



GERALD R. FORD International Airport

CONTRACT DRAWINGS FOR THE CONSTRUCTION OF AIRPORT FIELD MAINTENANCE FUEL FACILITY RELOCATION

GERALD R. FORD INTERNATIONAL AIRPORT

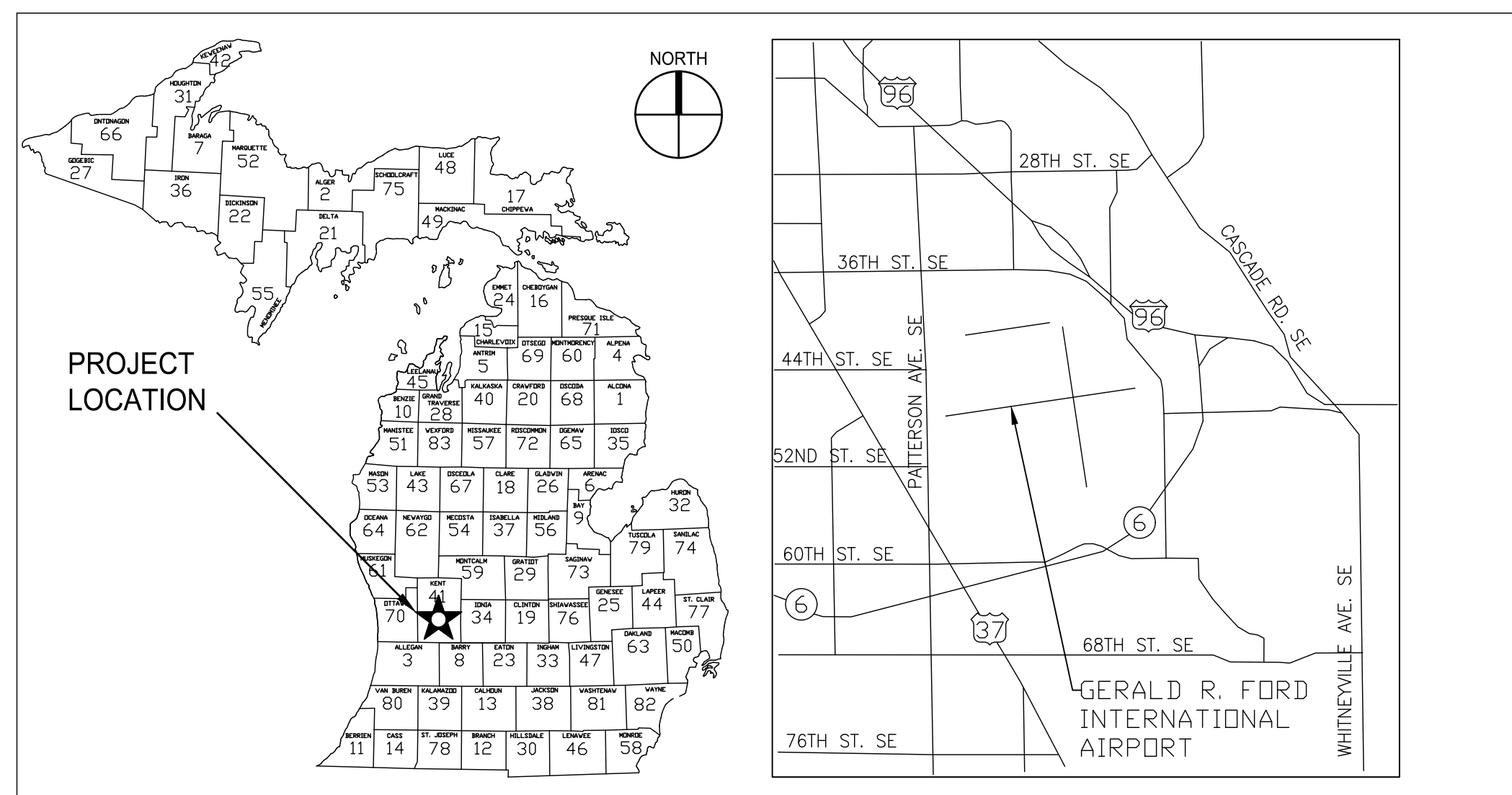
GERALD R. FORD INTERNATIONAL AIRPORT AUTHORITY GRAND RAPIDS, MICHIGAN

CLIENT PROJECT: C-385

C&S PROJECT: K19014001

APRIL, 2023

ISSUED FOR BID



LOCATION MAP



- GI - SERIES
- GC - SERIES
- CD - SERIES
- CP - SERIES
- CG - SERIES
- CU - SERIES

S - SERIES



A - SERIES



EL - SERIES



CF - SERIES
MI - SERIES

Apr 12, 2023, 8:10am
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GI-001
SHEET NO. 1 OF 36

1

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4

C

C

B

B

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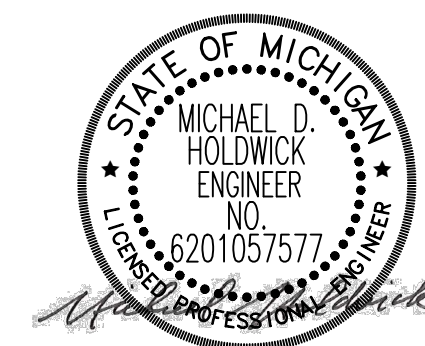
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SHEET NO.	SHEET REFERENCE NO.	TITLE
1	GI001	COVER SHEET
2	GI002	SHEET INDEX AND CONTROL POINTS
3	GI003	LEGEND AND ABBREVIATIONS
4	GI004	GENERAL NOTES
5	GH101	GENERAL PLAN
6	GC100	CONSTRUCTION SAFETY PHASING PLAN- OVERALL
7	GC101	CONSTRUCTION SAFETY PHASING PLAN
8	GC501	CONSTRUCTION SAFETY PHASING DETAILS
9	CD101	EXISTING CONDITIONS AND DEMOLITION PLAN
10	CD501	EXISTING CONDITIONS AND DEMOLITION DETAILS
11	CP101	GEOMETRY AND PCC JOINT LAYOUT
12	CP102	FUEL PAD JOINTING PLAN
13	CP501	GEOMETRY AND PCC JOINT LAYOUT DETAILS
14	CP502	GEOMETRY AND PCC JOINT LAYOUT DETAILS
15	CP503	GEOMETRY AND PCC JOINT LAYOUT DETAILS
16	CG101	GRADING, DRAINAGE AND UTILITY PLANS
17	CG102	FUEL PAD ELEVATION PLAN
18	CG301	PROFILES
19	CU501	UTILITY AND DRAINAGE DETAILS
20	CU502	UTILITY AND DRAINAGE DETAILS
21	CF100	FUEL FACILITY LAYOUT
22	CF100A	FUEL FACILITY LAYOUT - ALTERNATE BID
23	CF101	FUEL FACILITY SIGNAGE
24	CF501	FUEL FACILITY DETAILS
25	CF502	FUEL FACILITY DETAILS
26	S-001	GENERAL NOTES
27	S-101	FOUNDATION AND FRAMING PLANS
28	S-501	STRUCTURAL DETAILS
29	A-001	ABBREVIATIONS, SYMBOLS, LEGENDS, AND GENERAL NOTES
30	A-002	LIFE SAFETY PLAN AND BUILDING CODE ANALYSIS
31	A-101	FLOOR PLANS, ELEVATIONS, WALL SECTION, AND DETAILS
32	A-601	SCHEDULES AND DETAILS
33	EL001	ELECTRICAL NOTES, SYMBOLS, ABBREVIATIONS, AND ONE-LINES
34	ED101	ELECTRICAL FUEL FACILITY PLAN - REMOVAL
35	EL101	ELECTRICAL FUEL FACILITY PLAN
36	EL401	ELECTRICAL FUEL FACILITY PLAN . ENLARGED
37	EL501	ELECTRICAL DETAILS
38	EL502	ELECTRICAL DETAILS
39	EL503	ELECTRICAL DETAILS
40	EL601	ELECTRICAL SCHEDULES
41	EL602	ELECTRICAL SCHEDULES
42	MI701	P&ID SYMBOLS AND ABBREVIATIONS
43	MI702	P&ID DIESEL FUEL BULK STORAGE AND DISPENSING
44	MI703	P&ID UNLEADED GASOLINE BULK STORAGE AND DISPENSING
45	MI704	P&ID DE-ICING BULK STORAGE AND DISPENSING

Point #	Northing	Easting	Elevation	Description
600	502977.22	12807954.55	793.19	CP P&N TRAV CAP TOP HILL 120W OF FORK IN DR
601	502944.58	12808364.94	790.41	CP P&N TRAV CAP 15 W OF < PT FNC 3 S OF EB PARKING
602	503058.15	12808240.03	790.09	CP P&N TRAV CAP 1.2N OF EB NEAR < PT FNC
603	503118.71	12808088.55	784.31	CP P&N TRAV CAP 30N OF N EDGE PRIM RD
604	503241.84	12808667.11	788.71	CP P&N TRAV CAP /12 W OF COMM MH20N OF EB
605	503277.18	12808983.88	794.27	CP P&N TRAV CAP /40 N FO EB OPROX CL OF FUEL DEPOT
606	503203.47	12809361.60	790.57	CP P&N TRAV CAP /BEAT CAP 3E OF EB 16+-N OF CHLINK FNC TO E
607	502899.14	12809349.80	791.68	CP P&N TRAV CAP /30+- N OF E-W FNC 25 W OF N-S FNC
608	502902.36	12808956.88	789.16	CP P&N TRAV CAP /60+-SW OF HYD
612	502857.72	12808475.00	789.97	CP MAG NAIL IN PAVEMENT / 1FT N OF EB OPP CBS TO N AT GATE 36
613	502859.97	12808425.80	789.15	CP P&N TRAV CAP / 12S OF EB OPP FNC TO N
615	503124.06	12808393.37	789.31	CP MAG NAIL IN PAVEMENT /PK 10 NE OF CLDR 90W OF GATE 35



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**AIRPORT FIELD MAINTENANCE
 FUEL FACILITY RELOCATION
 GERALD R. FORD INTL AIRPORT
 GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION

REVISIONS	
PROJECT NO:	K19.014.001
DATE:	APRIL 2023
DRAWN BY:	G.C.HAYDEN
DESIGNED BY:	R.D. MIDDLESWARTH
CHECKED BY:	M.D. HOLDWICK

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

SHEET INDEX AND CONTROL POINTS

GI002

SHEET NO. 2 OF 44

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A1 SHEET INDEX
SCALE: NOT TO SCALE

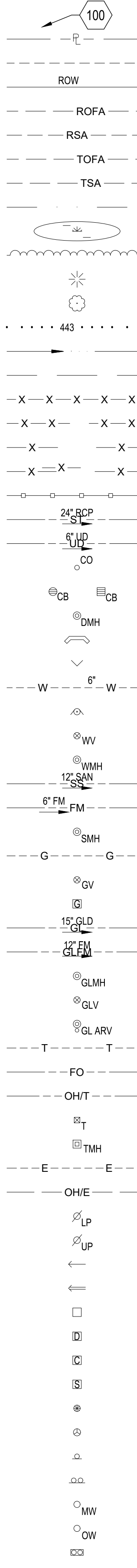
A3 BENCHMARKS AND CONTROL POINTS
SCALE: NOT TO SCALE

1

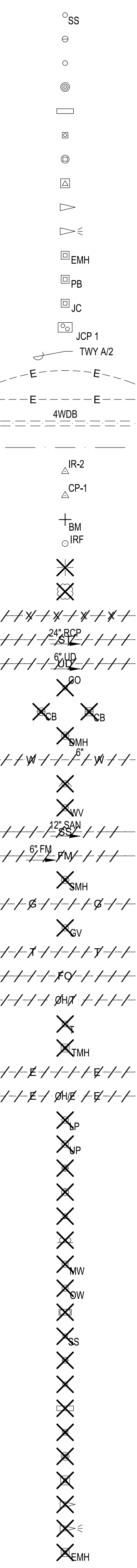
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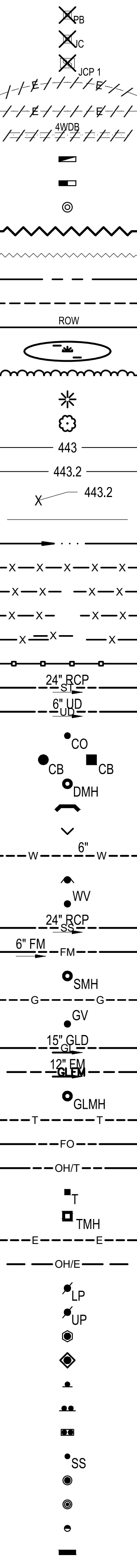
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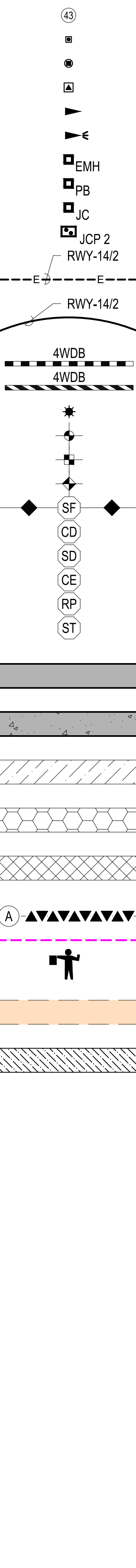
KEYED NOTE REFERENCE
 EXISTING AIRPORT PROPERTY LINE
 EXISTING AVIGATION EASEMENT BOUNDARY
 EXISTING ROADWAY BOUNDARY
 EXISTING RUNWAY OBJECT FREE AREA
 EXISTING RUNWAY SAFETY AREA
 EXISTING TAXIWAY OBJECT FREE AREA
 EXISTING TAXIWAY SAFETY AREA
 EXISTING EDGE OF WATER
 EXISTING WETLAND LOCATION
 EXISTING EDGE OF WOODS
 EXISTING CONIFEROUS TREE
 EXISTING DECIDUOUS TREE
 EXISTING CONTOUR LINE
 EXISTING SWALE CENTERLINE
 EXISTING TOP/BOTTOM OF DITCH
 EXISTING FENCE LINE
 EXISTING SINGLE SWING GATE
 EXISTING DOUBLE SWING GATE
 EXISTING CANTILEVER GATE
 EXISTING GUIDE RAIL
 EXISTING DRAINAGE LINE
 EXISTING UNDERDRAIN
 EXISTING UNDERDRAIN CLEANOUT
 EXISTING CATCH BASIN
 EXISTING DRAINAGE MANHOLE
 EXISTING HEADWALL
 EXISTING PIPE END SECTION
 EXISTING WATER LINE
 EXISTING HYDRANT
 EXISTING WATER VALVE
 EXISTING WATER MANHOLE
 EXISTING SANITARY LINE
 EXISTING SANITARY FORCE MAIN
 EXISTING SANITARY MANHOLE
 EXISTING GAS LINE
 EXISTING GAS VALVE
 EXISTING GAS LINE MARKER
 EXISTING GLYCOL SYSTEM DRAINAGE LINE
 EXISTING GLYCOL SYSTEM FORCE MAIN
 EXISTING GLYCOL SYSTEM DRAINAGE MANHOLE
 EXISTING GLYCOL SYSTEM VENT
 EXISTING GLYCOL SYSTEM AIR RELEASE VAULT
 EXISTING UNDERGROUND TELEPHONE LINE
 EXISTING FIBER OPTIC LINE
 EXISTING OVERHEAD TELEPHONE LINE
 EXISTING TELEPHONE JUNCTION BOX
 EXISTING TELEPHONE MANHOLE
 EXISTING UNDERGROUND ELECTRIC LINE
 EXISTING OVERHEAD ELECTRIC LINE
 EXISTING LIGHT POLE
 EXISTING UTILITY POLE
 EXISTING GUY WIRE AND ANCHOR
 EXISTING POLE SUPPORT
 EXISTING CONCRETE MARKER
 EXISTING CONCRETE DUCT MARKER
 EXISTING CONCRETE CABLE MARKER
 EXISTING CONCRETE SPLICE MARKER
 EXISTING BOLLARD OR POST
 EXISTING TIE-DOWN
 EXISTING SINGLE POST TRAFFIC SIGN
 EXISTING DOUBLE POST TRAFFIC SIGN
 EXISTING MONITORING WELL
 EXISTING OBSERVATION WELL
 EXISTING HOLDING POSITION LIGHT



EXISTING SURFACE SENSOR
 EXISTING RETROREFLECTIVE MARKER
 EXISTING RUNWAY OR TAXIWAY EDGE LIGHT
 EXISTING IN-PAVEMENT EDGE LIGHT
 EXISTING AIRFIELD GUIDANCE SIGN
 EXISTING REIL UNIT
 EXISTING ELECTRICAL DISCONNECT
 EXISTING TRANSFORMER
 EXISTING WIND CONE
 EXISTING LIGHTED WIND CONE
 EXISTING ELECTRICAL MANHOLE
 EXISTING PULLBOX
 EXISTING JUNCTION CAN
 EXISTING JUNCTION CAN PLAZA
 EXISTING CIRCUIT LABEL
 EXISTING AIRFIELD LIGHTING CABLE IN TRENCH
 EXISTING AIRFIELD LIGHTING CABLE IN CONDUIT
 EXISTING DUCT BANK
 EXISTING SURVEY BASELINE
 EXISTING SURVEY BASELINE POINT
 EXISTING SURVEY CONTROL POINT
 EXISTING BENCHMARK LOCATION
 IRON ROD FOUND
 EXISTING CONIFEROUS TREE TO BE REMOVED
 EXISTING DECIDUOUS TREE TO BE REMOVED
 EXISTING FENCE LINE TO BE REMOVED
 EXISTING DRAINAGE LINE TO BE REMOVED
 EXISTING UNDERDRAIN TO BE REMOVED
 EXISTING UNDERDRAIN CLEANOUT TO BE REMOVED
 EXISTING CATCH BASIN TO BE REMOVED
 EXISTING DRAINAGE MANHOLE TO BE REMOVED
 EXISTING WATER LINE TO BE REMOVED
 EXISTING HYDRANT TO BE REMOVED
 EXISTING WATER VALVE TO BE REMOVED
 EXISTING SANITARY LINE TO BE REMOVED
 EXISTING SANITARY FORCE MAIN TO BE REMOVED
 EXISTING SANITARY MANHOLE TO BE REMOVED
 EXISTING GAS LINE TO BE REMOVED
 EXISTING GAS VALVE TO BE REMOVED
 EXISTING UNDERGROUND TELEPHONE LINE TO BE REMOVED
 EXISTING FIBER OPTIC LINE TO BE REMOVED
 EXISTING OVERHEAD TELEPHONE LINE TO BE REMOVED
 EXISTING TELEPHONE JUNCTION BOX TO BE REMOVED
 EXISTING TELEPHONE MANHOLE TO BE REMOVED
 EXISTING UNDERGROUND ELECTRIC LINE TO BE REMOVED
 EXISTING OVERHEAD ELECTRIC LINE TO BE REMOVED
 EXISTING LIGHT POLE TO BE REMOVED
 EXISTING UTILITY POLE TO BE REMOVED
 EXISTING BOLLARD OR POST TO BE REMOVED
 EXISTING TIE-DOWN TO BE REMOVED
 EXISTING SINGLE POST TRAFFIC SIGN TO BE REMOVED
 EXISTING DOUBLE POST TRAFFIC SIGN TO BE REMOVED
 EXISTING MONITORING WELL TO BE REMOVED
 EXISTING OBSERVATION WELL TO BE REMOVED
 EXISTING HOLDING POSITION LIGHT TO BE REMOVED
 EXISTING SURFACE SENSOR TO BE REMOVED
 EXISTING RETROREFLECTIVE MARKER TO BE REMOVED
 EXISTING RUNWAY OR TAXIWAY EDGE LIGHT TO BE REMOVED
 EXISTING AIRFIELD GUIDANCE SIGN TO BE REMOVED
 EXISTING REIL UNIT TO BE REMOVED
 EXISTING ELECTRICAL DISCONNECT TO BE REMOVED
 EXISTING TRANSFORMER TO BE REMOVED
 EXISTING WIND CONE TO BE REMOVED
 EXISTING LIGHTED WIND CONE TO BE REMOVED
 EXISTING ELECTRICAL MANHOLE TO BE REMOVED



EXISTING PULLBOX TO BE REMOVED
 EXISTING JUNCTION CAN TO BE REMOVED
 EXISTING JUNCTION CAN PLAZA TO BE REMOVED
 EXISTING AIRFIELD LIGHTING CABLE IN TRENCH TO BE REMOVED
 EXISTING AIRFIELD LIGHTING CABLE IN CONDUIT TO BE REMOVED
 EXISTING DUCT BANK TO BE REMOVED
 EXISTING AIRFIELD GUIDANCE SIGN TO BE MODIFIED
 EXISTING AIRFIELD GUIDANCE SIGN TO BE REFURBISHED
 EXISTING RUNWAY OR TAXIWAY EDGE LIGHT TO BE MODIFIED
 EXISTING CRACK TO BE MILLED AND FILLED
 EXISTING MARKING TO BE REMOVED
 PROPOSED AIRPORT PROPERTY LINE
 PROPOSED AVIGATION EASEMENT BOUNDARY
 PROPOSED ROADWAY BOUNDARY
 PROPOSED WETLAND LOCATION
 PROPOSED EDGE OF WOODS
 PROPOSED CONIFEROUS TREE
 PROPOSED DECIDUOUS TREE
 PROPOSED CONTOUR LINE
 PROPOSED INTERMEDIATE CONTOUR LINE
 PROPOSED SPOT ELEVATION
 PROPOSED GRADE LINE
 PROPOSED SWALE CENTERLINE
 PROPOSED FENCE LINE
 PROPOSED SINGLE SWING GATE
 PROPOSED DOUBLE SWING GATE
 PROPOSED CANTILEVER GATE
 PROPOSED GUIDE RAIL
 PROPOSED DRAINAGE LINE
 PROPOSED UNDERDRAIN
 PROPOSED UNDERDRAIN CLEANOUT
 PROPOSED CATCH BASIN
 PROPOSED DRAINAGE MANHOLE
 PROPOSED HEADWALL
 PROPOSED PIPE END SECTION
 PROPOSED WATER LINE
 PROPOSED HYDRANT
 PROPOSED WATER VALVE
 PROPOSED SANITARY LINE
 PROPOSED SANITARY FORCE MAIN
 PROPOSED SANITARY MANHOLE
 PROPOSED GAS LINE
 PROPOSED GAS VALVE
 PROPOSED GLYCOL SYSTEM DRAINAGE LINE
 PROPOSED GLYCOL SYSTEM FORCE MAIN
 PROPOSED GLYCOL SYSTEM DRAINAGE MANHOLE
 PROPOSED UNDERGROUND TELEPHONE LINE
 PROPOSED OVERHEAD TELEPHONE LINE
 PROPOSED TELEPHONE JUNCTION BOX
 PROPOSED TELEPHONE MANHOLE
 PROPOSED UNDERGROUND ELECTRIC LINE
 PROPOSED OVERHEAD ELECTRIC LINE
 PROPOSED LIGHT POLE
 PROPOSED UTILITY POLE
 PROPOSED BOLLARD OR POST
 PROPOSED TIE-DOWN
 PROPOSED SINGLE POST TRAFFIC SIGN
 PROPOSED HOLDING POSITION LIGHT
 PROPOSED SURFACE SENSOR
 PROPOSED BASE MOUNTED EDGE LIGHT
 PROPOSED IN-PAVEMENT EDGE LIGHT
 PROPOSED RETROREFLECTIVE MARKER
 PROPOSED AIRFIELD GUIDANCE SIGN



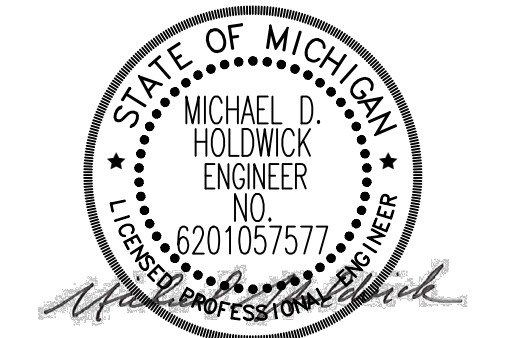
PROPOSED SIGN UNIT ID TAG NUMBER
 PROPOSED REIL UNIT
 PROPOSED ELECTRICAL DISCONNECT
 PROPOSED TRANSFORMER
 PROPOSED WIND CONE
 PROPOSED LIGHTED WIND CONE
 PROPOSED ELECTRICAL MANHOLE
 PROPOSED PULLBOX
 PROPOSED JUNCTION CAN
 PROPOSED JUNCTION CAN PLAZA
 PROPOSED AIRFIELD LIGHTING CABLE IN CONDUIT WITH CIRCUIT NUMBER AND NUMBER OF CABLES
 PROPOSED AIRFIELD LIGHTING CABLE IN TRENCH WITH CIRCUIT NUMBER AND NUMBER OF CABLES
 PROPOSED DUCT BANK
 PROPOSED DIRECTIONAL DRILL DUCT BANK
 TEMPORARY SOLAR POWERED OBSTRUCTION LIGHT
 TEST BORING LOCATION
 TEST PIT LOCATION
 PAVEMENT CORE LOCATION
 PROPOSED SILT FENCE LOCATION
 PROPOSED CHECK DAM LOCATION
 PROPOSED STORM DRAIN INLET PROTECTION
 PROPOSED STABILIZED CONSTRUCTION ENTRANCE LOCATION
 PROPOSED ROCK OUTLET PROTECTION LOCATION
 PROPOSED SEDIMENT TRAP LOCATION
 PROPOSED HMA PAVEMENT
 PROPOSED PCC PAVEMENT
 EXISTING ASPHALT PAVEMENT TO BE REMOVED
 EXISTING BUILDING TO BE REMOVED
 EXISTING CONCRETE PAVEMENT TO BE REMOVED
 BARRICADE LOCATION WITH WORK AREA DESIGNATION
 WORK AREA LIMITS
 FLAGPERSON LOCATION
 PHASE 1
 CONTRACTOR'S STAGING AREA

ABBREVIATIONS

ABAN - ABANDONED
 APPROX. - APPROXIMATE
 ASPH - ASPHALT
 AST - ABOVEGROUND STORAGE TANK
 B - BASELINE
 BLDG - BUILDING
 BM - BENCH MARK
 C - CENTERLINE
 CIP - CAST IRON PIPE
 CMP - CORRUGATED METAL PIPE
 CONC. - CONCRETE
 CSP - CORRUGATED STEEL PIPE
 DIA. - DIAMETER
 EFSO - EMERGENCY FUEL SHUT-OFF
 ELEV. - ELEVATION
 FND. - FOUNDATION
 HP - HIGH POINT
 INV. - INVERT
 LT - LEFT
 LP - LOW POINT
 MAX. - MAXIMUM
 MIN. - MINIMUM
 MISC. - MISCELLANEOUS
 NA - NOT APPLICABLE
 OFA - OBJECT FREE AREA
 O.C. - ON CENTER
 PAVT. - PAVEMENT
 PC - POINT OF CURVATURE
 PCC - PORTLAND CEMENT CONCRETE PAVEMENT
 PI - POINT OF INTERSECTION
 P - PROPERTY LINE
 PT - POINT OF TANGENCY
 PVI - POINT OF VERTICAL INTERSECTION
 PVC - POINT OF CURVATURE (VERTICAL CURVE)
 PVIC - POLYVINYL CHLORIDE PIPE
 PVT - POINT OF TANGENCY (VERTICAL CURVE)
 R - RADIUS
 RCP - REINFORCED CONCRETE PIPE
 ROFA - RUNWAY OBJECT FREE AREA
 RSR - RESIDENT PROJECT REPRESENTATIVE
 RSA - RUNWAY SAFETY AREA
 ROW - RIGHT OF WAY
 RPZ - RUNWAY PROTECTION ZONE
 RT - RIGHT
 RW - RUNWAY
 SHDR. - SHOULDER
 SICPP - SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE
 STA. - STATION
 TOFA - TAXIWAY OBJECT FREE AREA
 TSA - TAXIWAY SAFETY AREA
 TW - TAXIWAY
 TYP. - TYPICAL
 UD - UNDERDRAIN
 UST - UNDERGROUND STORAGE TANK



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**AIRPORT FIELD MAINTENANCE
 FUEL FACILITY RELOCATION
 GERALD R. FORD INTL AIRPORT
 GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
		PROJECT NO: K19.014.001
		DATE: APRIL 2023
		DRAWN BY: G.C. HAYDEN
		DESIGNED BY: R.D. MIDDLESWARTH
		CHECKED BY: M.D. HOLDSWICK
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		

LEGEND AND ABBREVIATIONS

THIS PLAN IS TO BE PRINTED IN COLOR

GI003

SHEET NO. 3 OF 36

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) OF THE GENERAL PROVISIONS.
2. THESE DRAWINGS HAVE BEEN PREPARED, IN PART, BASED UPON RECORD DRAWINGS AND/OR CAD FILES FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THOSE UTILIZING THE INFORMATION ON THESE DRAWINGS ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY PURPOSE.
3. EXISTING UTILITIES WERE TAKEN FROM PLANS OF RECORD. THEY HAVE BEEN SHOWN TO THE EXTENT KNOWN AND ARE OFFERED IN GOOD FAITH SOLELY FOR INFORMATIONAL PURPOSES. THEY MAY NOT REFLECT ACTUAL LOCATIONS AND MAY NOT BE INCLUSIVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
4. THE ACTUAL LOCATION AND ELEVATION OF ALL UTILITIES SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
5. IN THE EVENT OF DAMAGE TO EXISTING UTILITIES OR CABLES, THE ENGINEER AND OWNER SHALL BE NOTIFIED IMMEDIATELY.
6. THE CONTRACTOR SHALL REPAIR ALL DAMAGE TO UTILITIES OR CABLES, AS DIRECTED BY THE ENGINEER, IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.
7. ALL AREAS DISTURBED AS A RESULT OF THE CONTRACTOR'S STAGING AND CONSTRUCTION OPERATIONS SHALL BE RESTORED EQUAL TO OR BETTER THAN ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
8. ALL DIRT, DUST, STONES AND LOOSE DEBRIS SHALL BE CONTINUOUSLY REMOVED FROM ALL PAVED SURFACES DURING THIS CONTRACT.
9. THE CONTRACTOR SHALL RECONSTRUCT AND MAINTAIN EXISTING ACCESS ROADS AS REQUIRED FOR ACCESS TO THE WORK AREAS.
10. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN PROPOSED GRAVEL ACCESS ROADS AT THE APPROXIMATE LOCATION SHOWN.
11. ALL OF THE CONTRACTOR'S OPERATIONS SHALL REMAIN ON AIRPORT PROPERTY AT ALL TIMES. UNDER NO CIRCUMSTANCES WILL THE CONTRACTOR BE ALLOWED ON ADJACENT PROPERTY.
12. TO THE EXTENT THAT WETLAND AREAS ARE KNOWN, THEY HAVE BEEN DEPICTED ON THE CONTRACT DRAWINGS.
13. THIS CONTRACT DOES NOT ALLOW FOR PRICE INCREASES DUE TO ESCALATION IN COST OF LUMP SUM ITEMS. THE CONTRACTOR SHALL TAKE THIS INTO CONSIDERATION WHEN PREPARING UNIT PRICES FOR BID.
14. THE COST OF ALL FAILING TESTS PERFORMED BY THE OWNER OR ON THE OWNER'S BEHALF SHALL BE BORNE BY THE CONTRACTOR.
15. THE OWNER RESERVES THE RIGHT TO ELIMINATE ANY ITEMS OF THE CONTRACT AND PERFORM THESE ITEMS WITH ITS FORCES AND MATERIALS.
16. THE OWNER RESERVES THE RIGHT TO SALVAGE FENCE MATERIALS. THE MATERIAL TO BE SALVAGED IS IDENTIFIED IN THE SPECIFICATION. SALVAGED MATERIAL SHALL BE STOCKPILED AT A LOCATION DESIGNATED BY THE OWNER IN GOOD CONDITION. ALL OTHER FENCE MATERIAL SHALL BE SPOILED OFF AIRPORT PROPERTY AT A PROPER DISPOSAL SITE SELECTED BY THE CONTRACTOR.

GRADING AND EXCAVATION NOTES

17. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL STRIP AND STOCKPILE ALL MATERIAL SUITABLE FOR TOPSOILING.
18. SELECTIVE GRADING SHALL BE REQUIRED AS DIRECTED BY THE ENGINEER.
19. THE EXACT LOCATIONS AND DIMENSIONS OF PAVEMENT TO BE RECONSTRUCTED SHALL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION.
20. THE PLACEMENT OF UNSUITABLE MATERIALS SHALL BE COORDINATED WITH THE ENGINEER PRIOR TO PLACEMENT.
21. EMBANKMENTS SHALL BE CONSTRUCTED WITH SUITABLE ON-SITE MATERIAL UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
22. THE LIMIT FOR TOPSOILING, SEEDING, AND MULCHING ARE THE LIMITS OF GRADING SHOWN ON THE GRADING PLANS. ALL AREAS OUTSIDE OF THE GRADING LIMITS WHICH ARE DISTURBED SHALL BE RESTORED BY THE CONTRACTOR AT HIS EXPENSE.
23. THE COMBINATION OF SILT/CLAY SOILS AND HIGH NATURAL MOISTURE CONTENTS CREATE THE POTENTIAL FOR LOSS OF STRENGTH UNDER REPETITIVE LOADINGS OR VIBRATION. THE CONTRACTOR SHOULD TAKE THESE FACTORS INTO CONSIDERATION WHEN SELECTING EQUIPMENT, METHODS AND MEANS FOR CONSTRUCTION OF THIS PROJECT, AS WELL AS HAULING EQUIPMENT THAT WILL OPERATE IN THE AREA THROUGHOUT CONSTRUCTION. ANY DAMAGE TO THE SUBGRADE CONDITION AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RESTORED TO EQUAL OR BETTER THAN ORIGINAL CONDITION, AS DIRECTED BY THE ENGINEER AND ALL AT THE CONTRACTOR'S EXPENSE.
24. TEMPORARY AIR AND WATER POLLUTION, SOIL EROSION AND SILTATION CONTROL WORK PERFORMED FOR PROTECTION OF CONSTRUCTION AREAS OUTSIDE THE CONSTRUCTION LIMITS, SUCH AS BORROW AREAS AND WASTE AREAS, HAUL ROADS, EQUIPMENT AND MATERIAL STORAGE SITES, AND TEMPORARY PLANT SITES, WILL NOT BE MEASURED AND PAID FOR DIRECTLY BUT SHALL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR.
25. TOPSOILING WILL BE CONSIDERED A NECESSARY AND INCIDENTAL PART OF THE WORK AND ITS COST SHALL BE CONSIDERED BY THE CONTRACTOR AND INCLUDED IN THE CONTRACT PRICE FOR THE WORK INVOLVED.

26. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES AND MATERIALS SHALL BE IN PLACE PRIOR TO BEGINNING EARTHWORK OPERATIONS AND SHALL BE MAINTAINED UNTIL THE NEW SLOPES ARE STABILIZED WITH SEEDING AND/OR SLOPE PROTECTION.

SURVEY NOTES

27. FOR TYPICAL SECTIONS, THE CONTOUR INTERVAL EQUALS 1 FOOT. FOR TRANSITIONAL AREAS TO KEYWAYS, THE CONTOUR INTERVAL EQUALS 0.1 FOOT.
28. ALL ELEVATIONS REFER TO NAVD 88 VERTICAL DATUM. COORDINATES REFER NAD 83 HORIZONTAL DATUM.
29. THE TOPOGRAPHIC FEATURES SHOWN HEREON WERE COMPILED FROM FIELD SURVEY PERFORMED BY PREIN & NEWHOF DATED 03/09/2023.

PAVING NOTES

30. ALL AREAS TO BE OVERLAID SHALL BE PREPARED IN ACCORDANCE WITH ITEM P-101, "PREPARATION/REMOVAL OF EXISTING PAVEMENTS".
31. TACK COAT (BOND COAT), ITEM MDOT 501, SHALL BE APPLIED PRIOR TO PLACING EACH LIFT OF PAVEMENT, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
32. TRANSVERSE PAVING JOINTS IN ONE LAYER SHALL LINE UP WITH TRANSVERSE JOINTS IN THE PREVIOUS LAYERS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
33. TRANSVERSE PAVING JOINTS IN ADJACENT LANES SHALL LINE UP WITH EACH OTHER EXTENDING ACROSS THE FULL WIDTH OF PAVEMENT.
34. IN CASES OTHER THAN CENTERLINE JOINTS, LONGITUDINAL PAVING JOINTS IN ONE LAYER SHALL BE OFFSET FROM THAT IN THE PREVIOUS LAYER BY AT LEAST ONE FOOT. THE JOINT AT THE CENTERLINE OF THE PAVEMENT SHALL LINE UP WITH PREVIOUS LAYER CENTERLINE JOINTS.
35. PROPOSED BITUMINOUS SURFACE COURSE TO BE INSTALLED IN PAVEMENT RECONSTRUCTION AREAS, SHALL BE SUBJECT TO THE SAME MATERIAL ACCEPTANCE CRITERIA AS THE ASPHALT LEVELING COURSE.
36. COLD JOINTS SHALL BE SAWCUT BACK A MINIMUM OF 6 INCHES TO EXPOSE A CLEAN, SOUND, UNIFORM VERTICAL SURFACE FOR THE FULL DEPTH OF THE LIFT. THE SAWCUT SHALL NOT BE PERFORMED UNTIL THE PAVEMENT HAS REACHED AMBIENT TEMPERATURE.
37. DELAMINATED PAVEMENT SHALL BE REMOVED BY COLD MILLING. THE LIMITS OF DELAMINATED PAVEMENT SHALL BE SAW CUT. THE LOCATION OF THE LIMITS OF DELAMINATED PAVEMENT WILL BE DETERMINED BY THE ENGINEER.

ELECTRICAL AND SIGNAGE NOTES

38. ALL ELECTRICAL WORK SHALL CONFORM TO APPLICABLE LOCAL, STATE AND NATIONAL ELECTRICAL CODES.
39. THE ELECTRICAL CHARACTERISTICS OF PROPOSED EQUIPMENT SHALL BE VERIFIED TO BE COMPATIBLE WITH EXISTING EQUIPMENT MANUFACTURER PRIOR TO INSTALLATION.
40. ABANDONED CABLES MAY EXIST IN THE VICINITY OF THE PROPOSED WORK. IF ENCOUNTERED, CONTRACTOR SHALL VERIFY THAT THEY ARE ABANDONED PRIOR TO REMOVAL. IF THEY ARE NOT ABANDONED, CABLES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
41. ITEMS OF SPECIFIC MANUFACTURE SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS AND OR MANUFACTURER'S REPRESENTATIVE DIRECTIONS.
42. ALL GROUND CONNECTIONS SHALL BE MADE USING EXOTHERMIC CONNECTIONS.
43. GROUND RODS SHALL BE INSTALLED AT 500-FT INTERVALS ALONG COUNTERPOISE WIRE.
44. ALL CABLE CONNECTIONS SHALL BE MADE AT LIGHT UNITS OR AT ENDS OF DUCT BANKS UNLESS DIRECTED OTHERWISE.
45. THE OWNER RESERVES THE RIGHT TO SALVAGE LIGHTING EQUIPMENT. THE EQUIPMENT TO BE SALVAGED IS IDENTIFIED IN THE SPECIFICATION. SALVAGED EQUIPMENT SHALL BE STOCKPILED AT A LOCATION DESIGNATED BY THE OWNER IN PROPER WORKING CONDITION. ALL OTHER LIGHTING EQUIPMENT SHALL BE SPOILED OFF AIRPORT PROPERTY AT A PROPER DISPOSAL SITE SELECTED BY THE CONTRACTOR.

STORAGE TANK SETBACK DISTANCES PER FIRE CODE				
TANK:	12,000 GAL. AST UNLEADED GASOLINE		12,000 GAL. DIESEL FUEL AST	
	REQUIRED	DESIGN	REQUIRED	DESIGN
MIN. DISTANCE FROM LOT LINE / OPPOSITE SIDE OF PUBLIC WAY	25'	95'	25'	95'
MIN. DISTANCE FROM NEAREST SIDE OF PUBLIC WAY OR IMPORTANT BUILDING	15'	87'	15'	67'
MIN. DISTANCE BETWEEN TANKS	3'	28'	3'	28'

NOTE: ACTUAL DISTANCES ARE APPROXIMATE

CHEMICAL BULK STORAGE TANK SETBACK DISTANCES		
TANK:	20,000 GAL. AST POTASSIUM ACETATE	
	REQUIRED	DESIGN
MIN. DISTANCE FROM LOT LINE / FENCE	10'	28'

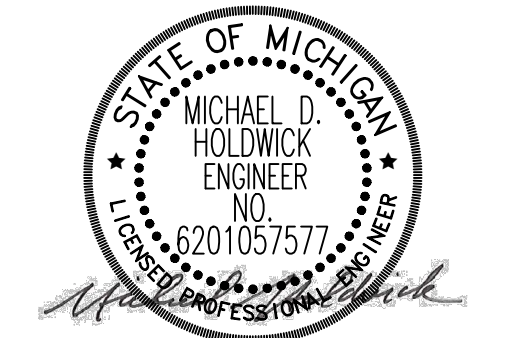
NOTE: ACTUAL DISTANCES ARE APPROXIMATE

A1 GENERAL NOTES
SCALE: NOT TO SCALE

A4 FUEL AND CHEMICAL SETBACK DISTANCES
SCALE: NOT TO SCALE



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www.cscos.com



**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO: K19.014.001		
DATE: APRIL 2023		
DRAWN BY: G.C. HAYDEN		
DESIGNED BY: R.D. MIDDLESWARTH		
CHECKED BY: M.D. HOLDWICK		
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		

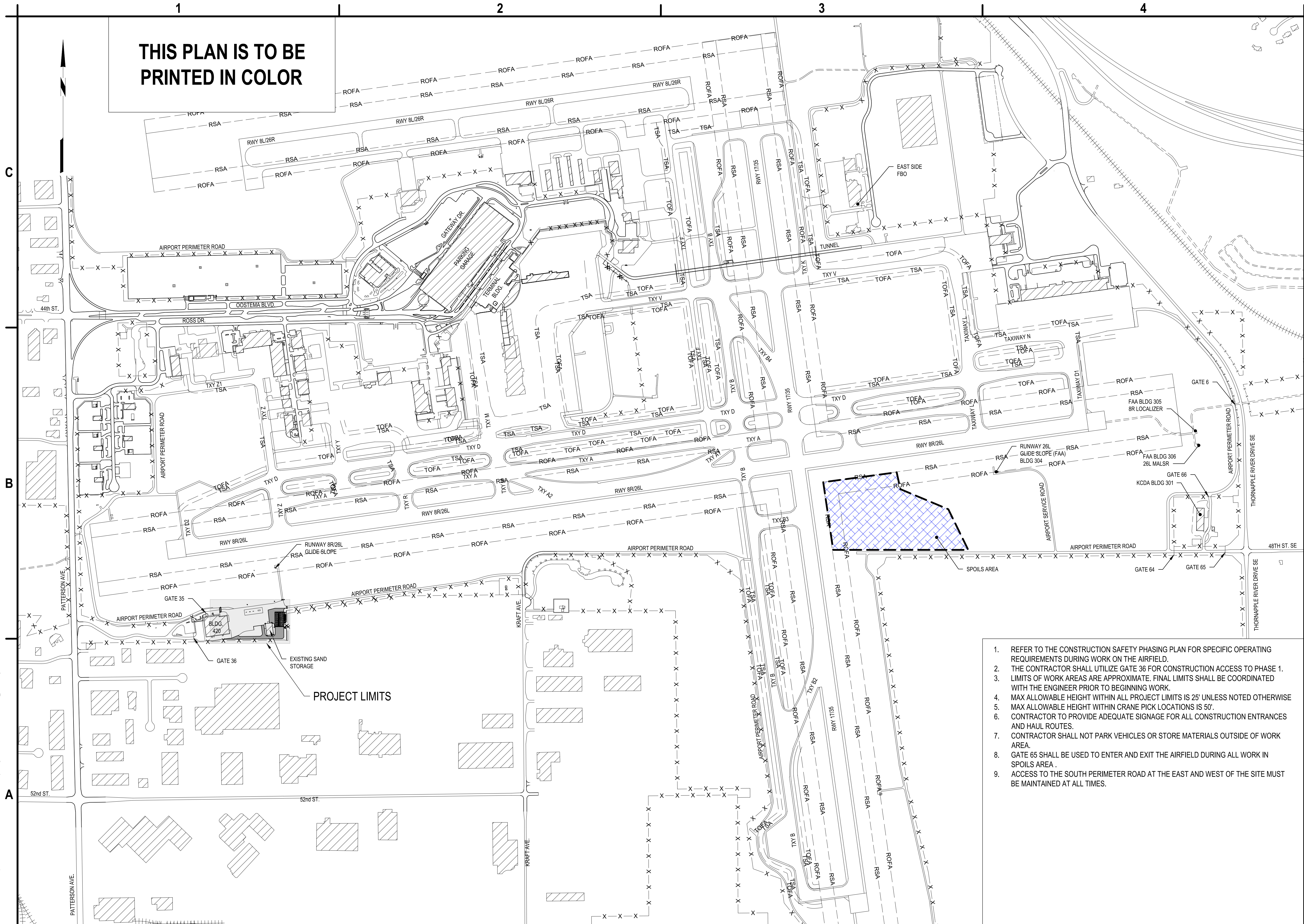
GENERAL NOTES

G1004

SHEET NO. 4 OF 36

Apr 11, 2023 - 3:06pm
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THIS PLAN IS TO BE PRINTED IN COLOR



1. REFER TO THE CONSTRUCTION SAFETY PHASING PLAN FOR SPECIFIC OPERATING REQUIREMENTS DURING WORK ON THE AIRFIELD.
2. THE CONTRACTOR SHALL UTILIZE GATE 36 FOR CONSTRUCTION ACCESS TO PHASE 1. LIMITS OF WORK AREAS ARE APPROXIMATE. FINAL LIMITS SHALL BE COORDINATED WITH THE ENGINEER PRIOR TO BEGINNING WORK.
3. LIMITS OF WORK AREAS ARE APPROXIMATE. FINAL LIMITS SHALL BE COORDINATED WITH THE ENGINEER PRIOR TO BEGINNING WORK.
4. MAX ALLOWABLE HEIGHT WITHIN ALL PROJECT LIMITS IS 25' UNLESS NOTED OTHERWISE
5. MAX ALLOWABLE HEIGHT WITHIN CRANE PICK LOCATIONS IS 50'.
6. CONTRACTOR TO PROVIDE ADEQUATE SIGNAGE FOR ALL CONSTRUCTION ENTRANCES AND HAUL ROUTES.
7. CONTRACTOR SHALL NOT PARK VEHICLES OR STORE MATERIALS OUTSIDE OF WORK AREA.
8. GATE 65 SHALL BE USED TO ENTER AND EXIT THE AIRFIELD DURING ALL WORK IN SPOILS AREA .
9. ACCESS TO THE SOUTH PERIMETER ROAD AT THE EAST AND WEST OF THE SITE MUST BE MAINTAINED AT ALL TIMES.



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**AIRPORT FIELD MAINTENANCE
 FUEL FACILITY RELOCATION
 GERALD R. FORD INTL AIRPORT
 GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
		PROJECT NO: K19.014.001
		DATE: APRIL 2023
		DRAWN BY: G.C HAYDEN
		DESIGNED BY: R.D. MIDDLESWARTH
		CHECKED BY: M.D. HOLDWICK
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		

GENERAL PLAN

GI101

SHEET NO. 5 OF 36

Apr 11, 2023 3:38pm P:\Projects\G - Gerald R. Ford Airport\K19014001 - Field Maintenance Fuel Facility\Design\CADD\Sheet Files\K19014001_G1101.dwg

A1 GENERAL PLAN
SCALE: 1"=300'

A4 GENERAL NOTES
SCALE: NOT TO SCALE

THIS PLAN IS TO BE PRINTED IN COLOR

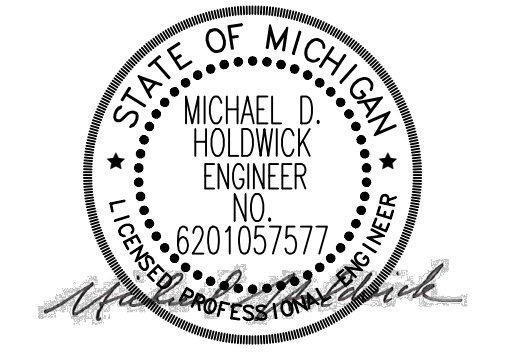
SPOILS AREA POINTS						
POINT NO.	NORTHING	EASTING	LATITUDE	LONGITUDE	GROUND ELEV.	MAX HEIGHT
FF	504,602.32	12,815,295.57	N42° 52' 43.95"	W85° 30' 57.95"	782.00	25'
GG	504,710.36	12,816,104.83	N42° 52' 45.13"	W85° 30' 47.10"	782.00	25'
HH	504,525.02	12,816,145.91	N42° 52' 43.30"	W85° 30' 46.52"	782.00	25'
II	504,304.29	12,816,671.91	N42° 52' 41.19"	W85° 30' 39.41"	782.00	25'
JJ	503,858.49	12,816,890.46	N42° 52' 36.82"	W85° 30' 36.39"	782.00	25'
KK	503,858.49	12,815,407.48	N42° 52' 36.62"	W85° 30' 56.31"	782.00	25'

- GENERAL NOTES:
- PRIOR TO CONSTRUCTION, CONTRACTOR AND RPR SHALL VIDEOTAPE / PHOTOGRAPH ALL HAUL ROADS TO BE USED DURING THE PROJECT. THE INFORMATION SHALL BE PROVIDED TO THE OWNER PRIOR TO NOTICE TO PROCEED. ANY DAMAGE TO THE PAVEMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR, PER RPR. ALL COSTS SHALL BE RESPONSIBILITY OF THE CONTRACTOR.
 - CONTRACTOR TO COORDINATE UTILITY WORK WITH AIRPORT. CONTRACTOR TO PROVIDE A MINIMUM TWO WEEK NOTICE FOR ANY UTILITY WORK THAT WILL INTERRUPT AIRPORT ACCESS TO AND FROM MAINTENANCE FACILITY.
 - THE CONTRACTOR SHALL GIVE WAY TO AIRPORT TRAFFIC AT ALL TIMES DURING THE PROJECT.
 - THE CONTRACTOR SHALL NOT LEAVE THE LIMITS OF WORK AND THE DESIGNATED HAUL ROUTES AS SHOWN ON THE CONTRACT DOCUMENTS UNLESS OTHERWISE AUTHORIZED BY AIRPORT PERSONNEL.

C4 SPOILS AREA POINTS & GENERAL NOTES
SCALE: NOT TO SCALE



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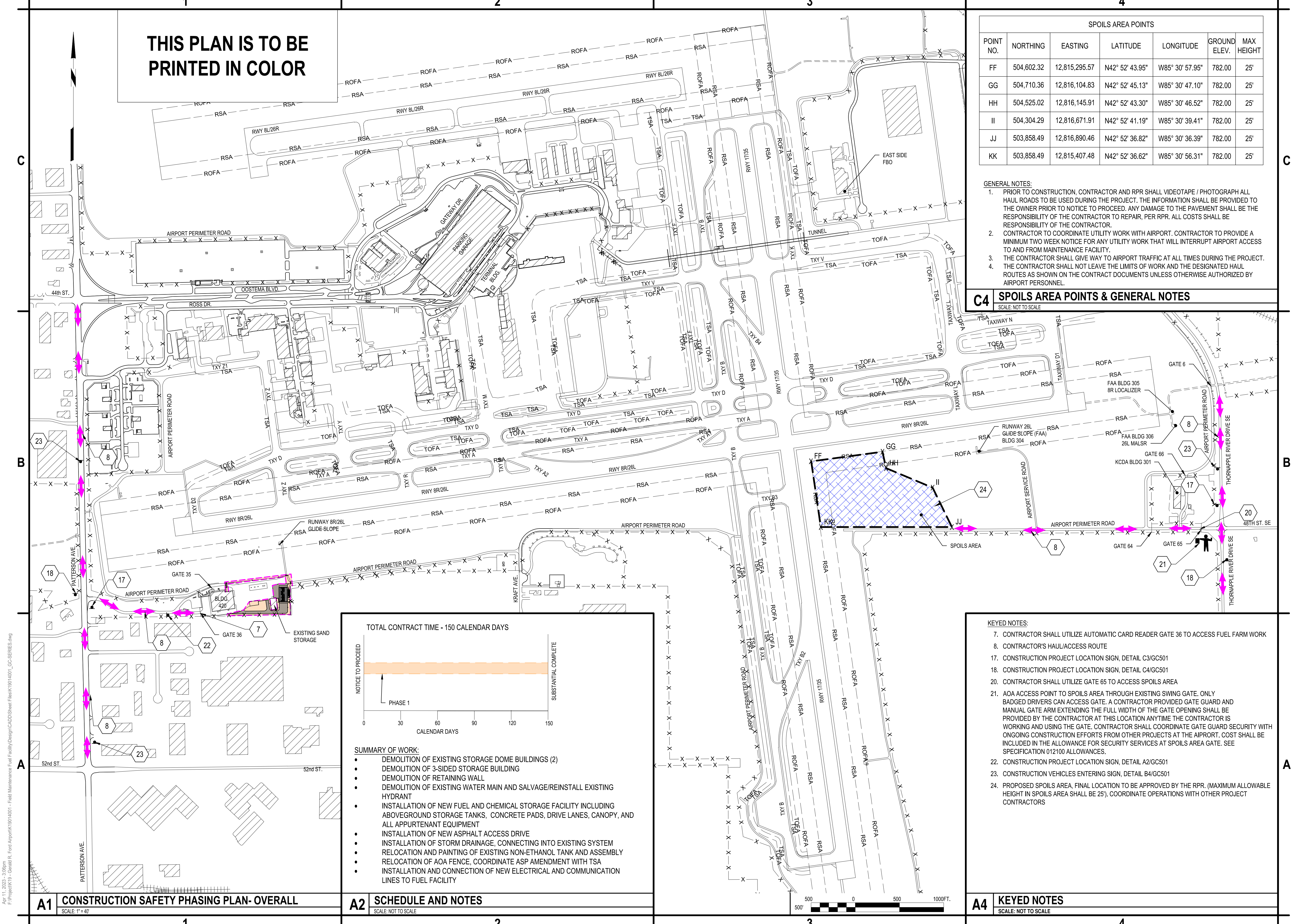


**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO: K19.014.001		
DATE: APRIL 2023		
DRAWN BY: G.C. HAYDEN		
DESIGNED BY: R.D. MIDDLESWARTH		
CHECKED BY: M.D. HOLDWICK		
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		

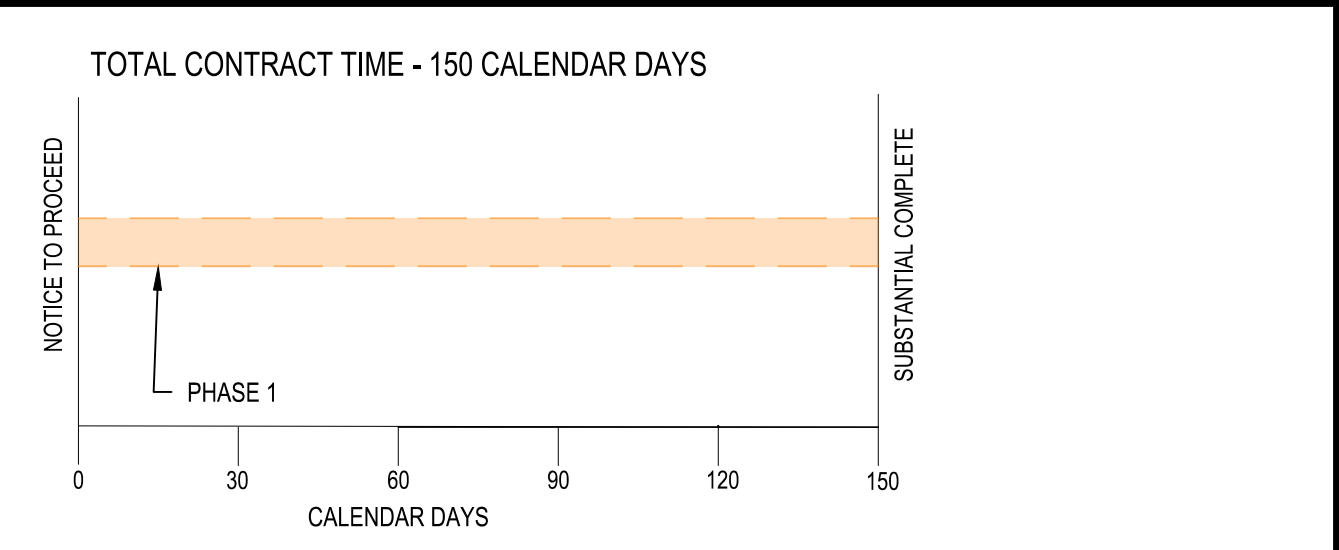
CONSTRUCTION SAFETY PHASING PLAN- OVERALL

GC100
SHEET NO. 6 OF 36



Apr 11, 2023 - 3:06pm
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A1 CONSTRUCTION SAFETY PHASING PLAN- OVERALL
SCALE: 1"=40'

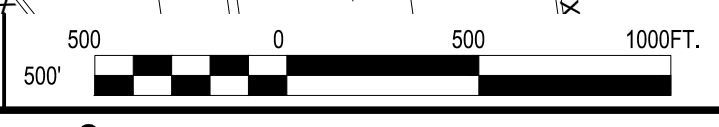


- SUMMARY OF WORK:**
- DEMOLITION OF EXISTING STORAGE DOME BUILDINGS (2)
 - DEMOLITION OF 3-SIDED STORAGE BUILDING
 - DEMOLITION OF RETAINING WALL
 - DEMOLITION OF EXISTING WATER MAIN AND SALVAGE/REINSTALL EXISTING HYDRANT
 - INSTALLATION OF NEW FUEL AND CHEMICAL STORAGE FACILITY INCLUDING ABOVEGROUND STORAGE TANKS, CONCRETE PADS, DRIVE LANES, CANOPY, AND ALL APPURTENANT EQUIPMENT
 - INSTALLATION OF NEW ASPHALT ACCESS DRIVE
 - INSTALLATION OF STORM DRAINAGE, CONNECTING INTO EXISTING SYSTEM
 - RELOCATION AND PAINTING OF EXISTING NON-ETHANOL TANK AND ASSEMBLY
 - RELOCATION OF AOA FENCE, COORDINATE ASP AMENDMENT WITH TSA
 - INSTALLATION AND CONNECTION OF NEW ELECTRICAL AND COMMUNICATION LINES TO FUEL FACILITY

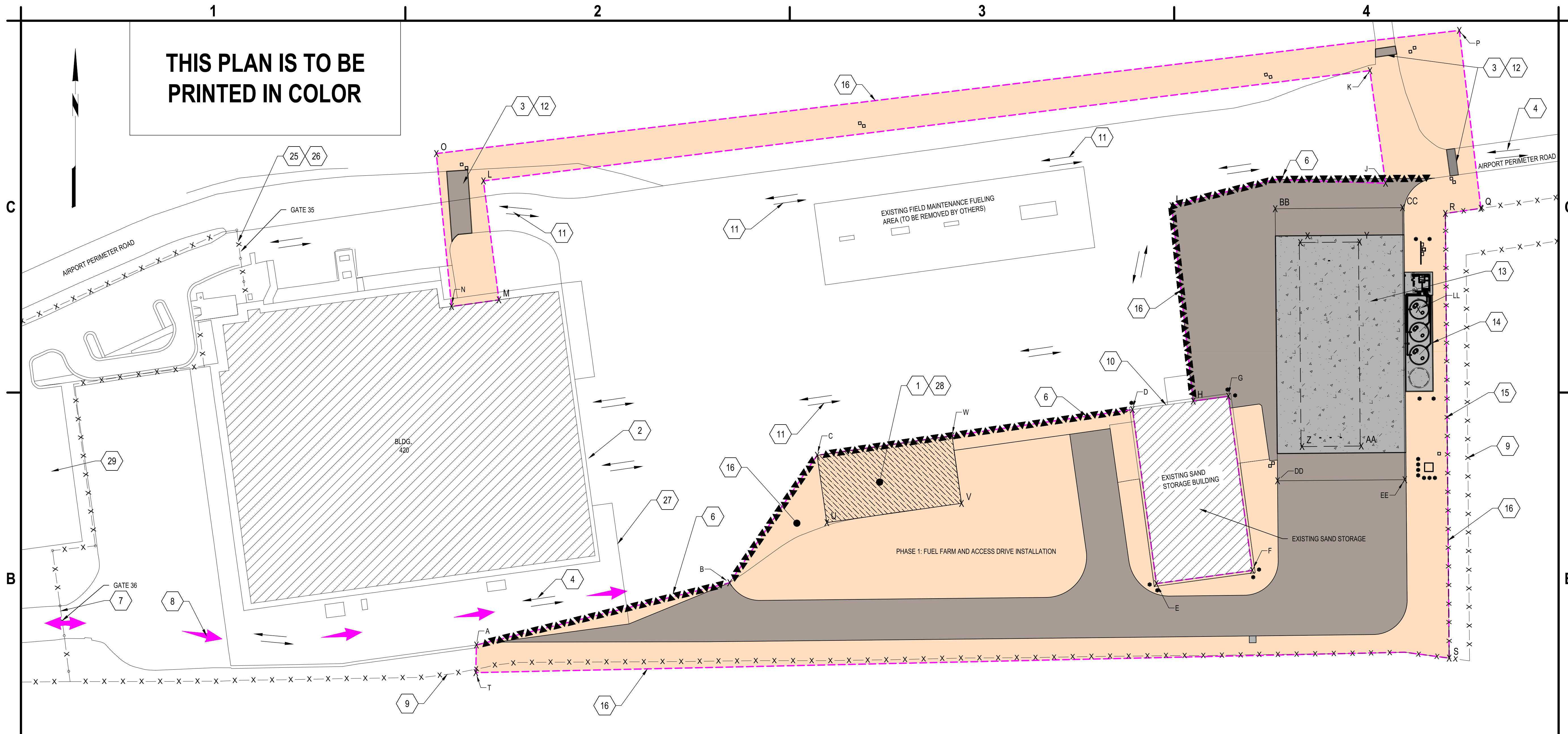
A2 SCHEDULE AND NOTES
SCALE: NOT TO SCALE

- KEYED NOTES:**
- CONTRACTOR SHALL UTILIZE AUTOMATIC CARD READER GATE 36 TO ACCESS FUEL FARM WORK
 - CONTRACTOR'S HAUL/ACCESS ROUTE
 - CONSTRUCTION PROJECT LOCATION SIGN, DETAIL C3/GC501
 - CONSTRUCTION PROJECT LOCATION SIGN, DETAIL C4/GC501
 - CONTRACTOR SHALL UTILIZE GATE 65 TO ACCESS SPOILS AREA
 - AOA ACCESS POINT TO SPOILS AREA THROUGH EXISTING SWING GATE. ONLY BADGED DRIVERS CAN ACCESS GATE. A CONTRACTOR PROVIDED GATE GUARD AND MANUAL GATE ARM EXTENDING THE FULL WIDTH OF THE GATE OPENING SHALL BE PROVIDED BY THE CONTRACTOR AT THIS LOCATION ANYTIME THE CONTRACTOR IS WORKING AND USING THE GATE. CONTRACTOR SHALL COORDINATE GATE GUARD SECURITY WITH ONGOING CONSTRUCTION EFFORTS FROM OTHER PROJECTS AT THE AIRPORT. COST SHALL BE INCLUDED IN THE ALLOWANCE FOR SECURITY SERVICES AT SPOILS AREA GATE. SEE SPECIFICATION 012100 ALLOWANCES.
 - CONSTRUCTION PROJECT LOCATION SIGN, DETAIL A2/GC501
 - CONSTRUCTION VEHICLES ENTERING SIGN, DETAIL B4/GC501
 - PROPOSED SPOILS AREA, FINAL LOCATION TO BE APPROVED BY THE RPR. (MAXIMUM ALLOWABLE HEIGHT IN SPOILS AREA SHALL BE 25'). COORDINATE OPERATIONS WITH OTHER PROJECT CONTRACTORS

A4 KEYED NOTES
SCALE: NOT TO SCALE

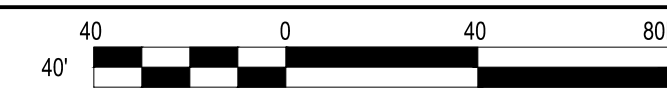


THIS PLAN IS TO BE PRINTED IN COLOR



B1 CONSTRUCTION SAFETY PHASING PLAN

SCALE: 1"=40'



1. CONTRACTOR STAGING/LAYDOWN AREA
2. EXISTING MAINTENANCE FACILITY DOORS TO REMAIN ACCESSIBLE AT ALL TIMES DURING CONSTRUCTION
3. CONTRACTOR TO COORDINATE UTILITY WORK WITH AIRPORT AND FAA TECH OPS. CONTRACTOR TO PROVIDE A MINIMUM TWO WEEK NOTICE FOR ANY UTILITY WORK THAT WILL INTERRUPT AIRPORT ACCESS TO AND FROM MAINTENANCE FACILITY
4. AIRPORT ACCESS TO AIRFIELD DURING CONSTRUCTION
6. TEMPORARY PLASTIC DRUM BARRICADES, SEE DETAIL B1/GC501
7. CONTRACTOR SHALL UTILIZE AUTOMATIC CARD READER GATE 36 TO ACCESS FUEL FARM WORK
8. CONTRACTOR'S HAUL/ACCESS ROUTE
9. EXISTING FENCE
10. MAINTAIN ACCESS EXISTING SAND STORAGE BUILDING
11. AIRPORT OPERATIONS AND MAINTENANCE VEHICLE ROUTES DURING CONSTRUCTION
12. ACCESS ROAD CROSSING SHALL BE BACKFILLED TO MAINTAIN OPERATIONS TRAFFIC
13. PROPOSED FUEL FACILITY WITH CANOPY
14. PROPOSED CHEMICAL STORAGE TANKS
15. PROPOSED FENCE AND MAINTENANCE STRIP. RELOCATE EXISTING SIGNAGE TO NEW FENCE.
16. APPROXIMATE CONSTRUCTION LIMITS
25. CONTRACTOR SHALL MAINTAIN ROUTE TO GATE 35 FOR AIRPORT OPERATIONS AND MAINTENANCE AT ALL TIMES
26. CONTRACTOR SHALL NOT USE GATE 35 DURING CONSTRUCTION WITHOUT WRITTEN APPROVAL FROM AIRPORT AUTHORITY
27. THIS AREA IS RESERVED FOR WASHDOWN OF VEHICLES USED BY AIRPORT MAINTENANCE THROUGHOUT CONSTRUCTION PERIOD. NON CONTRACTOR PARKING OR STANDING ALLOWED.
28. PERSONAL VEHICLES CANNOT BE PARKED IN THIS OR ANY OTHER LOCATION INSIDE THE SECURED AREA.
29. EMPLOYEE PARKING (UP-TO 10 SPACES ONLY), REFER TO CSPP

POINT NO.	WORK AREA					
	NORTHING	EASTING	LATITUDE	LONGITUDE	GROUND ELEV.	MAX HEIGHT
A	502,874.99	12,808,693.31	N42° 52' 25.99"	W85° 32' 26.30"	789.18	25'
B	502,920.72	12,808,879.41	N42° 52' 26.47"	W85° 32' 23.81"	788.87	25'
C	503,014.45	12,808,943.72	N42° 52' 27.40"	W85° 32' 22.96"	789.40	25'
D	503,048.04	12,809,175.42	N42° 52' 27.76"	W85° 32' 19.86"	791.38	25'
E	502,920.13	12,809,192.94	N42° 52' 26.50"	W85° 32' 19.60"	792.45	25'
F	502,929.81	12,809,263.50	N42° 52' 26.61"	W85° 32' 18.65"	792.40	25'
G	503,057.81	12,809,245.93	N42° 52' 27.87"	W85° 32' 18.91"	791.69	25'
H	503,054.30	12,809,220.10	N42° 52' 27.83"	W85° 32' 19.26"	791.45	25'
I	503,197.96	12,809,204.27	N42° 52' 29.25"	W85° 32' 19.50"	790.50	25'
J	503,214.44	12,809,361.43	N42° 52' 29.43"	W85° 32' 17.39"	790.21	25'
K	503,297.23	12,809,349.92	N42° 52' 30.25"	W85° 32' 17.56"	788.63	25'
L	503,216.17	12,808,698.47	N42° 52' 29.36"	W85° 32' 26.29"	789.04	25'
M	503,128.71	12,808,709.88	N42° 52' 28.50"	W85° 32' 26.12"	790.00	25'

POINT NO.	WORK AREA					
	NORTHING	EASTING	LATITUDE	LONGITUDE	GROUND ELEV.	MAX HEIGHT
N	503,123.87	12,808,675.07	N42° 52' 28.44"	W85° 32' 26.59"	790.00	25'
O	503,236.30	12,808,663.88	N42° 52' 29.55"	W85° 32' 26.76"	788.79	25'
P	503,326.80	12,809,415.59	N42° 52' 30.55"	W85° 32' 16.68"	790.74	25'
Q	503,196.01	12,809,431.45	N42° 52' 29.26"	W85° 32' 16.44"	788.72	25'
R	503,192.24	12,809,405.35	N42° 52' 29.22"	W85° 32' 16.79"	788.78	25'
S	502,865.34	12,809,408.15	N42° 52' 25.99"	W85° 32' 16.70"	789.56	25'
T	502,854.67	12,808,692.86	N42° 52' 25.79"	W85° 32' 26.30"	791.73	25'

POINT NO.	TEMPORARY CRANE FOR FUEL FARM CANOPY					
	NORTHING	EASTING	LATITUDE	LONGITUDE	GROUND ELEV.	MAX HEIGHT
BB	503,195.70	12,809,280.32	N42° 52' 29.24"	W85° 32' 18.47"	790.84	50'
CC	503,196.50	12,809,373.81	N42° 52' 29.26"	W85° 32' 17.22"	790.30	50'
DD	502,995.71	12,809,282.03	N42° 52' 27.26"	W85° 32' 18.41"	791.63	50'
EE	502,996.51	12,809,375.53	N42° 52' 27.28"	W85° 32' 17.16"	791.88	50'

POINT NO.	CONTRACTOR STAGING AREA					
	NORTHING	EASTING	LATITUDE	LONGITUDE	GROUND ELEV.	MAX HEIGHT
C	503,014.45	12,808,943.72	N42° 52' 27.40"	W85° 32' 22.96"	789.40	25'
U	502,964.96	12,808,950.81	N42° 52' 26.91"	W85° 32' 22.86"	788.15	25'
V	502,979.06	12,809,049.81	N42° 52' 27.06"	W85° 32' 21.53"	790.40	25'
W	503,028.67	12,809,042.89	N42° 52' 27.55"	W85° 32' 21.63"	790.24	25'

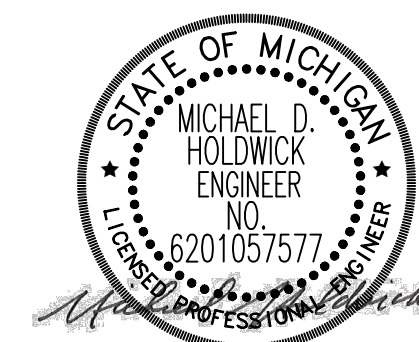
POINT NO.	FUEL FARM CANOPY & CHEMICAL TANKS					
	NORTHING	EASTING	LATITUDE	LONGITUDE	GROUND ELEV.	MAX HEIGHT
X	503,170.86	12,809,298.78	N42° 52' 28.99"	W85° 32' 18.22"	791.20	25'
Z	503,020.86	12,809,300.07	N42° 52' 27.51"	W85° 32' 18.18"	791.73	25'
Y	503,171.23	12,809,342.28	N42° 52' 29.00"	W85° 32' 17.64"	791.07	25'
AA	503,021.24	12,809,343.56	N42° 52' 27.52"	W85° 32' 17.59"	791.44	25'
LL	503,121.76	12,809,385.46	N42° 52' 28.52"	W85° 32' 17.05"	790.12	25'

A1 KEYED NOTES
SCALE: NOT TO SCALE

A2 POINT TABLES
SCALE: NOT TO SCALE



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FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION

REVISIONS	
PROJECT NO:	K19.014.001
DATE:	APRIL 2023
DRAWN BY:	G.C. HAYDEN
DESIGNED BY:	R.D. MIDDLESWARTH
CHECKED BY:	M.D. HOLDWICK

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

CONSTRUCTION SAFETY PHASING PLAN

GC101

SHEET NO. 7 OF 36

Apr 11, 2023 - 3:06pm P:\Projects\GC501 - Gerald R. Ford Airport\K19014001 - Field Maintenance Fuel Facility\Design\CADD\Sheet Files\K19014001_GC-DETAILS.dwg

1
2
3
4

TO FUEL FACILITY CONSTRUCTION PROJECT

48" X 48" SIGN (TYP.)

SIGN NOTES:

- SIGN BACKGROUND IS TO BE ORANGE, SIGN LETTERING IS TO BE BLACK, MINIMUM HEIGHT OF 3", AND BE A BOLD LETTERING STYLE SIMILAR TO DETAIL SHOWN ON THIS SHEET.
- SIGN SHALL BE LOCATED HIGH ENOUGH TO ALLOW EASY VIEWING FROM ALL CONSTRUCTION VEHICLES ENTERING THE CONSTRUCTION SITE.
- SEE PHASING DRAWINGS FOR GENERAL LOCATIONS. THE CONTRACTOR SHALL COORDINATE THE EXACT PLACEMENT AND LOCATION OF ALL CONSTRUCTION TRAFFIC SIGNS WITH THE AIRPORT AND ENGINEER.
- SEE DETAIL A3 THIS SHEET FOR SIGN MOUNTING/ASSEMBLY.

C3
CONSTRUCTION PROJECT LOCATION SIGN DETAIL

SCALE: NOT TO SCALE

1
2
3
4

TO FUEL FACILITY CONSTRUCTION PROJECT

48" X 48" SIGN (TYP.)

SIGN NOTES:

- SIGN BACKGROUND IS TO BE ORANGE, SIGN LETTERING IS TO BE BLACK, MINIMUM HEIGHT OF 3", AND BE A BOLD LETTERING STYLE SIMILAR TO DETAIL SHOWN ON THIS SHEET.
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- SEE PHASING DRAWINGS FOR GENERAL LOCATIONS. THE CONTRACTOR SHALL COORDINATE THE EXACT PLACEMENT AND LOCATION OF ALL CONSTRUCTION TRAFFIC SIGNS WITH THE AIRPORT AND ENGINEER.
- SEE DETAIL A3 THIS SHEET FOR SIGN MOUNTING/ASSEMBLY.

C4
CONSTRUCTION PROJECT LOCATION SIGN DETAIL

SCALE: NOT TO SCALE

1
2
3
4

NOTE:
BARRICADES SHALL BE SPACED 8' MAX. O.C.

B1
PLASTIC DRUM BARRICADE DETAIL

SCALE: NOT TO SCALE

1
2
3
4

SIGN NOTES:

- THE CONTRACTOR SHALL RELOCATE EXISTING WARNING SIGNS FROM EXISTING FENCE TO THE SAME LOCATION ON PROPOSED FENCE.
- CONTRACTOR SHALL COORDINATE EXACT LOCATIONS WITH OWNER WITH A MAXIMUM SPACING OF 200'.
- SIGNS ARE TO BE SECURELY ATTACHED TO THE FENCE WITH CLIPS OR OTHER MEANS THAT MEET THE APPROVAL OF THE ENGINEER. WARNING SIGNS SHALL BE INCIDENTAL TO WORK.
- SIGNS TO BE PROVIDED BY AIRPORT, INSTALLED BY CONTRACTOR.

B2
WARNING SIGN DETAIL

SCALE: NOT TO SCALE

1
2
3
4

48" X 48" SIGN (TYP.)

SIGN NOTES:

- SIGN BACKGROUND IS TO BE ORANGE, SIGN LETTERING IS TO BE BLACK, MINIMUM HEIGHT OF 3", AND BE A BOLD LETTERING STYLE SIMILAR TO DETAIL SHOWN ON THIS SHEET.
- SIGN SHALL BE LOCATED HIGH ENOUGH TO ALLOW EASY VIEWING FROM ALL CONSTRUCTION VEHICLES ENTERING THE CONSTRUCTION SITE.
- SEE PHASING DRAWINGS FOR GENERAL LOCATIONS. THE CONTRACTOR SHALL COORDINATE THE EXACT PLACEMENT AND LOCATION OF ALL CONSTRUCTION TRAFFIC SIGNS WITH THE AIRPORT AND ENGINEER.
- SEE DETAIL A3 THIS SHEET FOR SIGN MOUNTING/ASSEMBLY.

B4
CONSTRUCTION VEHICLES ENTERING SIGN DETAIL

SCALE: NOT TO SCALE

1
2
3
4

TO FUEL FACILITY CONSTRUCTION PROJECT

48" X 48" SIGN (TYP.)

SIGN NOTES:

- SIGN BACKGROUND IS TO BE ORANGE, SIGN LETTERING IS TO BE BLACK, MINIMUM HEIGHT OF 3", AND BE A BOLD LETTERING STYLE SIMILAR TO DETAIL SHOWN ON THIS SHEET.
- SIGN SHALL BE LOCATED HIGH ENOUGH TO ALLOW EASY VIEWING FROM ALL CONSTRUCTION VEHICLES ENTERING THE CONSTRUCTION SITE.
- SEE PHASING DRAWINGS FOR GENERAL LOCATIONS. THE CONTRACTOR SHALL COORDINATE THE EXACT PLACEMENT AND LOCATION OF ALL CONSTRUCTION TRAFFIC SIGNS WITH THE AIRPORT AND ENGINEER.
- SEE DETAIL A3 THIS SHEET FOR SIGN MOUNTING/ASSEMBLY.

A2
CONSTRUCTION PROJECT LOCATION SIGN DETAIL

SCALE: NOT TO SCALE

1
2
3
4

SIGN NOTES:

- ALL SIGNS SHALL CONFORM IN SIZE, APPEARANCE AND REFLECTORIZATION TO THE REQUIREMENTS OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
- AT PROJECT COMPLETION, ALL POSTS AND SIGNS SHALL BE REMOVED FROM AIRPORT PROPERTY AND SHALL REMAIN PROPERTY OF THE CONTRACTOR.
- CONTRACTOR TO VERIFY PRESENCE OF EXISTING FOUNDATIONS AND TUBING PRIOR TO PURCHASE & INSTALLATION OF TEMPORARY CONSTRUCTION SIGNS. EXISTING FOUNDATIONS MAY BE UTILIZED PROVIDED THEY ARE IN THE CORRECT LOCATIONS.

