POLE SPACES.

DRY TYPE TRANSFORMER SCHEDULE

XFMR	kVA	PRIMARY VOLTAGE	PRIMARY ϕ	PRIMARY CB	PRIMARY WIRING	SECONDARY WIRING	SECONDARY VOLTAGE	SECONDARY ϕ	SECONDARY CB	NEUTRAL/ CASE GND	REMARKS	MOUNTING DESCRIPTION
TC	112.5	480 V	3	225 A	(3) #4/0 + #4GW - 2"C	2 SETS (5-250KCMIL + #3GW - 2 1/2"C)	208/120 V	3	225 A (C1)	#1/0	K-FACTOR	FLOOR
[redacted]						2 SETS (5-250KCMIL + #3GW - 2 1/2"C)	208/120 V	3	225 A (C)	[redacted]		
TR	75	480 V	3	150 A	(3) #1/0 + #6GW - 2"C	(4) #4/0 + #4GW - 2 1/2"C	208/120 V	3	225 A	#2		FLOOR

Branch Panel: L

LOCATION: ELECTRIC 220B **VOLTAGE:** 480/277 Wye **A.I.C. RATING:** 14kAIC
SUPPLY FROM: MDP **PHASE:** 3 **MAINS RATING:** 100 A
MOUNTING: Surface **WIRES:** 4 **MCB RATING:** 60 A

Notes:

CKT	CIRCUIT	# of Cond.		Gnd.	C	P	CB	A		B		C		CB	P	C	Gnd.	# of Cond.		CIRCUIT	CKT
L-1	LTG - ROOM 201, 202, 206	2	#12	#12	3/4"	1	20 A	2.4 kVA	1.5 kVA					20 A	1	3/4"	#12	#12	2	LTG - Room 225	L-2
L-3	LTG - ROOM 228, 229A, 229B	2	#12	#12	3/4"	1	20 A			2.4 kVA	1.7 kVA			20 A	1	3/4"	#12	#12	2	LTG - ROOM 208, 212-219, 209	L-4
L-5	LTG - CORRIDOR 200	2	#12	#12	3/4"	1	20 A					2.0 kVA	1.2 kVA	20 A	1	3/4"	#12	#12	2	LTG - ROOM 221, 222, 239, 238, 204	L-6
L-7	LTG - ROOM 235, 236	2	#12	#12	3/4"	1	20 A	1.3 kVA	1.4 kVA					20 A	1	3/4"	#12	#12	2	LTG - LOBBY 231	L-8
L-9	EXTERIOR LTG	2	#12	#12	3/4"	1	20 A			0.1 kVA	0.2 kVA			20 A	1	3/4"	#12	#12	2	EXTERIOR & CANOPY LTG	L-10
L-11	SPARE	--	--	--	--	1	20 A					0.0 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	L-12
L-13	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	L-14
L-15	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	L-16
L-17	SPARE	--	--	--	--	1	20 A					0.0 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	L-18
L-19	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	L-20
L-21	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	L-22
L-23	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	L-24
L-25	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	L-26
L-27	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	L-28
L-29	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	L-30

	Total	A	B	C
Total Connected Load:	14.6 kVA	6.5 kVA	4.3 kVA	3.2 kVA
Total Connected Circuit:	18 A	24 A	16 A	11 A

Legend:

Branch Panel: M

LOCATION: ELECTRIC 220B **VOLTAGE:** 480/277 Wye **A.I.C. RATING:** 22kAIC
SUPPLY FROM: MDP **PHASE:** 3 **MAINS RATING:** 400 A
MOUNTING: Surface **WIRES:** 4 **MCB RATING:** 300 A

Notes:

CKT	CIRCUIT	# of Cond.		Gnd.	C	P	CB	A		B		C		CB	P	C	Gnd.	# of Cond.		CIRCUIT	CKT
M-1								1.1 kVA	1.2 kVA												M-2
M-3	AHU-1 SAF MEP 220	3	#8	#10	3/4"	3	35 A			1.1 kVA	1.2 kVA			15 A	3	3/4"	#12	#12	3	AHU-2 RAF- MECHANICAL PENTHOUSE 241	M-4
M-5												1.1 kVA	1.2 kVA								M-6
M-7								1.2 kVA	2.2 kVA												M-8
M-9	AHU-3 RAF- MECHANICAL PENTHOUSE 241	3	#12	#12	3/4"	3	15 A			1.2 kVA	2.2 kVA			15 A	3	3/4"	#12	#12	3	AHU-4 SAF- MECHANICAL PENTHOUSE 241	M-10
M-11												1.2 kVA	2.2 kVA								M-12
M-13								3.9 kVA	0.0 kVA												M-14
M-15	P-1 - MEP 220	3	#10	#10	3/4"	3	25 A			3.9 kVA	0.0 kVA			25 A	3	3/4"	#10	#10	3	P-2 (STAND-BY) - MEP 220	M-16
M-17												3.9 kVA	0.0 kVA								M-18
M-19								3.0 kVA	0.0 kVA												M-20
M-21	P-3- MEP 220	3	#12	#12	3/4"	3	20 A			3.0 kVA	0.0 kVA			20 A	3	3/4"	#12	#12	3	P-4(STAND-BY) - MEP 220	M-22
M-23												3.0 kVA	0.0 kVA								M-24
M-25								37.6 kVA	2.2 kVA												M-26
M-27	CHILLER	3	250 KCMIL	#4	2-1/2"	3	250 A			37.6 kVA	2.2 kVA			30 A	3	3/4"	#10	#10	3	AHU-1 RAF - MEP 220	M-28
M-29												37.6 kVA	2.2 kVA								M-30
M-31								2.2 kVA	2.2 kVA												M-32
M-33	AHU-2 SAF - MECHANICAL PENTHOUSE 241	3	#12	#12	3/4"	3	15 A			2.2 kVA	2.2 kVA			15 A	3	3/4"	#12	#12	3	AHU-3 SAF - MECHANICAL PENTHOUSE 241	M-34
M-35												2.2 kVA	2.2 kVA								M-36
M-37								1.2 kVA	0.6 kVA												M-38
M-39	AHU-4 RAF - MECHANICAL PENTHOUSE 241	3	#12	#12	3/4"	3	15 A			1.2 kVA	0.6 kVA			15 A	3	3/4"	#12	#12	3	F-2,F-4 - MECHANICAL PENTHOUSE 241	M-40
M-41												1.2 kVA	0.6 kVA								M-42
M-43								0.8 kVA	0.6 kVA												M-44
M-45	F-6 - ROOF	3	#12	#12	3/4"	3	15 A			0.8 kVA	0.6 kVA			15 A	3	3/4"	#12	#12	3	F-3,F-5 - MECHANICAL PENTHOUSE 241	M-46
M-47												0.8 kVA	0.6 kVA								M-48
M-49								0.3 kVA	0.3 kVA												M-50
M-51	F-7 - ROOF	3	#12	#12	3/4"	3	15 A			0.3 kVA	0.3 kVA			15 A	3	3/4"	#12	#12	3	F-11 - ROOF	M-52
M-53												0.3 kVA	0.3 kVA								M-54
M-55	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	M-56
M-57	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	M-58
M-59	SPARE	--	--	--	--	1	20 A					0.0 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	M-60
M-61	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	M-62
M-63	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	M-64
M-65	SPARE	--	--	--	--	1	20 A					0.0 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	M-66
M-67	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	M-68
M-69	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	M-70
M-71	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	M-72
M-73	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	M-74
M-75	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	M-76
M-77	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	M-78
M-79	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	M-80
M-81	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	M-82
M-83	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	M-84

