

MC BEAMLINE ENCLOSURES

PROJECT NUMBER 6-10-22

APPLICABLE CODES:

2009 INTERNATIONAL BUILDING CODE (IBC)
 2009 INTERNATIONAL FIRE CODE
 2010 AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
 1997 ILLINOIS ACCESSIBILITY CODE AND ANSI 117.14-2003
 2009 NFPA 101 - LIFE SAFETY CODE

Notes:
 * Per IBC 3104.10 Tunneled walkway. "Separation between the tunneled walkway and the building to which it is connected shall not be less than 2-hour fire-resistant construction and openings therein shall be protected in accordance with Table 715.4"

PROJECT DATA:

OCCUPANCY CLASSIFICATION: F2 - LOW-HAZARD FACTORY INDUSTRIAL (IBC 2009 - CH. 3) SPECIAL PURPOSE INDUSTRIAL (NFPA101-6.1.12)

CONSTRUCTION TYPE: IIB-NONCOMBUSTIBLE

MAXIMUM ALLOWABLE HEIGHT: 3 STORIES - 55 FEET WITHOUT SPRINKLER INCREASE
 ACTUAL HEIGHT:

MAXIMUM ALLOWABLE AREA: 23,000 SF (PER FLOOR WITHOUT SPRINKLER INCREASE)
 ACTUAL AREAS:

REQUIRED FIRE RATINGS OF STRUCTURAL MEMBERS FOR TYPE II-B CONSTRUCTION (TABLE 601):
 STRUCTURAL FRAME (COLUMNS, GIRDERS, TRUSSES): 0 HR
 EXTERIOR BEARING WALLS: 0 HR
 INTERIOR BEARING WALLS: 0 HR
 FLOOR CONSTRUCTION (INCL. BEAMS, JOISTS): 0 HR
 ROOF CONSTRUCTION (INCL. BEAMS, JOISTS): 0 HR

FIRE RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS
 BASED ON FIRE SEPARATION DISTANCE (TABLE 602):

FIRE SEPARATION DISTANCE > 30 FT: 0 HR

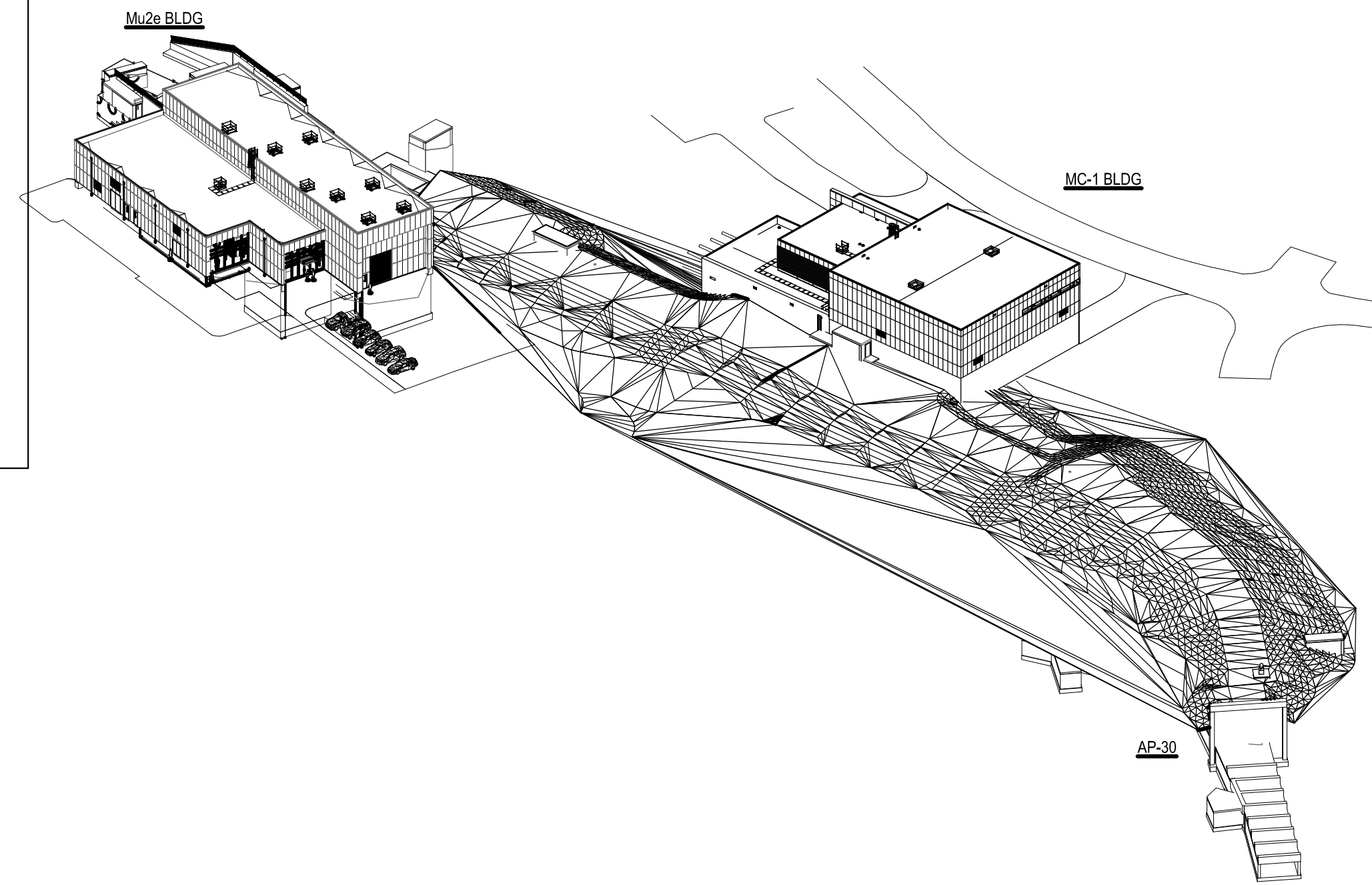
AUTOMATIC FIRE SUPPRESSION SYSTEM: TUNNEL NOT SPRINKLERED

MINIMUM NUMBER OF EXITS: 2 REQUIRED (NFPA101 - 40.2.4.1.1 & 2)

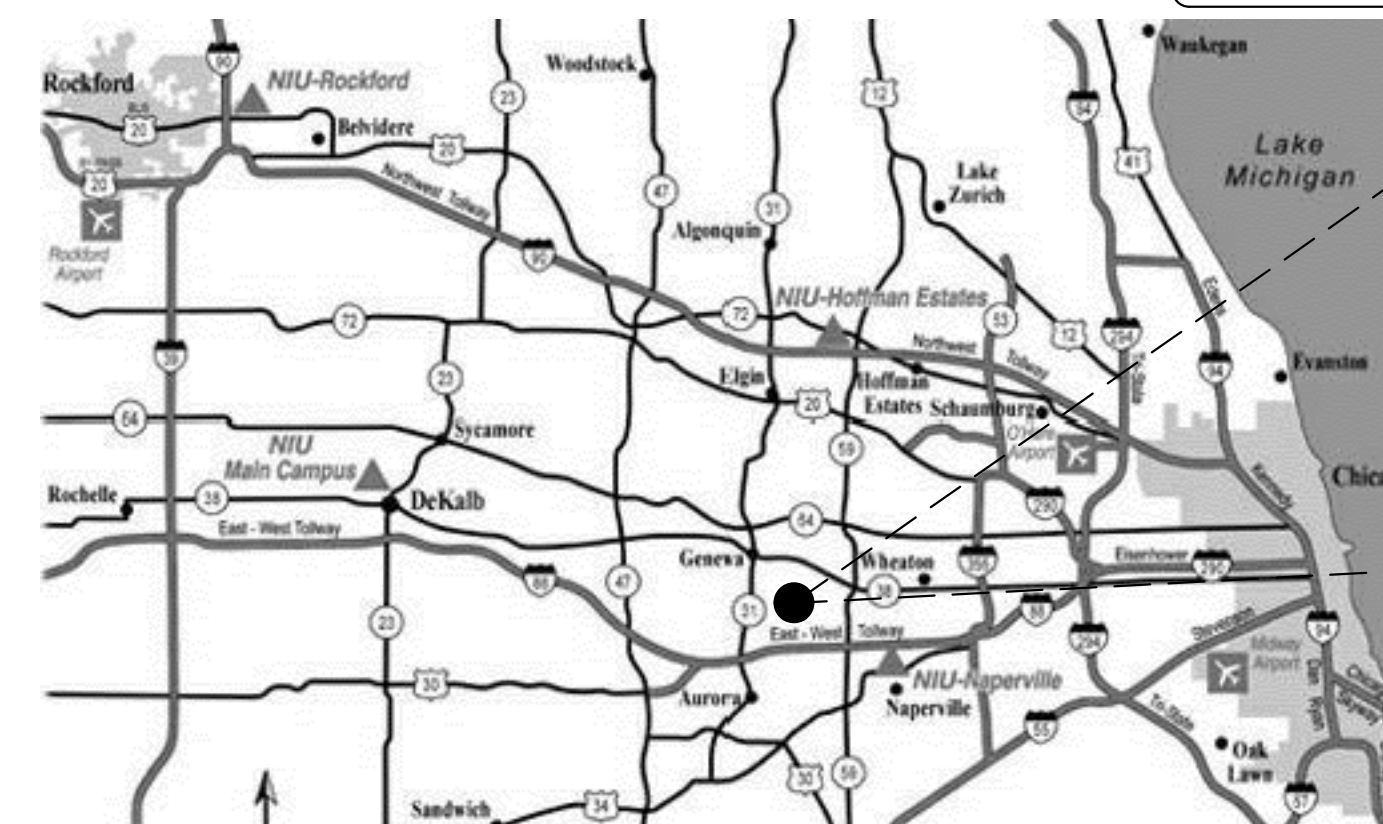
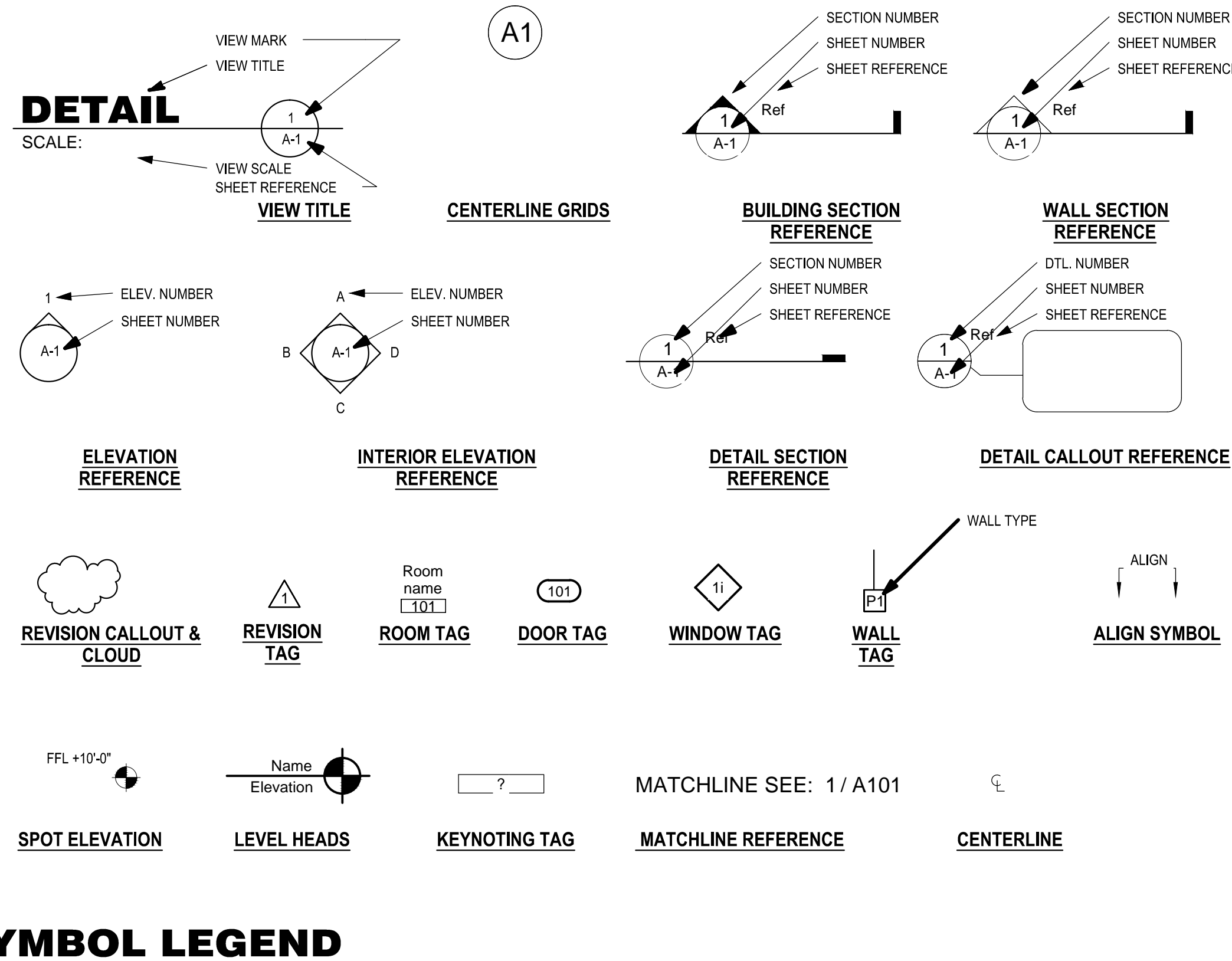
MAX. TRAVEL DISTANCE: 300 FEET (WITHOUT SPRINKLER SYSTEM, NFPA101 - 40.2.6)
 MAX. DEAD END CORRIDOR: 50 FEET (NFPA101 - TABLE 40.2.5)
 MAX. COMMON PATH OF EGRESS TRAVEL: 50 FEET (WITHOUT SPRINKLER SYSTEM, NFPA101 - 40.2.5)

LIFE SAFETY SYMBOLS LEGEND

- 1-HR PARTITION
- 2-HR PARTITION
- ⊕ FIRE EXTINGUISHER AND WALL MOUNTING BRACKET
- ⊕ CLEAN AGENT FIRE EXTINGUISHER AND WALL MOUNTING BRACKET
- - - PATH OF TRAVEL
- ➔ GROUND LEVEL EXIT DISCHARGE
- # TRAVEL DISTANCE
- # COMMON PATH OF EGRESS
- # DOOR RATING IN MINUTES
- ▶ EXIT ACCESS



SHEET	DRAWING TITLE	SHEET	DRAWING TITLE
GENERAL		MECHANICAL	
G-1	COVER SHEET	M-1	HVAC GENERAL NOTES, SCHEDULES AND DETAILS
CIVIL		M-2	MECHANICAL FLOOR PLAN AND SECTIONS
C-1	GENERAL NOTES AND ABBREVIATIONS	M-3	INPUT/OUTPUT SCHEDULE
C-2	EXCAVATION PLAN	PLUMBING	
C-3	SITE AND GRADING PLAN	P-1	PLUMBING SYMBOLS, ABBREVIATIONS & NOTES
C-4	UTILITY PLAN	P-2	PLUMBING PLAN-NORTH END
C-5	CROSS SECTIONS SHEET 1	P-3	PLUMBING PLAN-SOUTH END
C-6	CROSS SECTIONS SHEET 2	P-4	PLUMBING SCHEDULES AND DETAILS
C-7	CROSS SECTIONS SHEET 3	ELECTRICAL	
C-8	SITE DETAILS	E-1	ELECTRICAL GENERAL NOTES, SYMBOLS AND FIXTURE SCHEDULE
ARCHITECTURE		E-2	SINGLE LINE DIAGRAMS & ELECTRICAL SITE PLAN
A-1	BEAMLINE FLOOR PLAN	E-3	ELECTRICAL PLANS
A-2	DOOR SCHEDULE & DETAILS	E-4	ELECTRICAL SECTIONS
STRUCTURAL		E-5	ELECTRICAL SECTIONS
S-1	STRUCTURAL NOTES	E-6	ELECTRICAL DETAILS
SC-1	FOUNDATION PLAN 1	E-7	ELECTRICAL CABLE TRAY DETAILS
SC-2	FOUNDATION PLAN 2	E-8	ELECTRICAL CABLE TRAY PLANS
SC-3	STAIR PLANS	E-9	ELECTRICAL PANEL SCHEDULES
SC-4	ROOF PLAN 1	FA-1	FIRE ALARM PLANS
SC-5	ROOF PLAN 2	FA-2	FIRE ALARM DIAGRAMS, NOTES AND DETAILS
SC-6	SECTIONS 1		
SC-7	SECTIONS 2		
SC-8	SECTIONS 3		
SC-9	STAIR SECTIONS		
SC-10	TYPICAL SECTIONS AND DETAILS 1		
SC-11	TYPICAL SECTIONS AND DETAILS 2		
SC-12	MAT SCHEDULE		
SC-13	WALL SCHEDULE		
SC-14	SLAB SCHEDULE		
SC-15	BEAM SCHEDULE		
SC-16	SECTIONS AND DETAILS 1		
SC-17	SECTIONS AND DETAILS 2		
SC-18	SITE CONCRETE		
SC-19	ANTIPROTON RING ROOF REINFORCING SHEET - 1		
SC-20	DIAGNOSTIC ABSORBER PLAN SECTIONS AND DETAILS		
SC-21	SECTIONS AND DETAILS 3		
SS-1	ROOF FRAMING PLAN, SECTIONS AND DETAILS		



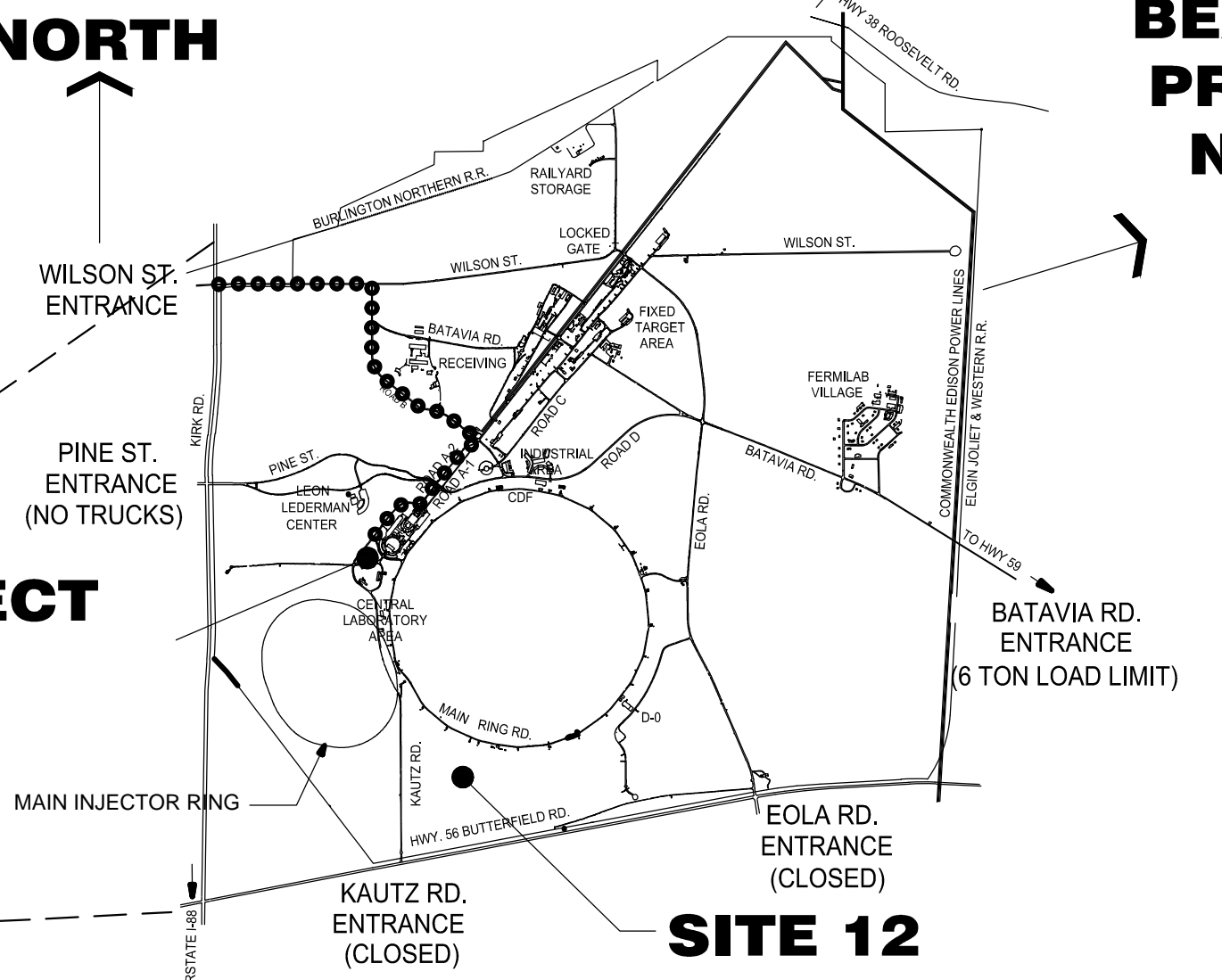
TRUE NORTH

FERMI NORTH
 BEAMLINE PROJECT NORTH

LEGEND

- SITE BOUNDARY LINES
- o o o o o ON SITE CONST. ROUTES
- ***** HOURS

WILSON ST. 6 AM TO 3:30 PM
 PINE ST. 6 AM TO 8 PM
 BATAVIA RD. 6 AM TO 8 PM
 EOLA RD.
 KAUTZ RD.



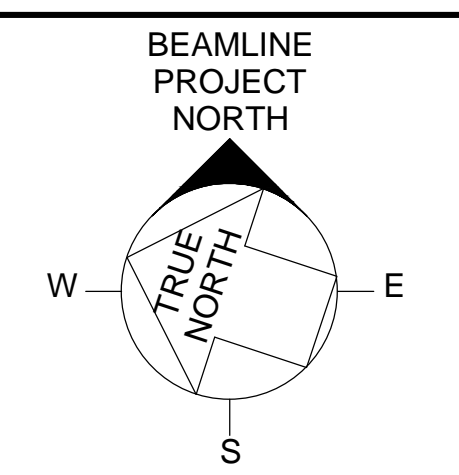
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REV.	DATE	DESCRIPTIONS

FNA1303

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DRAWN T. Soukup	03/03/14
CHECKED F. Hengge	03/03/14
APPROVED M. Shrader	03/03/14
SUBMITTED	



SCALE:

FERMI NATIONAL ACCELERATOR LABORATORY
 UNITED STATES DEPARTMENT OF ENERGY

MC BEAMLINE ENCLOSURES
 COVER SHEET

DRAWING NO. 6-10-22 G-1 REV.

03 MAR 2014

GENERAL NOTES

1. THE SUBCONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE STARTING WORK. IF CONDITIONS VARY FROM THOSE INDICATED ON THE DRAWINGS, THE FERMLAB CONSTRUCTION COORDINATOR SHALL BE NOTIFIED AND NO WORK SHALL BE DONE IN THIS AREA WITHOUT THEIR APPROVAL.
2. THE SUBCONTRACTOR SHALL COORDINATE WORK AND COOPERATE WITH SUBCONTRACTORS ON ADJACENT AND CONCURRENT WORK.
3. SCALE FOR THE DRAWINGS IS FOR GENERAL INFORMATION ONLY. LOCATIONS AND DIMENSIONS SHALL BE TAKEN AS SHOWN AND NOT SCALED.
4. DAILY CLEANUP SHALL INCLUDE ALL MATERIALS FROM DEMOLITION, DROPPINGS, SCRAPS AND PACKING MATERIALS.
5. ALL DEBRIS SHALL BE REMOVED FROM THE FERMLAB SITE.
6. WARNING SIGNS AND BARRICADES SHALL BE USED IN THE CONSTRUCTION AREA.

EROSION CONTROL NOTES

1. STRAW WATTLE DITCH CHECKS SHALL BE PROVIDED AT 100 FT. ON CENTERS IN NEW AND EXISTING DITCHES TO MINIMIZE SOIL EROSION.
2. INLET PROTECTION SHALL BE PROVIDED ON ALL EXISTING AND NEW STRUCTURES SUCH AS MANHOLES/CATCH BASINS/CULVERTS, TO MINIMIZE SOIL ENTERING THE STRUCTURES DURING THE CONSTRUCTION ACTIVITIES.
3. FOR DETAILS OF EROSION CONTROL MEASURES, SEE SPECIFICATIONS SECTION 02370 AND PROJECT SWPPP.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION. ALL SUCH MEASURES SHALL COMPLY WITH THE REQUIREMENTS OF ILLINOIS URBAN MANUAL AND ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
5. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY FERMLAB.
6. ALL DISTURBED AREAS SHALL DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT WORK UNTIL FINAL STABILIZATION IS ACHIEVED.
7. QUALIFIED PERSONNEL SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE, WHICH HAVE NOT BEEN FULLY STABILIZED, STRUCTURAL MEASURES AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. SUCH INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES OR GREATER OF RAINFALL OR EQUIVALENT SNOWFALL.
8. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL TRANSPORTED FROM THE PROJECT SITE.
9. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY FERMLAB. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
10. TEMPORARY SEEDING AND MULCHING SHALL BE CONSISTENT WITH ARTICLE 965 OF ILLINOIS URBAN MANUAL.
11. STABILIZATION OF DISTURBED AREAS SHALL BE IN ACCORDANCE WITH NPDES PERMIT NO. ILR10 AND THE PROJECT SPECIFIC SWPPP INCLUDED WITH EXHIBIT A.
12. HAUL ROADS SHALL BE WATERED FOR DUST CONTROL DURING EARTH MOVING OPERATIONS.
13. FOR DETAILS OF ROUGH GRADING, SEE SPECIFICATIONS SECTION 02311 ROUGH GRADING.
14. NECESSARY DEWATERING SHALL BE PERFORMED AS PER FERMLAB SPECIFICATION SECTION 02220 ITEM 3.03-D.

GRADING NOTES

1. GRADING AND CONSTRUCTION OF THIS PROJECT SHALL NOT CAUSE PONDING OF STORMWATER. ALL AREAS ADJACENT TO THESE IMPROVEMENTS SHALL BE GRADED TO ALLOW POSITIVE DRAINAGE AT ALL TIMES.
2. BEFORE ANY SITE GRADING ACTIVITY BEGINS, ANY PAVEMENTS, GRAVEL AREAS, VEGETATION AND SHRUBS SHALL BE REMOVED AND DISPOSED OF OFFSITE.
3. ANY LOOSE DISPOSED MATERIAL THAT OBSTRUCTS THE NATURAL FLOW OF WATER IN DRAINAGE STRUCTURES OR DITCHES SHALL BE REMOVED AT THE CLOSE OF EACH WORKING DAY. AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL DRAINAGE STRUCTURES AND FLOW LINES SHALL BE FREE FROM DIRT, SEDIMENT, AND DEBRIS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
4. ALL UNDERGROUND SEWERS AND STRUCTURES SHALL BE CLEANED AND FLUSHED WITH WATER TO THE SATISFACTION OF FERMLAB.
5. PROVIDE STRAW MULCH ON ALL DISTURBED AREAS WITH SLOPE LESS THAN 3:1. PROVIDE EROSION CONTROL BLANKETS ON ALL SLOPES OF 3:1 OR GREATER.
6. FOR FERTILIZING AND SEEDING DETAILS, SEE SPECIFICATIONS SECTION 02930.

UTILITY NOTES

1. FOR UTILITY MATERIAL AND INSTALLATION SPECIFICATIONS, SEE UTILITY DETAILS AND SPECIFICATION SECTION 02510.
2. COORDINATE UTILITY CONNECTIONS WITH MECHANICAL AND PLUMBING DRAWINGS.
3. PRIOR TO ANY DEMOLITION OR REMOVAL OF ELECTRICAL CONDUITS, THE SUB-CONTRACTOR SHALL VERIFY THAT THE SERVICE IS NO LONGER BEING UTILIZED AND THE LINES ARE DE-ENERGIZED.
4. PIPING TO BE REMOVED: WHERE INDICATED ON THE DRAWINGS, PIPE (AND CONDUIT) SHALL BE DRAINED AND THE CONTENTS PROPERLY DISPOSED. THE PIPE (OR CONDUIT) SHALL THEN BE COMPLETELY REMOVED FROM THE SITE, INCLUDING FITTINGS, VALVES, AND OTHER IN-LINE DEVICES. CONNECTIONS TO EXISTING PIPING TO REMAIN SHALL BE PLUGGED BY MECHANICAL MEANS (M.J. PLUGS, TIE-RODS, OR THRUST BLOCKS). REMOVED PIPING SHALL BE THOROUGHLY PRESSURE WASHED AND REMOVED OF OFFSITE UNLESS REQUESTED TO BE SALVAGED BY FERMLAB.
5. PIPING TO BE ABANDONED: WHERE INDICATED ON THE DRAWINGS, PIPING (OR CONDUIT) SHALL BE LEFT IN PLACE. ALL SUCH PIPING SHALL BE DRAINED AND THE CONTENTS PROPERLY DISPOSED. THE PIPE (OR CONDUIT) SHALL THEN BE FILLED WITH GROUT (FLOWABLE FILL) AND EACH END OF THE PIPE (OR CONDUIT) SHALL BE PLUGGED USING A CONCRETE PLUG IN A MANNER ACCEPTABLE TO FERMLAB.

GENERAL ABBREVIATIONS


ABD -	ABANDONED
BLDG -	BUILDING
BM -	BENCHMARK
B/ OR BOT -	BOTTOM
CB -	CATCH BASIN
CL -	CENTER LINE
CONC -	CONCRETE
CONST -	CONSTRUCTION
CONT -	CONTINUE, CONTINUOUS
CMP -	CORRUGATED METAL PIPE
DIA -	DIAMETER
DIAG -	DIAGONAL
DIM -	DIMENSION
DIP -	DUCTILE IRON PIPE
DTL -	DETAIL
DWG -	DRAWING
E -	EAST
EL -	ELEVATION
ELEC -	ELECTRIC
EQP -	EQUIPMENT
E.S. -	ENGINEERING STATION
EXIST -	EXISTING
EXT -	EXTERIOR
FES -	FLARED END SECTION
FLR -	FLOOR
FT -	FEET
FTG -	FOOTING
GC -	GENERAL CONTRACTOR
HDPE -	HIGH DENSITY POLYETHYLENE
HP -	HIGH POINT
IE -	INVERT ELEVATION
IL -	INLET
INV. -	INVERT
L -	LEFT
LP -	LOW POINT
MH -	MANHOLE
N -	NORTH
PAVE -	PAVEMENT
PC -	POINT OF CURVE
PI -	POINT OF INTERSECTION
PRC -	POINT OF REVERSE CURVE
PROP -	PROPOSED
PT -	POINT OF TANGENCY
PVC -	POLYVINYL CHLORIDE
R -	RADIUS / RIGHT
RCP -	REINFORCED CONCRETE PIPE
RFI -	REQUEST FOR INFORMATION
REF -	REFERENCE
REQ'D -	REQUIRED
REV -	REVISION
ROW -	RIGHT OF WAY
S -	SOUTH
SAN -	SANITARY SEWER
SPEC -	SPECIFICATION
SQ -	SQUARE
SS -	STAINLESS STEEL
STA -	STATION
STM -	STORM SEWER
STMH -	STORM MANHOLE
T -	TOP
TYP -	TYPICAL
UNO -	UNLESS NOTED OTHERWISE
V.I.F. -	VERIFY IN FIELD
W -	WEST
W/ -	WITH

LEGEND

	EXIST. STORM SEWER
	EXIST. SANITARY SEWER
	EXIST. SANITARY FORCE MAIN
	PROP. CHILLED WATER SUPPLY
	PROP. CHILLED WATER RETURN
	EXIST. CHILLED WATER SUPPLY
	EXIST. CHILLED WATER RETURN
	EXIST. INDUSTRIAL COOLING WATER
	EXIST. DOMESTIC WATER SUPPLY
	EXIST. NATURAL GAS
	EXIST. POWER SUPPLY
	EXIST. COMMUNICATION LINE
	PROP. LOW CONDUCTIVITY WATER SUPPLY
	PROP. LOW CONDUCTIVITY WATER RETURN
	EXIST. LOW CONDUCTIVITY WATER SUPPLY
	EXIST. LOW CONDUCTIVITY WATER RETURN
	SILT FENCE
	PROPOSED CONTOUR
	Mu2e EXCAVATION CONTOUR
	EXIST. CONTOUR
	FLOW DIRECTION
	SLOPE DIRECTION
	STRAW WATTLE INLET PROTECTION
	DEMOLISH ASPHALT PAVEMENT
	DEMOLISH U/G STRUCTURES
	DEMOLISH/REMOVE ITEM
	CATCH BASIN
	STORM MANHOLE
	FLARED END SECTION
	SANITARY MANHOLE
	ELECTRICAL MANHOLE
	LIGHT POLE (2-ARM SHOWN)
	EXIST. VALVE
	HARDSTAND

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REV.	DATE	DESCRIPTIONS



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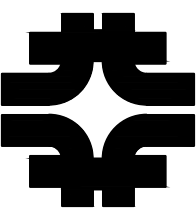
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	NAME	DATE
DESIGNED	A. JASINSKI	03/03/14
DRAWN	K. CUSEN	03/03/14
CHECKED	A. VASONIS	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

SCALE:

FERMI NATIONAL ACCELERATOR LABORATORY

UNITED STATES DEPARTMENT OF ENERGY

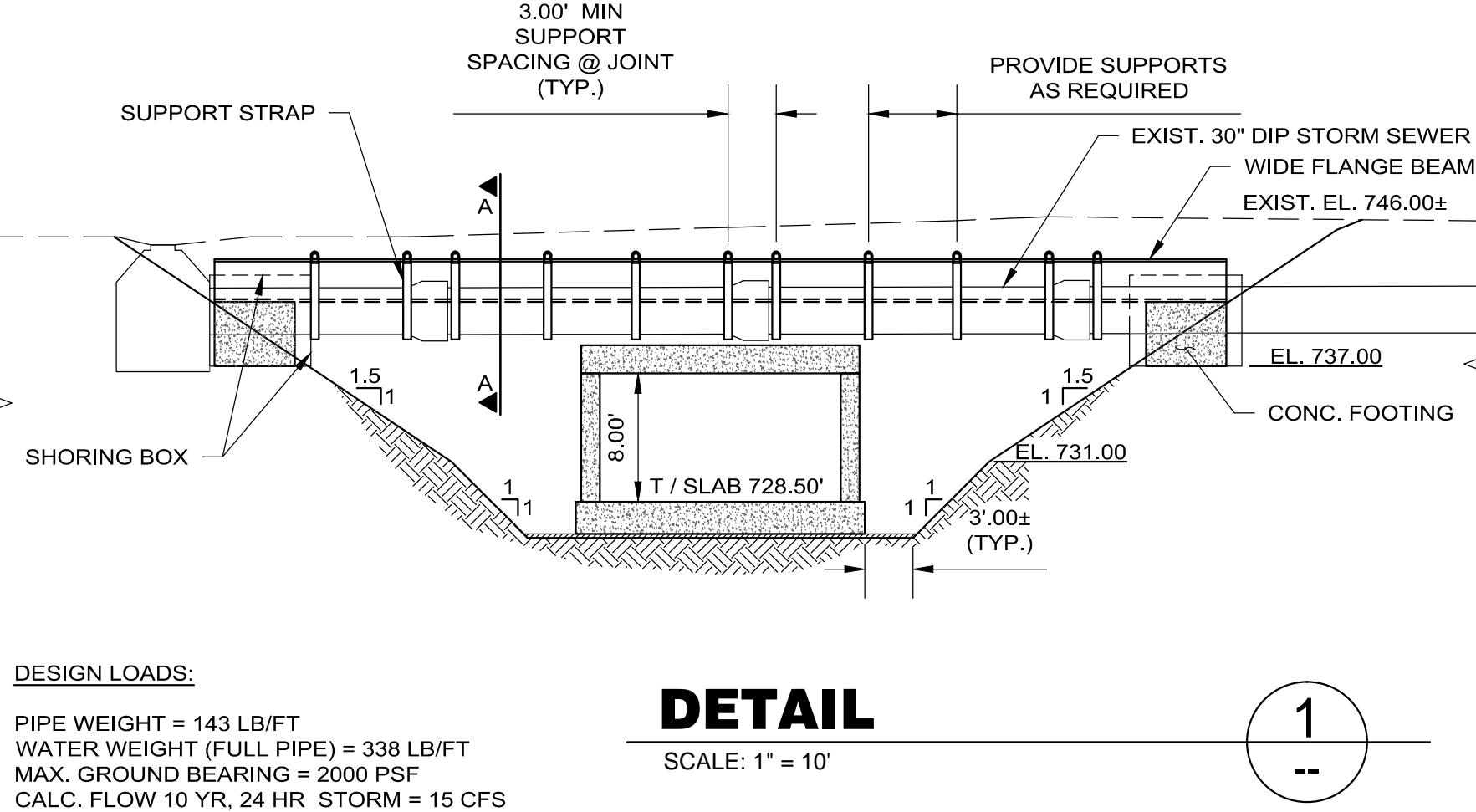
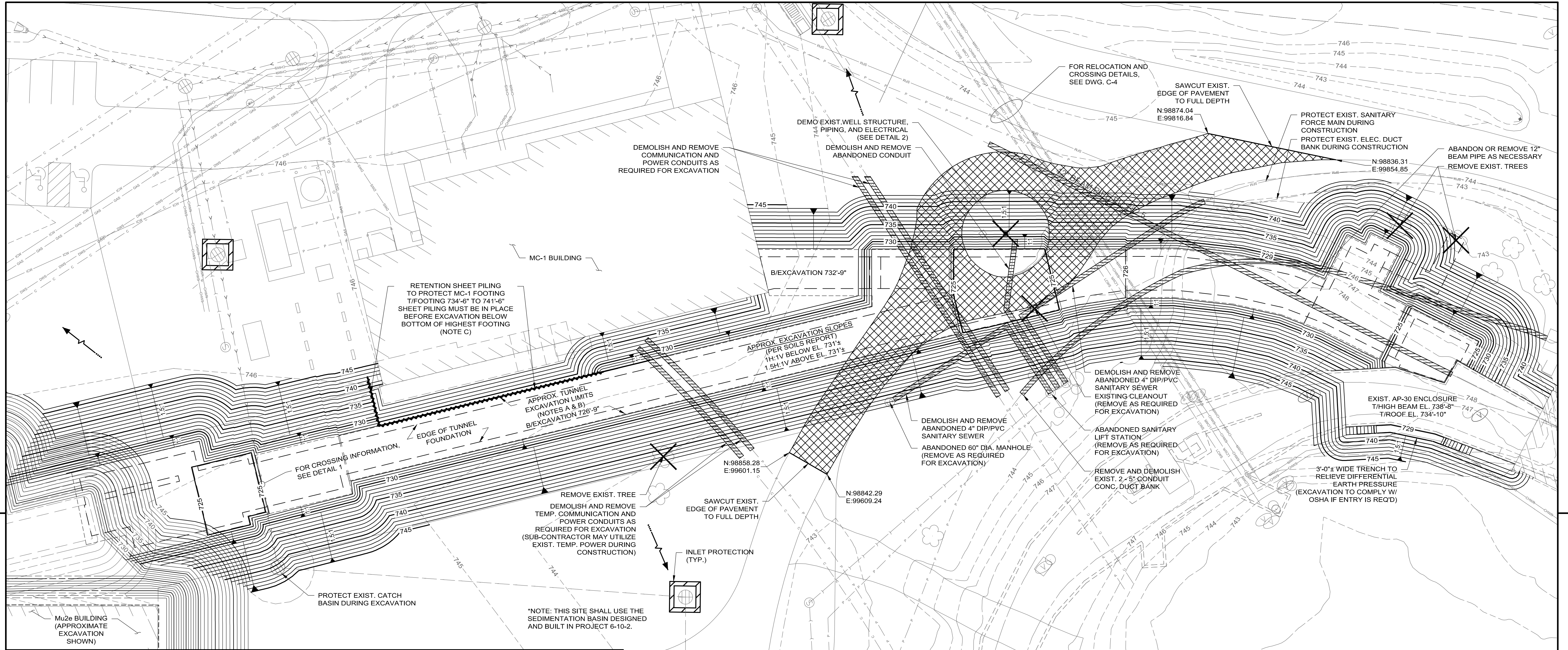


MC BEAMLINE ENCLOSURES

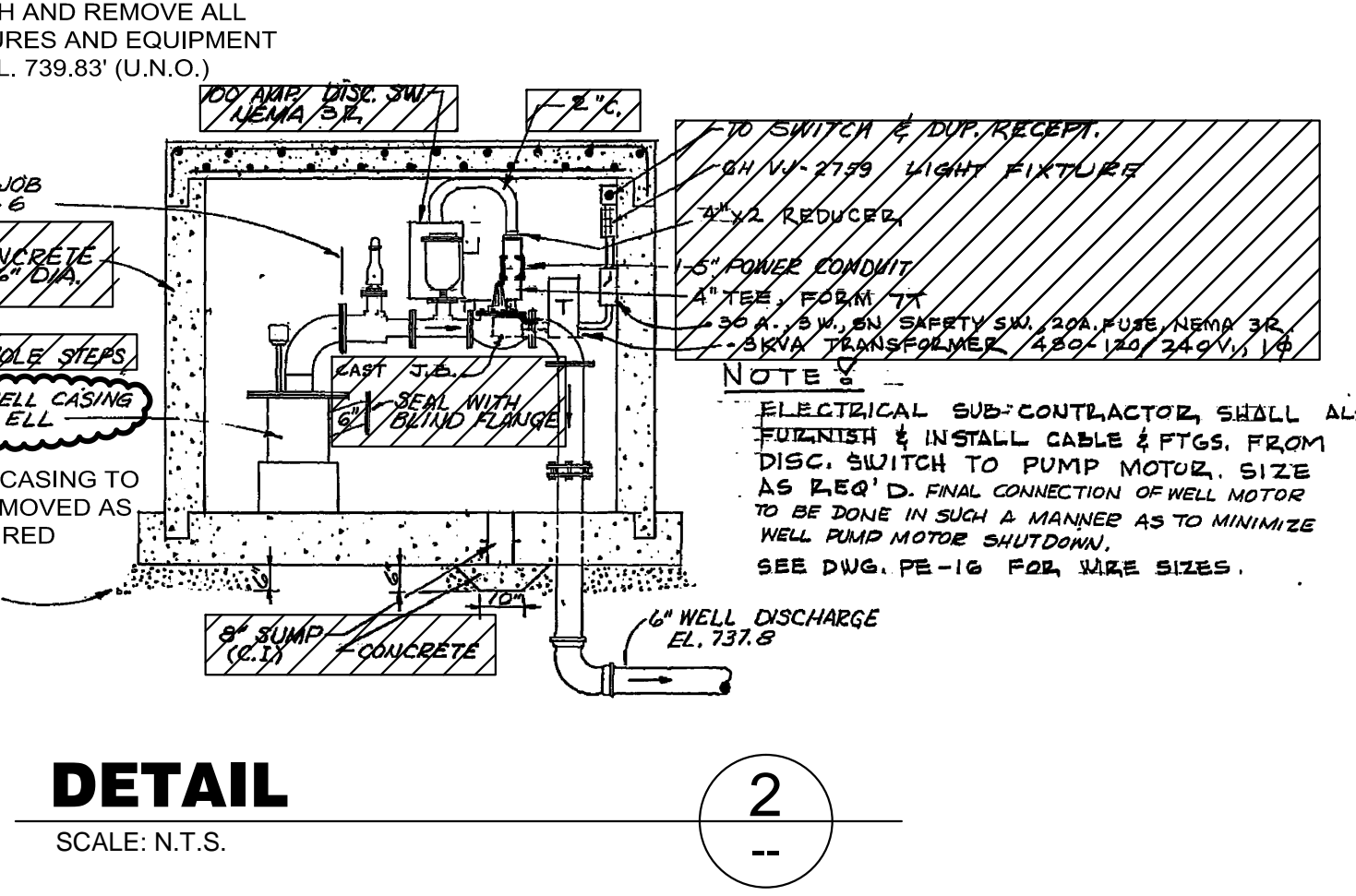
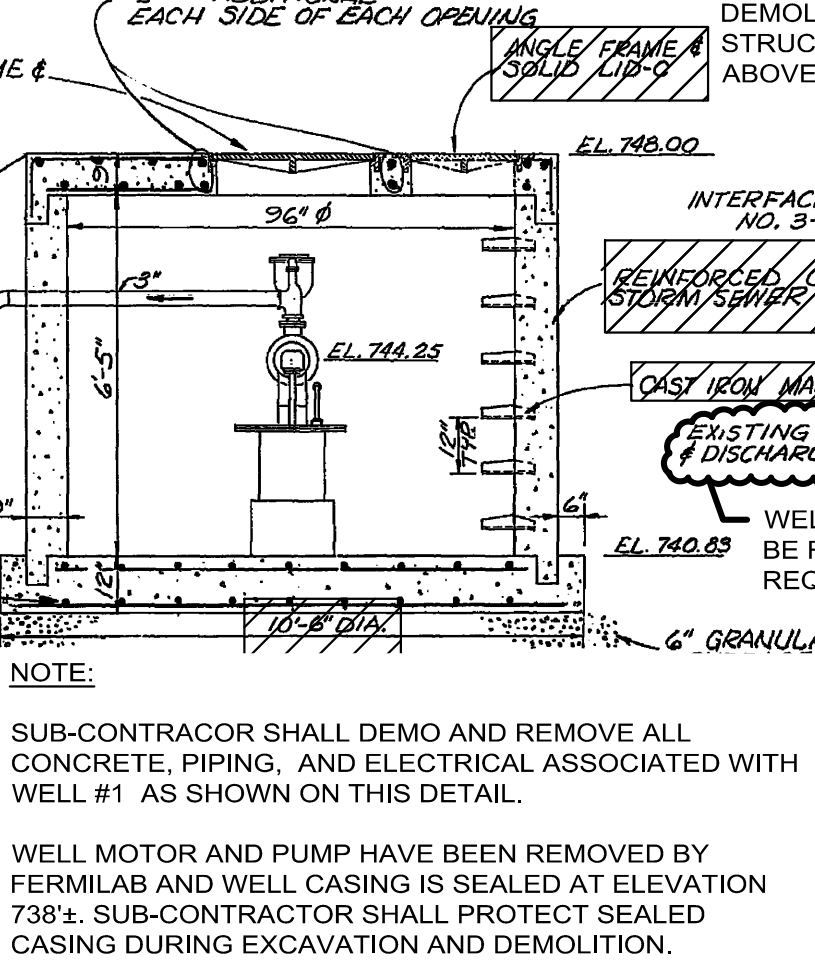
GENERAL NOTES AND ABBREVIATIONS

DRAWING NO. **6-10-22** **C-1** REV.

F.I.M.S. No. 03 MAR 2014



SECTION A-A
NOTE:
 SUB-CONTRACTOR SHALL PROVIDE STORM SEWER SUPPORT PLAN SIMILAR TO DETAIL SHOWN. THE SUPPORT PLAN AND ASSOCIATED CALCULATIONS SHALL BE STAMPED/SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF ILLINOIS.
 IF SUPPORTING EXISTING STORM SEWER INTERFERES WITH CONSTRUCTION SEQUENCING, SCHEDULE, OR BECOMES UNFEASIBLE, THE SUB-CONTRACTOR MAY REMOVE THE STORM SEWER AND PROVIDE AN ALTERNATIVE STORMWATER CONVEYANCE SYSTEM CAPABLE OF HANDLING THE CALCULATED 10 YR, 24 HR STORM RUNOFF.



A. THE EXCAVATION AND SHORING LIMITS REFLECT THE MINIMUM REQUIREMENTS FOR SLOPE AS REQUIRED BY OSHA STANDARDS. SUB-CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF THE COMPLETE EXCAVATION AND SHEET PILING SYSTEM REQUIRED TO ADEQUATELY PROTECT THE EXISTING BUILDING AND PROPOSED CONCRETE STRUCTURES. SUB-CONTRACTOR TO ENGINEER AND VERIFY EXCAVATION SLOPES SHOWN. TEMPORARY PERSONNEL GUARDRAIL SHALL BE INSTALLED AROUND ALL OPEN EXCAVATIONS AND TRENCHES.

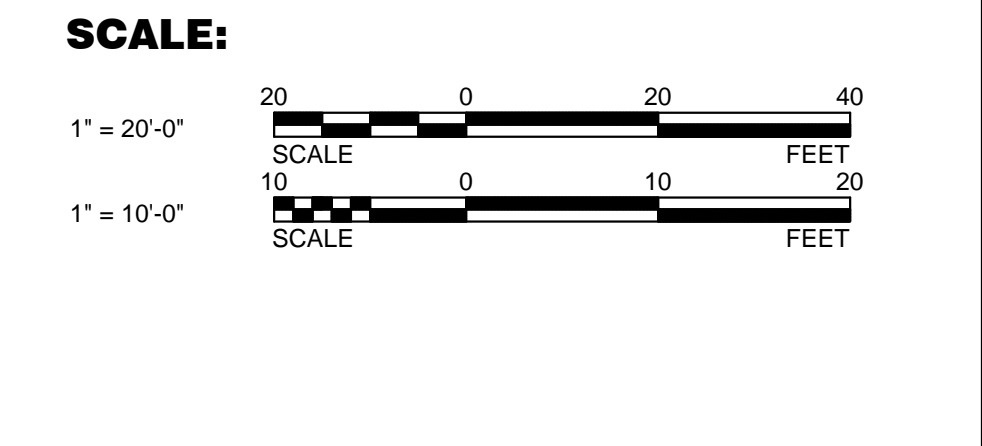
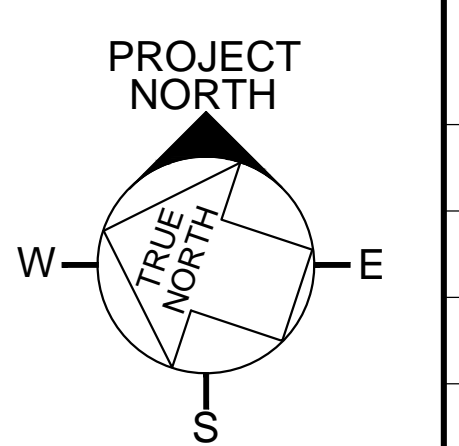
B. FOR EXCAVATIONS OVER 20 FEET DEPTH OR EXCAVATIONS WITH CONDITIONS SUCH AS WATER, SILTY MATERIALS, LOOSE BOULDERS, EROSION, DEEP FROST ACTION OR EARTH FRACTURE PLANES, THE SUB-CONTRACTOR SHALL HAVE A REGISTERED PROFESSIONAL ENGINEER APPROVE THE EXCAVATION SLOPES OR PROVIDE DESIGN SUPPORT SYSTEMS THAT MEET ACCEPTED ENGINEERING AND OSHA REQUIREMENTS TO CONTAIN THE EXCAVATION SLOPES OR WALLS.

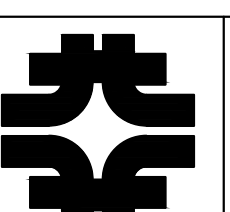
C. THE SUB-CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS FOR THE STRUCTURAL STEEL BRACING SYSTEM TO FERMI LAB FOR REVIEW AND RELEASE. THE CALCULATIONS SHALL BE SIGNED AND STAMPED BY PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE STATE OF ILLINOIS. THE STRUCTURAL STEEL BRACING SYSTEM SHALL BE COMPLETELY INSTALLED BEFORE PROCEEDING WITH EXCAVATION. STEEL SHIMS AND WEDGES SHALL BE USED AS REQUIRED TO PROVIDE FULL BEARING. DURING BACKFILL OPERATIONS, THE STRUCTURAL STEEL BRACING SYSTEM SHALL REMAIN IN PLACE AND SHALL NOT BE REMOVED UNTIL THE COMPACTED BACKFILL IS BROUGHT TO AN ELEVATION AT LEAST TWO FEET BELOW THE ELEVATION OF THE STRUTS AND WALERS.

REV.	DATE	DESCRIPTIONS	REVISIONS


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	NAME	DATE
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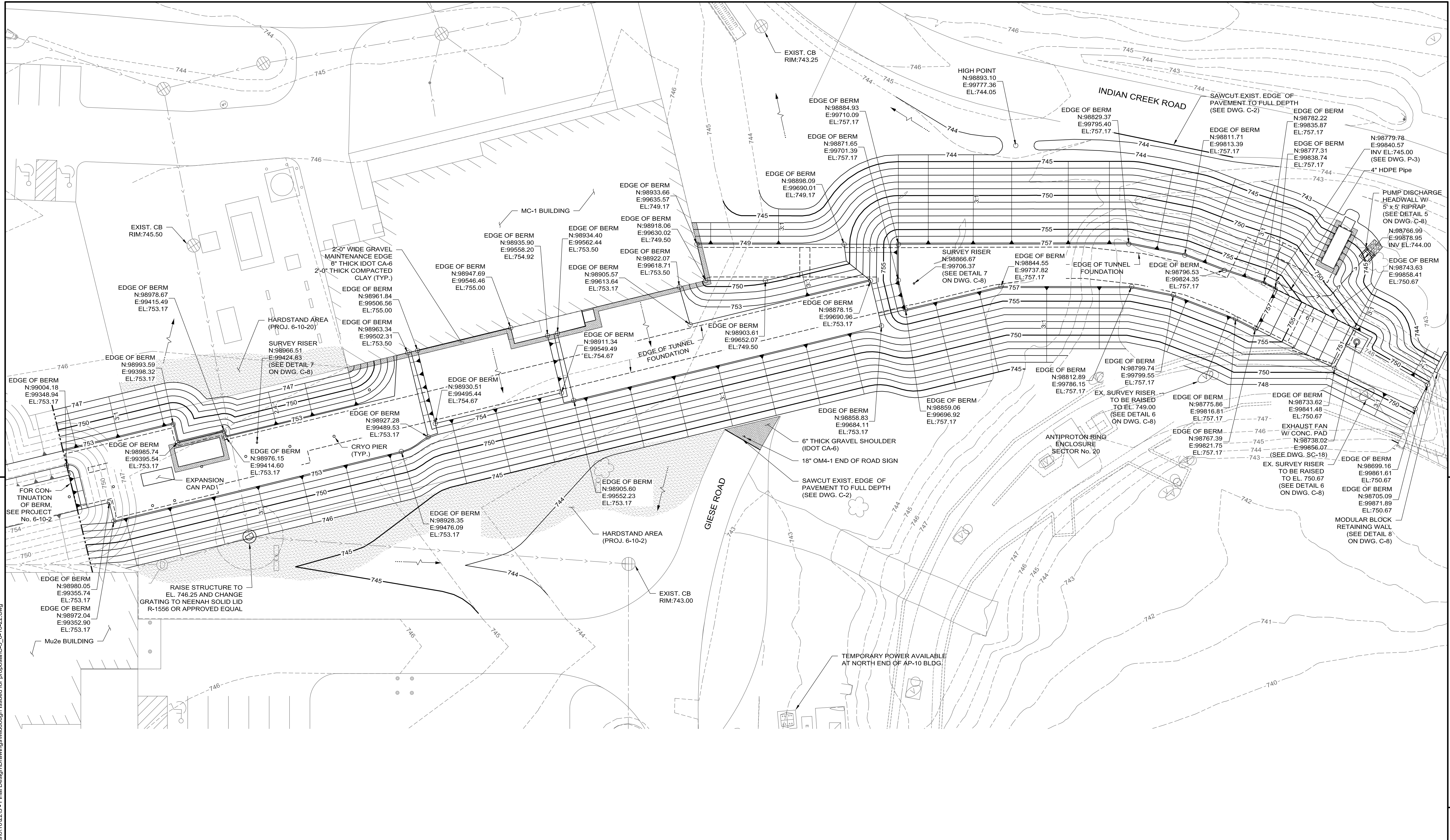


FERMI NATIONAL ACCELERATOR LABORATORY
 UNITED STATES DEPARTMENT OF ENERGY

MC BEAMLINE ENCLOSURES
EXCAVATION PLAN
 DRAWING NO. **6-10-22** **C-2** REV.

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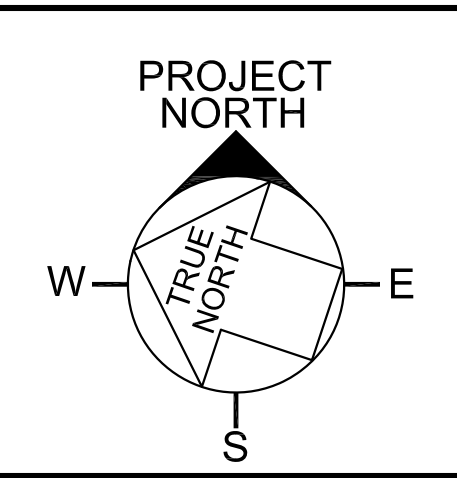


REV.	DATE	DESCRIPTIONS

middough
FNA1303

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SCALE:
1" = 20'-0"

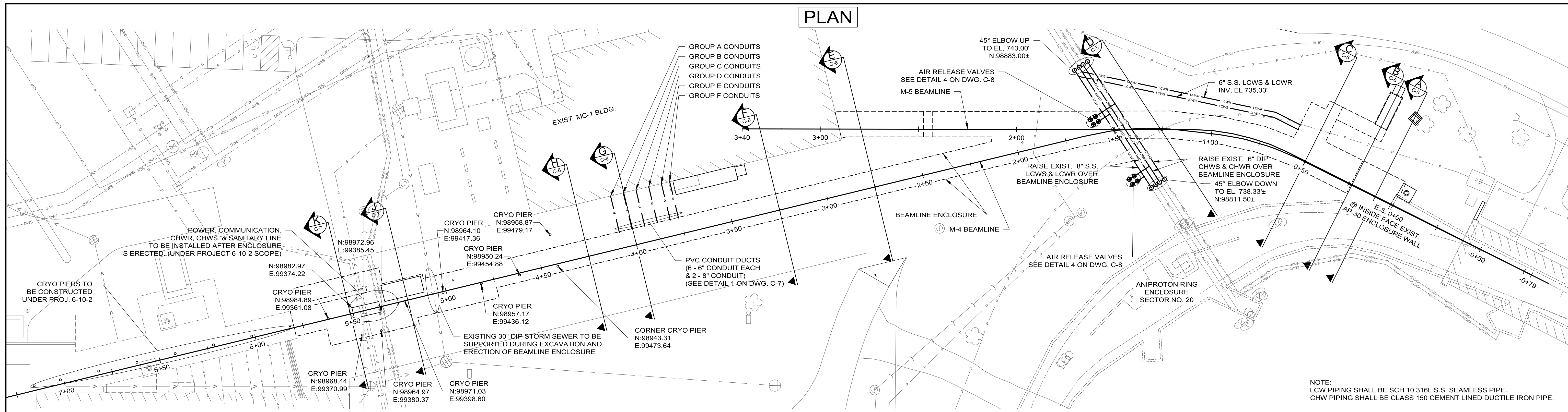
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Fermi National Accelerator Laboratory
UNITED STATES DEPARTMENT OF ENERGY

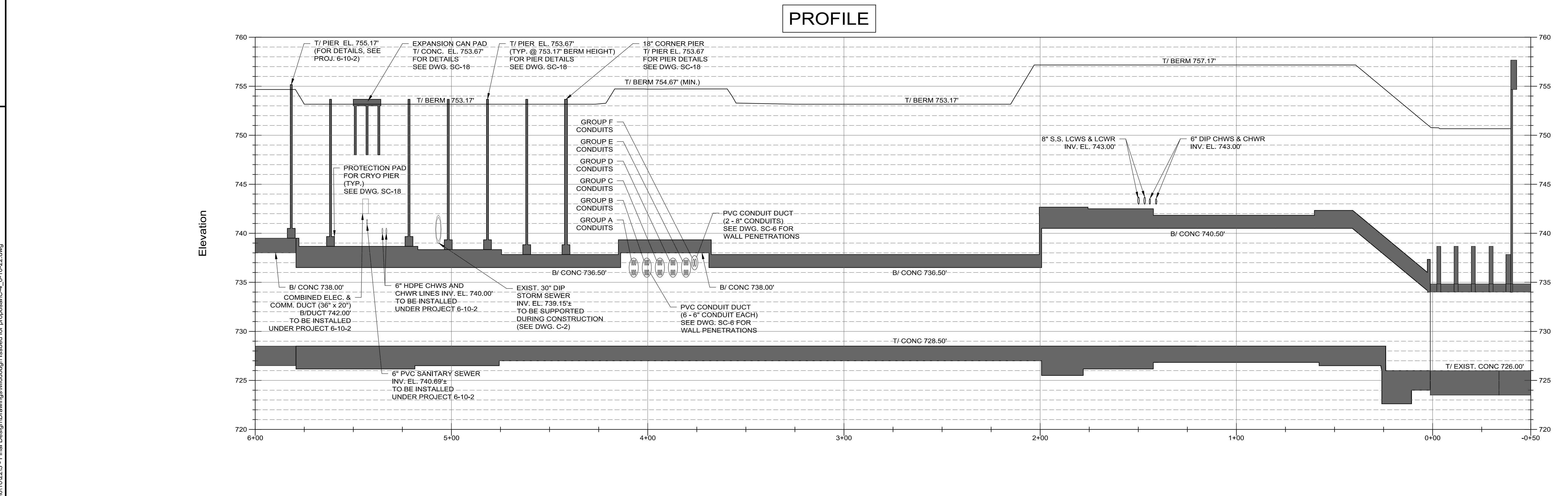
MC BEAMLINE ENCLOSURES
SITE AND GRADING PLAN

DRAWING NO. **6-10-22** **C-3** REV.

F.I.M.S. No. 03 MAR 2014



NOTE:
 LCW PIPING SHALL BE SCH 10 316L S.S. SEAMLESS PIPE.
 CHW PIPING SHALL BE CLASS 150 CEMENT LINED DUCTILE IRON PIPE.



REV.	DATE	DESCRIPTIONS

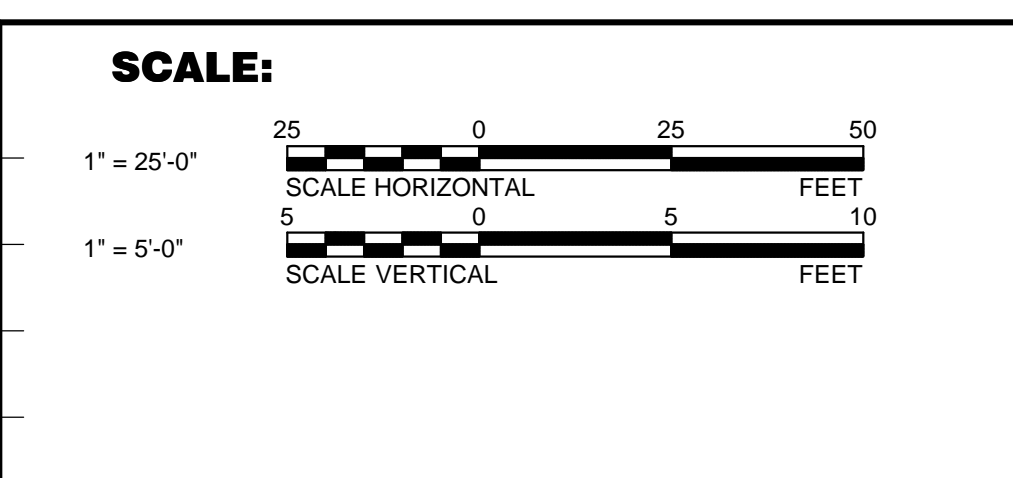
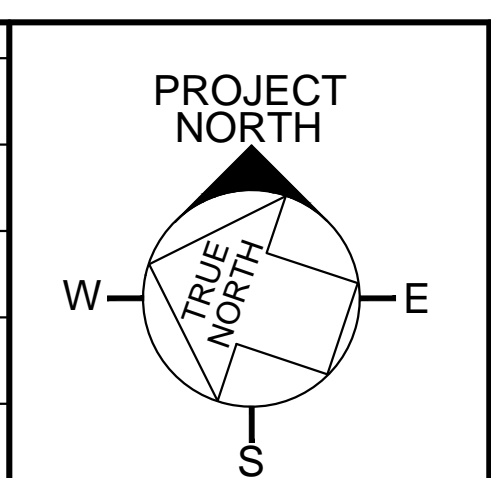
middough
 FNA1303

Oak Brook Pointe
 ph. 630-756-7000

700 Commerce Drive, Suite 200
 www.middough.com

Oak Brook, IL 60523
 fx. 630-756-7001

	NAME	DATE
DESIGNED	A. JASINSKI	03/03/14
DRAWN	K. CUSSEN	03/03/14
CHECKED	A. VASONIS	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



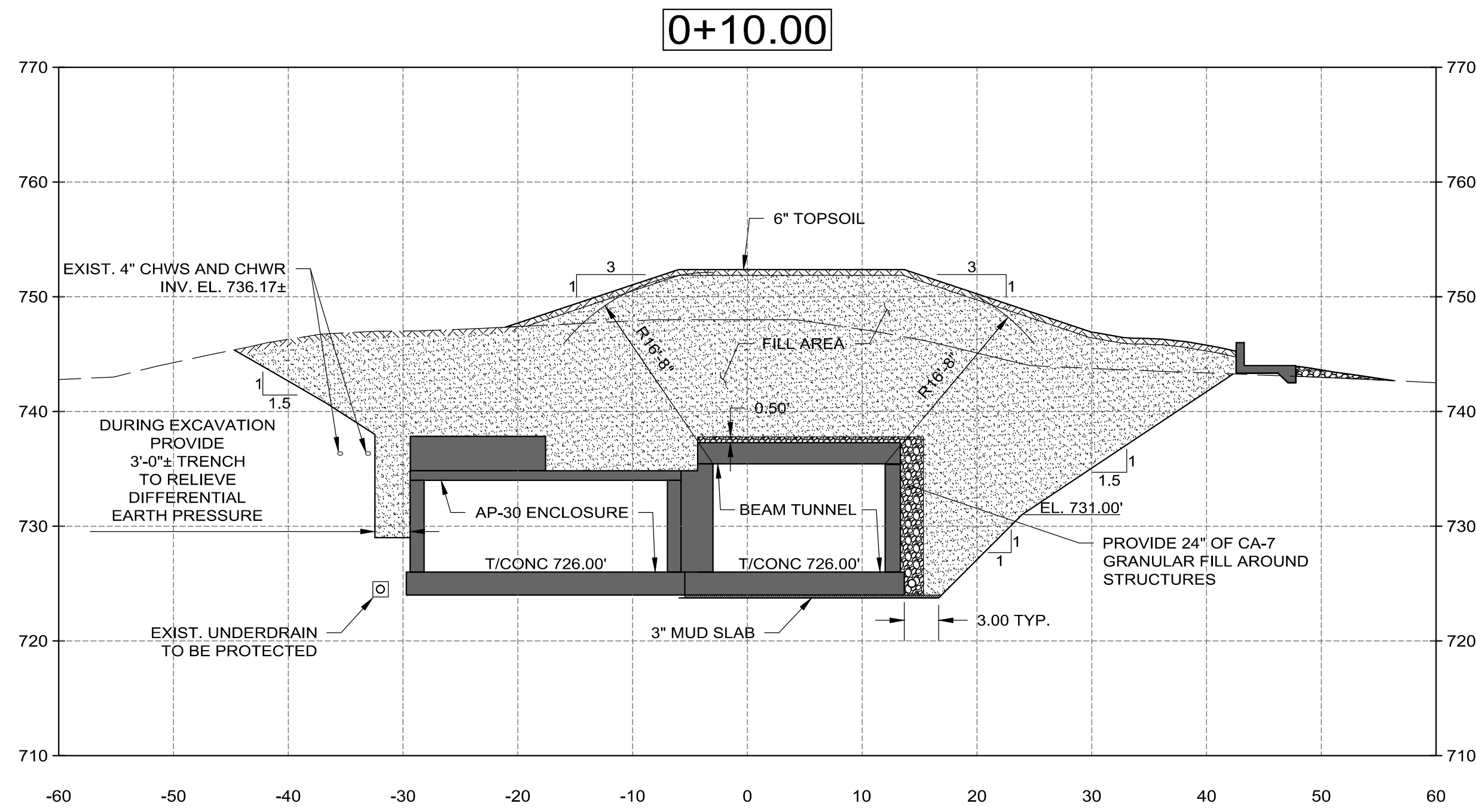
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 UNITED STATES DEPARTMENT OF ENERGY

MC BEAMLINE ENCLOSURES
UTILITY PLAN

DRAWING NO. **6-10-22** **C-4** REV.

Jun 03, 2014 - 6:57am M:\Active Projects\61010223 - Final Design\Drawings\Middough\Issued for proposal\C-4_6-10-22.dwg

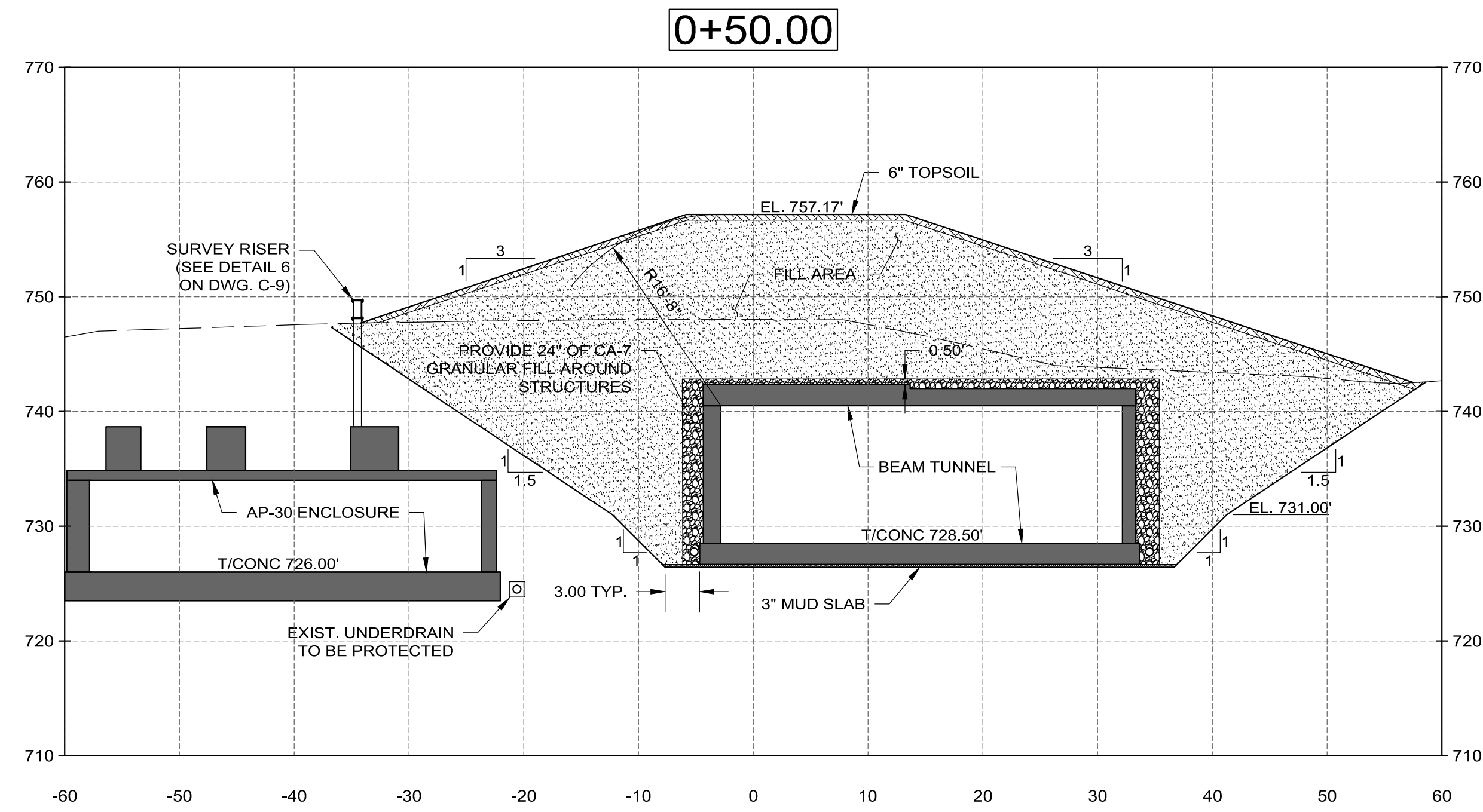
F.I.M.S. No. 03 MAR 2014



SECTION

SCALE: 1" = 10'

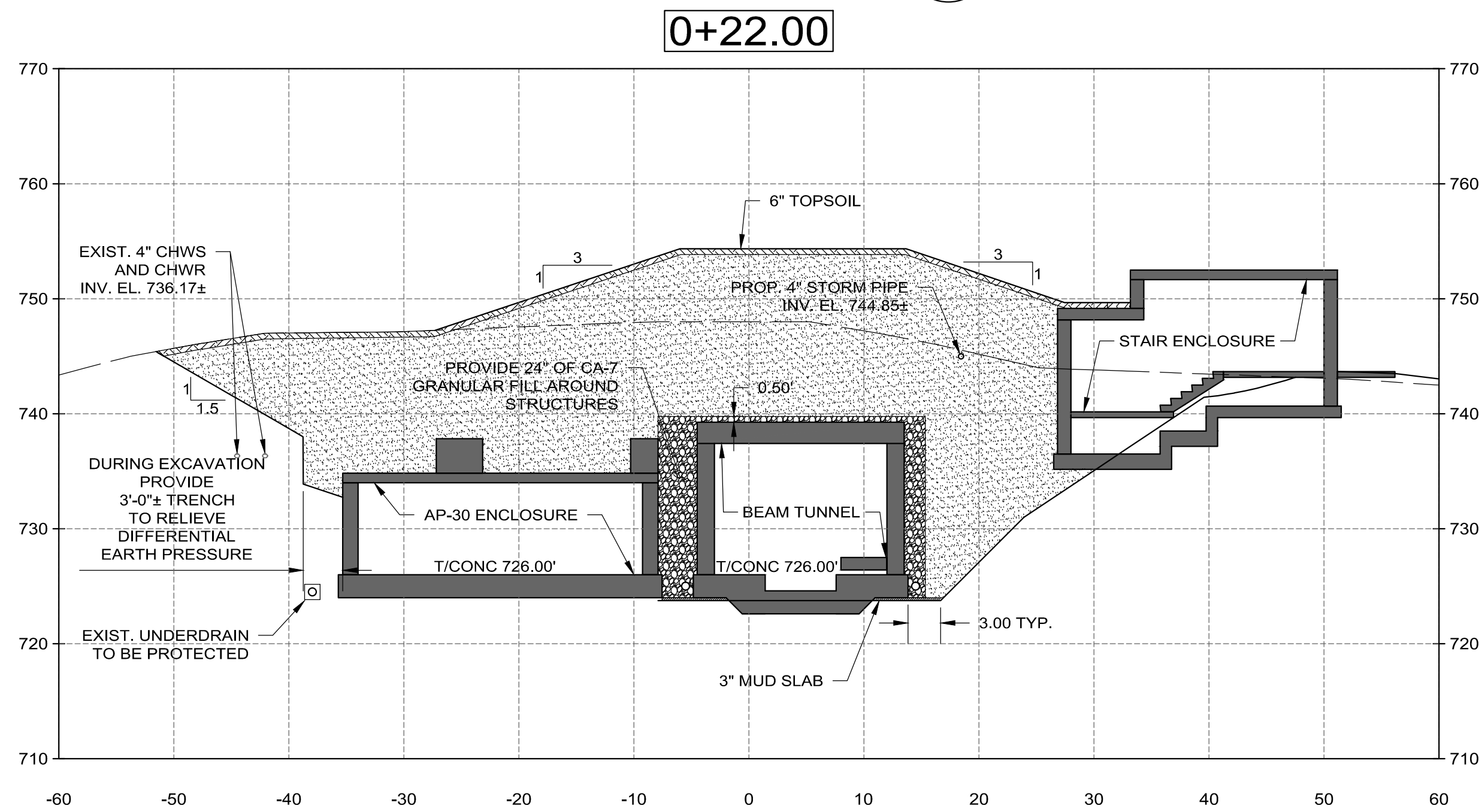
A
C-4



SECTION

SCALE: 1" = 10'

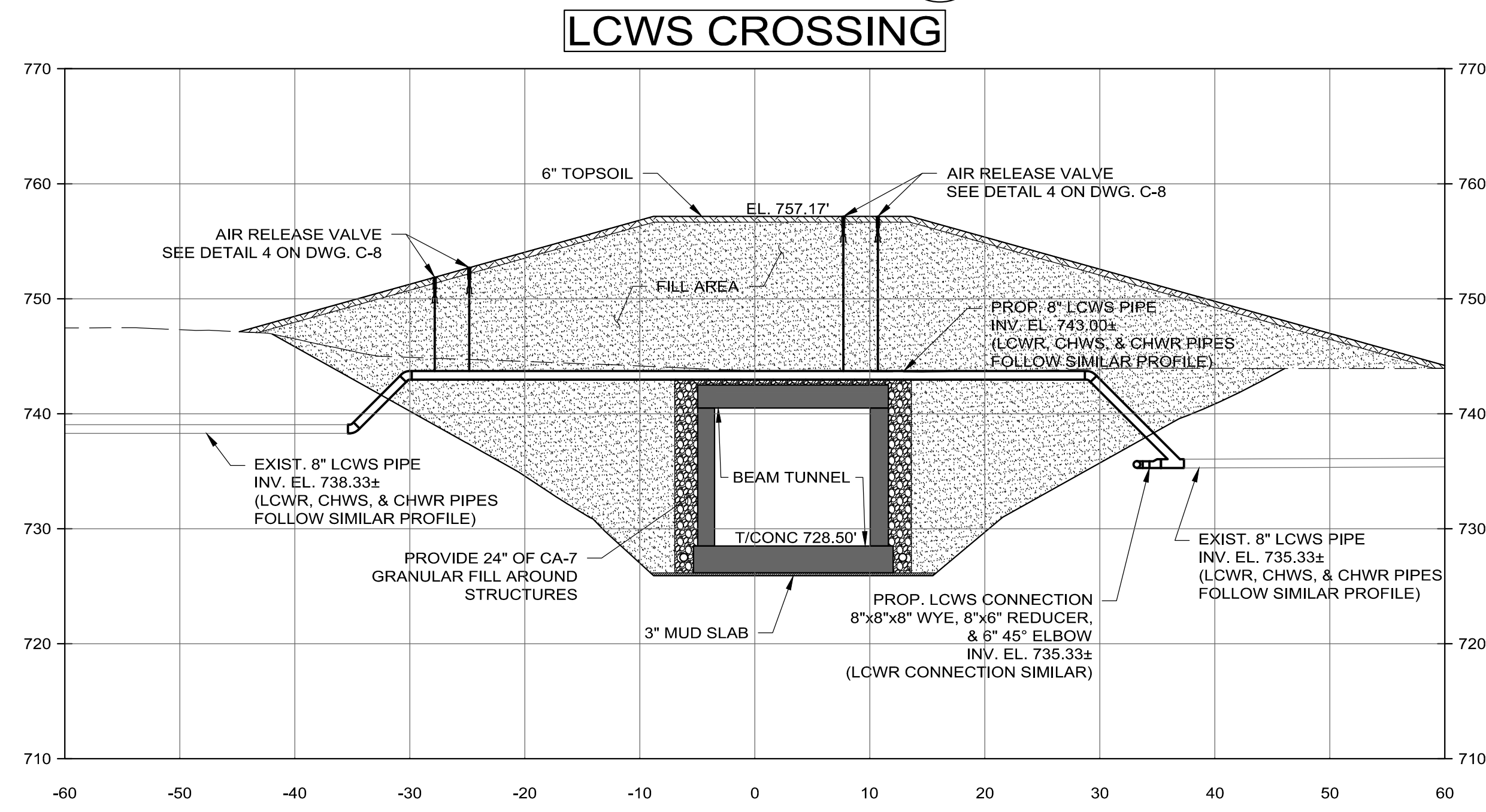
C
C-4



SECTION

SCALE: 1" = 10'

B
C-4



SECTION

SCALE: 1" = 10'

D
C-4

NOTE:
FOR MORE INFORMATION ON BACKFILL MATERIAL, COMPACTION AND PROCEDURES, SEE FERMILAB SPECIFICATIONS SECTION 02230 EMBANKMENT.

Jun 03, 2014 - 6:56am M:\Active Projects\61010223 - Final Design\Drawings\Middough\Issued for proposal\C-5_6-10-22.dwg

REV.	DATE	DESCRIPTIONS



FNA1303

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	NAME	DATE
DESIGNED	A. JASINSKI	03/03/14
DRAWN	K. CUSSEN	03/03/14
CHECKED	A. VASONIS	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

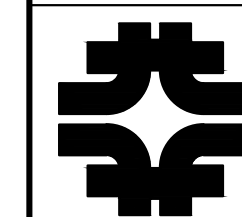
SCALE:

1" = 10'-0"



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UNITED STATES DEPARTMENT OF ENERGY



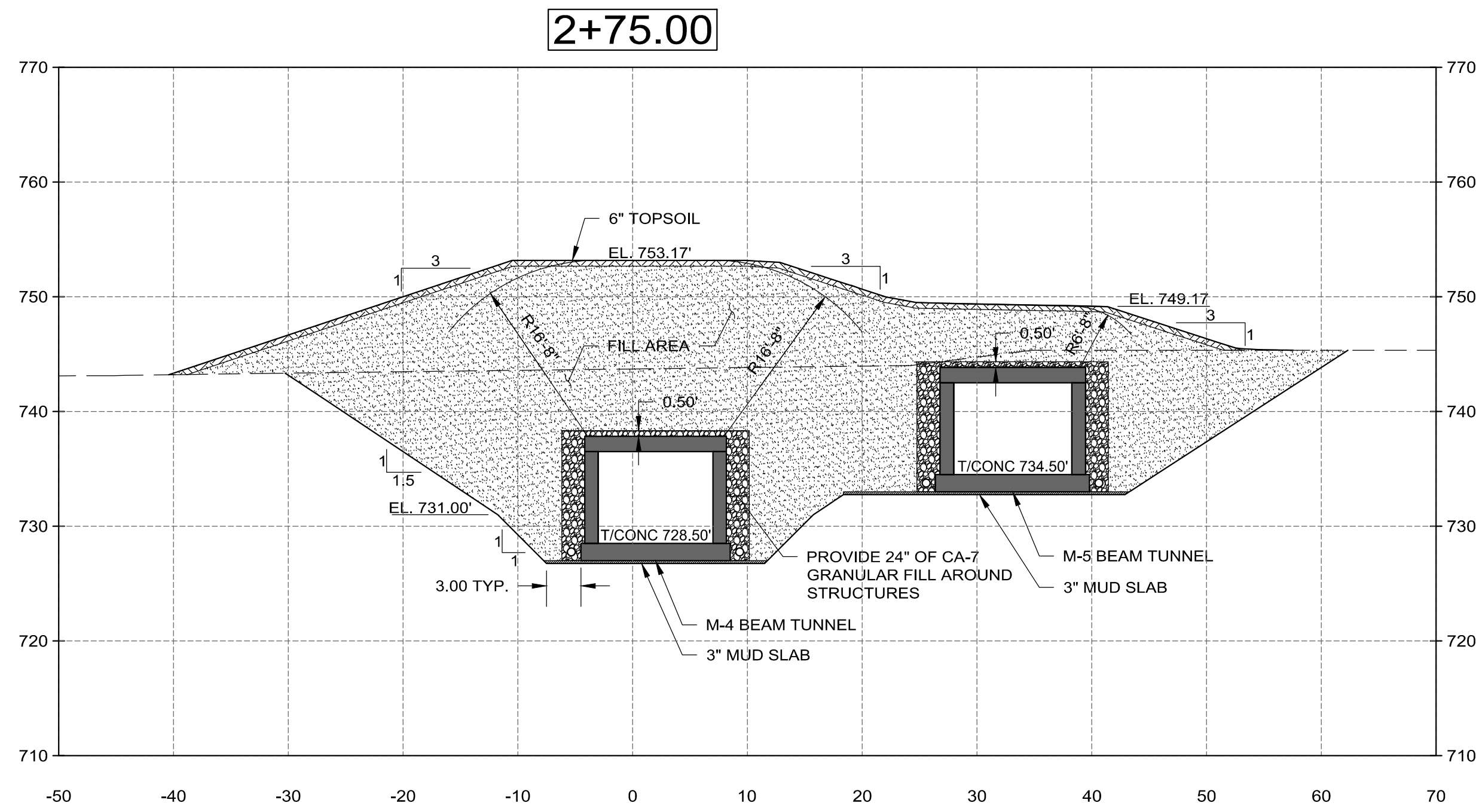
MC BEAMLINE ENCLOSURES
CROSS SECTIONS, SHEET 1

DRAWING NO. **6-10-22**

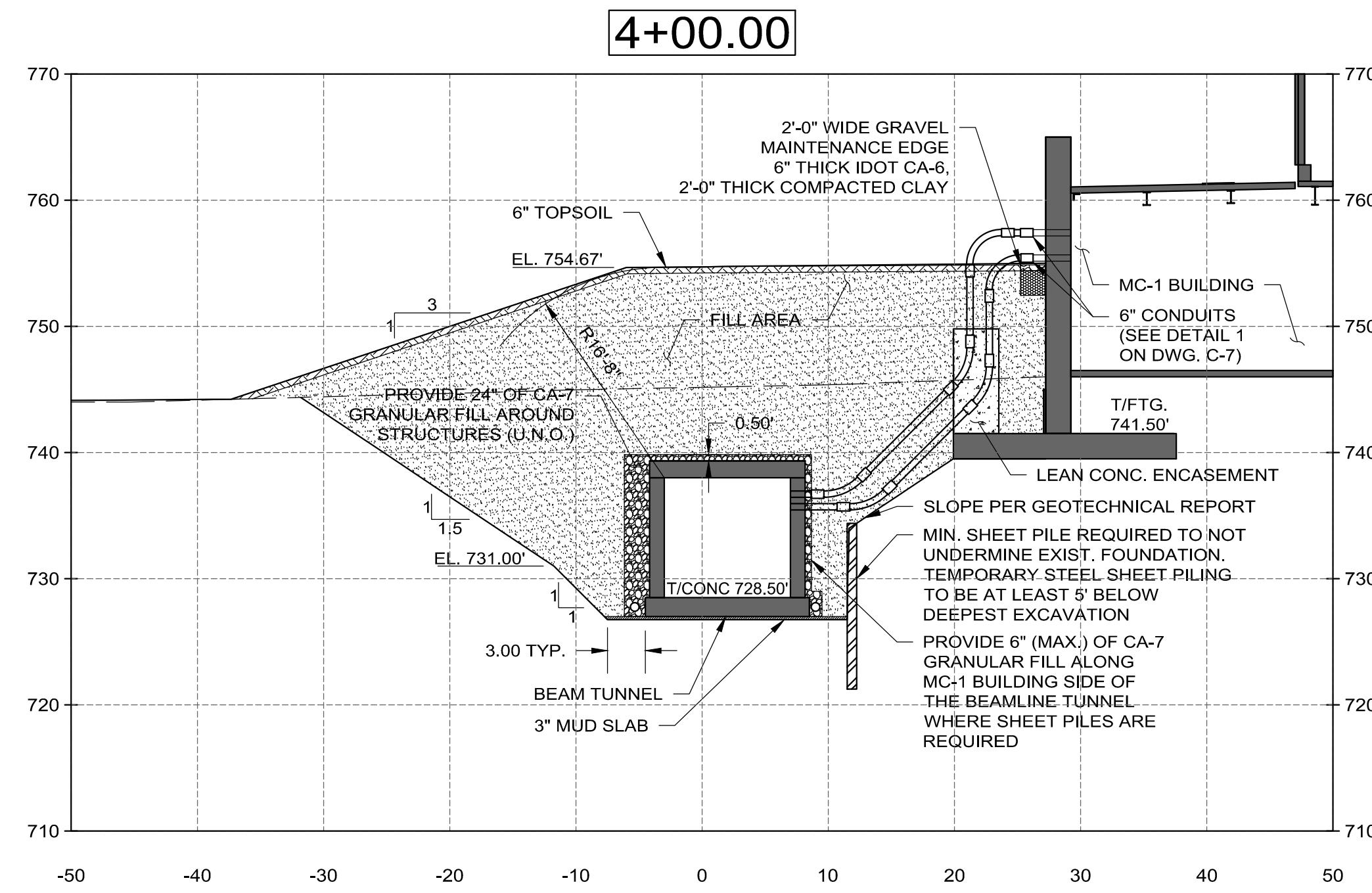
C-5

REV.

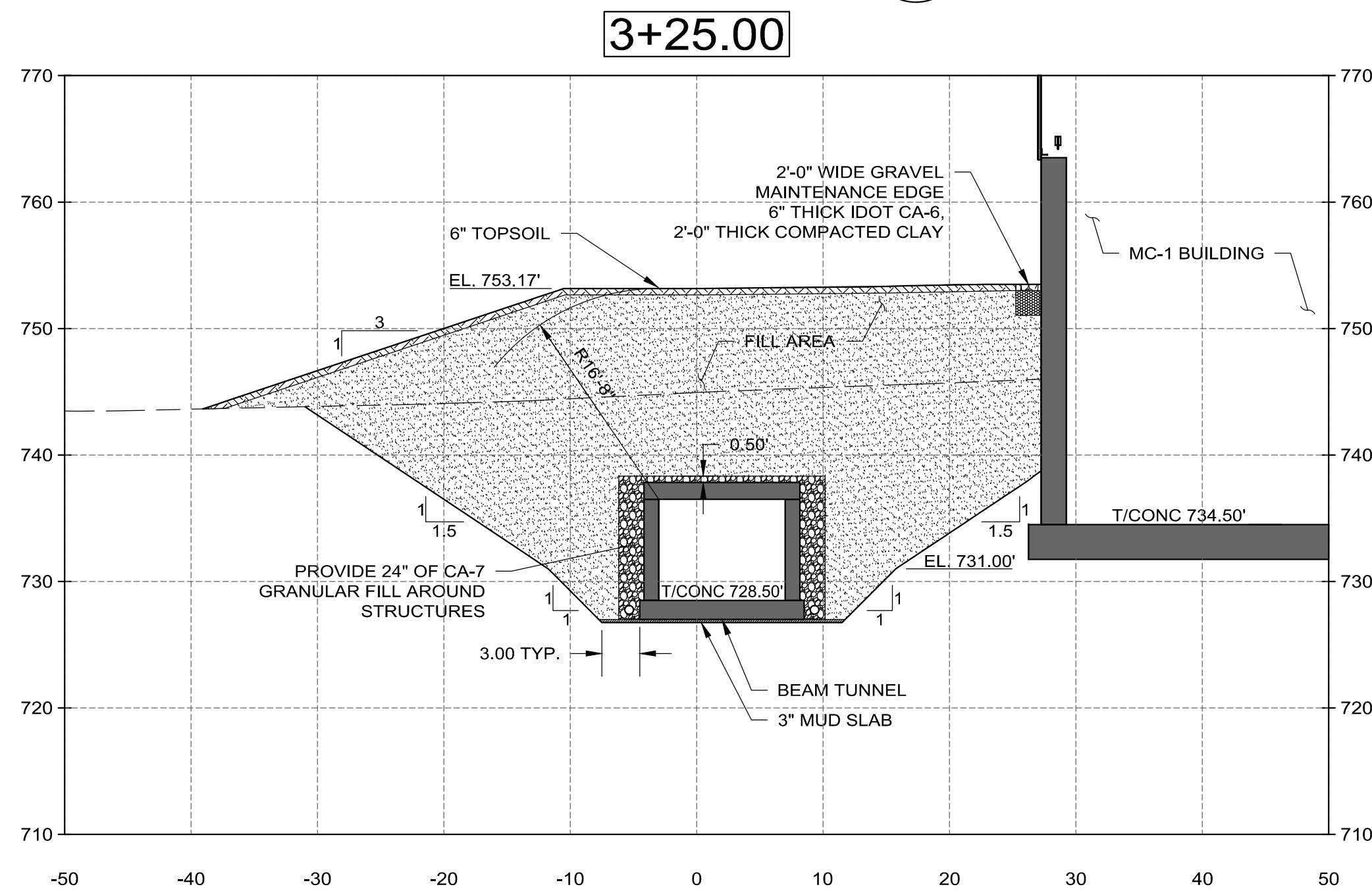
F.L.M.S. No. 03 MAR 2014



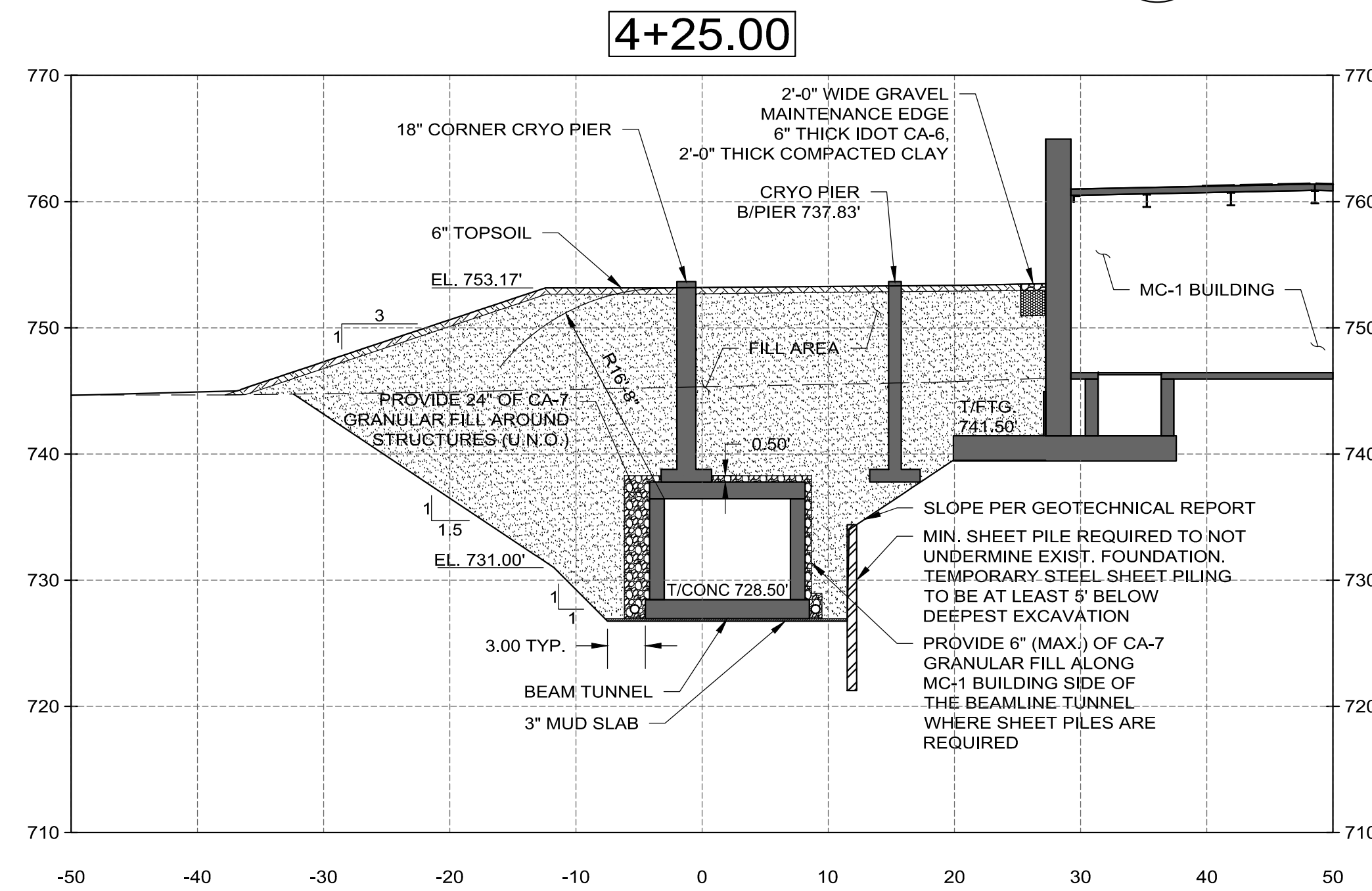
SECTION E
SCALE: 1" = 10'



SECTION G
SCALE: 1" = 10'



SECTION F
SCALE: 1" = 10'



SECTION H
SCALE: 1" = 10'

NOTE:
FOR MORE INFORMATION ON BACKFILL MATERIAL, COMPACTION AND PROCEDURES, SEE FERMILAB SPECIFICATIONS SECTION 02230 EMBANKMENT.