A3
CONSTRUCTION SIGN ASSEMBLY DETAIL

SCALE: NOT TO SCALE

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FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN

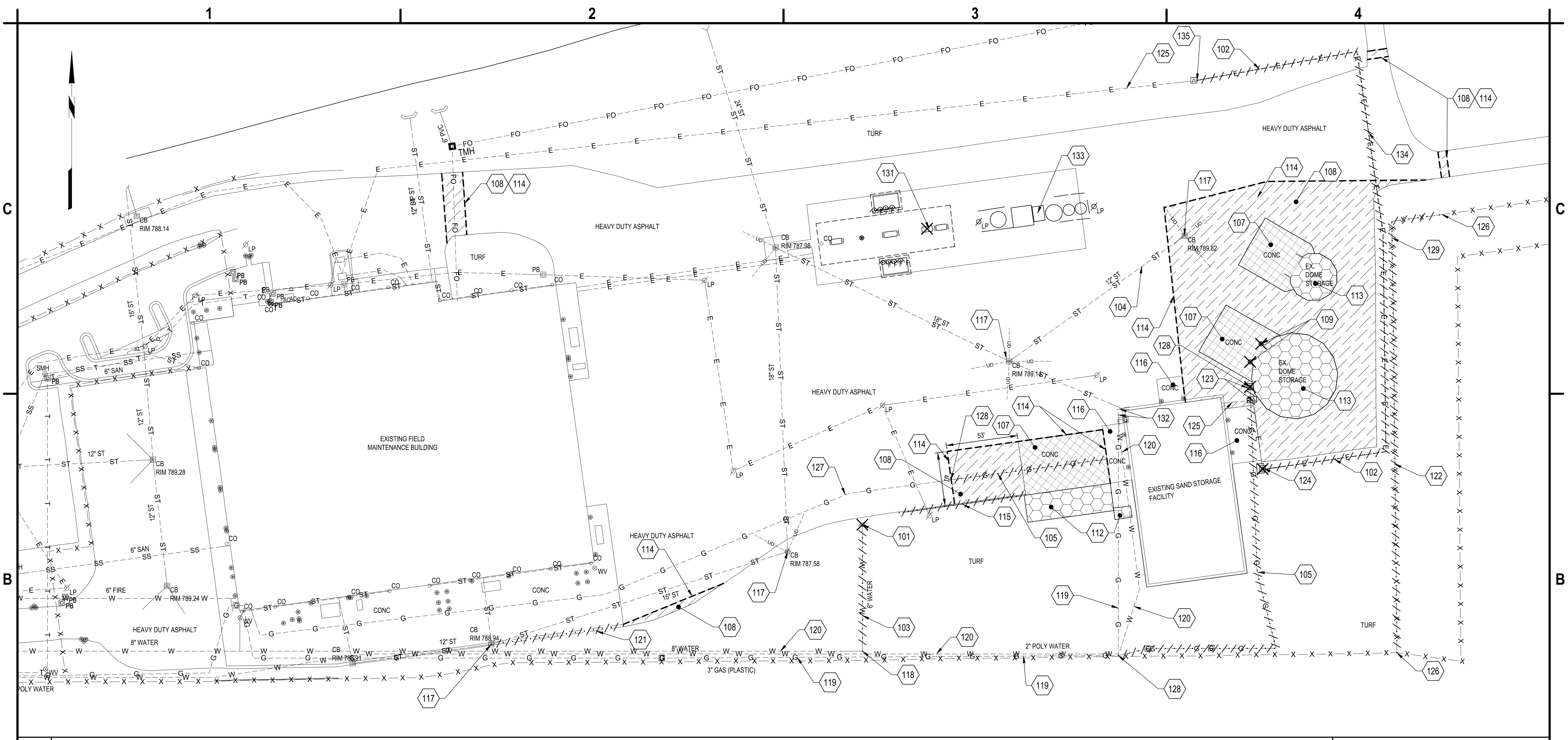
MARK	DATE	DESCRIPTION
REVISIONS		
		PROJECT NO: K19.014.001
		DATE: APRIL 2023
		DRAWN BY: G.C HAYDEN
		DESIGNED BY: R.D. MIDDLESWARTH
		CHECKED BY: M.D. HOLDWICK
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		

CONSTRUCTION
SAFETY PHASING
DETAILS

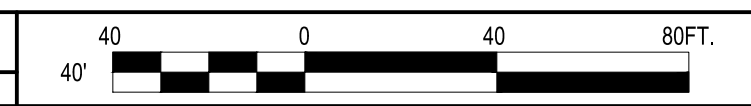
GC501

SHEET NO. 8 OF 36

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B1 EXISTING CONDITIONS AND DEMOLITION PLAN
SCALE: 1"=40'



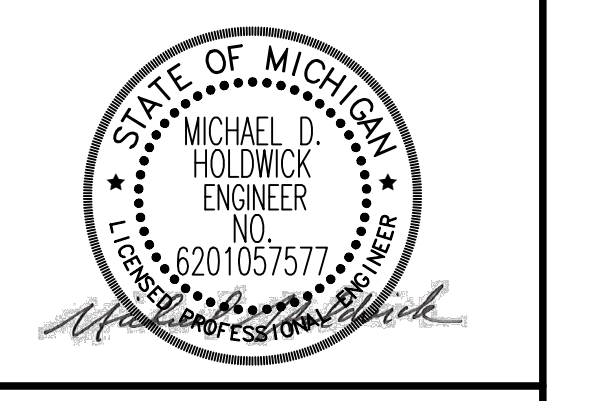
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- | | |
|--|--|
| <p>A1 KEYED NOTES
SCALE: NOT TO SCALE</p> <ul style="list-style-type: none"> 101. REMOVE AND SALVAGE EXISTING HYDRANT 102. REMOVE EXISTING UNDERGROUND ELECTRIC CONDUIT AND CABLES, SEE ELECTRICAL SERIES 103. REMOVE EXISTING UNDERGROUND WATER PIPE 104. EXISTING DRAINAGE PIPE TO REMAIN 105. REMOVE EXISTING UNDERGROUND GAS PIPE, SEE SHEET NOTE 5 (THIS SHEET) 107. REMOVE CONCRETE PAVEMENT (FULL DEPTH), DETAIL A2/CD501 108. REMOVE ASPHALT PAVEMENT (FULL DEPTH), DETAIL A1/CD501 109. REMOVE EXISTING BOLLARD AND FOUNDATION 112. REMOVE EXISTING CONCRETE SHED STRUCTURE AND WOODEN SHED, CONTENTS TO BE REMOVED BY THE OWNER. SEE NOTE 10 THIS SHEET 113. REMOVE EXISTING CONCRETE BLOCK COLD STORAGE DOMED BUILDING, FOUNDATIONS, AND ALL ASSOCIATED EQUIPMENT. SEE NOTE 9 THIS SHEET 114. SAWCUT EXISTING PAVEMENT PRIOR TO REMOVAL (TYP.) 115. EXISTING RETAINING WALL AND FOUNDATION TO BE REMOVED, SEE DETAIL B2/CD501 116. EXISTING CONCRETE APRON TO BE PROTECTED IN PLACE 117. EXISTING DRAINAGE STRUCTURE TO BE PROTECTED IN PLACE 118. LIMIT OF WATER MAIN REMOVAL AT EXISTING 90° BEND 119. EXISTING ACTIVE GAS LINE TO BE PROTECTED IN PLACE 120. EXISTING ACTIVE WATER MAIN TO BE PROTECTED IN PLACE 121. REMOVE EXISTING CURB AND GUTTER | <ul style="list-style-type: none"> 122. REMOVE EXISTING AOA FENCE. DETAIL A3/CD501. COORDINATE WORK WITH AIRPORT SECURITY AND TSA. SEE NOTES 7 AND 8 THIS SHEET 123. REMOVE EXISTING TRANSFORMER, ELECTRICAL EQUIPMENT AND FOUNDATIONS, SEE ELECTRICAL SERIES 124. EXISTING ELECTRICAL TRANSFORMER AND FOUNDATION TO BE RELOCATED, SEE ELECTRICAL SERIES 125. EXISTING ELECTRICAL CABLE AND CONDUIT TO BE PROTECTED IN PLACE 126. LIMIT OF AOA FENCE REMOVAL. COORDINATE WORK WITH AIRPORT SECURITY AND TSA 127. EXISTING GAS LINE TO BE SHUT OFF AT FIELD MAINTENANCE BUILDING AND ABANDONED IN PLACE 128. LIMIT OF EXISTING GAS LINE REMOVAL. CAP AND ABANDON IN PLACE 129. REMOVE AND RELOCATE EXISTING GATE 37. COORDINATE WORK WITH AIRPORT SECURITY AND TSA, SEE DETAIL B1/CD501 131. RELOCATE EXISTING 500 GALLON NON-ETHANOL ABOVE GROUND TANK TO THE NEW FUEL FACILITY AND REPAINT 132. CONCRETE BARRIERS TO BE REMOVED 133. RELOCATE THE CHEMICAL TRANSFER PUMP & MOTOR ASSEMBLY TO THE PROPOSED CHEMICAL FACILITY EQUIPMENT SHED 134. REMOVE EXISTING CABLE FROM CONDUIT, ABANDON EXISTING CONDUIT IN PLACE. SEE ELECTRICAL SERIES 135. LIMIT OF EXISTING ELECTRICAL CABLE REMOVAL |
|--|--|

- A3** SHEET NOTES
SCALE: NOT TO SCALE
- NOTES:
1. ELECTRICAL AND COMMUNICATION WORK IS SHOWN FOR INFORMATIONAL PURPOSES ONLY. SEE ELECTRICAL AND COMMUNICATION PLANS FOR ALL WORK ASSOCIATED WITH THE LIGHTING, POWER DISTRIBUTION AND CABLING. REFER TO THE PROPOSED UTILITY SERIES FOR THE LIMITS OF DEMO AND NEW PIPE.
 2. THE CONTRACTOR SHALL DOUBLE SAWCUT FULL DEPTH PAVEMENT PRIOR TO THE REMOVAL OF EXISTING CONCRETE AND ASPHALT PAVEMENTS. SAWCUTS SHALL BE A MINIMUM OF 12 INCHES APART.
 3. ALL STORED MISC. EQUIPMENT SUCH AS SPARE LIGHT POLES, CONCRETE BARRIERS, PLOWS, METAL, FRAC TANK AND DRUMS NOT SHOWN ON THIS PLAN SHALL BE REMOVED BY THE OWNER PRIOR TO CONSTRUCTION ACTIVITY.
 4. CONTRACTOR SHALL LOCATE EXISTING GAS SERVICE LINE SERVICING EXISTING DOME STRUCTURES AND PROVIDE LOCATION TO ENGINEER PRIOR TO REMOVAL. CONTRACTOR SHALL COORDINATE WITH GAS COMPANY AND AIRPORT TO SCHEDULE OUTAGE AND REMOVE EXISTING GAS SERVICE LINE BACK TO TEE.
 5. A HAZARDOUS BUILDING MATERIALS SURVEY WAS CONDUCTED ON THE TWO DOME STRUCTURES (#113) AND THE CONCRETE SHED STRUCTURE (#112) AND NO ASBESTOS-CONTAINING MATERIALS OR LEAD-BASED PAINT WAS DETECTED IN ANY OF THE STRUCTURES. THE SURVEY IS AVAILABLE UPON WRITTEN REQUEST. THE CONTRACTOR SHALL REMOVE FROM THE STRUCTURES AND PROPERLY DISPOSE OF THE FOLLOWING UNIVERSAL WASTES: MERCURY VAPOR BULBS, FLORESCENT FIXTURES AND BALLASTS.
 6. CONTRACTOR SHALL INSTALL PROPOSED FENCE PRIOR TO DEMOLISHING EXISTING FENCE.
 7. PROPOSED FENCE SHALL BE INSPECTED BY AIRPORT SECURITY AND TSA FOR APPROVAL PRIOR TO BEGINNING REMOVAL OF EXISTING FENCE.
 8. REFER TO ATTACHMENTS TO SPECIFICATIONS FOR THE SAND DOME STORAGE STRUCTURE RECORD DRAWINGS.
 9. REFER TO ATTACHMENTS TO SPECIFICATIONS FOR THE STORAGE SHED RECORD DRAWINGS.

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GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

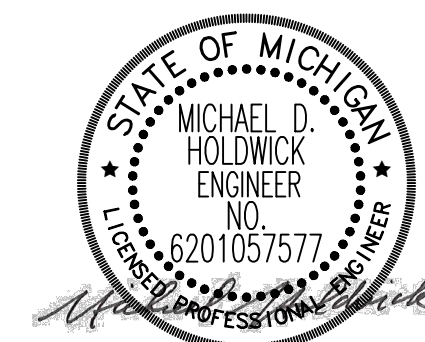
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**EXISTING
CONDITIONS AND
DEMOLITION PLAN**

CD101
SHEET NO. 9 OF 36



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**AIRPORT FIELD MAINTENANCE
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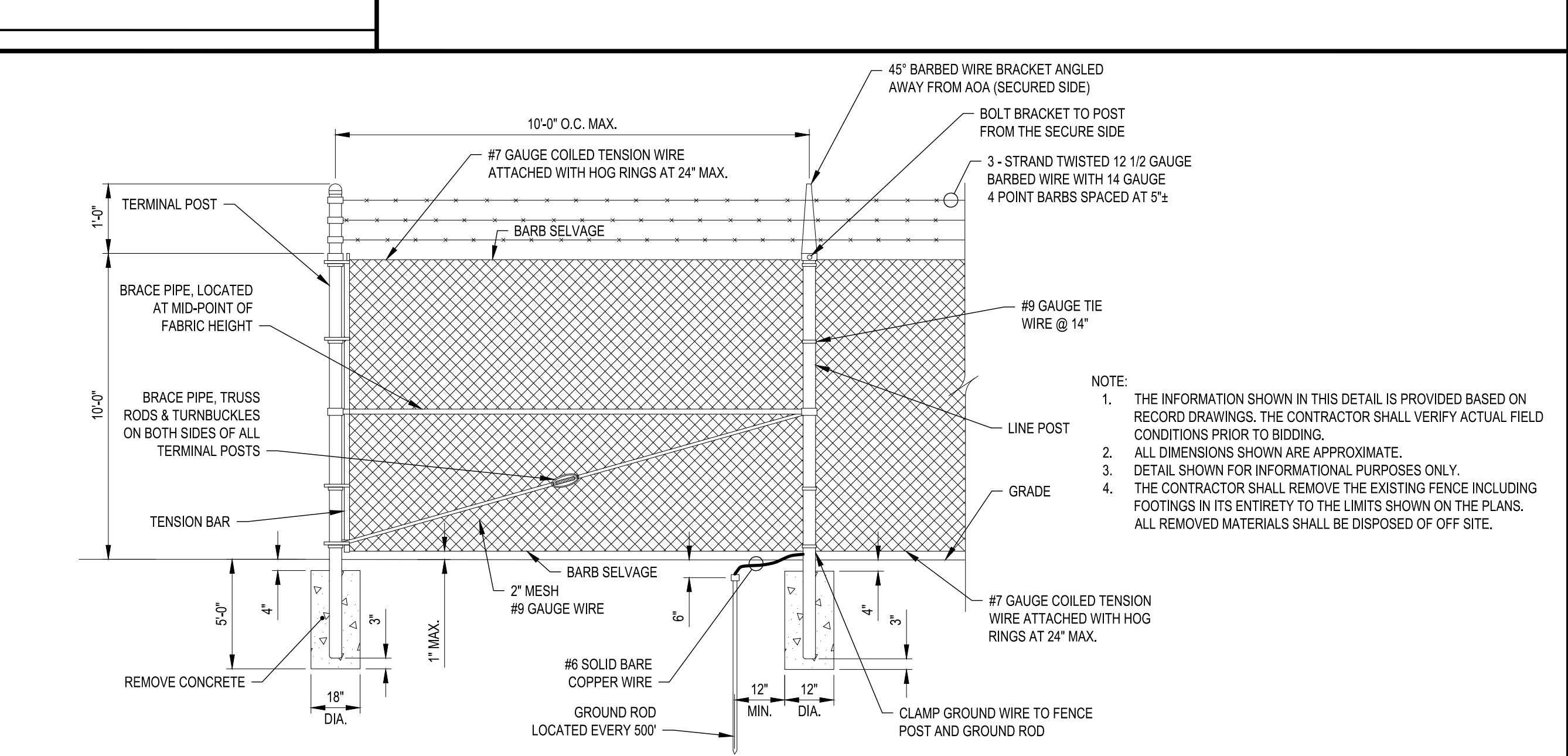
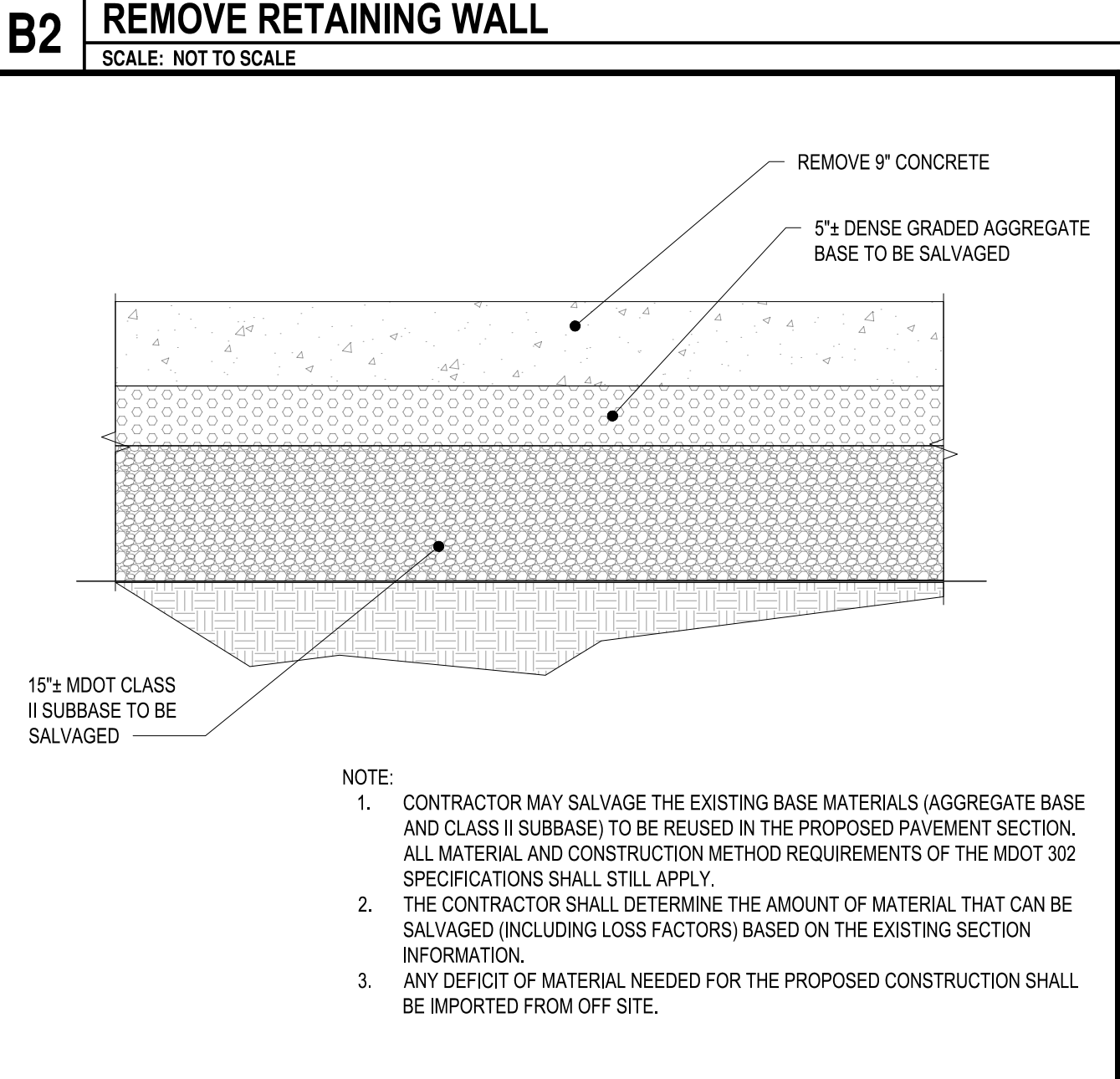
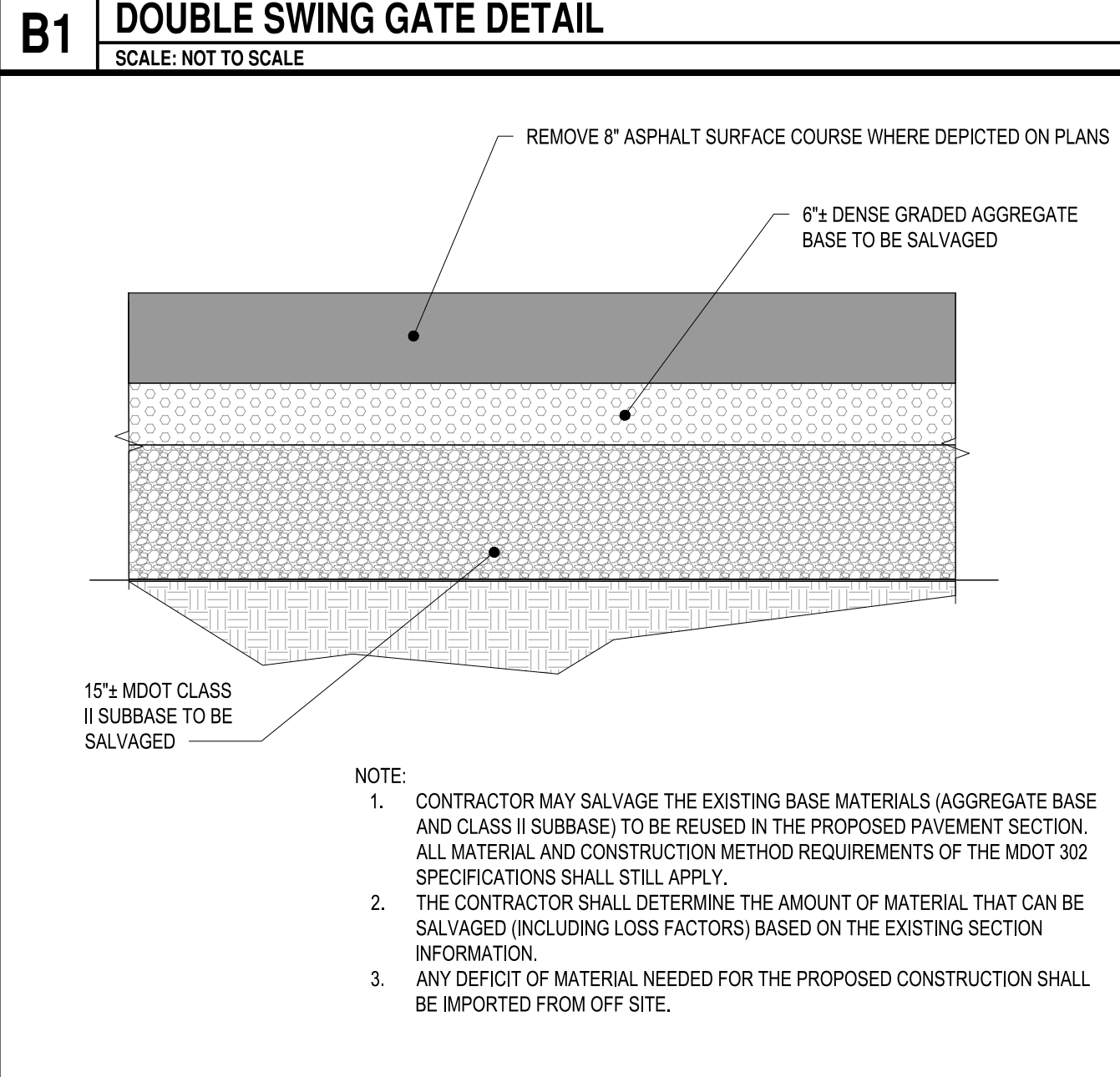
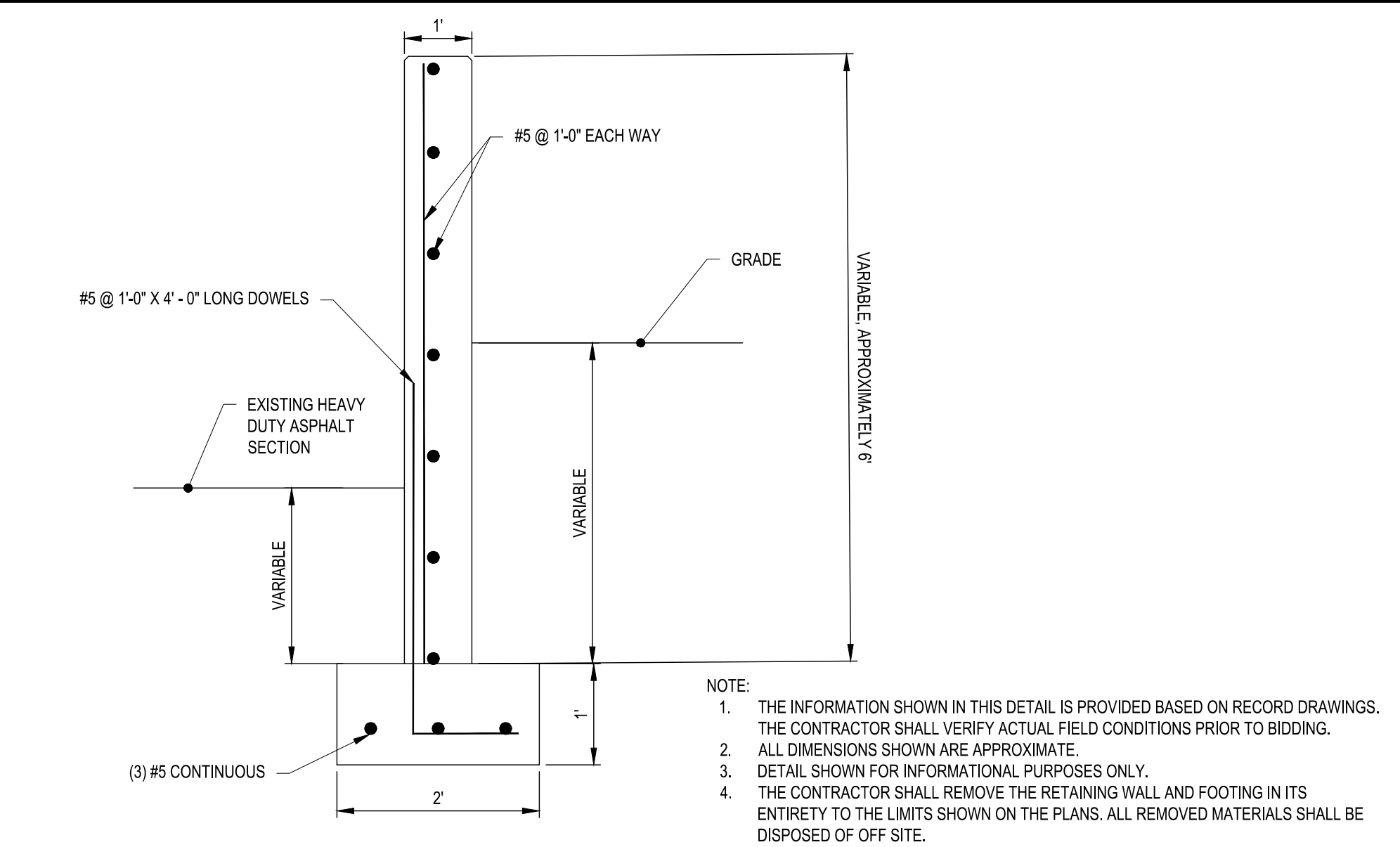
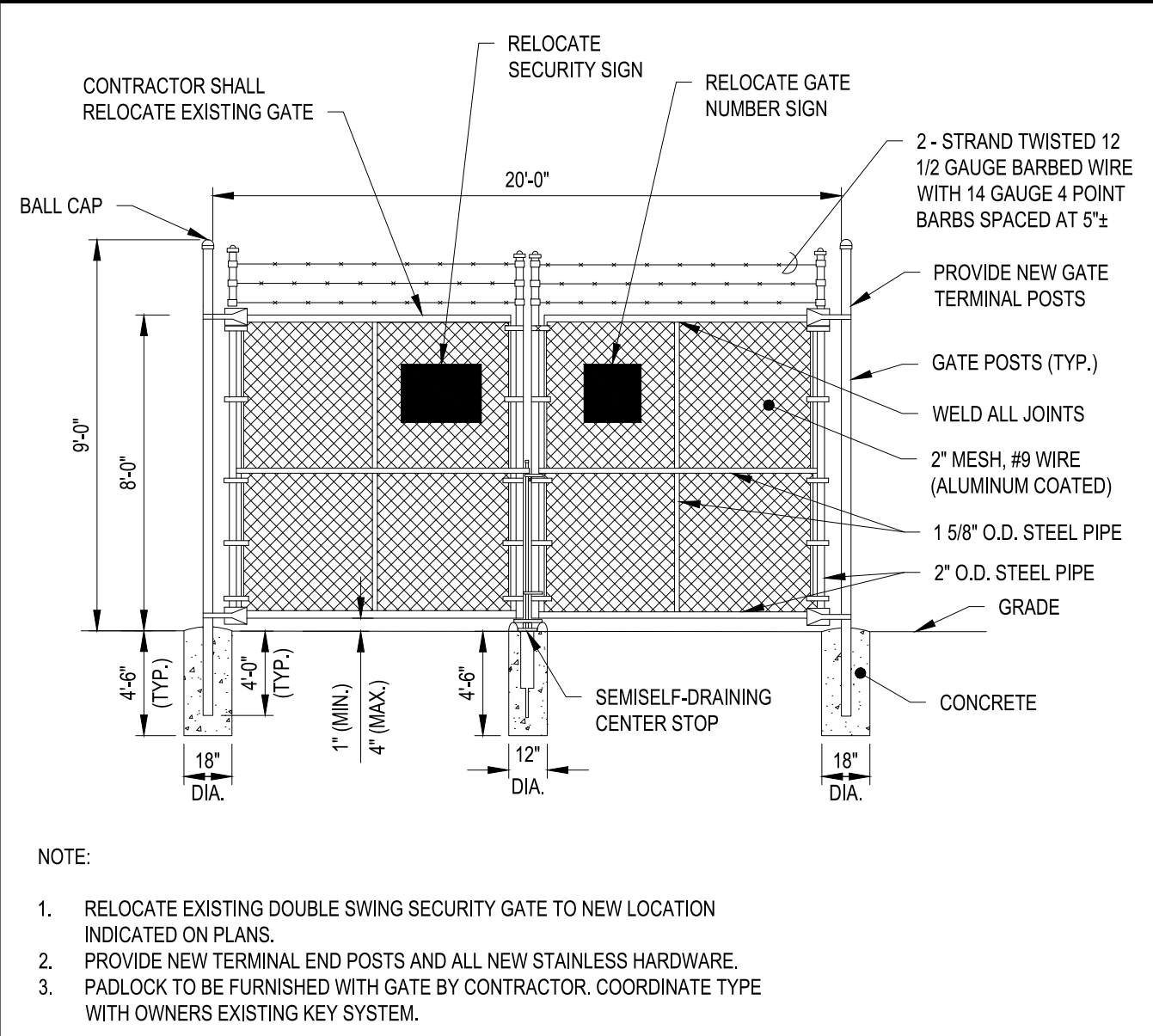
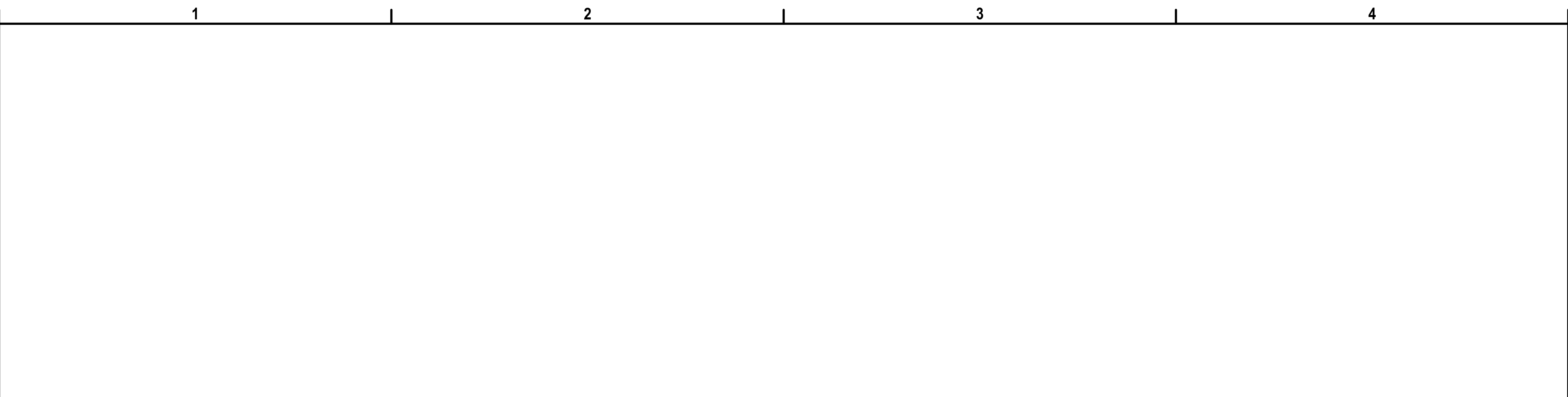
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**EXISTING
CONDITIONS AND
DEMOLITION DETAILS**

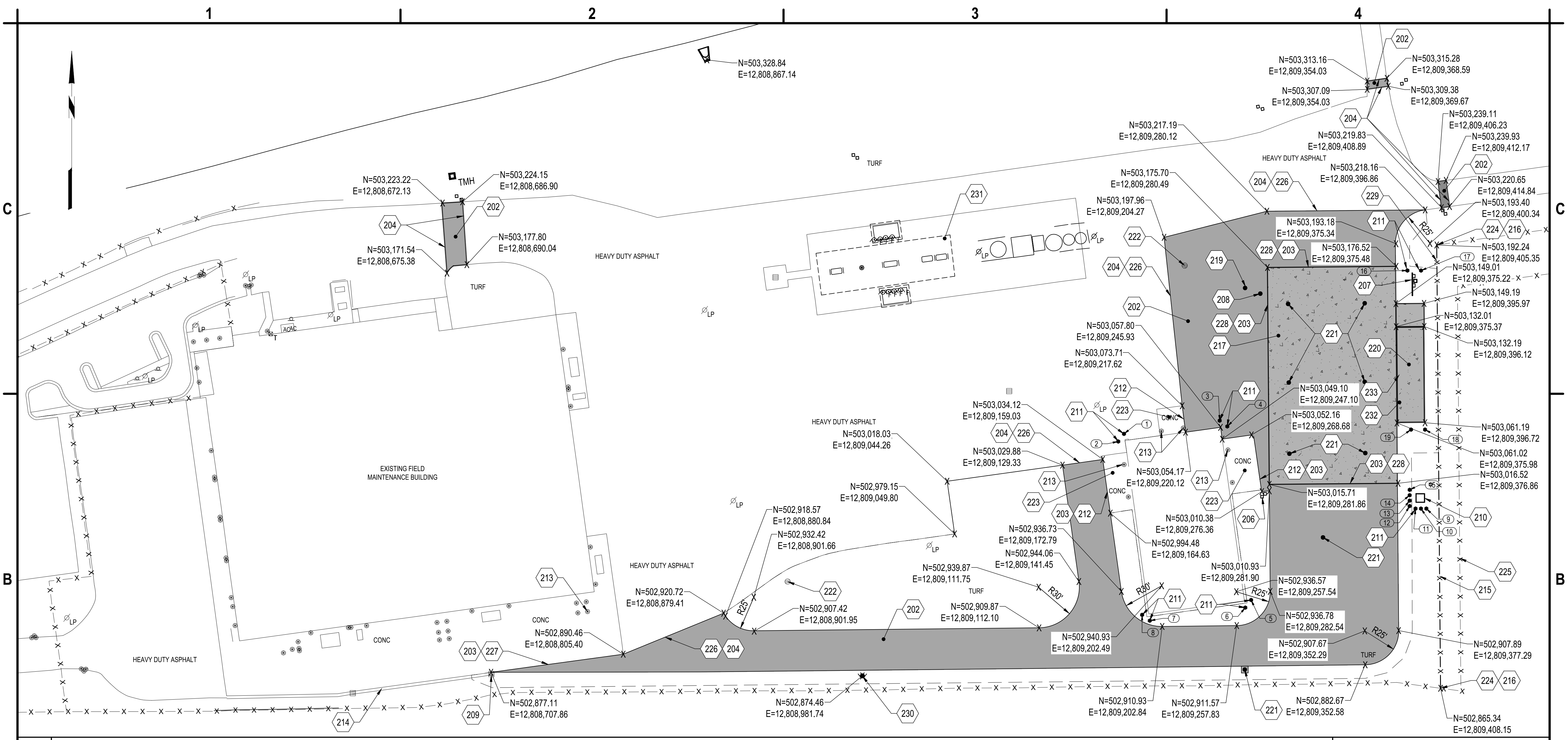
CD501

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B1 GEOMETRY AND PCC JOINT LAYOUT
SCALE: 1" = 40'



- A1 KEYED NOTES**
SCALE: NOT TO SCALE
- 202. PROPOSED HEAVY DUTY ASPHALT PAVEMENT, SEE DETAIL C2/CP501
 - 203. SAWCUT AND SEAL JOINT, SEE DETAIL C3/CP501
 - 204. SAWCUT AND SEAL JOINT, SEE DETAIL C4/CP501
 - 206. PROPOSED ELECTRICAL PULLBOX, SEE ELECTRICAL SERIES
 - 207. PROPOSED ELECTRICAL FIXTURE, SEE ELECTRICAL SERIES
 - 208. PROPOSED OIL STOP VALVE MANHOLE, SEE CG SERIES
 - 209. CONNECT TO EXISTING CURB AND GUTTER AT EXISTING DRAINAGE STRUCTURE
 - 210. RELOCATED ELECTRICAL TRANSFORMER AND PAD, SEE ELECTRICAL PLANS
 - 211. PROPOSED BOLLARD (TYP.), SEE DETAIL A1/CP503; SEE A3 THIS SHEET FOR LOCATIONS
 - 212. EXISTING CONCRETE APRON AND HEAVY DUTY HMA INTERFACE, SEE DETAIL B1/CP501
 - 213. EXISTING BOLLARD (TYP.), PROTECT IN PLACE
 - 214. EXISTING CURB AND GUTTER TO REMAIN
 - 215. PROPOSED 10' SECURITY FENCE AND MAINTENANCE STRIP, SEE DETAIL A2/CP503
 - 216. CONNECT PROPOSED FENCE TO EXISTING AOA FENCE. COORDINATE WORK WITH AIRPORT SECURITY AND TSA
 - 217. PROPOSED FUEL FACILITY CONCRETE PAD, SEE SHEET CP102
 - 219. PROPOSED CONTAINMENT VALVE, SEE CG SERIES
 - 220. PROPOSED ABOVE GROUND CHEMICAL STORAGE TANKS, SEE FUEL FACILITY AND MECHANICAL PLANS
 - 221. PROPOSED DRAINAGE STRUCTURE (TYP.), SEE CG301 FOR STRUCTURE NORTHING AND EASTINGS
 - 222. EXISTING DRAINAGE STRUCTURE, SEE CG SERIES
 - 223. EXISTING CONCRETE APRON, PROTECT IN PLACE
 - 224. LIMIT OF PROPOSED SECURITY FENCE
 - 225. EXISTING FENCE, OWNED BY OTHERS (PROTECT IN PLACE)
 - 226. PROPOSED HEAVY DUTY ASPHALT AND EXISTING ASPHALT PAVEMENT INTERFACE, SEE DETAIL B3/CP501
 - 227. PROPOSED HEAVY DUTY ASPHALT AND EXISTING CONCRETE INTERFACE, SEE DETAIL B2/CP501
 - 228. PROPOSED HEAVY DUTY ASPHALT AND PROPOSED FUEL FACILITY DRIVE PAD INTERFACE, SEE DETAIL B4/CP501
 - 229. RELOCATED GATE 37 TO NEW FENCE LOCATION, MOUNT EXISTING GATE TO NEW GATE POSTS. NEW GATE HARDWARE TO BE PROVIDED AND INSTALLED BY THE CONTRACTOR, SEE DETAIL B1/GC501
 - 230. RELOCATED WATER HYDRANT, SEE CG SERIES
 - 231. EXISTING FUEL FACILITY TO REMAIN
 - 232. PROPOSED 9" CURB AND GUTTER, SEE DETAIL A2/CP501
 - 233. PROPOSED CURB OUTLET DRAIN, SEE DETAIL A2/CP501

- A3 SHEET NOTES & BOLLARD LOCATIONS**
SCALE: NOT TO SCALE
- NOTES:
- REFER TO THE PROPOSED UTILITY SERIES FOR UTILITY WORK.
 - SEE ELECTRICAL AND COMMUNICATIONS PLAN FOR ALL WORK ASSOCIATED WITH SITE LIGHTING, POWER DISTRIBUTION AND CABLING, COMMUNICATIONS AND FIBER OPTIC WORK.
 - THE CONTRACTOR MAY SALVAGE BASE MATERIALS UNDER PAVEMENT TO BE DEMOLISHED. SEE CD501 FOR PAVEMENT THICKNESS INFORMATION.
 - THE CONTRACTOR SHALL INSTALL NEW AOA SECURITY FENCE PRIOR TO REMOVAL OF EXISTING AOA FENCE.
 - SEE CF100 FOR FUEL FARM LAYOUT INFORMATION

BOLLARD TABLES

POINT #	NORTHING	EASTING
1	503,052.99	12,809,174.70
2	503,047.36	12,809,170.47
3	503,062.76	12,809,245.26
4	503,058.50	12,809,250.88
5	502,930.45	12,809,268.46

BOLLARD TABLES

POINT #	NORTHING	EASTING
6	502,924.84	12,809,264.16
7	502,915.19	12,809,193.71
8	502,919.48	12,809,188.08
9	502,997.85	12,809,397.69
10	502,997.85	12,809,393.69

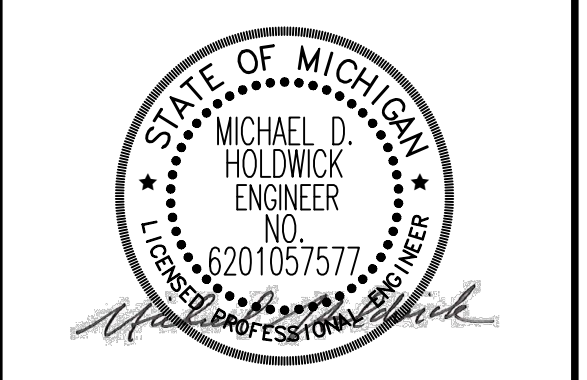
BOLLARD TABLES

POINT #	NORTHING	EASTING
11	502,997.85	12,809,389.69
12	502,999.72	12,809,385.40
13	503,003.72	12,809,385.40
14	503,007.72	12,809,385.40
15	503,011.72	12,809,385.40

BOLLARD TABLES

POINT #	NORTHING	EASTING
16	503,173.45	12,809,383.74
17	503,173.45	12,809,393.77
18	503,056.11	12,809,396.72
19	503,056.11	12,809,386.39

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**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

REVISIONS

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CHECKED BY: M.D. HJOLDWICK

**GEOMETRY AND PCC
JOINT LAYOUT**

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- 235. CHEMICAL STORAGE PAD, SEE MECHANICAL AND STRUCTURAL SERIES
- 236. PROPOSED CATCH BASIN (TYP.), SEE DETAIL B2/CP503
- 237. FUEL FARM CANOPY FOUNDATION (TYP.), SEE STRUCTURAL SERIES
- 238. FUEL TANK SADDLE FOUNDATION, SEE STRUCTURAL SERIES DETAILS

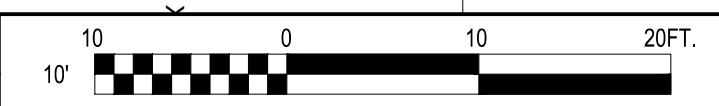
A1 KEYED NOTES
SCALE: NOT TO SCALE

- NOTES:
1. REFER TO THE PROPOSED UTILITY SERIES FOR UTILITY WORK.
 2. SEE ELECTRICAL AND COMMUNICATIONS PLAN FOR ALL WORK ASSOCIATED WITH SITE LIGHTING, POWER DISTRIBUTION AND CABLING, COMMUNICATIONS AND FIBER OPTIC WORK.
 3. SEE STRUCTURAL SERIES FOR FOUNDATION LOCATIONS AND DETAILS
 4. SEE CF100 FOR FUEL FARM LAYOUT INFORMATION

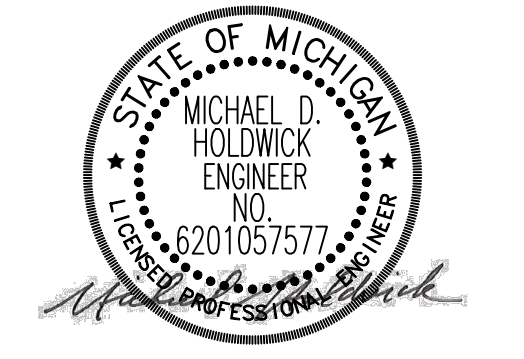
- (C) CONTRACTION JOINT WITH DOWEL BAR, B1/CP502
- (E) CONSTRUCTION JOINT WITH DOWEL BAR, B2/CP502
- * IRREGULAR / REINFORCED SLABS, A3/CP502
- (A-N) CONCRETE TO ASPHALT JOINT, B4/CP501
- (A-F) ISOLATION JOINT AT FOUNDATION, B4/CP502
- (N-N) THICKENED EDGE ISOLATION JOINT, B3/CP502

A3 SHEET NOTES & BOLLARD LOCATIONS
SCALE: NOT TO SCALE

B1 FUEL PAD JOINTING PLAN
SCALE: 1"=10'



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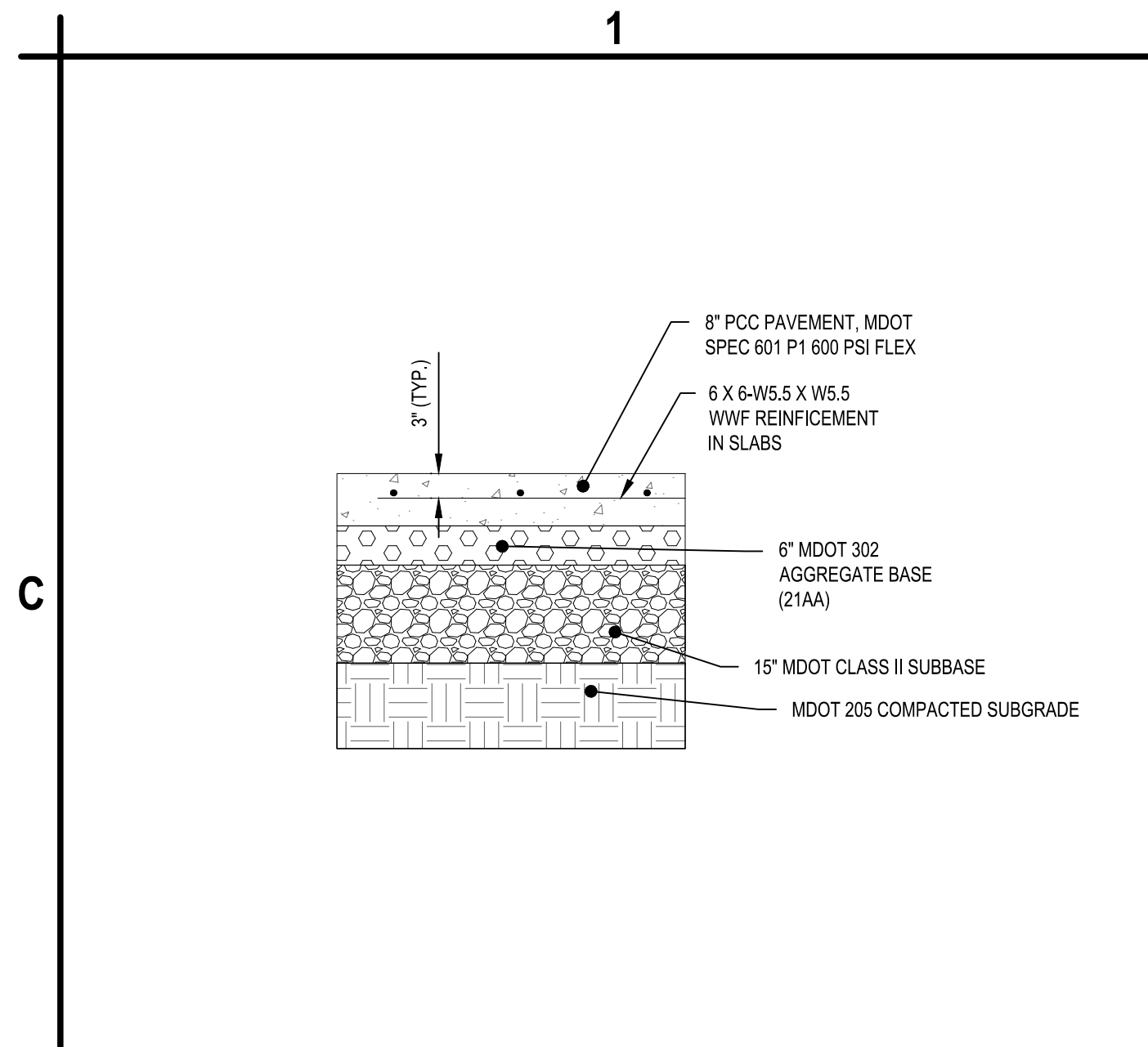
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**FUEL PAD JOINTING
PLAN**

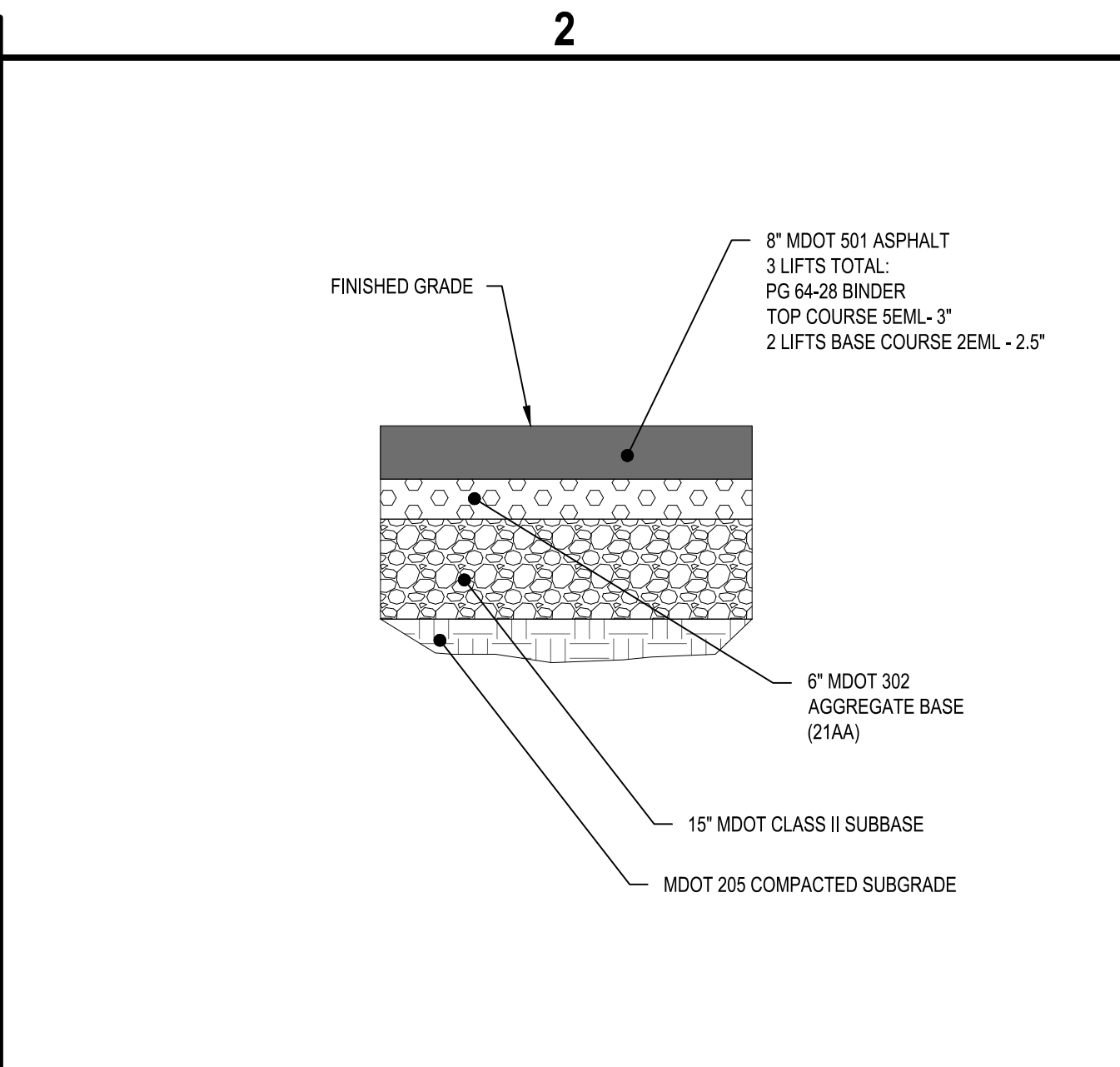
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SHEET NO. 12 OF 36

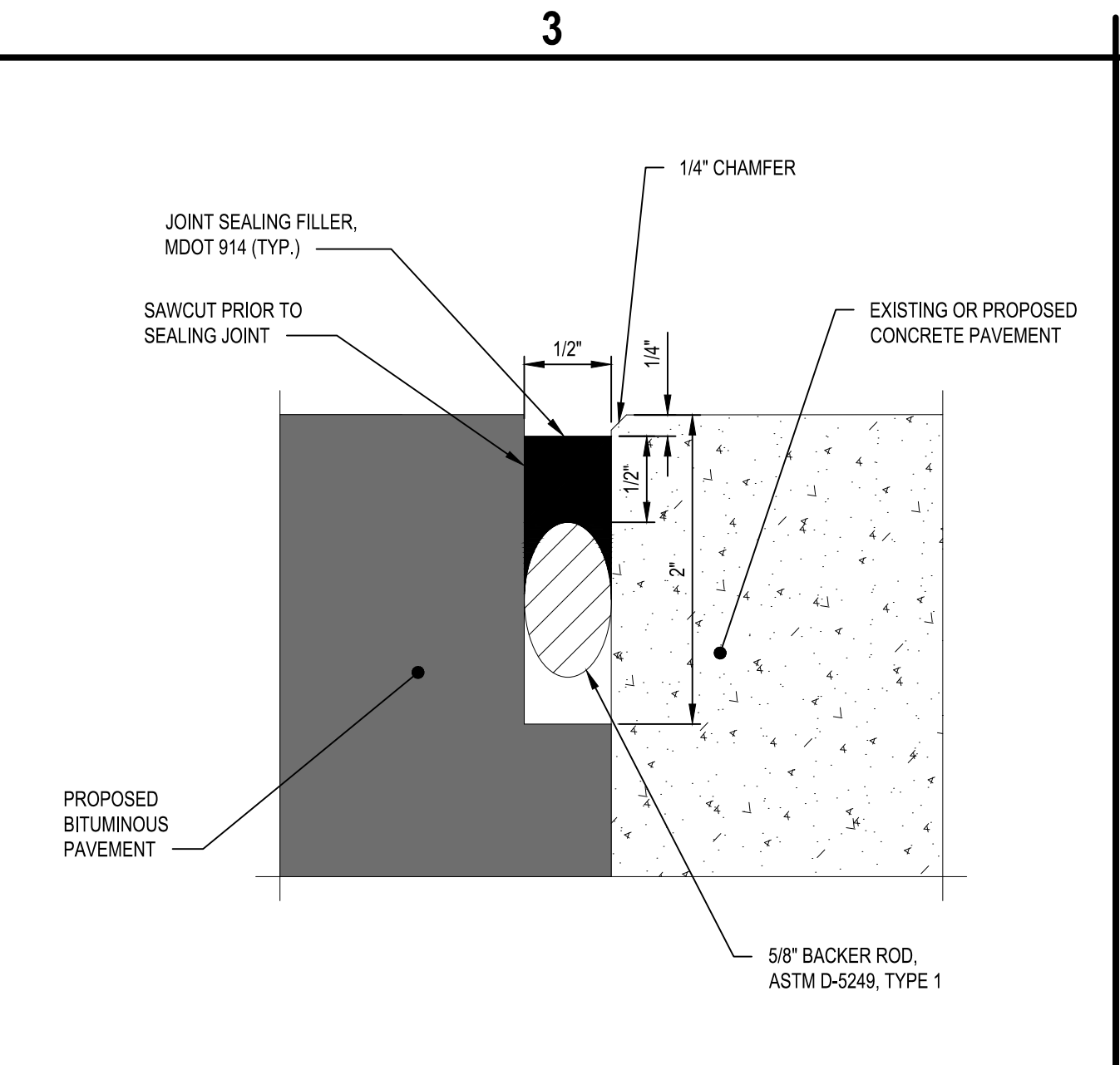
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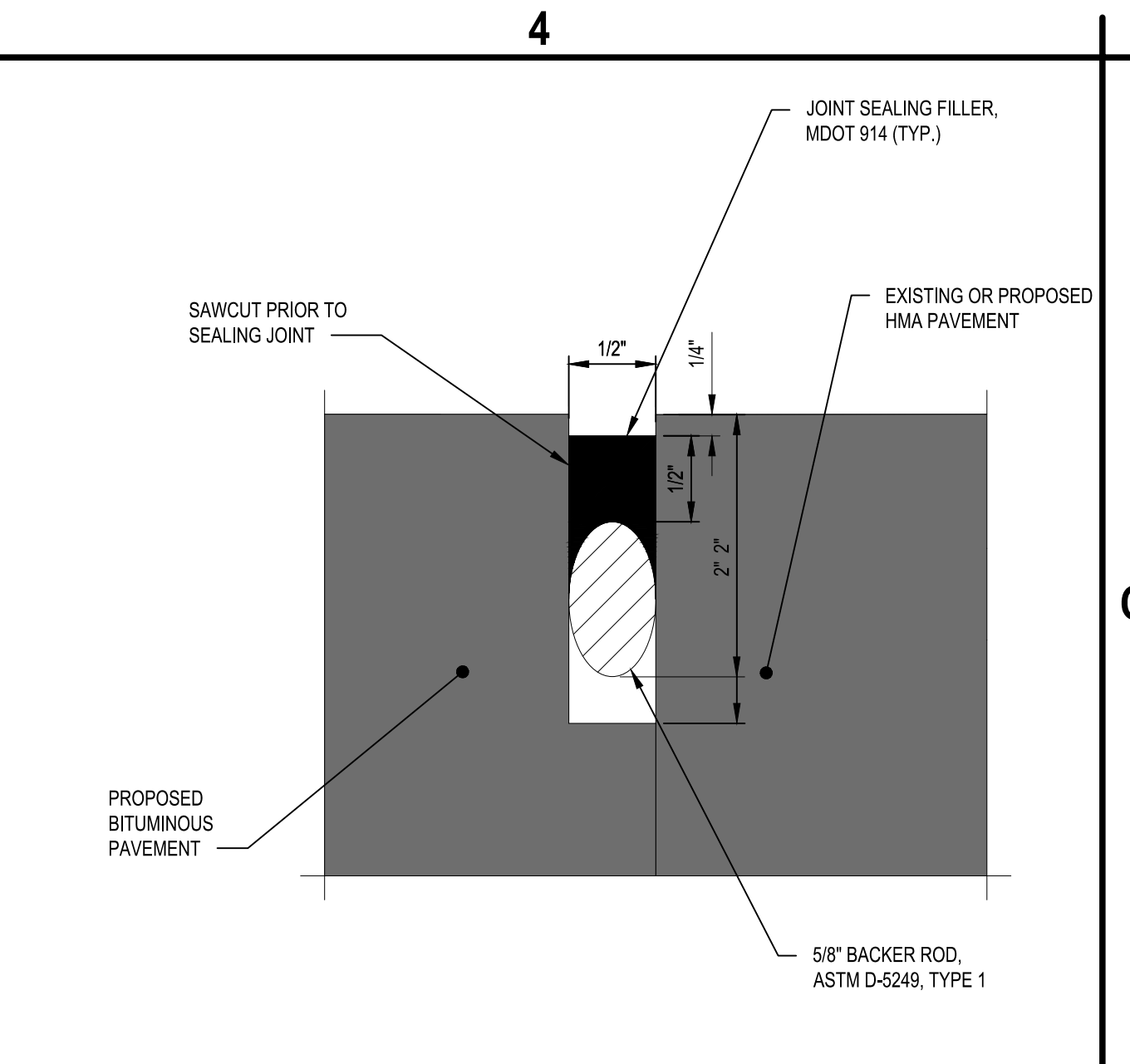
C1 PROPOSED CONCRETE FUEL PAD SECTION
SCALE: NOT TO SCALE



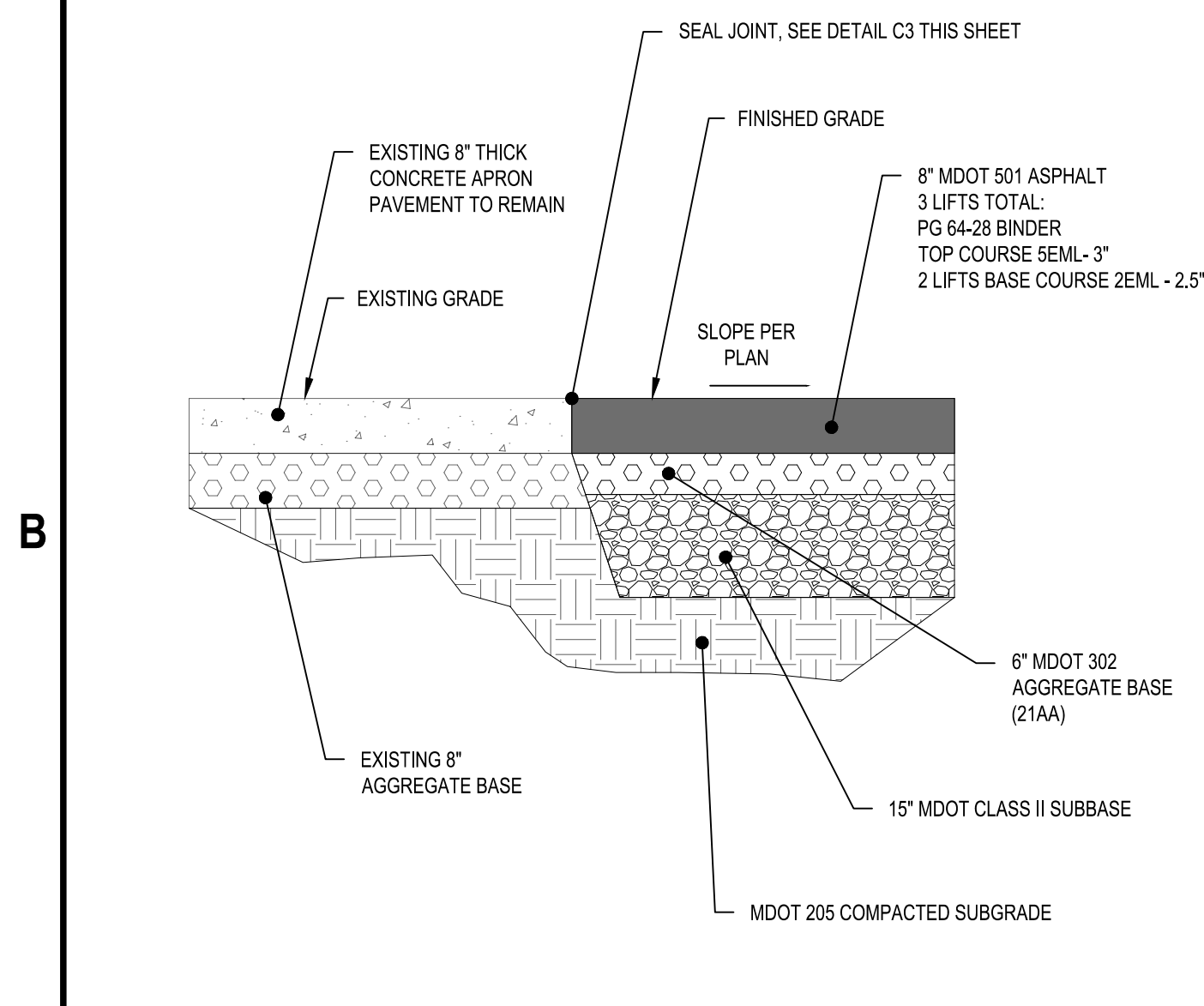
C2 PROPOSED HEAVY DUTY ASPHALT PAVEMENT SECTION
SCALE: NOT TO SCALE



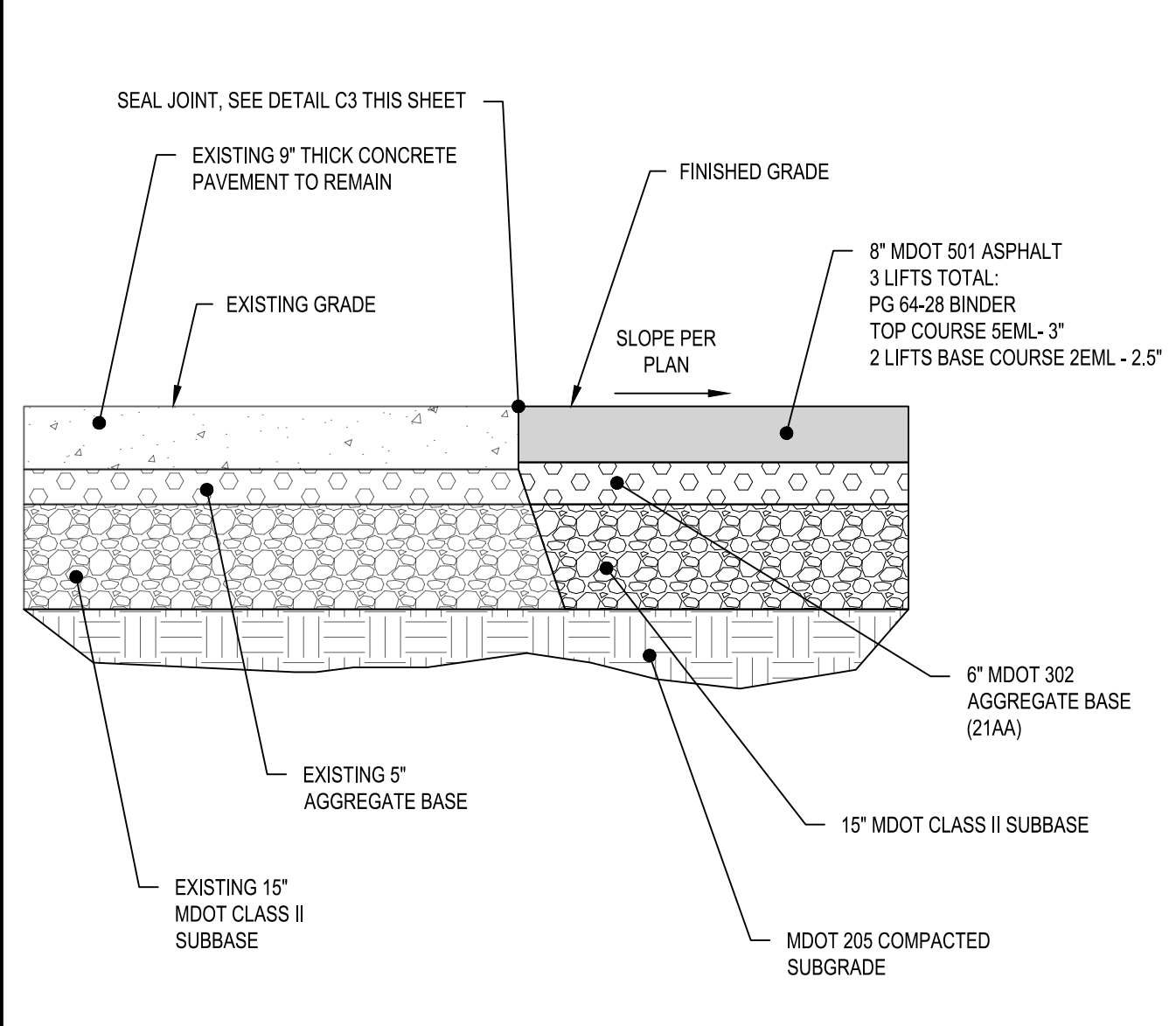
C3 ASPHALT TO CONCRETE JOINT SEALANT DETAIL
SCALE: NOT TO SCALE



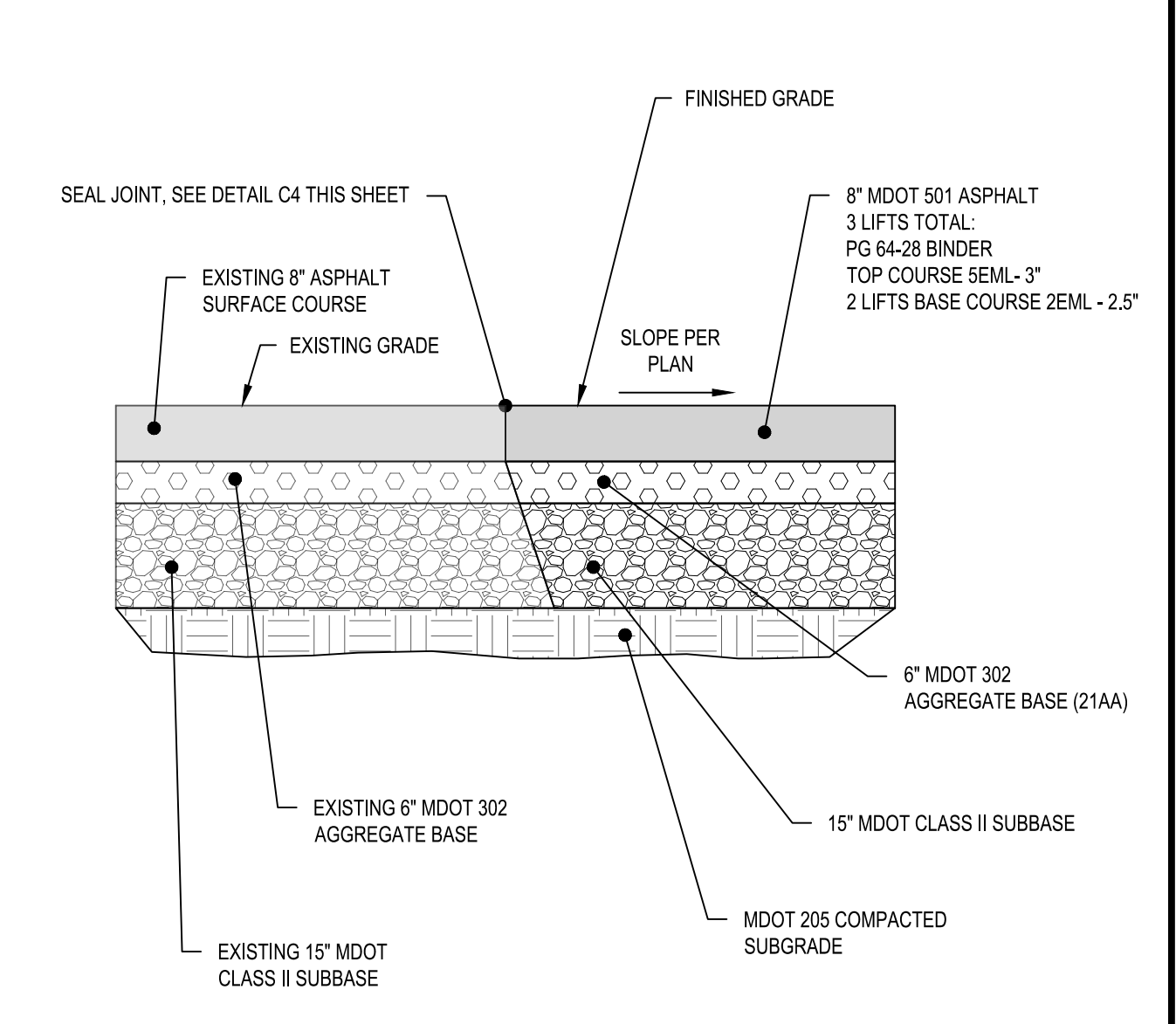
C4 ASPHALT TO ASPHALT JOINT SEALANT DETAIL
SCALE: NOT TO SCALE



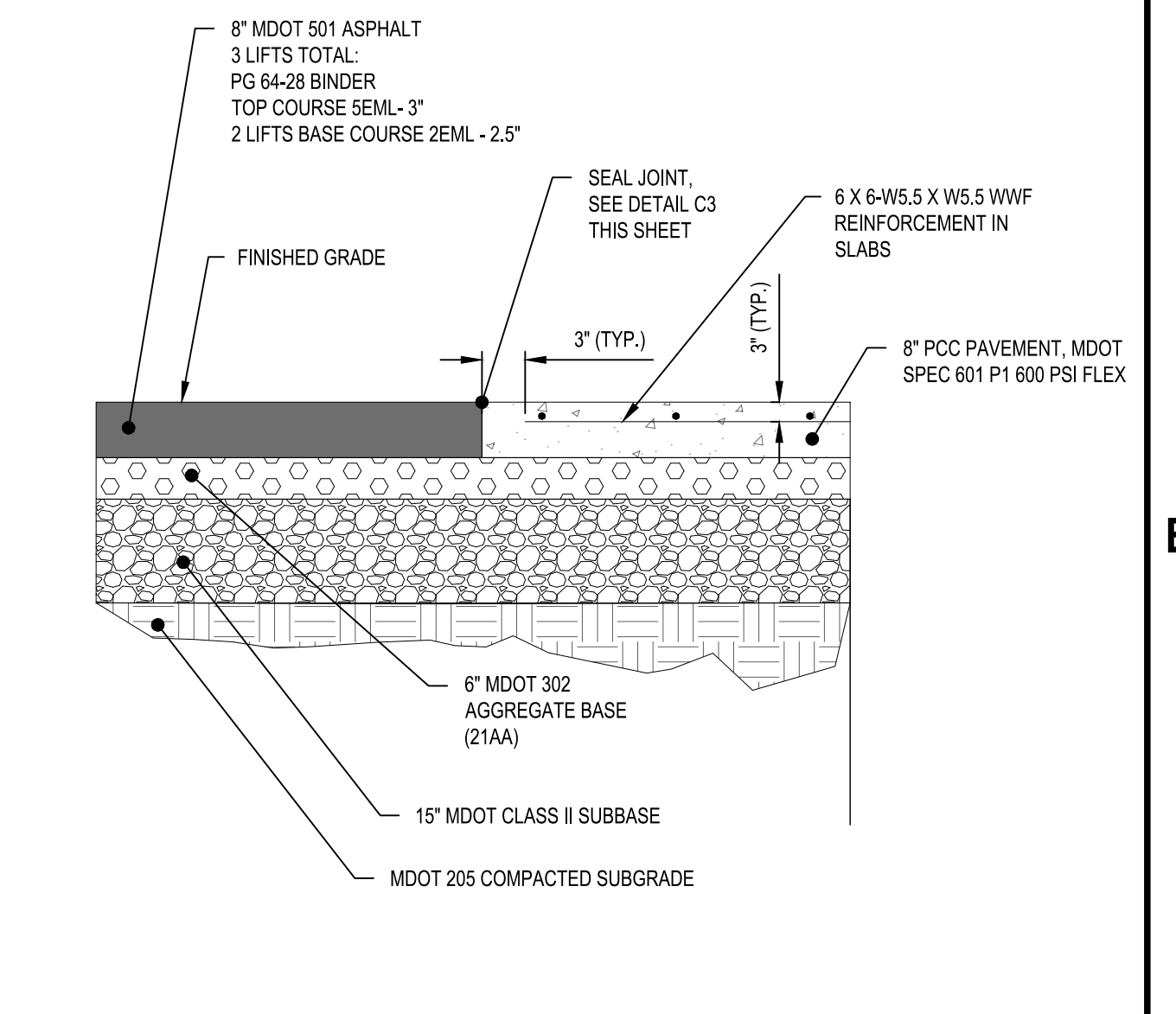
B1 ASPHALT TO EXISTING CONCRETE APRON KEY
SCALE: NOT TO SCALE



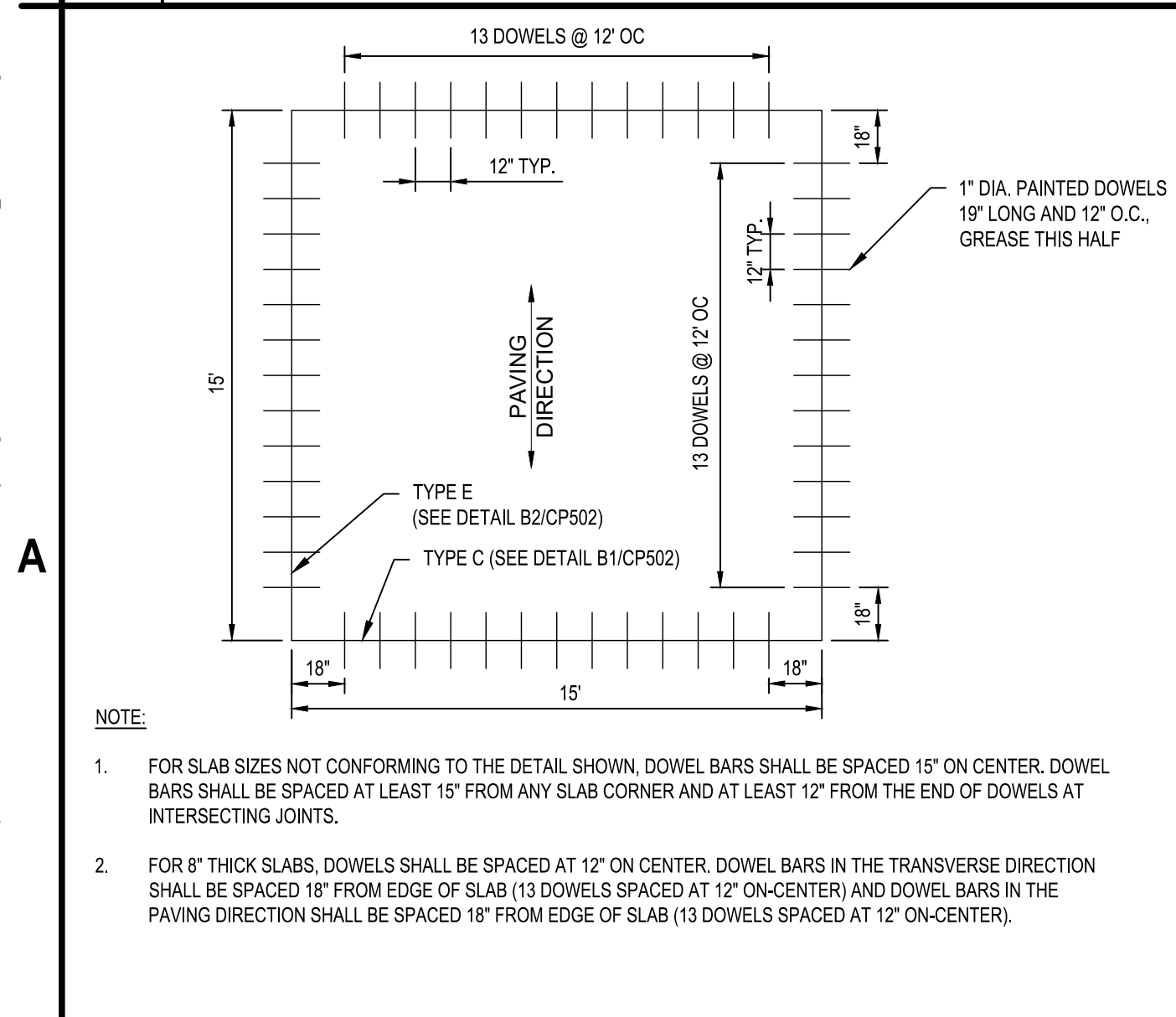
B2 ASPHALT TO EXISTING CONCRETE KEY
SCALE: NOT TO SCALE