	Total	A	B	C
Total Connected Load:	182.7 kVA	60.9 kVA	60.9 kVA	60.9 kVA
Total Connected Circuit:	220 A	220 A	220 A	220 A

Legend:

Branch Panel: R

LOCATION: ELECTRIC 220B **VOLTAGE:** 120/208 Wye **A.I.C. RATING:** 22kAIC
SUPPLY FROM: TR **PHASE:** 3 **MAINS RATING:** 225 A
MOUNTING: Surface **WIRES:** 4 **MCB RATING:** 225 A

Notes:

CKT	CIRCUIT	# of Cond.		Gnd.	C	P	CB	A		B		C		CB	P	C	Gnd.	# of Cond.		CIRCUIT	CKT
R-1	MICROWAVE - WORK ROOM 211	2	#12	#12	3/4"	1	20 A	1.5 kVA	1.2 kVA					20 A	1	3/4"	#12	#12	2	REFRIGERATOR - WORK ROOM 211	R-2
R-3	VENDING MACHINE - VENDING 234	2	#12	#12	3/4"	1	20 A			1.2 kVA	1.2 kVA			20 A	1	3/4"	#12	#12	2	VENDING MACHINE - VENDING 234	R-4
R-5	VENDING MACHINE - VENDING 234	2	#12	#12	3/4"	1	20 A					1.2 kVA	1.0 kVA	20 A	1	3/4"	#12	#12	2	REC - CORRIDOR 200	R-6
R-7	REC - WORK ROOM 211	2	#12	#12	3/4"	1	20 A	0.2 kVA	0.2 kVA					20 A	1	3/4"	#12	#12	2	REC - CUSTODIAL 223	R-8
R-9	REC - CUSTODIAL 223	2	#12	#12	3/4"	1	20 A			0.2 kVA	1.4 kVA			20 A	1	3/4"	#12	#12	2	REC - ROOM 210B, 207, 200	R-10
R-11	REC - ROOM 223, 204, 237, 200	2	#12	#12	3/4"	1	20 A					0.8 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	TOWEL DISPENSER - WOMEN 221	R-12
R-13	TOWEL DISPENSER - MEN 222	2	#12	#12	3/4"	1	20 A	0.8 kVA	0.4 kVA					20 A	1	3/4"	#12	#12	2	REC - ROOM 222, 221	R-14
R-15	DISPLAY CASE LTG - STUDENT BREAKOUT...	2	#12	#12	3/4"	1	20 A			0.7 kVA	0.7 kVA			20 A	1	3/4"	#12	#12	2	ADA DOORS - LOBBY 231	R-16
R-17	CARD READERS	2	#12	#12	3/4"	1	20 A					0.4 kVA	0.3 kVA	20 A	1	3/4"	#12	#12	2	CARD READERS	R-18
R-19								0.1 kVA	0.1 kVA					15 A	2	3/4"	#12	#12	2	AC-1	R-20
R-21	WIND TURBINE	3	#12	#12	3/4"	3	15 A			0.1 kVA	0.1 kVA										R-22
R-23												0.1 kVA	1.2 kVA	20 A	1	3/4"	#12	#12	2	F-8,F-9,F-10 - ROOF	R-24
R-25	REC - MEP 220	2	#12	#12	3/4"	1	20 A	1.0 kVA	1.0 kVA					20 A	1	3/4"	#12	#12	2	REC - PENTHOUSE	R-26
R-27	REC - COURTYARD	2	#12	#12	3/4"	1	20 A			0.2 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	SOLATUBES - CLASSROOM 205	R-28
R-29	EWC - CORRIDOR 200	2	#12	#12	3/4"	1	20 A					1.0 kVA	0.0 kVA	15 A	1	3/4"	#12	#12	2	CEILING FAN - LOBBY 231	R-30
R-31	REC - MEP 220	2	#12	#12	3/4"	1	20 A	0.2 kVA	2.4 kVA					25 A	1	3/4"	#10	#10	2	BOILER-1 MEP 220	R-32
R-33	BOILER-2 - MEP 220	2	#10	#10	3/4"	1	25 A			2.4 kVA	0.6 kVA			20 A	1	3/4"	#12	#12	2	HWG - MEP 220	R-34
R-35												3.5 kVA	0.6 kVA	20 A	1	3/4"	#12	#12	2	UH-1,RP-1 - MEP 220	R-36
R-37	LABORATORY VACUUM PUMP MEP 220	3	#8	#10	3/4"	3	40 A	3.5 kVA	1.9 kVA					20 A	1	3/4"	#12	#12	2	AHU-1 HRW - MEP 220	R-38
R-39										3.5 kVA	0.7 kVA			20 A	1	3/4"	#12	#12	2	AHU-2 HRW - MECHANICAL PENTHOUSE 241	R-40
R-41	AHU-3 HRW - MECHANICAL PENTHOUSE 241	2	#12	#12	3/4"	1	20 A					0.7 kVA	0.7 kVA	20 A	1	3/4"	#12	#12	2	AHU-4 HRW - MECHANICAL PENTHOUSE 241	R-42
R-43	TRAP PRIMING STATION - MEP 220	2	#12	#12	3/4"	1	20 A	0.2 kVA	0.2 kVA					20 A	1	3/4"	#12	#12	2	TRAP PRIMING STATION - MECH 241	R-44
R-45	REC - VENDING 234	2	#12	#12	3/4"	1	20 A			0.8 kVA	0.4 kVA			20 A	1	3/4"	#12	#12	2	TRAP PRIMING STATION - ENGINEERING 235	R-46
R-47	BOILER EPO - MEP 220	2	#12	#12	3/4"	1	20 A					0.5 kVA	0.5 kVA	20 A	1	3/4"	#12	#12	2	EPO - ENGINEERING /ROBOTICS 236	R-48
R-49	EPO - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A	1.5 kVA	0.6 kVA					15 A	2	3/4"	#12	#12	2	P-5 - MEP 220	R-50
R-51	P-6 (STANDBY) - MEP 220	2	#12	#12	3/4"	2	15 A			0.0 kVA	0.6 kVA										R-52
R-53												0.0 kVA	0.5 kVA	15 A	1	3/4"	#12	#12	2	P-7 - MECHANICAL PENTHOUSE 241	R-54
R-55	P-8 (STANDBY) - MECH PENTHOUSE 241	2	#12	#12	3/4"	1	15 A	0.0 kVA	0.5 kVA					15 A	1	3/4"	#12	#12	2	P-9 - MECHANICAL PENTHOUSE 241	R-56
R-57	P-10 (STANDBY) - MECH PENTHOUSE 241	2	#12	#12	3/4"	1	15 A			0.0 kVA	0.5 kVA			15 A	1	3/4"	#12	#12	2	P-11 - MECHANICAL PENTHOUSE 241	R-58
R-59	P-12 (STANDBY) - MECH PENTHOUSE 241	2	#12	#12	3/4"	1	15 A					0.0 kVA	0.3 kVA	15 A	1	3/4"	#12	#12	2	CUH-1 - VESTIBULE 232	R-60
R-61	CUH-2 - VESTIBULE 200A	2	#12	#12	3/4"	1	15 A	0.2 kVA	0.2 kVA					15 A	1	3/4"	#12	#12	2	UH-2 - MECHANICAL PENTHOUSE 241	R-62
R-63	HEAT TRACE	2	#12	#12	3/4"	1	20 A			0.4 kVA	0.4 kVA			20 A	1	3/4"	#12	#12	2	HEAT TRACE	R-64
R-65	RADON VENT	2	#12	#12	3/4"	1	20 A					2.4 kVA	1.0 kVA	20 A	1	3/4"	#12	#12	2	REC - ROOF	R-66
R-67	INJECTION PUMP - ENG/ROBOT STORAGE 235	2	#12	#12	3/4"	1	15 A	0.2 kVA	0.7 kVA					15 A	1	3/4"	#12	#12	2	F-1 - ROOF	R-68
R-69	REC - LOBBY 231	2	#12	#12	3/4"	1	20 A			0.4 kVA	0.2 kVA			20 A	1	3/4"	#12	#12	2	TRACK LTS - LIGHTING DISPLAY 237A	R-70
R-71	HYDRONIC SYSTEM FEEDER - ENG STOR 235	2	#12	#12	3/4"	1	20 A					0.2 kVA	1.2 kVA	20 A	1	3/4"	#12	#12	2	GLYCOL FEEDER - MEP 220	R-72
R-73	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	R-74
R-75	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	R-76
R-77	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	R-78
R-79	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	R-80
R-81	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	R-82
R-83	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	R-84

