

1. THE PROTOTYPE DRAWINGS AND TECHNICAL SPECIFICATIONS PROVIDE BASE PLANS, ELEVATIONS, SECTIONS, DETAILS, SCHEMATICS, SCHEDULES, AND MATERIAL SPECIFICATIONS FOR THE BUILDING CONSTRUCTION ALONG WITH ASSOCIATED UTILITY ENTRANCE LOCATIONS. THE SITE ADAPTATION DESIGN DESIGN SHALL PROVIDE DRAWINGS AND SPECIFICATIONS FOR THE SITE SPECIFIC ADAPTATION AND CONSTRUCTION INCLUDING BUT NOT LIMITED TO GENERAL CONDITIONS, GEOTECHNICAL INFORMATION, BUILDING ORIENTATION, FENCING, PARKING, SITE LIGHTING, STORMWATER MANAGEMENT, OTHER STRUCTURES, OTHER SITE IMPROVEMENTS, AND UTILITIES INCLUDING, BUT NOT LIMITED TO, WATER, POWER, AND EMERGENCY POWER.

2. PROTOTYPE DRAWINGS AND TECHNICAL SPECIFICATIONS INCLUDE PROVISIONS FOR VARYING ELECTRICAL SERVICE - THREE PHASE (208/120 - 3P/4W) OR SINGLE PHASE (120/240 - 1P/3W). UTILITY TYPE SHALL BE INDICATED ON THE SITE ADAPTATION PROJECT COVER SHEET.

3. PROTOTYPE DRAWINGS INCLUDING PROVISIONS FOR POWER NOTED AS **RESERVED FOR SITE SPECIFIC CONDITION** ON THE PANEL *CSB* SCHEDULE FOR THE FOLLOWING EQUIPMENT IF REQUIRED FOR SITE ADAPTATION. THE FOLLOWING ITEMS ARE ONLY INCORPORATED IF SPECIFIED AS PART OF THE SITE ADAPTATION DESIGN.

- CALCIUM CHLORIDE PUMP
- BRINE PUMP

4. DESIGN SOIL BEARING CAPACITY: REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR DESIGN SOIL BEARING CAPACITY.

5. MAXIMUM BASIC WIND SPEED IS 130 MPH. IF SITE BASIC WIND SPEED IS GREATER THAN 130 MPH, OR IS LOCATED IN A SPECIAL WIND REGION AS DEFINED IN ASCE 7-16 FIGURES 26.5-1B AND 26.5-2B, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR SITE SPECIFIC CONDITIONS. REFER TO VCC 1609.3 FOR ADDITIONAL INFORMATION ON SPECIAL WIND REGIONS, NEAR MOUNTAINOUS TERRAIN AND NEAR GORGES.

6. MAXIMUM SEISMIC DESIGN CATEGORY IS C. IF SITE SEISMIC SITE CLASS IS CLASS D, E, OF F, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR SITE SPECIFIC CONDITIONS.

THIS SITE IS CLASSIFIED AS SEISMIC CLASS B AND SITE SPECIFIC DESIGN IS NOT REQUIRED.

IF THE SITE IS LOCATED WITHIN A FLOOD ZONE, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR THE SITE SPECIFIC CONDITIONS.

8. MAXIMUM GROUND SNOW LOAD IS 43 PSF. IF THE SITE IS LOCATED WITHIN A SITE SPECIFIC CASE STUDY AREA WITH GROUND SNOW LOAD GREATER THAN 43 PSF, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR SITE SPECIFIC CONDITIONS.

Salem District Airport AHQ FAACS #2140845, 2140836 and 2140849

CONTACT INFO
Monitor on Contract - H&P - 540-777-0265 / gwhitt@handp.com

All lead and lead coated building components are to be recycled whenever possible

ABBREVIATIONS	DESCRIPTION
AEP	American Electric Power
CMP	Corrugated Metal Pipe
CONC.	Concrete
CP	Corrugated Plastic Pipe
EX	Existing
FB	Electric Box/Pan
FFE	Finished Floor Elevation
INV.	Inv.
IP	Iron Pipe
OU	Overhead Utilities
PVC	Polyvinyl Chloride Pipe
RCP	Reinforced Concrete Pipe
SD	Storm Drainage
SDMH	Storm Drainage Manhole
SS	Sanitary Sewer Line
SSMH	Sanitary Sewer Manhole
TCP	Terra Cotta Pipe
UE	Underground Electric
UG	Underground Gas
UT	Underground Telephone
VP	Watered Clay Pipe
W	Waterline
WWWA	Western Virginia Water Authority
+1105.24	Spot Elevation
TBR	To Be Removed
BR	To Be Relocated
FG	Finished Grade Spot
FFE	Finished Floor Elevation

WESTERN VIRGINIA WATER AUTHORITY: 540-283-2941

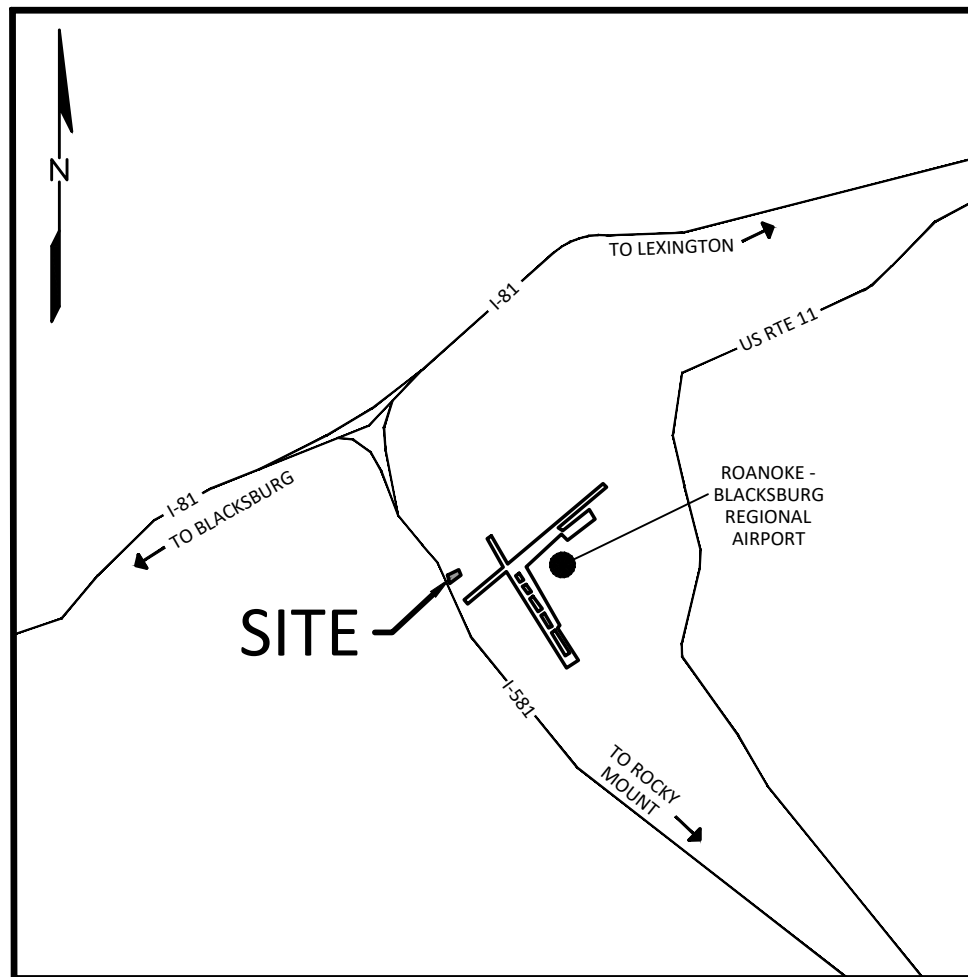


4330 THIRLANE RD, NW
ROANOKE, VA



A map showing the proposed site location. The site is a rectangular area with diagonal hatching, located between Frontage Rd. NW and 10th Ave. NW. To the north of the site is the Roanoke-Blacksburg Regional Airport. To the south of the site is the 10th Ave. NW. To the west of the site is Frontage Rd. NW. To the east of the site is 10th Ave. NW. The map also shows other roads: Pettigrew Hwy (State Rte. 171) to the north, and 10th Ave. NW, 11th Ave. NW, and 12th Ave. NW to the south. The site is labeled "SITE" with a line pointing to it.

NTS
(SOURCE: GOOGLE MAPS)



NTS
(SOURCE: GOOGLE MAPS)

ZONING: I-1: LIGHT INDUSTRIAL

PARKING SPACE MINIMUM:	NONE
PARKING SPACES PROVIDED:	22 STANDARD SPACES 1 H.C. SPACE (ALL EXISTING - NO ADDITIONS OR ALTERATIONS OF EXISTING PARKING PROPOSED WITH THIS PROJECT)

C-100	COVER SHEET
C-101	GENERAL SITE CONSTRUCTION NOTES
C-200	EXISTING SITE CONDITIONS & DEMOLITION PLAN
C-300	LAYOUT AND UTILITY PLAN
C-400	GRADING PLAN
C-500	EROSION AND SEDIMENT CONTROL PLAN
C-501	EROSION AND SEDIMENT CONTROL NOTES
C-502	EROSION AND SEDIMENT CONTROL DETAILS
C-600	STORM SEWER PROFILES
C-700	DETAILS
SW-1 TO SW-4	SWPPP
B-1 TO B-3	SOIL BORING LOGS

E-100	ELECTRICAL SITE PLAN
E-101	ELECTRICAL SITE NEW WORK PLAN
E-102	ENLARGED ELECTRICAL SERVICE SITE PLANS
E-103	RISER DIAGRAMS, PANEL SCHEDULES, AND CALCULATIONS
E-104	DETAILS AND NOTES

PROTOTYPE CHEMICAL STORAGE BUILDINGS - 3,000 TON (BUILDING 2)	
T-1	TITLE SHEET (BUILDING 2)
A-1	FLOOR PLAN, SCHEDULES AND SECTION (BUILDING 2)
A2	BUILDING ELEVATIONS AND SECTION
A3	WORK PAD PLAN, SECTIONS AND DETAILS
A4.1	SALT POND PLAN, SECTIONS AND DETAILS (NOT IN CONTRACT)
A4.2	SALT STORAGE TANK
A5	MATERIAL SPECIFICATIONS
S1	FOUNDATION PLAN AND SCHEDULE (BUILDING 2)
S2	FOUNDATION SECTION, DETAILS AND SCHEDULE
S3	FOUNDATION SECTION, DETAILS AND SCHEDULE
S4	GENERAL NOTES
E1	LEGEND ABBREVIATIONS AND NOTES
E2	SPECIFICATIONS AND DIAGRAMS
E3.1	BUILDING 1 ELECTRICAL PLAN (NOT IN CONTRACT)
E3.2	BUILDING 2 ELECTRICAL PLAN
E3.3	BUILDING 3 ELECTRICAL PLAN (NOT IN CONTRACT)
E4	SCHEDULES
E5	DETAILS
E6	CALCULATIONS (BUILDING 2)

APPLICABLE CODES:
 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (VUSBC) 2018 EDITION
 2024 CONSTRUCTION AND PROFESSIONAL SERVICES MANUAL (CPSM) REV. 1-10/10/2024

CONSTRUCTION TYPE: IIB
OCCUPANCY GROUP: S-2, LOW HAZARD STORAGE
MEMBRANE STRUCTURE MEETS THE REQUIREMENTS OF VCC 3102.3.1 AND NFPA 701

REFER TO PROTOTYPE DRAWING TITLE SHEET T1 FOR ADDITIONAL BUILDING CODE INFORMATION.

REVISIONS

△	_____
△	_____
△	_____
△	_____
△	_____

HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA
540.342.4002
www.HughesAE.com

VDOT Virginia Department of Transportation
CHEMICAL STORAGE BUILDING
SALEM DISTRICT AIRPORT AHD
4330 THIRI ANE RD. NW, ROANOKE VA 24019

DRAWN BY: JC
CHECKED BY: JC

COVER SHEET

PROJECT CODE:
01-18130-07

COMMISSION No
23027

SHEET
C-100

GENERAL SITE CONSTRUCTION NOTES

SITEWORK

1.

THE LOCATION OF EXISTING UTILITIES ACROSS, ALONG OR IN THE VICINITY OF PROPOSED WORK ARE NOT NECESSARILY SHOWN ON THE PLANS, AND WHERE SHOWN, ARE APPROXIMATE. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND LINES AND STRUCTURES AS NECESSARY.
2.

THE CONTRACTOR IS TO PROVIDE FOR THE SAFETY OF THE GENERAL PUBLIC DURING ALL PHASES OF CONSTRUCTION. PROVIDE CHAIN LINK FENCE AND/OR SAFETY FENCE AS NEEDED.
3.

THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING BUILDINGS, SIDEWALKS, PAVEMENT, UTILITY POLES & PEDESTALS, ABOVE AND BELOW GROUND UTILITIES ETC, IF THOSE ITEMS ARE NOT DESIGNATED AS TO BE REMOVED.
4.

THE CONTRACTOR SHALL CALL "MISS UTILITY" AT 811 A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION AND REQUEST ALL UTILITIES TO BE LOCATED.
5.

CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS FROM VDOT AND WESTERN VIRGINIA WATER AUTHORITY PRIOR TO BEGINNING ANY WORK. ALL WORK WITH THE PUBLIC RIGHT OF WAY SHALL FOLLOW THE CITY OF ROANOKE RIGHT OF WAY EXCAVATION AND RESTORATION STANDARDS.
6.

ALL UNDERGROUND UTILITIES ARE TO BE CLEARLY MARKED PRIOR TO BEGINNING CONSTRUCTION, ANY POTENTIAL CONFLICTS AS A RESULT OF THE MARKINGS SHALL BE MADE KNOWN TO THE ARCHITECT/ENGINEER IMMEDIATELY.
7.

UTILITY LINES, UTILITY POLES AND PEDESTALS, ABOVEGROUND AND BELOW GROUND SHALL BE PROTECTED FROM DAMAGE IN ACCORDANCE WITH THE UTILITY OWNERS' INSTRUCTIONS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY OWNERS TO OBTAIN THE PROPER PROTECTIVE MEASURES FOR EACH INDIVIDUAL UTILITY AND FOR PROTECTING UTILITIES FROM DAMAGE. ANY AND ALL DAMAGE CAUSED BY THE CONTRACTOR OR BY THE CONTRACTOR'S CONSTRUCTION OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR EXPENSE.
8.

THE CONTRACTOR SHALL NOTIFY THE ENGINEER/ARCHITECT SHOULD DISCREPANCIES BE DISCOVERED AT THE SITE OR ON THE DRAWINGS.
9.

THE CONTRACTOR SHALL NOTIFY VDOT OF ANY FIELD REVISIONS AND/OR CORRECTIONS TO THE APPROVED PLANS PRIOR TO SUCH CONSTRUCTION.
10.

THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF ALL EXCAVATED DITCHES AND SHALL FURNISH AND INSTALL ALL NECESSARY BARRICADES FOR THE PUBLIC ARE IN PLACE.
11.

ALL AREAS NOT COVERED WITH PAVEMENT, SIDEWALK, OF STRUCTURES SHALL RECEIVE LANDSCAPING AND PERMANENT SEEDING OR SOD, AS SHOWN ON THE PLANS.
12.

THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE MOST RECENT REVISION DATE OF THE PLANS PRIOR TO COMMENCING WITH CONSTRUCTION.
13.

ALL LINES TO BE STAKED PRIOR TO CONSTRUCTION.
14.

THE CONTRACTOR SHALL PROVIDE AS-BUILTS PER VDOT REQUIREMENTS.
15.

ALL CONSTRUCTION DEBRIS SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED LANDFILL.
16.

REMOVE CURBING AND SIDEWALKS TO THE NEAREST EXPANSION JOINT TO PROVIDE A STRAIGHT, CLEAN, AND NEAT JOINT WITH THE NEW CURBING & SIDEWALK.
17.

ALL ASPHALT INTERFACES BETWEEN OLD AND NEW PAVEMENT MUST BE SAW CUT TO NEAT STRAIGHT LINES AND A TACK COAT SHALL BE APPLIED AT A RATE OF 0.1 GALLON PER SQUARE YARD OF RC-250 IMMEDIATELY PRIOR TO PLACING THE ASPHALT.
18.

IF REQUIRED, ALL WORK WITHIN THE RIGHT OF WAY TO FOLLOW ROANOKE CITY RIGHT OF WAY EXCAVATIONS STANDARDS. A RIGHT OF WAY EXCAVATION PERMIT MUST BE OBTAINED PRIOR TO BEGINING ANY WORK IN THE RIGHT OF WAY.
19.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER, FROM A QUALIFIED GEOTECHNICAL ENGINEER, MATERIAL TESTING REPORTS FOR ALL AGGREGATES, FILL AND BACKFILL. THESE REPORTS SHALL STATE THEIR COMPLIANCE WITH THE FOLLOWING:
CLASSIFICATION ACCORDING TO ASTM D 2487
LABORATORY COMPACTION CURVE ACCORDING TO ASTM D 698
LABORATORY COMPACTION CURVE ACCORDING TO ASTM D 1557

EARTHWORK

20.

ALL SOIL, SOIL PLACEMENT AND PAVEMENT CONSIDERATIONS SHALL BE AS RECOMMENDED BY A LICENSED GEOTECHNICAL ENGINEER OR THEIR ASSIGNED REPRESENTATIVE.
21.

THE CONTRACTOR SHALL PERFORM MINOR, INVESTIGATIVE EXCAVATIONS TO VERIFY LOCATION OF VARIOUS EXISTING UNDERGROUND FACILITIES AT SUFFICIENT LOCATIONS TO ASSURE THAT NO CONFLICT WITH THE PROPOSED WORK EXISTS AND SUFFICIENT CLEARANCE IS AVAILABLE TO AVOID DAMAGE TO EXISTING FACILITIES.
22.

SUBSEQUENT TO THE CLEARING AND ROUGH GRADING OPERATIONS AND PRIOR TO THE PLACEMENT OF THE FILL, THE EXPOSED SUBGRADE SOILS SHALL BE CAREFULLY INSPECTED. ANY UNSUITABLE MATERIAL THUS EXPOSED SHALL BE REMOVED AND REPLACED WITH A WELL COMPACTED AND SUITABLE MATERIAL. THE INSPECTION OF THESE PHASES SHALL BE PERFORMED BY A GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE. DENSITY TESTING AT THE DISCRETION OF THE SOILS ENGINEER SHALL BE PERFORMED AT THIS TIME.
23.

CUT OFF TREES, SHRUBS, BRUSH, AND VEGETATIVE GROWTH TWELVE INCHES MAXIMUM ABOVE GROUND. GRUB OUT STUMPS AND ROOTS 12 INCHES MINIMUM BELOW ORIGINAL GROUND SURFACE, EXCEPT UNDER BUILDINGS, REMOVE ROOTS ONE INCH AND LARGER ENTIRELY AND ENTIRELY REMOVE ROOTS OF PLANTS THAT NORMALLY SPROUT FROM ROOTS.
24.

DO NOT PULL UP OR RIP OUT ROOTS OF TREES AND SHRUBS THAT ARE TO REMAIN. IF EXCAVATION THROUGH ROOTS IS REQUIRED, EXCAVATE BY HAND AND CUT ROOTS WITH SHARP AXE. MAKE CLEAN, SMOOTH, SLOPING CUTS.
25.

STRIP EXISTING VEGETATION LAYER THREE INCHES DEEP MINIMUM FROM AREAS OF SITE TO RECEIVE BUILDINGS, LANDSCAPING, AND PAVING AND REMOVE FROM SITE BEFORE STRIPPING TOPSOIL FOR STORAGE AND REUSE.
26.

AFTER STRIPPING VEGETATION LAYER, STRIP EXISTING TOPSOIL TO DEPTHS AS INDICATED IN THE GEOTECHNICAL REPORT FROM AREAS OF SITE TO RECEIVE BUILDINGS AND PAVING AND STORE ON SITE FOR LATER USE.
27.

BEFORE MAKING CUTS, REMOVE TOPSOIL OVER AREAS TO BE CUT AND FILLED THAT WAS NOT PREVIOUSLY REMOVED. STOCKPILE THIS ADDITIONAL TOPSOIL WITH PREVIOUSLY STRIPPED TOPSOIL.
28.

THE FOUNDATIONS AND ABUTMENTS SHALL BEAR ON FIRM AND STABLE EXISTING SUBGRADE WHICH HAS BEEN PREPARED SO AS TO REMOVE ALL ORGANIC, LOOSE, AND GENERALLY UNSUITABLE MATERIAL.
29.

DURING GRADING OPERATIONS, THE CONTRACTOR SHALL GRADE ALL AREAS TO DRAIN TO PREVENT THE SATURATION OF THE SOILS. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE STOCKPILES FROM RAIN IF THE SOIL IS NEEDED FOR BACKFILL MATERIAL.
30.

THE CONTRACTOR SHALL PROOF-ROLL THE CONSTRUCTION AREA WITH HEAVY-PNEUMATIC EQUIPMENT. ALL UNSUITABLE MATERIAL SHALL BE UNDERCUT AND RECOMPACTED WITH APPROVED STRUCTURAL FILL MATERIAL.
31.

IF SOFT OR UNSUITABLE SOILS ARE OBSERVED AT THE FOOTING BEARING ELEVATIONS, THE UNSUITABLE SOILS ARE TO BE UNDERCUT AND REMOVED. ANY UNDERCUT TO BE BACKFILLED WITH LEAN CONCRETE OR COMPACTED VDOT NO. 21A STONE UP TO THE ORIGINAL DESIGN BOTTOM OF FOOTING ELEVATION. DO NOT USE VDOT NO. 57 STONE FOR UNDERCUT BACKFILLING. COORDINATE ALL FILL AND WORK WITH THE GEOTECHNICAL ENGINEER.
32.

EARTHWORK SHALL BE TO THE LINES AND GRADES SHOWN. PROOF-ROLLING AND COMPACTION TESTS SHALL BE ACCOMPLISHED IN THE FIELD TO ALL GRADED AREAS. THE GRADING SHALL CONFORM TO ELEVATIONS AND DIMENSIONS SHOWN TO WITHIN A TOLERANCE OF PLUS OR MINUS 0.10 FEET.
33.

ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE TESTING COMPANY AND BE WELL GRADED MATERIAL CONFORMING TO ASTM D2487 FREE FROM DEBRIS, ORGANIC MATERIAL, FROZEN MATERIALS, BRICK, LIME, CONCRETE, STONES GREATER THAN 4 INCHES DIAMETER, AND OTHER MATERIALS WHICH WOULD PREVENT ADEQUATE PERFORMANCE OF THE BACKFILL. NINETY PERCENT MINIMUM OF FILL MATERIAL SHALL BE SMALLER THAN 1/8-INCH UNDER BUILDINGS, PAVED AREAS, STRUCTURES. THE TOP 36 INCHES OF FILL BENEATH THE TOP SOIL IN LANDSCAPED AREAS SHALL HAVE STONES NO GREATER THAN 2 INCHES AND NINETY PERCENT OF FILL MATERIAL SHALL BE SMALLER THAN 3/4 INCH IN ANY DIRECTION.
34.

THE FILL SHALL BE PLACED IN 8 INCH LOOSE LAYERS, 4 INCH LOOSE LAYERS CLOSE TO STRUCTURES AND NARROW TRENCHES AND COMPACTED AS SPECIFIED.
35.

FILL MATERIALS SHALL BE ADEQUATELY KEYED INTO STRIPPED AND SCARIFIED SUBGRADE SOILS AND SHOULD, WHERE APPLICABLE, BE BENCHED INTO THE EXISTING SLOPES, THE SUBGRADE SHALL BE SCARIFIED A DEPTH OF 4" PRIOR TO FILL PLACEMENT TO ASSURE BONDING BETWEEN THE TWO SOILS.
36.

EXPOSED SUBGRADE WHICH HAS BEEN PREPARED TO ACCEPT FILL MATERIAL, SHALL BE CAREFULLY INSPECTED. ANY UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH A WELL COMPACTED MATERIAL. THE INSPECTION SHALL BE PERFORMED BY A SOILS ENGINEER.
37.

STRUCTURAL FILL INDEX PROPERTIES FOR BUILDING AND PAVEMENT AREAS ARE FOR BORROW SOILS LL<50, PI<25, AND FOR ON-SITE SOILS LL<60, PI<30. MAXIMUM PARTICLE SIZE IS 4" AND MAXIMUM ORGANIC CONTENT IS 3% DRY WEIGHT. ALL ON-SITE MATERIAL AND OFF-SITE BORROW MATERIAL SHALL BE APPROVED BY A GEOTECHNICAL ENGINEER.
38.

ALL FILL UNDER BUILDING PADS, ROADWAYS, PARKING LOTS, GRAVEL LOTS, UTILITIES AND SLOPES SHALL BE COMPACTED TO AT LEAST 95% OF THAT SOIL'S MAXIMUM DRY DENSITY ASTM D698 (STANDARD PROCTOR). THE COMPACTION SHALL BE ACCOMPLISHED BY PLACING THE FILL IN MAXIMUM 8 INCH LOOSE LIFTS AND COMPACTING EACH LIFT WITH HEAVY CONSTRUCTION EQUIPMENT TO THE REQUIRED DENSITY. THE MOISTURE CONTENT OF FILL SOILS SHALL BE MAINTAINED OF PLUS/MINUS 3.0 PERCENTAGE POINTS FROM THE OPTIMUM MOISTURE CONTENT.
39.

ON-SITE SILT TYPE SOILS ARE MOISTURE SENSITIVE AND BECOME DIFFICULT TO WORK IN WET WEATHER. WORKING WITH WET SOILS CAN RESULT IN DETERIORATION OF SUITABLE SOIL CONDITIONS OR DETERIORATION OF PREVIOUSLY AND PROPERLY COMPACTED FILL. CONTRACTOR IS RESPONSIBLE FOR AVOIDING SUCH DETERIORATION AND SUBSEQUENT OVER-EXCAVATION AND REPLACEMENT.
40.