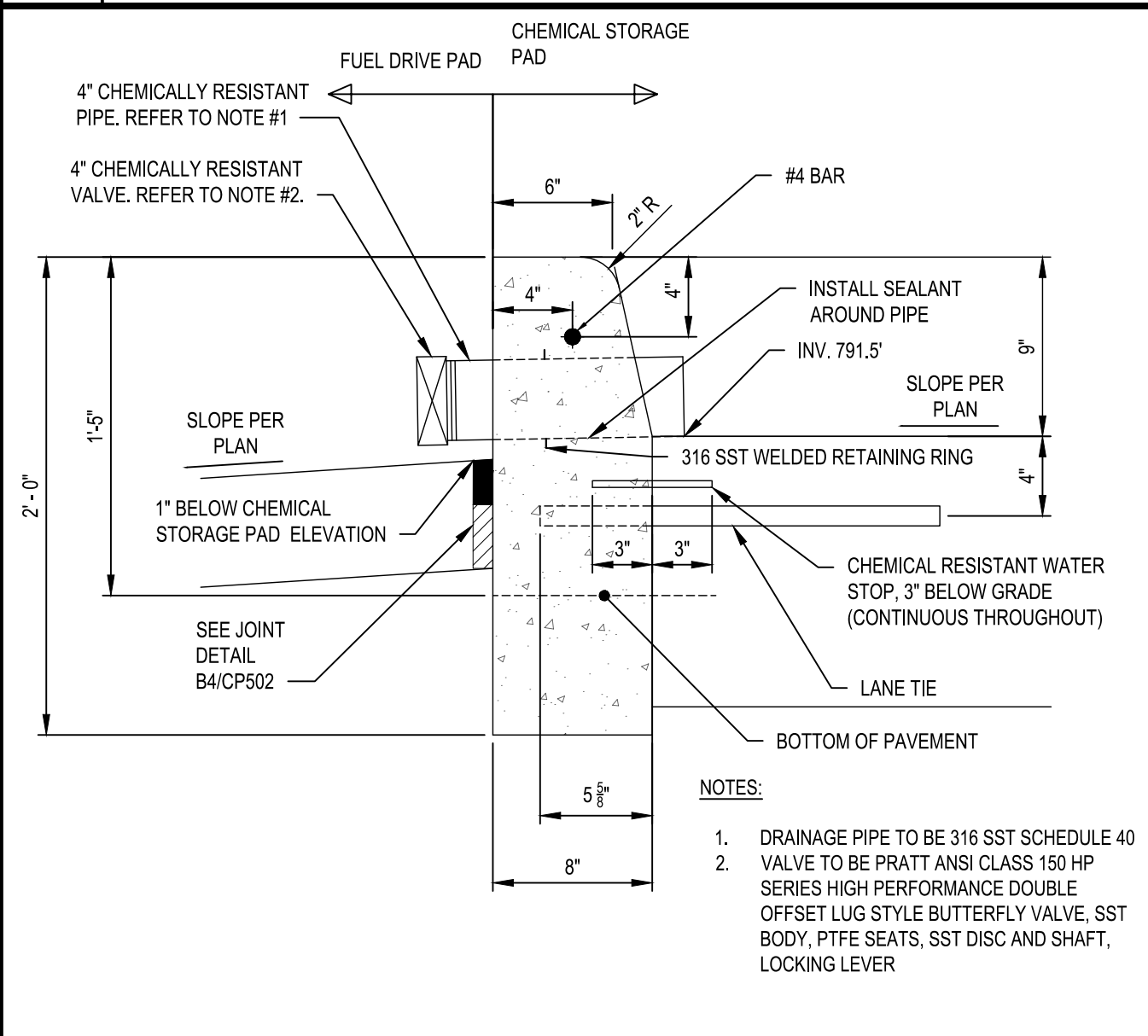
B3 ASPHALT TO EXISTING ASPHALT APRON KEY
SCALE: NOT TO SCALE



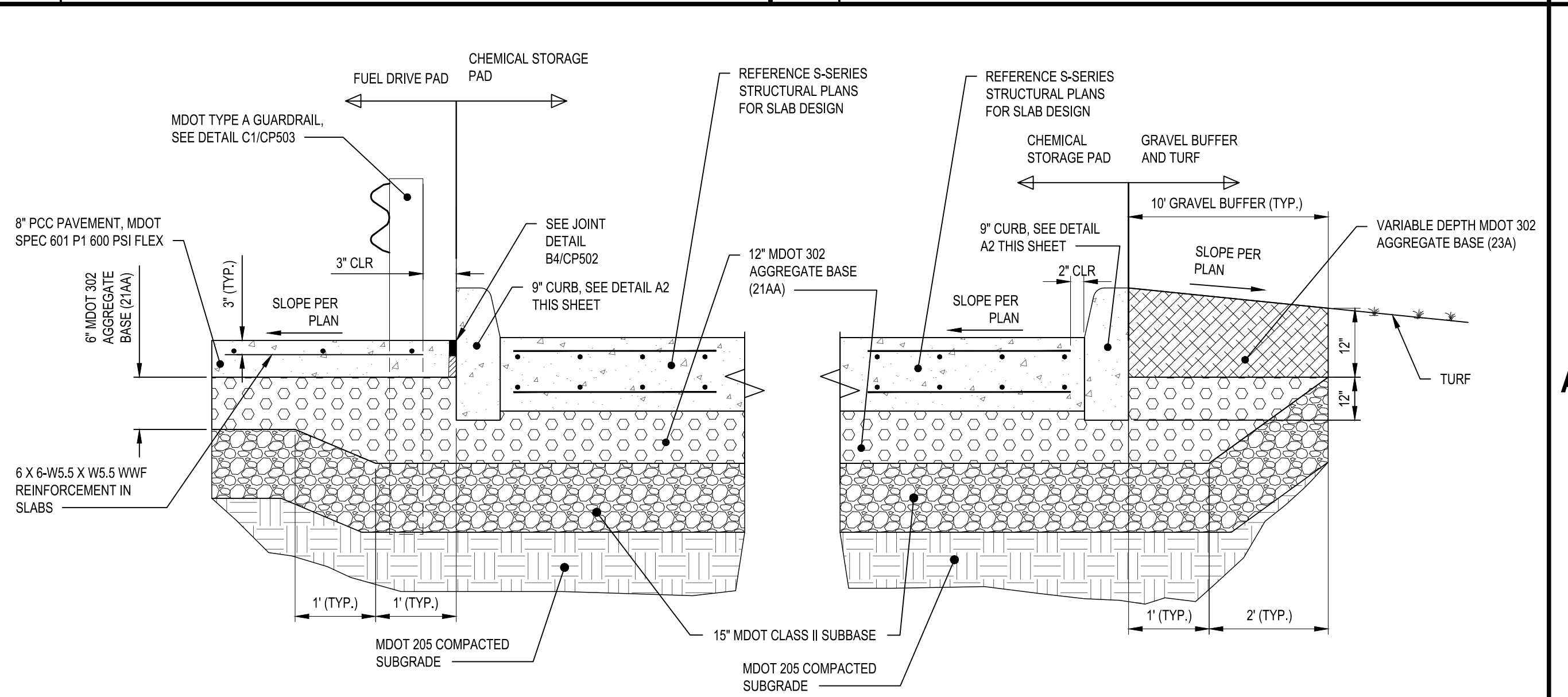
B4 ASPHALT TO PROPOSED FUEL DRIVE PAD KEY
SCALE: NOT TO SCALE



A1 DOWEL POSITION AT JOINT EDGE
SCALE: NOT TO SCALE



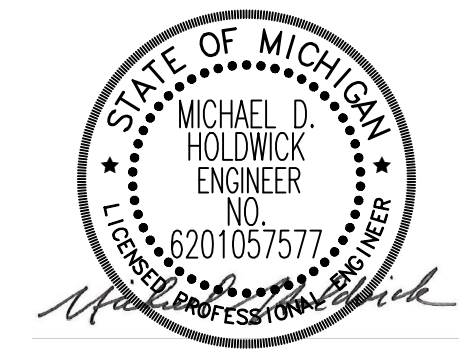
A2 9" CHEMICAL STORAGE TANK CURB AND OUTLET VALVE
SCALE: NOT TO SCALE



A3 CHEMICAL STORAGE PAD KEY DETAIL
SCALE: NOT TO SCALE



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		DATE: APRIL 2023
		DRAWN BY: G.C. HAYDEN
		DESIGNED BY: R.D. MIDDLESWARTH
		CHECKED BY: M.D. HOLDWICK
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		

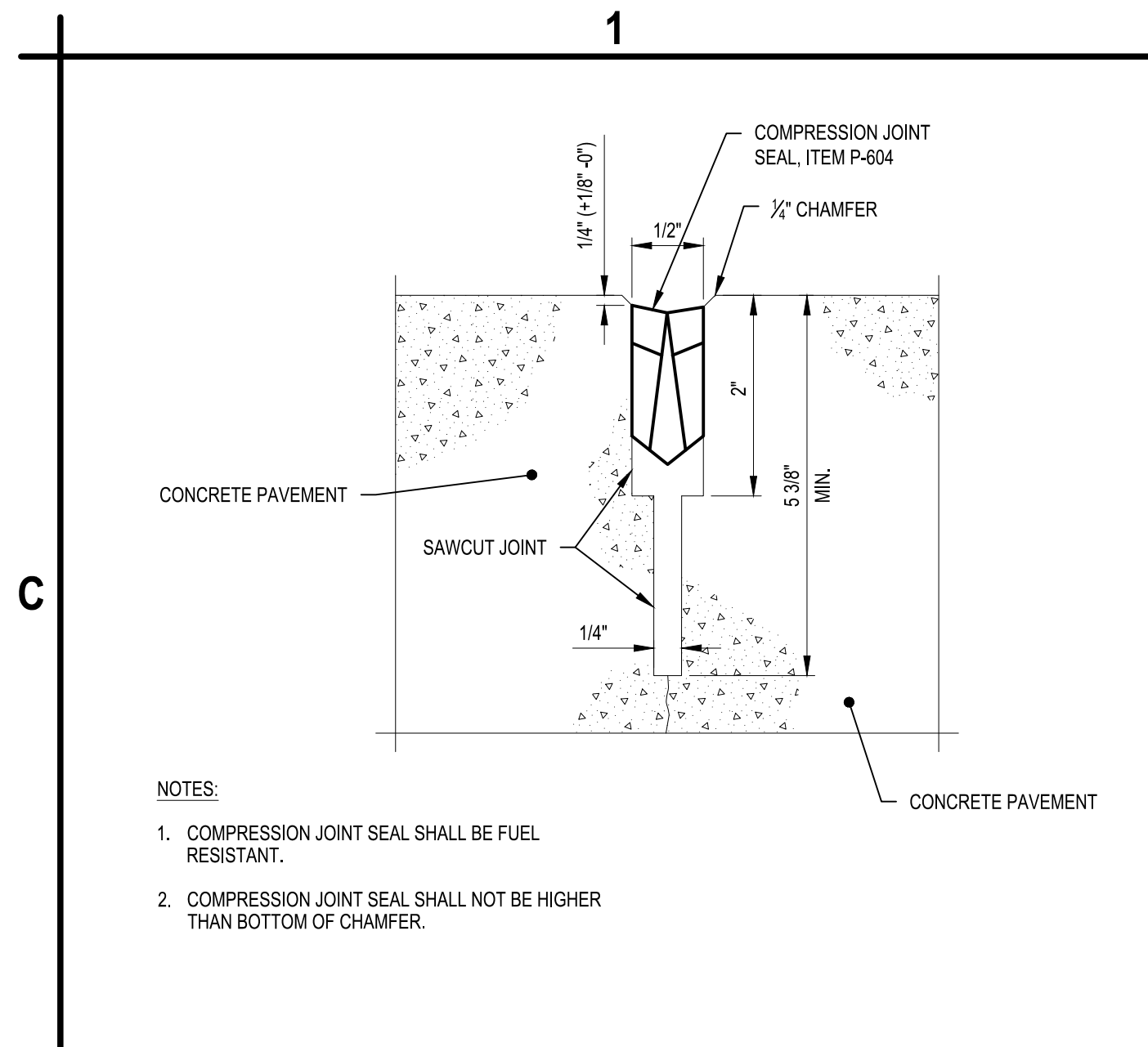
**GEOMETRY AND PCC
JOINT LAYOUT
DETAILS**

CP501

SHEET NO. 13 OF 36

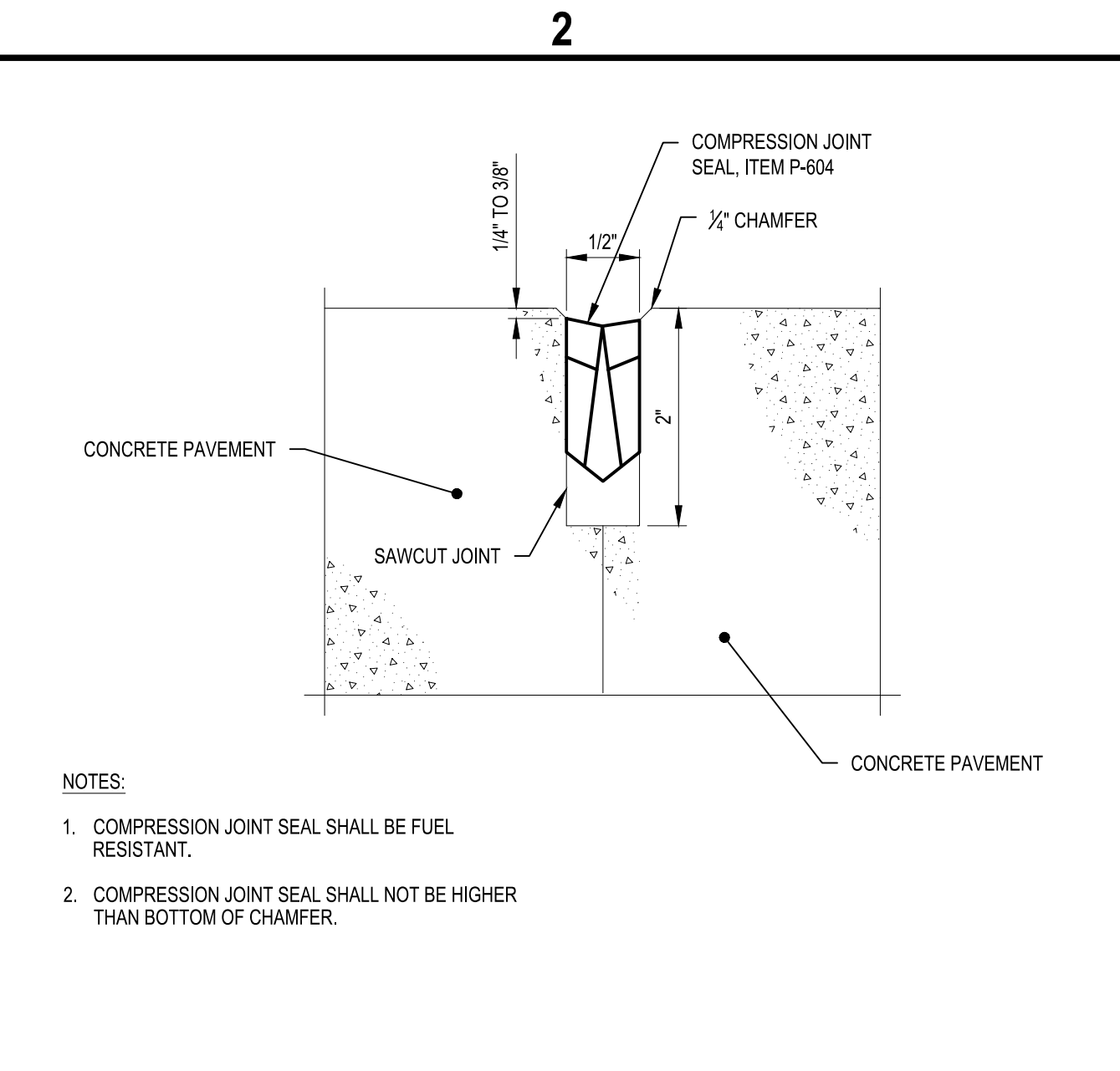
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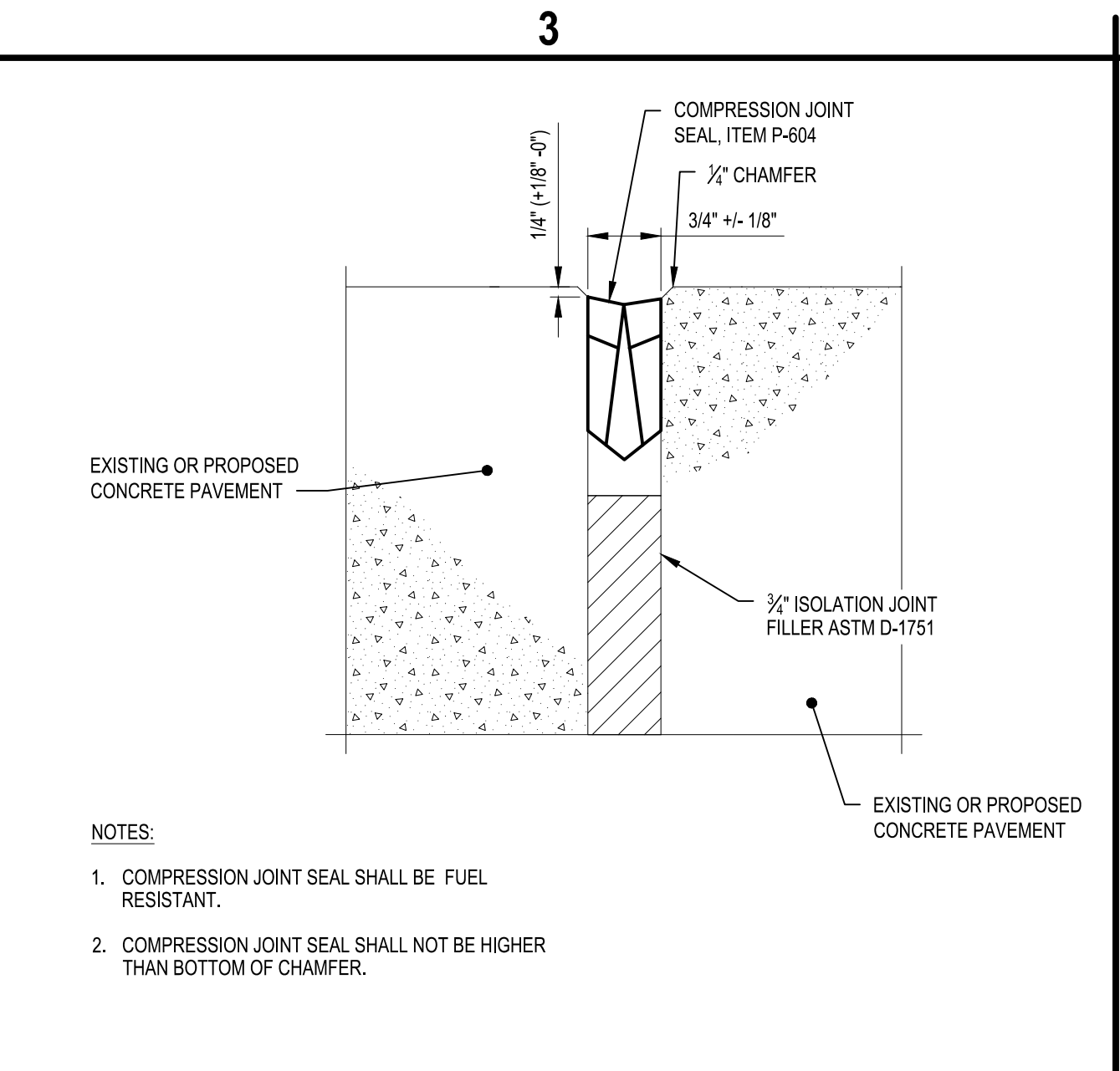
NOTES:
 1. COMPRESSION JOINT SEAL SHALL BE FUEL RESISTANT.
 2. COMPRESSION JOINT SEAL SHALL NOT BE HIGHER THAN BOTTOM OF CHAMFER.

C1 CONTRACTION JOINT SEALING DETAIL
 SCALE: NOT TO SCALE



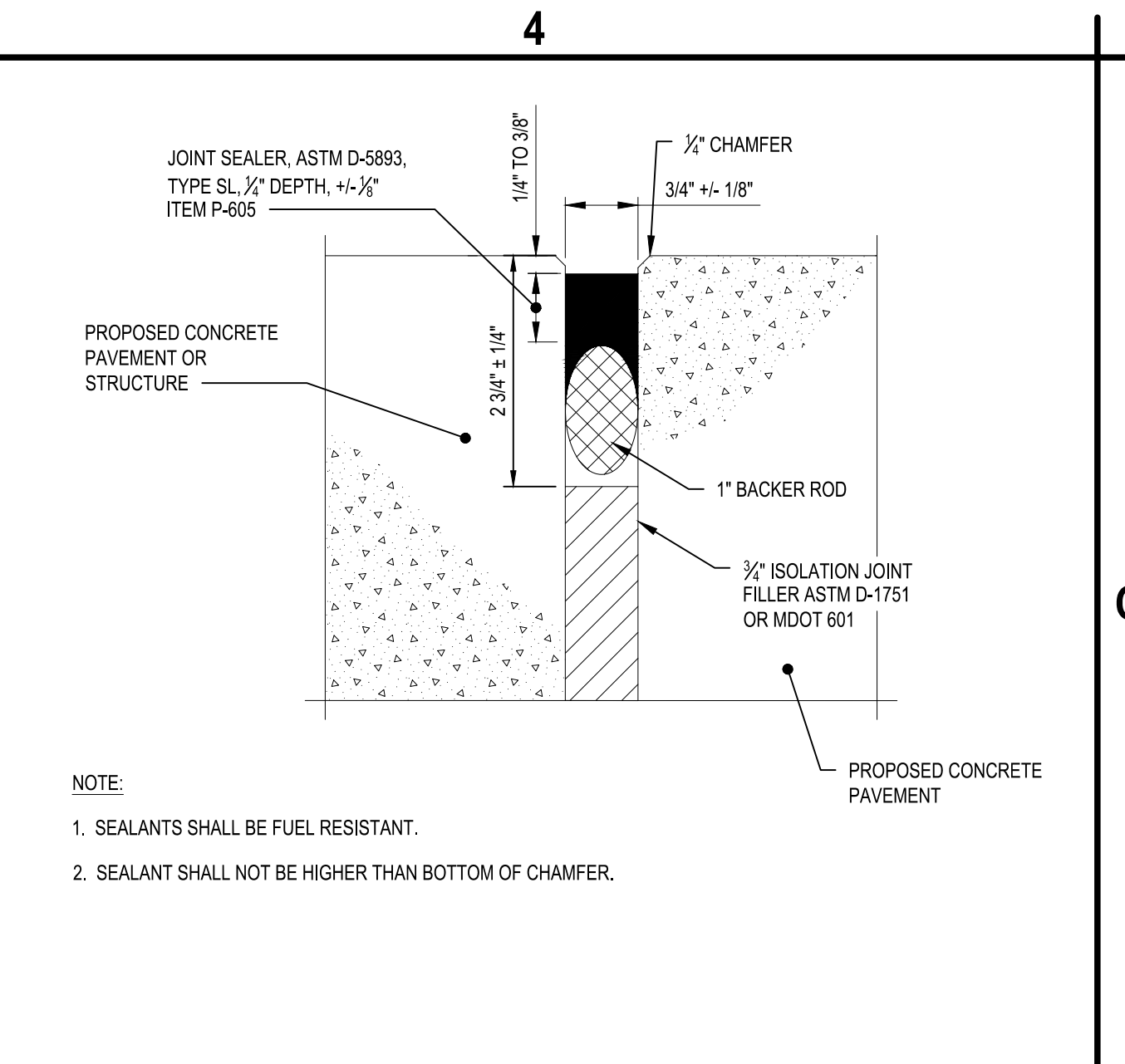
NOTES:
 1. COMPRESSION JOINT SEAL SHALL BE FUEL RESISTANT.
 2. COMPRESSION JOINT SEAL SHALL NOT BE HIGHER THAN BOTTOM OF CHAMFER.

C2 CONSTRUCTION JOINT SEALING DETAIL
 SCALE: NOT TO SCALE



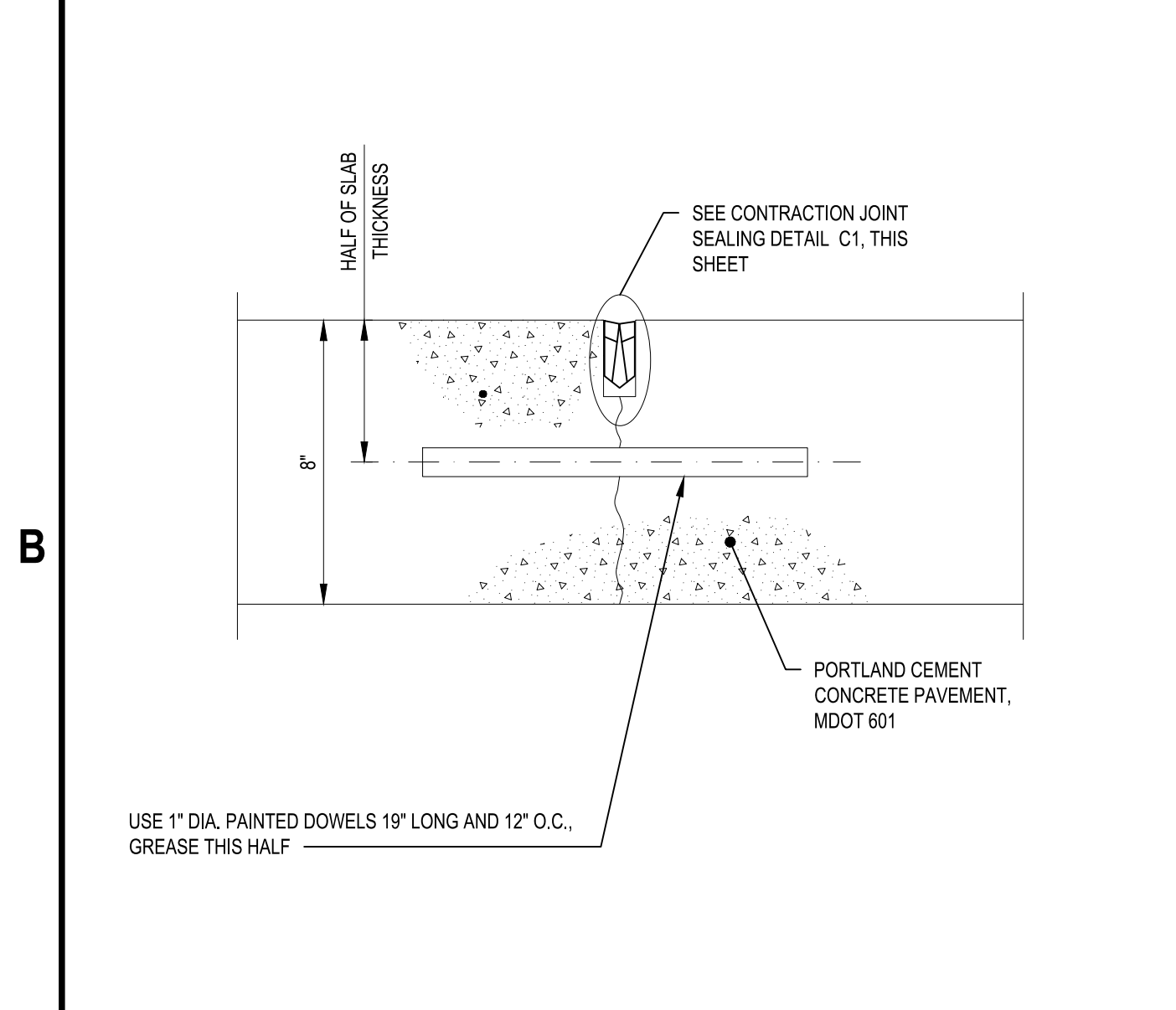
NOTES:
 1. COMPRESSION JOINT SEAL SHALL BE FUEL RESISTANT.
 2. COMPRESSION JOINT SEAL SHALL NOT BE HIGHER THAN BOTTOM OF CHAMFER.

C3 ISOLATION JOINT COMPRESSION SEALING DETAIL
 SCALE: NOT TO SCALE



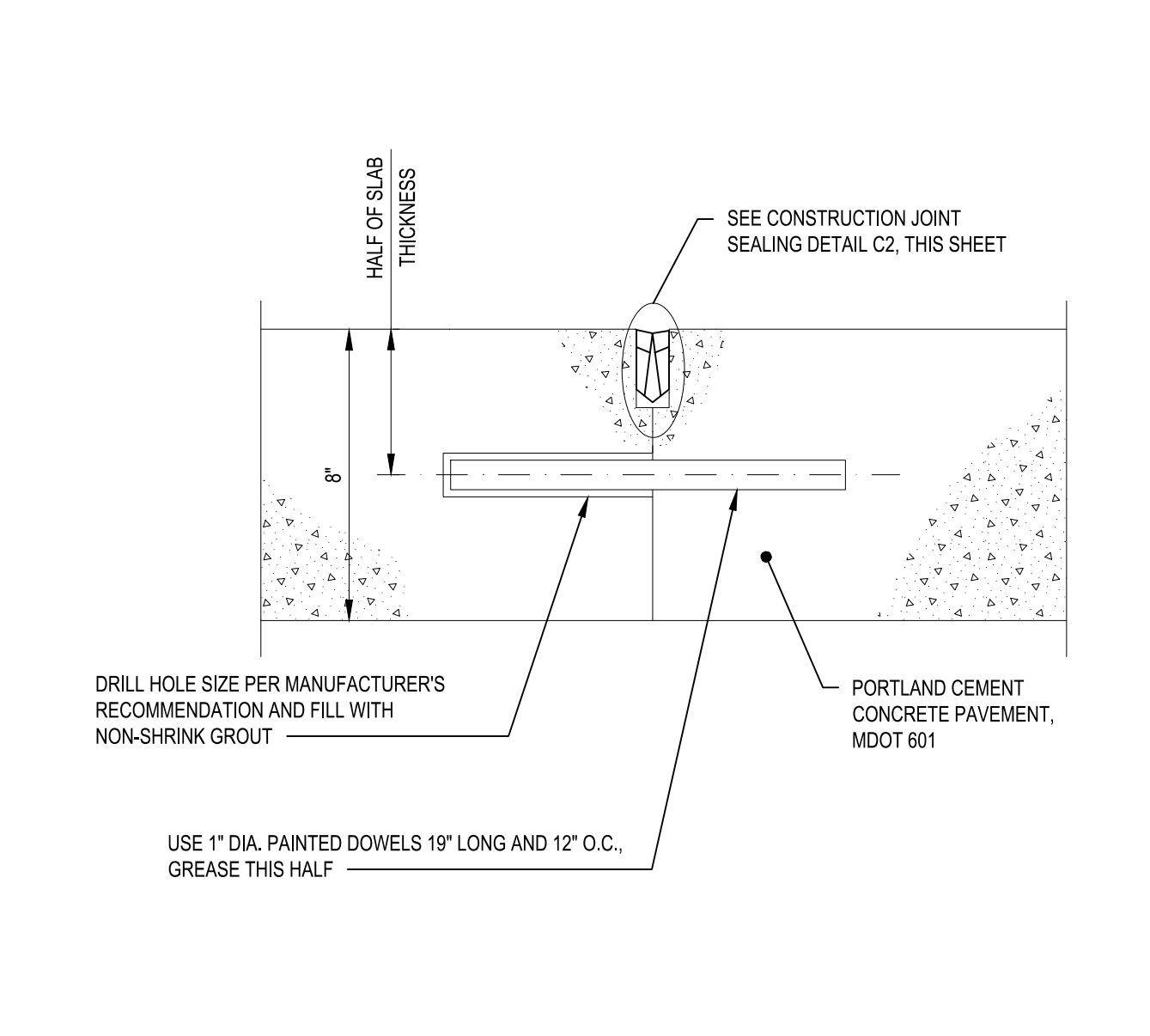
NOTE:
 1. SEALANTS SHALL BE FUEL RESISTANT.
 2. SEALANT SHALL NOT BE HIGHER THAN BOTTOM OF CHAMFER.

C4 ISOLATION JOINT SEALING DETAIL
 SCALE: NOT TO SCALE



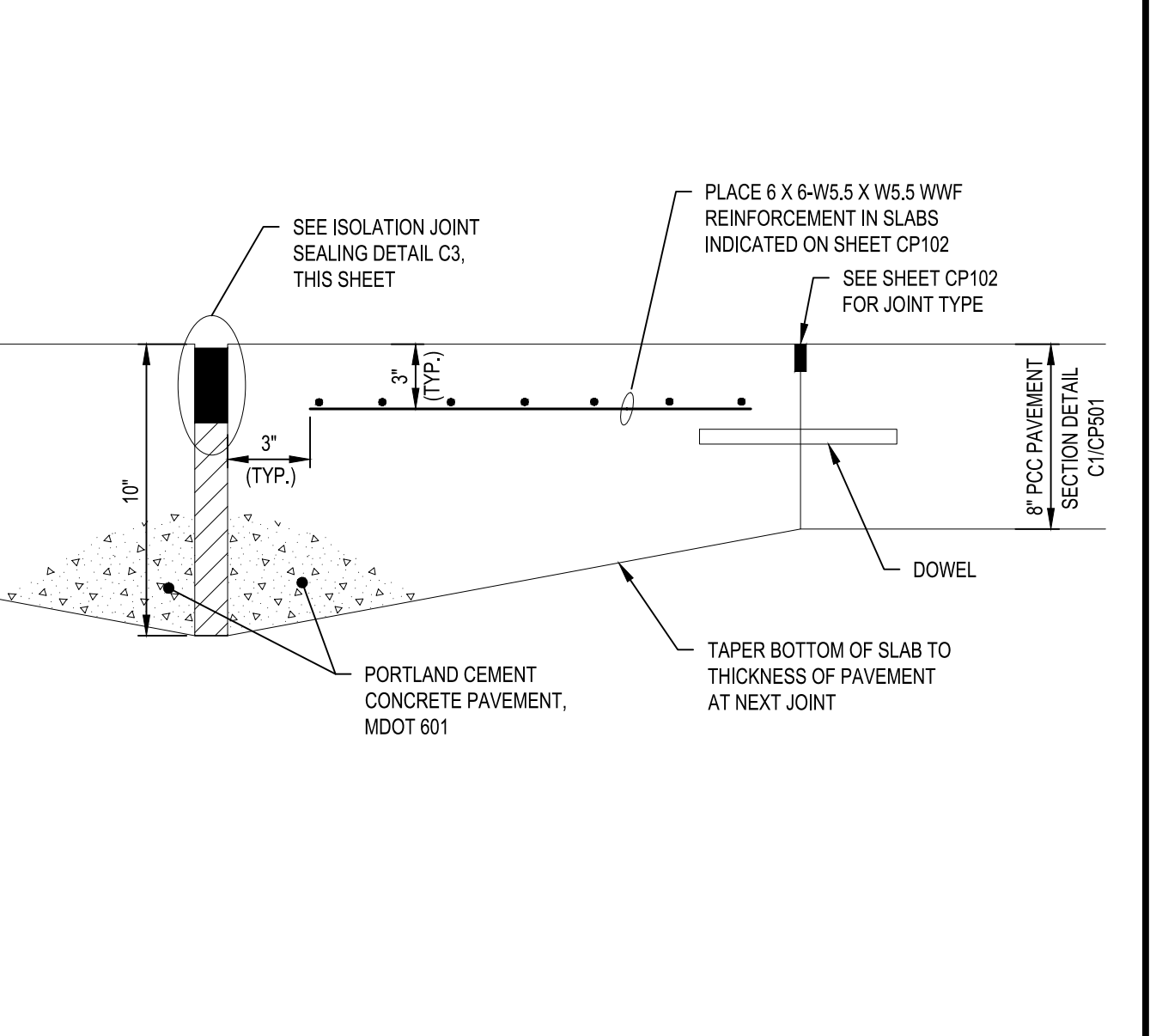
USE 1" DIA. PAINTED DOWELS 19" LONG AND 12" O.C., GREASE THIS HALF

B1 CONTRACTION JOINT WITH DOWEL BAR (TYPE C)
 SCALE: NOT TO SCALE

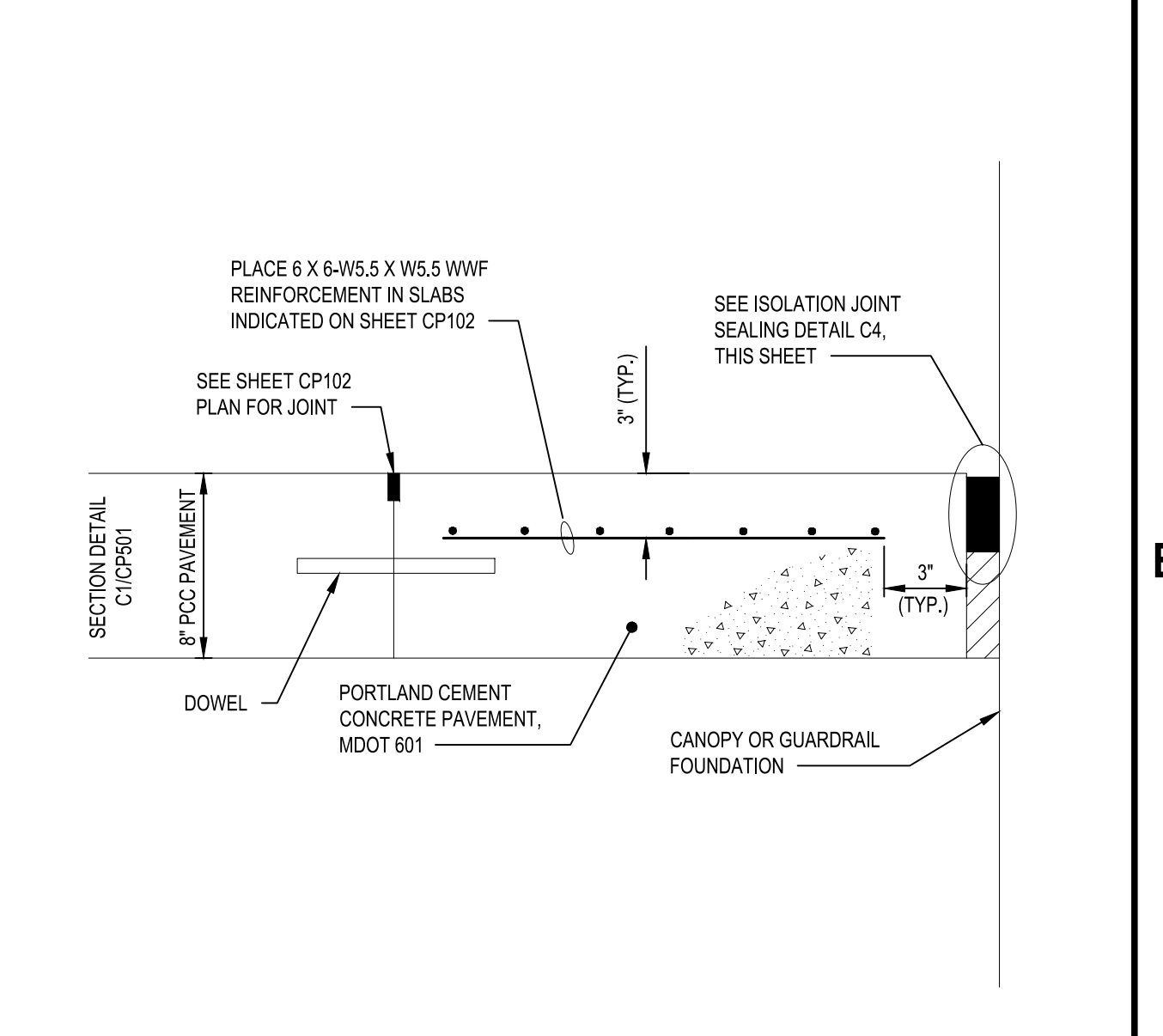


DRILL HOLE SIZE PER MANUFACTURER'S RECOMMENDATION AND FILL WITH NON-SHRINK GROUT
 USE 1" DIA. PAINTED DOWELS 19" LONG AND 12" O.C., GREASE THIS HALF

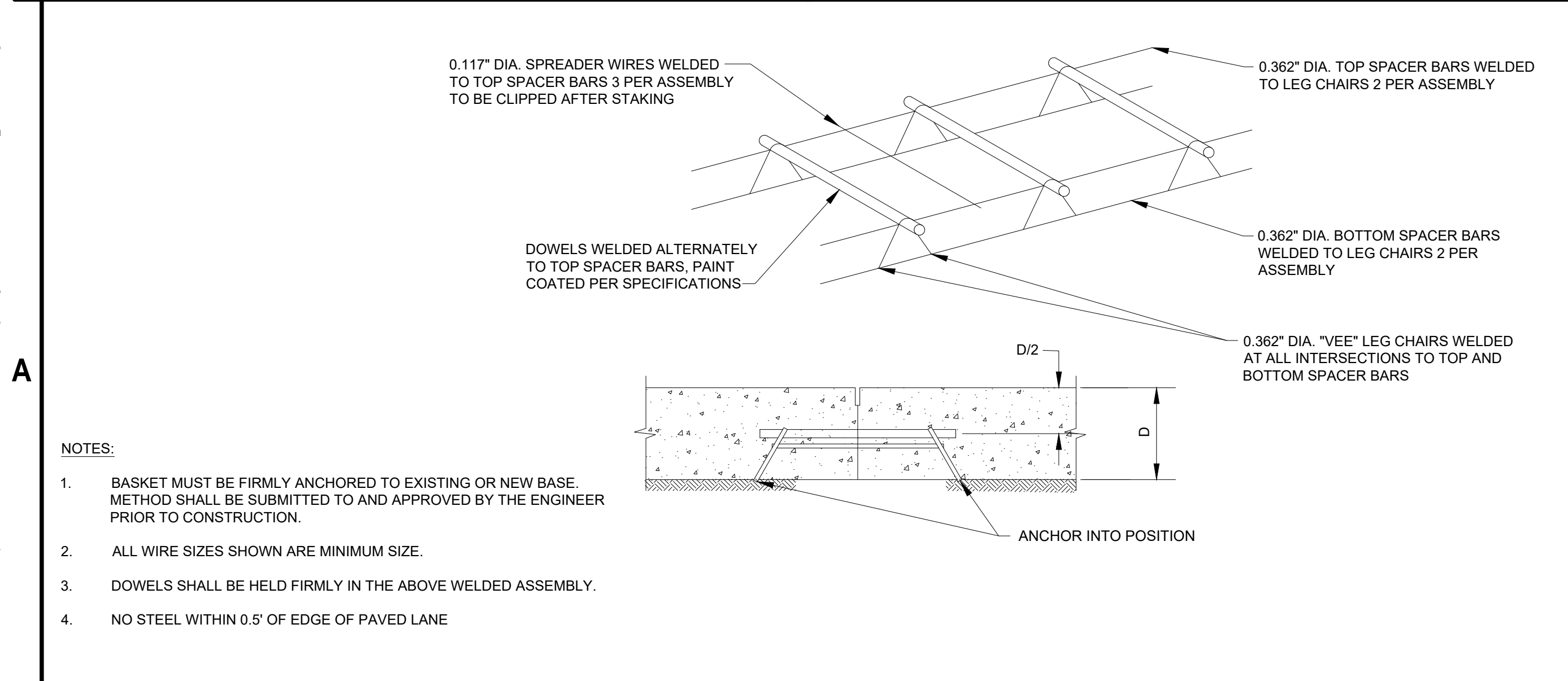
B2 CONSTRUCTION JOINT WITH DOWEL BAR (TYPE E)
 SCALE: NOT TO SCALE



B3 THICKENED EDGE ISOLATION JOINT (TYPE N-N)
 SCALE: NOT TO SCALE

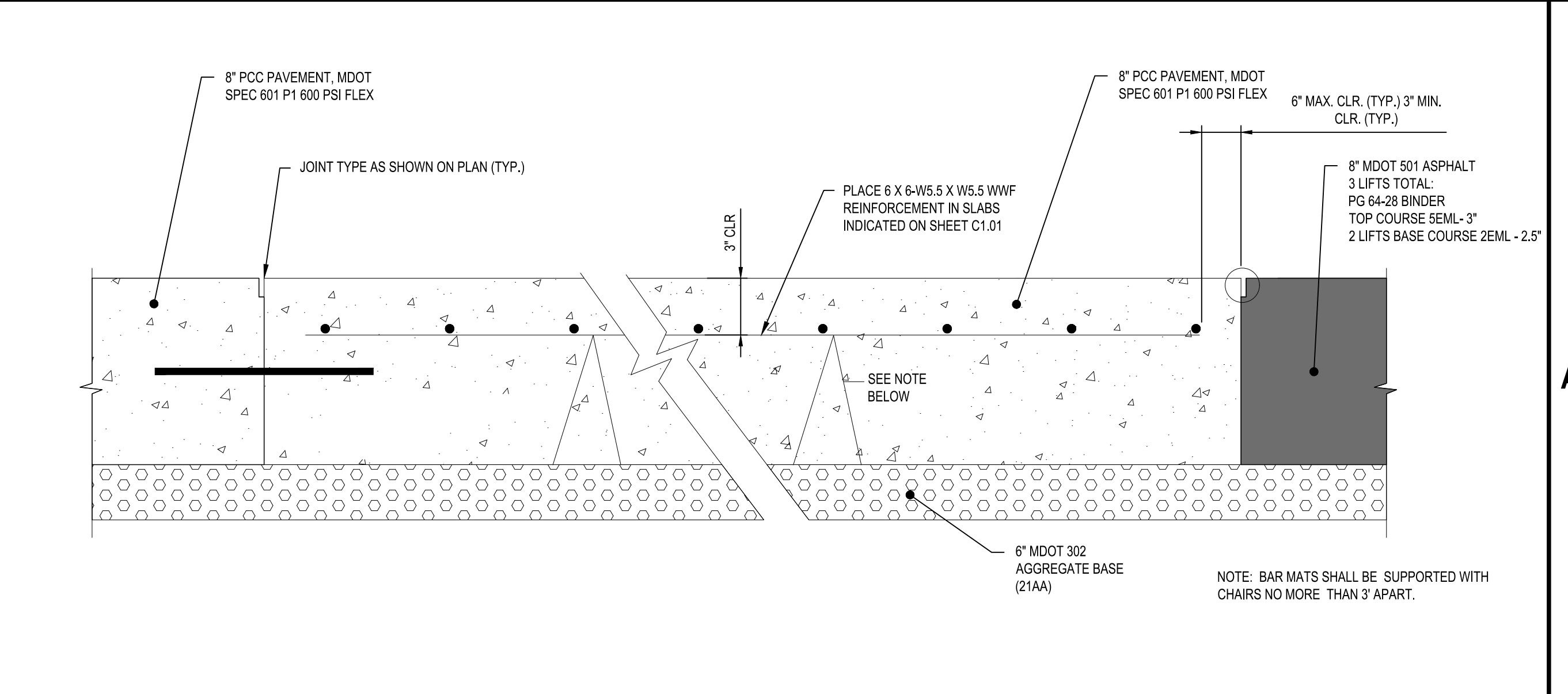


B4 ISOLATION JOINT AT FOUNDATION (TYPE A-F)
 SCALE: NOT TO SCALE



NOTES:
 1. BASKET MUST BE FIRMLY ANCHORED TO EXISTING OR NEW BASE. METHOD SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
 2. ALL WIRE SIZES SHOWN ARE MINIMUM SIZE.
 3. DOWELS SHALL BE HELD FIRMLY IN THE ABOVE WELDED ASSEMBLY.
 4. NO STEEL WITHIN 0.5' OF EDGE OF PAVED LANE

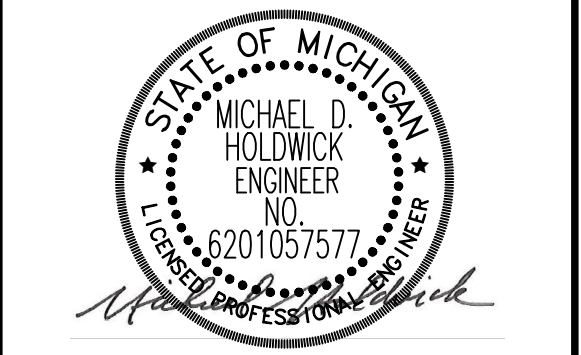
A1 TYPICAL DOWEL AND TIE BAR BASKET DETAIL
 SCALE: NOT TO SCALE



A3 REINFORCEMENT FOR IRREGULARLY SHAPED SLABS
 SCALE: NOT TO SCALE



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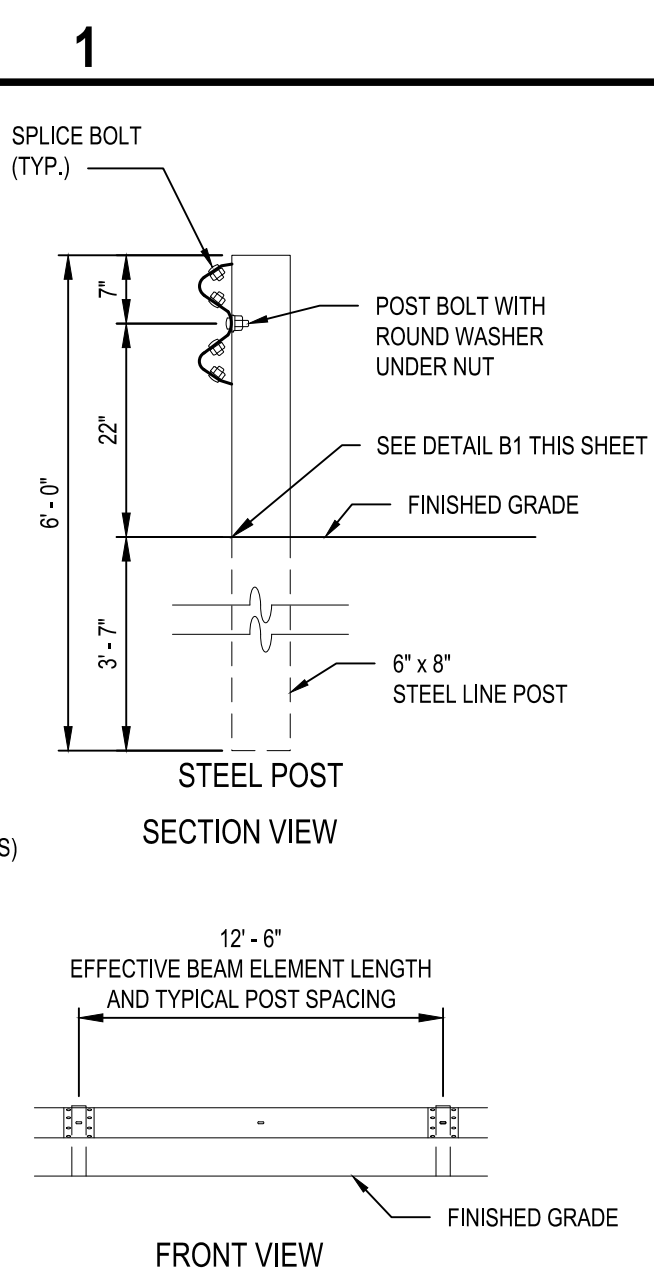
**AIRPORT FIELD MAINTENANCE
 FUEL FACILITY RELOCATION
 GERALD R. FORD INTL AIRPORT
 GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
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**GEOMETRY AND PCC
 JOINT LAYOUT
 DETAILS**

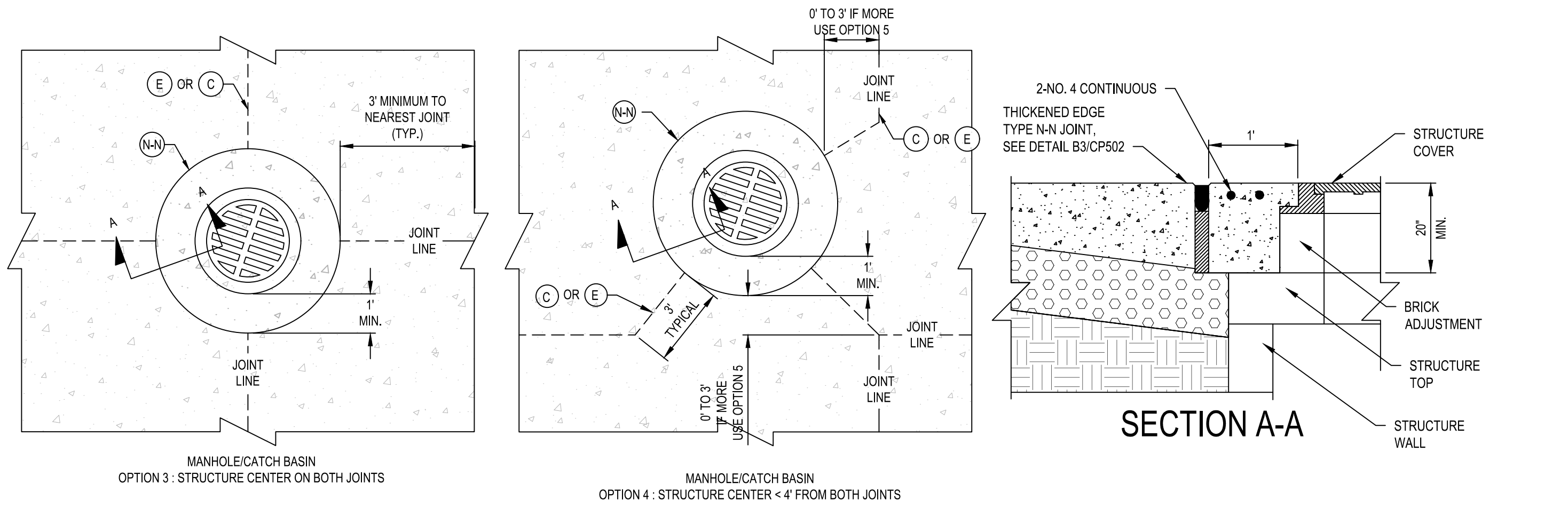
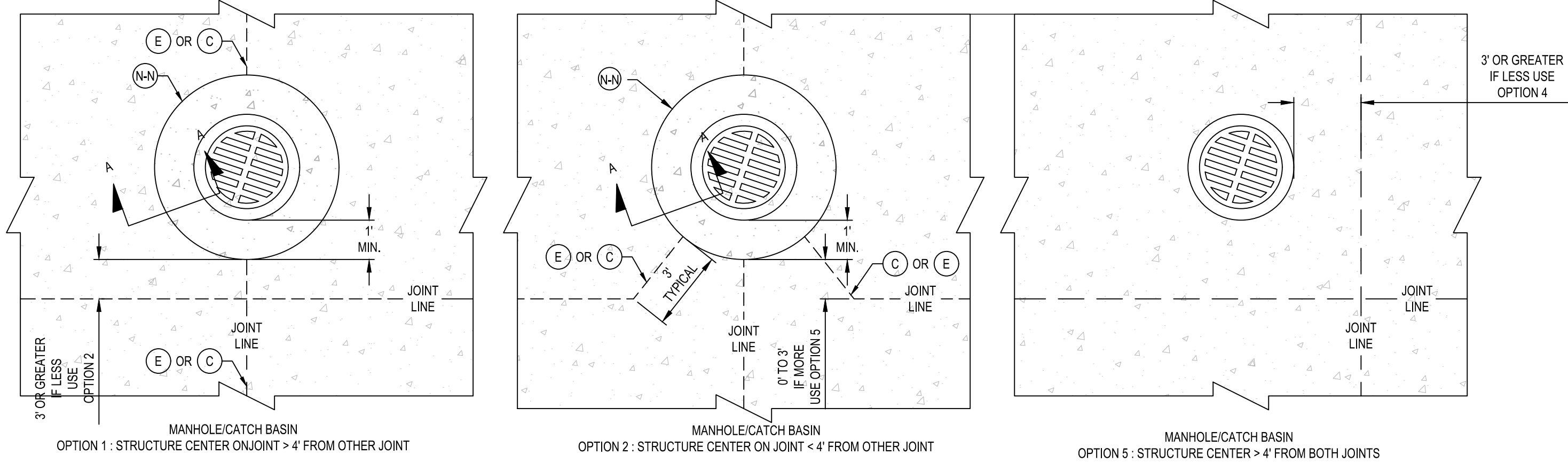
CP502

SHEET NO. 14 OF 36

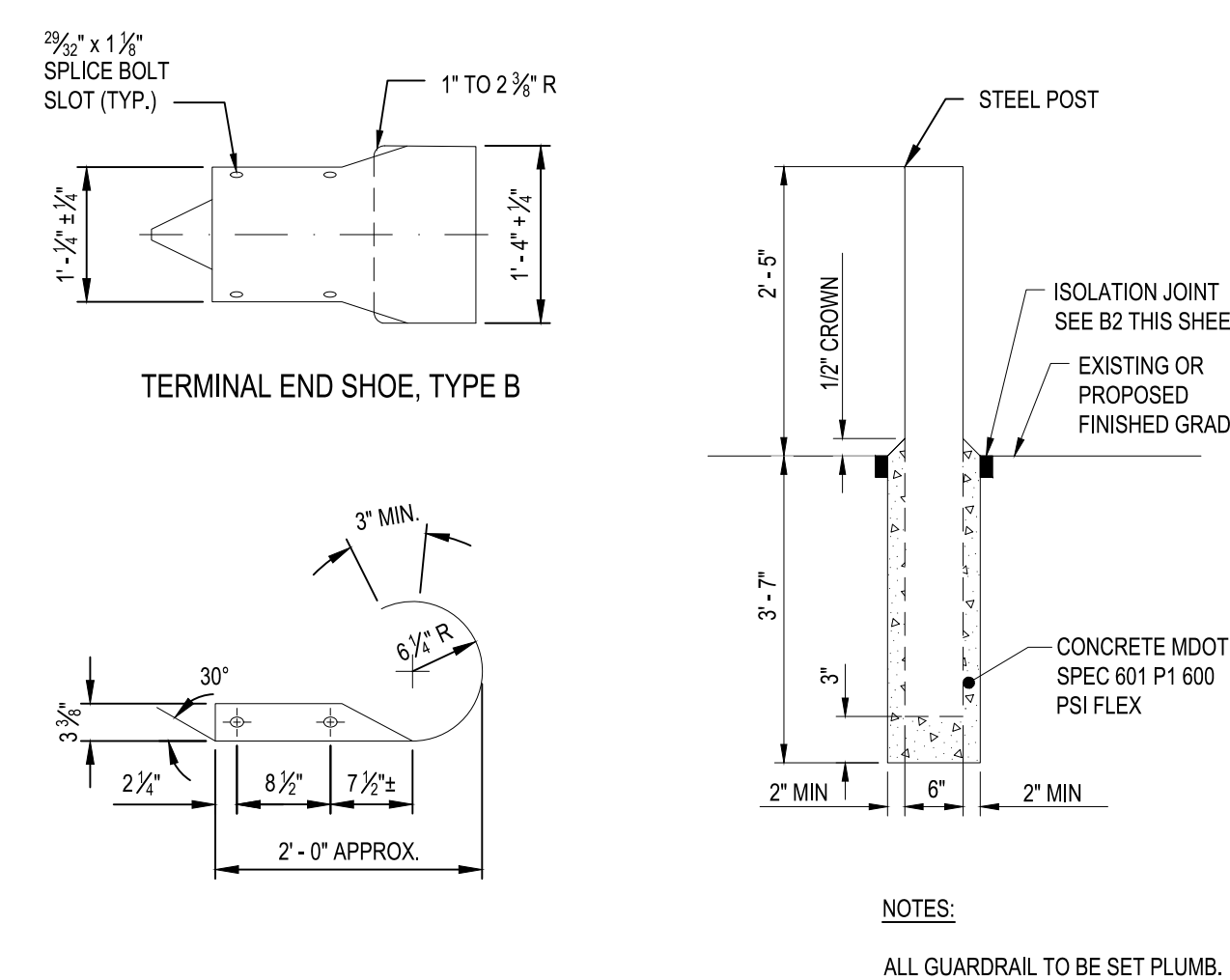


NOTES:
 ALL POSTS, OFFSET BLOCKS, BEAM ELEMENTS, AND HARDWARE (INCLUDING BOLTS, NUTS, AND WASHERS) SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND TO THE CURRENT STANDARD PLAN R-60-SERIES, WHERE APPLICABLE, EXCEPT AS SPECIFIED ON THIS STANDARD.
 ALL GUARDRAIL RUNS SHALL HAVE TERMINAL ENDS ON THE ENDS, SEE DETAIL B1.

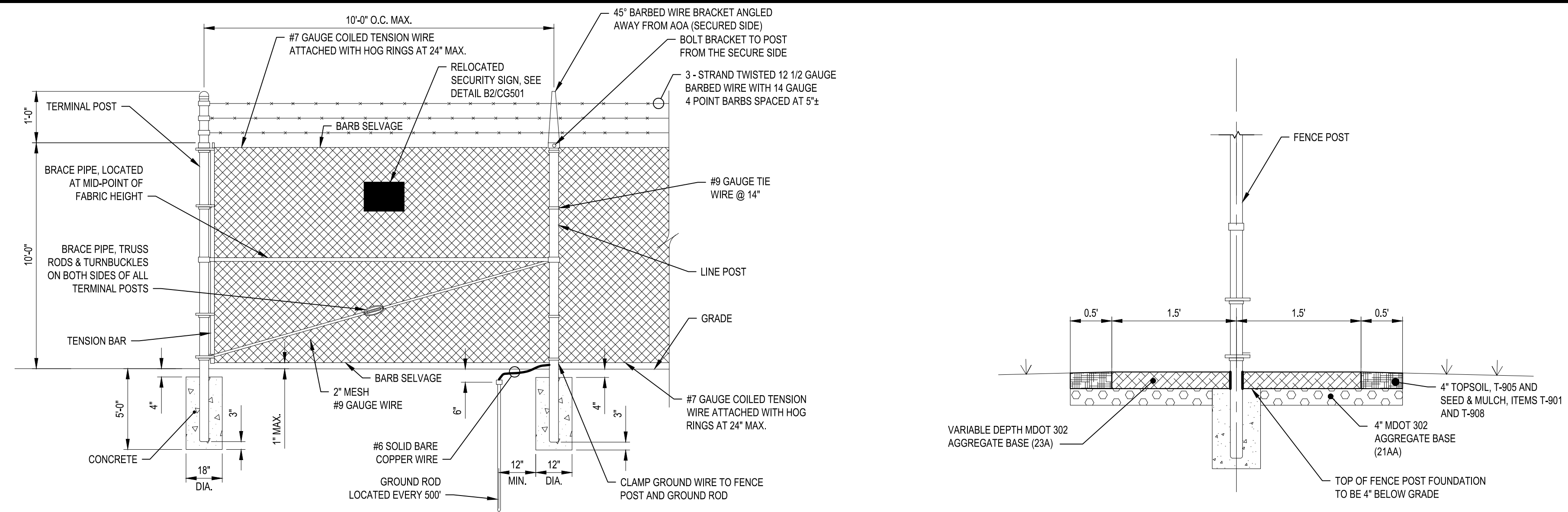
C1 GUARDRAIL TYPE A
 SCALE: NOT TO SCALE



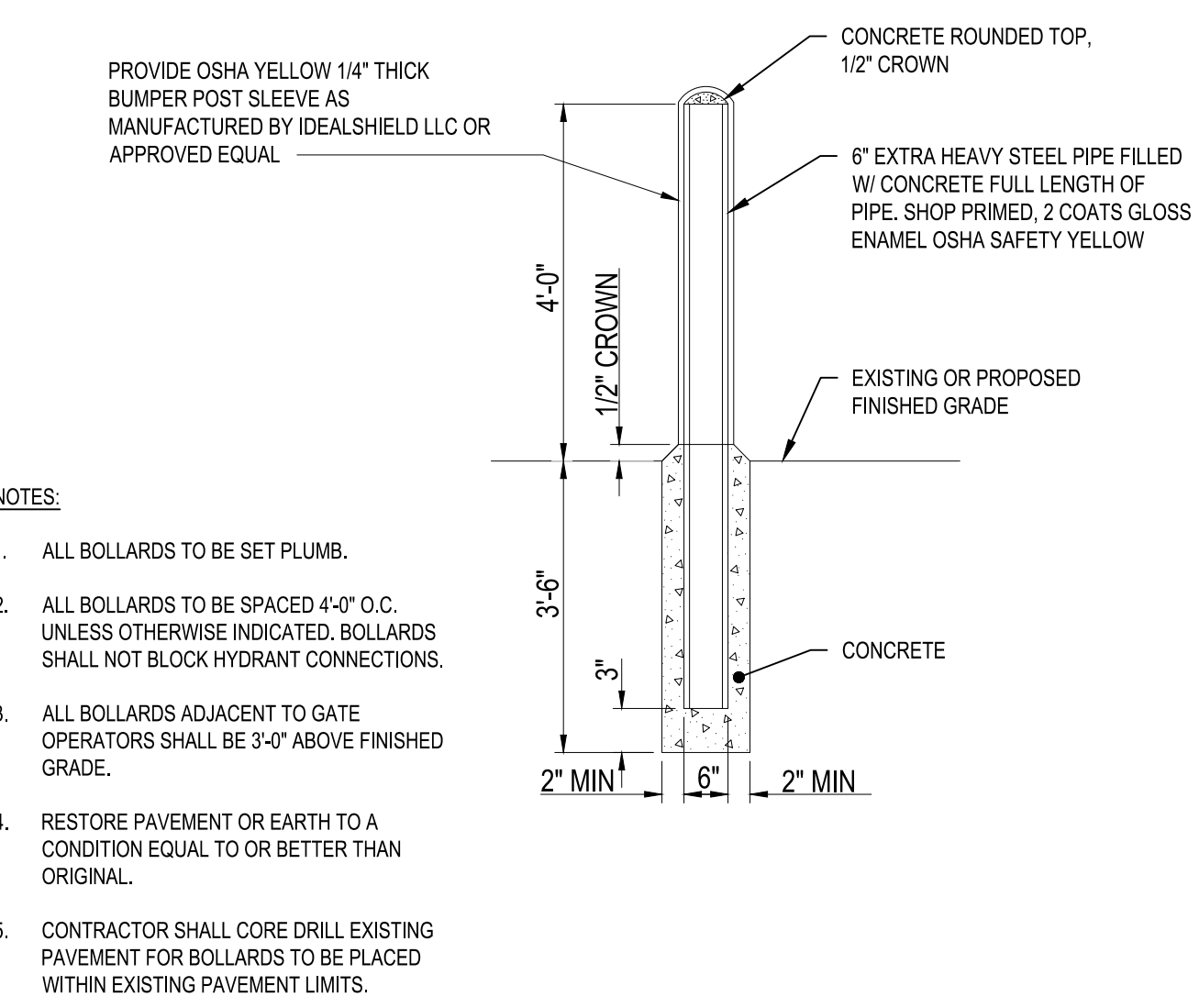
B2 STRUCTURE BOX OUT JOINTING DETAIL
 SCALE: NOT TO SCALE



B1 GUARDRAIL TERMINAL END DETAIL (TYPE B) & FOUNDATION
 SCALE: NOT TO SCALE



A2 CHAIN LINK FENCE DETAIL
 SCALE: NOT TO SCALE

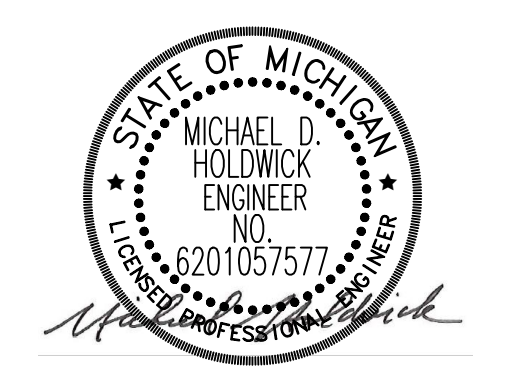


A1 TYPICAL BOLLARD DETAIL
 SCALE: NOT TO SCALE

NOTES:
 1. ALL BOLLARDS TO BE SET PLUMB.
 2. ALL BOLLARDS TO BE SPACED 4'-0" O.C. UNLESS OTHERWISE INDICATED. BOLLARDS SHALL NOT BLOCK HYDRANT CONNECTIONS.
 3. ALL BOLLARDS ADJACENT TO GATE OPERATORS SHALL BE 3'-0" ABOVE FINISHED GRADE.
 4. RESTORE PAVEMENT OR EARTH TO A CONDITION EQUAL TO OR BETTER THAN ORIGINAL.
 5. CONTRACTOR SHALL CORE DRILL EXISTING PAVEMENT FOR BOLLARDS TO BE PLACED WITHIN EXISTING PAVEMENT LIMITS.



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**AIRPORT FIELD MAINTENANCE
 FUEL FACILITY RELOCATION
 GERALD R. FORD INTL AIRPORT
 GRAND RAPIDS, MICHIGAN**

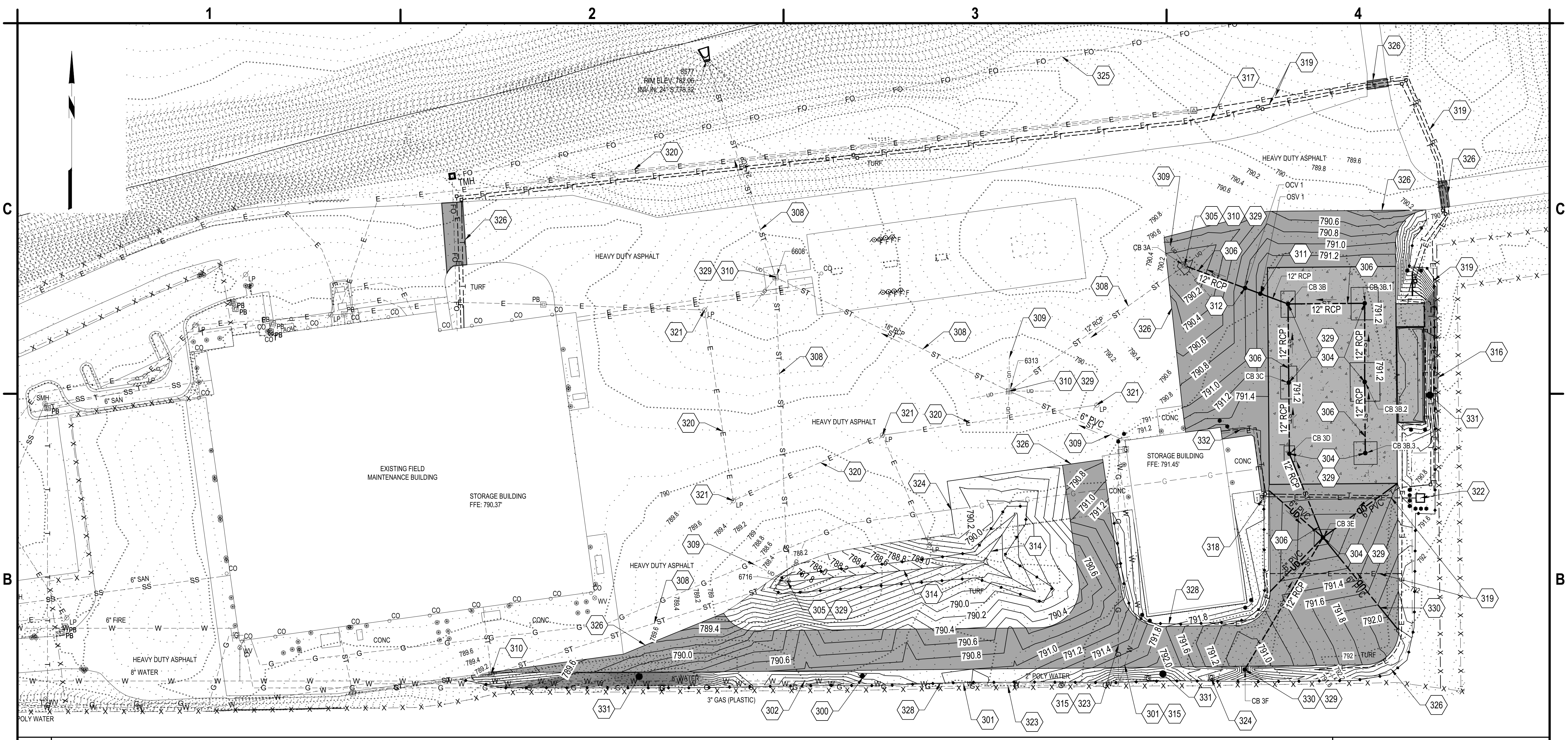
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**GEOMETRY AND PCC
 JOINT LAYOUT
 DETAILS**

CP503

SHEET NO. 15 OF 36

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B1 GRADING, DRAINAGE AND UTILITY PLANS
SCALE: 1" = 40'



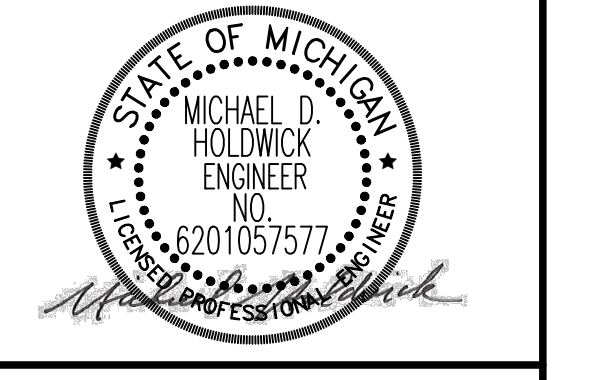
- | | |
|--|---|
| <p>300. RELOCATE SALVAGED HYDRANT ASSEMBLY, SPEC D-707</p> <p>301. EXISTING 2" POLY WATER SERVICE, PROTECT IN PLACE</p> <p>302. EXISTING 8" DIP WATER SERVICE, PROTECT IN PLACE</p> <p>304. PROPOSED CATCH BASIN (TYP.) SPEC MDOT 403. SEE DETAIL A1/CU502</p> <p>305. CONNECT PROPOSED STORM SEWER PIPE TO EXISTING CATCH BASIN</p> <p>306. PROPOSED STORM SEWER LINE, SEE DETAIL B4/CU502</p> <p>307. CONNECT PROPOSED STORM DRAIN LINE TO EXISTING STORM SEWER PIPE</p> <p>308. EXISTING RCP STORM SEWER PIPE, PROTECT IN PLACE</p> <p>309. EXISTING UNDERDRAIN TO REMAIN (TYP.)</p> <p>310. EXISTING STORM CATCH BASIN, PROTECT IN PLACE</p> <p>311. PROPOSED 12" OIL STOP VALVE MANHOLE, SEE DETAIL A3/CU502</p> <p>312. FUEL TRANSFER ISOLATION GATE VALVE, SEE DETAIL C4/CU502</p> <p>314. PROPOSED DRAINAGE SWALE @ 1% LONGITUDINAL GRADE</p> <p>315. CONCRETE ENCASE EXISTING UTILITY, SEE DETAIL B1/CG501</p> <p>316. PROPOSED SECURITY FENCE, SEE CP SERIES</p> <p>317. PROPOSED COMMUNICATION CABLE AND CONDUIT, SEE ELECTRICAL PLANS</p> <p>318. PROPOSED ELECTRICAL ELECTRICAL PULL BOX, SEE ELECTRICAL PLANS</p> <p>319. PROPOSED ELECTRICAL PRIMARY POWER FEED, SEE ELECTRICAL PLANS</p> <p>320. EXISTING ELECTRICAL, PROTECT IN PLACE</p> <p>321. EXISTING LIGHT POLE, PROTECT IN PLACE</p> <p>322. PROPOSED ELECTRICAL TRANSFORMER AND PAD, SEE ELECTRICAL PLANS</p> | <p>323. EXISTING GAS SERVICE, PROTECT IN PLACE</p> <p>324. EXISTING GAS SERVICE, CAP AND ABANDON IN PLACE</p> <p>325. EXISTING SECURITY FIBER OPTIC LINE, PROTECT IN PLACE</p> <p>326. MATCH EXISTING GRADE (TYP.)</p> <p>328. PROPOSED SILT FENCE, SEE DETAIL C2/CU501. FINAL LOCATION TO BE APPROVED BY THE RPR</p> <p>329. PROPOSED STORM DRAIN INLET PROTECTION (TYP.), SEE DETAIL C3/CU501</p> <p>330. PROPOSED UNDERDRAIN (TYP.), SPEC MDOT 404. SEE DETAIL C3/CU502</p> <p>331. INSTALL EROSION CONTROL BLANKET AT DIRECTION OF RPR. SEE DETAIL B2/CU501</p> <p>332. PROPOSED COMMUNICATION CONDUIT, INSTALLED INTO SAND STORAGE BUILDING. SEE ELECTRICAL SERIES</p> |
|--|---|

A1 KEYED NOTES
SCALE: NOT TO SCALE

- NOTES:**
- SEE ELECTRICAL AND COMMUNICATIONS PLAN FOR ALL WORK ASSOCIATED WITH SITE LIGHTING, POWER DISTRIBUTION AND CABLING, COMMUNICATIONS AND FIBER OPTIC WORK.
 - THE CONTRACTOR MAY SALVAGE BASE MATERIALS UNDER PAVEMENT TO BE DEMOLISHED. SEE CD501 FOR PAVEMENT THICKNESS INFORMATION.
 - THE CONTRACTOR SHALL RESTORE ALL DISTURBED TURF AREAS WITH 4" OF TOPSOIL AND SEED PER MDOT 816 THM (TYP).
 - SEE CF100 FOR FUEL FARM LAYOUT INFORMATION
 - SEE CG102 FOR CONCRETE PAD ELEVATIONS AND UNDERDRAIN LAYOUT.
 - THE FUEL TRANSFER ISOLATION GATE VALVE PROVIDES 15,000 GALLONS OF CONTAINMENT CAPACITY WHEN CLOSED.

A3 SHEET NOTES
SCALE: NOT TO SCALE

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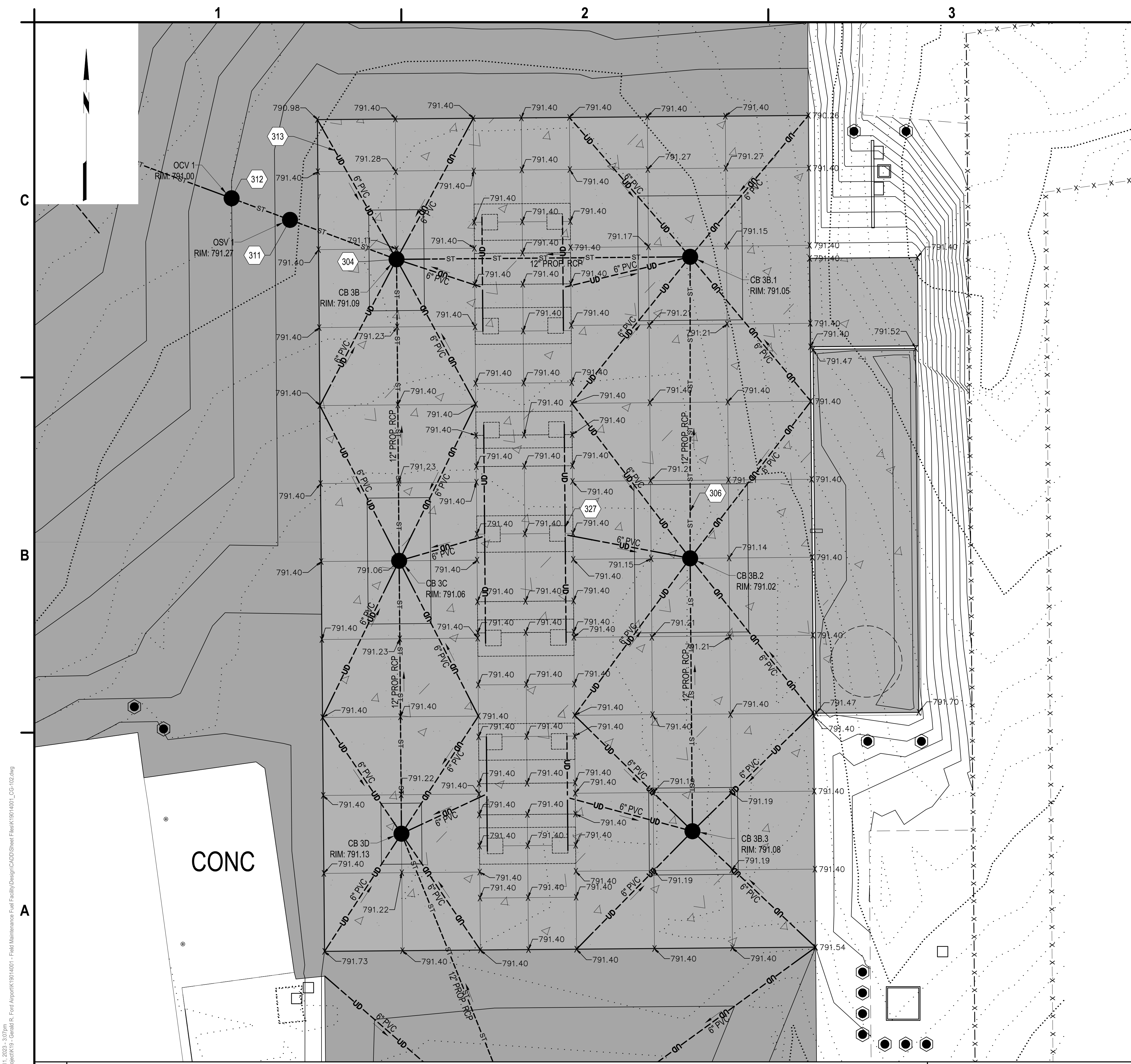


**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

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**GRADING, DRAINAGE
AND UTILITY PLANS**

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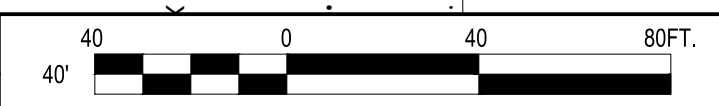


- 304. PROPOSED CATCH BASIN (TYP.) SPEC MDOT 403. SEE DETAIL A1/CU502
- 306. PROPOSED STORM SEWER LINE, SEE DETAIL B4/CU502
- 311. PROPOSED 12" OIL STOP VALVE MANHOLE, SEE DETAIL A3/CU502
- 312. FUEL TRANSFER ISOLATION GATE VALVE, SEE DETAIL C4/CU502
- 313. PROPOSED UNDERDRAIN (TYP.), SPEC MDOT 404. SEE DETAIL C3/CU502
- 327. CONTRACTOR SHALL CONNECT ROOF DRAINS TO UNDERGROUND UNDERDRAIN SYSTEM TO DRAIN (TYP. ALL CANOPY COLUMNS)

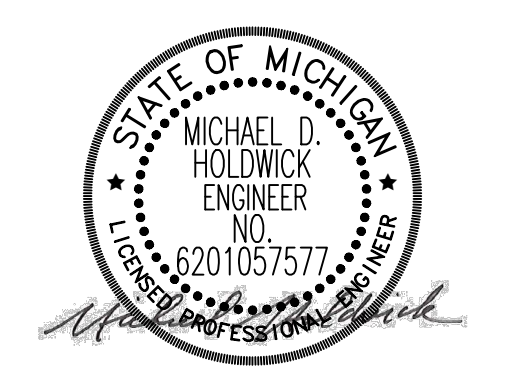
A1 KEYED NOTES
SCALE: NOT TO SCALE

- NOTES:
1. REFER TO THE PROPOSED UTILITY SERIES FOR UTILITY WORK.
 2. SEE ELECTRICAL AND COMMUNICATIONS PLAN FOR ALL WORK ASSOCIATED WITH SITE LIGHTING, POWER DISTRIBUTION AND CABLING, COMMUNICATIONS AND FIBER OPTIC WORK.
 3. SEE CF100 FOR FUEL FARM LAYOUT INFORMATION.
 4. THE FUEL TRANSFER ISOLATION GATE VALVE PROVIDES 15,000 GALLONS OF CONTAINMENT CAPACITY WHEN CLOSED.