	Total	A	B	C
Total Connected Load:	55.1 kVA	18.8 kVA	17.5 kVA	18.8 kVA
Total Connected Circuit:	153 A	158 A	146 A	159 A

Legend:

ALBAN ENGINEERING, INC
303 INTERNATIONAL CIRCLE, SUITE 450
HUNT VALLEY, MD 21030
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G+P GRIMM AND PARKER

GP #21620

PANELBOARD SCHEDULES

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-7.1

February 1, 2017
Bid Set

Branch Panel: C

LOCATION: ELECTRIC 220B **VOLTAGE:** 120/208 Wye **A.I.C. RATING:** 14kAIC
SUPPLY FROM: TC **PHASE:** 3 **MAINS RATING:** 150 A
MOUNTING: Surface **WIRES:** 4 **MCB RATING:** 225 A

Notes:

CKT	CIRCUIT	# of Cond.		Gnd.	C	P	CB	A		B		C		CB	P	C	Gnd.	# of Cond.		CIRCUIT	CKT
C-1	REC - CLASSROOM 201	2	#12	#12	3/4"	1	20 A	1.0 kVA	0.8 kVA					20 A	1	3/4"	#12	#12	2	PROJ - CLASSROOM 201	C-2
C-3	REC - CLASSROOM 202	2	#12	#12	3/4"	1	20 A			1.0 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	REC - CLASSROOM 201	C-4
C-5	REC - CLASSROOM 206	2	#12	#12	3/4"	1	20 A					1.0 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	PROJ - CLASSROOM 202	C-6
C-7	REC - CLASSROOM 202	2	#12	#12	3/4"	1	20 A	0.8 kVA	0.8 kVA					20 A	1	3/4"	#12	#12	2	PROJ - CLASSROOM 206	C-8
C-9	REC - CLASSROOM 206	2	#12	#12	3/4"	1	20 A			1.0 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	ADMIN - PART-TIME FACULTY 208	C-10
C-11	ADMIN - PART-TIME FACULTY 208	2	#12	#12	3/4"	1	20 A					1.0 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	ADMIN - PART-TIME FACULTY 208	C-12
C-13	PROJ - CONFERENCE ROOM 209	2	#12	#12	3/4"	1	20 A	0.8 kVA	0.4 kVA					20 A	1	3/4"	#12	#12	2	POLYCOM SYSTEM - CONFERENCE ROOM 209	C-14
C-15	REC - CONFERENCE ROOM 209	2	#12	#12	3/4"	1	20 A			0.8 kVA	1.0 kVA			20 A	1	3/4"	#12	#12	2	REC - FACULTY 212	C-16
C-17	REC - FACULTY 213	2	#12	#12	3/4"	1	20 A					1.0 kVA	1.0 kVA	20 A	1	3/4"	#12	#12	2	REC - FACULTY 214	C-18
C-19	REC - FACULTY 215	2	#12	#12	3/4"	1	20 A	1.0 kVA	1.0 kVA					20 A	1	3/4"	#12	#12	2	REC - FACULTY 216	C-20
C-21	ADMIN - FACULTY MEETING 217	2	#12	#12	3/4"	1	20 A			0.6 kVA	0.4 kVA			20 A	1	3/4"	#12	#12	2	REC - FACULTY MEETING 217	C-22
C-23	REC - FACULTY 218	2	#12	#12	3/4"	1	20 A					1.0 kVA	1.0 kVA	20 A	1	3/4"	#12	#12	2	REC - FACULTY 219	C-24
C-25	REC - WORK ROOM 211	2	#12	#12	3/4"	1	20 A	1.2 kVA	1.0 kVA					20 A	1	3/4"	#12	#12	2	REC - COPY ROOM 210A	C-26
C-27	COPIER - COPY ROOM 210A	2	#12	#12	3/4"	1	20 A			0.2 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	PROJ - CLASSROOM 205	C-28
C-29	REC - CLASSROOM 205	2	#12	#12	3/4"	1	20 A					1.4 kVA	1.0 kVA	20 A	1	3/4"	#12	#12	2	CHARGING STATION - STORAGE 204	C-30
C-31	REC - STUDENT BREAKOUT 238	2	#12	#12	3/4"	1	20 A	1.0 kVA	0.2 kVA					20 A	1	3/4"	#12	#12	2	VIDEO - STUDENT BREAKOUT 203	C-32
C-33	RECEPTACLE STUDENT BREAKOUT 203	2	#12	#12	3/4"	1	20 A			0.8 kVA	1.0 kVA			20 A	1	3/4"	#12	#12	2	CHARGING STATION - STORAGE 204	C-34
C-35	RECEPTACLE STUDENT BREAKOUT 224	2	#12	#12	3/4"	1	20 A					0.8 kVA	1.0 kVA	20 A	1	3/4"	#12	#12	2	REC - LOUNGE 233	C-36
C-37	REC - LOUNGE 233	2	#12	#12	3/4"	1	20 A	1.0 kVA	0.4 kVA					20 A	1	3/4"	#12	#12	2	VIDEO - LOBBY 231	C-38
C-39	RECEPTACLE LOBBY 231	2	#12	#12	3/4"	1	20 A			0.8 kVA	0.6 kVA			20 A	1	3/4"	#12	#12	2	REC - LOBBY 231	C-40
C-41	RECEPTACLE LOBBY 231	2	#12	#12	3/4"	1	20 A					1.2 kVA	0.2 kVA	20 A	1	3/4"	#12	#12	2	ENERGY DASHBOARD - LOBBY 231	C-42
C-43	DATA RACK - IT 220A	2	#10	#10	3/4"	1	30 A	2.2 kVA	0.4 kVA					20 A	1	3/4"	#12	#12	2	CABINETIZED STILL - BIO PREP/STOR 229B	C-44
C-45	REC - DISPLAY 237A	2	#12	#12	3/4"	1	20 A			0.6 kVA	2.2 kVA			30 A	1	3/4"	#10	#10	2	DATA RACK - IT 220A	C-46
C-47	REC - IT 220A	2	#12	#12	3/4"	1	20 A					0.4 kVA	0.4 kVA	20 A	1	3/4"	#12	#12	2	REC - IT 220A	C-48
C-49	REC - IT 220A	2	#12	#12	3/4"	1	20 A	0.4 kVA	0.4 kVA					20 A	1	3/4"	#12	#12	2	REC - IT 220A	C-50
C-51	SECURITY PANEL - IT 220A	2	#12	#12	3/4"	1	20 A			0.4 kVA	2.0 kVA										C-52
C-53	SPARE	--	--	--	--	1	20 A					0.0 kVA	2.0 kVA	20 A	3	3/4"	#12	#12	3	CABINETIZED STILL - BIOLOGY PREP/STORAGE 229B	C-54
C-55	SPARE	--	--	--	--	1	20 A	0.0 kVA	2.0 kVA												C-56
C-57	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	C-58
C-59	SPARE	--	--	--	--	1	20 A					0.0 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	C-60
C-61	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	C-62
C-63	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	C-64
C-65	SPARE	--	--	--	--	1	20 A					0.0 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	C-66
C-67	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	C-68
C-69	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	C-70
C-71	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	C-72
C-73	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	C-74
C-75	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	C-76
C-77	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	C-78
C-79	SPACE	--	--	--	--	--	--	0.0 kVA	0.1 kVA												C-80
C-81	SPACE	--	--	--	--	--	--			0.0 kVA	0.1 kVA			30 A	3	3/4"	#10	#10	4	SPD - ELECTRIC 220B	C-82
C-83	SPACE	--	--	--	--	--	--					0.0 kVA	0.1 kVA								C-84
						Total Connected Load:	48.9 kVA	16.9 kVA		15.9 kVA		16.1 kVA									
						Total Connected Circuit:	136 A	141 A		132 A		135 A									