A SOILS ENGINEER, OR A TECHNICIAN UNDER THE ENGINEERS DIRECTION, SHALL PERFORM FIELD DENSITY TESTS ON EACH LIFT AS NECESSARY, TO ASCERTAIN THAT ADEQUATE COMPACTION HAS BEEN ACHIEVED.

41.

REMOVE FROM SITE TREES, SHRUBS, UPROOTED STUMPS, VEGETATIVE LAYER, AND SURFACE DEBRIS AND DISPOSE OF LEGALLY. DO NOT BURY CUTTINGS, STUMPS, ROOTS, AND OTHER VEGETATIVE MATTER OR BURNT WASTE MATERIAL ON SITE.
42.

ENSURE THAT LAND DISTURBING PERMITS AND THE PROPER EROSION AND SEDIMENT CONTROLS ARE IN PLACE FOR THE CONSTRUCTION SITE AND FOR OFF-SITE BORROW AND SPOIL SITE.
43.

ROCK REMOVAL SHALL BE TO A DEPTH OF 12 INCHES BELOW BOTTOM OF DESIGNATED FOOTING ELEVATION, 8 INCHES BELOW THE EXTERIOR OF THE PIPE AND 6" BELOW THE UTILITY.
44.

MATERIAL USED TO FILL BETWEEN TOP OF ROCK AND BOTTOM OF FOOTING SHALL BE CONTROLLED FILL.

TOPSOIL MATERIAL AND PREPARATION

45.

TOPSOIL FURNISHED BY THE CONTRACTOR SHALL CONSIST OF A NATURAL FRIABLE SURFACE SOIL WITHOUT ADMIXTURES OF UNDESIRABLE SUBSOIL, REFUSE, OR FOREIGN MATERIALS. IT SHALL BE FREE FROM ROOTS, HARD CLAY, COARSE GRAVEL, STONES LARGER THAN ONE INCH IN ANY DIMENSION, WEEDS, SEEDS, TALL GRASS, BRUSH, STICKS, STUBBLE OR OTHER MATERIAL WHICH WOULD BE DETRIMENTAL TO THE PROPER DEVELOPMENT OF THE DESIRED VEGETATIVE GROWTH.
46.

TOPSOIL SHALL BE OBTAINED FROM NATURALLY WELL DRAINED SITES WHERE TOPSOIL OCCURS AT LEAST 4-INCHES DEEP. TOPSOIL SHALL NOT BE OBTAINED FROM BOGS OR MARSHES.

LANDSCAPING

47.

IN GRASS AND LANDSCAPED AREAS, PLACE THE TOPSOIL TO A MINIMUM DEPTH OF 4 INCHES. REMOVE EXISTING SOIL IF NEEDED. RAKE THE AREAS TO REMOVE ALL ROOTS, CLUMPS, STONES AND DEBRIS 3/4" OR GREATER IN ANY DIRECTION. TRUE UP ALL OF THE DEPRESSIONS, RUTS, MOUNDS AND EDGES. SCARIFY SUBSOIL TO A DEPTH OF 2 INCHES WHERE TOPSOIL IS TO BE PLACED. ESTABLISH A SMOOTH GRADE READY TO RECEIVE LANDSCAPING, SEED AND SOD. FINISH GRADE MUST BE ACCEPTABLE TO THE OWNER OR ENGINEER.
48.

SOW THE SEED AS SPECIFIED AND DISTRIBUTE EVENLY. DO NOT LAP SEED INTO THE SHRUBS AND PLANTING BEDS. RAKE THE SEED LIGHTLY INTO THE TOP 1/8 INCH OF THE TOPSOIL, ROLL LIGHTLY, APPLY MULCH AND WATER WITH A FINE SPRAY.
49.

WATERING AND MAINTENANCE OF ALL TREES, SHRUBS, GRASS, SOD AND PLANTINGS IS THE RESPONSIBILITY OF THE CONTRACTOR. THE SEEDBED SHALL BE KEPT MOIST FOR TWO TO THREE WEEKS TO ALLOW FOR GERMINATION, LONGER IF NEEDED. WATER LANDSCAPING AS RECOMMENDED BY THE SUPPLIER OR AS NEEDED BASED ON THE WEATHER CONDITIONS AND SEASON.
50.

REPLACE LANDSCAPING, INCLUDING GRASS, THAT IS DEAD OR APPEARS NON-HEALTHY OR NON-VIGOROUS AS DIRECTED BY THE ENGINEER OR OWNER WITHIN 10 DAYS OF NOTIFICATION.
51.

THE CONTRACTOR SHALL APPLY FERTILIZER AND WEED KILLERS AS NECESSARY TO PROMOTE THE GRASS GROWTH.
52.

ALL GRASS AREAS SHALL BE THICK, UNIFORM AND FREE OF DENUDED AREAS AND WEEDS.
53.

THE CONTRACTOR SHALL REPLACE/ REHABILITATE ALL DEAD/DYING TREES, SHRUBS, GRASS AND SOD WITHIN ONE YEAR OF SUBSTANTIAL COMPLETION. WHEN THESE ITEMS ARE REPLACED, THE WARRANTY PERIOD SHALL BE EXTENDED BY SIX MONTHS FROM THE TIME OF RE-PLANTING OR SOWING.

PAVEMENT, CURBS, AND GUTTER

54.

AGGREGATE BASE AND PAVING MUST BE PLACED BEFORE ANY MOISTURE OR SEASONAL CHANGES OCCUR TO SUBGRADE THAT WOULD CAUSE COMPACTION TESTS PREVIOUSLY PERFORMED TO BE ERRONEOUS. RECOMPACT AND RETEST SUBGRADE SOILS THAT HAVE BEEN LEFT EXPOSED TO WEATHER.
55.

SEE DETAIL SHEET FOR TYPICAL SECTIONS OF PROPOSED PAVEMENT TYPES (SUBJECT TO CHANGE BASED ON FIELD RUN CBR TESTING. ALL PAVEMENT SHALL COMPLY WITH VDOT SUPERPAVE SPECIFICATIONS AND STANDARDS.
56.

ALL WORK SHALL COMPLY WITH VDOT SPECIFICATIONS IN ACCORDANCE WITH THE LATEST REVISION OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS.

EROSION CONTROL NOTES

57.

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
58.

THE APPROVING AUTHORITY MAY ADD TO, DELETE, RELOCATE, OR OTHERWISE MODIFY CERTAIN MEASURES WHERE FIELD CONDITIONS WARRANT. EROSION CONTROL MEASURES SHOWN ARE NOT NECESSARILY ALL THAT WILL BE REQUIRED.
59.

EROSION CONTROL MEASURES SHALL BE INSTALLED IN ADVANCE OF WORK BEING PERFORMED, AS FAR AS PRACTICAL.
60.

IN NO CASE DURING CONSTRUCTION SHALL WATER RUNOFF BE DIVERTED OR ALLOWED TO FLOW TO LOCATIONS WHERE ADEQUATE PROTECTION HAS NOT BEEN PROVIDED.
61.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LEAVE THE SITE ADEQUATELY PROTECTED AGAINST EROSION, SEDIMENTATION, OR ANY DAMAGE TO ANY ADJACENT PROPERTY AT THE END OF EACH DAY'S WORK.
62.

THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EVERY ERODIBLE RAINFALL. ANY NECESSARY REPAIRS OR CLEANUP SHALL BE MADE IMMEDIATELY AND AT NO EXTRA COST TO THE OWNER. INSPECTIONS SHALL BE COMPLETED PER THE VARIOUS CONSTRUCTION GENERAL PERMIT.
63.

THE CONTRACTOR SHALL NOT ALLOW WATER RUNOFF TO FLOW OVER NEWLY GRADED UNPROTECTED VEGETATED SLOPES.

STORM-SEWER SYSTEMS & CULVERTS

64.

ALL CULVERTS AND STORM-SEWER SYSTEMS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE VDOT ROAD AND BRIDGE SPECIFICATIONS, LATEST EDITION AND THE VDOT ROAD AND BRIDGE STANDARDS, LATEST EDITION/REVISION. PIPES SHALL BE BEDDED PER PB-1, METHOD A.
65.

UNLESS INDICATED OTHERWISE WHERE PIPING OR STRUCTURES OF DIFFERING MATERIALS ARE CONNECTED, PROVIDE AN A3 CONCRETE ENCASED BLOCK THAT IS 12" LARGER THAN THE OUTSIDE DIAMETER OF THE PIPES AND EXTENDS 18" ONTO EACH PIPE OR STRUCTURE.
66.

INLET SHAPING SHALL CONFORM TO THE VDOT ROAD AND BRIDGE STANDARD 106.08, IS-1.

DATE: FEB. 5, 2024

REVISIONS

HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA
540.342.4002
www.HughesAE.com

Virginia Department
of Transportation

VDOT

CHEMICAL STORAGE BUILDING
SALEM DISTRICT AIRPORT AHQ
4330 THIRLANE RD, NW ROANOKE, VA 24019

DRAWN BY: JCB

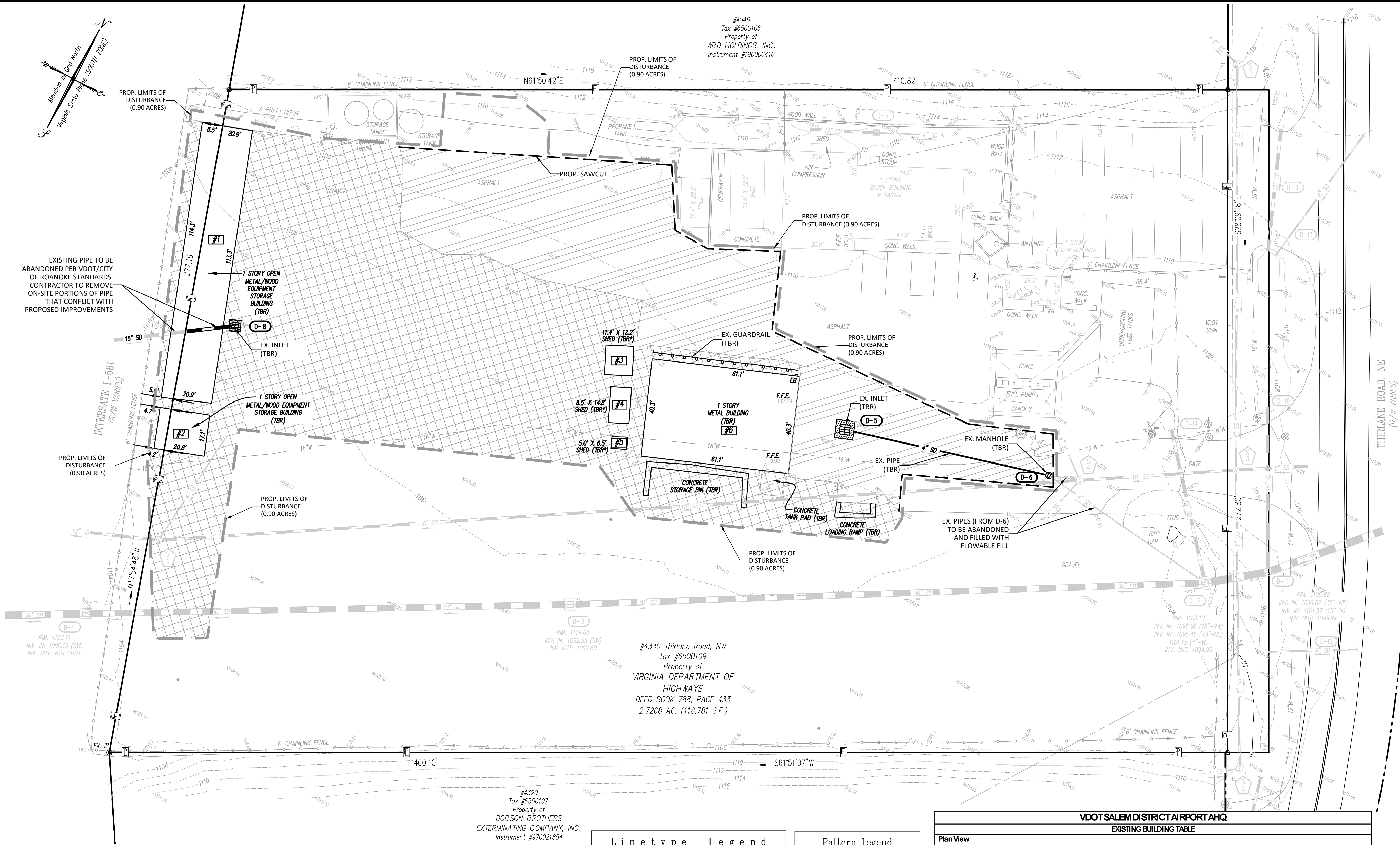
CHECKED BY: JCB

GENERAL
SITE
CONSTRUCTION
NOTES

PROJECT CODE:
501-18130-077



COMMISSION No.
23027
SHEET
C-101



SANITARY SEWER DATA TABLE						
#	STRUCTURE	RIM	INV.IN(1)	INV.IN(2)	INV.IN(3)	WVWA#
1	SSMH	1116.05	1113.15 (6" TCP)		1111.10 (8" TCP)	128-3021.0
2	SSMH	1110.73	1101.49 (4")		1101.45 (8" PVC)	128-3022.0
3	SSMH	1109.12	1097.75 (8" TCP-NE)	1100.77 (8" TCP-NW)	1098.70 (8" PVC-SE)	128-3001.0
4	SSMH	1106.85	1096.71 (10" TCP-NE)	1099.12 (4" PVC-NW)	1103.12 (4" PVC-FROM SDMH-W)	128-0112.0
5	SSMH	1104.54	1089.58 (10" TCP-NE)	1101.67 (4" PVC-N)	1089.49 (12" TCP)	128-0111.0

STORMDRAIN DATA TABLE						
#	STRUCTURE	TOP	INV.IN	INV.IN(2)	INV.IN(3)	INV.OUT
1	SDMH	1106.82	1096.02 (36" RCP-NE)	1101.37 (15" RCP-N)		1095.94 (36" RCP)
2	SDDI	1103.10	1098.95 (15" CMP-NW)	1095.45 (36" RCP-NE)	1101.15 (4" PVC-W)	1094.95 (30" RCP)
3	SDDI	1104.65	1092.55 (30" RCP-SW)			1092.60 (30" RCP)
4	SDDI	1103.71	1090.19 (30" RCP)			NOT SHOT
5	SDDI	1107.09	N/A (SEDIMENT)			N/A (SEDIMENT)
6	SDMH	1106.70	1103.20 (4" PVC-NW)		1103.15 (4" PVC-TO D-2)	1103.05 (4" PVC-TO SSMH S4)
7	SDDI	1109.35	1107.87 (4" CPP-NE)		1107.80 (12" PVC-SW)	
8	SDDI	1104.47				1101.47 (15" RCP)
9	15" CMP		1111.61			1108.81
10	15" RCP					1106.41
11	12" RCP		1108.44			1107.22
12	6" RCP		N/A			1106.59
13	6" CMP		N/A			1109.21
14	15" CMP					1105.12

Linetype Legend	
	Chain Link Fence
	Guard Rail
	Tree Line
	Storm and/or Sewer Pipe
	Existing Contour

Pattern Legend	
	Asphalt (Road/Parking)
	Concrete
	Gravel (Road/Parking)

Utilities Marked per Miss Utility Ticket #B311002511				
Company	Contact	Phone Number	Damage Contact Phone Number	Conflict
AEP (AEP111)	Brian Dowdy	(540) 204-5732	(800) 956-4237	No
Comcast (CMC503)	Cable Protection Services	(804) 562-3861	(877) 359-1821 ext opt 1	No
COX (COX668)	Utilitquest	(703) 754-2116	(877) 866-4474	No
CRN (CRN207)	Stake Center Locating	(801) 364-1063	(855) 933-4237	No
LMS (LMS546)	Stake Center Locating	(801) 364-1063	(801) 411-6930	No
LTC (LTC903)	Call Center	(877) 366-8344	(877) 336-8344 ext 3	Yes
Roanoke Gas (RGC540)	Jake Marxen	(540) 655-0277	(540) 777-4427	Yes
Verizon (VZN804)	Utilitquest	(804) 286-1721	(888) 483-1233	No
WWV (WWV853)	Michelle Niday	(540) 283-2981	(540) 283-2981	Yes

VDOT SALEM DISTRICT AIRPORT AHQ EXISTING BUILDING TABLE					
Plan View Bldg #	Building Name	FAACS#	Construction Date	Action	Notes
1	Spread Rack #1	2140849	1/1/1979	TBR	Asbestos report in Specs. Demo Permit Required
2	Spread Rack #2	2140850	12/23/1997	TBR	Asbestos report not required. Demo Permit Required
3	Storage Building #5	2140840	8/21/2003	TBR*	Relocated on Site. Asbestos report not required
4	Storage Building #1	2140836	1/1/1965	TBR*	Relocated on Site. Asbestos report required
5	Storage Shed #2	2140837	9/21/1985	TBR*	Relocated on Site. Asbestos report not required
6	Chemical Storage Building #1	2140845	1/1/1980	TBR	Asbestos report in Specs. Demo Permit Required

SURVEY NOTES:

- THIS PLAN IS BASED ON A CURRENT FIELD SURVEY PERFORMED BY LUMSDEN AND ASSOCIATES DATED JUNE 6TH 2023.
- THIS PLAT WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND ENCUMBRANCES MAY EXIST THAT AFFECT THE SUBJECT PROPERTY THAT ARE NOT SHOWN HEREON.
- THE PROPERTY AS SHOWN HEREON DOES NOT LIE WITHIN THE LIMITS OF A SPECIAL FLOOD HAZARD AREA AS DESIGNATED BY F.E.M.A. THIS OPINION IS BASED ON AN INSPECTION OF THE FLOOD INSURANCE RATE MAP AND HAS BEEN VERIFIED BY ACTUAL FIELD ELEVATIONS. SEE MAP NUMBER 51161C0153G, DATED SEPTEMBER 28, 2007. ZONE "X" UN-SHADED, AREA OF MINIMAL FLOOD HAZARD.
- THE VERTICAL CONTROL (NAVD 88) FOR THIS PROJECT WAS BASED ON TRIMBLE'S KEYNET VRS GPS NETWORK.
- CONTOURS AS SHOWN ARE AT A 2-FOOT CONTOUR INTERVAL.
- THIS PLAT DOES NOT GUARANTEE THE EXISTENCE OR LOCATION OF ANY UNDERGROUND UTILITIES. ALL SURFACE UTILITIES WERE FIELD LOCATED. ALL UNDERGROUND UTILITIES SHOWN WERE ESTABLISHED USING ABOVE GROUND STRUCTURES, MARKINGS, AVAILABLE UTILITY MAPS AND MISS UTILITY MARKINGS. ALL UNDERGROUND UTILITY LINES ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED PRIOR TO THE START OF ANY CONSTRUCTION.

SYMBOL LEGEND

	Existing Property Monument
	Property Corner
	Property Line
	Sign
	Bollard
	Mailbox
	Gas Meter
	Gas Valve
	Water Meter
	Water Manhole
	Fire Hydrant
	Water Valve
	Sanitary Sewer Manhole
	Cleanout
	Storm Drainage Manhole
	Telephone Pedestal
	Utility Pole
	Guy Wire
	Street Light
	Lamp Post
	Electric Meter
	Cable TV Pedestal
	Fuel Cap
	Sanitary Sewer Tag
	Storm Sewer Tag
	Telephone Manhole

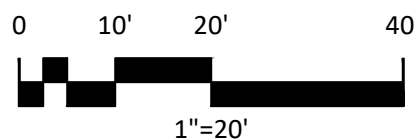
ABBREVIATIONS	DESCRIPTION
AEP	American Electric Power
CMP	Corrugated Metal Pipe
CONC.	Concrete
CPP	Corrugated Plastic Pipe
EX.	Existing
EB	Electric Box/Panel
FFE	Finished Floor Elevation
INVERT	Invert
IP	Iron Pin
OU	Overhead Utilities
PVC	Polyvinyl Chloride Pipe
RCP	Reinforced Concrete Pipe
SD	Storm Drainage
SDMH	Storm Drainage Manhole
SS	Sanitary Sewer Line
SSMH	Sanitary Sewer Manhole
TCP	Terra Cotta Pipe
UE	Underground Electric
UG	Underground Gas
UT	Underground Telephone
VCP	Vitrified Clay Pipe
W	Waterline
WVWA	Western Virginia Water Authority
+1105.24	Spot Elevation
TBR	To Be Removed
TBR*	To Be Relocated
FG	Finished Grade Spot
FFE	Finished Floor Elevation

DEMOLITION NOTES:

- CONTRACTOR TO COORDINATE WITH OWNER TO DETERMINE NEW LOCATION FOR RELOCATED EQUIPMENT STORAGE BUILDING.
- CONTRACTOR TO TAKE EXTRA CARE WHEN DEMOLISHING STRUCTURES OVER EXISTING WATER AND SEWER LINES TO ENSURE THE LINES ARE NOT DAMAGED AND UTILITY SERVICE IS NOT INTERRUPTED.

LEGEND

	LIMITS OF DISTURBANCE
	TO BE REMOVED
	TO BE RELOCATED ON-SITE. LOCATION TO BE CONFIRMED WITH VDOT
	PLAN VIEW BUILDING NUMBER CORRESPONDING TO EXISTING BUILDING TABLE
	EX. ASPHALT TO BE REMOVED
	EX. GRAVEL PAVING TO BE REMOVED



DATE: FEB. 5, 2024

REVISIONS	
△	
△	
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HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
2800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA 24012-4002
WWW.HUGHESAE.COM

Virginia Department of Transportation
VDOT
CHEMICAL STORAGE BUILDING
SALEM DISTRICT AIRPORT AHQ
4330 THIRLANE RD, NW ROANOKE, VA 24019