A3 SHEET NOTES & BOLLARD LOCATIONS
SCALE: NOT TO SCALE



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FUEL PAD ELEVATION PLAN

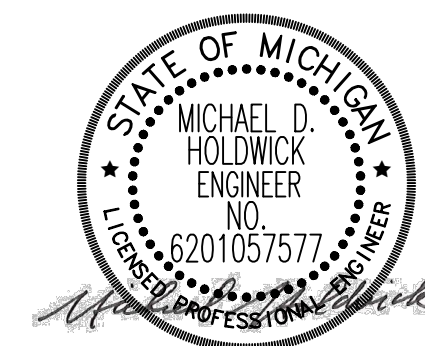
CG102

SHEET NO. 17 OF 36

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**AIRPORT FIELD MAINTENANCE
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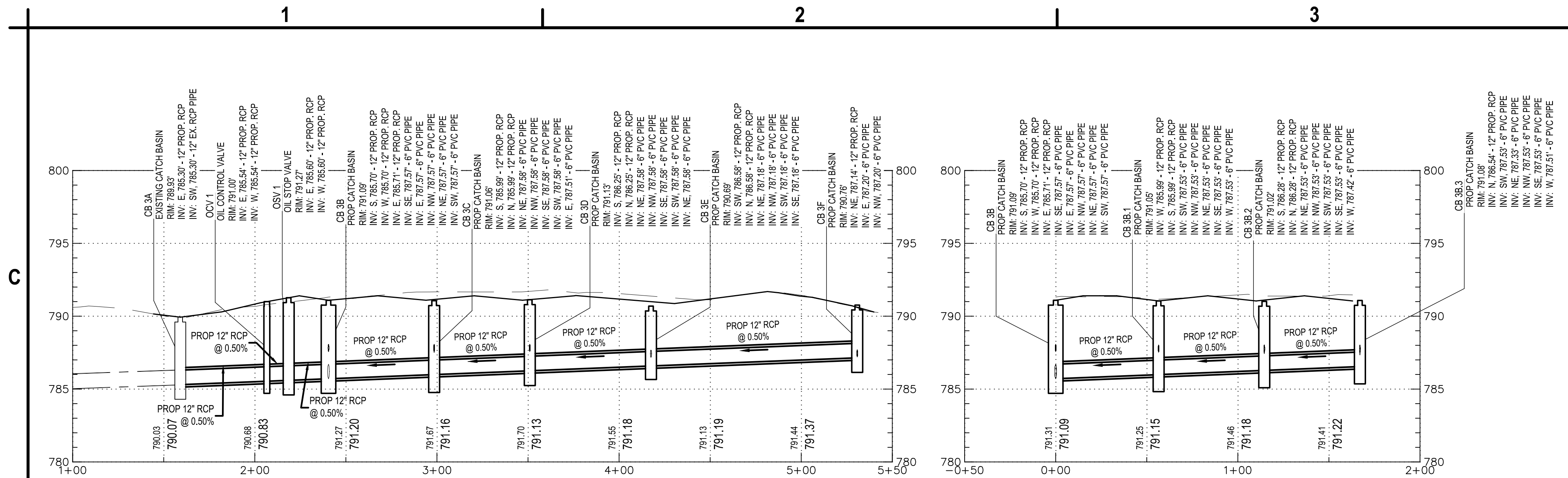
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PROFILES

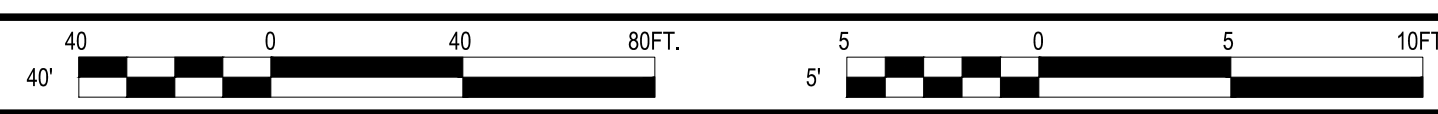
CG301

SHEET NO. 18 OF 36

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C1 PROFILES
 SCALE: HORIZ. 1" = 40' VERT. 1" = 5'

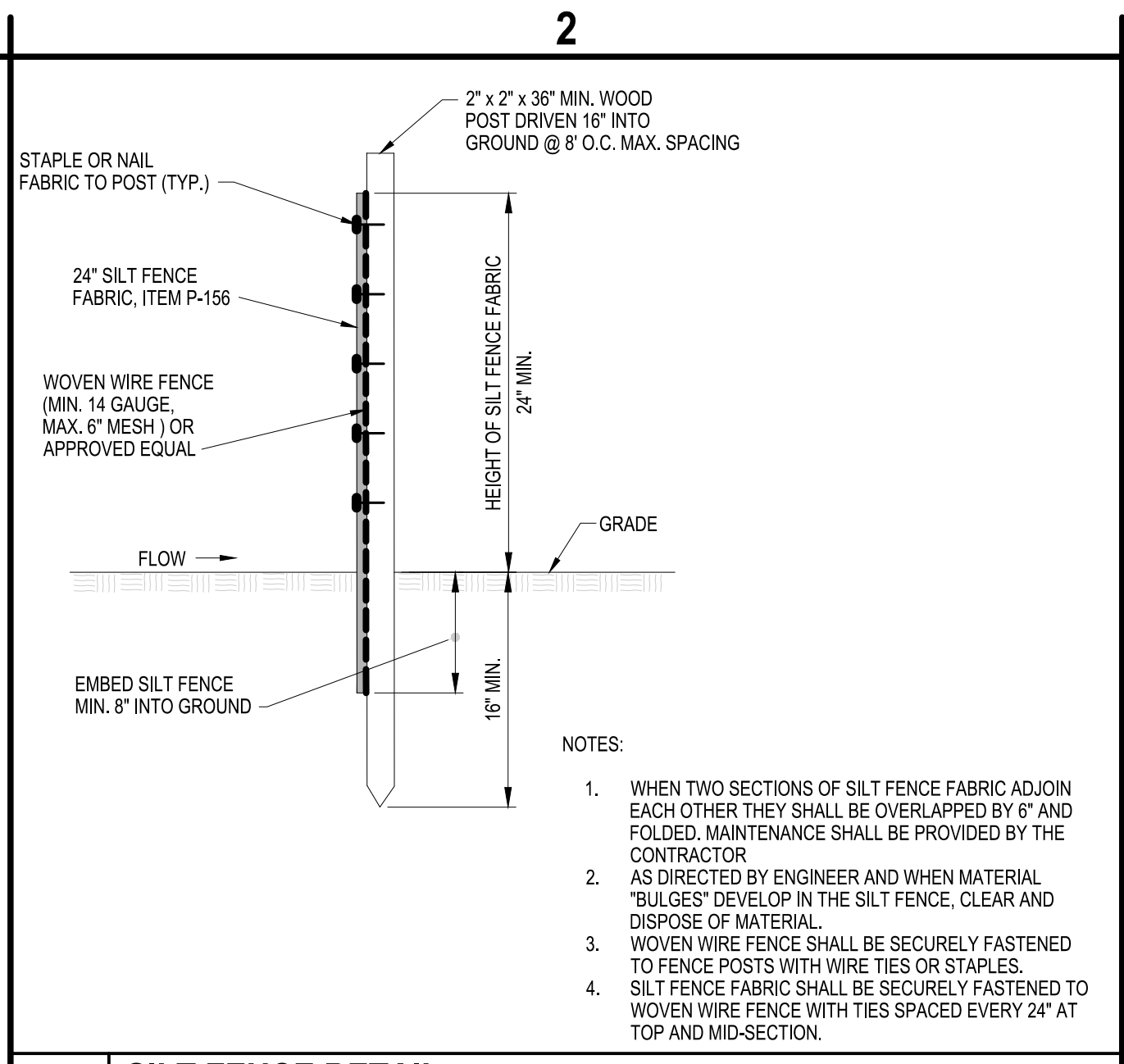
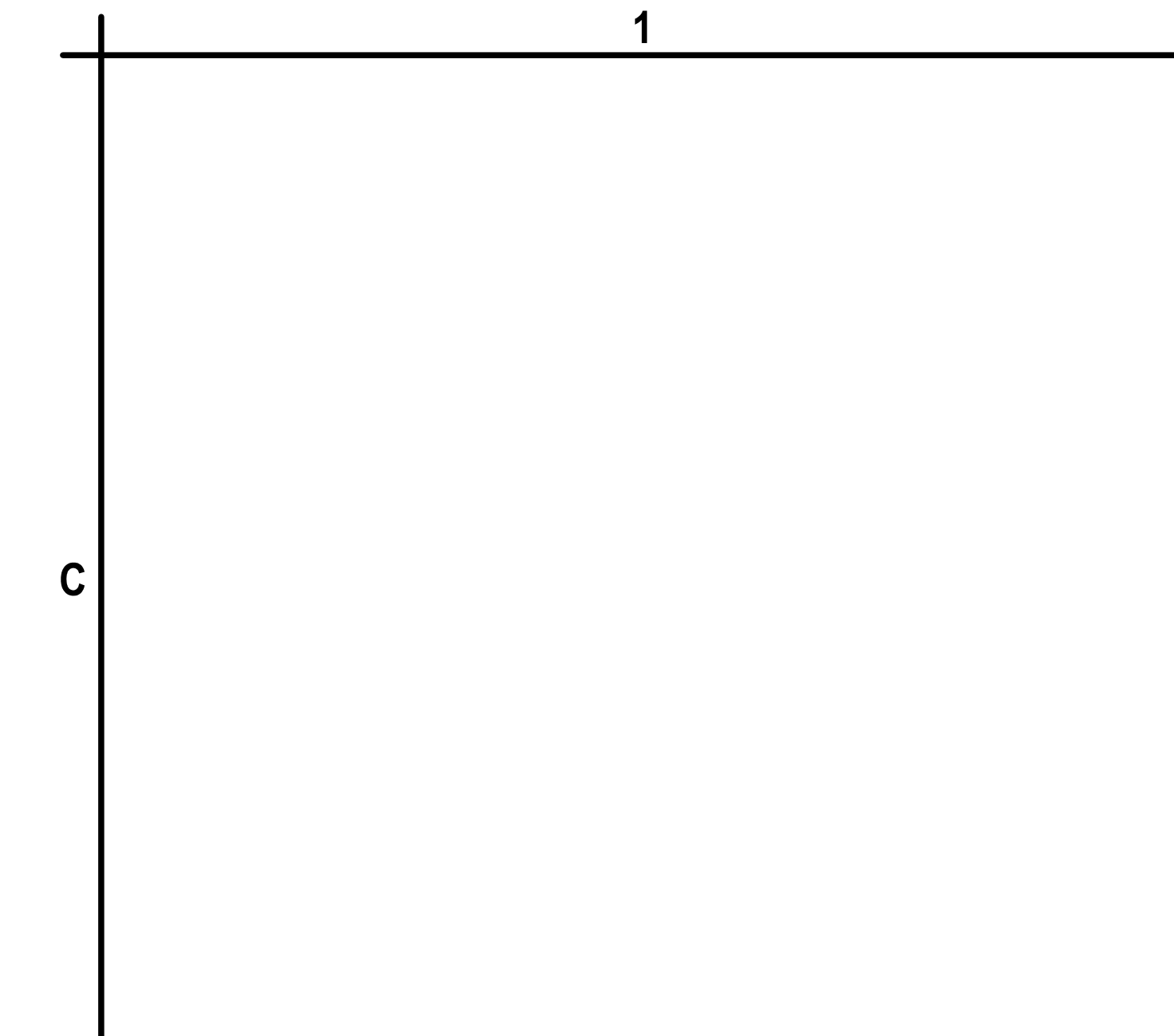


STRUCTURE TABLE			
STRUCTURE NAME & LOCATION:	DETAILS:	PIPES IN:	PIPES OUT
CB 3A N: 503177.08 E: 12809219.41	48" EXISTING CATCH BASIN RIM = 789.93	12" PROP. RCP INV IN = 785.30	12" EX. RCP PIPE INV OUT = 785.30
CB 3B N: 503148.83 E: 12809295.72	72" PROP CATCH BASIN RIM = 791.09	12" PROP. RCP INV IN = 785.70 12" PROP. RCP INV IN = 785.71 6" PVC Pipe INV IN = 787.57 6" PVC Pipe INV IN = 787.57 6" PVC Pipe INV IN = 787.57 6" PVC Pipe INV IN = 787.57	12" PROP. RCP INV OUT = 785.70
CB 3B.1 N: 503149.32 E: 12809352.22	48" PROP CATCH BASIN RIM = 791.05	12" PROP. RCP INV IN = 785.99 6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.53	12" PROP. RCP INV OUT = 785.99
CB 3B.2 N: 503091.31 E: 12809352.21	48" PROP CATCH BASIN RIM = 791.02	12" PROP. RCP INV IN = 786.28 6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.53	12" PROP. RCP INV OUT = 786.28
CB 3B.3 N: 503038.82 E: 12809352.66	48" PROP CATCH BASIN RIM = 791.08	6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.33 6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.53 6" PVC Pipe INV IN = 787.51	12" PROP. RCP INV OUT = 786.54
CB 3C N: 503090.83 E: 12809296.22	48" PROP CATCH BASIN RIM = 791.06	12" PROP. RCP INV IN = 785.99 6" PVC Pipe INV IN = 787.58 6" PVC Pipe INV IN = 787.58 6" PVC Pipe INV IN = 787.58 6" PVC Pipe INV IN = 787.58 6" PVC Pipe INV IN = 787.51	12" PROP. RCP INV OUT = 785.99

STRUCTURE TABLE			
STRUCTURE NAME & LOCATION:	DETAILS:	PIPES IN:	PIPES OUT
CB 3D N: 503038.34 E: 12809296.67	48" PROP CATCH BASIN RIM = 791.13	12" PROP. RCP INV IN = 786.25 6" PVC Pipe INV IN = 787.58 6" PVC Pipe INV IN = 787.58 6" PVC Pipe INV IN = 787.58 6" PVC Pipe INV IN = 787.58 6" PVC Pipe INV IN = 787.58	12" PROP. RCP INV OUT = 786.25
CB 3E N: 502976.58 E: 12809321.45	48" PROP CATCH BASIN RIM = 790.69	12" PROP. RCP INV IN = 786.58 6" PVC Pipe INV IN = 787.18 6" PVC Pipe INV IN = 787.18 6" PVC Pipe INV IN = 787.18 6" PVC Pipe INV IN = 787.18	12" PROP. RCP INV OUT = 786.58
CB 3F N: 502879.14 E: 12809263.77	48" PROP CATCH BASIN RIM = 790.76	6" PVC Pipe INV IN = 787.20 6" PVC Pipe INV IN = 787.20	12" PROP. RCP INV OUT = 787.14
OCV 1 N: 503160.58 E: 12809263.98	15" OIL CONTROL VALVE RIM = 791.00	12" PROP. RCP INV IN = 785.54	12" PROP. RCP INV OUT = 785.54
OSV 1 N: 503156.42 E: 12809275.22	48" OIL STOP VALVE RIM = 791.27	12" PROP. RCP INV IN = 785.60	12" PROP. RCP INV OUT = 785.60

A1 STRUCTURE TABLES
 SCALE: NTS

Apr 11, 2023, 3:07pm P:\Projects\K19 - Gerald R. Ford Airport\K19014001 - Field Maintenance Fuel Facility\Design\CADD\Sheet Files\K19014001_CG-PROFILES.dwg

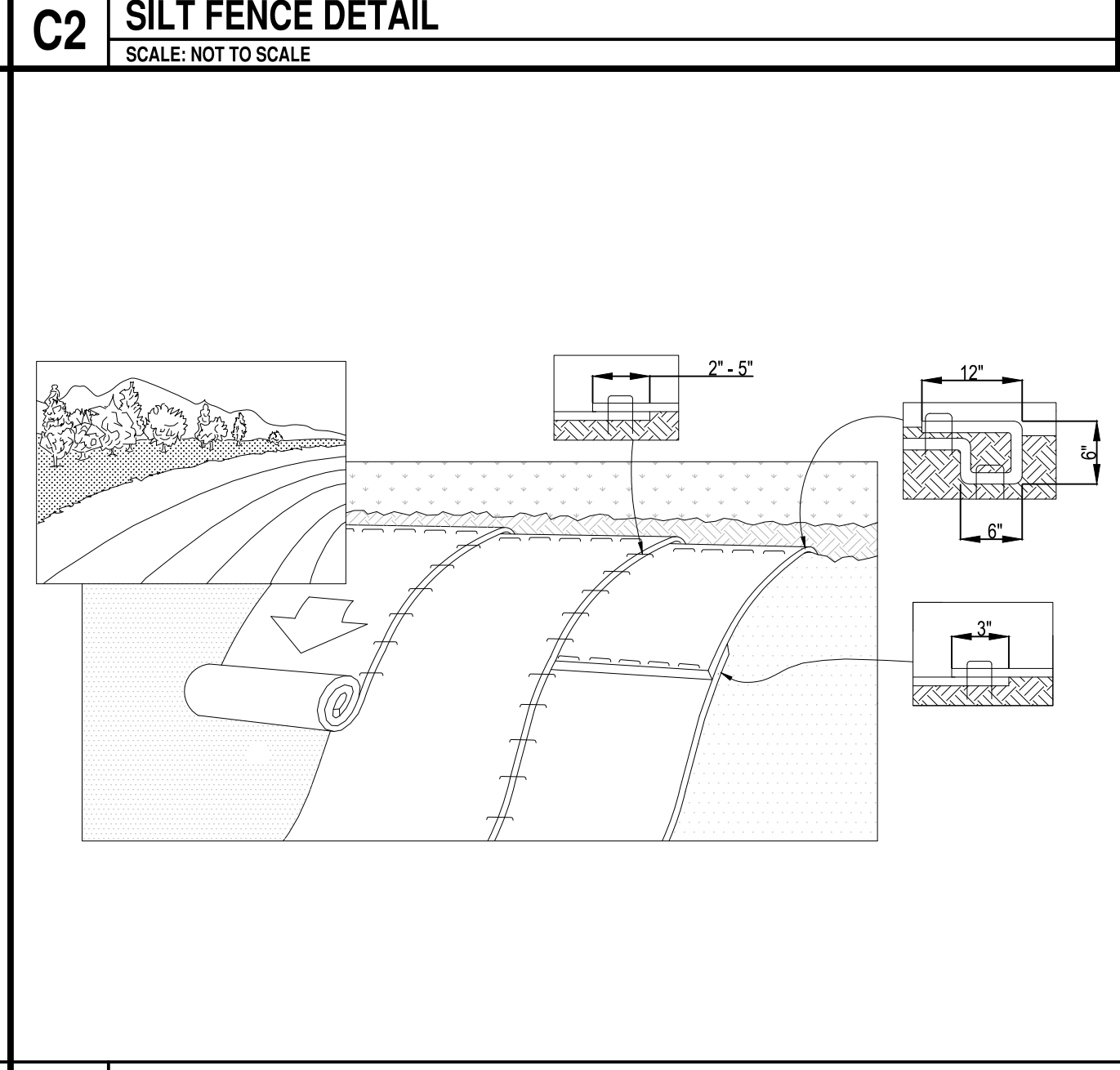
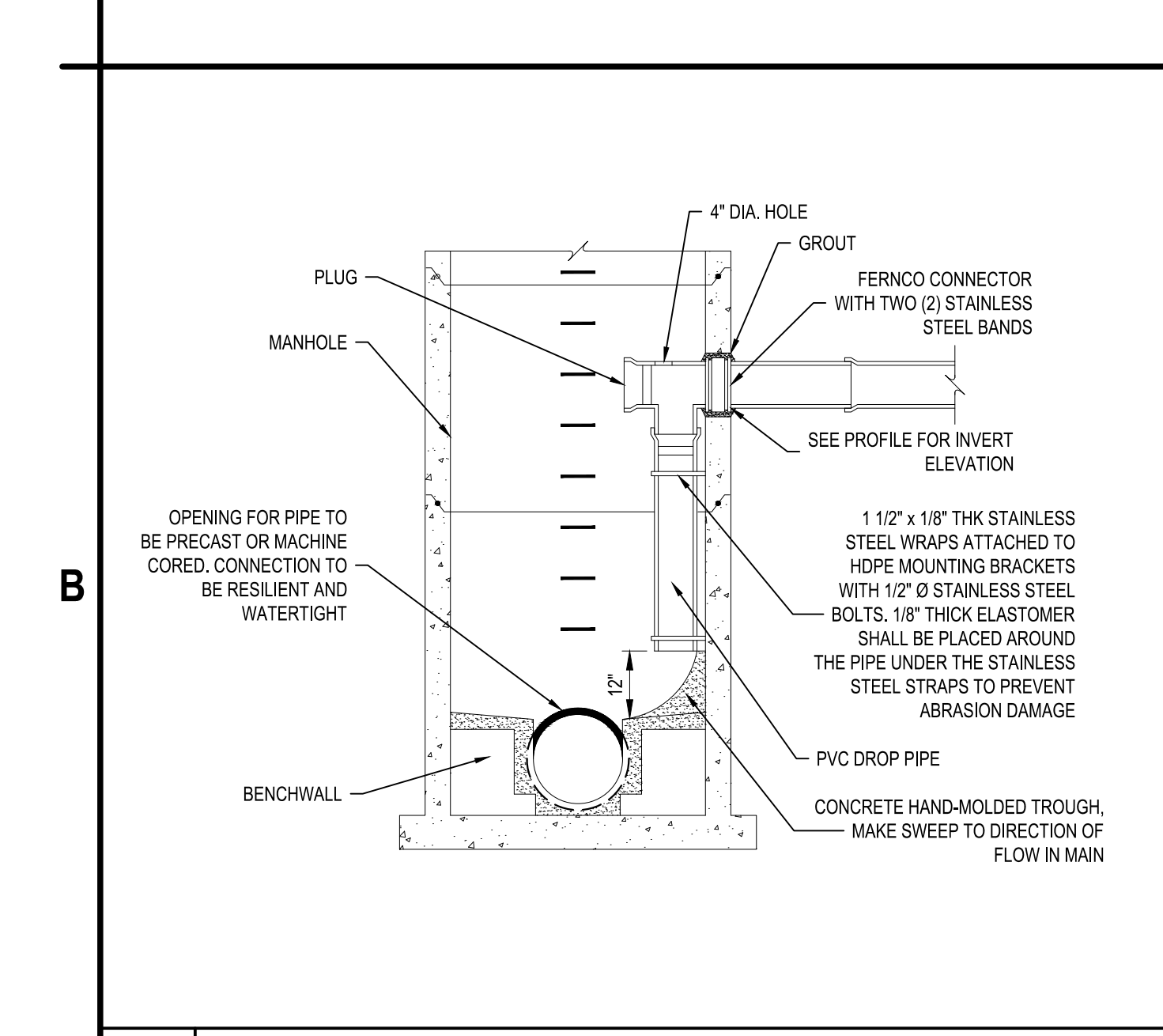


C2 SILT FENCE DETAIL
SCALE: NOT TO SCALE

C3 STORM DRAIN INLET PROTECTION
SCALE: NOT TO SCALE

CATCH BASIN INSERT INLET PROTECTION NOTES:

- INLETS IN TURF AREAS SHALL HAVE SILT FENCE INSTALLED AROUND THE STRUCTURES AS WELL.
- CATCH BASIN INSERT SHALL BE ULTRA-DRAIN GUARD®, REUSABLE MODEL OR APPROVED EQUAL. CONTRACTOR SHALL VERIFY DIMENSIONS OF STRUCTURES WITH MANUFACTURER PRIOR TO ORDERING FOR CORRECT SIZING.
- THE CATCH BASIN INSERT SHALL BE INSTALLED, MAINTAINED AND REMOVED IN ALL EXISTING AND PROPOSED STRUCTURES WITHIN THE CONSTRUCTION LIMITS PER MANUFACTURER RECOMMENDATIONS.
- THE LOCATIONS SHOWN ON THE PLAN FOR PLACEMENT OF THIS DEVICE MAY VARY FROM WHERE THEY ARE ACTUALLY INSTALLED. THE DEVICES SHALL BE PLACED IN CATCH BASINS DURING CONCRETE SAW CUTTING AND DRILLING OPERATIONS, DURING REMOVAL OF CURING COMPOUND, AND AT ALL OTHER TIMES THAT THERE WILL BE WATER FLOWING INTO THE CATCH BASINS WHICH MAY CONTAIN DUST, DIRT OR OTHER FINE MATERIAL WHICH MAY CAUSE SILTATION DOWNSTREAM OF THE CONSTRUCTION SITE.
- ALL STORM WATER THAT NEEDS TO BE PUMPED FROM THE SITE SHALL BE PUMPED INTO ONE OF THESE DEVICES. THE FLOW RATE PUMPED INTO THIS DEVICE SHALL NOT EXCEED THE MANUFACTURER'S RECOMMENDED TREATMENT FLOW RATE. DURING THE PUMPING PROCESS, THE DEVICE SHALL BE MONITORED IN ORDER TO DETERMINE THAT IT IS TREATING THE WATER. IF THE WATER IS UTILIZING THE BYPASS PORT AND IS NOT BEING CLEANED BY THE DEVICE, THE PUMPING SHALL BE STOPPED AND THE DEVICE SHALL BE CLEANED PER MANUFACTURER'S RECOMMENDATIONS AND THEN REINSTALLED.
- ULTRA-DRAIN GUARD RETAINERS® OR APPROVED EQUAL MAY BE REQUIRED TO HOLD THE ULTRA-DRAIN GUARD®, REUSABLE MODEL OR APPROVED EQUAL IN-PLACE IF THE GRATING CANNOT BE INSTALLED, NEEDS TO BE REMOVED, OR THE INSERT IS INSTALLED ON A DRAINAGE MANHOLE.
- MAINTENANCE SHALL BE PROVIDED BY THE CONTRACTOR WHEN THE CAPACITY IS REDUCED BY APPROXIMATELY 50 PERCENT OR DIRECTED BY THE ENGINEER.

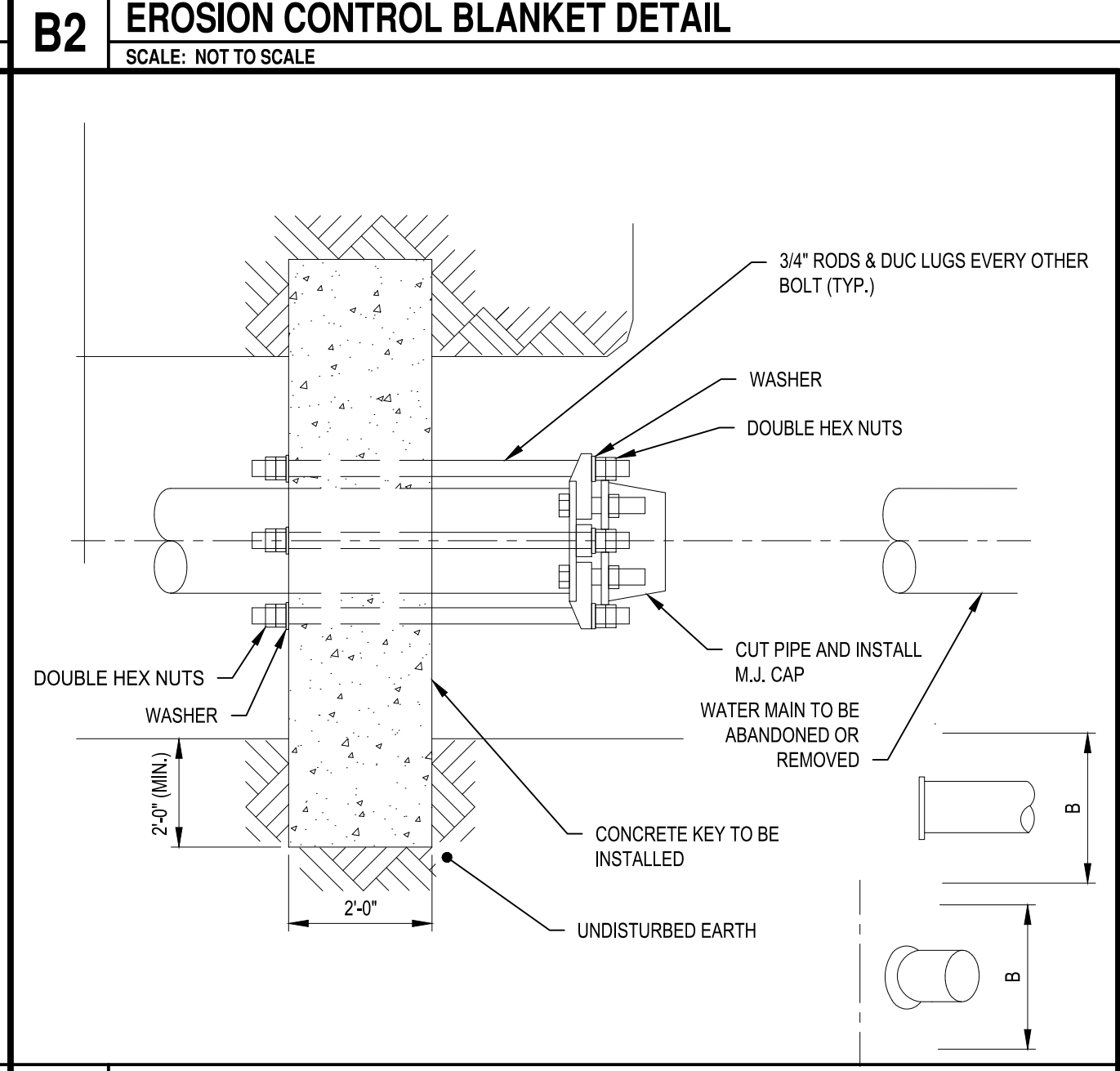
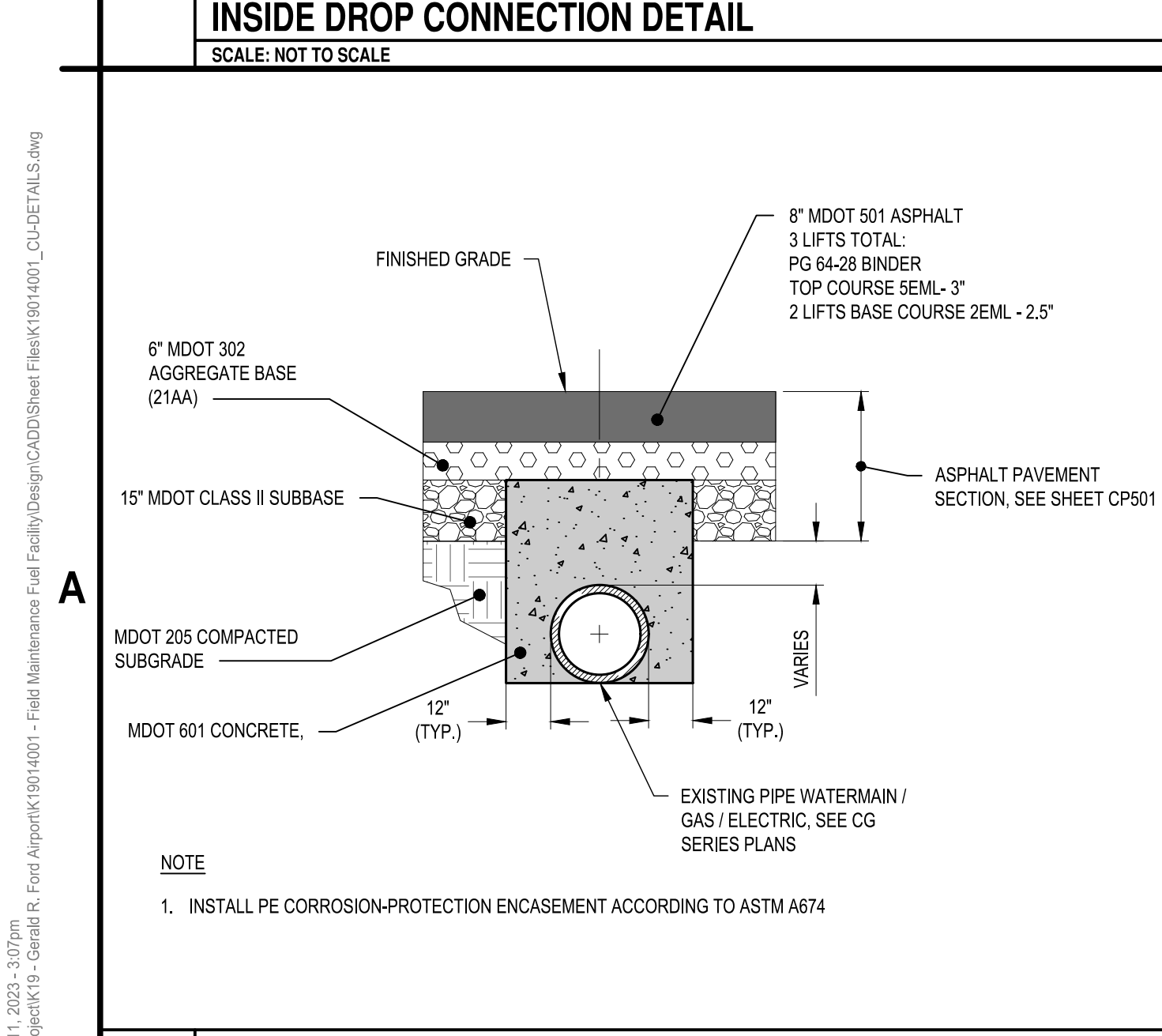


B2 EROSION CONTROL BLANKET DETAIL
SCALE: NOT TO SCALE

B1 INSIDE DROP CONNECTION DETAIL
SCALE: NOT TO SCALE

NOTES:

- ROLLED EROSION CONTROL PRODUCTS (RECP'S) SHALL BE "TEMPORARY". TEMPORARY PRODUCTS SHALL BE SPECIFIED AS "EROSION CONTROL BLANKETS" OR "ECB'S". ECB'S SHALL BE WESTERN EXCELSIOR "EXCEL SS-2 RAPID 60" OR APPROVED EQUAL. ALL RECP'S SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ECB'S MUST TOTALLY BIODEGRADE WITHIN 1 YEAR (OR TURF ESTABLISHMENT) WITHOUT LEAVING RESIDUE/NETTING.
- PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP'S IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP'S.
- ROLL THE RECP'S (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON RECP'S TYPE.
- CONSECUTIVE RECP'S SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP'S WIDTH. (NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.)



A2 CUT AND CAP DETAIL
SCALE: NOT TO SCALE

A1 PIPE TRENCHING DETAIL IN PAVEMENT
SCALE: NOT TO SCALE

NOTE:

- INSTALL PE CORROSION-PROTECTION ENCASEMENT ACCORDING TO ASTM A674

A4 WATERMAIN NOTES
SCALE: NOT TO SCALE

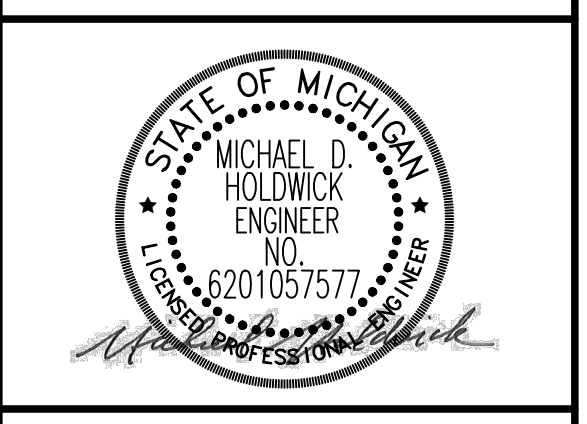
- ALL WATER SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND GENERAL SPECIFICATION OF THE AGENCIES HAVING JURISDICTION OF THE WATER SUPPLY SYSTEM AND CONSTRUCTION AREA. THE CONTRACTOR IS RESPONSIBLE TO COMPLY WITH ALL APPLICABLE NATIONAL AND LOCAL CODES. THE CONTRACTOR IS TO NOTIFY THE ENGINEER IMMEDIATELY IF CONTRACT DOCUMENTS CONFLICT WITH ANY SUCH CODES.
- ALL WATERMAIN SHALL BE DUCTILE IRON, CEMENT LINED, CLASS 56, AND SHALL BE FULLY WRAPPED IN POLYETHYLENE IN ACCORDANCE WITH THE LATEST SPECIFICATION OF AWWA C105. ALL FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT DUCTILE IRON.
- WATER MAIN CONSTRUCTION SHALL BE COORDINATED WITH THE ENGINEER AND THE GERALD R. FORD INTERNATIONAL AIRPORT AUTHORITY. THE CONTRACTOR SHALL PROVIDE A WORK PLAN WITH SCHEDULE AND MILESTONES, CONSTRUCTION METHODS, AND A RISK ANALYSIS DETAILING POTENTIAL HAZARDS AND PROPOSED HAZARD MITIGATION PROCEDURES. THIS WORK PLAN SHALL BE PRESENTED TO THE ENGINEER AS SOON AS POSSIBLE WITH A MINIMUM OF 30 DAYS PRIOR TO COMMENCEMENT OF SUCH PROCEDURES. THE EXISTING WATER MAIN MAY ONLY BE SHUT DOWN BETWEEN THE HOURS OF 11PM - 5AM DURING CONNECTION TO PROPOSED WATER MAIN.
- RECORD DRAWINGS FOR EXISTING WATER MAIN ARE NOT AVAILABLE, THUS THE EXACT DEPTH, LOCATION AND TYPE OF EXISTING WATER MAIN IS UNKNOWN.
- OPERATION OF EXISTING WATER MAIN IS TO BE MAINTAINED UNTIL REPLACEMENT LINE IS PLACED INTO SERVICE. EVERY EFFORT SHALL BE MADE TO PROTECT IN PLACE EXISTING WATER MAIN. IF WATER SERVICE IS COMPROMISED DUE TO WATER MAIN BREAKAGE WITHIN THE CONSTRUCTION AREA, THE CONTRACTOR SHALL IMMEDIATELY REPAIR THE DAMAGE AND IS RESPONSIBLE FOR THE IMPLICATIONS OF ANY NECESSARY SHUT DOWN. NO SEPARATE PAYMENT WILL BE MADE FOR EMERGENCY REPAIR WORK. EMERGENCY REPAIR WORK IS TO COMPLY WITH ANY APPLICABLE NATIONAL AND LOCAL CODES.
- PROPOSED WATER MAIN IS TO BE INSTALLED AT A MINIMUM DEPTH OF 6.0 FEET UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WATER MAIN SHALL BE INSTALLED WITH MINIMUM 18 INCHES OF VERTICAL SEPARATION FROM ANY EXISTING OR PROPOSED UTILITY. WATER MAINS SHALL CROSS SEWER MAINS AT HIGHER ELEVATION THAN THE SEWER MAIN UNLESS OTHERWISE DIRECTED BY THE ENGINEER. CROSSINGS SHALL BE ARRANGED SO THAT WATER MAIN JOINTS ARE AS FAR AS POSSIBLE FROM SEWER MAIN JOINTS. CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE NATIONAL AND LOCAL CODES.
- CONNECTION TO EXISTING WATER MAIN SHALL BE MADE ONLY AFTER HYDROSTATIC AND BACTERIOLOGICAL TESTS HAVE BEEN SUCCESSFULLY COMPLETED AND REVIEWED BY THE ENGINEER AND THE GERALD R. FORD INTERNATIONAL AIRPORT AUTHORITY. TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SEE TECHNICAL SPECIFICATION D-707 FOR ADDITIONAL INFORMATION.
- ALL SURFACE STRUCTURES, SUCH AS HYDRANTS, VALVE PITS AND CURB BOXES SHALL BE SET TO GRADE AS INDICATED ON THE PLANS UNLESS OTHERWISE DIRECTED BY ENGINEER.
- ALL FITTINGS SHALL CONFORM TO TECHNICAL SPECIFICATION D-707 UNLESS OTHERWISE DIRECTED BY ENGINEER.
- ALL VALVE PITS SHALL CONFORM TO TECHNICAL SPECIFICATION D-707 UNLESS OTHERWISE DIRECTED BY ENGINEER.

A4 WATERMAIN NOTES
SCALE: NOT TO SCALE

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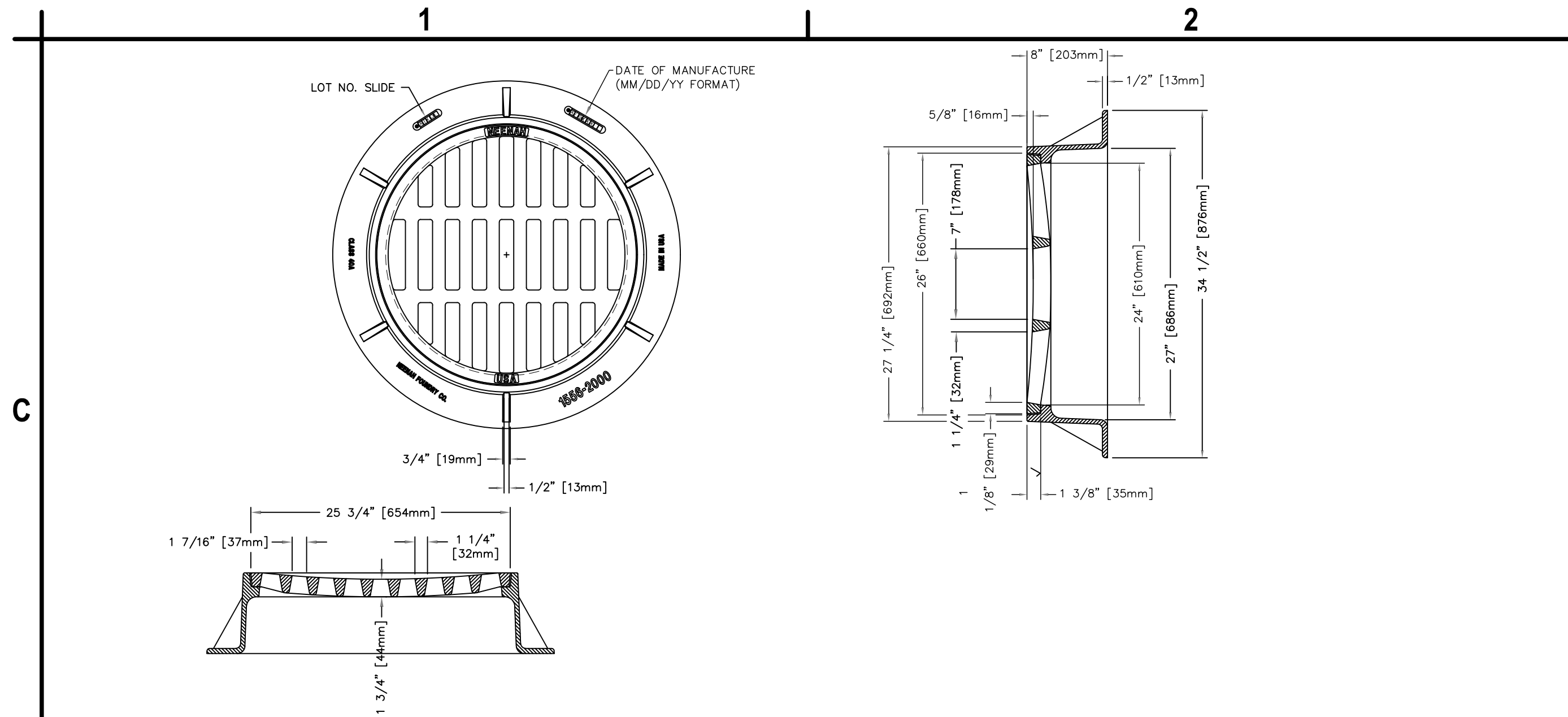


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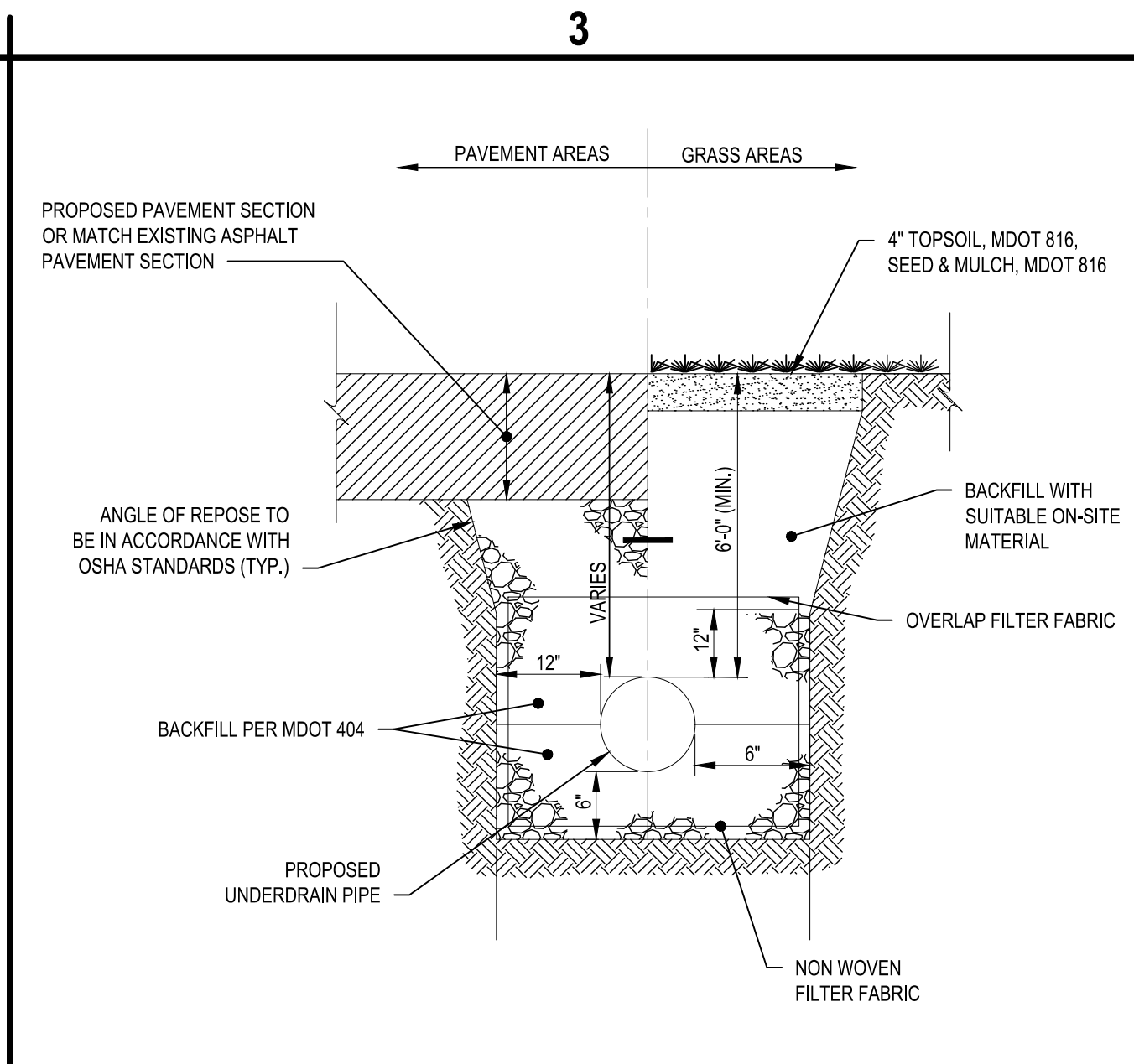


**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

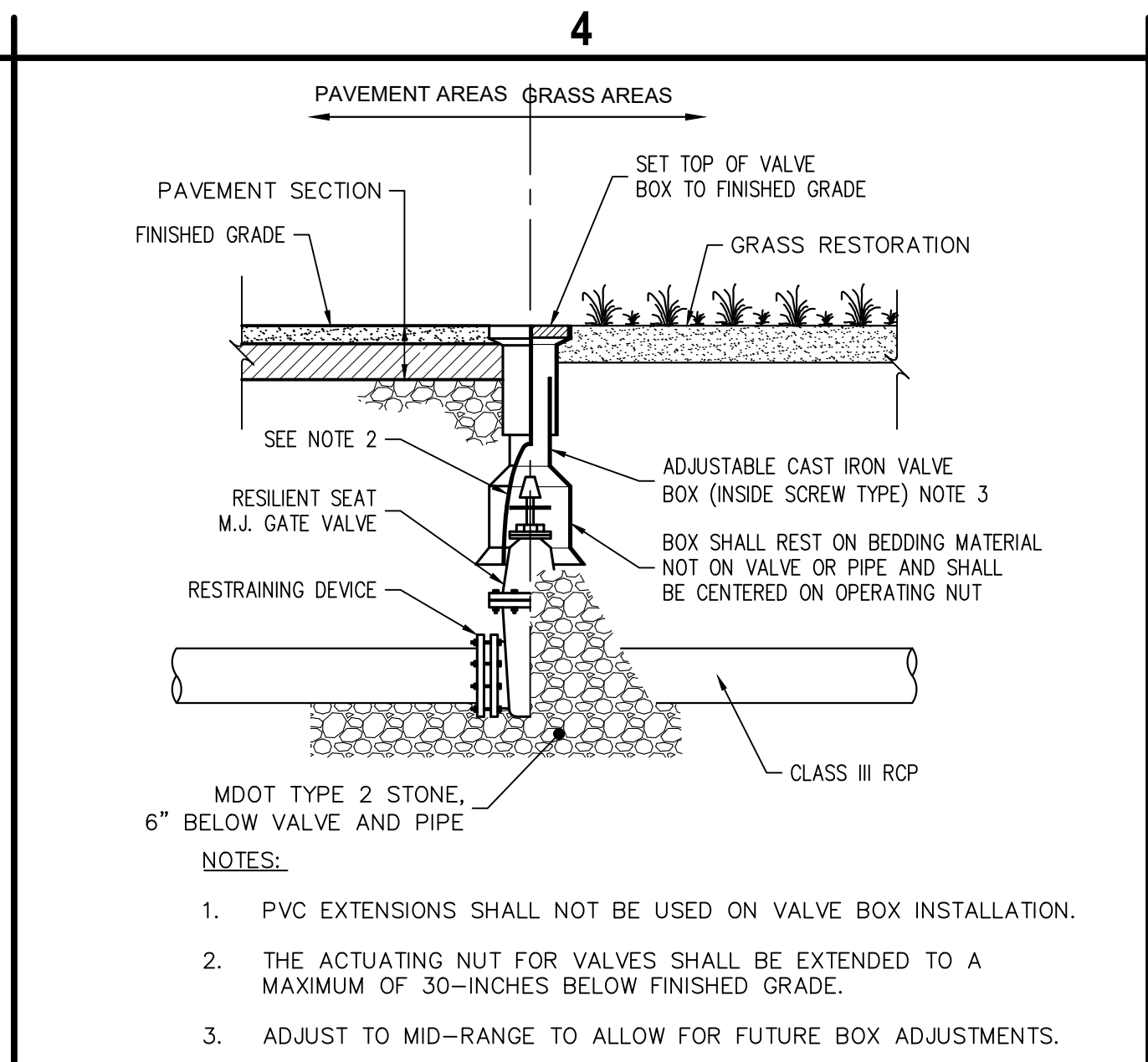
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REVISIONS		
PROJECT NO: K19.014.001		
DATE: APRIL 2023		
DRAWN BY: G.H. HAYDEN		
DESIGNED BY: R.D. MIDDLESWARTH		
CHECKED BY: M.D. HOLDWICK		
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		
UTILITY AND DRAINAGE DETAILS		
CU501		
SHEET NO. 19 OF 36		



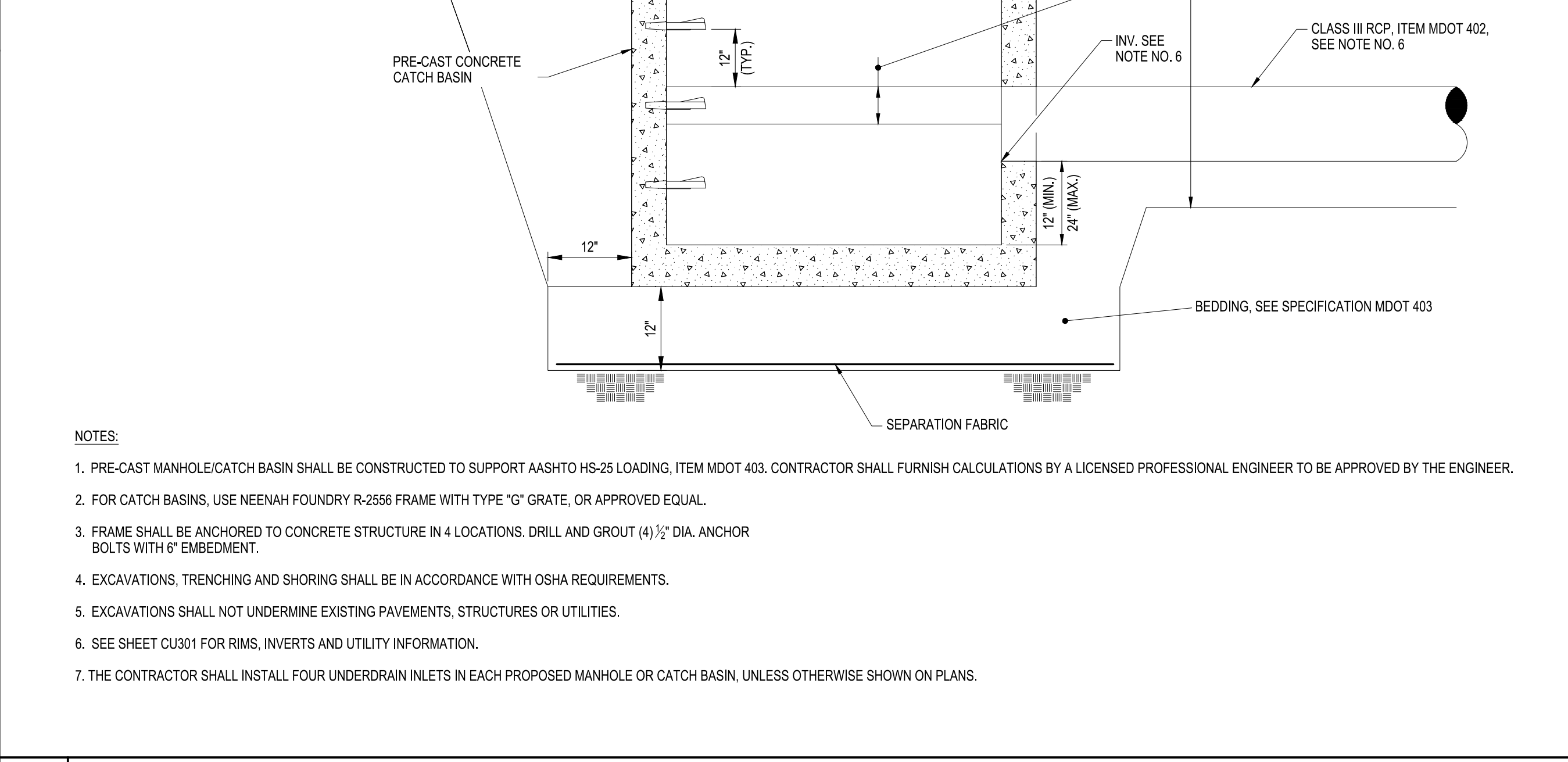
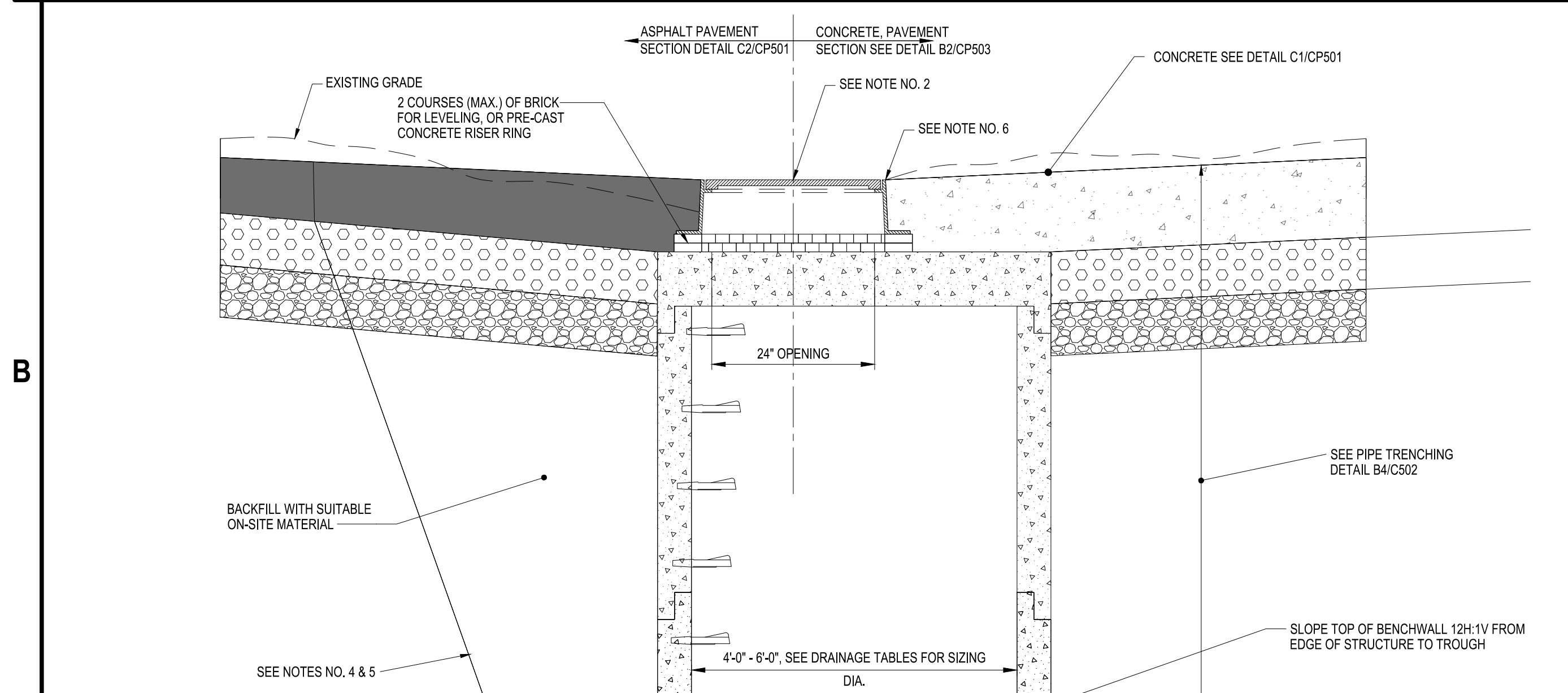
C1 NEENAH FOUNDRY R-2556 FRAME WITH TYPE "G" GRATE
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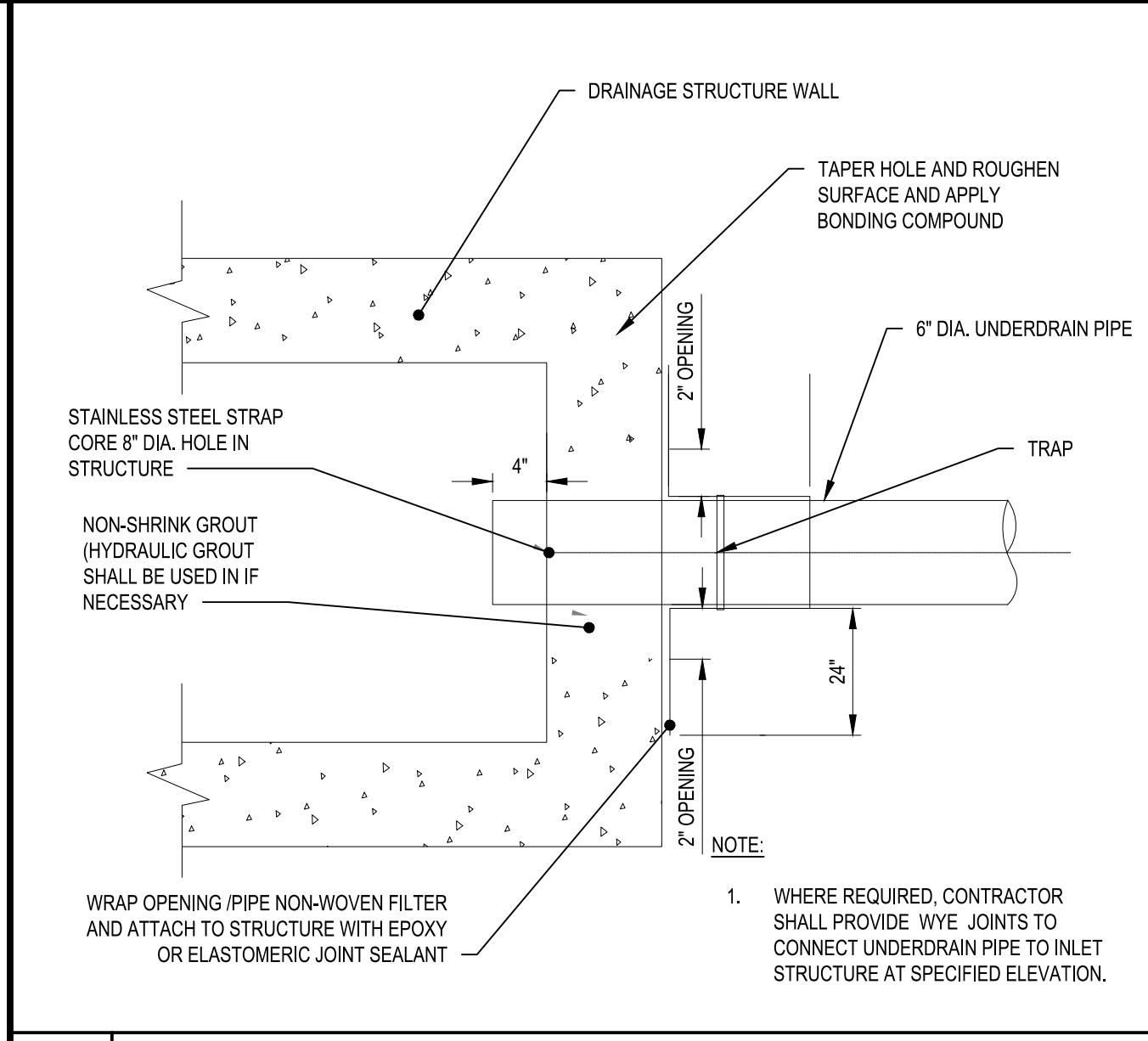
C3 TYPICAL UNDERDRAIN DETAIL
SCALE: NOT TO SCALE



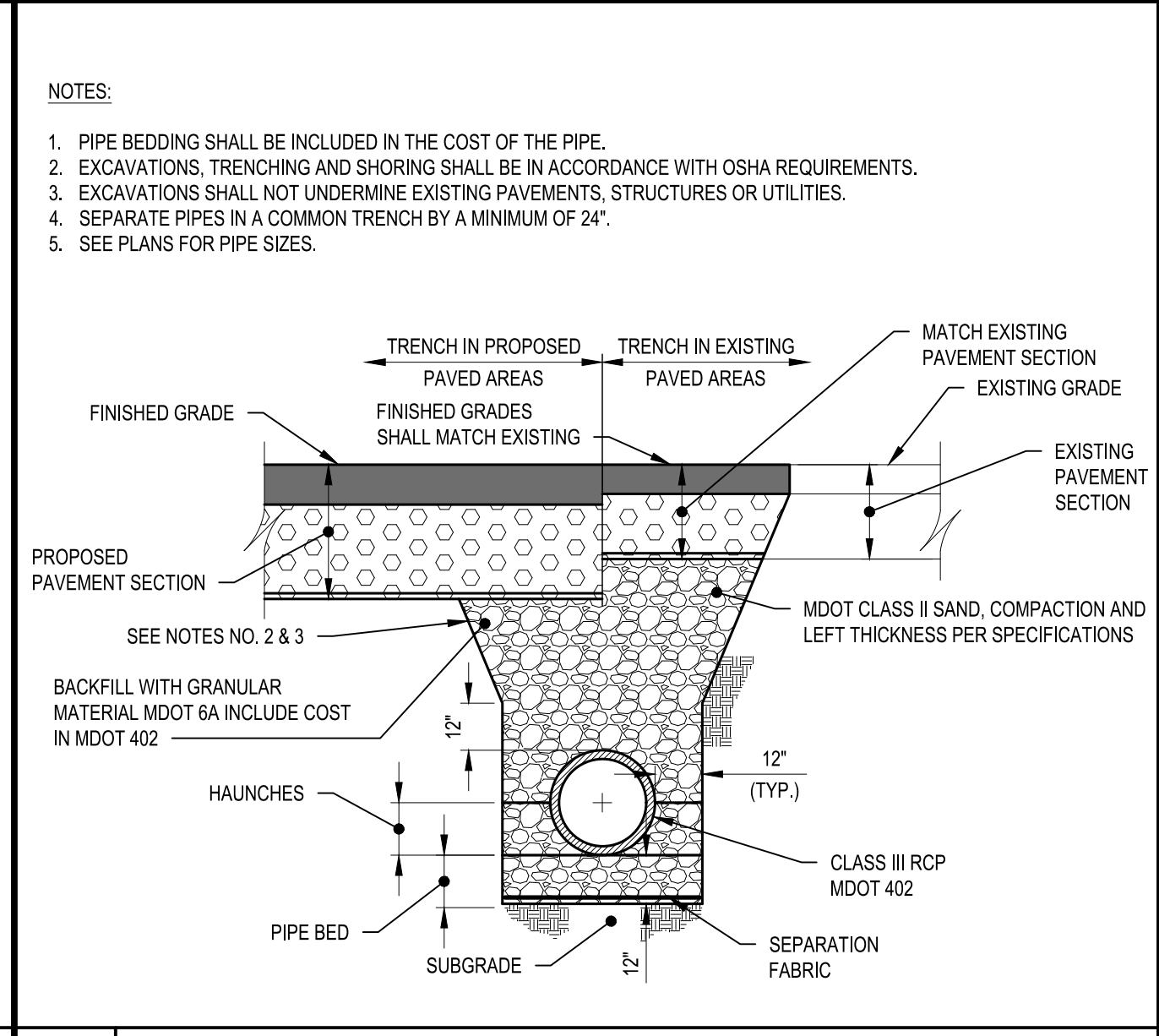
C4 FUEL TRANSFER ISOLATION GATE VALVE
SCALE: NOT TO SCALE



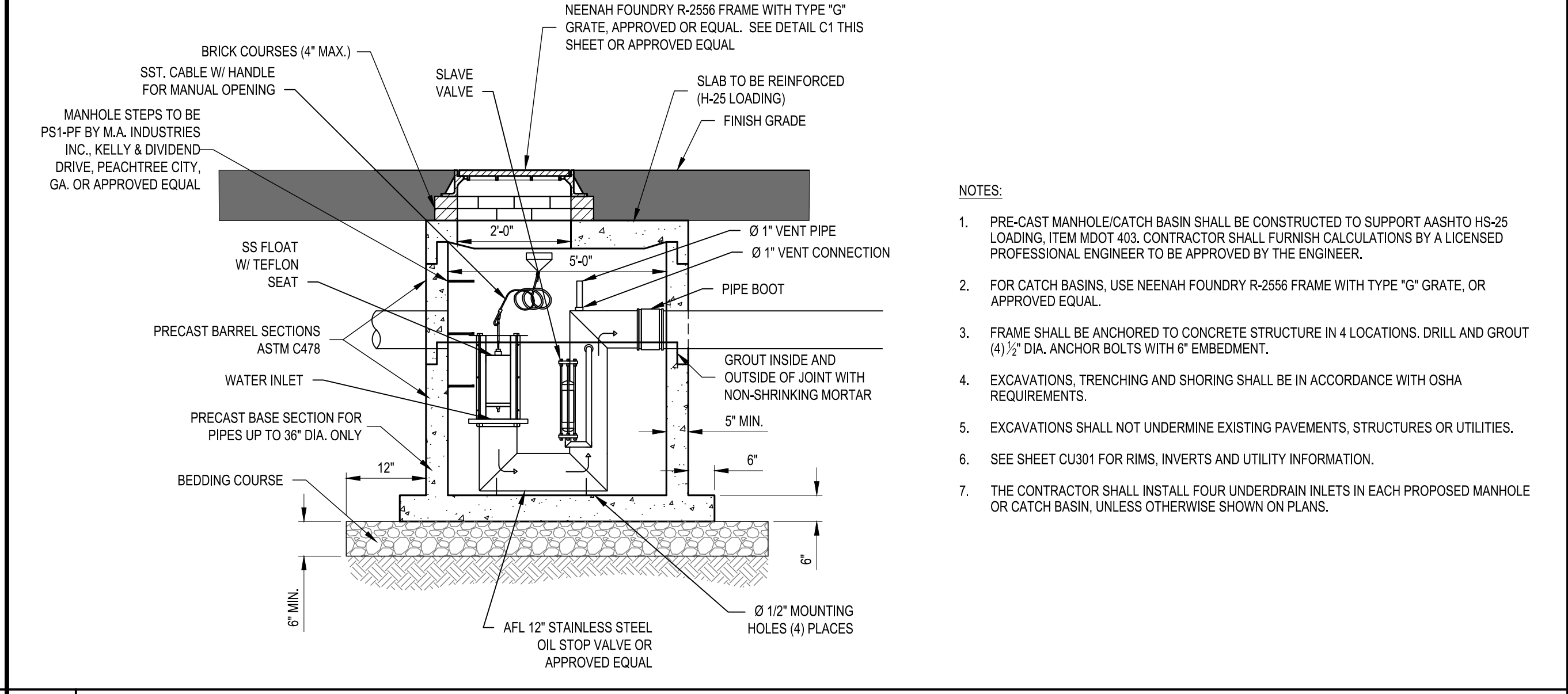
A1 CATCH BASIN DETAIL
SCALE: NOT TO SCALE



B3 UNDERDRAIN CONNECTION TO DRAINAGE STRUCTURE
SCALE: NOT TO SCALE



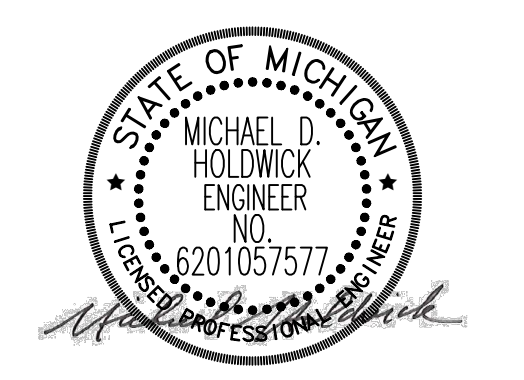
B4 STORM DRAIN TRENCHING DETAIL
SCALE: NOT TO SCALE



A3 12\"/>



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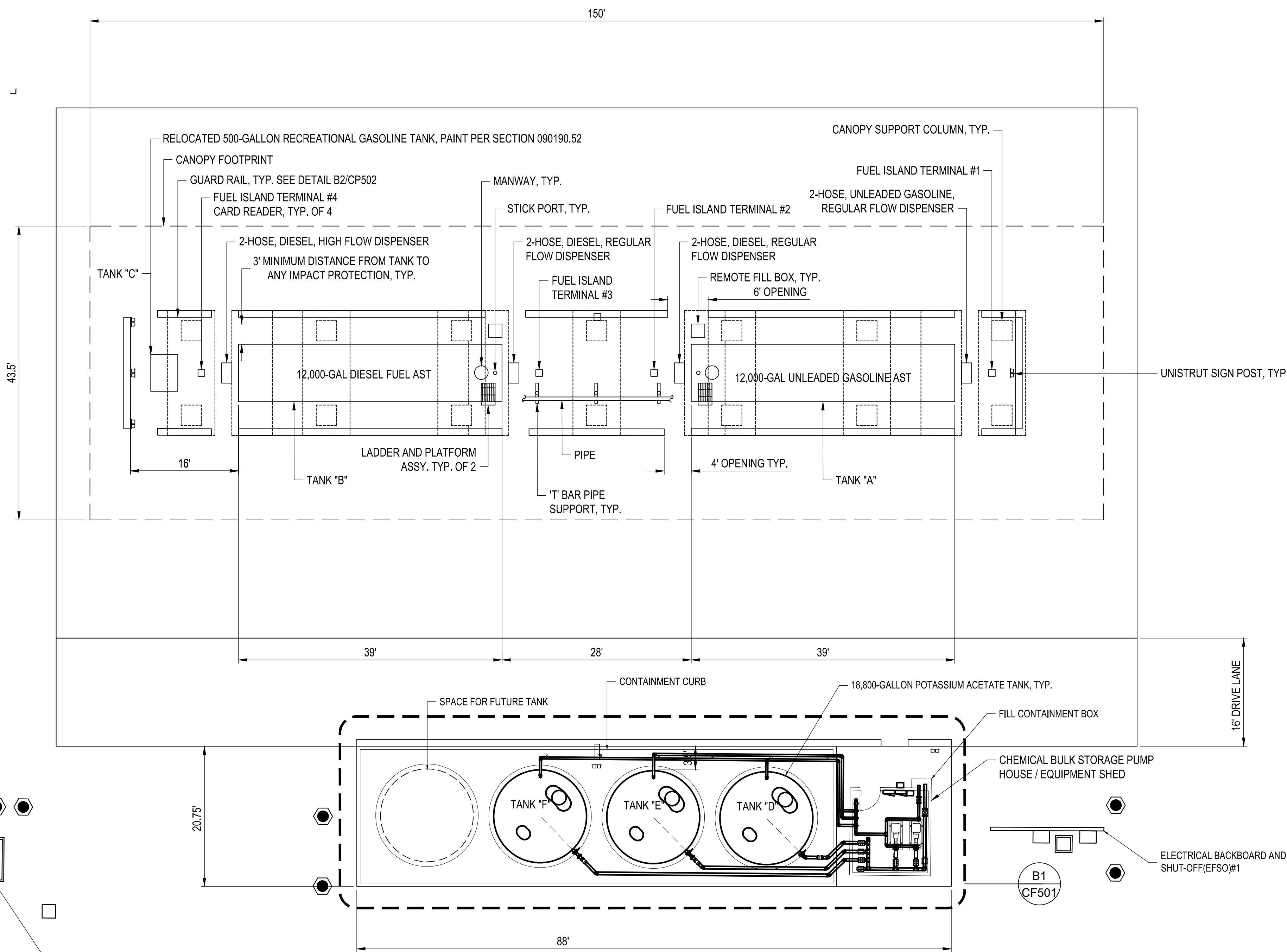
**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
		PROJECT NO: K19.014.001
		DATE: APRIL 2023
		DRAWN BY: G.C. HAYDEN
		DESIGNED BY: R.D. MIDDLESWARTH
		CHECKED BY: M.D. HOLDWICK
CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.		

UTILITY AND DRAINAGE DETAILS

CU502
SHEET NO. 20 OF 36

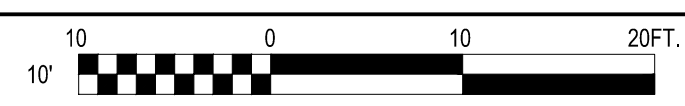
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NOTES:
1. ALL PIPING IS NOT SHOWN FOR CLARITY.

Apr 10, 2023 - 1:39pm P:\Projects\G - Gerald R. Ford Airport\K1914001 - Field Maintenance Fuel Facility\Design\CAD\Sheet Files\K1914001_C1-SERIES.dwg

A1 FUEL FACILITY LAYOUT
SCALE: 1"=10'



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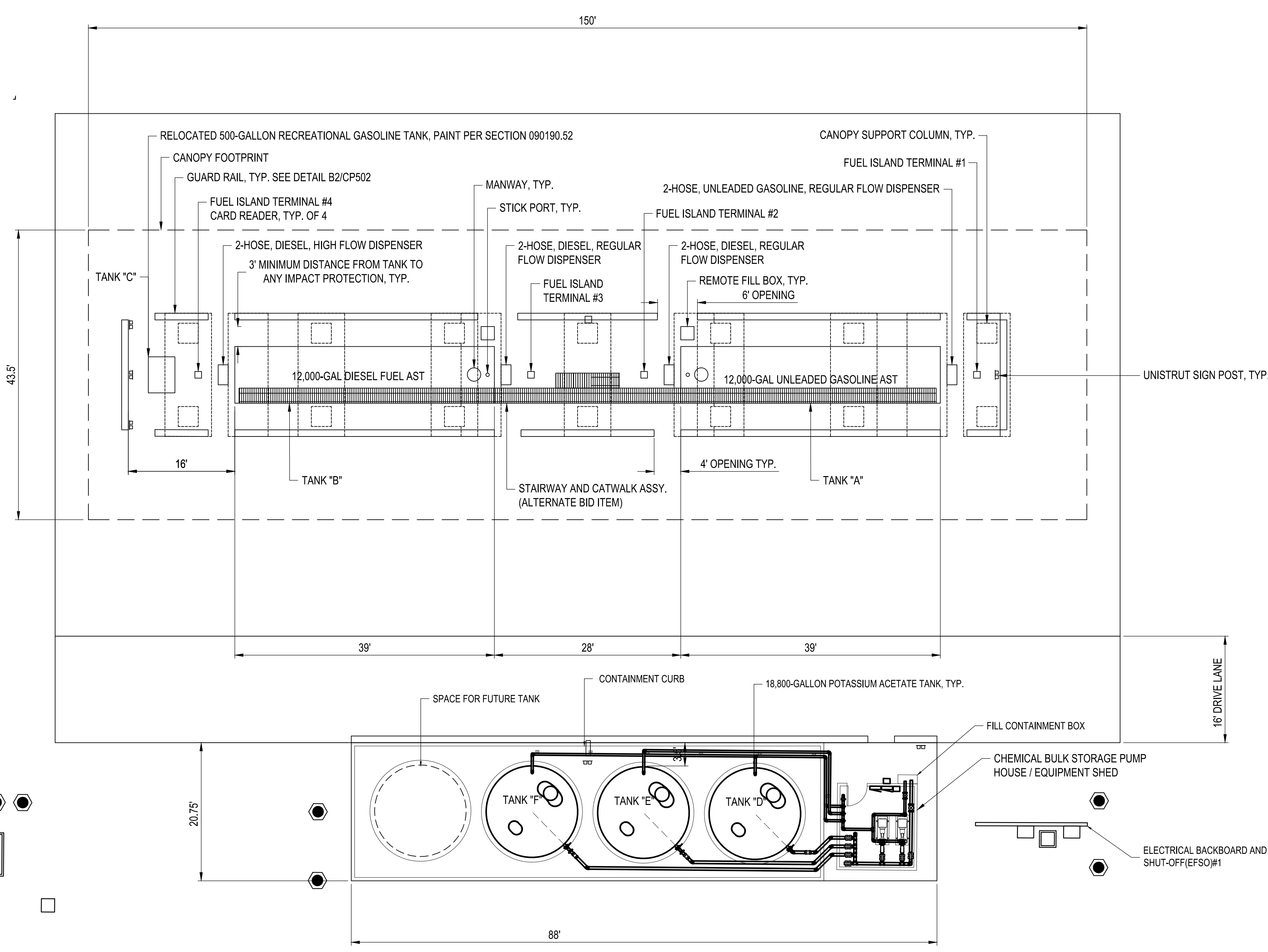
**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
		PROJECT NO: K19.014.001
		DATE: APRIL 2023
		DRAWN BY: A.G. ALEJO
		DESIGNED BY: A.G. ALEJO
		CHECKED BY: W.S. FRYE
<small>CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.</small>		

FUEL FACILITY LAYOUT

CF100

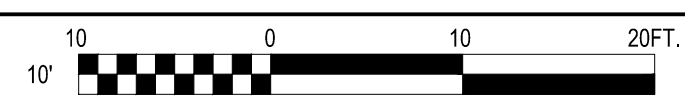
SHEET NO. 21 OF 36



NOTES:
1. ALL PIPING IS NOT SHOWN FOR CLARITY.