Jun 03, 2014 - 6:51am M:\Active Projects\61010223 - Final Design\Drawings\Middough issued for proposal\C-6_6-10-22.dwg

REV.	DATE	DESCRIPTIONS



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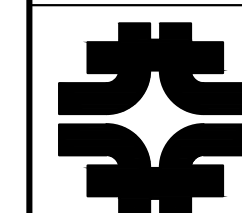
	NAME	DATE
DESIGNED	A. JASINSKI	03/03/14
DRAWN	K. CUSSEN	03/03/14
CHECKED	A. VASONIS	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

SCALE:



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UNITED STATES DEPARTMENT OF ENERGY

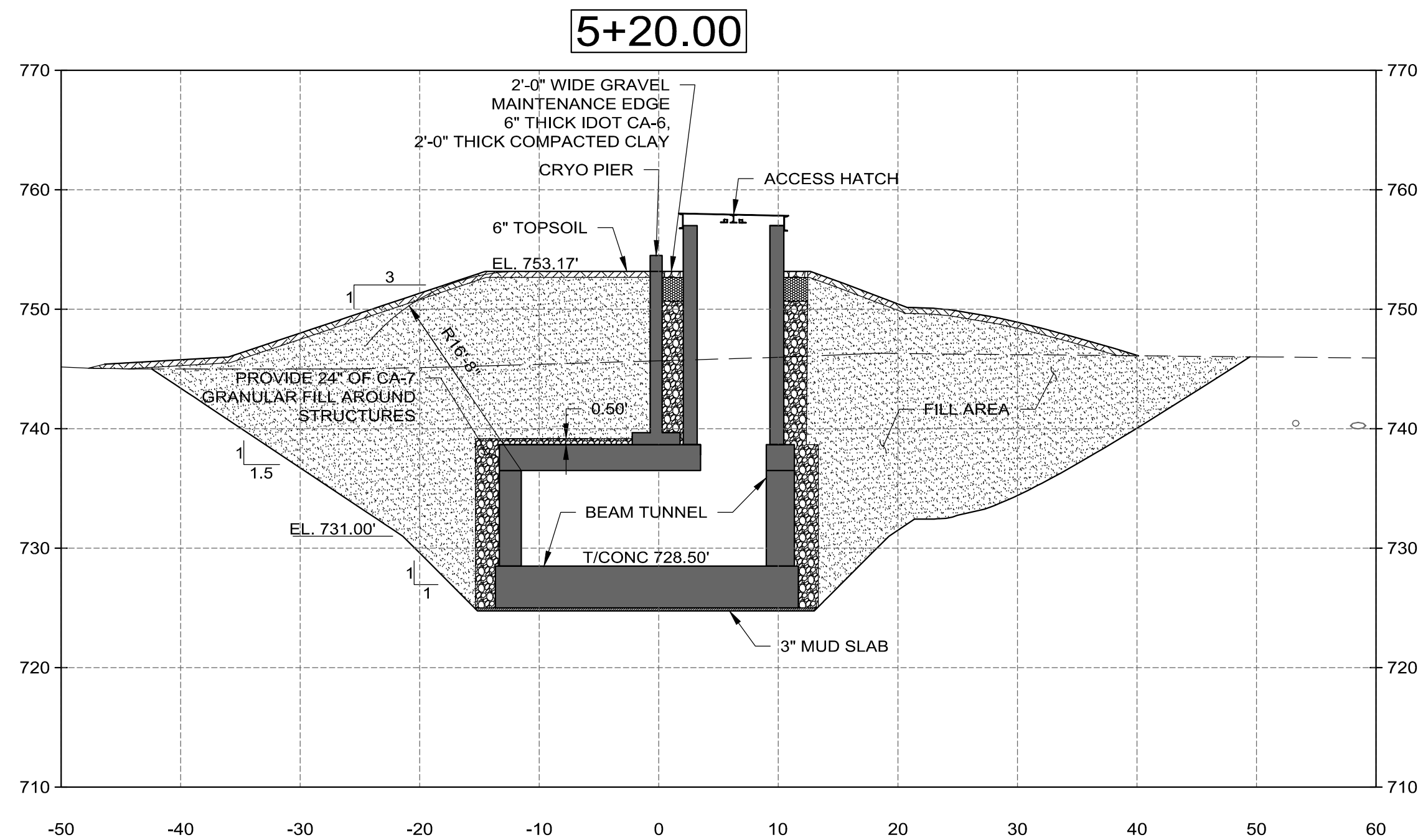


MC BEAMLINE ENCLOSURES
CROSS SECTIONS, SHEET 2

DRAWING NO. **6-10-22**

C-6 REV.

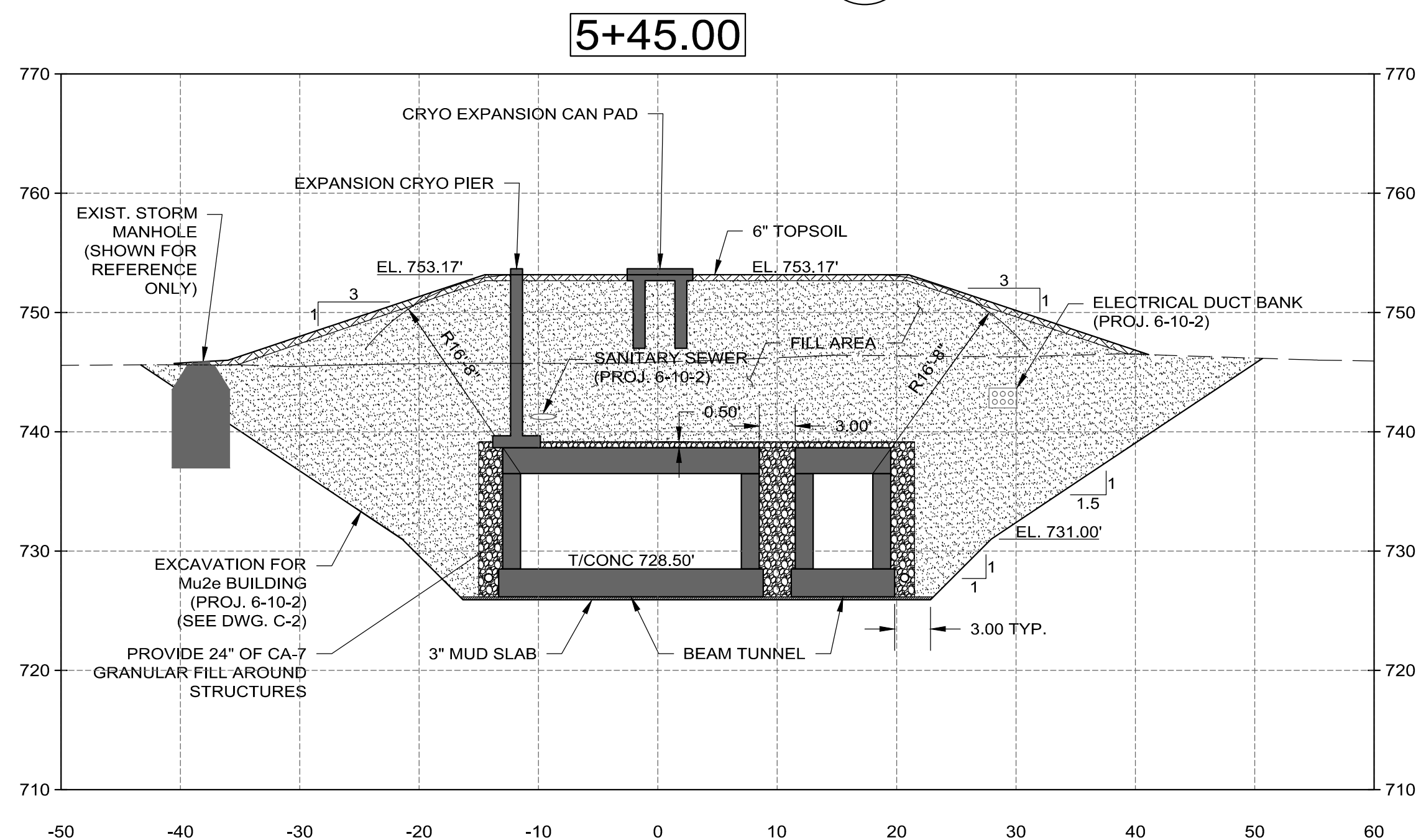
F.I.M.S. No. 03 MAR 2014



SECTION

SCALE: 1" = 10'

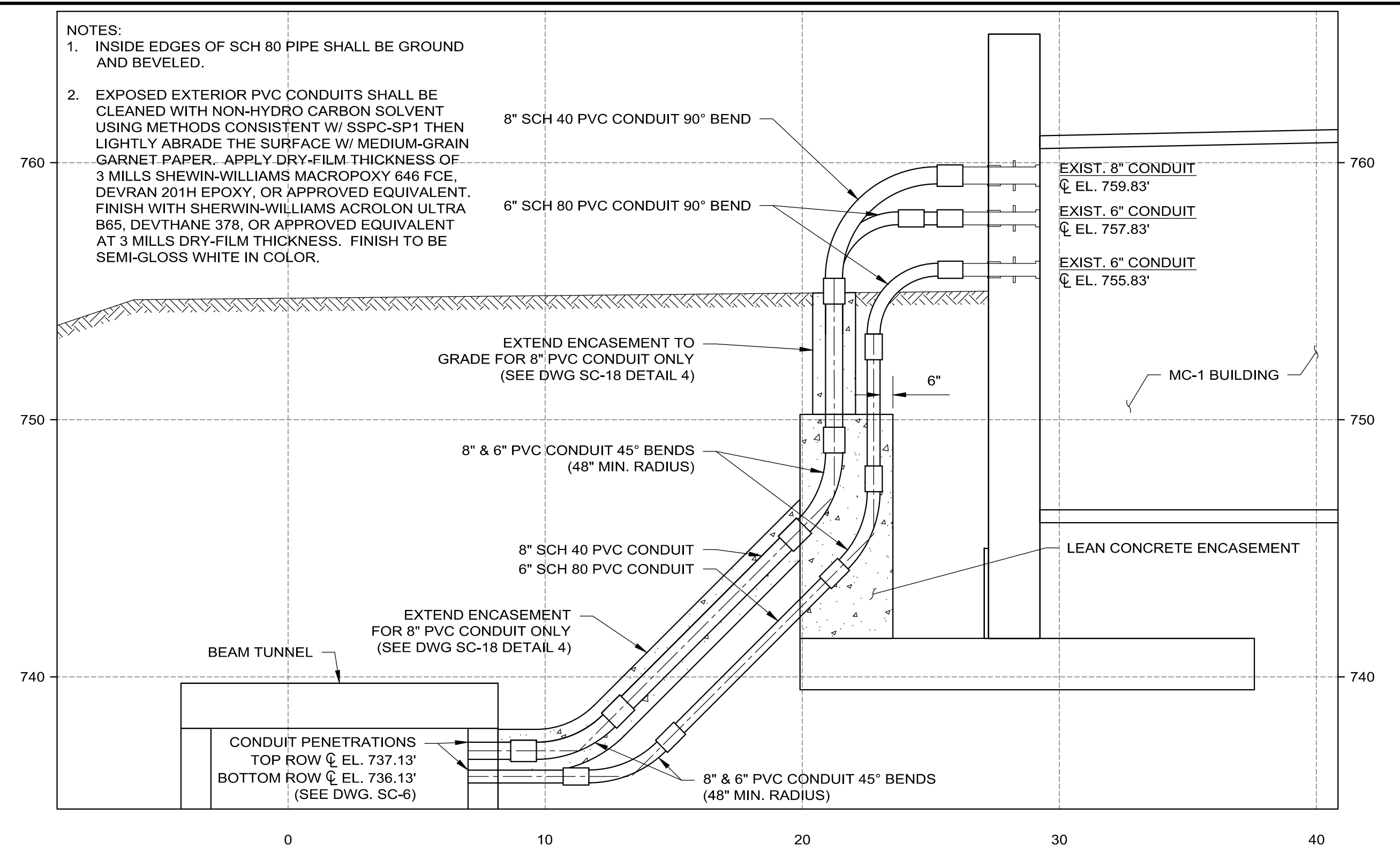
J
C-4



SECTION

SCALE: 1" = 10'

K
C-4



DETAIL

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

1
--

- NOTES:
- INSIDE EDGES OF SCH 80 PIPE SHALL BE GROUND AND BEVELED.
 - EXPOSED EXTERIOR PVC CONDUITS SHALL BE CLEANED WITH NON-HYDRO CARBON SOLVENT USING METHODS CONSISTENT W/ SSPC-SP1 THEN LIGHTLY ABRASE THE SURFACE W/ MEDIUM-GRAIN GARNET PAPER. APPLY DRY-FILM THICKNESS OF 3 MILLS SHERWIN-WILLIAMS MACROPOXY 646 FCE, DEVTRAN 201H EPOXY, OR APPROVED EQUIVALENT. FINISH WITH SHERWIN-WILLIAMS ACROLON ULTRA B65, DEVTHANE 378, OR APPROVED EQUIVALENT AT 3 MILLS DRY-FILM THICKNESS. FINISH TO BE SEMI-GLOSS WHITE IN COLOR.

NOTE:
FOR MORE INFORMATION ON BACKFILL MATERIAL, COMPACTION AND PROCEDURES, SEE FERMILAB SPECIFICATIONS SECTION 02230 EMBANKMENT.

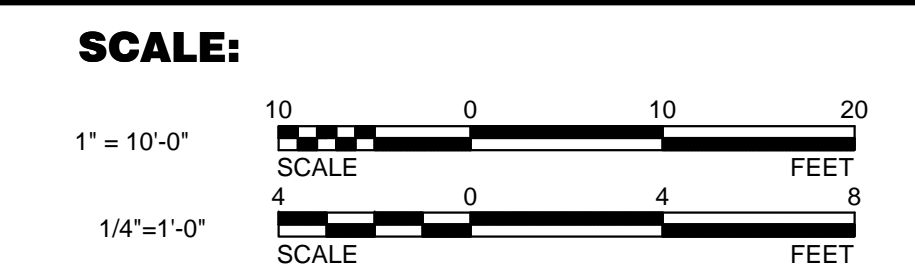
Jun 03, 2014 - 6:51am M:\Active Projects\610223 - Final Design\Drawings\Middough\Issued for proposal\C-7_6-10-22.dwg

REV.	DATE	DESCRIPTIONS



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	NAME	DATE
DESIGNED	A. JASINSKI	03/03/14
DRAWN	K. CUSSEN	03/03/14
CHECKED	A. VASONIS	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

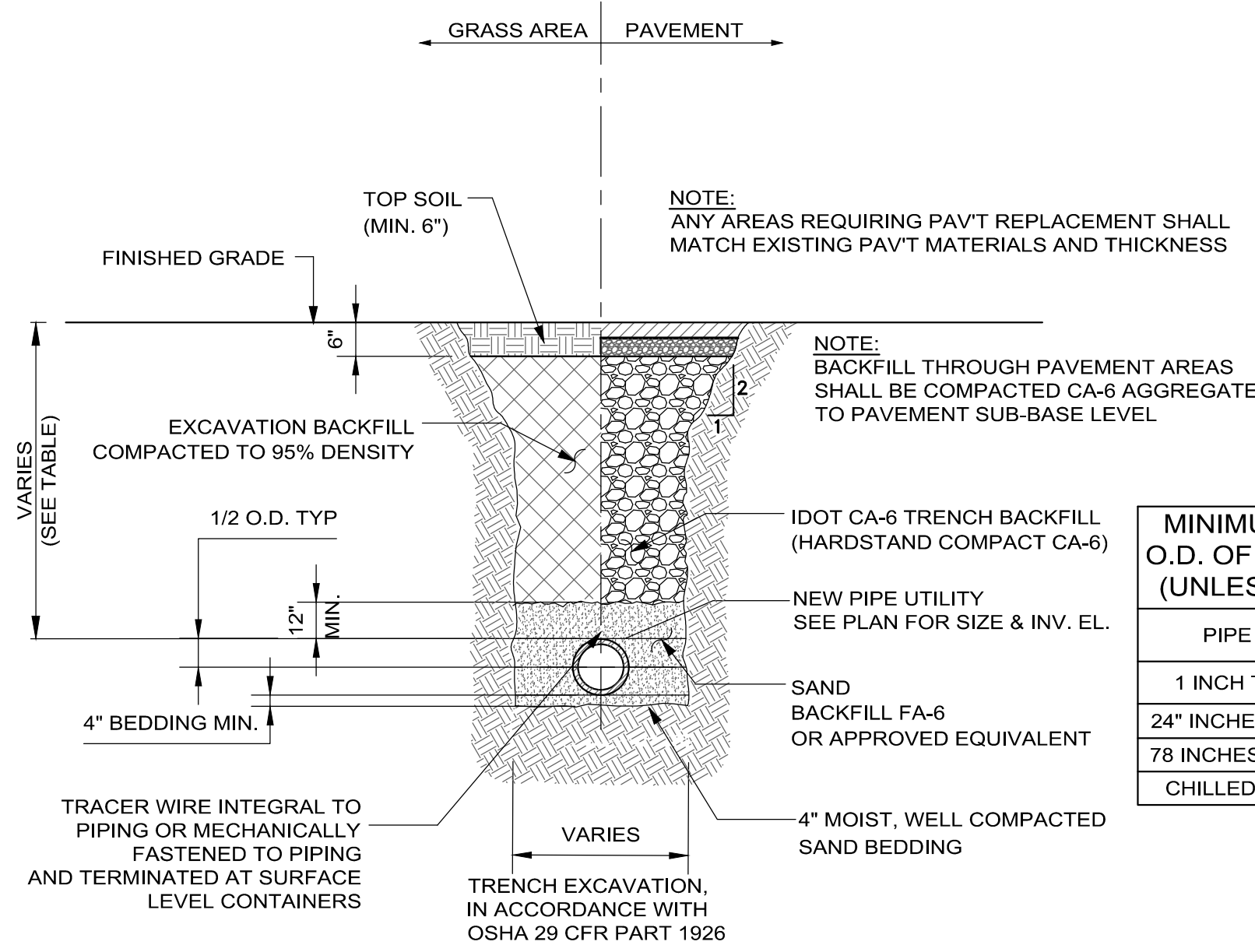


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UNITED STATES DEPARTMENT OF ENERGY

MC BEAMLINE ENCLOSURES
CROSS SECTIONS, SHEET 3

DRAWING NO. **6-10-22** **C-7** REV.

F.L.M.S. No. 03 MAR 2014

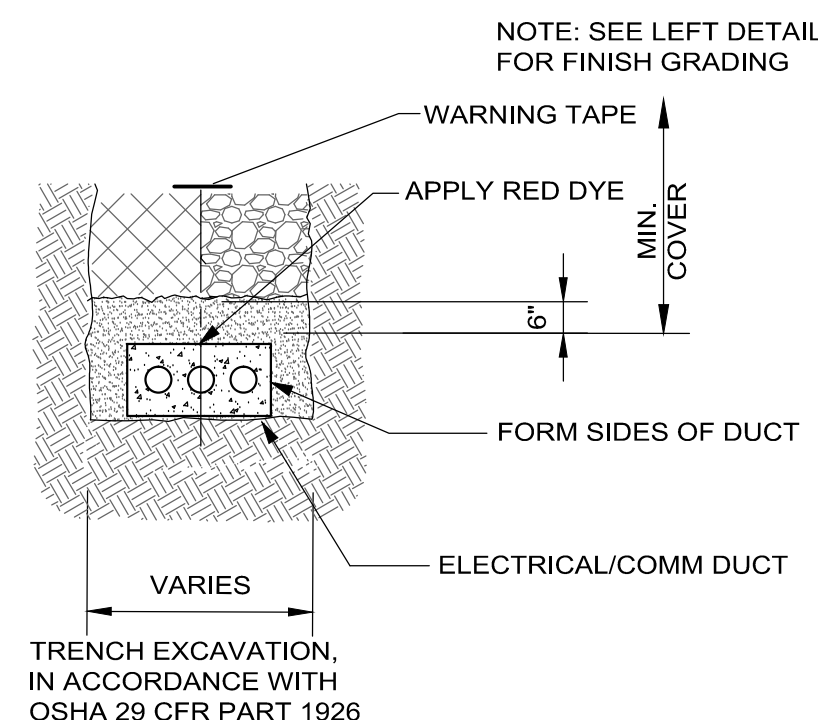


TYPE OF UTILITY	MIN. DEPTH*
NATURAL GAS	1'-6" TO 3'-0"
DIRECT BURIED COMMUNICATION	2'-6"
DIRECT BURIED POWER	1'-6" TO 3'-6"
DOMESTIC WATER	5'-6"
INDUSTRIAL COOLING WATER	6'-0"
STORM/SANITARY FORCE MAIN	5'-6" MIN.
STORM/SANITARY GRAVITY	1'-0" MIN.

*MINIMUM DEPTHS OF UNDERGROUND UTILITIES UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

MINIMUM SPACING BETWEEN O.D. OF PIPES IN SAME TRENCH (UNLESS OTHERWISE NOTED)

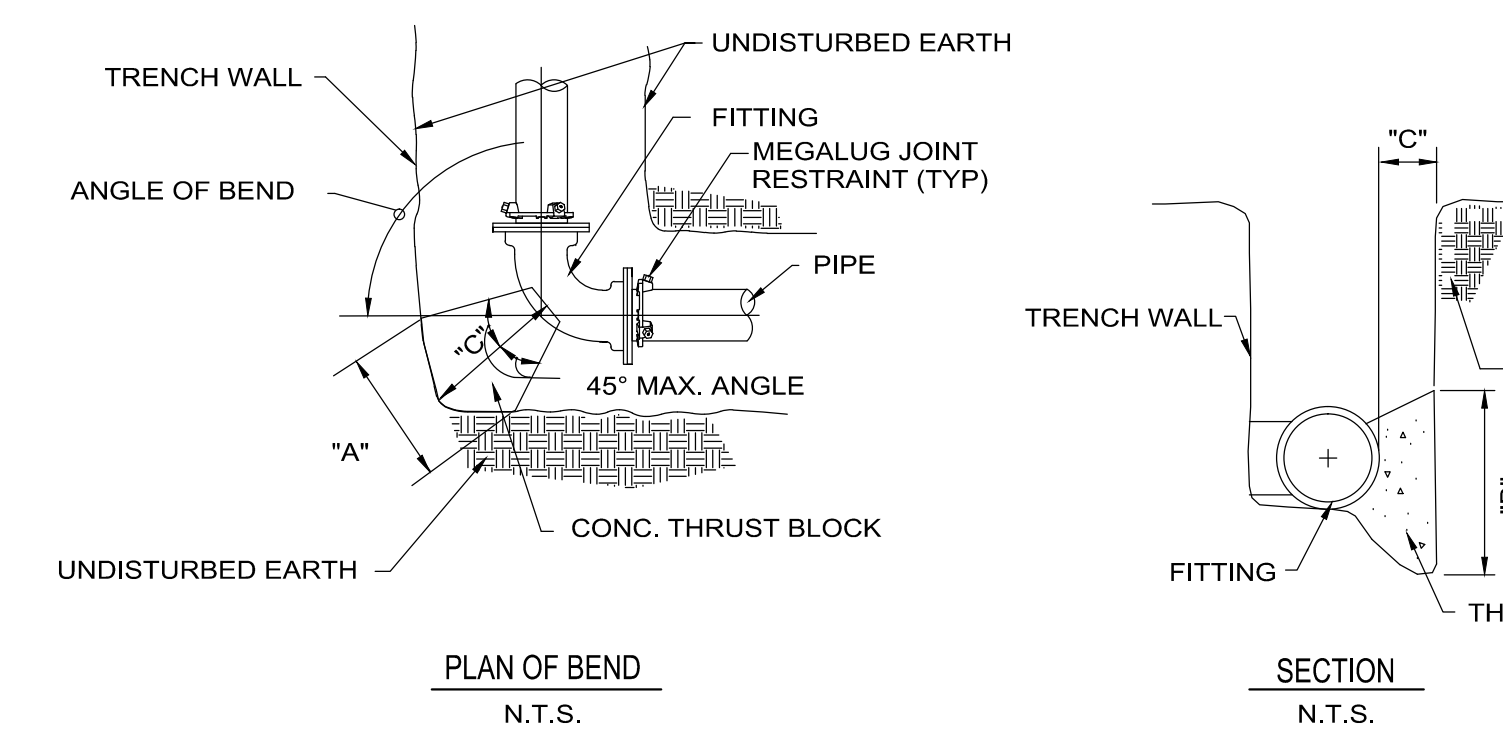
PIPE DIAMETER	STRAIGHT PIPE ONLY
1 INCH TO 22 INCHES	1'-0"
24" INCHES TO 72 INCHES	1/2 DIAMETER
78 INCHES AND GREATER	3'-0"
CHILLED WATER LINES	1'-6"



TRENCH BEDDING

SCALE: NTS

1



100 P.S.I. TABLE

SIZE	90° BEND			45° BEND			22-1/2° BEND			11-1/4° BEND			TEE OR PLUG		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
4" & 6"	2'-0"	1'-4"	9"	1'-6"	1'-0"	6"	1'-1"	0'-8"	6"	0'-9"	0'-6"	6"	2'-5"	1'-7"	1'-0"
8"	2'-8"	1'-10"	1'-0"	2'-0"	1'-4"	8"	1'-5"	1'-0"	8"	1'-0"	0'-8"	8"	3'-2"	2'-2"	1'-3"
10"	3'-4"	2'-3"	1'-3"	2'-6"	1'-8"	10"	1'-9"	1'-2"	8"	1'-3"	0'-10"	8"	4'-0"	2'-8"	1'-7"
12"	4'-0"	2'-8"	1'-6"	3'-0"	2'-0"	1'-0"	2'-2"	1'-5"	8"	1'-6"	1'-0"	8"	4'-10"	3'-2"	1'-11"
14"	4'-8"	3'-2"	1'-9"	3'-6"	2'-4"	1'-2"	2'-6"	1'-8"	8"	1'-9"	1'-2"	8"	5'-7"	3'-9"	2'-3"
16"	5'-4"	3'-7"	2'-0"	3'-11"	2'-8"	1'-4"	2'-10"	1'-11"	9"	2'-0"	1'-4"	8"	6'-4"	4'-3"	2'-6"
18"	6'-0"	4'-0"	2'-3"	4'-5"	3'-0"	1'-6"	3'-2"	2'-2"	10"	2'-3"	1'-6"	8"	7'-2"	4'-9"	2'-10"
20"	6'-8"	4'-5"	2'-6"	4'-11"	3'-4"	1'-8"	3'-6"	2'-4"	11"	2'-6"	1'-8"	8"	7'-11"	5'-4"	3'-2"
24"	8'-0"	5'-4"	3'-0"	5'-11"	3'-11"	2'-0"	4'-3"	2'-10"	1'-1"	3'-0"	2'-0"	8"	9'-6"	6'-4"	3'-9"

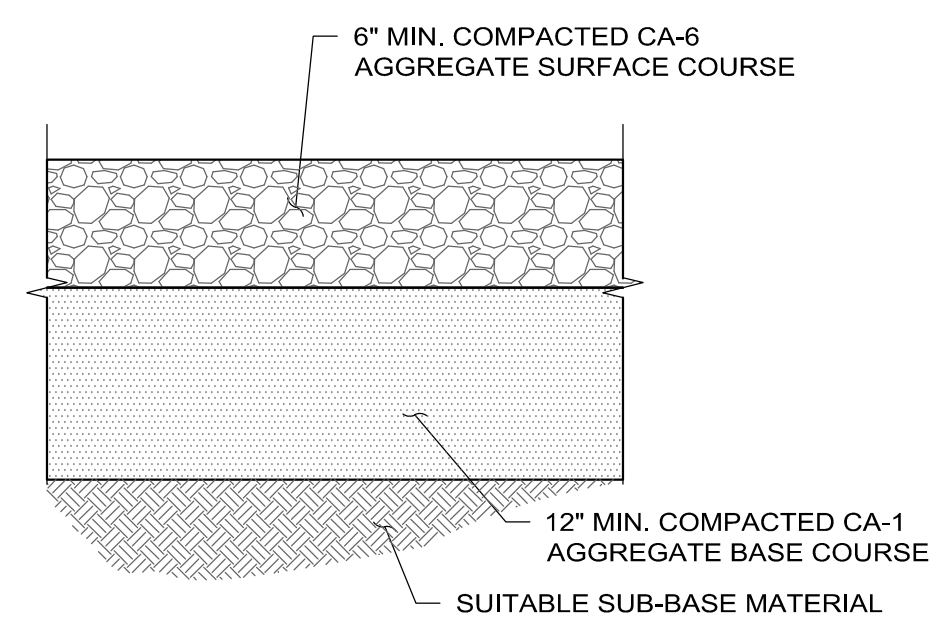
THRUST BLOCK DETAILS (FOR HORIZONTAL ALIGNMENT)

THRUST BLOCKS

SCALE: NTS

2

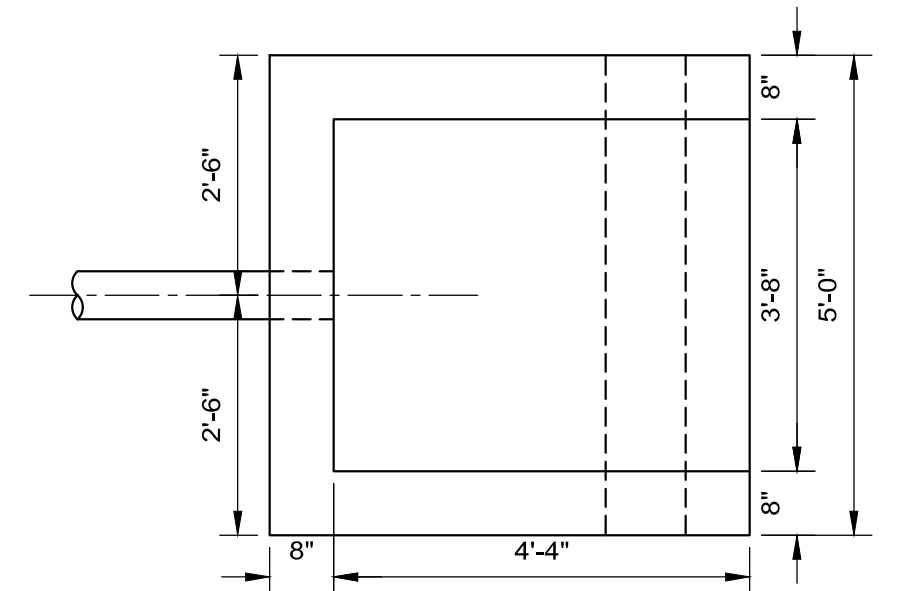
- NOTES:
- ALL BENDS, TEES, PLUGS, FITTINGS OR OTHER SIGNIFICANT CHANGES IN ALIGNMENT SHALL BE BRACED WITH POURED CONCRETE THRUST BLOCKS AND RESTRAINED WITH WEDGE ACTION RETAINER GLANDS DESIGNED FOR USE WITH DUCTILE IRON PIPE (MEGA-LUG BY EBBA IRON, OR APPROVED EQUIVALENT).
 - "C" DIMENSION SHALL BE AS REQUIRED TO REACH UNDISTURBED EARTH BUT NOT LESS THAN VALUE LISTED IN TABLE.
 - DIMENSIONS "A" AND "B" ARE BASED ON INTERNAL PIPE PRESSURE OF 100 P.S.I. AND BEARING ON THE UNDISTURBED SOIL OF 1500 P.S.F.
 - "B" = HEIGHT OF THRUST BLOCK
 - ALL PLUGS SHALL BE SEPARATED FROM THE CONCRETE THRUST BLOCK BY A LAYER OF 5 MIL PLASTIC SHEET
 - ALL POURED CONCRETE SHALL BE 3000 psi @ 28 DAYS.



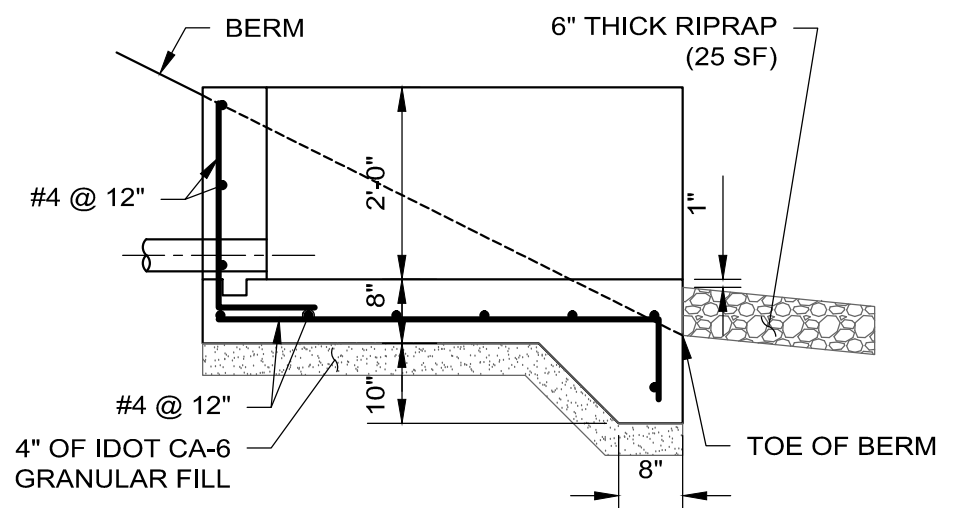
HARDSTAND

SCALE: NTS

3



PLAN

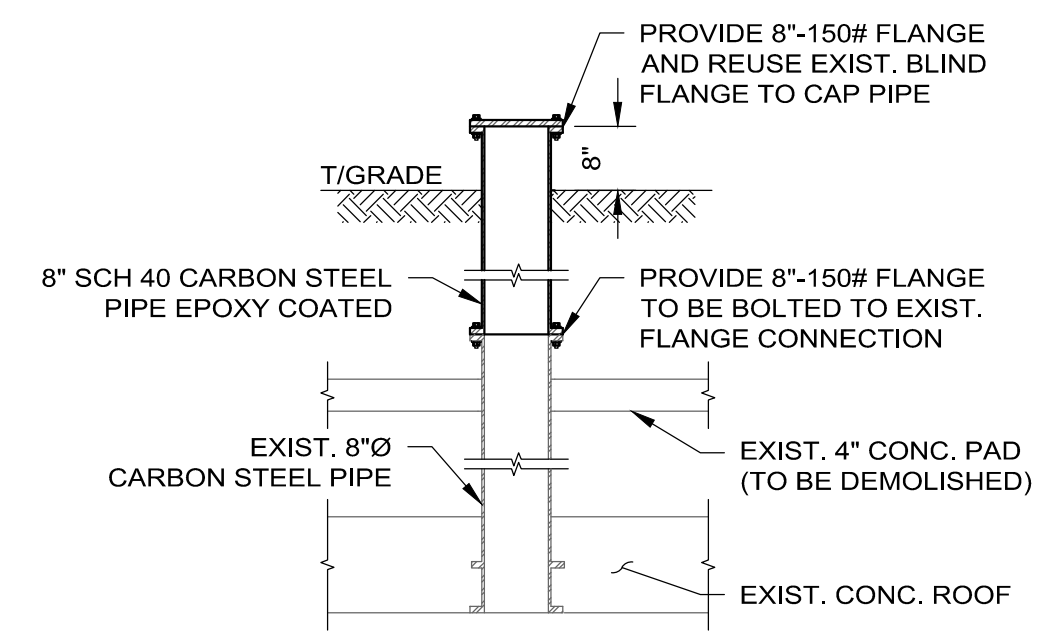


SECTION

HEADWALL

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

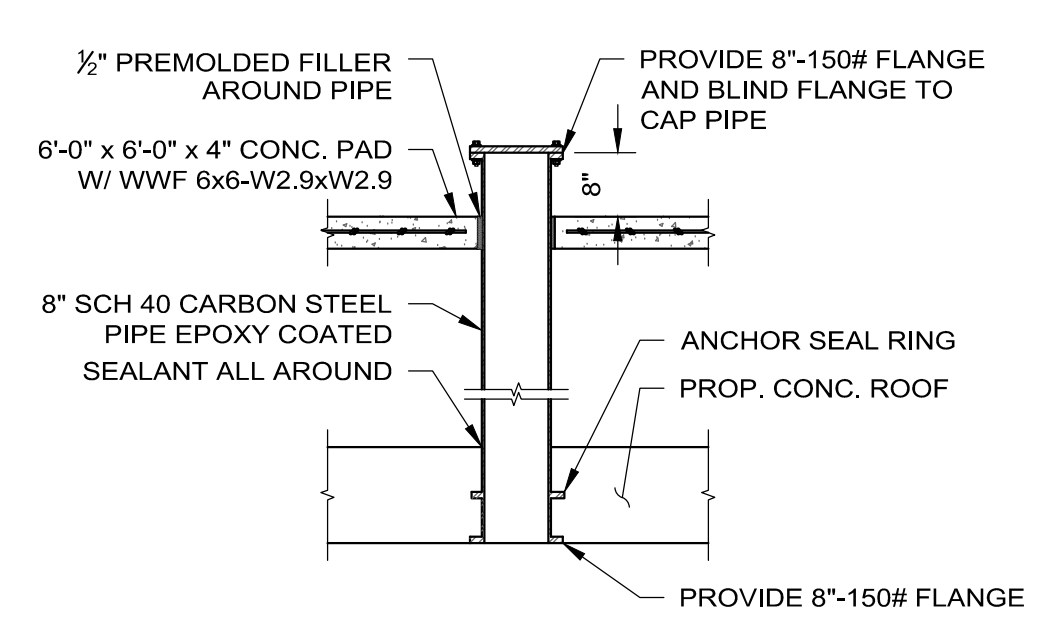
5



EXIST. SURVEY RISER

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

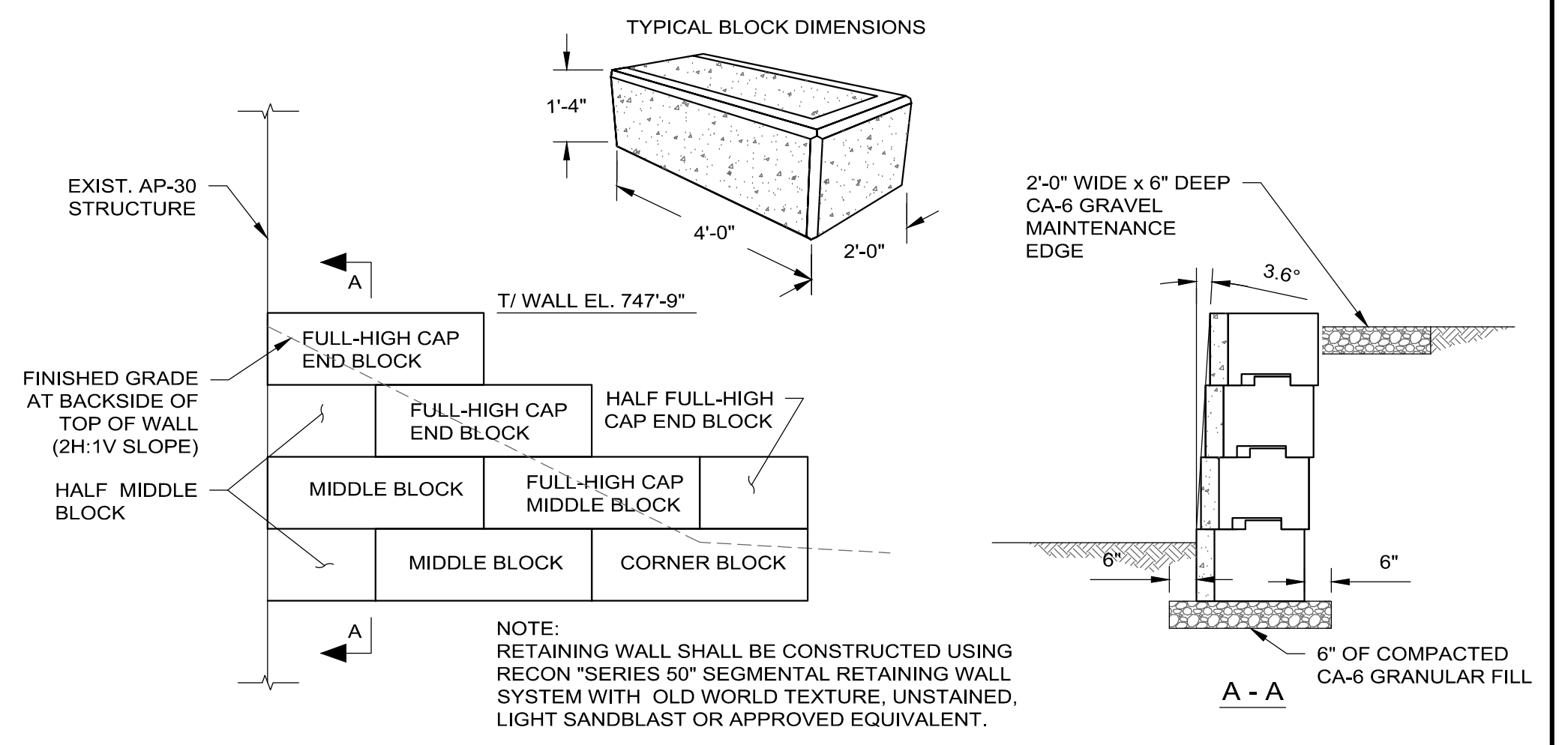
6



SURVEY RISER

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

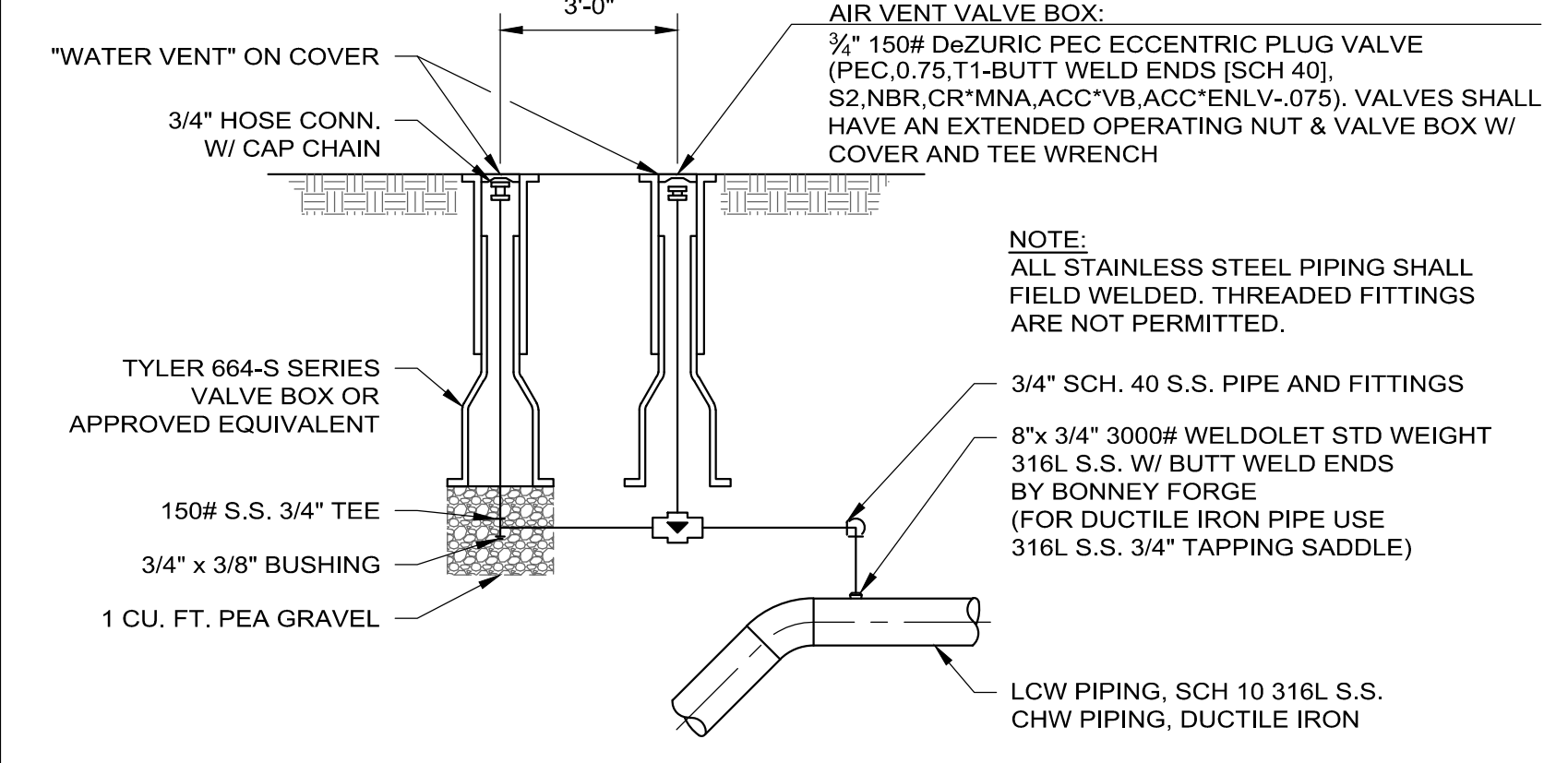
7



GRAVITY WALL

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

8



AIR RELEASE VALVE

SCALE: NTS

4

REV.	DATE	DESCRIPTIONS

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Oak Brook Pointe 700 Commerce Drive, Suite 200 Oak Brook, IL 60523 ph. 630-756-7000 www.middough.com

NAME	DATE
DESIGNED A. JASINSKI	03/03/14
DRAWN K. CUSEN	03/03/14
CHECKED A. VASONIS	03/03/14
APPROVED M. SHRADER	03/03/14
SUBMITTED	

SCALE:

FERMI NATIONAL ACCELERATOR LABORATORY

UNITED STATES DEPARTMENT OF ENERGY

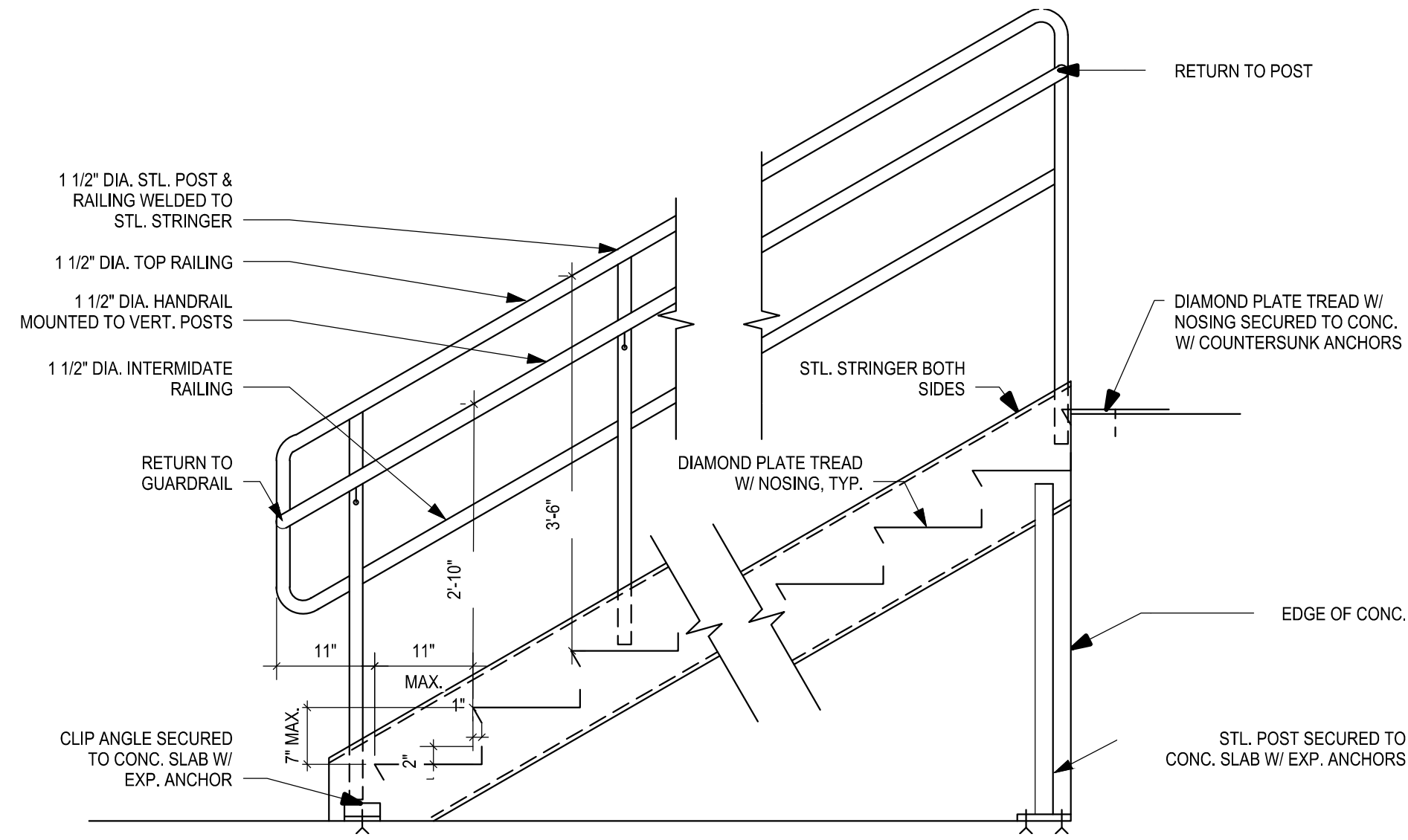
MC BEAMLINE ENCLOSURES

SITE DETAILS

DRAWING NO. **6-10-22** **C-8** REV.

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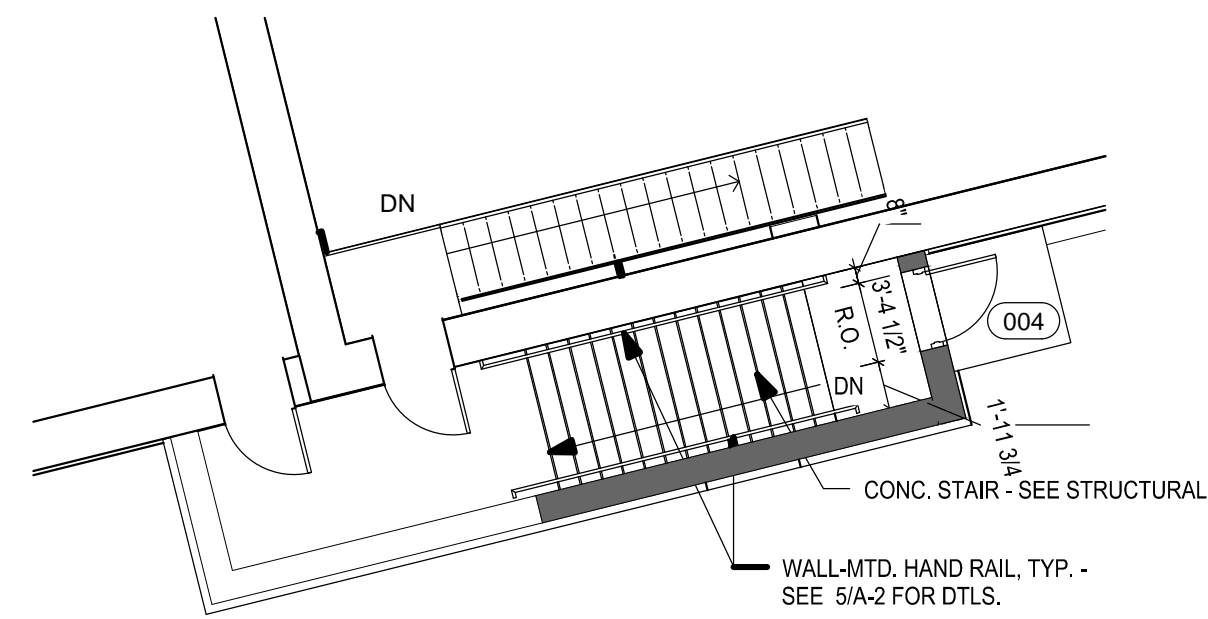
03 MAR 2014 F.I.M.S. No.



REMOVEABLE STAIR SECTION

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

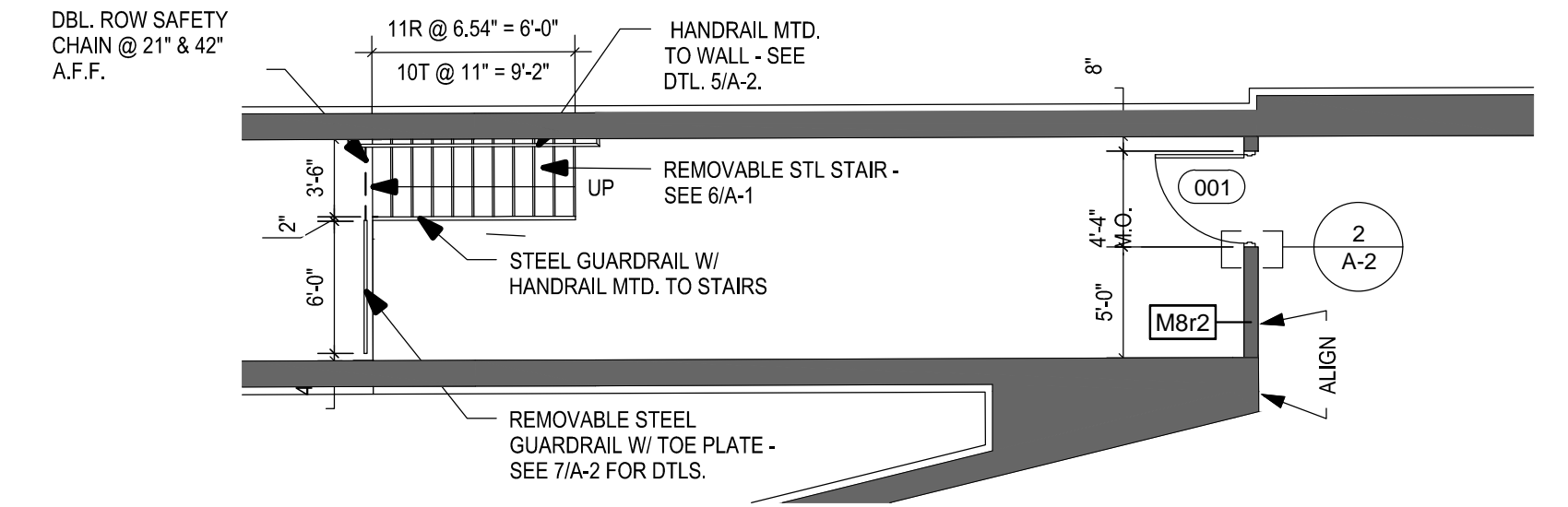
6



ENLARGED PLAN

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

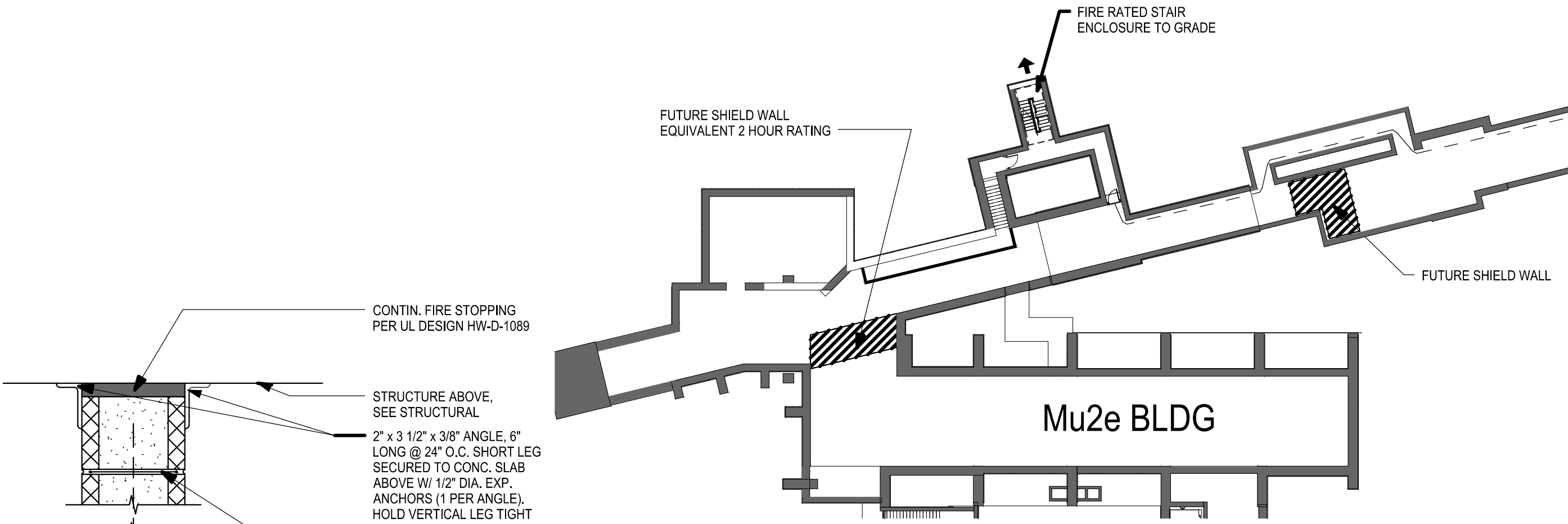
4
A-1



ENLARGED PLAN

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

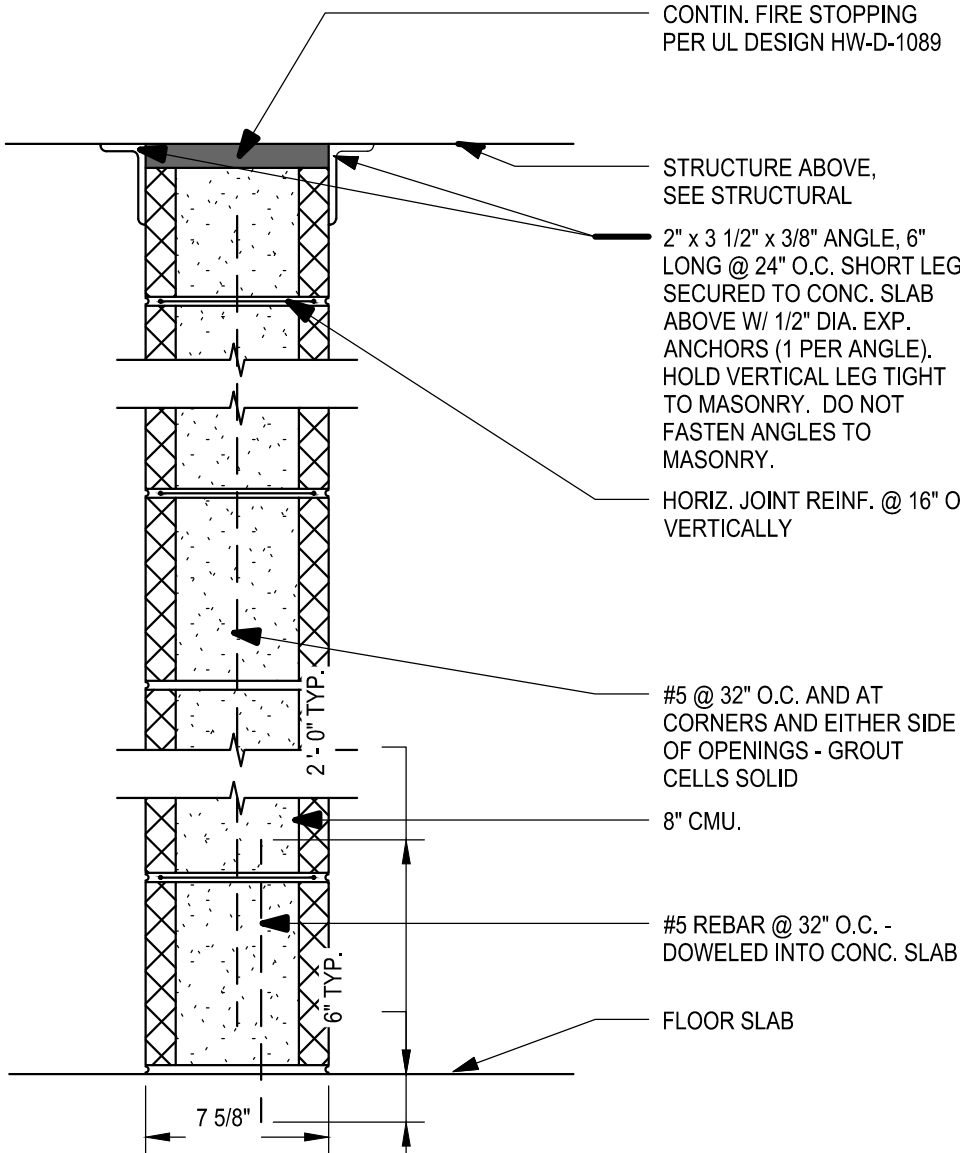
2
A-1



BEAMLINE FLOOR PLAN

SCALE: 1" = 30'-0"

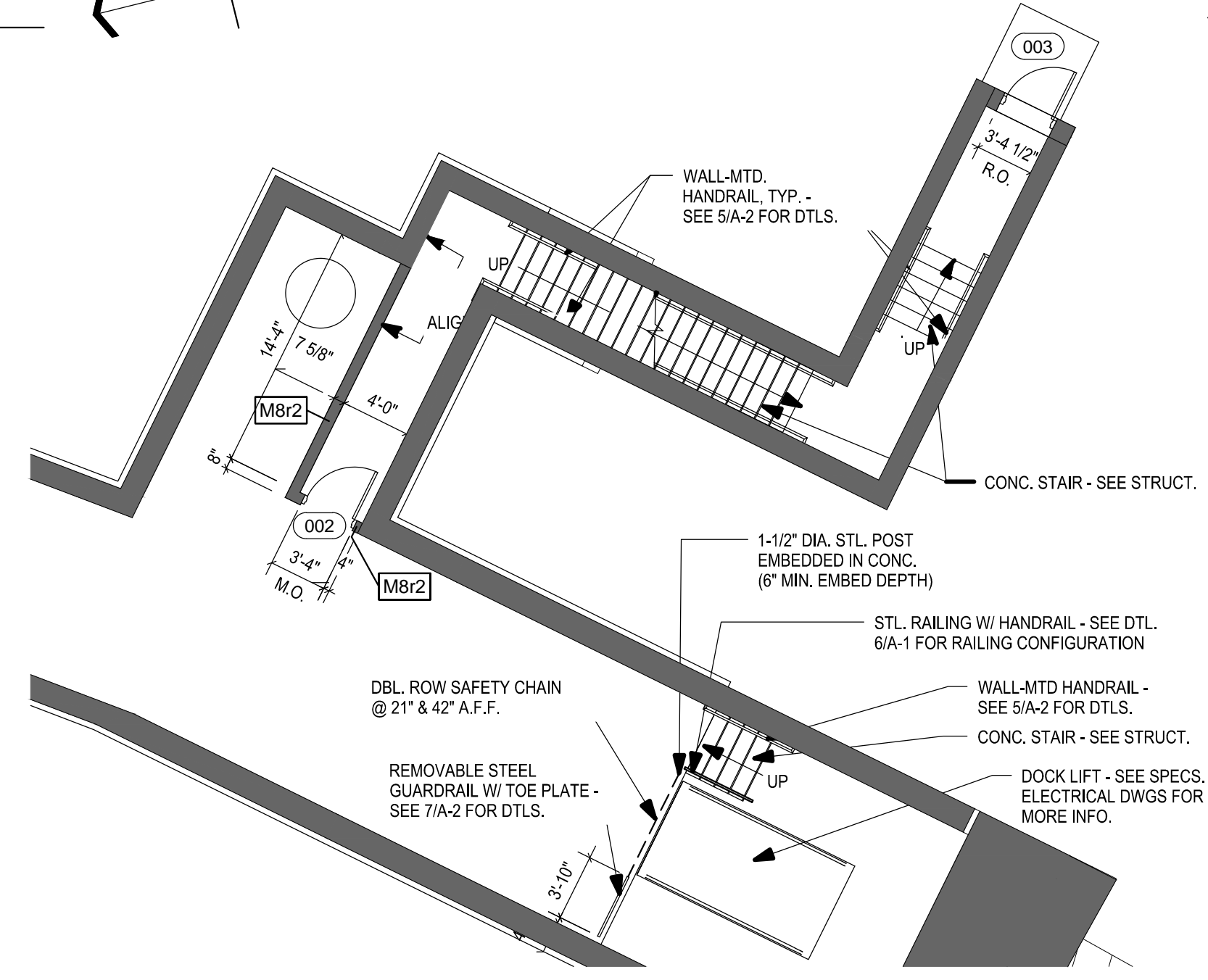
NOTE:
PAINT ALL CONCRETE AND MASONRY WALLS
AND CEILINGS WITHIN PROJECT LIMIT.



PART. TYPE M8r2

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

5



ENLARGED PLAN

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

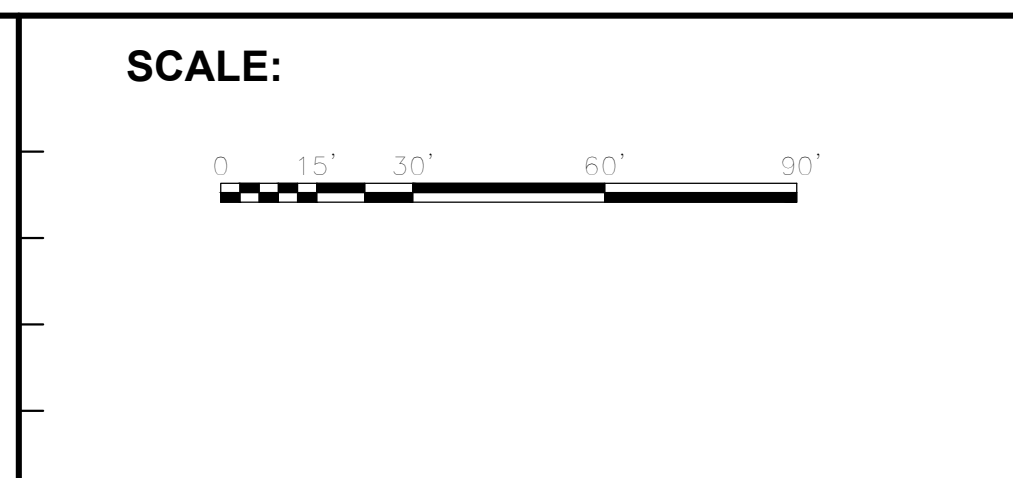
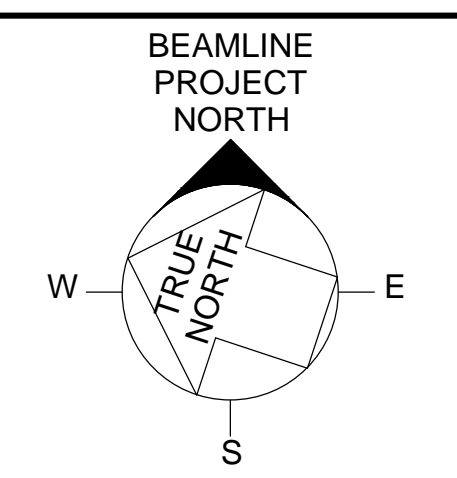
3
A-1

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REV.	DATE	DESCRIPTIONS	REVISIONS

middough
FNA1303
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	NAME	DATE
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DRAWN	T. Soukup	03/03/14
CHECKED	F. Hengge	03/03/14
APPROVED	M. Shrader	03/03/14
SUBMITTED		

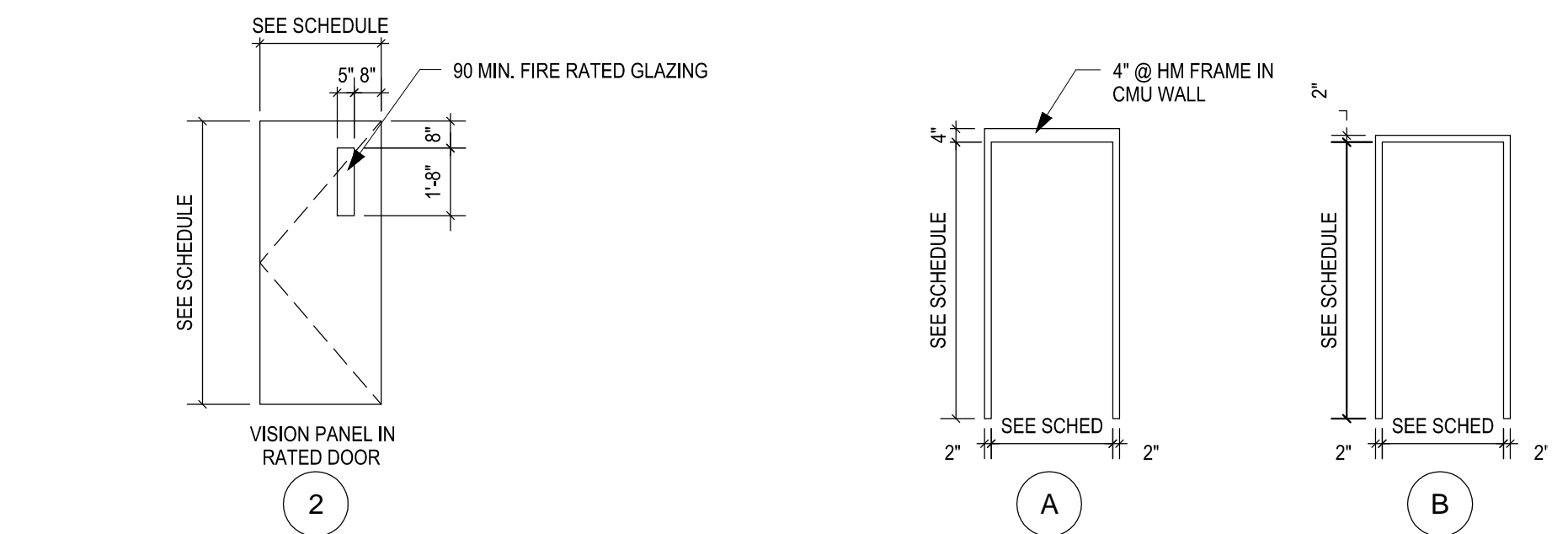


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UNITED STATES DEPARTMENT OF ENERGY
MC BEAMLINE ENCLOSURES
BEAMLINE FLOOR PLAN
DRAWING NO. 6-10-22
A-1 REV.

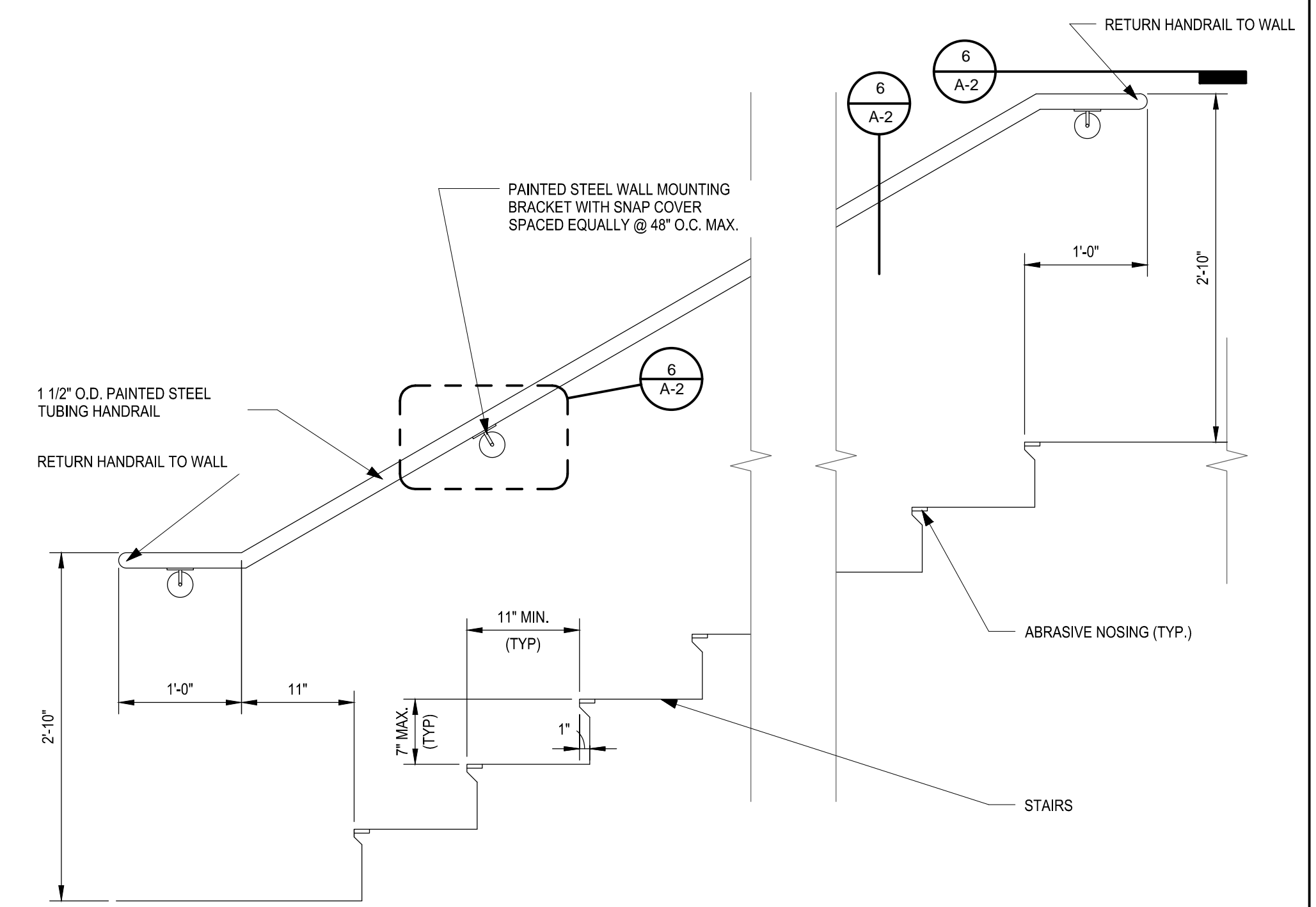
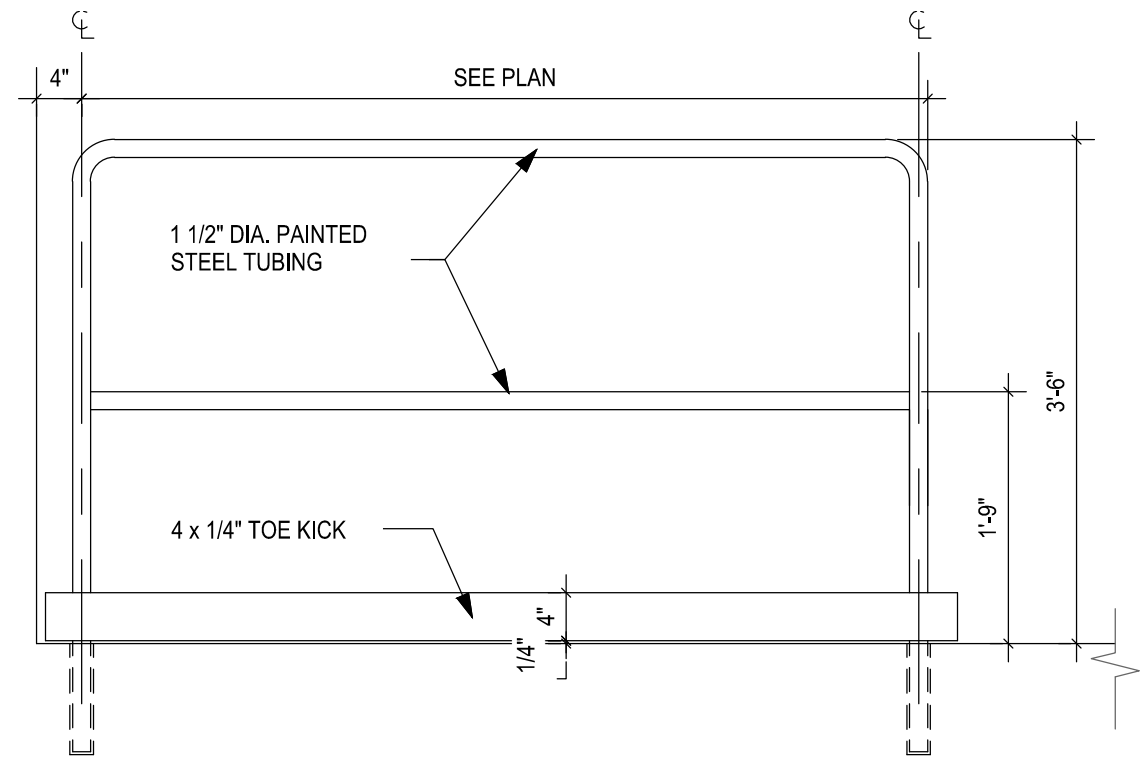
03 MAR 2014

DOOR SCHEDULE																							
NO.	DOOR			SIZE			FRAME			HARDWARE											NO.		
	TYPE	MATERIAL	FINISH	WIDTH	HEIGHT	THICKNESS	TYPE	MATERIAL	FINISH	HEAD	JAMB	GLAZING	FIRE RATING (IN MIN.)	HINGES	LOCKSET	EXIT DEVICE	CLOSER	PROTECTION PLATE - PUSH	PROTECTION PLATE - PULL	STOP		THRESHOLD / WEATHERSTRIP	NOTES
001	2	HM	PT	4'-0"	7'-0"	1 3/4"	A	HM	PT	1/A-2	2/A-2	GL-5	90	H1	L2	-	C1	P1		S1		N1	001
002	2	HM	PT	3'-0"	7'-0"	1 3/4"	A	HM	PT	1/A-2	2/A-2	GL-5	90	H1	L2	E3	C1	P1		S1		N1	002
003	2	HM	PT	3'-0"	7'-0"	1 3/4"	B	HM	PT	3/A-2	4/A-2	GL-5	90	H2	L10	E3	C2	P1			W1,W2,W4,W5	N1, N2	003
004	2	HM	PT	3'-0"	7'-0"	1 3/4"	B	HM	PT	3/A-2	4/A-2	GL-5	90	H2	L10	E3	C2	P1			W1,W2,W4,W5	N1, N2	004

HINGES: H1 HINGES H2 HINGES - WP	EXIT DEVICE: ED RHM EXIT DEVICE	PROTECTION PLATE: P1 WOOD PLATE	THRESHOLD/WEATHERSTRIP: W1 FRAMER/WEATHERSTRIP W2 EXTERIOR THRESHOLD W3 RAN DRIP W4 RAN DRIP W5 DOOR SWEEP	NOTES: N1 CALL DOOR & FRAME N2 INSULATED DOOR	LEGEND: HM YELLOW METAL PT PAINTED
LOCKSETS: L2 PRSSAGE L10 EXIT ONLY - NO EXTERIOR TRM	CLOSER: C1 CLOSER C2 CLOSER W/ STOP	STOP: S1 WALL STOP	GLAZING: GL-5 90 MIN. FIRE RATED		



ELEVATION

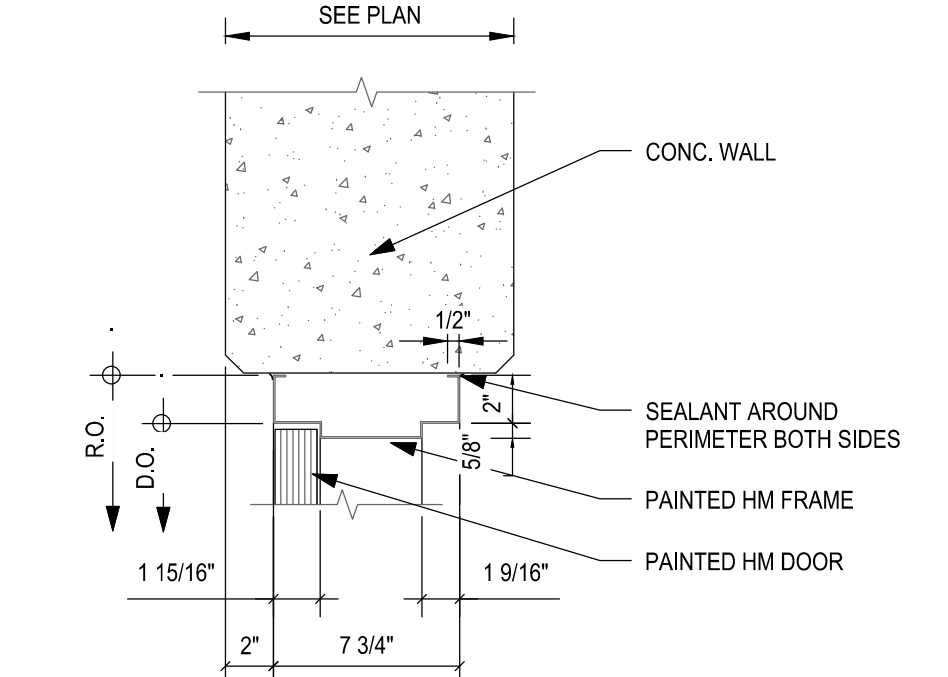


DOOR TYPE LEGEND

FRAME TYPE LEGEND

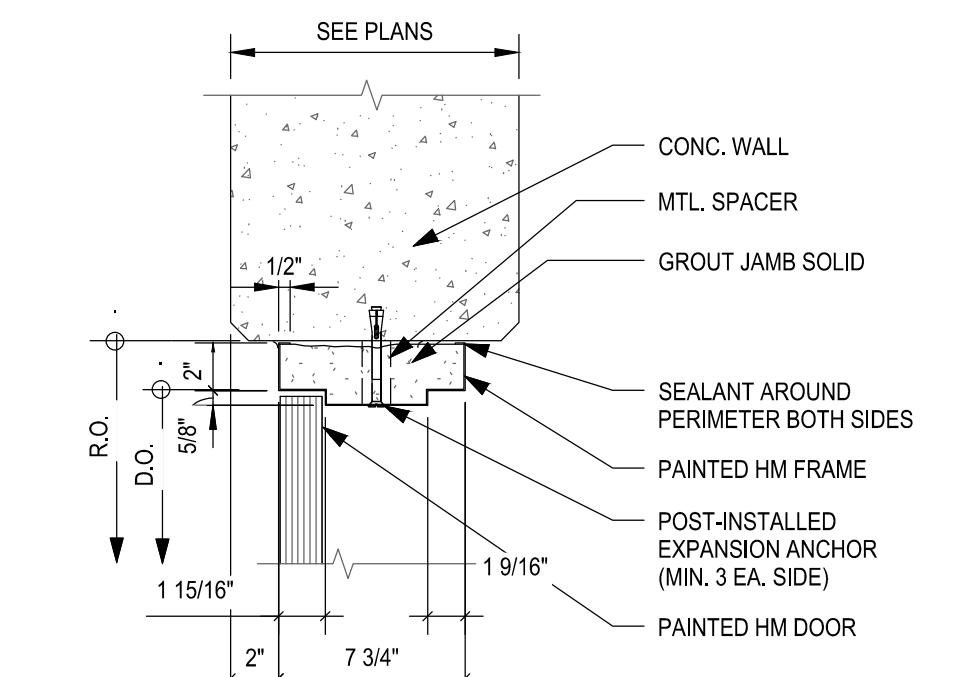
SCALE: 1/4" = 1'-0"

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



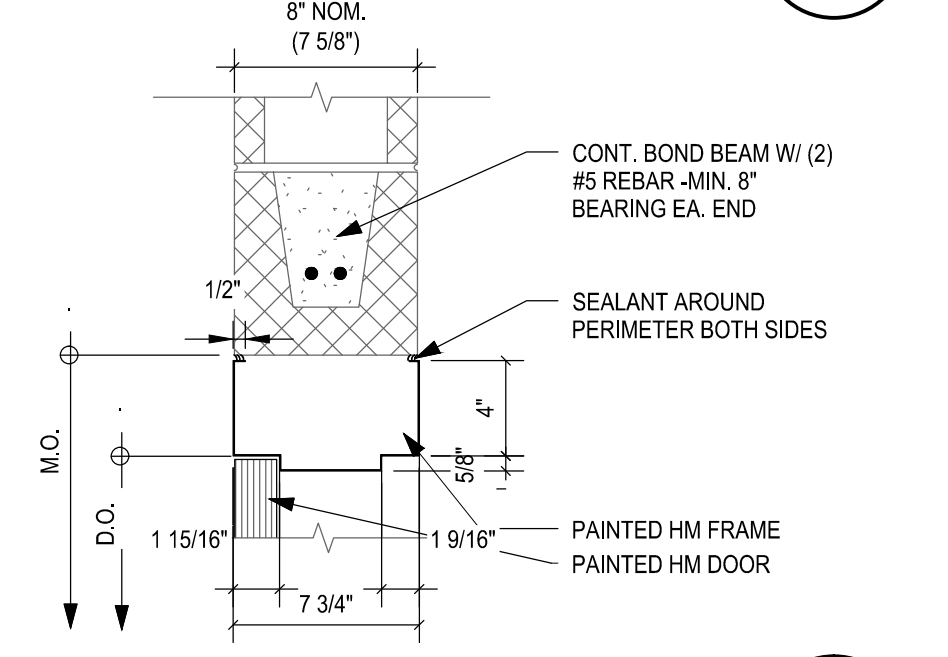
HEAD - CONG

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



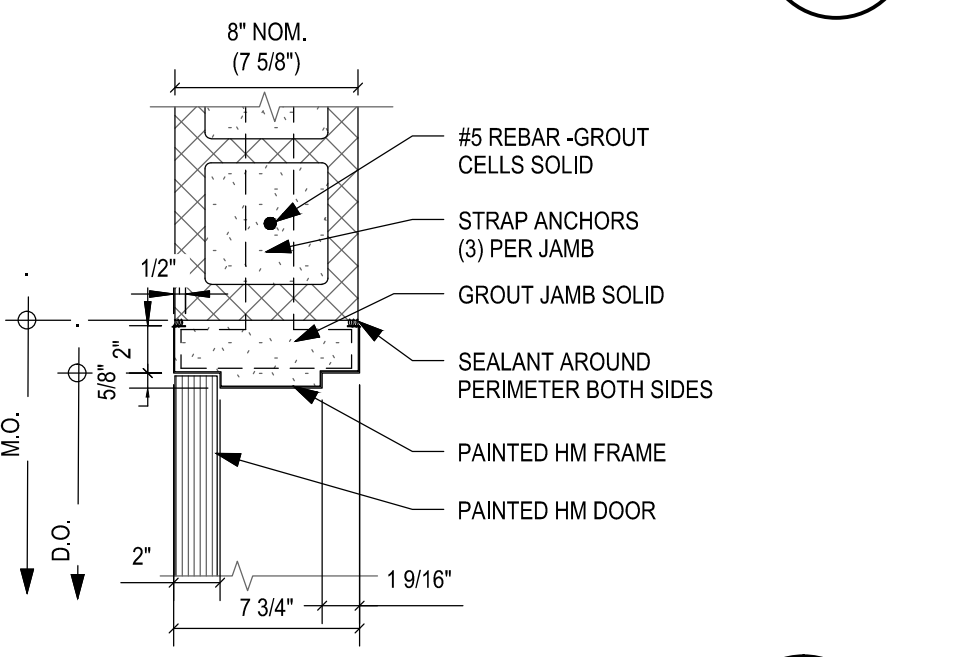
JAMB - CONG

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



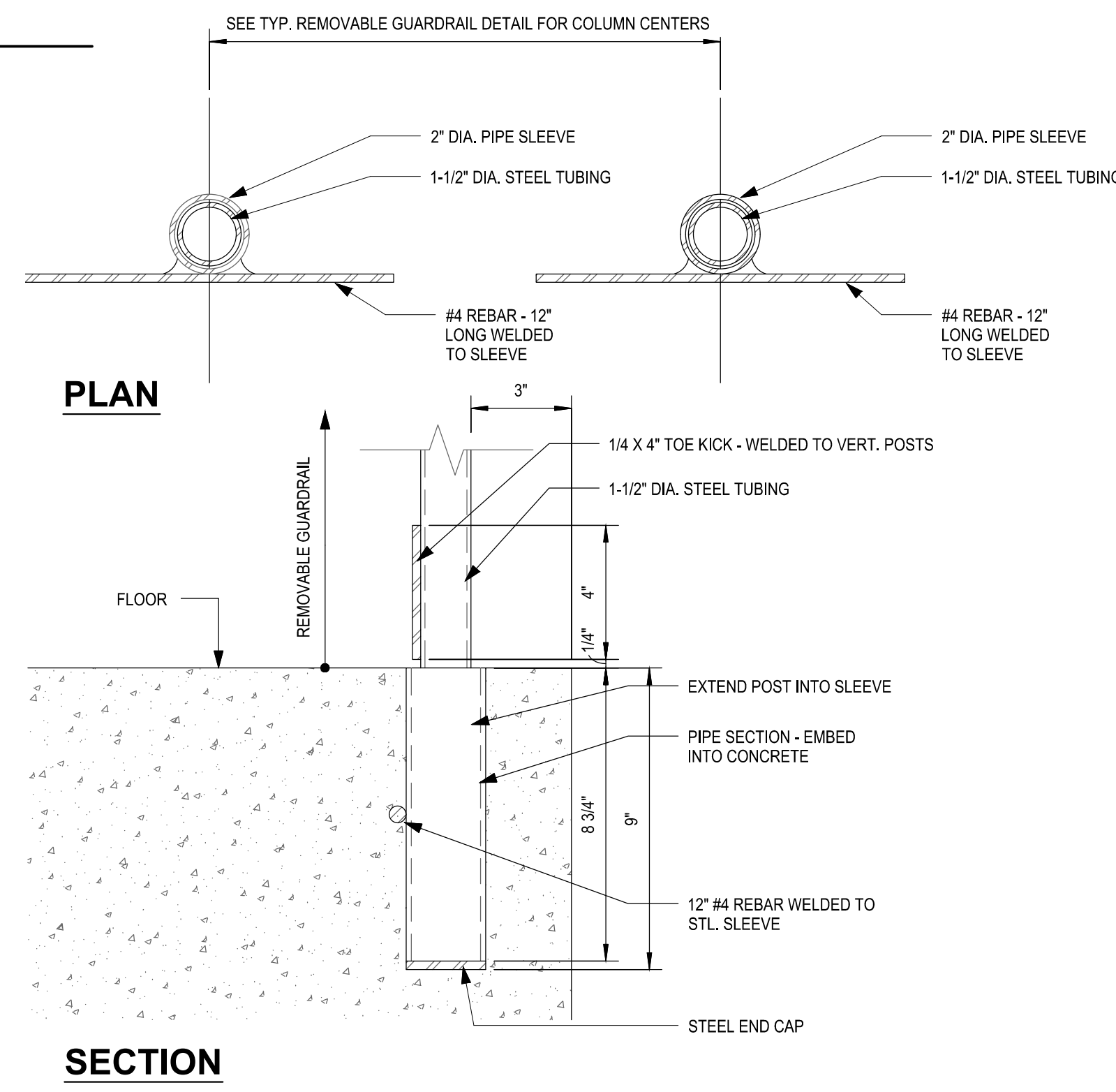
HEAD - CMU

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



JAMB - CMU

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

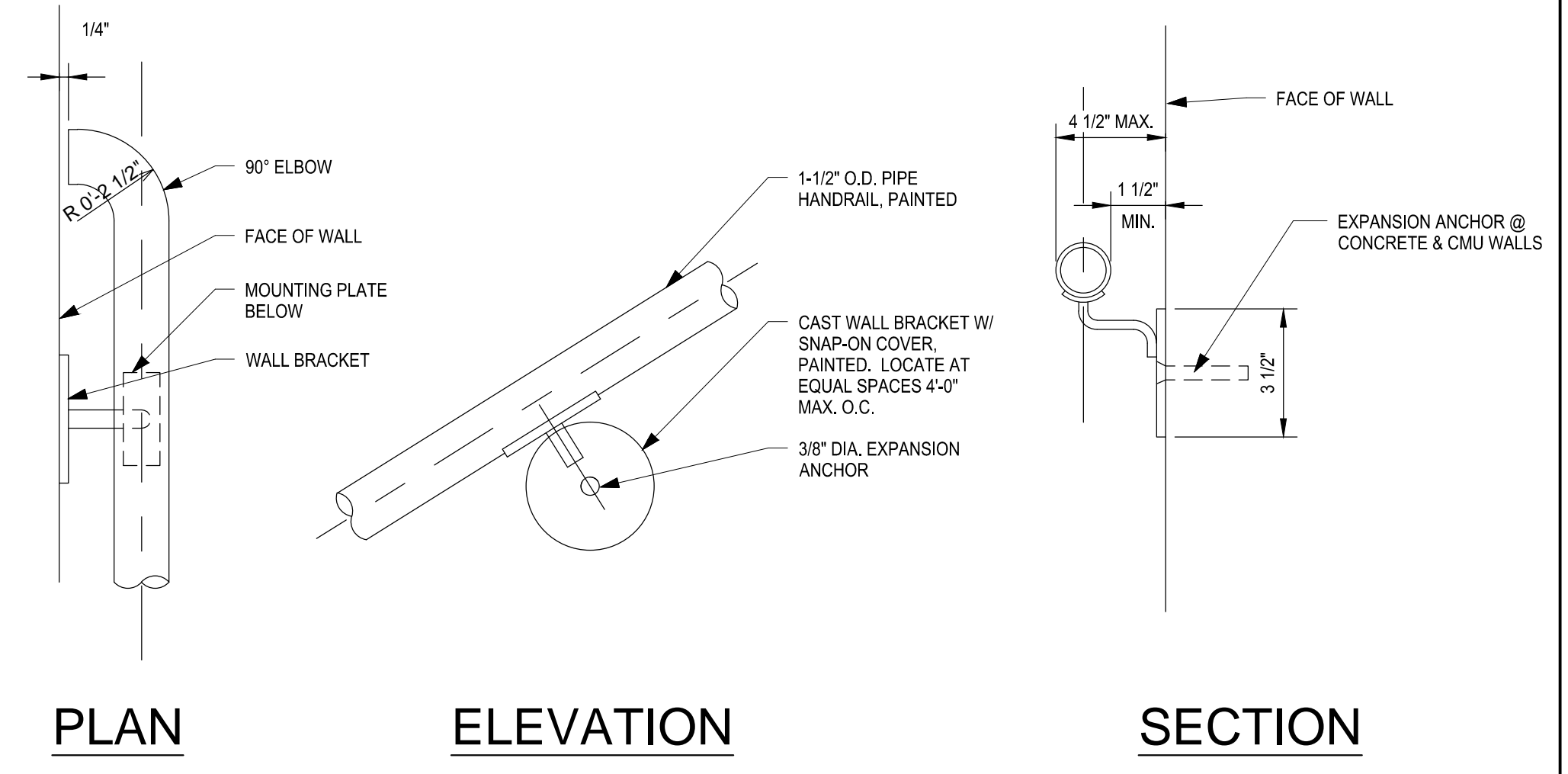


RAILING POST - REMOVABLE

SCALE: 3" = 1'-0"

TYP. WALL-MOUNTED HANDRAIL

SCALE: 1" = 1'-0"



TYP. HANDRAIL DETAILS

SCALE: 3" = 1'-0"

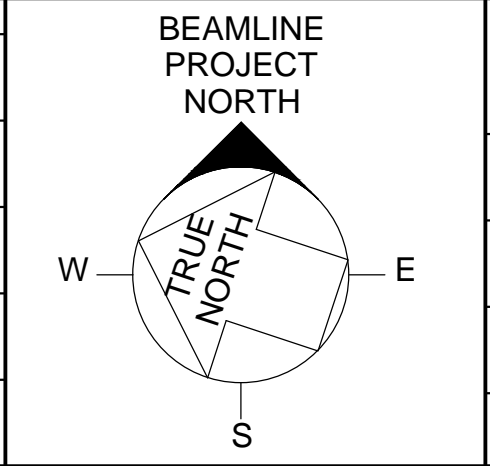
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REV.	DATE	DESCRIPTIONS	REVISIONS

middough
FNA1303

Oak Brook Pointe 700 Commerce Drive, Suite 200 Oak Brook, IL 60523
ph. 630-756-7000 www.middough.com fx. 630-756-7001

	NAME	DATE
DESIGNED	T. Soukup	03/03/14
DRAWN	T. Soukup	03/03/14
CHECKED	F. Hengge	03/03/14
APPROVED	M. Shrader	03/03/14
SUBMITTED		



SCALE:

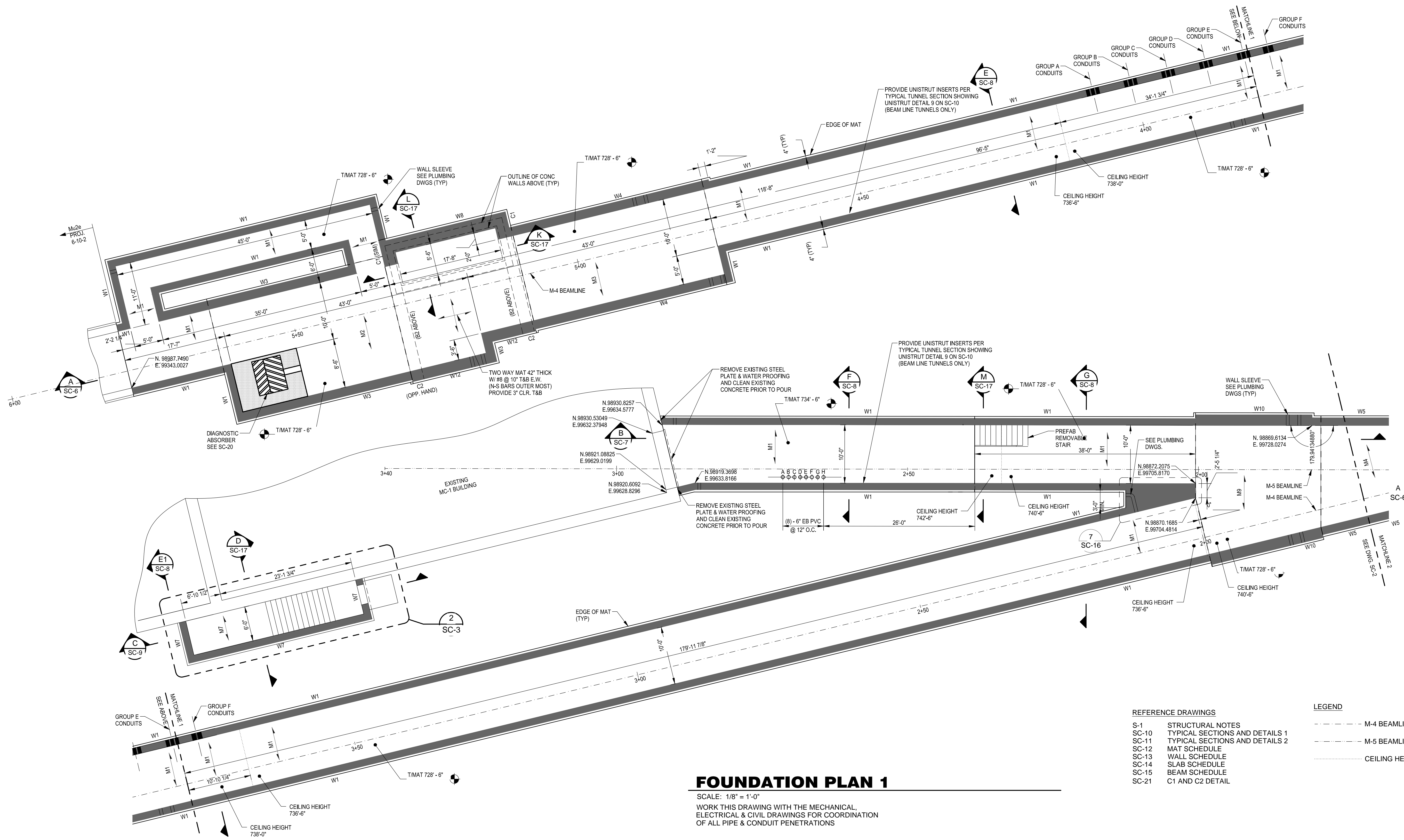
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UNITED STATES DEPARTMENT OF ENERGY

**MC BEAMLINE ENCLOSURES
DOOR SCHEDULE & DETAILS**

DRAWING NO. 6-10-22 A-2 REV.