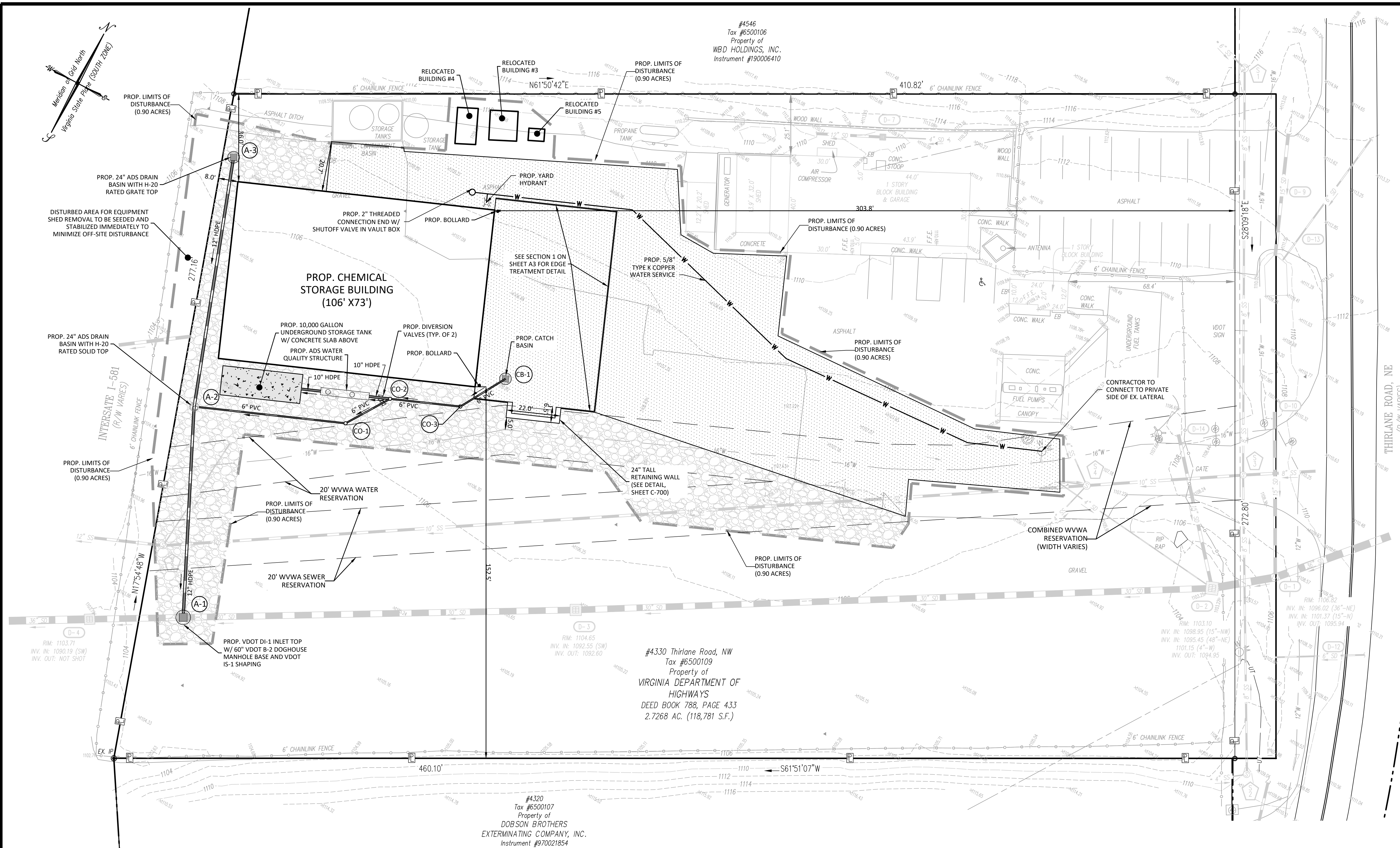
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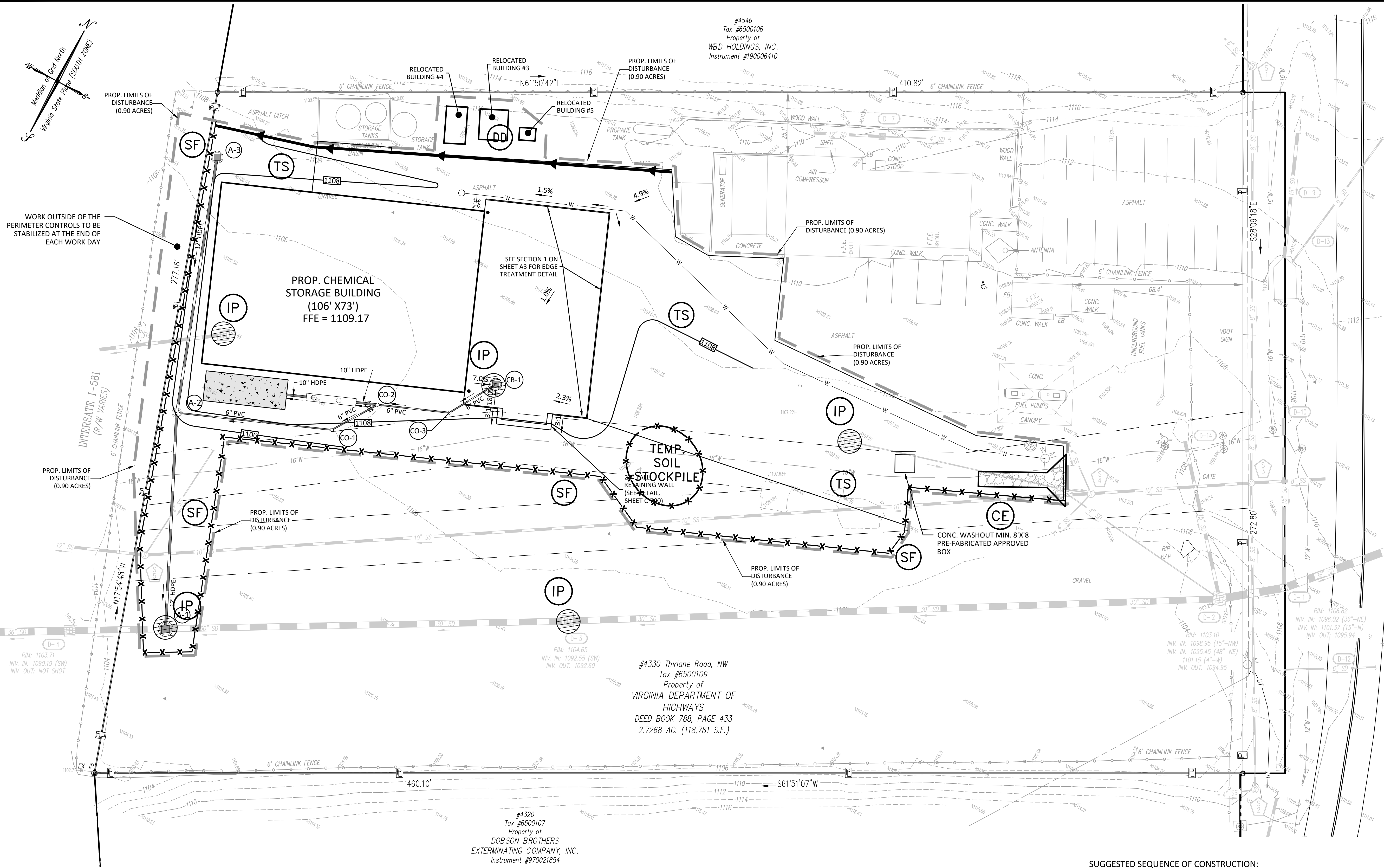
EXISTING CONDITIONS AND DEMOLITION PLAN

PROJECT CODE:
501-18130-077



COMMISSION NO.
23027
SHEET
C-200





EROSION & SEDIMENT CONTROL NOTES:

1. REFER TO THE PLAN SET FOR E&S REQUIREMENTS AND SPECIFICATIONS AND THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 1992 EDITION.
2. THE CONTRACTOR SHALL PLACE ALL EXCAVATED SPOILS ON THE UPPER SIDE OF THE TRENCH TO PREVENT SEDIMENT FROM LEAVING THE SITE.
3. SEE EROSION AND SEDIMENT CONTROL DETAIL SHEETS FOR ADDITIONAL EROSION AND SEDIMENT CONTROL DETAILS.
4. NO GRADING IS PERMITTED WITHOUT A DEQ/DCR CERTIFIED "RESPONSIBLE LAND DISTURBER" PRESENT.
5. CONSTRUCTION SHOULD BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
6. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS A FIRST STEP OF CONSTRUCTION.
7. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES. INSPECTIONS ARE TO BE MADE EVERY FOUR DAYS AND AFTER EVERY ERODIBLE RAINFALL.
8. THE GRADING INSPECTION PERSONNEL SHALL REPAIR ALL DAMAGED OR DEFICIENT CONTROL MEASURES IMMEDIATELY UPON DISCOVERY OF DAMAGE OR UPON NOTIFICATION OF THE DEFICIENCY.
9. ONCE THE SITE IS STABILIZED, REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL ITEMS.
10. REMOVE ALL EXCAVATED AND EXCESS SOIL FROM THE SITE AND COMPACT AREA PRIOR TO PLACING AGGREGATE FOR THE BASE MATERIAL.
11. THE CONTRACTOR SHALL ADD EROSION AND SEDIMENT CONTROLS AS INSTRUCTED BY THE CITY OF ROANOKE AND STATE OF VIRGINIA OFFICIALS HAVING JURISDICTION. THESE CONTROLS SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
12. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF A SEPARATE EROSION CONTROL PLAN REQUIRED FOR EXCAVATED MATERIAL FROM, OR IMPORT MATERIAL FOR THE SITE FROM ANY OFF-SITE LOCATION.
13. TOPSOIL SHALL NOT BE PLACED WHILE IN A FROZEN OR MUDDY CONDITION, WHEN TOPSOIL OR SUBGRADE IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING OR PROPOSED SODDING OR SEEDING. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED TO A MINIMUM COMPACTED DEPTH OF 4 INCHES.
14. NO SLOPES SHALL BE STEEPER 3:1
15. THE LOCATION OF THE SOIL STOCKPILE WILL MOVE WITHIN THE CONSTRUCTION LIMITS AS THE SITE DEVELOPS. THE PROJECT MAY REQUIRE MULTIPLE SOIL STOCKPILE LOCATIONS.
16. A RESPONSIBLE LAND DISTURBER (RLD) CURRENTLY REGISTERED WITH THE VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (VDEQ) MUST BE IDENTIFIED FOR THE PROJECT PRIOR TO ISSUANCE OF A LAND DISTURBANCE PERMIT
17. THE CONTRACTOR SHALL DECLARE THE LOCATIONS OF ALL BORROW, SPOIL/WASTE SITES AT OR BEFORE THE PRE-CONSTRUCTION MEETING PRIOR TO THE LAND DISTURBANCE PERMIT BEING ISSUED. ALL SITES SHALL BE VDEQ PERMITTED

CONSTRUCTION ENTRANCE NOTE:

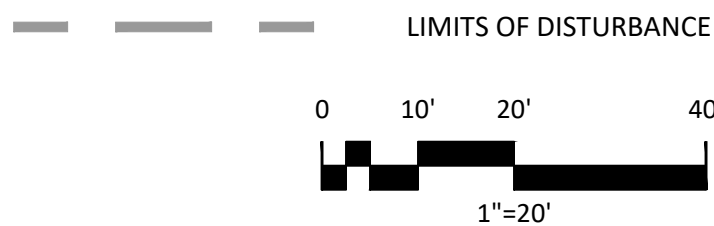
CONTRACTOR TO COORDINATE WITH CITY OF ROANOKE SITE INSPECTOR REGARDING THE NEED FOR CONSTRUCTION ENTRANCE AND/OR ALTERNATIVE LOCATION TO WHAT IS SHOWN ON THE PLANS. CONTRACTOR MAY UTILIZE THE EXISTING GRAVEL OR ASPHALT PAVING AND EXISTING ON-SITE WATER SOURCE TO ADEQUATELY CLEAN CONSTRUCTION VEHICLES BEFORE LEAVING THE SITE TO PREVENT SEDIMENT TRACK-OUT.

SUGGESTED SEQUENCE OF CONSTRUCTION:

1. CONTACT VIRGINIA 811 AND PRIVATE UTILITY LOCATING COMPANY TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES.
2. THE CONTRACTOR SHALL INSTALL THE PERIMETER EROSION AND SEDIMENT CONTROL MEASURES INCLUDING THE CONSTRUCTION ENTRANCE, INLET PROTECTION AND SILT FENCE AS SHOWN ON THIS PLAN BEFORE ANY LAND DISTURBANCE TAKES PLACE.
3. DEMOLISH EXISTING FEATURES AS NOTED IN THIS PLAN SET.
4. INSTALL PROPOSED FACILITIES AS SHOWN IN THIS SITE PLAN.
5. INSTALL PERMANENT STABILIZATION MEASURES.
6. PERIMETER CONTROLS MAY BE REMOVED WITH PERMISSION FROM THE CITY OF ROANOKE E&S INSPECTOR ONCE UPSTREAM AREAS ARE STABILIZED.
7. CITY OF ROANOKE E&S INSPECTOR MAY MODIFY CONTROLS BASED ON SITE CONDITIONS. THIS MAY INCLUDE ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES IF DEEMED NECESSARY.

LEGEND

KEY	TITLE	NO.	SYMBOL
CE	CONSTRUCTION ENTRANCE	3.02	
SF	SILT FENCE	3.05	
SSF	SUPER SILT FENCE	3.05	
IP	INLET PROTECTION	3.07	
DD	TEMPORARY DIVERSION DIKE	3.09	
TS	TEMPORARY SEEDING	3.31	TS
PS	PERMANENT SEEDING	3.32	PS
MU	MULCHING	3.35	MU
B/M	SOIL STABILIZATION BLANKETS & MATTING	3.36	B/M



REVISIONS	DATE: FEB. 5, 2024
1	
2	
3	
4	

HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA 24012
540.342.4002
www.hughesassoc.com

VDOT Virginia Department of Transportation
CHEMICAL STORAGE BUILDING
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4330 THIRLANE RD, NW ROANOKE, VA 24019

DRAWN BY: JCB
CHECKED BY: JCB

EROSION AND SEDIMENT CONTROL PLAN

PROJECT CODE:
501-18130-077

COMMONWEALTH OF VIRGINIA
12/06/2024
JOHNATHAN C. BRODIE
Lic. No. 053540
PROFESSIONAL ENGINEER

COMMISSION NO.
23027
SHEET
C-500

EROSION & SEDIMENT CONTROL MINIMUM STANDARDS

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
THE LOCATION OF SEEDING IS SHOWN AND SPECIFIED ON THE EROSION CONTROL PLAN SHEET.
2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
SOIL STOCKPILES STORED ON-SITE ARE TO BE STABILIZED & PROTECTED. CONTRACTOR RESPONSIBLE FOR PERMITTING AND INSTALLATION OF E & S MEASURES AT OFF-SITE HAUL/BORROW AND WASTE SITES (IF NECESSARY).
3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
ALL DISTURBED AREAS, NOT PERMANENTLY STABILIZED, SHALL RECEIVE PERMANENT SEEDING OR LANDSCAPING AS SHOWN ON THE PLANS.
4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
EROSION CONTROL MEASURES ARE SHOWN ON THE EROSION CONTROL PLAN SHEET & EXPLAINED IN THE E&S NARRATIVE.
5. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
DIVERSION DIKES TO BE STABILIZED PER VESCH STANDARDS ONCE INSTALLED.
6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.

6.a. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CY/AC OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.

6.b. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CY/AC OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YR. STORM OF 24-HR. DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.
NOT APPLICABLE TO THIS PROJECT.
7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
NOT APPLICABLE TO THIS PROJECT
8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
NOT APPLICABLE TO THIS PROJECT.
9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
NOT EXPECTED TO BE AN ISSUE. CONTRACTOR TO NOTIFY THE SITE ENGINEER IF THIS IS ENCOUNTERED.
10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
INLET PROTECTION MEASURES ARE SHOWN ON THE EROSION CONTROL PLAN SHEETS.
11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
NOT APPLICABLE TO THIS PROJECT. PROPOSED STORM DRAIN WITH CONNECT INTO EXISTING STORM SEWER SYSTEM.
12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
NOT APPLICABLE TO THIS PROJECT.
13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
NOT APPLICABLE TO THIS PROJECT.
14. ALL APPLICABLE FEDERAL, STATE AND LOCAL CHAPTERS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
NOT APPLICABLE TO THIS PROJECT.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
NOT APPLICABLE TO THIS PROJECT.
16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

16.a. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.

16.b. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.

16.c. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.

16.d. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.

16.e. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.

16.f. APPLICABLE SAFETY CHAPTERS SHALL BE COMPLIED WITH.
THESE PRACTICES ARE TO BE FOLLOWED DURING INSTALLATION OF ALL UTILITY LINES SHOWN ON THESE PLANS.
17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
A CONSTRUCTION ENTRANCE IS SHOWN ON THE PLANS.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
THIS IS NOTED WITHIN THE E&S NARRATIVE.
19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS:

a. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.

b. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
- (1) THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE

- HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
- (a) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
- (b) ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
- (c) PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
- c. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:

(1) IMPROVE THE CHANNELS TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL BED OR BANKS; OR

(2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES; OR

(3) DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL; OR

(4) PROVIDE A COMBINATION OF CHANNEL IMPROVEMENTS, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE VESCP AUTHORITY TO PREVENT DOWNSTREAM EROSION.
- d. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
- e. ALL HYDROLOGICAL ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
- f. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESCP OF PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.
- g. OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.
- h. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
- i. INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION OF ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, OR TO A DETENTION FACILITY.
- j. IN APPLYING THESE STORMWATER RUNOFF CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.
- k. ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER WHICH MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS AND OTHER WATERS OF THE STATE.
- l. ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS IF THE PRACTICES AREA DESIGNED TO (i) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (ii) DETAIN AND RELEASE OVER A 24-HOUR PERIOD THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (iii) REDUCE THE ALLOWABLE PEAK FLOW RATE RESULTING FROM THE 1.5, 2, AND 10-YEAR, 24-HOUR STORMS TO A LEVEL THAT IS LESS THAN OR EQUAL TO THE PEAK FLOW RATE FROM THE SITE ASSUMING IT WAS IN A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN IT WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN ITS PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO § 62.1-44.15-54 OR 62.1-44.15-65 OF THE ACT.
- m. FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15-52 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (§ 62.1-44.15-24 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES (i) ARE IN ACCORDANCE WITH PROVISIONS FOR TIME LIMITS ON APPLICABILITY OF APPROVED DESIGN CRITERIA IN 9VAC25-870-47 OR GRANDFATHERING IN 9VAC25-870-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMF) REGULATIONS, IN WHICH CASE THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15-52 A OF THE ACT SHALL APPLY, OR (ii) ARE EXEMPT PURSUANT TO § 62.1-44.15-34 C 7 OF THE ACT.
- n. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-870-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMF) PERMIT REGULATIONS SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF THIS SUBDIVISION 19.

THIS PROJECT PROPOSES LESS THAN 1 ACRE OF LAND DISTURBANCE AND DOES NOT TRIGGER VSMF PERMIT REQUIREMENTS. THE PLAN FOLLOWS THE EXISTING DRAINAGE PATTERNS AND RESULTS IN NO CHANGES TO THE TOTAL IMPERVIOUS LAND COVER. THEREFORE, IT IS NOT ANTICIPATED THAT THIS DEVELOPMENT WILL HAVE A NEGATIVE IMPACT THE DOWNSTREAM PROPERTIES.

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION
THIS PROJECT CONSISTS OF THE CONSTRUCTION OF A NEW CHEMICAL STORAGE BUILDING AND ASSOCIATED DRAINAGE INFRASTRUCTURE ON AN EXISTING VDOT MAINTENANCE YARD. THE EXISTING CHEMICAL STORAGE BUILDING AND ASSOCIATED STRUCTURES WILL BE REMOVED. THE PROJECT DISTURBS 0.90 ACRES SO A VSMF CONSTRUCTION GENERAL PERMIT IS NOT REQUIRED. THE PROJECT WILL FOLLOW THE EXISTING DRAINAGE DIVIDES AND PROPOSES NO CHANGE IN IMPERVIOUS COVER. IT IS NOT ANTICIPATED THAT THIS DEVELOPMENT WILL HAVE A NEGATIVE IMPACT ON THE ADJACENT OR DOWNSTREAM PROPERTIES.

EXISTING SITE CONDITIONS
THE EXISTING SITE IS A VDOT FACILITY THAT IS MOSTLY PAVED (GRAVEL AND ASPHALT) WITH VARIOUS BUILDINGS AND SHEDS ACROSS THE PROPERTY. THE SITE GENERALLY DRAINS FROM EAST TO WEST TOWARDS THE I-581 RIGHT-OF-WAY. LARGE DIAMETER WATER, SANITARY SEWER AND STORM SEWER MAINS CROSS THE SITE FROM EAST TO WEST.

ADJACENT PROPERTY
THE SITE IS BORDERED ON THE NORTH AND SOUTH BY INDUSTRIAL USES; INTERSTATE I-581 TO THE WEST; AND THIRLANE ROAD TO THE EAST. THE ROANOKE/BLACKSBURG REGIONAL AIRPORT IS LOCATED ACROSS THIRLANE ROAD FROM THE SITE.

OFF-SITE AREAS
THE ONLY OFF-SITE DISTURBANCE IS FOR REMOVAL OF THE EXISTING EQUIPMENT SHEDS THAT EXTEND BEYOND THE PROPERTY LINE. CONTRACTOR TO OBTAIN THE NECESSARY PERMITS/PERMISSION PRIOR TO COMMENCING DEMOLITION OF THESE STRUCTURES.

SOILS
THE PREDOMINANT SOIL WITHIN THE SITE IS UDORTHENTS-URBAN LAND COMPLEX.

CRITICAL EROSION AREAS
THERE ARE NO CRITICAL EROSION AREAS ASSOCIATED WITH THIS DEVELOPMENT.

EROSION AND SEDIMENT CONTROL MEASURES
UNLESS OTHERWISE STATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (1992 EDITION). IF DURING CONSTRUCTION, ADDITIONAL EROSION CONTROL DEVICES ARE DEEMED NECESSARY, THEY WILL BE INSTALLED AS DIRECTED BY THE SITE DESIGNER OR CITY PERSONNEL.

STRUCTURAL PRACTICES

1. CONSTRUCTION ENTRANCE - 3.02: CONSTRUCTION ENTRANCE WILL BE INSTALLED AT THE EXISTING ENTRANCE ON MEXICO WAY.
2. SILT FENCE - 3.05: SILT FENCE TO BE PLACED AROUND THE PERIMETER OF THE PROJECT SITES AS INDICATED ON THE PLANS.
3. STORM DRAIN INLET PROTECTION - 3.07: INLET PROTECTION TO BE PLACED AROUND THE NEW AND EXISTING INLETS AS SHOWN ON THE PLANS.
4. DIVERSION DIKES - 3.09: DIVERSION DIKES TO BE INSTALLED PER PLAN TO PREVENT OFF-SITE WATER FROM ENTERING THE PROJECT AREA.

VEGETATIVE PRACTICES

TEMPORARY SEEDING - 3.31 TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE, BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. REFERENCE IS MADE TO THE 1992 EROSION AND SEDIMENT CONTROL HANDBOOK ADDRESSING MINIMUM NUMBERS ONE AND THREE (MS-1, MS-3).

PERMANENT SEEDING - 3.32 PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN A YEAR. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IN THE OPINION OF THE LOCAL PROGRAM ADMINISTRATOR OR HIS DESIGNATED AGENT, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION. REFERENCE IS MADE TO THE 1992 EROSION AND SEDIMENT CONTROL HANDBOOK ADDRESSING MINIMUM NUMBERS ONE AND THREE (MS-1, MS-3). ALL AREAS DISTURBED BY CONSTRUCTION WILL BE STABILIZED WITH PERMANENT SEEDING WITHIN SEVEN DAYS AFTER FINISH GRADING. PERMANENTLY SEEDED AREAS WILL BE PROTECTED WITH STRAW MULCH. REFERENCE IS MADE TO THE 1992 EROSION AND SEDIMENT CONTROL HANDBOOK ADDRESSING MINIMUM STANDARD NUMBERS ONE AND THREE (MS-1 & MS-3).

MULCHING - 3.35 MULCHING TO BE USED IN CONJUNCTION WITH PERMANENT SEEDING AS INDICATED WITHIN THE SEEDING SCHEDULE.

MANAGEMENT STRATEGIES

1. CONSTRUCTION SHOULD BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. EROSION AND SEDIMENT CONTROL DEVICES WILL BE INSTALLED AS A FIRST STEP OF CONSTRUCTION.
3. THE GRADING CONTRACTOR WILL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES. INSPECTIONS ARE TO BE MADE PERIODICALLY AND AFTER EVERY ERODIBLE RAINFALL.
4. THE GRADING INSPECTION PERSONNEL WILL MAKE REPAIRS TO DAMAGED OR DEFICIENT CONTROL MEASURES IMMEDIATELY UPON DISCOVERY OF DAMAGE OR UPON NOTIFICATION OF THE DEFICIENCY.

STORMWATER MANAGEMENT
STORMWATER MANAGEMENT MEASURES ARE NOT PROPOSED SINCE THIS PROJECT DISTURBS LESS THAN ONE ACRE, HONORS EXISTING DRAINAGE DIVIDES AND DOES NOT RESULT IN AN INCREASE IN IMPERVIOUS AREA.

REMOVAL OF CONTROL MEASURES
ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES WILL BE REMOVED WITHIN THIRTY DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED AND WITH THE APPROVAL FROM THE CITY OF ROANOKE SITE INSPECTOR.

GENERAL EROSION & SEDIMENT CONTROL NOTES

FROM VESCH THIRD EDITION 1992

ES-1
UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VACS0-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-3
ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4
A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5
PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND TO THE PLAN APPROVING AUTHORITY FOR APPROVAL.

ES-6
THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO CONTROL EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7
ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-9
THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES ONCE EVERY FIVE BUSINESS DAYS AND WITHIN 48 HOURS FOLLOWING A MEASURABLE RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

DATE: FEB. 5, 2024

REVISIONS

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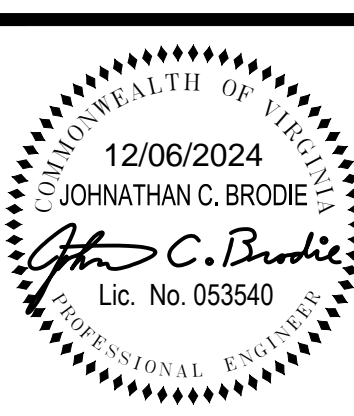


DRAWN BY: JCB

CHECKED BY: JCB

EROSION AND SEDIMENT CONTROL NOTES

PROJECT CODE:
501-18130-077



COMMISSION No.
23027
SHEET
C-501

TABLE 3.31-B (Revised June 2003) TEMPORARY SEEDING SPECIFICATIONS QUICK REFERENCE FOR ALL REGIONS		
SEED		
APPLICATION DATES	SPECIES	APPLICATION RATES
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (olium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 - 100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (olium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)
FERTILIZER & LIME		
• Apply 10-10-10 fertilizer at a rate of 450 lbs. / acre (or 10 lbs. / 1,000 sq. ft.) • Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)		
NOTE: 1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site. 2 - Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means. 3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4. 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs		

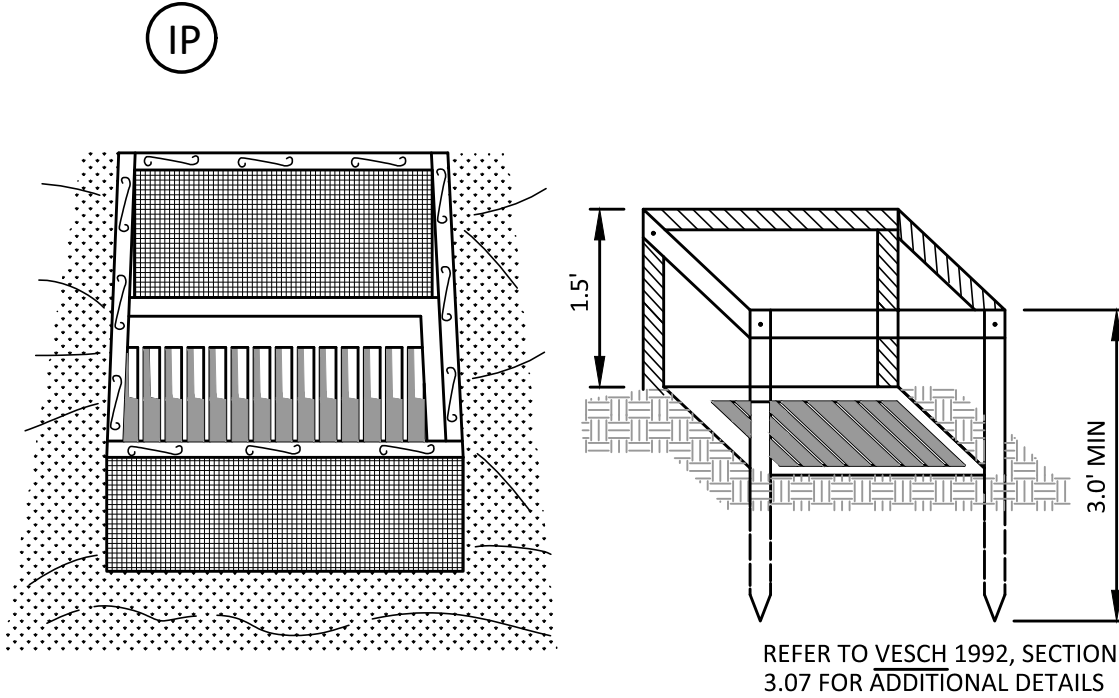
TABLE 3.32-C (Revised June 2003) PERMANENT SEEDING SPECIFICATIONS FOR APPALACHIAN/MOUNTAIN AREA		
SEED ¹		
LAND USE	SPECIES	APPLICATION RATES
Minimum Care Lawn, (Commercial or Residential)	Tall Fescue ²	90-100%
	Perennial Ryegrass ²	0-10%
	Kentucky Bluegrass ³	0-10%
		TOTAL: 200-250 lbs.
High-Maintenance Lawn	Minimum of three (3) up to five (5) varieties of Kentucky Bluegrass from approved list for use in Virginia	TOTAL: 125 lbs.
General Slope (3:1 or less)	Tall Fescue ⁴	128 lbs.
	Red Top Grass or Creeping Red Fescue	2 lbs.
	Seasonal Nurse Crop ⁵	20 lbs.
		TOTAL: 150 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue ⁴	108 lbs.
	Red Top Grass or Creeping Red Fescue	2 lbs.
	Seasonal Nurse Crop ⁵	20 lbs.
	Crownvetch ⁴	20 lbs.
		TOTAL: 150 lbs.
1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4864 or at http://sudan.ces.vt.edu/html/Turf/turfpublications/publications2.html		
2 - Perennial Ryegrass will germinate faster and at lower soil temperatures than Tall Fescues, thereby providing cover and erosion resistance for seedbed.		
3 - Use seasonal nurse crop in accordance with seeding dates as stated below:		
March, April - May 15 th Annual Rye		
May 16 th - August 15 th Foxtail Millet		
August 16 th - September, October Annual Rye		
November - February Winter Rye		
4 - All legume seed must be properly inoculated. If Plattea is used, increase to 30 lbs/acre. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40 lbs/acre.		
FERTILIZER & LIME		
• Apply 10-20-10 fertilizer at a rate of 500 lbs. / acre (or 12 lbs. / 1,000 sq. ft.) • Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)		
NOTE: - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site. - Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means. - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4. 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs		

MULCH: STRAW OR FIBER MULCH SHALL BE USED OVER ALL SEEDED AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION

MULCHING RATE:
STRAW OR HAY: 1.5-2 TONS/ACRE (70-90 LBS./1000 SF.)
FIBER MULCH: 1500 LBS./ACRE (35 LBS./1000 SF.)