Legend:

Branch Panel: C1

LOCATION: ELECTRIC 220B **VOLTAGE:** 120/208 Wye **A.I.C. RATING:** 14kAIC
SUPPLY FROM: TC **PHASE:** 3 **MAINS RATING:** 225 A
MOUNTING: Surface **WIRES:** 4 **MCB RATING:** 225 A

Notes:

CKT	CIRCUIT	# of Cond.		Gnd.	C	P	CB	A		B		C		CB	P	C	Gnd.	# of Cond.		CIRCUIT	CKT
C1-1								5.2 kVA	8.2 kVA												C1-2
C1-3	LAB1	3	#12	#12	3/4"	3	20 A			5.0 kVA	8.4 kVA			20 A	3	3/4"	#12	#12	3	LAB2	C1-4
C1-5												4.0 kVA	7.9 kVA								C1-6
C1-7								2.6 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	C1-8
C1-9	LAB4	3	#12	#12	3/4"	3	20 A			3.6 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	C1-10
C1-11												3.0 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	C1-12
C1-13	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	C1-14
C1-15	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	C1-16
C1-17	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	C1-18
C1-19	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	C1-20
C1-21	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	C1-22
C1-23	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	C1-24
C1-25	SPACE	--	--	--	--	--	--	0.0 kVA	0.1 kVA												C1-26
C1-27	SPACE	--	--	--	--	--	--			0.0 kVA	0.1 kVA			30 A	3	3/4"	#10	#10	4	SPD - ELECTRIC 220B	C1-28
C1-29	SPACE	--	--	--	--	--	--					0.0 kVA	0.1 kVA								C1-30
						Total Connected Load:	48.2 kVA	16.1 kVA		17.1 kVA		15.0 kVA									
						Total Connected Circuit:	134 A	136 A		143 A		125 A									

Legend:

Branch Panel: LAB1

LOCATION: PHYSICS/EARTH SCIENCE... **VOLTAGE:** 120/208 Wye **A.I.C. RATING:** 14kAIC
SUPPLY FROM: C1 **PHASE:** 3 **MAINS RATING:** 100 A
MOUNTING: Recessed **WIRES:** 4 **MCB RATING:** 60 A (SHUNT TRIP TYPE)

Notes: SHUNT TRIP W/120V COIL

CKT	CIRCUIT	# of Cond.		Gnd.	C	P	CB	A		B		C		CB	P	C	Gnd.	# of Cond.		CIRCUIT	CKT
LAB1-1	REC - PHYSICS/EARTH SCIENCE...	2	#12	#12	3/4"	1	20 A	1.2 kVA	0.8 kVA					20 A	1	3/4"	#12	#12	2	PROJ - PHYSICS/EARTH SCIENCE 226	LAB1-2
LAB1-3	REC - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A			1.0 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	REC - PHYSICS/EARTH SCIENCE 226	LAB1-4
LAB1-5	REC - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A					0.8 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	REC - PHYSICS/EARTH SCIENCE 226	LAB1-6
LAB1-7	REC - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A	0.8 kVA	0.8 kVA					20 A	1	3/4"	#12	#12	2	REC - PHYSICS/EARTH SCIENCE 226	LAB1-8
LAB1-9	REC - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A			0.8 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	REC - PHYSICS/EARTH SCIENCE 226	LAB1-10
LAB1-11	REC - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A					0.8 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	REC - PHYSICS/EARTH SCIENCE 226	LAB1-12
LAB1-13	REC - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A	0.8 kVA	0.8 kVA					20 A	1	3/4"	#12	#12	2	REC - PHYSICS/EARTH SCIENCE 226	LAB1-14
LAB1-15	REC - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A			0.8 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	REC - PHYSICS/EARTH SCIENCE 226	LAB1-16
LAB1-17	REC - PHYSICS/EARTH SCIENCE 226	2	#12	#12	3/4"	1	20 A					0.8 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	LAB1-18
LAB1-19	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	LAB1-20
LAB1-21	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	LAB1-22
LAB1-23	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	LAB1-24
LAB1-25	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	LAB1-26
LAB1-27	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	LAB1-28
LAB1-29	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	LAB1-30
						Total Connected Load:	14.2 kVA	5.2 kVA		5.0 kVA		4.0 kVA									
						Total Connected Circuit:	39 A	45 A		43 A		33 A									