Apr 10, 2023 - 1:39pm P:\Projects\K19-Grand R. Ford Airport\K19014001 - Field Maintenance Fuel Facility\Design\CADD\Sheet Files\K19014001_C1-SERIES.dwg

A1 FUEL FACILITY LAYOUT - ALTERNATE BID
SCALE: 1"=10'



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**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
		PROJECT NO: K19.014.001
		DATE: APRIL 2023
		DRAWN BY: A.G. ALEJO
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**FUEL FACILITY
LAYOUT - ALTERNATE
BID**

CF100A

SHEET NO. 22 OF 36

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SIGNAGE SPECIFICATIONS:

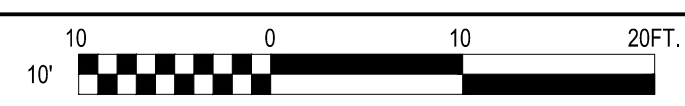
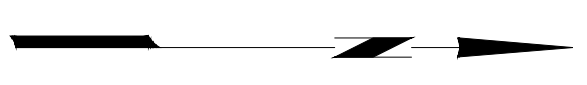
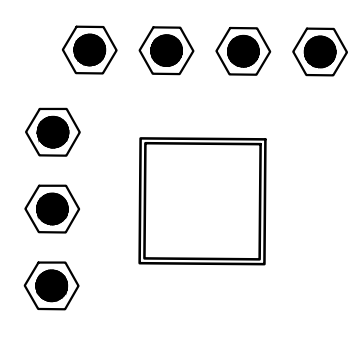
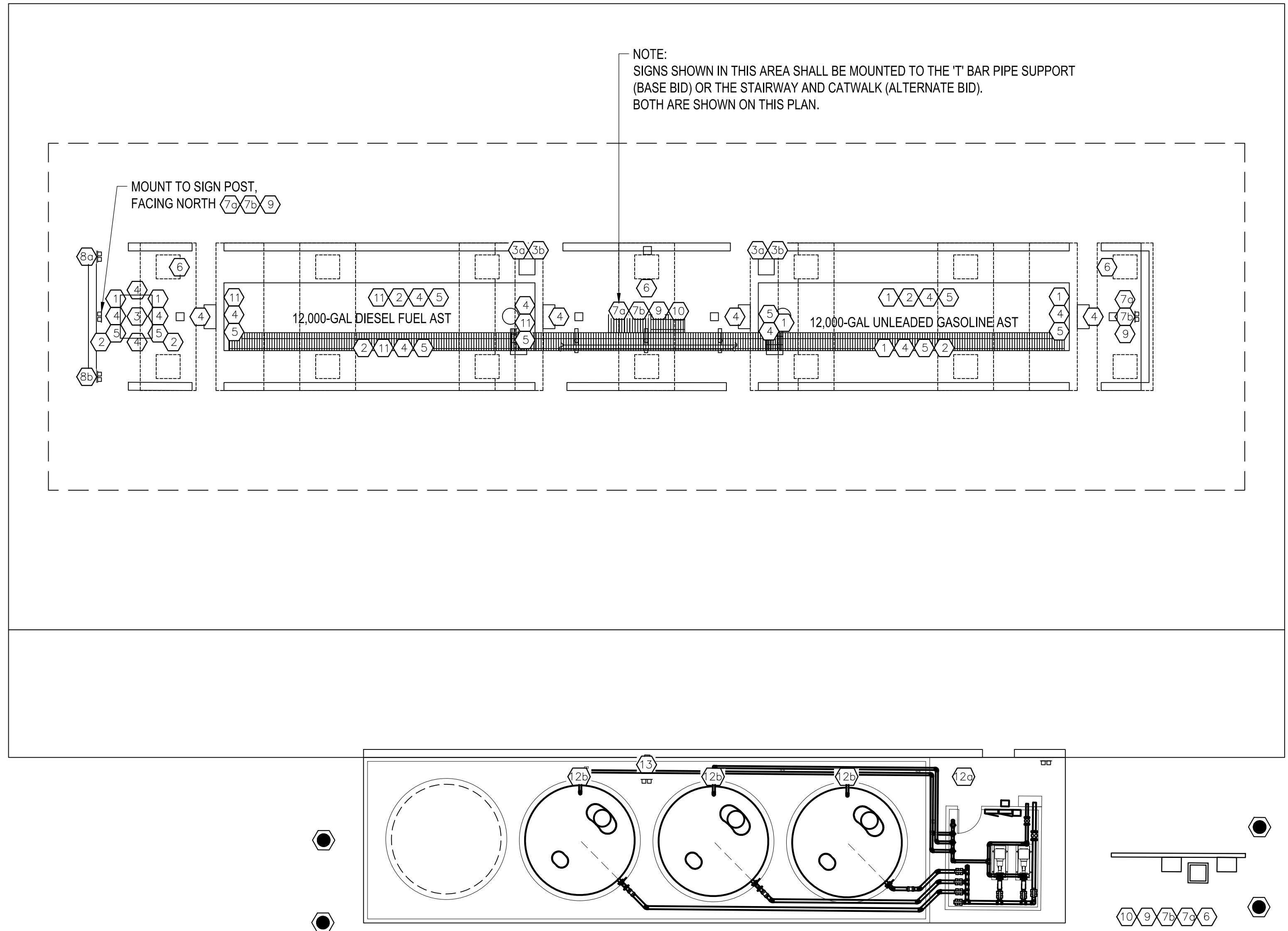
1. "DANGER - FLAMMABLE LIQUID"
 - a. PROVIDE ON FOUR SIDES OF THE UNLEADED GASOLINE TANK.
 - b. PROVIDE ON TWO SIDES OF THE NON-ETHANOL GASOLINE FUEL TANK.
 - c. PROVIDE WHITE LETTERS ON A RED BACKGROUND. LETTERS SHALL NOT BE LESS THAN 3-INCHES IN HEIGHT AND 1/2-INCH IN STROKE.
2. TANK IDENTIFICATION:
 - a. PROVIDE 3-INCH LETTERS ON THE TWO LONG SIDES OF EACH FUEL TANK, THE TANK IDENTIFICATION NUMBER, DESIGN CAPACITY, AND WORKING CAPACITY, AS FOLLOWS:

TANK	IDENTIFICATION NO.	CAPACITY	WORKING CAPACITY (90%)
DIESEL FUEL	TBD	12,000 GALLONS	10,800 GALLONS
UNLEADED GASOLINE	TBD	12,000 GALLONS	10,800 GALLONS
NON-ETHANOL UNLEADED GASOLINE	TBD	500 GALLONS	450 GALLONS

3. FUEL FILL PORT (CONFIRM PRODUCTS WITH OWNER):
 - a. PROVIDE FILL PORT COLOR CODES CONSISTENT WITH API RP 1637 AS FOLLOWS:
 - UNLEADED GASOLINE - WHITE CIRCLE WITH BLACK CROSS.
 - DIESEL FUEL - YELLOW HEXAGON
 - b. PROVIDE FILL PORT TAG WITH LABELS AS SHOWN ON THE TABLE ABOVE.
4. NO SMOKING OR OPEN FLAMES
 - a. PROVIDE ON ALL FOUR SIDES OF EACH STORAGE TANK AND DISPENSER.
 - b. LETTERS SHALL NOT BE LESS THAN 3-INCHES IN HEIGHT AND 1/2-INCH IN STROKE.
5. NFPA 407 FIRE DIAMONDS:
 - a. PROVIDE 18 X18 NFPA 407 FIRE DIAMONDS ON FOUR SIDES OF THE TANK.
6. EMERGENCY FUEL SHUT-OFF
 - a. PROVIDE SIGN AT EACH EMERGENCY FUEL SHUT-OFF LOCATION
 - b. INDICATE THE METHOD OF OPERATION (E.G., PUSH OR PULL).
 - c. INSTALL SIGNS 7-FT ABOVE GRADE AS MEASURED FROM BOTTOM OF SIGN.
7. AUTOMOTIVE FUEL DISPENSING AREA AND ELECTRICAL BACKBOARD:
 - a. EMERGENCY PROCEDURES (12 X12):
 - IN CASE OF FIRE, SPILL, OR RELEASE:
 - USE EMERGENCY PUMP SHUT-OFF;
 - REPORT THE ACCIDENT!
 - CALL AIRPORT COMMUNICATIONS CENTER (616) 233-6055
 - b. PROVIDE A SIGN STATING (12 X12):
 - NO SMOKING.
 - SHUT OFF MOTOR.
 - DISCHARGE YOUR STATIC ELECTRICITY BEFORE FUELING BY TOUCHING A METAL SURFACE AWAY FROM THE NOZZLE.
 - TO PREVENT STATIC DISCHARGE, DO NOT RE-ENTER YOUR VEHICLE WHILE GASOLINE IS PUMPING.
 - IF A FIRE STARTS, DO NOT REMOVE NOZZLE - BACK AWAY IMMEDIATELY.
 - IT IS UNLAWFUL AND DANGEROUS TO DISPENSE GASOLINE INTO UNAPPROVED CONTAINERS.
 - NO FILLING OF PORTABLE CONTAINERS IN OR ON A MOTOR VEHICLE. PLACE CONTAINER ON GROUND BEFORE FILLING.
8. TRAFFIC SIGNAGE:
 - a. PROVIDE A DIRECTIONAL SIGN FACING SOUTH STATING: "BULK FUEL DELIVERIES" WITH ARROW POINTING WEST.
 - b. PROVIDE A DIRECTIONAL SIGN FACING SOUTH STATING: "BULK CHEMICAL DELIVERIES" WITH ARROW POINTING EAST.
 - c. SIGNS SHALL BE 24"x24" AND THE BOTTOM OF THE SIGN SHALL BE AT LEAST 6" ABOVE GRADE.
9. PROVIDE 16" X 4" RED AND WHITE SIGNS INDICATING FIRE EXTINGUISHER AND AN ARROW POINTING TO THE FIRE EXTINGUISHER CABINET AT EACH FIRE EXTINGUISHER.
10. AT ALARM PROVIDE 12" X 12" SIGN WITH RED LETTERS ON A WHITE BACKGROUND STATING "WHEN ACTIVATED, USE EMERGENCY FUEL SHUT OFF". INSTALL SIGN 7-FT ABOVE GRADE AS MEASURED FROM BOTTOM OF SIGN.
11. "DANGER - COMBUSTIBLE LIQUID"
 - a. PROVIDE ON ALL FOUR SIDES OF THE DIESEL FUEL TANK.
 - b. PROVIDE WHITE LETTERS ON A RED BACKGROUND. LETTERS SHALL NOT BE LESS THAN 3-INCHES IN HEIGHT AND 1/2-INCH IN STROKE.
12. CHEMICAL BULK STORAGE SIGNAGE
 - a. PROVIDE LAMINATED SAFETY DATA SHEET
 - b. PROVIDE 3-INCH LETTERS ON THE WEST FACING SIDE OF EACH TANK. INFORMATION INCLUDES TANK IDENTIFICATION NUMBER, DESIGN CAPACITY, AND WORKING CAPACITY.
13. PROVIDE A 24"x24" SIGN WITH 2" HIGH LETTERS STATING: "DIKE DRAIN VALVE - KEEP LOCKED, IN CLOSED POSITION, INSPECT SUMP FOR CHEMICAL PRODUCT, DO NOT DISCHARGE CHEMICAL PRODUCT, OPEN ONLY UNDER AUTHORIZED SUPERVISION."

TANK	IDENTIFICATION NO.	DESIGN CAPACITY	WORKING CAPACITY (90%)
POTASSIUM ACETATE	TBD	18,800 GALLONS	16,920 GALLONS

NOTE:
SIGNS SHOWN IN THIS AREA SHALL BE MOUNTED TO THE 'T' BAR PIPE SUPPORT (BASE BID) OR THE STAIRWAY AND CATWALK (ALTERNATE BID). BOTH ARE SHOWN ON THIS PLAN.



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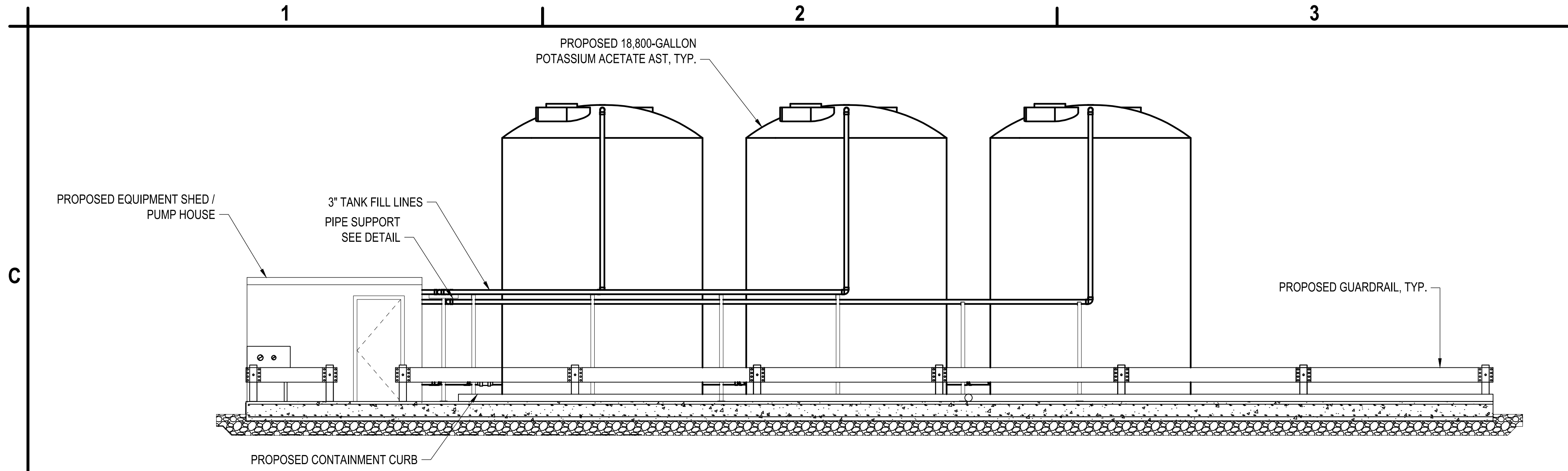
**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

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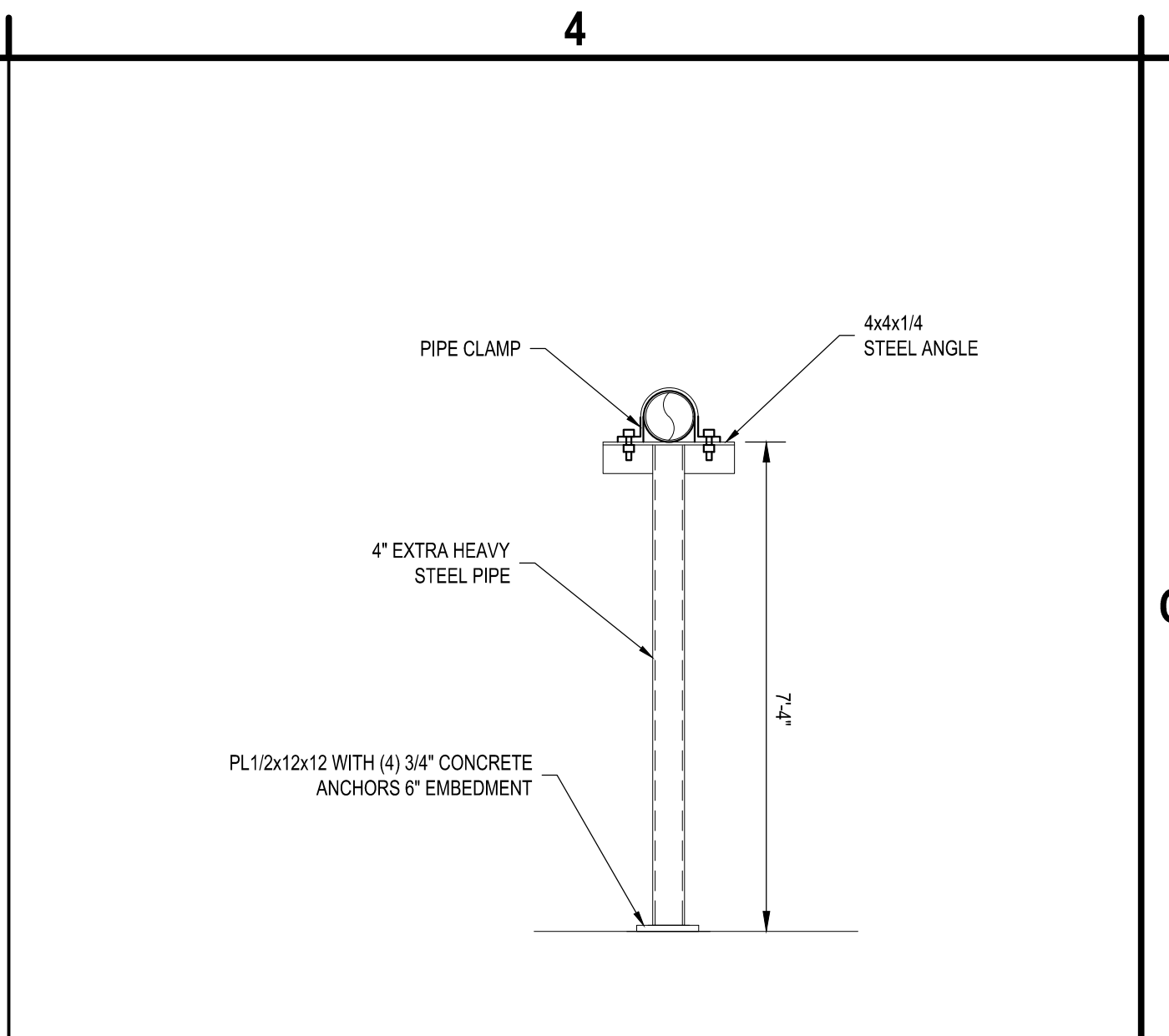
FUEL FACILITY SIGNAGE

CF101

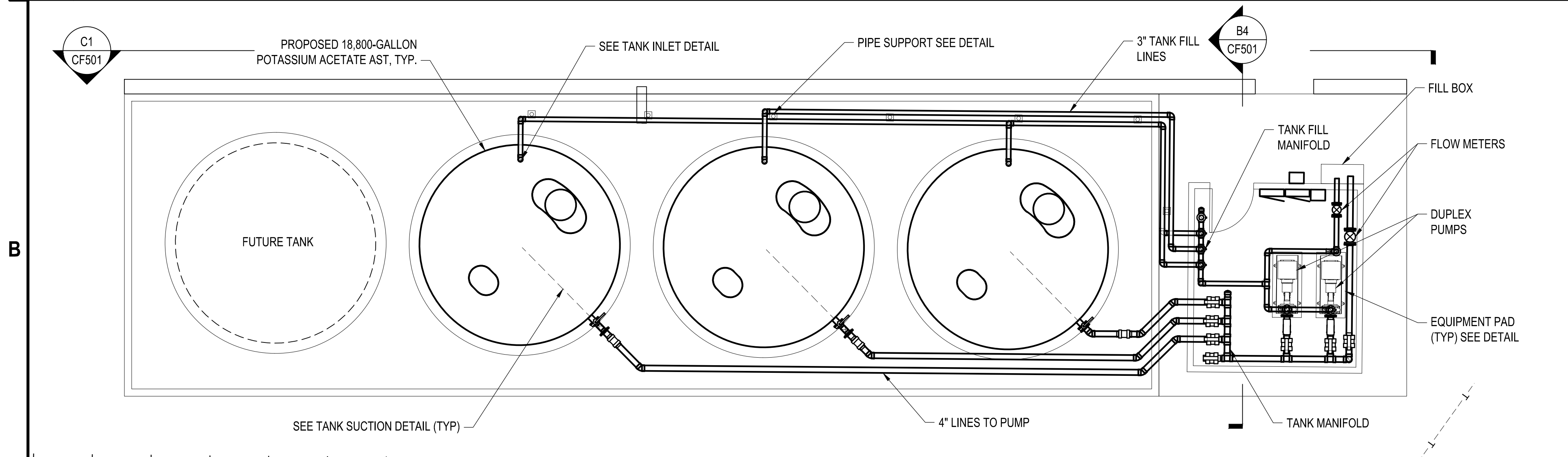
SHEET NO. 23 OF 36



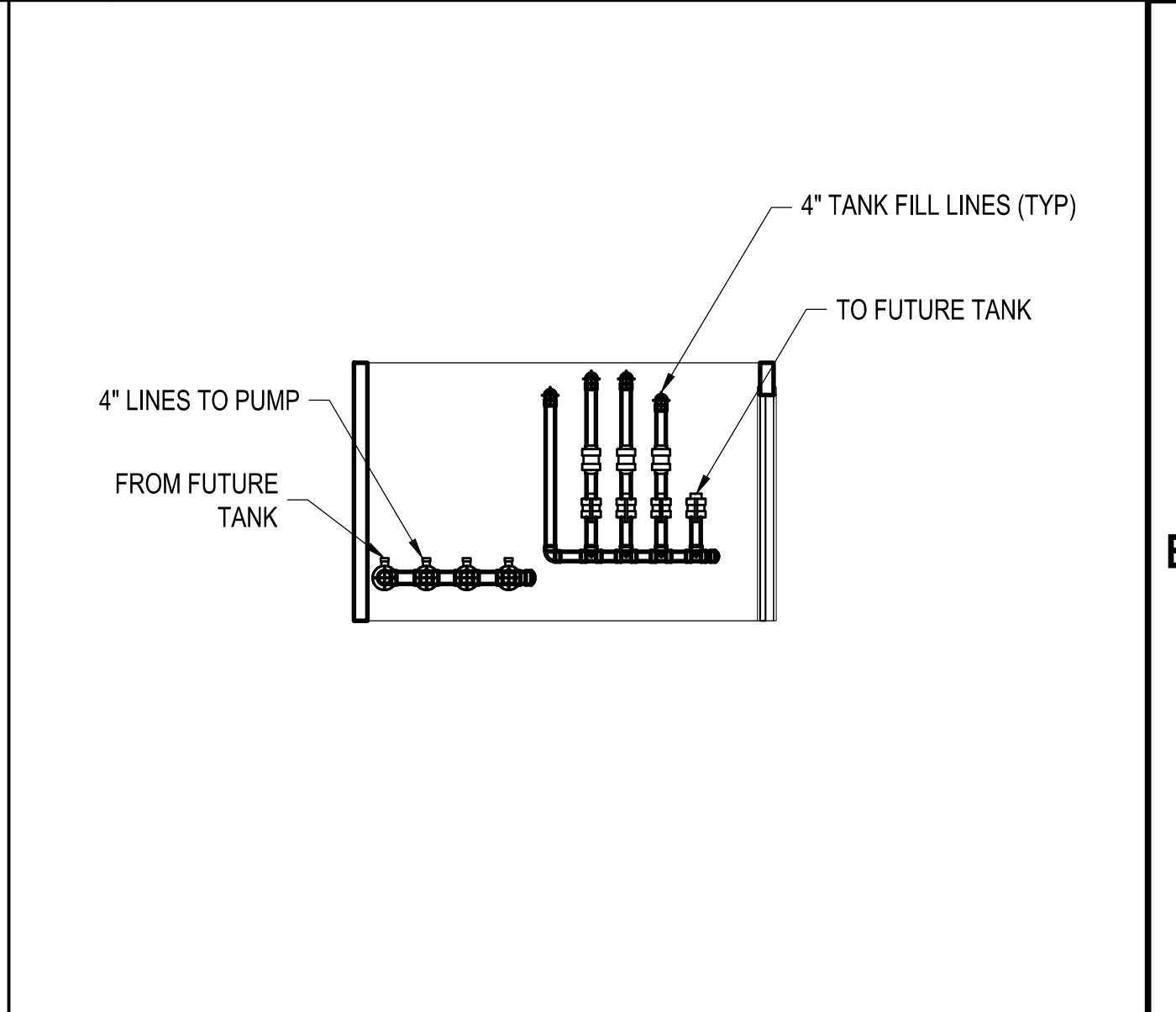
C1 DEICING CHEMICAL BULK STORAGE ELEVATION (FACING EAST)
SCALE: 1" = 5'-0"



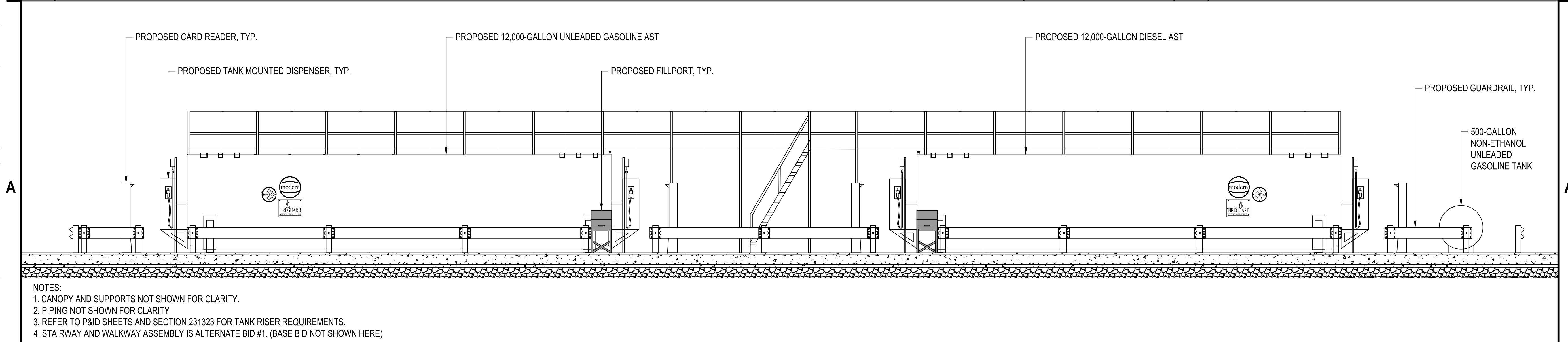
B2 DEICING PIPE SUPPORT DETAIL
SCALE: NOT TO SCALE



B1 ENLARGED DEICING CHEMICAL BULK STORAGE PLAN
SCALE: 1" = 5'-0"



B4 DEICING MANIFOLD ELEVATION
SCALE: 1" = 5'-0"

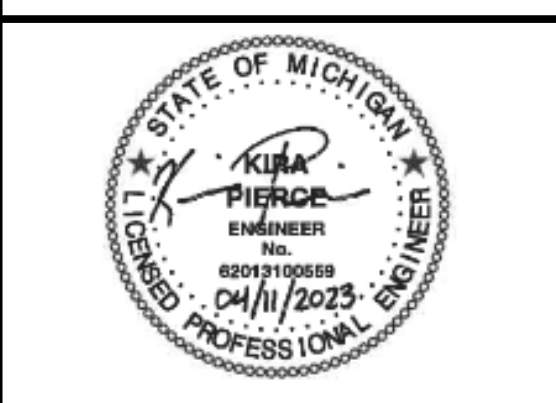


A1 FUEL FACILITY ELEVATION (FACING EAST)
NTS

- NOTES:
 1. CANOPY AND SUPPORTS NOT SHOWN FOR CLARITY.
 2. PIPING NOT SHOWN FOR CLARITY
 3. REFER TO P&ID SHEETS AND SECTION 231323 FOR TANK RISER REQUIREMENTS.
 4. STAIRWAY AND WALKWAY ASSEMBLY IS ALTERNATE BID #1. (BASE BID NOT SHOWN HERE)



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 38777 Six Mile Road, Suite 202
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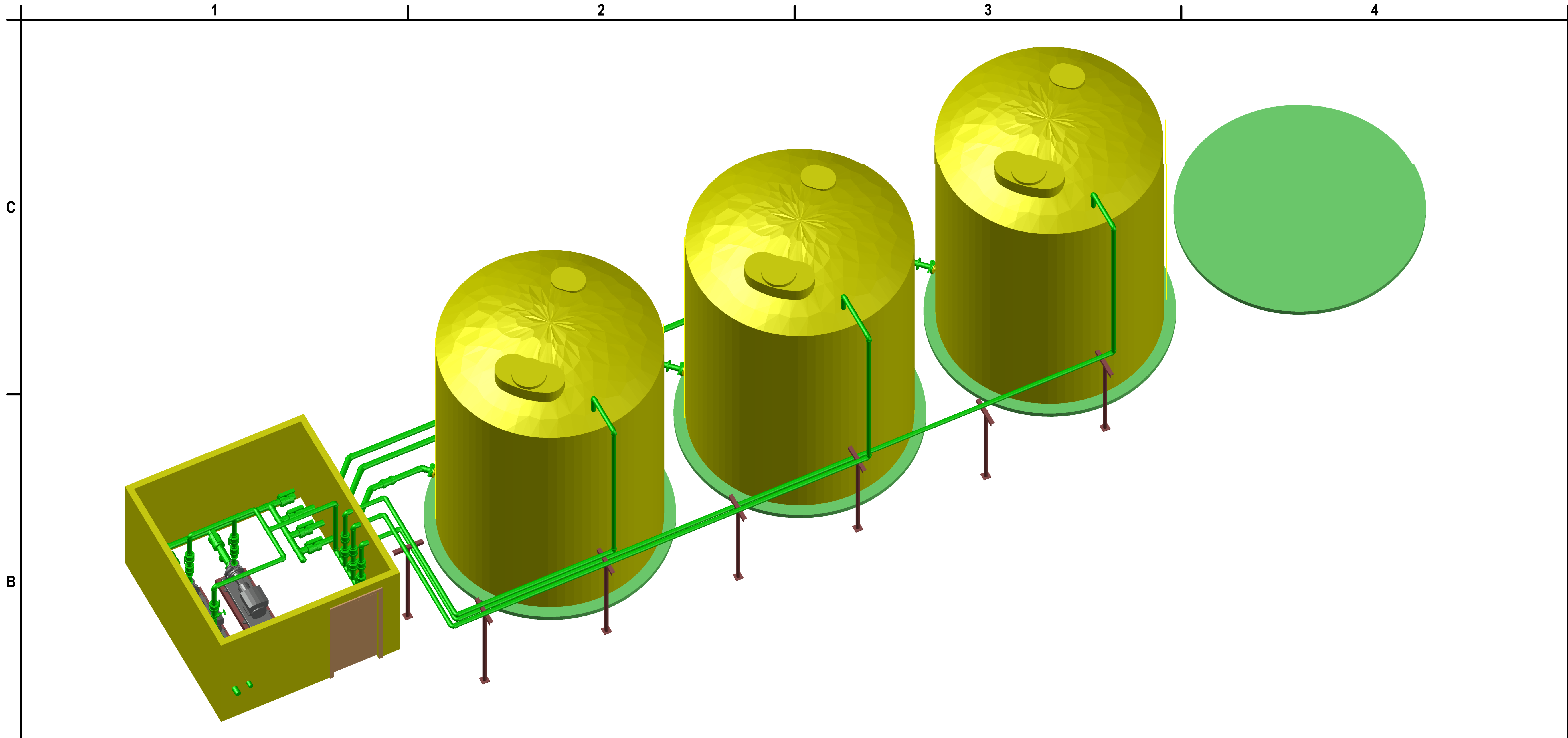
**AIRPORT FIELD MAINTENANCE
 FUEL FACILITY RELOCATION
 GERALD R. FORD INTL AIRPORT
 GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
		PROJECT NO: K19.014.001
		DATE: APRIL 2023
		DRAWN BY: A.G. ALEJO
		DESIGNED BY: D.B. CLARK, P.E.
		CHECKED BY: W.S. FRYE
<small>CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.</small>		

**FUEL FACILITY
 DETAILS**

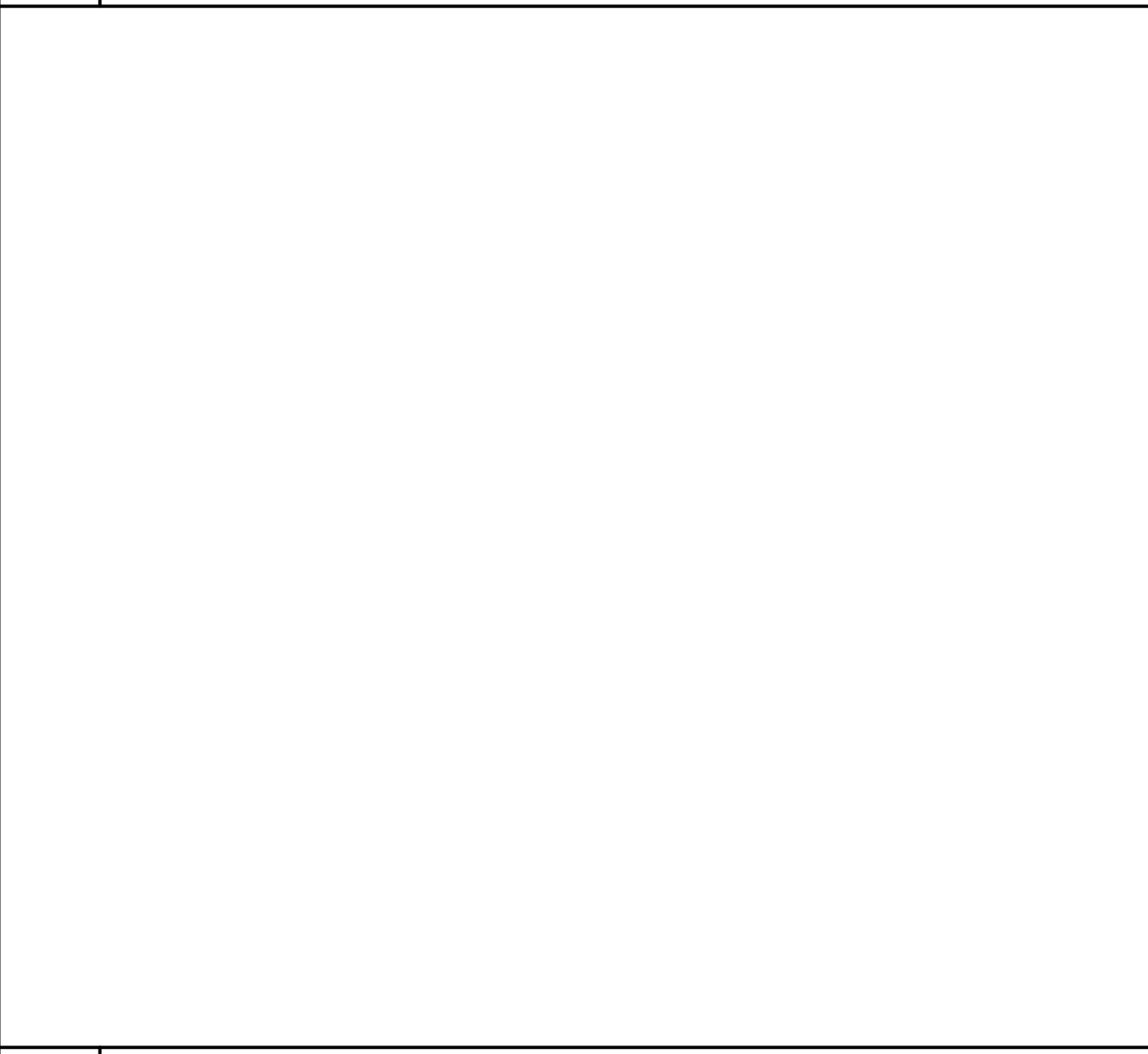
CF501
 SHEET NO. 24 OF 36

Apr 10, 2023 - 1:33pm
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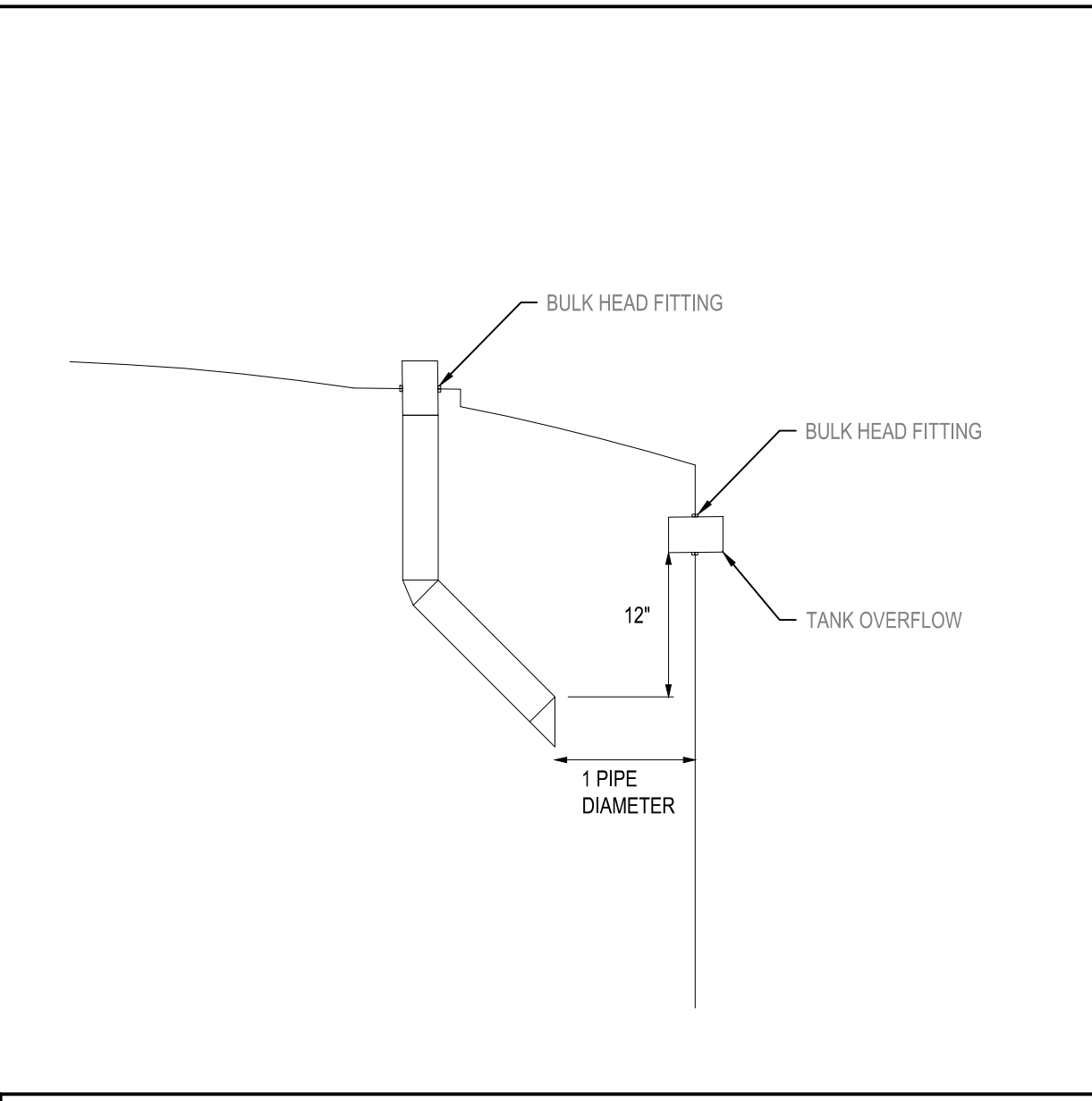


B1 DEICING CHEMICAL BULK STORAGE ISOMETRIC VIEW

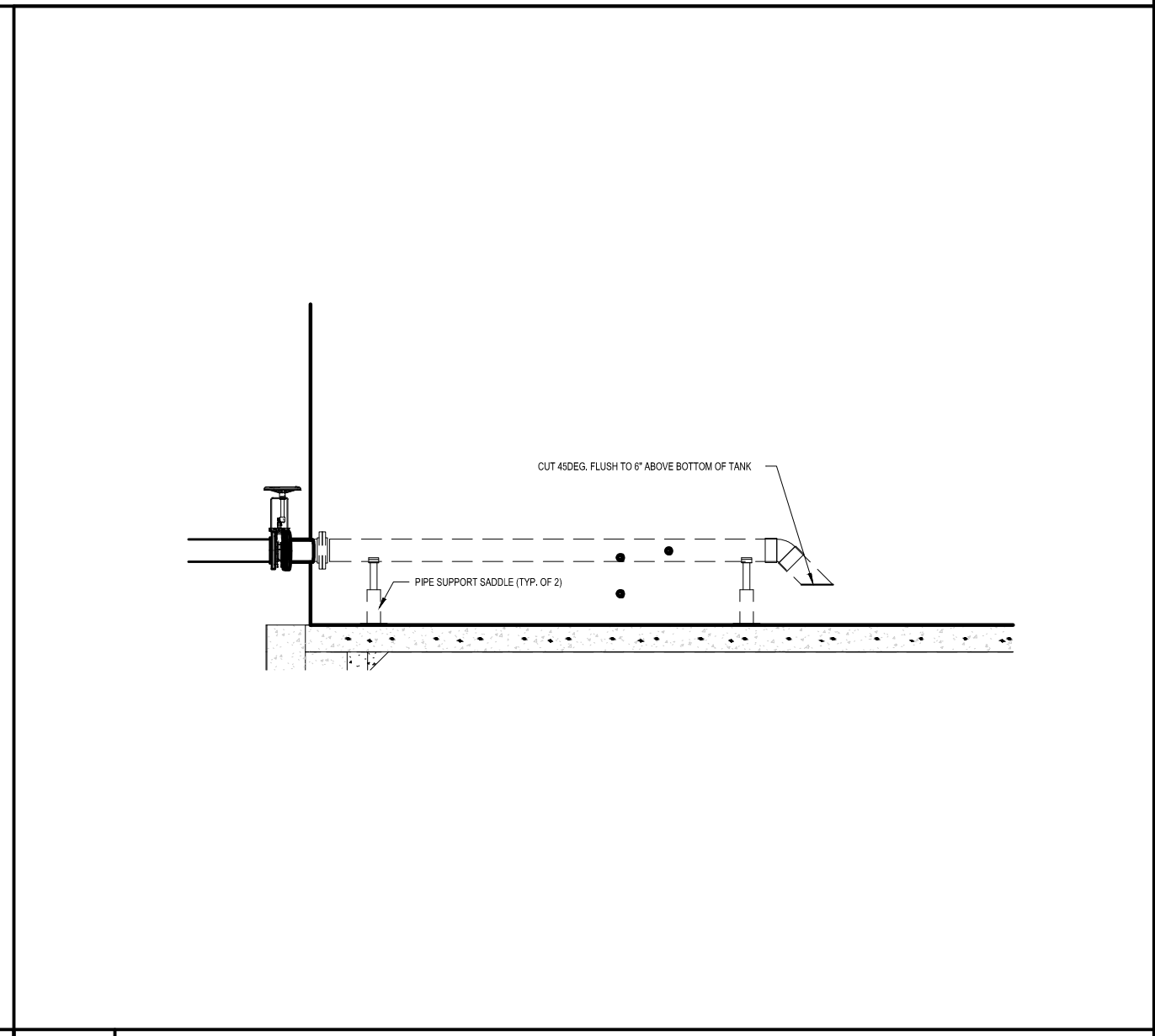
SCALE: NOT TO SCALE



A3 DEICING TANK INLET DETAIL



A3 DEICING TANK INLET DETAIL
SCALE: NOT TO SCALE



A4 DEICING TANK SUCTION (OUTLET) PIPE DETAIL
SCALE: NOT TO SCALE



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**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

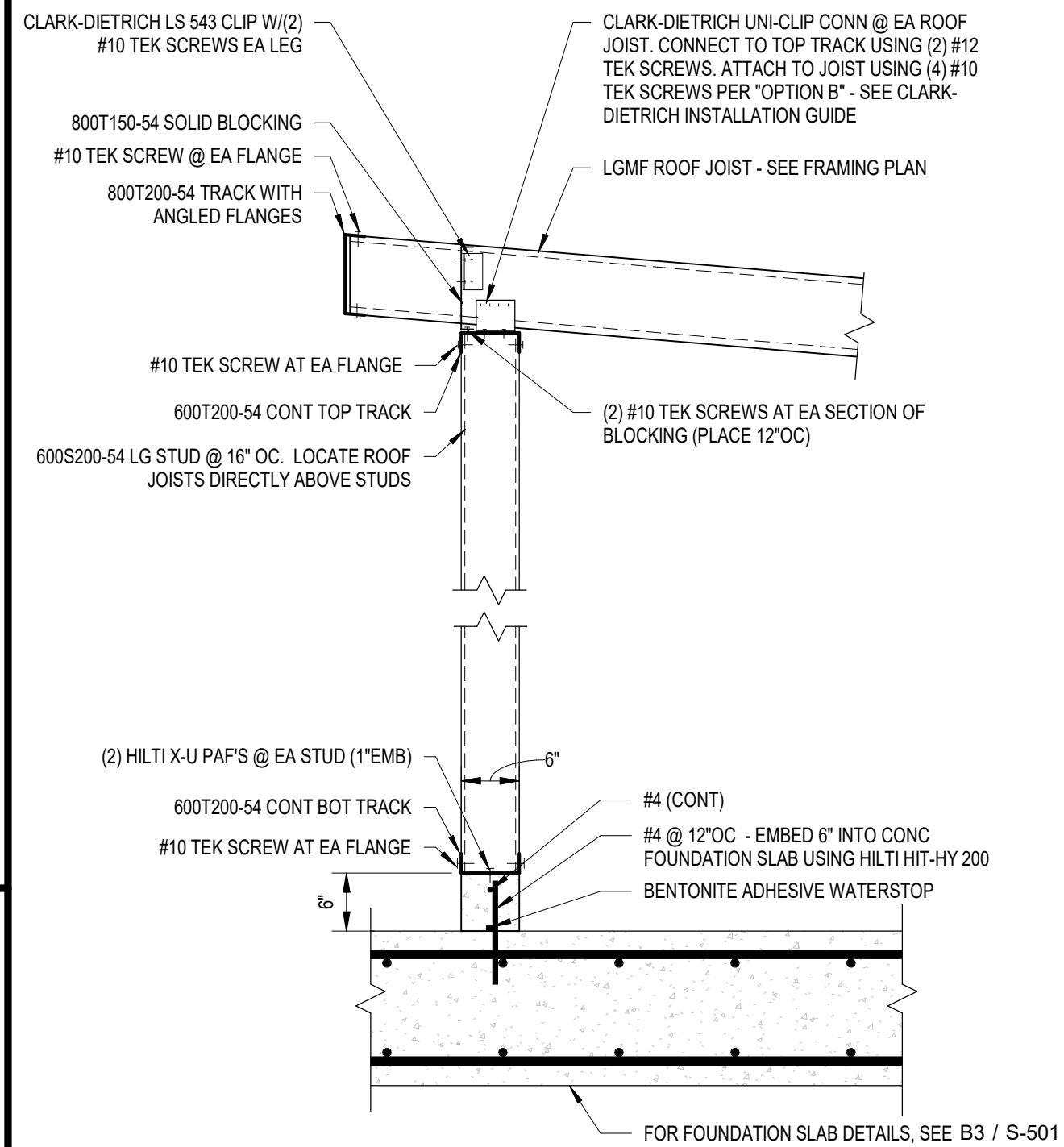
MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO: K19.014.001		
DATE: APRIL 2023		
DRAWN BY: P.L. DAMBROSI		
DESIGNED BY: D.B. CLARK, P.E.		
CHECKED BY: W.S. FRYE		
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DEICING CHEMICAL
BULK STORAGE
SYSTEM DETAILS

CF502

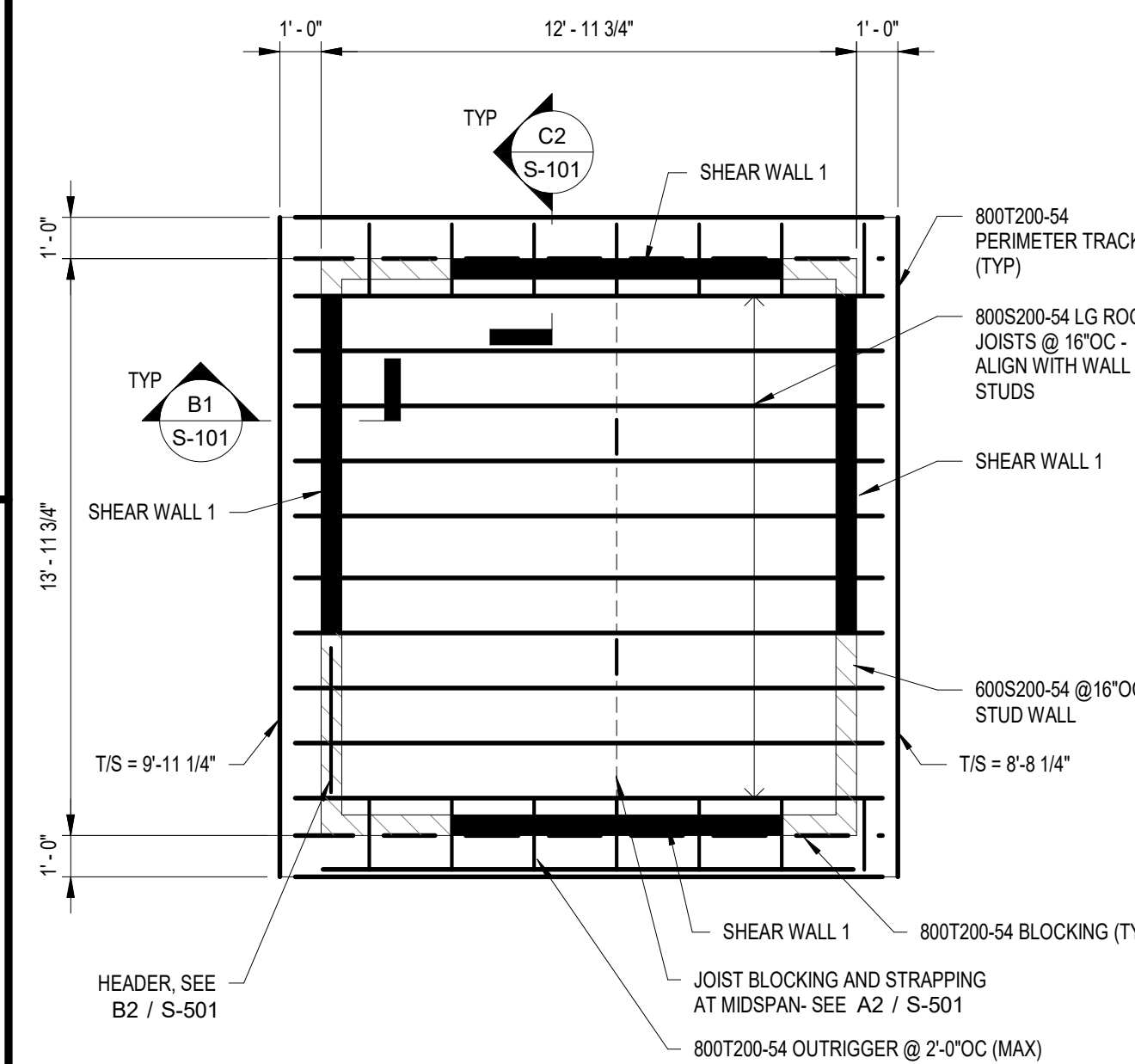
SHEET NO. 25 OF 36

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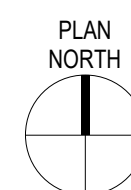


B1 TYPICAL WALL SECTION

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

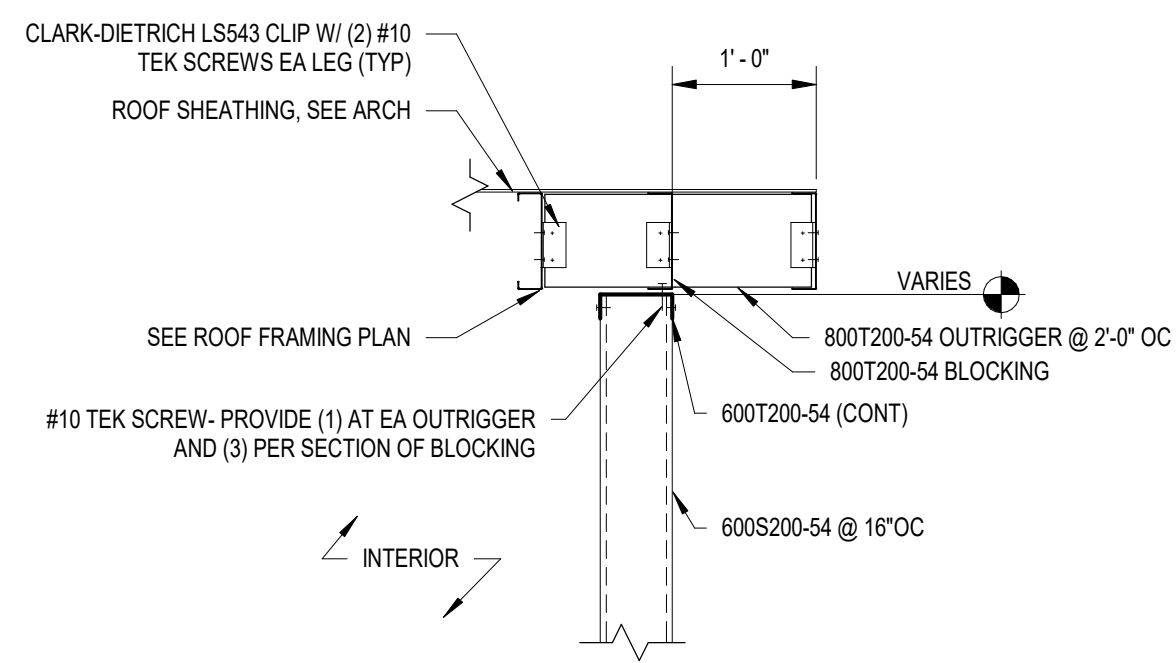


NOTES:
 1. SEE ARCH DRAWINGS FOR ADDITIONAL DETAILS
 2. COORDINATE WALL PENETRATIONS WITH ELECTRICAL AND MECHANICAL COMPONENTS
 3. SEE SHEAR WALL DETAILS, HEADER DETAIL, AND TYPICAL LIGHT GAUGE DETAILS ON SHEET S-501



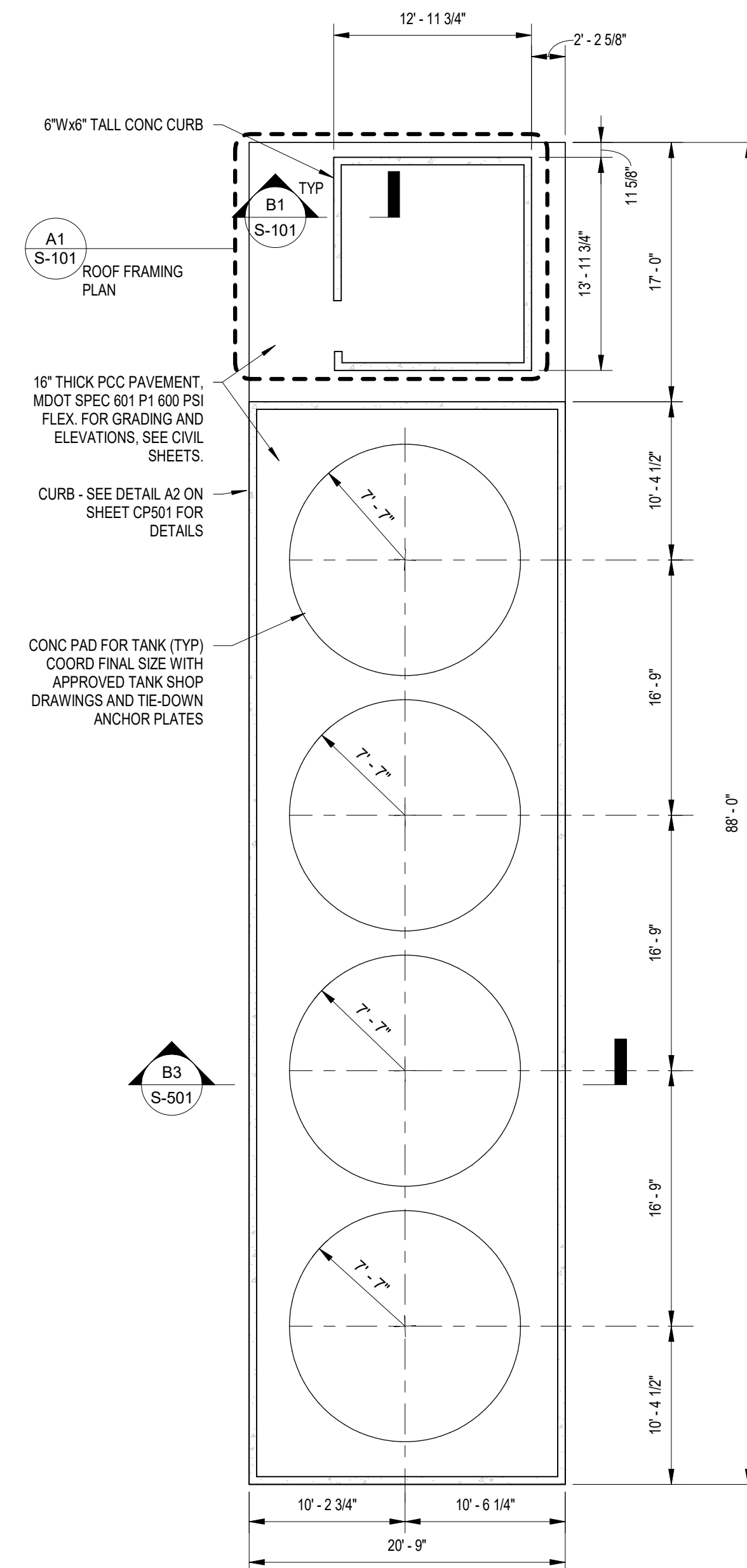
A1 SHED ROOF FRAMING PLAN

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



C2 TYPICAL ROOF DETAIL

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



NOTES:
 1. FOR SLAB ELEVATION, SLAB GRADING, AND SITE LOCATION, SEE CIVIL SHEETS.
 2. SEE MI AND EL SHEETS FOR ADDITIONAL INFORMATION
 3. SEE ARCH SHEETS FOR STORAGE SHED DETAILS



A2 CHEMICAL STORAGE AREA FOUNDATION PLAN

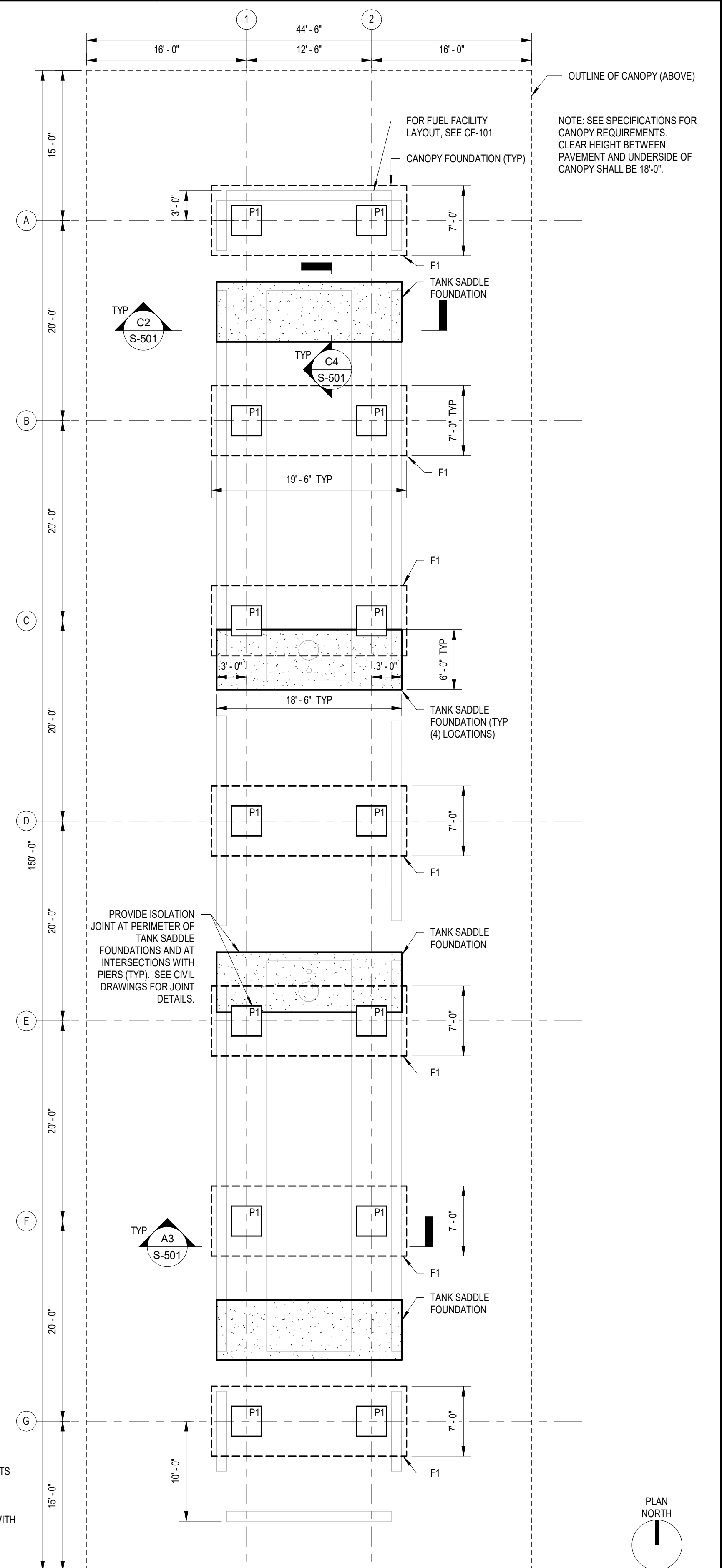
SCALE: 1/8" = 1'-0"

NOTE: PRE-ENGINEERED CANOPY FOUNDATIONS ARE PRELIMINARY AND ARE PROVIDED FOR BIDDING PURPOSES ONLY. FINAL FOUNDATION DESIGN WILL BE PROVIDED TO THE SUCCESSFUL BIDDER AFTER REVIEW OF THE FINAL CANOPY SHOP DRAWINGS AND FOUNDATION REACTIONS, AND FINAL APPROVAL BY THE ENGINEER.
 FINAL FOUNDATION DRAWINGS WILL NOT BE PROVIDED UNTIL FINAL SHOP DRAWINGS AND FOUNDATION REACTIONS ARE PROVIDED

FOUNDATION PLAN NOTES:
 1. FOR SLAB ON GRADE, GRADING, AND UTILITY DETAILS, SEE CP, CG, AND CU SHEETS
 2. P₁ INDICATES A CONCRETE PIER. SEE SHEET S-501 FOR DETAILS
 3. F₁ INDICATES A CONCRETE FOUNDATION. SEE SHEET S-501 FOR DETAILS
 4. FOR FUEL FACILITY LAYOUT, SEE OF SHEETS
 5. TANK SADDLE FOUNDATIONS SHALL BE CENTERED ON SADDLES. COORDINATE WITH APPROVED TANK SHOP DRAWINGS

A3 FUEL FACILITY CANOPY FOUNDATION PLAN

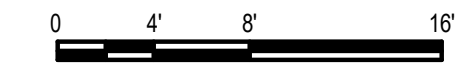
SCALE: 1/8" = 1'-0"



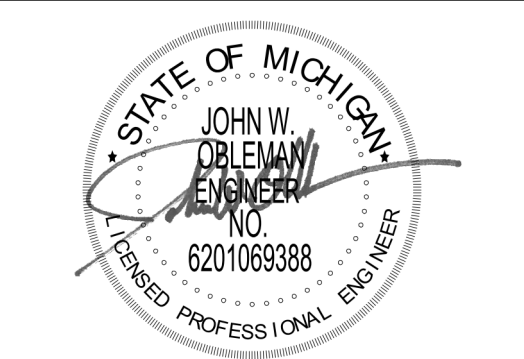
NOTE: SEE SPECIFICATIONS FOR CANOPY REQUIREMENTS. CLEAR HEIGHT BETWEEN PAVEMENT AND UNDERSIDE OF CANOPY SHALL BE 18'-0".



A3 FUEL FACILITY CANOPY FOUNDATION PLAN



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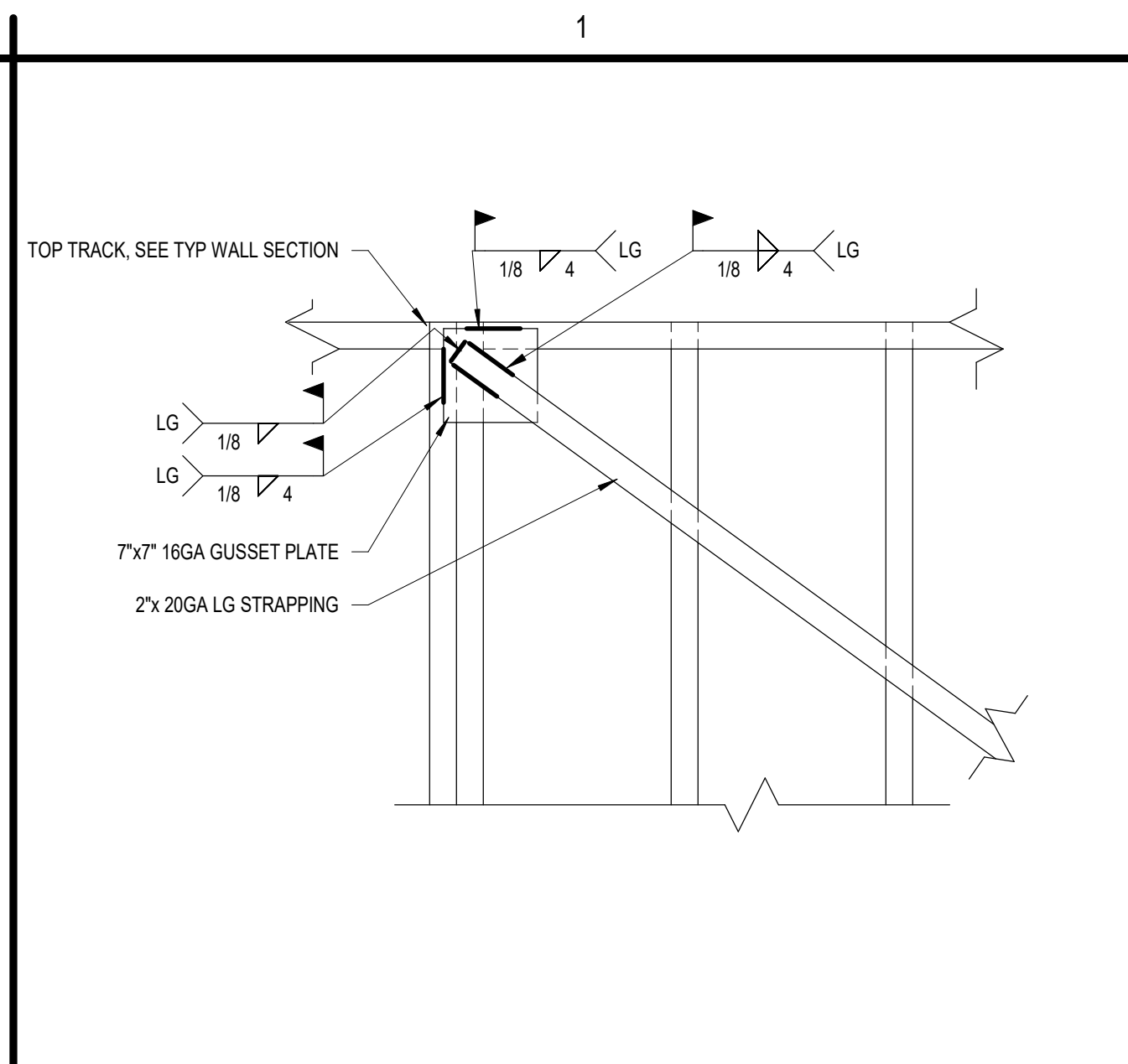


**AIRPORT FIELD MAINTENANCE
 FUEL FACILITY RELOCATION
 GERALD R. FORD INTL AIRPORT
 GRAND RAPIDS, MICHIGAN**

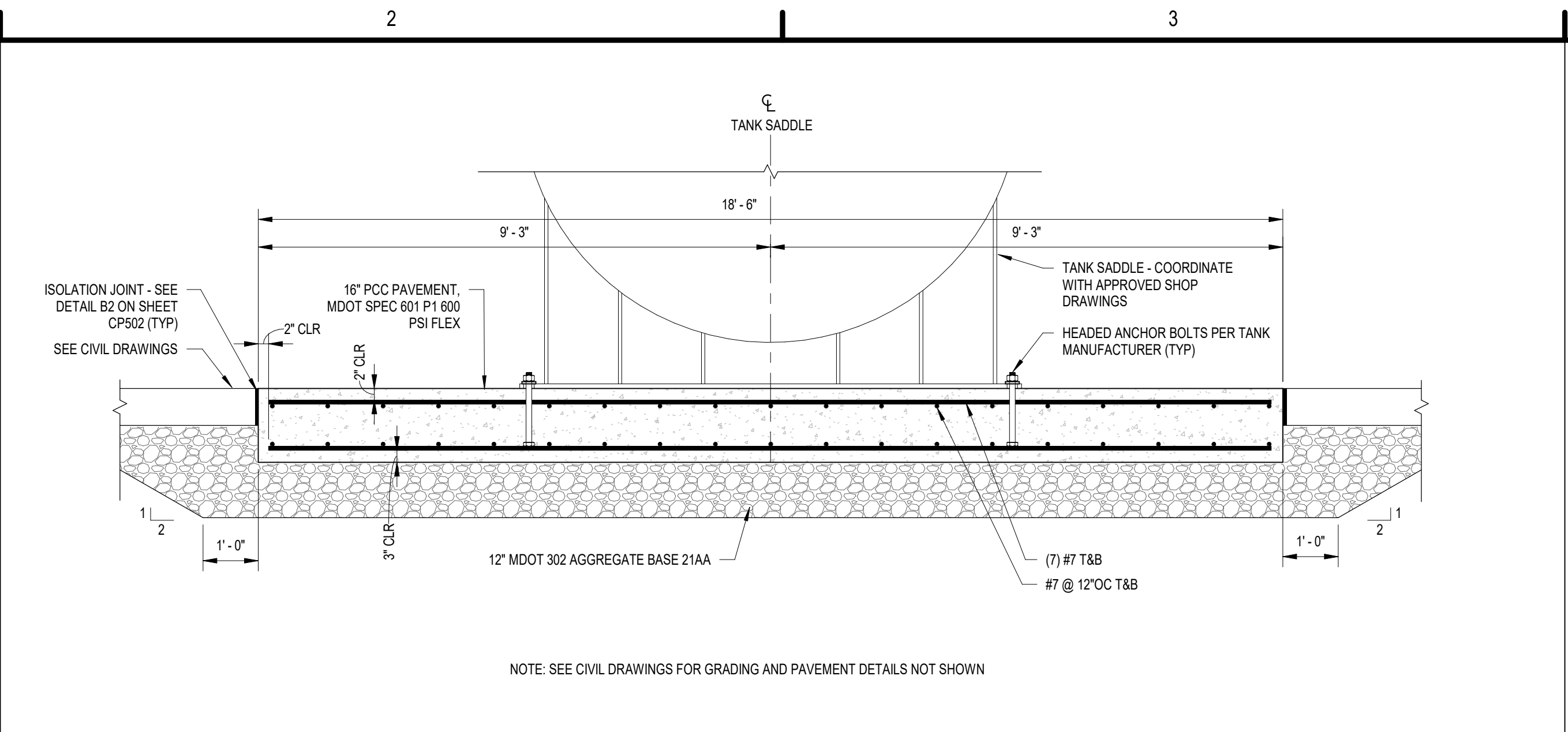
MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO: K19.014.001		
DATE: APRIL 2023		
DRAWN BY: K.J. SPYTKO, P.E.		
DESIGNED BY: K.J. SPYTKO, P.E.		
CHECKED BY: J.W. OBLEMAN, P.E.		
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FOUNDATION AND FRAMING PLANS

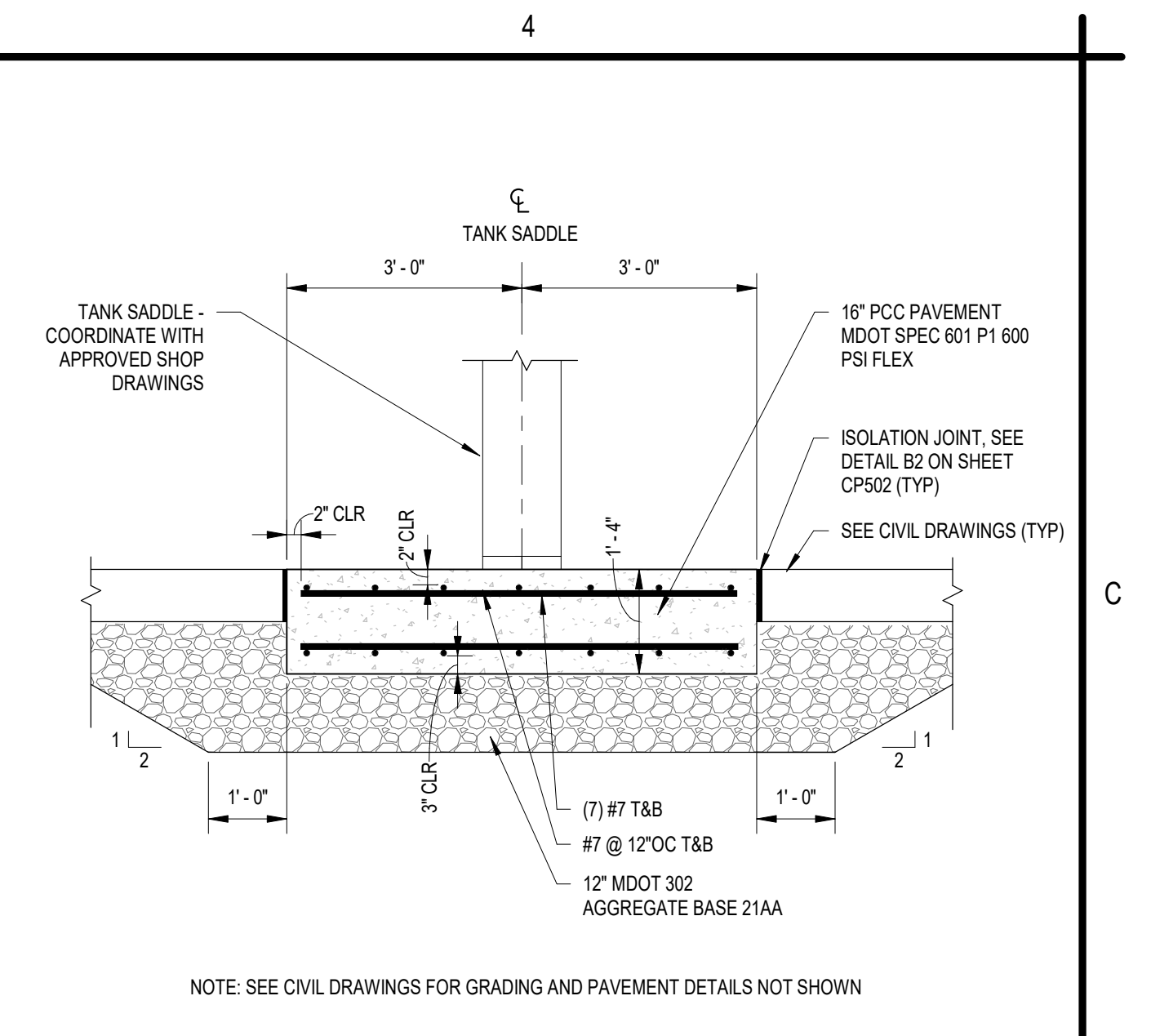
S-101



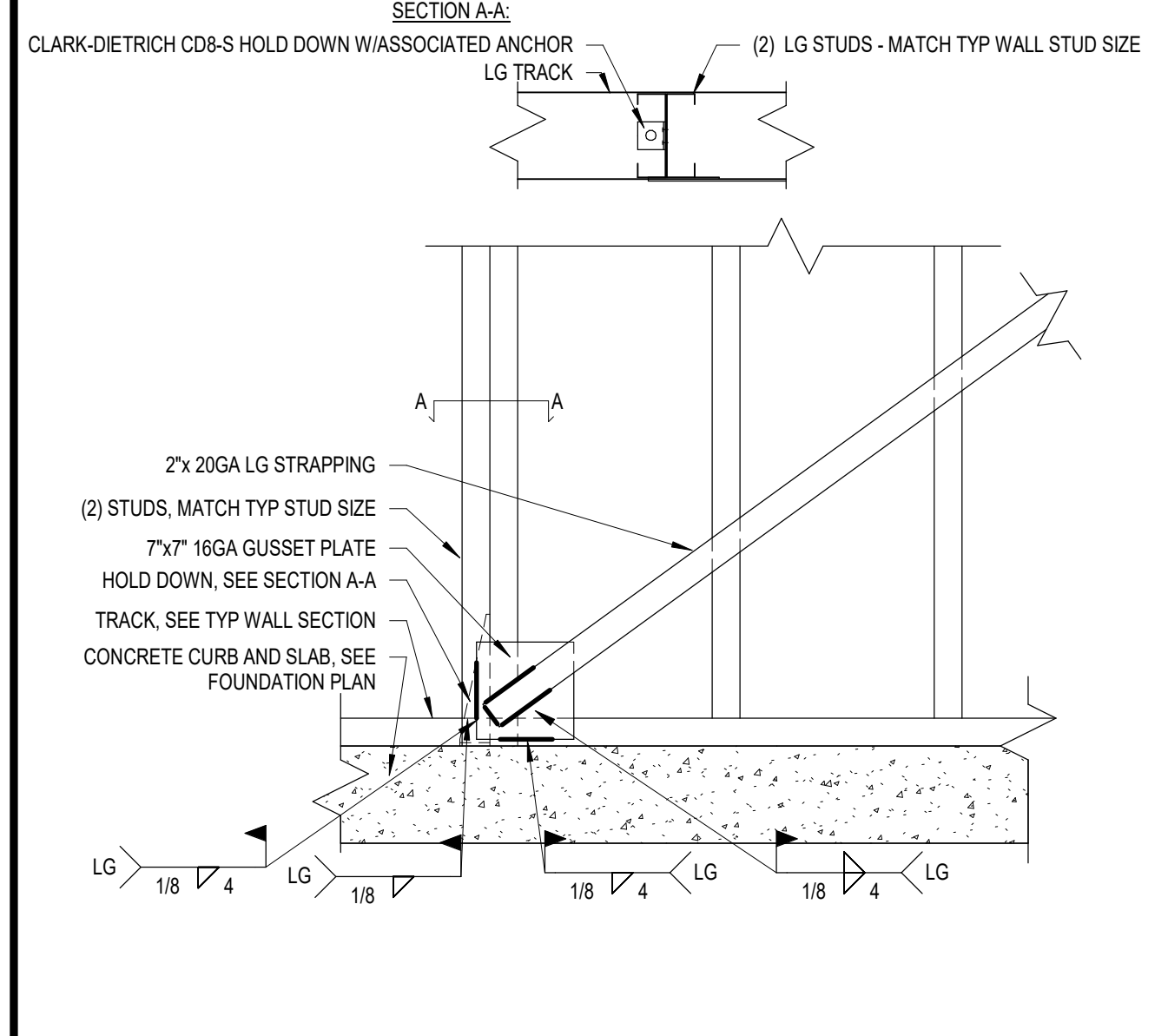
C1 LGMF STRAPPING UPPER GUSSET DETAIL
SCALE: 1" = 1'-0"