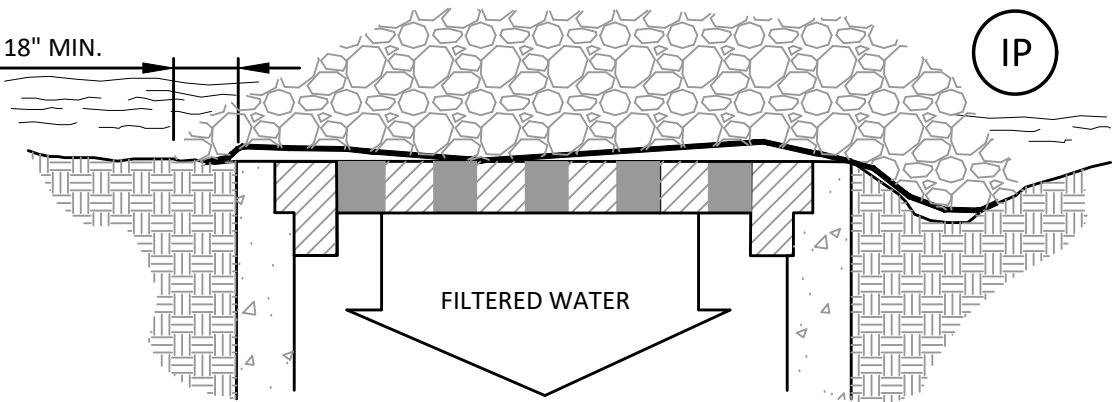
MULCHING

(MU)



SILT FENCE DROP INLET PROTECTION

NO SCALE

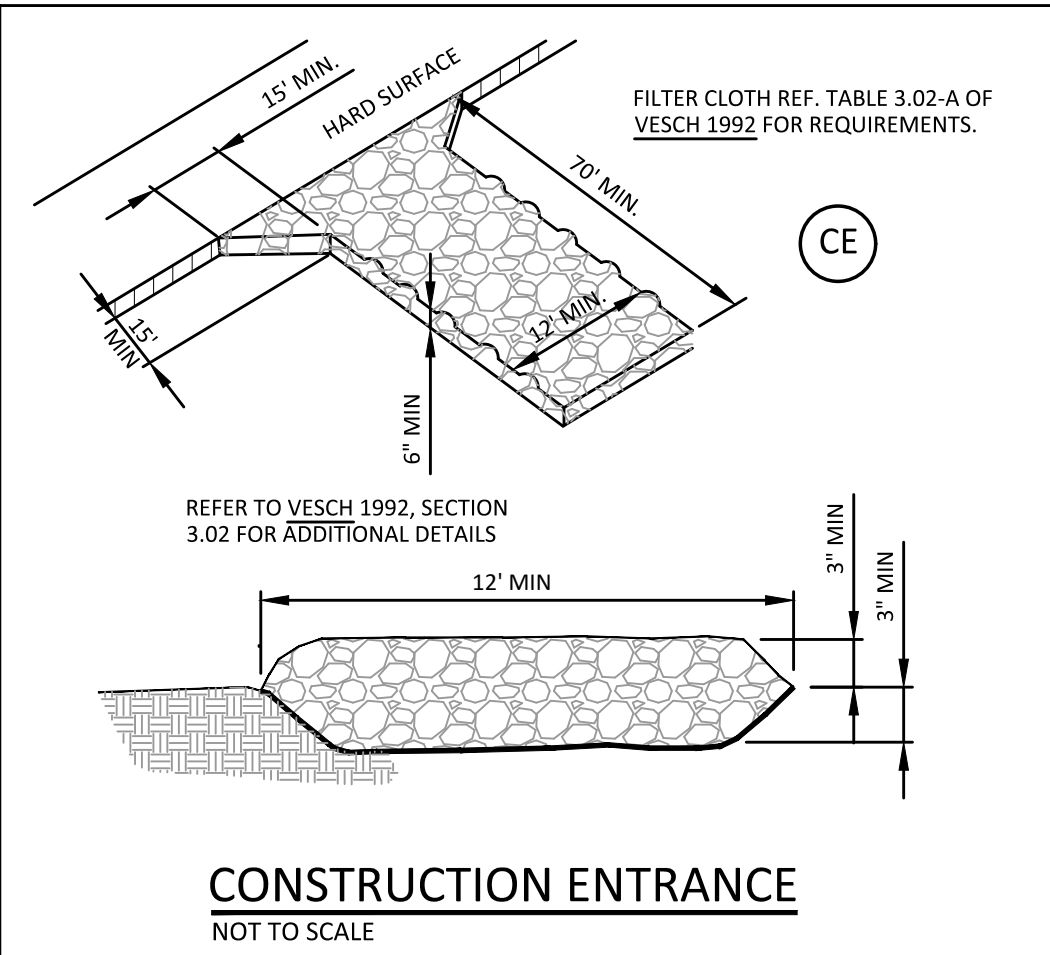


SPECIFIC APPLICATION
THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY CONCENTRATED FLOWS ARE EXPECTED, BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.
* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.

GRAVEL & WIRE MESH DROP INLET SEDIMENT FILTER

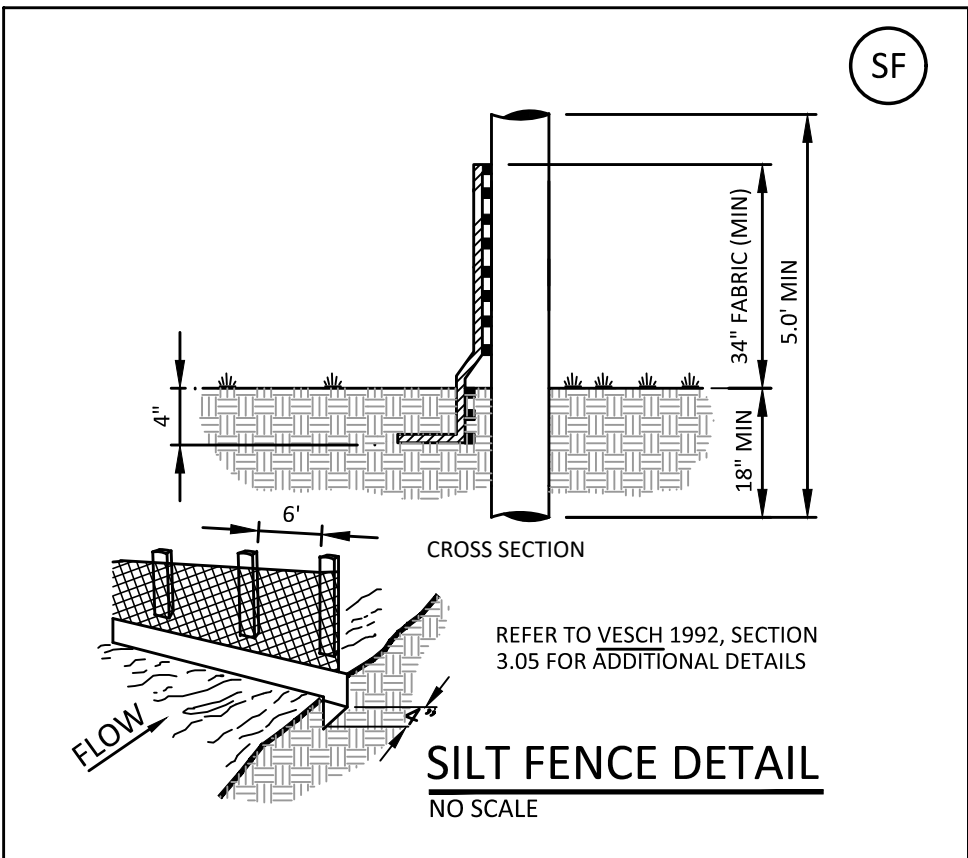
NOT TO SCALE

NOTE: GRAVEL MESH SEDIMENT FILTER MAY BE USED IN AREAS OUTSIDE OF LIMITS OF DISTURBANCE, IF PREFERRED, TO MINIMIZE DISRUPTIONS TO VEHICULAR FLOW.



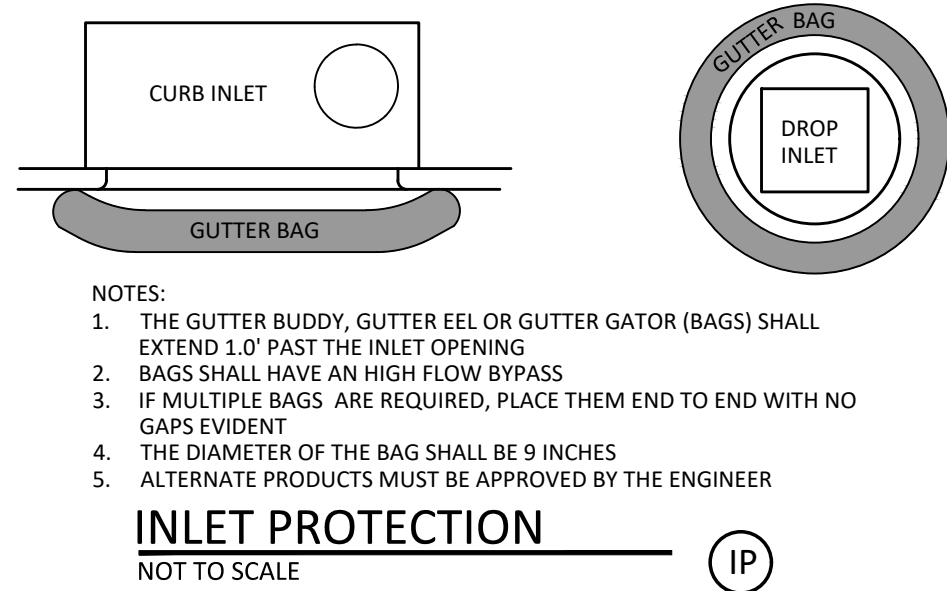
CONSTRUCTION ENTRANCE

NOT TO SCALE



SILT FENCE DETAIL

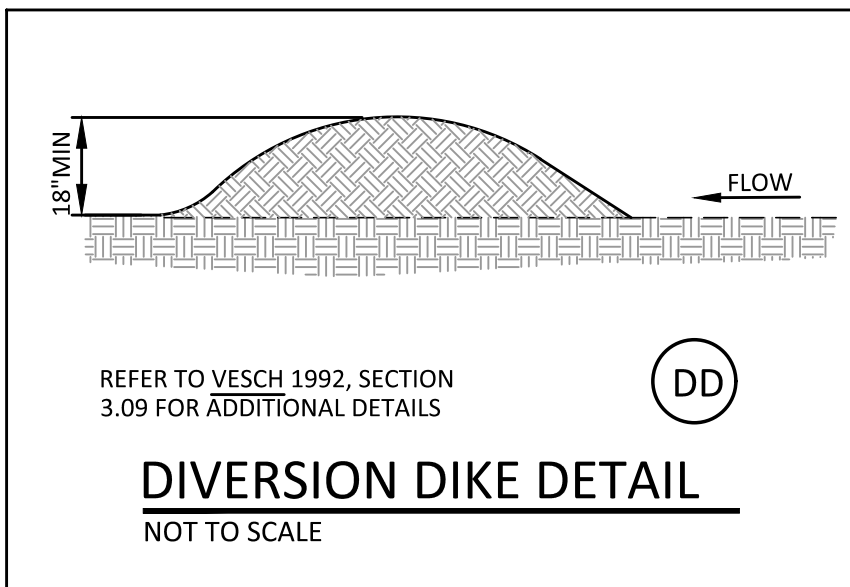
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- NOTES:
1. THE GUTTER BUDDY, GUTTER EEL OR GUTTER GATOR (BAGS) SHALL EXTEND 1.0' PAST THE INLET OPENING
 2. BAGS SHALL HAVE AN HIGH FLOW BYPASS
 3. IF MULTIPLE BAGS ARE REQUIRED, PLACE THEM END TO END WITH NO GAPS EVIDENT
 4. THE DIAMETER OF THE BAG SHALL BE 9 INCHES
 5. ALTERNATE PRODUCTS MUST BE APPROVED BY THE ENGINEER

INLET PROTECTION

NOT TO SCALE



REFER TO VESCH 1992, SECTION 3.09 FOR ADDITIONAL DETAILS

DIVERSION DIKE DETAIL

NOT TO SCALE

DATE: FEB. 5, 2024

REVISIONS

HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD / STE 300 / ROANOKE, VIRGINIA
540.342.4002
WWW.HUGHESAE.COM

VDOT Virginia Department of Transportation
CHEMICAL STORAGE BUILDING
SALEM DISTRICT AIRPORT AHQ
4330 THIRLANE RD, NW ROANOKE, VA 24019

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EROSION AND
SEDIMENT
CONTROL
DETAILS

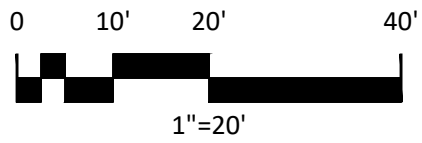
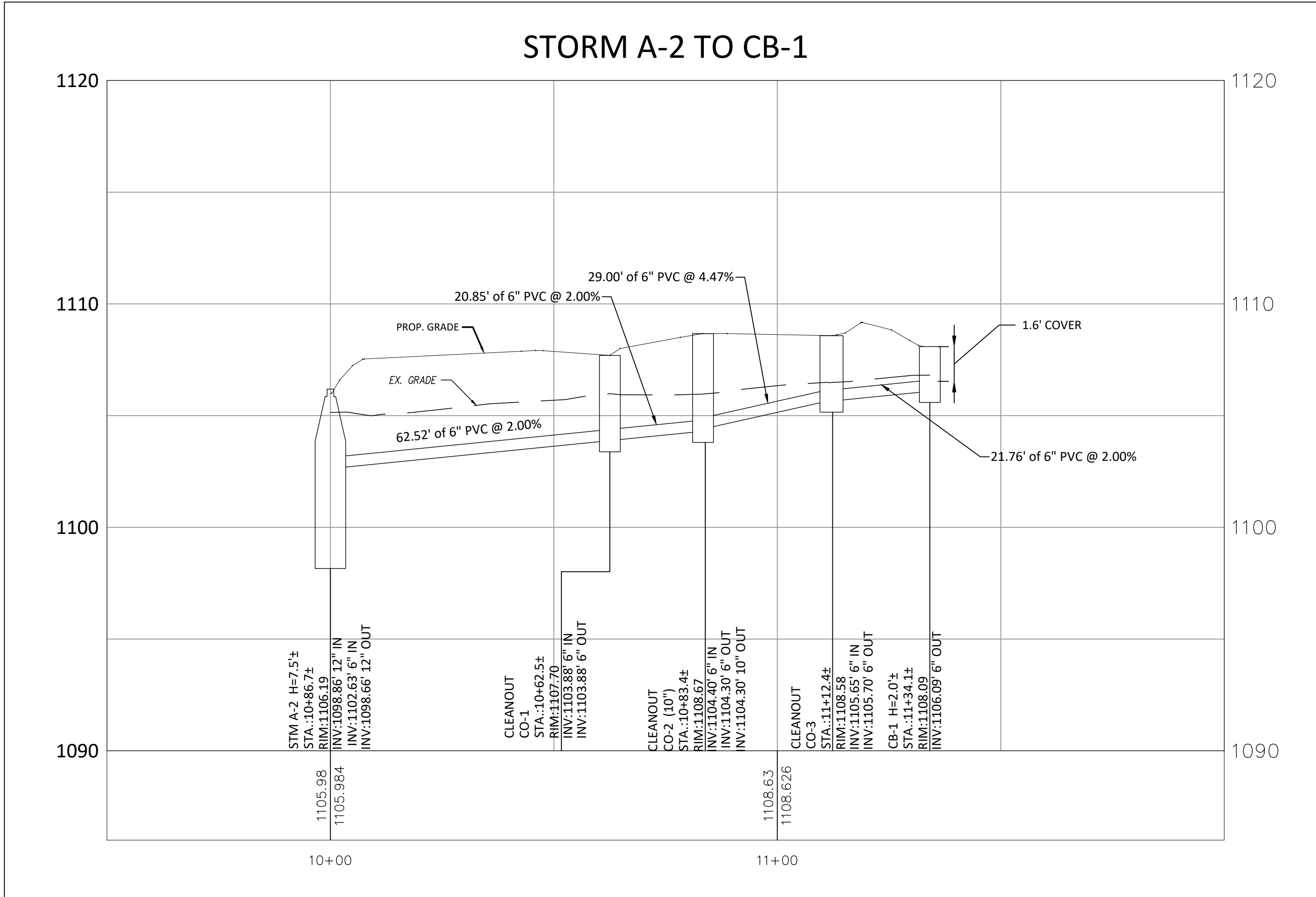
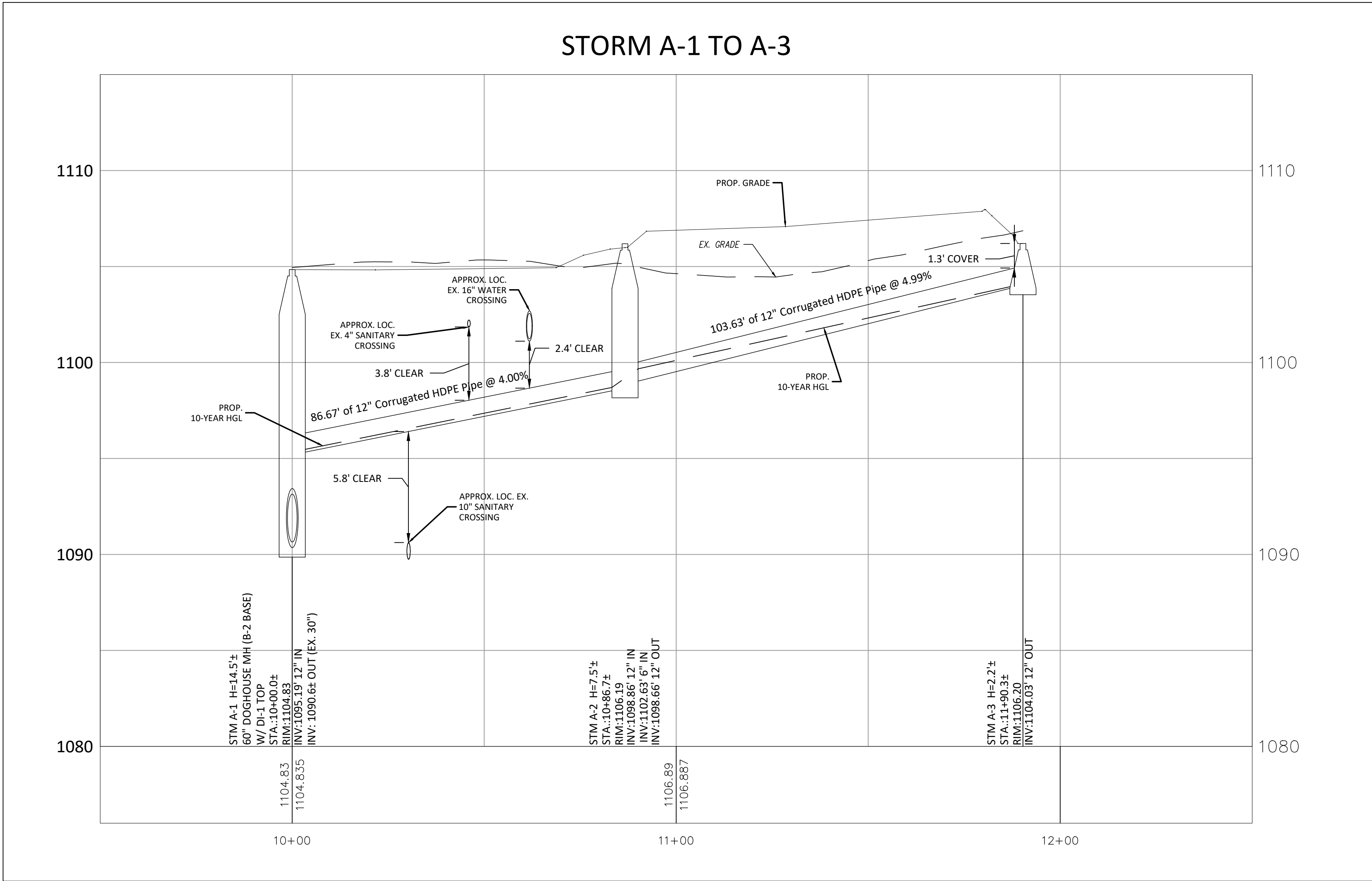
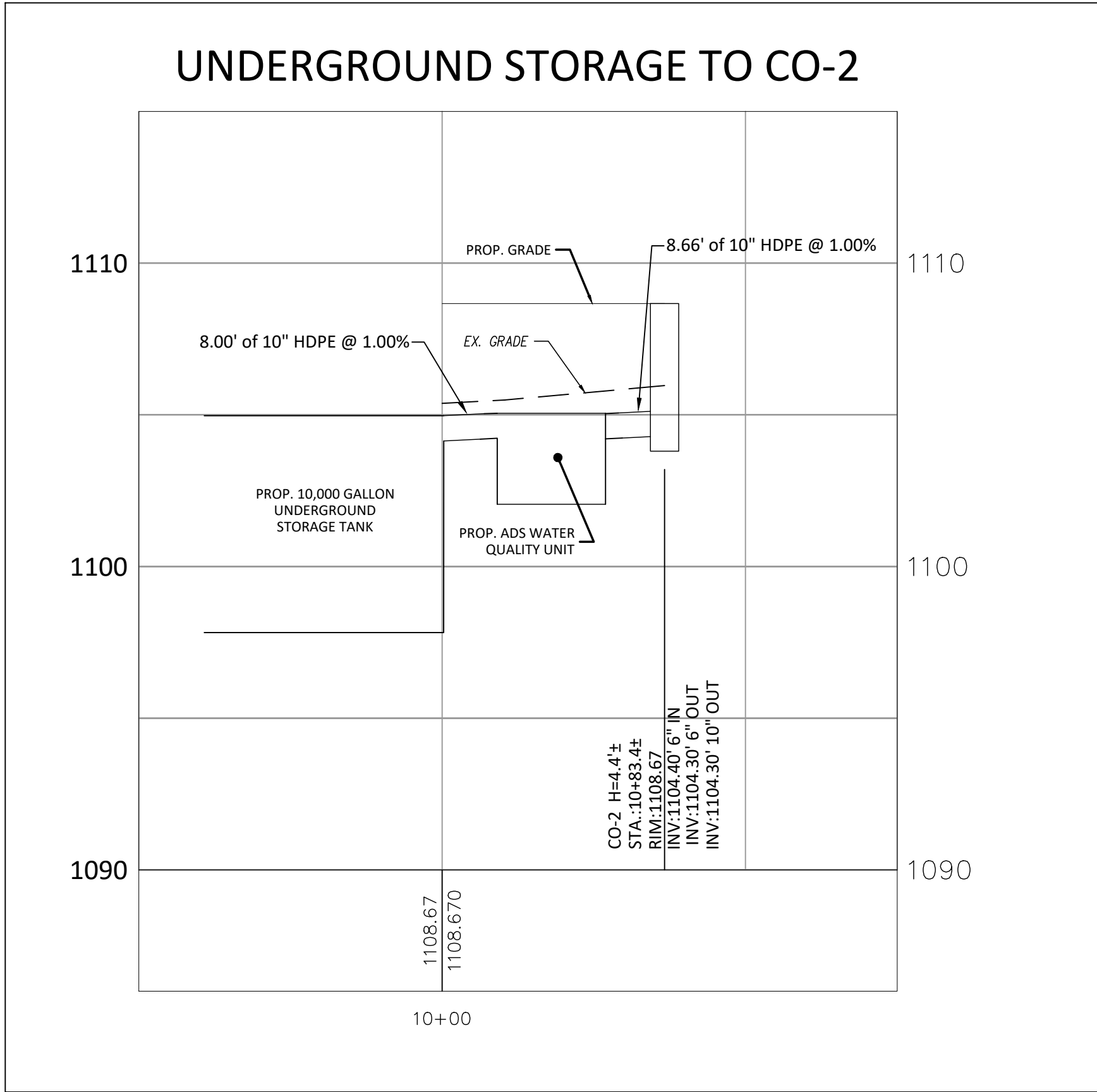
PROJECT CODE:
501-18130-077

COMMONWEALTH OF VIRGINIA
12/06/2024
JOHNATHAN C. BRODIE
John C. Brodie
Lic. No. 053540
PROFESSIONAL ENGINEER

COMMISSION No.
23027

SHEET
C-502

Drawing File: P:\2023\23027 - VDOT - Salem District Airport AHQ Chemical Storage Building\05.0 Drawings\5.2 Add\05\Civil\Sta Plan\23027 - PPRF.dwg 7/9/2024 4:37 PM



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HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA
540.342.4002
WWW.HUGHESAEC.COM

VDOT Virginia Department of Transportation
CHEMICAL STORAGE BUILDING
SALEM DISTRICT AIRPORT AHQ
4330 THIRLANE RD, NW/ROANOKE, VA 24019

DRAWN BY: JCB
CHECKED BY: JCB

STORM PROFILES

PROJECT CODE:
501-18130-077

COMMONWEALTH OF VIRGINIA
12/06/2024
JOHNATHAN C. BRODIE
Lic. No. 053540
PROFESSIONAL ENGINEER

COMMISSION No.
23027
SHEET
C-600

NYLOPLAST 24" DRAIN BASIN: 2824AG __X

(1, 2) INTEGRATED DUCTILE IRON FRAME & GRATE TO MATCH BASIN O.D.