03 MAR 2014

Jun 03, 2014 - 9:22am M:\Active Projects\6101223 - Final Design\Drawings\Middough issued for proposal\SC-1_6-1022.dwg




FOUNDATION PLAN 1

SCALE: 1/8" = 1'-0"
 WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS

- | | | | |
|---------------------------|--------------------------------|---------------|-----------------------|
| REFERENCE DRAWINGS | | LEGEND | |
| S-1 | STRUCTURAL NOTES | --- | M-4 BEAMLINE |
| SC-10 | TYPICAL SECTIONS AND DETAILS 1 | --- | M-5 BEAMLINE |
| SC-11 | TYPICAL SECTIONS AND DETAILS 2 | --- | CEILING HEIGHT CHANGE |
| SC-12 | MAT SCHEDULE | | |
| SC-13 | WALL SCHEDULE | | |
| SC-14 | SLAB SCHEDULE | | |
| SC-15 | BEAM SCHEDULE | | |
| SC-21 | C1 AND C2 DETAIL | | |

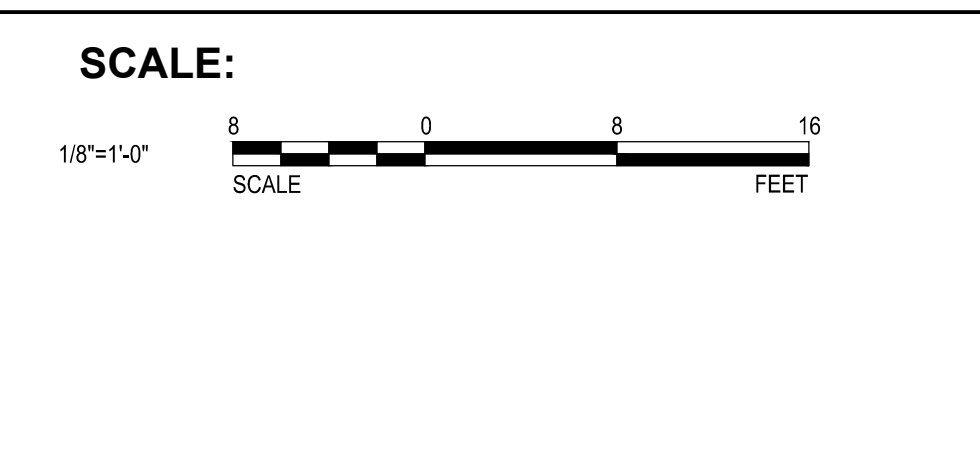
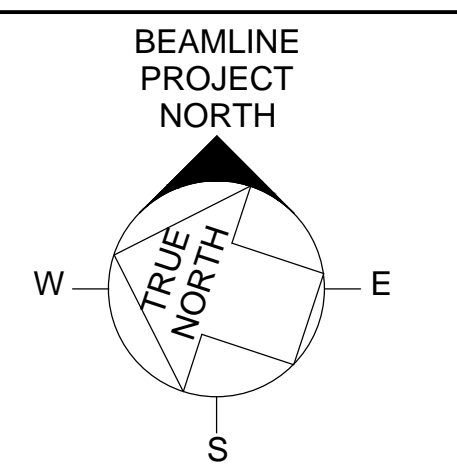
REV.	DATE	DESCRIPTIONS



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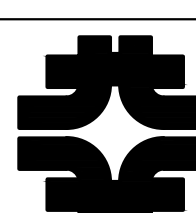
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	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



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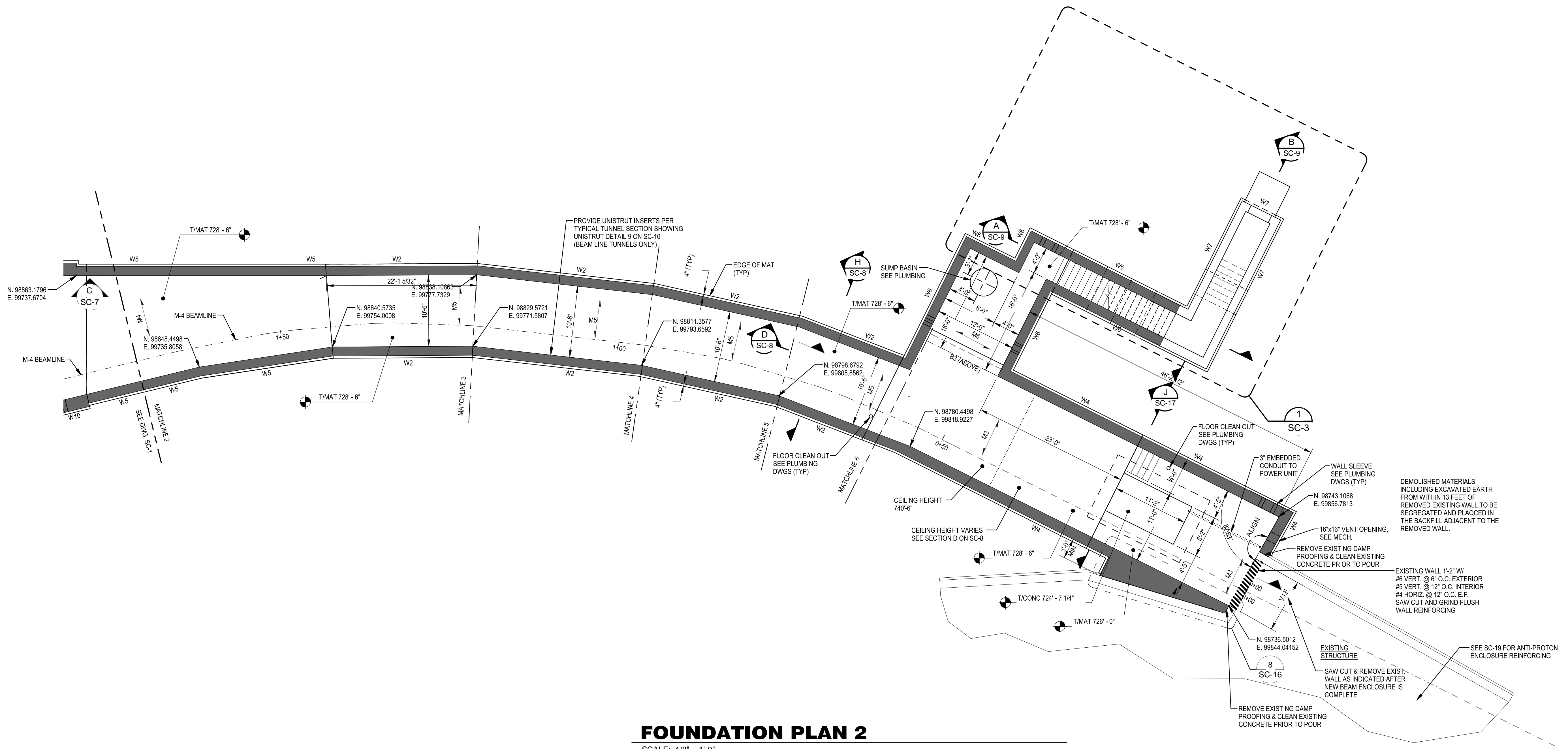


MC BEAMLINE ENCLOSURES

FOUNDATION PLAN 1

DRAWING NO. 6-10-22 SC-1 REV.

03 MAR 2014



FOUNDATION PLAN 2

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

WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS

- REFERENCE DRAWINGS**
- S-1 STRUCTURAL NOTES
 - SC-10 TYPICAL SECTIONS AND DETAILS 1
 - SC-11 TYPICAL SECTIONS AND DETAILS 2
 - SC-12 MAT SCHEDULE
 - SC-13 WALL SCHEDULE
 - SC-14 SLAB SCHEDULE
 - SC-15 BEAM SCHEDULE
- LEGEND**
- - - - - M-4 BEAMLINE
 - - - - - M-5 BEAMLINE
 - CEILING HEIGHT CHANGE

Jun 03, 2014 - 9:24am M:\Active Projects\6102213 - Final Design\Drawings\Middough for proposal\SC-2_6-10-22.dwg

REV.	DATE	DESCRIPTIONS



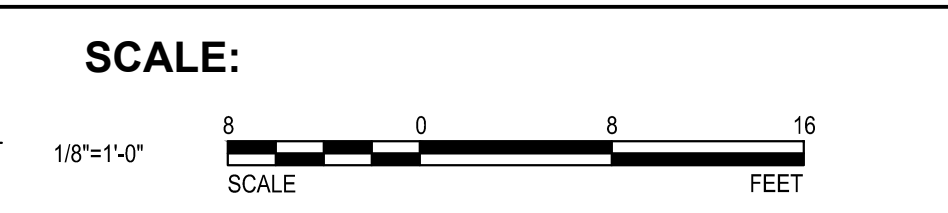
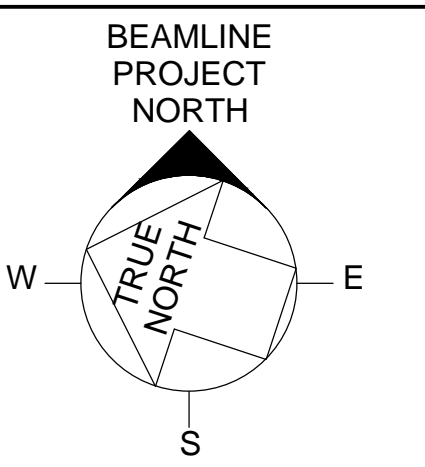
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	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

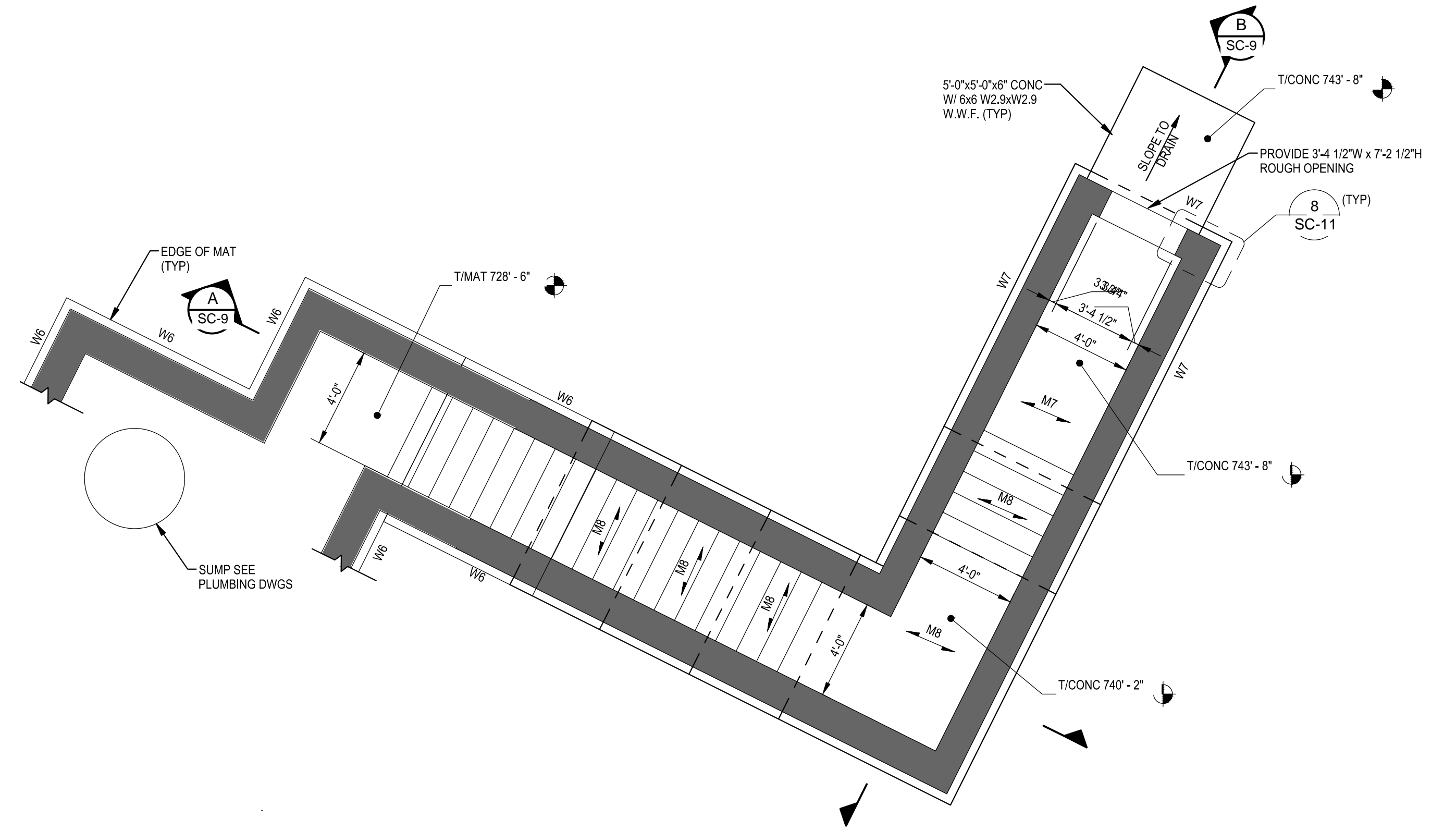


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MC BEAMLINE ENCLOSURES
FOUNDATION PLAN 2

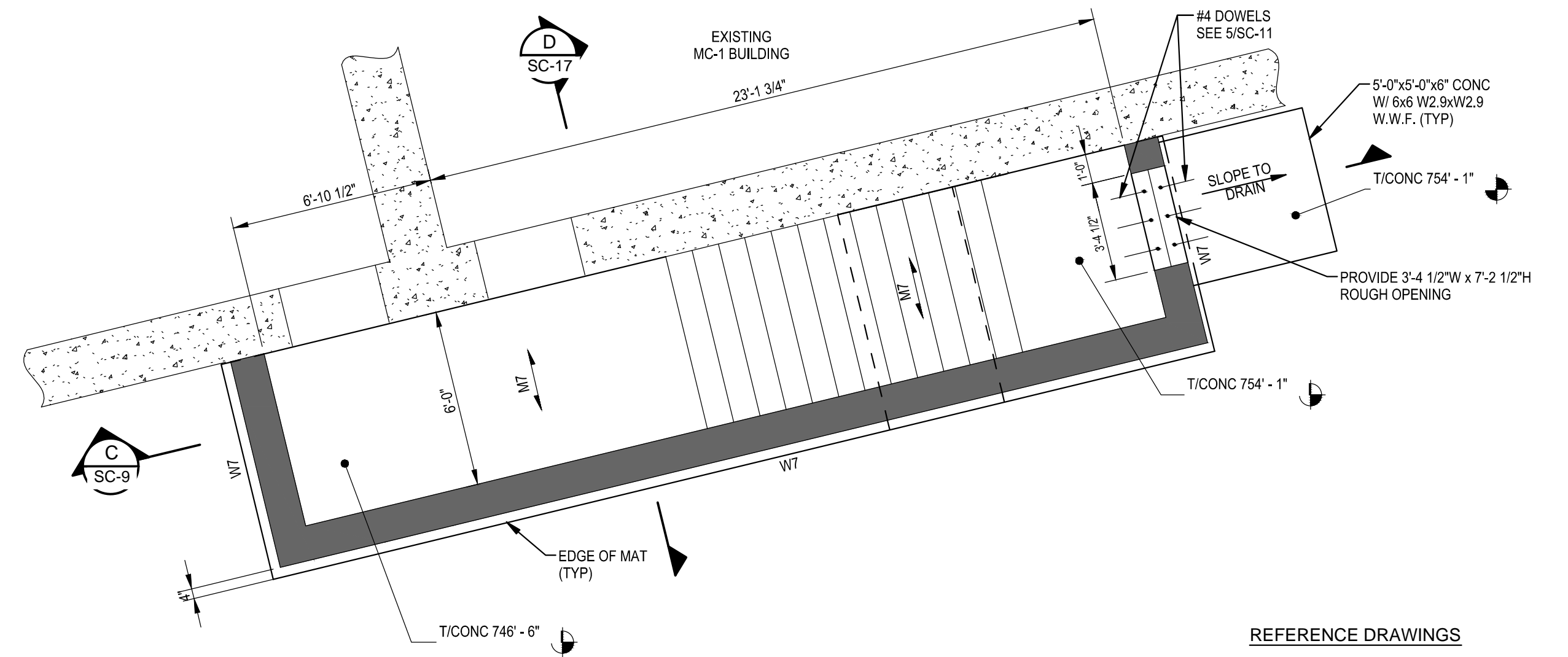
DRAWING NO. **6-10-22** SC-2 REV.

03 MAR 2014



STAIR PLAN 1

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



STAIR PLAN 2

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

REFERENCE DRAWINGS

S-1	STRUCTURAL NOTES
SC-10	TYPICAL SECTIONS AND DETAILS 1
SC-11	TYPICAL SECTIONS AND DETAILS 2
SC-12	MAT SCHEDULE
SC-13	WALL SCHEDULE
SC-14	SLAB SCHEDULE
SC-15	BEAM SCHEDULE

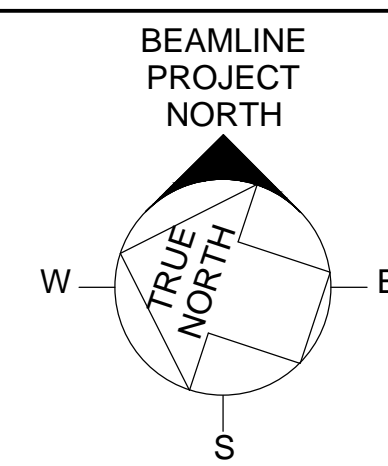
WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS



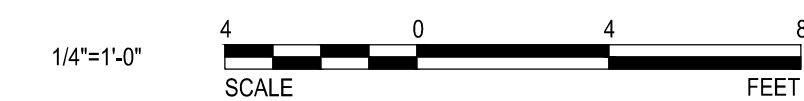
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	NAME	DATE
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DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

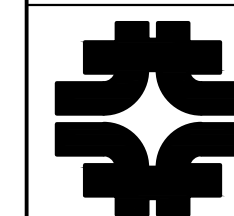


SCALE:



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UNITED STATES DEPARTMENT OF ENERGY

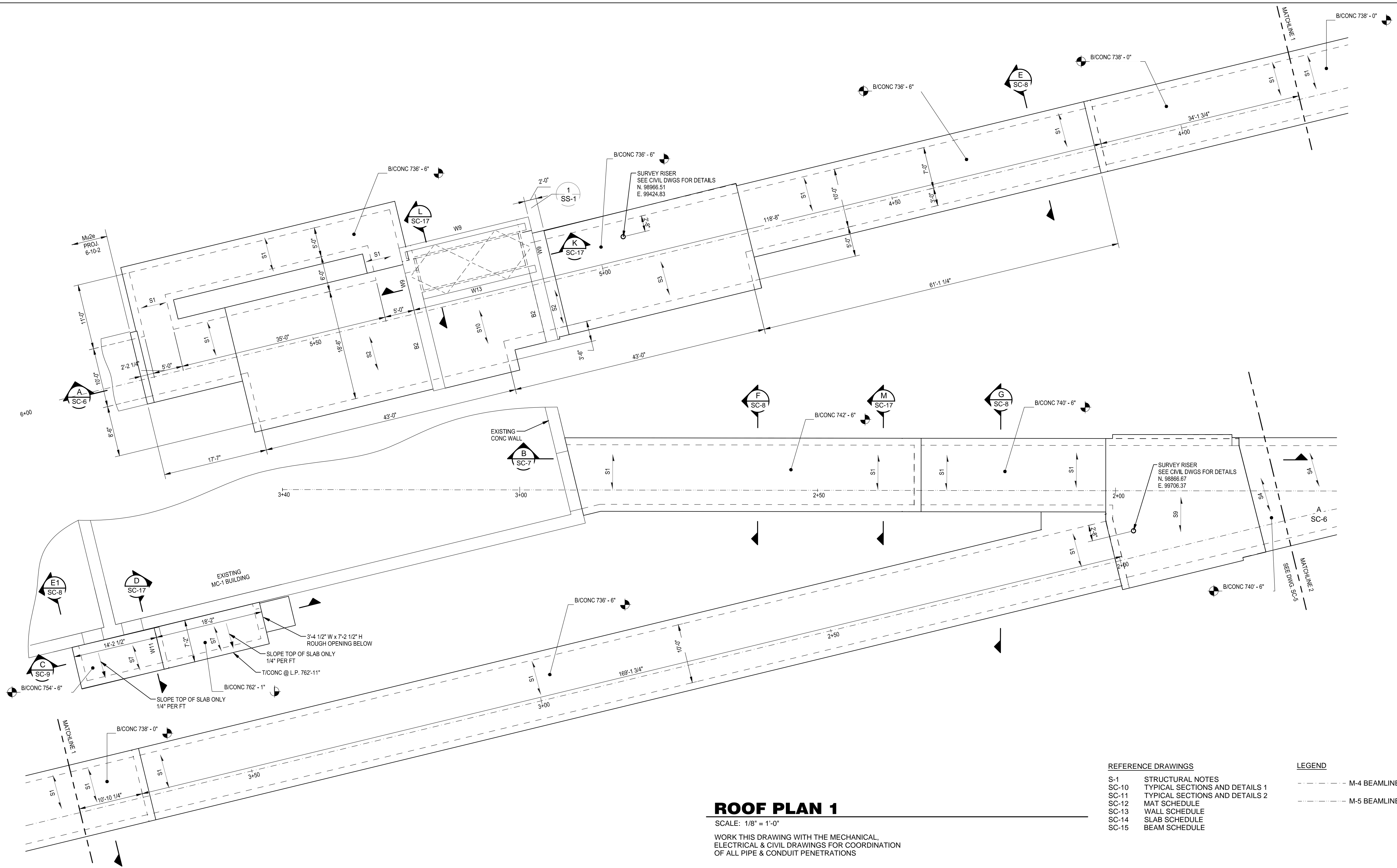


MC BEAMLINE ENCLOSURES
 STAIR PLANS

DRAWING NO. 6-10-22

SC-3 REV.

Jun 03, 2014 - 9:28am M:\Active Projects\6102213 - Final Design\Drawings\Middough Issued for proposal\SC-4_6-10-22.dwg



ROOF PLAN 1

SCALE: 1/8" = 1'-0"
 WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS

REFERENCE DRAWINGS		LEGEND
S-1	STRUCTURAL NOTES	--- M-4 BEAMLINE
SC-10	TYPICAL SECTIONS AND DETAILS 1	--- M-5 BEAMLINE
SC-11	TYPICAL SECTIONS AND DETAILS 2	
SC-12	MAT SCHEDULE	
SC-13	WALL SCHEDULE	
SC-14	SLAB SCHEDULE	
SC-15	BEAM SCHEDULE	

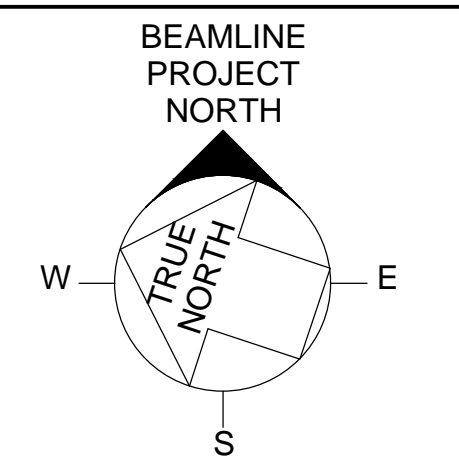
REV.	DATE	DESCRIPTIONS



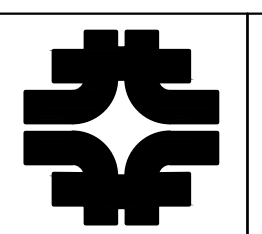
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	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



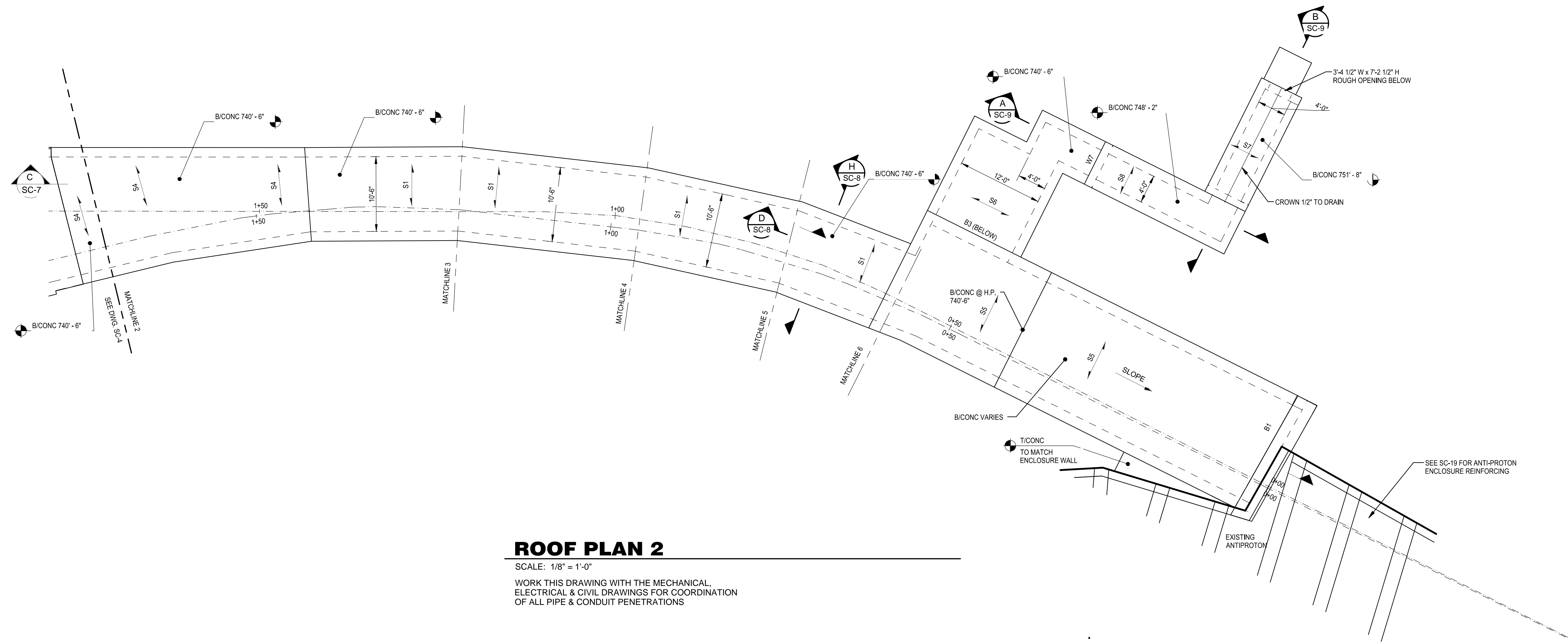
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MC BEAMLINE ENCLOSURES
 ROOF PLAN 1

DRAWING NO. 6-10-22 SC-4 REV.

03 MAR 2014



ROOF PLAN 2
 SCALE: 1/8" = 1'-0"
 WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS

- REFERENCE DRAWINGS**
- S-1 STRUCTURAL NOTES
 - SC-10 TYPICAL SECTIONS AND DETAILS 1
 - SC-11 TYPICAL SECTIONS AND DETAILS 2
 - SC-12 MAT SCHEDULE
 - SC-13 WALL SCHEDULE
 - SC-14 SLAB SCHEDULE
 - SC-15 BEAM SCHEDULE
- LEGEND**
- - - - - M-4 BEAMLINE
 - - - - - M-5 BEAMLINE



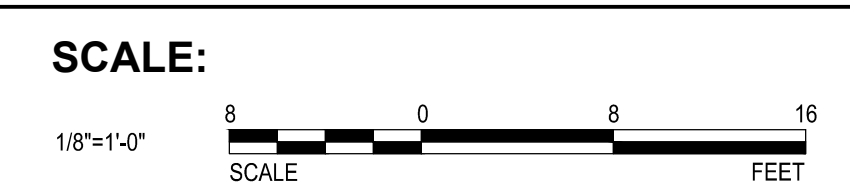
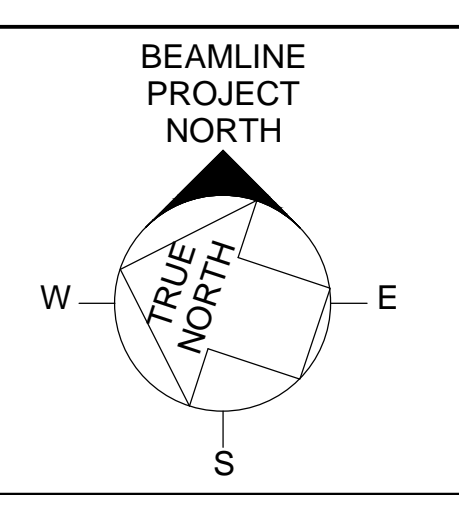
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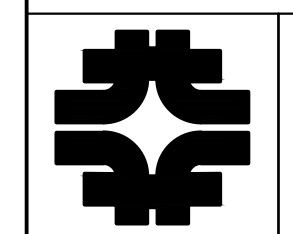
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	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



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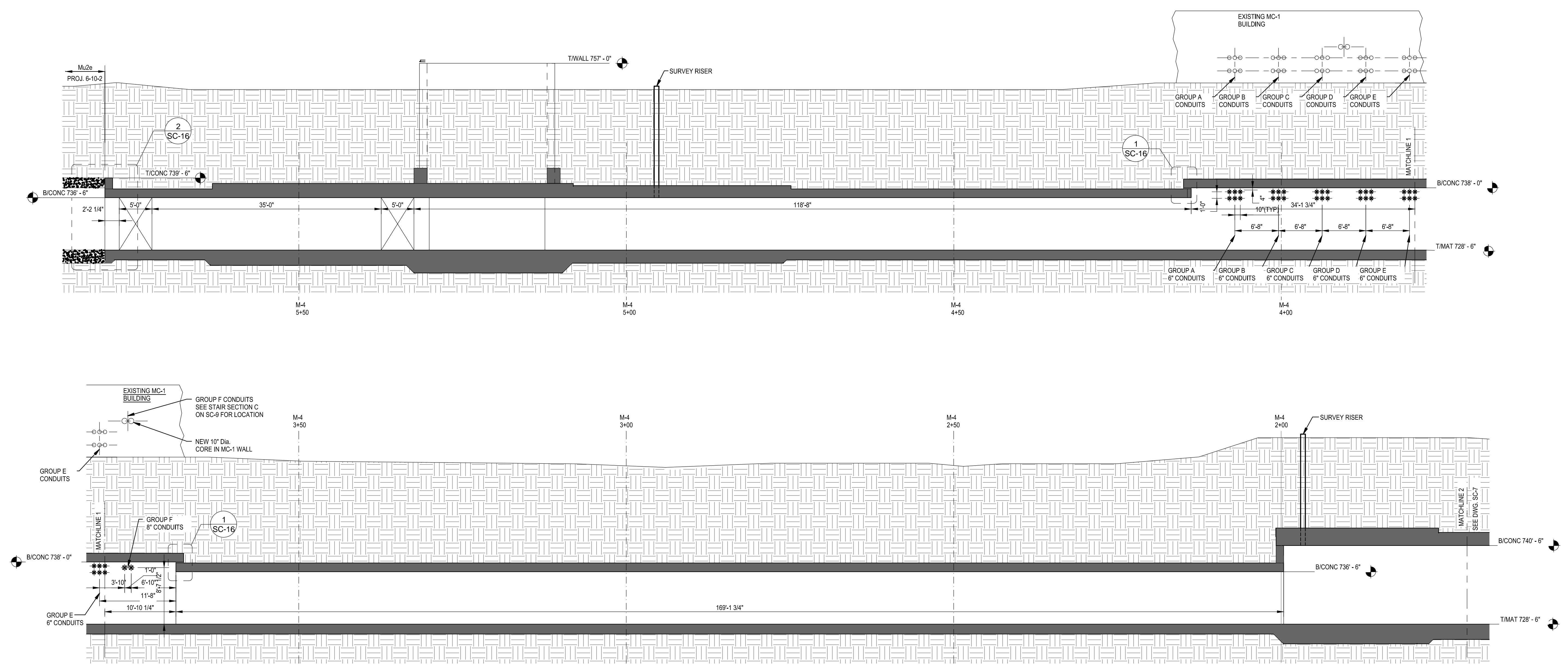
MC BEAMLINE ENCLOSURES
 ROOF PLAN 2

DRAWING NO. 6-10-22 SC-5 REV.

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03 MAR 2014

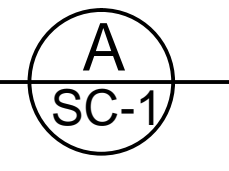
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SECTION A

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

WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS



- REFERENCE DRAWINGS**
- S-1 STRUCTURAL NOTES
 - SC-10 TYPICAL SECTIONS AND DETAILS 1
 - SC-11 TYPICAL SECTIONS AND DETAILS 2
 - SC-12 MAT SCHEDULE
 - SC-13 WALL SCHEDULE
 - SC-14 SLAB SCHEDULE
 - SC-15 BEAM SCHEDULE

REV.	DATE	DESCRIPTIONS



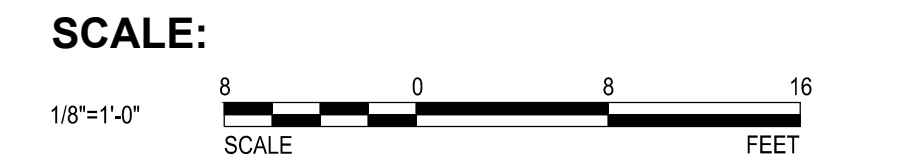
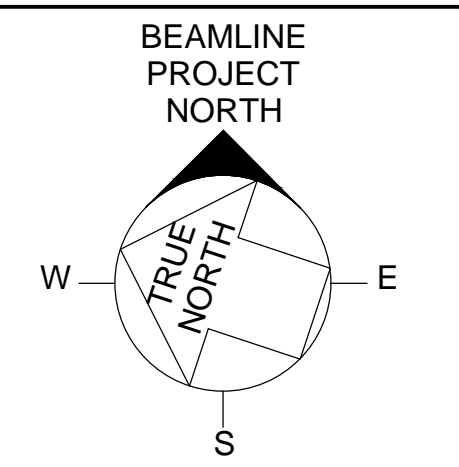
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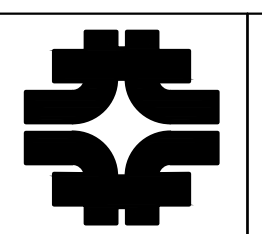
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	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



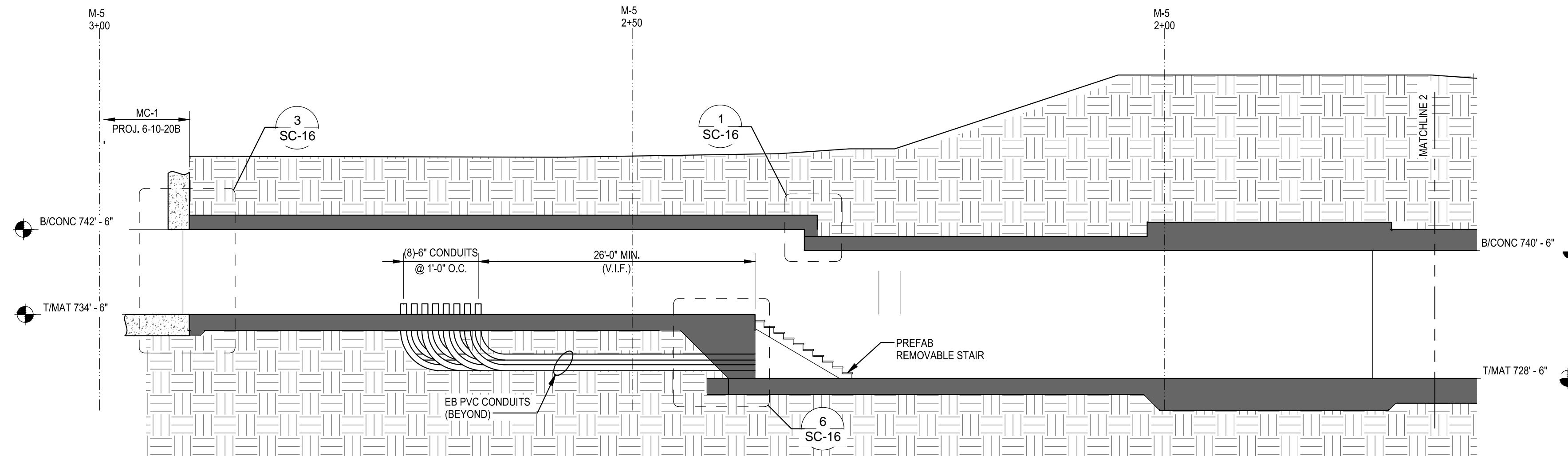
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MC BEAMLINE ENCLOSURES
SECTIONS 1

DRAWING NO. **6-10-22** SC-6 REV.

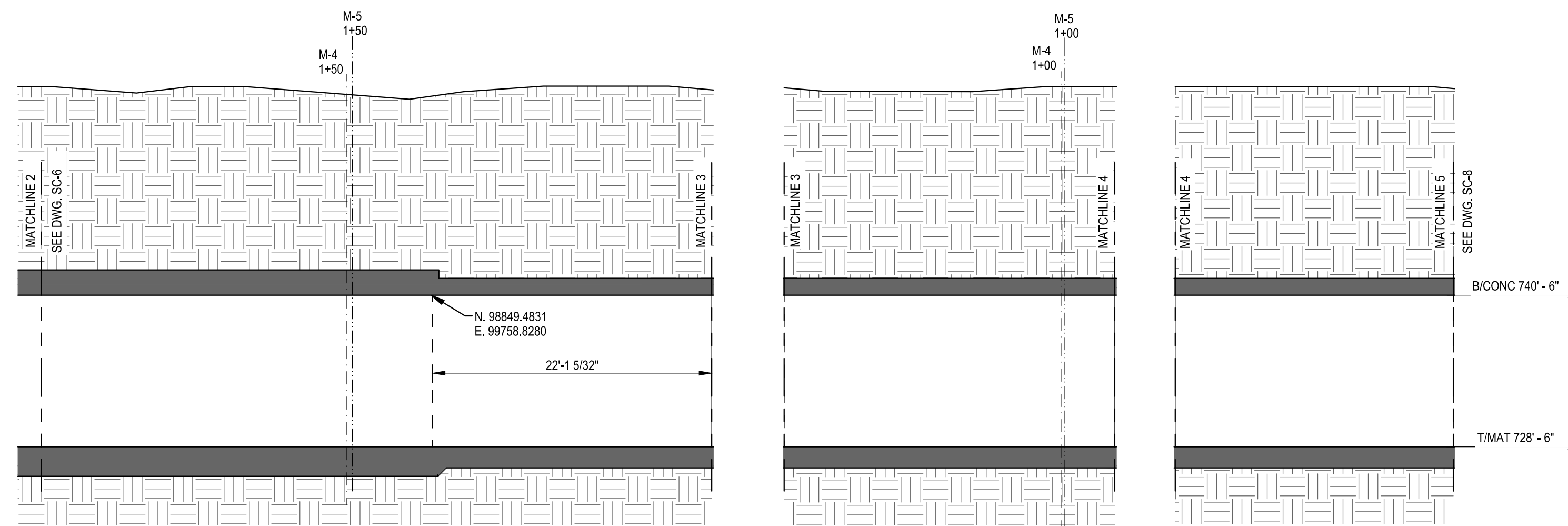
03 MAR 2014



SECTION B

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

B
SC-1



SECTION C

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

WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS

C
SC-2

REFERENCE DRAWINGS

- S-1 STRUCTURAL NOTES
- SC-10 TYPICAL SECTIONS AND DETAILS 1
- SC-11 TYPICAL SECTIONS AND DETAILS 2
- SC-12 MAT SCHEDULE
- SC-13 WALL SCHEDULE
- SC-14 SLAB SCHEDULE
- SC-15 BEAM SCHEDULE



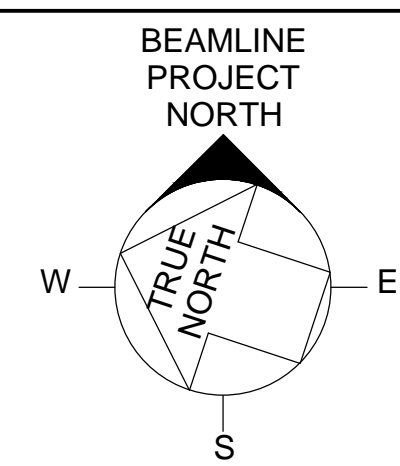
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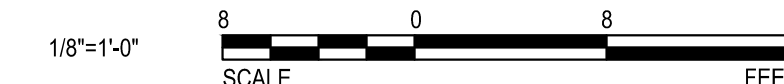
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fx. 630-756-7001

	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

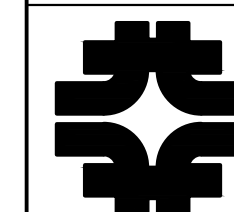


SCALE:



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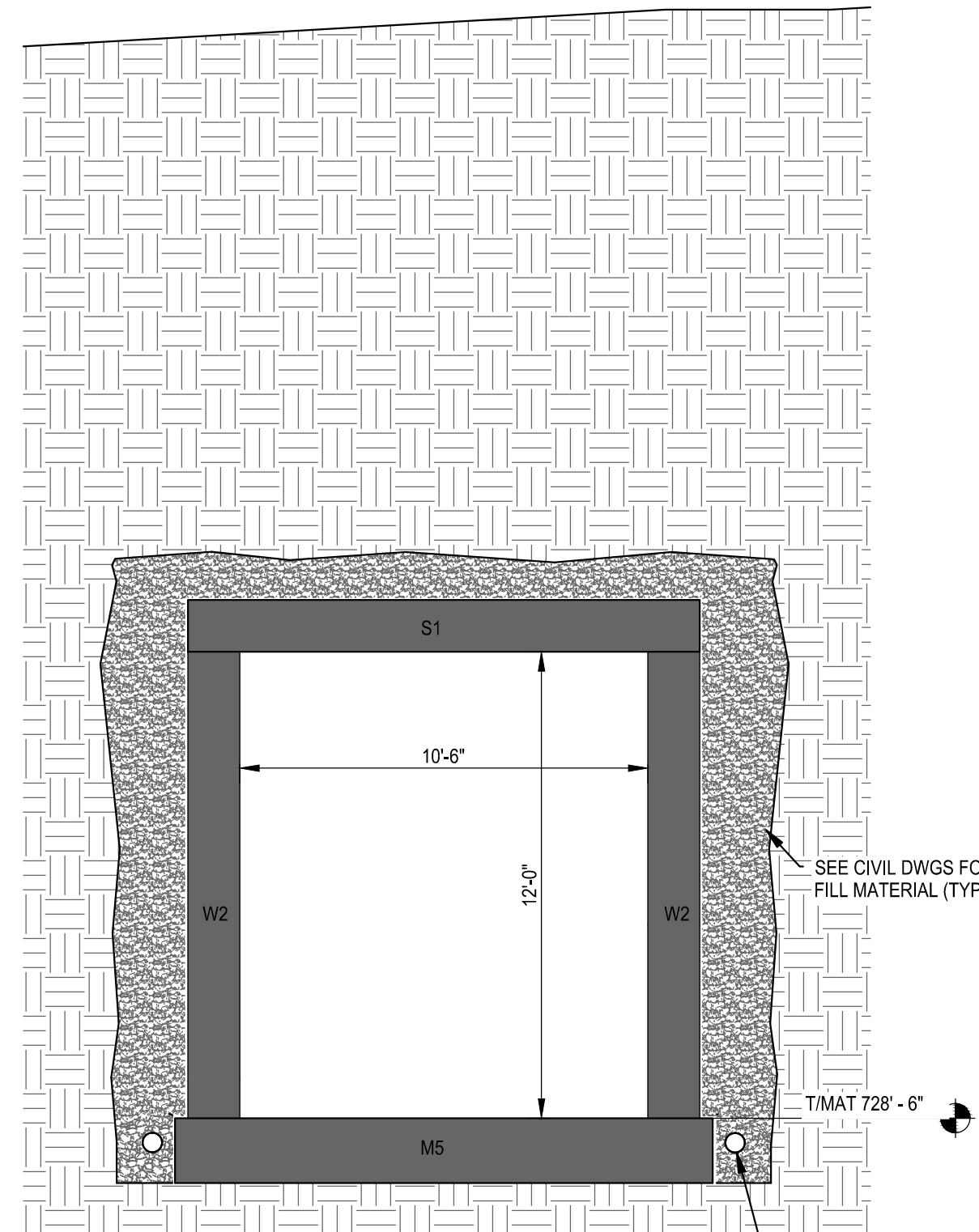
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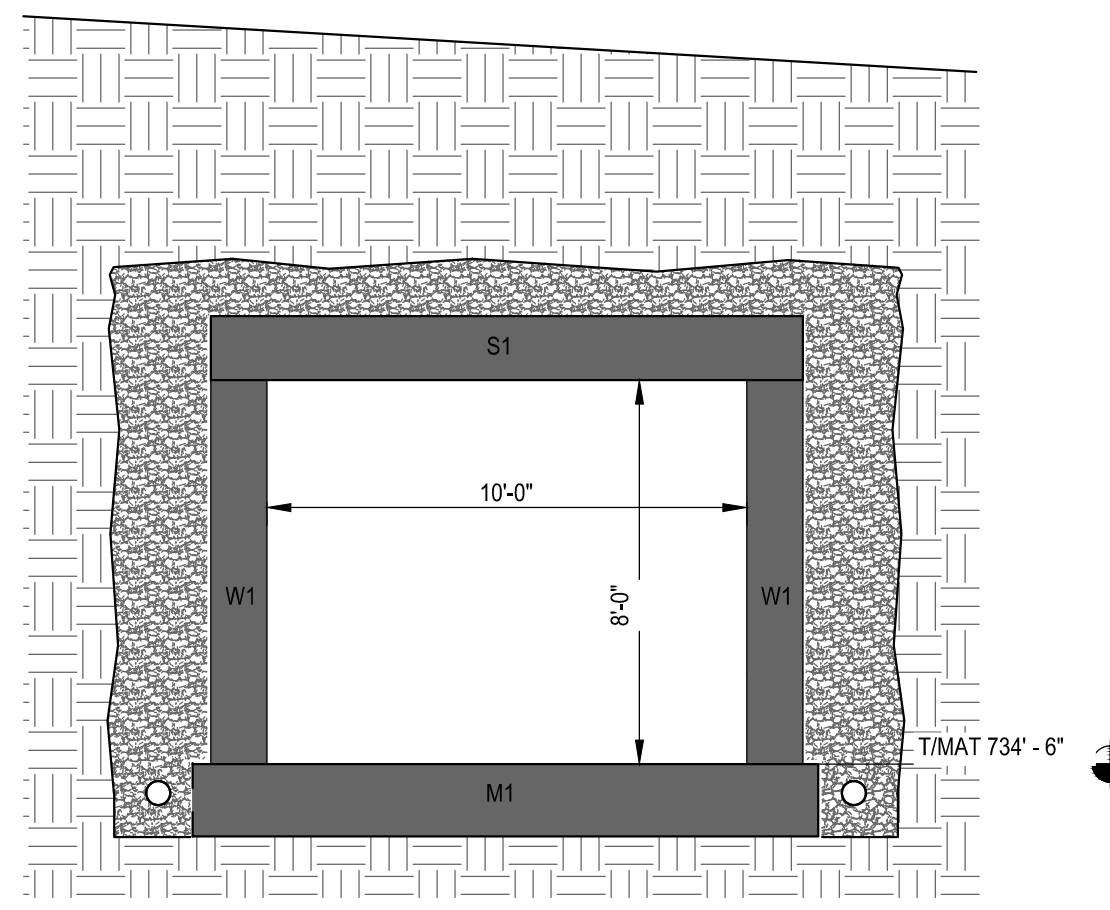
MC BEAMLINE ENCLOSURES
SECTIONS 2

DRAWING NO. 6-10-22

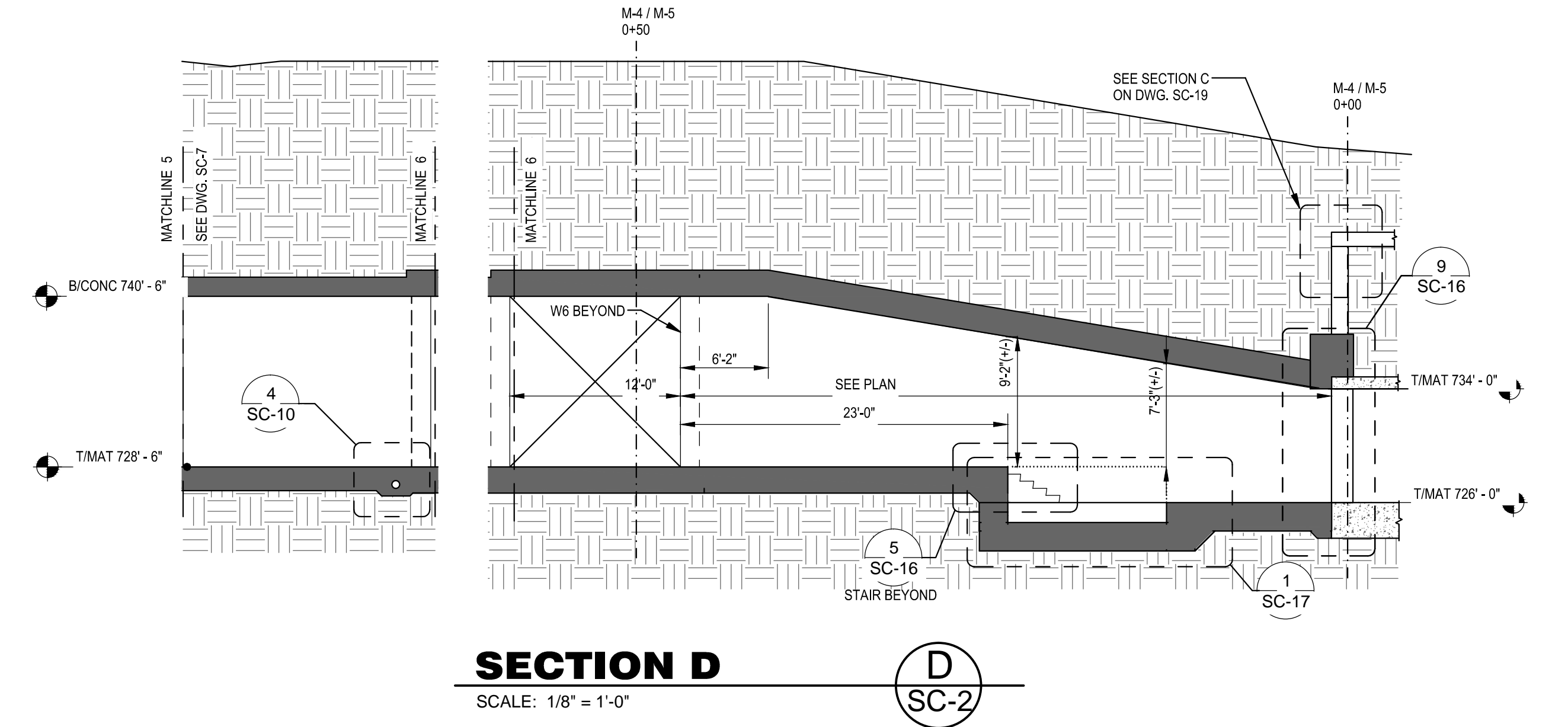
SC-7 REV.



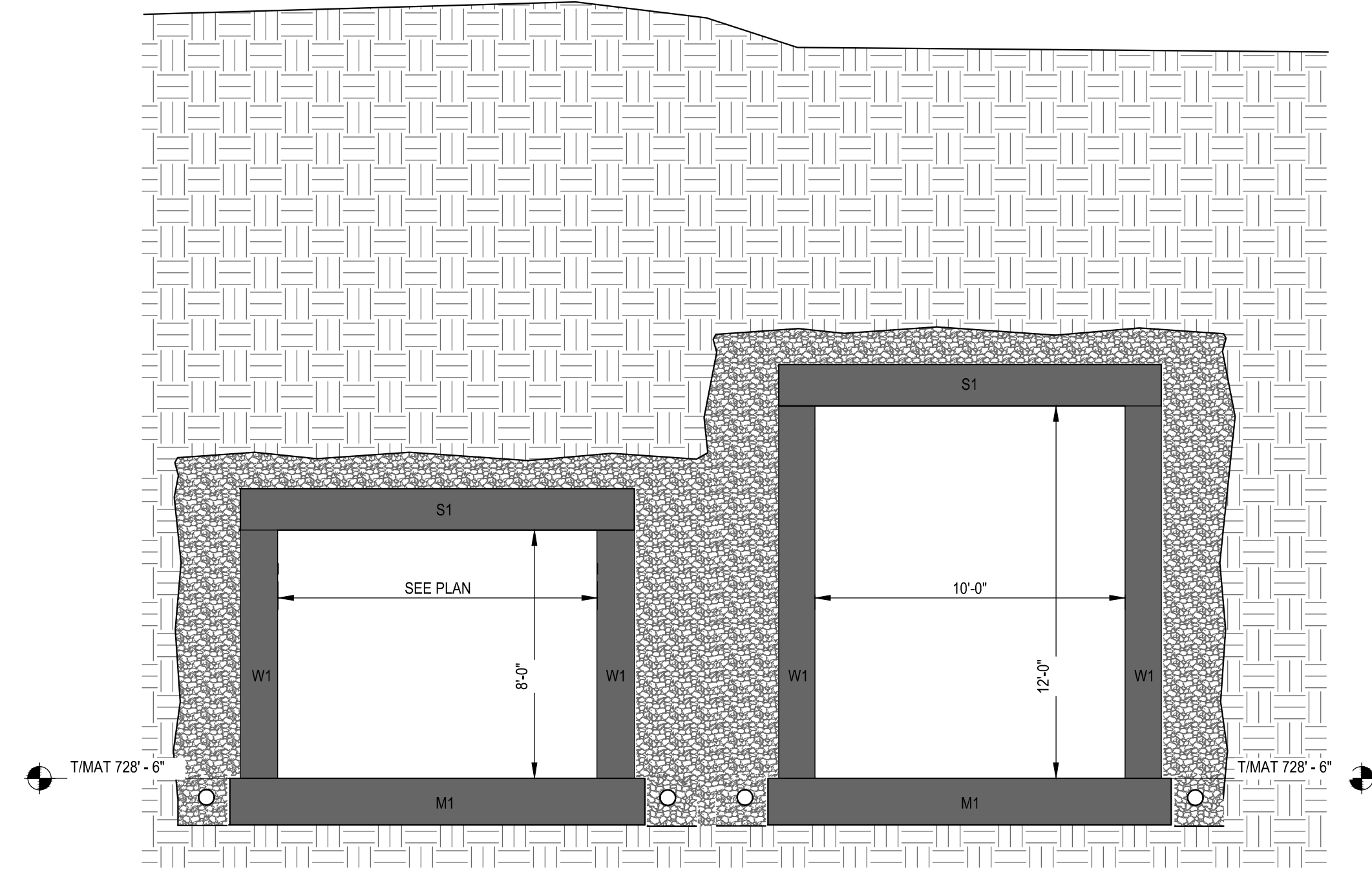
SECTION H
SCALE: 1/4" = 1'-0"
H
SC-2



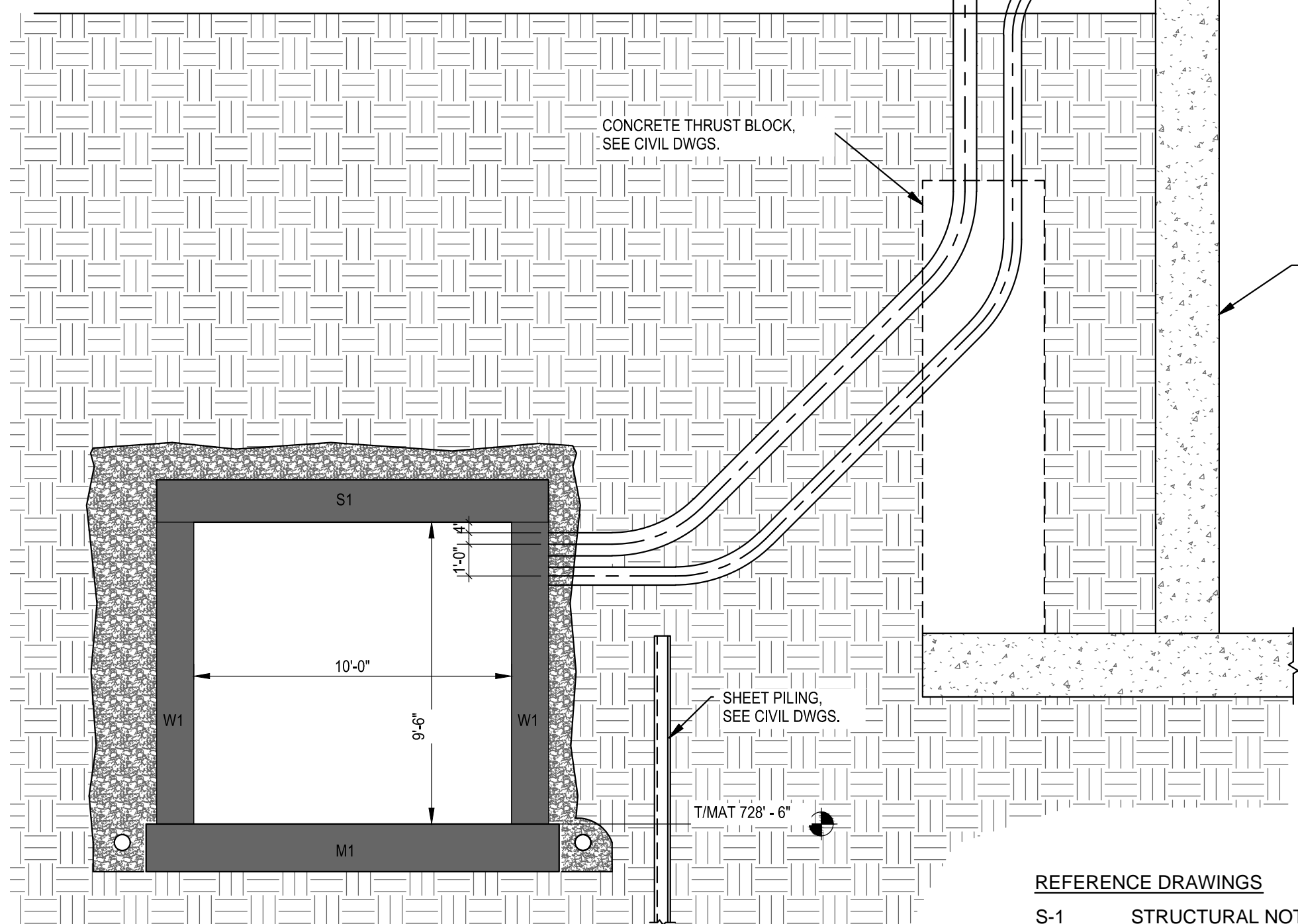
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SCALE: 1/4" = 1'-0"
F
SC-1



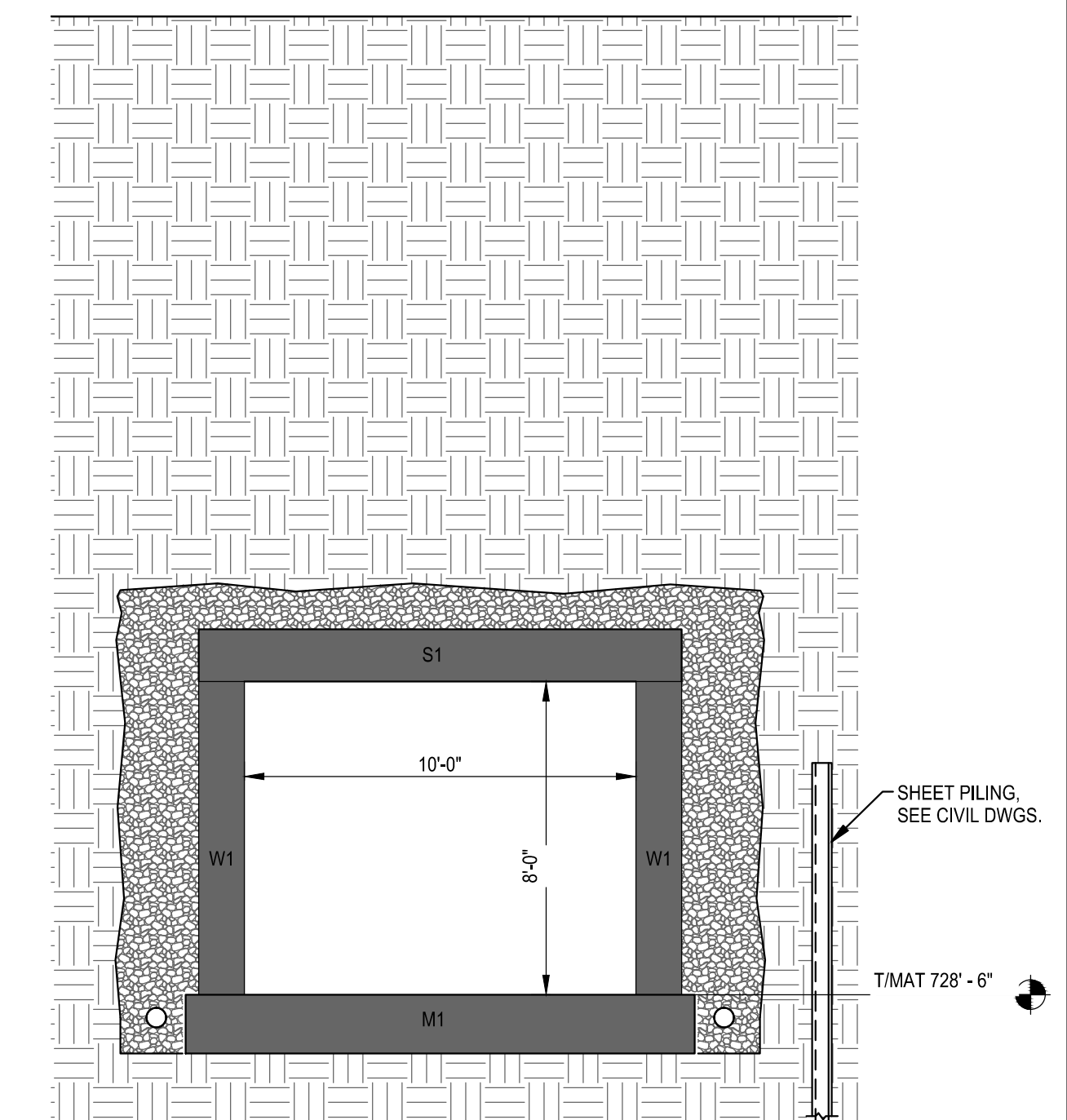
SECTION D
SCALE: 1/8" = 1'-0"
D
SC-2



SECTION G
SCALE: 1/4" = 1'-0"
G
SC-1



SECTION E1
SCALE: 1/4" = 1'-0"
E1
SC-1



SECTION E
SCALE: 1/4" = 1'-0"
E
SC-1

- REFERENCE DRAWINGS**
- S-1 STRUCTURAL NOTES
 - SC-10 TYPICAL SECTIONS AND DETAILS 1
 - SC-11 TYPICAL SECTIONS AND DETAILS 2
 - SC-12 MAT SCHEDULE
 - SC-13 WALL SCHEDULE
 - SC-14 SLAB SCHEDULE
 - SC-15 BEAM SCHEDULE

WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS

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REV.	DATE	DESCRIPTIONS

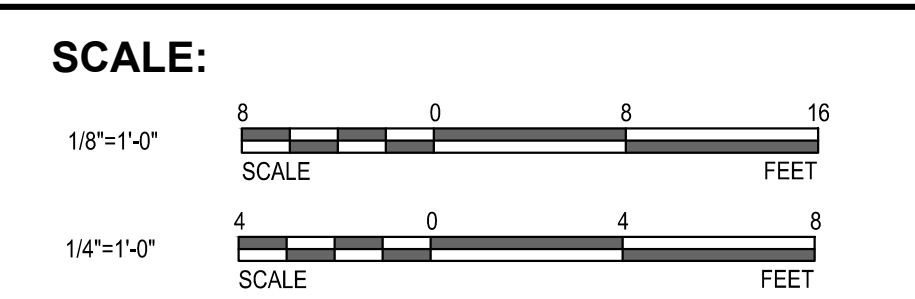
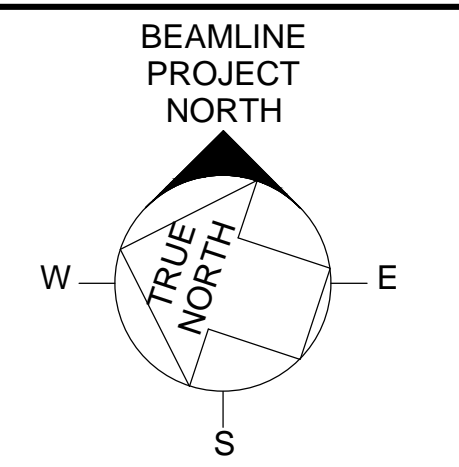


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	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

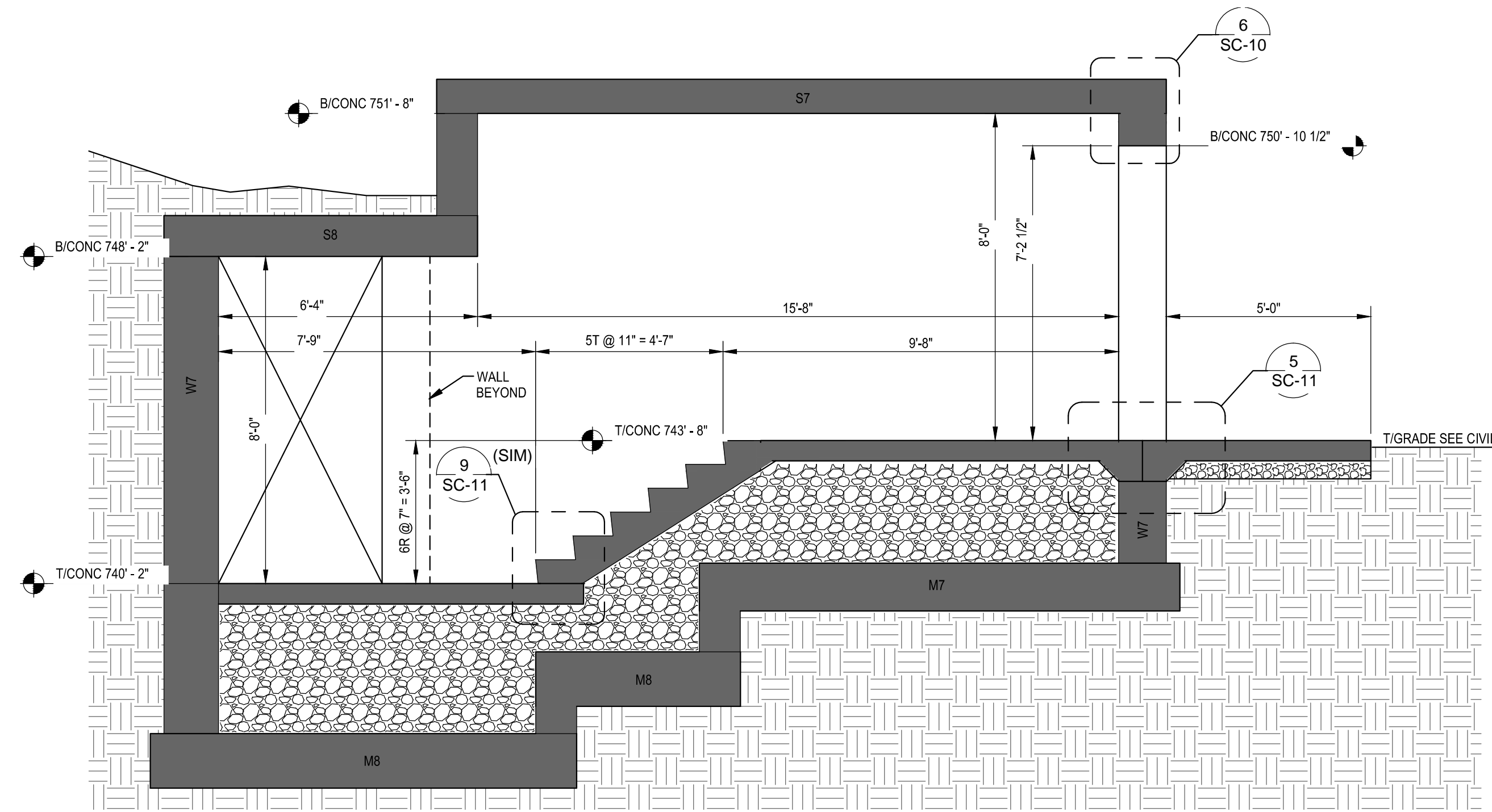


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MC BEAMLINE ENCLOSURES
SECTIONS 3

DRAWING NO. **6-10-22** **SC-8** REV.

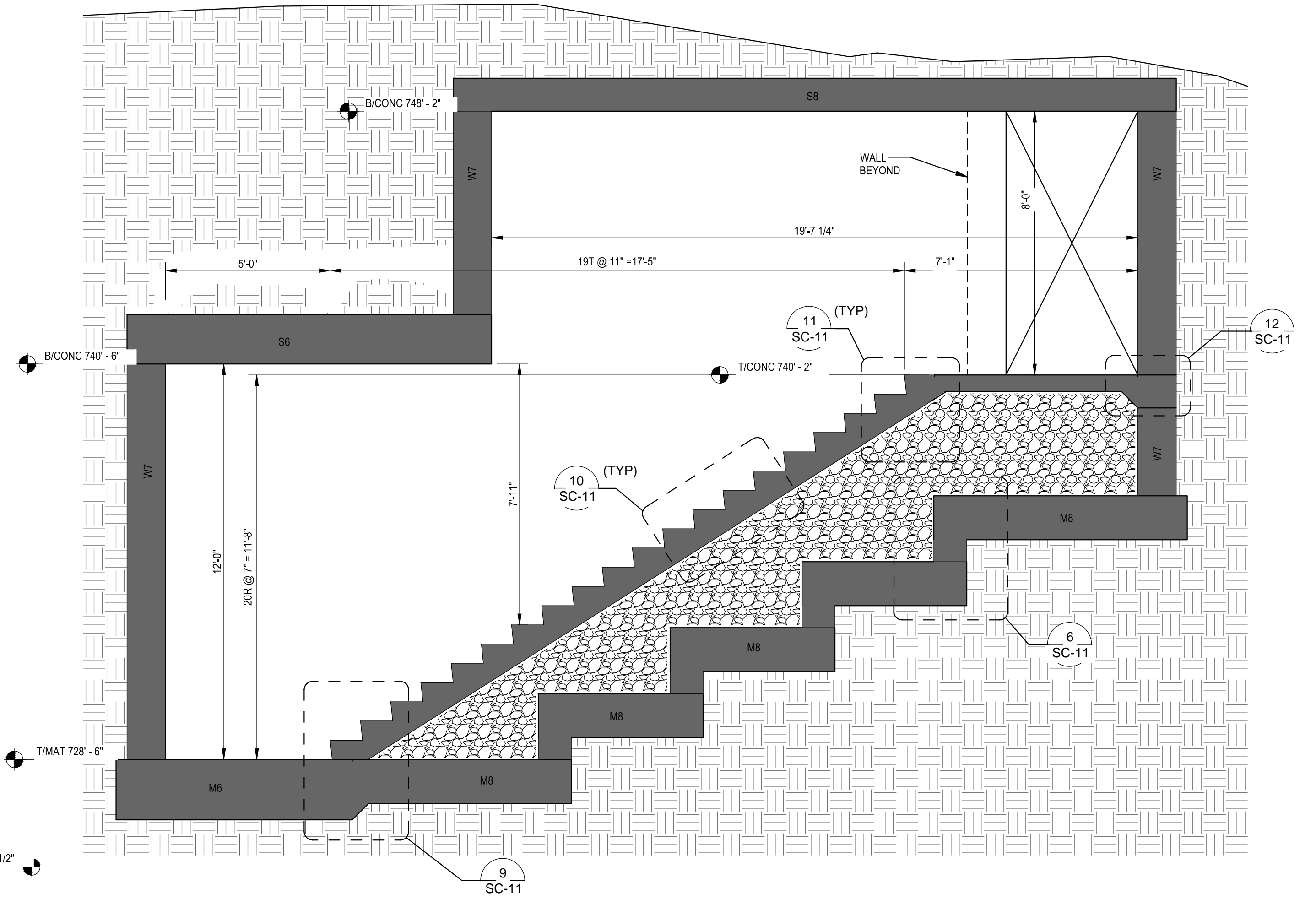
03 MAR 2014



STAIR SECTION B

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

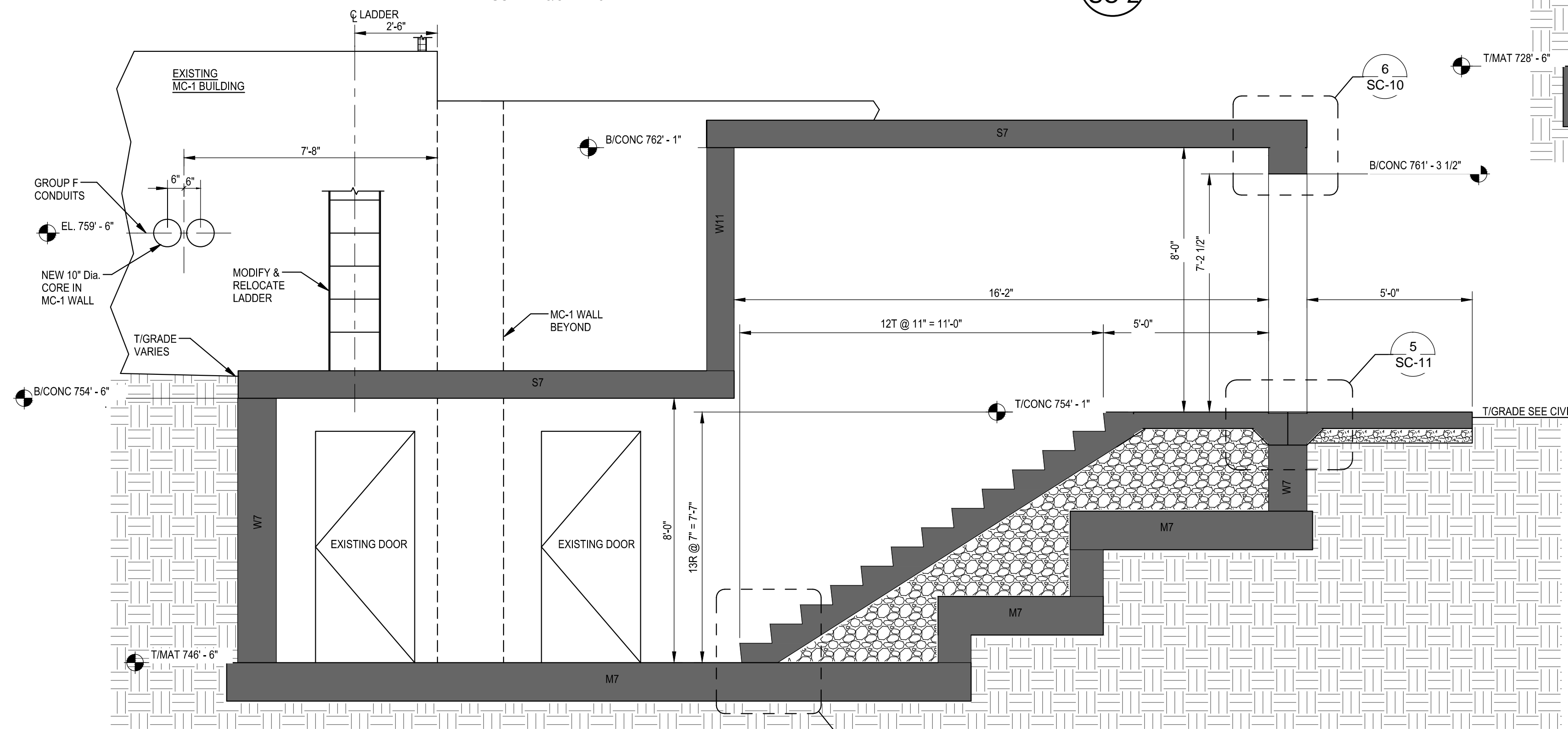
B
SC-2



STAIR SECTION A

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

A
SC-2



STAIR SECTION C

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

C
SC-1

REFERENCE DRAWINGS

- S-1 STRUCTURAL NOTES
- SC-10 TYPICAL SECTIONS AND DETAILS 1
- SC-11 TYPICAL SECTIONS AND DETAILS 2
- SC-12 MAT SCHEDULE
- SC-13 WALL SCHEDULE
- SC-14 SLAB SCHEDULE
- SC-15 BEAM SCHEDULE

WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS



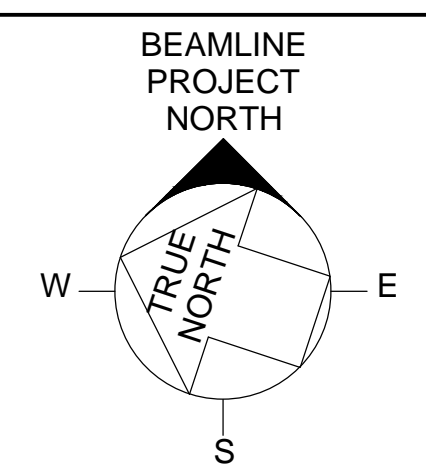
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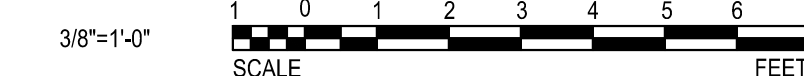
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fx. 630-756-7001

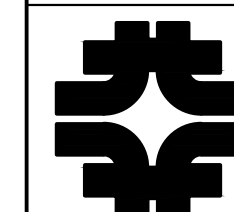
	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



SCALE:



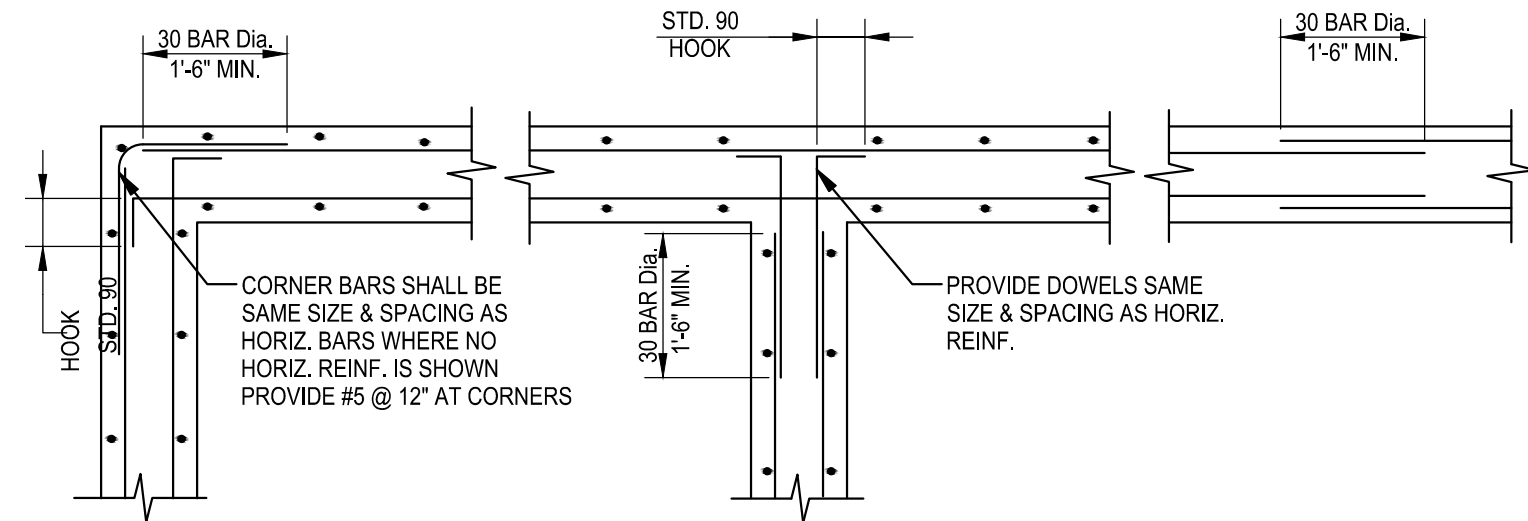
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MC BEAMLIN ENCLOSURES
STAIR SECTIONS

DRAWING NO. 6-10-22

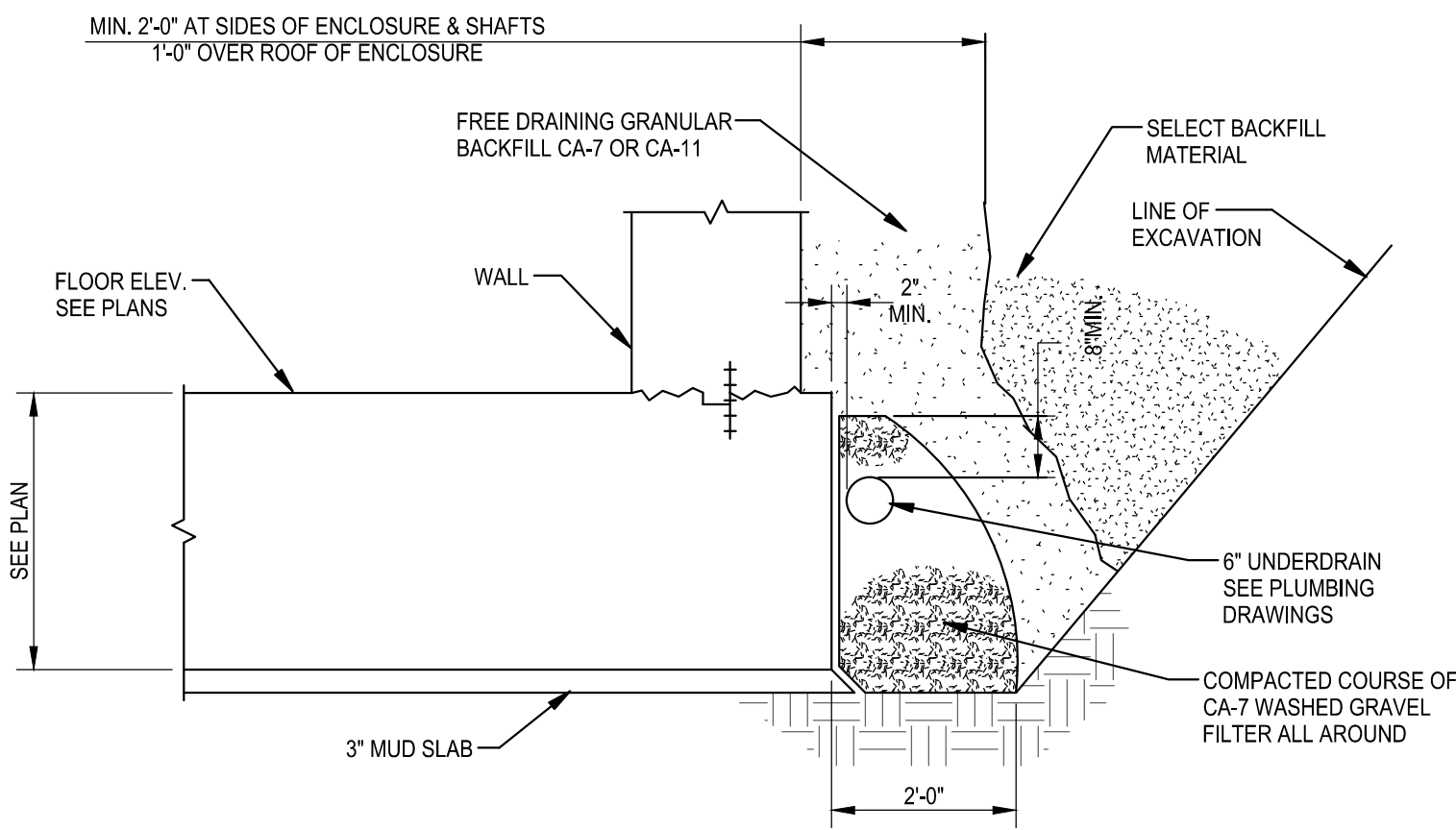
SC-9 REV.



TYPICAL CORNER BAR DET.

SCALE: N.T.S.

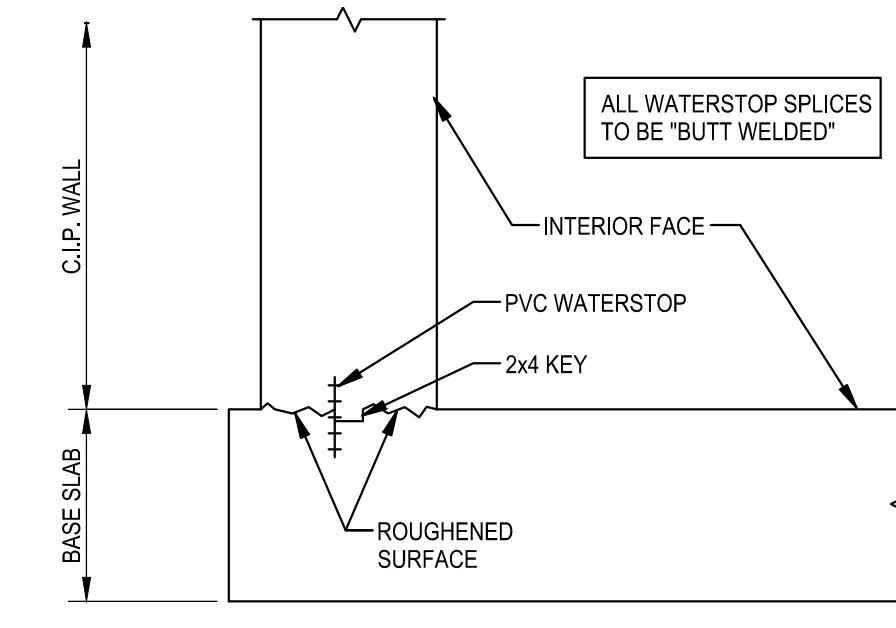
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TYP UNDERDRAIN DETAIL

SCALE: N.T.S.