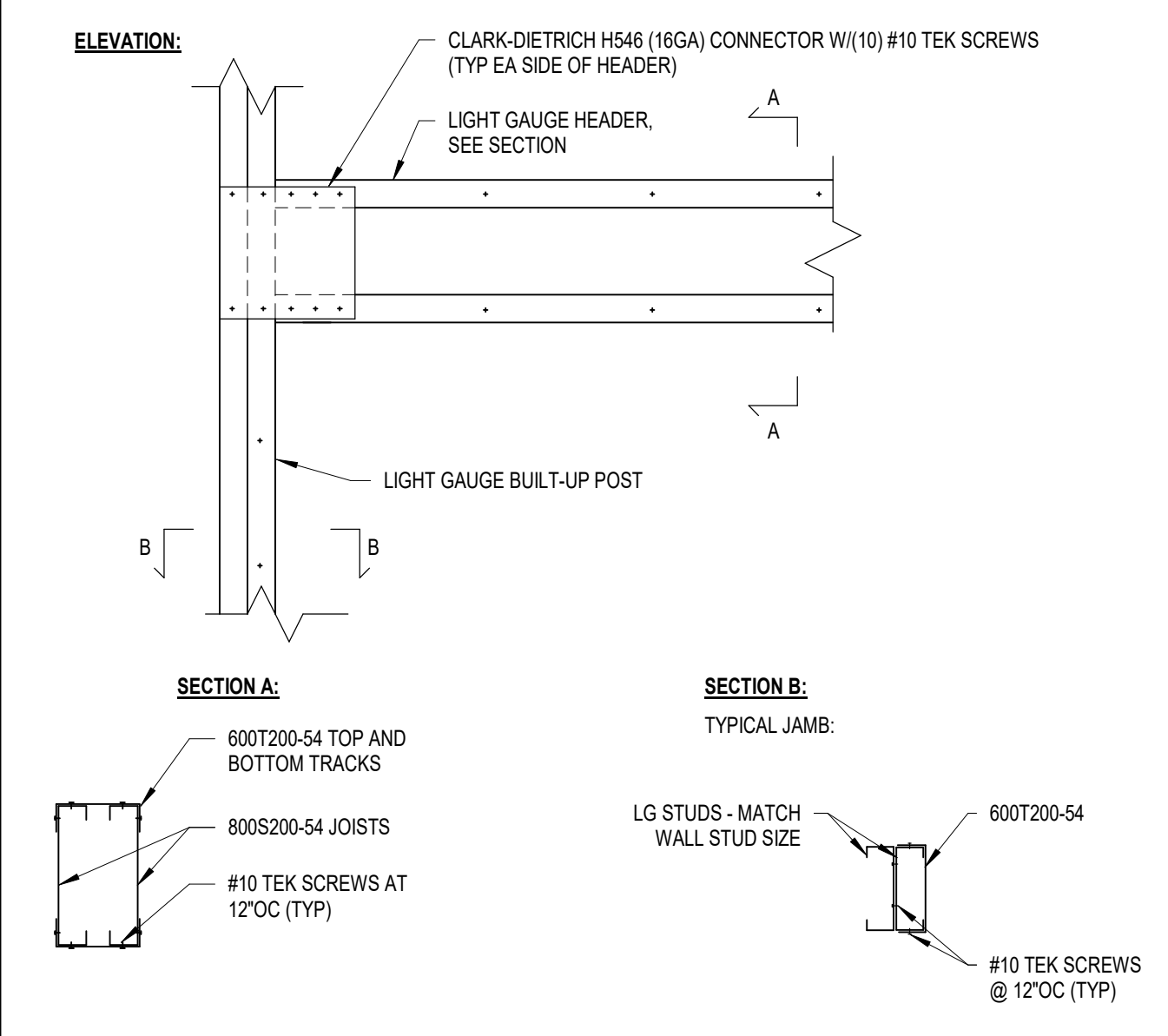
C2 TANK SADDLE FOUNDATION SECTION
SCALE: 1/2" = 1'-0"



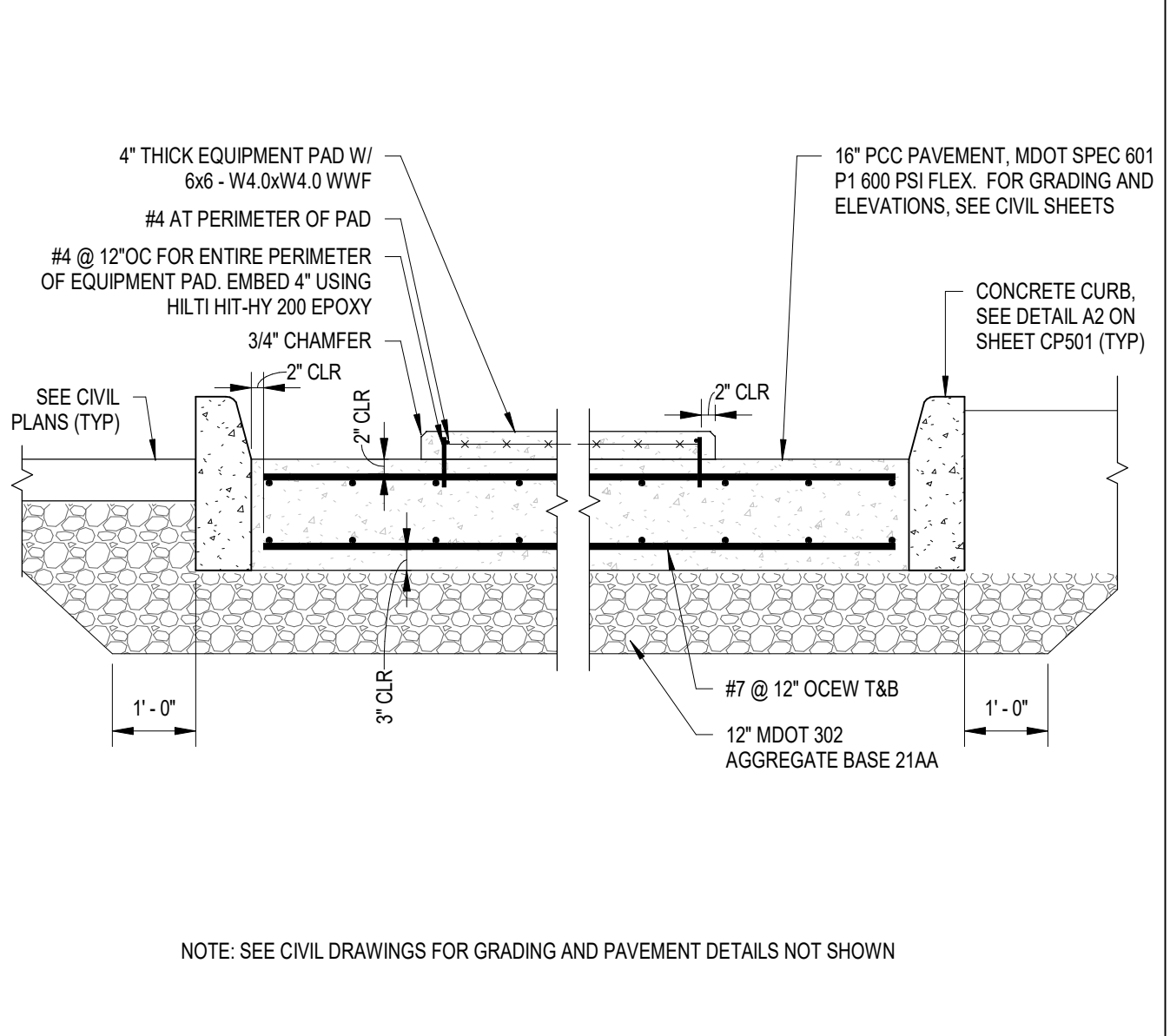
C4 TANK SADDLE FOUNDATION SECTION
SCALE: 1/2" = 1'-0"



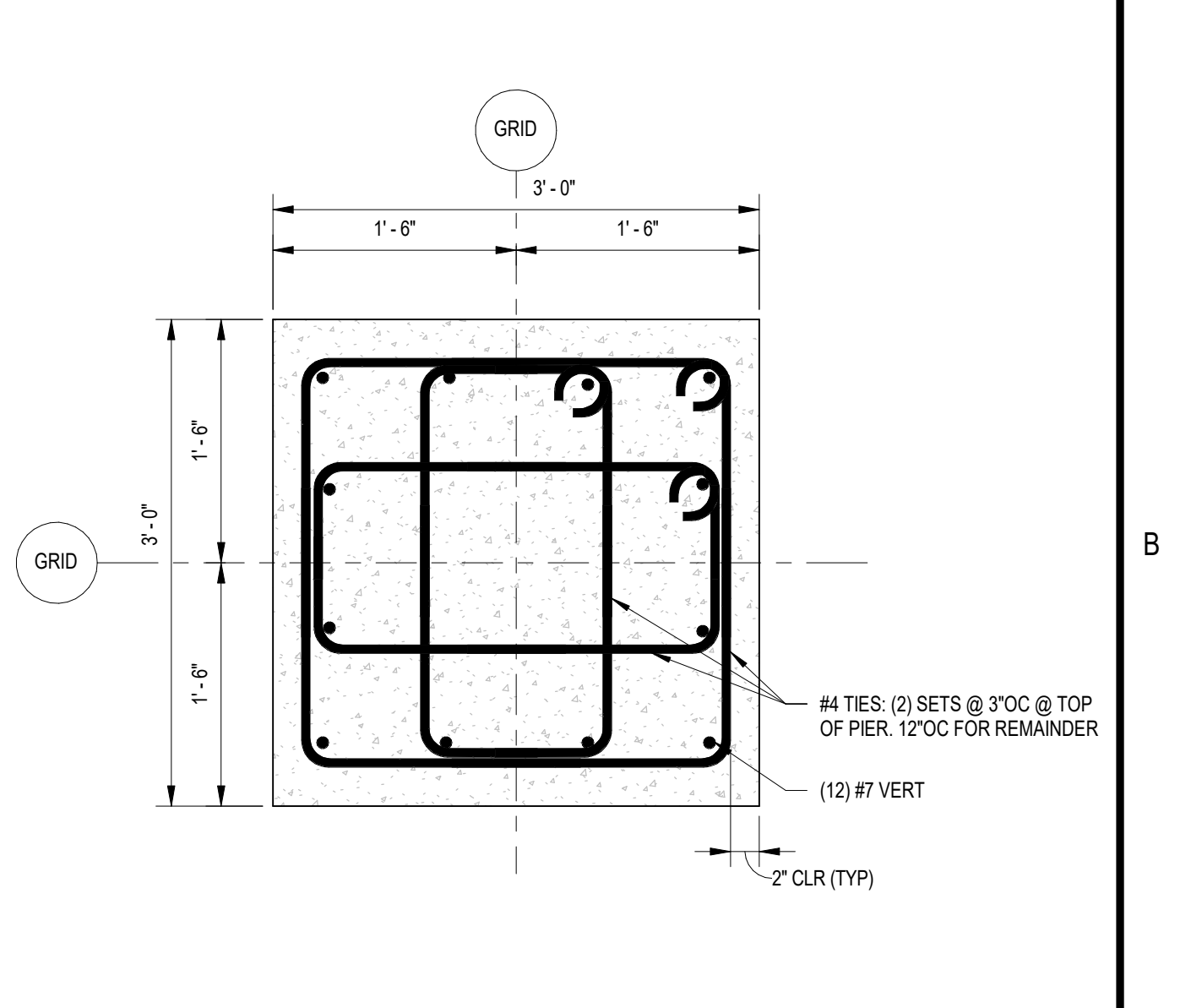
B1 LGMF STRAPPING LOWER GUSSET DETAIL
SCALE: 1" = 1'-0"



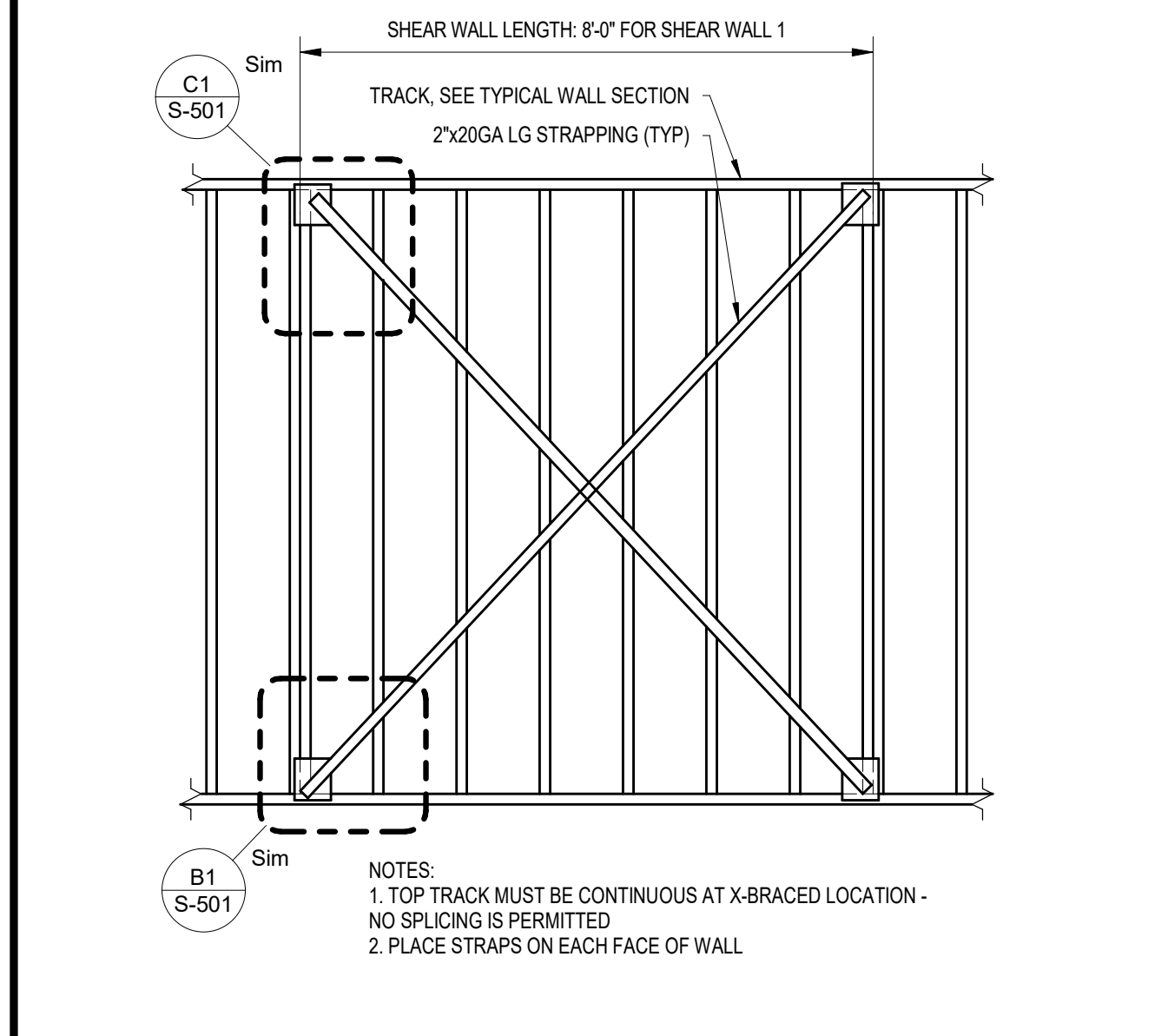
B2 LGMF HEADER DETAIL
SCALE: 1" = 1'-0"



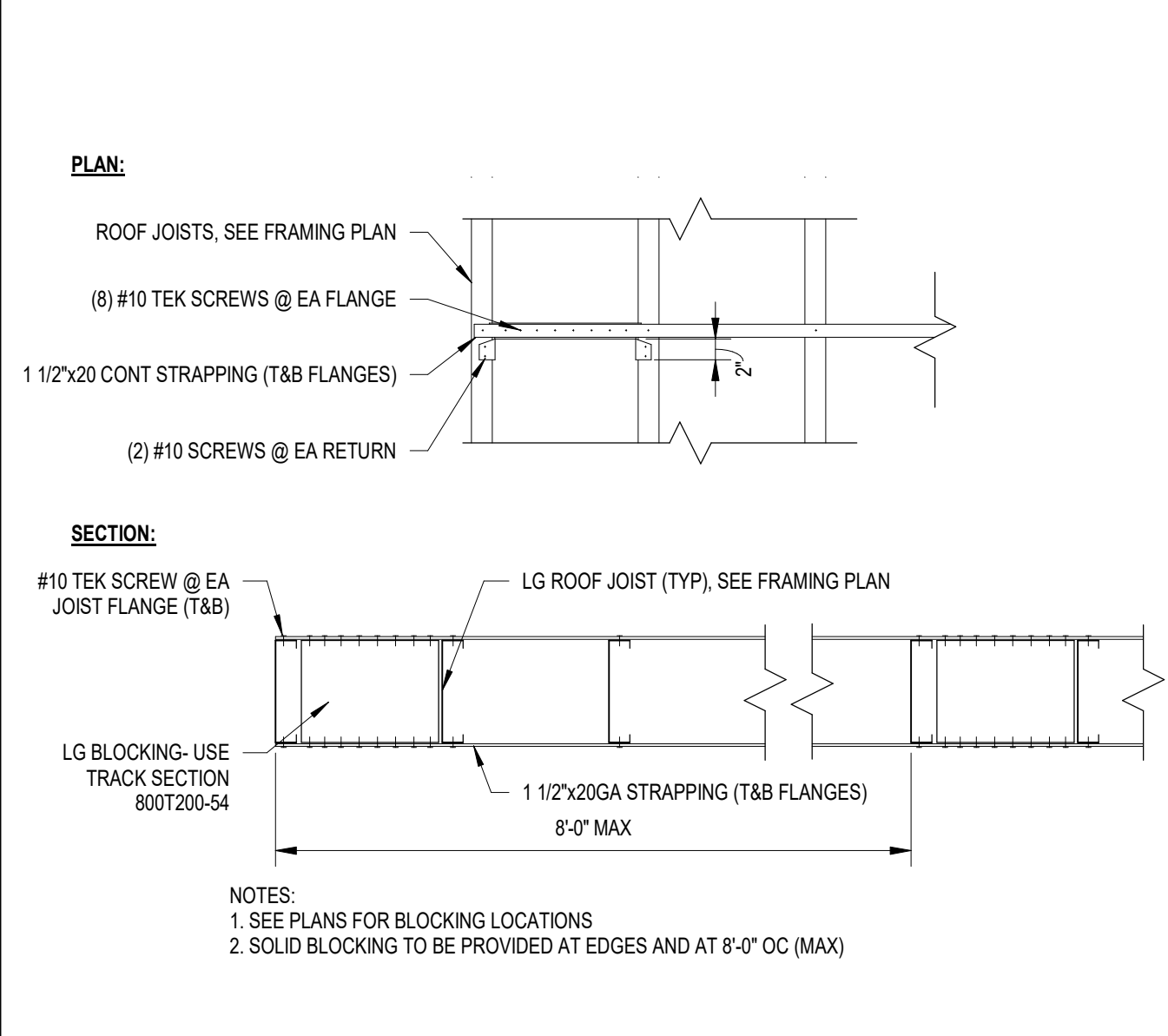
B3 TYPICAL CHEMICAL TANK PAD SECTION
SCALE: 1/2" = 1'-0"



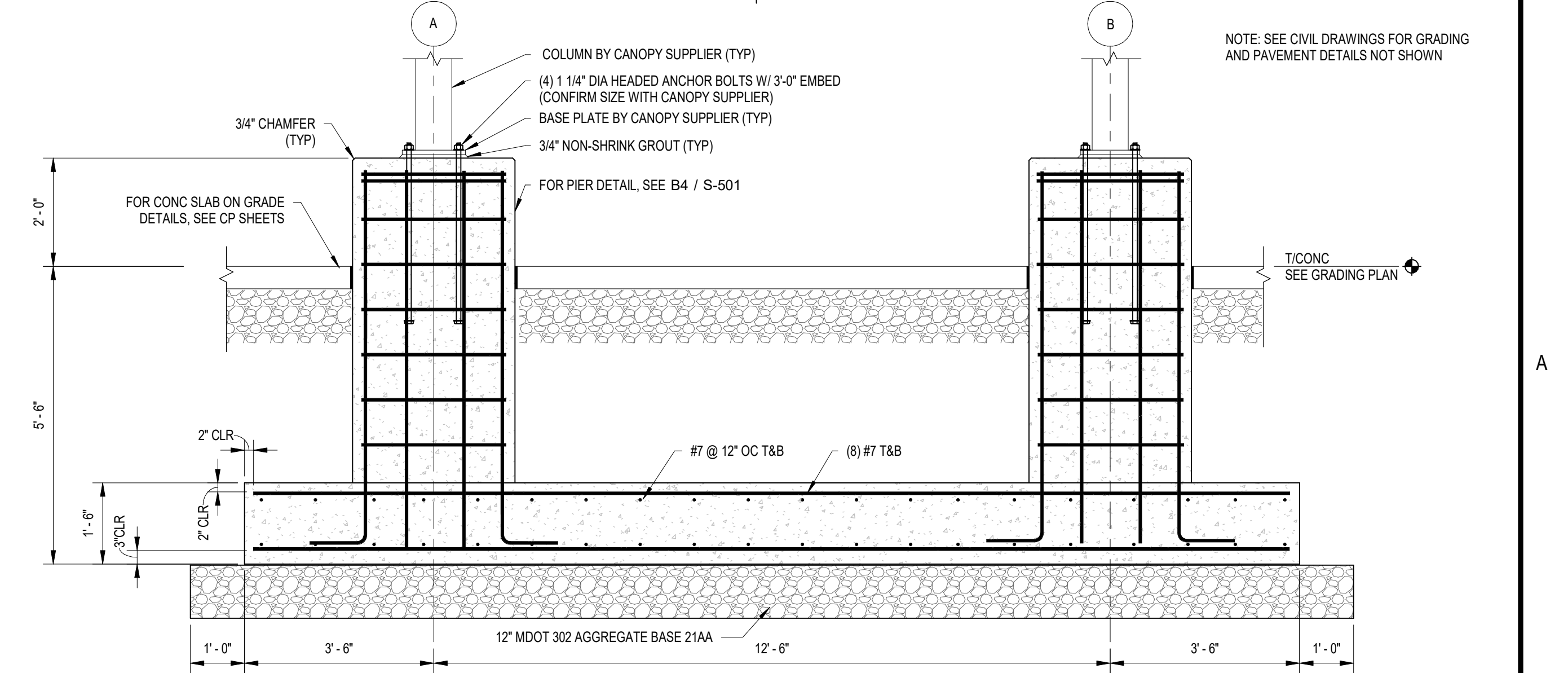
B4 P1 PIER DETAIL
SCALE: 1" = 1'-0"



A1 SHEAR WALL 1 STRAPPING ELEVATION
SCALE: 3/8" = 1'-0"

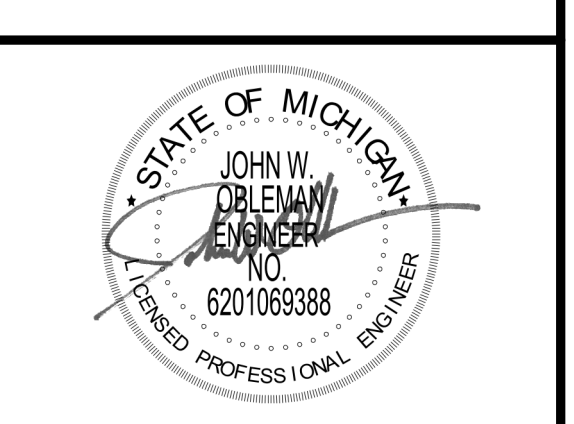


A2 LGMF SOLID BLOCKING DETAIL
SCALE: 3/4" = 1'-0"



A3 TYPICAL CANOPY F1 FOUNDATION SECTION
SCALE: 1/2" = 1'-0"

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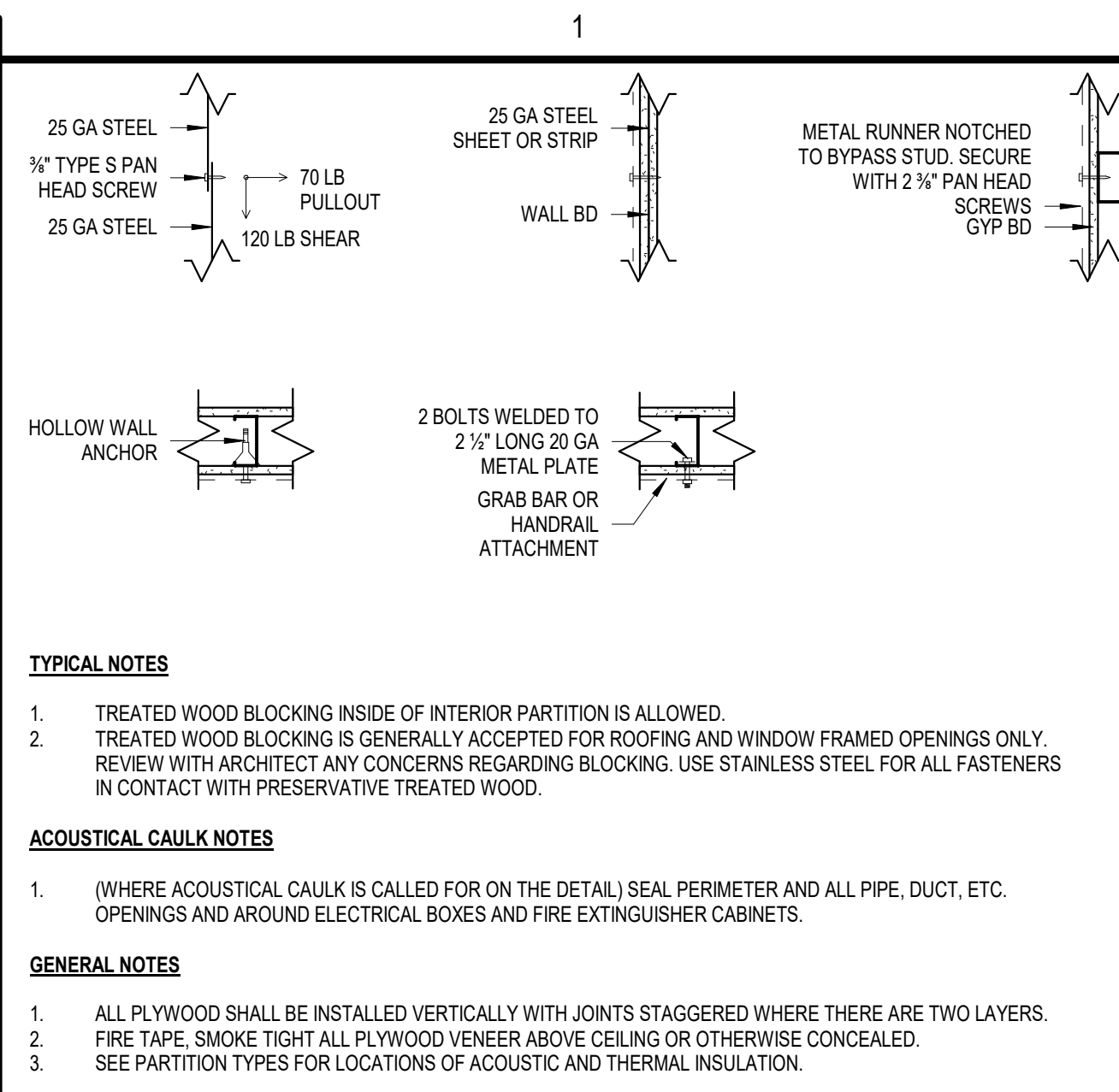


**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION**
**GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NO: K19.014.001		
DATE: APRIL 2023		
DRAWN BY: K.J. SPYTKO, P.E.		
DESIGNED BY: K.J. SPYTKO, P.E.		
CHECKED BY: J.W. OBLEMAN, P.E.		
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STRUCTURAL DETAILS

S-501



C1 TYPICAL ATTACHMENT DETAILS
SCALE: 1" = 1'-0"

GENERAL WALL NOTES

- THE TERM "WALL" AND "PARTITION" ARE USED INTERCHANGEABLY.
- ALL DIMENSIONS ARE NOMINAL CENTERLINE OF METAL STUD PARTITION OR FACE OF MASONRY UNLESS OTHERWISE NOTED.
- ALL PLYWOOD TO BE FIRE RETARDANT TREATED EXCEPT WHERE CEMENTITIOUS BACKER BOARD IS REQUIRED AT TILE INSTALLATIONS.
- PROVIDE ACOUSTICAL SEALANT AT ALL PARTITION PERIMETERS, RUNNERS, ELECTRICAL OUTLETS, PENETRATIONS AND OPENINGS. TO MINIMIZE SOUND TRANSMISSION ELECTRICAL OUTLETS SHALL BE SEPARATED BY A MINIMUM OF ONE STUD, BACK TO BACK.
- THE LOCATIONS OF FIRE RATED WALLS ARE SHOWN ON THE DRAWINGS. PENETRATIONS IN RATED ASSEMBLIES SHALL BE FIRE STOPPED TO MAINTAIN REQUIRED RATING.
- WALL HEIGHTS:
-ALL FIRE RATED WALLS SHALL BE FULL HEIGHT TO UNDERSIDE OF STRUCTURE. UNLESS OTHERWISE NOTED ON THE DRAWINGS ALL WALLS SHALL BE PARTIAL HEIGHT TO 6" ABOVE CEILING. STUDS MAY CONTINUE TO STRUCTURE FOR BRACING, OR BRACED AS NOTED BELOW.
- LATERAL BRACING:
-PROVIDE APPROPRIATE LATERAL BRACING FOR WALLS EXCEEDING THE UNBRACED HEIGHT INDICATED OR THOSE THAT DO NOT EXTEND TO STRUCTURE. SEE LATERAL BRACING DETAILS FOR ADDITIONAL REQUIREMENTS.
- PLYWOOD CONSTRUCTION SHALL BE ISOLATED WITH CONTROL JOINTS WHERE:
-PARTITIONS OR CEILINGS OF DISSIMILAR CONSTRUCTION MEET AND REMAIN IN THE SAME PLANE.
-EXPANSION OR CONTROL JOINTS OCCUR IN THE BUILDING STRUCTURE OR WALL CONSTRUCTION.
PROVIDE CONTROL JOINTS IN THE FACE OF GWB PARTITIONS AND CEILINGS WHEN THE SIZE OF THE SURFACE EXCEEDS THE FOLLOWING CONTROL JOINT SPACING:
-PARTITIONS: 30' MAX. IN EITHER DIRECTION
-CEILINGS: 50' MAX. IN EITHER DIRECTION (WITH PERIMETER RELIEF)
- PROVIDE METAL STUD INSERT BLOCKING AT ALL WALLS RECEIVING WALL MOUNTED EQUIPMENT AND/OR ACCESSORIES. COORDINATE WITH ALL TRADES AND OWNER EQUIPMENT LAYOUTS.
- SEE PARTITION TYPES FOR LOCATIONS OF ACOUSTIC AND THERMAL INSULATION.

C2 GENERAL WALL NOTES
SCALE: 1 1/2" = 1'-0"

MEANS AND METHODS

THE GENERAL CONTRACTOR (G.C.) AND ALL SUB-CONTRACTORS SHALL EXECUTE THE DESIGN-INTENT ILLUSTRATED (EVEN IF THE DESIGN-INTENT IS NOT FULLY DETAILED) ON THESE DOCUMENTS WITHOUT EXCEPTION.

CONSTRUCTION METHODOLOGY ALSO KNOWN AS "MEANS AND METHODS" SHALL BE THE G.C. RESPONSIBILITY AND MAY BE DETERMINED AS JOB CONDITIONS DICTATE. IT IS UNDERSTOOD THAT THE ARCHITECT WILL NOT PROVIDE THE "MEANS AND METHODS" OF CONSTRUCTION WHICH WILL BE THE SOLE RESPONSIBILITY OF THE G.C. BASED UPON HIS OR HER CONSTRUCTION EXPERIENCE AND ABILITY.

THE DEFINITION FOR "MEANS AND METHODS" IS AS FOLLOWS: A MEANS OR MANNER OF PROCEDURE, SPECIFICALLY A REGULAR AND SYSTEMATIC WAY OF ACCOMPLISHING CONSTRUCTION, INCLUDING PROCUREMENT, CHARACTERISTICS OF A PARTICULAR DISCIPLINE, AMOUNT OF LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO IMPLEMENT THE TECHNIQUE(S) ADOPTED BY THE G.C. TO PERFORM WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

C3 MEANS AND METHODS
SCALE: NOT TO SCALE

SYMBOL	DESCRIPTION
	NEW DOOR, FRAME, AND HARDWARE
	NEW WALL
	NEW DOOR TAG

B1 CONSTRUCTION SYMBOLS
SCALE: 1/8" = 1'-0"

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	STRUCTURAL GRID		LEVEL REFERENCE
	VIEW REFERENCE		ROOM TAG
	EXTERIOR ELEVATION		WALL TAG
	INTERIOR ELEVATION		DOOR TAG
	BUILDING SECTION		WINDOW TAG
	WALL SECTION		REVISION TAG
	DETAIL CALLOUT		STRUCTURAL GRID LINE
			FINISHED SURFACE LINE
			DEMOLITION LINE
			OVERHEAD/HIDDEN LINE

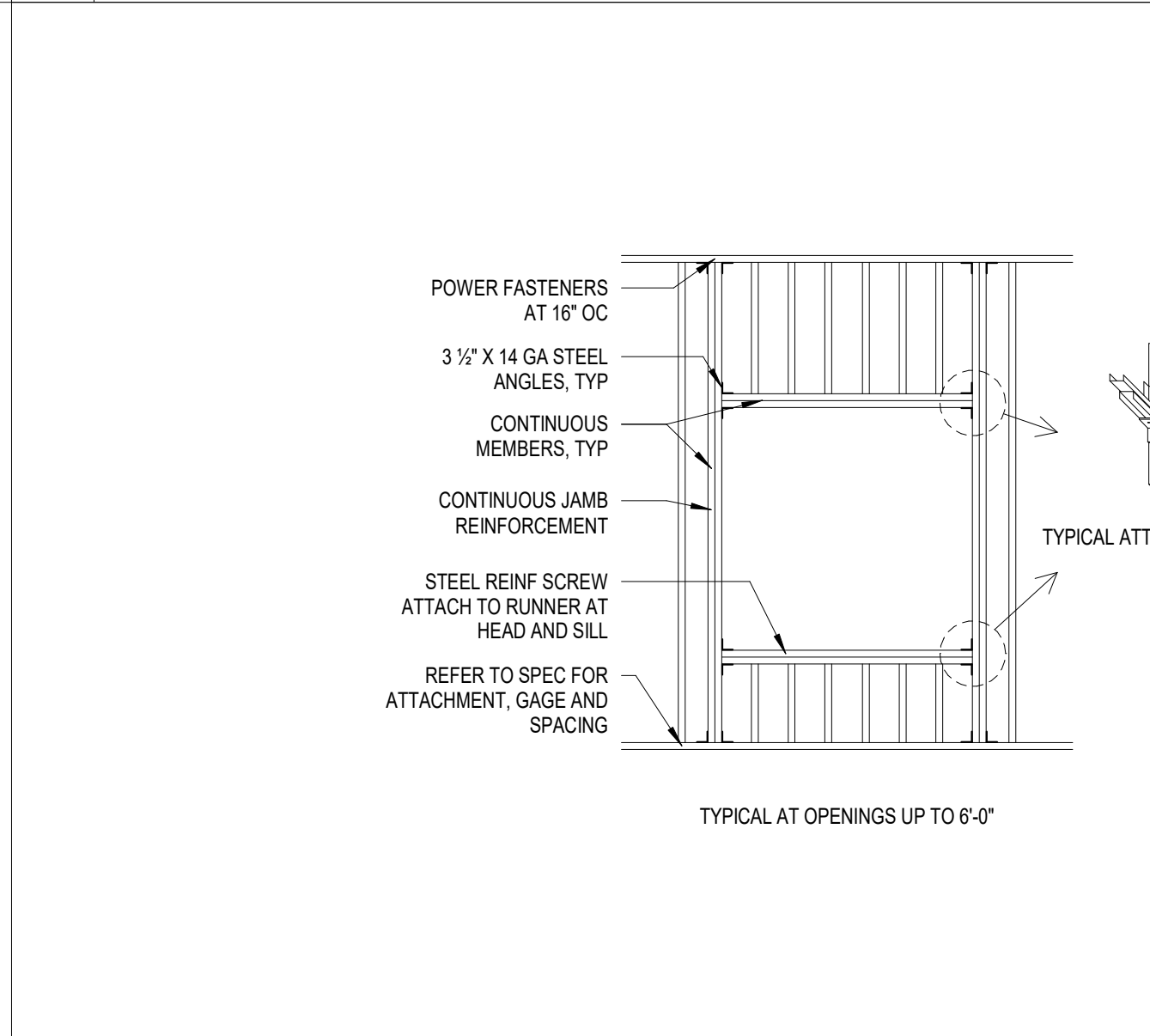
B2 SYMBOLS LEGEND
SCALE: NOT TO SCALE

	EARTH		WOOD (FINISHED)
	GRANULAR FILL		WOOD (CONTINUOUS)
	CONCRETE		WOOD (BLOCKING)
	BRICK		INSULATION (LOOSE OR BATT)
	CONCRETE MASONRY UNIT		INSULATION (RIGID BOARD)
	STEEL SECTION		GLASS
	STRUCTURAL STEEL		ACOUSTIC/CERAMIC TILE
	PLYWOOD		GYPSUM WALL BOARD, SAND, PLASTER, CEMENT, GROUT
			TERRAZZO
			CARPET

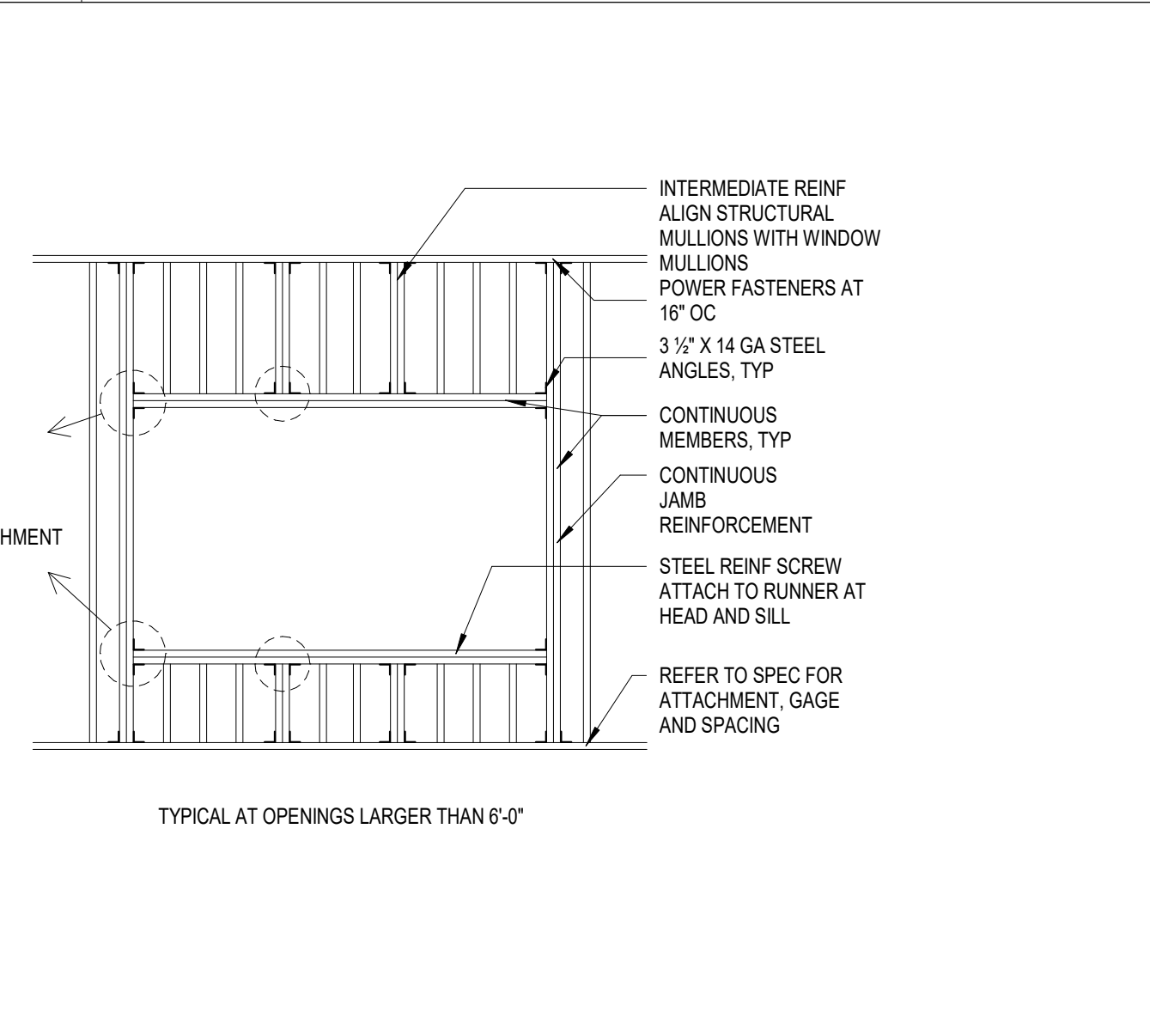
B3 MATERIAL LEGEND
SCALE: 1:1



A2 TYPICAL DETAIL AT FRAMED OPENINGS
SCALE: 1" = 1'-0"



A2 TYPICAL DETAIL AT FRAMED OPENINGS
SCALE: 1" = 1'-0"



A4 ABBREVIATION LIST
SCALE: 1 1/2" = 1'-0"

A	AFF ABOVE FINISHED FLOOR ACT ACOUSTICAL CEILING TILE AMP ACOUSTICAL METAL PANEL ALUM ALUMINUM L ANGLE	L	LAM LAMINATE LAV LAVATORY L LENGTH / LONG LF LINEAL FEET LGMF LIGHT GAUGE METAL FRAMING LLH LONG LEG HORIZONTAL LLV LONG LEG VERTICAL LPT LOW POINT
B	BLK BLOCK BD BOARD BOT BOTTOM BLDG BUILDING BL BUILDING LINE	M	MFR MANUFACTURER MO MASONRY OPENING MATL MATERIAL MAX MAXIMUM MECH MECHANICAL MTL METAL MEZZ MEZZANINE MIN MINIMUM
C	OPT CARPET TILE CLKG CAULKING CLG CEILING CBB CEMENTITIOUS BACKER BOARD CTR CENTER CL CENTER LINE CH BD CHALKBOARD CLR CLEAR / CLEARANCE CLO CLOSET COL COLUMN CONC CONCRETE CMU CONCRETE MASONRY UNIT CONT CONTINUOUS CJ CONTROL JOINT CG CORNER GUARD CORR CORRIDOR CTR COUNTER CRS COURSE(S) CRN CROWN	N	NOM NOMINAL NA NOT APPLICABLE NIC NOT IN CONTRACT NO NUMBER NTS NOT TO SCALE
D	DEMO DEMOLISH / DEMOLITION DET DETAIL DIA DIAMETER DIM DIMENSION DISP DISPENSER DN DOWN DWG DRAWING DF DRINKING FOUNTAIN	O	OC ON CENTER OPNG OPENING OPP OPPOSITE OD OUTSIDE DIAMETER OH OVERHEAD
E	EA EACH ELEC ELECTRIC EWC ELECTRIC WATER COOLER EL ELEVATION ELEV ELEVATOR ENCL ENCLOSURE ENTR ENTRANCE EQ EQUAL EQUIP EQUIPMENT EXH EXHAUST EXIST EXISTING ETR EXISTING TO REMAIN EXP EXPANSION EJ EXPANSION JOINT EXP EXPOSED EXT EXTERIOR	P	PT PAINT PTD PAPER TOWEL DISPENSER PFB PARTICLE BOARD PTN PARTITION PLAS PLASTER PLAM PLASTIC LAMINATE PLBG PLUMBING PLYWD PLYWOOD POL POLISHED PVC POLYVINYL CHLORIDE PT PRESSURE TREATED
F	FOF FACE OF FINISH FOM FACE OF MASONRY FOS FACE OF STUDS FOW FACE OF WALL FIF FACE TO FACE FT FEET/FOOT FRP FIBER REINFORCED POLYESTER FGL FIBERGLASS FN FINISH(ED) FF FINISH FLOOR FM GR FINISH GRADE FFL FINISHED FLOOR FA FIRE ALARM FEC FIRE EXTINGUISHER CABINET FHC FIRE HOSE CABINET FP FIRE PROTECTION FRT FIRE RETARDANT FR FIREPROOF FXT FIXTURE FLASH FLASHING FLR FLOOR FD FLOOR DRAIN FTG FOOTING FDTN FOUNDATION FURN FURNISH FBO FURNISHED BY OTHERS FURG FURRED(ING)	Q	QT QUARRY TILE QTZ QUARTZ
G	GA GAGE / GAUGE GALV GALVANIZED GC GENERAL CONTRACTOR GL GLASS GL BLK GLASS BLOCK GB GRAB BAR GRL GRILLE GWB GYPSUM BOARD	R	REINF REINFORCE REQD REQUIRED RF RESILIENT FLOORING REV REVISION / REVISED R RISER RD ROOF DRAIN RL ROOF LEADER RTU ROOF TOP UNIT RM ROOM RO ROUGH OPENING RBR RUBBER RB RUBBER BASE
H	HCP HANDICAPPED HNDRL HANDRAIL HDWD HARDWOOD HT HEIGHT HP HIGH POINT HM HOLLOW METAL	S	SCH SCHEDULE (D) SLANT SEALANT SLR SEALER SECT SECTION SHTHG SHEATHING SIM SIMILAR SD SOAP DISPENSER SAFB SOUND ATTENUATION FIBERGLASS BATT SPEC SPECIFICATION SF SQUARE FEET STN STAIN SS SOLID SURFACE SST STAINLESS STEEL STL STEEL STOR STORAGE STRUCT STRUCTURAL SUSP SUSPENDED SYS SYSTEM
I	IRWC IMPACT RESISTANT WALL COVERING ID INSIDE DIAMETER INSUL INSULATION / INSULATED INT INTERIOR	T	TACK BOARD TMPP GL TEMPERED GLASS TER TERRAZZO THK THICKNESS THRES THRESHOLD TL TILE TPTN TOILET PARTITION T&B TOP AND BOTTOM TO TOP OF TOS TOP OF STEEL TOW TOP OF WALL T&G TONGUE AND GROOVE T TREAD(S) TYP TYPICAL
J	JAN CL JANITOR'S CLOSET	U	UNFIN UNFINISHED UON UNLESS OTHERWISE NOTED
K	KD KNOCKDOWN	V	VB VAPOR BARRIER VR VAPOR RETARDER VTR VENT THROUGH ROOF VIF VERIFY IN FIELD VERT VERTICAL VEST VESTIBULE VCT VINYL COMPOSITION TILE VWB VINYL WALL BASE VWC VINYL WALL COVERING VP VISION PANEL
W	WSCOT WAINSCOT WCAB WALL CABINET WC WATER CLOSET W WIDE WG WIRE GLASS W WIRE MESH WD WOOD WBL WOOD BLOCKING		

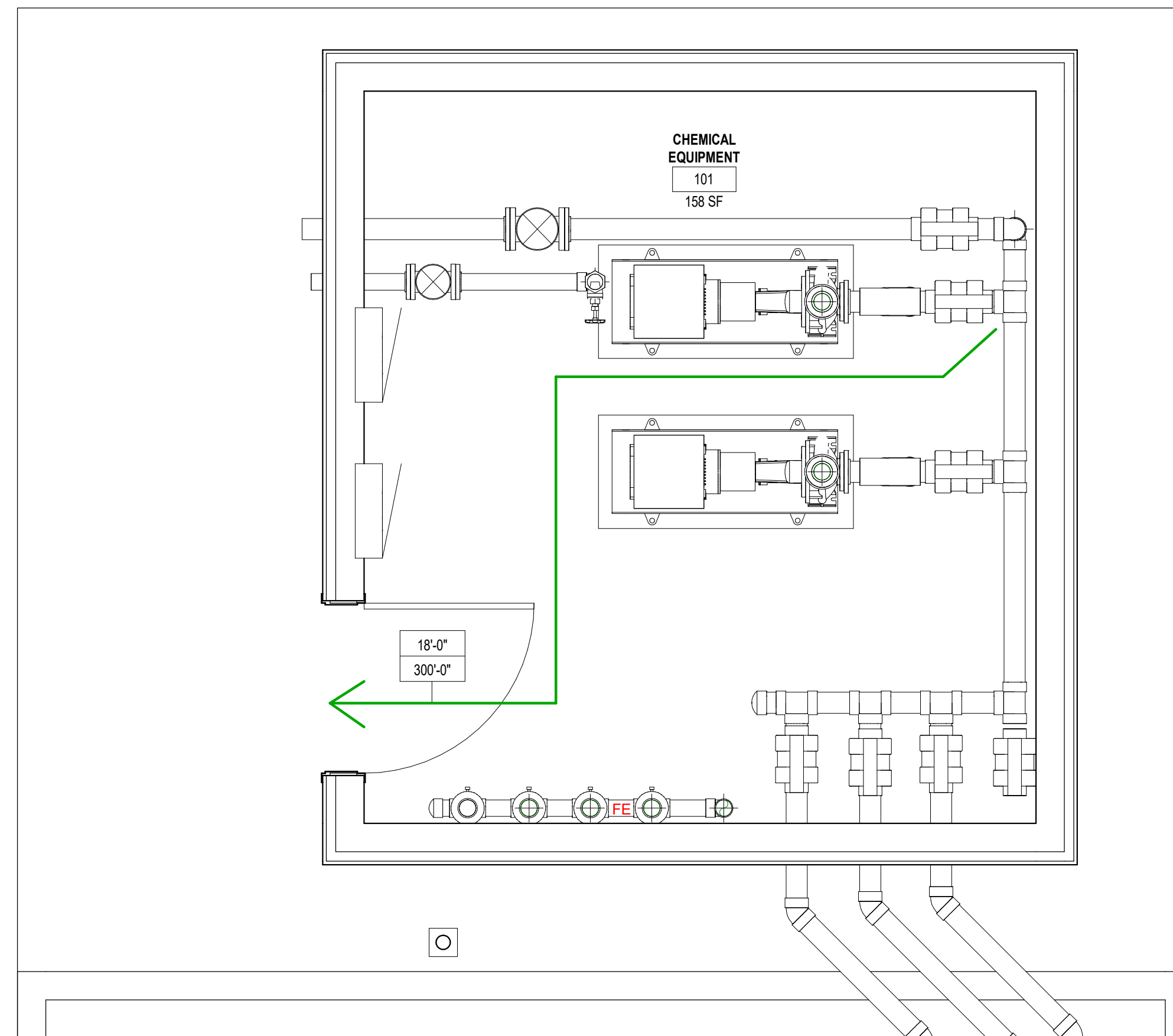
A4 ABBREVIATION LIST
SCALE: 1 1/2" = 1'-0"

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FUEL FACILITY RELOCATION**

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GRAND RAPIDS, MICHIGAN**

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DESIGNED BY: T.S. McNEAL		
CHECKED BY: D.J. MARINARO, AIA		
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ABBREVIATIONS, SYMBOLS, LEGENDS, AND GENERAL NOTES		
A-001		



B2 LIFE SAFETY PLAN
SCALE: 1/2" = 1'-0"

2015 MICHIGAN BUILDING CODE - CODE ANALYSIS

SECTION 312.1: OCCUPANCY CLASSIFICATION: GROUP U (UTILITY) : MISCELLANEOUS/ SHED

TABLE 504.3 - ALLOWABLE BUILDING HEIGHT:
GROUP U: (NON-SPRINKLERED) - 55FT (MAX) PROVIDED: 11FT +/- (1 STORY ABOVE GRADE)

TABLE 506.2 - ALLOWABLE BUILDING AREA:
GROUP U: (NON-SPRINKLERED) - 8,500 SFT (MAX) PROVIDED: 158 SFT

SECTION 601:
BUILDING TYPE: II-B

FIRE RESISTANCE RATING BY ELEMENT:
PRIMARY STRUCTURE= 0 HRS
BEARING WALLS= 0 HRS
EXTERIOR= 0 HRS
INTERIOR= 0 HRS
NONBEARING WALLS= 0 HRS
FLOOR= 0 HRS
ROOF= 0 HRS

LIFE SAFETY OCCUPANCY AND OCCUPANT LOAD CALCULATION

TABLE 1004.1.2- FUNCTION OF SPACE:	GROSS SF	SF/PERSON	OCCUPANCY
ACCESSORY STORAGE AREAS/ MECHANICAL EQUIPMENT ROOM	158 SF	300 GROSS	1 OCCUPANT

SECTION 1006 NUMBER OF EXITS AND EXIT ACCESS DOORWAYS-
BASED ON OCCUPANT LOAD (<49) AND DIRECT DISCHARGE TO EXTERIOR
REQUIRED: 1 PROVIDED: 1

SECTION 1017 EXIT ACCESS TRAVEL DISTANCE (WITHOUT SPRINKLER)
GROUP U: MAXIMUM 300'
PROVIDED: SEE LIFE SAFETY PLAN

2015 MICHIGAN ENERGY CODE

A. CHAPTER 3 DESIGN CONDITIONS

- TABLE 301.1 CLIMATE ZONES
KENT COUNTY, ZONE 5A

B. CHAPTER 4 COMMERCIAL ENERGY EFFICIENCY

COMMERCIAL BUILDINGS SHALL COMPLY WITH ANSI/ASHRAE/IESNA 90.1-2013

ASHRAE 90.1-2013 - ENERGY STANDARD FOR BUILDINGS

A. CHAPTER 5 - BUILDING ENVELOPE

1. TABLE 5.5-5 BUILDING ENVELOPE REQUIREMENTS FOR CLIMATE ZONE 5

- ROOF - METAL BUILDING U-0.037; R-19 + R-11 LS
- WALLS - METAL BUILDING U-0.050
- WALLS - MASS U-0.090; R-11.4 C.I.
- SLAB, UNHEATED R-15 FOR 24" BELOW
- DOORS U-0.500 MAX.
- FENESTRATION - METAL FRAMING, FIXED U-0.42; SHGC-0.40

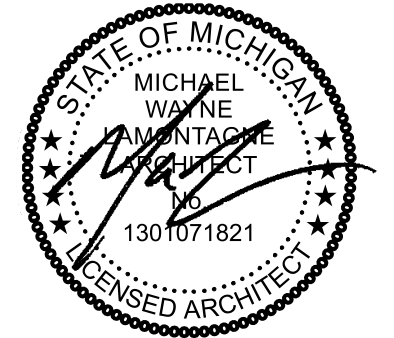
LIFE SAFETY LEGEND

SYMBOL	DESCRIPTION
	EXIT ACCESS TRAVEL DISTANCE
	FIRE EXTINGUISHER

A4 CODE ANALYSIS AND LIFE SAFETY LEGEND
SCALE: 1/2" = 1'-0"



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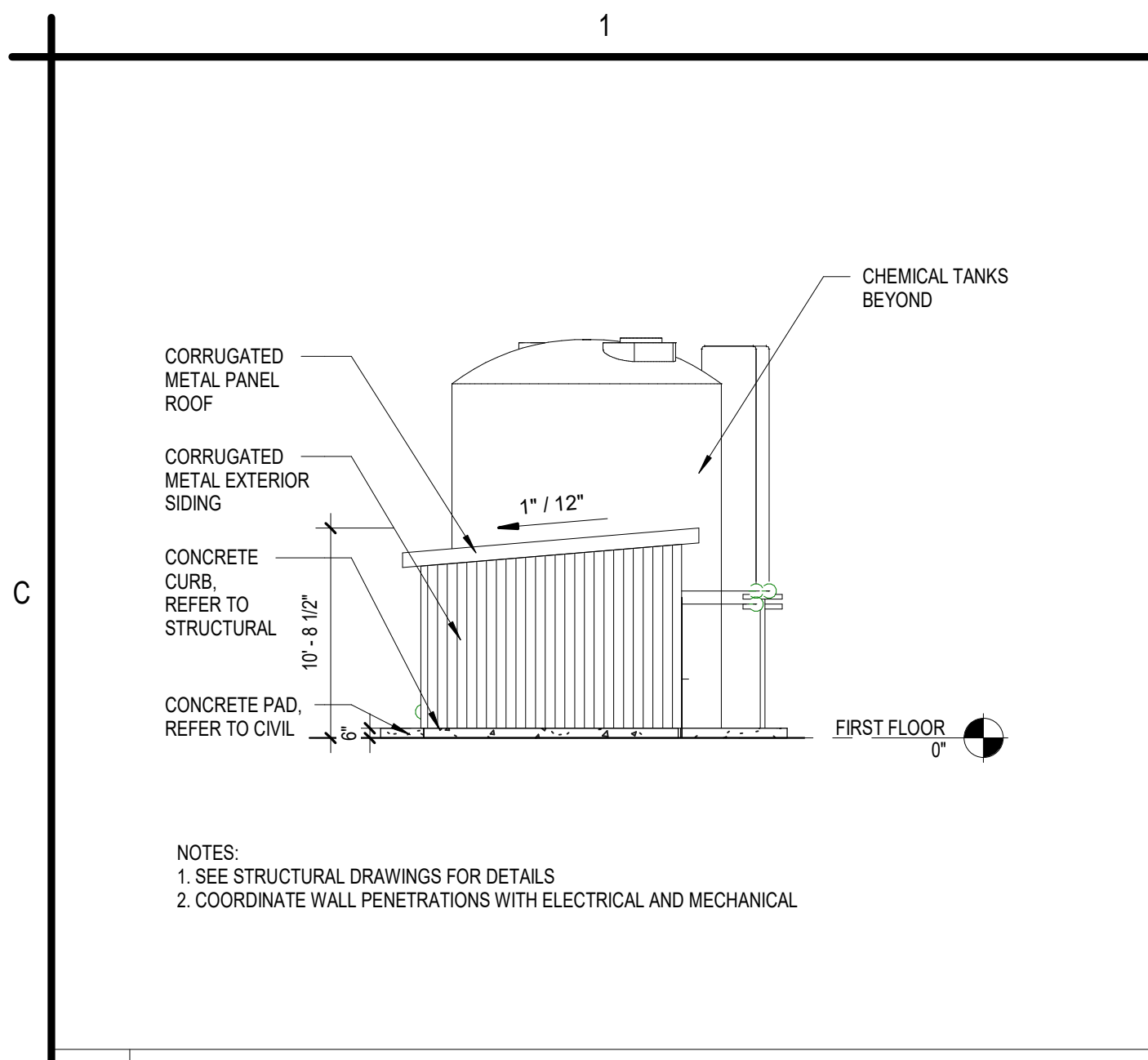
**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION**

**GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

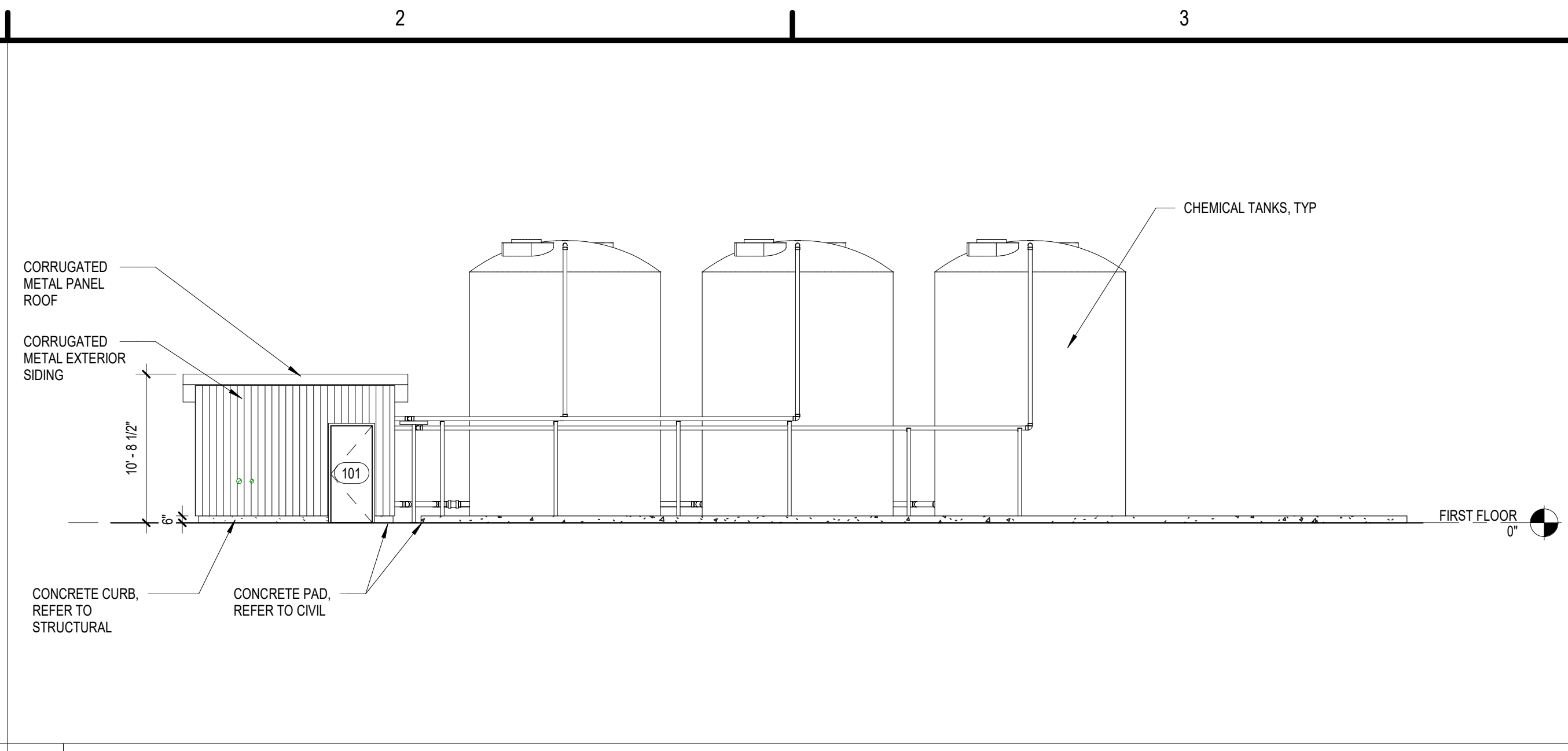
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**LIFE SAFETY PLAN AND
BUILDING CODE
ANALYSIS**

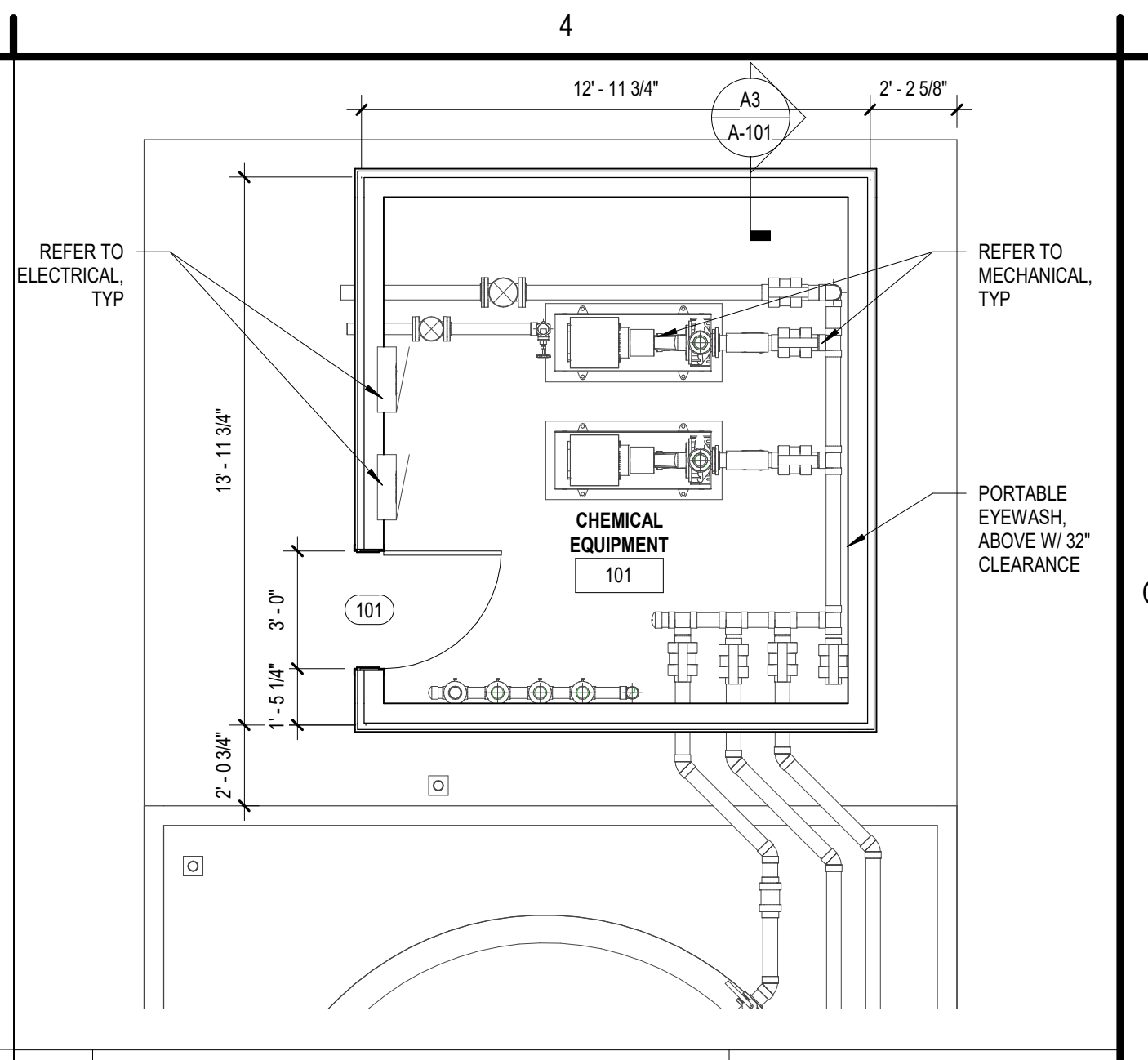
A-002



C1 EXTERIOR ELEVATION- NORTH
SCALE: 1/8" = 1'-0"



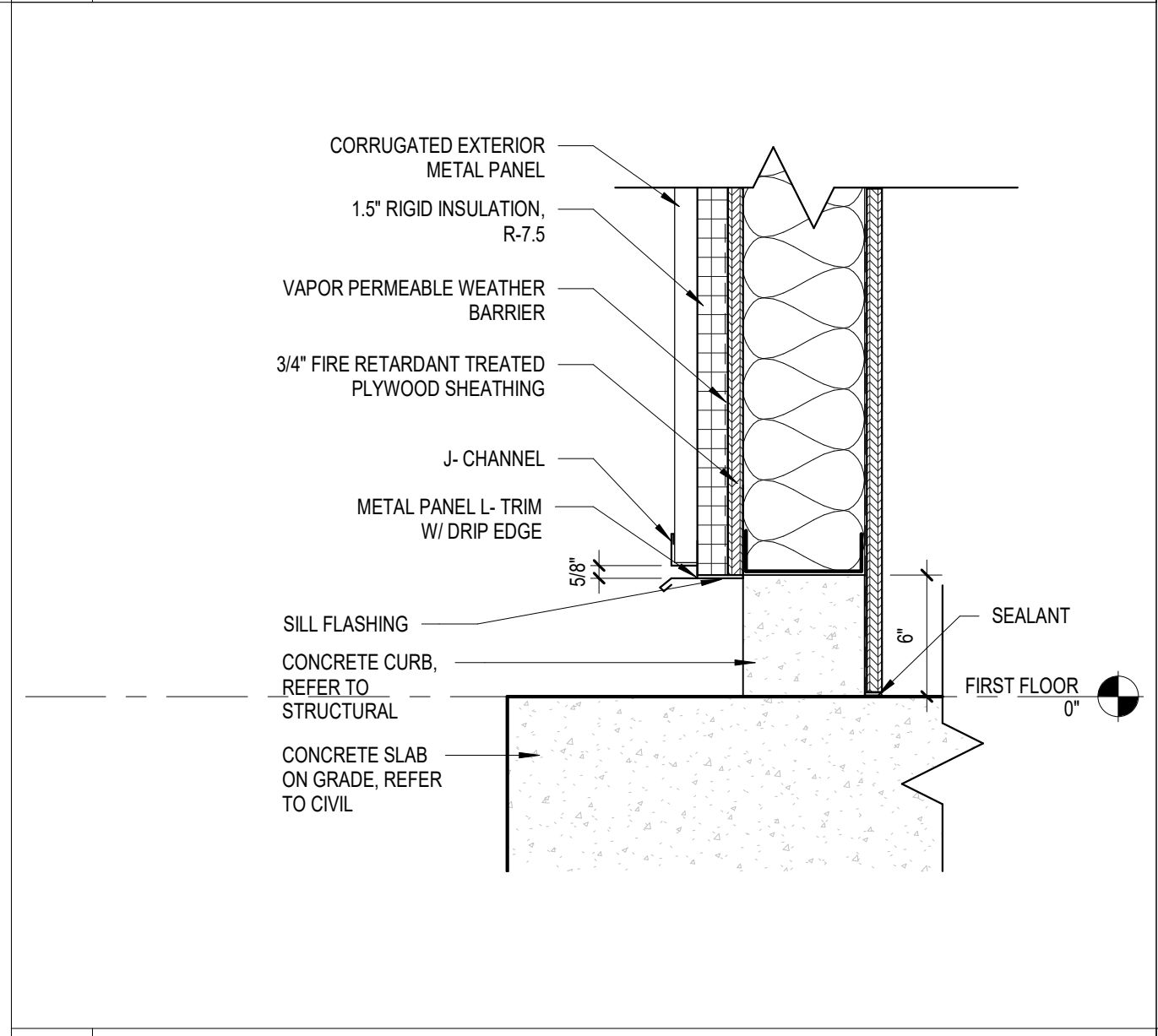
C2 EXTERIOR ELEVATION- WEST
SCALE: 1/8" = 1'-0"



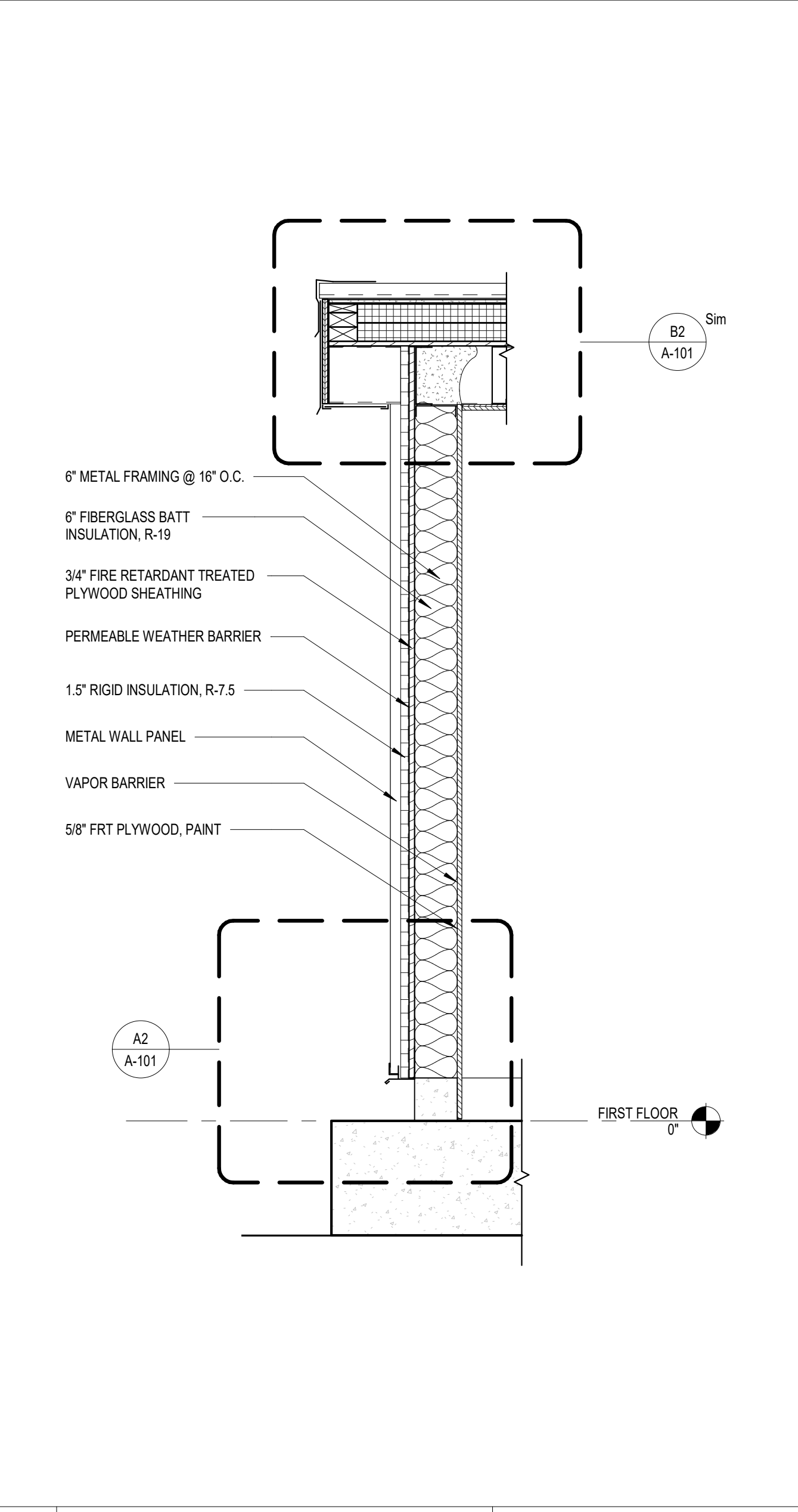
C4 FLOOR PLAN- EQUIPMENT SHED
SCALE: 1/4" = 1'-0"



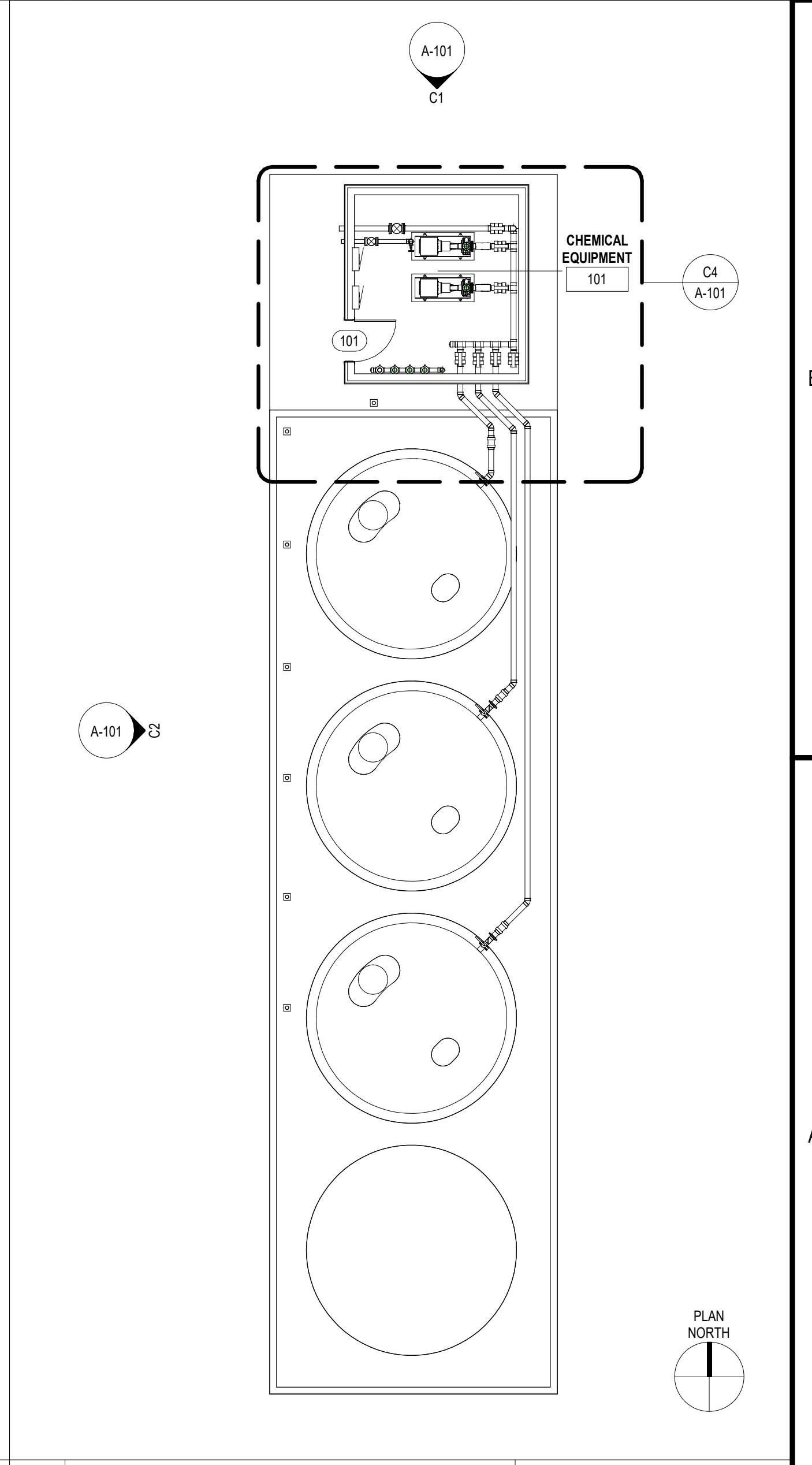
B2 TYPICAL ROOF EDGE DETAIL
SCALE: 1" = 1'-0"



A2 TYPICAL BASE DETAIL
SCALE: 1 1/2" = 1'-0"



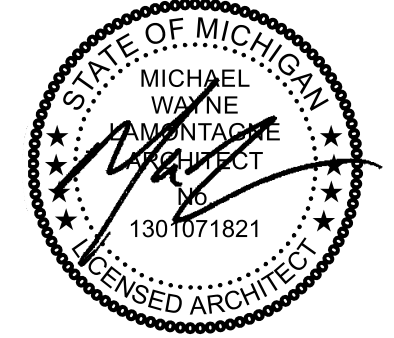
A3 TYPICAL WALL SECTION
SCALE: 3/4" = 1'-0"



A4 OVERALL FLOOR PLAN
SCALE: 1/8" = 1'-0"



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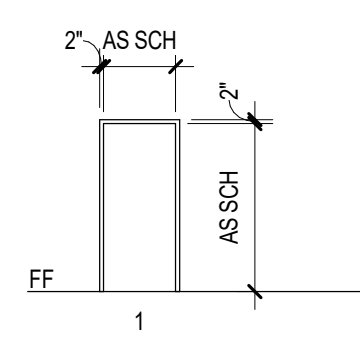
**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION**
**GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION
REVISIONS		
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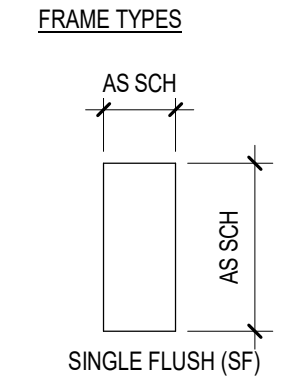
**FLOOR PLANS,
ELEVATIONS, WALL
SECTION, AND DETAILS**

A-101

DOOR SCHEDULE											
DOOR NO.	ROOM NO.	DOOR TYPE	WIDTH	HEIGHT	DOOR		FRAME		HARDWARE SET	FIRE RATING	NOTES
					MATERIAL	FINISH	TYPE	MATERIAL			
101	101	SF	3'-0"	7'-0"	HM	PT	1	HM	PT	SEE BELOW	



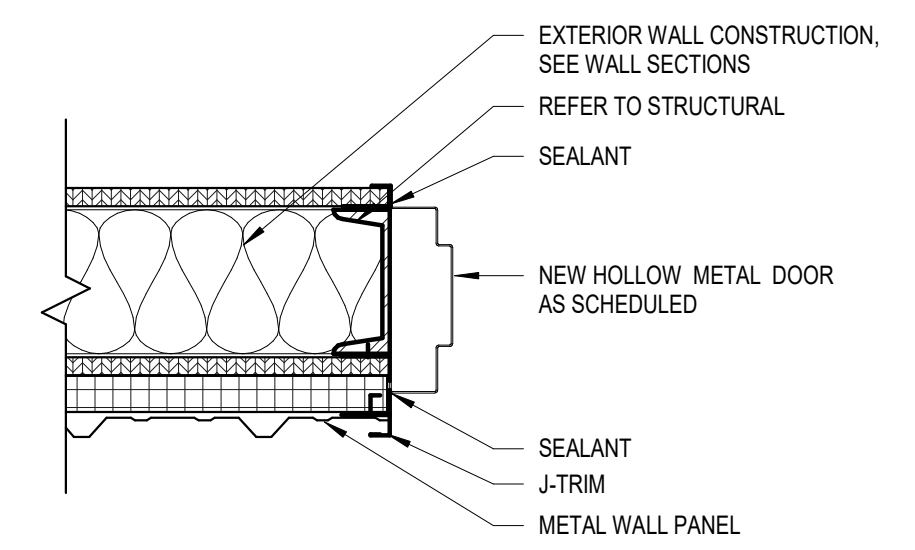
- ABBREVIATIONS:**
- FF - FINISH FLOOR
 - HM - HOLLOW METAL
 - PR - PAIR
 - PT - PAINT