(3) VARIABLE INVERT HEIGHTS AVAILABLE (ACCORDING TO PLAN/STAKE OFF)

MINIMUM PIPE BURIAL DEPTH PER PIPE MANUFACTURER RECOMMENDATION (MIN. MANUFACTURING REQ. SAME AS MIN. SUMP)

(4) VARIOUS TYPES OF INLET & OUTLET ADAPTERS AVAILABLE:
4" - 24" FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, ADSHANCOR SINGLE WALL), N-12 HP, PVC SEWER (EX. SDR 35), PVC DWV (EX. SCH 40), PVC CR80/CROSS, CORRUGATED & RIBBED PVC

(5) ADAPTER ANGLES VARIABLE 0° - 30° ACCORDING TO PLANS

TRAFFIC LOADS: CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS. SEE DRAWING NO. 7001-110-111 FOR NON TRAFFIC INSTALLATION.

(3) VARIABLE SUMP DEPTH ACCORDING TO FLANS
6" MIN. BASED ON MANUFACTURING REQ.)

WATERTIGHT JOINT (CORRUGATED HDPE SHOWN)

THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D3231.

GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS 14-10	2489GCP	7001-110-216
STANDARD	MEETS 1+30	2489CSB	7001-110-217
SOLD COVER	MEETS 1+30	2489CSC	7001-110-218
SDMA	MEETS 1+30	2489CSB	7001-110-219
DROP IN GRATE	LIGHT DUTY	240DI	7001-110-075

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-90.05.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-90.05.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE REQUIRED FOR BASINS OVER 8' DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-080.
4 - DRAINAGE CONNECTION SUB/JOB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP & PVC COVER.
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.

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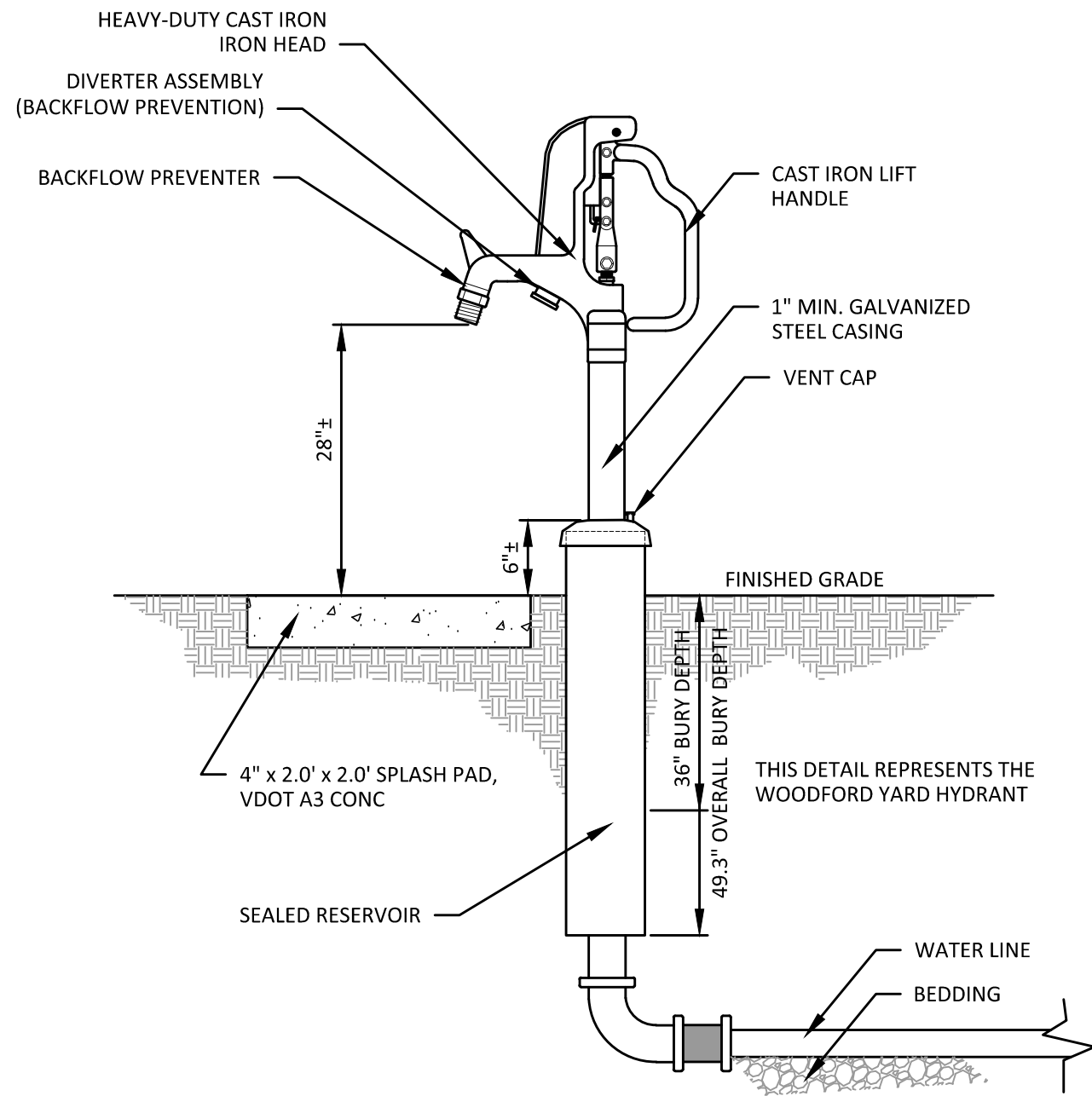
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BURLINGTON, IA 50911
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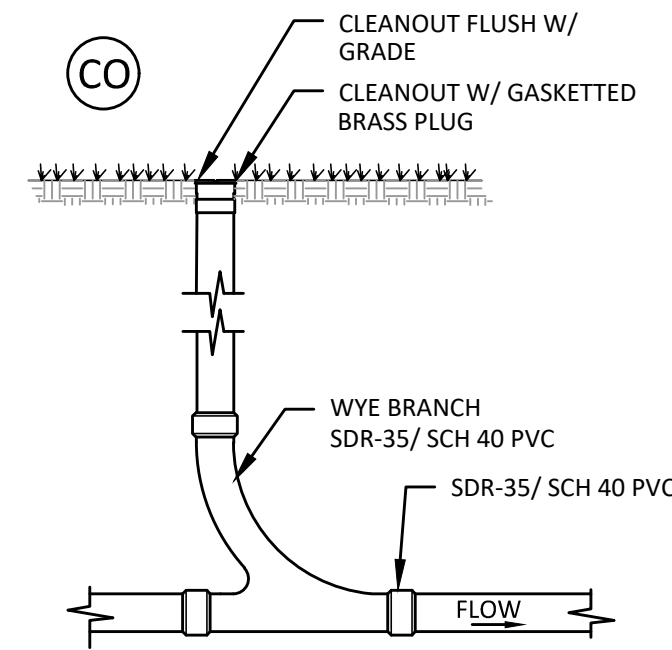
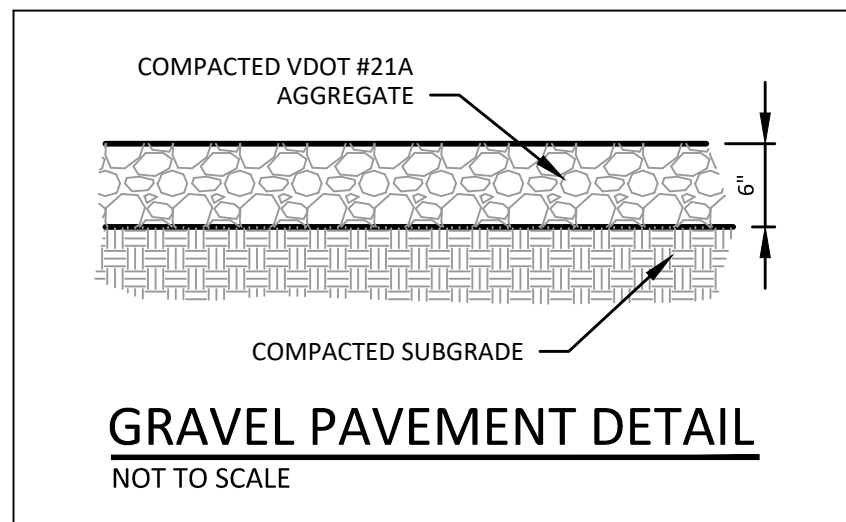
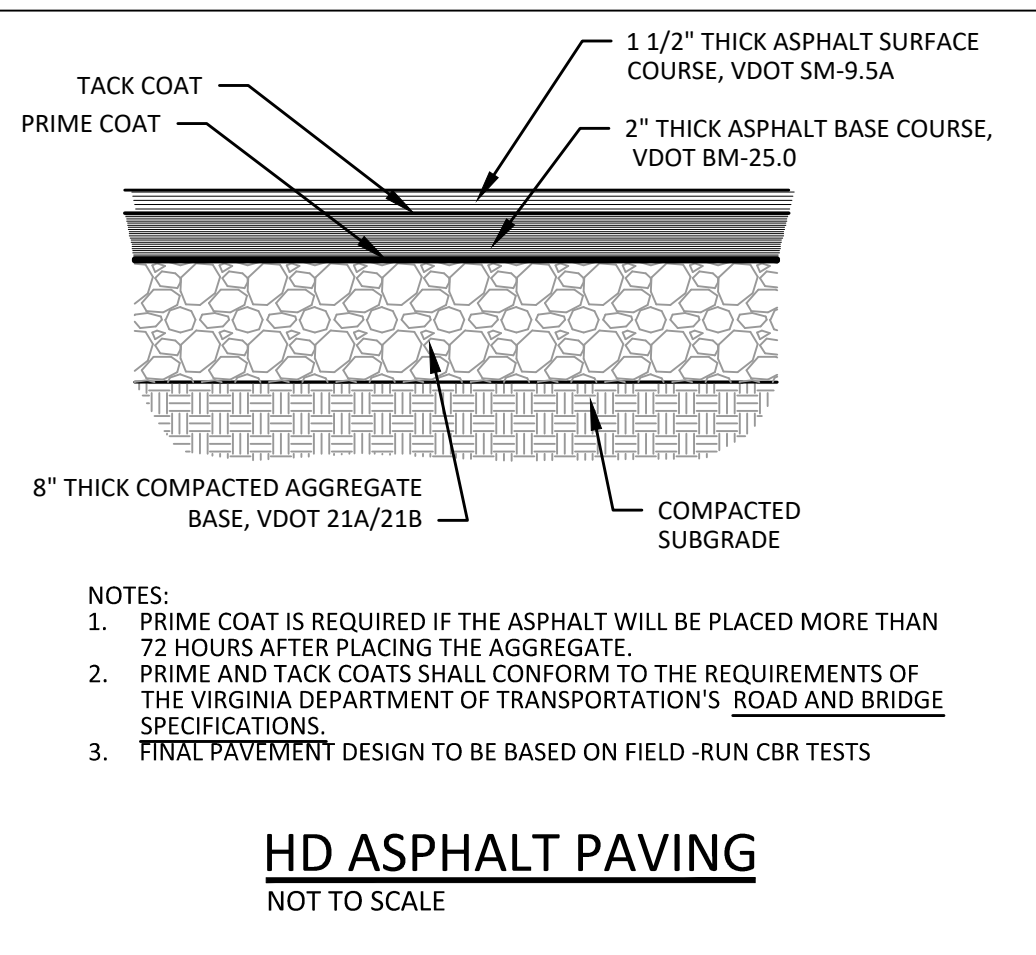
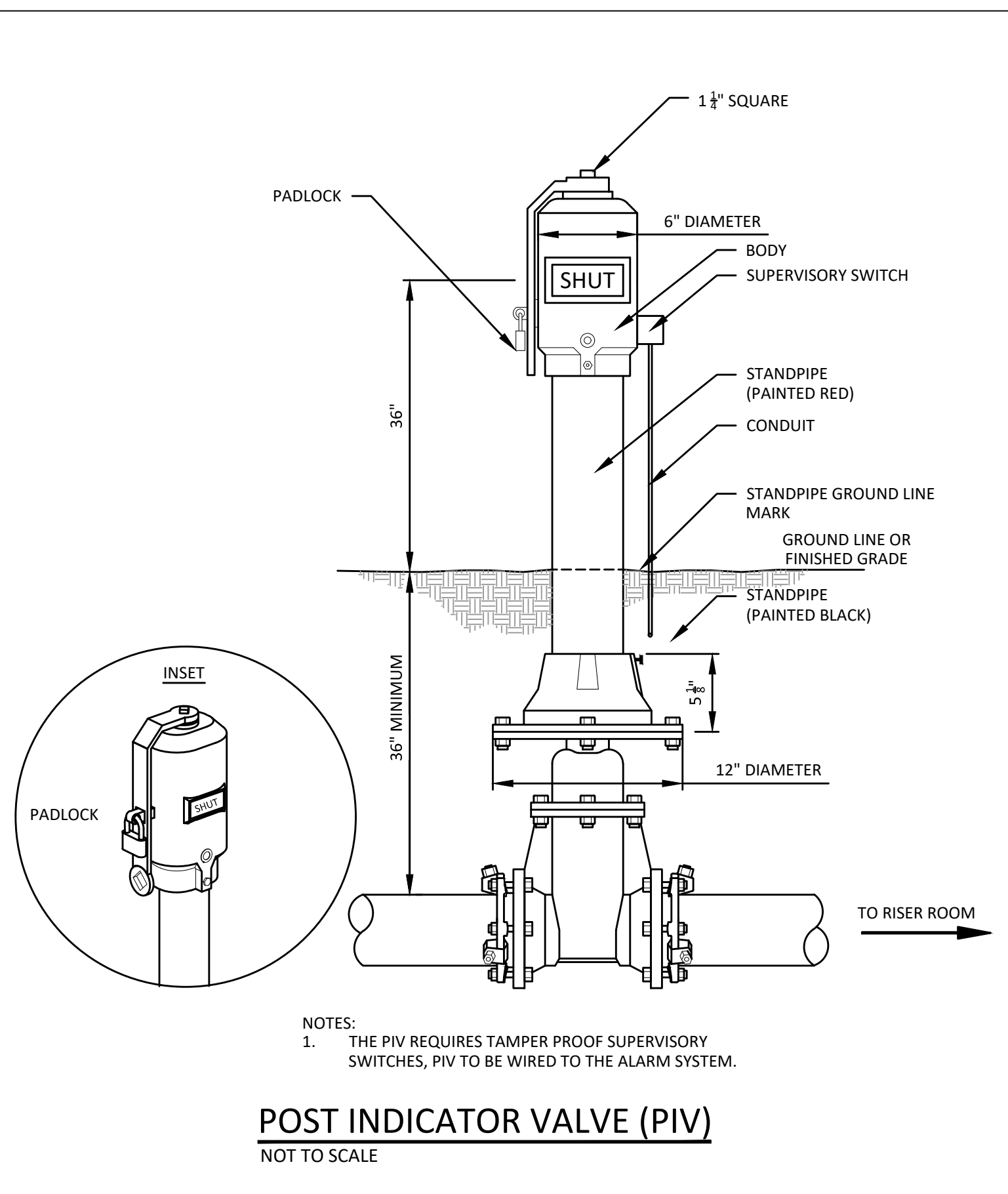
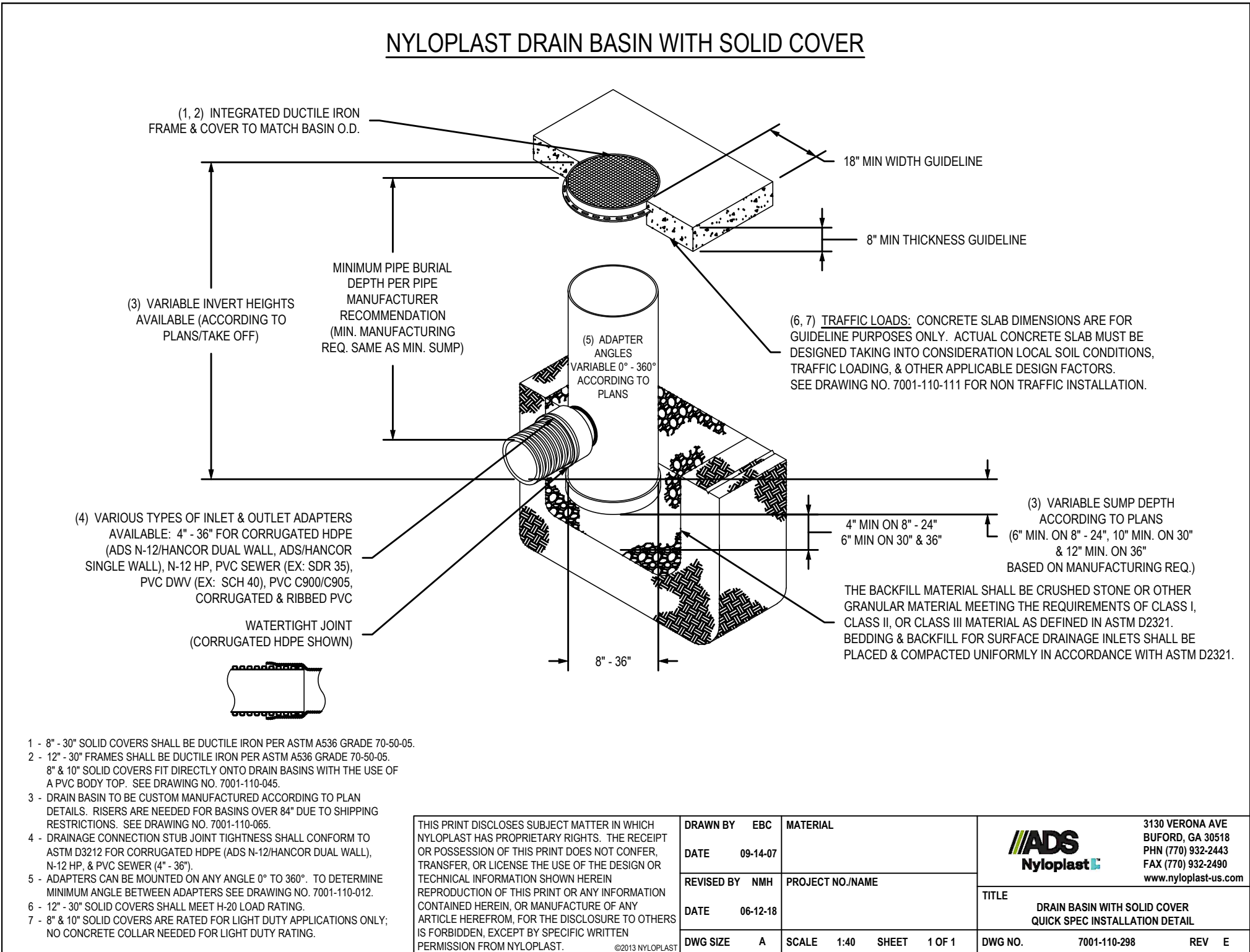
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24 IN DRAIN BASIN QUICK SPICE INSTALLATION DETAIL

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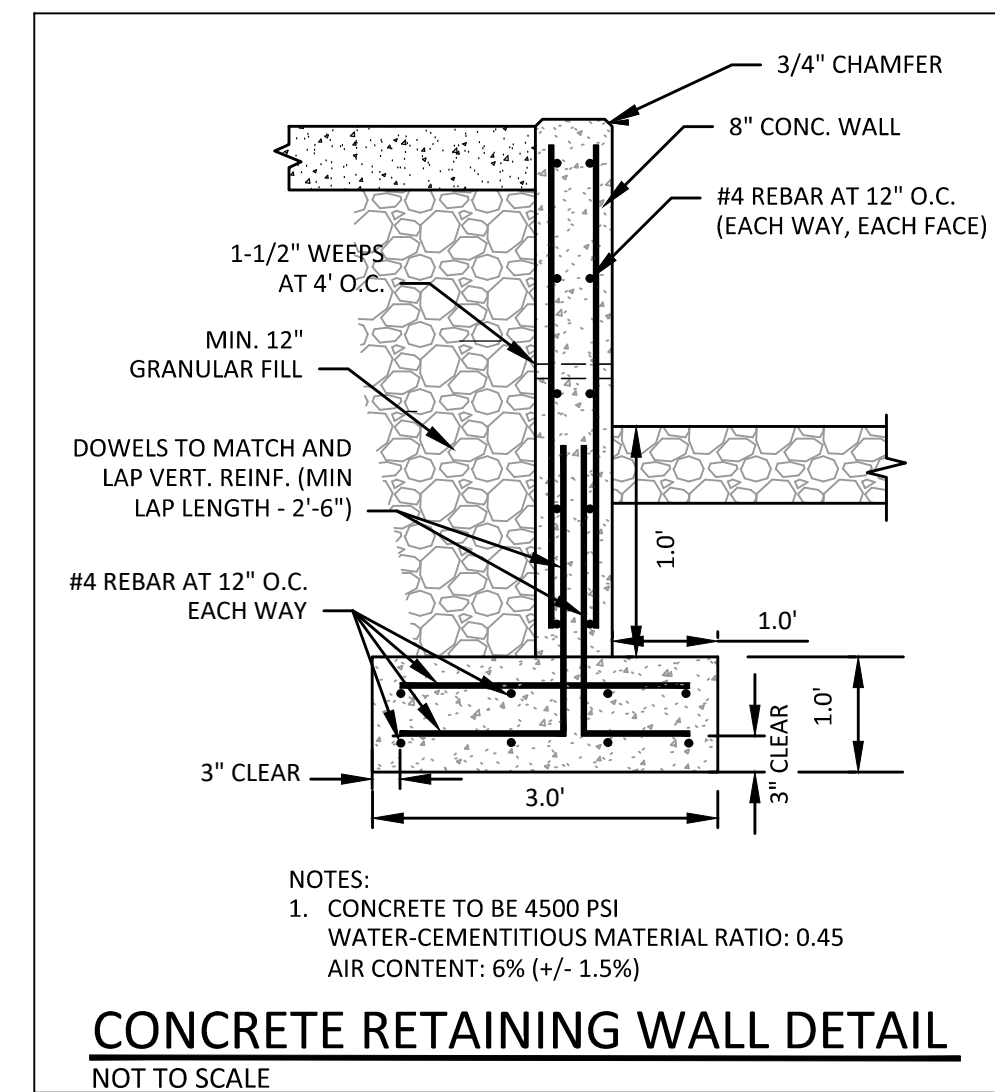
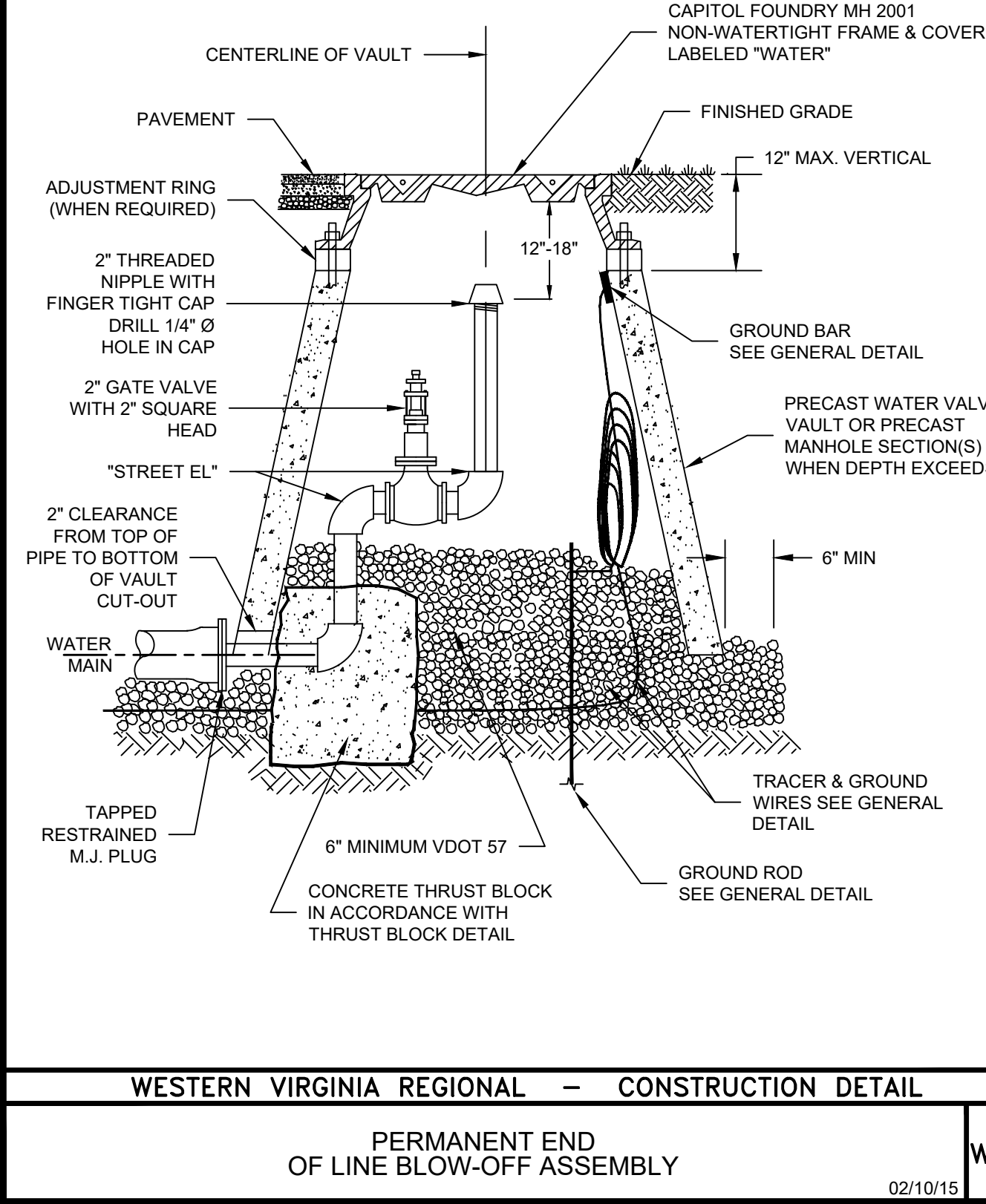
- NOTES:
1. HOSE BIB SHALL ACCOMMODATE STANDARD 3/4" GARDEN HOSE
 2. ALL FITTINGS SHALL BE "NO LEAD" BRASS MEETING UNS C898833 AS PER ASTM B584
 3. KICKSTART HYDRANT SHALL HAVE BACKFLOW PREVENTION INCORPORATED INTO THE HEAD.
 4. PROVIDE A (1) 7"110" PRESSURE SENSITIVE SIGN ON 0.040 ALUMINUM TO READ "CAUTION NON-POTABLE WATER. DO NOT DRINK"
 5. THE HYDRANT SHALL HAVE A SEALED REVERFLOW BELOW THE FROST LINE TO PREVENT FREEZING AND PROHIBIT STOP AND WASTE TYPE VALVES THAT DRAIN THE RISER INTO THE GROUND.
 6. THE HYDRANT SHALL BE A WOODFORD 53-37HF-BR, JAY R. SMITH MFG CO. 5904-H OR A HOEPTNER PRODUCTS FREEZE FLOW 2133CEDA OR APPROVED EQUAL