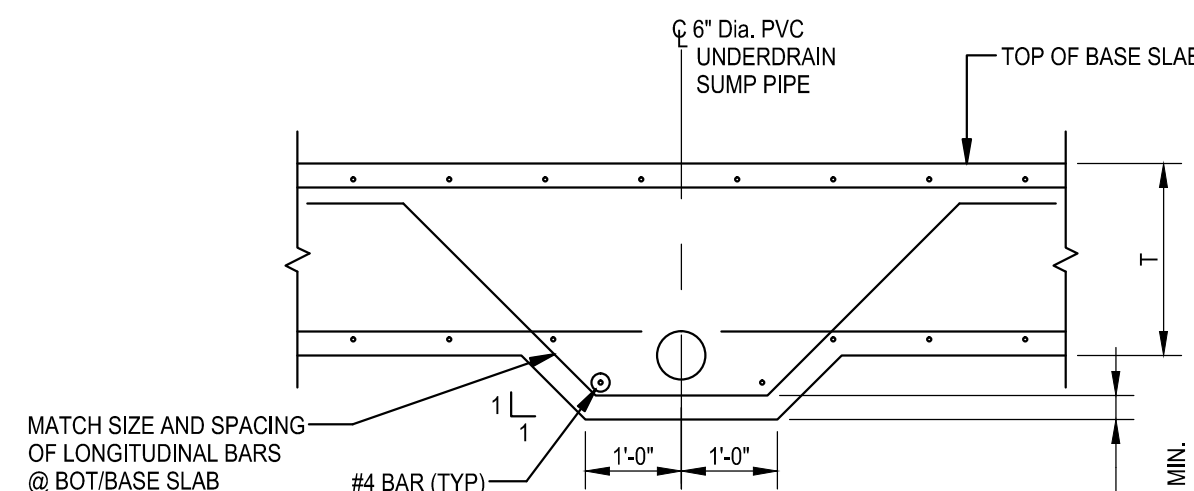
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**TYPICAL WATERSTOP DETAIL
BASE SLAB TO C.I.P. WALLS**

SCALE: N.T.S.

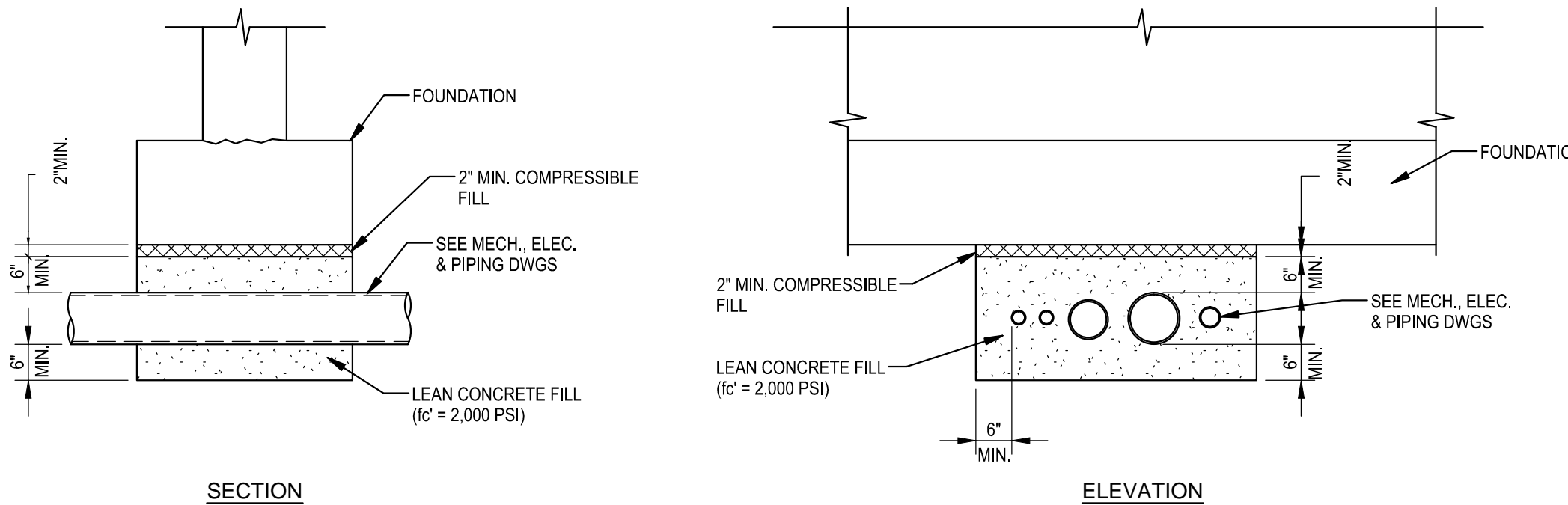
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**TYPICAL REINFORCING DETAIL AT
EMBEDDED UNDERDRAIN SUMP PIPE**

SCALE: N.T.S.

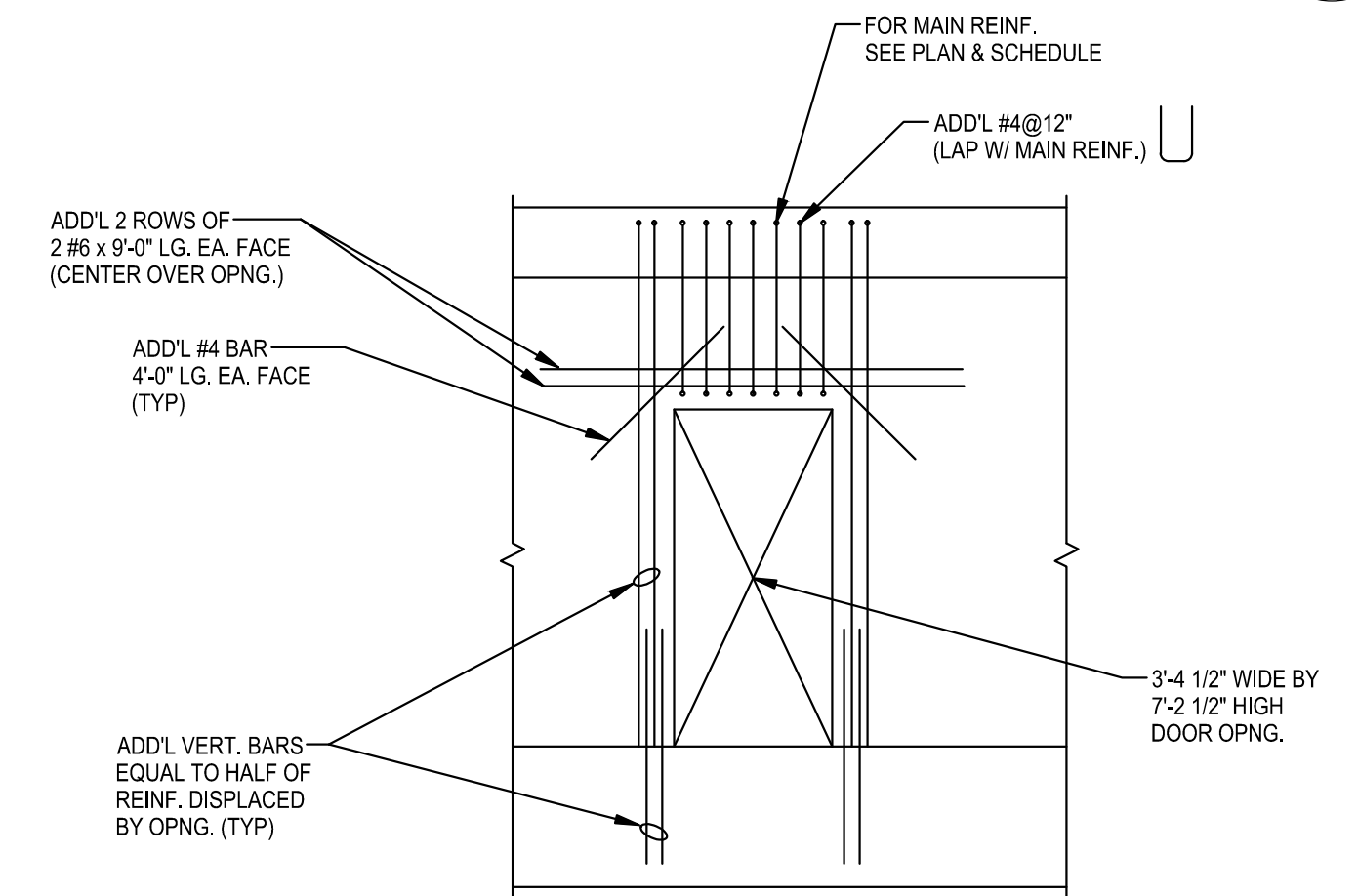
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UTILITY BELOW FOUNDATION DETAIL

SCALE: N.T.S.

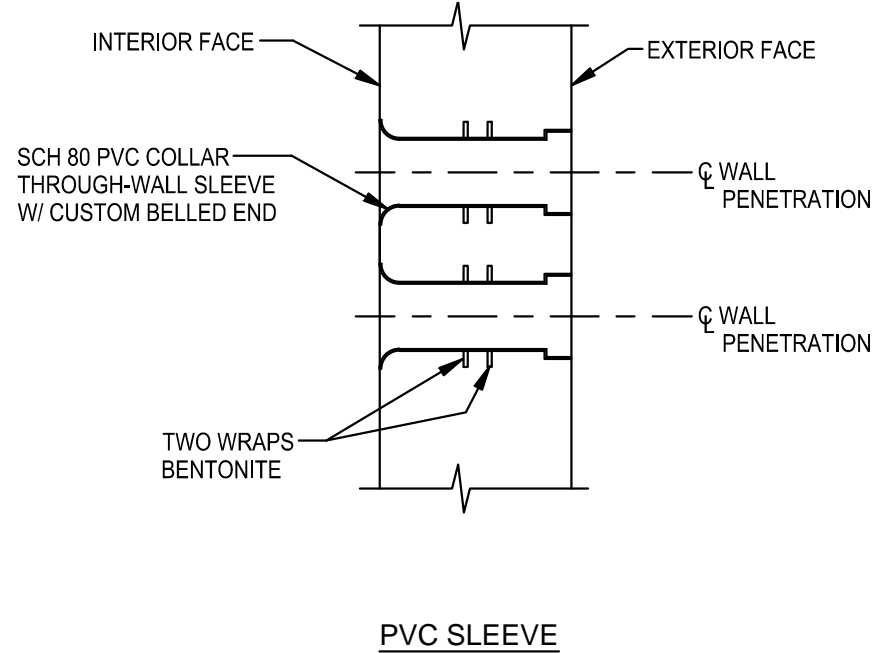
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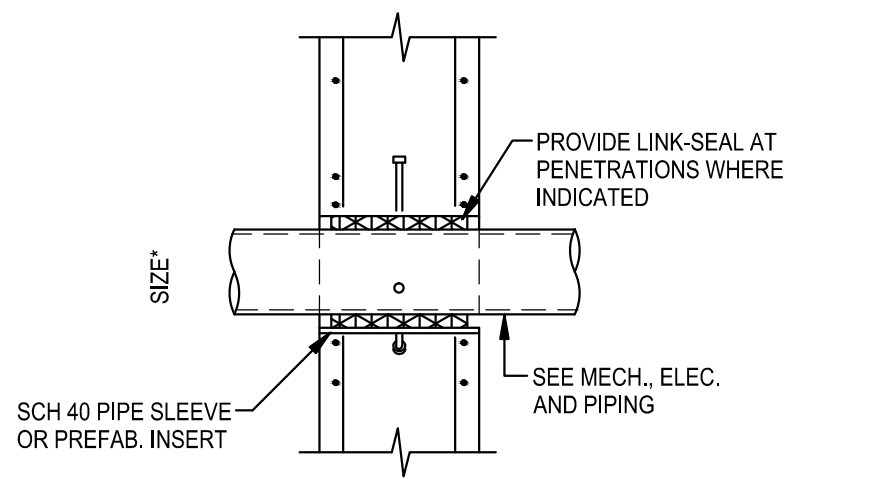
**TYP REINFORCING DET
AT DOOR OPENINGS**

SCALE: N.T.S.

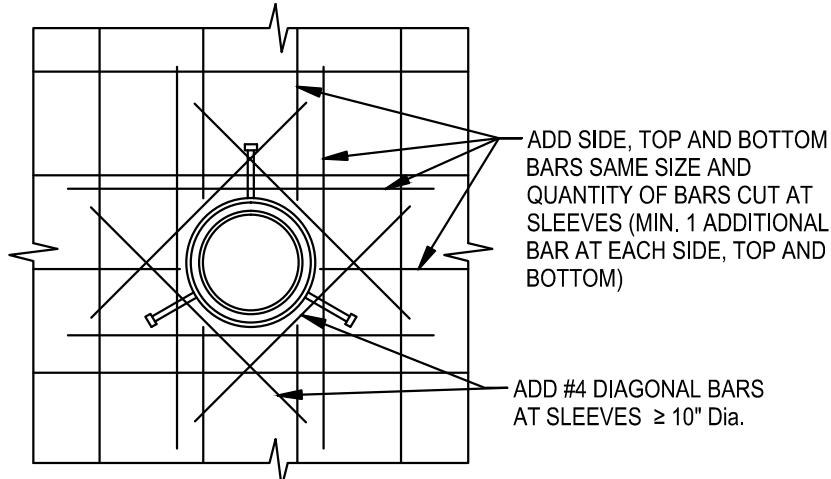
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PVC SLEEVE



PIPE SLEEVE

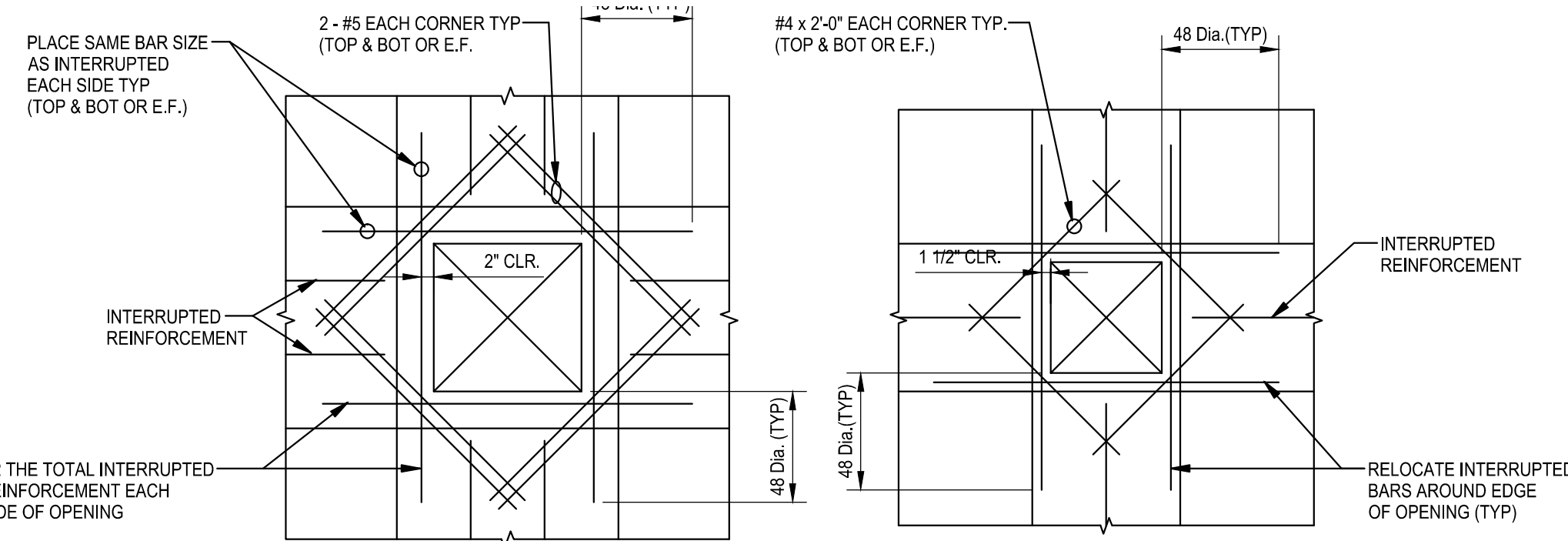


PIPE SLEEVE ELEVATION

WALL SLEEVE DETAILS

SCALE: N.T.S.

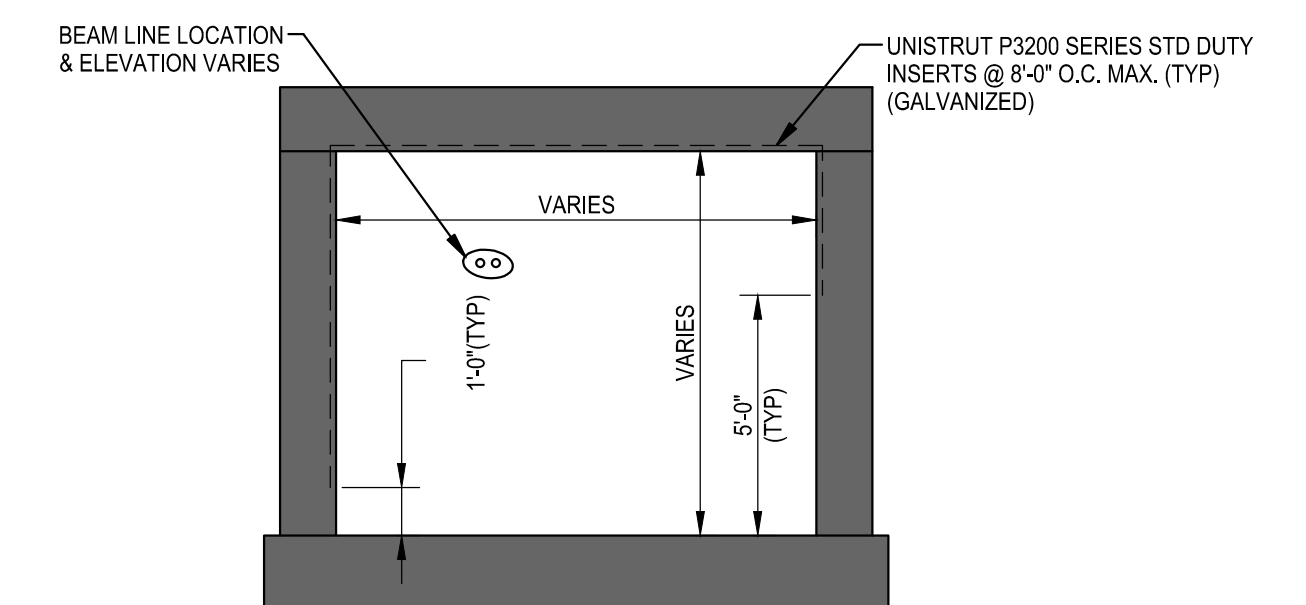
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ADD'L REINFORCEMENT @ SLAB & WALL OPNG'S

SCALE: N.T.S.

8



**TYPICAL TUNNEL SECTION
SHOWING UNISTRUT**

SCALE: N.T.S.

LOOKING WEST

9



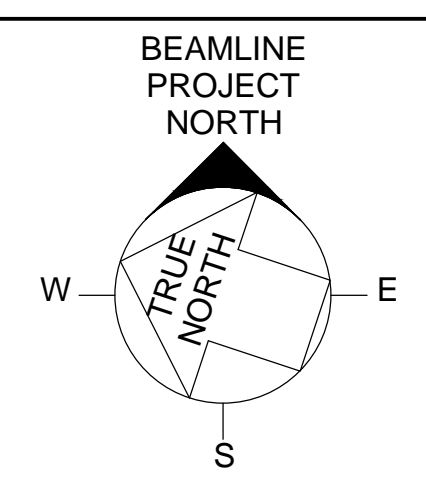
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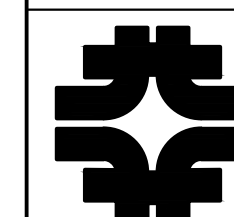
	NAME	DATE
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SUBMITTED		



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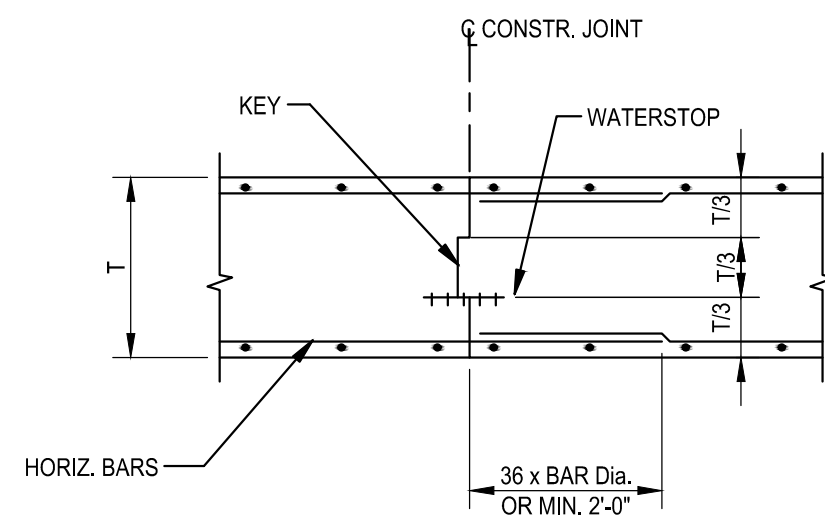


MC BEAMLINE ENCLOSURES
TYPICAL SECTIONS AND DETAILS 1

DRAWING NO. 6-10-22

SC-10 REV.

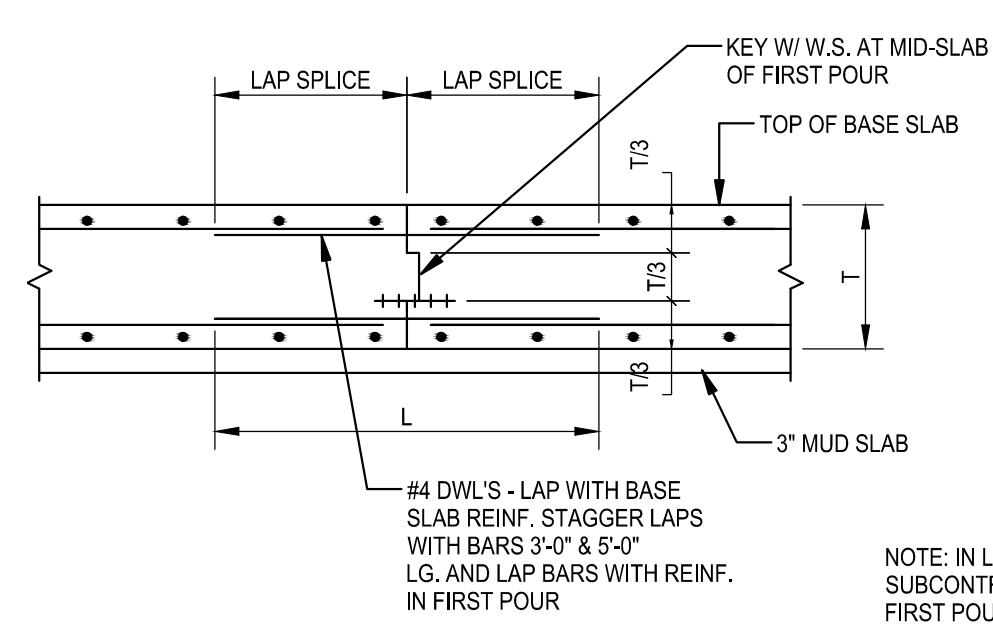
03 MAR 2014



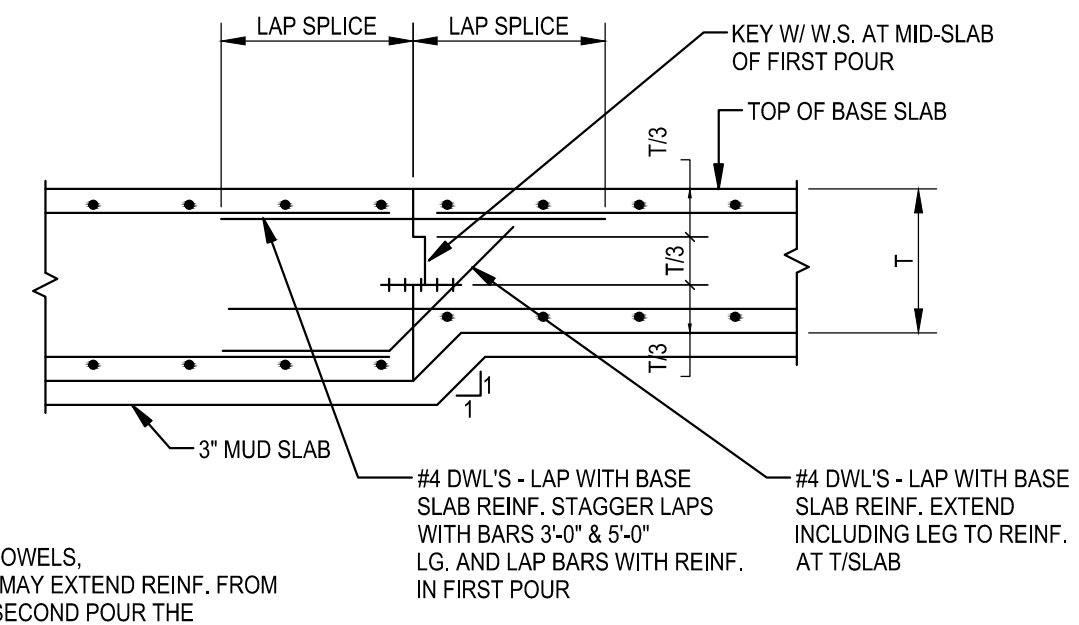
TYPICAL CONSTR. JOINT DET.

SCALE: N.T.S.

1

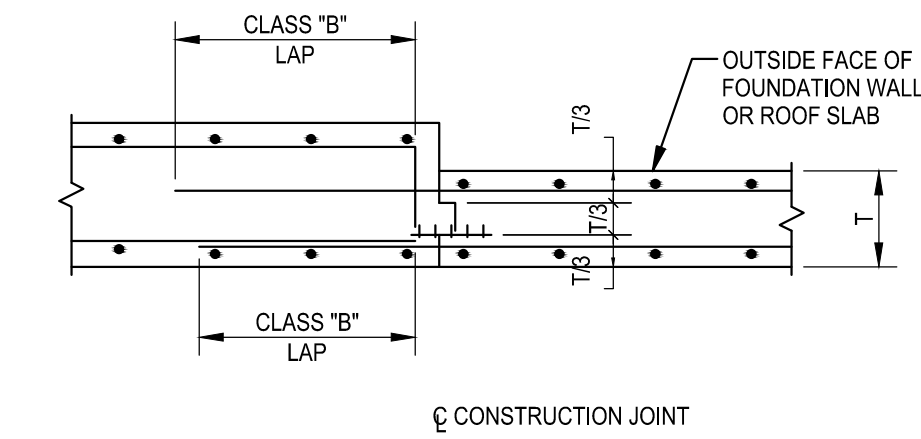


EQUAL SLAB THICKNESS



UNEQUAL SLAB THICKNESS

NOTE: IN LIEU OF DOWELS, SUBCONTRACTOR MAY EXTEND REINF. FROM FIRST POUR INTO SECOND POUR THE LENGTHS INDICATED



TYPICAL REINFORCING AT WALL OR ROOF CONSTR. JT.

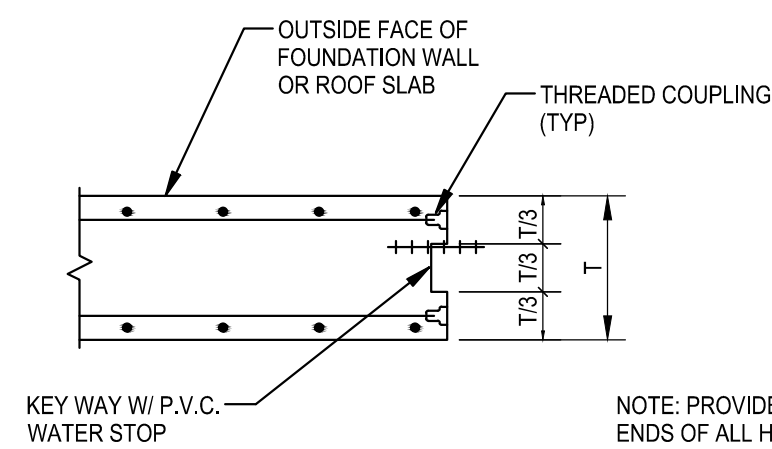
SCALE: N.T.S.

3

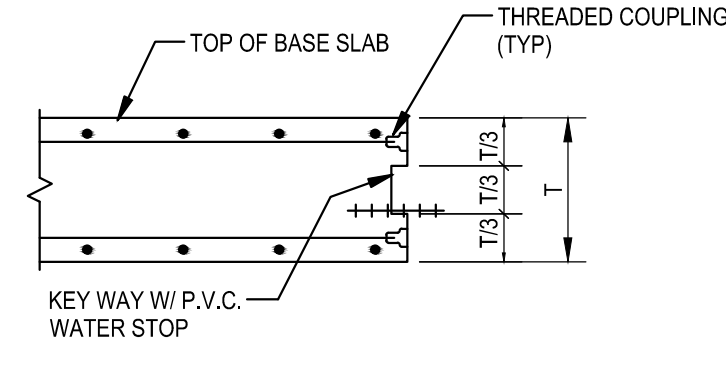
TYPICAL REINFORCING DETAILS AT BASE SLAB CONST. JT.

SCALE: N.T.S.

2

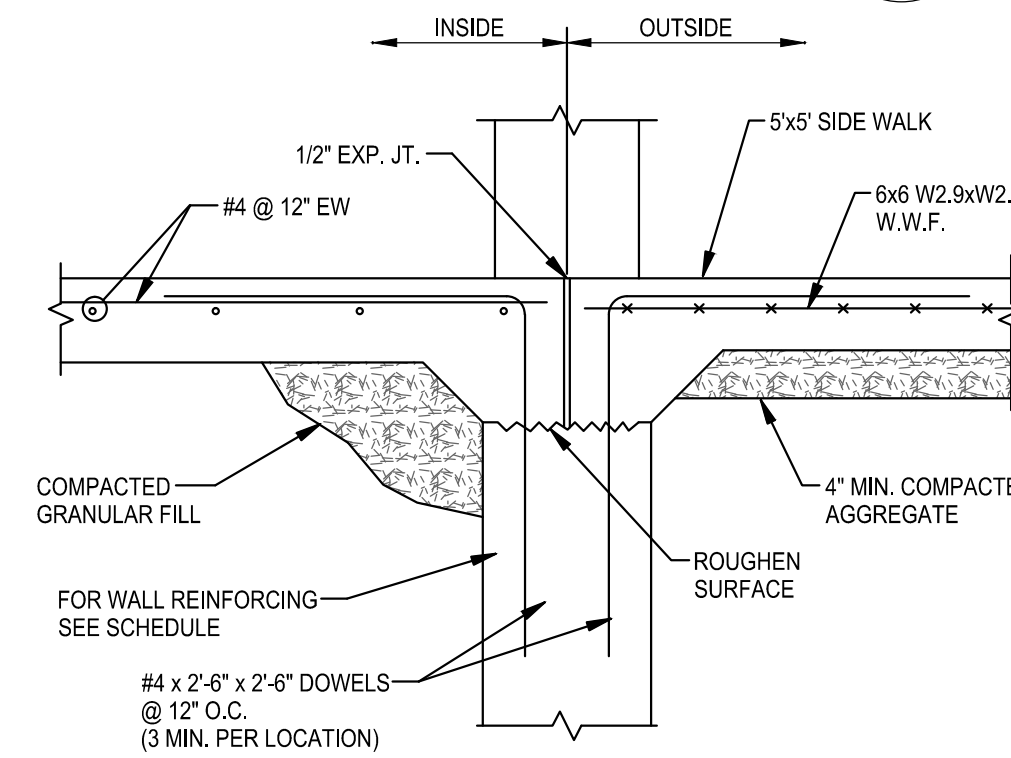


WALL OR ROOF SLAB



BASE SLAB

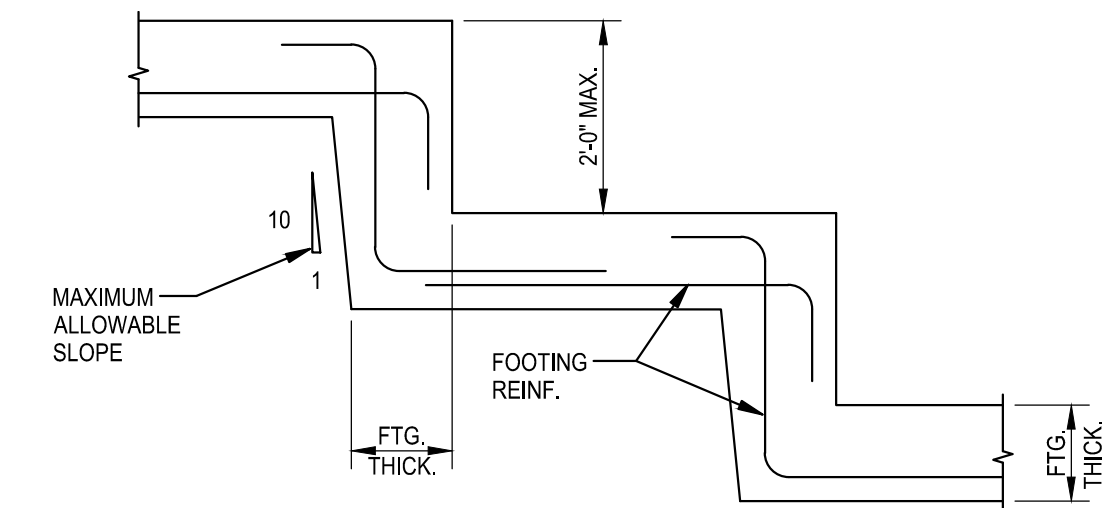
NOTE: PROVIDE THREADED COUPLINGS AT THE ENDS OF ALL HORIZONTAL WALL, ROOF AND BASE SLAB REINF. WHERE THE CAST-IN-PLACE PORTION OF THE ENCLOSURE IS TEMPORARILY OR PERMANENTLY BULKHEADED. DO NOT USE COUPLINGS IN WALL AND ROOF THAT WILL BE ADJOINED IN PRECAST ENCLOSURE SEGMENT.



CONC. DOOR DET.

SCALE: N.T.S.

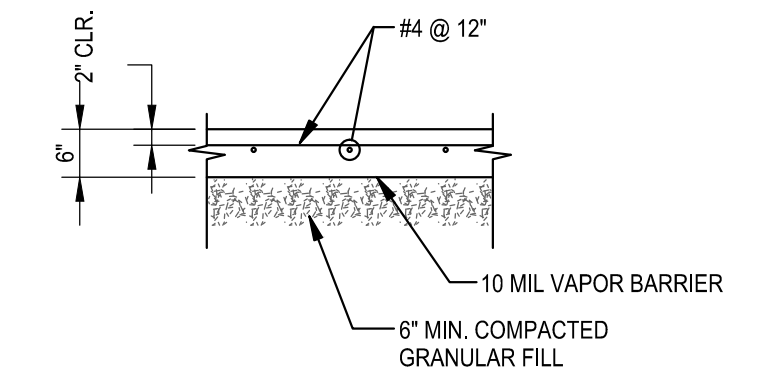
5



STEP FOOTING DETAIL

SCALE: N.T.S.

6



TYP SLAB ON GRADE

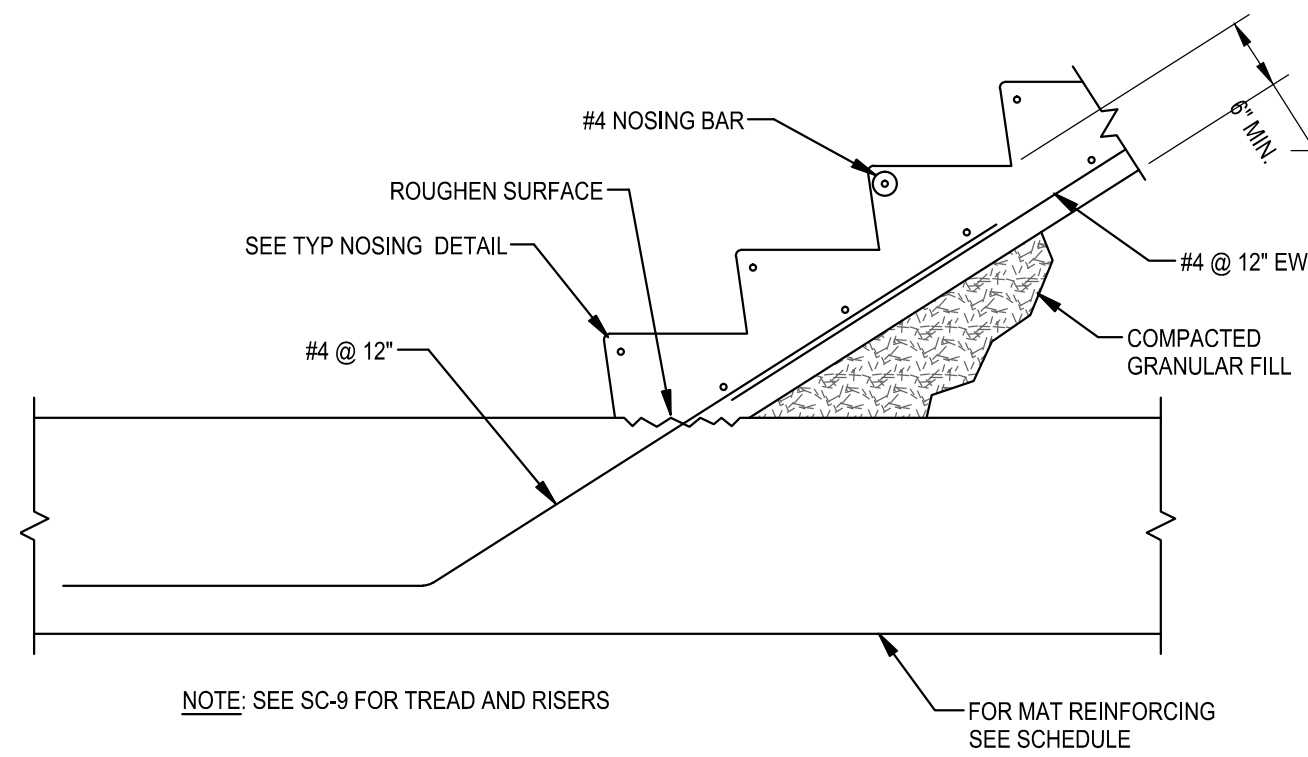
SCALE: N.T.S.

7

TYPICAL REINFORCING AT CONCRETE BULK HEADS

SCALE: N.T.S.

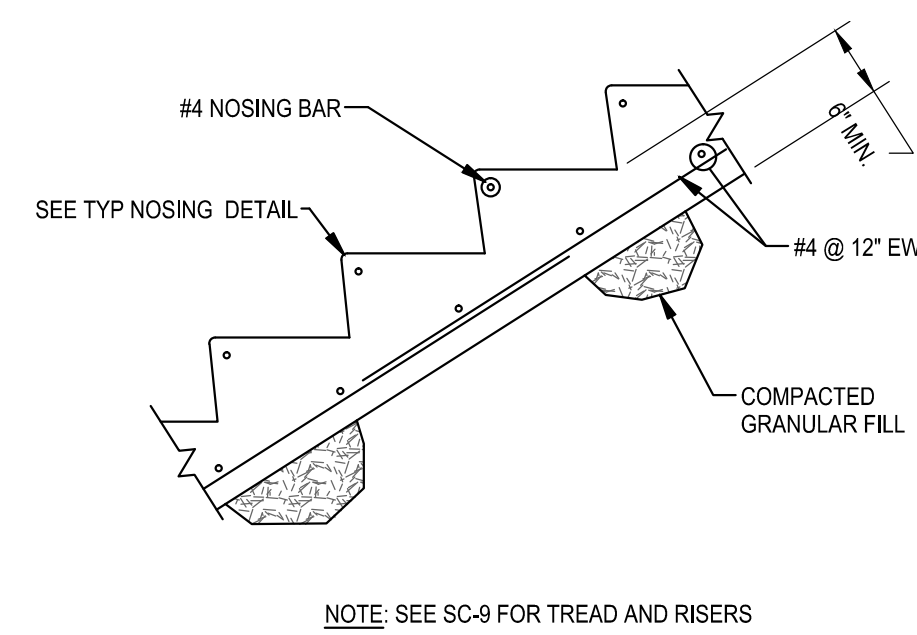
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CONC. STAIR DET.

SCALE: N.T.S.

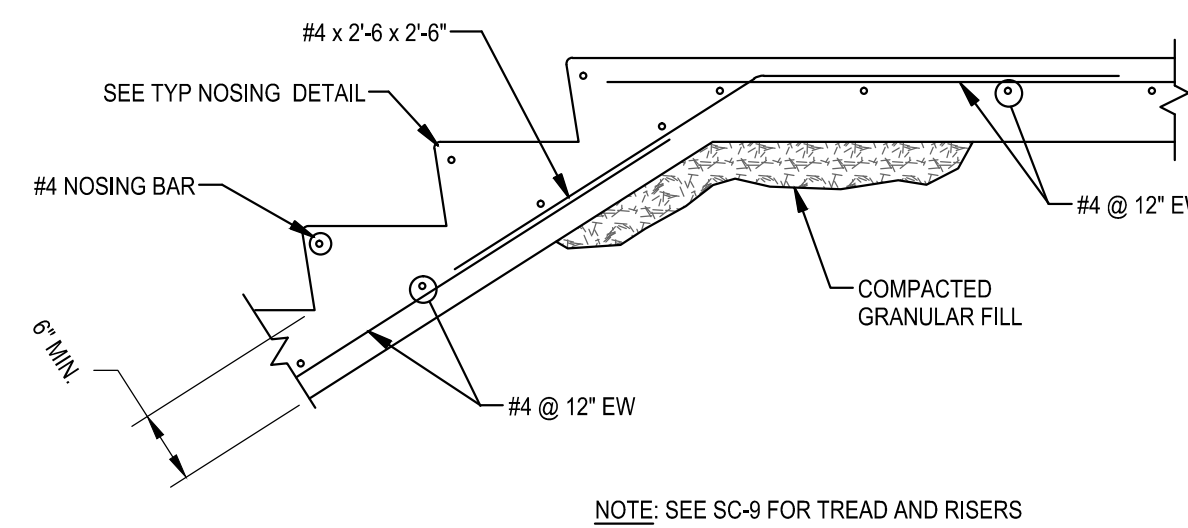
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CONC. STAIR DET.

SCALE: N.T.S.

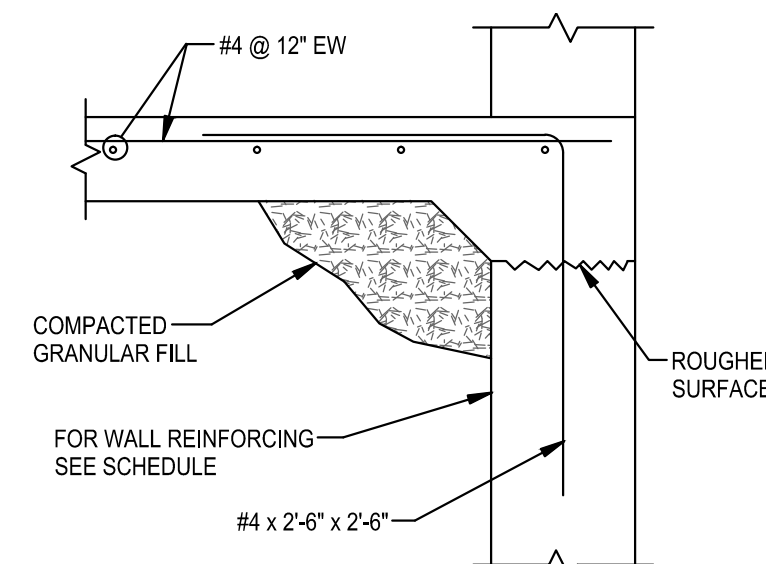
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CONC. STAIR DET.

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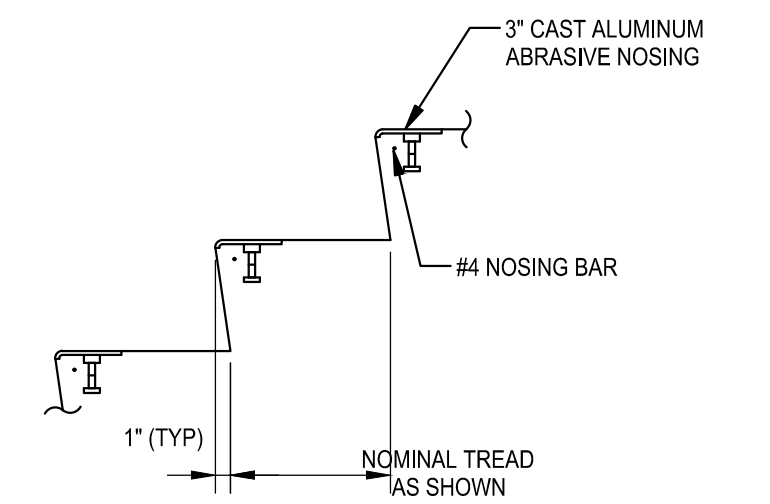
11



CONC. STAIR DET.

SCALE: N.T.S.

12



TYP NOSING DETAIL

SCALE: N.T.S.

13

NOT USED

SCALE: N.T.S.

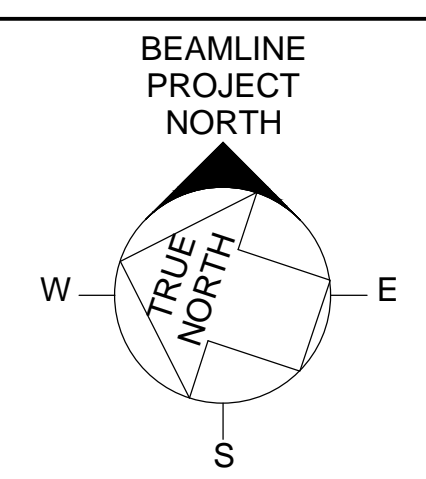
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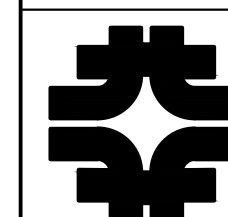
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700 Commerce Drive, Suite 200
Oak Brook, IL 60523
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fx. 630-756-7001

	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



SCALE:

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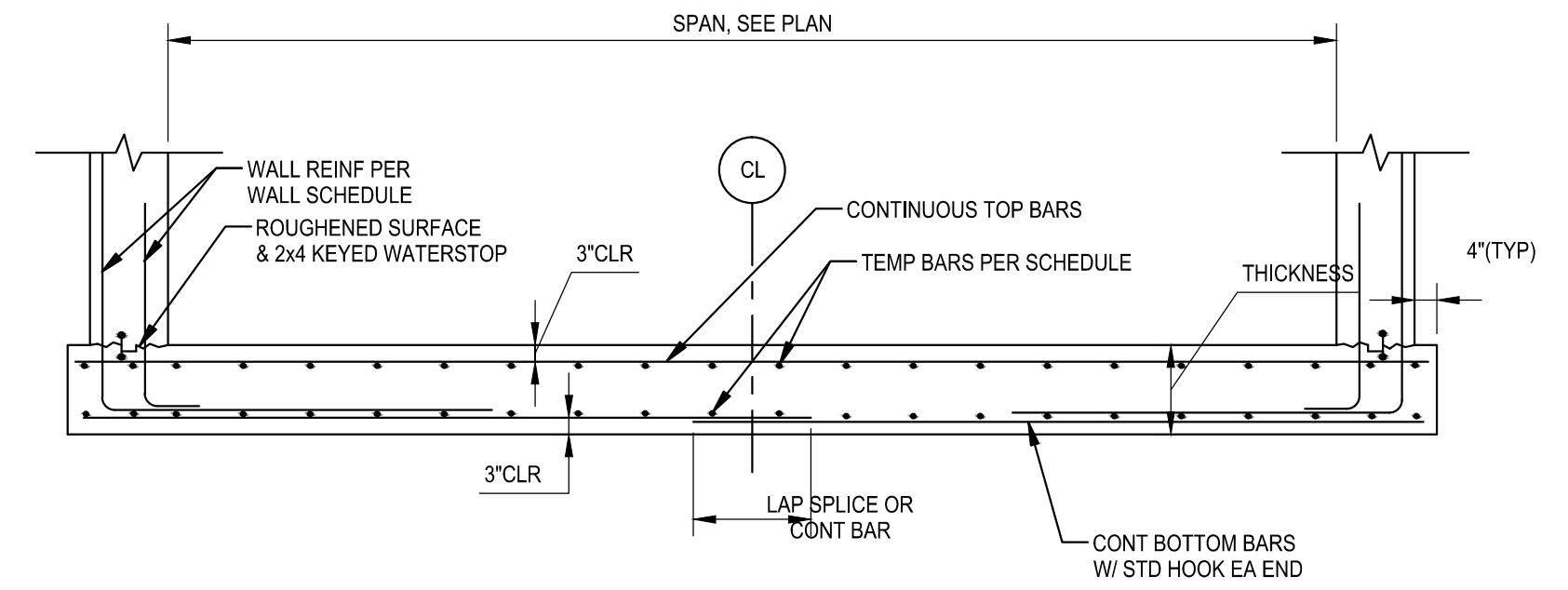
MC BEAMLINE ENCLOSURES
TYPICAL SECTIONS AND DETAILS 2

DRAWING NO. 6-10-22

SC-11 REV.

03 MAR 2014

Jun 03, 2014 - 9:40am M:\Active Projects\610223 - Final Design\Drawings\Middough Issued for proposal\SC-11_F-10-22.dwg



BAR PLACEMENT TUNNEL BASE

N.T.S.

MAT/BASE SLAB SCHEDULE					
MARK	THICKNESS	BOTTOM BARS	TOP BARS	TEMP BARS	REMARKS
M1	18"	#6 @ 12"	#8 @ 12"	#6 @ 18" EF	
M2	28"	#6 @ 12"	#10 @ 11"	#6 @ 18" EF	
M3	24"	#6 @ 12"	#10 @ 12"	#6 @ 18" EF	
M4	28"	#6 @ 12"	#10 @ 12"	#6 @ 18" EF	
M5	20"	#6 @ 12"	#8 @ 12"	#6 @ 18" EF	
M6	22"	#6 @ 12"	#8 @ 10"	#6 @ 18" EF	
M7	14"	#6 @ 12"	#6 @ 12"	#6 @ 18" EF	
M8	16"	#6 @ 12"	#6 @ 10"	#6 @ 18" EF	
M9	36"	#6 @ 12"	#10 @ 12"	#6 @ 12" EF	

- REFERENCE DRAWINGS**
- S-1 STRUCTURAL NOTES
 - SC-10 TYPICAL SECTIONS AND DETAILS 1
 - SC-11 TYPICAL SECTIONS AND DETAILS 2
 - SC-12 MAT SCHEDULE
 - SC-13 WALL SCHEDULE
 - SC-14 SLAB SCHEDULE
 - SC-15 BEAM SCHEDULE



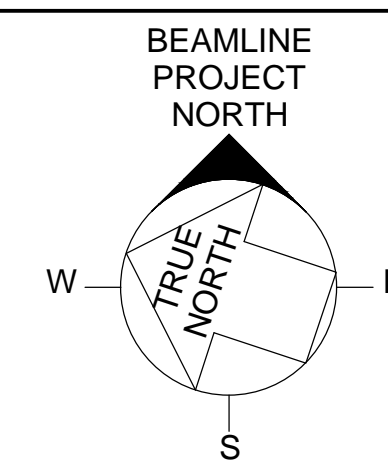
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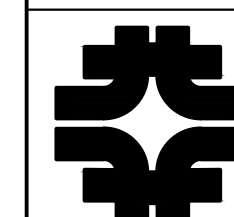
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SUBMITTED		



SCALE:

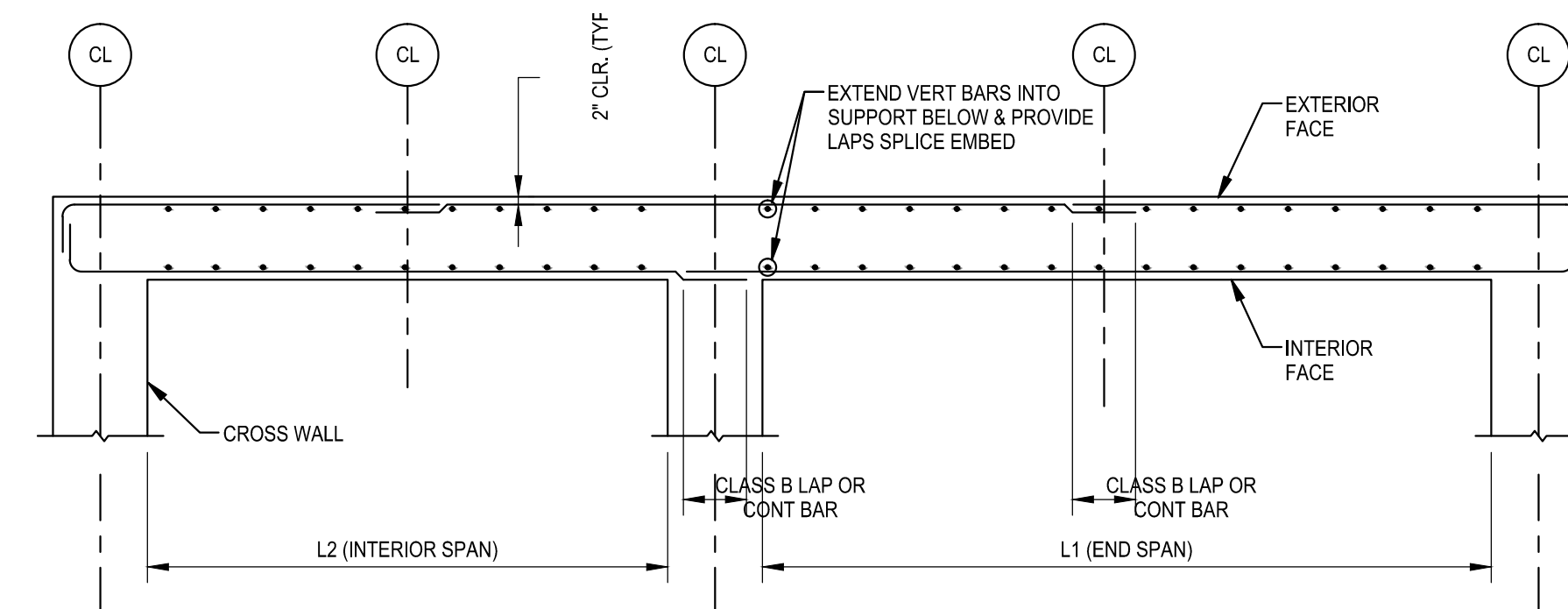
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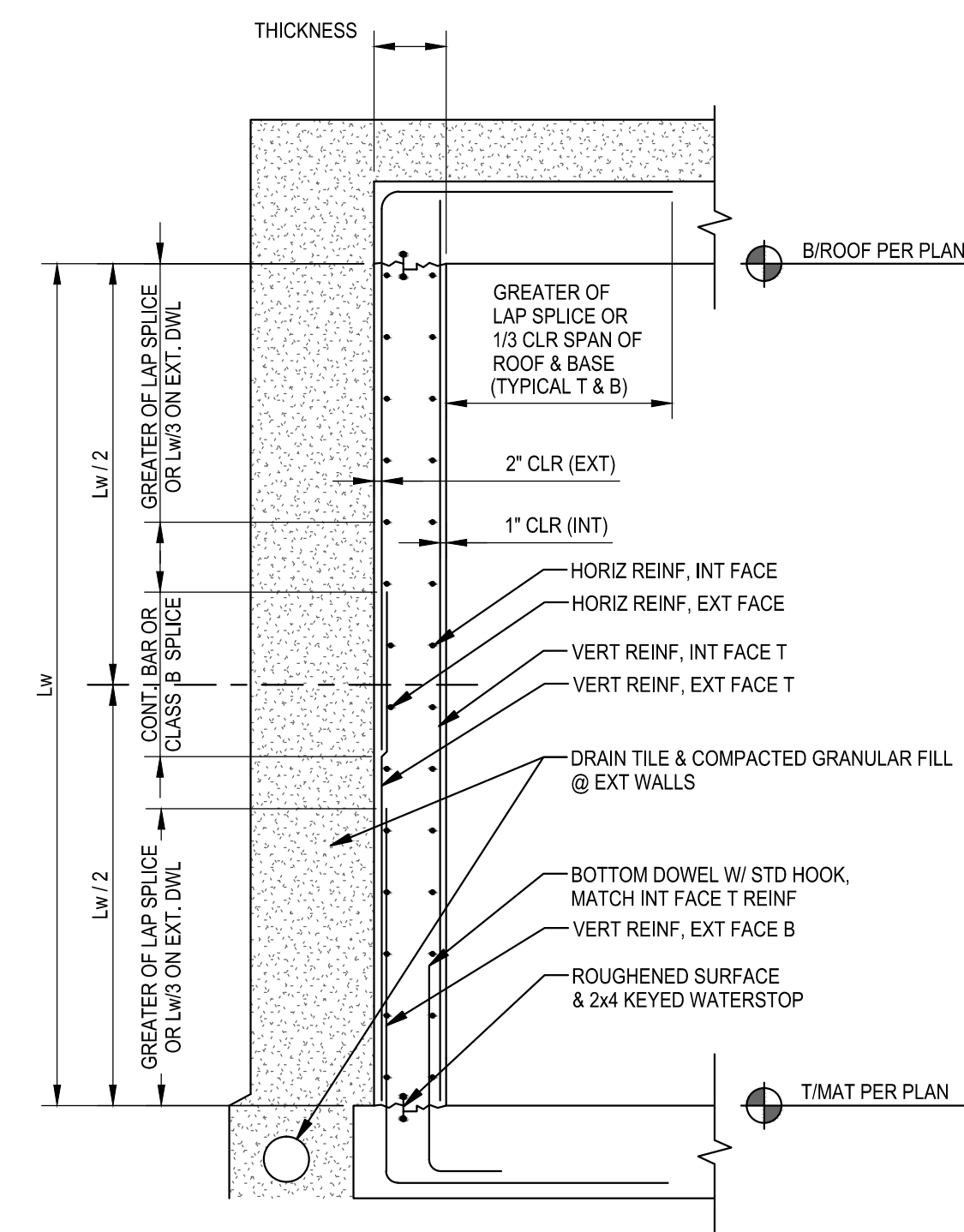
MC BEAMLINE ENCLOSURES
MAT SCHEDULE

DRAWING NO. 6-10-22

SC-12 REV.



HORIZONTAL



TUNNEL - TYPICAL U.N.O.

BAR PLACEMENT

N.T.S.

REFERENCE DRAWINGS

- S-1 STRUCTURAL NOTES
- SC-10 TYPICAL SECTIONS AND DETAILS 1
- SC-11 TYPICAL SECTIONS AND DETAILS 2
- SC-12 MAT SCHEDULE
- SC-13 WALL SCHEDULE
- SC-14 SLAB SCHEDULE
- SC-15 BEAM SCHEDULE

CONCRETE WALL SCHEDULE									
MARK	THICKNESS	VERTICAL REINFORCEMENT			HORIZ. REINFORCEMENT		TOP BARS	BOTTOM BARS	REMARKS
		INTERIOR	EXT FACE B	EXT FACE T	INT FACE	EXT FACE			
W1	14"	#6 @ 12"	#6 @ 10"	#6 @ 10"	#6 @ 18"	#6 @ 18"	-----	-----	
W2	16"	#6 @ 12"	#6 @ 10"	#6 @ 10"	#6 @ 18"	#6 @ 18"	-----	-----	
W3	18"	#6 @ 12"	#10 @ 11"	#10 @ 12"	#6 @ 18"	#6 @ 18"	-----	-----	
W4	18"	#6 @ 12"	#8 @ 10"	#8 @ 10"	#6 @ 18"	#6 @ 18"	-----	-----	
W5	18"	#6 @ 12"	#10 @ 12"	#10 @ 12"	#6 @ 18"	#6 @ 18"	-----	-----	
W6	16"	#6 @ 12"	#8 @ 12"	#8 @ 12"	#6 @ 18"	#6 @ 18"	-----	-----	
W7	14"	#6 @ 12"	#6 @ 12"	#6 @ 12"	#6 @ 18"	#6 @ 18"	-----	-----	
W8	28"	#8 @ 12"	#8 @ 12"	#8 @ 12"	#8 @ 12"	#8 @ 12"	-----	-----	HORIZ BAR PLACEMENT
W9	14"	#6 @ 18"	#6 @ 18"	#6 @ 18"	#6 @ 10"	#6 @ 10"	-----	-----	HORIZ BAR PLACEMENT
W10	22"	#6 @ 12"	#10 @ 12"	#10 @ 12"	#6 @ 14"	#6 @ 14"	-----	-----	
W11	12"	#6 @ 12"	#6 @ 12"	-----	#6 @ 12"	#6 @ 12"	-----	-----	
W12	22"	#6 @ 12"	#6 @ 10"	#6 @ 10"	#6 @ 14"	#6 @ 14"	-----	-----	
W13	14"	#6 @ 18"	#6 @ 18"	#6 @ 18"	#6 @ 10"	#6 @ 10"	2#10	2#10	HORIZ BAR PLACEMENT



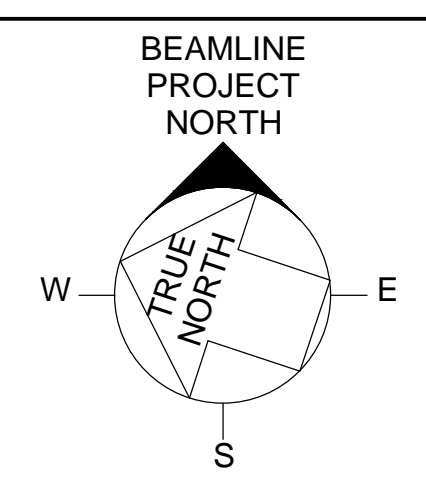
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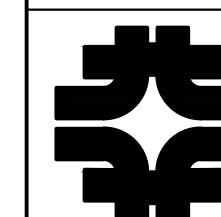
NAME		DATE
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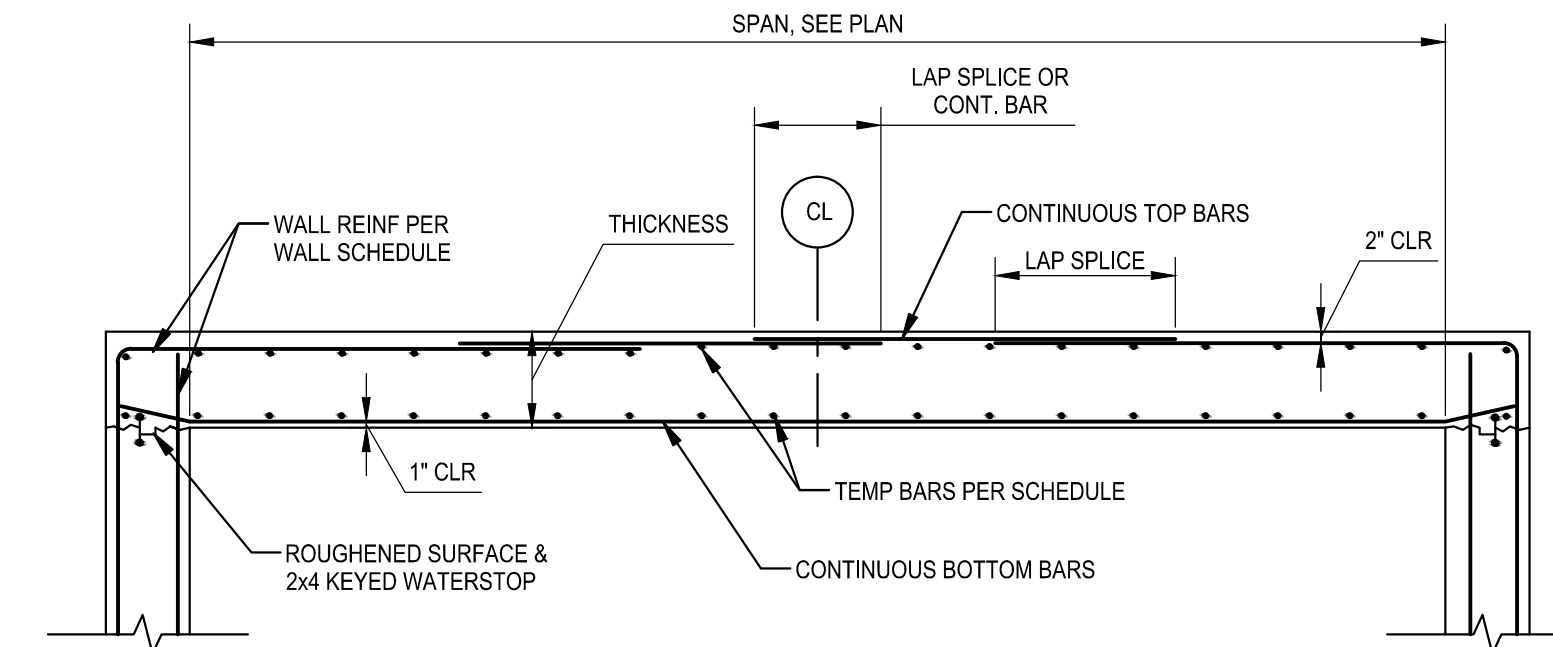


MC BEAMLINE ENCLOSURES
WALL SCHEDULE

DRAWING NO. 6-10-22

SC-13 REV.

03 MAR 2014



BAR PLACEMENT TUNNEL ROOF

N.T.S.

ONE WAY SLAB SCHEDULE					
MARK	THICKNESS	TOP BARS	BOTTOM BARS	TEMP BARS	REMARKS
S1	16"	#6 @ 12"	#8 @ 12"	#6 @ 18" E.F.	
S2	26"	#6 @ 12"	#10 @ 12"	#6 @ 18" E.F.	
S3	22"	#6 @ 12"	#8 @ 11"	#6 @ 18" E.F.	
S4	24"	#6 @ 12"	#10 @ 12"	#6 @ 18" E.F.	
S5	22"	#6 @ 12"	#10 @ 12"	#6 @ 18" E.F.	
S6	18"	#6 @ 12"	#8 @ 12"	#6 @ 12" E.F.	
S7	10"	#6 @ 12"	#6 @ 10"	#6 @ 18" E.F.	INDICATED THICKNESS IS MINIMUM
S8	12"	#6 @ 12"	#6 @ 10"	#6 @ 18" E.F.	
S9	32"	#6 @ 12"	#10 @ 12"	#6 @ 14" E.F.	
S10	26"	#6 @ 12"	#8 @ 12"	#6 @ 12" E.F.	

REFERENCE DRAWINGS

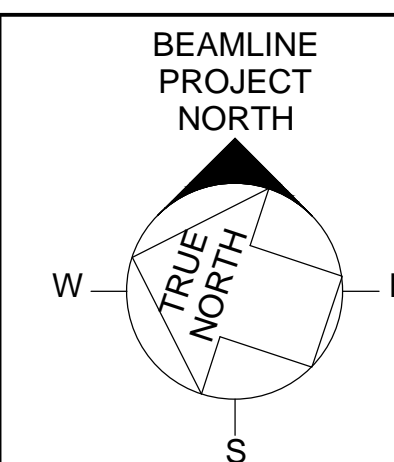
- S-1 STRUCTURAL NOTES
- SC-10 TYPICAL SECTIONS AND DETAILS 1
- SC-11 TYPICAL SECTIONS AND DETAILS 2
- SC-12 MAT SCHEDULE
- SC-13 WALL SCHEDULE
- SC-14 SLAB SCHEDULE
- SC-15 BEAM SCHEDULE



FNA1303

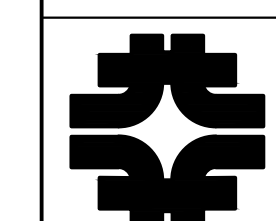
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SUBMITTED		



SCALE:

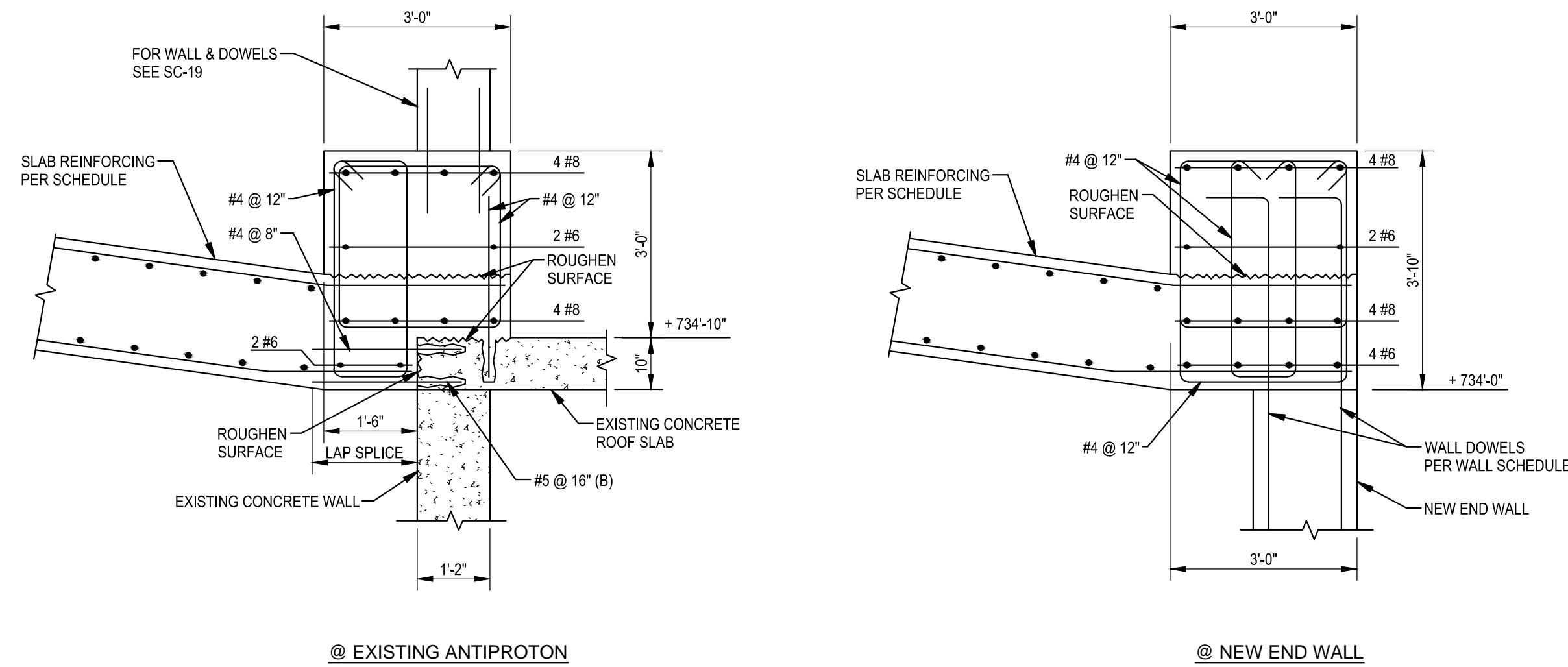
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MC BEAMLINE ENCLOSURES
 SLAB SCHEDULE

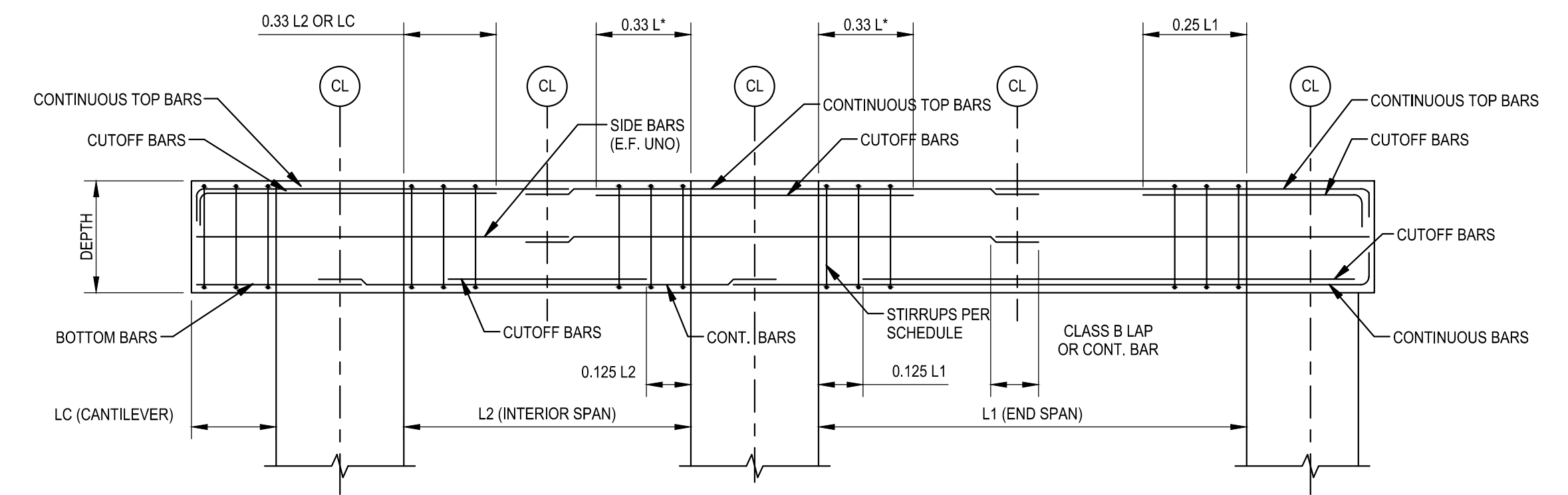
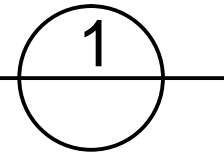
DRAWING NO. 6-10-22

SC-14 REV.



BEAM DETAIL B1

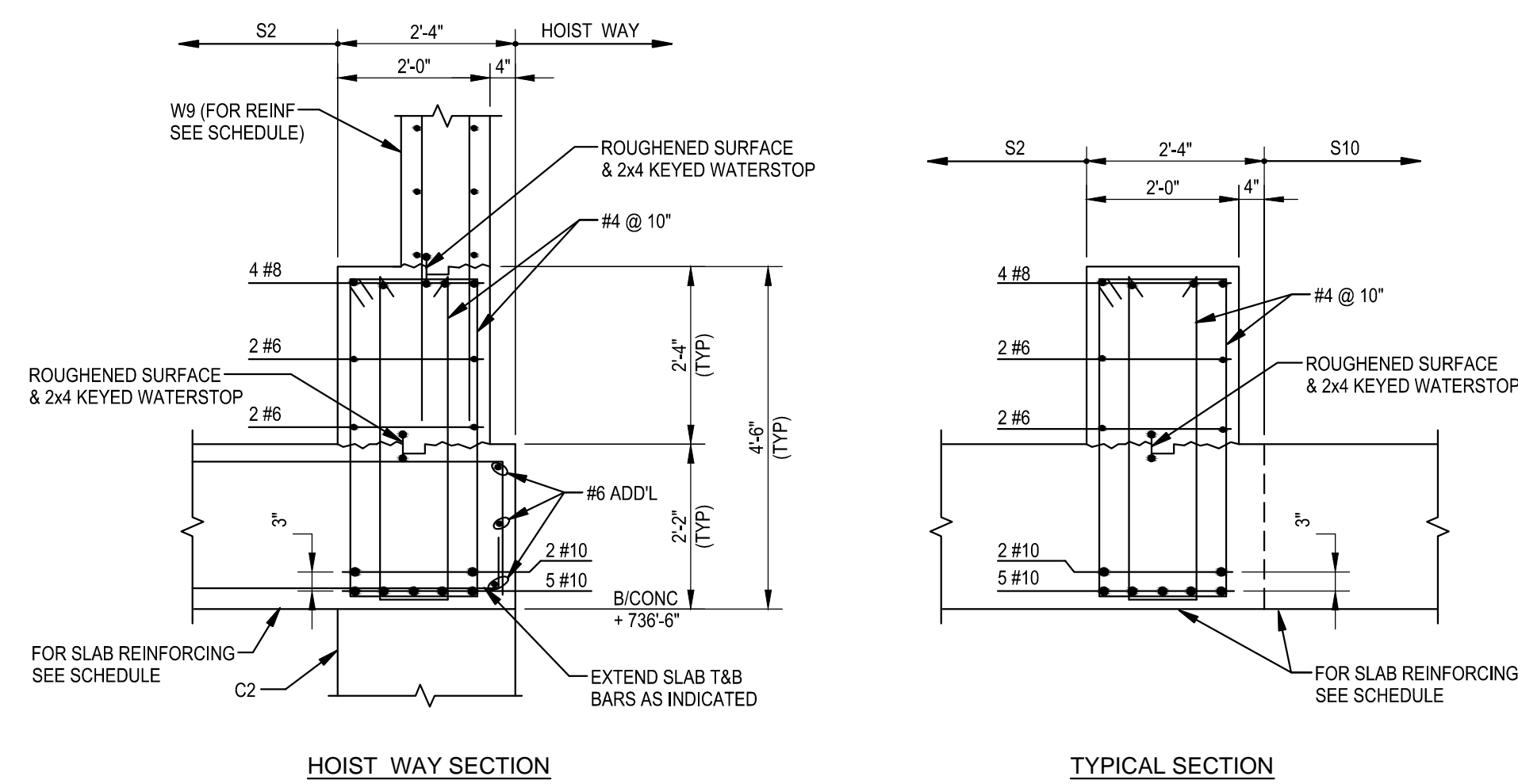
SCALE: 1/2" = 1'-0"



NOTE:
 1. L* = LARGER OF ADJACENT SPANS.
 2. SIDE BARS 1/2 E.F. EQUALLY SPACED BETWEEN T & B BARS.
 3. PROVIDE #6 HORIZ BAR W/ LAP SPLICE @ ENDS OF CUTOFF BARS.

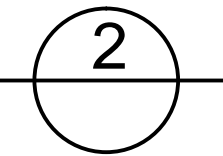
BAR PLACEMENT

N.T.S.



BEAM DETAIL B2

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



CONCRETE BEAM SCHEDULE

(f_c = 4,000psi)

MARK	SIZE		BOTTOM BARS		TOP BARS			SIDE BARS	STIRRUPS			REMARKS
	WIDTH	DEPTH	CONT	CUTOFF	L CUTOFF	CONT	R. CUTOFF		SIZE	TYPE	SPACING	
B1	36	46	4 #8	-----	-----	4 #8	-----	2 #6	#4	VARIES	ALL @ 18"	SEE 1/SC-15
B2	24	54	5 #10 + 2 #10	-----	-----	4 #8	-----	4 #6	#4	U	ALL @ 10"	SEE 2/SC-15
B3	18	50	3 #10	-----	-----	3 #10	-----	3 #6 EF	#4	□	6 @ 6", R @ 12"	

REFERENCE DRAWINGS

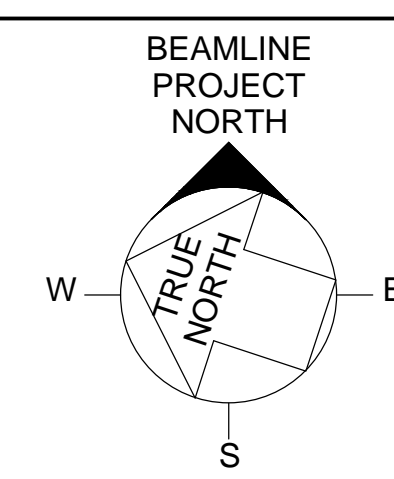
- S-1 STRUCTURAL NOTES
- SC-10 TYPICAL SECTIONS AND DETAILS 1
- SC-11 TYPICAL SECTIONS AND DETAILS 2
- SC-12 MAT SCHEDULE
- SC-13 WALL SCHEDULE
- SC-14 SLAB SCHEDULE
- SC-15 BEAM SCHEDULE



FNA1303

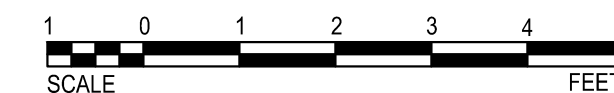
Oak Brook Pointe 700 Commerce Drive, Suite 200 Oak Brook, IL 60523
 ph. 630-756-7000 www.middough.com fx. 630-756-7001

	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



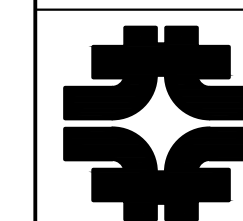
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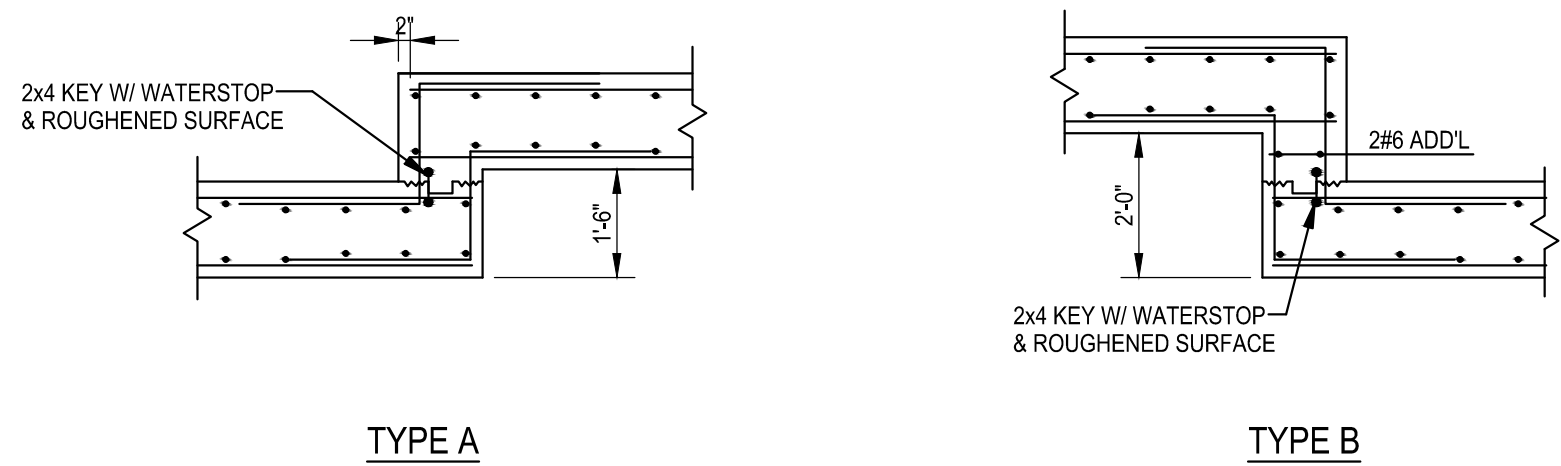
UNITED STATES DEPARTMENT OF ENERGY



MC BEAMLINE ENCLOSURES
 BEAM SCHEDULE

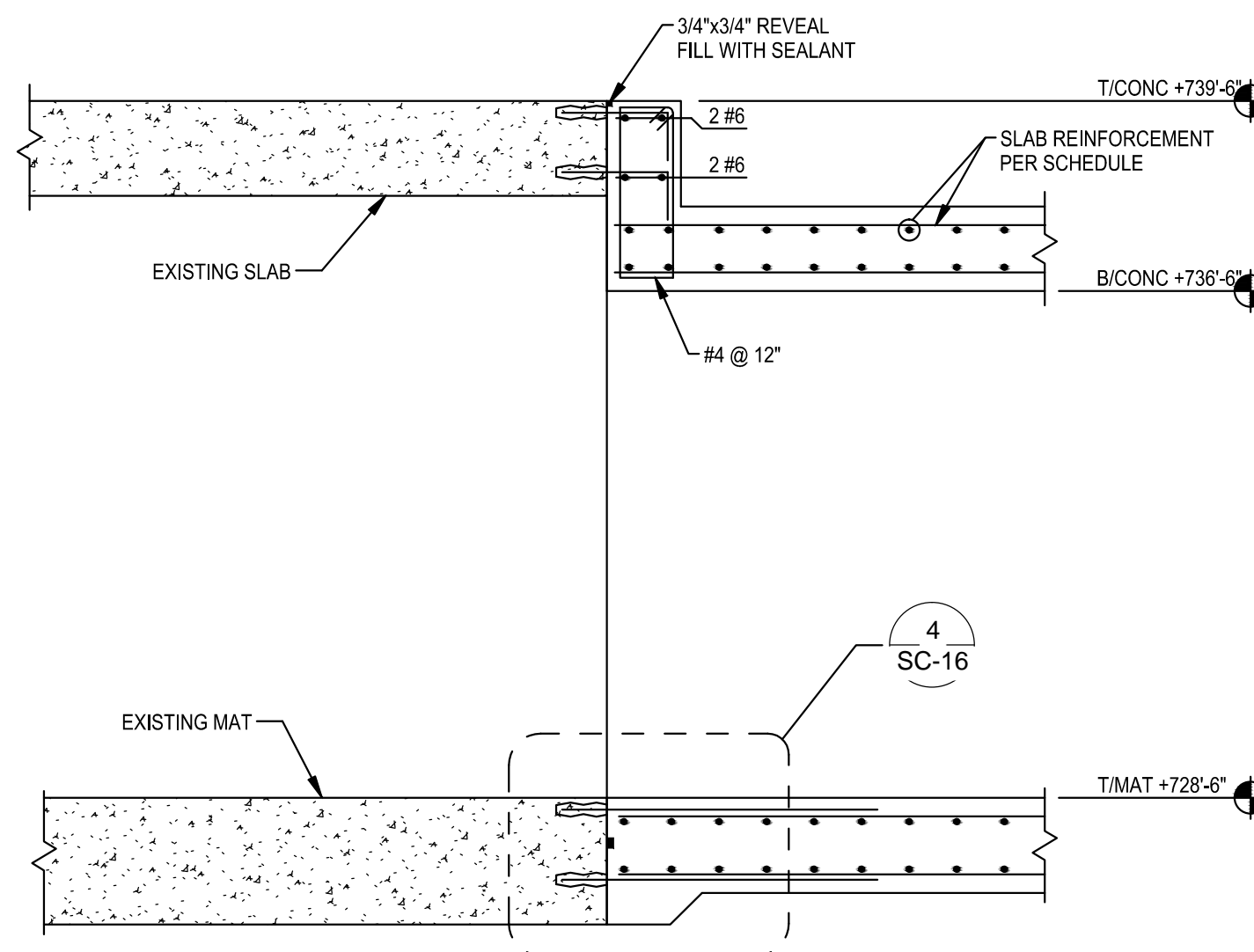
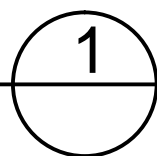
DRAWING NO. 6-10-22

SC-15 REV.