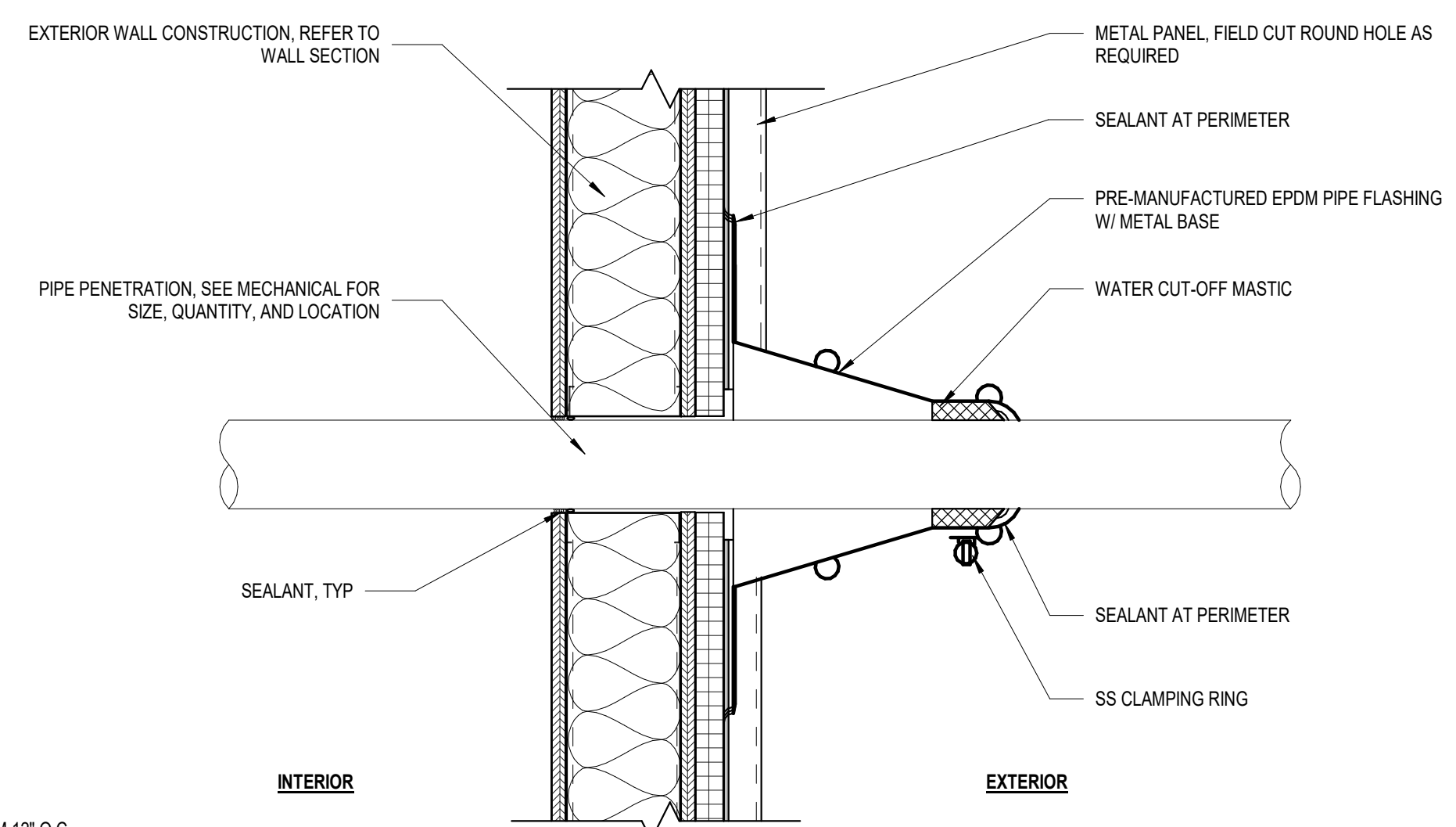
- DOOR HARDWARE:**
- 1 CONTINUOUS HINGE; A156.26; A31031G
 - 1 LOCK SET; A156.13; FUNCTION 07, GRADE 1
 - 1 CLOSER; A156.4; C02021
 - 1 WEATHER-STRIPPING
 - 1 DOOR SWEEP
 - 1 THRESHOLD; A156.21; J36190

DOOR TYPES

C3 DOOR AND FRAME SCHEDULE, TYPES, AND HARDWARE
SCALE: 1/8" = 1'-0"



B4 TYPICAL DOOR HEAD AND JAMB DETAIL
SCALE: 1 1/2" = 1'-0"

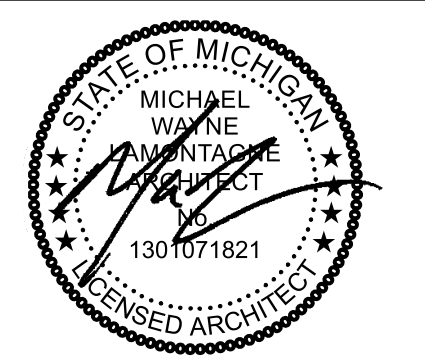


- NOTES:**
1. SPACE PENETRATIONS MINIMUM 12" O.C.
 2. MAXIMUM HOLE SIZE: 12" DIAMETER
 3. SEE MECHANICAL FOR QUANTITY, SIZE, AND LOCATIONS

A3 SECTION DETAIL @ PIPE PENETRATION
SCALE: 1 1/2" = 1'-0"



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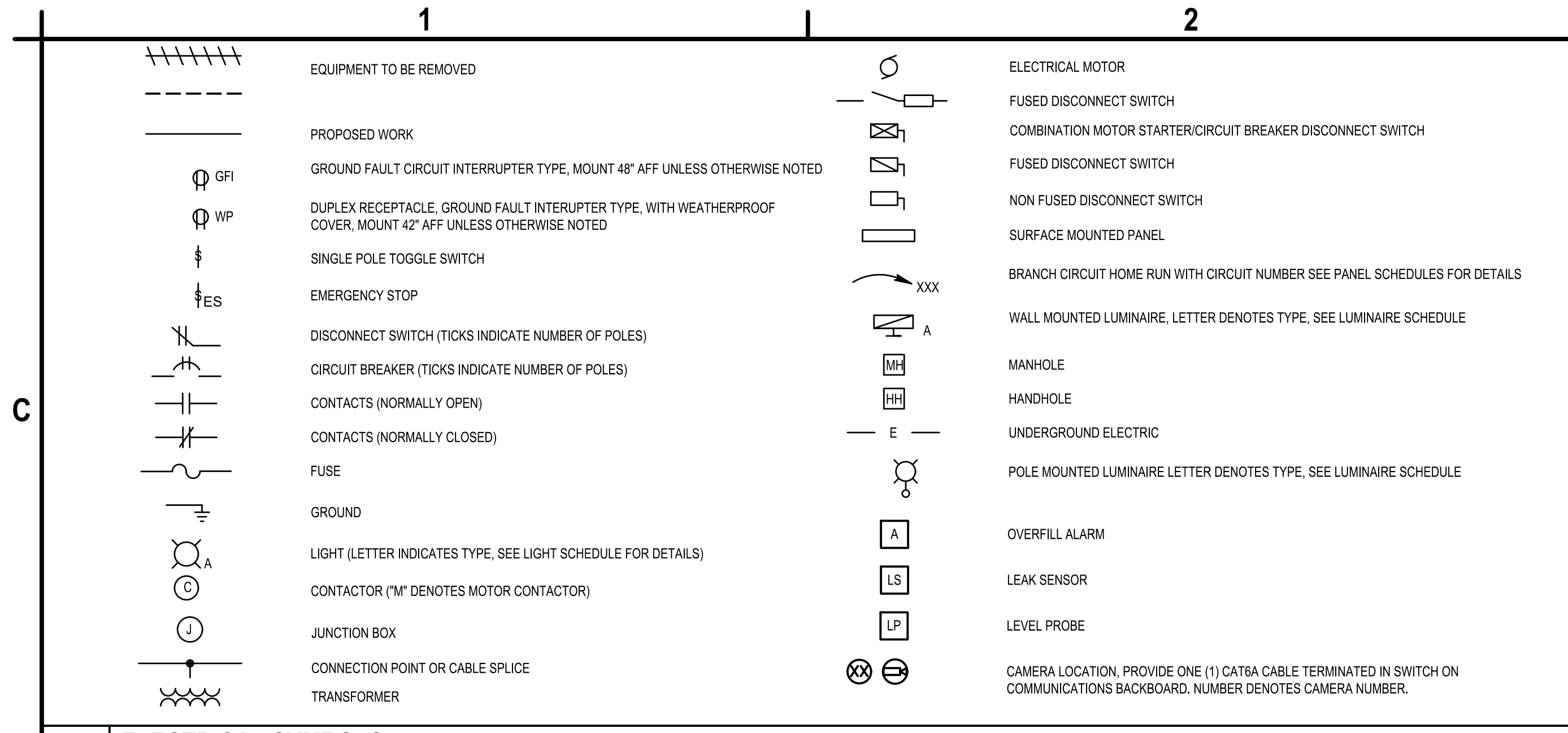


**AIRPORT FIELD MAINTENANCE
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SCHEDULES AND DETAILS

A-601



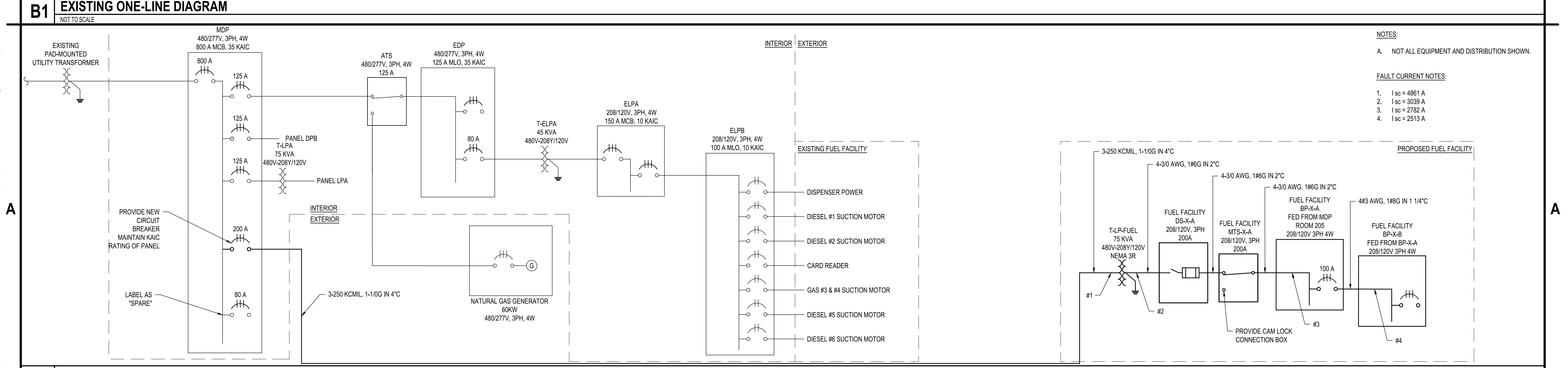
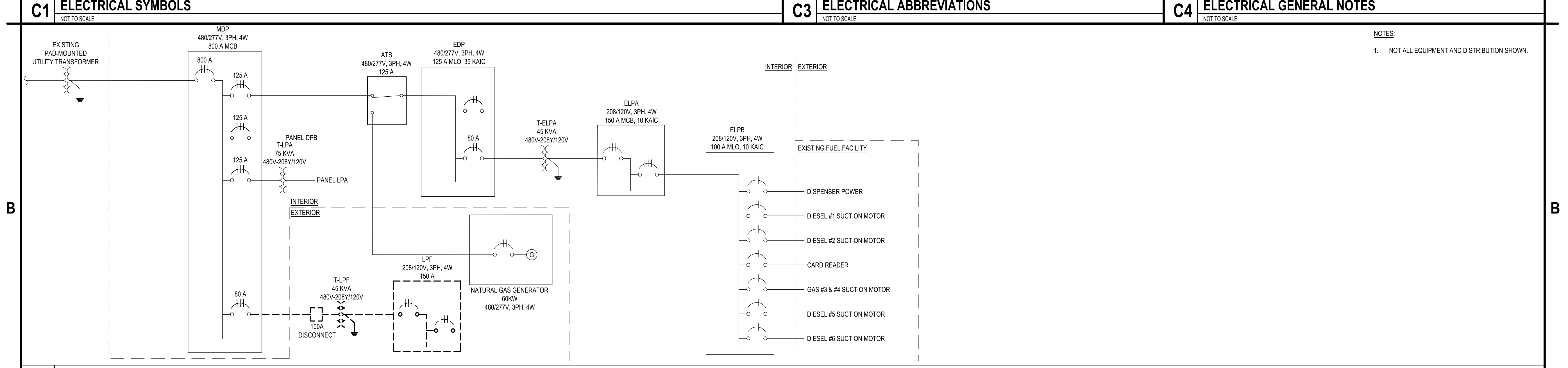
C1 ELECTRICAL SYMBOLS
NOT TO SCALE

C3 ELECTRICAL ABBREVIATIONS
NOT TO SCALE

C4 ELECTRICAL GENERAL NOTES
NOT TO SCALE

- ALL ELECTRICAL WORK SHALL CONFORM TO ALL STATE, LOCAL, AND NATIONAL ELECTRICAL CODES.
- ELECTRICAL CHARACTERISTICS SHALL BE VERIFIED WITH EQUIPMENT MANUFACTURER.
- ITEMS OF SPECIFIC MANUFACTURERS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS AND/OR MANUFACTURER'S REPRESENTATIVE'S DIRECTIONS.
- THE CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS AND DIMENSIONS SHOWN ON DRAWINGS.
- ALL CONDUIT AND WIRING SCHEDULES SHALL BE VERIFIED BEFORE INSTALLATION.
- THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL EQUIPMENT WITH OTHER CONTRACTORS.
- ALL AREAS DISTURBED BY WORK SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN ORIGINAL AS DETERMINED BY THE ENGINEER.
- THE CONTRACTOR SHALL PROVIDE RACEWAYS, WIRING, AND CONNECTIONS FOR ALL CONTROL CIRCUITS AND INTERLOCK.
- ALL ELECTRICAL CONDUIT AND CONDUCTORS DISCONNECTED AND NOT TO BE REUSED SHALL BE REMOVED.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS BEFORE STARTING WORK. IF ONLY A PORTION OF AN EXISTING CIRCUIT IS BEING REMOVED FOR DEMOLITION, CONTINUITY SHALL BE MAINTAINED TO THE REST OF THE REMAINING CIRCUIT.
- ALL BRANCH CIRCUIT CONDUCTORS SHALL BE #12AWG UNLESS OTHERWISE SHOWN.
- ALL BRANCH CIRCUITS SHALL CONSIST OF 2 CONDUCTORS PLUS GROUND, UNLESS OTHERWISE SHOWN.
- ALL EXTERIOR CONDUITS SHALL BE PVC-COATED RGS UNLESS OTHERWISE NOTED.
- ALL EXPLOSION-PROOF CONNECTIONS AND JUNCTIONS BOXES SHALL BE PVC-COATED RGS.

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**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

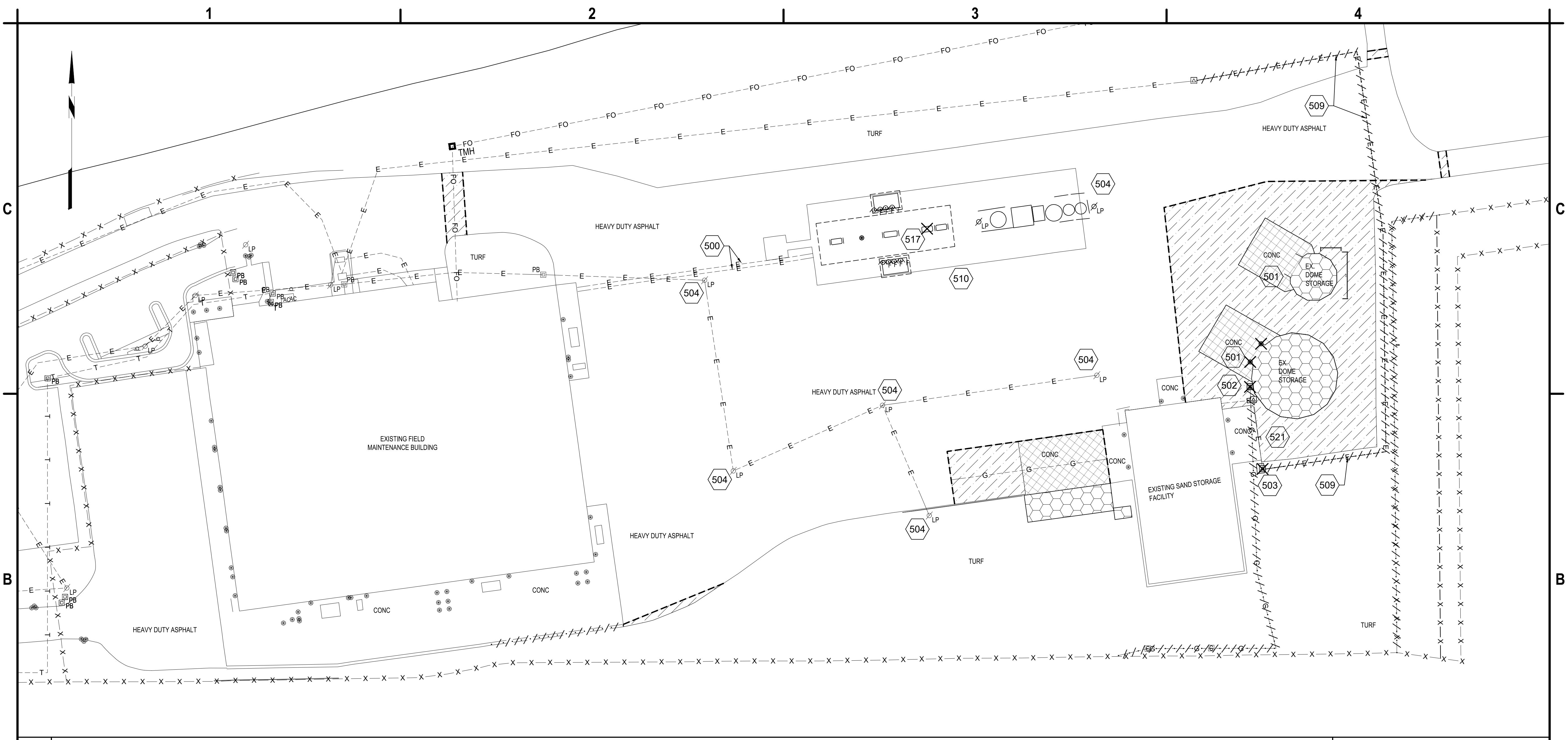
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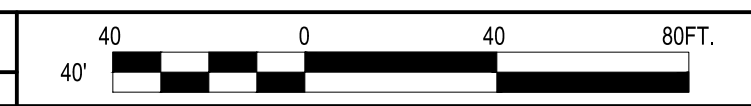
ELECTRICAL NOTES, SYMBOLS, ABBREVIATIONS, AND ONE-LINES

EL001
SHEET NO. 26 OF 36

Apr 11, 2023, 2:18pm P:\Projects\G - Gerald R. Ford Airport\K19.014.001 - Field Maintenance Fuel Facility\Design\CADD\Sheet Files\K19.014.001_EL-SERIES.dwg



B1 ELECTRICAL SITE PLAN - REMOVALS
SCALE: 1" = 40'

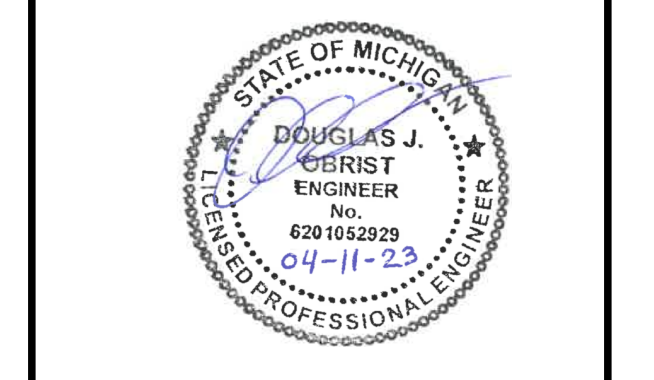


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- 500. EXISTING CONDUCTORS AND CONDUITS REMOVED UNDER SRE EXPANSION PROJECT.
- 501. REMOVE ALL LIGHTING, DEVICES, CONDUCTORS, AND CONDUITS ON INTERIOR AND EXTERIOR BACK TO SOURCE.
- 502. REMOVE PANEL LF, TRANSFORMER, DISCONNECT, AND ASSOCIATED FEEDERS BACK TO SOURCE. REMOVE CONDUITS WITHIN FOOTPRINT. CAP AND ABANDON REMAINING CONDUITS.
- 503. RELOCATE EXISTING 7.2 KV - 208Y/120V TRANSFORMER. COORDINATE WITH UTILITY.
- 504. EXISTING SITE LIGHTING, CONDUCTORS, AND CONDUITS TO BE REMOVED UNDER SRE EXPANSION PROJECT.
- 509. DISCONNECT AND REMOVE EXISTING CONDUITS AND CABLES AS SHOWN. PROVIDE TRENCHING AND BACKFILL, COORDINATE WITH UTILITY.
- 510. EXISTING FUEL FACILITY ELECTRICAL EQUIPMENT (DISPENSERS, PUMPS, CONDUCTORS, CONDUITS, JBOXES) REMOVAL BY OTHERS.
- 517. DISCONNECT AND RELOCATE EXISTING RECREATIONAL FUEL PUMP AND STARTER TO NEW FUEL FACILITY LOCATION.
- 521. PROTECT EXISTING ELECTRICAL CONDUIT(S) DURING EXCAVATION.

A1 KEYED NOTES

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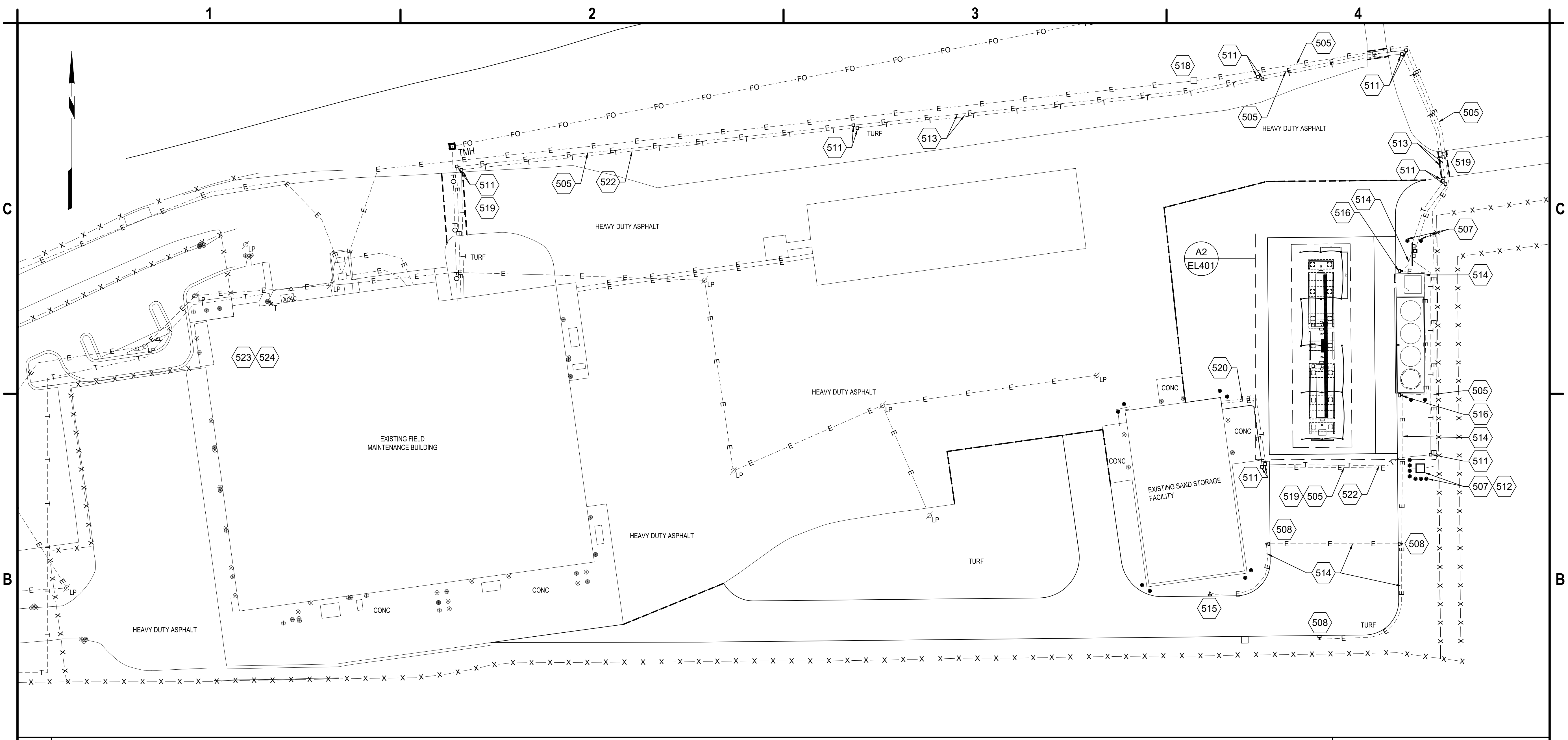


**AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

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**ELECTRICAL FUEL
FACILITY PLAN -
REMOVAL**

ED101
SHEET NO. 27 OF 36



B1 ELECTRICAL SITE PLAN
SCALE: 1"=40'



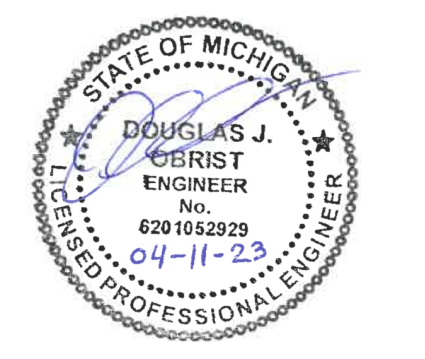
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- 505. PROVIDE CABLES IN CONDUIT, MATCH EXISTING SIZE AND TYPE. COORDINATE WITH UTILITY.
- 507. PROVIDE BOLLARDS. SEE DETAIL B1/CP501.
- 508. PROVIDE LIGHT POLE AND TYPE C LIGHT. SEE DETAIL B4/EL501. CIRCUIT TO BP-X-A-2.
- 511. PROVIDE ELECTRICAL PULLBOX.
- 512. RELOCATED 7.2 KV - 208Y/120V TRANSFORMER. RELOCATION AND CONCRETE PAD BY CONTRACTOR. COORDINATE WITH UTILITY.
- 513. PROVIDE CABLES IN CONDUIT.
- 514. PROVIDE CABLES IN CONDUIT. SEE PANEL SCHEDULE.
- 515. PROVIDE LIGHT POLE AND TYPE D LIGHT. SEE DETAIL B4/EL501. CIRCUIT TO BP-X-A-2.
- 516. PROVIDE LIGHT POLE AND TYPE B LIGHT. SEE DETAIL B4/EL501. CIRCUIT TO BP-X-A-2.
- 518. SPLICE NEW AND EXISTING CABLES AT EXISTING PULL BOX.
- 519. PROVIDE CONCRETE ENCASED ACROSS ROADWAY/DRIVEWAY.
- 520. PROTECT EXISTING ELECTRICAL CONDUIT(S) DURING EXCAVATION. PROVIDE 24" MINIMUM OF COVER.
- 522. PROVIDE COMMUNICATION CABLE IN CONDUIT
- 523. PROVIDE LEVEL/LEAK MONITORING SYSTEM CONSOLE IN OFFICE IN THIS AREA. COORDINATE WITH OWNER FOR EXACT LOCATION.
- 524. INSTALL FUEL MANAGEMENT SOFTWARE ON A PC IN OFFICE IN THIS AREA. COORDINATE WITH OWNER FOR EXACT LOCATION.

A1 KEYED NOTES
SCALE: NOT TO SCALE



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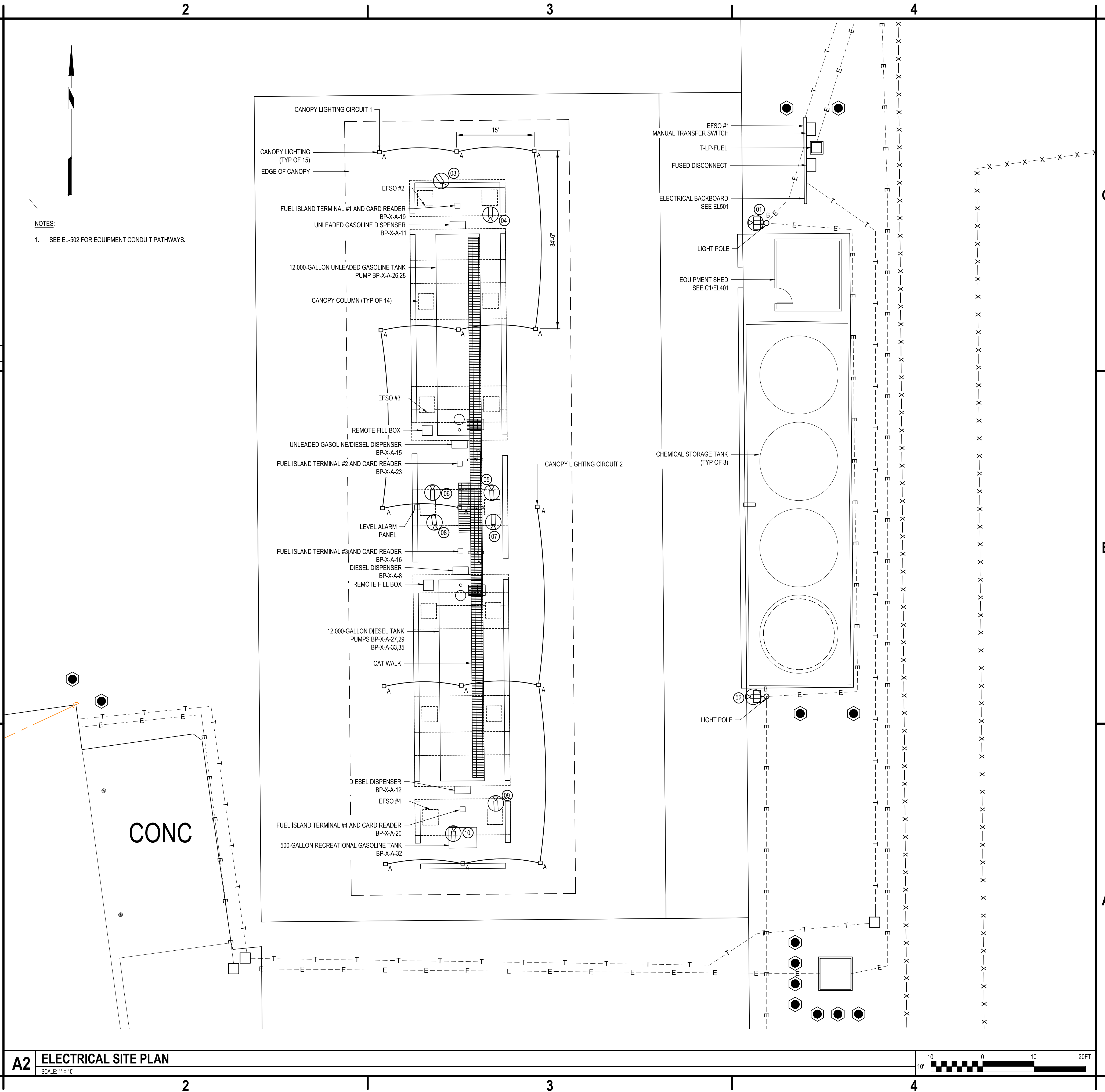
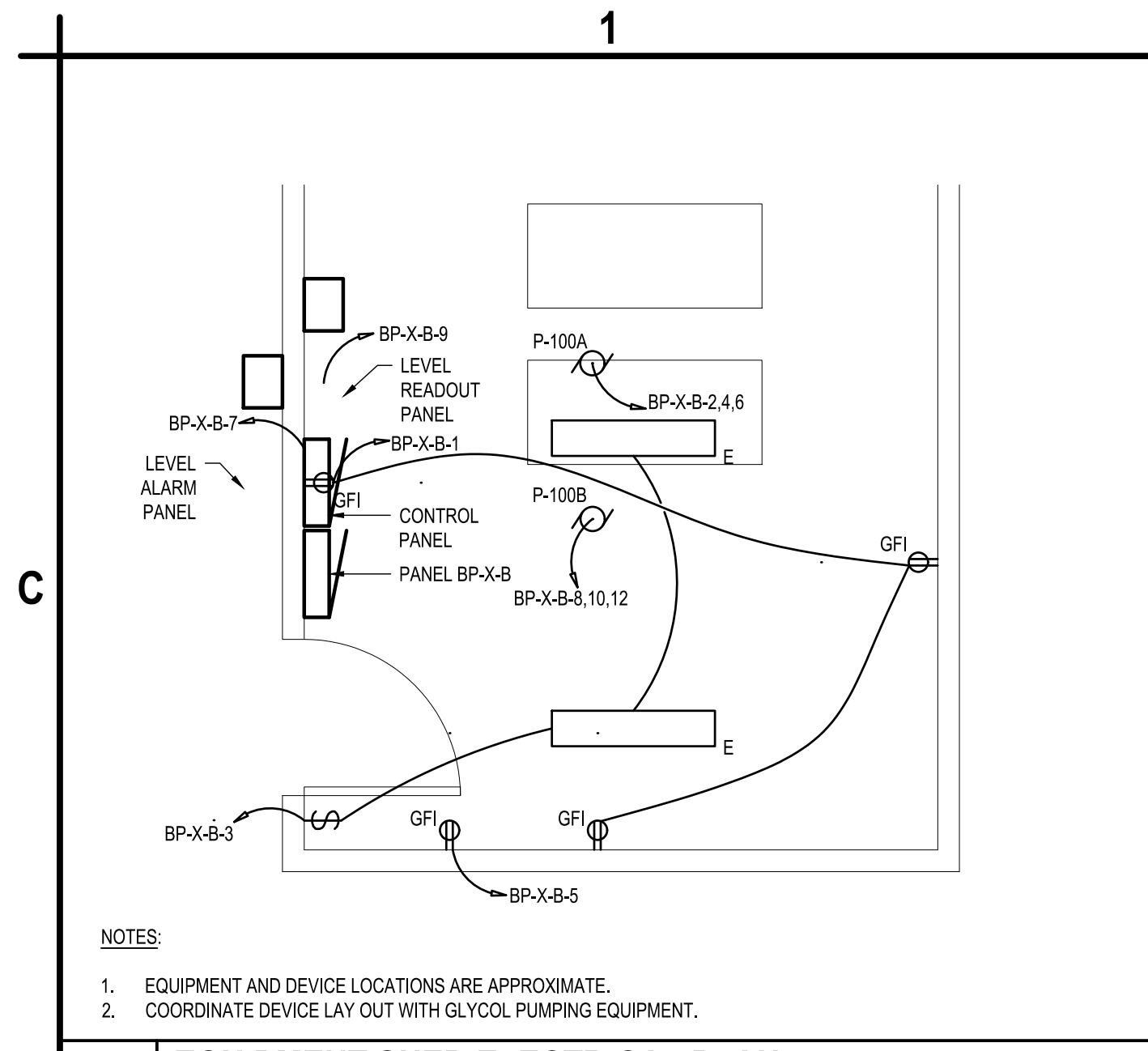
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**ELECTRICAL FUEL
FACILITY PLAN**

EL101

SHEET NO. 28 OF 36



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**ELECTRICAL FUEL
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EL401

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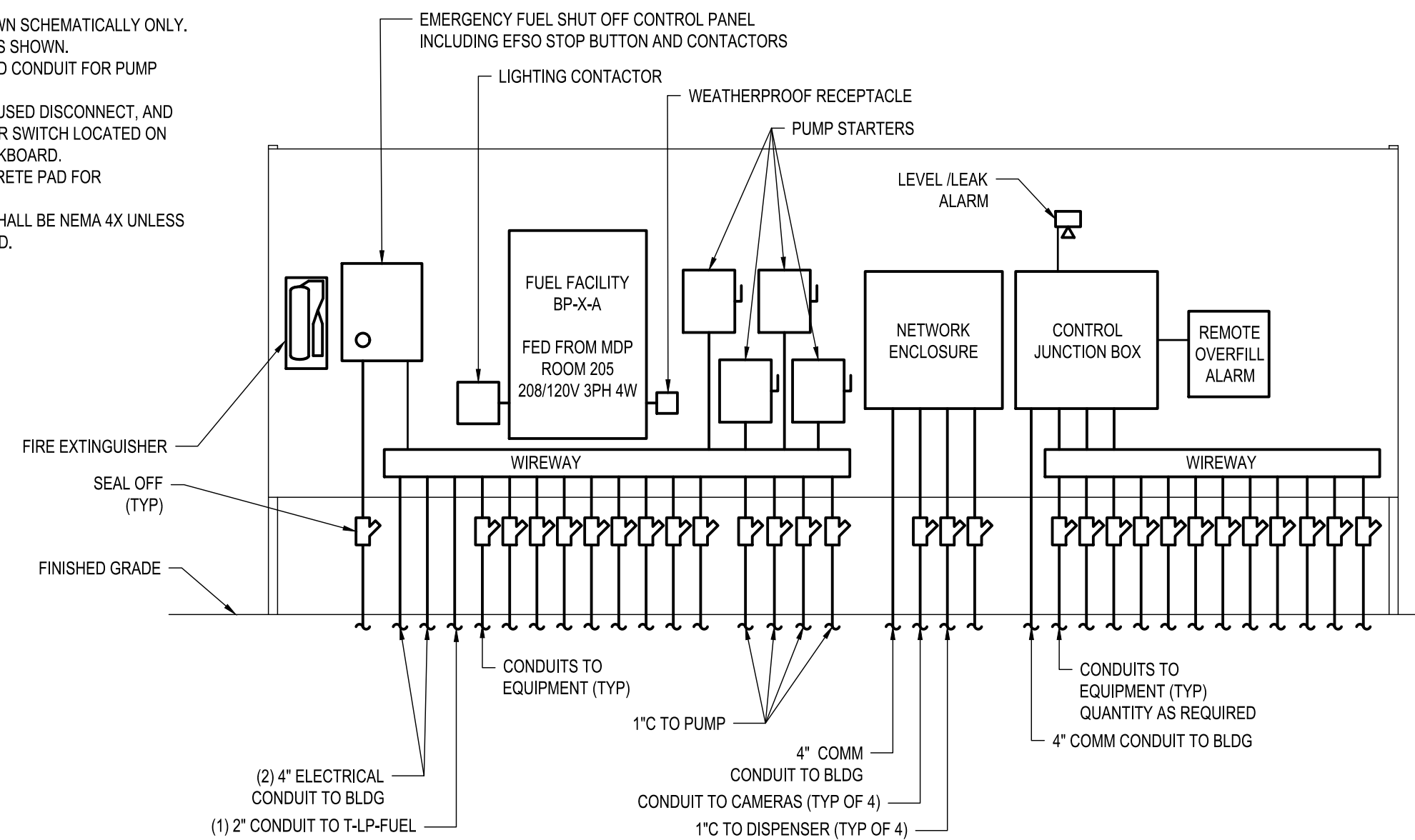
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4

C

C

- NOTES:
1. BACKBOARD SHOWN SCHEMATICALLY ONLY.
 2. NOT ALL CONDUITS SHOWN.
 3. PROVIDE WIRE AND CONDUIT FOR PUMP SHUT-DOWNS.
 4. TRANSFORMER, FUSED DISCONNECT, AND MANUAL TRANSFER SWITCH LOCATED ON BACKSIDE OF BACKBOARD.
 5. PROVIDE 4" CONCRETE PAD FOR TRANSFORMER.
 6. ALL EQUIPMENT SHALL BE NEMA 4X UNLESS OTHERWISE NOTED.

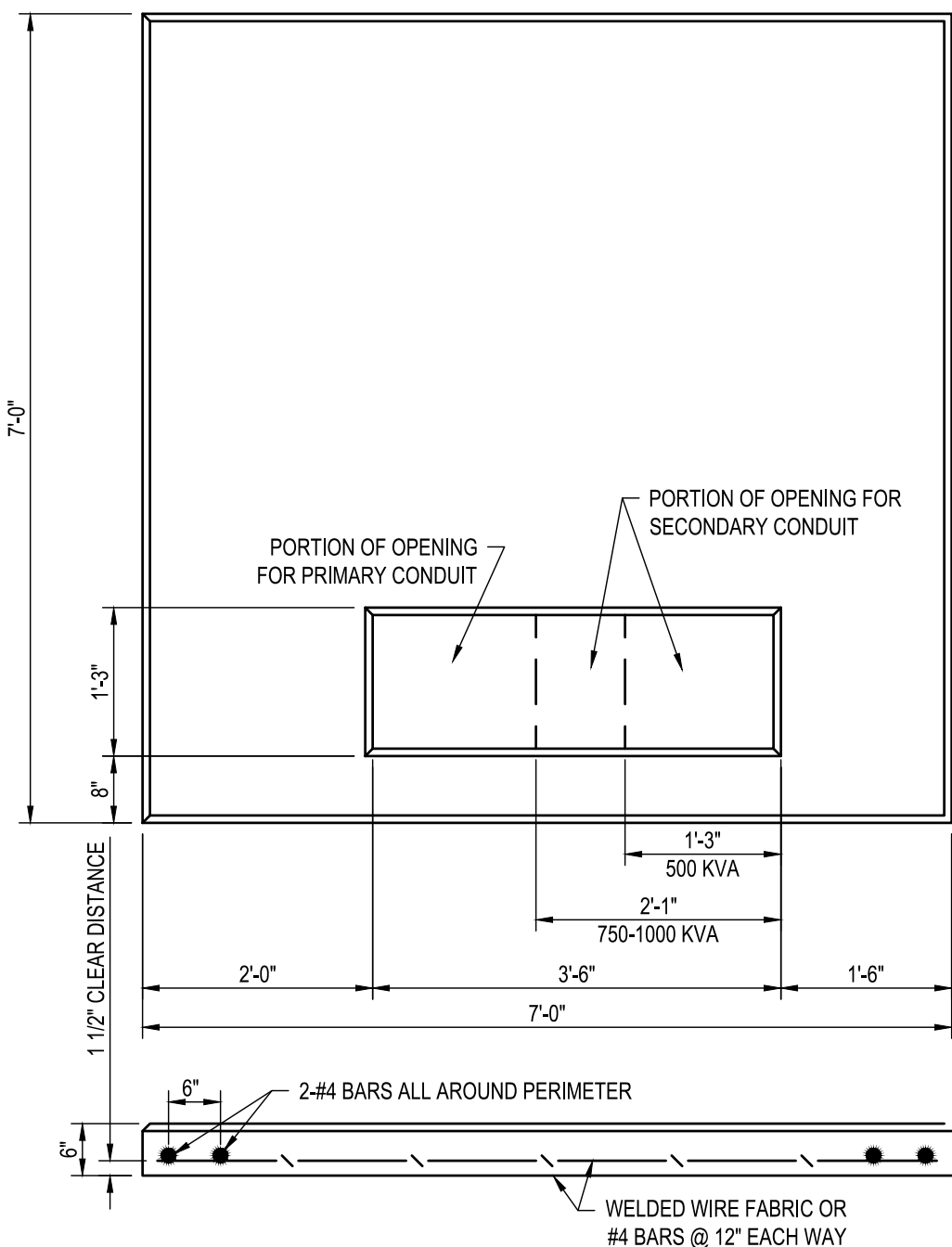


C3 ELECTRICAL BACKBOARD DETAIL

SCALE: NOT TO SCALE

B

B



- NOTES:
1. CONCRETE 3500 PSI @ 28 DAYS.
 2. WELDED WIRE FABRIC - ASTM A-185.
 3. DEFORMED BARS - ASTM A-615, GRADE 40.
 4. TOP SURFACE SHALL BE TROWEL FINISHED.
 5. 3/4" CHAMFER ALL EXPOSED EDGES, INCLUDING OPENING.
 6. USE THIS PAD FOR A MAXIMUM SIZE TRANSFORMER OF 750 KVA.

REINFORCING SCHEDULE	
	APPROX. WT.
#4 BARS @ 12" EACH WAY	60 LBS
OR, WWF 4 X 4 X44	38 LBS
OR, WWF 6 X 6 X 22	42 LBS
CONCRETE VOLUME	0.83 CU. YD.

A1 UTILITY TRANSFORMER CONCRETE PAD DETAIL

SCALE: NOT TO SCALE

NOTES:

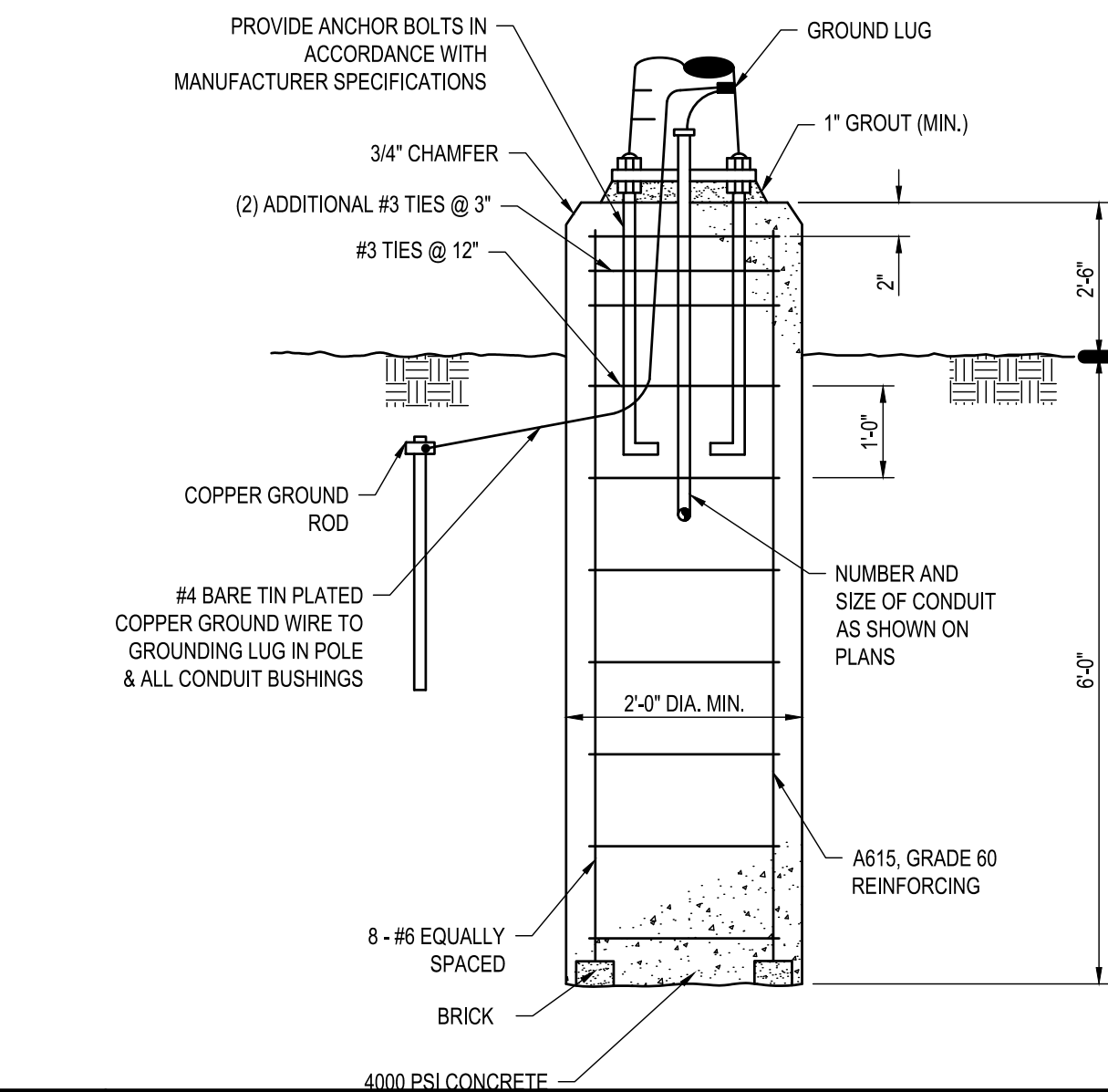
1. GENERAL GROUND REQUIREMENTS SHALL MEET THE REQUIREMENTS OF NFPA 70 & NFPA 77 AND SHALL INCLUDE BONDING ALL TANK GROUND GRIDS TOGETHER AS WELL AS ALL OTHER INDEPENDENT METALLIC STRUCTURES SUCH AS LIGHT POLES, ALL BACKBOARD EQUIPMENT, SELF SERVICE DEVICES, H-FRAMES, STAIRWAYS, PERMANENTLY INSTALLED EQUIPMENT SKIDS, ETC.
2. THIS SHALL BE CONNECTED WITH #20 STRANDED BARE CU FOR THE GROUND RING, BONDING TO ANY GROUND RODS, BONDING BETWEEN GROUND RINGS, BONDING TO ALL TANKS AND BONDING ALL EXTERNAL GROUND BARS OR INDIVIDUAL ABOVE GROUND BONDING CONDUCTORS WHICH SHALL BE #2 STRANDED BARE CU.
3. EACH TANK SHALL HAVE AT LEAST TWO BONDING POINTS UNLESS OTHERWISE DIRECTED BY TANK MANUFACTURER.
4. EACH DEVICE OR ENCLOSURE ON AN H-FRAME SHALL HAVE ITS OWN BONDING CONDUCTOR.
5. ALL OF THE CONNECTIONS UNDERGROUND SHALL BE EXOTHERMIC OR IRREVERSIBLE CRIMP CONNECTIONS. ALL CONNECTIONS ABOVE GROUND SHALL BE EXOTHERMIC, IRREVERSIBLE, OR IRREVERSIBLE LONG BARREL LUG WITH NEMA DOUBLE LUG CONNECTOR. THE DOUBLE LUG CONNECTOR SHALL BE SECURED WITH STAINLESS STEEL 5/16" BOLT, NUT, WASHER, AND LOCK WASHER.
6. ALL GROUND WIRES BETWEEN DEVICES SHALL BE UNDERGROUND WITH A PVC SLEEVE THROUGH CONCRETE PADS TO AVOID ANY TRIPPING HAZARDS.
7. ALL GROUND RINGS SHALL BE AT LEAST 30" BELOW THE FINAL GRADED SURFACE. ALL OTHER BURIED GROUND CONDUCTORS SHALL BE 24" BELOW THE FINAL GRADED SURFACE.
8. ALL GROUND RINGS SHALL HAVE GROUND RODS 3/4" X 10' PLACED TWO FEET BELOW THE FINISHED SURFACE AND AT DISTANCES AROUND THE RING NOT TO EXCEED 15' AND NOT TO BE ANY LESS THAN 2 GROUND RODS FOR ALL GROUND RINGS.
9. ALL GROUND RINGS SHALL BE AT A DISTANCE OF 24" AWAY FROM ALL SUPPORTING PADS OR STRUCTURES ENCIROILING IT COMPLETELY.
10. CONTRACTOR SHALL SUBMIT A GROUNDING AND BONDING SHOP DRAWING FOR APPROVAL.
11. THE CONTRACTOR SHALL PROVIDE GROUND RESISTANCE TESTING AT ALL METALLIC OBJECTS INCLUDING THE CLAMP OF THE GROUNDING LINE IN THE HAZARDOUS ZONE. THE GROUND RESISTANCE SHALL BE 10 OHMS OR LESS. IN THE EVENT THAT THE RESISTANCE DOES NOT MEET THIS CRITERIA THE CONTRACTOR SHALL PROVIDE, INSTALL, AND BOND ADDITIONAL GROUND RODS AS WELL AS MAIN CONDUCTORS TO GROUND RODS TO BRING THE GROUNDING RESISTANCE INTO COMPLIANCE.
12. THE GROUND RODS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE NEC.

A2 TANK GROUNDING DETAIL

SCALE: NOT TO SCALE

B4 LIGHT POLE DETAIL

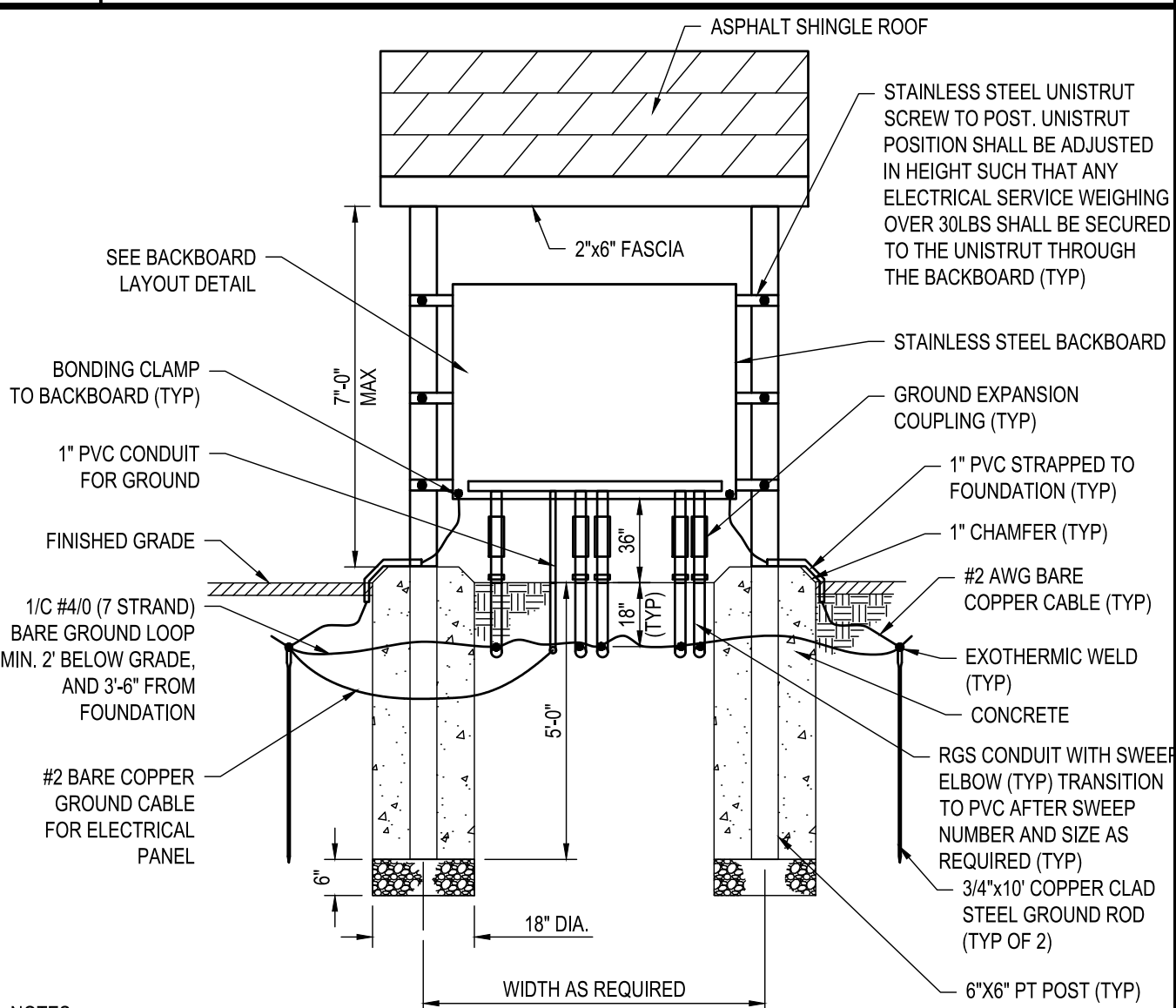
SCALE: NOT TO SCALE



SCALE: NOT TO SCALE

A4 ELECTRICAL SEAL-OFF DETAIL

SCALE: NOT TO SCALE



- NOTES:
1. SEE DETAIL A3, THIS SHEET FOR ADDITIONAL INFORMATION.

A4 ELECTRICAL SEAL-OFF DETAIL

SCALE: NOT TO SCALE



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 FUEL FACILITY RELOCATION**

**GERALD R. FORD INTL AIRPORT
 GRAND RAPIDS, MICHIGAN**

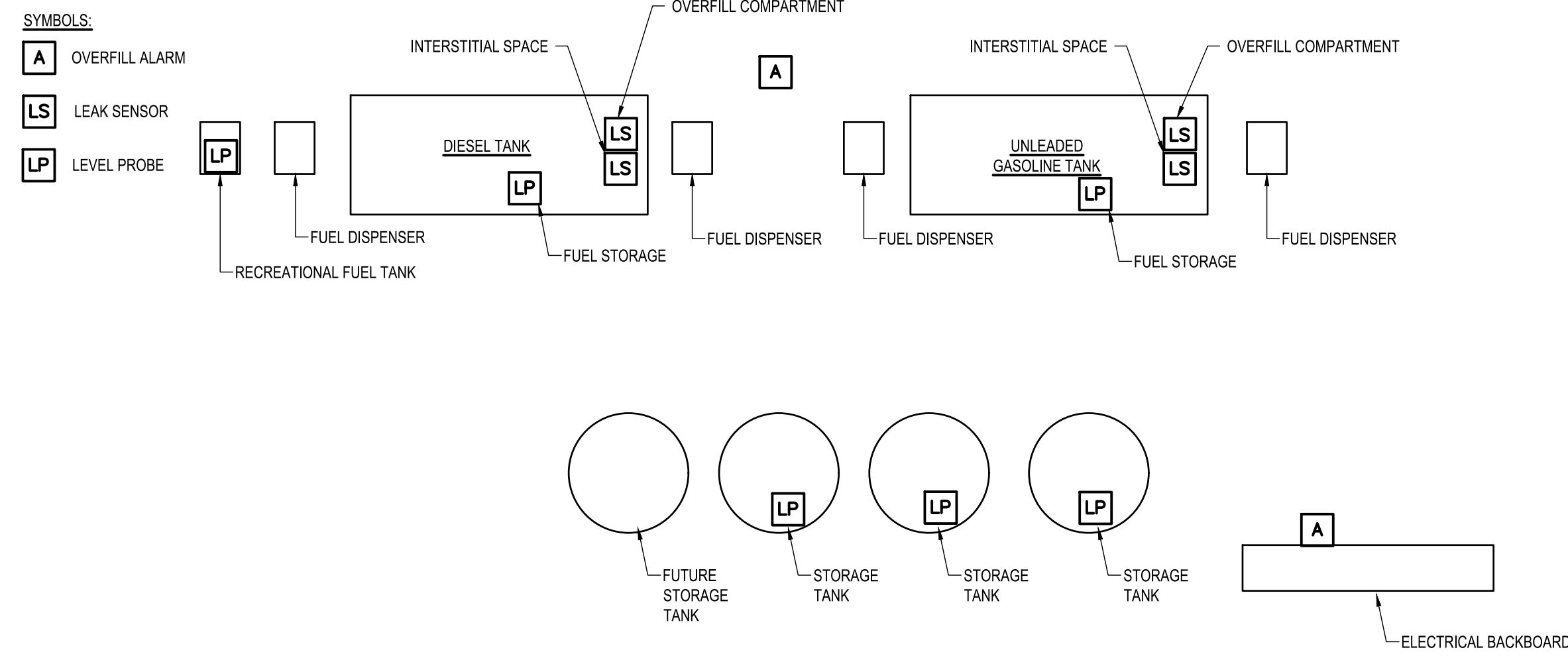
MARK	DATE	DESCRIPTION
REVISIONS		
		PROJECT NO: K19.014.001
		DATE: APRIL 2023
		DRAWN BY: F.K. NEILEY, P.E.
		DESIGNED BY: F.K. NEILEY, P.E.
		CHECKED BY: D.J. OBRIST, P.E.
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ELECTRICAL DETAILS

EL501

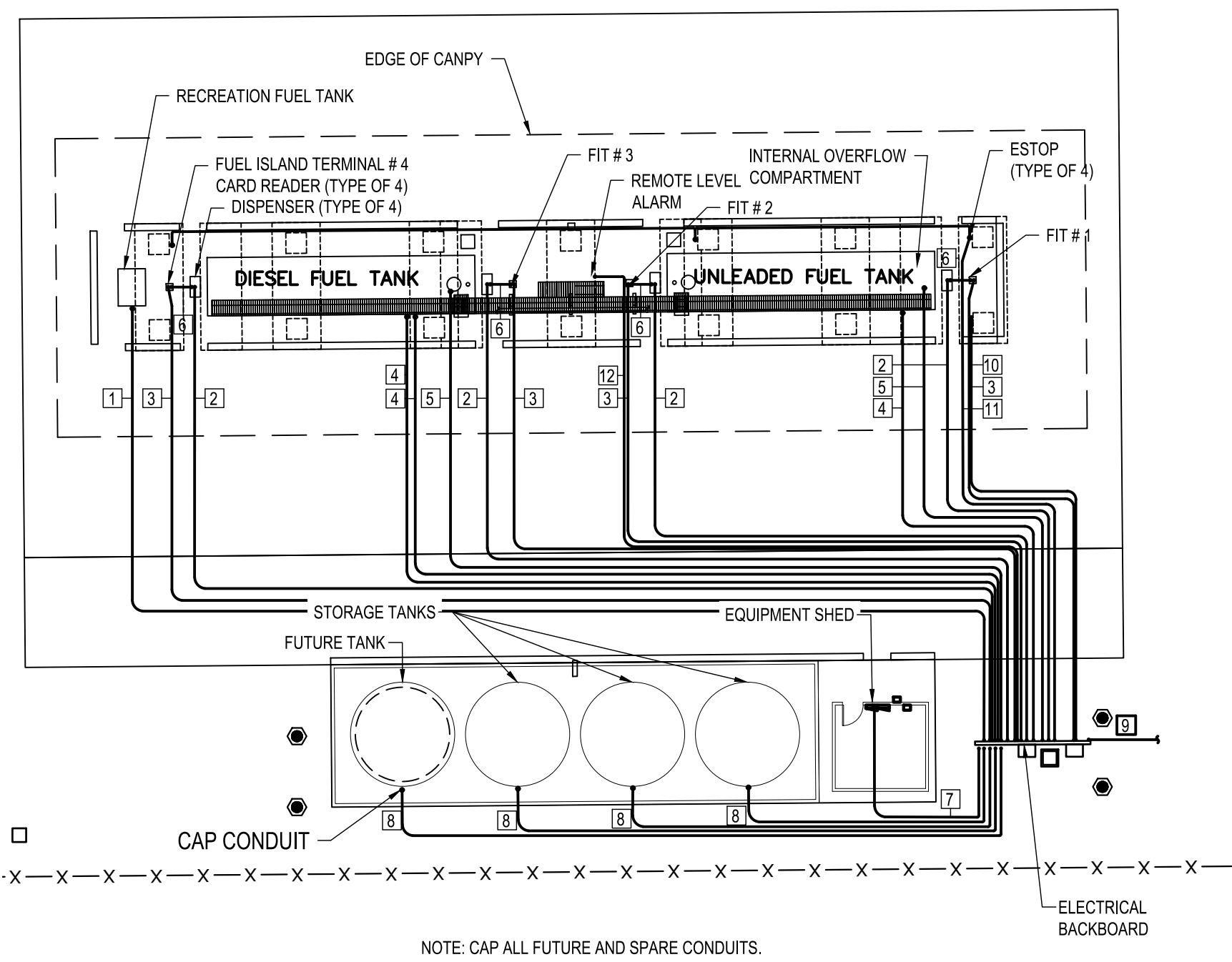
SHEET NO. 30 OF 36

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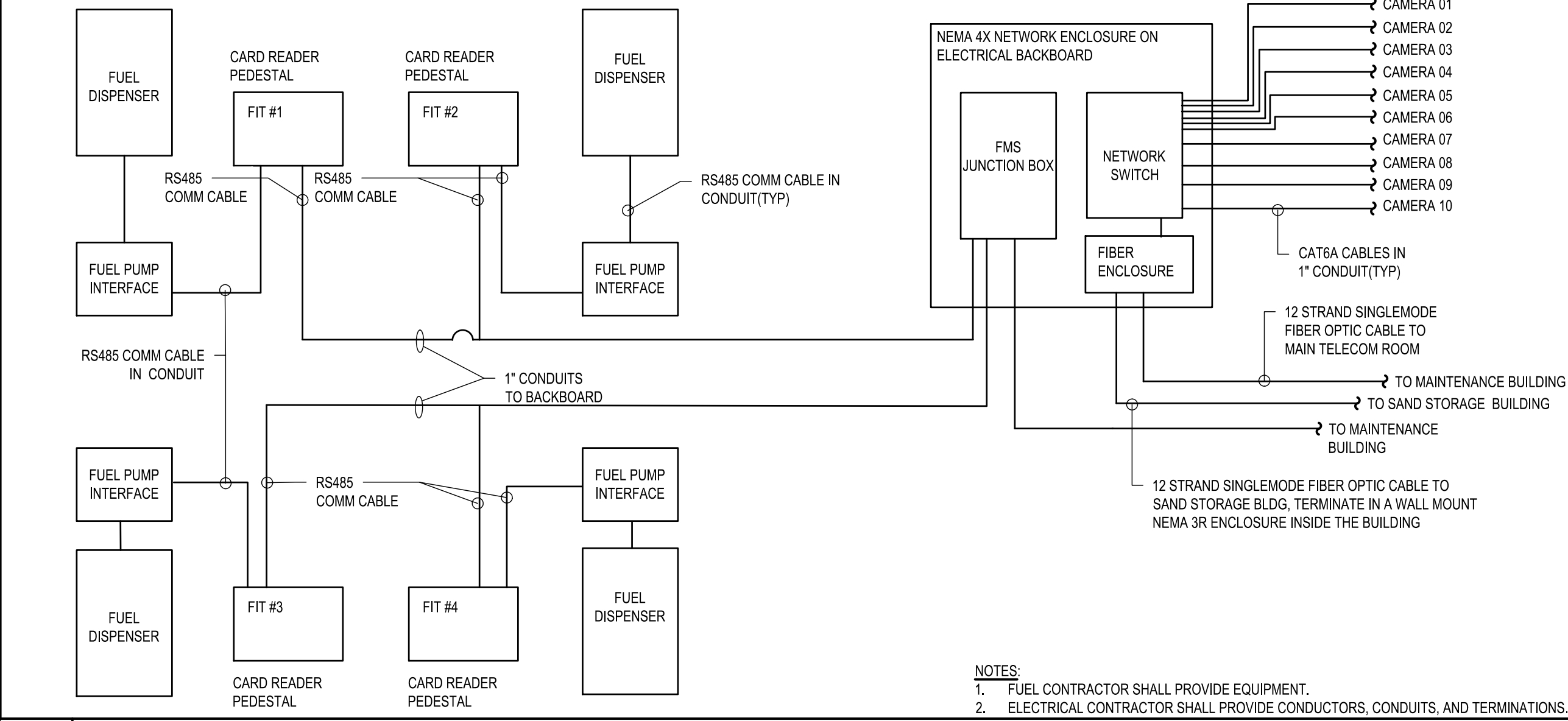


C1 SENSOR SCHEMATIC PLAN
SCALE: NOT TO SCALE

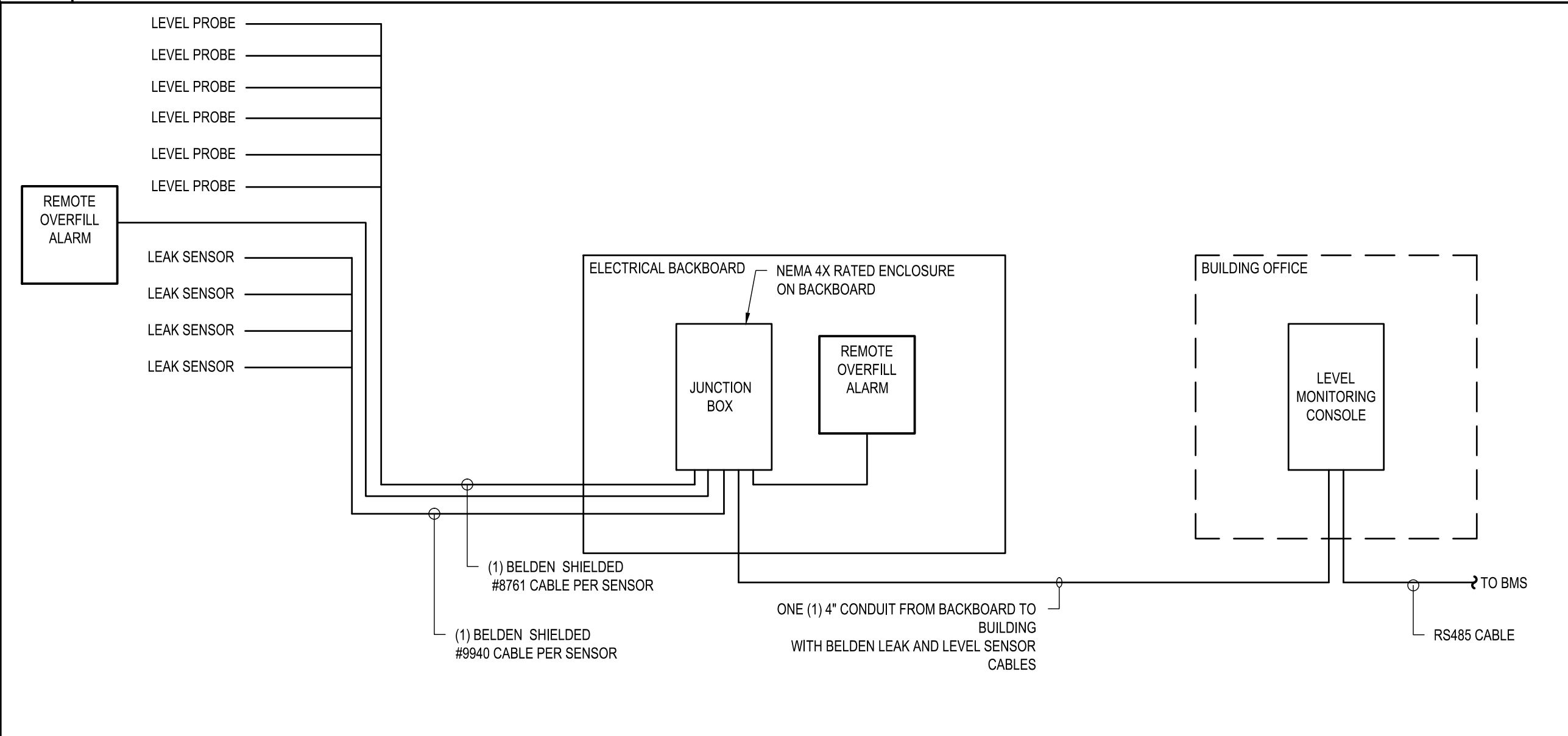
NUMBER	EQUIPMENT	CONDUIT SCHEDULE	POWER	COMMUNICATIONS	SPARE	NOTES:
1	RECREATIONAL FUEL	(1) 1" C	(1) 1" C	(1) 1" C		1. CONDUIT LOCATIONS ARE APPROXIMATE. 2. COORDINATE CONDUIT LOCATIONS AND CONDUIT STUB UPS WITH EQUIPMENT AND COLUMN PLACEMENT.
2	DISPENSER	(1) 1" C	(1) 1" C	(1) 1" C	(1) 1" C	
3	CARD READER	(1) 1" C	(1) 1" C	(1) 1" C	(1) 1" C	
4	TANK PUMP, SENSORS	(1) 1" C	(1) 1" C	(1) 1" C		
5	TANK PUMP SENSORS	(3) 1" C	(3) 1" C			
6	CARD READER, DISPENSER	(1) 1" C	(1) 1" C			
7	EQUIPMENT SHED	(1) 2" C				
8	TANK SENSOR	(1) 1" C	(1) 1" C			
9	MAIN FEEDERS	(1) 4" C	(1) 4" C	(1) 4" C		
10	CANOPY LIGHTING, CAMERAS	(2) 1" C	(2) 1-1/2" C			
11	EFSS SYSTEM	(1) 1" C				
12	REMOTE LEVEL ALARM	(1) 1" C				



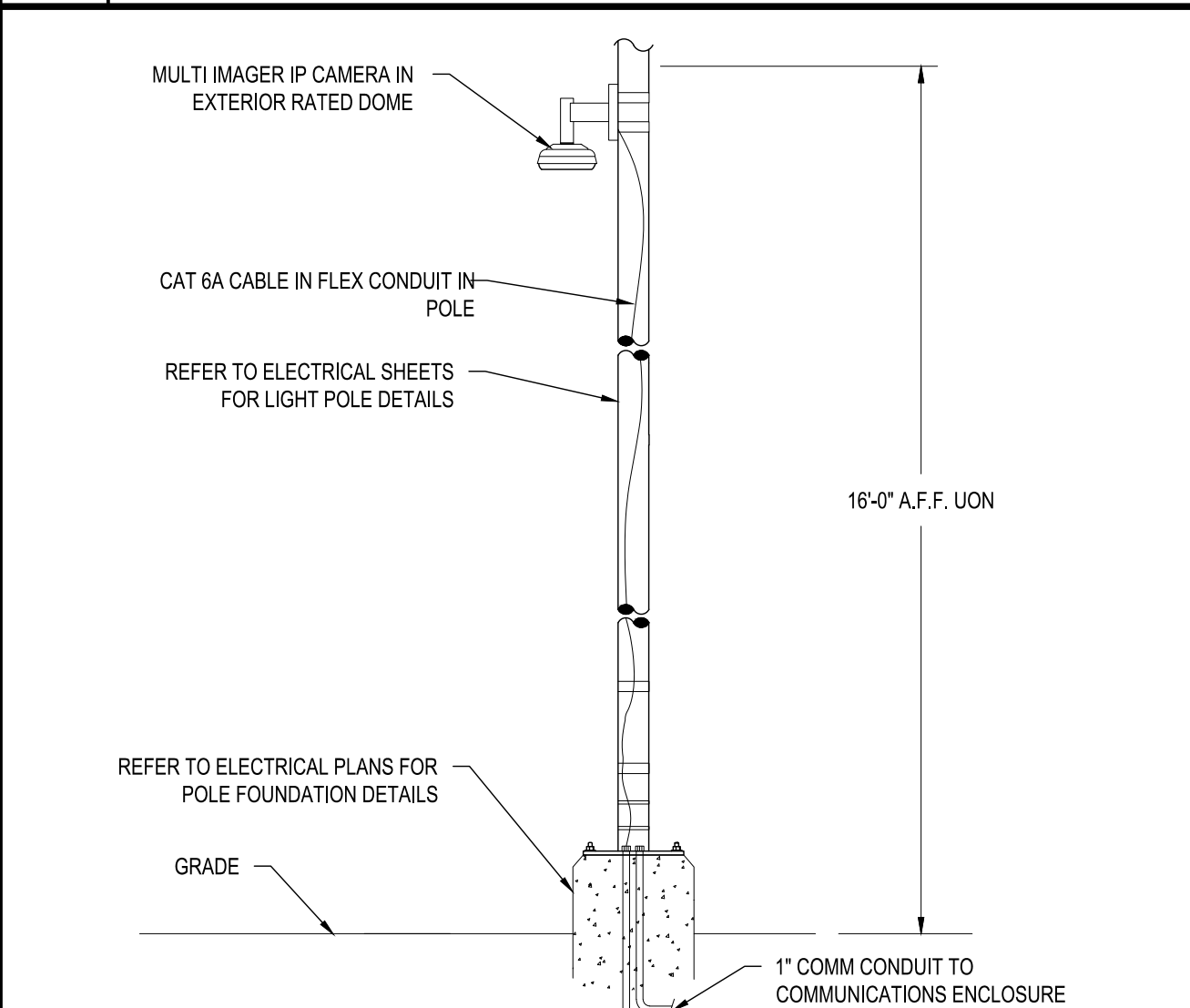
A1 FUEL SYSTEMS CONDUIT PLAN
SCALE: 1" = 20'-0"



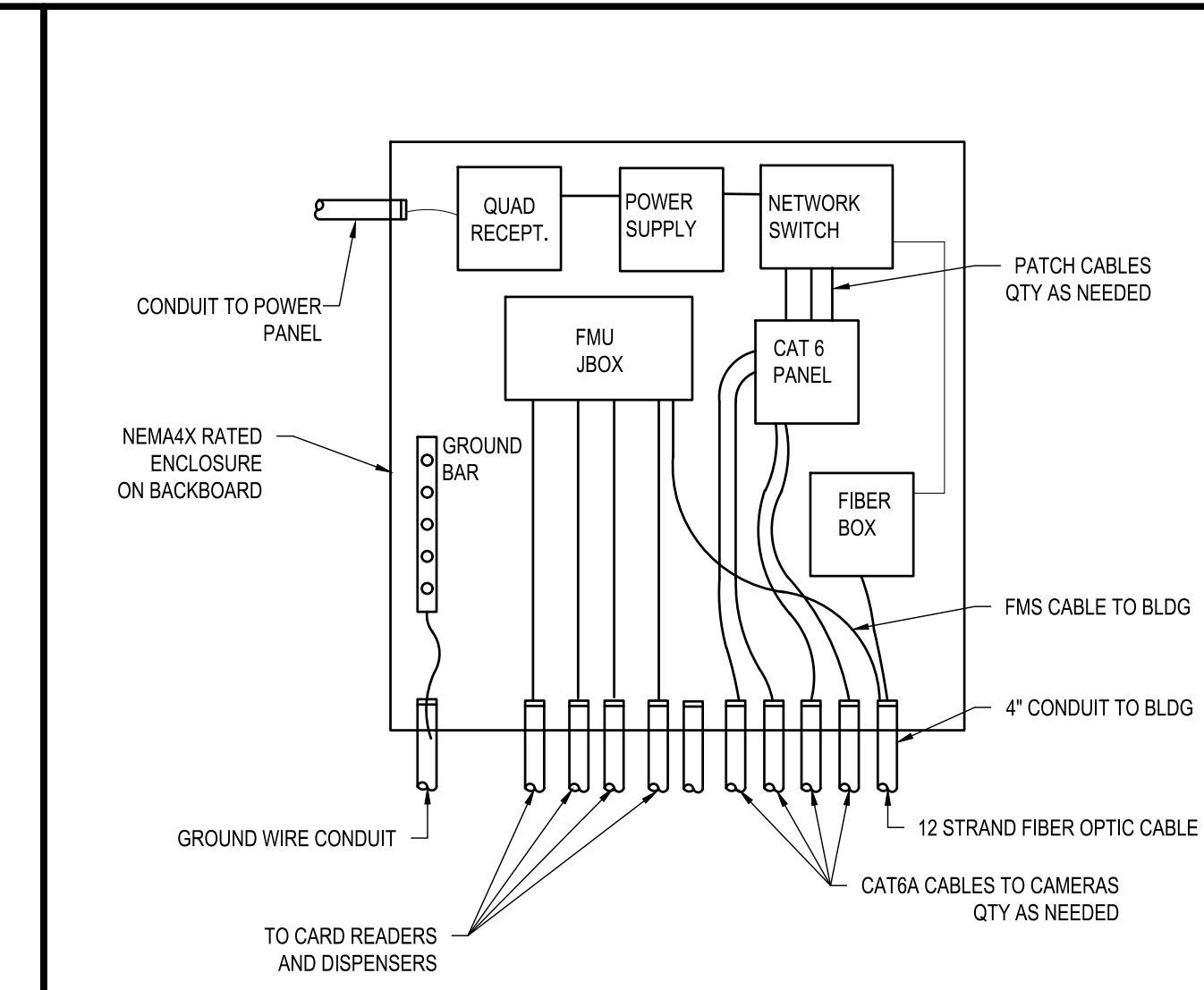
C3 FUEL MANAGEMENT SYSTEM ONE LINE
SCALE: NOT TO SCALE



B3 SENSOR SYSTEM ONE LINE
SCALE: NOT TO SCALE



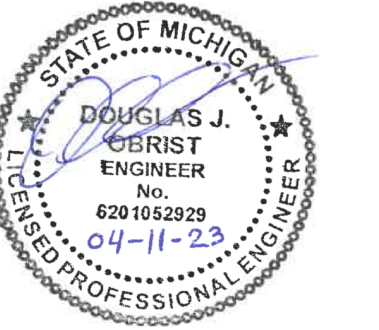
A3 POLE MOUNT CAMERA DETAIL
SCALE: NOT TO SCALE