NOT TO SCALE



- NOTES:
1. REFER TO PLANS FOR PIPE PIPE & CLEANOUT SIZES
 2. REFER TO DETAIL FOR TRAFFIC BEARING CLEANOUTS
 3. REFER TO THE WVWA S-6 DETAIL FOR CLEAN OUT AT PROPERTY LINE

NOUT



- ### GENERAL NOTES

1. REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION RECOMMENDATIONS.
2. REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR MODIFICATION TO THE THICKNESS OF PAVEMENT LAYERS INCLUDING SM-9-5D, BM-25.0, AND CRUSHER AGGREGATE #21B.
3. REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR GEOGRID RECOMMENDATIONS.
4. DIVERSION VALVES FOR WORK PAD RUNOFF SHALL BE POST INDICATOR VALVES EQUIVALENT TO MEULLER MODEL A20806. VDOT'S OPERATIONAL PROCEDURES DICTATE WHEN VALVES ARE OPENED AND CLOSED FOR SALT HANDLING OPERATIONS.
5. SEE SHEET A3 FOR CONCRETE WORK PAD DETAILS.
6. SEE SHEET A4.2 FOR UNDERGROUND STORAGE TANK DETAILS.
7. REFER TO DRAWING A5 FOR MATERIAL SPECIFICATIONS.
8. A 10,000 GALLON UNDERGROUND STORAGE TANK IS PROPOSED AS NOTED ON SHEET C-300. THIS SIZE TANK IS ADEQUATE PER THE DEQ RAINWATER HARVESTING CISTERN WORKSHEET BASED ON HISTORICAL RAINFALL DATA FROM THE REGION.

DATE: FEB. 5, 2024

REVISIONS

△	_____
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ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA
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VDOT Virginia Department
of Transportation

CHEMICAL STORAGE BUILDING

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4320 THIBAUDEAU RD. NW, BOA NOVE, VA 24019

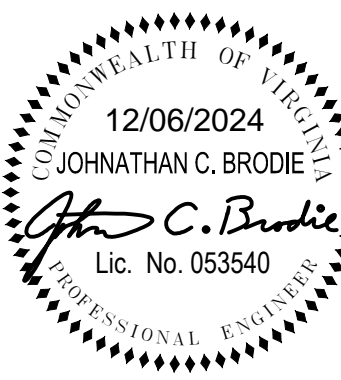
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DETAILS

PROJECT CODE:

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP) GENERAL INFORMATION SHEET (1)

The information contained in the SWPPP General Information sheets is intended to comply with the requirements of the General VPDES Permit For Discharges Of Stormwater From Construction Activities (VAR10) (the CGP) issued July 1, 2024 and VDOT's approved Annual ESC and SWM Standards and Specifications.

The SWPPP General Information sheets are to be completed and included in the construction plan set (or other such documents) for land disturbance activities that disturb an area equal to or greater than 10,000 square feet outside the Chesapeake Bay Preservation Area, or equal to or greater than 2,500 square feet in the area defined as Tidewater, Virginia in the Virginia Chesapeake Bay Preservation Act.

The VDOT RLD (as defined in the latest IIM-LD-242) will ensure that the information shown on the SWPPP General Information sheets is updated/revised as necessary in order to reflect changes that may occur during the construction phase of the land disturbing (construction) activity. The updated/revised sheets shall be maintained with the designated record set of plans (or other such documents)for the land disturbance (construction) activity.

I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that this document and all other documents related to the SWPPP, as identified on the SWPPP General Information Sheets, are maintained at the activity site, or at a location convenient to the activity site where no on-site facilities are available, and such documents will be made available for review upon request in accordance with the provisions of the General VPDES Permit For Discharges of Stormwater from Construction Activities (VAR10) when applicable. Where the SWPPP documents are not stored on-site, a copy of such documents shall be in the possession of those with day to day operational control over the implementation of the SWPPP whenever they are on site.

* or ** Duly Authorized Representative Signature*

Signature: _____
Printed Name: _____
Date: _____

(1) See Section 1, Item 12 relating to delegation of authority, and form LD-445H (Delegation of Authority).

ACRONYMS

ACE – Area Construction Engineer	R&B – Road and Bridge
AS&S – Annual Standards and Specifications	RLD – Responsible Land Disturber
BMP – Best Management Practice	SWM – Stormwater Management
CBPA – Chesapeake Bay Preservation Act	SWPPP – Stormwater Pollution Prevention Plan
CGP – General VPDES Permit For Discharges of Stormwater from Construction Activities (VAR10)	TMDL – Total Maximum Daily Load
DEQ – Department of Environmental Quality	VDOT – Virginia Department of Transportation
DHE – District Hydraulic Engineer	VESMP – Virginia Erosion and Stormwater Management Program
EPA – U.S. Environmental Protection Agency	VPDES – Virginia Pollutant Discharge Elimination System
ESC – Erosion and Sediment Control	WLA – Waste Load Allocation
IIM – Instructional and Informational Memorandum	
NPDES – National Pollutant Discharge Elimination System	

SECTION I GENERAL INFORMATION

1. Activity Description – This project proposes the removal of an existing chemical building and associated features as well as the construction of a new chemical building per current prototype standards. Proposed work also includes installation of the work pad and associate drainage/runoff improvements.

2. This land disturbance (construction) activity site is located in City of Roanoke and approximately 0.9 acres will be disturbed by excavation, grading or other construction activities.

3. (Include one of the following notes as appropriate)

B. This proposed activity disturbs less than one acre and is exempt from coverage under the CGP as issued by the DEQ.

✱✱ 4. The location of support facilities that will be covered under the CGP coverage for this land disturbance (construction) activity shall be provided by the contractor and identified on a legible map. Support facilities shall include, but not be limited to, borrow and disposal areas, construction and waste material storage areas, equipment and vehicle washing, maintenance, storage and fueling areas, storage areas for fertilizers, fuels or chemicals, concrete wash out areas, sanitary waste facilities and any other areas that may involve land disturbance or pollutant-generating activities of its own. Must also include areas where polymers, flocculants, or other stormwater treatment chemicals will be used or stored. Only support facilities within the VDOT ROW and easements are covered under this CGP.

✱✱ 5. Written Evidence of permit coverage shall be provided by the contractor for all support activities located outside of VDOT right of way or easement in the form of the CGP coverage letter: (List VPDES Permit # or Letter from VESMP Authority stating coverage not needed)

Impaired waters, TMDLs, Exceptional waters, and Turbidity Monitoring

6. Does stormwater from this land disturbing activity discharge into surface waters that have been identified as impaired in the 2022 305(b)/303(d) Water Quality Assessment Integrated Report for Benthic Macroinvertebrates Bioassessments? (See latest DEQ Environmental Mapper)

☒ No
☐ Yes

List impaired water(s) here:

7. Does stormwater from this land disturbing activity discharge into a watershed with a TMDL waste load allocation established prior to July 1, 2024 for sediment, total suspended solids, turbidity, nitrogen or phosphorus, including all surface waters within the Chesapeake Bay Watershed?

☒ No
☐ Yes

List TMDL(s) and pollutant(s) here:

8. Does stormwater from this land-disturbing activity discharge stormwater to surface waters that have been identified as Exceptional in 9VAC25-260-30.A.3.c of the Water Quality Standards regulation?

☒ No
☐ Yes

List name of surface waters:

9. If "NO" was answered in note 6, 7, and 8, then items a, b, c and d (below) shall be implemented and adhered to for this land-disturbing activity.
If "Yes" was answered in note 6, 7, or 8, then the requirements of Part I.B.4.a or Part I.B.5, as applicable, of the Construction General Permit shall be implemented and the operator shall ensure the following SWPPP requirements are adhered to for this land-disturbing activity:
a. Permanent or temporary soil stabilization shall be applied to denuded areas within seven (7) days after final grade is reached on any portion of the construction site.
b. Temporary and permanent stabilization will be applied as noted and in accordance with ESC Minimum Standards 1 and 3.
c. Nutrients (e.g., fertilizers) shall be applied in accordance with manufacturers recommendations or an approved nutrient management plan and shall not be applied during rainfall events; Nutrients are being applied per the projects Roadside Development sheet.
d. Inspections shall be conducted at a frequency of (i) at least once every four (4) business days or (ii) at least once every (5) business days and no later than 24 hours following a measurable storm event. In the event that a measurable storm event occurs when there are more than 24 hours between business days, the inspection shall be conducted on the next business day; and inspections are being completed at least every four (4) business days (C-107s are completed on Mondays and Thursdays) Representative inspections used by utility line installation, pipeline construction, or other similar linear construction activities shall inspect all outfalls.
e. Turbidity Monitoring Requirement – Undertake one of the methods identified in Part II.B.8. of the CGP for controlling and documenting construction dewatering discharges.

10. Locations of surface waters and locations where concentrated stormwater is discharged from this land disturbance (construction) activity are identified in the construction plan set (or other such site maps) for this land disturbance(construction) activity. (List name of surface waters and locations here if not shown in construction plan or other such documents).

11. The ESC and SWM plans (where applicable) for this land disturbance (construction) activity have been developed in accordance with VDOT's Annual Erosion and Sediment Control and Stormwater Management Standards and Specifications as approved by the DEQ.

12. List the RLD and other responsible parties for the land disturbance activity: (required for erosion and sediment control). The following individual(s) are "duly authorized" to sign all reports required by the CGP including the SWPPP General Information Sheets and Inspection Reports (C-107). Reference form LD-445H for Duly Authorized Representatives (form LD-445H for the project is hereby incorporated by reference into this SWPPP). These individual(s) has/have overall responsibility or the environmental matters for the project: (required only for permitted projects):

Name	Position	Qualifications (if required)	Responsibility
John Dyer (VDOT PM)	RLD		Certify the SWPPP (with date & sig.)
TBD	Certified Contractor		Sign (C-107) Inspection Form Part 1
Stantec	Certified Inspector		Sign (C-107) Inspection Form Part 1
TBD	Certified Inspector		Sign (C-107) Inspection Form Part 2

✱✱ 13. The name of the VDOT individual(s) responsible for the oversight inspection in accordance with IIM-LD-256 on these land disturbance construction activities as identified on these SWPPP General Information Sheets. The following individual(s) are "duly authorized" to sign all reports required by the CGP including the SWPPP General Information Sheets and Inspection Reports (C-107). Reference for LD-445H for Duly Authorized Representatives (form LD-445H for the project is hereby incorporated by reference into this SWPPP). The names will be updated and maintained with the other SWPPP documents for this land disturbance activity.

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DATE: FEB. 5, 2024
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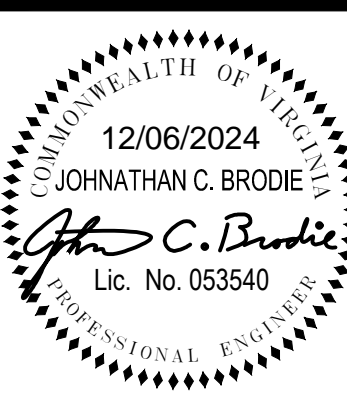
HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA
540.342.4002
WWW.HUGHESAE.COM

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VDOT SWPPP

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SW-1

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✱ Denotes information that is to be provided/completed by the RLD.

✱✱ Denotes information that is to be provided/completed by the contractor.

Revised 7/25/24
SWPPP Sheet 1 of 4

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP) GENERAL INFORMATION SHEET (2)

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SECTION II EROSION AND SEDIMENT CONTROL

1. The intended sequence and timing of activities that disturb soils at the site (e.g., grubbing, excavation, grading, utilities and infrastructure installation, etc.) shall be provided by the contractor in accordance with the current edition of Section 108 of the VDOT R&B Specifications identified on the title sheet and shall be included with the other SWPPP documents for this land disturbance (construction) activity.
2. Existing and proposed drainage patterns on the construction site and approximate slopes anticipated before and after major grading activities are identified in the construction plan set (or other such documents) for this land disturbance (construction) activity.
3. Areas of soil disturbance and areas of the site which will not be disturbed are identified in the construction plan set (or other such documents) for this land disturbance (construction) activity.
4. Locations of major structural and nonstructural ESC measures intended to filter, settle or similarly remove sediment are identified in the construction plan set (or other such documents) for this land disturbance (construction) activity.
5. Locations where stabilization practices are expected to occur are identified in the construction plan set (or other such documents) for this land disturbance (construction) activity.
6. A description of interim and permanent stabilization practices for the site are identified in the applicable sections of the documents identified in the Note 1 of Section IV.
7. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the construction site, and when stabilization measures are initiated will be provided by the contractor and maintained with the record set of plans or other SWPPP documents for this land disturbance (construction) activity: (List how this will be tracked and the location)
8. A description and schedule of procedures to maintain vegetation, erosion and sediment control measures and other protective measures in good and effective operating conditions are identified in the current edition of Sections 107 and 303 of the VDOT R&B Specifications identified on the title sheet.
9. Nutrients shall be applied in accordance with the current edition of Sections 603, 604 and 605 of the VDOT Road and Bridge Specifications identified on the title sheet. Nutrients shall not be applied during rainfall events. Top soil shall be applied in accordance with the current edition of section 602 of the Road and Bridge Specifications identified on the title sheet.
10. All engineering calculations supporting the design of erosion and sediment control measures proposed for this land disturbance (construction) activity are contained in the project drainage file located in the (insert appropriate location, i.e., VDOT Central Office Hydraulics Section or the VDOT (specify) District Hydraulics Section or the VDOT (specify) Residency Office) and will be made available for review upon request during normal business hours.
11. The temporary erosion and siltation control items shown on the ESC Plan for this land disturbing (construction) activity are intended to provide a general plan for controlling erosion and sediment within the project limits. The ESC Plan is based on field conditions at the time of plan development and an assumed sequence of construction for the project. The contractor, in conjunction with the VDOT Project Engineer and/or ESC Inspector, shall adjust the location, quantity and type of erosion and sediment control items required based on the actual field conditions encountered at the time of construction and the actual scheduling and sequencing of the construction activities. Significant changes to the proposed ESC Plan (e.g., those that require an engineering analysis, elimination of a perimeter control, change to ESC concept that would affect the quantity or direction of flow of water) shall be submitted to the applicable District Hydraulics Engineer for review and approval. Any changes to the proposed ESC Plan must be noted on the designated record set of plans which shall be retained on the project site and made available upon request during normal business hours. Changes noted on the designated record set of plans must address certification language with initial and date by duly authorized personnel.
12. The areas beyond the project's construction limits are to be protected from siltation. Perimeter controls such as silt fence, diversion dikes, turbidity curtains, etc. shall be installed prior to any grubbing operations or other earth moving activities.
13. Temporary earthen structures such as dikes and berms are to be stabilized immediately upon installation. Stabilization may include temporary or permanent seeding, riprap, aggregate, sod, mulching, and/or soil stabilization blankets and matting in conjunction with seeding.
14. All channel relocations are to be constructed during the earliest stage of construction and shall be constructed in accordance with all applicable permit requirements and shall be constructed in the dry wherever possible. Stabilization or vegetation shall be established before flow is redirected through the constructed area as directed by the Engineer.
15. The contractor shall plan and implement his land disturbance operations in order to:
- Control the volume and velocity of stormwater runoff within the site to minimize erosion.
 - Control the peak flow rates, volume and velocity of stormwater discharges to minimize erosion at outlets and in downstream channels.
 - Minimize the amount of soil exposed.
 - Minimize the disturbance of steep slopes.
 - Minimize sediment discharge from the site.
 - Provide and maintain natural buffers around surface waters, direct stormwater runoff to vegetated areas and maximize stormwater infiltration, unless infeasible.
 - Minimize soil compaction (except in those areas where compaction is required by the contract documents) and preserve topsoil where feasible.

16. The name of the individual(s) or contractor(s) responsible for the installation and maintenance of the erosion and sediment control measures shall be supplied by the contractor and maintained with the other SWPPP documents for this land disturbance (construction) activity.
17. Soil stockpiles temporarily placed within the project area or on VDOT right of way or easement shall be identified, stabilized, and protected with sediment trapping measures.
18. A construction entrance or other approved measure shall be installed at all locations where construction vehicular traffic access routes intersect a paved or a public road in order to minimize the transport of sediment by vehicular tracking onto the paved surface. Where sediment is transported onto a paved or a public road surface, the road shall be cleaned thoroughly at the end of each work day by shoveling or sweeping. Removed sediment shall be disposed of in accordance with Section 106.04 of the R&B Specifications identified on the title sheet. Construction entrances shall be maintained as necessary, including the addition of additional rock, as part of routine maintenance.
- ~~19. Any variance, exception or deviation approved by DEQ must be listed below and supporting documentation (exception/variance/deviation request and DEQ approval) must be maintained with the SWPPP.~~
- The following exceptions to the Water Quantity criteria of the VESMP Regulation have been approved by the DEQ for this land disturbance (construction) activity: (list all approved variances, exceptions, deviations and include a brief description of the variance, the date approved and the approving DEQ Office).

Type(1) n/a	Regulation Modified(2)	Approval Date(3)	Description

- (1) Type of modification (Variance from ESC regulations, or Deviation from published guidance)
(2) Section of Regulation or Guidance Document Modified (e.g. ESC Min. Std. 15)
(3) Date that variance/exception/deviation was approved by DEQ.
(4) Description and request

SECTION III POST CONSTRUCTION STORMWATER MANAGEMENT

Choose the appropriate note 1A or 1B that is applicable to the proposed post construction SWM Plan for this land disturbance (construction) activity. (Delete, strike through or mark as NA those notes not applicable.)

1. (Include one of the following notes as appropriate)
- 1A. ~~This land disturbance activity is grandfathered under Section 9VAC25-875-490 of the VESMP Regulations and utilizes the technical criteria (Formerly Part IIC of the technical criteria) contained in Article 4 (9VAC25-875-670, et seq.) of the VESMP Regulations.~~
- 1B. This land disturbance activity utilizes the technical criteria contained in Article 3 (9VAC25-875-570, et seq.) of the VESMP Regulations (Formerly Part IIB of the technical criteria).
- ~~2. An exception for (number) pounds of phosphorus removal has been granted for this land disturbance activity by the DEQ in its letter dated (date).~~
- ~~3. Any variance, exception or deviation approved by DEQ must be listed below and supporting documentation (exception/variance/deviation request and DEQ approval) must be maintained with the SWPPP.~~

The following exceptions to the Water Quantity criteria of the VESMP Regulation have been approved by the DEQ for this land disturbance activity: (list all approved variances, exceptions/deviations and include a brief description, the date approved and the approving DEQ Office)

Type(1) n/a	Regulation Modified(2)	Approval Date(3)	Description

- (1) Type of modification (Variance, or Exception from SWM Regulations or Deviation from published guidance)
(2) Section of Regulation or Guidance Document Modified (e.g. ESC Min. Std. 15)
(3) Date that variance/exception/deviation was approved by DEQ.
(4) Description of request
4. The permanent on-site SWM facilities or off-site strategies proposed to meet the water quality/quantity requirements for this land disturbance (construction) activity are listed in Section VI.

5. A description of all post-construction stormwater management measures that will be installed during the construction process to control pollutants in stormwater discharges after construction operations have been completed is included in the construction plan set (or other such documents) for this land disturbance (construction) activity.
6. All engineering calculations supporting the design of the post-construction stormwater management measures for this land disturbance (construction) activity, including an explanation of the technical basis used to select the practices, are contained in the project drainage file located in the (insert appropriate location, i.e., VDOT Central Office Hydraulics Section or the VDOT (specify) District Hydraulics Section or the VDOT (specify) Residency Office) and will be made available for review upon request during normal working business hours.

- * Denotes information that is to be provided/ completed by the RLD.
- ** Denotes information that is to be provided/completed by the contractor.

REVISIONS	DATE: FEB. 5, 2024
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DRAWN BY: JCB
CHECKED BY: JCB

VDOT SWPPP

PROJECT CODE:
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COMMISSION NO.
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Revised 7/25/24
SWPPP Sheet 2 of 4

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP) GENERAL INFORMATION SHEET (3)

The information contained in the SWPPP General Information sheets is intended to comply with the requirements of the General VPDES Permit For Discharges Of Stormwater From Construction Activities (the CGP) issued July 1, 2024 and VDOT's approved Annual ESC and SWM Standards and Specifications.

The SWPPP General Information sheets are to be completed and included in the construction plan set (or other such documents) for land disturbance (construction) activities that disturb an area equal to or greater than 10,000 square feet outside the Chesapeake Bay Preservation Area, or equal to or greater than 2,500 square feet in the area defined as Tidewater, Virginia in the Virginia Chesapeake Bay Preservation Act.

The VDOT RLD will ensure that the information shown on the SWPPP General Information sheets is updated/revised as necessary in order to reflect changes that may occur during the construction phase of the land disturbing (construction) activity. The updated/revised sheets shall be maintained with the designated record set of plans (or other such documents) for the land disturbance (construction) activity.