Legend:

Branch Panel: LAB3

LOCATION: ENGINEERING/ROBOTICS STORAGE 235 **VOLTAGE:** 120/208 Wye **A.I.C. RATING:** 14kAIC
SUPPLY FROM: C1 **PHASE:** 3 **MAINS RATING:** 100 A
MOUNTING: Recessed **WIRES:** 4 **MCB RATING:** 60 A (SHUNT TRIP TYPE)

Notes: SHUNT TRIP W/120V COIL

CKT	CIRCUIT	# of Cond.		Gnd.	C	P	CB	A		B		C		CB	P	C	Gnd.	# of Cond.		CIRCUIT	CKT
LAB3-1	REC - ENGINEERING/ROBOTICS STORAGE 235	2	#12	#12	3/4"	1	20 A	0.4 kVA	0.8 kVA					20 A	1	3/4"	#12	#12	2	TCHR - ENGINEERING /ROBOTIC 236	LAB3-2
LAB3-3	CORD REEL - ENGINEERING/ROBOTIC 236	2	#12	#12	3/4"	1	20 A			0.8 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	CORD REEL - ENGINEERING/ROBOTIC 236	LAB3-4
LAB3-5	CORD REEL	2	#12	#12	3/4"	1	20 A					0.8 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	CORD REEL - ENGINEERING/ROBOTIC 236	LAB3-6
LAB3-7	REC - ENGINEERING /ROBOTIC 236	2	#12	#12	3/4"	1	20 A	0.6 kVA	0.2 kVA					20 A	1	3/4"	#12	#12	2	REC - ENGINEERING /ROBOTIC 236	LAB3-8
LAB3-9	DRILL PRESS - ENGINEERING/ROBOTICS...	2	#12	#12	3/4"	1	20 A			1.0 kVA	1.0 kVA			20 A	1	3/4"	#12	#12	2	REC - ENGINEERING/ROBOTICS STORAGE 235	LAB3-10
LAB3-11	REC - ENGINEERING/ROBOTICS STORAGE 235	2	#12	#12	3/4"	1	20 A					1.0 kVA	0.4 kVA	20 A	1	3/4"	#12	#12	2	REC - ENGINEERING /ROBOTIC 236	LAB3-12
LAB3-13	REC - ENGINEERING /ROBOTIC 236	2	#12	#12	3/4"	1	20 A	0.6 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	LAB3-14
LAB3-15	SPARE	--	--	--	--	1	20 A			0.0 kVA	0.0 kVA			20 A	1	--	--	--	--	SPARE	LAB3-16
LAB3-17	SPARE	--	--	--	--	1	20 A					0.0 kVA	0.0 kVA	20 A	1	--	--	--	--	SPARE	LAB3-18
LAB3-19	SPARE	--	--	--	--	1	20 A	0.0 kVA	0.0 kVA					20 A	1	--	--	--	--	SPARE	LAB3-20
LAB3-21	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	LAB3-22
LAB3-23	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	LAB3-24
LAB3-25	SPACE	--	--	--	--	--	--	0.0 kVA	0.0 kVA					--	--	--	--	--	--	SPACE	LAB3-26
LAB3-27	SPACE	--	--	--	--	--	--			0.0 kVA	0.0 kVA			--	--	--	--	--	--	SPACE	LAB3-28
LAB3-29	SPACE	--	--	--	--	--	--					0.0 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	LAB3-30
						Total Connected Load:	9.2 kVA	2.6 kVA		3.6 kVA		3.0 kVA									
						Total Connected Circuit:	26 A	22 A		31 A		26 A									

Legend:

Branch Panel: LAB2

LOCATION: CHEMISTRY/MICROBIOLOGY... **VOLTAGE:** 120/208 Wye **A.I.C. RATING:** 14kAIC
SUPPLY FROM: C1 **PHASE:** 3 **MAINS RATING:** 100 A
MOUNTING: Recessed **WIRES:** 4 **MCB RATING:** 90 A

Notes:

CKT	CIRCUIT	# of Cond.		Gnd.	C	P	CB	A		B		C		CB	P	C	Gnd.	# of Cond.		CIRCUIT	CKT
LAB2-1	REC - CHEMISTRY/MICROBIOLOGY 227	2	#12	#12	3/4"	1	20 A	0.8 kVA	0.8 kVA					20 A	1	3/4"	#12	#12	2	TCHR - CHEMISTRY/MICROBIOLOGY 227	LAB2-2
LAB2-3	REC - CHEMISTRY/MICROBIOLOGY 227	2	#12	#12	3/4"	1	20 A			0.8 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	POWER CHEMISTRY/MICROBIOLOGY 227	LAB2-4
LAB2-5	POWER CHEMISTRY/MICROBIOLOGY 227	2	#12	#12	3/4"	1	20 A					0.8 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	POWER CHEMISTRY/MICROBIOLOGY 227	LAB2-6
LAB2-7	POWER CHEMISTRY/MICROBIOLOGY 227	2	#12	#12	3/4"	1	20 A	0.8 kVA	0.3 kVA					20 A	1	3/4"	#12	#12	2	INCUBATOR MICROWAVE - BIO PREP/STOR...	LAB2-8
LAB2-9	REC - CHEMISTRY/MICROBIOLOGY...	2	#12	#12	3/4"	1	20 A			0.6 kVA	1.8 kVA			15 A	1	3/4"	#12	#12	2	REFRIGERATOR/FREEZER - CHEM/MICRO...	LAB2-10
LAB2-11	REC - BIOLOGY 230	2	#12	#12	3/4"	1	20 A					1.0 kVA	1.9 kVA	15 A	1	3/4"	#12	#12	2	LAB GLASSWARE WASHER - BIO PREP/STO...	LAB2-12
LAB2-13	INCUBATOR MICROWAVE - BIOLOGY...	2	#12	#12	3/4"	1	20 A	0.3 kVA	1.8 kVA					20 A	1	3/4"	#12	#12	2	REFRIGERATOR/FREEZER -...	LAB2-14
LAB2-15	MICROWAVE DRYING OVEN - CHEM/MICRO...	2	#12	#12	3/4"	1	15 A			0.6 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	FUME HOOD - CHEMISTRY/MICROBIOLOGY...	LAB2-16
LAB2-17	FUME HOOD - CHEMISTRY/MICROBIOLOGY...	2	#12	#12	3/4"	1	20 A					0.8 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	FUME HOOD - BIOLOGY PREP/STORAGE 229B	LAB2-18
LAB2-19	TCHR - BIOLOGY 230	2	#12	#12	3/4"	1	20 A	0.8 kVA	1.0 kVA					20 A	1	3/4"	#12	#12	2	REC - BIOLOGY 230	LAB2-20
LAB2-21	AUTOCLAVE MICROWAVE - BIO PREP/STOR...	2	#12	#12	3/4"	1	20 A			1.0 kVA	0.8 kVA			20 A	1	3/4"	#12	#12	2	RECEPTACLE BIOLOGY 230	LAB2-22
LAB2-23	RECEPTACLE BIOLOGY 230	2	#12	#12	3/4"	1	20 A					0.8 kVA	0.8 kVA	20 A	1	3/4"	#12	#12	2	RECEPTACLE BIOLOGY 230	LAB2-24
LAB2-25	RECEPTACLE BIOLOGY 230	2	#12	#12	3/4"	1	20 A	0.8 kVA	0.8 kVA					20 A	1	3/4"	#12	#12	2	FUME HOOD - BIOLOGY 230	LAB2-26
LAB2-27	EXPLOSION PROOF REF - CHEM STORAGE...	2	#12	#12	3/4"	1	20 A			1.0 kVA	0.2 kVA			20 A	1	3/4"	#12	#12	2	REC - BIOLOGY 230	LAB2-28
LAB2-29	REC - CHEMISTRY/MICROBIOLOGY 227	2	#12	#12	3/4"	1	20 A					0.2 kVA	0.0 kVA	--	--	--	--	--	--	SPACE	LAB2-30
						Total Connected Load:	24.5 kVA	8.2 kVA		8.4 kVA		7.9 kVA									
						Total Connected Circuit:	68 A	69 A		70 A		66 A									