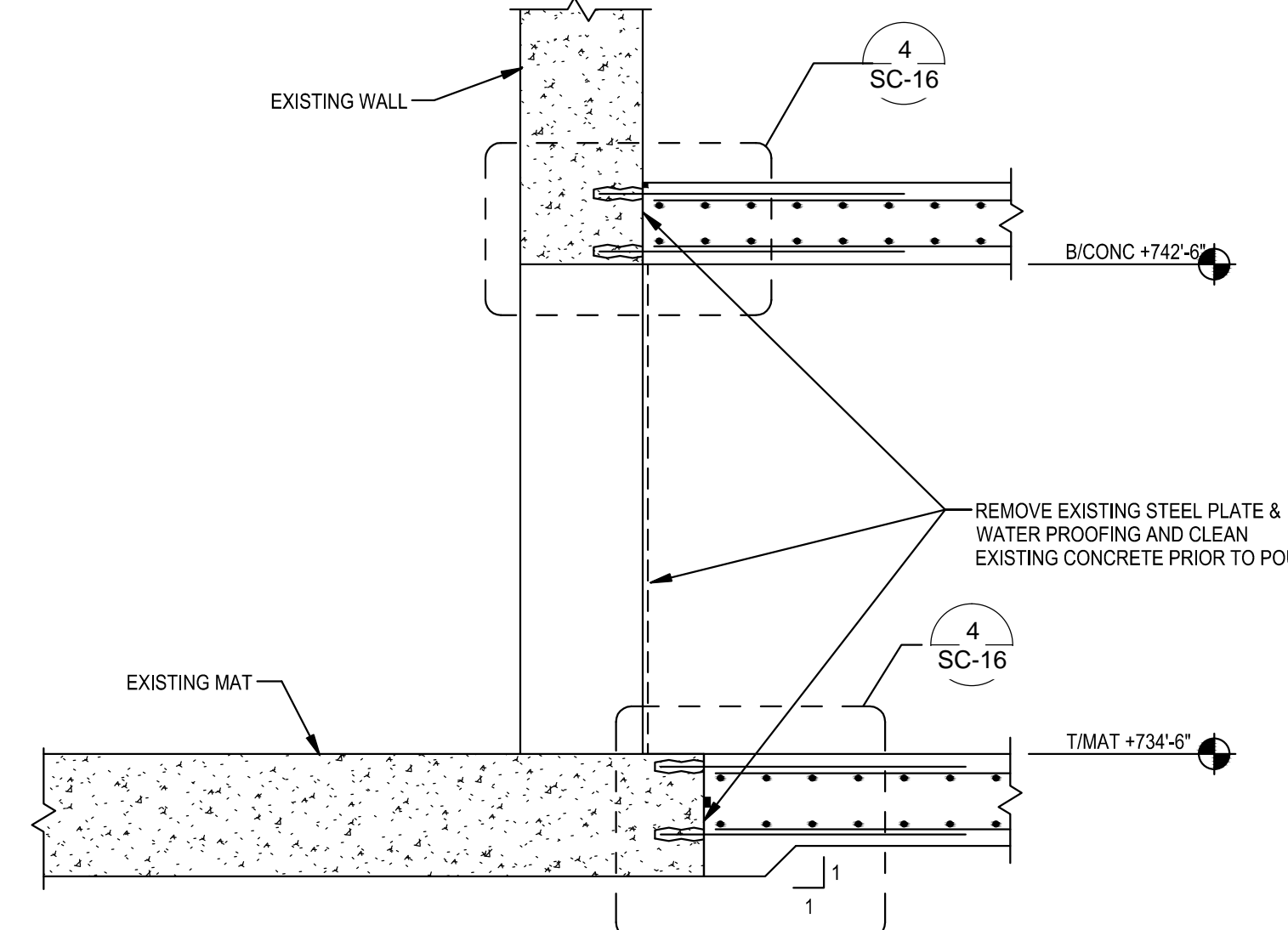
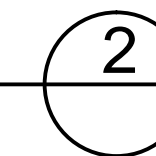
ROOF ELEVATION CHANGE

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



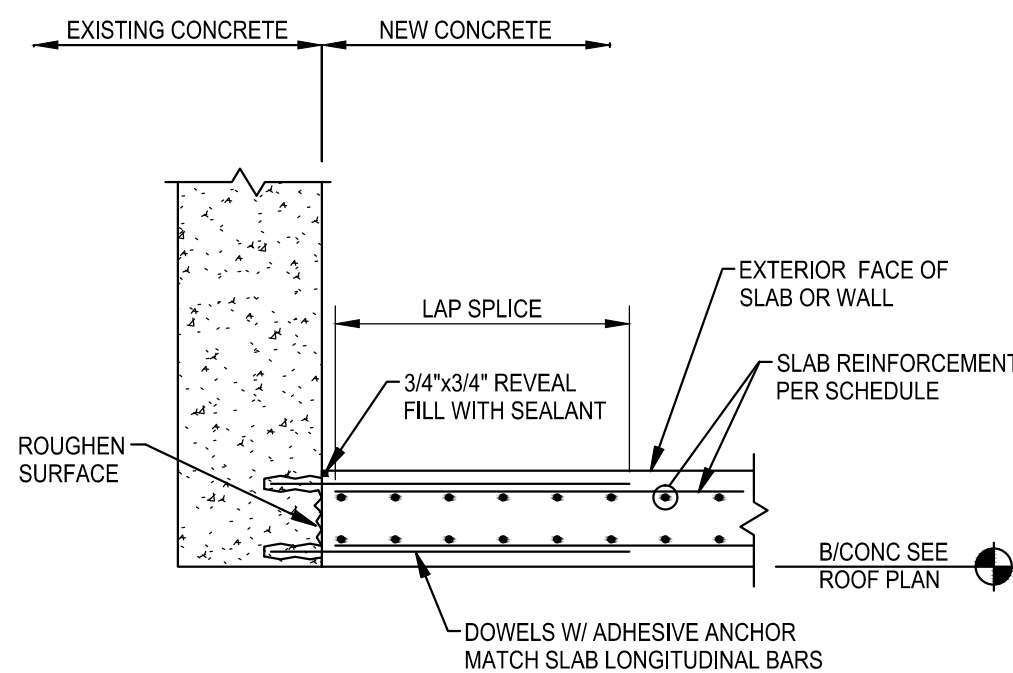
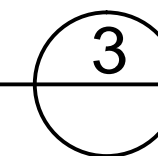
Mu2e TO BEAMLINE

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

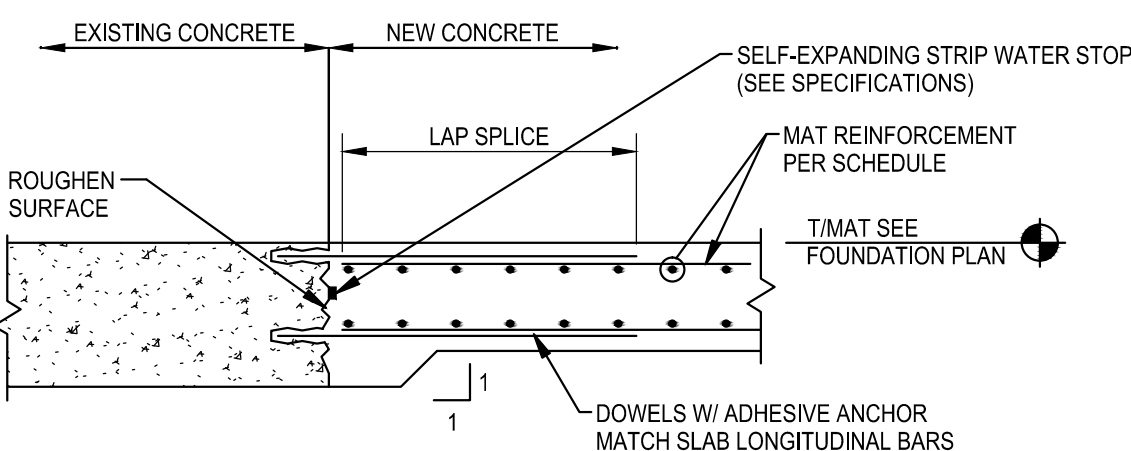


MC-1 TO BEAMLINE

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



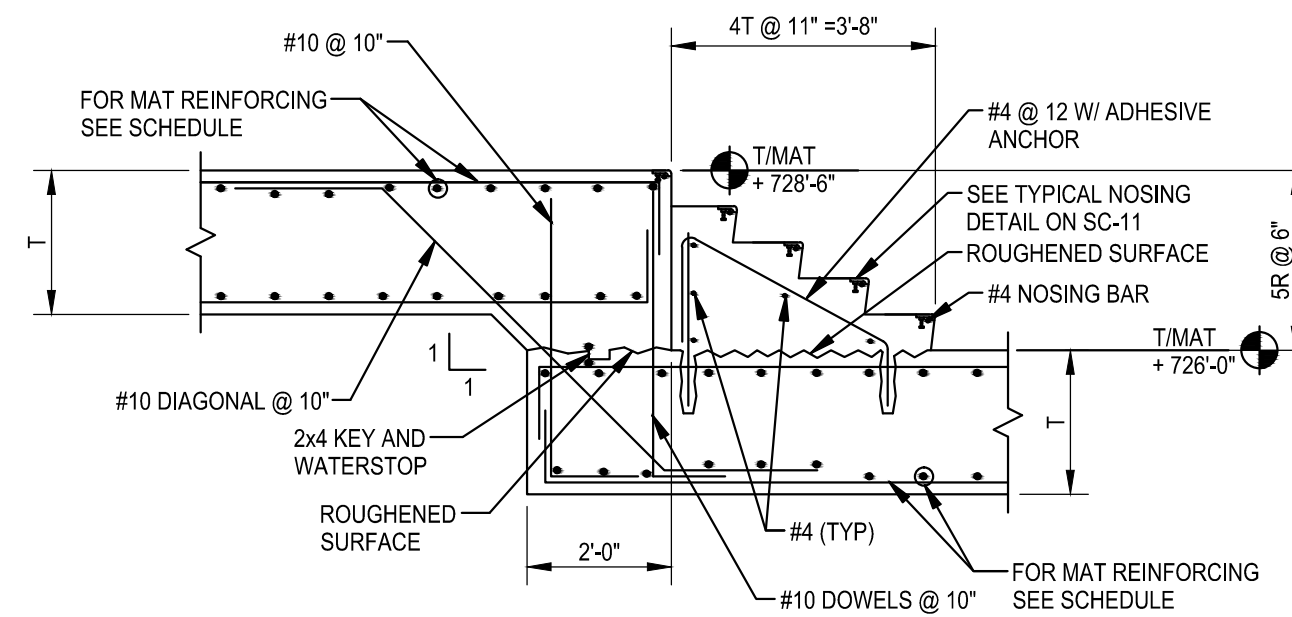
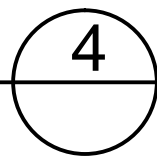
TYPICAL SLAB OR WALL TO EXISTING SLAB OR WALL



TYPICAL MAT TO EXISTING MAT

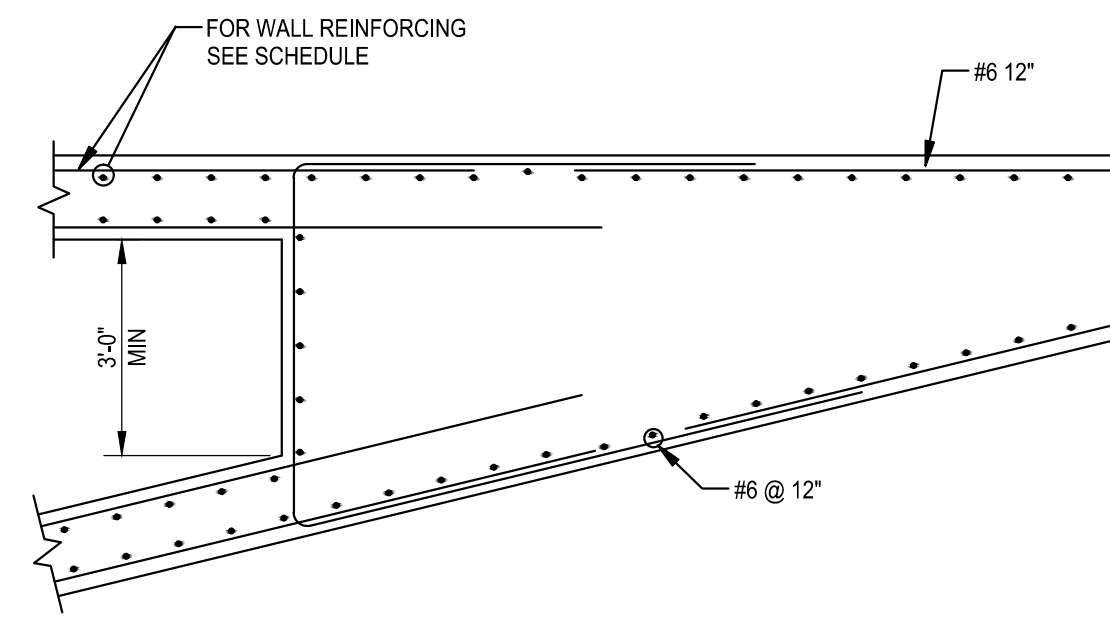
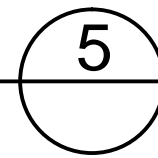
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SCALE: 3/8" = 1'-0"



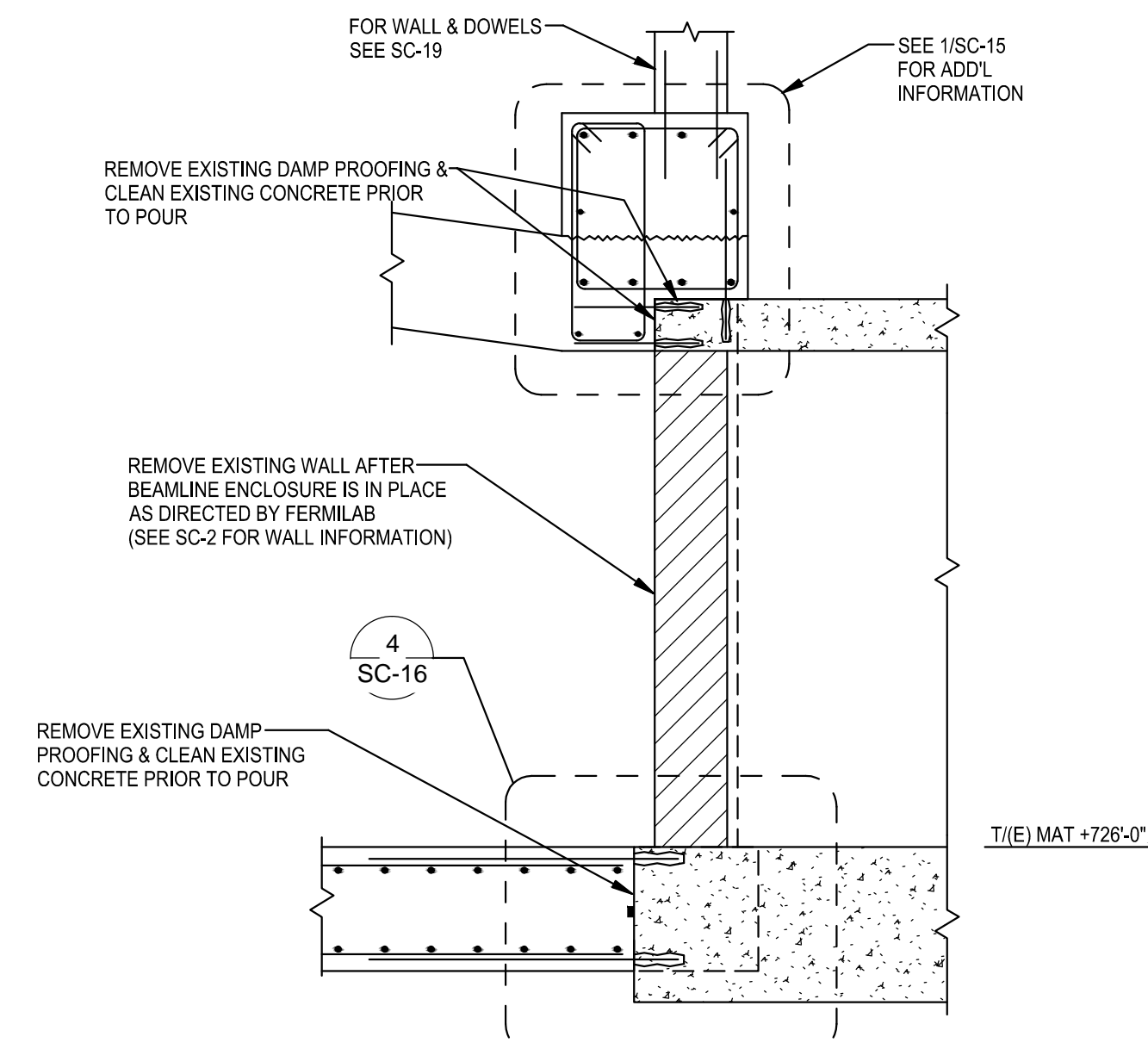
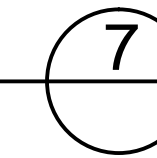
DETAIL 5

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



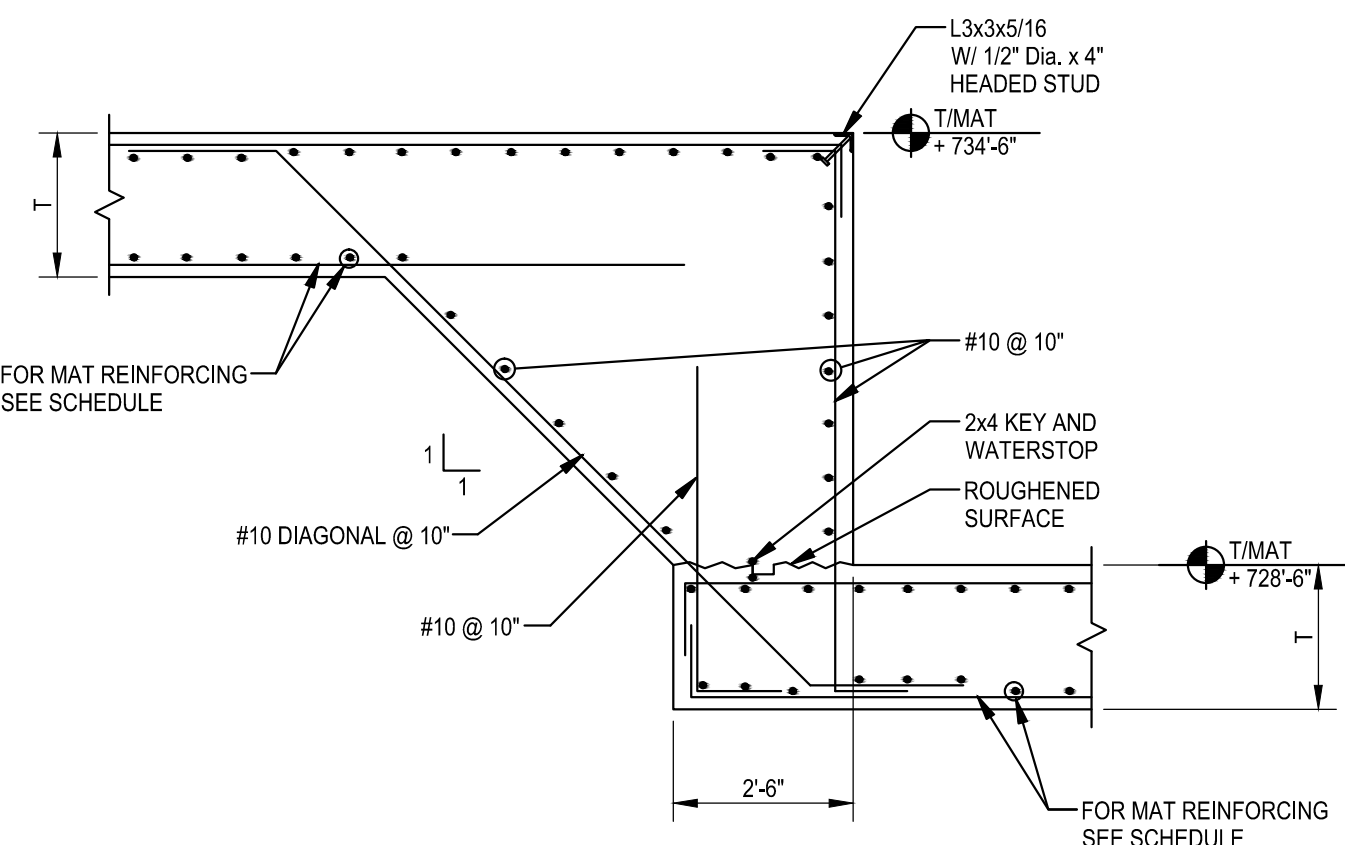
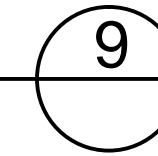
DETAIL 7

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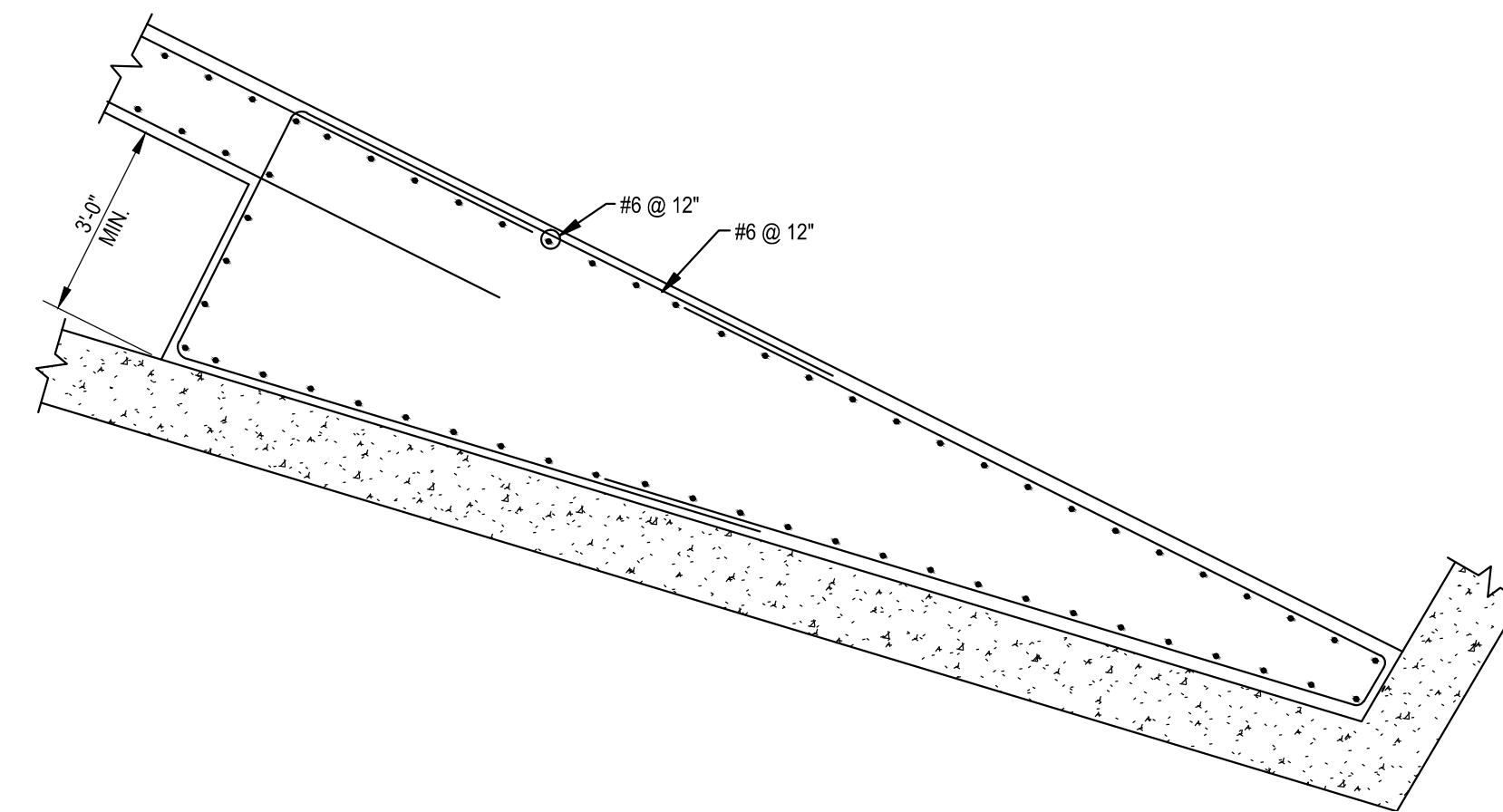
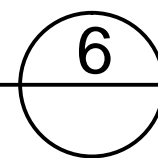
ANTIPROTON TO BEAMLINE

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



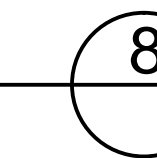
DETAIL 6

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



DETAIL 8

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



REFERENCE DRAWINGS

- S-1 STRUCTURAL NOTES
- SC-10 TYPICAL SECTIONS AND DETAILS 1
- SC-11 TYPICAL SECTIONS AND DETAILS 2
- SC-12 MAT SCHEDULE
- SC-13 WALL SCHEDULE
- SC-14 SLAB SCHEDULE
- SC-15 BEAM SCHEDULE

Jun 03, 2014 - 9:43am M:\Active Projects\610223 - Final Design\Drawings\Middough Issued for proposal\SC-16_F-10-22.dwg

REV.	DATE	DESCRIPTIONS



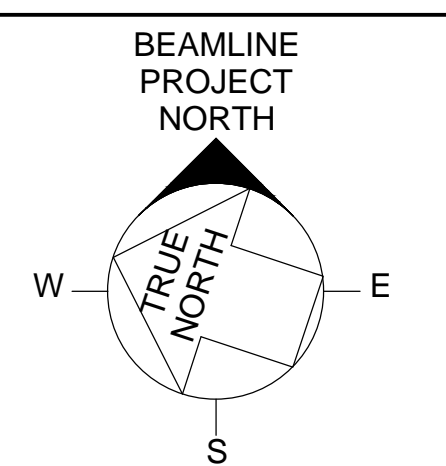
FNA1303

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ph. 630-756-7000

700 Commerce Drive, Suite 200
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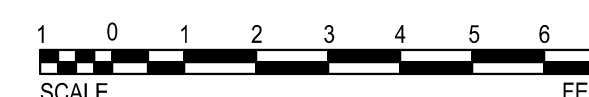
Oak Brook, IL 60523
fx. 630-756-7001

	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



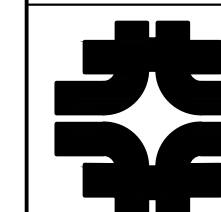
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3/8"=1'-0"



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UNITED STATES DEPARTMENT OF ENERGY



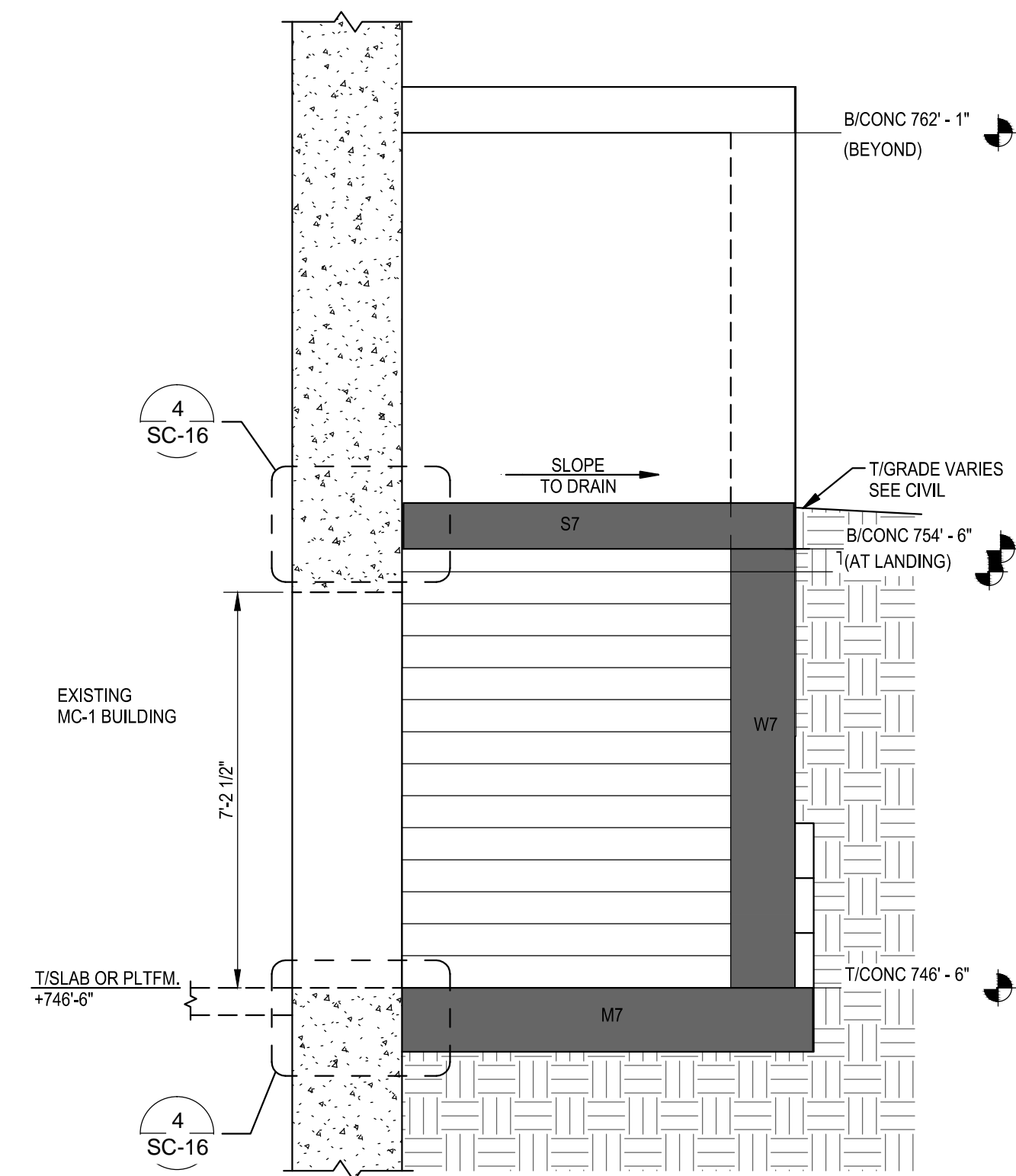
**MC BEAMLINE ENCLOSURES
SECTIONS AND DETAILS 1**

DRAWING NO. 6-10-22

SC-16

REV.

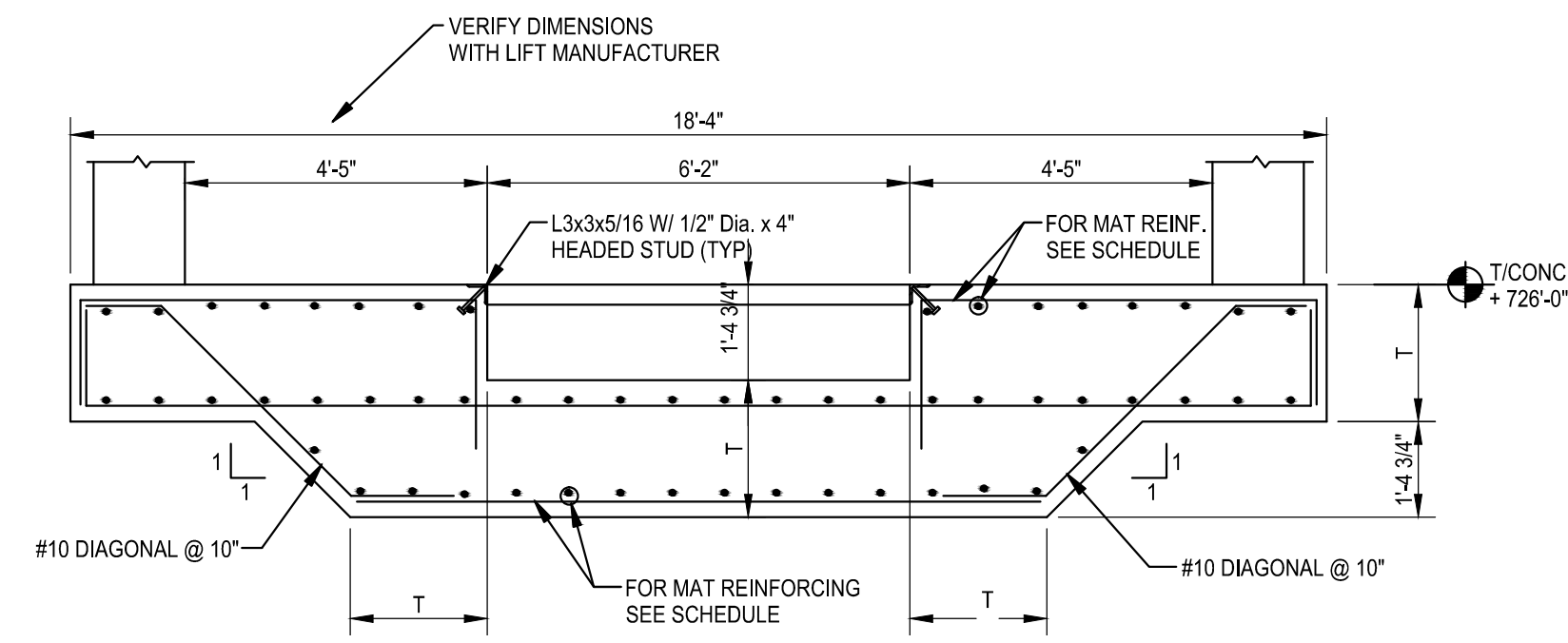
03 MAR 2014



STAIR SECTION D

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

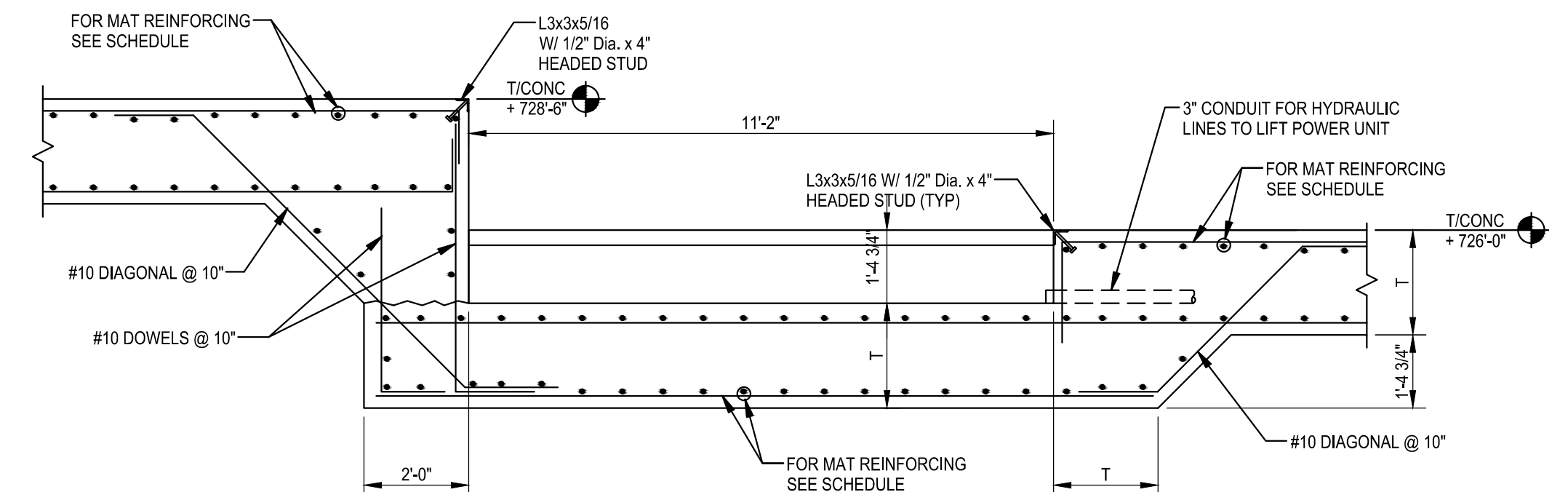
D
SC-1



SECTION J

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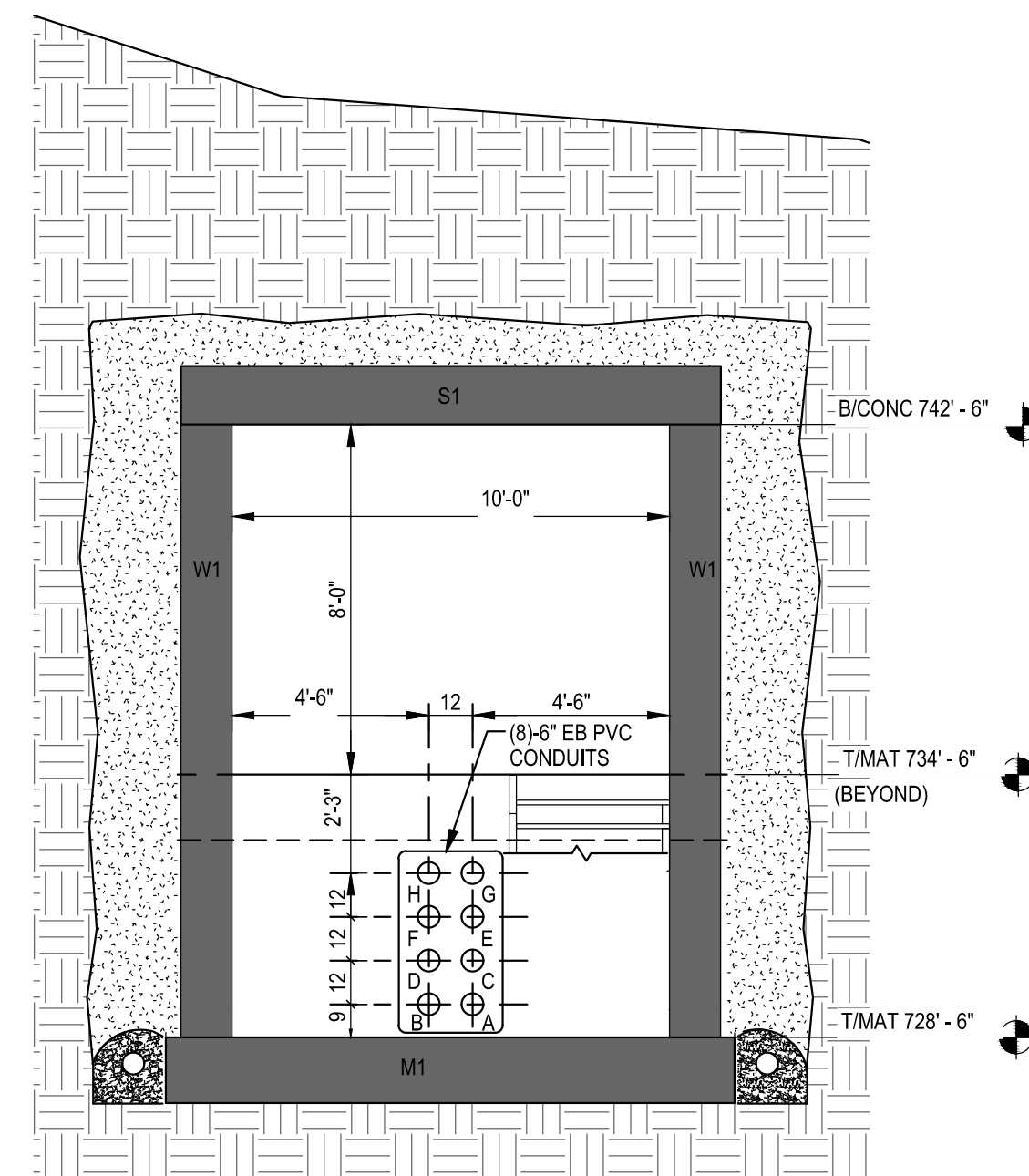
J
SC-2



LIFT PIT DETAIL 1

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

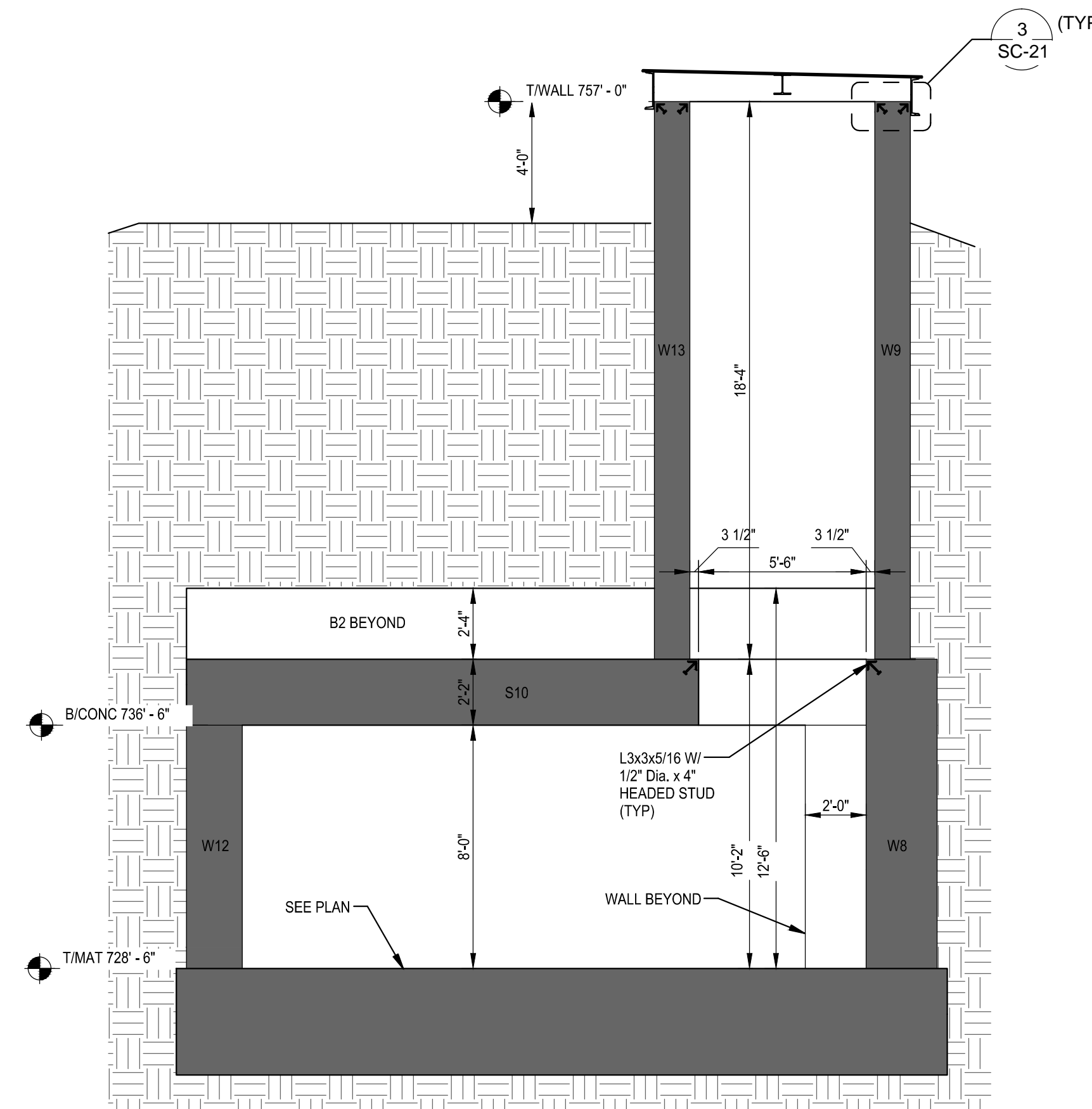
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SECTION M

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

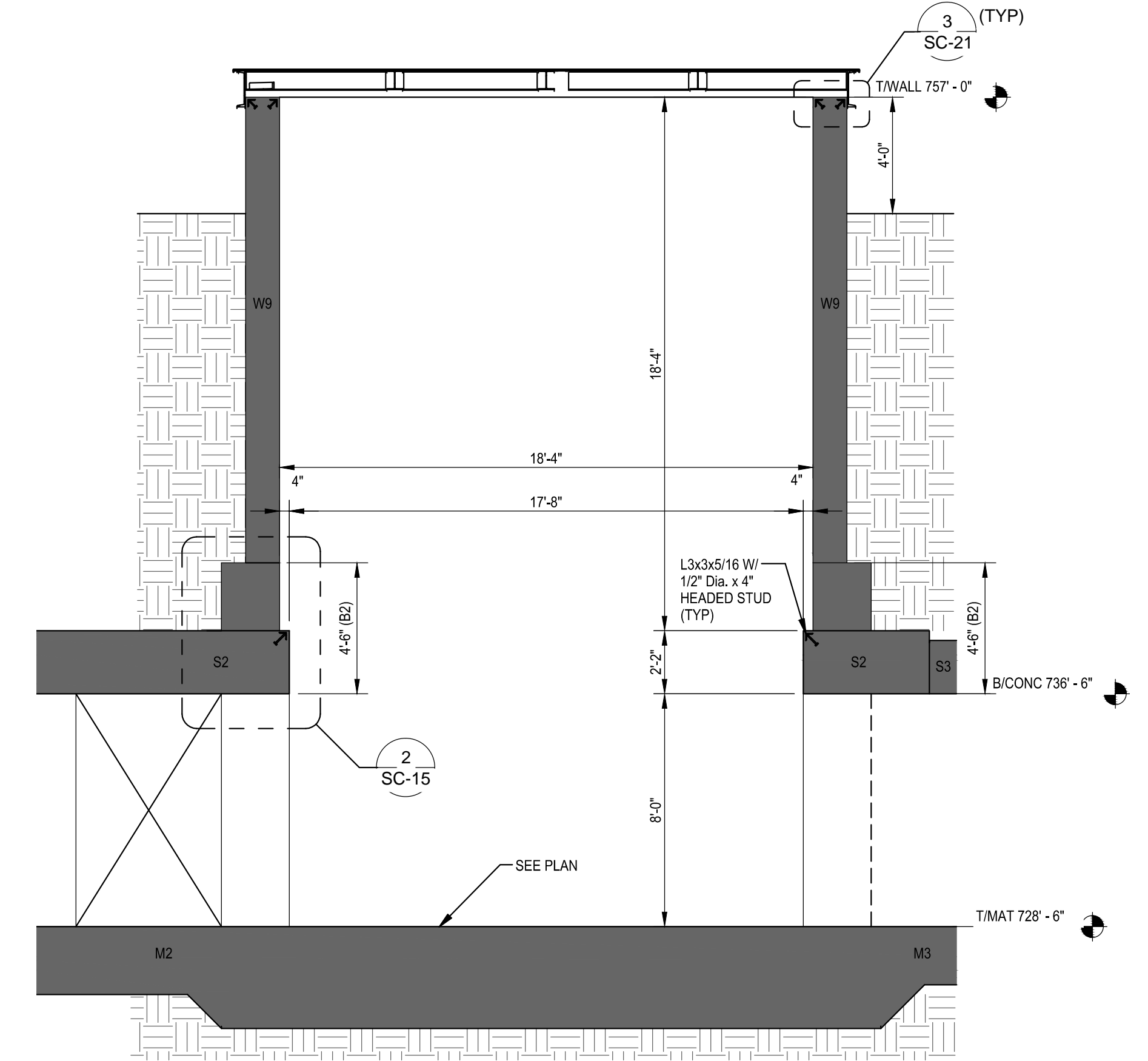
M
SC-1



SECTION L

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

L
SC-1



SECTION K

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

K
SC-1

- REFERENCE DRAWINGS
- S-1 STRUCTURAL NOTES
 - SC-10 TYPICAL SECTIONS AND DETAILS 1
 - SC-11 TYPICAL SECTIONS AND DETAILS 2
 - SC-12 MAT SCHEDULE
 - SC-13 WALL SCHEDULE
 - SC-14 SLAB SCHEDULE
 - SC-15 BEAM SCHEDULE

WORK THIS DRAWING WITH THE MECHANICAL, ELECTRICAL & CIVIL DRAWINGS FOR COORDINATION OF ALL PIPE & CONDUIT PENETRATIONS



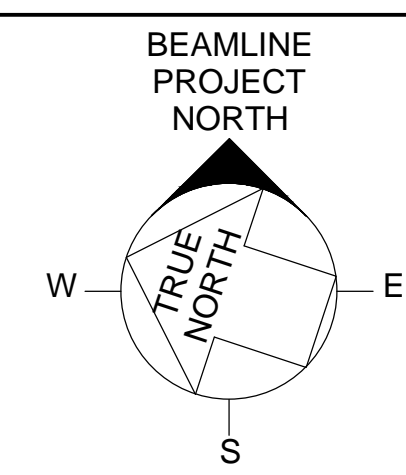
FNA1303

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ph. 630-756-7000

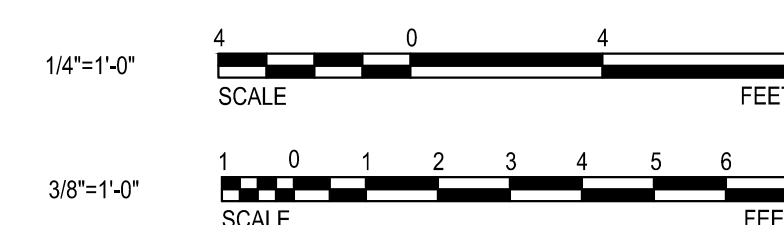
700 Commerce Drive, Suite 200
www.middough.com

Oak Brook, IL 60523
fx. 630-756-7001

	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

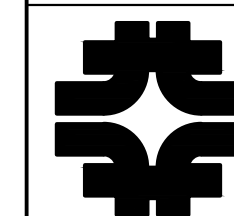


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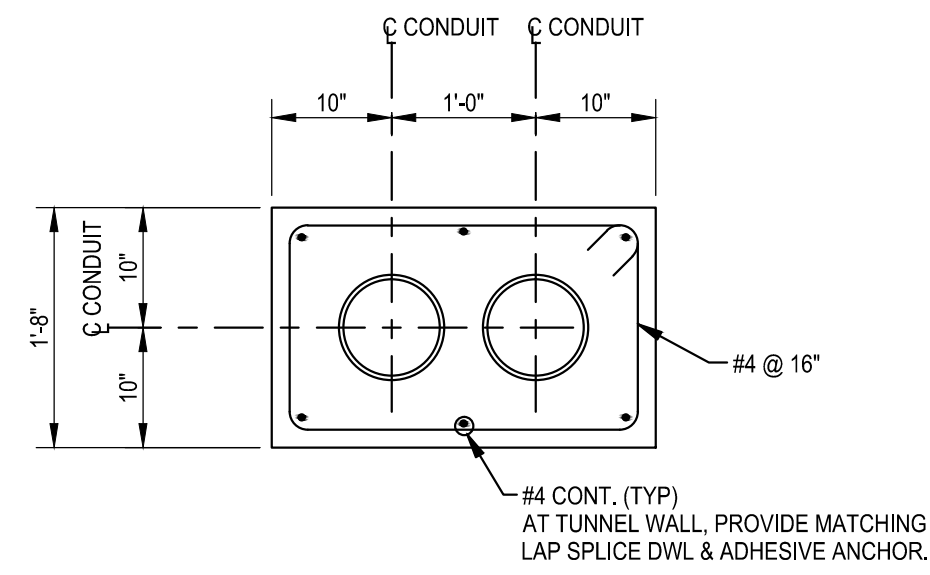
UNITED STATES DEPARTMENT OF ENERGY



MC BEAMLINE ENCLOSURES
SECTIONS AND DETAILS 2

DRAWING NO. 6-10-22

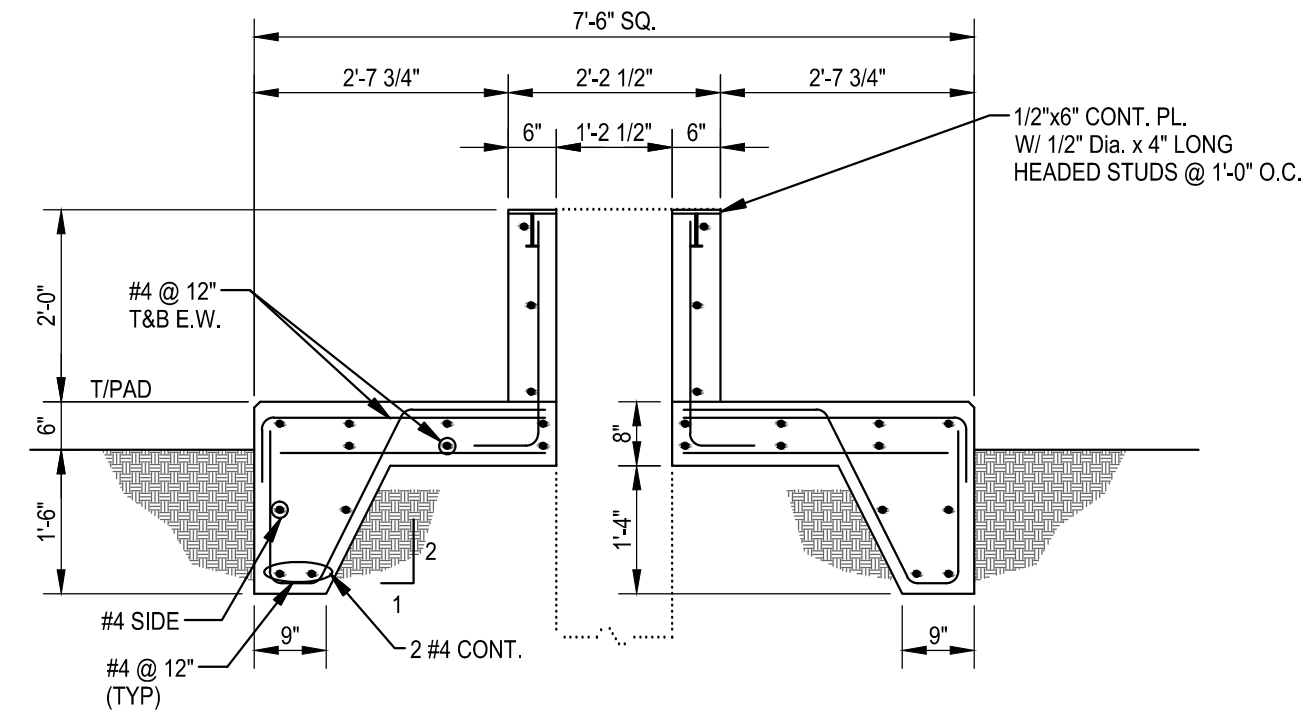
SC-17 REV.



CONDUIT ENCASEMENT

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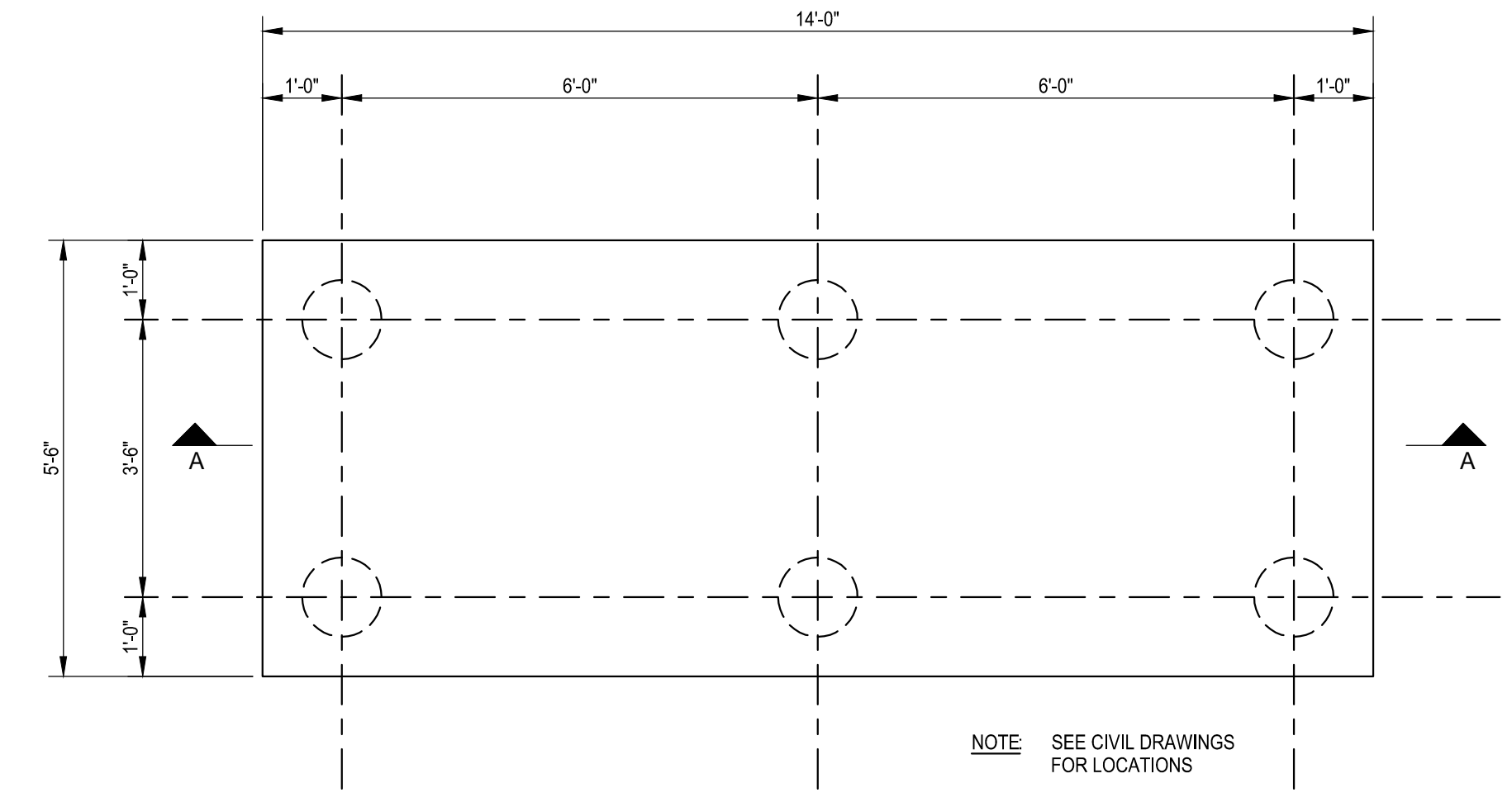
4



EXHAUST FAN SUPPORT

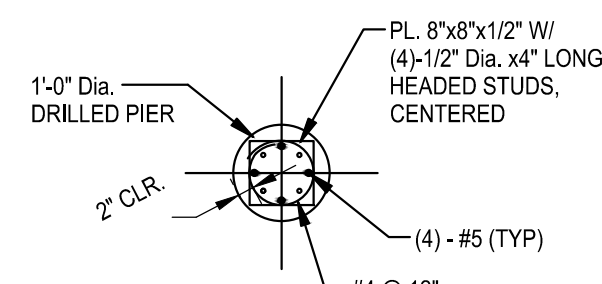
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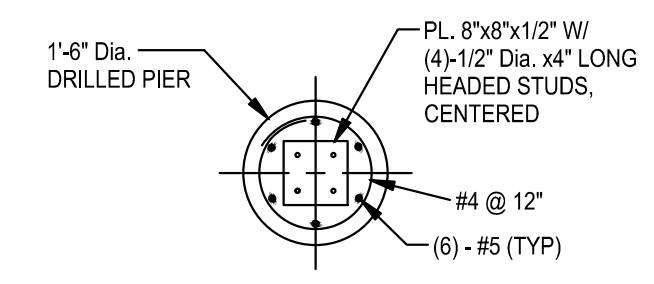


PLAN

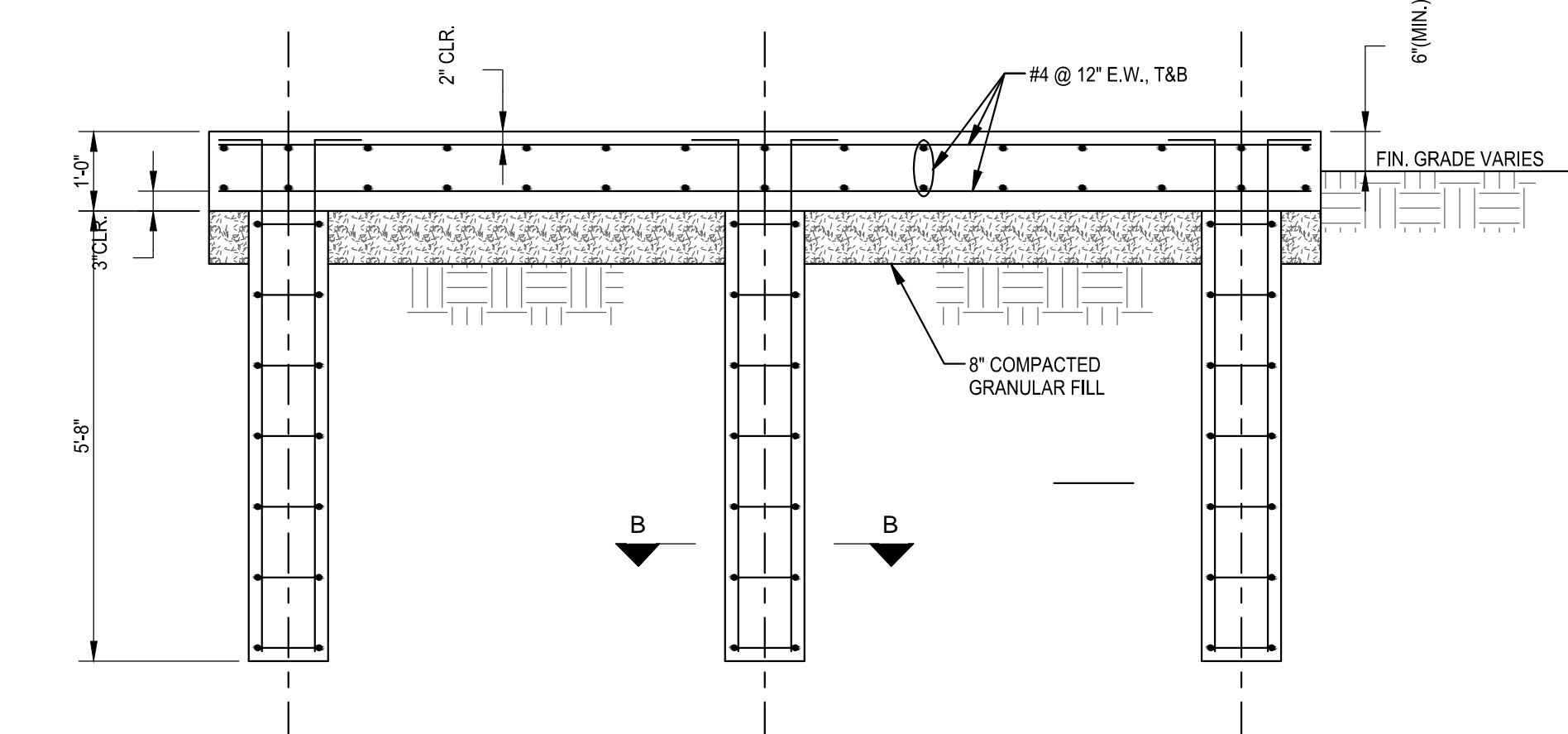
NOTE: SEE CIVIL DRAWINGS FOR LOCATIONS



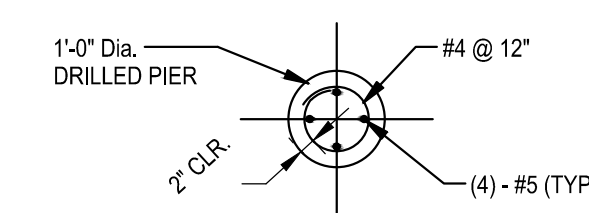
SECTION A-A (TYPICAL PIER)



SECTION A-A' (CORNER PIER)



SECTION A-A

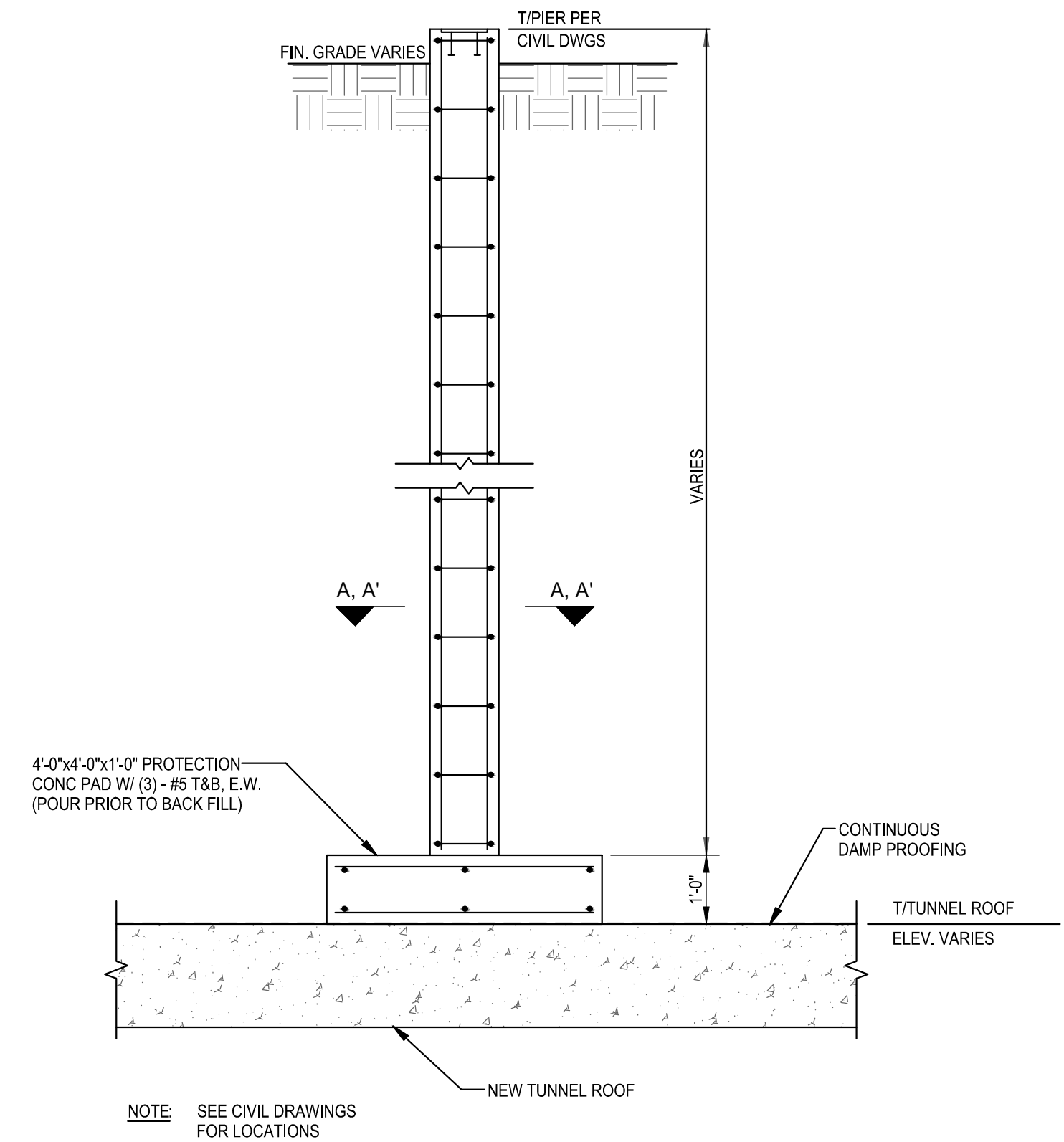


SECTION B-B

CRYO EXPANSION CAN PAD

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

1



TYPICAL CRYO DRILLED PIER

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

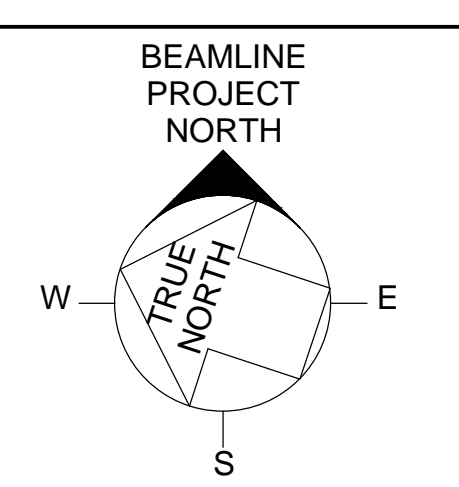
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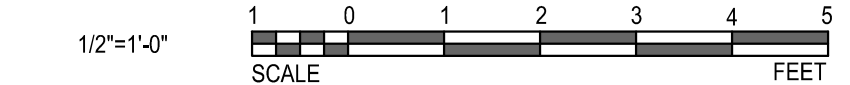
FNA1303

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700 Commerce Drive, Suite 200
Oak Brook, IL 60523
ph. 630-756-7000 www.middough.com fx. 630-756-7001

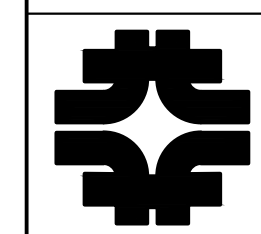
	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



SCALE:



FERMI NATIONAL ACCELERATOR LABORATORY
UNITED STATES DEPARTMENT OF ENERGY

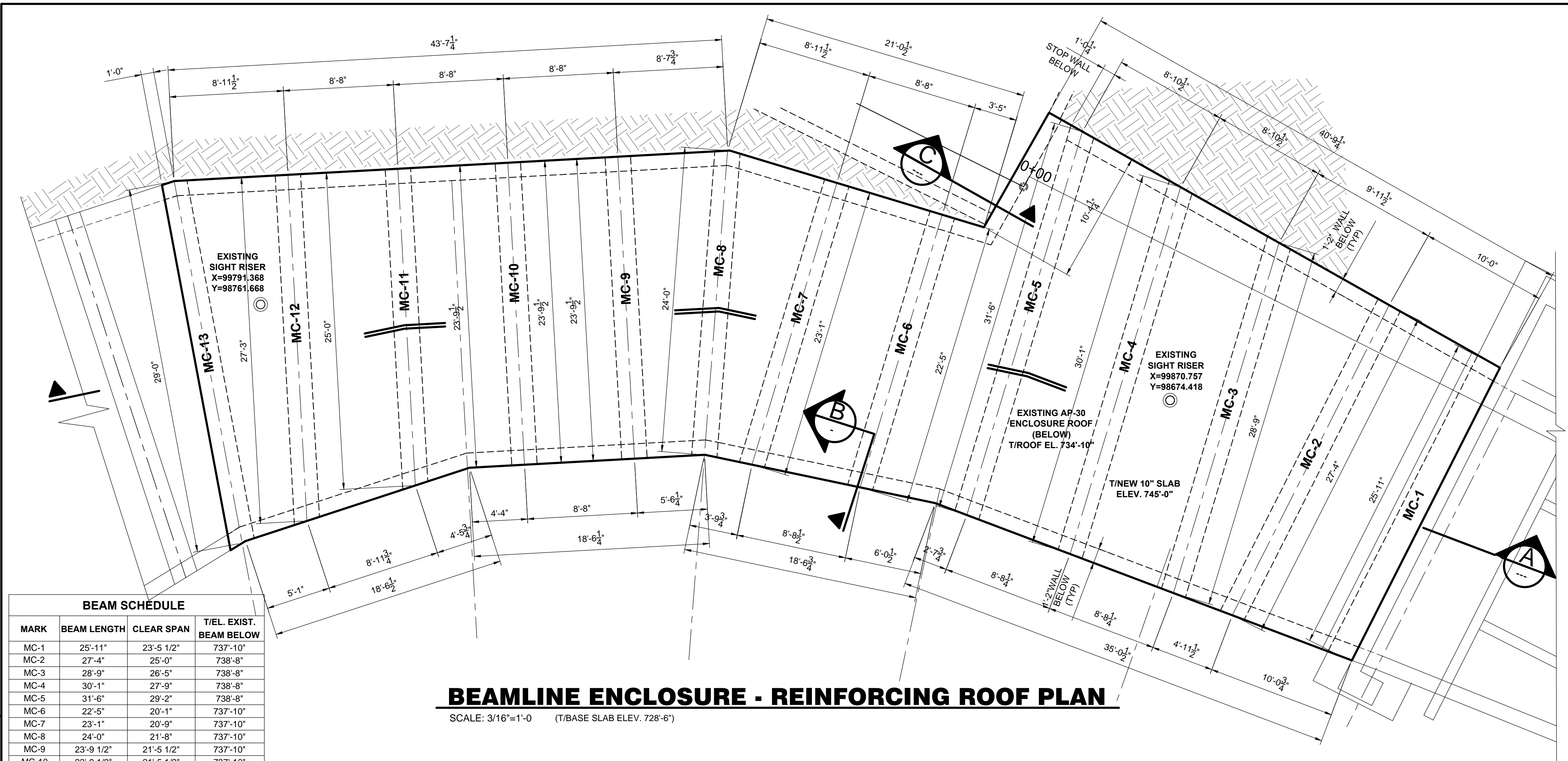


MC BEAMLINE ENCLOSURES
SITE CONCRETE

DRAWING NO. 6-10-22 SC-18 REV.

Jun 03, 2014 - 9:48am M:\Active Projects\610223 - Final Design\Drawings\Middough Issued for proposal\SC-18_F-1022.dwg

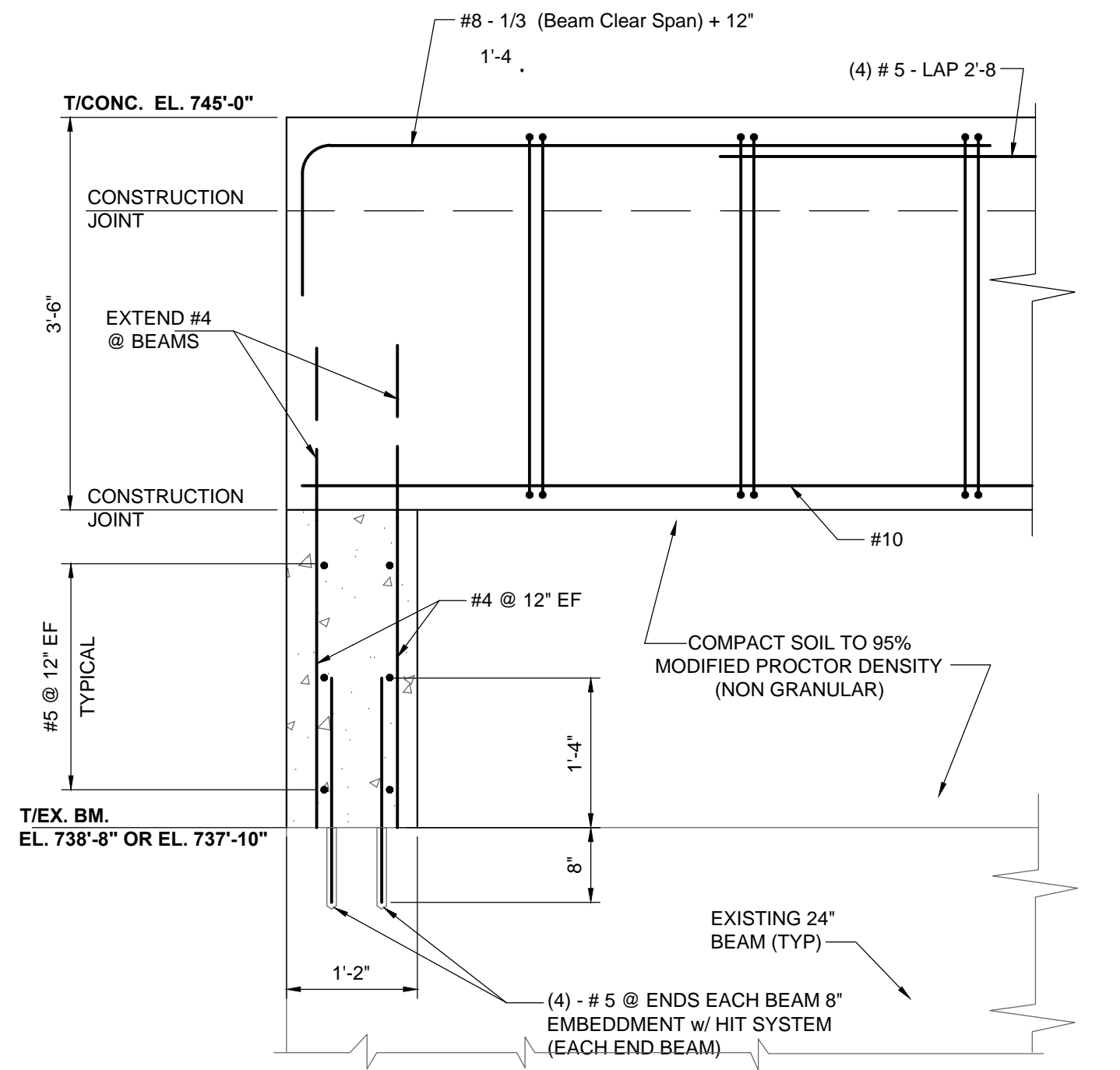
03 MAR 2014



BEAMLINE ENCLOSURE - REINFORCING ROOF PLAN

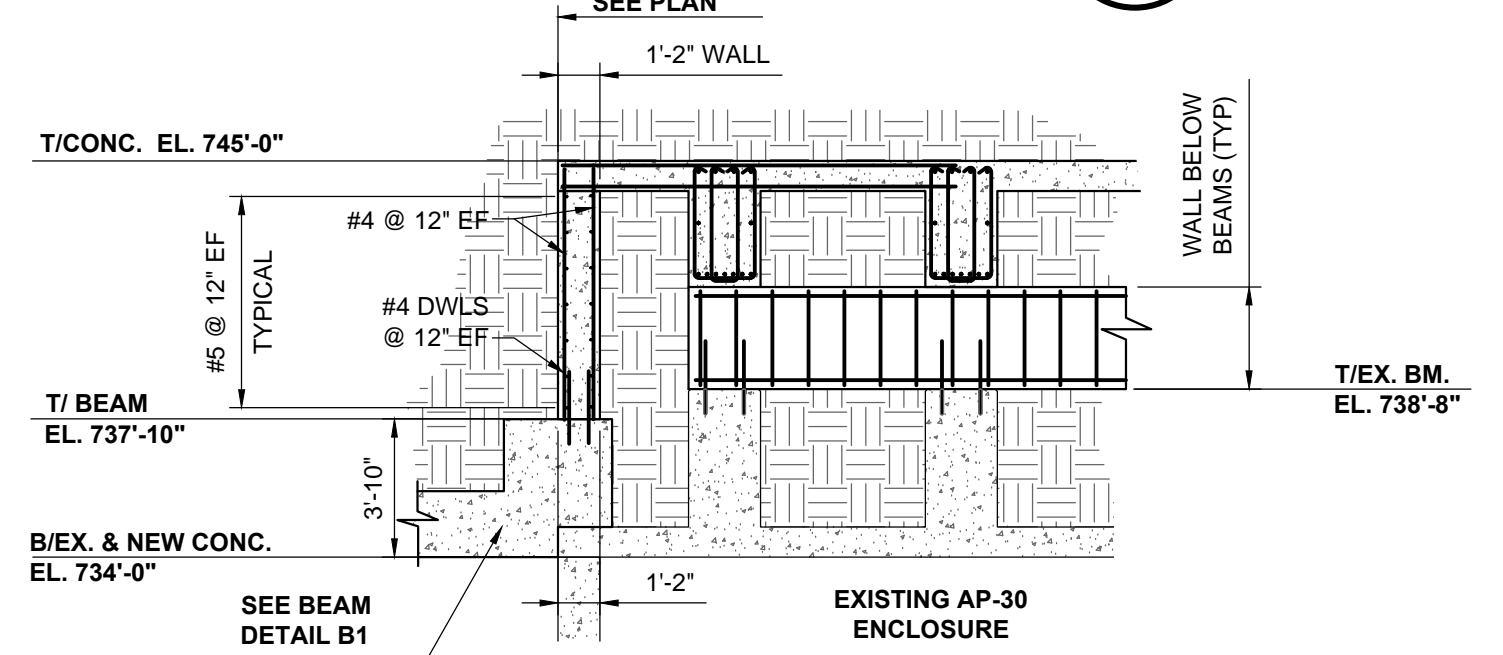
SCALE: 3/16"=1'-0" (T/BASE SLAB ELEV. 728'-6")

MARK	BEAM LENGTH	CLEAR SPAN	T/EL. EXIST. BEAM BELOW
MC-1	25'-11"	23'-5 1/2"	737'-10"
MC-2	27'-4"	25'-0"	738'-8"
MC-3	28'-9"	26'-5"	738'-8"
MC-4	30'-1"	27'-9"	738'-8"
MC-5	31'-6"	29'-2"	738'-8"
MC-6	22'-5"	20'-1"	737'-10"
MC-7	23'-1"	20'-9"	737'-10"
MC-8	24'-0"	21'-8"	737'-10"
MC-9	23'-9 1/2"	21'-5 1/2"	737'-10"
MC-10	23'-9 1/2"	21'-5 1/2"	737'-10"
MC-11	25'-0"	22'-8"	737'-10"
MC-12	27'-3"	24'-11"	738'-8"
MC-13	29'-0"	26'-10"	738'-8"



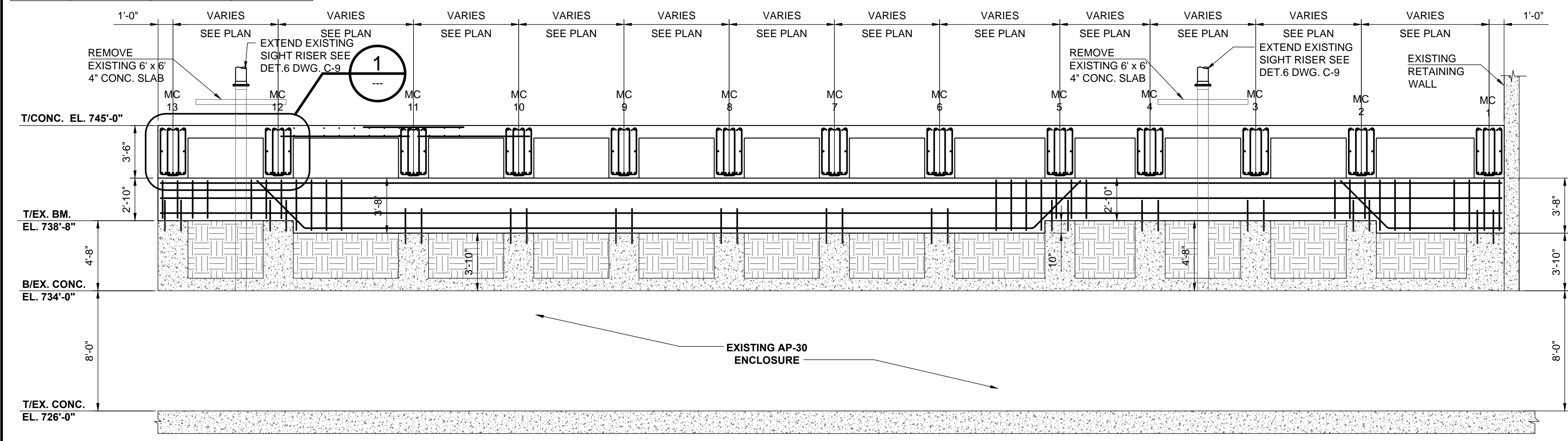
SECTION B

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



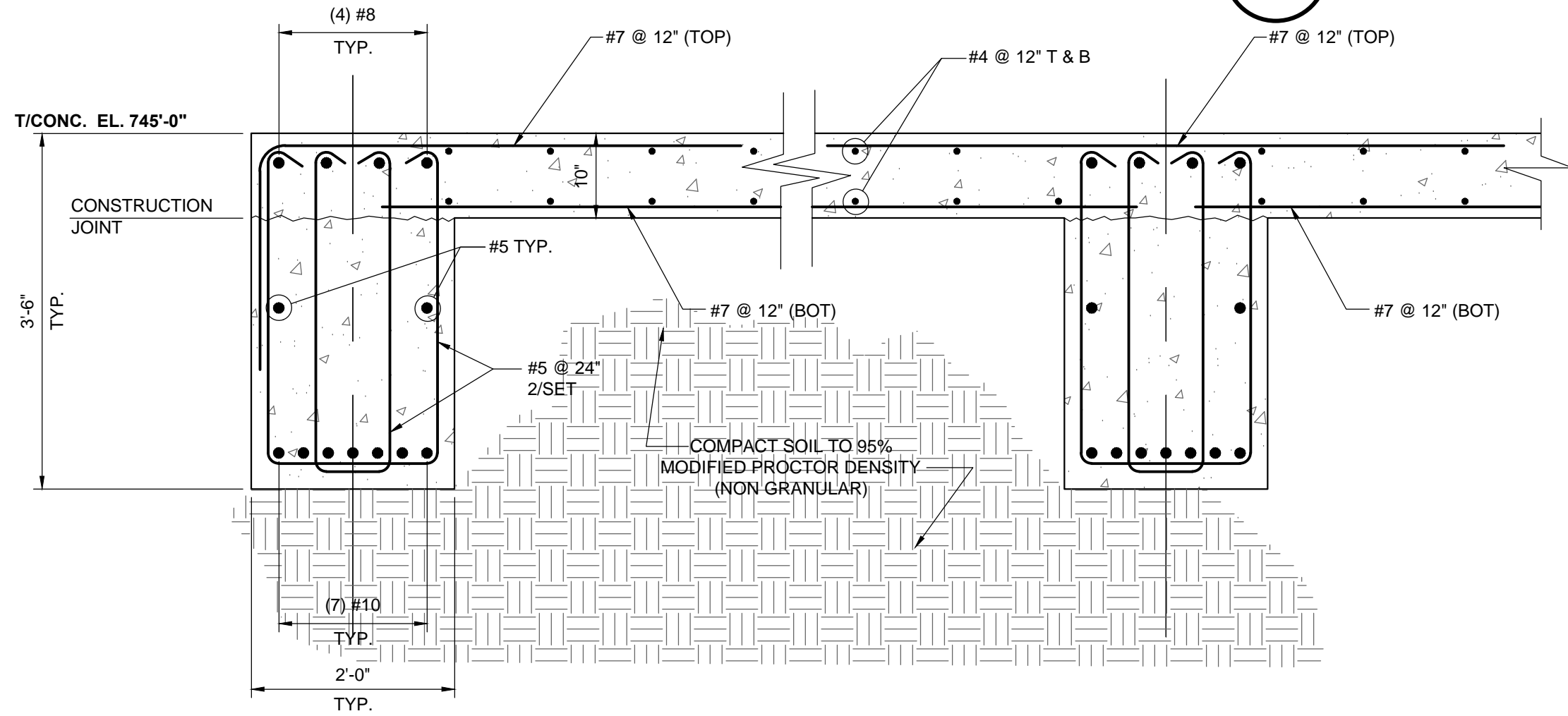
SECTION C

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



SECTION A

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

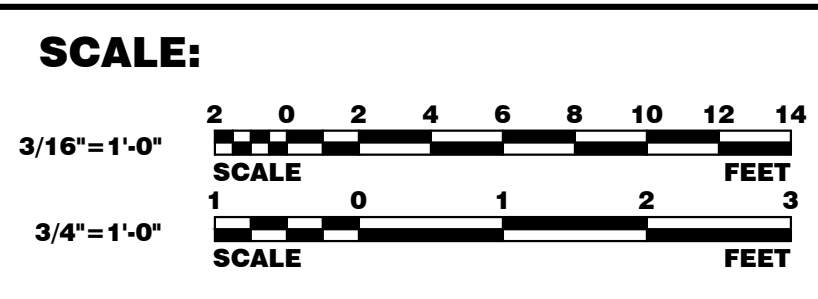
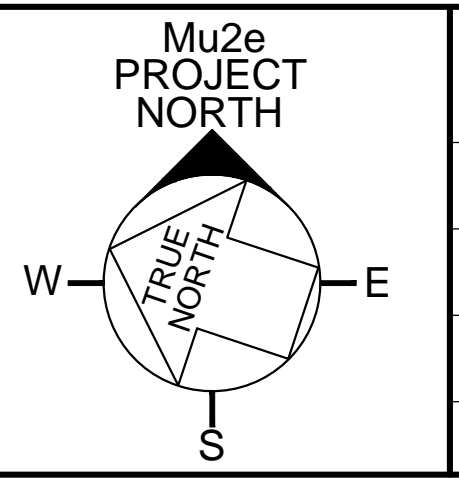


DETAIL 1

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

REV.	DATE	DESCRIPTIONS	REVISIONS

	NAME	DATE
DESIGNED	T. LACKOWSKI	02/01/14
DRAWN	R. JEDZINIAK	02/01/14
CHECKED	T. LACKOWSKI	02/01/14
APPROVED	.	.
SUBMITTED	.	.



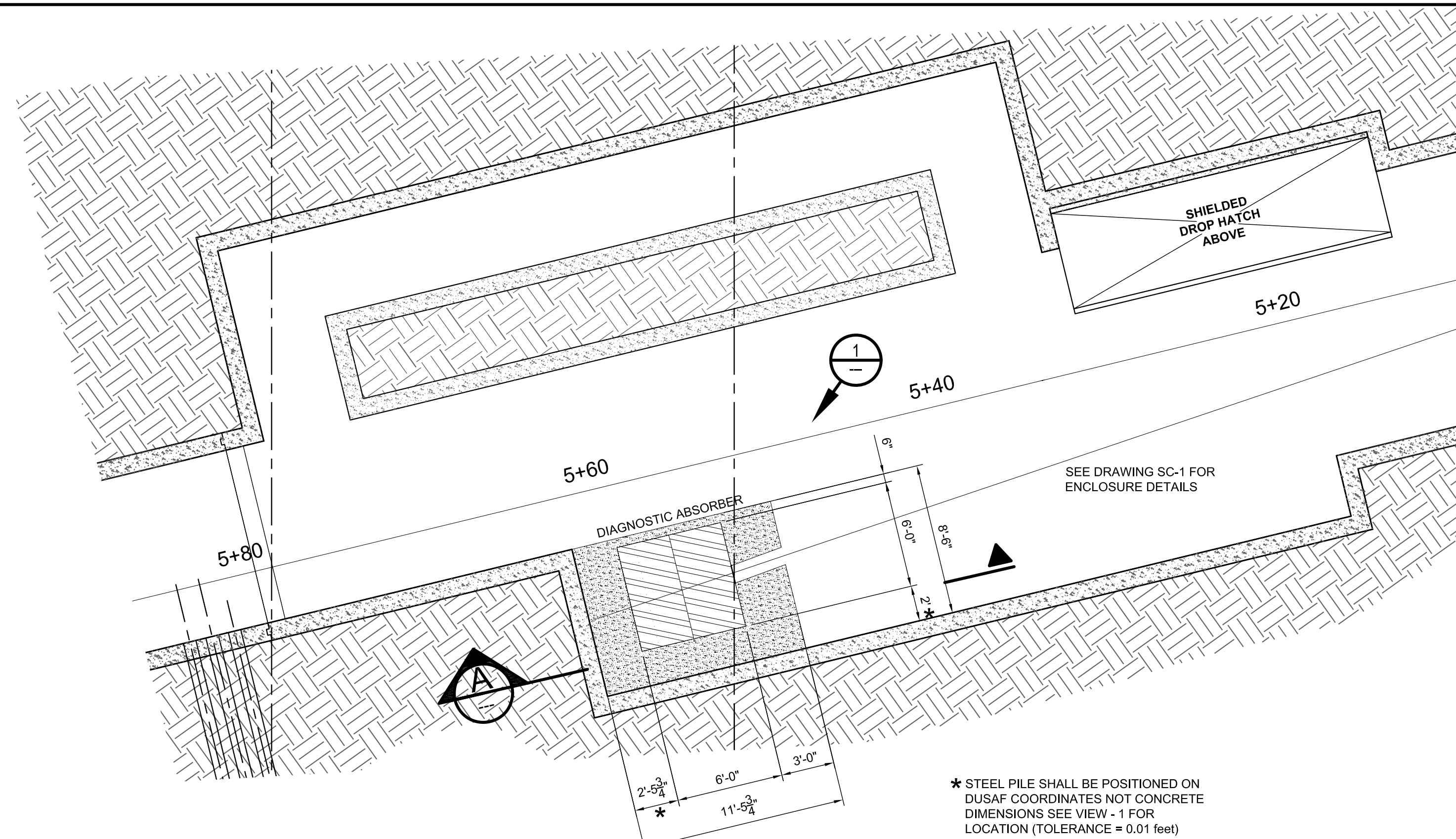
FERMI NATIONAL ACCELERATOR LABORATORY
 UNITED STATES DEPARTMENT OF ENERGY

**MC BEAMLINE ENCLOSURES
 ANTIPROTON RING ROOF
 REINFORCING SHEET - 1**

DRAWING NO. **6-10-22** SC-19 REV.

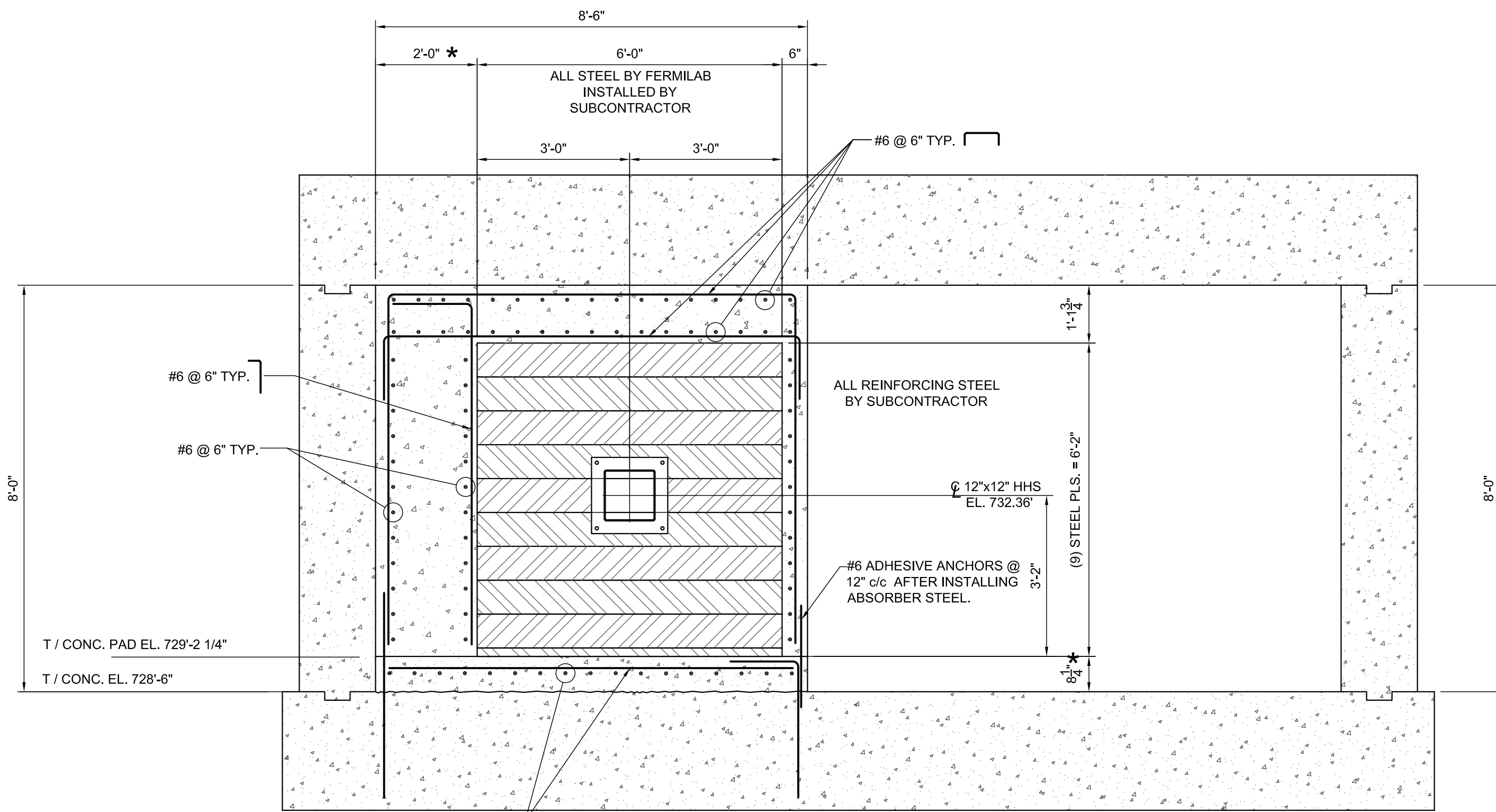
Jun 05, 2014 - 5:59am \\bluel\users\FESS_ENG\active\Projects\610223 - Final Design\Drawings\Midough\Issued for proposal\SC-19_SC-20_6-10-22.dwg

03 MAR., 2014



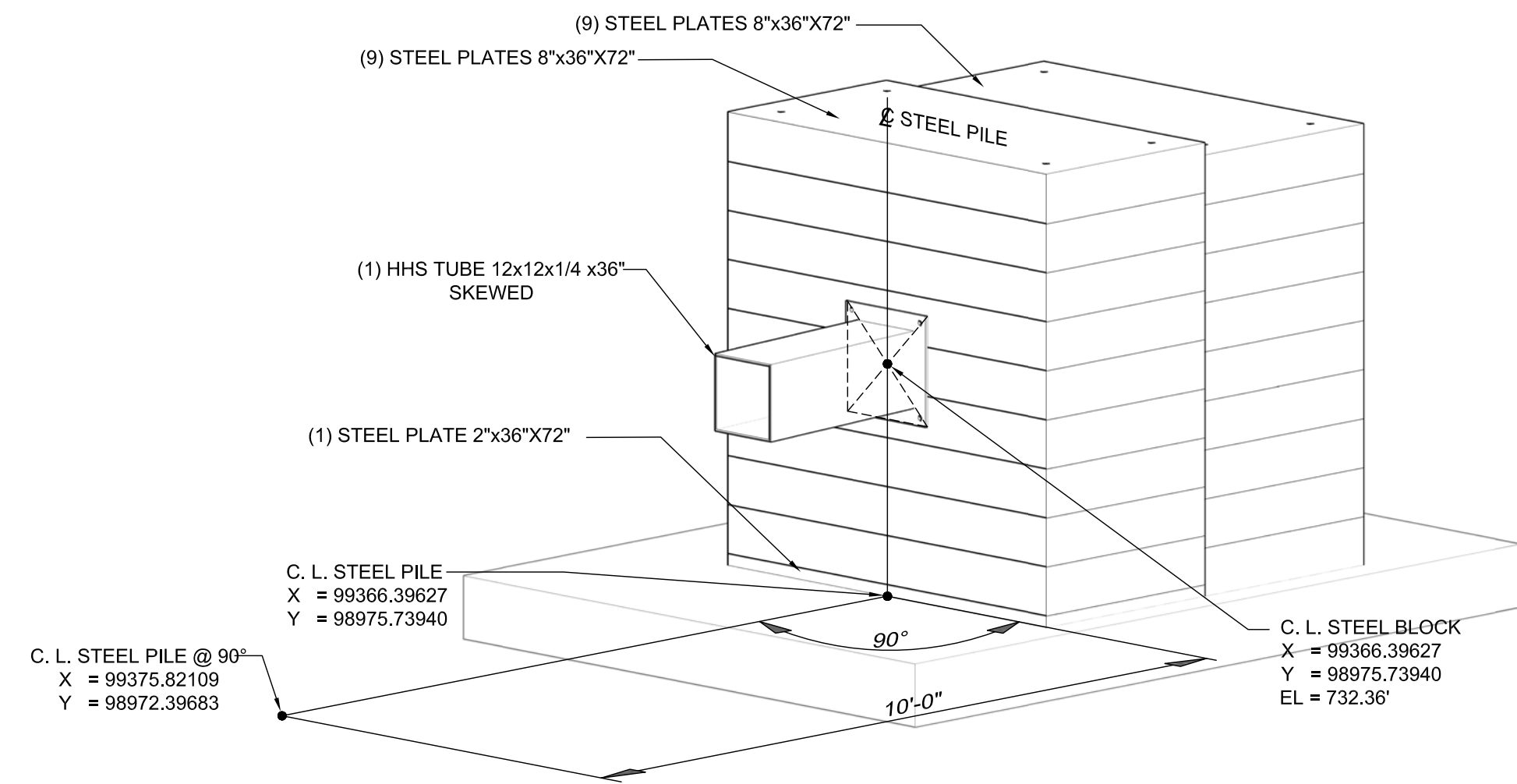
BEAMLINE ENCLOSURE - DIAGNOSTIC ABSORBER

SCALE: 3/16"=1'-0" (T/BASE SLAB ELEV. 728'-6")



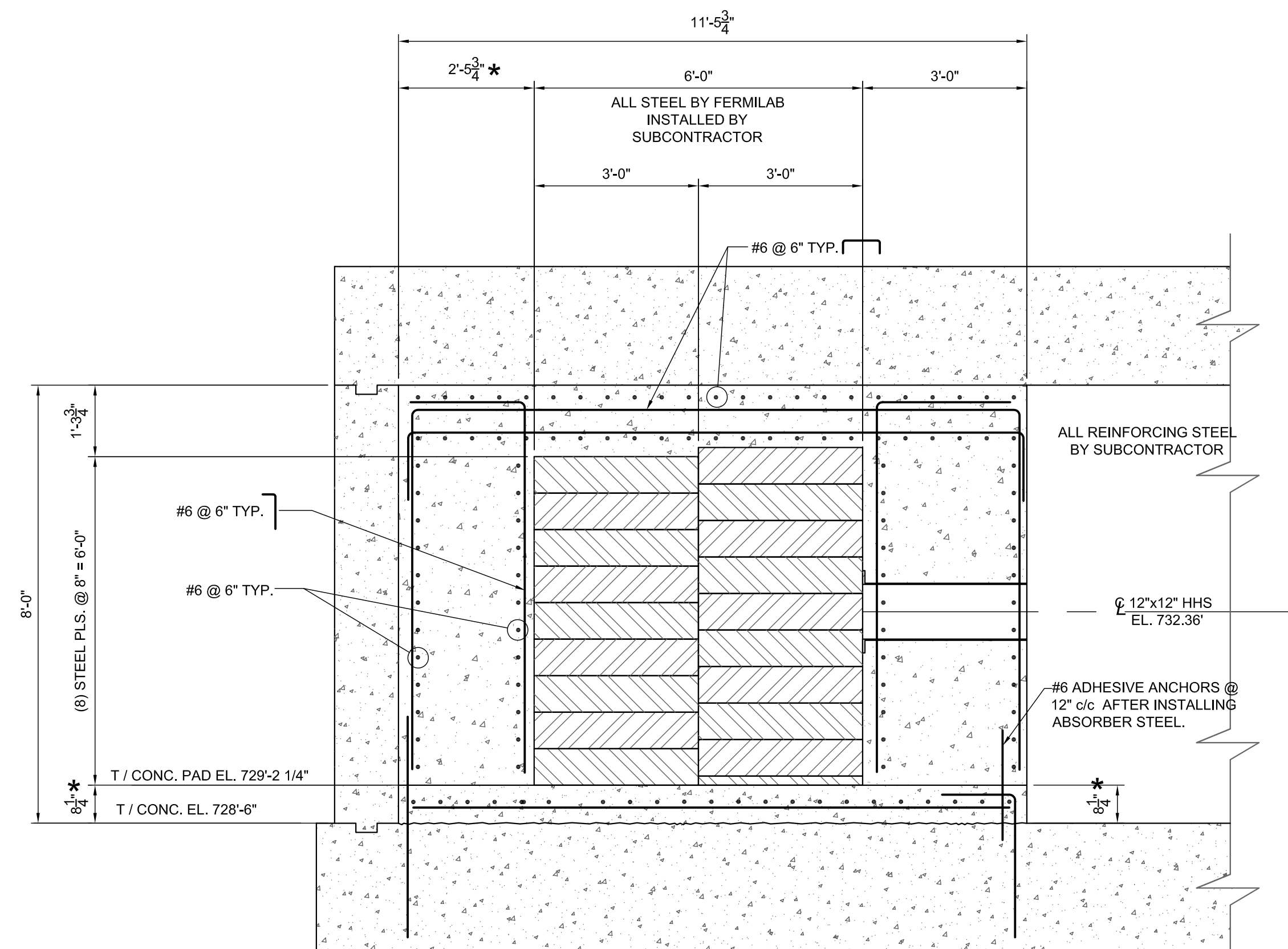
SECTION A

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



VIEW 1 - DIAGNOSTIC ABSORBER STEEL (SUPPLIED BY FERMILAB)

SCALE: 1/2"=1'-0



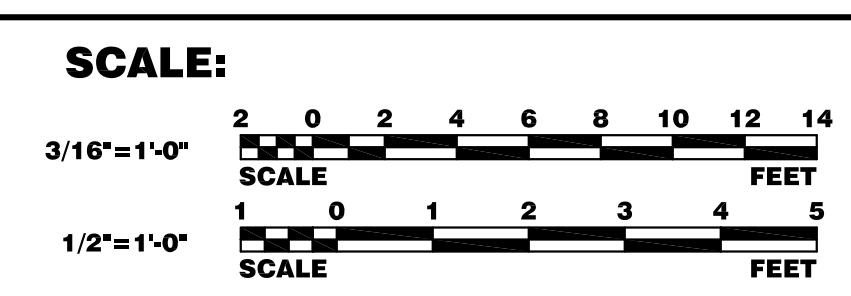
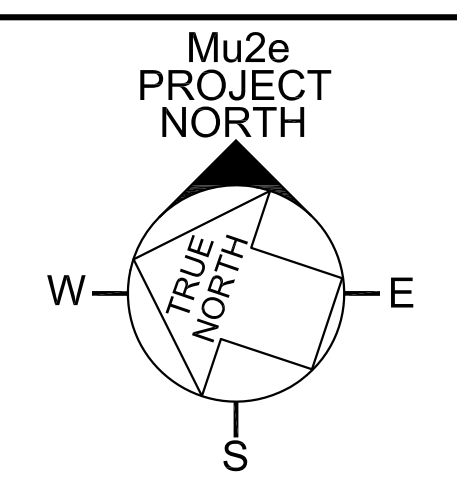
SECTION B

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

Jun 05, 2014 - 6:00am \\lulus1\less\FESS_ENG\Active Projects\610223 - Final Design\Drawings\Middough Issued for proposal\SC-19_SC-20_6-10-22.dwg

REV.	DATE	DESCRIPTIONS	REVISIONS

	NAME	DATE
DESIGNED	T. LACKOWSKI	02/01/14
DRAWN	R. JEDZINIAK	02/01/14
CHECKED	T. LACKOWSKI	02/01/14
APPROVED	.	.
SUBMITTED	.	.