SECTION IV SWPPP

1. All documents related to the SWPPP for this land disturbance (construction) activity shall be maintained at the activity site and shall be readily available for review upon request during normal business hours. Such documents include, but are not limited to, the construction plans (or other such documents), the ESC Plan, the Pollution Prevention Plan, the post construction SWM Plan (if applicable), the VDOT R&B Standards and Specifications, Supplemental Specifications, Special Provisions and Special Provision Copied Notes. Documents related to stormwater pollution prevention which are not a part of those documents referenced above, such as copies of the CGP coverage letter (when applicable) and the CGP (when applicable) and those required to be developed by the contractor for pollution prevention associated with any support facilities being included in the CGP coverage for this land disturbance (construction) activity are to be maintained at the activity site with the other SWPPP documents for this land disturbance (construction) activity. Where no facilities are available at the activity site to maintain the SWPPP documents, they are to be kept by or with the designated RLD at a location convenient to the activity site where they would be made available for review upon request during normal business hours.
2. The SWPPP and any subsequent amendments, modifications and updates shall be signed and certified as necessary to comply with the CGP, and shall be implemented from commencement of land disturbance until termination of CGP coverage or completion of land disturbance (construction) activities where no CGP coverage is required.
- ✖✖3. For all support facilities that will be included in the CGP coverage for this land disturbance (construction) activity, the contractor shall develop a SWPPP in accordance with, but not limited to, Section 106 and 107 of the VDOT Road and Bridge Specifications identified on the title sheet. The SWPPP for the support facilities shall be maintained with and become a component of the SWPPP for this land disturbance (construction) activity. Support facilities shall include, but not be limited to, borrow and disposal areas, construction and waste material storage areas, equipment and vehicle washing, maintenance, storage and fueling areas, storage areas for fertilizers, fuels or chemicals, concrete wash out areas, sanitary waste facilities and any other areas that may generate a stormwater or non-stormwater discharge directly related to the construction site.
4. For those land disturbing (construction) activities requiring coverage under the CGP, the SWPPP shall be made available for review upon the request of the DEQ, the EPA, the VESMP Authority, the VESCP Authority, local government officials or the operator of a municipal separate storm sewer system (MS4) receiving discharge from the construction site.
- ✖5. For those land disturbing (construction) activities requiring coverage under the CGP, the VDOT RLD shall post, or have posted, a copy of the CGP coverage letter and a copy of a completed LD-445A form, noting the name and contact information for the VDOT person responsible for the land disturbing (construction) activity and its SWPPP, outside the project's construction office along with other Federal and State mandated information. The copy of the notice of coverage letter shall be visible such that it can be readily viewed from a public right-of-way. Where there is no construction office (e.g., a maintenance activity), the permit coverage letter and the LD-445A form are to be maintained with the other SWPPP documents for the land disturbing (construction) activity.
6. The SWPPP shall be made available for review by the public upon request. Such reviews shall be at a time and publicly accessible location convenient to the public and shall be scheduled during normal business hours and no less than once per month.

SECTION V – POLLUTION PREVENTION PLAN

1. The following non-stormwater discharges from this land disturbing (construction) activity and any support facilities covered by this permit are prohibited:

a. Wastewater from concrete washouts.

b. Wastewater from the washout or clean out of stucco, paint, from release oils, curing compounds and other construction materials.

c. Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance.

d. Oils, toxic substances or hazardous substances from spills or other releases.

e. Soaps, solvents or detergents used in equipment and vehicle washing.

f. There shall be no discharge of floating solids or visible foam in other than trace amounts.
2. The following non-stormwater discharges from this land disturbing (construction) activity and any support facilities are allowed when discharged in compliance with this CGP:

a. Discharges from emergency fire fighting activities.

b. Fire hydrant flushings managed to avoid an instream impact.

c. Waters used to wash vehicles or equipment, provided no soaps, solvents or detergents are used and the wash water is filtered, settled or similarly treated prior to discharge.

d. Potable water including uncontaminated waterline flushings managed in a manner to avoid stream impacts.

f. Routine external building wash down, provided no soaps, solvents or detergents are used, external building surfaces do not contain hazardous substances, and the wash water is filtered, settled or similarly treated prior to discharge.

g. Pavement wash waters, provided spills or leaks of toxic or hazardous materials have not occurred (unless all spilled or leaked material is removed prior to washing), soaps, solvents or detergents are not used and the wash water is filtered, settled or similarly treated prior to discharge.

h. Uncontaminated air conditioning or compressor condensate.

i. Uncontaminated ground water or spring water.

j. Foundation or footing drains, provided flows are not contaminated with process materials such as solvents or contaminated groundwater.

k. Uncontaminated excavation dewatering, including dewatering trenches and excavations that are filtered, settled or similarly treated prior to discharge.

l. Landscape irrigation.
- ✖✖3. The contractor shall develop a Pollution Prevention Plan to address any operations that have a potential to generate a pollutant that may reasonably be expected to affect the quality of stormwater discharges from this land disturbance (construction) activity. The Pollution Prevention Plan shall be developed in accordance with, but not limited to, Sections 106 and 107 of the VDOT Road and Bridge Specifications identified on the title sheet and shall include a narrative with appropriate plan detail and shall:

a. Identify the potential pollutant-generating activities and the pollutant that is expected to be exposed to stormwater.

b. Describe the location where the potential pollutant-generating activities will occur, or if identified on the record set of plans, reference the record set of plans.

c. Identify all non-stormwater discharges, as described in note two of this section, that are or will be commingled with stormwater discharges from the construction activity, including any on-site support activities.

d. Identify the person(s) or contractor(s) responsible for implementing and maintaining the pollution prevention practices for each pollutant-generating activity.

- e. Describe the pollution prevention practices and procedures that will be implemented to:

1) Prevent and respond to leaks, spills, and other releases, including procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases, and procedures for reporting leaks, spills, and other releases in accordance with Section 107 of the VDOT Road and Bridge Specifications identified on the title sheet and the requirements within the CGP.

2) Prevent the discharge of spilled and leaked fuels and chemicals from vehicle fueling and maintenance activities.

3) Prevent the discharge of soaps, solvents, detergents, and wash water from construction materials, including procedures for the clean-up of stucco, paint, form release oils, and curing compounds.

4) Minimize the discharge of pollutants from vehicle and equipment washing, wheel wash water, and other types of washing.

5) Direct concrete wash water into a leakproof container or leakproof settling basin designed so that no overflows can occur due to inadequate sizing or precipitation. Hardened concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wastes. Liquid concrete wastes shall be removed and disposed of in a manner consistent with the handling of other construction wash waters and shall not be discharged to surface waters, disposed of through infiltration, or otherwise disposed of on the ground.

6) Minimize the discharge of pollutants from storage, handling, and disposal of construction products, materials, and wastes including building products (such as asphalt sealants, copper flashing, roofing materials, adhesives, and concrete admixtures), pesticides, herbicides, insecticides, fertilizers, landscape materials, construction and domestic wastes (such as packaging materials), scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, and other trash or building materials.

7) Prevent the discharge of fuels, oils, and other petroleum products, hazardous or toxic wastes, waste concrete and sanitary wastes.

8) Address any other discharge from any potential pollutant-generating activity not listed herein.

9) Minimize the exposure of waste materials to precipitation by closing or covering waste containers during precipitation events and at the end of the business day, or implementing other similarly effective practices. Minimization of exposure is not required in case where the exposure to precipitation will not result in a discharge of pollutants.

10) Describe and implement procedures for providing pollution prevention awareness (including but not limited to prevention practices, disposal practices and appropriate disposal locations) for all applicable wastes (including any wash water), to appropriate personnel.

✖ Denotes information that is to be provided/completed by the RLD.

✖✖ Denotes information that is to be provided/completed by the contractor.

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CHECKED BY:	JCB

VDOT SWPPP

PROJECT CODE:
501-18130-077



COMMISSION NO.
23027

SHEET
SW-3

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Revised 7/25/24
SWPPP Sheet 3 of 4
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Drawing File: PA 23027 23027 - SWPP - Station Related - Sheet - MTD - Chemical Storage Building V5.0 Drawing V5.2 AutoCAD Civil Site Plan V2027 - COVER-NOTES-DETAILS-SWPPP.dwg 5/25/2024 9:16 AM

STORMWATER POLLUTION PREVENTION PLAN (SWPPP) GENERAL INFORMATION SHEET (4)

SECTION VI – PERMANENT BMP INFORMATION

* Denotes information that is to be completed by the RLD.
() See note referenced by number in parentheses.

INSTALLED BMP INFORMATION
(VDOT Owned/Operated)

Plan Sheet(s)	* Date BMP Made Functional	Type of BMP Installed (See Table A, C, or D)	Geographic Location (County or City)	Latitude/Longitude (1)		VA 6th Order HUC (7)	Receiving Water (2)	Name of Impaired Water (9)	Acres Treated Per BMP (3)			* BMP Maintenance ID Number (10)	BMP Maintenance and Inspection Manual (11)
				LAT	LONG				Impervious	Pervious	TOTAL		
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

ALTERNATIVE BMP INFORMATION

Plan Sheet(s)	Date	Type of BMP Installed (See Table B)	Geographic Location (County or City) (5)	Latitude/Longitude (1) (5)		VA 6th Order HUC (5) (7)	Receiving Water (2)	Name of Impaired Water (9)
				LAT	LONG			
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Perpetual Nutrient Credits Acquired for Project

Name of Nutrient Credit Generating Entity (6)	Nutrient Credits (lbs./TP./year) Acquired (6) (12)
n/a	n/a

△ Any changes to the proposed SWM Plan or BMPs necessitated during the construction phase of the project that affects the proposed construction details or potentially affects the information shown in the BMP Tables A and/or B shall be coordinated by the VDOT RLD with the appropriate VDOT District Hydraulics Engineer. The construction plans and the BMP Tables A and/or B are to be formally revised to reflect any authorized/ approved changes to the proposed SWM Plan and/or the proposed BMP construction details. All plan revisions shall be completed in accordance with the Road Design Manual and the Construction Division IIM–CD–2013–12.01, signed and sealed in accordance with Department’s sealing and signing policy IIM–LD–243 and filed with the construction record drawings maintained in the VDOT Central Office Plan File Room (ProjectWise). Prior to submitting for termination of coverage under the CGP, the RLD shall have the District Maintenance Division (Infrastructure Manager or Designee) along with the ACE, DHE, and the NPDES coordinator review the BMPs installed with the project for acceptance of maintenance responsibility and to obtain a Maintenance ID number for each BMP listed in BMP Table A. The RLD shall use the information in BMP Tables A and B along with the assigned Maintenance ID number and the date that the BMP became functional as a permanent control measure (for BMPs in Table A only) to complete the LD–445D form when certifying the construction of the BMPs and submitting for termination of coverage under the CGP.

Table A: Permanent BMP Types
(1999 Va. SWM Handbook)

Bio–retention Basin
Bio–retention Filter
Constructed Stormwater Wetlands
Extended Detention Basin
Extended Detention Basin Enhanced
Grassed Swale
Infiltration Basin
Infiltration Trench
Manufactured Treatment Device (MTD) (8)
Retention Basin I
Retention Basin II
Retention Basin III
Sand Filter
Vegetated Filter Strip
Other Approved Types (List Type)
Detention Basin

Table B: Alternative BMP Types
Comprehensive SWM Plan (Regional) Facility
Pollutant Loading Pro Rata Share Program
Other Approved Options (List Type) (4)

Table C: Permanent BMP Types
(BMP Clearing House)

Sheet Flow to Vegetated Filter Strip (Level Spreader)
Grass Channel
Soil Compost Amendment
Permeable Pavement (Level 1)
Permeable Pavement (Level 2)
Infiltration Practice (Level 1)
Infiltration Practice (Level 2)
Bioretention (Level 1)
Bioretention (Level 2)
Dry Swale (Level 1)
Dry Swale (Level 2)
Wet Swale (Level 1)
Wet Swale (Level 2)
Filtering Practice (Level 1)
Filtering Practice (Level 2)
Constructed Wetlands (Level 1)
Constructed Wetlands (Level 2)
Extended Detention Pond (Level 1)
Extended Detention Pond (Level 2)
Wet Pond (Level 1)
Wet Pond (Level 2)
Manufactured Treatment Device (MTD)(8)
Other Approved Types (List Type)

*Table D: Permanent Post–Construction BMP Types
(Virginia Stormwater Management Handbook, Ver. 1.0)

Constructed Wetland
Wet Pond
Extended Detention Pond
Rainwater Harvesting
Grass Channel
Dry Swale
Wet Swale
Regenerative Stormwater Conveyance
Rooftop/Impervious Surface Disconnection
Vegetated Roof
Permeable Pavement
Infiltration Practices
Bioretention
Filtering Practices
Sheet Flow to Vegetated Filter Strip/ Conserved Open Space
Soil Compost Amendment
Tree Planting
Earthen Embankment
Principal Spillway
Vegetated Emergency Spillway
Pretreatment
Quantity–Only Approach to BMPs
MTD–H Hydrodynamic Devices
MTD–F Filtering Devices
MTD–B Biofilter Devices

*Designer may not mix methods from Tables A, B and C with methods from Table D.

- NOTES:
- (1) In decimal degrees to the nearest one ten–thousandth of a degree.
- (2) For streams with no names, list “(Unnamed Tributary to downstream name)”.
- (3) Show acres treated to the nearest one hundredths acre.
- (4) Include agreements with off–site BMP owners.
- (5) Information pertains to the alternative BMP option location, where applicable.
Exception – Not required for nutrient credit purchase option.
- (6) Applies to the purchase of nutrient credits only.
- (7) Virginia 6th Order HUC (VAHU6) Example – Y030.
- (8) Final approved shop drawings of Manufactured Treatment Devices (MTDs) are to be included with the BMP information submitted with the LD–445D form.
- (9) List the name of any impaired water to which the BMP discharges. The determination of impaired water shall be based on those surface waters identified as impaired in the 2022 305(b)/303(d) Water Quality Assessment Integrated Report for Benthic Macroinvertebrates Bioassessments and shall be the first named waterbody to which the BMP discharges.
- (10) BMP Maintenance ID Number is to be assigned by the District Maintenance Division at permit termination or project completion. This ID number shall be assigned prior to the permit close out process and entered by the area construction engineer under this column, per IIM–LD–195.

- (11) Provide the section of the manual that pertains to the type of BMP. The manual can be found at https://www.vdot.virginia.gov/media/vdotvirginiagov/doing-business/technical-guidance-and-support/technical-guidance-documents/maintenance/VDOT_BMP_Manual_acc.pdf in the Maintenance selections. Example: Section 4 would be noted for the maintenance and inspection manual for a Bioretention I infiltration BMP.
- (12) Nutrient credits purchased to the nearest one hundredth pound.
- (13) If level spreader is utilized as part of sheet flow to vegetative filter strip, report under that BMP type Table C.
- (14) If several level spreaders are in close proximity, they may be combined for recording purposes; however each level spreader shall have individual lat/longs reported.

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ARCHITECTS & ENGINEERS
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540.342.4002
www.HughesAE.com

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CHECKED BY: JCB

VDOT SWPPP

PROJECT CODE:
501-18130-077

COMMONWEALTH OF VIRGINIA
12/06/2024
JOHNATHAN C. BRODIE
John C. Brodie
Lic. No. 053540
PROFESSIONAL ENGINEER

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SW-4
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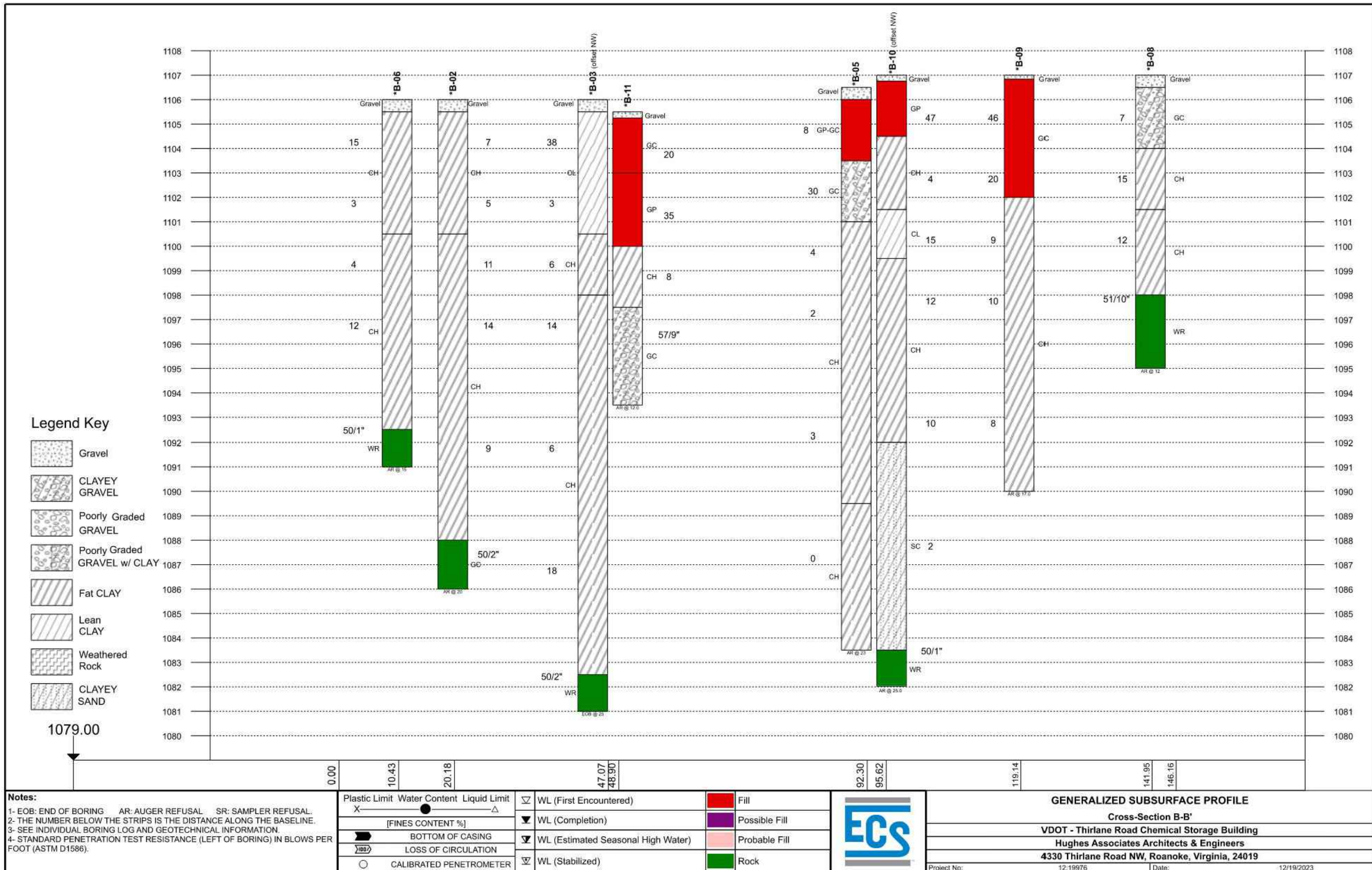
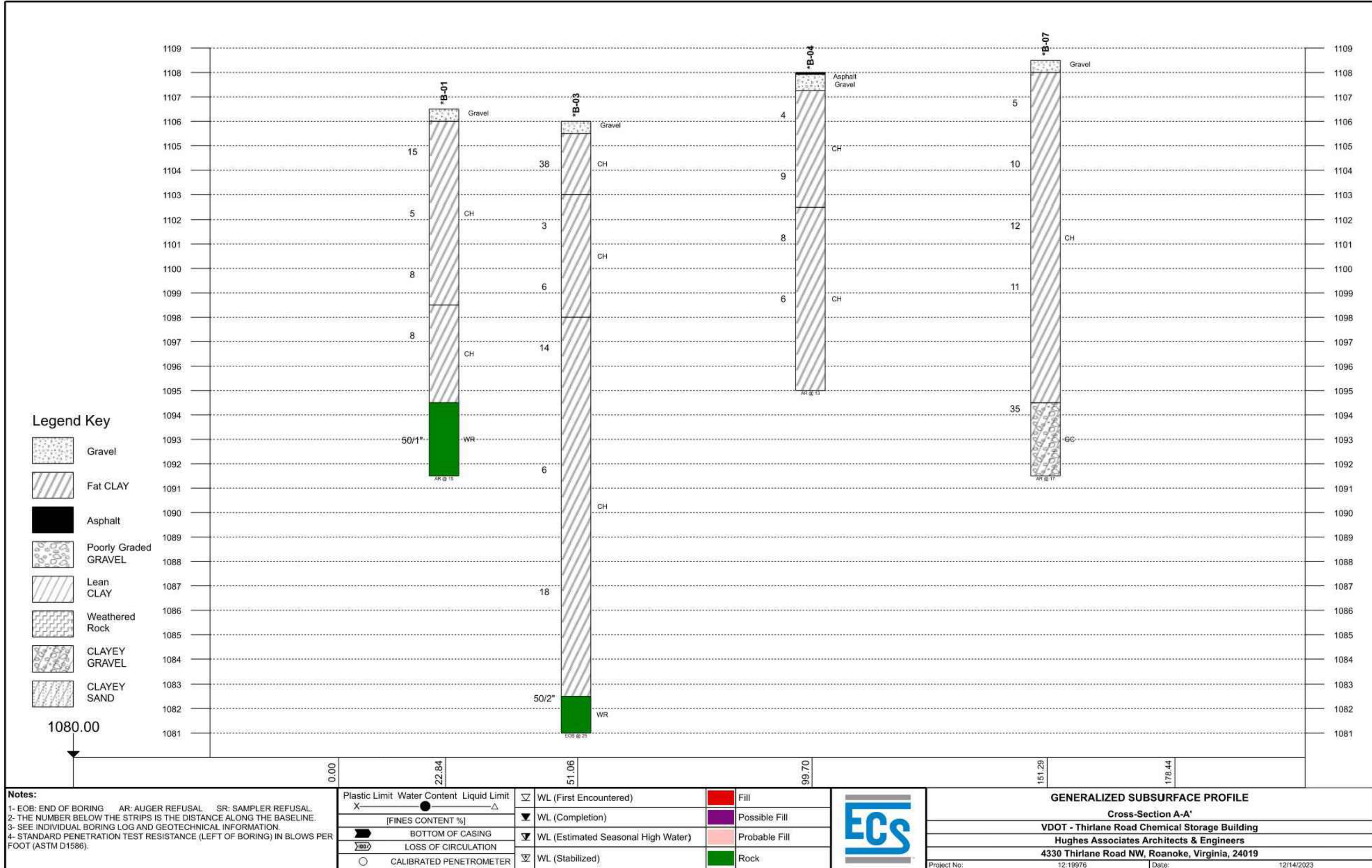
Revised 7/25/24
SWPPP Sheet 4 of 4
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BORING LOCATION DIAGRAM
VDOT - THIRLANE ROAD CHEMICAL STORAGE BUILDING
4330 THIRLANE ROAD NW, ROANOKE, VIRGINIA
HUGHES ASSOCIATES ARCHITECTS & ENGINEERS