Legend:

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G+P GRIMM AND PARKER

GP #21620

PANELBOARD SCHEDULES

Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-7.2

February 1, 2017
Bid Set

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (SPLIT SYSTEMs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
AC-1	208 V	1	1.0 A	0.2 kVA	R-20,22	9

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (GLYCOL FEEDWATER UNITs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
GLYCOL FEEDER	120 V	1	9.8 A	1.2 kVA	R-72	3

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (INJECTION PUMP)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
INJECTION PUMP	120 V	1	2.0 A	0.2 kVA	R-67	3, 12

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (BOILERs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
BOILER-1	120 V	1	20.0 A	2.4 kVA	R-32	2
BOILER-2	120 V	1	20.0 A	2.4 kVA	R-33	2

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (AIR HANDLER UNITs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
AHU-1 HRW	120 V	1	16.0 A	1.9 kVA	R-38	5
AHU-1 RAF	480 V	3	8.0 A	6.7 kVA	M-26,28,30	6
AHU-1 SAF	480 V	3	4.1 A	3.4 kVA	M-1,3,5	6
AHU-2 HRW	120 V	1	5.8 A	0.7 kVA	R-40	5
AHU-2 RAF	480 V	3	4.5 A	3.7 kVA	M-2,4,6	6
AHU-2 SAF	480 V	3	8.0 A	6.7 kVA	M-31,33,35	6
AHU-3 HRW	120 V	1	5.8 A	0.7 kVA	R-41	5
AHU-3 RAF	480 V	3	4.5 A	3.7 kVA	M-7,9,11	6
AHU-3 SAF	480 V	3	8.0 A	6.7 kVA	M-32,34,36	6
AHU-4 HRW	120 V	1	5.8 A	0.7 kVA	R-42	5
AHU-4 RAF	480 V	3	4.5 A	3.7 kVA	M-37,39,41	6
AHU-4 SAF	480 V	3	8.0 A	6.7 kVA	M-8,10,12	6

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (PUMPs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
P-1	480 V	3	14.0 A	11.6 kVA	M-13,15,17	1
P-2(STAND-BY)	480 V	3	0.0 A	0.0 kVA	M-14,16,18	1
P-3	480 V	3	11.0 A	9.1 kVA	M-19,21,23	1
P-4 (STAND-BY)	480 V	3	0.0 A	0.0 kVA	M-20,22,24	1
P-5	208 V	1	5.4 A	1.1 kVA	R-50,52	8
P-6 (STANDBY)	208 V	1	0.0 A	0.0 kVA	R-51,53	8
P-7	120 V	1	4.4 A	0.5 kVA	R-54	3
P-8 (STANDBY)	120 V	1	0.0 A	0.0 kVA	R-55	3
P-9	120 V	1	4.4 A	0.5 kVA	R-56	3
P-10 (STANDBY)	120 V	1	0.0 A	0.0 kVA	R-57	3
P-11	120 V	1	4.4 A	0.5 kVA	R-58	3
P-12 (STANDBY)	120 V	1	0.0 A	0.0 kVA	R-59	3
RP-1	120 V	1	3.4 A	0.4 kVA	R-36	3

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (SPLIT SYSTEMs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
AC-1	208 V	1	1.0 A	0.2 kVA	R-20,22	9

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (HWGs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
HWG-1	120 V	1	5.0 A	0.6 kVA	R-34	3

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (CHILLERs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
CHILLER	480 V	3	135.6 A	112.7 kVA	M-25,27,29	4

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (CABINET UNIT HEATERs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
CUH-1	120 V	1	2.1 A	0.3 kVA	R-60	3
CUH-2	120 V	1	1.4 A	0.2 kVA	R-61	3

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (UNIT HEATERs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
UH-1	120 V	1	1.3 A	0.2 kVA	R-36	3
UH-2	120 V	1	1.3 A	0.2 kVA	R-62	3

MECHANICAL EQUIPMENT CONNECTION SCHEDULE (FANs)						
	ELECTRICAL CHARACTERISTICS					MECS
EQUIPMENT DESIG.	*VOLTAGE*	*ϕ*	*AMPS*	*kVA*	CIRCUIT DESIG.	NOTES
F-1	120 V	1	5.8 A	0.7 kVA	R-68	11
F-2	480 V	3	1.1 A	0.9 kVA	M-38,40,42	7
F-3	480 V	3	1.1 A	0.9 kVA	M-44,46,48	7
F-4	480 V	3	1.1 A	0.9 kVA	M-38,40,42	7
F-5	480 V	3	1.1 A	0.9 kVA	M-44,46,48	7
F-6	480 V	3	3.0 A	2.5 kVA	M-43,45,47	10
F-7	480 V	3	1.1 A	0.9 kVA	M-49,51,53	10
F-8	120 V	1	3.4 A	0.4 kVA	R-24	11
F-9	120 V	1	3.4 A	0.4 kVA	R-24	11
F-10	120 V	1	3.4 A	0.4 kVA	R-24	11
F-11	480 V	3	1.1 A	0.9 kVA	M-50,52,54	10

MECS NOTES:

1. MAKE ALL CONNECTIONS TO VSD AND PUMP. INSTALL VSD (FURNISHED BY MECHANICAL CONTRACTOR).
2. PROVIDE LOCKABLE 2P-30A-NF/SS IN NEMA 1 ENCLOSURE AND MOUNT AT UNIT. CONNECT TO BOILER CONTROL PANEL AHEAD OF DISCONNECT AND MAKE ALL CONNECTIONS FROM CONTROL PANEL TO DISCONNECT.
3. PROVIDE FRACTIONAL MANUAL MOTOR STARTER SWITCH WITH GREEN PILOT LIGHT AND HOA IN NEMA 1 ENCLOSURE. MOUNT AT UNIT AND MAKE ALL CONNECTIONS AS REQUIRED.
4. PROVIDE 3P-400A-F/SS (FUSED PER MANUFACTURERS NAMEPLATE DATA) IN NEMA 3R ENCLOSURE. MOUNT AT UNIT AND MAKE ALL CONNECTIONS AS REQUIRED.
5. MAKE ALL CONNECTIONS TO VSD. INSTALL VSD (FURNISHED BY MECHANICAL CONTRACTOR).
6. MAKE CONNECTION TO DISCONNECT FURNISHED WITH UNIT.
7. PROVIDE 3P-30A-NF/SS IN NEMA 1 ENCLOSURE. MOUNT AT UNIT AND MAKE ALL CONNECTIONS AS REQUIRED.
8. PROVIDE 2P-30A-NF/SS IN NEMA 1 ENCLOSURE. MOUNT AT UNIT AND MAKE ALL CONNECTIONS AS REQUIRED.
9. PROVIDE 3P-30A-F/SS (FUSED PER MANUFACTURERS NAMEPLATE DATA) IN NEMA 3R ENCLOSURE. MOUNT AT UNIT AND CONNECT TO ASSOCIATED INDOOR UNIT. PROVIDE 3P-30A-F/SS (FUSED PER MANUFACTURERS NAMEPLATE DATA) IN NEMA 1 ENCLOSURE AT ASSOCIATED INDOOR UNIT.
10. PROVIDE 3P-30A-NF/SS IN NEMA 3R ENCLOSURE. MOUNT AT UNIT AND MAKE ALL CONNECTIONS AS REQUIRED.
11. PROVIDE FRACTIONAL MANUAL MOTOR STARTER SWITCH WITH GREEN PILOT LIGHT AND HOA IN NEMA 3R ENCLOSURE. MOUNT AT UNIT AND MAKE ALL CONNECTIONS AS REQUIRED.
12. ONLY PROVIDED UNDER ALTERNATE 3.

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GP #21620

MECHANICAL EQUIPMENT CONNECTION SCHEDULE
Garrett College STEM Renovation and Addition
McHenry, MD