A4 COMM PANEL DETAIL
SCALE: NOT TO SCALE



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GRAND RAPIDS, MICHIGAN**

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		DRAWN BY: W. BARLEY
		DESIGNED BY: W. BARLEY
		CHECKED BY: D.J. OBRIST, P.E.
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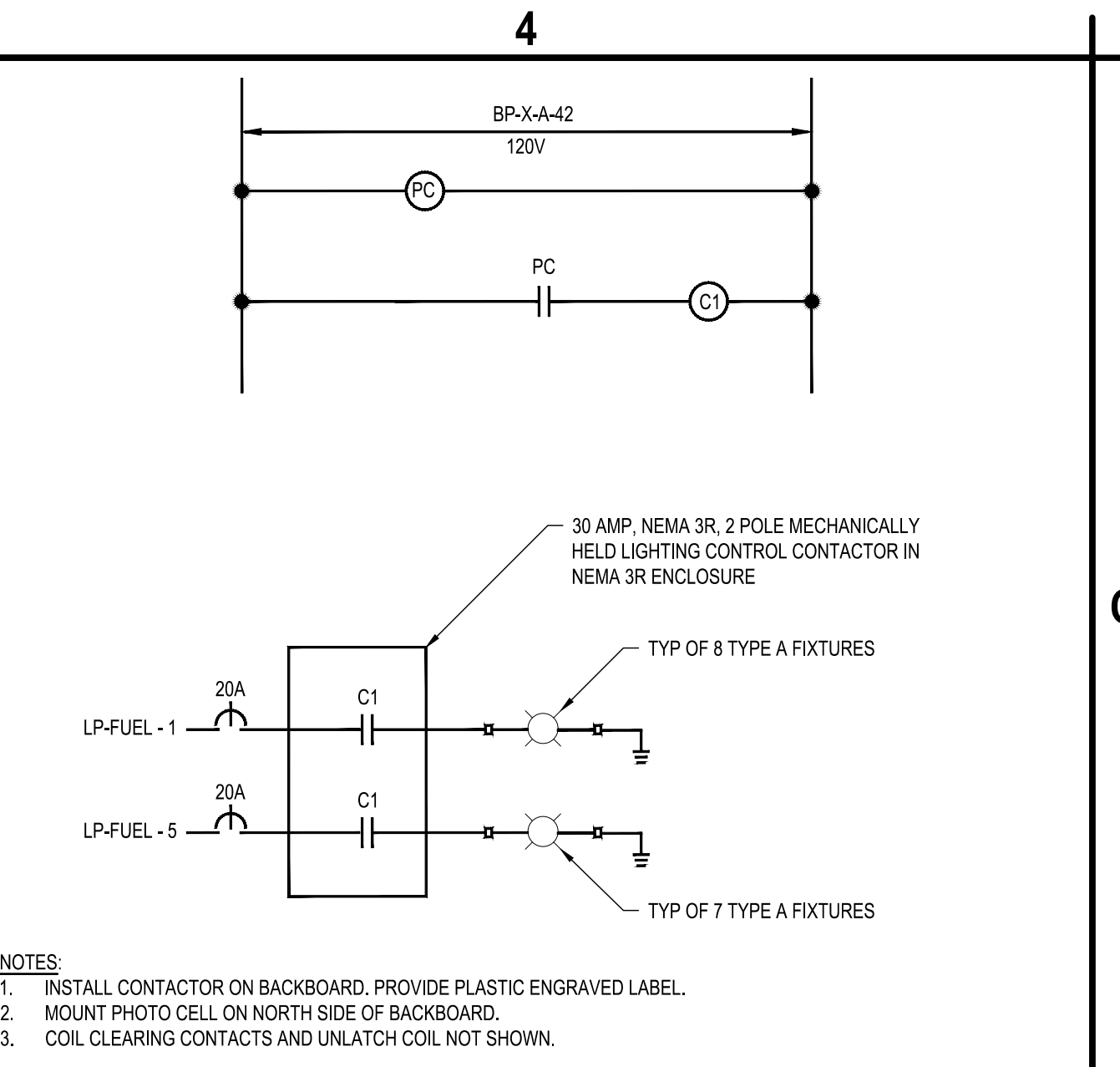
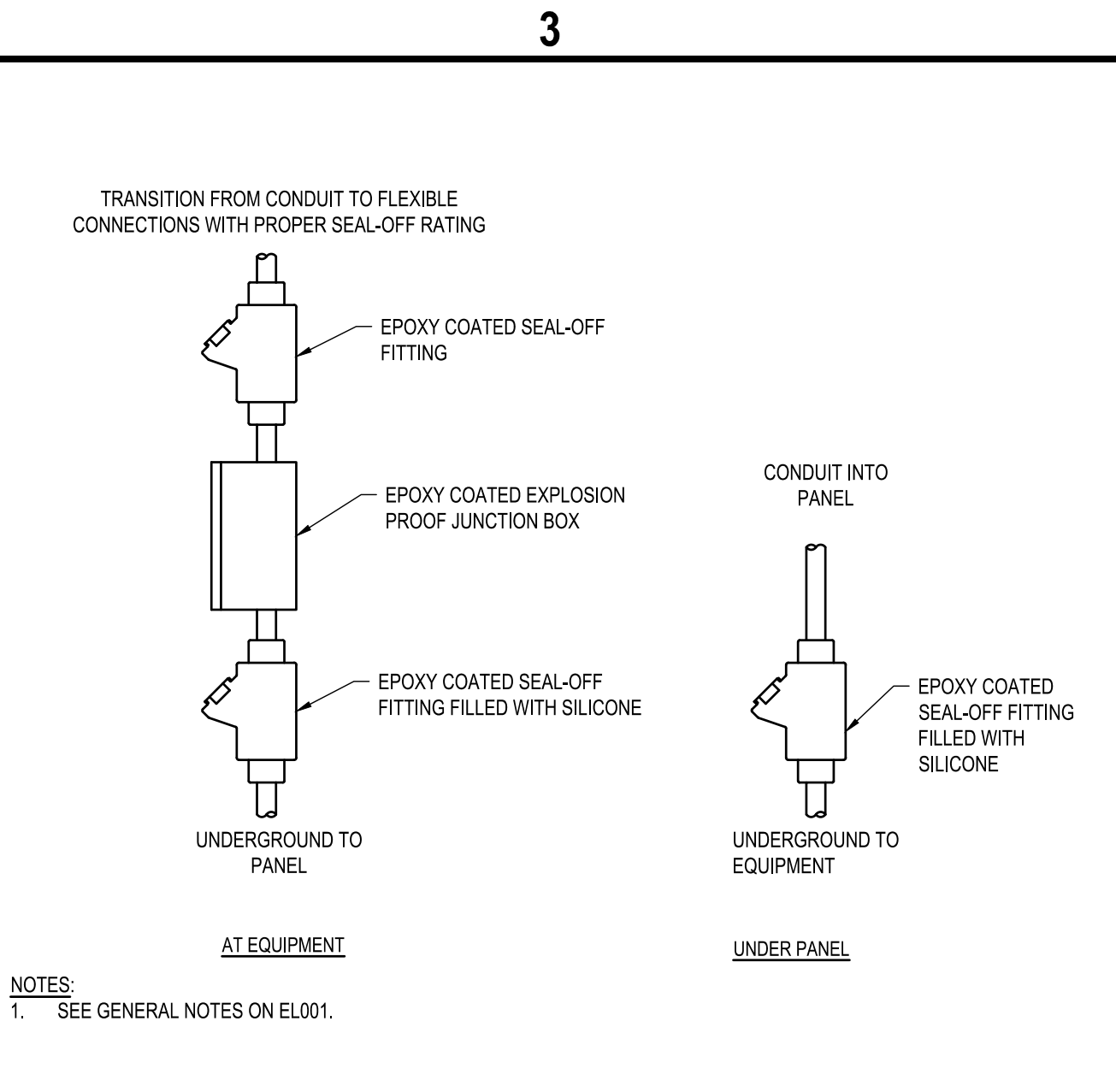
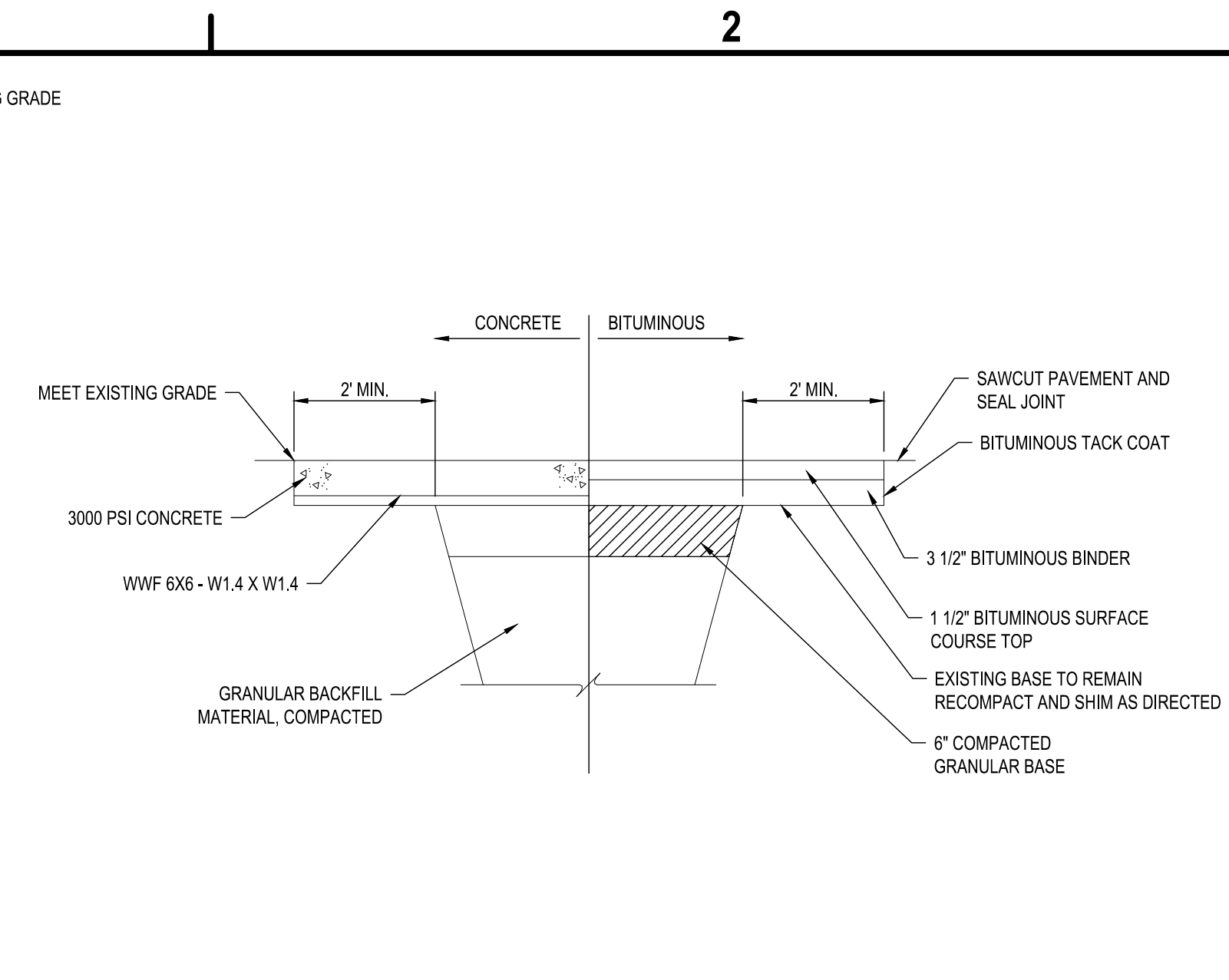
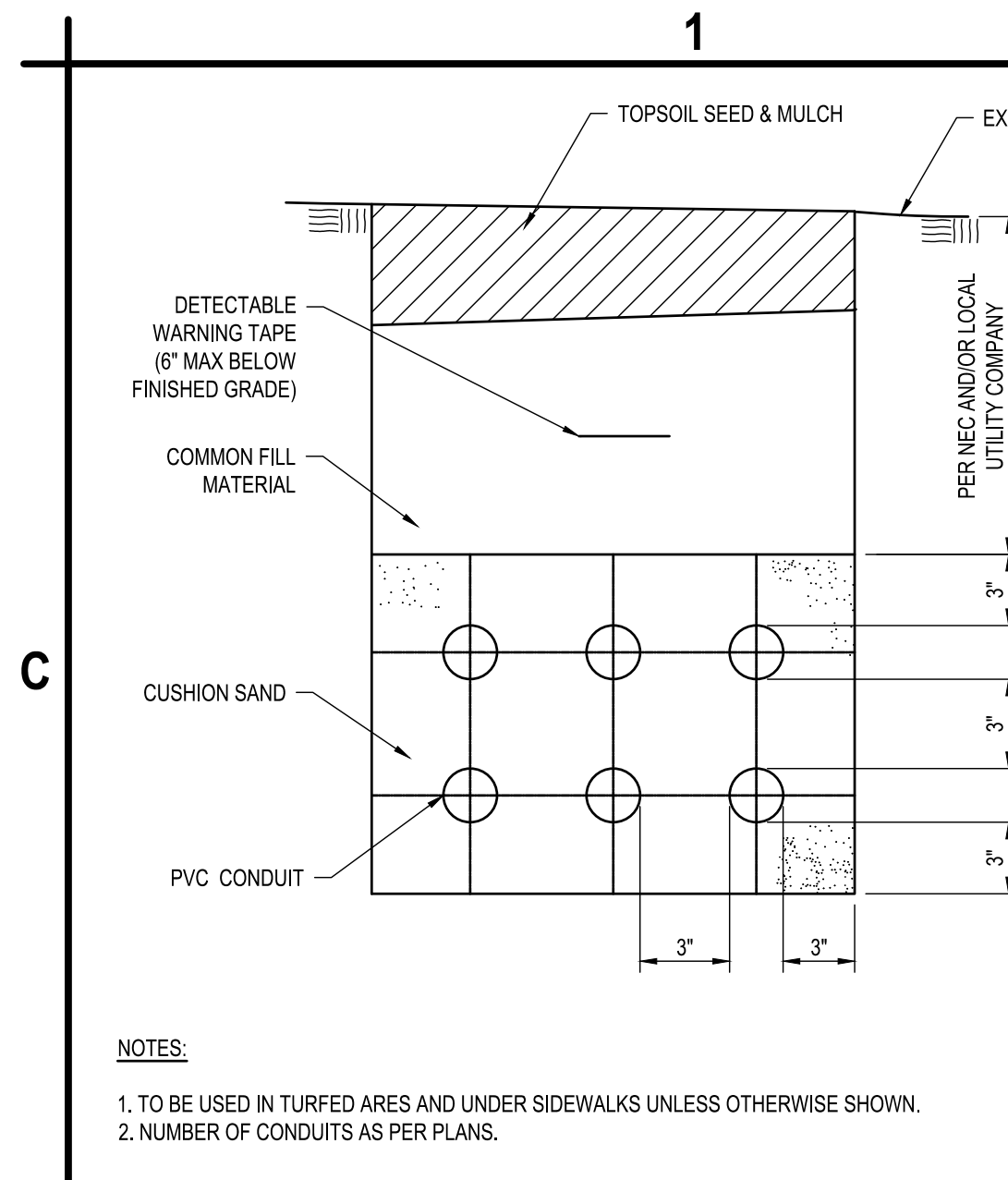
ELECTRICAL DETAILS

EL502

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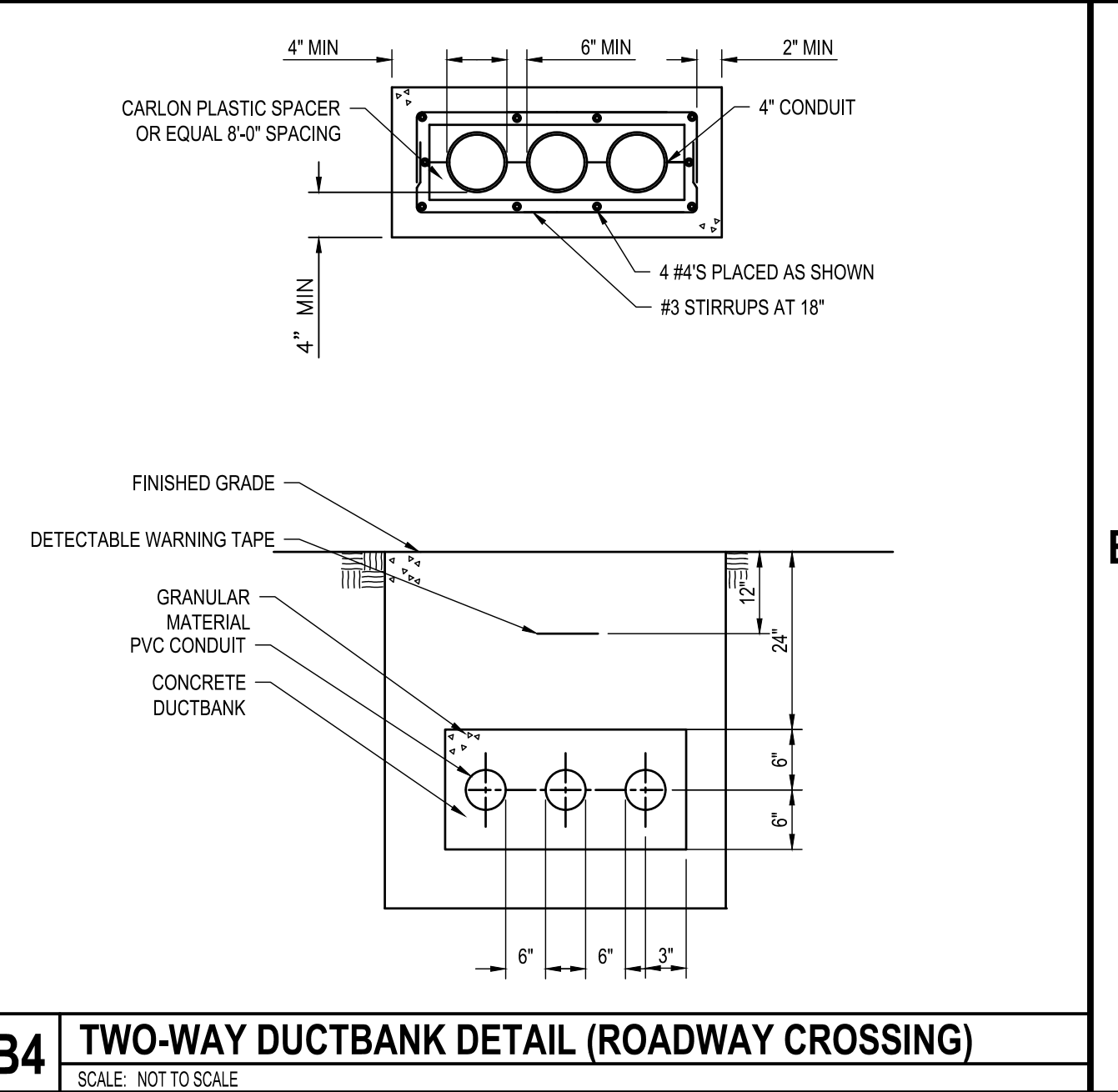
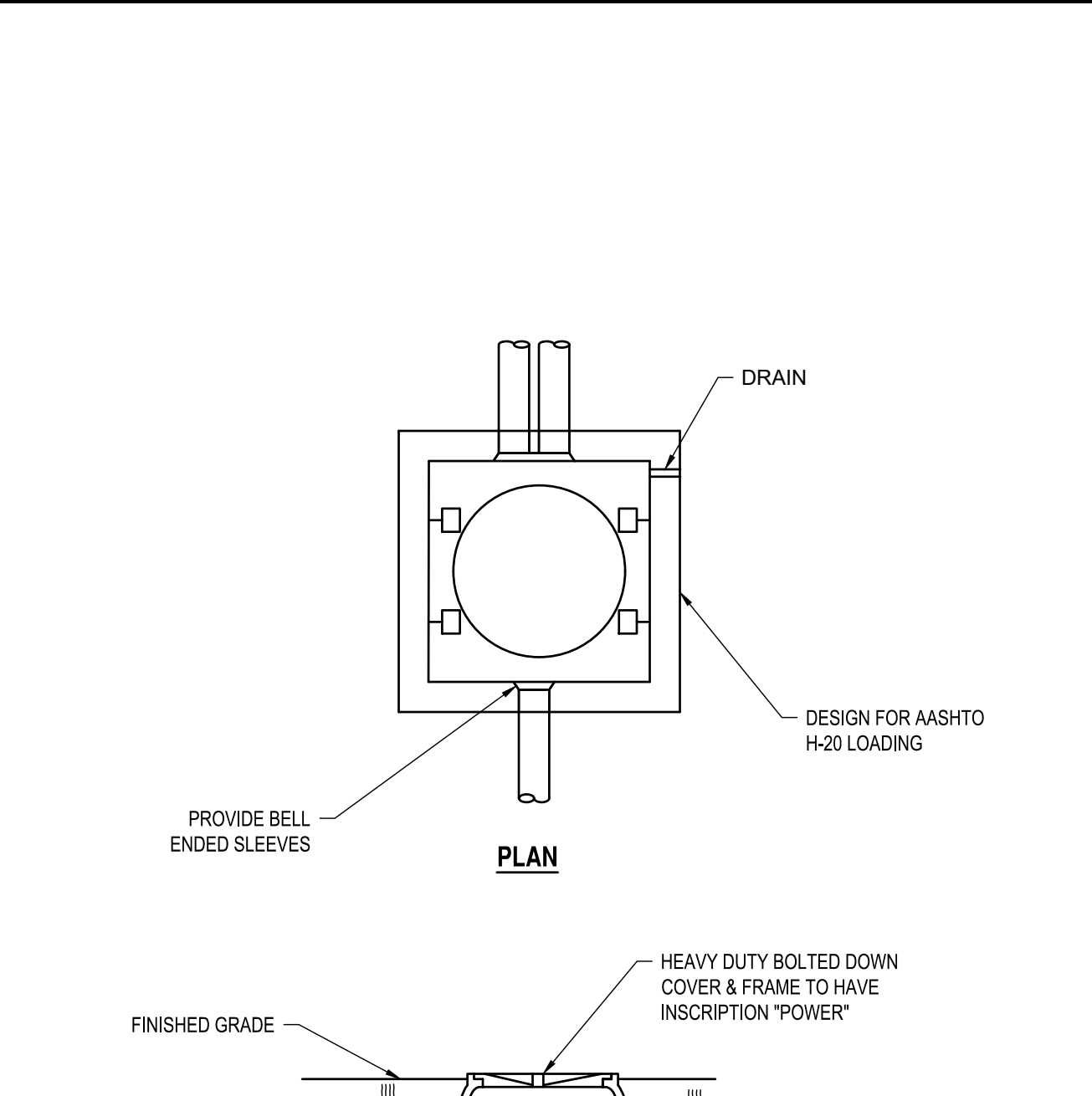
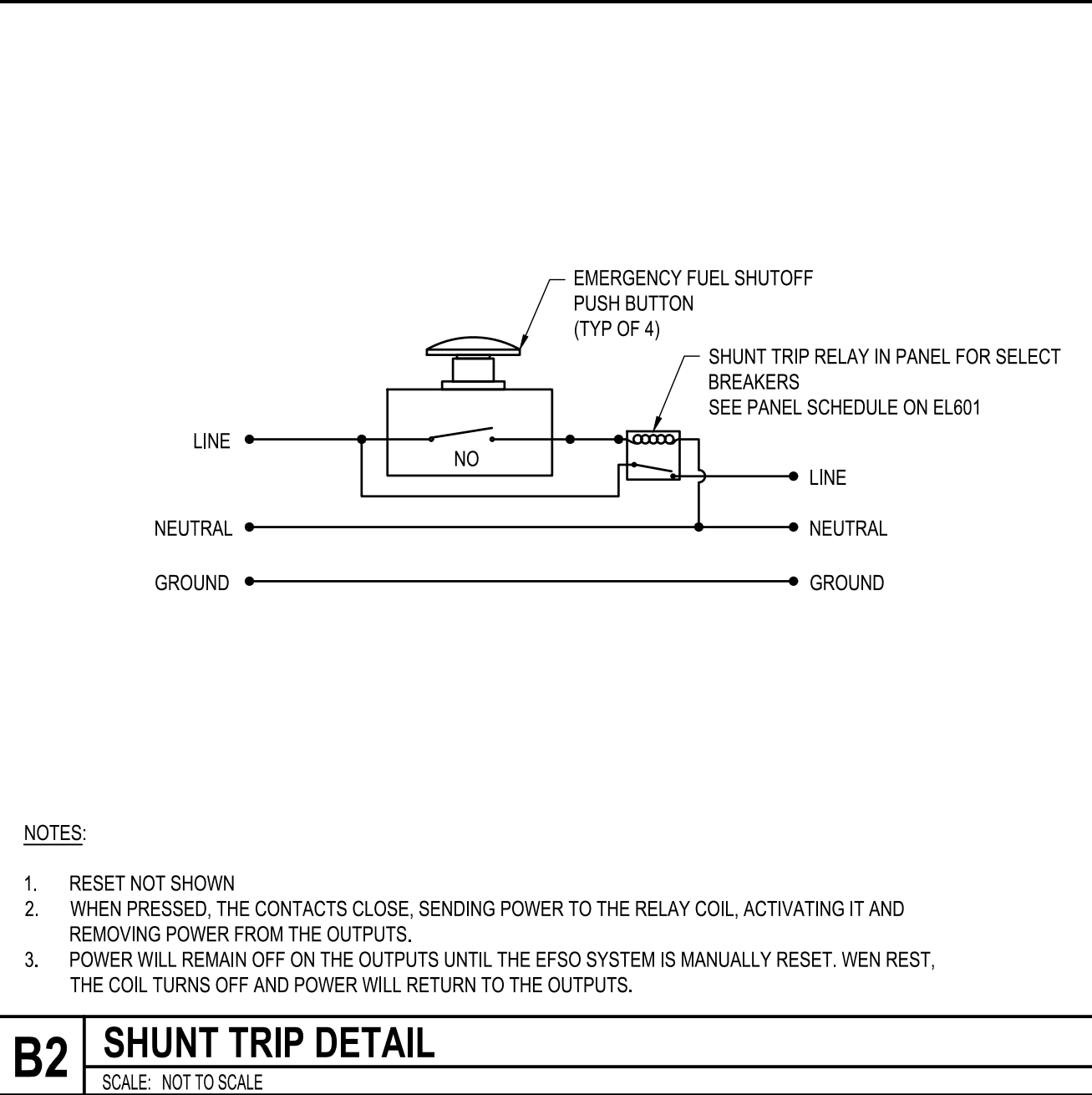
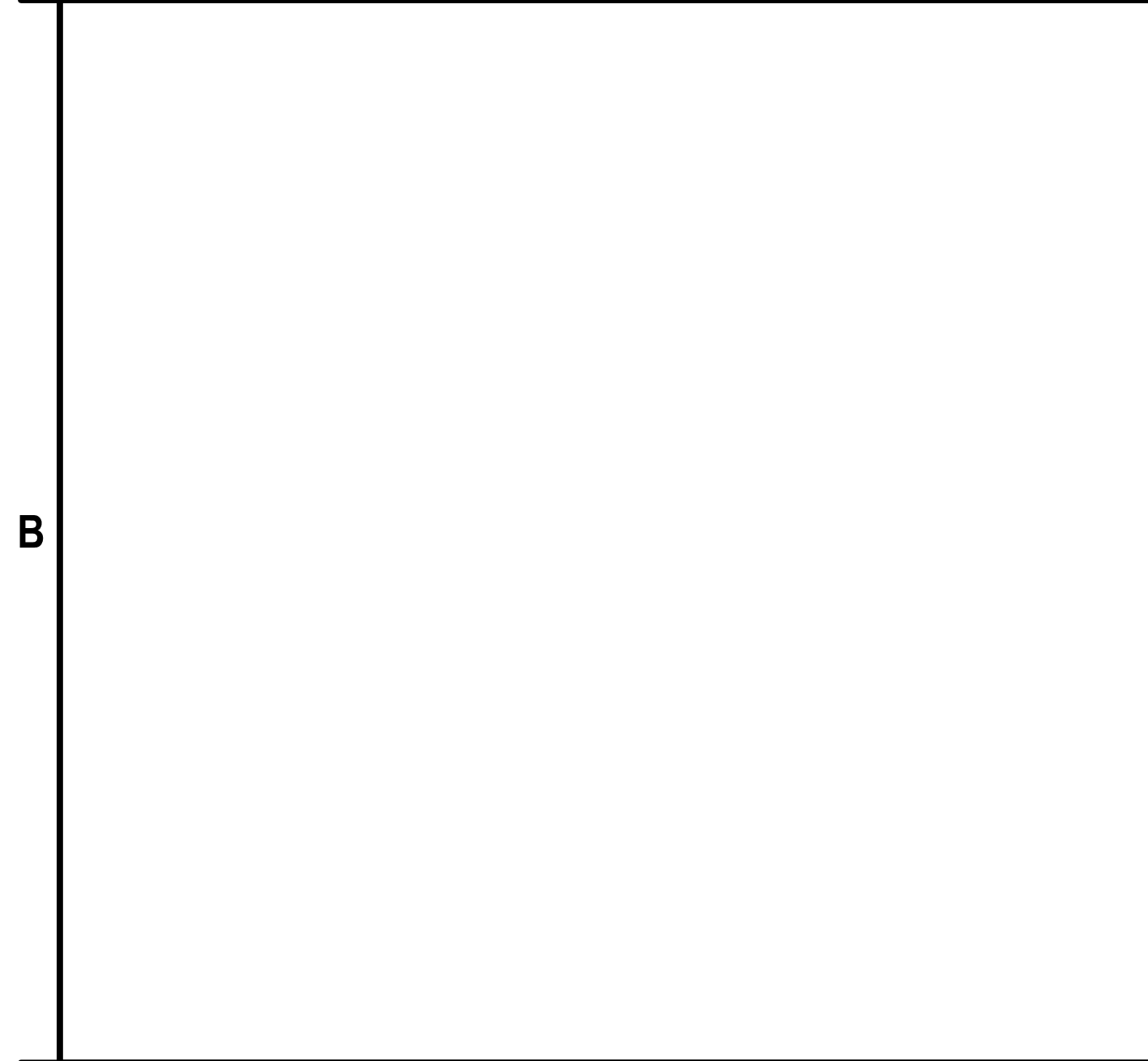
Apr 11, 2023, 2:18pm P:\Projects\G - Gerald R. Ford Airport\K19014001 - Field Maintenance Fuel Facility\Design\CADD\Sheet Files\K19014001_EL_DETAILS.dwg



C1 TRENCHING AND RESTORATION DETAIL
SCALE: NOT TO SCALE

C3 ELECTRICAL SEAL-OFF DETAIL
SCALE: NOT TO SCALE

C4 CANOPY LIGHTING CONTROL DETAIL
SCALE: NOT TO SCALE

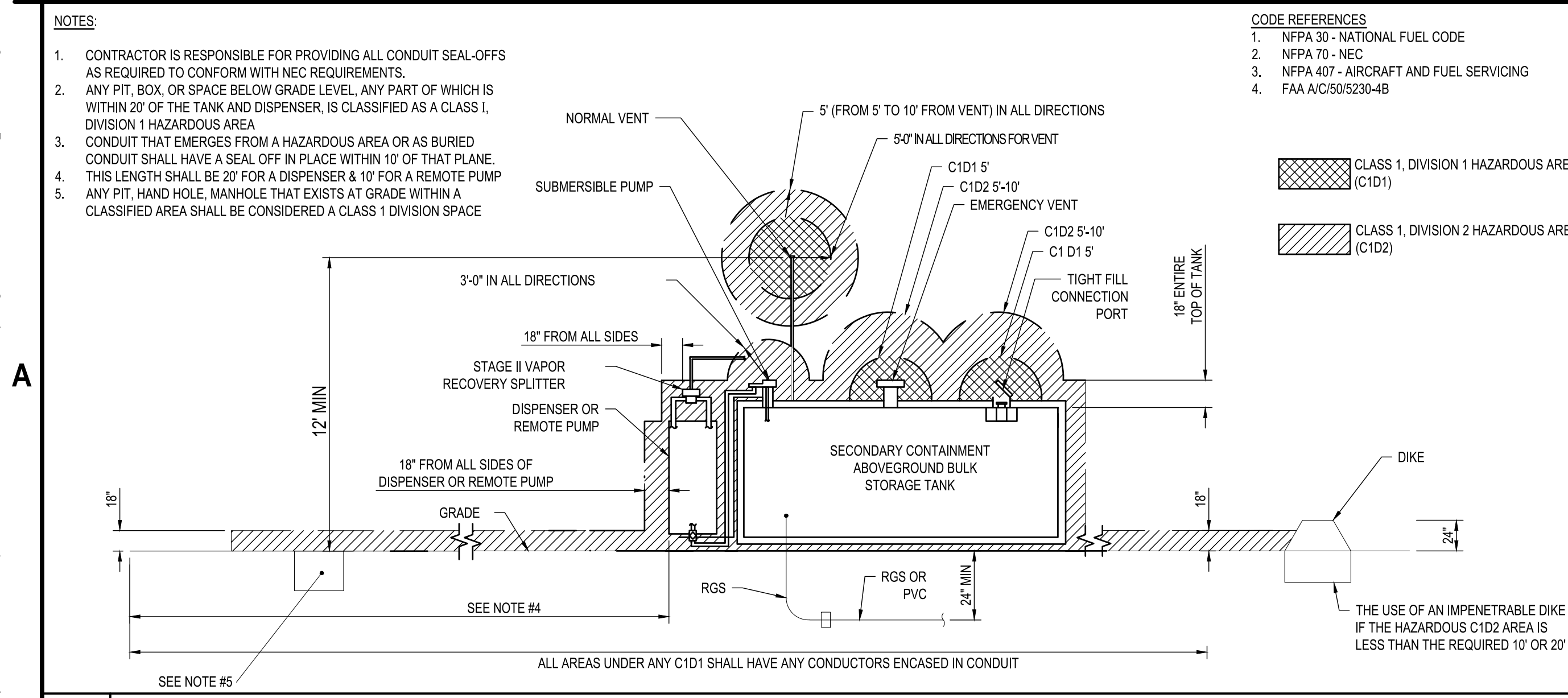


B2 SHUNT TRIP DETAIL
SCALE: NOT TO SCALE

B4 TWO-WAY DUCTBANK DETAIL (ROADWAY CROSSING)
SCALE: NOT TO SCALE

A3 PULL BOX DETAIL
SCALE: NOT TO SCALE

A4 STRUCTURAL GROUNDING DETAIL
SCALE: NOT TO SCALE



A1 HAZARDOUS LOCATION CLASSIFICATION DETAIL
SCALE: NOT TO SCALE

A3 PULL BOX DETAIL
SCALE: NOT TO SCALE

A4 STRUCTURAL GROUNDING DETAIL
SCALE: NOT TO SCALE



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ELECTRICAL DETAILS

EL503

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CAMERA SCHEDULE				
CAMERA #	TYPE	LOCATION	MOUNTING	MOUNTING HEIGHT
C01	A	FUEL FACILITY	POLE/PENDANT	12' AFG
C02	A	FUEL FACILITY	POLE PENDANT	12' AFG
C03	B	FUEL FACILITY	CANOPY CEILING	CANOPY CEILING
C04	A	FUEL FACILITY	COLUMN	12'AFG
C05	A	FUEL FACILITY	COLUMN	12'AFG
C06	B	FUEL FACILITY	COLUMN	12'AFG
C07	A	FUEL FACILITY	COLUMN	12'AFG
C08	A	FUEL FACILITY	COLUMN	12'AFG
C09	A	FUEL FACILITY	COLUMN	12'AFG
C10	B	FUEL FACILITY	CANOPY CEILING	CANOPY CEILING

CAMERA TYPES:

TYPE A: 20 MP MULTI IMAGER

TYPE B: 5MP VARIFOCAL

MASTER LUMINAIRE SCHEDULE

FIXTURE DESCRIPTION	MANUFACTURER & MODEL NO.	NUMBER AND TYPE OF LAMP	VOLTS	DRIVER	MOUNTING	REMARKS
A	NLS #VSS-1-T5-48L-1-40K7-UNV-CM-X OR APPROVED EQUAL	156 W	UNV	LED DRIVER	SURFACE MOUNT ON CANOPY	
B	NLS #VUE-1-T3-48L-1-40K7-UNV-DPS6- BRZ-PC-HSS OR APPROVED EQUAL	156 W	UNV	LED DRIVER	POLE MOUNT AT 18'-0" A.F.G	
C	NLS #VUE-1-T4-32L-530-40K7-UNV-DPS6-BRZ-PC-HSS OR APPROVED EQUAL	54 W	UNV	LED DRIVER	POLE MOUNT AT 20'-0" A.F.G	
D	NLS #VUE-1-T2-32L-530-40K7-UNV-DPS6-BRZ-PC-HSS OR APPROVED EQUAL	54 W	UNV	LED DRIVER	POLE MOUNT AT 20'-0" A.F.G	
E	HEW #96-4-L40-840-HIAFR-DRV-UNV OR APPROVED EQUAL	30 W	UNV	LED DRIVER	SURFACE MOUNT ON UNDERSIDE OF CEILING STRUCTURE	

NOTES FOR LUMINAIRE SCHEDULE:

- IF THE SUBMITTED LUMINAIRES SUBSTITUTIONS THE ENGINEER SHALL REQUEST THE CONTRACTOR TO PROVIDE PHOTOMETRIC ANALYSIS USING PHOTOMETRIC SOFTWARE AS PART OF THE SUBMITTAL.
- SUBSTITUTIONS SHALL PERFORM WITHIN 5% OF BASIS-OF-DESIGN.

EQUIPMENT CONNECTION SCHEDULE

CONTRACT RESPONSIBLE		ENCLOSURE			DISCONNECT TYPE			STARTER TYPE			CONTROLS				LOCATION								
G	GENERAL	1	NEMA 1 - INDOOR GENERAL		1	NON-FUSED SAFETY SWITCH		1	MAGNETIC X-LINE		1	START/STOP PB W/PILOT LIGHT IN COVER				A	AT EQUIPMENT						
M	MECHANICAL	3R	NEMA 3R - EXTERIOR RAINPROOF		2	FUSED SAFETY SWITCH		2	COMBINATION X-LINE		2	H-O-A SWITCH W/PILOT LIGHT ON COVER				B	REMOTE						
E	ELECTRICAL	4	NEMA 4 - OUTDOOR WATERTIGHT		3	TOGGLE SWITCH		3	MANUAL		3	AUXILIARY CONTACTS				C	IN MOTOR CONTROL CENTER						
P	PLUMBING	4X	NEMA 4X - CORROSION RESISTANT		4	INTEGRAL TO STARTER		4	REDUCED VOLTAGE		4	CONTROL TRANSFORMER				D	IN MECHANICAL ROOM						
O	OWNER	7	NEMA 7 - INDOOR EXPLOSION PROOF		5	CORD & PLUG		5	VFD		5	PROVIDED BY EQUIPMENT MANUFACTURER				E	IN ELECTRICAL ROOM						
		12	NEMA 12 - INDOOR DUST-TIGHT		6	PART OF CONTROL PANEL		6	SOFT START		6	REMOTE PUSHBUTTON STATIONS				F	OTHER (SEE REMARKS)						
		13	NEMA 13 - INDOOR OIL TIGHT		7	BY EQUIP. MANF.		7	TWO-SPEED		7	PART OF DIRECT DIGITAL CONTROL SYSTEM (DDC)											
					8	OTHER (SEE REMARKS)		8	BY EQUIP. MANF.		8	CONTROL PANEL											
					9	OTHER (SEE REMARKS)		9	OTHER (SEE REMARKS)		9	OTHER (SEE REMARKS)											
EQUIPMENT		ELECTRICAL			DISCONNECT			STARTER			CONTROLS				REMARKS								
ID #	NAME	FURN. BY	LOCATION	HP/KVA	VOLTS	PH	FURN. BY	INST. BY	TYPE	SIZE	ENCL	LOCAT	FURN. BY	INST. BY	TYPE	SIZE	ENCL	LOCAT	FURN. BY	INST. BY	VOLTS	TYPE	REMARKS
PG-1001	LOW FLOW DIESEL PUMP	M	FUEL ISLAND	1.5 HP	208	1	E	E	2	13	4X	B	M	M	8	-	4X	B	M	M	-	5	
PG-1002	HIGH FLOW DIESEL PUMP	M	FUEL ISLAND	1.5 HP	208	1	E	E	2	1	4X	B	M	M	8	-	4X	B	M	M	-	5	
PK-2010	UNLEADED PUMP	M	FUEL ISLAND	1 HP	208	1	E	E	2	10	4X	B	M	M	8	-	4X	B	M	M	-	5	
P-2000	NON-ETHANOL UNLEADED PUMP	M	FUEL ISLAND	1 HP	120	1	E	E	2	25	4X	B	M	M	8	-	4X	B	M	M	-	5	
PC-100A	GLYCOL PUMP	M	DEICING SHED	7.5	208	3	E	E	2	40	1	B	M	M	8	-	1	A	M	M	-	5	ONLY ONE PUMP OPERATES AT A TIME
PC-100B	GLYCOL PUMP	M	DEICING SHED	7.5	208	3	E	E	2	40	1	B	M	M	8	-	1	A	M	M	-	5	ONLY ONE PUMP OPERATES AT A TIME
PK-1012	HIGH FLOW DIESEL DISPENSER	M	FUEL ISLAND		120	1	E	E	8	-	4X	B	M	M	8	-	4X	B	M	M	-	5	CIRCUIT BREAKER ACTS AS DISCONNECTING MEANS
PK-1013	LOW FLOW DIESEL DISPENSER	M	FUEL ISLAND		120	1	E	E	8	-	4X	B	M	M	8	-	4X	B	M	M	-	5	CIRCUIT BREAKER ACTS AS DISCONNECTING MEANS
PK-2010	UNLEADED DISPENSER	M	FUEL ISLAND		120	1	E	E	8	-	4X	B	M	M	8	-	4X	B	M	M	-	5	CIRCUIT BREAKER ACTS AS DISCONNECTING MEANS
PK-2020	UNLEADED DIESEL DISPENSER	M	FUEL ISLAND		120	1	E	E	8	-	4X	B	M	M	8	-	4X	B	M	M	-	5	CIRCUIT BREAKER ACTS AS DISCONNECTING MEANS
C-1	CARD READER	M	FUEL ISLAND		120	1	E	E	8	-	4X	B	M	M	8	-	4X	B	M	M	-	5	CIRCUIT BREAKER ACTS AS DISCONNECTING MEANS
C-2	CARD READER	M	FUEL ISLAND		120	1	E	E	8	-	4X	B	M	M	8	-	4X	B	M	M	-	5	CIRCUIT BREAKER ACTS AS DISCONNECTING MEANS
C-3	CARD READER	M	FUEL ISLAND		120	1	E	E	8	-	4X	B	M	M	8	-	4X	B	M	M	-	5	CIRCUIT BREAKER ACTS AS DISCONNECTING MEANS
C-4	CARD READER	M	FUEL ISLAND		120	1	E	E	8	-	4X	B	M	M	8	-	4X	B	M	M	-	5	CIRCUIT BREAKER ACTS AS DISCONNECTING MEANS



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**ELECTRICAL
 SCHEDULES**

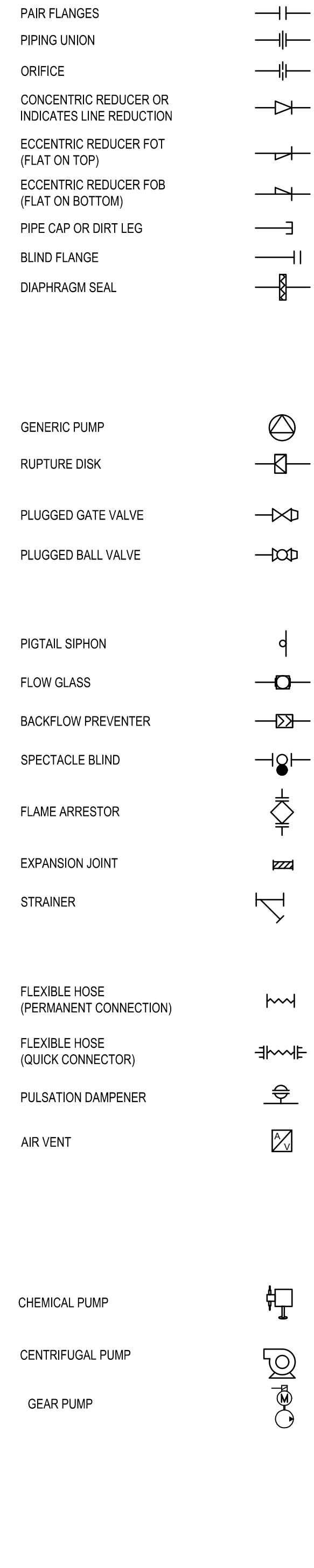
EL602

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MISCELLANEOUS SYMBOLS

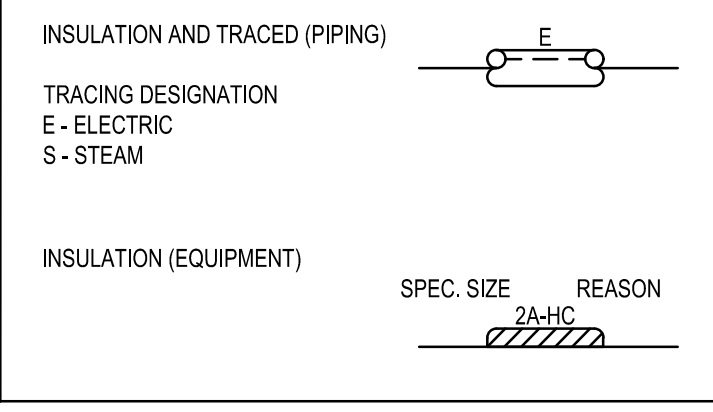


LINE DESIGNATIONS

EXAMPLE: 2" - DIE - CSS
LINE SIZE (NOMINAL)-PIPE SERVICE DESIG.-PIPE SPEC. -
SEQUENTIAL LINE NO.
INSULATION THICKNESS
INSULATION SPEC.
STEAM/ELECTRIC TRACED (S/T/E)
JACKETED (J)

INSULATION DESIGNATIONS

INSULATION (PIPING)
REASONS FOR INSULATING
AS - ANTI SWEAT
CC - COLD CONSERVATION
FP - FREEZE PROTECTION
HC - HEAT CONSERVATION
PP - PERSONAL PROTECTION



PIPE SPECIFICATIONS

Table with columns for material (CSS, GLV, SSH, SST, CPVC, PVC) and specifications (150#, SCHD 40, 304L, etc.).

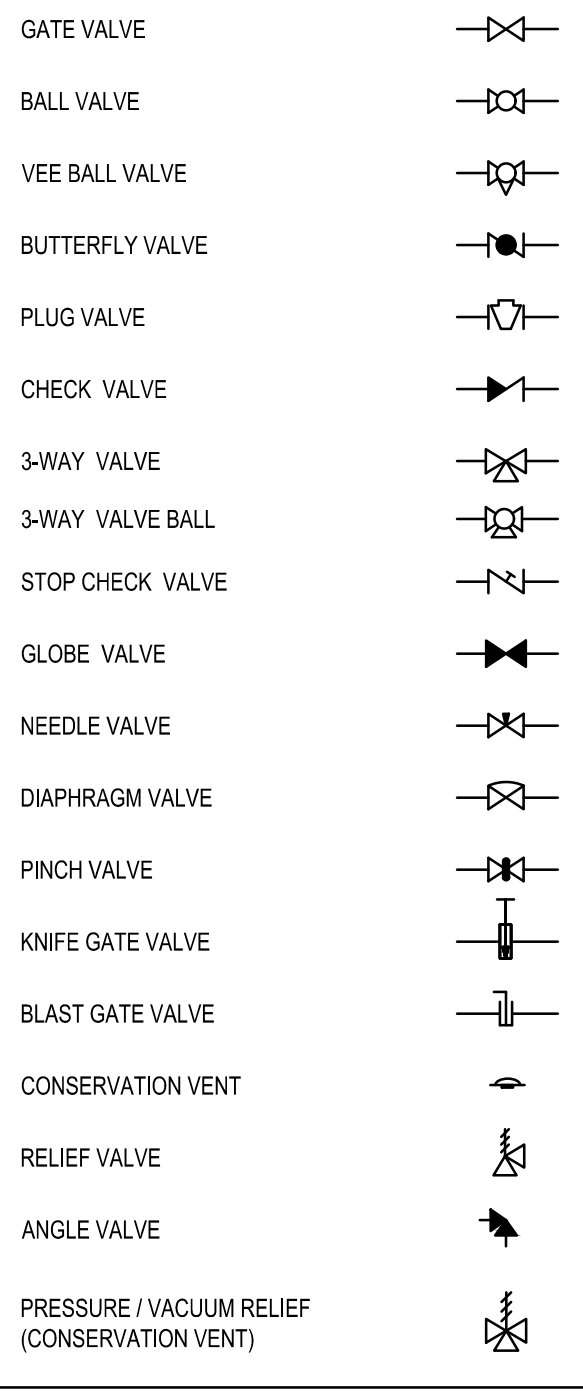
EQUIPMENT DESIGNATIONS

Table listing equipment types and their abbreviations: AI (Analog Current Signal), CV (Non Return Valve), DO (Digital Output Signal), FA (Filters - Air), FB (Filters - Bag Filter), FC (Filters - Cartridge), FM (Filters - Membrane), FS (Filters - Separator), HV (Hand Operated Valve), LI (Level Indication), LS (Switch Level), LSH (Switch Level - High Level Location), LT (Transmitter Level), PC (Pumps - Centrifugal), PG (Pumps - Positive Displacement), PH (Pumps - Hand Operated Piston), PK (Package Unit), S (Separator), SC (Screens), ST (Strainer), T (Plastic Storage Tank), TF (Tank Field Erected Containment), TK (Tanks with Integral Containment).

AREA NUMBERING

Table for area numbering with columns for Area No. and Area Name (e.g., 100 DE-ICING, 200 DE-ICING, 300 DE-ICING, 400 DE-ICING, 500 WATER, 600 WASTE WATER, 700 STORM WATER, 1000 DIESEL FUELING, 2000 UNLEADED GAS FUELING).

VALVES

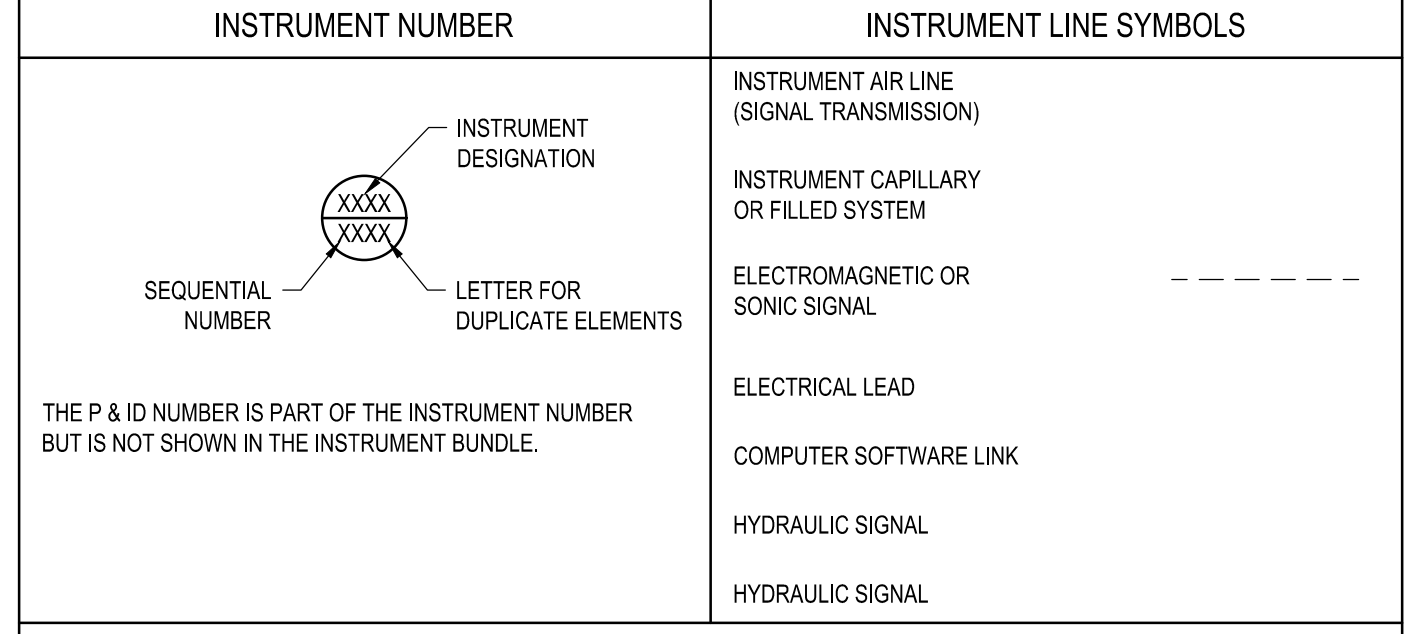


GENERAL INSTRUMENT OR FUNCTION SYMBOLS

Table showing instrument symbols for independent instruments, shared display, computer function, and programmable logic control, categorized by location (Primary, Field, Auxiliary).

ALL DISPLAYED ANALOG SIGNALS HAVE UP TO FOUR CONFIGURABLE ALARMS. THESE ARE NOT SHOWN UNLESS THEY OPERATE INTERLOCKS.

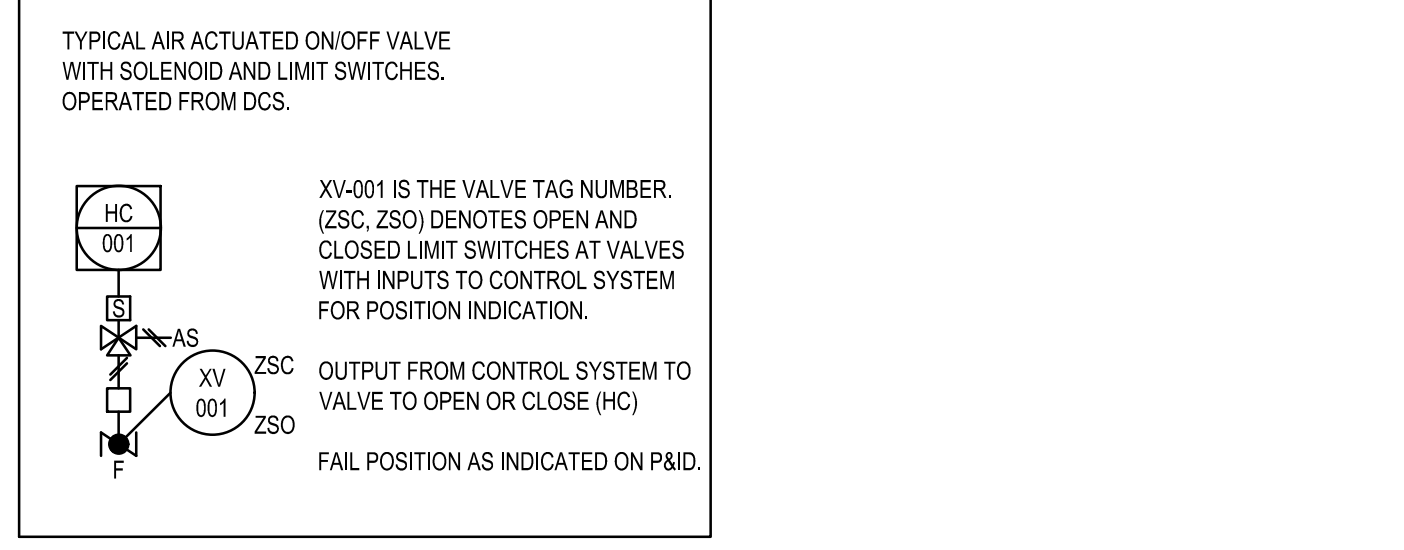
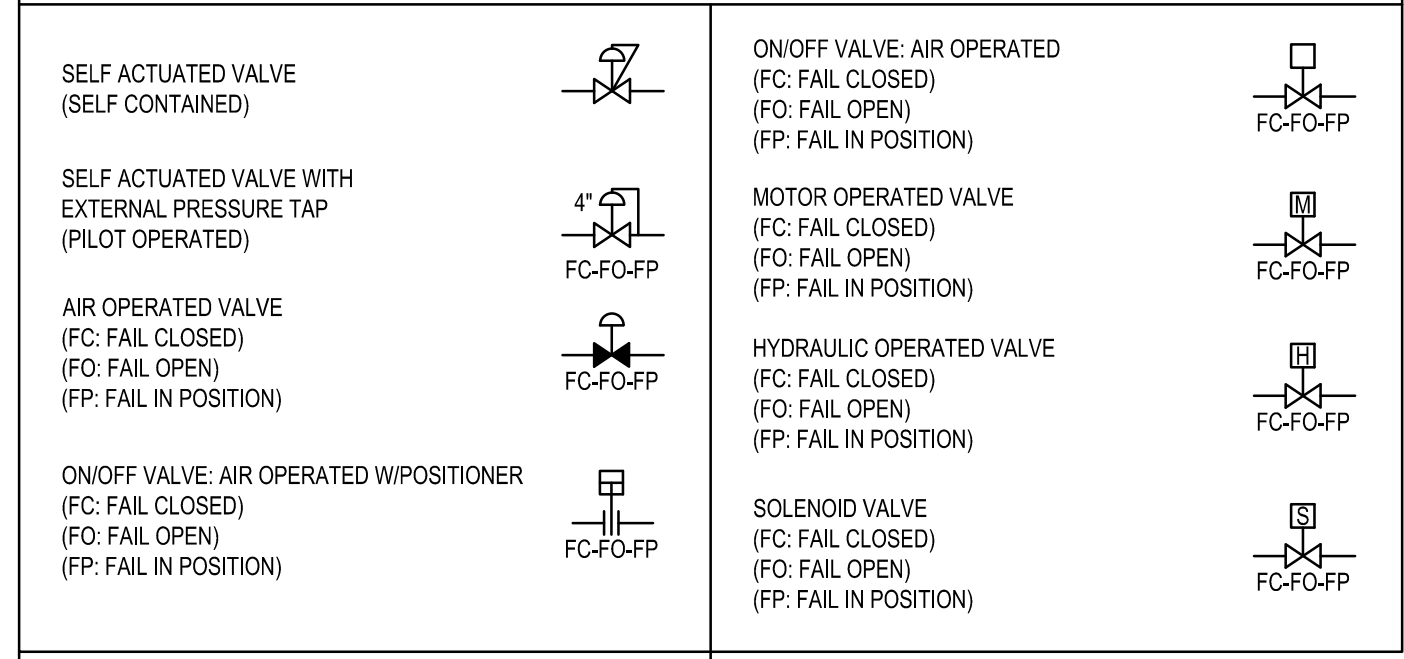
Table for computation and signal conditioning symbols: Interlock, Denotes Calculation, DCS Interface, Data Highway, PLC Interface, Burner Management Interface.



INSTRUMENT MODIFIERS

Table for instrument modifiers including flow elements (PE 0100), transducers (FY 016), and analytical instruments (PE 0100). Includes lists for element types and vendor codes.

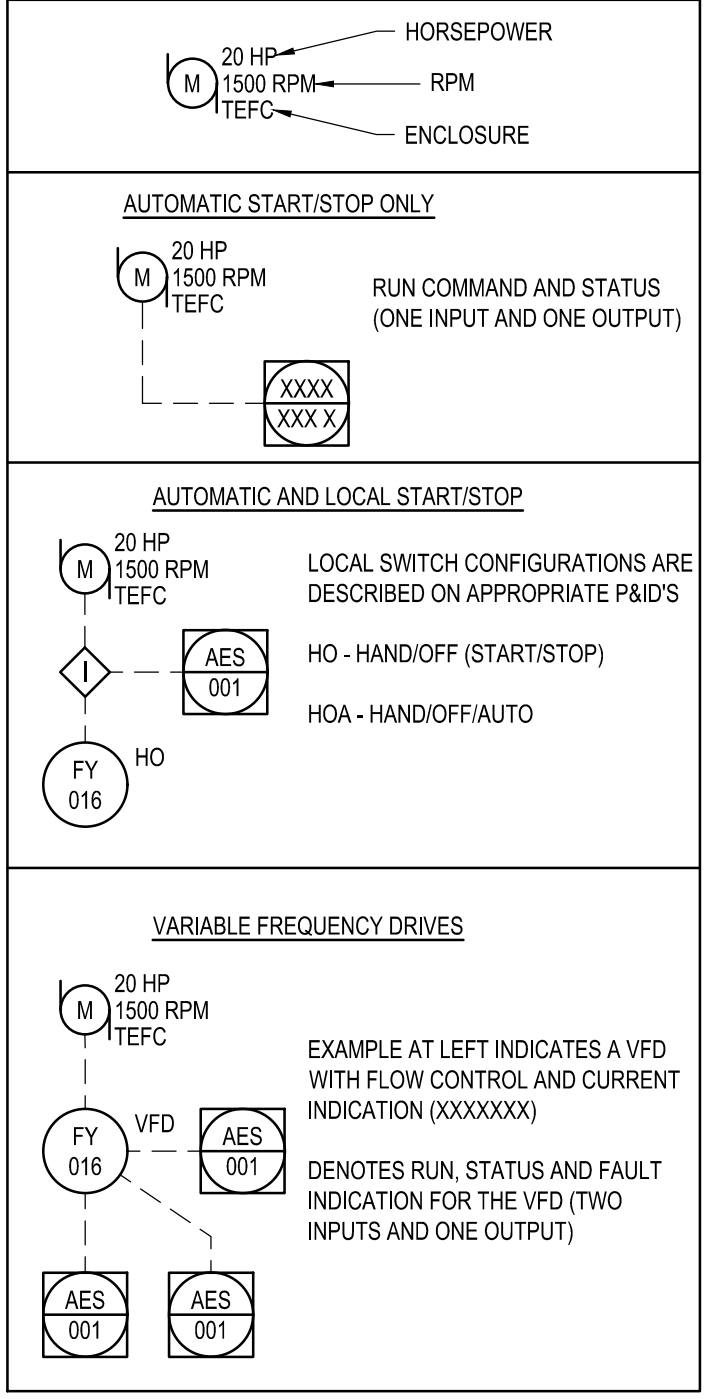
AUTOMATED VALVES



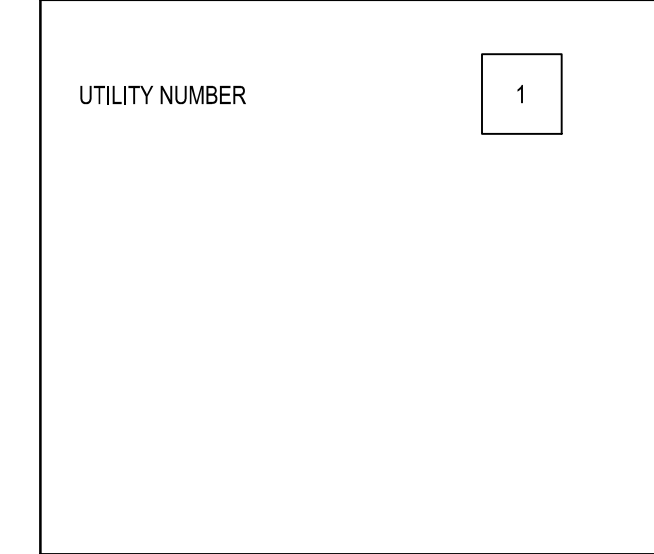
GENERAL INSTRUMENT OR FUNCTION SYMBOLS

Table for general instrument symbols with columns for Letter, Measured or Initiating Variable, Modifier, Readout or Passive Function, Output Function, and Modifier. Includes symbols for analysis, users choice, voltage, flow rate, hand, current, power, time schedule, level, momentary, DCS interface, data highway, PLC interface, burner management interface, X and Y axes, event/state, and Z axis.

MOTOR DESIGNATION



NOTES AND DETAILS



SPECIALTY ITEMS

X = D - DETAIL (SPECIAL FABRICATION)
X = E - EXPANSION JOINTS
X = H - HOSES AND FLEX CONNECTIONS
X = M - MISCELLANEOUS ITEMS
X = N - NOZZLES, SPRAY BALLS
X = S - STRAINERS
X = T - TRAPS
Z = ITEM NUMBER



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AIRPORT FIELD MAINTENANCE
FUEL FACILITY RELOCATION
GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN

Table with columns: MARK, DATE, DESCRIPTION

REVISIONS

Table with columns: PROJECT NO. (K19.014.001), DATE (APRIL 2023), DRAWN BY (D.B. CLARK, P.E.), DESIGNED BY (D.B. CLARK, P.E.), CHECKED BY (W.S. FRYE)

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

P&ID SYMBOLS AND ABBREVIATIONS

MI701

SHEET NO. 35 OF 36

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FUEL FACILITY RELOCATION**
**GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

MARK	DATE	DESCRIPTION

REVISIONS	
PROJECT NO:	K19.014.001
DATE:	APRIL 2023
DRAWN BY:	D.B. CLARK, P.E.
DESIGNED BY:	D.B. CLARK, P.E.
CHECKED BY:	W.S. FRYE

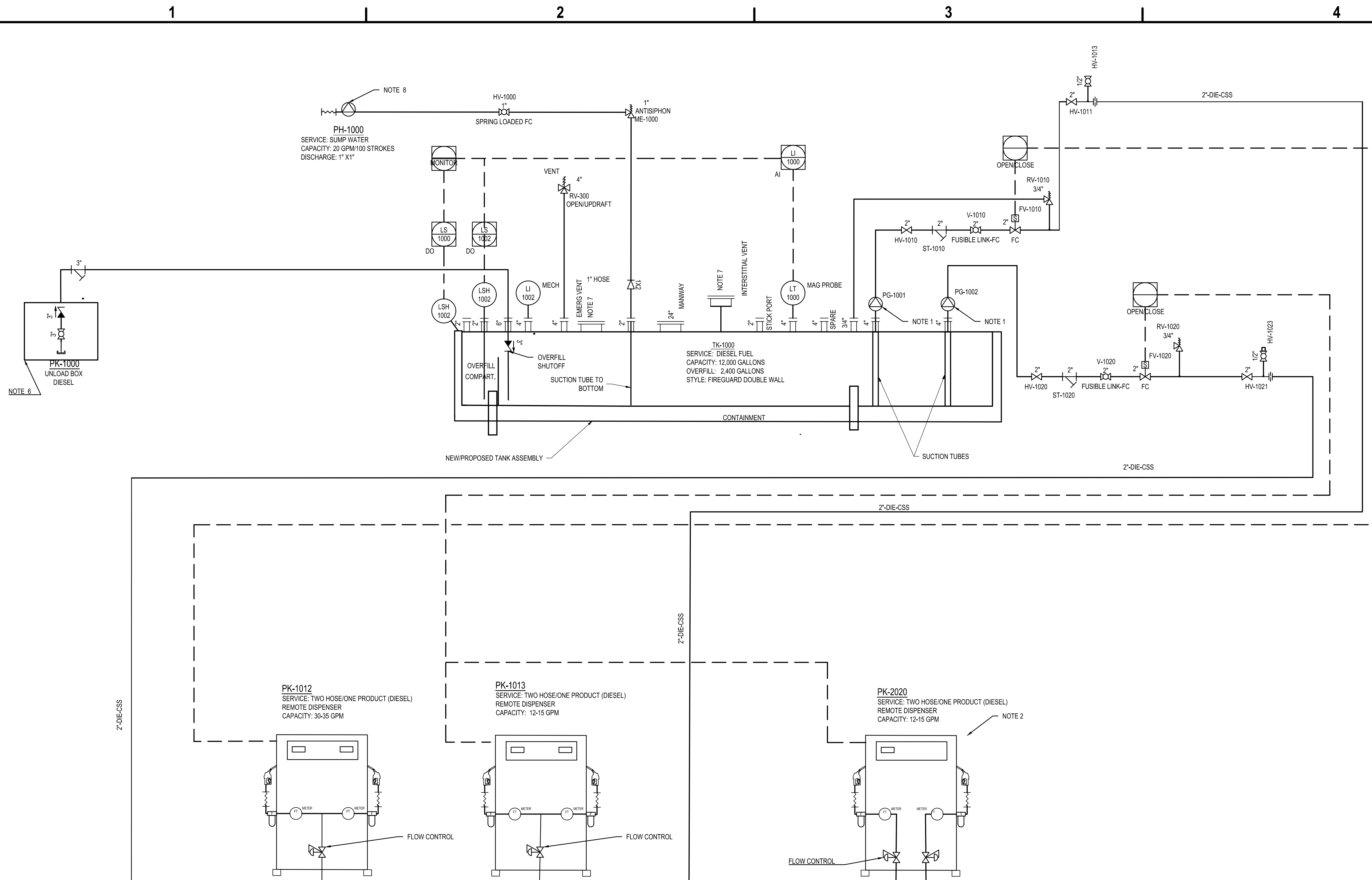
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**P&ID DIESEL FUEL
BULK STORAGE AND
DISPENSING**

MI702

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PUMP SCHEDULE														
UNIT NO.	LOCATION	TYPE	ARRANGEMENT	SYSTEM SERVED	SYSTEM FLUID	GPM	TDH (FT WG)	% EFF	RPM	ELECTRICAL			BASIS OF DESIGN [MANUFACTURER]	REMARKS
										VOLTS	PHASE	HP		
PG-1001	TK-1000	TURBINE	TOP MOUNT	DIE DISP.	DIE	12-15	-	-	-	208/230	1	1.5	RED JACKET	1,2
PG-1002	TK-1000	TURBINE	TOP MOUNT	DIE DISP	DIE	30-35	-	-	-	208/230	1	1.5	RED JACKET	1,2

- (1) FINAL SELECTION PER VENDOR
- (2) PUMP LOCATED ON TOP OF TANK, SUCTION INSIDE TANK

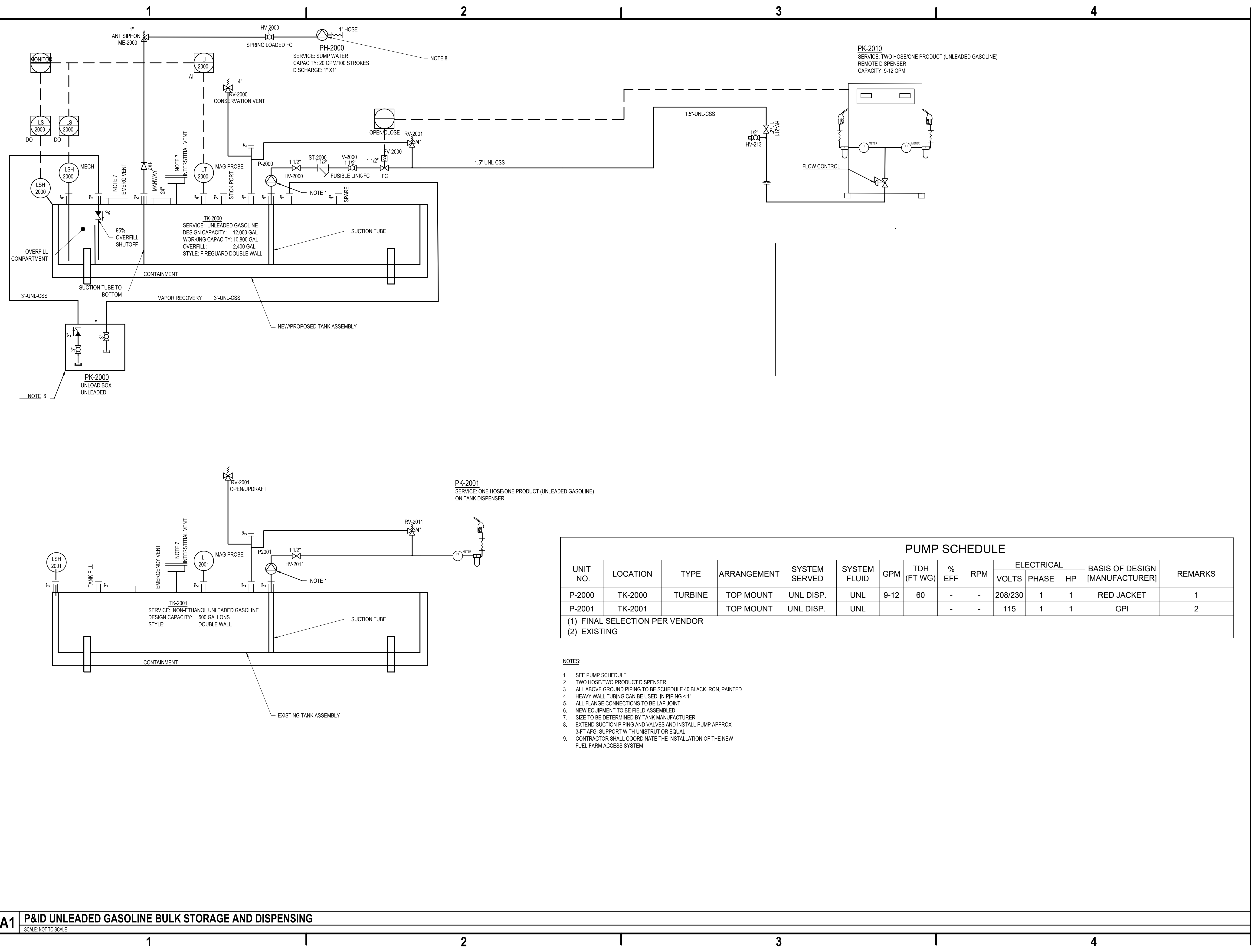
- NOTES:
1. SEE PUMP SCHEDULE
 2. TWO HOSE/ONE PRODUCT DISPENSER
 3. ALL ABOVE GROUND PIPING TO BE SCHEDULE 40 BLACK IRON, PAINTED
 4. HEAVY WALL TUBING CAN BE USED IN PIPING < 1"
 5. ALL FLANGE CONNECTIONS TO BE LAP JOINT
 6. NEW EQUIPMENT TO BE FIELD ASSEMBLED
 7. SIZE TO BE DETERMINED BY TANK MANUFACTURER
 8. EXTEND SUCTION PIPING AND VALVES AND INSTALL PUMP APPROX. 3-FT AFG. SUPPORT WITH UNISTRUT OR EQUAL
 9. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE NEW FUEL FARM ACCESS SYSTEM

A1 P&ID DIESEL FUEL BULK STORAGE AND DISPENSING

SCALE: NOT TO SCALE

Apr 10, 2023, 1:15pm P:\Project\K19 - Gerald R. Ford Airport\K19014001 - Field Maintenance Fuel Facility\Design\CADD\Sheet Files\K19014001_MI-SERIES.dwg

Apr 10, 2023 - 1:55pm P:\Projects\K19014001 - Field Maintenance Fuel Facility\Design\CAD\Sheet Files\K19014001_MISERIES.dwg



UNIT NO.	LOCATION	TYPE	ARRANGEMENT	SYSTEM SERVED	SYSTEM FLUID	GPM	TDH (FT WG)	% EFF	RPM	ELECTRICAL			BASIS OF DESIGN [MANUFACTURER]	REMARKS
										VOLTS	PHASE	HP		
P-2000	TK-2000	TURBINE	TOP MOUNT	UNL DISP.	UNL	9-12	60	-	-	208/230	1	1	RED JACKET	1
P-2001	TK-2001	TURBINE	TOP MOUNT	UNL DISP.	UNL			-	-	115	1	1	GPI	2

(1) FINAL SELECTION PER VENDOR
(2) EXISTING

- NOTES:
- SEE PUMP SCHEDULE
 - TWO HOSE/TWO PRODUCT DISPENSER
 - ALL ABOVE GROUND PIPING TO BE SCHEDULE 40 BLACK IRON, PAINTED
 - HEAVY WALL TUBING CAN BE USED IN PIPING < 1"
 - ALL FLANGE CONNECTIONS TO BE LAP JOINT
 - NEW EQUIPMENT TO BE FIELD ASSEMBLED
 - SIZE TO BE DETERMINED BY TANK MANUFACTURER
 - EXTEND SUCTION PIPING AND VALVES AND INSTALL PUMP APPROX. 3-FT AFG. SUPPORT WITH UNISTRUT OR EQUAL
 - CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE NEW FUEL FARM ACCESS SYSTEM



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GERALD R. FORD INTL AIRPORT
GRAND RAPIDS, MICHIGAN**

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DATE: APRIL 2023		
DRAWN BY: D.B. CLARK, P.E.		
DESIGNED BY: D.B. CLARK, P.E.		
CHECKED BY: W.S. FRYE		
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P&ID UNLEADED GASOLINE BULK STORAGE AND DISPENSING

MI703

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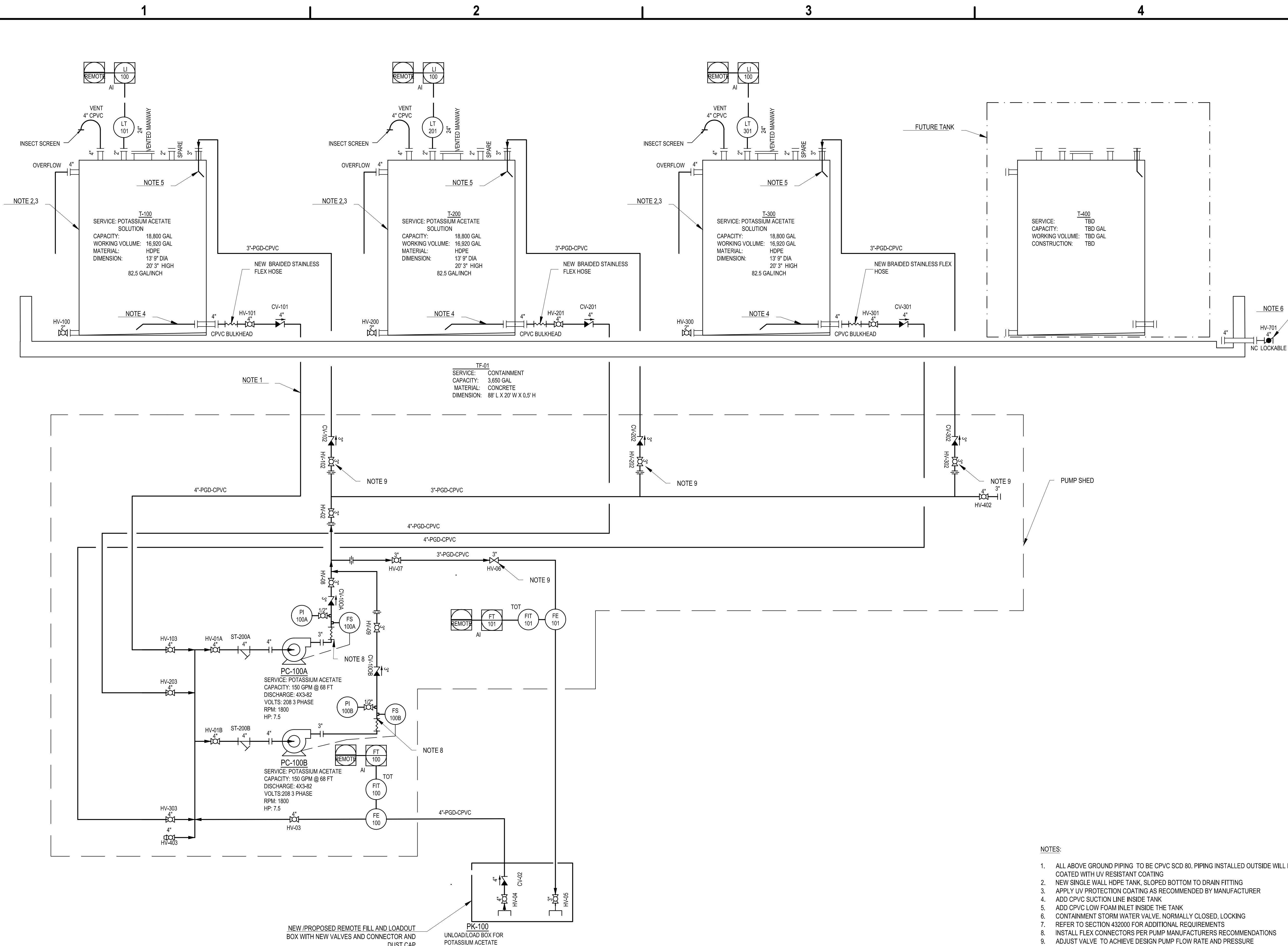
AIRPORT FIELD MAINTENANCE FUEL FACILITY RELOCATION GERALD R. FORD INTL AIRPORT GRAND RAPIDS, MICHIGAN

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P&ID DEICING CHEMICAL BULK STORAGE AND DISPENSING

MI704

SHEET NO. 38 OF 36



- NOTES:**
- ALL ABOVE GROUND PIPING TO BE CPVC SCD 80. PIPING INSTALLED OUTSIDE WILL BE COATED WITH UV RESISTANT COATING
 - NEW SINGLE WALL HDPE TANK, SLOPED BOTTOM TO DRAIN FITTING
 - APPLY UV PROTECTION COATING AS RECOMMENDED BY MANUFACTURER
 - ADD CPVC SUCTION LINE INSIDE TANK
 - ADD CPVC LOW FOAM INLET INSIDE THE TANK
 - CONTAINMENT STORM WATER VALVE, NORMALLY CLOSED, LOCKING
 - REFER TO SECTION 432000 FOR ADDITIONAL REQUIREMENTS
 - INSTALL FLEX CONNECTORS PER PUMP MANUFACTURERS RECOMMENDATIONS
 - ADJUST VALVE TO ACHIEVE DESIGN PUMP FLOW RATE AND PRESSURE

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