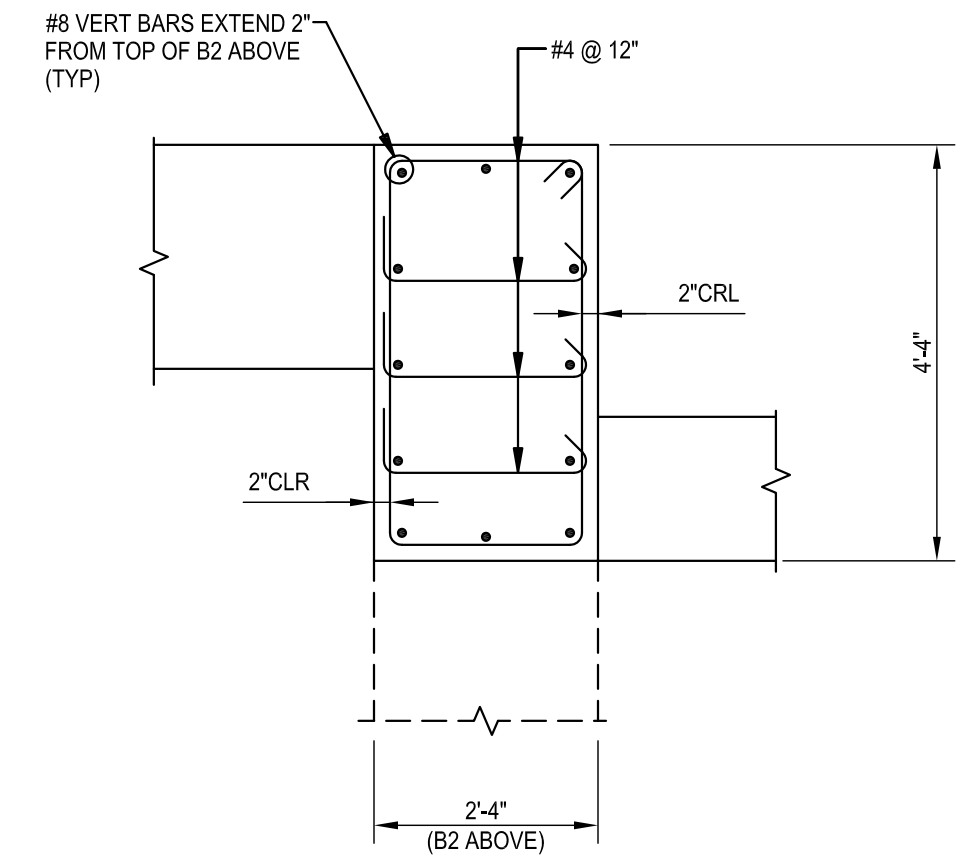
FERMI NATIONAL ACCELERATOR LABORATORY
 UNITED STATES DEPARTMENT OF ENERGY

MC BEAMLINE ENCLOSURES
DIAGNOSTIC ABSORBER PLAN
SECTIONS AND DETAILS

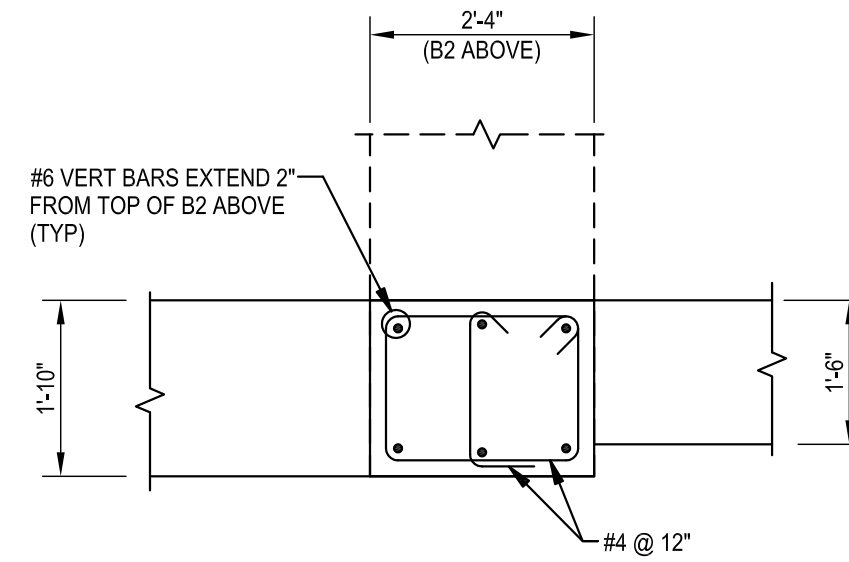
DRAWING NO. **6-10-22** **SC-20** REV.

03 MAR., 2014

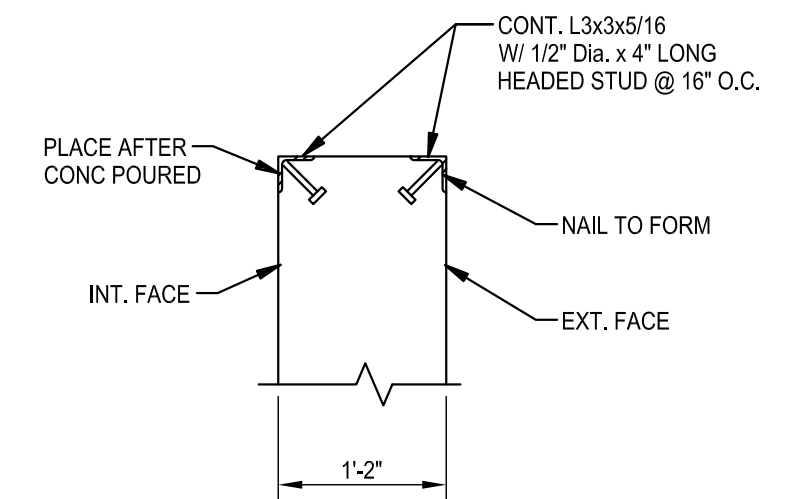
3/11/2014 2:46:43 PM JseraBridenDU\Documents\FNA1303_STRU_CENTRAL_Bridendj.rvt



C1 ①
SCALE: N.T.S.



C2 ②
SCALE: N.T.S.



WALL DETAIL ③
SCALE: N.T.S.

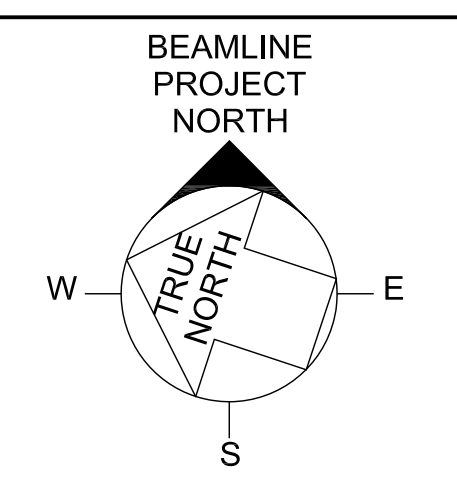
REV.	DATE	DESCRIPTIONS



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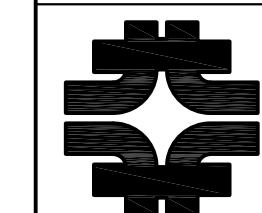
Oak Brook Pointe 700 Commerce Drive, Suite 200 Oak Brook, IL 60523
ph. 630-756-7000 www.middough.com fx. 630-756-7001

	NAME	DATE
DESIGNED	W. SONNA	03/03/14
DRAWN	D. BRIDENSTINE	03/03/14
CHECKED	K. BRAUNSHAUSEN	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



SCALE:

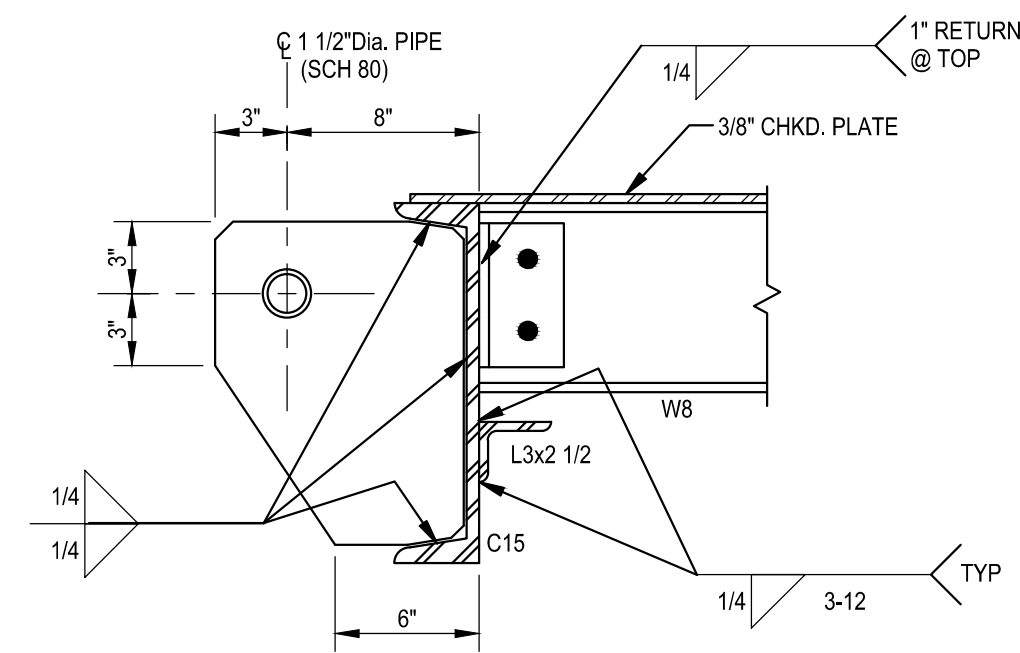
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UNITED STATES DEPARTMENT OF ENERGY



**MC BEAMLINE ENCLOSURES
SECTIONS AND DETAILS 3**

DRAWING NO. **6-10-22** **SC-21** REV.

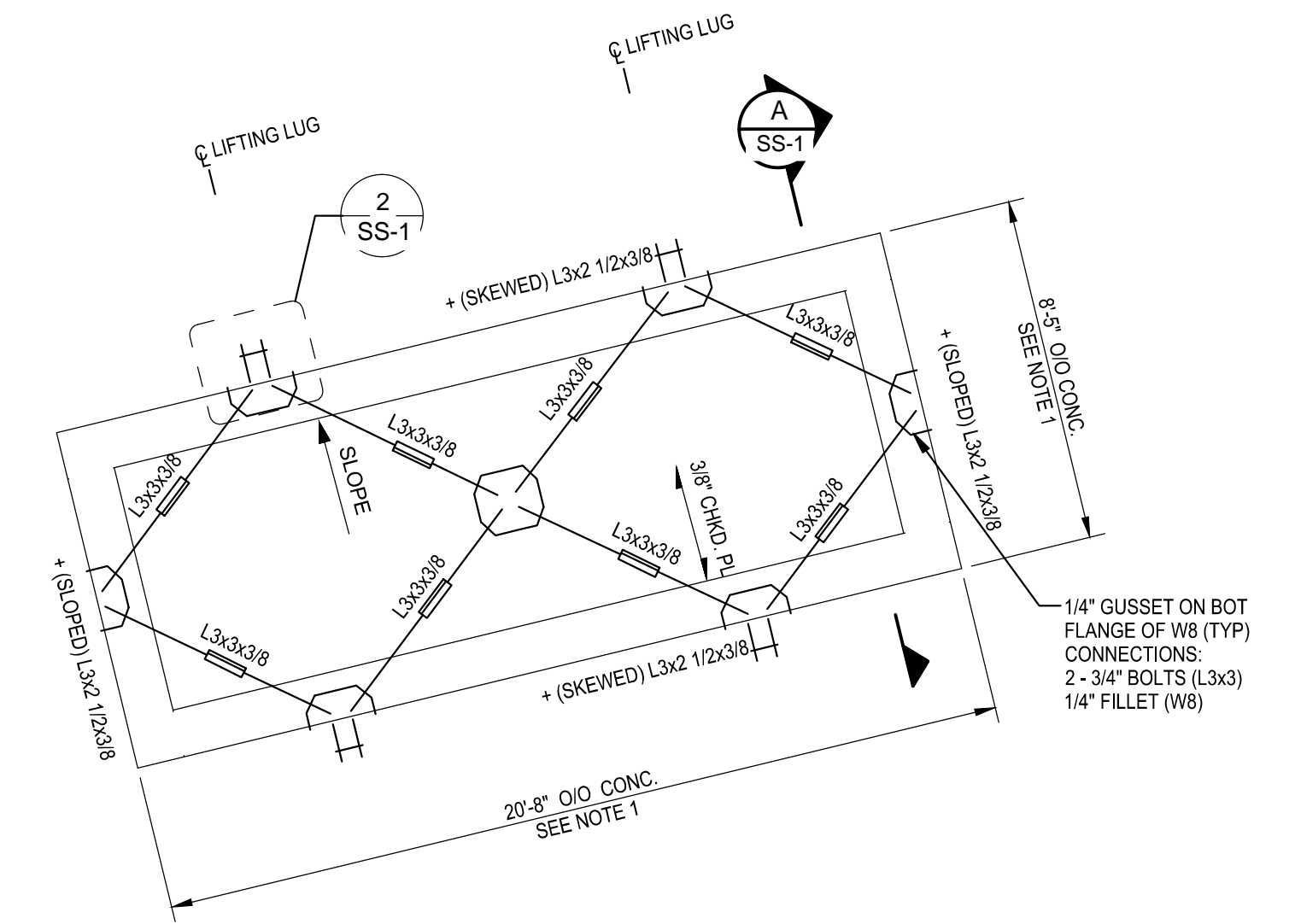
03 MAR 2014



HATCH SECTION B

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

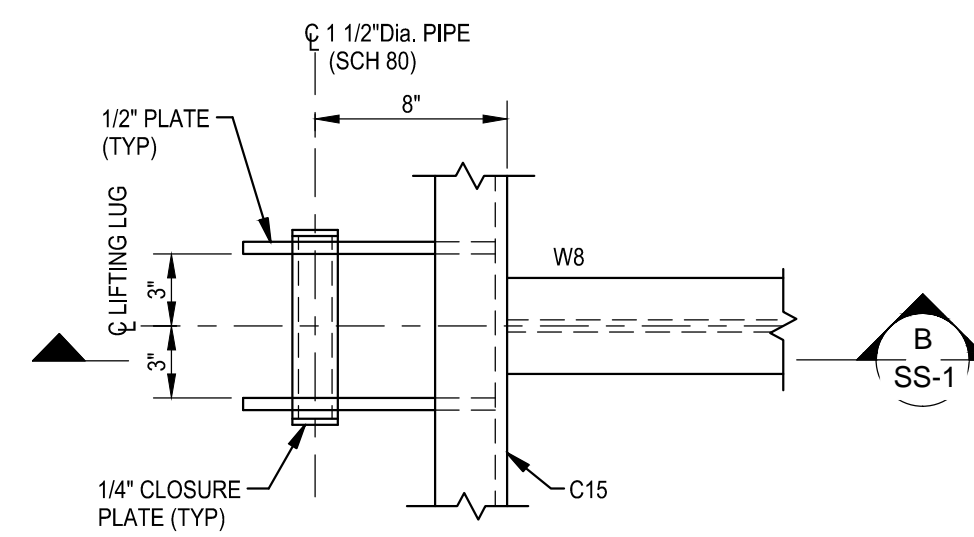
B



SHAFT FRAMING PLAN

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

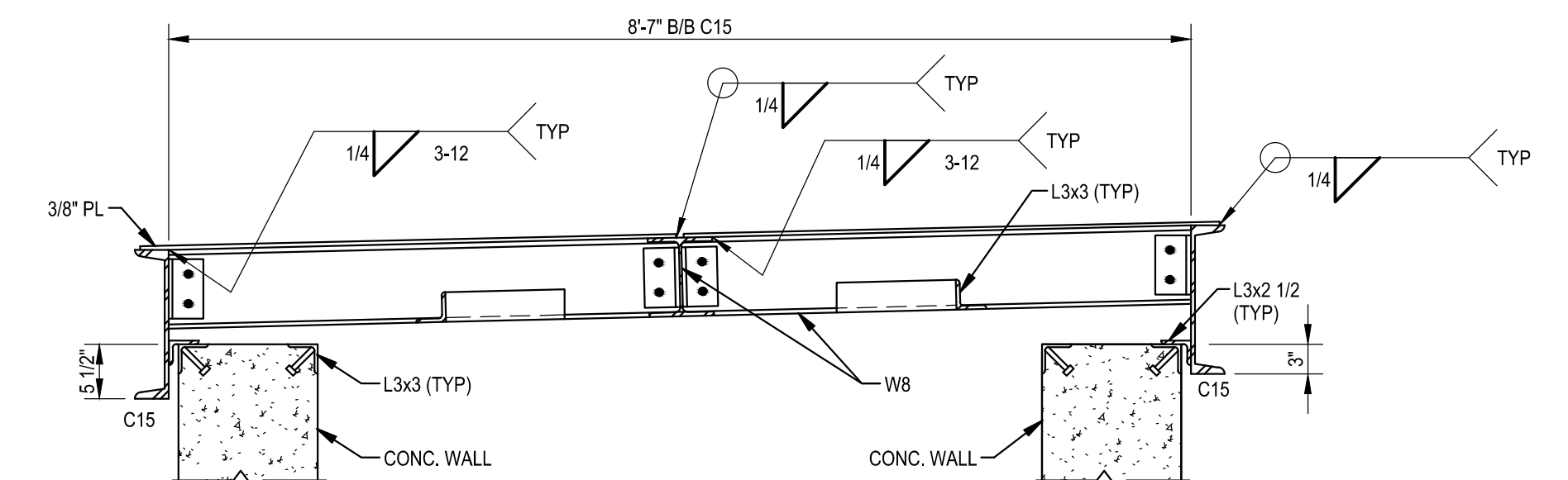
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HATCH DETAIL 2

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

2



HATCH SECTION A

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

A
SS-1

REFERENCE DRAWINGS

- S-1 STRUCTURAL NOTES
- SC-10 TYPICAL SECTIONS AND DETAILS 1
- SC-11 TYPICAL SECTIONS AND DETAILS 2
- SC-12 MAT SCHEDULE
- SC-13 WALL SCHEDULE
- SC-14 SLAB SCHEDULE
- SC-15 BEAM SCHEDULE

NOTE:

1. CONTRACTOR WILL VERIFY OUT/OUT CONCRETE DIMENSIONS PRIOR TO STEEL FABRICATION.
2. ALL STEEL TO BE PRIMED AND HAVE TWO COATS OF FINISH PAINT.

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REV.	DATE	DESCRIPTIONS



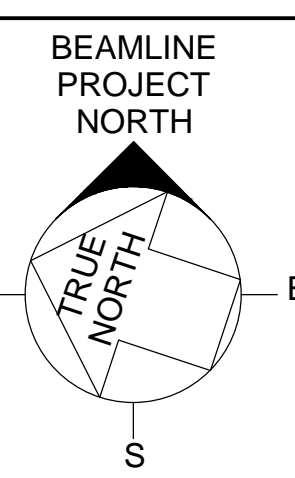
FNA1303

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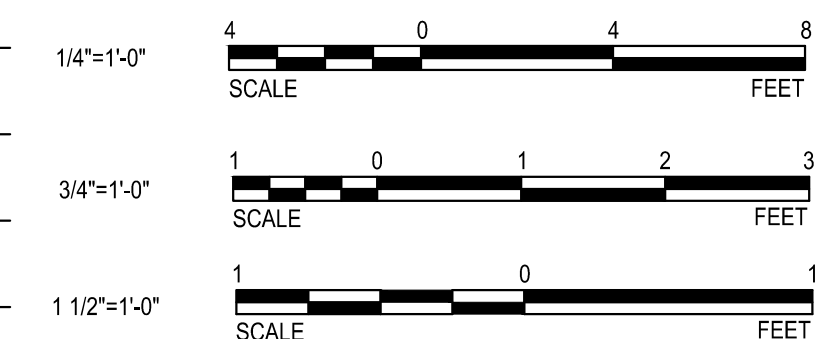
700 Commerce Drive, Suite 200
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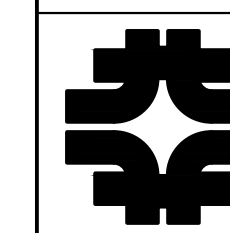


SCALE:



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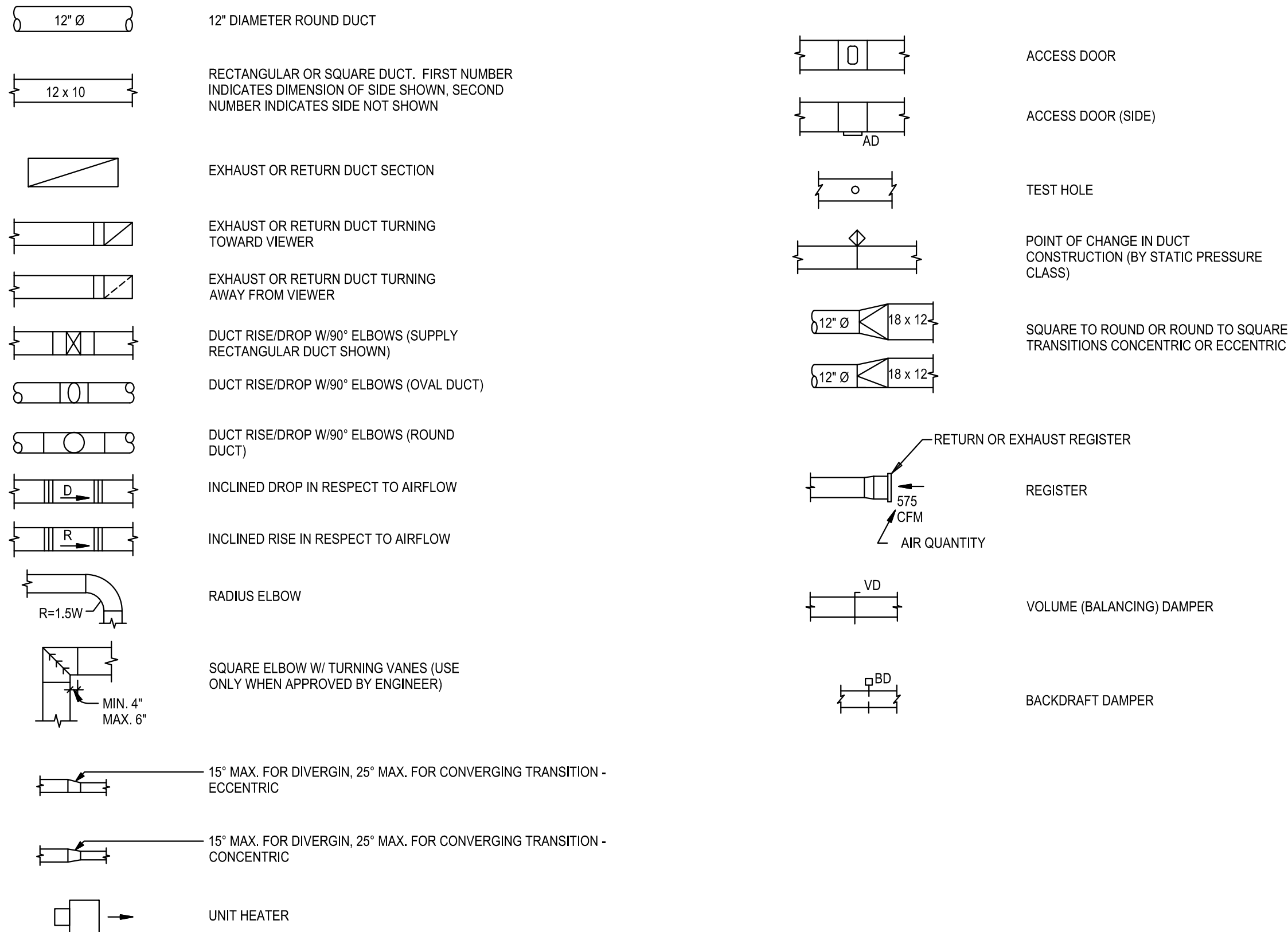
MC BEAMLINE ENCLOSURES
ROOF FRAMING PLAN, SECTIONS AND
DETAILS

DRAWING NO. 6-10-22

SS-1 REV.

03 MAR 2014

DUCTWORK & HVAC SYMBOL LIST



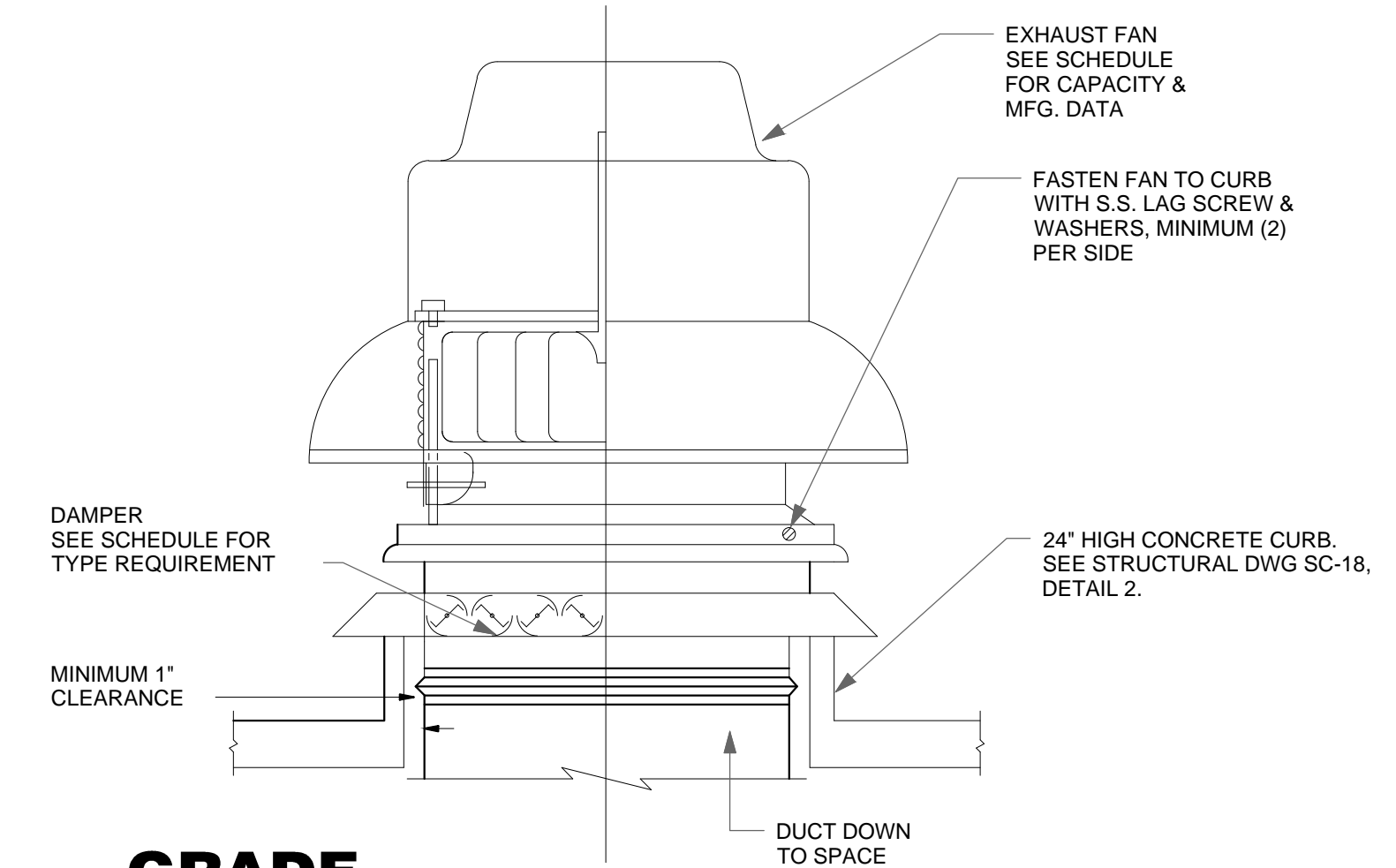
GENERAL NOTES

- DRAWINGS ARE GENERALLY DIAGRAMMATIC. ROUTING OF PIPING, DUCTWORK, CONDUITS, RACEWAYS, ETC., AS SHOWN ON DRAWINGS, DOES NOT INTEND TO SHOW EVERY RISE, DROP, OFFSET, FITTING NOR EVERY STRUCTURAL ELEMENT THAT MAY BE ENCOUNTERED DURING THE INSTALLATION OF THIS WORK. EACH SUB-CONTRACTOR SHALL MAKE ANY REQUIRED CHANGES FROM THE GENERAL ROUTING SHOWN ON THESE DRAWINGS, SUCH AS OFFSETS, BENDS OR CHANGES IN ELEVATION DUE TO COORDINATION WITH WORK OF OTHER TRADES AND BUILDING CONSTRUCTION. CHANGES SHALL BE MADE WITHOUT ADDITIONAL COST TO OWNER OR DELAY IN COMPLETION DATE OF PROJECT.
- IT IS INTENDED THAT EQUIPMENT SHALL BE LOCATED SYMMETRICALLY WITH ARCHITECTURAL ELEMENTS OF THE BUILDING, NOT WITHSTANDING THE FACT THAT LOCATIONS INDICATED BY THESE DRAWINGS MAY BE DISTORTED FOR CLARNESS OF PRESENTATION.
- SUB-CONTRACTOR SHALL CHECK DRAWINGS OF OTHER TRADES TO VERIFY THAT SPACES IN WHICH THEIR WORK WILL BE INSTALLED ARE CLEAR OF OBSTRUCTIONS. WORK SHALL BE INSTALLED TO MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS THROUGHOUT BUILDING. WHERE HEADROOM OR SPACE CONDITIONS APPEAR INADEQUATE, SUB-CONTRACTOR SHALL NOTIFY OWNER/ARCHITECT/ENGINEER BEFORE PROCEEDING WITH INSTALLATION OF THEIR WORK.
- SUB-CONTRACTOR SHALL FURNISH OTHER TRADES ADVANCE INFORMATION AND/OR SHOP DRAWINGS ON LOCATIONS AND SIZES OF PIPING, DUCTWORK, CONDUIT, RACEWAYS, EQUIPMENT, FRAMES, BOXES, SLEEVES AND OPENINGS, ETC. NEEDED FOR THEIR WORK TO PERMIT OTHER TRADES AFFECTED TO INSTALL THEIR WORK PROPERLY AND WITHOUT DELAY.
- WHERE THERE IS EVIDENCE THAT WORK OF ONE TRADE WILL INTERFERE WITH WORK OF OTHER TRADES, TRADES SHALL MEET ON JOB SITE TO WORK OUT SPACE CONDITIONS AND MAKE SATISFACTORY ADJUSTMENTS TO INSTALLATION OF NEW WORK. SUB-CONTRACTORS SHALL VERIFY EXACT LOCATIONS OF DEVICES AND EQUIPMENT WITH FIELD CONDITIONS, SHOP DRAWINGS, AND WORK OF OTHER TRADES PRIOR TO ROUGH-IN. EACH SUB-CONTRACTOR SHALL BE RESPONSIBLE, AT THEIR OWN EXPENSE, FOR REMOVAL AND REINSTALLATION OF ANY PART OF THEIR WORK IF SAME WAS INSTALLED WITHOUT CONSULTING WITH OTHER TRADES BEFORE INSTALLING THEIR WORK.
- SUB-CONTRACTOR SHALL PROVIDE SLEEVES IN BEAMS, FLOORS, COLUMNS AND WALLS AS SHOWN ON DRAWINGS, AS REQUIRED BY JOB SITE CONDITIONS, AND/OR AS SPECIFIED, WHEN INSTALLING THEIR WORK. BEAMS AND COLUMNS WHICH ARE REQUIRED TO BE SLEEVED SHALL BE CUT AND REINFORCED AS REQUIRED BY FIELD CONDITIONS AND LOCATIONS AND SIZES SHALL BE CHECKED AND APPROVED BY ARCHITECT BEFORE CONTRACTOR CUTS ANY STRUCTURAL BUILDING MEMBER.
- SEQUENCE FOR INSTALLATION OF WORK SHALL BE COORDINATED BETWEEN ALL SUB-CONTRACTORS ON THE PROJECT AND IN STRICT ACCORDANCE WITH ARCHITECT/ENGINEER AND OWNERS STIPULATION AS DIRECTED.
- SUB-CONTRACTOR SHALL REFER TO THE ARCHITECTURAL AND STRUCTURAL CONTRACT DRAWINGS (BEFORE SUBMITTING THEIR BIDS) TO FAMILIARIZE THEMSELVES WITH THE EXTENT OF GENERAL SUB-CONTRACTOR'S WORK, CEILING HEIGHTS AND CLEARANCE FOR INSTALLING THEIR WORK.
- SUB-CONTRACTOR SHALL BE RESPONSIBLE AND PAY FOR CORING, CUTTING, PATCHING, REPAIRING, REFINISHING AND REMOVAL/REPLACEMENT OF NEW BUILDING CONSTRUCTION ALREADY IN PLACE AS REQUIRED TO ACCOMMODATE INSTALLATION OF THEIR WORK. PATCHING, REPAIRING AND REFINISHING WORK SHALL BE PERFORMED BY THE HVAC/MECHANICAL SUB-CONTRACTOR AND SHALL MATCH ADJACENT CONSTRUCTION. CARE SHALL BE TAKEN NOT TO DAMAGE PREVIOUSLY INSTALLED NEW BUILDING CONSTRUCTION. PREVIOUSLY INSTALLED FINISHES THAT ARE DAMAGED DURING INSTALLATION OF NEW WORK SHALL BE REPAIRED, REPLACED AND PAID FOR BY INSTALLING SUB-CONTRACTOR WHO DAMAGED THEM TO THE SATISFACTION OF THE ARCHITECT AND OWNER.
- SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR OWN CLEAN-UP DURING CONSTRUCTION. IF SUB-CONTRACTOR FAILS TO PROVIDE SUCH CLEAN-UP, FERMI WILL DIRECT ANOTHER SUB-CONTRACTOR TO PERFORM CLEAN-UP AND THE NEGLIGENT CONTRACTOR SHALL PAY ASSOCIATED BACK-CHARGES AS DEEMED APPROPRIATE BY FERMI.
- SUB-CONTRACTOR SHALL INSTALL AUXILIARY SUPPORTING STEEL AS REQUIRED FOR SUPPORTING OF THEIR PIPING AND DUCTWORK, EQUIPMENT.
- UNLESS INDICATED OTHERWISE, THE ARCHITECT/ENGINEER MAKES NO REPRESENTATION AS TO WHETHER OR NOT HAZARDOUS OR CONTAMINATED MATERIALS (INCLUDING BUT NOT LIMITED TO ASBESTOS, PCB'S, CONTAMINATED SOILS, ETC.) ARE PRESENT ON SITE. WORK SHOWN ON DRAWINGS AND/OR INDICATED IN SPECIFICATIONS SHALL NOT BE CONSTRUED TO CALL FOR CONTACT WITH ANY OF THESE MATERIALS. IF THESE MATERIALS ARE ENCOUNTERED OR SUSPECTED, SUB-CONTRACTOR SHALL NOT DISTURB THEM AND SHALL CONTACT FERMI IMMEDIATELY.
- SUB-CONTRACTOR SHALL STORE MATERIALS AND EQUIPMENT SHIPPED TO THE SITE IN A PROTECTED AREA. IF MATERIAL IS STORED OUTSIDE OF THE BUILDING, IT MUST BE STORED OFF THE GROUND A MINIMUM OF SIX INCHES (6") SET ON 6 X 6 PLANKS AND/OR WOOD PALLETS. MATERIAL AND EQUIPMENT MUST BE COMPLETELY COVERED WITH WATERPROOF TARPS OR VISQUIN. CLOSE THE ENDS OF PIPING AND DUCTWORK WILL HAVE THE ENDS CLOSED TO KEEP OUT DIRT AND OTHER DEBRIS. NO EQUIPMENT WILL BE ALLOWED TO BE STORED OUTSIDE THE BUILDING ON SITE UNLESS IT IS SUPPORTED OFF THE GROUND AND COMPLETELY PROTECTED WITH WEATHERPROOF COVERS.
- DRAWINGS, SCHEDULES AND SPECIFICATIONS HAVE BEEN PREPARED USING ONE MANUFACTURER FOR EACH PIECE OF EQUIPMENT AS THE BASIS FOR DIMENSIONAL DESIGN. IF THE SUB-CONTRACTOR PURCHASES EQUIPMENT FROM AN ALTERNATE MANUFACTURER, BUT NOT THE SCHEDULED MANUFACTURER USED FOR THE BASE DESIGN, SUB-CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING ALL DIMENSIONS OF THE EQUIPMENT TO VERIFY THAT IT WILL FIT IN THE SPACE SHOWN ON THE DRAWINGS. MINOR DEVIATIONS IN DIMENSIONS WILL BE PERMITTED, PROVIDED RATINGS MEET THOSE SHOWN ON THE DRAWINGS AND EQUIPMENT WILL PHYSICALLY FIT INTO THE SPACE ALLOCATED WITH SUITABLE ACCESS AROUND EQUIPMENT FOR OPERATION AND MAINTENANCE OF EQUIPMENT. WHEN EQUIPMENT SUBMITTED FOR REVIEW DOES NOT MEET PHYSICAL SIZE OR ARRANGEMENT OF THAT SCHEDULED AND SPECIFIED, SUB-CONTRACTOR SHALL PAY FOR ALTERATIONS REQUIRED TO ACCOMMODATE SUCH EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER. SUB-CONTRACTOR WILL ALSO PAY COSTS FOR ADDITIONAL WORK REQUIRED BY OTHER SUB-CONTRACTORS, OWNER, ARCHITECT OR ENGINEER TO MAKE CHANGES WHICH WOULD ALLOW EQUIPMENT TO FIT IN THE SPACE AND FUNCTION AS INTENDED.
- SUB-CONTRACTOR AND/OR MANUFACTURER SHALL VERIFY THAT CHARACTERISTICS OF ALTERNATE EQUIPMENT SUBMITTED FOR REVIEW MEET CAPACITY AND DUTY SPECIFIED. WHEN EQUIPMENT SUBMITTED FOR REVIEW REQUIRES MODIFICATIONS TO WORK OF OTHER SUB-CONTRACTORS, SUBMITTING SUB-CONTRACTOR SHALL PAY FOR COSTS FOR ADDITIONAL WORK REQUIRED BY OTHER CONTRACTORS, OWNER, ARCHITECT OR ENGINEER TO MAKE CHANGES WHICH WOULD ALLOW EQUIPMENT TO FUNCTION SAFELY AND PROPERLY.
- SUB-CONTRACTOR SHALL COORDINATE INSTALLATION OF WORK WITH CONSTRUCTION OF THE BUILDING, INCLUDING VERIFYING SIZE OF EXISTING OPENINGS, WINDOWS, DOORS, CORRIDORS, ROOMS, FOR ACCESS OF NEW EQUIPMENT INTO BUILDING AREAS WHICH WILL ALREADY BE CONSTRUCTED WHEN EQUIPMENT IS READY TO BE INSTALLED. IF OPENINGS ARE TOO SMALL FOR ACCESS SUB-CONTRACTOR SHALL, AT ITS OWN EXPENSE, PROVIDE NEW OR ENLARGED OPENINGS AND RESTORE SAME TO PREVIOUS SIZE AND CONDITION. SUB-CONTRACTOR MAY ELECT TO ORDER EQUIPMENT DISASSEMBLED AND/OR WITH SPLIT HOUSING FOR ENTRANCE INTO THE SPACE OR BUILDING. SUB-CONTRACTOR SHALL REASSEMBLE EQUIPMENT AFTER IT IS IN THE SPACE AT HIS OWN EXPENSE.
- LOCATE CONTROL DEVICES SENSORS, CONTROLLERS, ETC. IN LOCATIONS ACCESSIBLE FOR MAINTENANCE, REPAIR, AND REPLACEMENT.

DEHUMIDIFIER SCHEDULE																
TAG	AREA SERVED	LOCATION	MANUFACTURER	MODEL	CFM	CAPACITY (PT)	REFRIGERANT TYPE	WATTS	V	PH	HZ	AMPS	MCA	DIMENSIONS L(IN)xW(IN)xH(IN)	WEIGHT (LBS)	COMMENTS
DH-T1	MC BEAMLINE ENCLOSURES	MC BEAMLINE ENCLOSURES	GE	ADER70LR	195/175/155	17.5	R-410A	745	120	1	60	7.5	15	24x16x11	49	TOP REAR AIR DISCHARGE; FRONT-REMOVABLE BASKET; WASHABLE AIR FILTER; 3 FAN SPEED SELECTIONS; "WATER FULL" INDICATOR LAMP; WASHABLE AIR FILTER, 59 dBA.

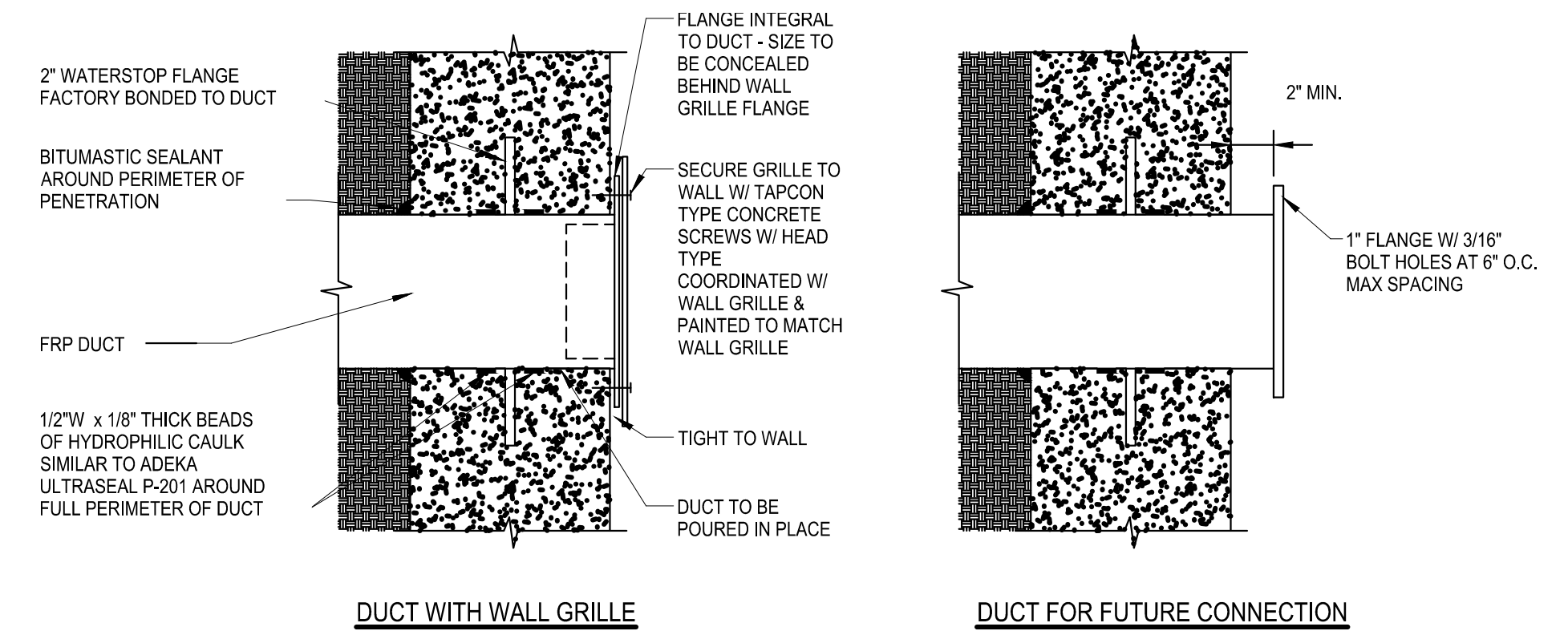
EXHAUST FAN SCHEDULE														
TAG	TYPE	AREA SERVED	LOCATION	MANUFACTURER	MODEL	AIRFLOW (CFM)	ESP (IN)	FAN RPM	FAN DRIVE	HP	V/PH/HZ	FLA	WEIGHT	COMMENTS
EF-T1	CENTRIFUGAL	BEAM LINE ENCLOSURES	GRADE	GREENHECK	G-133-A	1,500	0.5	1725	DIRECT	0.75	460/3/60	1.6	98	PROVIDE BACKDRAFT DAMPER, ALUMINUM BIRDSCREEN, VFD WITH BACNET INTERFACE. 12" CURB W/FAN.

UNIT HEATER SCHEDULE													
UNIT	AREA SERVED	LOCATION	MANUFACTURER	MODEL	AIRFLOW (CFM)	OUTPUT (KW)	V	PH	HZ	DIMENSIONS L(IN)xW(IN)xH(IN)	WEIGHT	COMMENTS	
EUH-T1	STAIR	STAIR	REZNOR	EGBE-7	625	7.5	460	3	60	22x10x25		BUILT-IN 1-STAGE THERMOSTAT; PROVIDE DISCONNECT SWITCH; PROVIDE CEILING MOUNTING BRACKETS.	



GRADE MOUNTED EXHAUST FAN

SCALE: NTS



UNDERGROUND WALL DUCT PENETRATION DETAIL

SCALE: NTS

NOTE: PROVIDE TEMPORARY BRACING INSIDE DUCTWORK TO HOLD SHAPE DURING CONCRETE POUR.



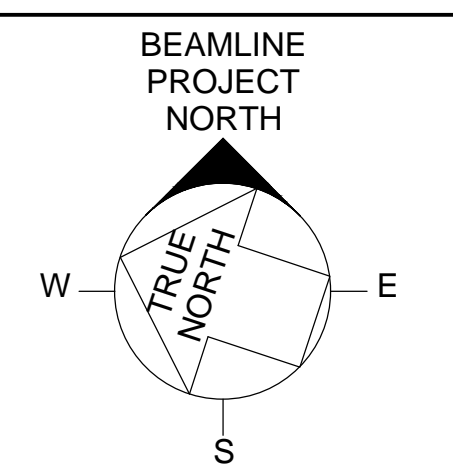
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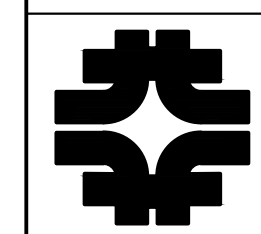
Oak Brook, IL 60523
fx. 630-756-7001

	NAME	DATE
DESIGNED	A. TOWE	03/03/14
DRAWN	D. BOJKO	03/03/14
CHECKED	D. HURST	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



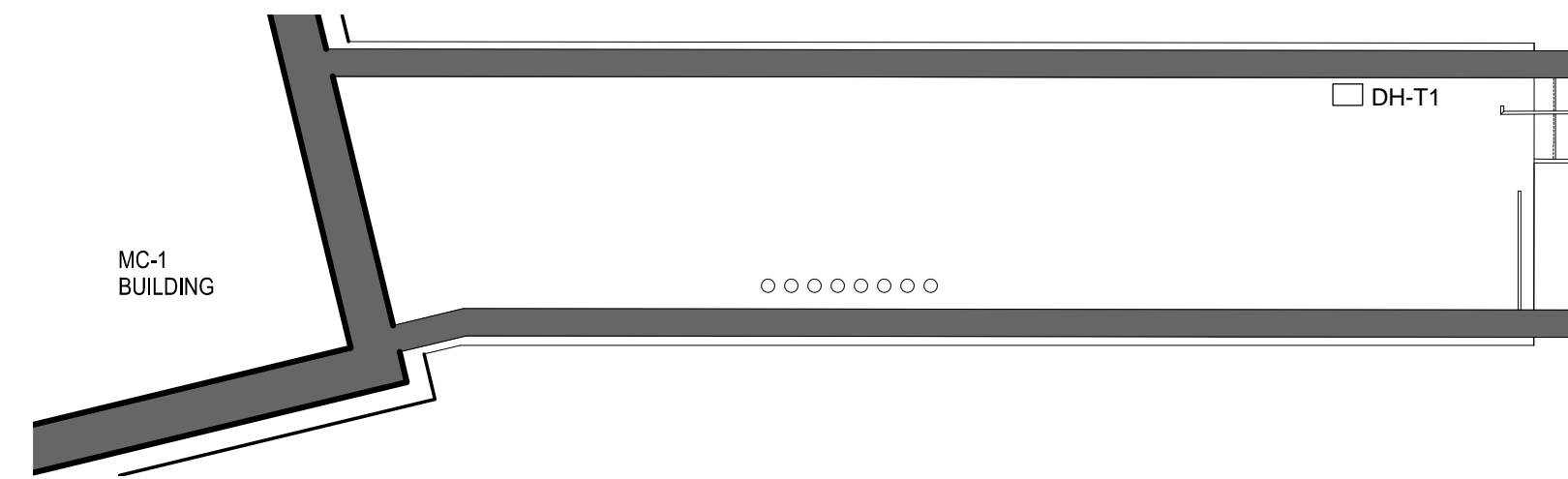
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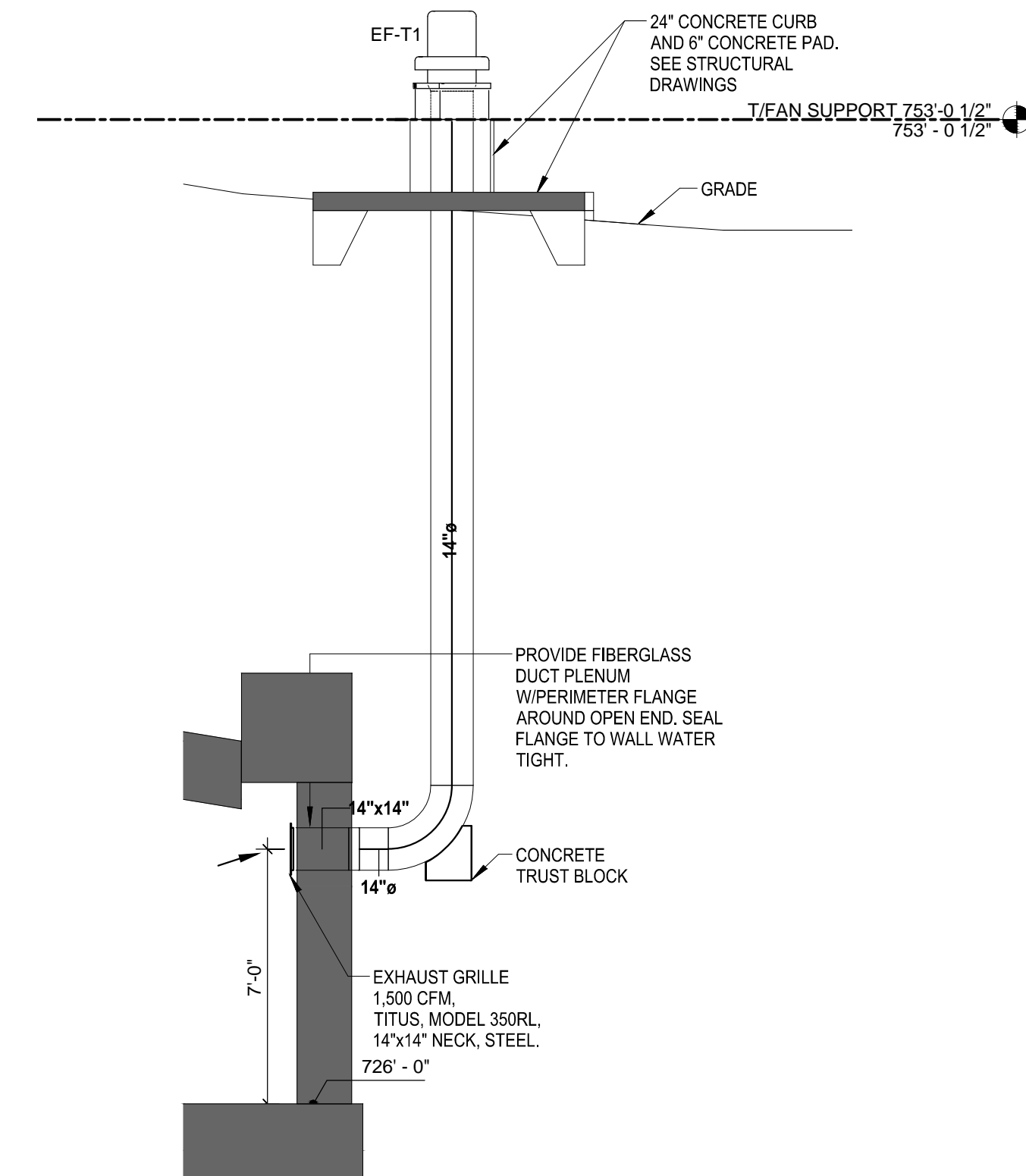
MC BEAMLINE ENCLOSURES
HVAC GENERAL NOTES, SCHEDULES
AND DETAILS

DRAWING NO. 6-10-22 M-1 REV.



PARTIAL MECHANICAL PLAN (BY MC-1 BLDG)

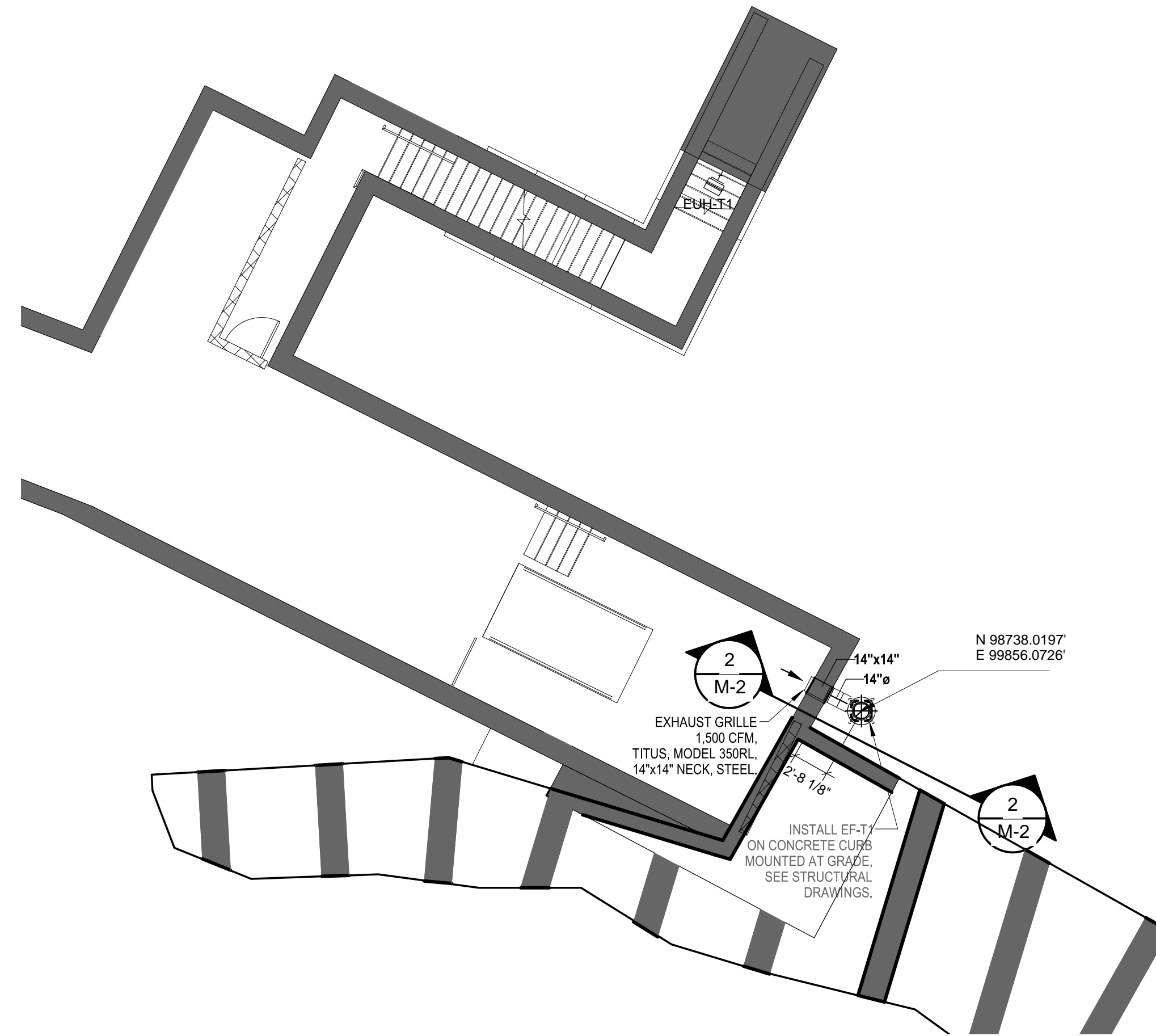
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EF-T1 MECHANICAL SECTION

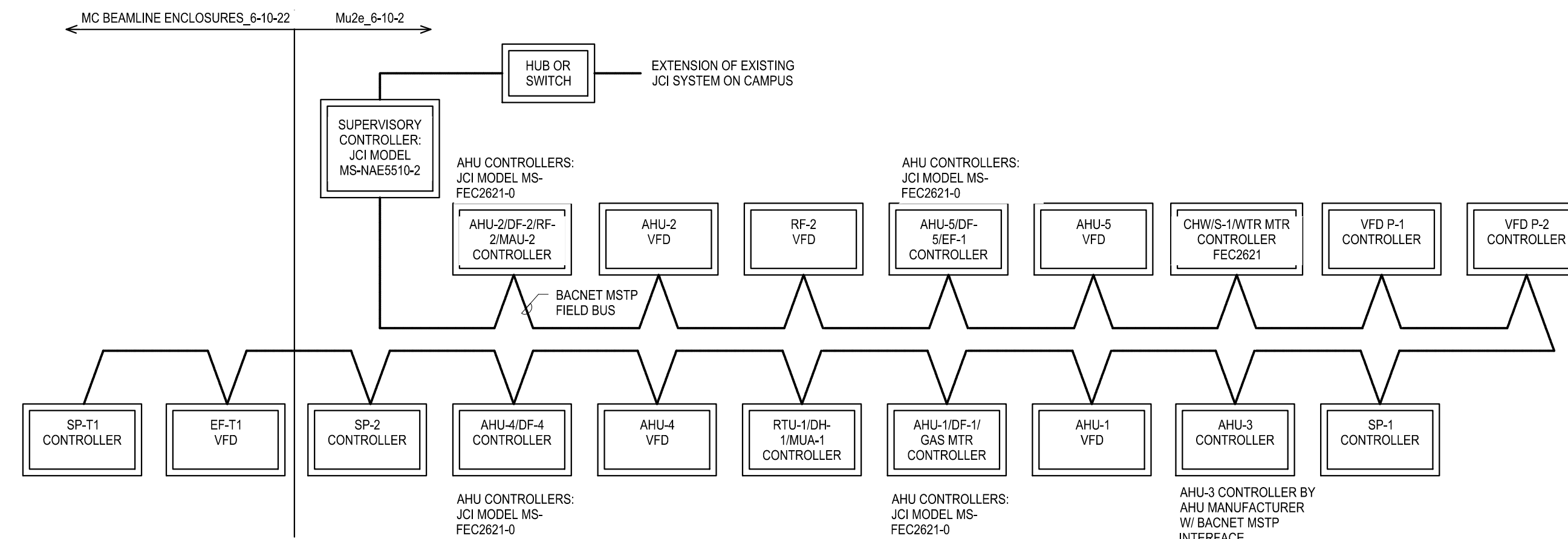
SCALE: 1/4" = 1'-0"

2
M-2



PARTIAL MECHANICAL PLAN (SOUTH END)

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



NOTES:

1. PERFORM PROGRAMMING AT FIELD EQUIPMENT WHERE POSSIBLE. TIME SCHEDULING MAY BE THROUGH SUPERVISORY CONTROLLER.
2. VFD'S SHALL NOT BE CONTROLLED THROUGH NETWORK. VFD IO TO BE WIRED DIRECTLY FOR STATUS, START/STOP, % SPEED, AND ALARM. PROVIDE BACNET INTERFACE WITH VFD.
3. PROVIDE IO EXPANSION MODULES (JCI MODEL MS-IOMXXX-0) AT FEC CONTROLLERS AS REQUIRED TO ACHIEVE SPECIFIED OPERATION AND MONITORING.

BACNET NETWORK DIAGRAM

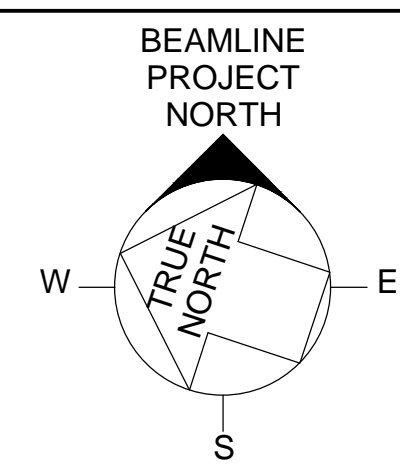
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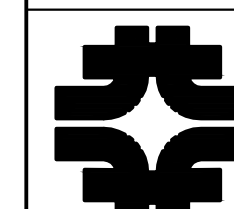
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SUBMITTED		



SCALE:

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MC BEAMLINE ENCLOSURES
MECHANICAL FLOOR PLAN AND
SECTIONS

DRAWING NO. 6-10-22

M-2 REV.

PLUMBING SYMBOLS LEGEND

- 1 / A101 VIEW REFERENCE ACROSS MATCHLINE: VIEW #/SHEET #
- MATCHLINE
- SECTION HEAD
- PLUMBING FIXTURE TAG
- PRESSURE GAUGE WITH ISOLATION VALVE AS SPECIFIED
- INVERT/SPOT ELEVATION AND/OR COORDINATES
- EQUIPMENT TAG
- THERMOMETER, WITH SENSOR WELL
- PUMP CONTROL PANEL, SEE PUMP PACKAGE EQUIPMENT SCHEDULE AND SPECIFICATIONS
- SUMP/SEWAGE BASIN PACKAGE, DUPLEX
- BALL VALVE
- FLOOR/YARD CLEANOUT
- FLOOR DRAIN, FINISHED SPACE

PLUMBING GENERAL NOTES

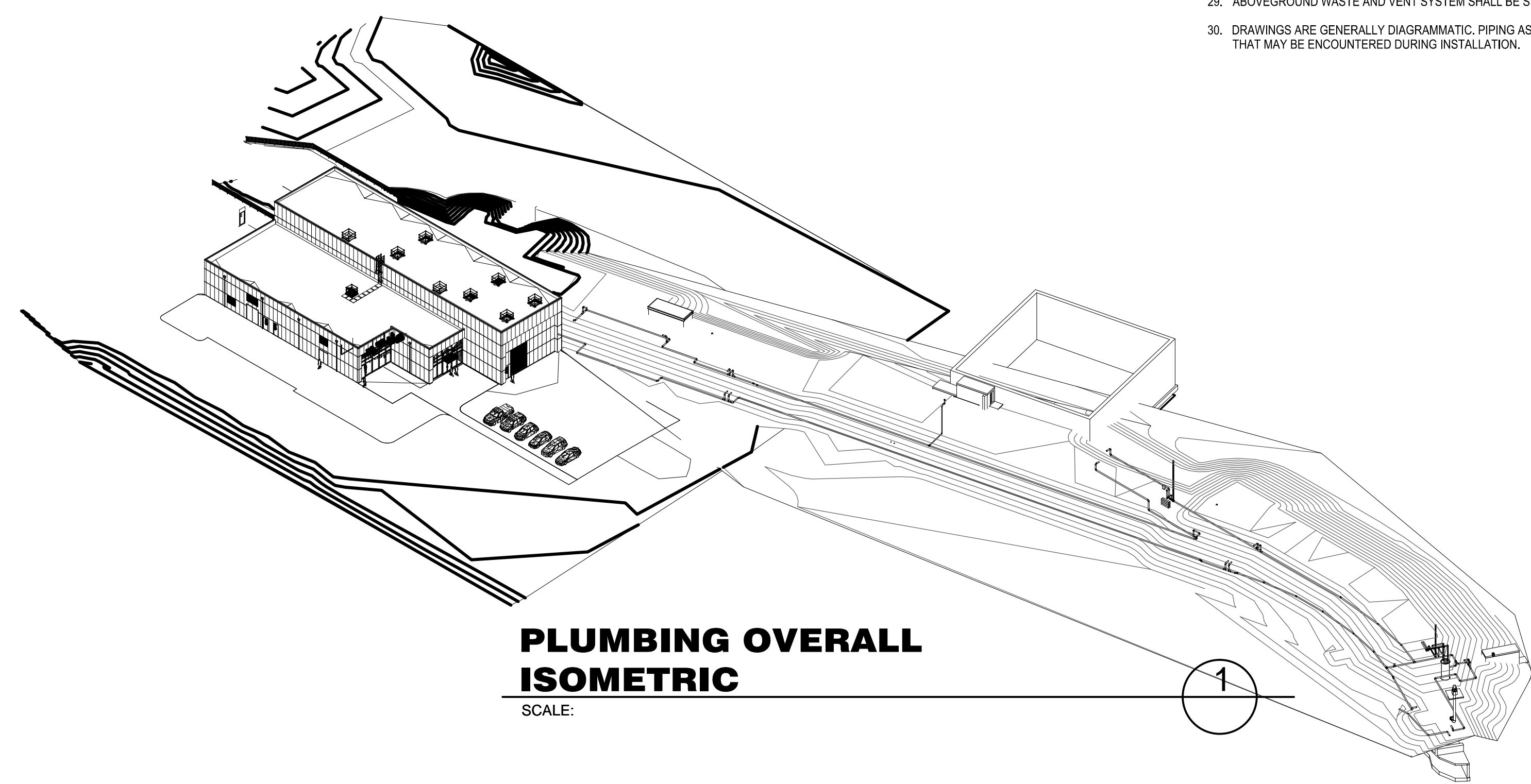
1. WORK SHALL BE INSTALLED AND MATERIALS SHALL BE, IN STRICT ACCORDANCE WITH THE ADOPTED CODES AND INDUSTRY STANDARDS, AS WELL AS OSHA, THE STATE OF ILLINOIS REQUIREMENTS, AND FERMI LAB REQUIREMENTS.
2. SUB-SUBCONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES AND INSTALL EQUIPMENT AND PIPING TO AVOID INTERFERENCE WITH STRUCTURAL MEMBERS AND EQUIPMENT.
3. DRAWINGS ARE TO BE USED IN CONJUNCTION WITH PROJECT SPECIFICATIONS AND OTHER RELATED DRAWINGS.
4. PIPING LAYOUT IS APPROXIMATE AND SHALL BE COORDINATED TO AVOID FIELD INTERFERENCES.
5. PIPING SHALL BE INSTALLED IN A NEAT WORKMANLIKE MANNER, AND RUN PARALLEL OR PERPENDICULAR TO WALLS, CEILINGS, AND FLOORS.
6. REFER TO OTHER DRAWINGS AND/OR CONSULT CONSTRUCTION COORDINATOR PRIOR TO ROUGH-IN FOR PLUMBING WORK TO AVOID FIELD CONFLICTS.
7. MATERIALS AND EQUIPMENT USED ON THIS PROJECT SHALL BE NEW UNLESS OTHERWISE NOTED. NEW EQUIPMENT SHALL BE U.L. APPROVED AS APPLICABLE.
8. PLUMBING, ACCESSORIES AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE SPECIFICATION SECTIONS AND MANUFACTURERS RECOMMENDATIONS.
9. FIRE STOP PIPE PENETRATIONS AT FIRE RATED WALLS.
10. PIPING SHALL BE SUPPORTED AS PER SPECIFICATIONS.
11. PIPING ROUGH-IN SHALL NOT COMMENCE UNTIL APPROVED EQUIPMENT SHOP DRAWINGS HAVE BEEN FURNISHED.
12. ARRANGEMENT AND LOCATION OF PIPING SHALL BE SUBSTANTIALLY AS ILLUSTRATED ON THE DRAWINGS. IN GENERAL PIPING SHALL BE INSTALLED RUNNING PARALLEL TO OR AT RIGHT ANGLES WITH BUILDING LINES.
13. PROVIDE ACCESS TO VALVES.
14. CHANGES IN DIRECTION IN WASTE AND SANITARY PIPING SHALL BE MADE BY APPROPRIATE USE 45 DEGREE WYES, HALF-WYES OR LONG SWEEP QUARTER, SIXTH, OR EIGHTH, OR SIXTEENTH BENDS.
15. WHERE WASTE AND SANITARY PIPING INCREASE IN SIZE AT A JUNCTION, SUCH INCREASE SHALL BE MADE (IMMEDIATELY) PRIOR TO JUNCTION USING STANDARD INCREASERS OR REDUCERS.
16. PIPE SIZES SHOWN ARE MINIMUM.
17. WHERE VENT PIPES CONNECT TO HORIZONTAL WASTE PIPES, THE VENT SHALL BE TAKEN OFF ABOVE THE CENTER LINE OF THE WASTE LINE AND SHALL RISE VERTICALLY, OR AT AN ANGLE NOT TO EXCEED 45 DEGREES FROM VERTICAL, BEFORE OFFSETTING HORIZONTALLY.
18. SLOPE HORIZONTAL VENTS AT 1/8" PER FOOT TO DRAIN BACK TOWARD WASTE/DRAIN PIPING.
19. WASTE AND DRAIN PIPING 3" AND SMALLER SHALL BE SLOPED AT 1/4" PER FOOT, MINIMUM. COORDINATE FLOOR DRAIN LOCATIONS WITH STRUCTURAL DRAWINGS.
20. COORDINATE SANITARY PIPING BELOW GRADE WITH STRUCTURAL FOOTINGS.
21. MAXIMUM DISTANCE FROM PLUMBING FIXTURE OUTLET TO THE TRAP WEIR SHALL BE 24".
22. EXACT LOCATION OF SANITARY LINES, VALVES, INVERT ELEVATIONS, AND SIZES SHALL BE VERIFIED IN FIELD BEFORE STARTING INSTALLATION.
23. EXACT LOCATION OF DRAINS SHALL BE VERIFIED WITH GENERAL PRIOR TO STARTING WORK.
24. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMITS AND ASSOCIATED FEES.
25. HORIZONTAL STORM PIPING SHALL BE INSULATED WITH 1 1/2" FIBERGLASS INSULATION WITH VAPOR BARRIER JACKET.
26. PITCH SUPPLY AND RETURN WATER LINES TO DRAIN COMPLETELY THROUGH LOWER EQUIPMENT FIXTURES, UNIONS, OR DRAIN VALVES. INSTALL A 1/2" DRAIN VALVE WITH 3/4" HOSE THREAD OUTLET IN MAIN PIPING RUNS WHICH WOULD NOT BE ABLE TO DRAIN THRU A LOWER PIECE OF EQUIPMENT.
27. VENT AND WASTE PIPING SIZES ARE MINIMUM. ADDITIONAL VENTS SHALL BE ADDED AND/OR PIPE SIZE INCREASED AS REQUIRED BY APPLICABLE CODES, STATUTES AND REGULATIONS, ETC. WITHOUT ADDITIONAL COST TO THE OWNER.
28. UNDERGROUND WASTE AND VENT SYSTEM SHALL BE TESTED WITH A TEN FOOT (10') HEAD OF WATER.
29. ABOVEGROUND WASTE AND VENT SYSTEM SHALL BE STACK TESTED WITH WATER TO THE HIGHEST FIXTURE OUTLET.
30. DRAWINGS ARE GENERALLY DIAGRAMMATIC. PIPING AS SHOWN ON DRAWINGS DOES NOT INTEND TO SHOW EVERY RISE, DROP, OFFSET, FITTING, NOR EVERY STRUCTURAL ELEMENT THAT MAY BE ENCOUNTERED DURING INSTALLATION.

PLUMBING ABBREVIATIONS

AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BOP	BOTTOM OF PIPE
CD	CONDENSATE DRAIN
CEIL	CEILING
CFH	CUBIC FEET PER HOUR
CI	CAST IRON
CO	CLEANOUT
CSW	COLD SOFT WATER
CW	COLD WATER
D	DRAIN
DET	DETAIL
DIA	DIAMETER
DN	DOWN
DT	FOUNDATION DRAIN TILE
DV	DRAIN VALVE
DWG	DRAWING
DWS	DOMESTIC WATER SERVICE
°	DEGREE
ø	DIAMETER
EC	ELECTRICAL CONTRACTOR
EL	ELEVATION
ELEC	ELECTRICAL
EP	ELEVATOR PUMP
EQUIP	EQUIPMENT
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EWB	ELECTRIC WATER HEATER
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FF ELEV	FINISH FLOOR ELEVATION
FPC	FIRE PROTECTION CONTRACTOR
FT	FEET
°F	DEGREES FAHRENHEIT
GCO	GRADE CLEANOUT
GF	GLYCOL FILL STATION
GPM	GALLON PER MINUTE
HD	HUB DRAIN
HW	HOT WATER
HWR	HOT WATER RETURN
ICW	INDUSTRIAL COLD WATER
KW	KILOWATT
L	LAVATORY
MAX	MAXIMUM
MB	MOP BASIN

PLUMBING ABBREVIATIONS

MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
NC	NORMALLY CLOSED
NFWH	NON FREEZE WALL HYDRANT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P	PUMP
PC	PLUMBING CONTRACTOR
PCP	PUMP CONTROL PANEL
PG	PRESSURE GAUGE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
PVC	POLYVINYL CHLORIDE
PW	PRESSUREIZED WASTE
REX	REMOVE EXISTING
RP	RECIRCULATION PUMP
SAN	SANITARY WASTE
SB	SUMP BASIN, OWNER REQUIRED FIBERGLASS BASIN WITH AIR TIGHT LID AND NO PIPING OR PUMPS
SK	SINK
SP	SUMP PUMP
SPEC	SPECIFICATION
ST	STORM, PUMP DISCHARGE TO MEET PRESSURIZED WASTE PIPING REQUIREMENTS
T&P	TEMPERATURE & PRESSURE RELIEF VALVE
TBD	TO BE DETERMINED
TDH	TOTAL DYNAMIC HEAD
TEMP OR T	TEMPERATURE
THX	THERMAL EXPANSION TANK
TMV	THERMOSTATIC MIXING VALVE
TP	TRAP PRIMER
TYP	TYPICAL
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
V	VENT
VTR	VENT THRU ROOF
W/	WITH
WC	WATER CLOSET
WCO	WALL CLEANOUT
WHA	WATER HAMMER ARRESTER
WM	WASHING MACHINE
WS	WATER SOFTENER
YCO	YARD CLEAN OUT



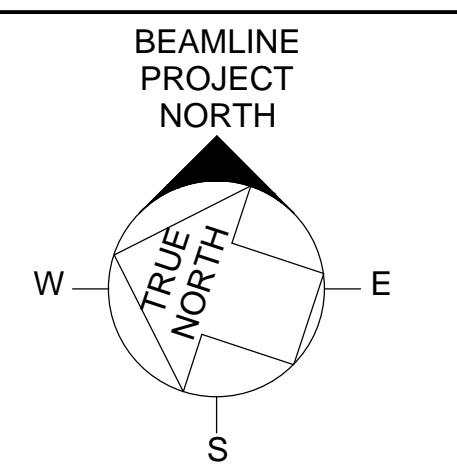
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REV.	DATE	DESCRIPTIONS

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	NAME	DATE
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DRAWN	D. BOJKO	03/03/14
CHECKED	D. HURST	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		



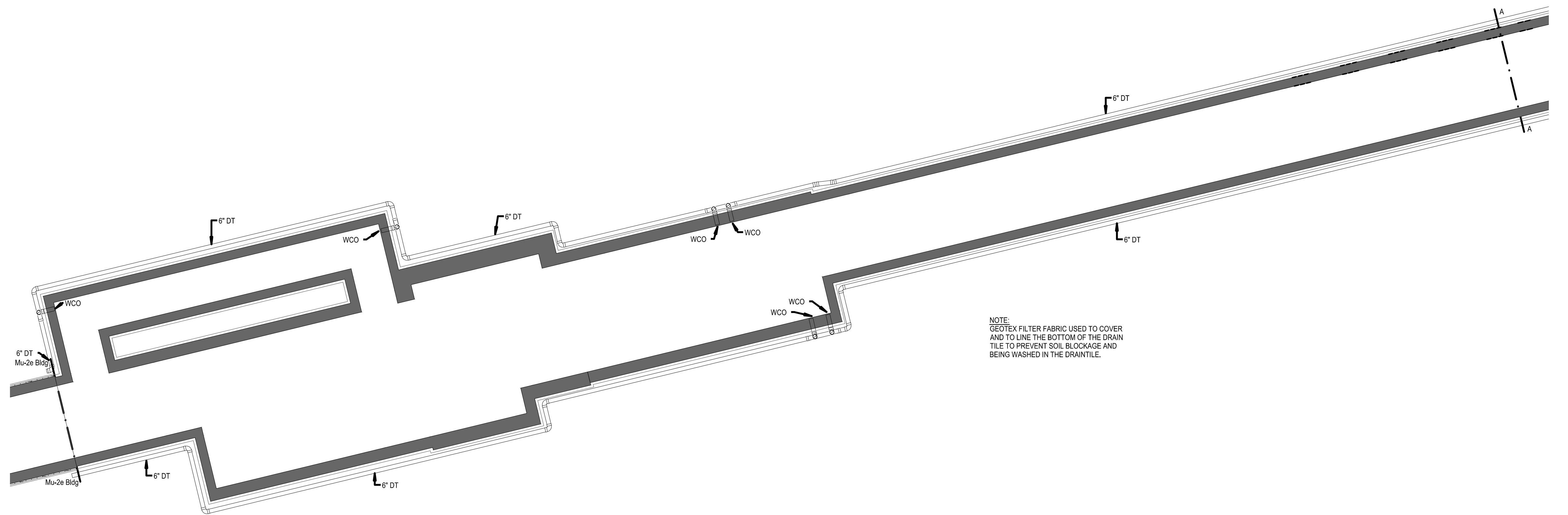
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UNITED STATES DEPARTMENT OF ENERGY

MC BEAMLIN ENCLOSURES PLUMBING SYMBOLS, ABBREVIATIONS & NOTES

DRAWING NO. 6-10-22 P-1 REV.

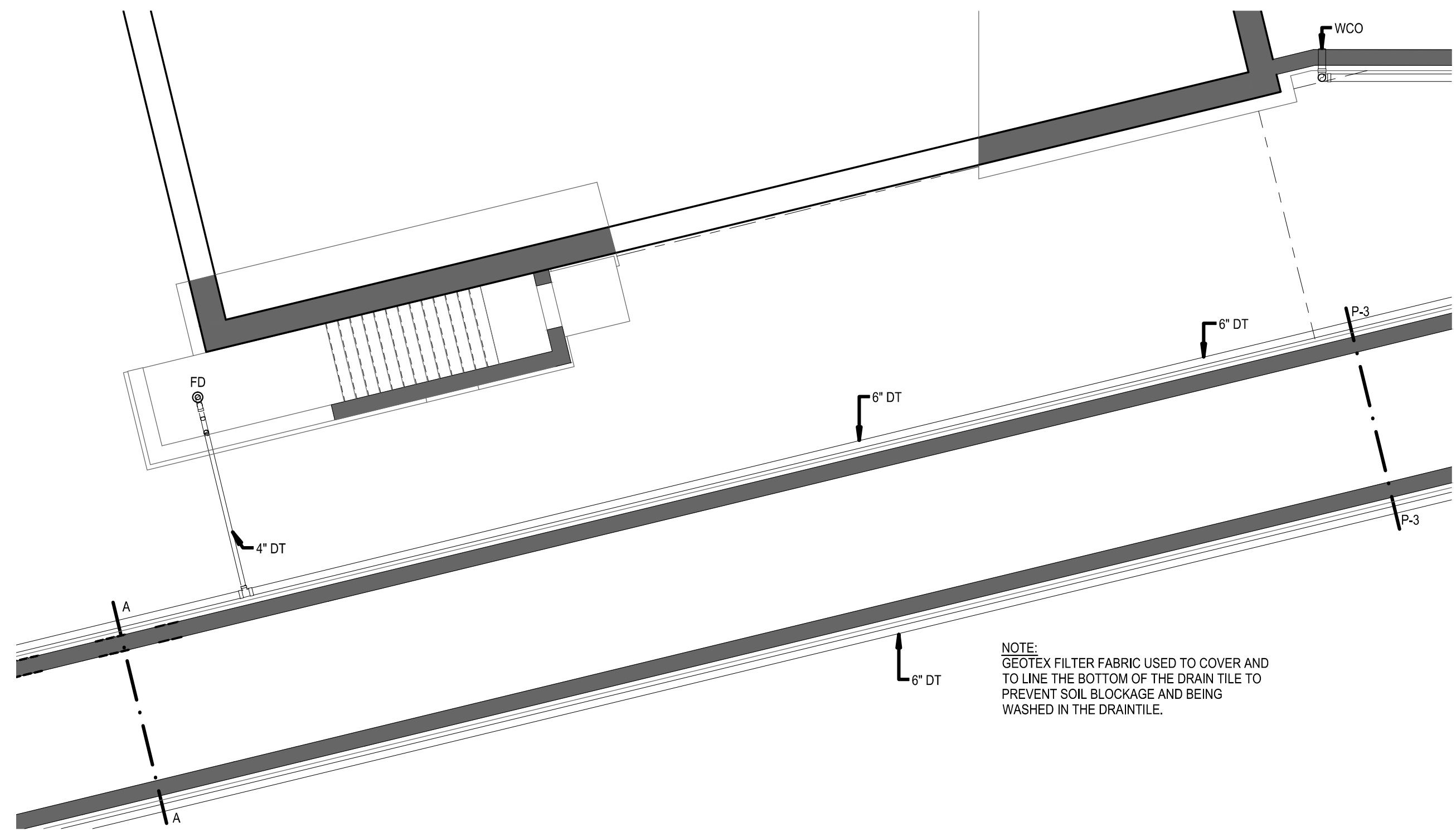
03 MAR 2014



PLUMBING PLAN-1

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

NOTE:
GEOTEX FILTER FABRIC USED TO COVER
AND TO LINE THE BOTTOM OF THE DRAIN
TILE TO PREVENT SOIL BLOCKAGE AND
BEING WASHED IN THE DRAINTILE.



PLUMBING PLAN-2

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

NOTE:
GEOTEX FILTER FABRIC USED TO COVER AND
TO LINE THE BOTTOM OF THE DRAIN TILE TO
PREVENT SOIL BLOCKAGE AND BEING
WASHED IN THE DRAINTILE.

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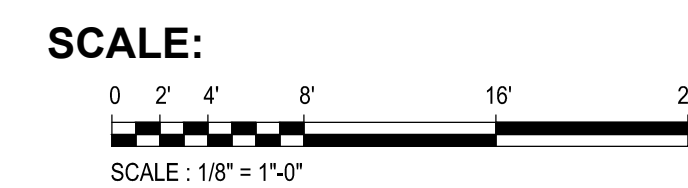
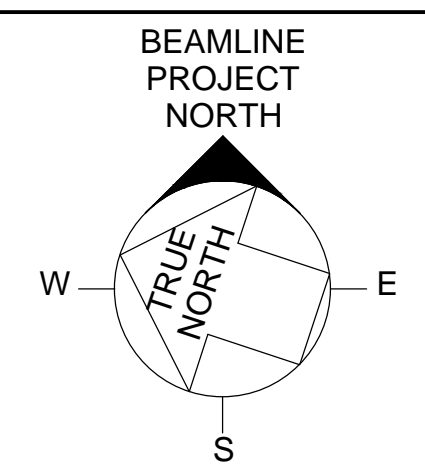
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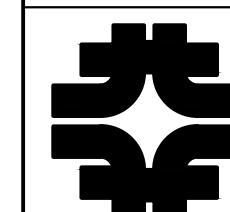
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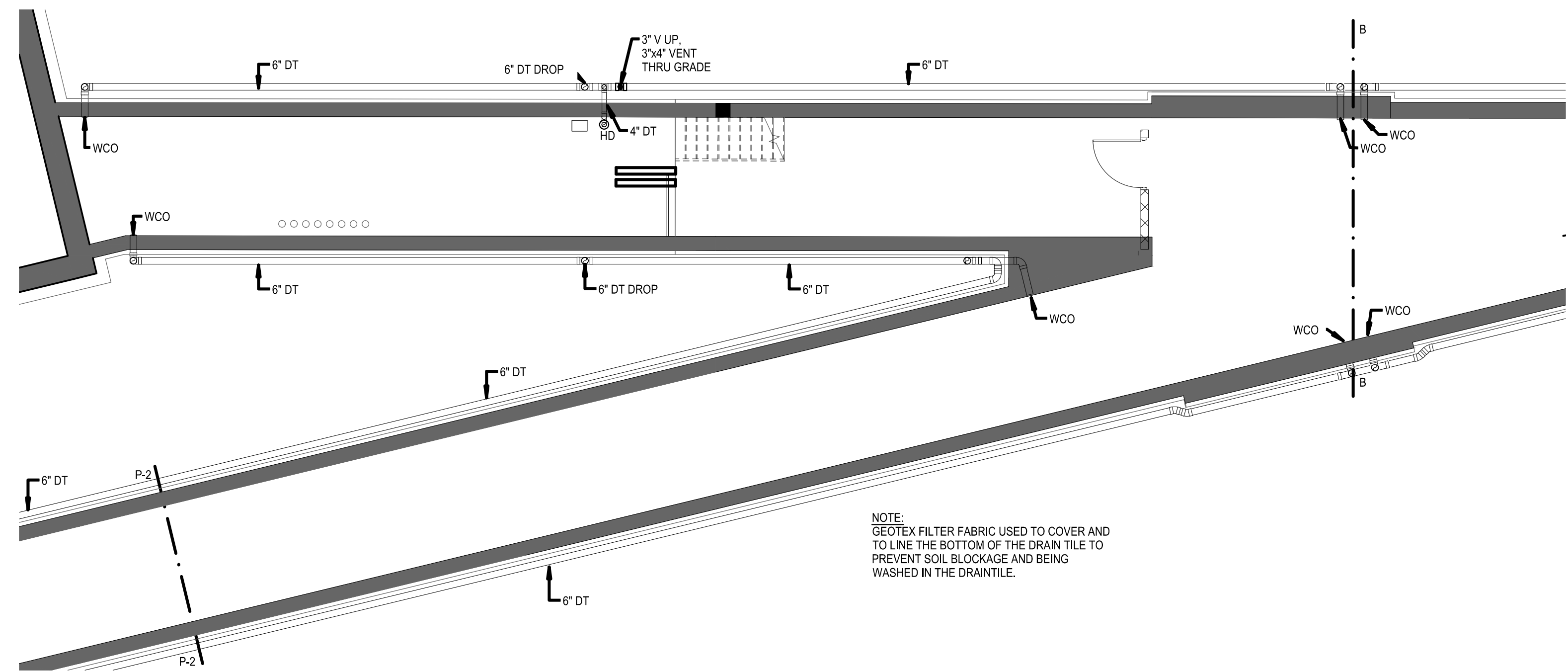
MC BEAMLINE ENCLOSURES
PLUMBING PLAN-NORTH END

DRAWING NO. 6-10-22

P-2 REV.