DATE	DESCRIPTION

E-7.3
February 1, 2017
Bid Set

LIGHTING CONTROL SCHEDULE - SEQUENCE OF OPERATION *

SPACE TYPE	ROOM NAME	ROOM NUMBER	LOCAL CONTROL	RESTRICTED MANUAL ON	RESTRICTED TO PARTIAL AUTO ON	BI-LEVEL LTG CONTROL	AUTOMATIC DAYLIGHT RESPONSIVE CONTROLS FOR SIDE LIGHTING	AUTOMATIC DAYLIGHT RESPONSIVE CONTROLS FOR TOP LIGHTING	AUTOMATIC PARTIAL OFF	AUTOMATIC FULL OFF	SCHEDULED SHUT OFF	CONTROL NARRATIVE
			REQ	ADD1	ADD1	REQ	REQ	REQ		REQ		
CONFERENCE, MEETING, MULTIPURPOSE	CONFERENCE ROOM	209	3 AND 5 BUTTON	ROOM CONTROLLER	-	ROOM CONTROLLER	LIGHT SENSOR	N/A	-	CLG SENSOR	-	3 BUTTON LOW VOLTAGE ENTRY STATION, 5 BUTTON PROJECTOR STATION, CEILING MOUNT DUAL TECH VACANCY SENSOR (LOW VOLTAGE), DAYLIGHTING (LOW VOLTAGE CEILING MOUNTED LIGHT SENSOR, WHEN APPLICABLE), NETWORKED ROOM CONTROLLER. REFER TO NOTE No. 1
	FACULTY MEETING	217	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	4 BUTTON ENTRY STATION (FULL ON, RAISE ALL, LOWER ALL, FULL OFF), CEILING MOUNTED DUAL TECH VACANCY SENSOR (LOW VOLTAGE), NETWORKED ROOM CONTROLLER. REFER TO NOTE No. 1
	WORK ROOM	211	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	
			REQ	ADD1	ADD1	REQ	REQ	REQ		REQ		
CLASSROOM/LECTURE HALL/TRAINING ROOM	CLASSROOM	201	3 AND 5 BUTTON	ROOM CONTROLLER	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR/NETWORK	-	3 BUTTON LOW VOLTAGE ENTRY STATION, 5 BUTTON LOW VOLTAGE TEACHER STATION, CEILING MOUNTED DUAL TECH VACANCY SENSOR (LOW VOLTAGE), PROGRAMMING FOR VARIOUS SCENES, LTG. REDUCTION, DAYLIGHTING (LOW VOLTAGE CEILING MOUNTED LIGHT SENSOR, WHEN APPLICABLE), VIA NETWORKED ROOM CONTROLLER. REFER TO WIRING DIAGRAM.
	CLASSROOM	202	3 AND 5 BUTTON	ROOM CONTROLLER	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR/NETWORK	-	
	CLASSROOM	205	3 AND 5 BUTTON	ROOM CONTROLLER	-	ROOM CONTROLLER	LIGHT SENSOR	N/A	-	CLG SENSOR/NETWORK	-	
	CLASSROOM	206	3 AND 5 BUTTON	ROOM CONTROLLER	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR/NETWORK	-	
	PHYSICS/EARTH SCIENCE	226	3 AND 5 BUTTON	ROOM CONTROLLER	-	ROOM CONTROLLER	LIGHT SENSOR	N/A	-	CLG SENSOR/NETWORK	-	
	CHEMISTRY/MICROBIOLOGY	227	3 AND 5 BUTTON	ROOM CONTROLLER	-	ROOM CONTROLLER	LIGHT SENSOR	N/A	-	CLG SENSOR/NETWORK	-	
	BIOLOGY	230	3 AND 5 BUTTON	ROOM CONTROLLER	-	ROOM CONTROLLER	LIGHT SENSOR	N/A	-	CLG SENSOR/NETWORK	-	
	ENGINEERING/ROBOTICS	236	3 AND 5 BUTTON	ROOM CONTROLLER		ROOM CONTROLLER	LIGHT SENSOR	N/A	-	CLG SENSOR/NETWORK	-	
			REQ	ADD1	ADD1	REQ	REQ	REQ		REQ		
COPY / PRINT	COPY ROOM	210A	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	4 BUTTON ENTRY STATION (FULL ON, RAISE ALL, LOWER ALL, FULL OFF), CEILING MOUNTED DUAL TECH VACANCY SENSOR (LOW VOLTAGE), NETWORKED ROOM CONTROLLER. REFER TO NOTE No. 1
			REQ				REQ	REQ	REQ	ADD2	ADD2	
CORRIDOR (EXCLUSIONS - VISUALLY IMPAIRED, HOSPITAL, MANUFACTURING)	CORRIDOR	200	THREE-WAY KEYED TOGGLE	-	-	-	N/A	N/A	-	CLG SENSOR	-	KEYED SWITCHES AND LONG THROW ULTRASONIC CEILING MOUNTED SENSORS (LOW VOLTAGE)
	STUDENT BREAKOUT	203	COMBINED WITH CORRIDOR 200									
	STUDENT BREAKOUT	224										
	STUDENT TUTORING AREA	240										
	LOUNGE	233										
			REQ				REQ	REQ				
ELECTRICAL AND MECHANICAL SPACES	MEP	220	TOGGLE	-	-	-	N/A	N/A	-	-	-	LINE VOLTAGE TOGGLE SWITCH
	IT	220A	TOGGLE	-	-	-	N/A	N/A	-	-	-	
	ELECTRIC	220B	TOGGLE	-	-	-	N/A	N/A	-	-	-	
			REQ				REQ	REQ	REQ	ADD2	ADD2	
LOBBY (...ALL OTHER LOBBIES)	LOBBY	231	KEYED TOGGLE	-	-	-	LIGHT SENSOR	N/A	-	WALL SENSOR	-	KEYED SWITCHES AND WALL MOUNTED DUAL TECH VACANCY SENSORS (LOW VOLTAGE), DAYLIGHTING (LOW VOLTAGE HIGH CEILING MOUNTED APPLICATION LIGHT SENSOR)
	VESTIBULE	232	COMBINED WITH LOBBY 2321									
			REQ	ADD1	ADD1	REQ	REQ	REQ		REQ		
LOUNGE / BREAK	STUDENT BREAKOUT	238	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	4 BUTTON ENTRY STATION (FULL ON, RAISE ALL, LOWER ALL, FULL OFF), CEILING MOUNTED DUAL TECH VACANCY SENSOR (LOW VOLTAGE), NETWORKED ROOM CONTROLLER. REFER TO NOTE No. 1
	VENDING	234	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	
			REQ	ADD1	ADD1	REQ	REQ	REQ		REQ		
OFFICE - ENCLOSED < 250sq ft	FACULTY	212	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	4 BUTTON ENTRY STATION (FULL ON, RAISE ALL, LOWER ALL, FULL OFF), CEILING MOUNTED DUAL TECH VACANCY SENSOR (LOW VOLTAGE), NETWORKED ROOM CONTROLLER. REFER TO NOTE No. 1
	FACULTY	213	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	
	FACULTY	214	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	
	FACULTY	215	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	
	FACULTY	216	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	
	FACULTY	218	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	
	FACULTY	219	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	
			REQ	ADD1	ADD1	REQ	REQ	REQ		ADD2	ADD2	
OFFICE - ENCLOSED > 250sq ft	PART-TIME FACULTY	208	4-BUTTON	CLG SENSOR	-	ROOM CONTROLLER	N/A	N/A	-	CLG SENSOR	-	4 BUTTON ENTRY STATION (FULL ON, RAISE ALL, LOWER ALL, FULL OFF), CEILING MOUNTED DUAL TECH VACANCY SENSOR (LOW VOLTAGE), NETWORKED ROOM CONTROLLER. REFER TO NOTE No. 1
			REQ				REQ	REQ		REQ		
RESTROOM (...ALL OTHER RESTROOMS)	WOMEN	221	KEYED TOGGLE	-	-	-	N/A	N/A	-	CLG SENSOR	-	DUAL TECH CEILING MOUNTED VACANCY SENSORS (LOW VOLTAGE) AND KEYED TOGGLE SWITCH
	MEN	222	KEYED TOGGLE	-	-	-	N/A	N/A	-	CLG SENSOR	-	
	FAMILY BATHROOM	239	WALL SWITCH/SENSOR	-	-	-	N/A	N/A	-	WALL SENSOR	-	LINE VOLTAGE DUAL TECHNOLOGY WALL SENSOR SWITCH. MANUAL ON, AUTO OFF OR MANUAL OFF.
STORAGE (... < 50 sq ft)			REQ							ADD2	ADD2	LINE VOLTAGE DUAL TECHNOLOGY WALL SENSOR SWITCH. MANUAL ON, AUTO OFF OR MANUAL OFF.
	DISPLAY	237A	WALL SWITCH/SENSOR	-	-	-	-	-	-	WALL SENSOR	-	
			REQ	ADD1	ADD1	REQ	REQ	REQ		REQ		
STORAGE (... > and < 1000 sq ft)	STORAGE	204	TOGGLE	CLG SENSOR	-	-	N/A	N/A	-	CLG SENSOR	-	DUAL TECH CEILING OR WALL MOUNTED VACANCY SENSORS (LOW VOLTAGE) AND TOGGLE SWITCH.
	RECYC	207	TOGGLE	WALL SENSOR	-	-	N/A	N/A	-	WALL SENSOR	-	
	CLASSROOM STORAGE	210B	TOGGLE	WALL SENSOR	-	-	N/A	N/A	-	WALL SENSOR	-	
	CUSTODIAL	223	TOGGLE	WALL SENSOR	-	-	N/A	N/A	-	WALL SENSOR	-	
	PHYSICS/EARTH SCIENCE PREP/STORAGE	225	TOGGLE	CLG SENSOR	-	-	N/A	N/A	-	CLG SENSOR	-	
	CHEMICAL STORAGE	228	TOGGLE	CLG SENSOR	-	-	N/A	N/A	-	CLG SENSOR	-	
	CHEM/MICROBIOLOGY PREP/STORAGE	229A	THREE-WAY TOGGLE	CLG SENSOR	-	-	N/A	N/A	-	CLG SENSOR	-	
	BIOLOGY/PREP/STORAGE	229B	COMBINED WITH CHEM/ MICROBIOLOGY PREP/STORAGE									
	ENGINEERING/ROBOTICS STORAGE	235	TOGGLE	CLG SENSOR	-	-	N/A	N/A	-	CLG SENSOR	-	
	HAZARD	237	TOGGLE	WALL SENSOR	-	-	N/A	N/A	-	WALL SENSOR	-	

* THE INTENT OF THIS SCHEDULE IS TO HELP EXPRESS CODE COMPLIANCE AND SIMPLE SEQUENCE OF OPERATION FOR THE BUILDING'S LIGHTING CONTROLS (IECC-2015). NOT EVERY SPACE IN THE BUILDING MAY BE LISTED HERE OR HAVE THE EXACT ROOM NUMBERS. REFER TO DRAWINGS FOR ANY ADDITIONAL SPACE NOT LISTED WITHIN THIS SCHEDULE. FINAL LABELING ON NETWORK LIGHTING PANELS SHALL BE PER ARCHITECTURAL DRAWINGS ROOM NAMES AND NUMBERS.

** COORDINATE ALL LIGHTING CONTROL REQUIREMENTS WITH OWNERSHIP FOR EXACT VIEWING AND FUNCTIONS OF THESE SPACES INTERACTING TOGETHER. PROVIDE ALL REQUIRED APPURTENANCES VIA LIGHTING ROOM CONTROLLER SYSTEM.

*** ALL LIGHTING CONTROLS SHALL BE COORDINATED WITH OWNERSHIP FOR EACH SPACE FUNCTION DURING COMMISSIONING.

NOTES:

1 PROVIDE ONE ROOM CONTROLLER FOR TWO SPACES WHERE APPLICABLE.

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GRIMM AND PARKER

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LIGHTING CONTROLS SCHEDULE

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E-7.4

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