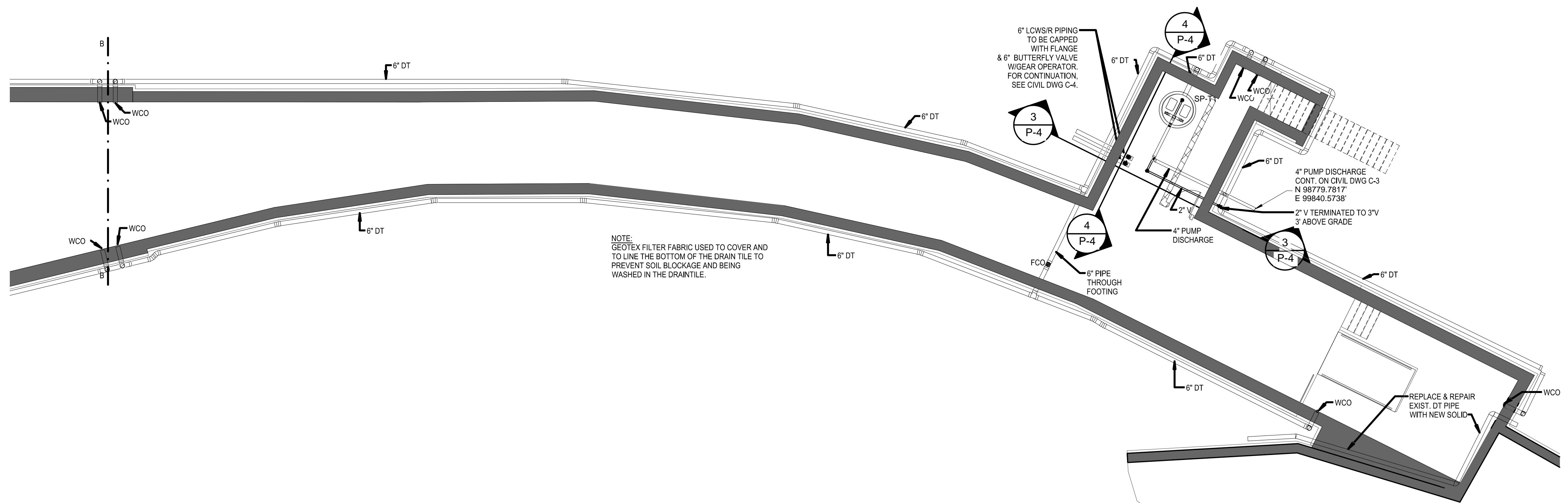
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PLUMBING PLAN-3

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



PLUMBING PLAN-4

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

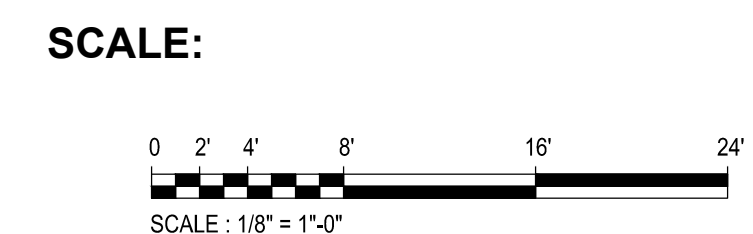
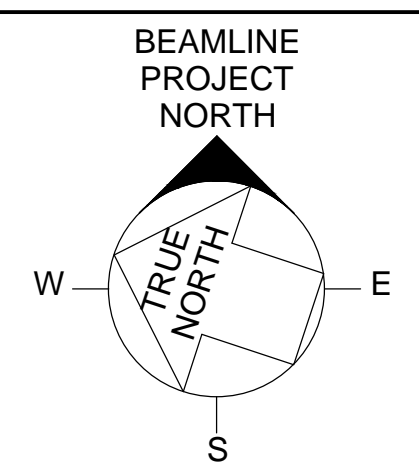
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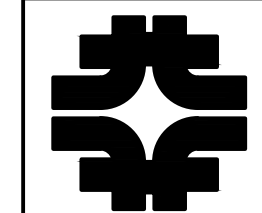
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SUBMITTED		



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MC BEAMLINE ENCLOSURES
 PLUMBING PLAN-SOUTH END

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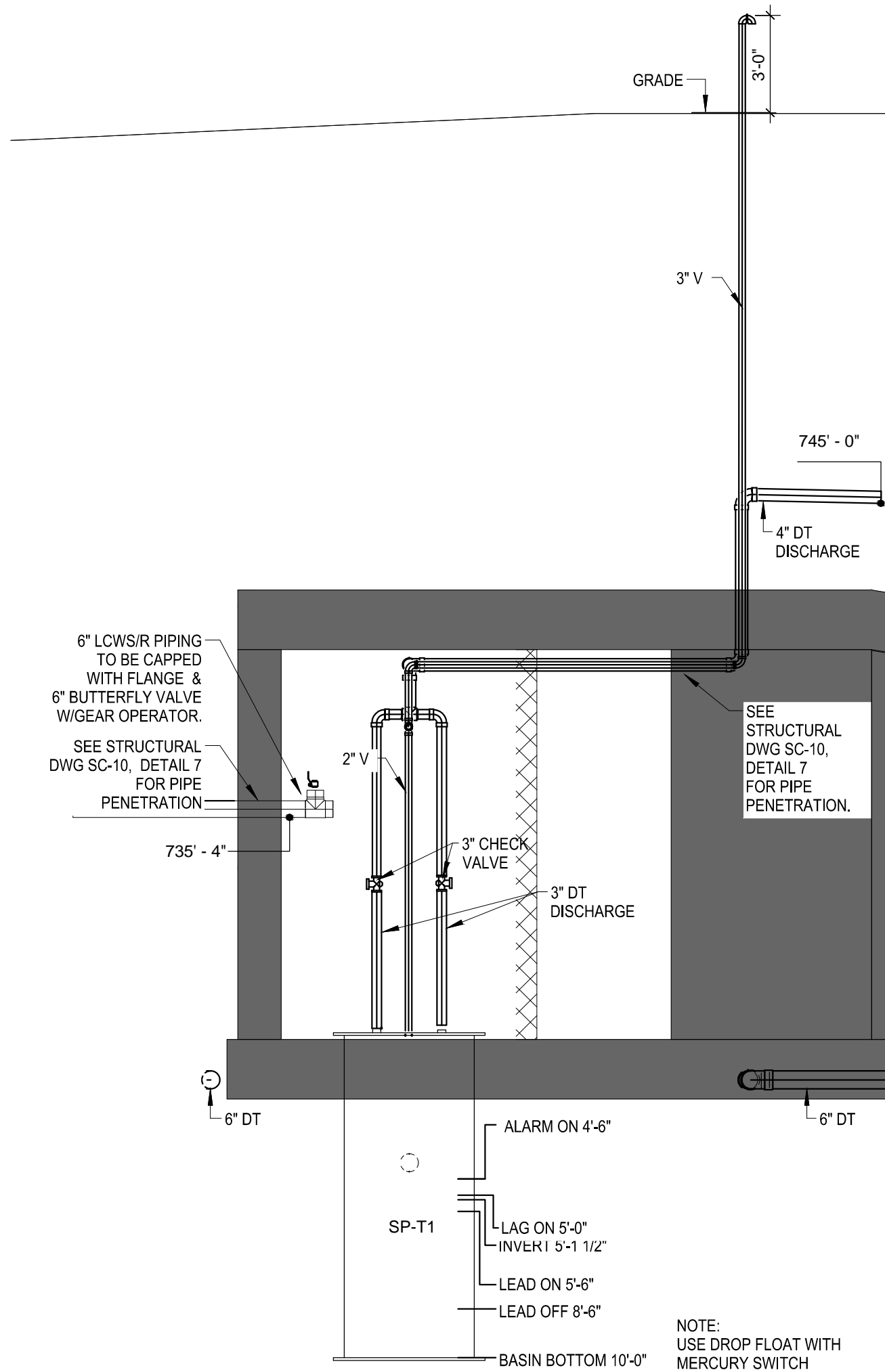
03 MAR 2014

TAG	AREA SERVED	LOCATION	MANUFACTURER	MODEL	GPM	TYPE	DISCHARGE SIZE (IN)	ELECTRICAL				BASIN DEPTH	BASIN DIA.	INVERT DEPTH (2)	RUN TIME (MIN)	ALARM ON	LAG ON	LEAD ON	LEAD OFF	NOTES
								HP	V	PH	Hz									
SP-T1	FOUNDATION DRAIN TILE	BEAM LINE ENCLOSURES	WEIL	2500-DS	150 EACH	SUBMERSIBLE	4	5	480	3	60	10'-0"	4'-0"	(1) 4'-0"; (1) 5'-0"	1.88	4'-6"	5'-0"	5'-6"	8'-6"	SEE NOTES 1-7 BELOW

- SUMP PUMP SCHEDULE NOTES:**
- FIBERGLASS BASIN WITH ANTI FLOTATION RING SET IN CONCRETE AND ANCHOR STUDS FOR REMOVAL SYSTEM GLASSED INTO BASIN BOTTOM.
 - QUICK REMOVAL RAIL SYSTEM, WEIL MODEL 2613-3', WITH BASE ELBOW MATED TO BASIN BOTTOM, IRON YOKE, UPPER GUIDE PIPE BRACKETS, BOSSES, AND DISCHARGE FLANGE KIT.
 - DUPLEX TWO PUMP OPENING HEAVY DUTY BASIN COVER INCLUDING PUMP REMOVAL DOORS, DISCHARGE FLANGES, FLOAT CONTROL OPENING, CABLE SLOTS, VENT FLANGE WITH GOOSENECK, AND INSPECTION OPENING; WEIL MODEL 8804.
 - PCP, WEIL SERIES 8100, NEMA 4, DUPLEX, UL LISTED, WITH MAIN DISCONNECT TRANSFORMER, STARTERS, DISCONNECT, OL BLOCKS, HOA SWITCHES, RUN LIGHT, ALARM HORN AND LIGHT, WITH PUSH BUTTON SILENCER, AND DRY REMOTE CONTACTS.
 - WEIL MODEL 8230 TETHERED FLOAT CONTROLS.
 - PUMPS TO BE DOUBLE SEALED UPPER CARBON AGAINST CERAMIC AND LOWER SILICON CARBIDE WITH MOISTURE SENSOR, CAST IRON CASE AND IMPELLER, STAINLESS STEEL HARDWARE.
 - PROVIDE ADJUSTABLE, REMOVABLE, AND PORTABLE HOIST WITH EMBEDDED SOCKET AND WINCH CAPABLE OF LIFTING EACH PUMP OUT OF BASIN WITH ATTACHED LIFTING CABLE. HALLIDAY OR EQUAL. COORDINATE SOCKET INSTALLATION WITH CONCRETE CONTRACTOR. 1 HOIST FOR EACH BASIN AND ONE WINCH CABLE FOR EACH PUMP (SECURED INSIDE TOP OF BASIN).

FLOOR DRAIN AND CLEANOUT SCHEDULE				
TAG	TYPE	MANUFACTURER	Type	NOTES
FCO	FLOOR CLEANOUT CAST IRON BODY, SCORIATED NICKEL BRONZE TOP	JR SMITH	4220	
FD	GENERAL SERVICE 6" ROUND NICKEL BRONZE TOP FOR FINISHED SPACES, CAST IRON BODY	JR SMITH	2005	SEE NOTES BELOW
HB	FLOOR DRAIN WITH HUB ADAPTOR	JR SMITH	2005A	SEE NOTES BELOW
WCO	WALL CLEANOUT, 4" DUCO CAST IRON WITH ROUND ADJUSTABLE SCORIATED SECURED CAST IRON TOP, GASKET SEAL-ABS PLUG	JR SMITH	4220	

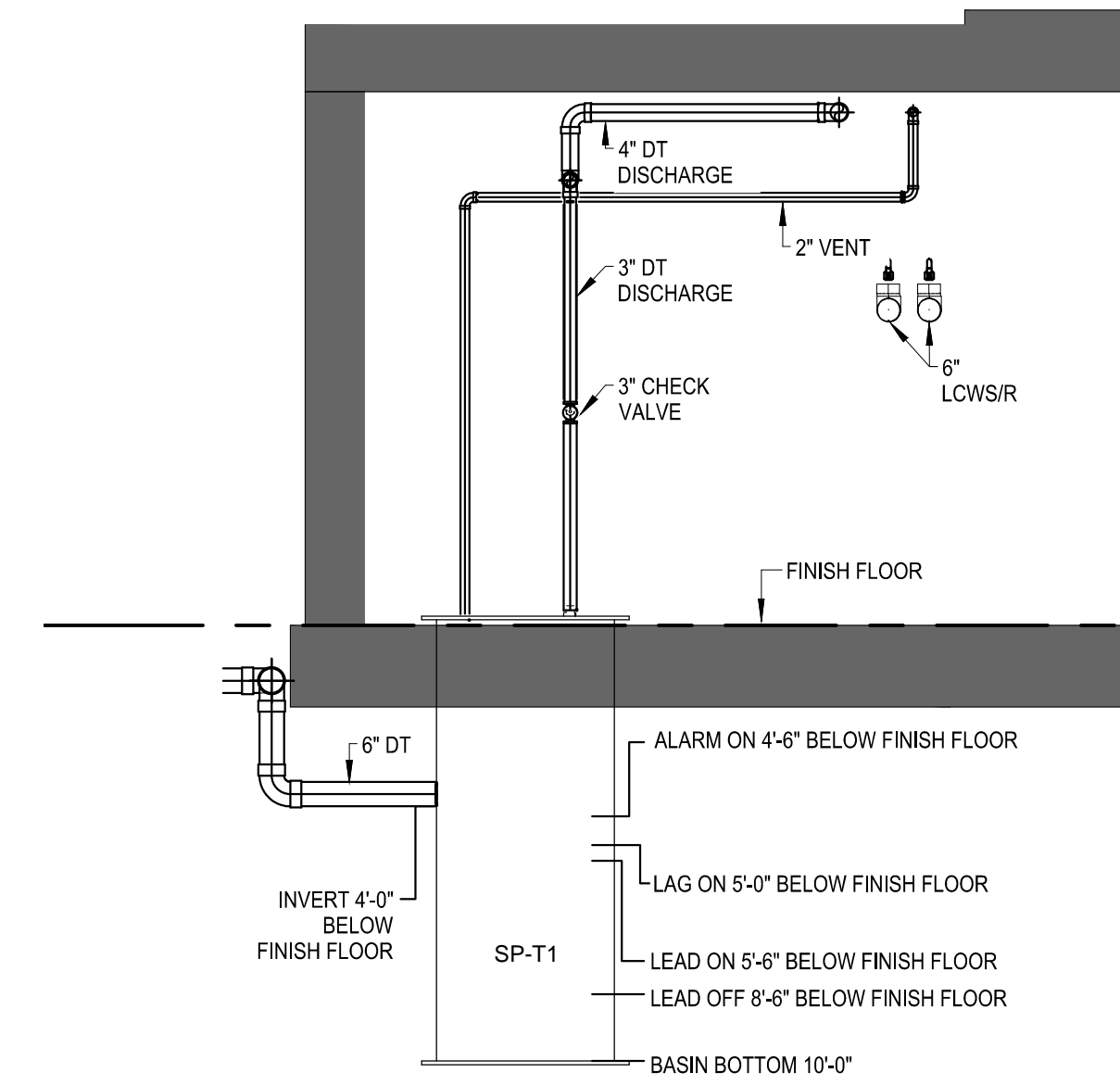
- FLOOR DRAIN SCHEDULE NOTES:**
- PROVIDE DEEP SEAL TRAPS, MINERAL OIL, AND TRAP SEAL INSERT (SURE SEAL SS4009 OR SIMILAR) FOR TRAP SEAL PROTECTION. OWNER TO IDENTIFY UNUSED/EMERGENCY FLOOR DRAINS FOR CONTRACTOR TO FILL WITH MINERAL OIL AND CONTRACTOR TO PROVIDE EXTRA FOR OTHER FLOOR DRAINS AND HUB DRAINS.
 - AS INDICATED ON PLANS AND OTHER SENSITIVE AREAS IDENTIFIED BY OWNER, PROVIDE BACKWATER VALVE INSERT, WATTS MODEL BV-1000 OR EQUAL FOR DRAINS.



SP-T1 SECTION 1 (Looking East)

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

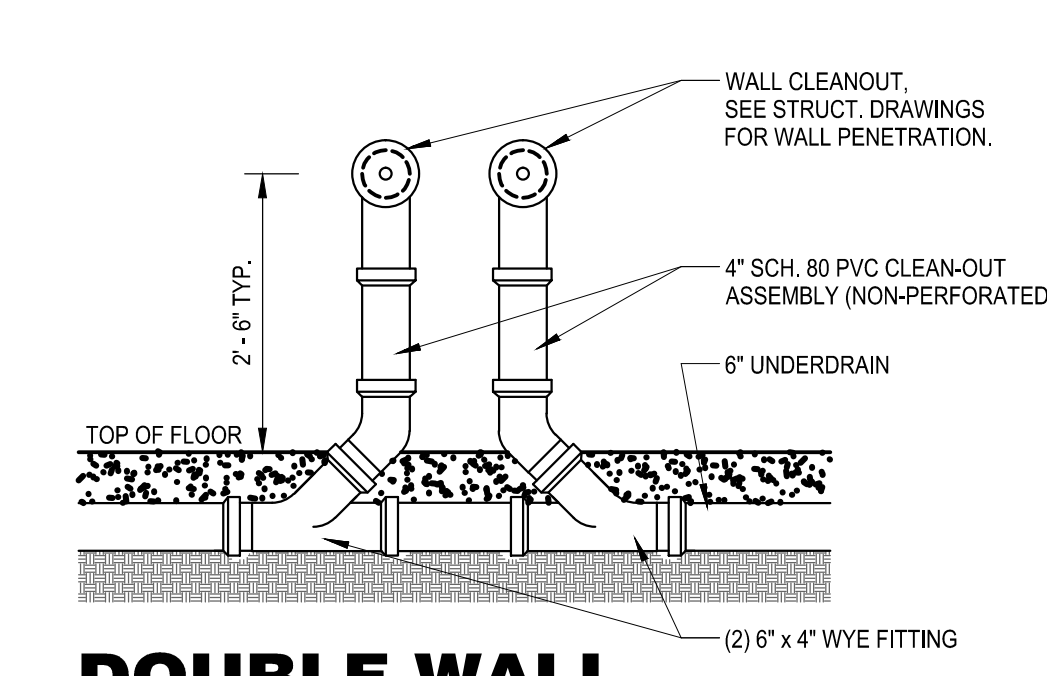
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P-3



SP-T1 SECTION (Looking South)

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

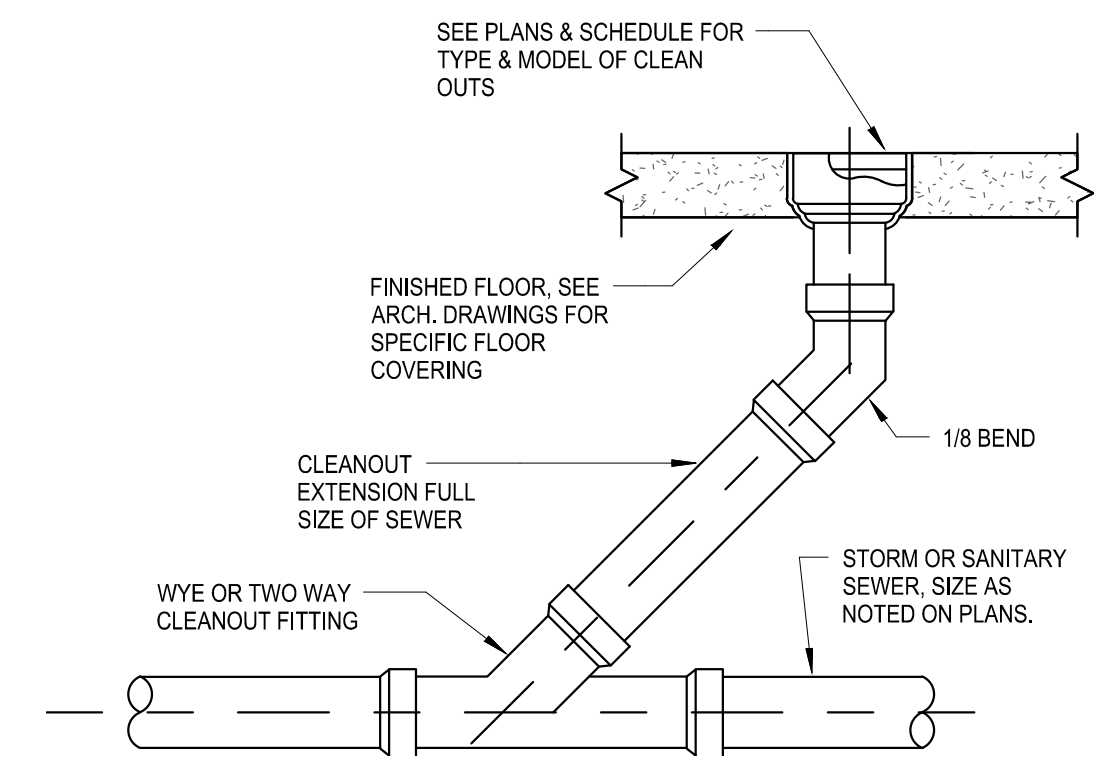
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P-3



DOUBLE WALL CLEANOUT ELEVATION (WCO), PVC FITTINGS

SCALE: NTS

1



INTERIOR FLOOR CLEANOUT, PVC FITTINGS

SCALE: NTS

2

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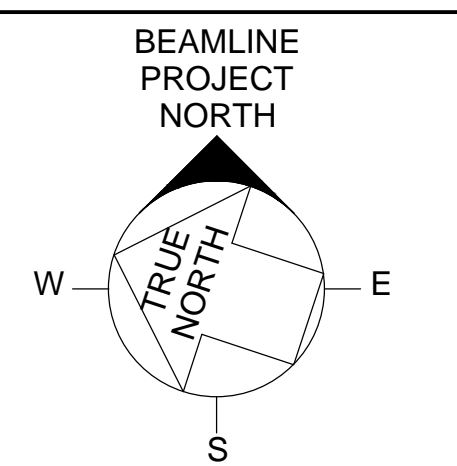
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SUBMITTED		



SCALE:





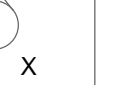

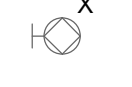

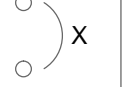




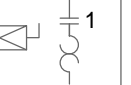











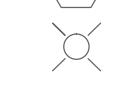
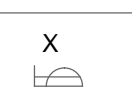
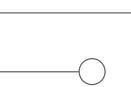
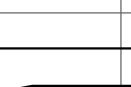


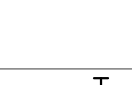
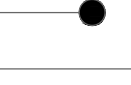
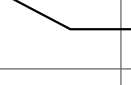

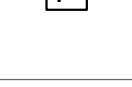




FERMI NATIONAL ACCELERATOR LABORATORY
 UNITED STATES DEPARTMENT OF ENERGY

**MC BEAMLINE ENCLOSURES
 PLUMBING SCHEDULES AND DETAILS**

DRAWING NO. 6-10-22 P-4 REV.

03 MAR 2014

SYMBOLS AND ABBREVIATIONS

X - YM 	INCANDESCENT LIGHT FIXTURE X - LETTER INDICATES FIXTURE TYPE Y - LETTER INDICATES MOUNTING TYPE 1 - NUMBER INDICATES CIRCUIT IN PANEL CM - CEILING MOUNTED PM - PENDANT MOUNTED WM - WALL MOUNTED		WELDING RECEPTACLE, 60A, 480V, 3W & GROUND CROUSE-HINDS CAT. NO. ARKITTE WSRD 63542 X - INDICATES CIRCUIT NUMBER		GROUND ROD 1" DIAMETER, 10'-0" LONG COPPERCLAD STEEL		PANELBOARD SEE PANELBOARD SCHEDULE ON DRAWING		ELECTRIC MOTOR X - INDICATES CIRCUIT NUMBER
X - YM 	INCANDESCENT LIGHT FIXTURE EL - LETTER INDICATES LIGHT CONNECTED TO UPS POWER X - LETTER INDICATES FIXTURE TYPE Y - LETTER INDICATES MOUNTING TYPE 1 - NUMBER INDICATES CIRCUIT IN PANEL CM - CEILING MOUNTED PM - PENDANT MOUNTED WM - WALL MOUNTED		POWER RECEPTACLE 20A or 30A, 120/208V, 4W & GROUND AS INDICATED ON DWG X - INDICATES CIRCUIT NUMBER		GROUND CABLE 500MCM BARE COPPER, UNLESS NOTED OTHERWISE		MOLDED CASE CIRCUIT BREAKER X - LETTER INDICATES BREAKER SIZE		JUNCTION BOX SIZED PER NEC
	EXIT SIGN SINGLE SIDED WITH DIRECTIONAL ARROW AS SHOWN ON DRAWING		DUPLEX RECEPTACLE 20A, 120V, 2W & GROUND X - INDICATES CIRCUIT NUMBER		EXPOSED CONDUIT SIZE AS SHOWN ON DRAWING INDICATES HOME-RUN TO PANEL		COMBINATION MAGNETIC TYPE MOTOR STARTER (NON-REVERSING) X - LETTER INDICATES BREAKER SIZE 1 - NUMBER INDICATES STARTER SIZE		AIR SAMPLING REMOTE DISPLAY ABOVE FINISHED FLOOR AIR SAMPLING SMOKE DETECTOR (VESDA) CEILING MOUNTED CABLE TRAY LINEAR TYPE HEAT DETECTOR CABLE PENDANT MOUNTED WALL MOUNTED UNDER CABINET
	EXIT SIGN DOUBLE SIDED WITH DIRECTIONAL ARROW ON BOTH FACES AS SHOWN ON DRAWING		QUADRUPLEX RECEPTACLE 20A, 120V, 2W & GROUND X - INDICATES CIRCUIT NUMBER		EXOTHERMIC WELDED CONNECTION GROUND CONDUCTOR BOLTED		"DS-XX", DISCONNECT SWITCH XX - DENOTES THE EQUIPMENT TYPE SERVED SIZED PER NEC NF - LETTER INDICATES NON FUSED F - LETTER INDICATES FUSED		GROUND CONDUCTOR COIL
	EMERGENCY LIGHT		GFI - GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE 20A, 120V, 2W & GROUND X - INDICATES CIRCUIT NUMBER		EMBEDDED CONDUIT SIZE AS SHOWN ON DRAWING INDICATES HOME-RUN TO PANEL		MANUAL MOTOR STARTER/DISCONNECT 20A, 120V OR 277V 1P		GROUND CONDUCTOR COIL
	AUDIBLE SPEAKER NOTIFICATION DEVICE, RED FINISH WITH BACK BOX. VISUAL NOTIFICATION DEVICE 75 CANDELA, UNLESS NOTED OTHERWISE		SPECIAL TYPE RECEPTACLE AND PLUG (L7-15R & P) 15A, 277V, 2W & GROUND X - INDICATES CIRCUIT NUMBER CATALOG NO. HUBBELL HBL4750 AND PLUG HBL4770C WITH STAINLESS STEEL COVER PLATE		CONDUIT TURNED UP		INDICATES GROUNDING (GREEN) WIRE INDICATES GROUNDED (NEUTRAL) WIRE INDICATES CONDUIT HOME RUN INDICATES PHASE (HOT) WIRE		
	LINEAR TYPE HEAT DETECTION PROTECTOWIRE MODEL NO. XCR AT 190°F		CONDUIT TURNED DOWN		CABLE TRAY				
	CONVENTIONAL MANUAL PULL STATION		EXIT SIGN IN ADDITION TO THE SPECIFIED LUMINESCENT SIGN PROVIDE A PHOTOLUMINESCENT EXIT SIGN AS MANUFACTURED BY EVERGLOW		CABLE TRAY				


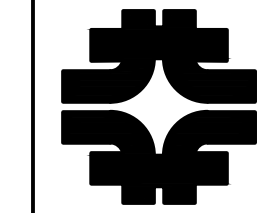
LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP	BALLAST	MANUFACTURER	CATALOG NUMBER	REMARKS
A	RUGGED AND CORROSION RESISTANT, WALL MOUNTED LIGHT FIXTURE WITH GASKETED AND GLASS GLOBE AND GUARD	FROST MINE 100W (INCANDESCENT) AT 277V MEDIUM BASE	NA	COOPER CROUSE-HINDS WITH PHILLIPS LIGHTING COMPANY	VJ2759 A21 MED. 24661-1 100A FROST MINE	BEAMLINE ENCLOSURE
AE	RUGGED AND CORROSION RESISTANT, WALL MOUNTED LIGHT FIXTURE WITH GASKETED AND GLASS GLOBE AND GUARD	FROST MINE 100W (INCANDESCENT) AT 277V MEDIUM BASE	NA	COOPER CROUSE-HINDS WITH PHILLIPS LIGHTING COMPANY	VJ2759 A21 MED. 24661-1 100A FROST MINE	LIGHTING IN BEAMLINE ENCLOSURE FOR FUTURE POWER FROM UPS PANEL OF M226 BUILDING
B	9'Dx18"W EXTERIOR WALL MOUNTED METAL HALIDE LIGHT FIXTURE	150MH	277V, TB SCWA	LITHONIA	MRW 150M MD TB SCWA SF QRS PE	EXTERIOR, COLOR SELECTED BY FERMI LAB
EX1	EXIT SIGN WITH RED FACEPLATE, 20- GAUGE STEEL HOUSING, UNIVERSAL MOUNTING, 277VAC, SINGLE OR DOUBLE FACE AS REQUIRED.	277VAC, 30-WATT	NA	BIG BEAM	XF-1/2-R-W-W	EXIT SIGN, WITHOUT BATTERY BACKUP SYSTEM. PROVIDE DIRECTION SIGN PER PLAN.
EM1	EMERGENCY LIGHTING UNIT WITH MAINTENANCE FREE BATTERY BACKUP, UNIVERSAL MOUNTING	HALOGEN LAMPS	120/277V	LITHONIA	ELM1254 H2012 SD ND N	TEMPORARY MOUNTED EMERGENCY LIGHT.

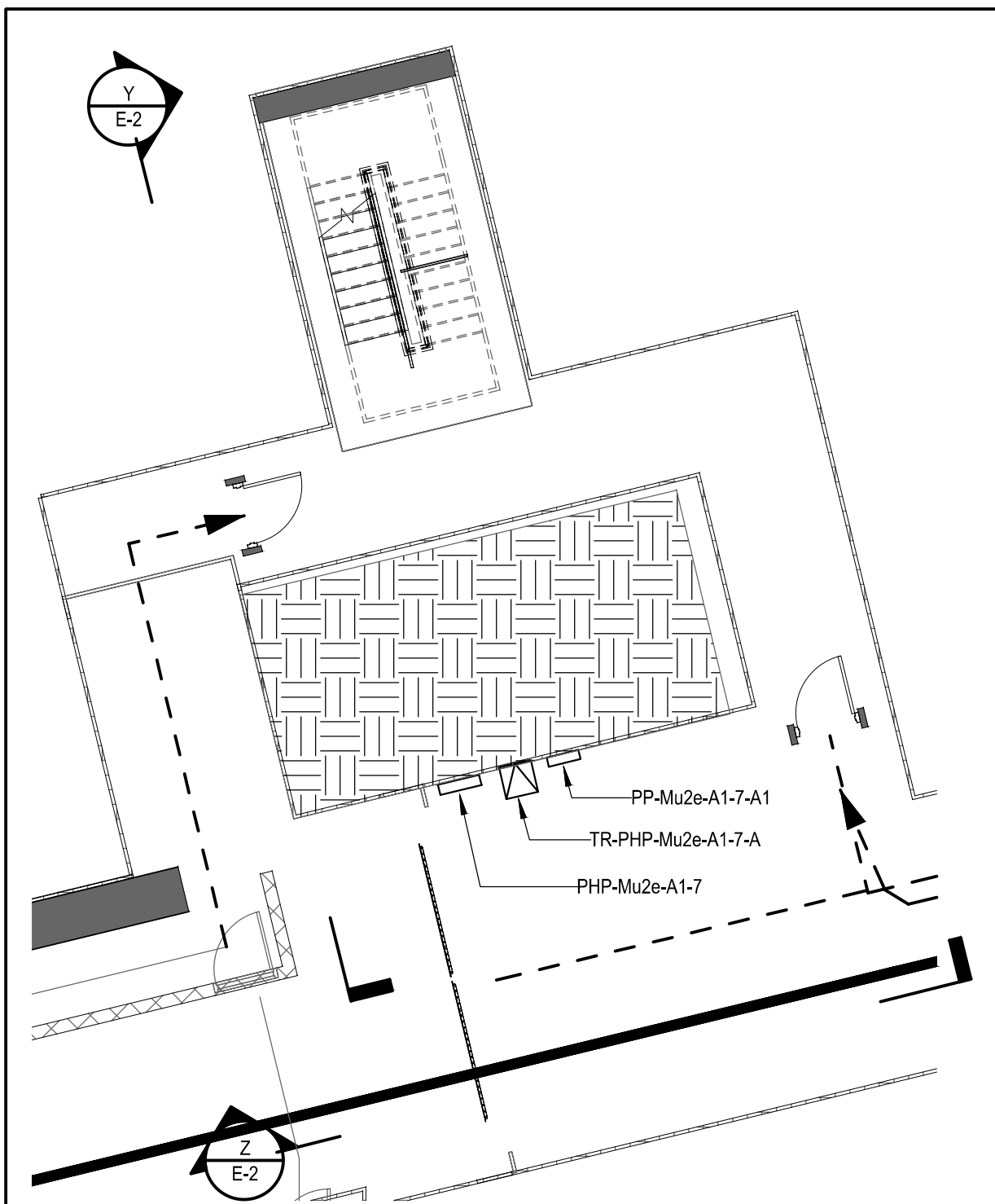
GENERAL NOTES

- DESCRIPTIONS, MANUFACTURER'S NAMES AND CATALOG NUMBERS OF LIGHTING FIXTURES ARE SPECIFIED TO ACHIEVE DESIRED LIGHTING LEVELS. REFER TO LIGHTING FIXTURE SPECIFICATION.
- LOCATION OF LIGHTING FIXTURES, FIRE ALARM DEVICES, AND OTHER PIECES OF ELECTRICAL EQUIPMENT AS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED IN THE FIELD WITH THE LOCATION OF VENTILATION DUCTS, LIFT, BEAMLINE, AND MECHANICAL EQUIPMENT TO AVOID INTERFERENCES. ANY CONFLICTS DERIVING FROM EQUIPMENT INSTALLATION SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE FERMI LAB CONSTRUCTION COORDINATOR.
- ALL CONDUITS FOR POWER SHALL CONTAIN AN INSULATED, GREEN COLORED GROUND WIRE CONDUCTOR.
- FINAL CONNECTION TO MOTORS OR OTHER VIBRATION GENERATING DEVICES SHALL BE MADE WITH USE OF STRANDED CONDUCTORS IN LIQUID TIGHT FLEXIBLE CONDUIT.
- ALL EQUIPMENT INCLUDING NON CURRENT CARRYING EQUIPMENT SHALL BE GROUNDED USING AN INSULATED GREEN COLORED OR BARE COPPER GROUND WIRE.
- ALL PULL BOXES AND JUNCTION BOXES SHALL BE SIZED PER THE LATEST EDITION OF THE NEC. SUBCONTRACTOR SHALL SIZE, FURNISH AND INSTALL ALL PULL BOXES OR JUNCTION BOXES AS REQUIRED BY THE NEC.
- ALL MATERIAL AND ELECTRICAL EQUIPMENT SHALL BE LISTED BY UNDERWRITERS LABORATORIES, INC. ALL INSTALLATIONS SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE LATEST EDITION OF THE NEC AND OSHA.
- ALL ELECTRICAL INSTALLATIONS SHALL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE FERMI LAB CONSTRUCTION COORDINATOR. ANY ELECTRICAL INSTALLATION NOT MEETING THE APPROVAL OF THE FERMI LAB CONSTRUCTION COORDINATOR SHALL BE REMOVED AND REINSTALLED TO THE SATISFACTION OF FERMI LAB BY THE SUBCONTRACTOR, AT NO COST TO FERMI LAB.
- BEFORE PERFORMING ANY EARTHWORK SUBCONTRACTOR SHALL COORDINATE WITH THE FERMI LAB CONSTRUCTION COORDINATOR.
- ALL FLEXIBLE CONDUITS SHALL BE EQUIPPED WITH A GROUNDING CONDUCTOR SIZED PER NEC IN THE SAME CONDUIT AS THE CIRCUIT CONDUCTORS
- CONDUIT RUNS SHOWN ON DRAWINGS ARE DIAGRAMMATIC ONLY. ACTUAL FIELD CONDITIONS SHALL BE VERIFIED AND CONDUITS SHALL BE ROUTED ACCORDINGLY.
- ALL PENETRATIONS THROUGH FIRE RATED FLOORS AND WALLS SHALL BE MADE FIRE SAFE IN COMPLIANCE WITH THE APPLICABLE ELECTRICAL CODES & FERMI LAB SPECIFICATIONS.
- BRANCH CIRCUIT WIRING IN EXCESS OF 60 FEET AND LESS THAN 95 FEET FOR 120V CIRCUITS SHALL BE #10 FROM PANEL TO MIDPOINT OUTLET OF THE CIRCUITS UNLESS NOTED OTHERWISE.
- VERIFY EXACT LOCATION OF CONDUIT ENTRANCE TO ALL MECHANICAL EQUIPMENT PRIOR TO ROUGH-IN.
- ALL OUTLETS ARE SURFACE MOUNTED AND SHALL HAVE STAINLESS STEEL COVERPLATES EXCEPT ON COMBINATION POWER OUTLETS. EACH DEVICE (RECEPTACLE, ETC.) SHALL BE AFFIXED WITH A STICK-ON WHITE LABEL WITH BLACK LETTERING TO INDICATE PANEL & CIRCUIT OF ORIGIN.
- COORDINATE WITH MECHANICAL AND PLUMBING SUBCONTRACTORS FOR POWER TO HVAC UNIT INCLUDING EXHAUST FAN AND SUMP PUMP. ALL MECHANICAL EQUIPMENT FURNISHED AND INSTALLED BY THE MECHANICAL SUBCONTRACTOR AND POWER BY ELECTRICAL SUBCONTRACTOR.
- SUBCONTRACTOR SHALL PROVIDE DRAWINGS SHOWING CONDUITS, CABLE TRAY LAYOUT, AND EQUIPMENT LAYOUT IN THE MC BEAMLINE ENCLOSURES FOR FERMI LAB TO REVIEW. FIELD COORDINATE AND GET APPROVAL FROM THE MIDDOUGH STRUCTURAL ENGINEER AND FERMI LAB BEFORE ANY CONDUITS PENETRATION TO WALL, FLOOR, OR ROOF ARE MADE.

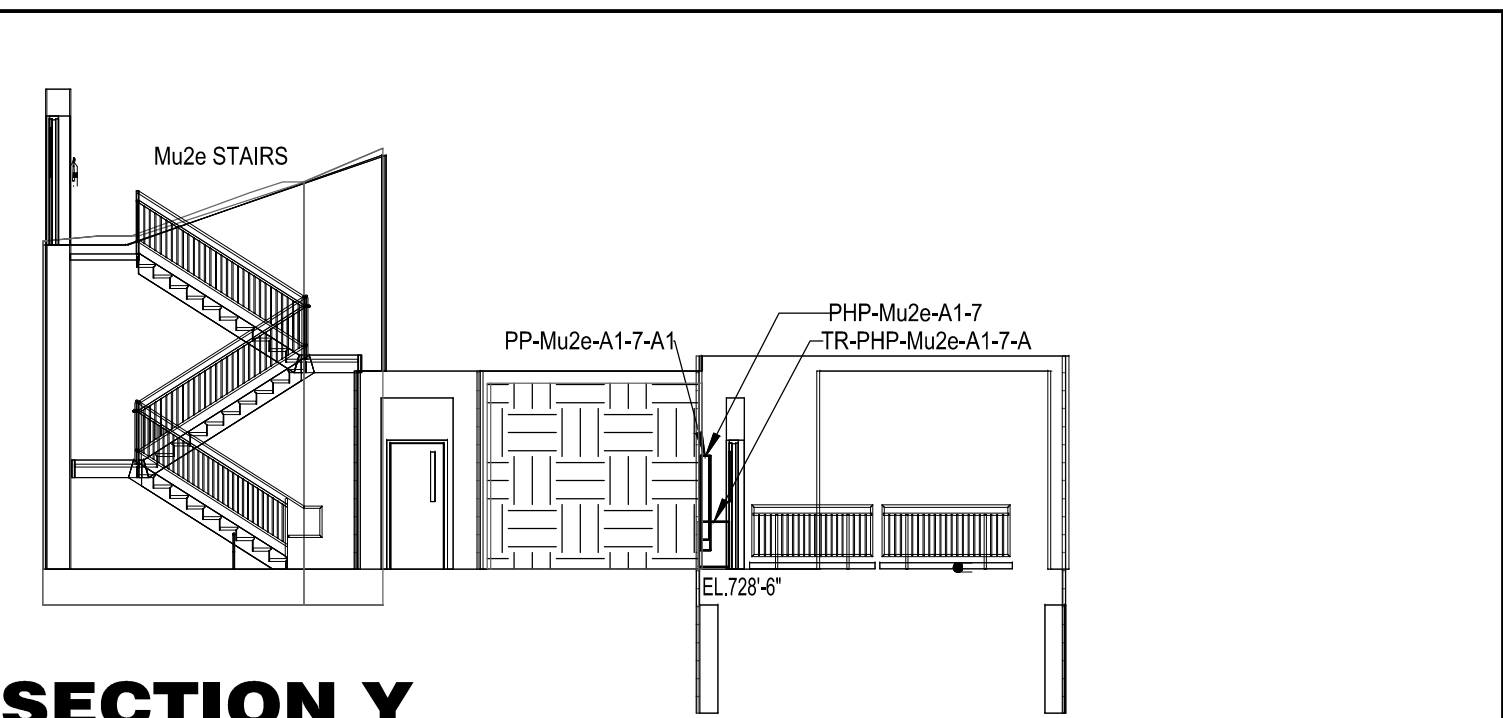
3/12/2014 10:44:37 AM sers\ivanov\Documents\Revit Projects\FNA1303\FNA1303.ELECTRICAL.LOCAL.Ivanov\m_1282014.rvt

	 FNA1303 Oak Brook Pointe 700 Commerce Drive, Suite 200 Oak Brook, IL 60523 ph. 630-756-7000 www.middough.com fx. 630-756-7001	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">NAME</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DESIGNED</td> <td>S. SINHA</td> <td>03/03/14</td> </tr> <tr> <td>DRAWN</td> <td>S. SINHA</td> <td>03/03/14</td> </tr> <tr> <td>CHECKED</td> <td>C. PIOTROWSKI</td> <td>03/03/14</td> </tr> <tr> <td>APPROVED</td> <td>M. SHRADER</td> <td>03/03/14</td> </tr> <tr> <td>SUBMITTED</td> <td></td> <td></td> </tr> </tbody> </table>	NAME		DATE	DESIGNED	S. SINHA	03/03/14	DRAWN	S. SINHA	03/03/14	CHECKED	C. PIOTROWSKI	03/03/14	APPROVED	M. SHRADER	03/03/14	SUBMITTED			SCALE:	FERMI NATIONAL ACCELERATOR LABORATORY UNITED STATES DEPARTMENT OF ENERGY  MC BEAMLINE ENCLOSURES ELECTRICAL GENERAL NOTES, SYMBOLS AND FIXTURE SCHEDULE DRAWING NO. 6-10-22 E-1 REV.
NAME		DATE																				
DESIGNED	S. SINHA	03/03/14																				
DRAWN	S. SINHA	03/03/14																				
CHECKED	C. PIOTROWSKI	03/03/14																				
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SUBMITTED																						

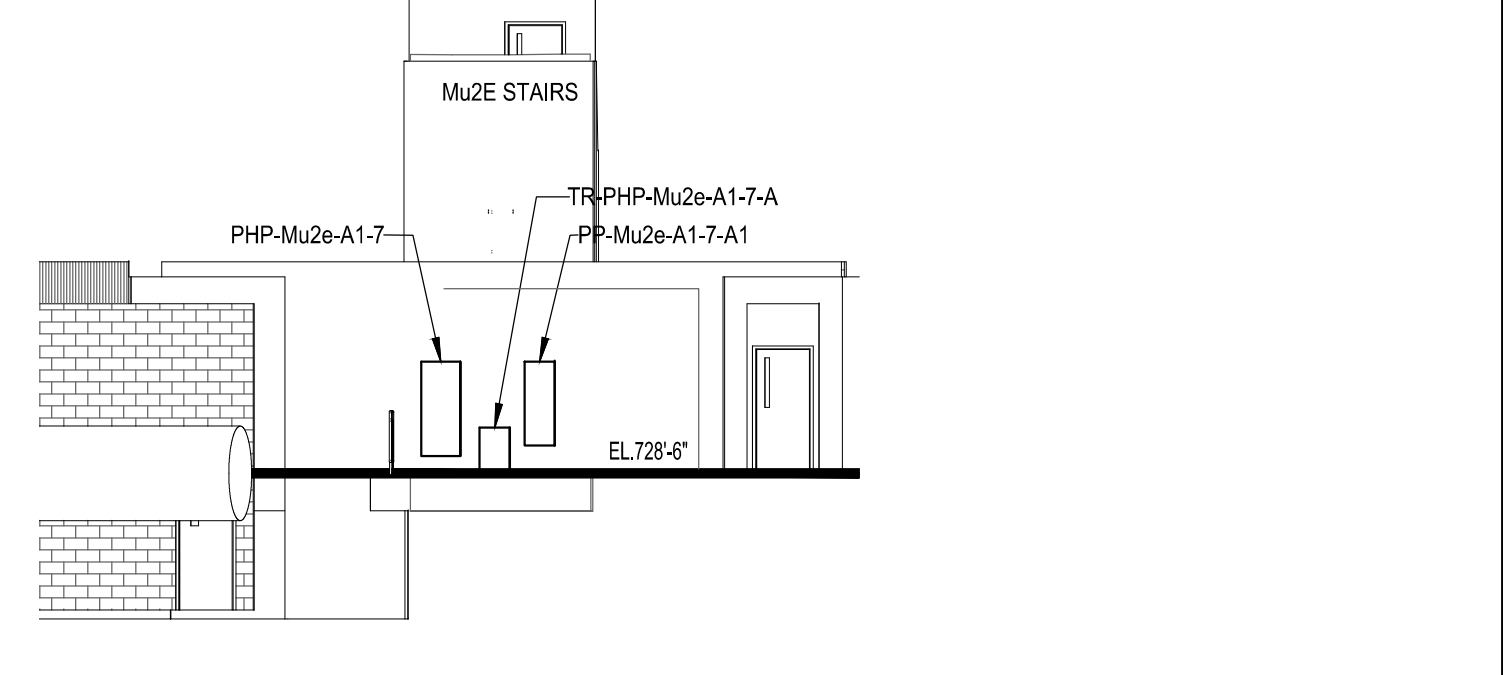
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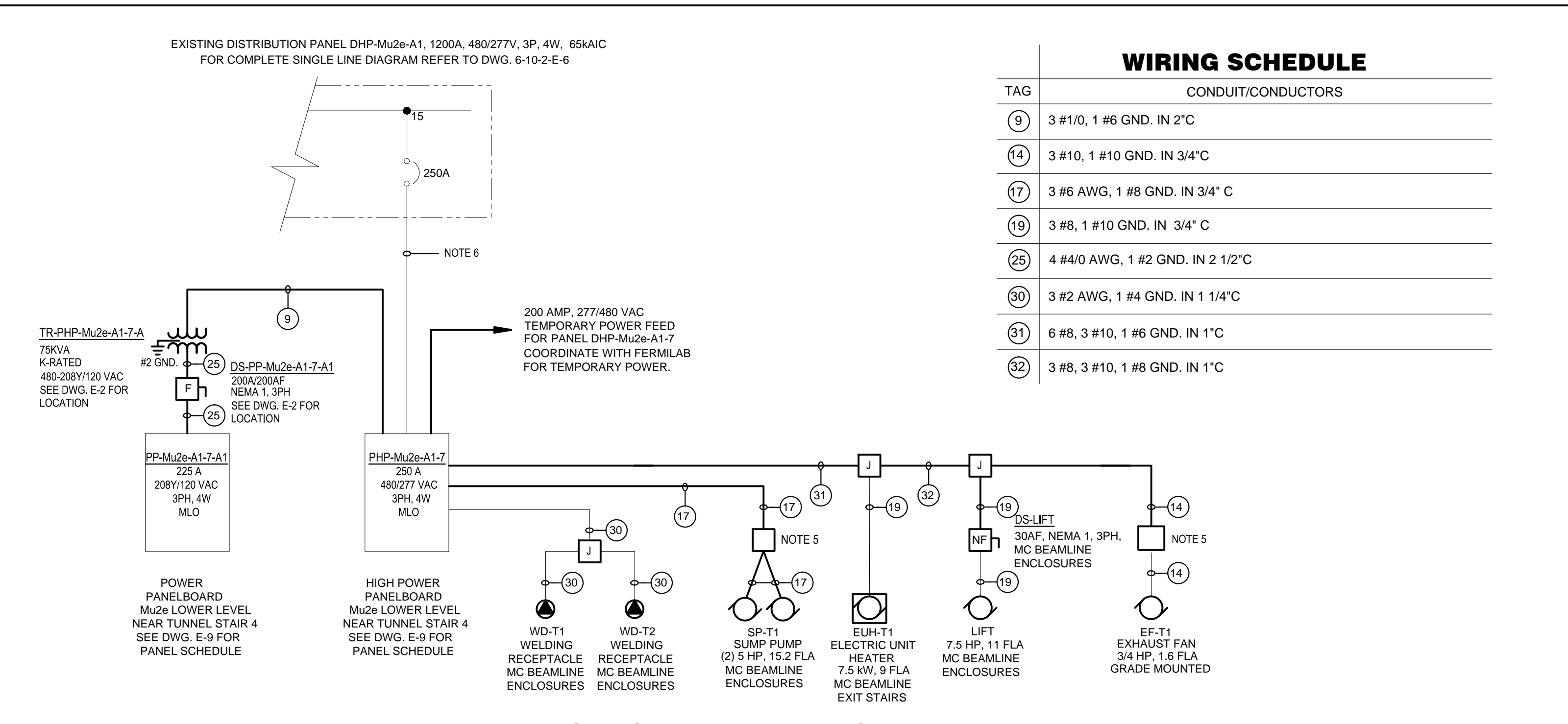
ENLARGED PLAN
SCALE: 1/8" = 1'-0"



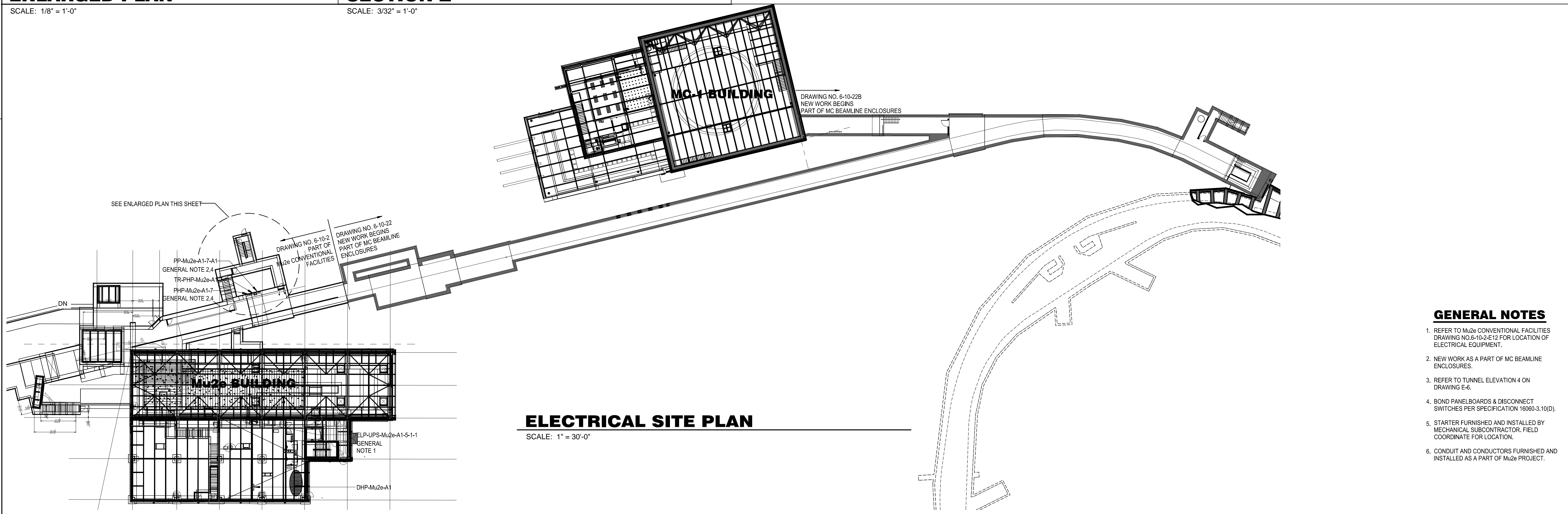
SECTION Y
SCALE: 3/32" = 1'-0"



SECTION Z
SCALE: 3/32" = 1'-0"



SINGLE LINE DIAGRAM



ELECTRICAL SITE PLAN
SCALE: 1" = 30'-0"

- GENERAL NOTES**
- REFER TO Mu2e CONVENTIONAL FACILITIES DRAWING NO. 6-10-2-E12 FOR LOCATION OF ELECTRICAL EQUIPMENT.
 - NEW WORK AS A PART OF MC BEAMLINE ENCLOSURES.
 - REFER TO TUNNEL ELEVATION 4 ON DRAWING E-6.
 - BOND PANELBOARDS & DISCONNECT SWITCHES PER SPECIFICATION 16060-3.10(D).
 - STARTER FURNISHED AND INSTALLED BY MECHANICAL SUBCONTRACTOR. FIELD COORDINATE FOR LOCATION.
 - CONDUIT AND CONDUCTORS FURNISHED AND INSTALLED AS A PART OF Mu2e PROJECT.

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REV.	DATE	DESCRIPTIONS

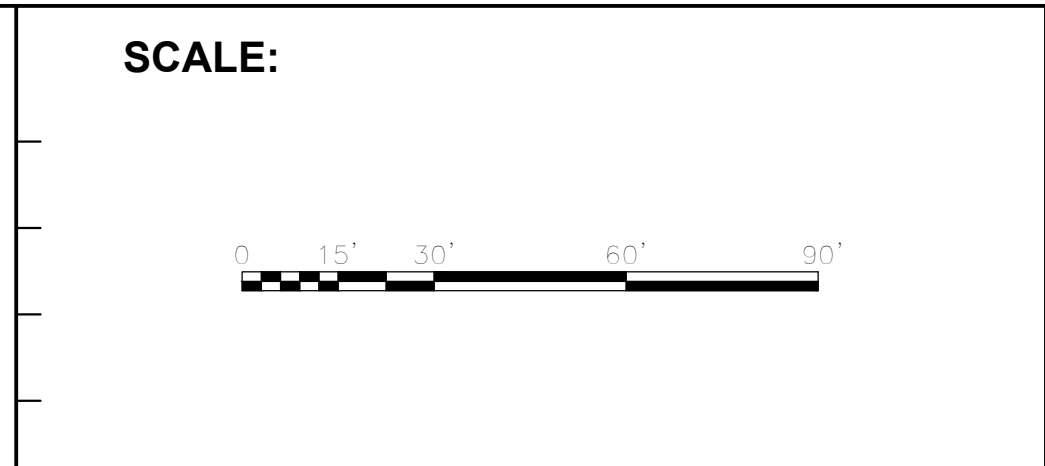
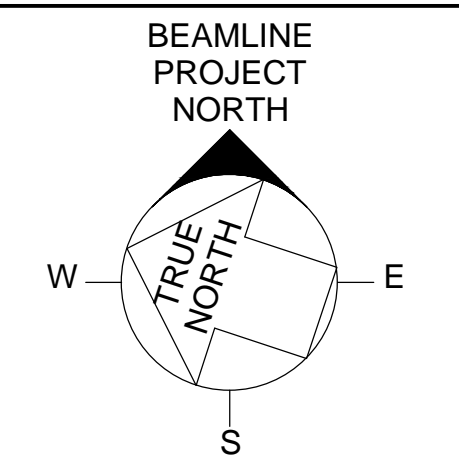
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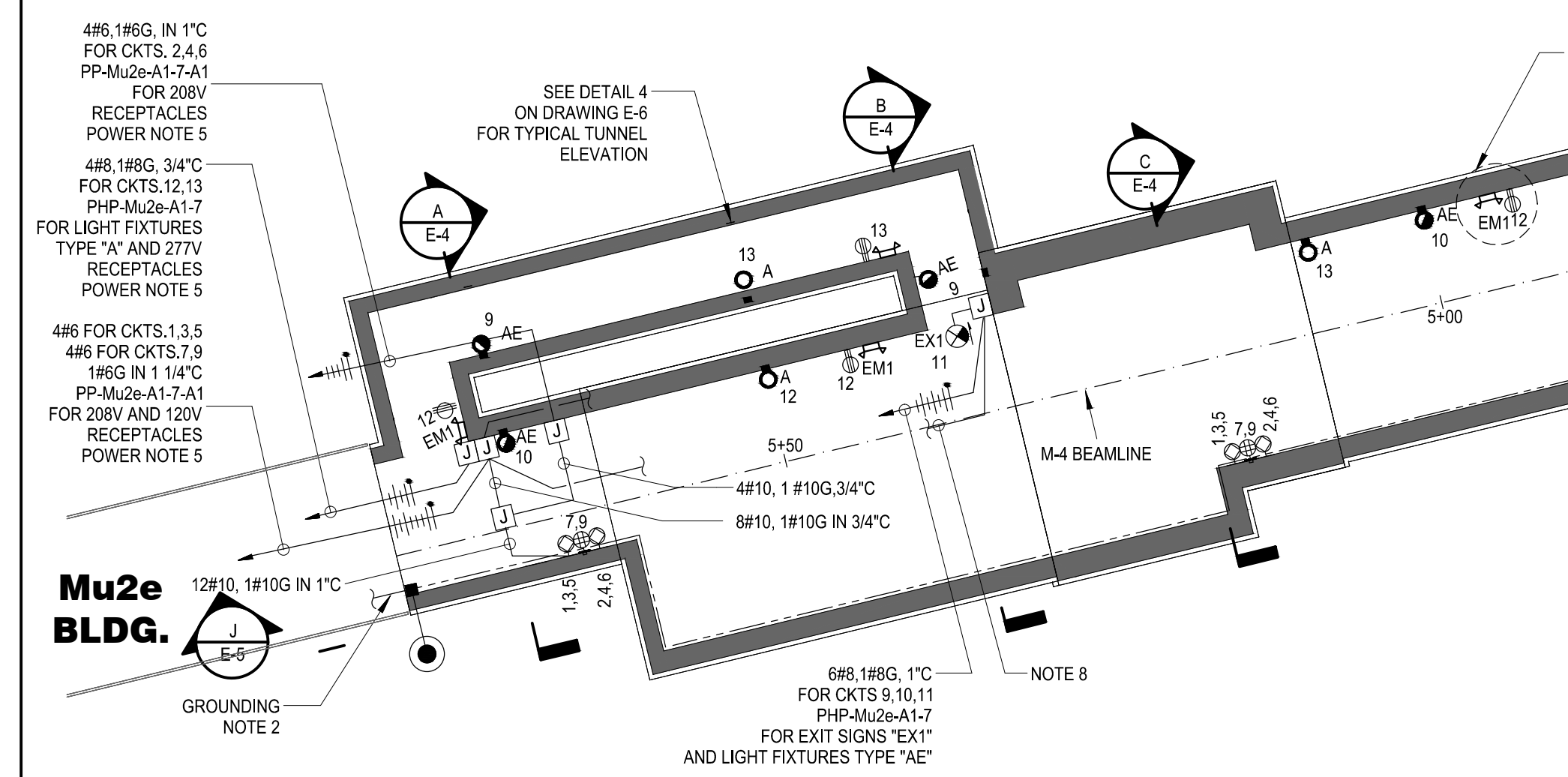
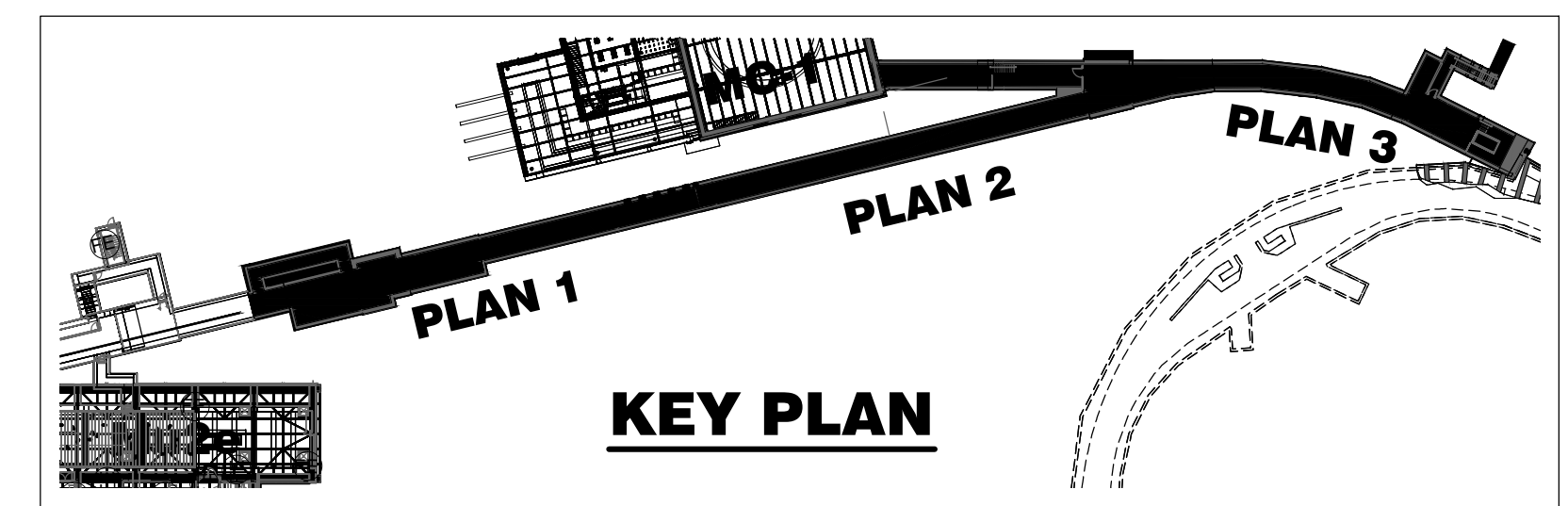


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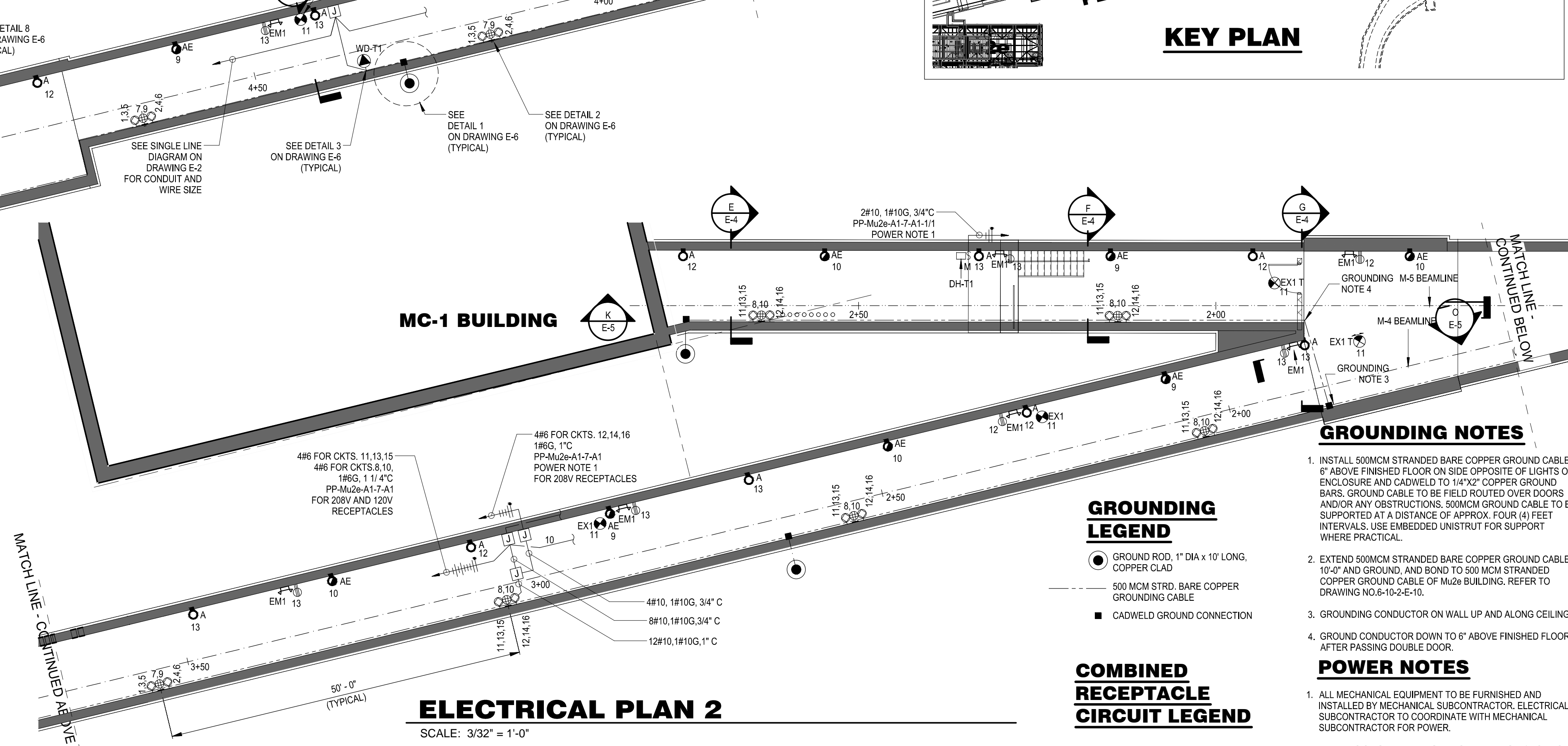
**MC BEAMLINE ENCLOSURES
SINGLE LINE DIAGRAMS &
ELECTRICAL SITE PLAN**

DRAWING NO. 6-10-22 E-2 REV.

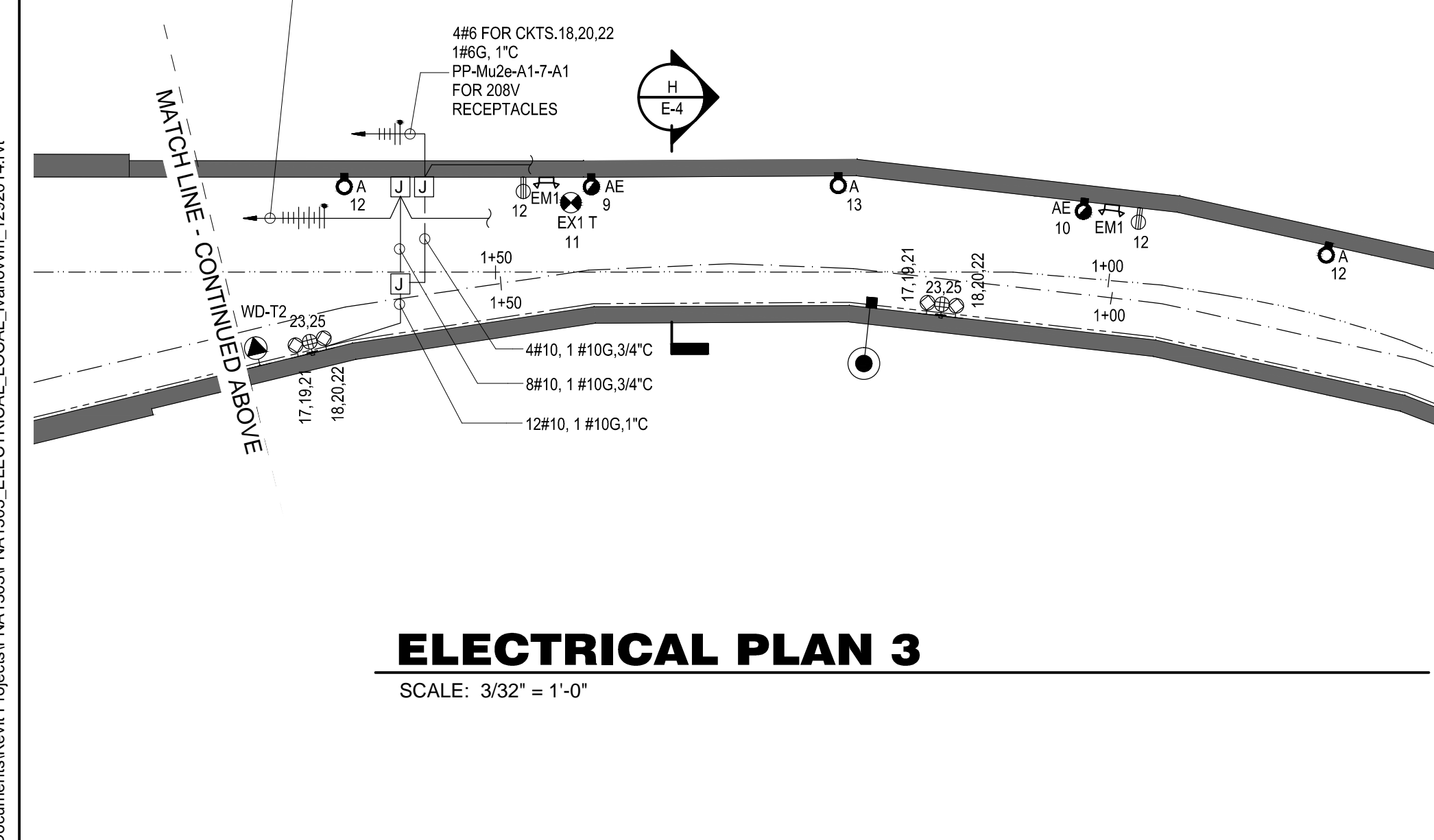
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ELECTRICAL PLAN 1
SCALE: 3/32" = 1'-0"



ELECTRICAL PLAN 2
SCALE: 3/32" = 1'-0"



ELECTRICAL PLAN 3
SCALE: 3/32" = 1'-0"

GROUNDING NOTES

- INSTALL 500MCM STRANDED BARE COPPER GROUND CABLE 6" ABOVE FINISHED FLOOR ON SIDE OPPOSITE OF LIGHTS OF ENCLOSURE AND CADWELD TO 1/4"x2" COPPER GROUND BARS. GROUND CABLE TO BE FIELD ROUTED OVER DOORS AND/OR ANY OBSTRUCTIONS. 500MCM GROUND CABLE TO BE SUPPORTED AT A DISTANCE OF APPROX. FOUR (4) FEET INTERVALS. USE EMBEDDED UNISTRUT FOR SUPPORT WHERE PRACTICAL.
- EXTEND 500MCM STRANDED BARE COPPER GROUND CABLE 10'-0" AND GROUND, AND BOND TO 500 MCM STRANDED COPPER GROUND CABLE OF Mu2e BUILDING. REFER TO DRAWING NO. 6-10-2-E-10.
- GROUNDING CONDUCTOR ON WALL UP AND ALONG CEILING.
- GROUND CONDUCTOR DOWN TO 6" ABOVE FINISHED FLOOR, AFTER PASSING DOUBLE DOOR.

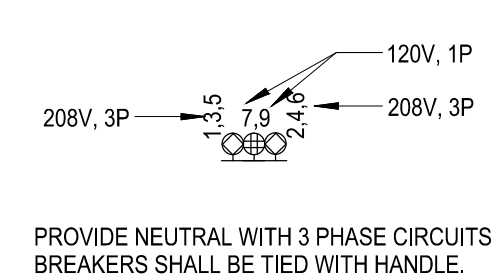
GROUNDING LEGEND

- GROUND ROD, 1" DIA x 10' LONG, COPPER CLAD
- 500 MCM STRD. BARE COPPER GROUNDING CABLE
- CADWELD GROUND CONNECTION

POWER NOTES

- ALL MECHANICAL EQUIPMENT TO BE FURNISHED AND INSTALLED BY MECHANICAL SUBCONTRACTOR. ELECTRICAL SUBCONTRACTOR TO COORDINATE WITH MECHANICAL SUBCONTRACTOR FOR POWER.
- REFER TO SINGLE LINE DIAGRAM ON DRAWING E-2 FOR POWER TO MECHANICAL EQUIPMENT.
- COORDINATE WITH LIFT INSTALLER FOR POWER AND LOCATION OF LIFT CONTROLLER.
- FURNISH AND INSTALL 1-1/2" CONDUIT AND TERMINATE INTO A JUNCTION BOX NEXT TO FRIIUS SUBPANEL IN DATA ACQUISITION ROOM 112 IN Mu2e CONVENTIONAL FACILITIES. FIELD COORDINATE FOR EXACT LOCATION.
- SEE DRAWING E-2 FOR PANELS LOCATIONS AND SINGLE LINE DIAGRAM.

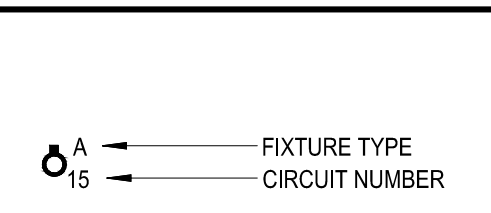
COMBINED RECEPTACLE CIRCUIT LEGEND



LIGHTING NOTES

- COORDINATE LOCATION OF LIGHT FIXTURES WITH MECHANICAL EQUIPMENT, DUCT, PIPING, AND CABLE TRAY.
- ALL CONDUITS PENETRATIONS SHALL BE SEALED. FOR FIRE RATED WALLS SEALANT SHALL BE RATED EQUAL TO THE WALL.
- SUBCONTRACTOR MUST GET AN APPROVAL FROM THE FERMI LAB STRUCTURAL ENGINEER BEFORE DRILLING ANY HOLE ON THE WALL OR SLAB.
- SUBCONTRACTOR SHALL PROVIDE TEMPORARY LIGHTS FOR CONSTRUCTION. EM1-EMERGENCY LIGHTING UNITS WILL BE INSTALLED TEMPORARILY AND SHALL BE REMOVED AFTER PERMANENT POWER IS FED FROM Mu2e BUILDING.
- CONDUIT SHALL BE FIELD ROUTED IF THERE ARE ANY OBSTRUCTIONS.
- ALL EM1 LIGHTS TO ILLUMINATE EXIT SIGN. ROTATE HEAD TOWARD EXIT SIGN.
- ALL 277V RECEPTACLES ARE FED FROM PHP-Mu2e-A1-7.
- FURNISH AND INSTALL 1" C AND EXTEND TO MECH. ROOM 111 IN Mu2e BUILDING FOR FUTURE CONNECTION TO EMERGENCY PANEL ELP-LPS-Mu2e-A1-5-1-1.

LIGHTING FIXTURE DESIGNATION LEGEND



MATCH LINE - CONTINUED ABOVE

MATCH LINE - CONTINUED BELOW

MATCH LINE - CONTINUED BELOW

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REV.	DATE	DESCRIPTIONS

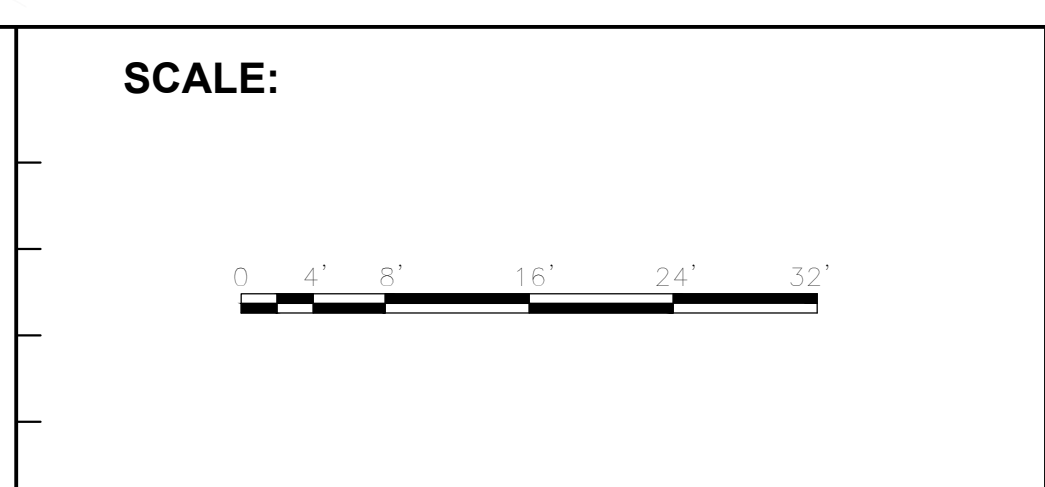
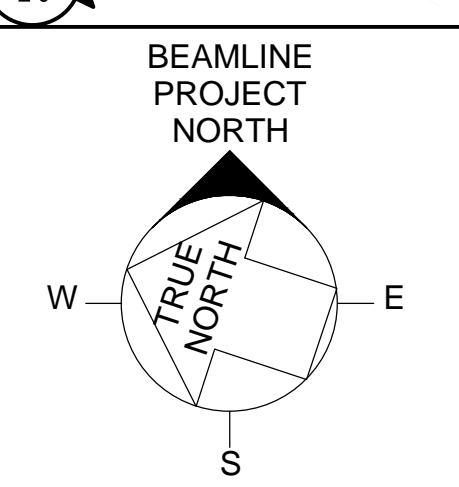
FNA1303

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SUBMITTED		

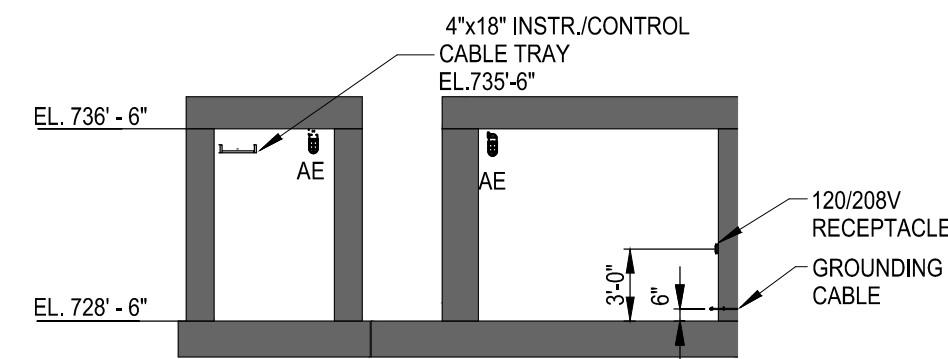


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MC BEAMLINE ENCLOSURES
ELECTRICAL PLANS

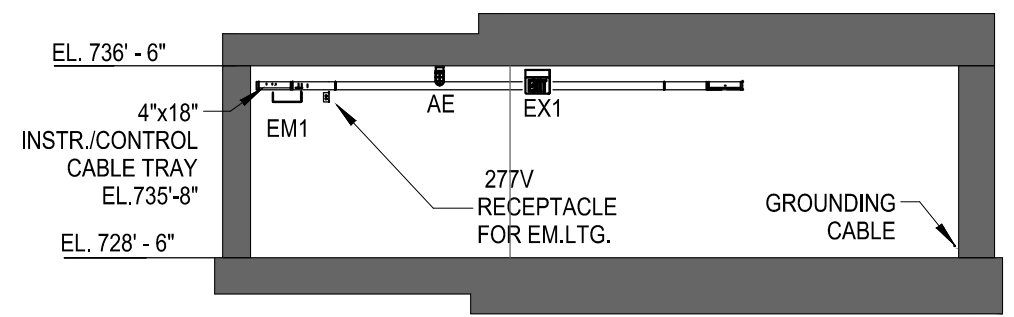
DRAWING NO. 6-10-22 E-3 REV.

03 MAR 2014



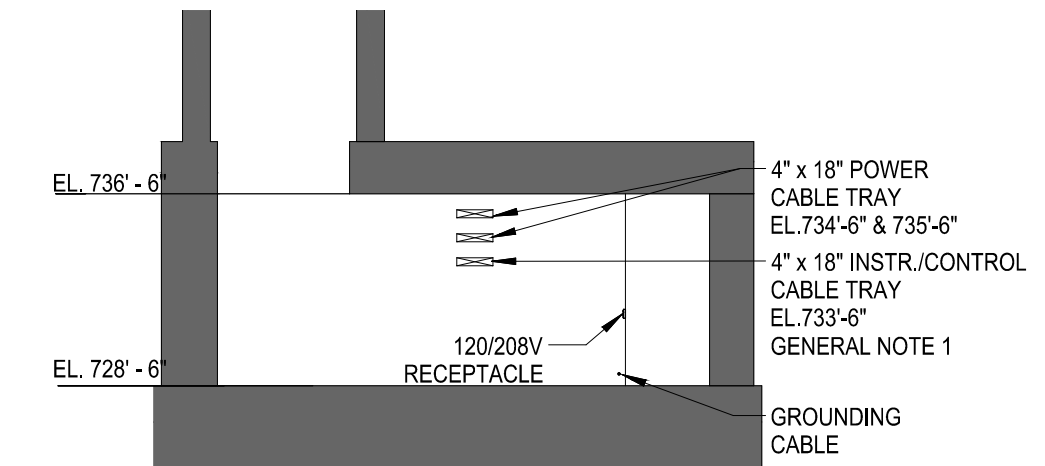
SECTION A
SCALE: 1/8" = 1'-0"

A
E-3



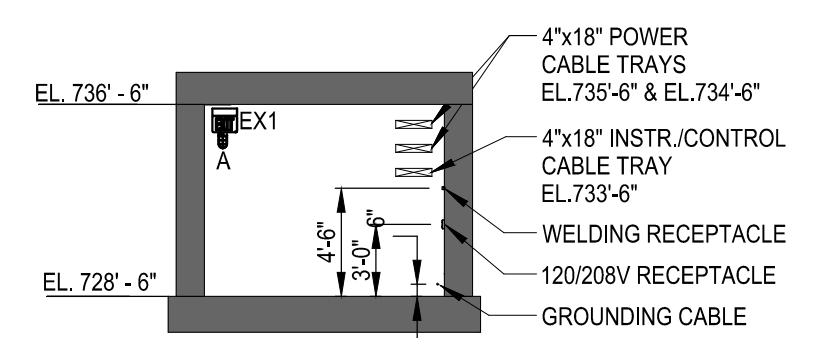
SECTION B
SCALE: 1/8" = 1'-0"

B
E-3



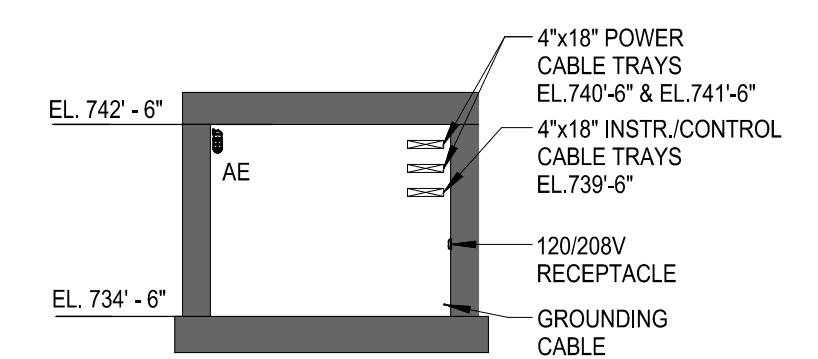
SECTION C
SCALE: 1/8" = 1'-0"

C
E-3



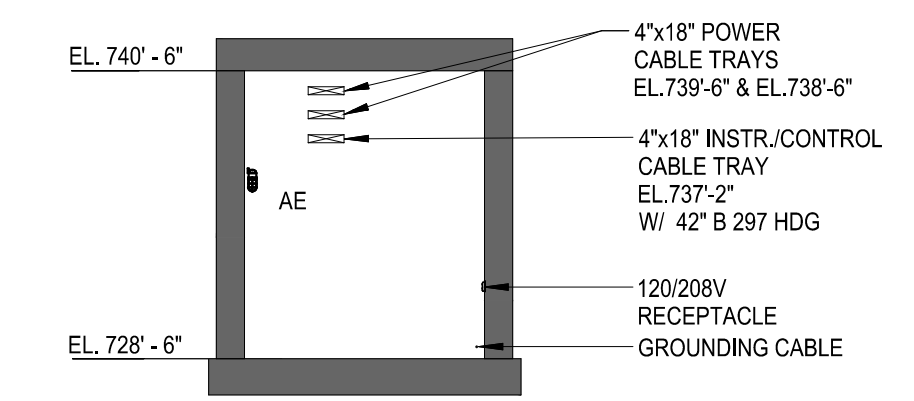
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SCALE: 1/8" = 1'-0"

D
E-3



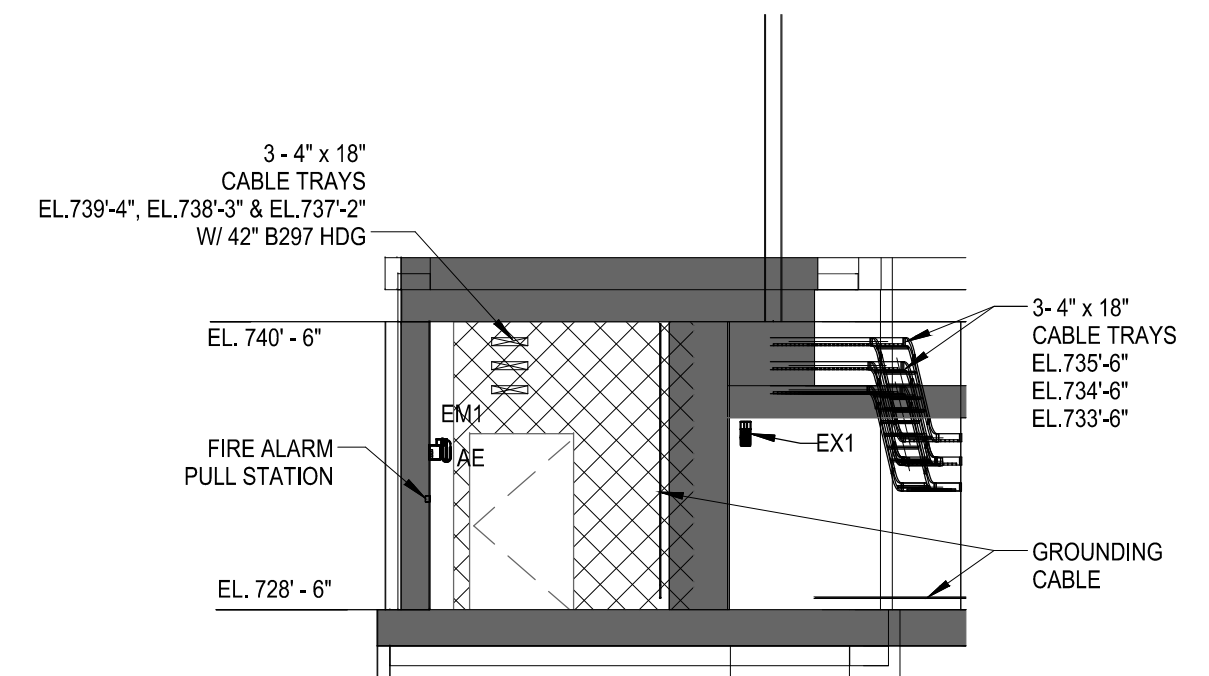
SECTION E
SCALE: 1/8" = 1'-0"

E
E-3



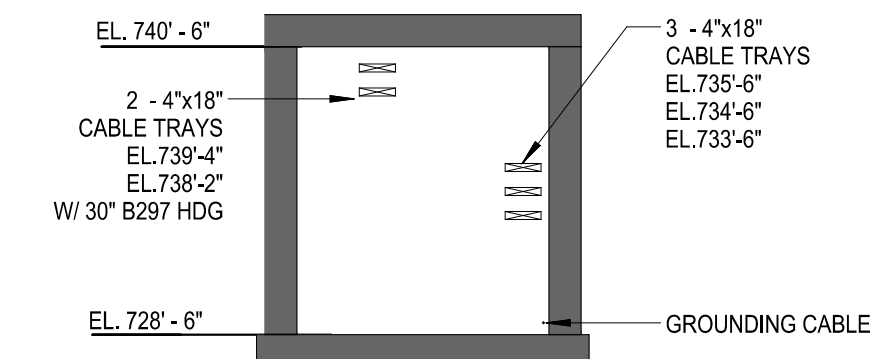
SECTION F
SCALE: 1/8" = 1'-0"

F
E-3



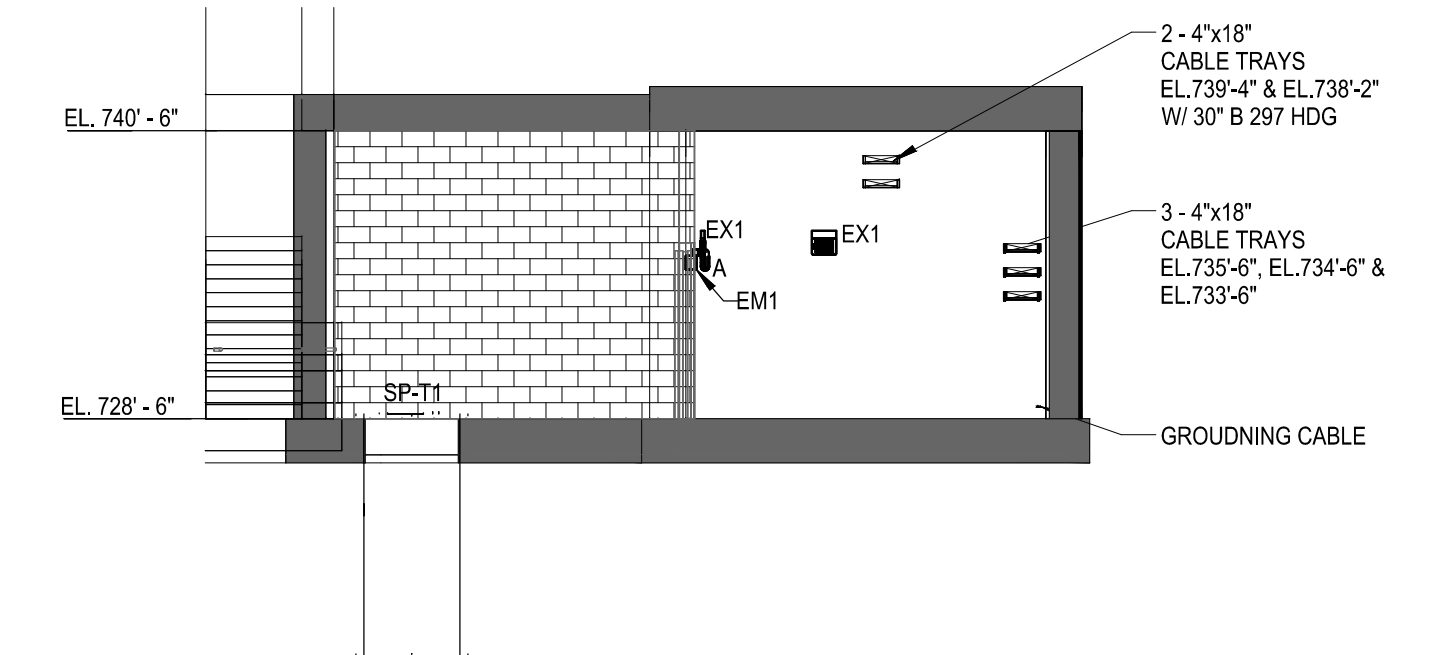
SECTION G
SCALE: 1/8" = 1'-0"

G
E-3



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

H
E-3



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

HA
E-3

GENERAL NOTES

1. ELEVATION OF CABLE TRAYS IS SHOWN FROM THE BOTTOM OF CABLE TRAY SUPPORT BRACKET (TYPICAL).

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DRAWN	V. IVANOVA	03/03/14
CHECKED	C. PIOTROWSKI	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

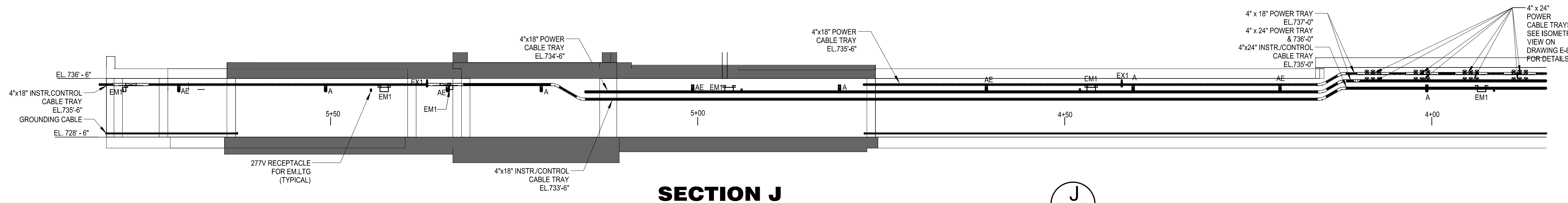
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MC BEAMLINE ENCLOSURES
ELECTRICAL SECTIONS

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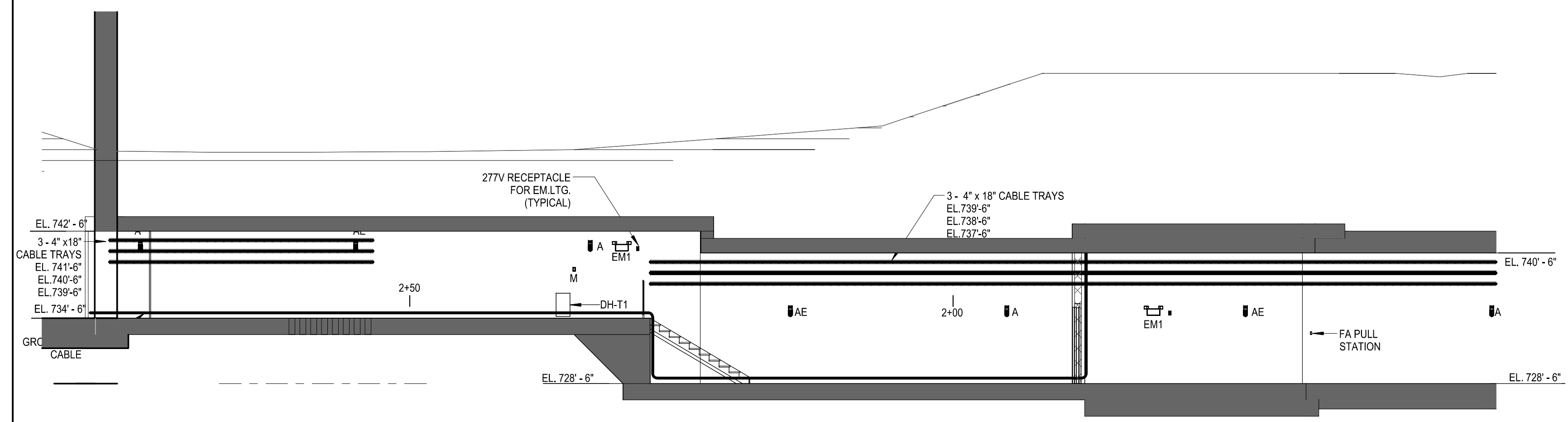
03 MAR 2014



SECTION J

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

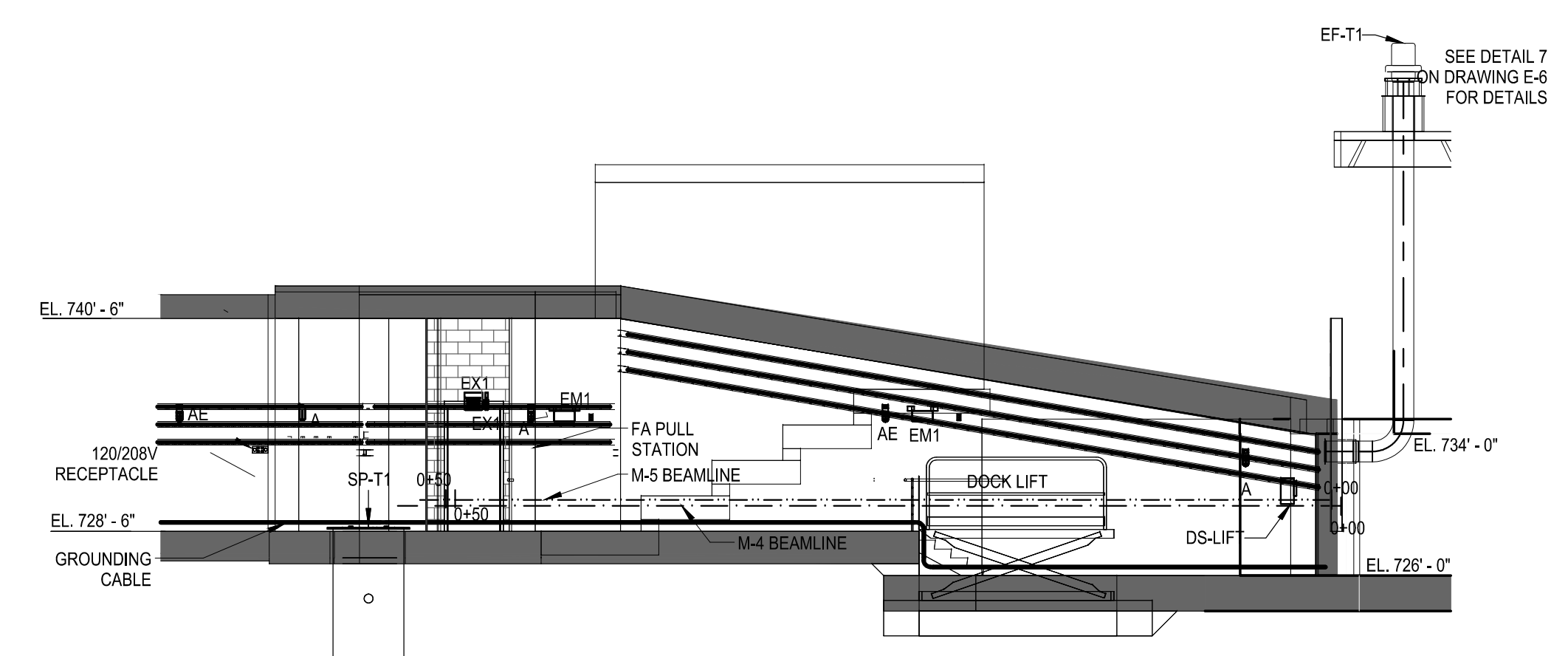
J
E-3



SECTION K

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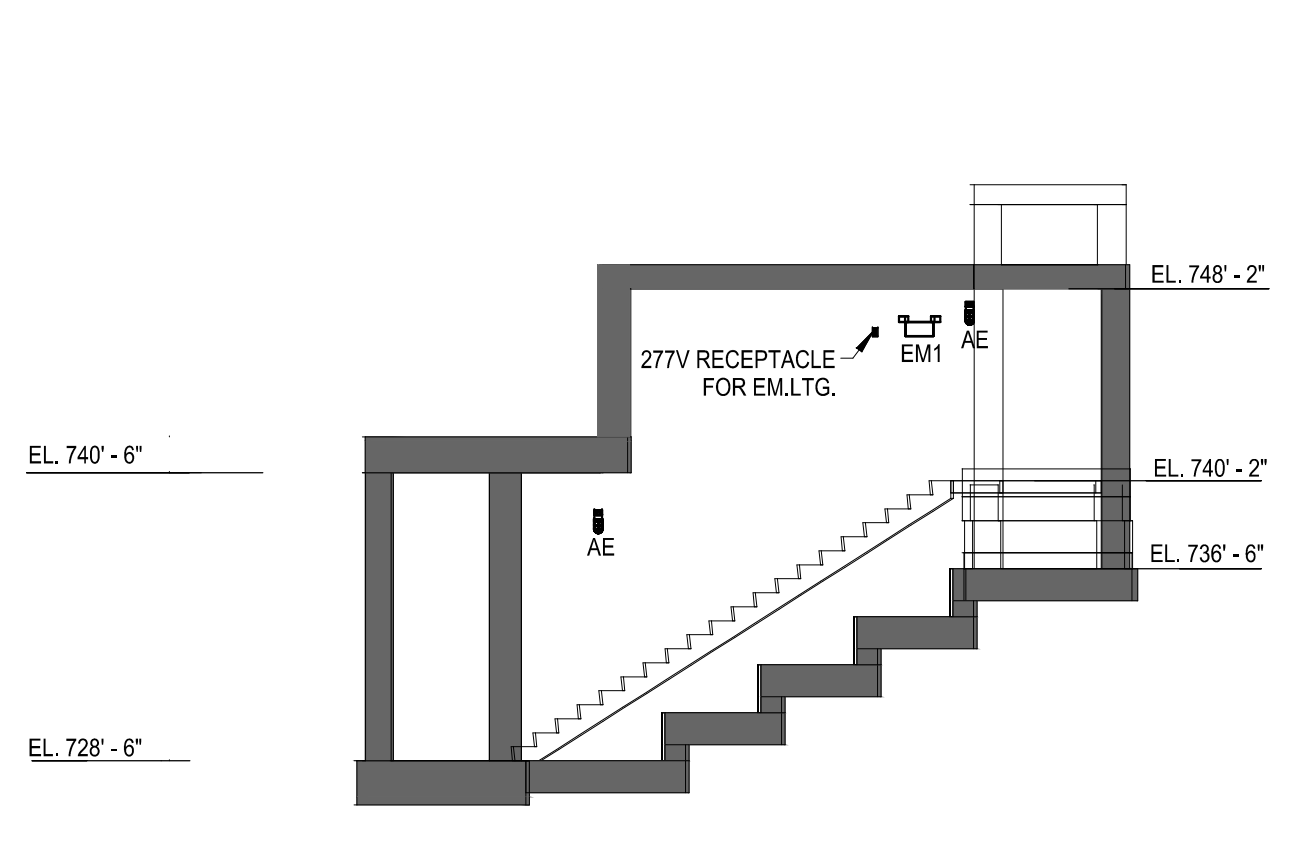
K
E-3



SECTION L

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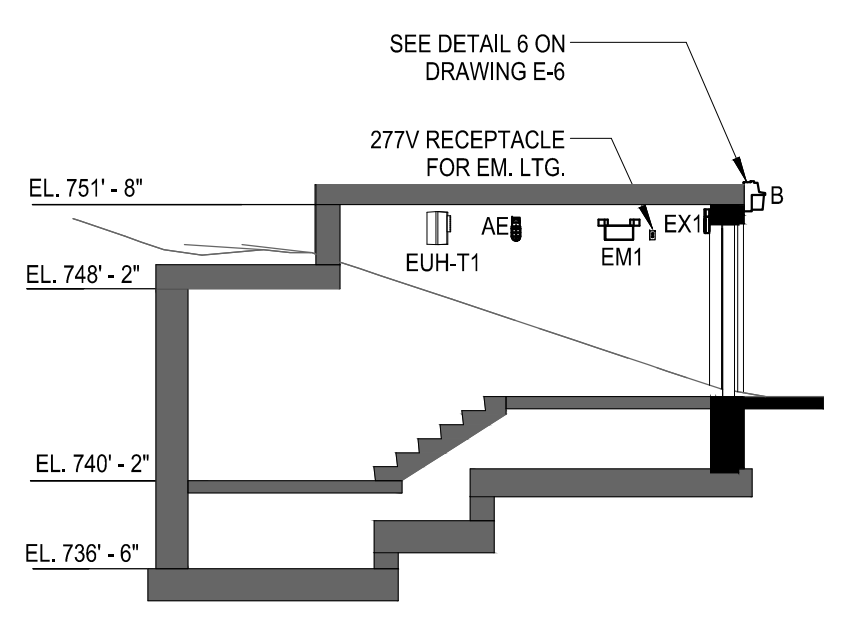
L
E-3



SECTION M

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

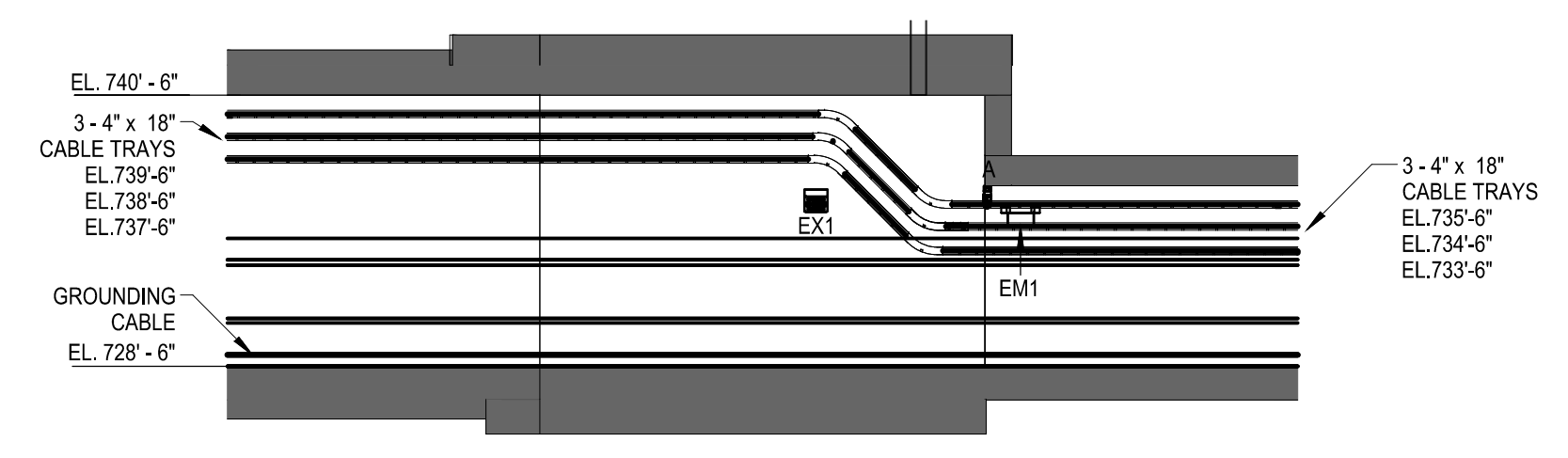
M
E-3



SECTION N

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

N
E-3



SECTION O

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

O
E-3

GENERAL NOTES

1. ELEVATION OF CABLE TRAYS IS SHOWN TO THE BOTTOM OF SUPPORT BRACKET (TYPICAL).

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FNA1303

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SUBMITTED		

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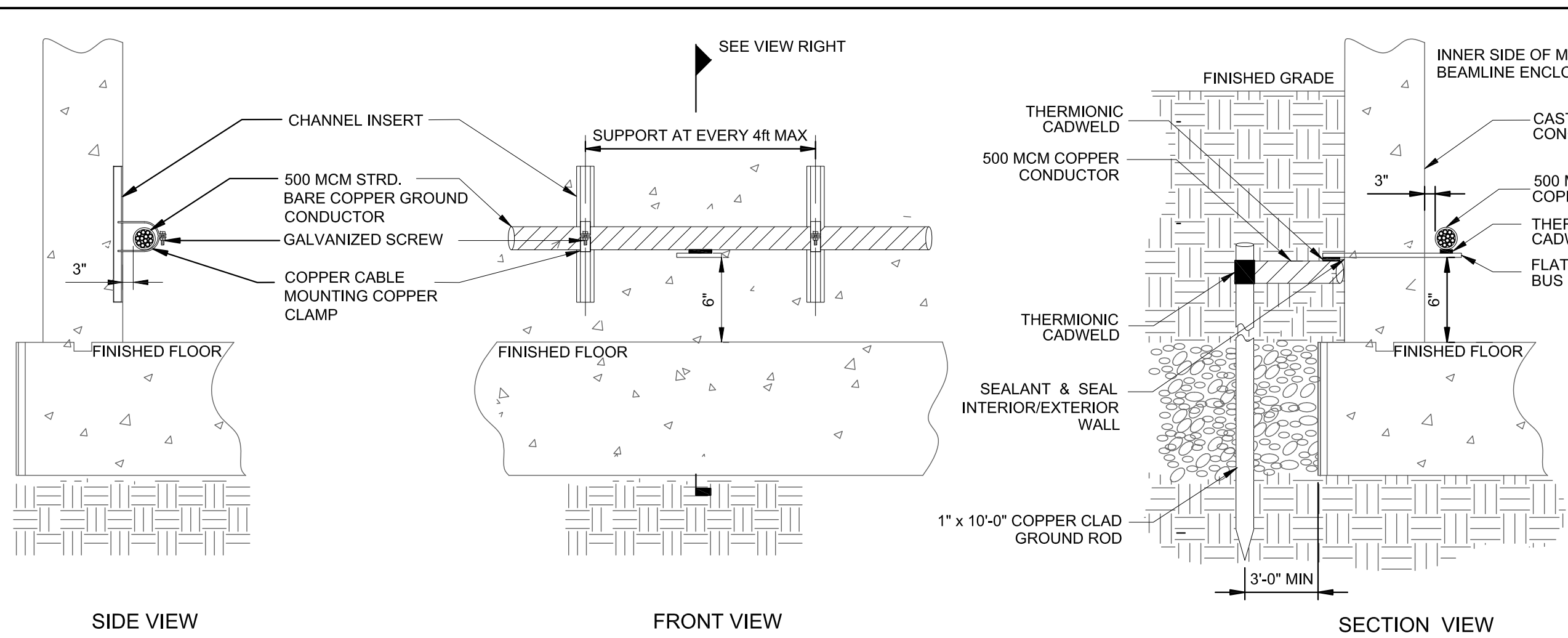
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MC BEAMLINE ENCLOSURES
ELECTRICAL SECTIONS

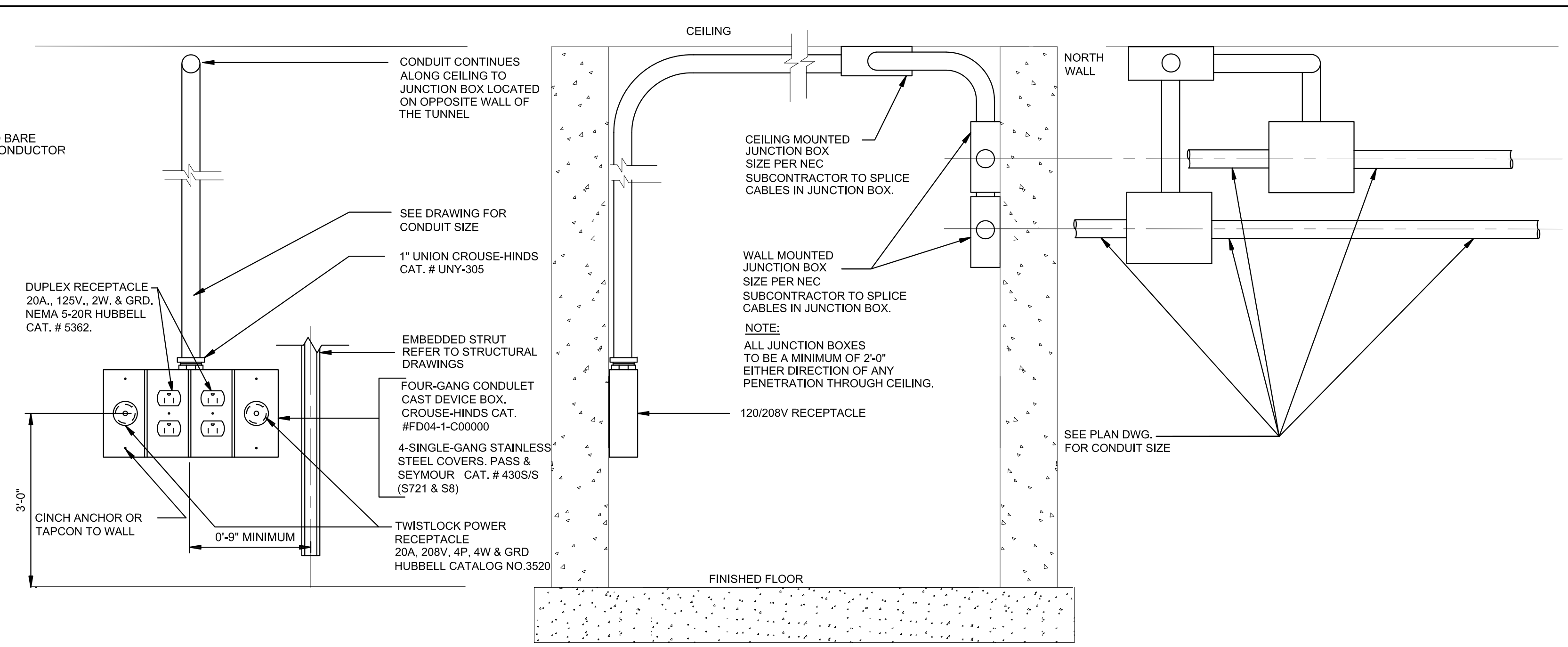
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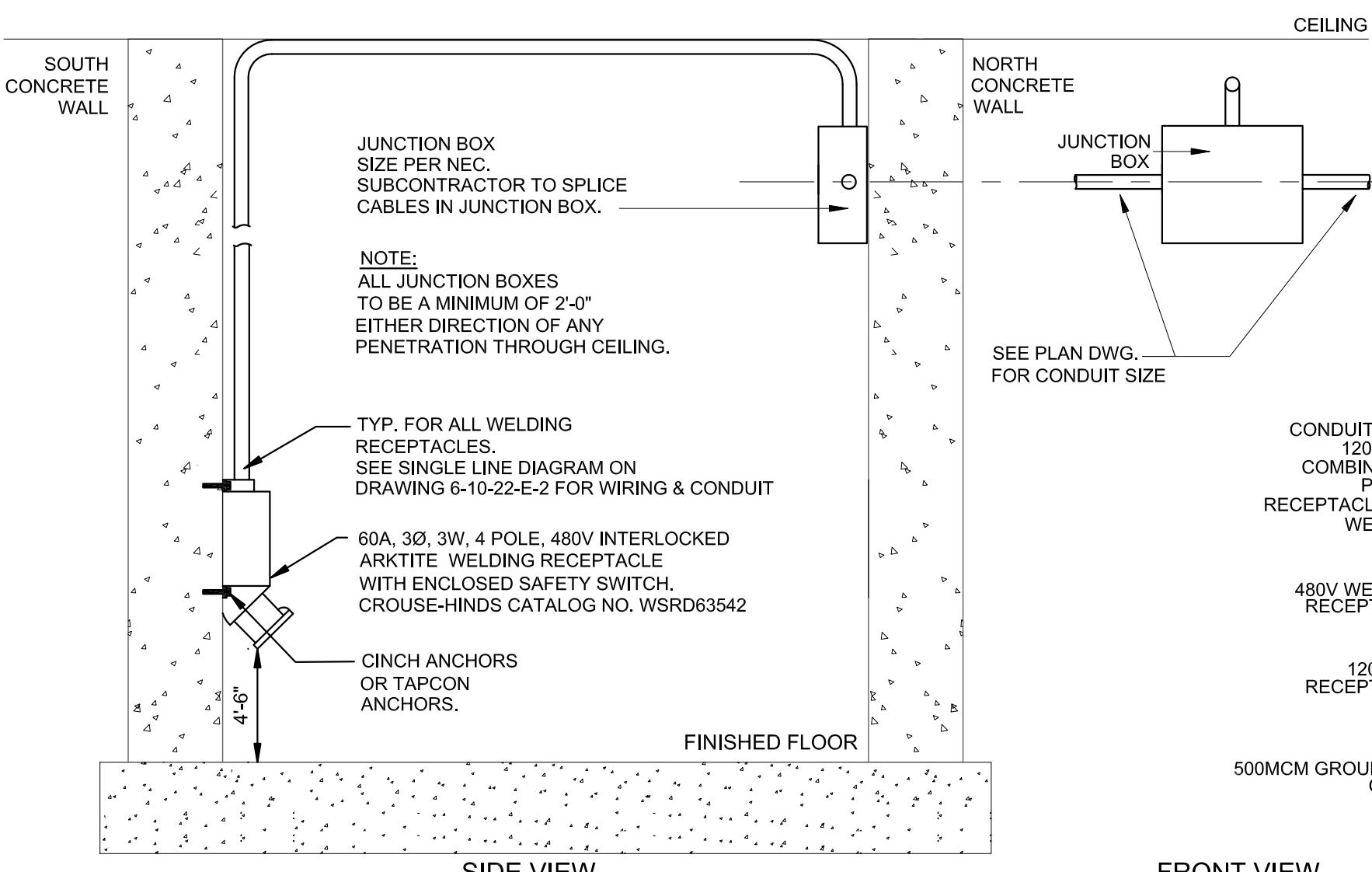
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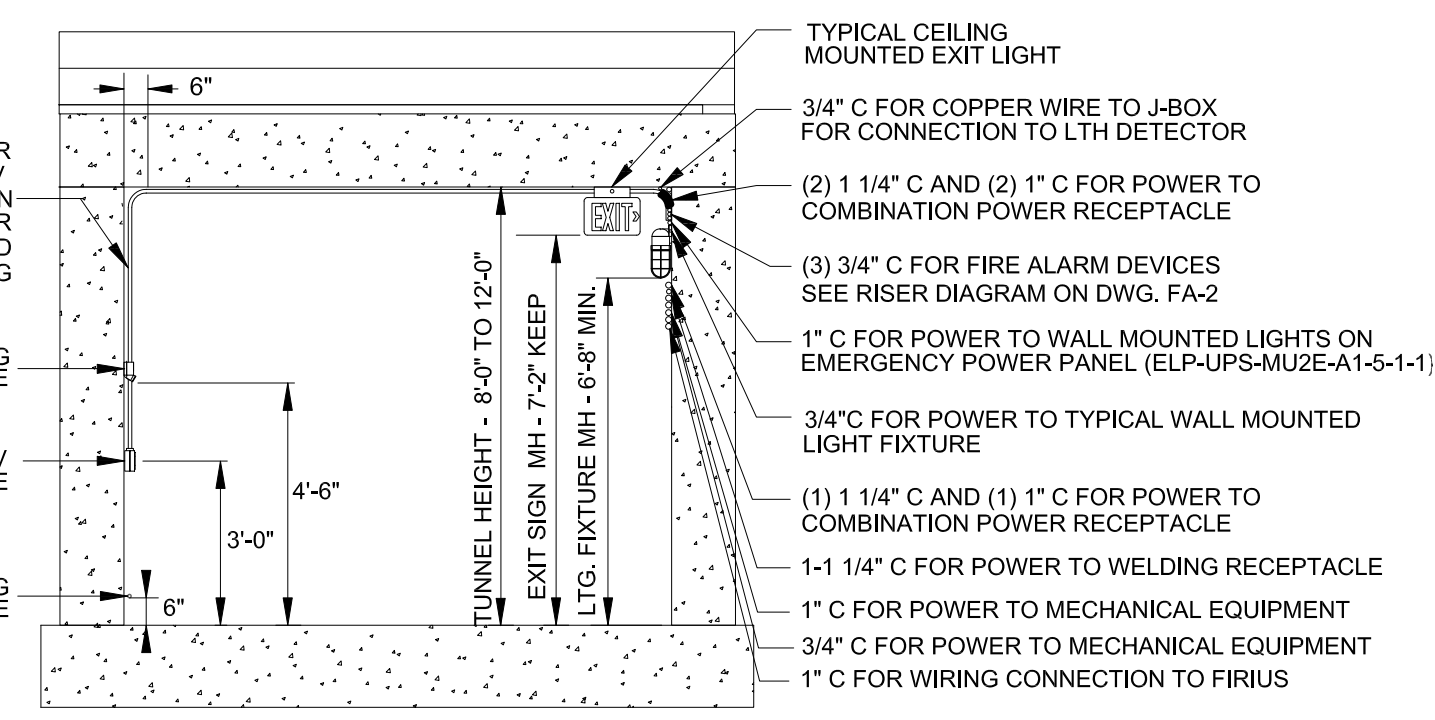
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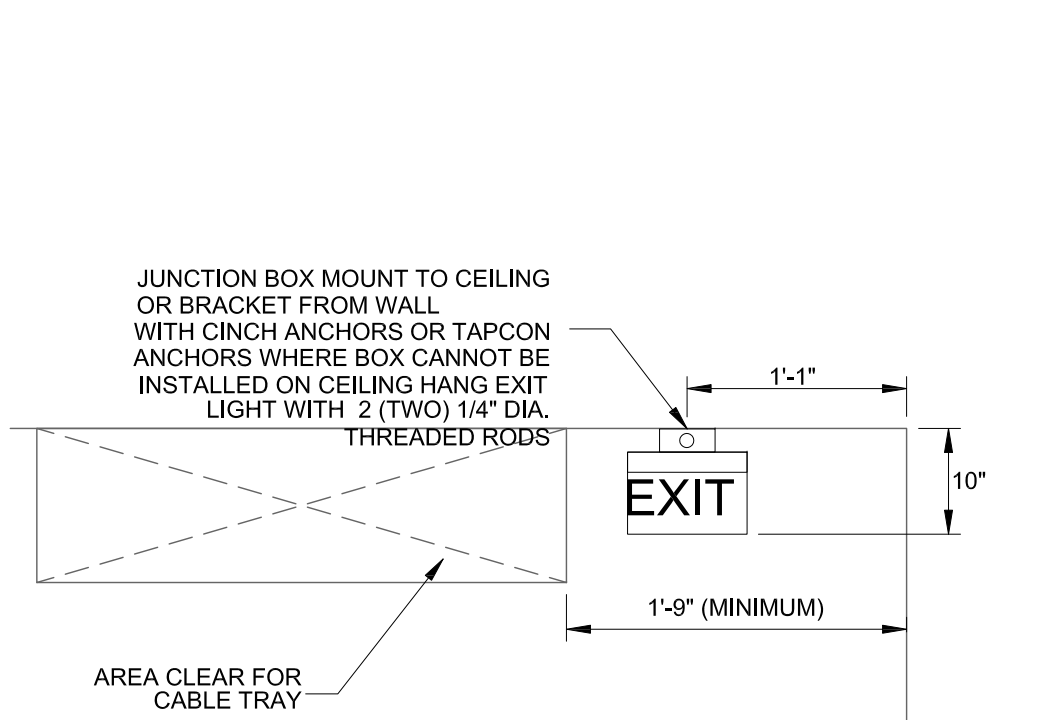
COMBINED RECEPTACLE MOUNTING DETAIL 2
SCALE: NONE



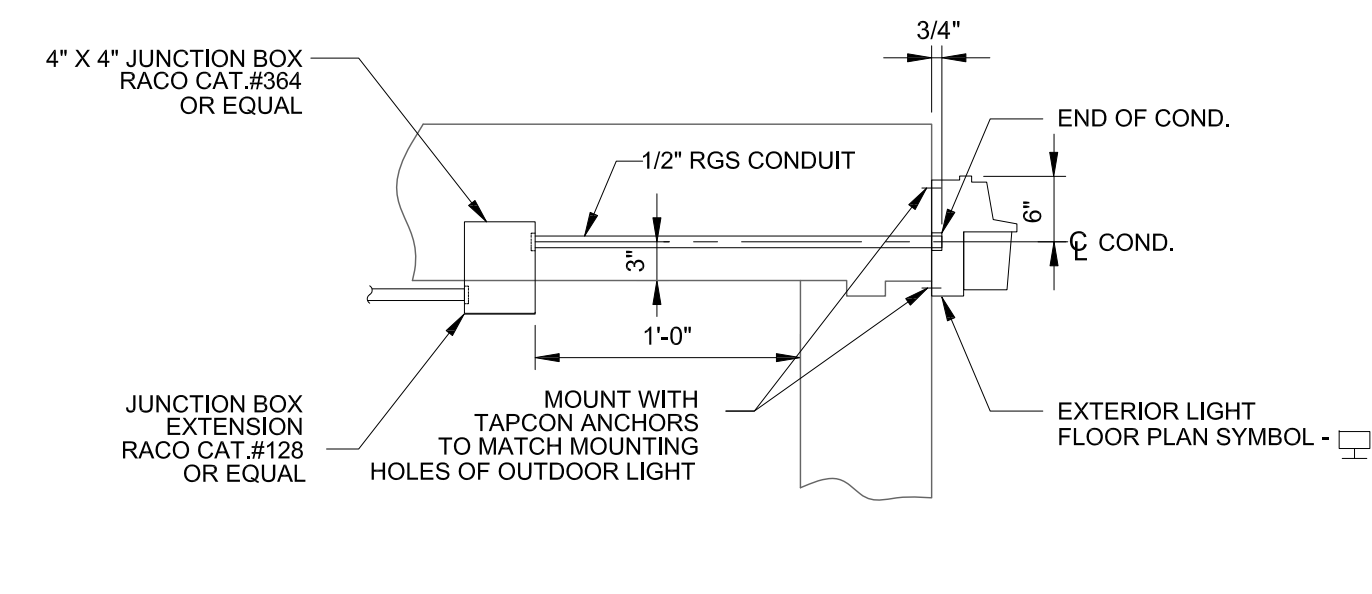
WELDING RECEPTACLE DETAIL 3
SCALE: NONE



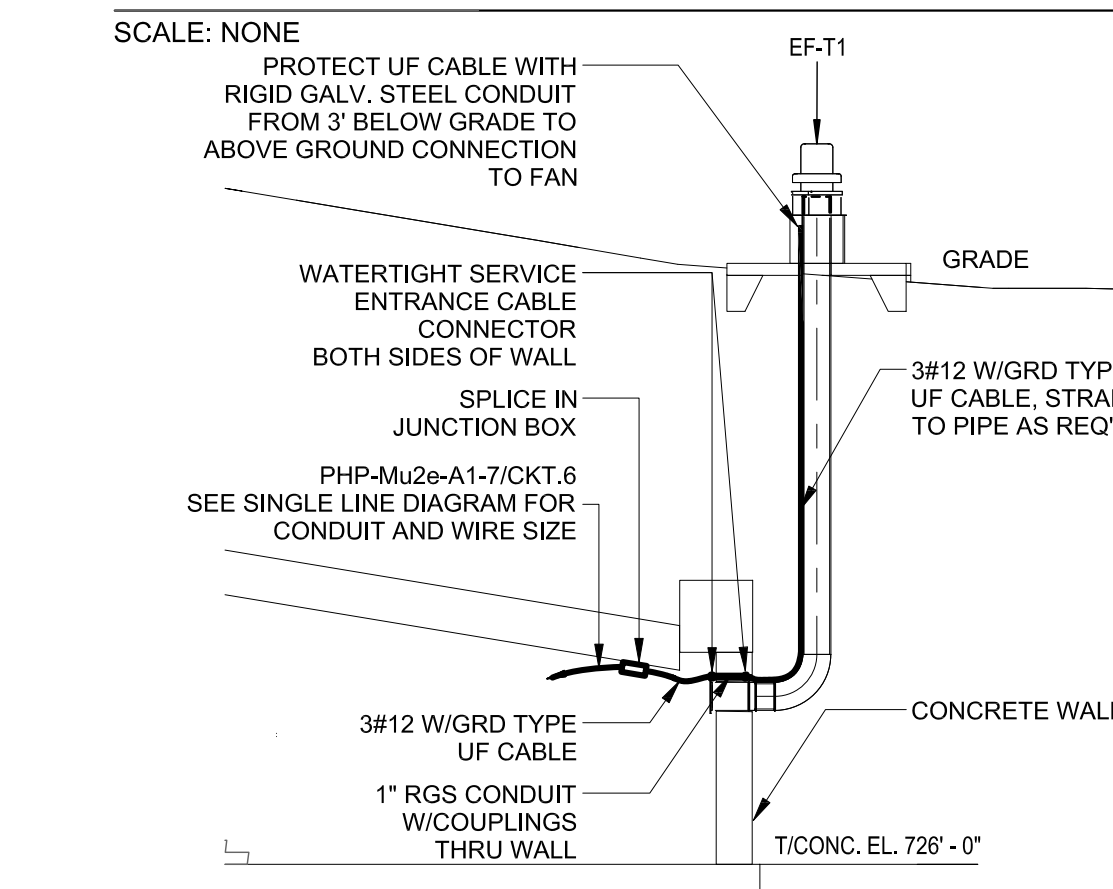
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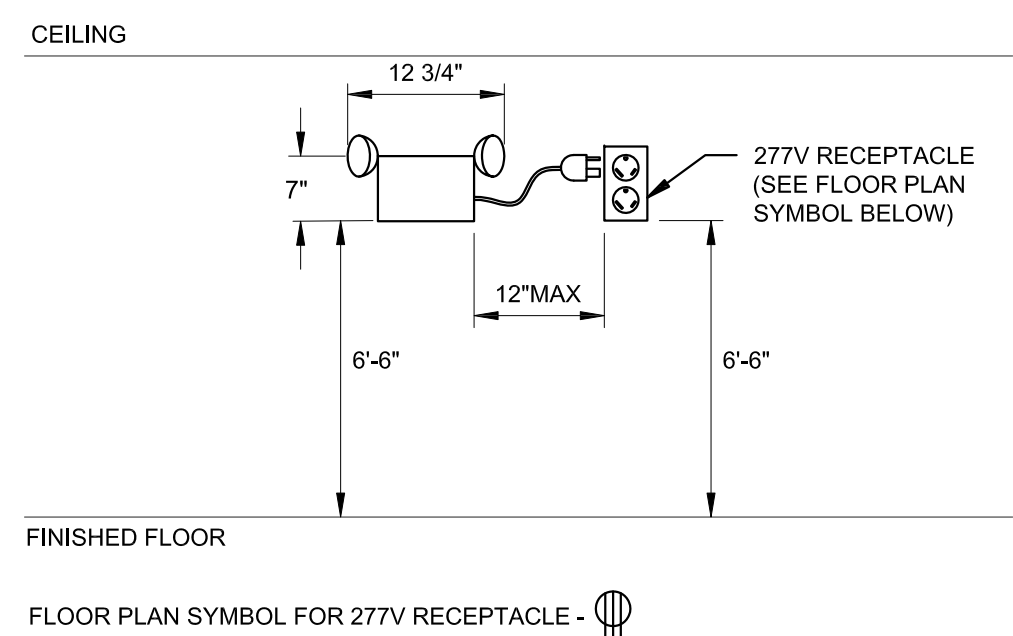
EXIT SIGN MOUNTING DETAIL 5
SCALE: NONE



EXTERIOR LIGHT ON CONCRETE WALL 6
SCALE: NONE



EXHAUST FAN DETAIL 7
SCALE: NONE



EMERGENCY LIGHTING UNIT DETAIL 8
SCALE: NONE

GENERAL NOTES

1. REFER TO DRAWING E-3 FOR LOCATION OF ELECTRICAL EQUIPMENT.



FNA1303

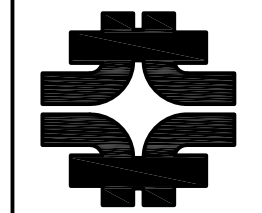
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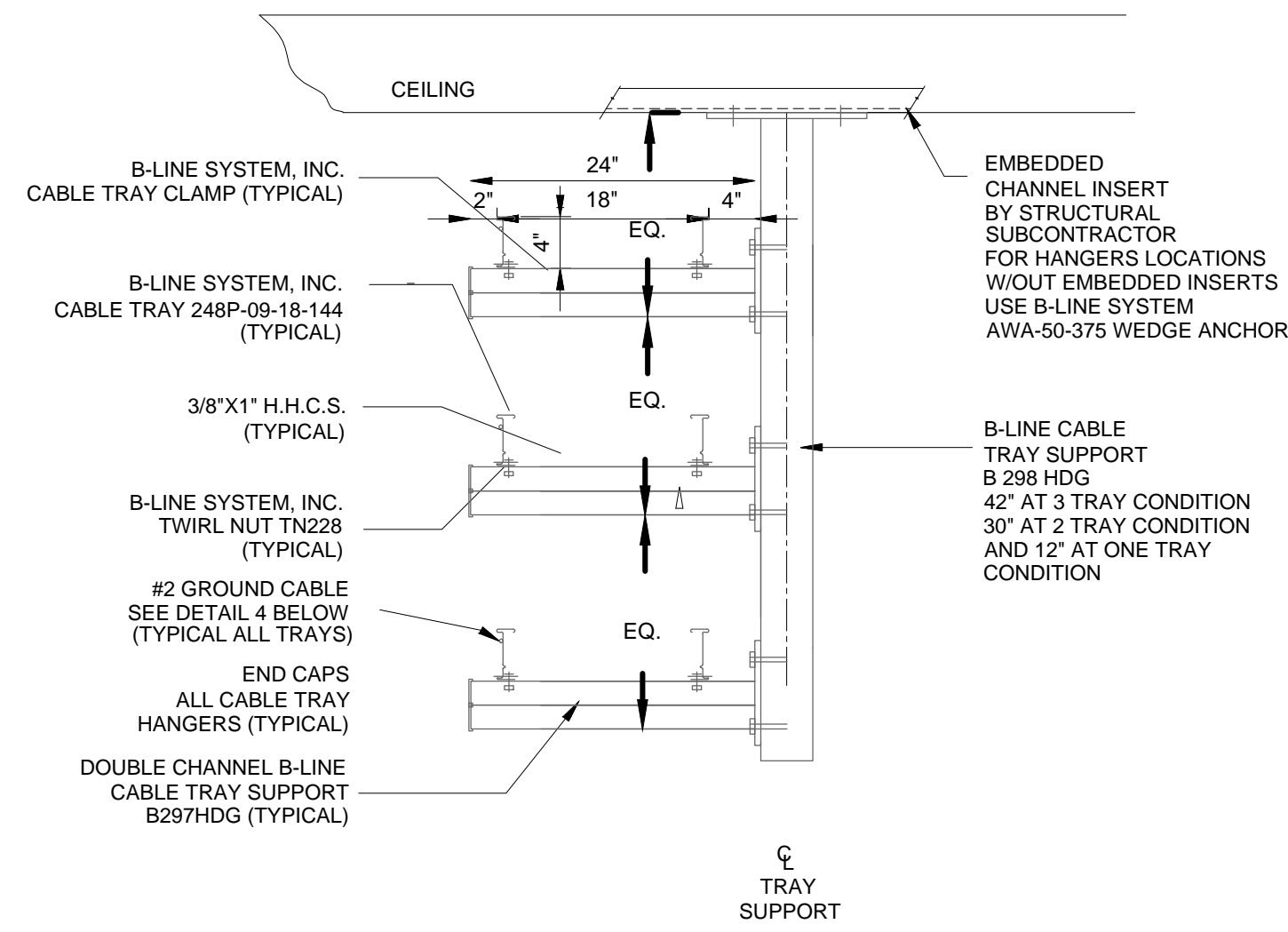
MC BEAMLINE ENCLOSURES ELECTRICAL DETAILS

DRAWING NO. **6-10-22**

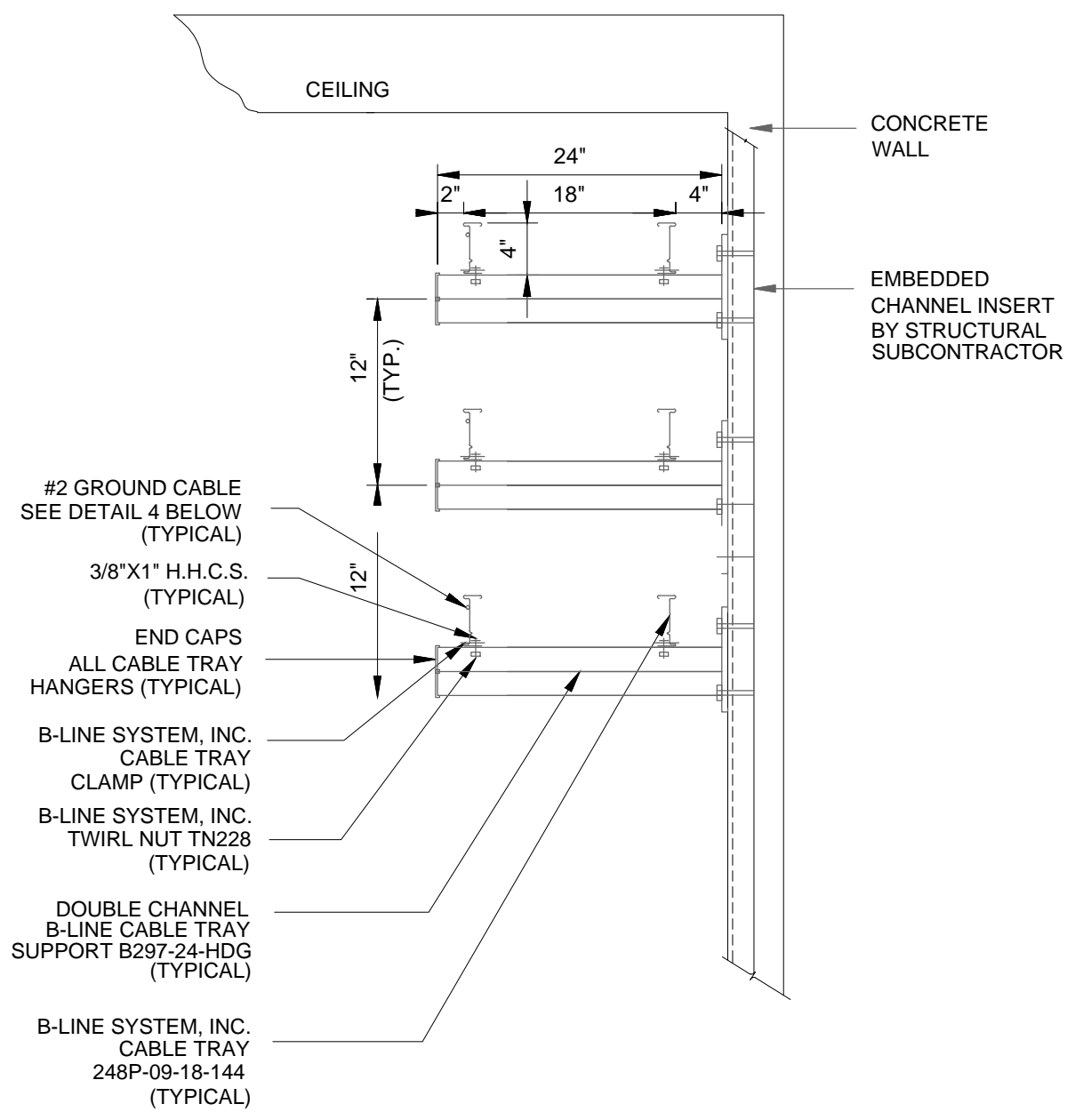
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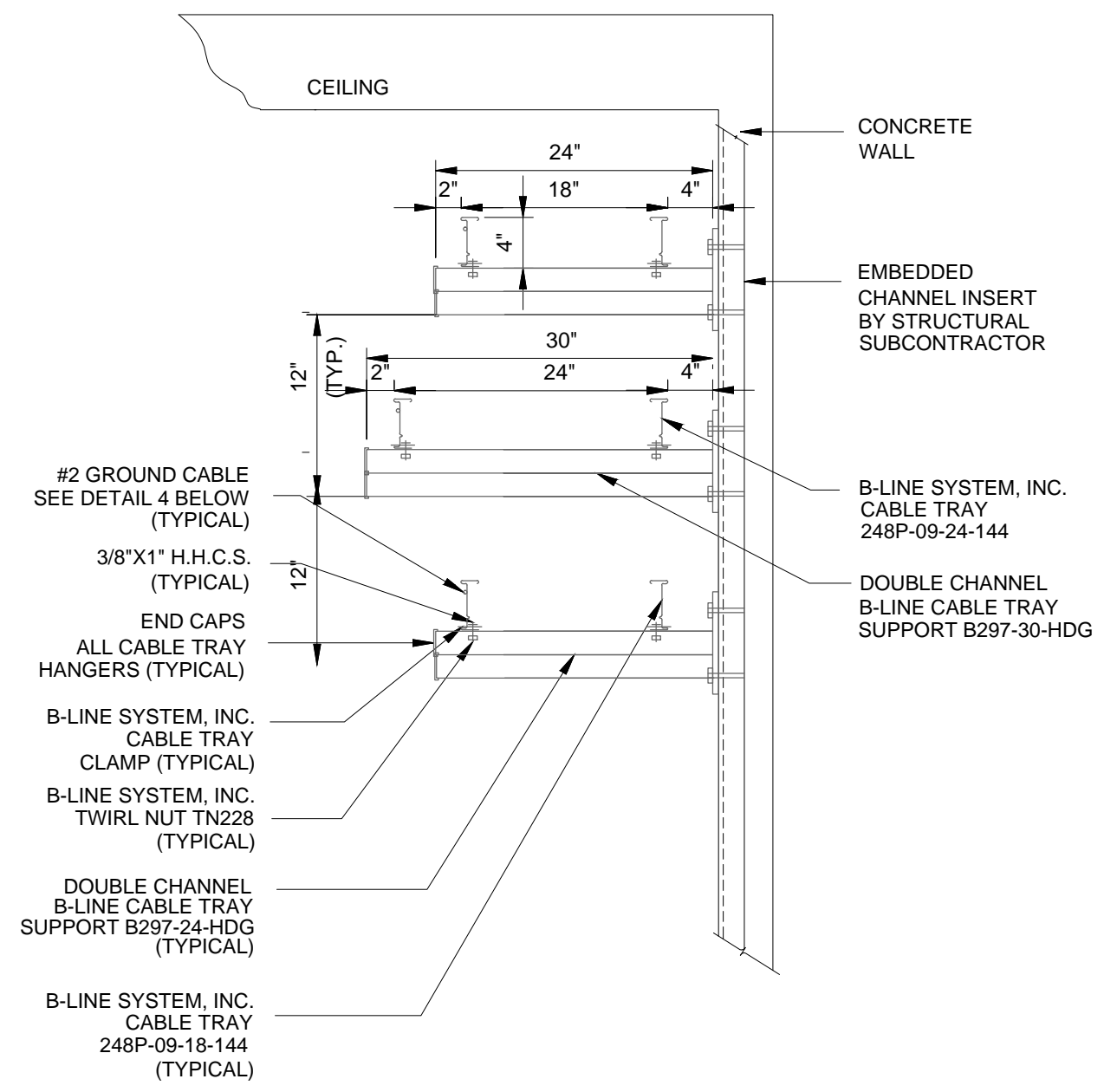
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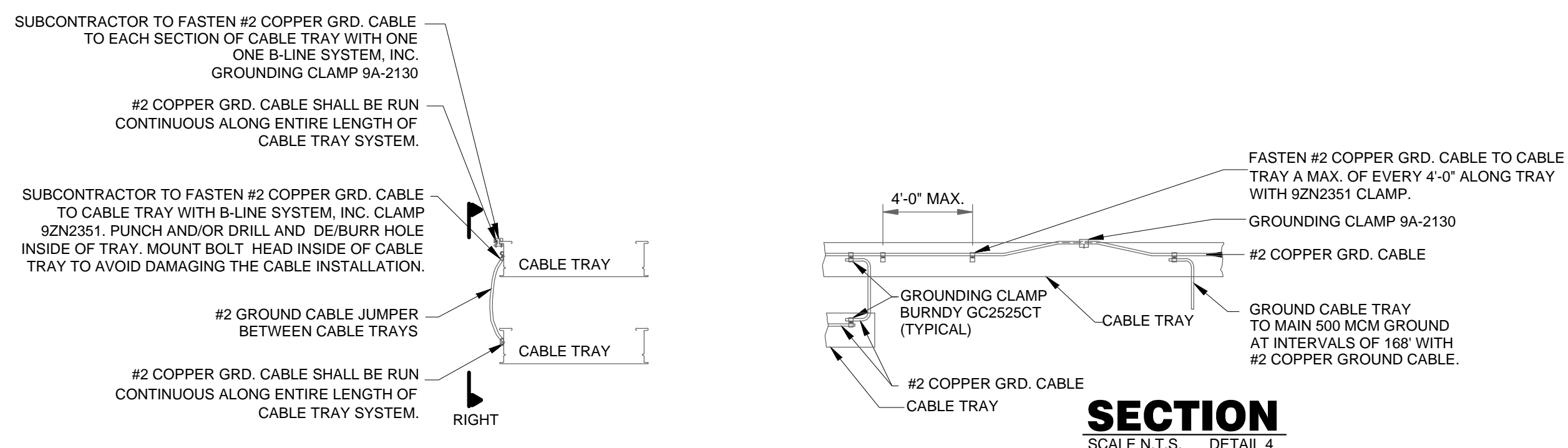
TYPE 1 - CEILING MOUNTED CABLE TRAYS DETAIL 1
SCALE: NONE (TYPICAL)



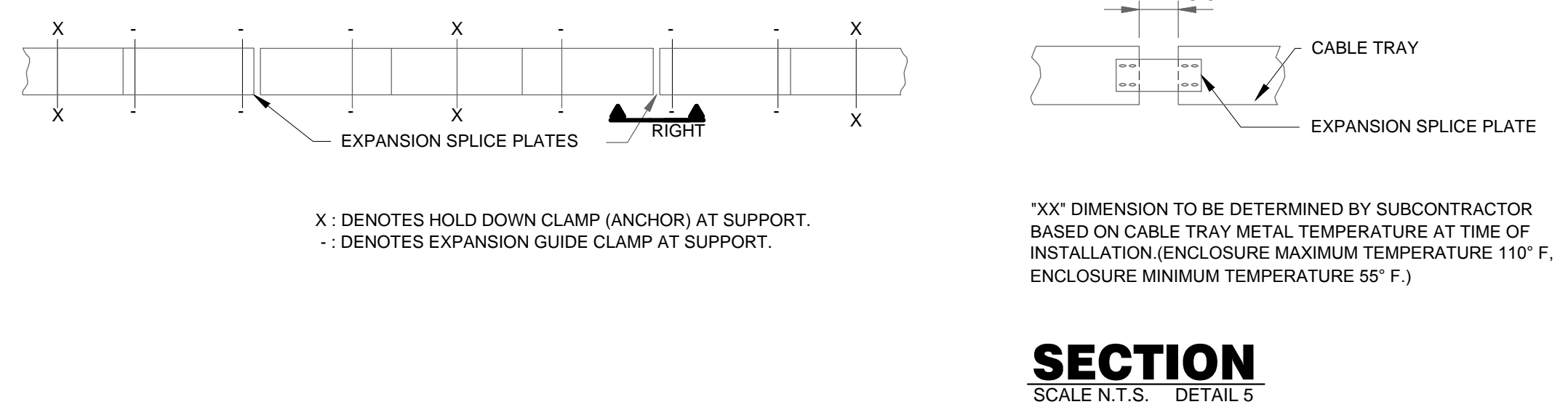
TYPE 2 - WALL MOUNTED CABLE TRAYS DETAIL 2
SCALE: NONE (TYPICAL)



TYPE 3 - WALL MOUNTED CABLE TRAYS DETAIL 3
SCALE: NONE (TYPICAL)



CABLE TRAY GROUNDING INSTALLATION DETAIL 4
SCALE: NONE (TYPICAL)



CABLE TRAY SUPPORT INSTALLATION DETAIL 5
SCALE: NONE (TYPICAL)

NOTES
1. SEE SECTIONS ON DRAWINGS E-4 AND E-5 FOR ELEVATION OF CABLE TRAYS.

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REV.	DATE	DESCRIPTIONS

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FNA1303

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APPROVED	M. SHRADER	03/03/14
SUBMITTED		

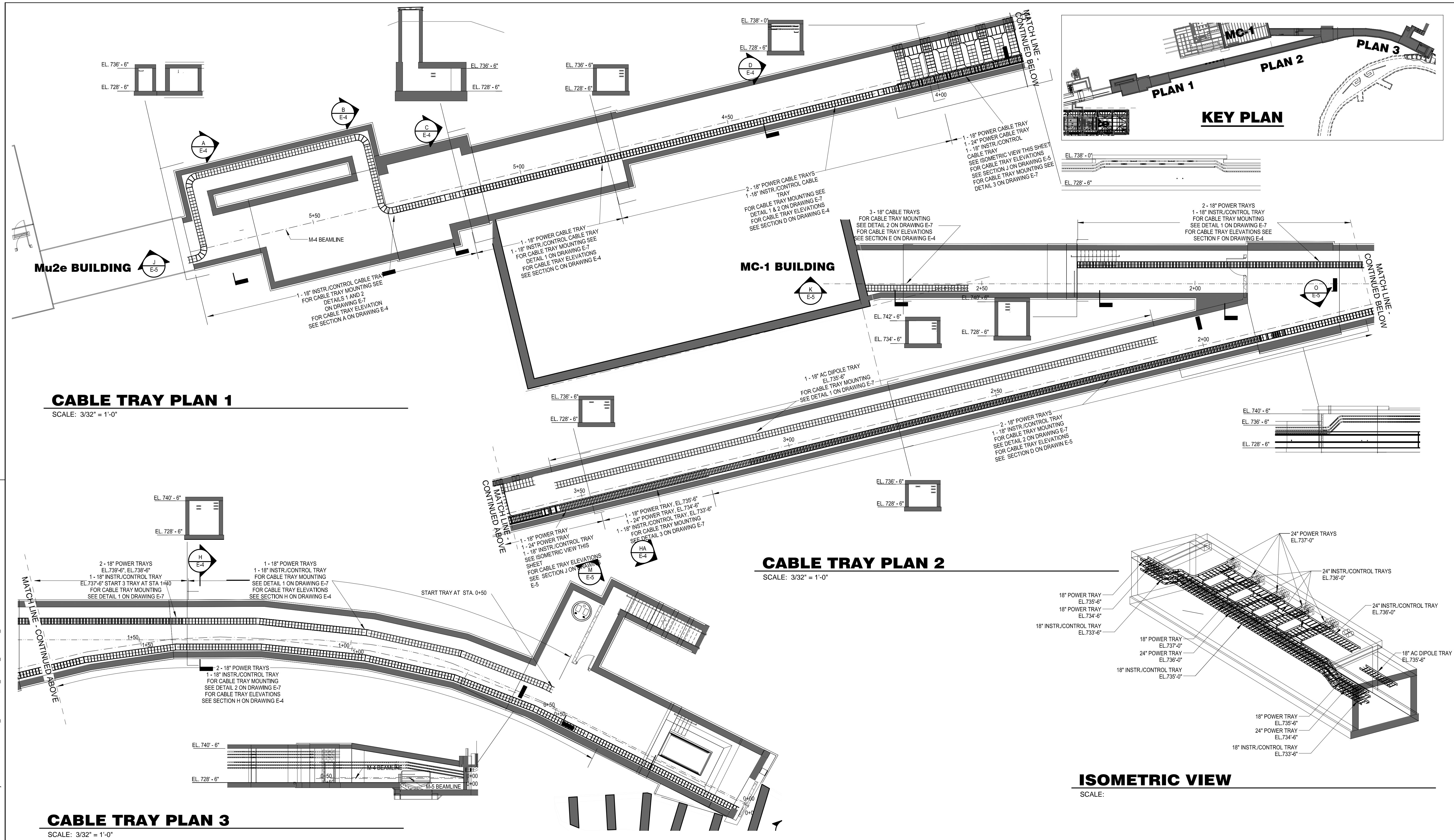
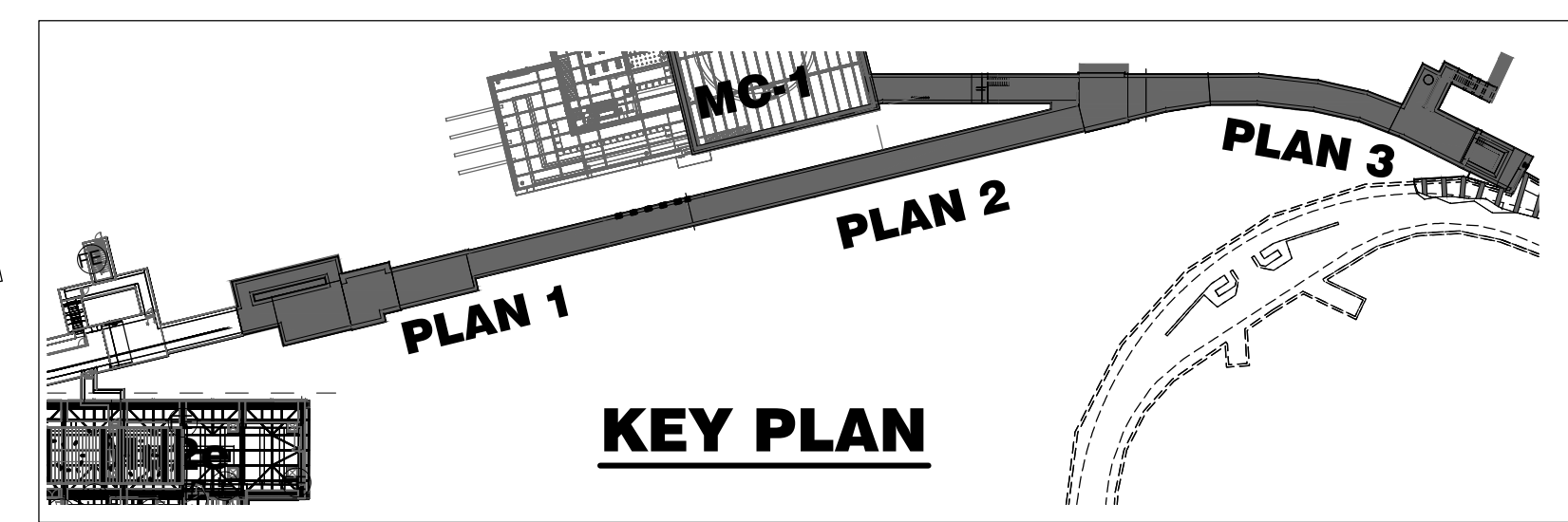
SCALE:

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**MC BEAMLINE ENCLOSURES
ELECTRICAL CABLE TRAY DETAILS**

DRAWING NO. 6-10-22 E-7 REV.

03 MAR 2014



CABLE TRAY PLAN 1
SCALE: 3/32" = 1'-0"

CABLE TRAY PLAN 2
SCALE: 3/32" = 1'-0"

CABLE TRAY PLAN 3
SCALE: 3/32" = 1'-0"

ISOMETRIC VIEW
SCALE:

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MC BEAMLINE ENCLOSURES
ELECTRICAL CABLE TRAY PLANS

DRAWING NO. 6-10-22 E-8 REV.



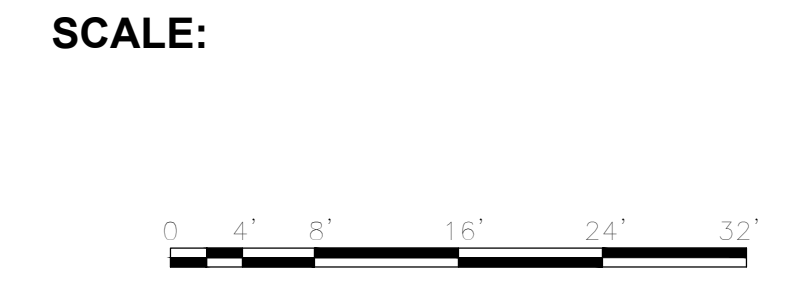
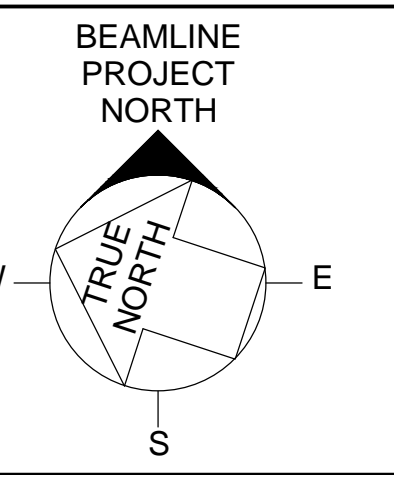
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03 MAR 2014

DISTR.PANEL: DHP-Mu2e-A1 - EXISTING

MAINS BUS RATING: 1200 A FED FROM: TR-Mu2e-A LOCATION: MECH. ROOM 111
 MAIN BREAKER: FEEDER SIZE: 3-3#600,1#500N,1#250G,5°C EA MOUNTING: WALL/SURFACE
 MAINS TYPE: MLO VOLTS 480/277V 3PH,4W ENCLOSURE TYPE: Type 1
 LUGS: PHASE / WIRE: 3PH,4W AIC RATING: 65,000A

CKT	Circuit Description	POLES	FRAME	TRIP	A	B	C	Remarks
1	PM-A1	3	400 A	15 A	554.0 VA	554.0 VA	554.0 VA	
2	SPD-Mu2e-A1-1	3	400 A	60 A	276.6 VA	276.6 VA	276.6 VA	
3	PHP-Mu2e-A1-1	3	400 A	400 A	54150.5 VA	43940.9 VA	55470.4 VA	
4	LP-Mu2e-A1-2	3	150 A	125 A	9678.9 VA	5400 VA	9791.1 VA	
5	PP-Mu2e-A1-A1 via TR-DHP-Mu2e-A1-A	3	150 A	125 A	11678.2 VA	14074.4 VA	15084.2 VA	
6	PP-Mu2e-A1-B1 via TR-DHP-Mu2e-A1-B	3	150 A	125 A	4722.0 VA	4722.0 VA	3822.0 VA	SHUNT TRIP
7	PP-Mu2e-A1-C1 via TR-DHP-Mu2e-A1-C	3	150 A	125 A	4362.0 VA	4362.0 VA	3822.0 VA	SHUNT TRIP
8	PHP-Mu2e-A1-3 (ROOM 111)	3	400 A	250 A	39254.4 VA	39254.4 VA	39254.4 VA	
9	PHP-Mu2e-A1-4 (ROOM 105)	3	400 A	250 A	29869.3 VA	29869.3 VA	29169.2 VA	
10	EHPH-Mu2e-A1-5 via ATS	3	400 A	400 A	41611.6 VA	45541 VA	42329.4 VA	
11	SPARE	3	--	250 A	0.0 VA	0.0 VA	0.0 VA	
12	SPARE	3	--	100 A	0.0 VA	0.0 VA	0.0 VA	
13	SPARE	3	--	100 A	0.0 VA	0.0 VA	0.0 VA	
14	SPARE	3	--	100 A	0.0 VA	0.0 VA	0.0 VA	
15	SPARE	3	400 A	400 A	112095.2 VA		112982.0 VA	
16	SPARE	3	--	250 A	0 VA	0 VA	0 VA	

TOTAL AMPS: 1113 A 1071 A 1133 A

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Lighting	47027.0 VA	100.00%	47027.0 VA	Total Conn. Load: 918461.2 VA
Receptacle	506194.8 VA	50.9%	258097.4 VA	Total Est. Demand: 681064.2 VA
Power	447753.2 VA	100.00%	447753.2 VA	Max. Connected Amp per Ph: 1134 A
Other	256.0 VA	100.00%	256.0 VA	Average Est. Demand Amp per Ph: 819 A
Lighting - Exterior	750.0 VA	100.00%	750.0 VA	
Power Compressor	33000.0 VA	80.00%	26400.0 VA	

I-LINE PANELBOARD

POWER PANEL: PHP-Mu2e-A1-7

MAINS BUS RATING: 250 A FED FROM: DHP-Mu2e-A1 LOCATION: Mu2e LL near STR 4
 MAIN BREAKER: FEEDER SIZE: 4#250, 1#2G, 2 1/2"C MOUNTING: SURFACE
 MAINS TYPE: MLO VOLTS 480/277V 3PH,4W ENCLOSURE TYPE: TYPE 1
 LUGS: PHASE / WIRE: 3PH,4W AIC RATING: 35,000A

CKT	Circuit Description	POLES	FRAME	TRIP	A	B	C	Remarks
1	PP-Mu2e-A1-7-A1 VIA TRANSFORMER	3	150 A	125 A	12313.6 VA	11773.6 VA	10513.6 VA	
2	SPARE	3	--	20 A	0.0 VA	0.0 VA	0.0 VA	
3	WD-T1 & WD-T2(WELDING...	3	150 A	60 A	13303.0 VA	13303.0 VA	13303.0 VA	
4	LIFT	3	150 A	20 A	3045.0 VA	3045.0 VA	3045.0 VA	
5	SPARE	3	--	30 A	0.0 VA	0.0 VA	0.0 VA	
6	EF-T1 (EXHAUST FAN)	3	150 A	15 A	443.0 VA	443.0 VA	443.0 VA	
7	SP-T1 (SUMP PUMP)	3	150 A	25 A	4207.0 VA	4207.0 VA	4207.0 VA	
8	EUH-T1 (ELECTRIC UNIT HEATER)	3	150 A	15 A	2491.0 VA	2491.0 VA	2491.0 VA	
9	LIGHTING BEAMLIN ENCLASURE	1	150 A	20 A	0.0 VA	1100.0 VA	0.0 VA	
10	LIGHTING BEAMLIN ENCLASURE	1	150 A	20 A	0.0 VA	0.0 VA	1100.0 VA	
11	EXIT SIGNS BEAMLIN ENCLASURE	1	150 A	20 A	270.0 VA	0.0 VA	0.0 VA	
12	LIGHTING BEAMLIN & 277V RECEPT.	1	150 A	20 A	1540.0 VA	0.0 VA	0.0 VA	
13	LIGHTING BEAMLIN & 277V RECEPT.	1	150 A	20 A	0.0 VA	1486.0 VA	0.0 VA	
14	SPARE	3	--	100 A	0.0 VA	0.0 VA	0.0 VA	
15	SPARE	3	--	60 A	0.0 VA	0.0 VA	0.0 VA	
16	SPARE	3	--	30 A	0.0 VA	0.0 VA	0.0 VA	

TOTAL LOAD: 37612.6 VA 37848.6 VA 35102.6 VA
 TOTAL AMPS: 137 A 138 A 127 A

	Connected Load	Demand Factor	Estimated Demand	Panel Totals
RECEPTACLE LOAD	34600.8	64.45%	22300.4	Total Conn. Load: 110563.8 VA
LIGHTING LOAD	5496	100 %	5496	Total Est. Demand: 98263.4
EQUIPMENT LOAD	70467	100 %	70467	Max. Connected Amp per Ph: 138 A
				Average Est. Demand Amp per Ph: 118 A

PANEL: PP-Mu2e-A1-7-A1

MAINS BUS RATING: 225 A FED FROM: PHP-Mu2e-A1-7 via TR LOCATION: Mu2e near STAIR 4
 MAIN BREAKER: FEEDER SIZE: 4#4/0, 1#2G, 2 1/2"C MOUNTING: SURFACE
 MAINS TYPE: MLO VOLTS: 208/120V 3PH,4W ENCLOSURE TYPE: Type 1
 LUGS: PHASE / WIRE: 3PH, 4W AIC RATING: 10,000 A

CKT	Circuit Description	C/B	P	A	B	C	P	C/B	Circuit Description	CKT	
1	RECEPTACLE 208V	20 A	3	1918.0 VA	1918.0 VA		3	20 A	RECEPTACLE 208V	2	
3	--	--	--		1918.0 VA	1918.0 VA	--	--	--	4	
5	--	--	--			1918.0 VA	1918.0 VA	--	--	6	
7	RECEPTACLE 120V	20 A	1	900.0 VA	900.0 VA		1	20 A	RECEPTACLE 120V	8	
9	RECEPTACLE 120V	20 A	1		900.0 VA	900.0 VA	1	20 A	RECEPTACLE 120V	10	
11	RECEPTACLE 208V	20 A	3			1918.0 VA	1918.0 VA	3	20 A	RECEPTACLE 208V	12
13	--	--	--	1918.0 VA	1918.0 VA		--	--	--	14	
15	--	--	--		1918.0 VA	1918.0 VA	--	--	--	16	
17	RECEPTACLE 208V	20 A	3			1150.8 VA	1150.8 VA	3	20 A	RECEPTACLE 208V	18
19	--	--	--	1150.8 VA	1150.8 VA		--	--	--	20	
21	--	--	--		1150.8 VA	1150.8 VA	--	--	--	22	
23	RECEPTACLE 120V	20 A	1			540.0 VA	0.0 VA	1	20 A	SPARE	24
25	RECEPTACLE 120V	20 A	1	540.0 VA	0.0 VA			1	20 A	SPARE	26
27	SPARE	20 A	1		0.0 VA	0.0 VA		1	20 A	SPARE	28
29	SPARE	20 A	1			0.0 VA	0.0 VA	1	20 A	SPARE	30
31	SPARE	20 A	1	0.0 VA	0.0 VA			1	20 A	SPARE	32
33	SPARE	20 A	1		0.0 VA	0.0 VA		1	20 A	SPARE	34
35	SPARE	20 A	1			0.0 VA	0.0 VA	1	20 A	SPARE	36
37	SPARE	20 A	1	0.0 VA	0.0 VA			1	20 A	SPARE	38
39	SPARE	20 A	1		0.0 VA	0.0 VA		1	20 A	SPARE	40
41	SPARE	20 A	1			0.0 VA	0.0 VA	1	20 A	SPARE	42

Total Load: 12314 VA 11773.6 VA 10513.6 VA
 Total... 104 A 100 A 88 A

	Connected Load	Demand Factor	Estimated Demand	Panel Totals
	34600.8 VA	64.45%	22300.4 VA	Total Conn. Load: 34600.8 VA
				Total Est. Demand: 22300.4 VA
				Max. Connected Amp per Ph: 104 A
				Average Est. Demand Amp per Ph: 62 A

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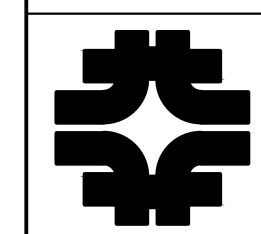
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SUBMITTED		

SCALE:

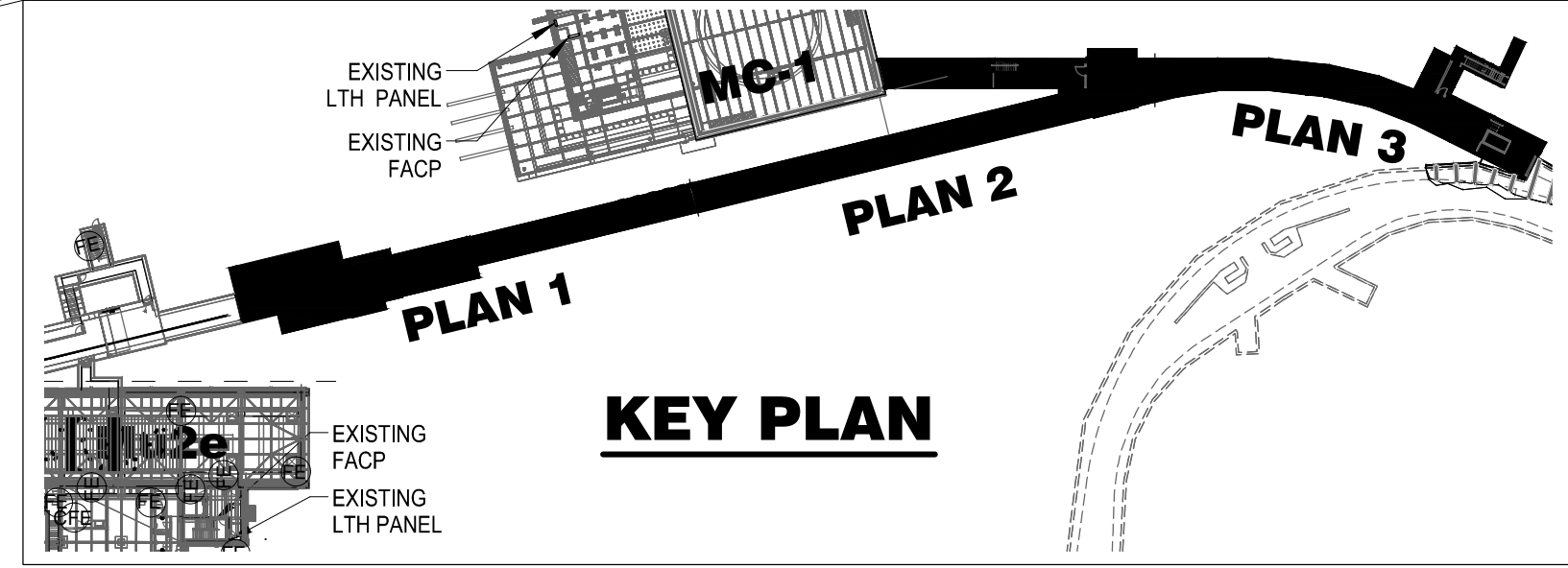
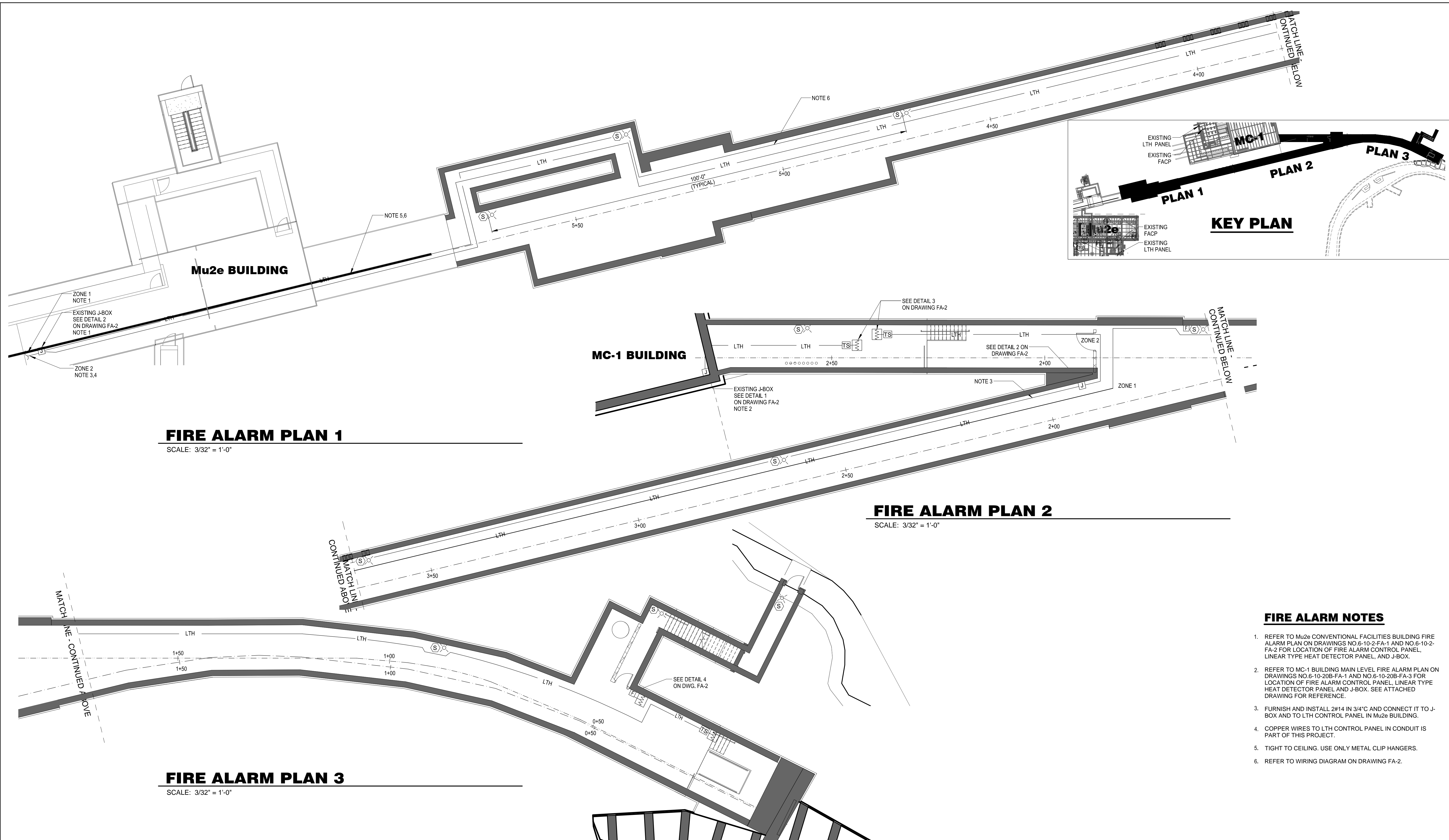
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MC BEAMLIN ENCLASURES
 ELECTRICAL PANEL SCHEDULES

DRAWING NO. 6-10-22 E-9 REV.

03 MAR 2014



FIRE ALARM PLAN 1
 SCALE: 3/32" = 1'-0"

FIRE ALARM PLAN 2
 SCALE: 3/32" = 1'-0"

FIRE ALARM PLAN 3
 SCALE: 3/32" = 1'-0"

FIRE ALARM NOTES

1. REFER TO Mu2e CONVENTIONAL FACILITIES BUILDING FIRE ALARM PLAN ON DRAWINGS NO.6-10-2-FA-1 AND NO.6-10-2-FA-2 FOR LOCATION OF FIRE ALARM CONTROL PANEL, LINEAR TYPE HEAT DETECTOR PANEL, AND J-BOX.
2. REFER TO MC-1 BUILDING MAIN LEVEL FIRE ALARM PLAN ON DRAWINGS NO.6-10-20B-FA-1 AND NO.6-10-20B-FA-3 FOR LOCATION OF FIRE ALARM CONTROL PANEL, LINEAR TYPE HEAT DETECTOR PANEL AND J-BOX. SEE ATTACHED DRAWING FOR REFERENCE.
3. FURNISH AND INSTALL 2#14 IN 3/4" AND CONNECT IT TO J-BOX AND TO LTH CONTROL PANEL IN Mu2e BUILDING.
4. COPPER WIRES TO LTH CONTROL PANEL IN CONDUIT IS PART OF THIS PROJECT.
5. TIGHT TO CEILING. USE ONLY METAL CLIP HANGERS.
6. REFER TO WIRING DIAGRAM ON DRAWING FA-2.

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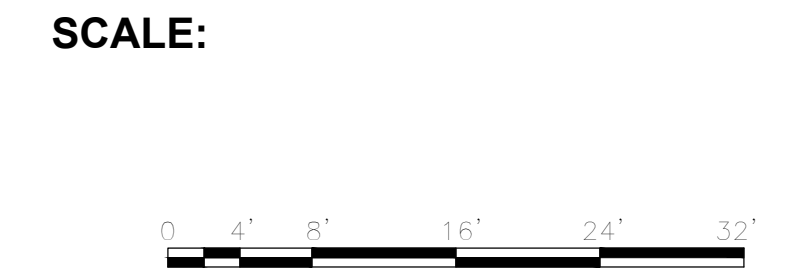
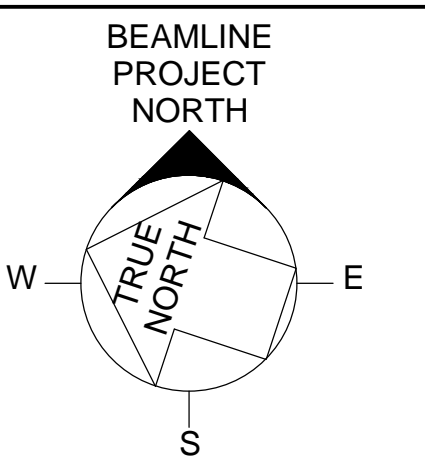
REV.	DATE	DESCRIPTIONS



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SUBMITTED		

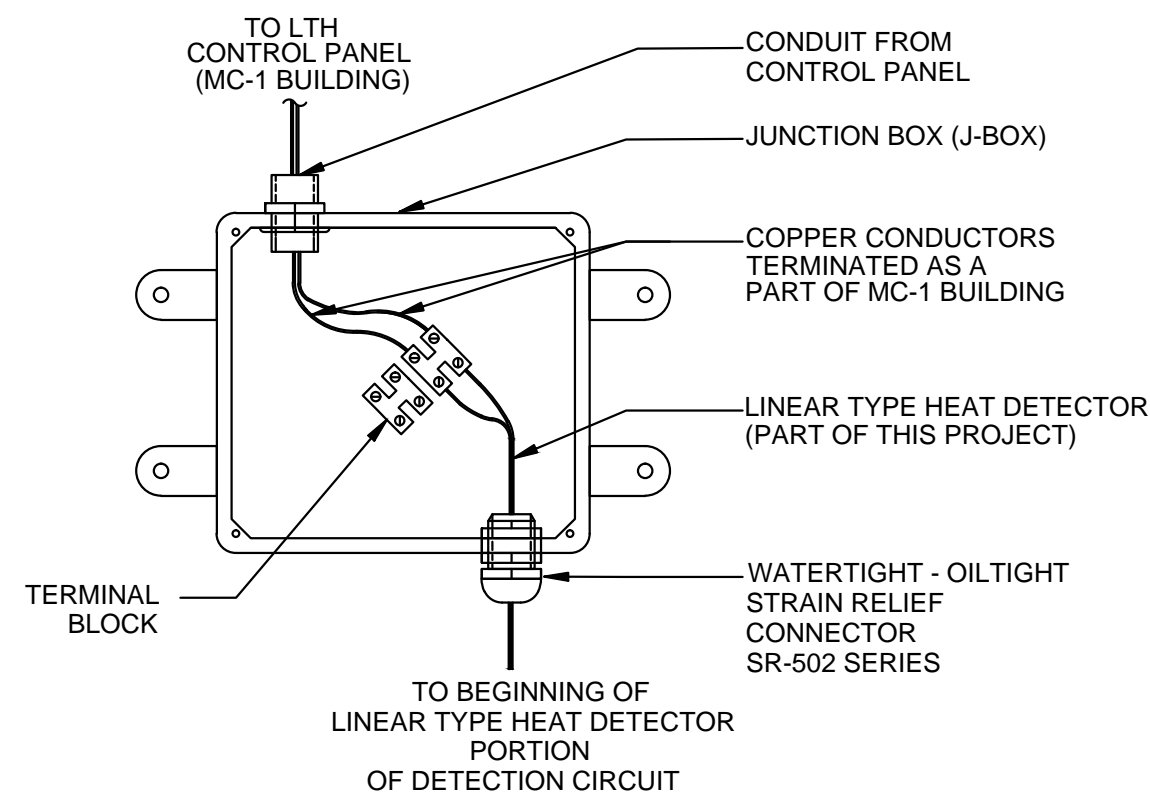


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MC BEAMLINE ENCLOSURES
 FIRE ALARM PLANS

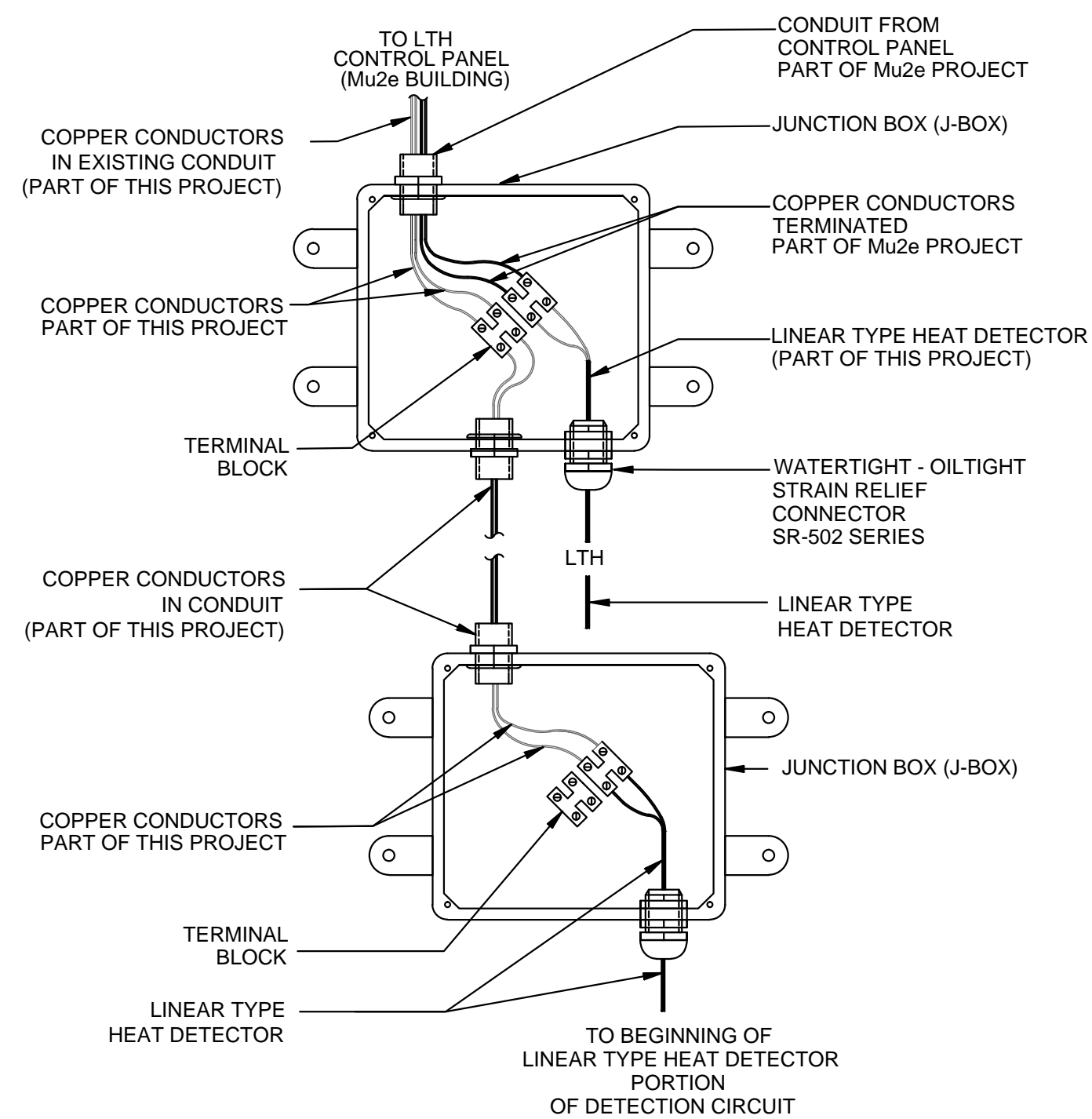
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03 MAR 2014



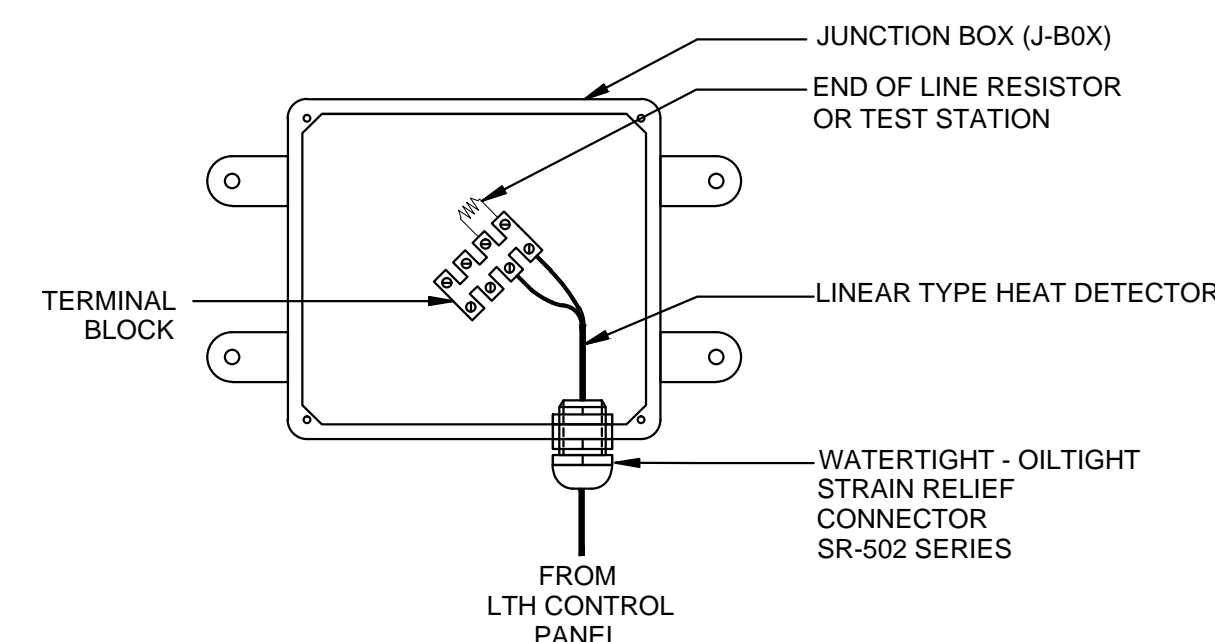
EXISTING J-BOX IN MC-1 BUILDING 1

SCALE: NONE



EXISTING J-BOX IN Mu2e BUILDING 2

SCALE: NONE

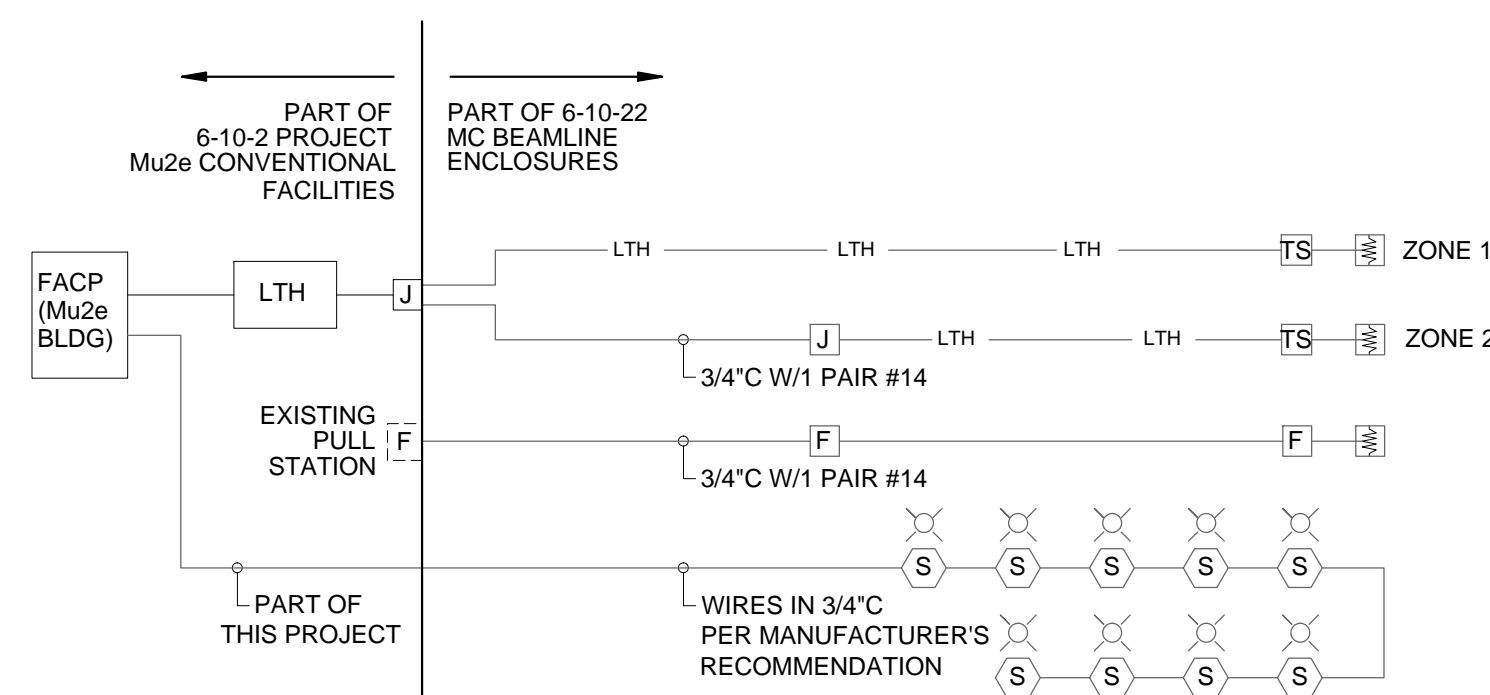


END OF LINE RESISTOR 3

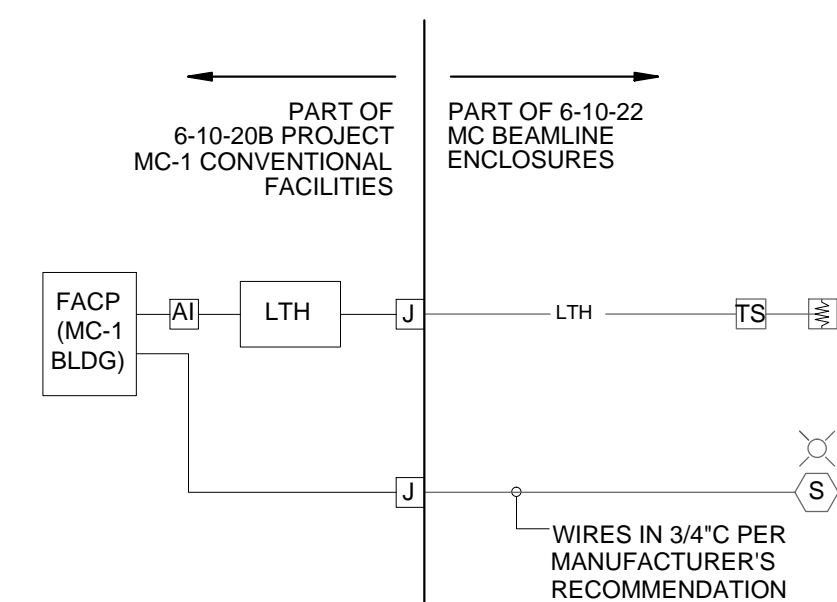
SCALE: NONE

FIRE ALARM GENERAL NOTES

1. SUBCONTRACTOR SHALL FURNISH AND INSTALL SHIELDED CABLES FOR FIRE ALARM CIRCUITS, AS REQUIRED BY THE MANUFACTURER. INSTALLATION OF WIRE SHALL BE NEW CONTINUOUS FOR THE LENGTH OF THE NEW CIRCUIT. ALL EQUIPMENT SHALL BE UL LISTED AND MANUFACTURED BY SIEMENS.
2. WIRING METHODS, CONDUIT, SUPPORTS, JUNCTION BOXES, TERMINAL BOXES, ETC. SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NFPA-70, 2011 EDITION.
3. CONDUIT ROUTING, WIRE TYPE AND GAUGE ARE FOR REFERENCE ONLY, THE SUBCONTRACTOR SHALL DESIGN AND INSTALL THE FIRE ALARM SYSTEM IN STRICT ACCORDANCE WITH NFPA-72, FIRE ALARM CODE, 2010 EDITION, AND THE MANUFACTURER'S REQUIREMENTS.
4. WIRE NUTS APPROPRIATELY SIZED FOR THE GAUGE OF WIRE ARE ACCEPTABLE IN JUNCTION BOXES ONLY. ALL WIRE NUTS SHALL BE SECURED WITH ELECTRICAL TAPE.
5. ALL JUNCTION BOX COVERS SHALL BE PAINTED "RED" AND LABELED, "FIRE ALARM CIRCUIT".
6. TROUBLE ALARM SIGNALS SHALL BE DIRECTLY MONITORED BY FIRUS MINI PANEL.
7. LINEAR TYPE HEAT DETECTION SHALL BE MONITORED FOR ALARM BY FACP.



Mu2e CONVENTIONAL FACILITIES AND BEAMLINE ENCLOSURES FIRE ALARM SYSTEM WIRING DIAGRAM



MC-1 BUILDING AND BEAMLINE ENCLOSURES FIRE ALARM SYSTEM WIRING DIAGRAM

FIRE ALARM LEGEND

- [FACP] FIRE ALARM CONTROL PANEL ADDRESSABLE SIEMENS, FIRE FINDER SERIES XLS, EMERGENCY VOICE ALARM
- [LTH] LINEAR TYPE HEAT DETECTION PANEL
- [AI] ADDRESSABLE INTERFACE MODULE
- LTH- LINEAR TYPE HEAT DETECTION PROTECTOWIRE MODEL NO.XCR @ 190°F
- (S) AUDIBLE SPEAKER NOTIFICATION DEVICE, RED FINISH WITH BACK BOX
- (V) VISUAL NOTIFICATION DEVICE 75 CANDELA, UNLESS NOTED OTHERWISE
- [TS] TEST STATION
- [J] JUNCTION BOX (MOISTURE TIGHT)
- ~~~ END-OF-LINE RESISTOR (EOLR)
- [F] MANUAL PULL STATION WITH FINISHED BACK BOX



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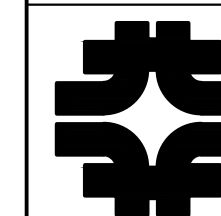
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SCALE:

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UNITED STATES DEPARTMENT OF ENERGY



MC BEAMLINE ENCLOSURES
FIRE ALARM DIAGRAMS, NOTES AND
DETAILS

DRAWING NO. 6-10-22

FA-2 REV.