ENGINEER
DOS
SCALE
AS NOTED
PROJECT NO.
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ARCHITECTS & ENGINEERS
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540.342.4002
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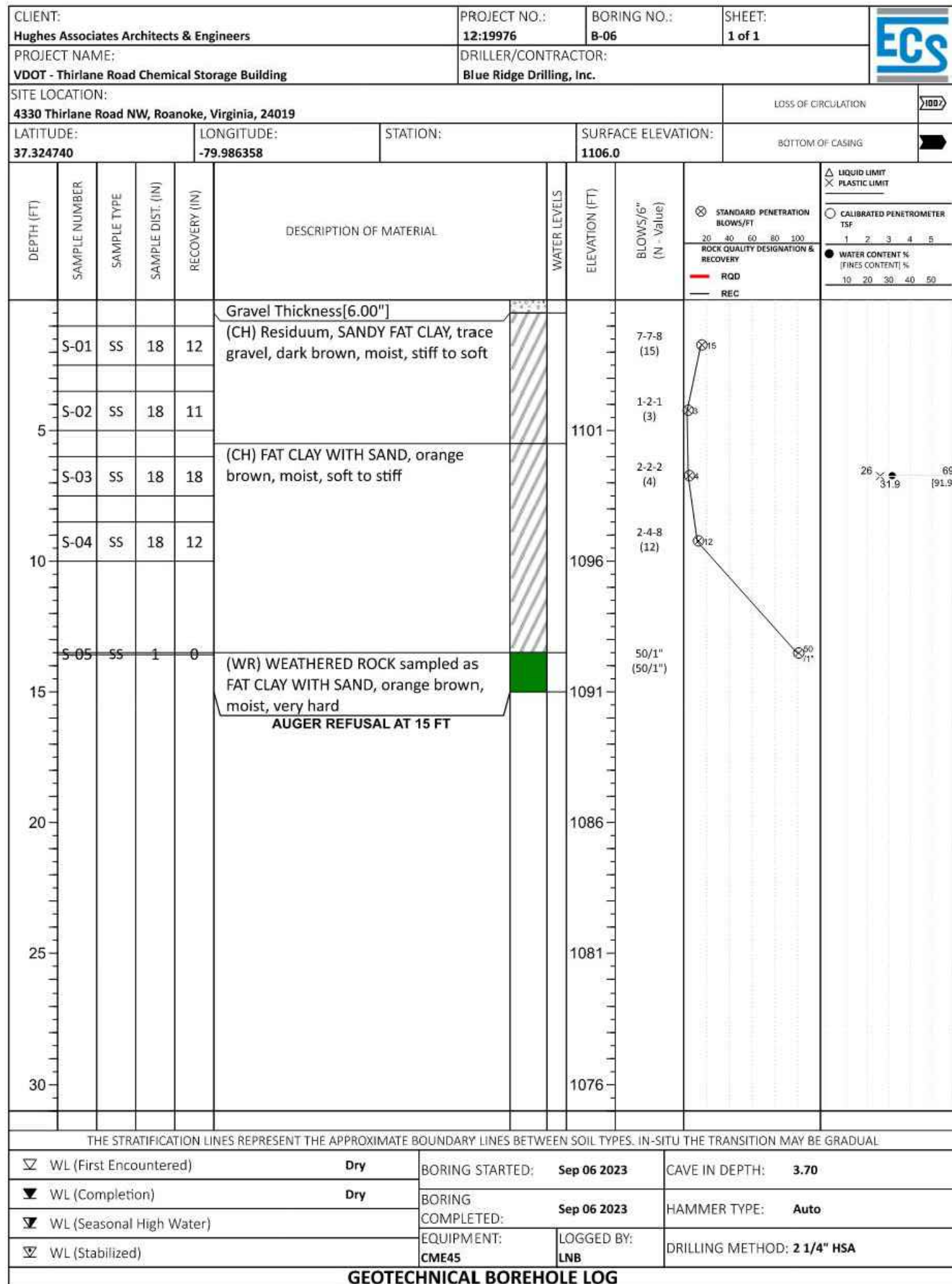
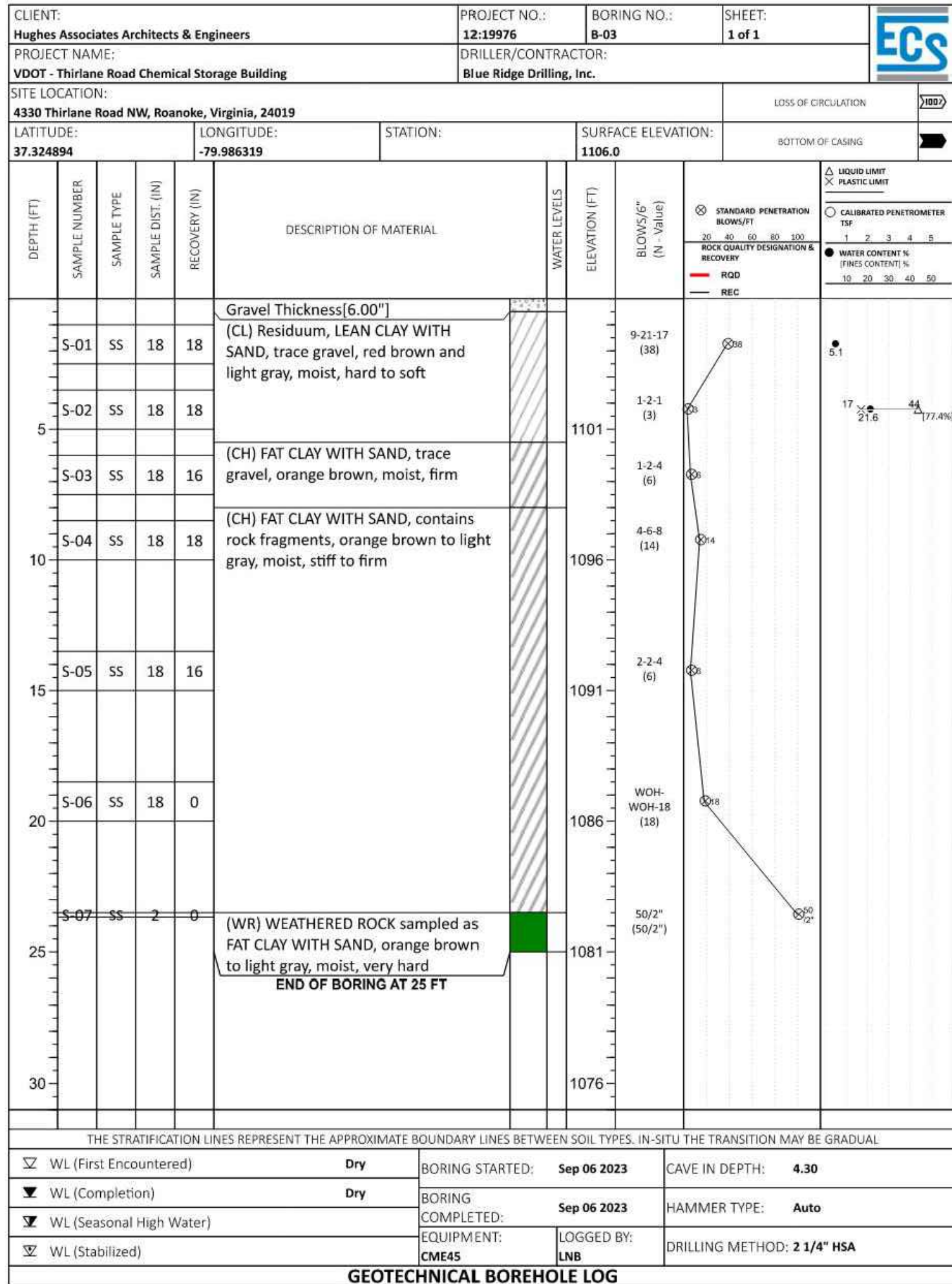
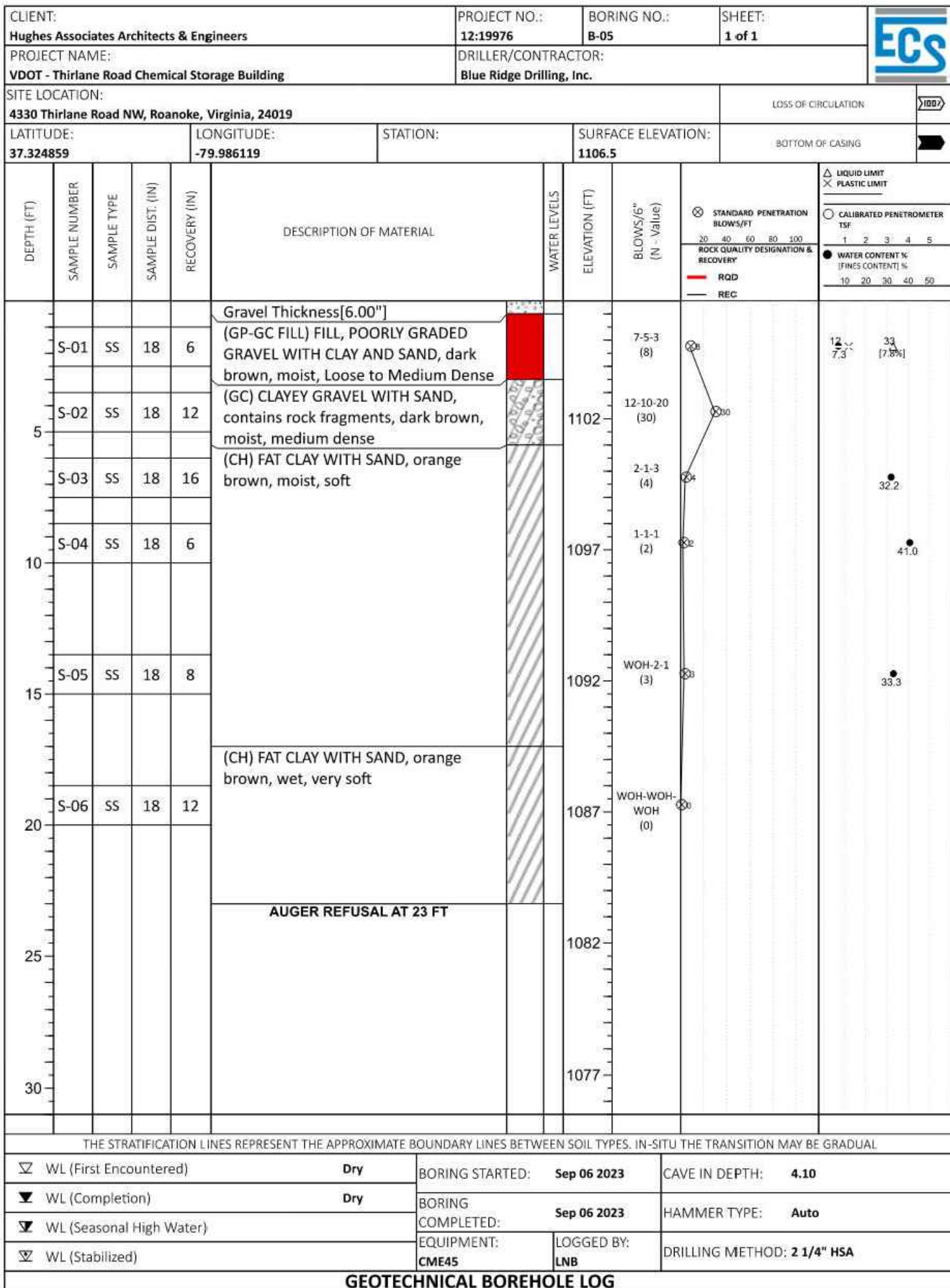
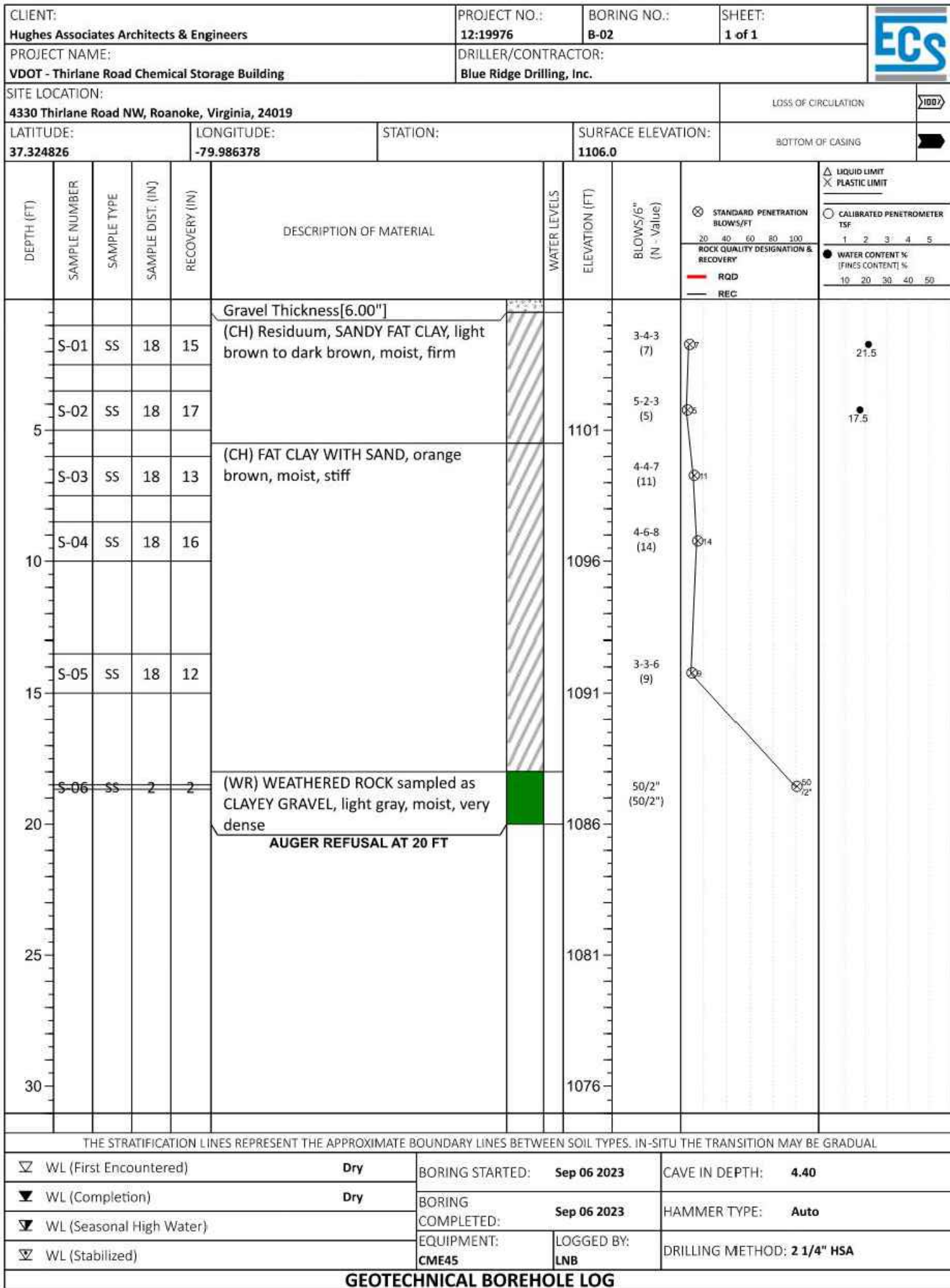
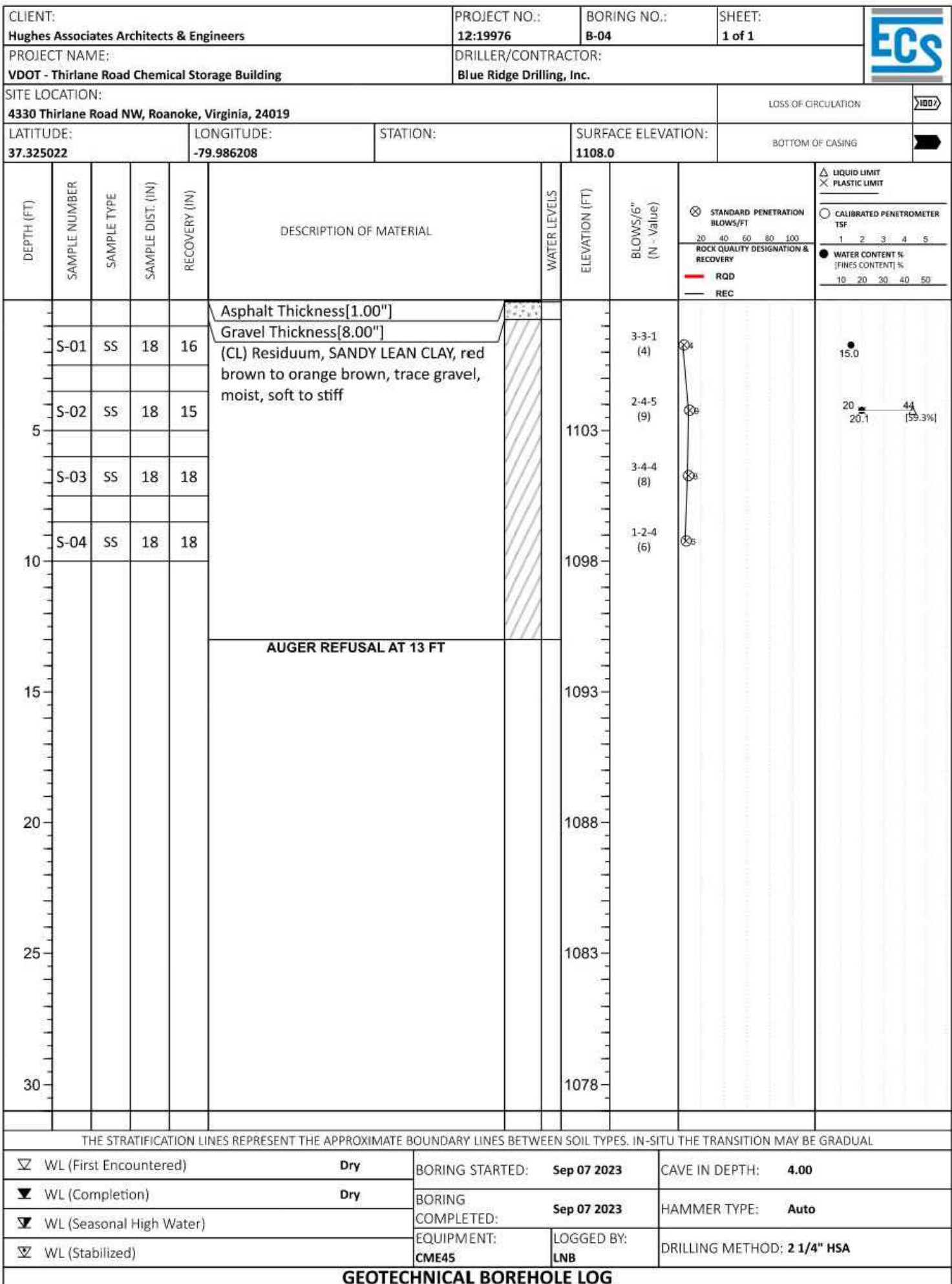
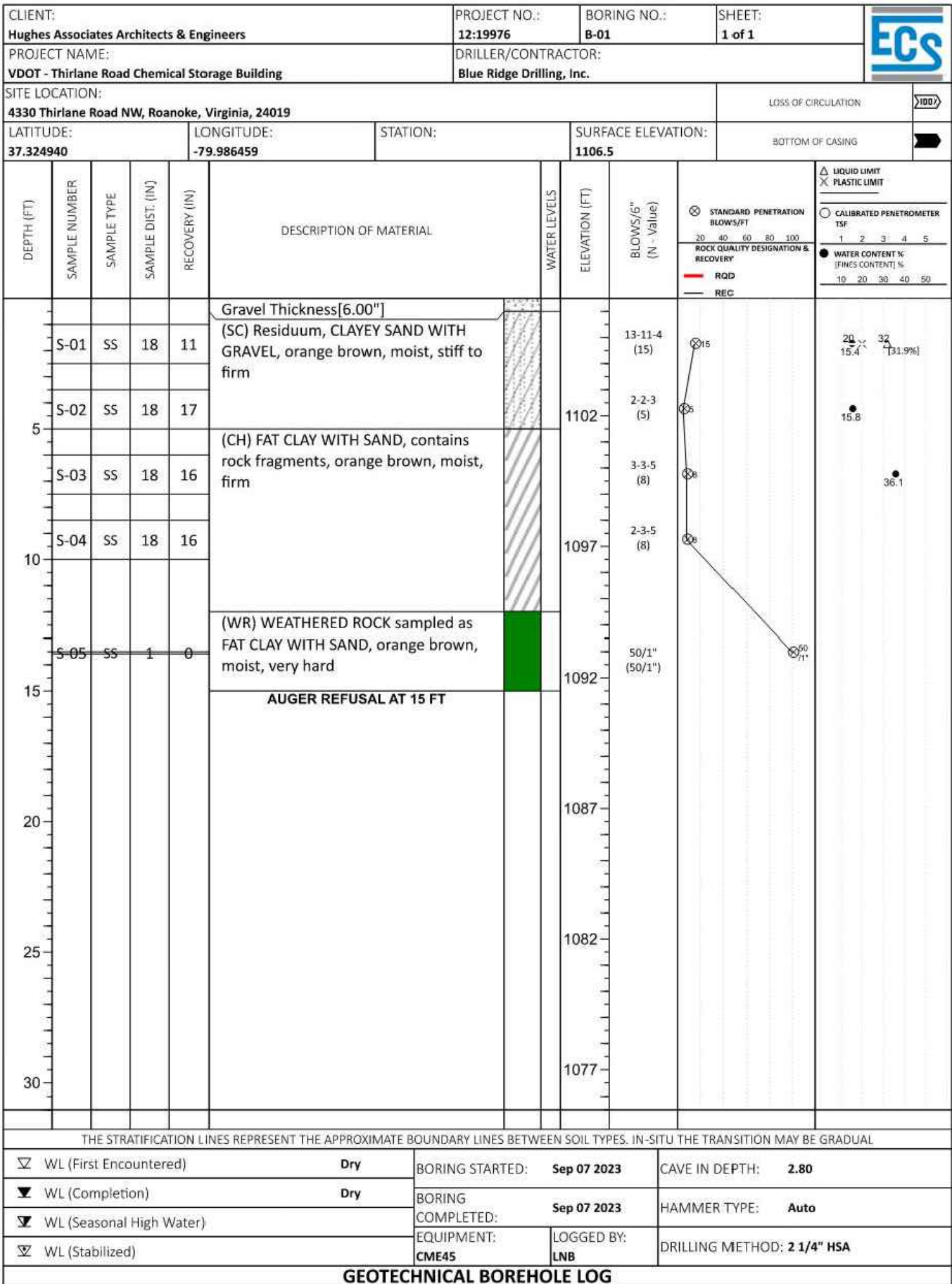
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SOIL BORING LOGS

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501-18130-077

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JOHNATHAN C. BRODIE
Lic. No. 053540
PROFESSIONAL ENGINEER

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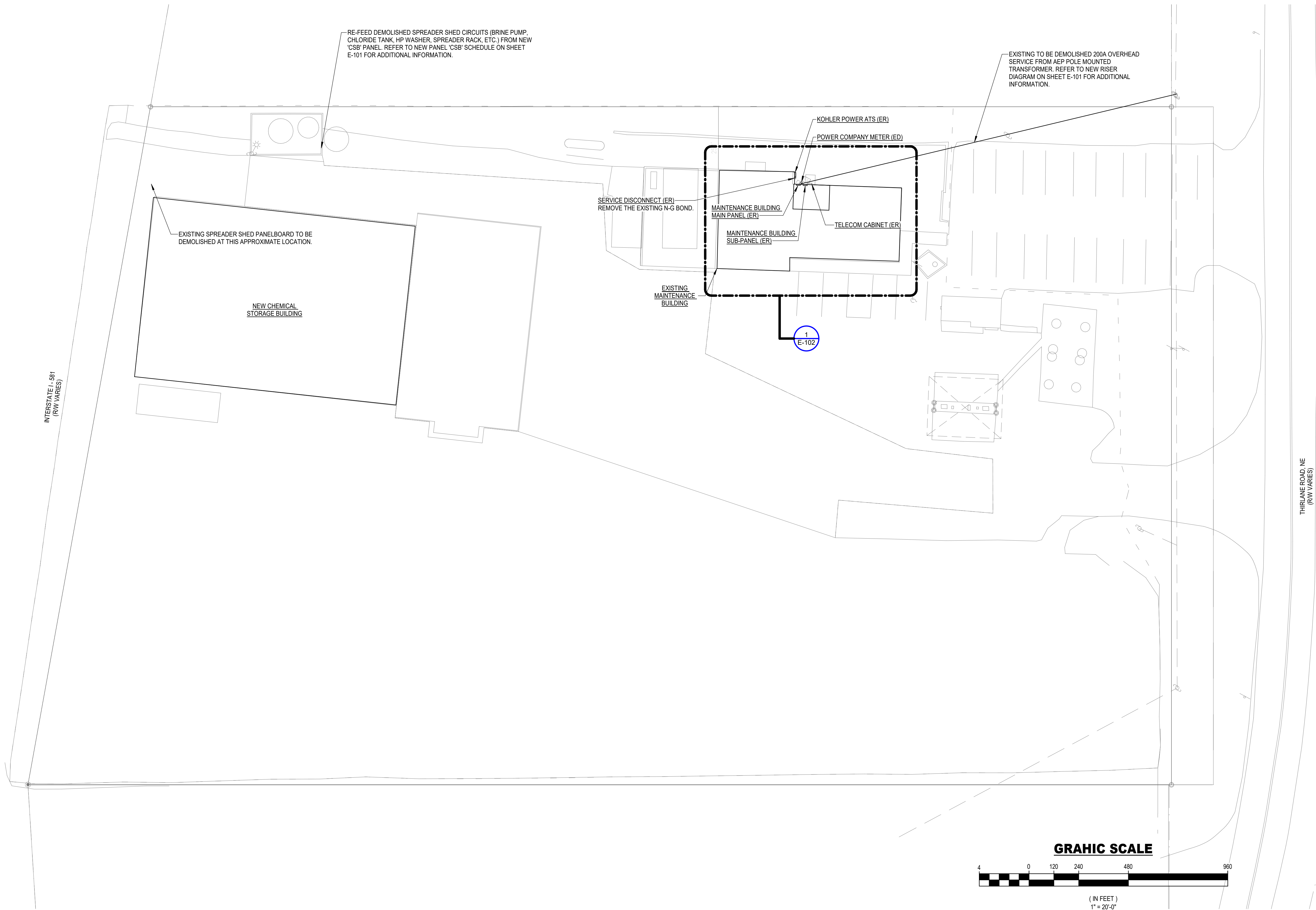
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12/06/2024
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Lic. No. 053540
PROFESSIONAL ENGINEER

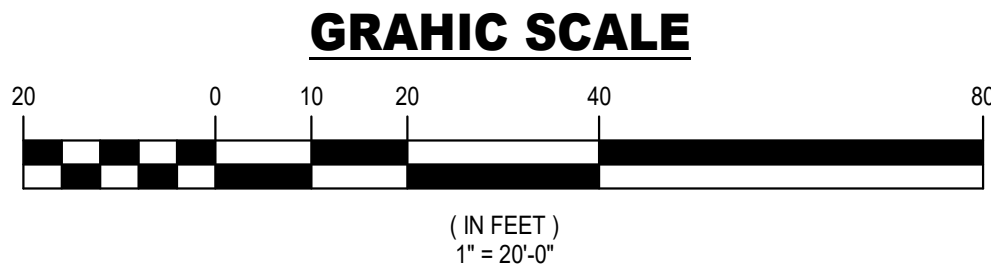
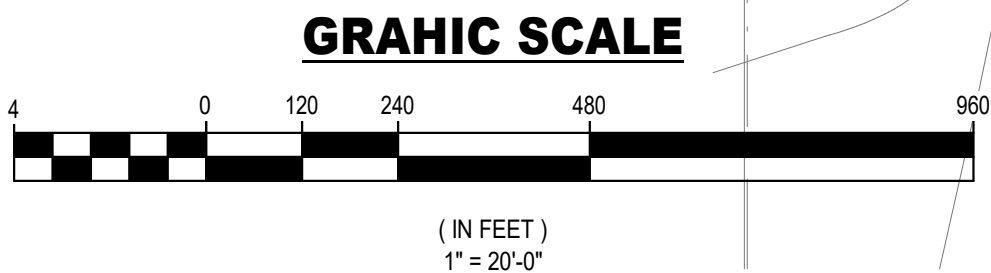
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Project Number: 2023-04335-00
119 Norfolk Ave SW Suite 310
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1 ELECTRICAL SITE DEMOLITION PLAN
Scale: 1" = 20'-0"



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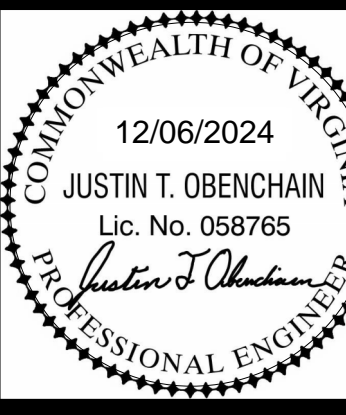
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ARCHITECTS & ENGINEERS
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CHEMICAL STORAGE BUILDING
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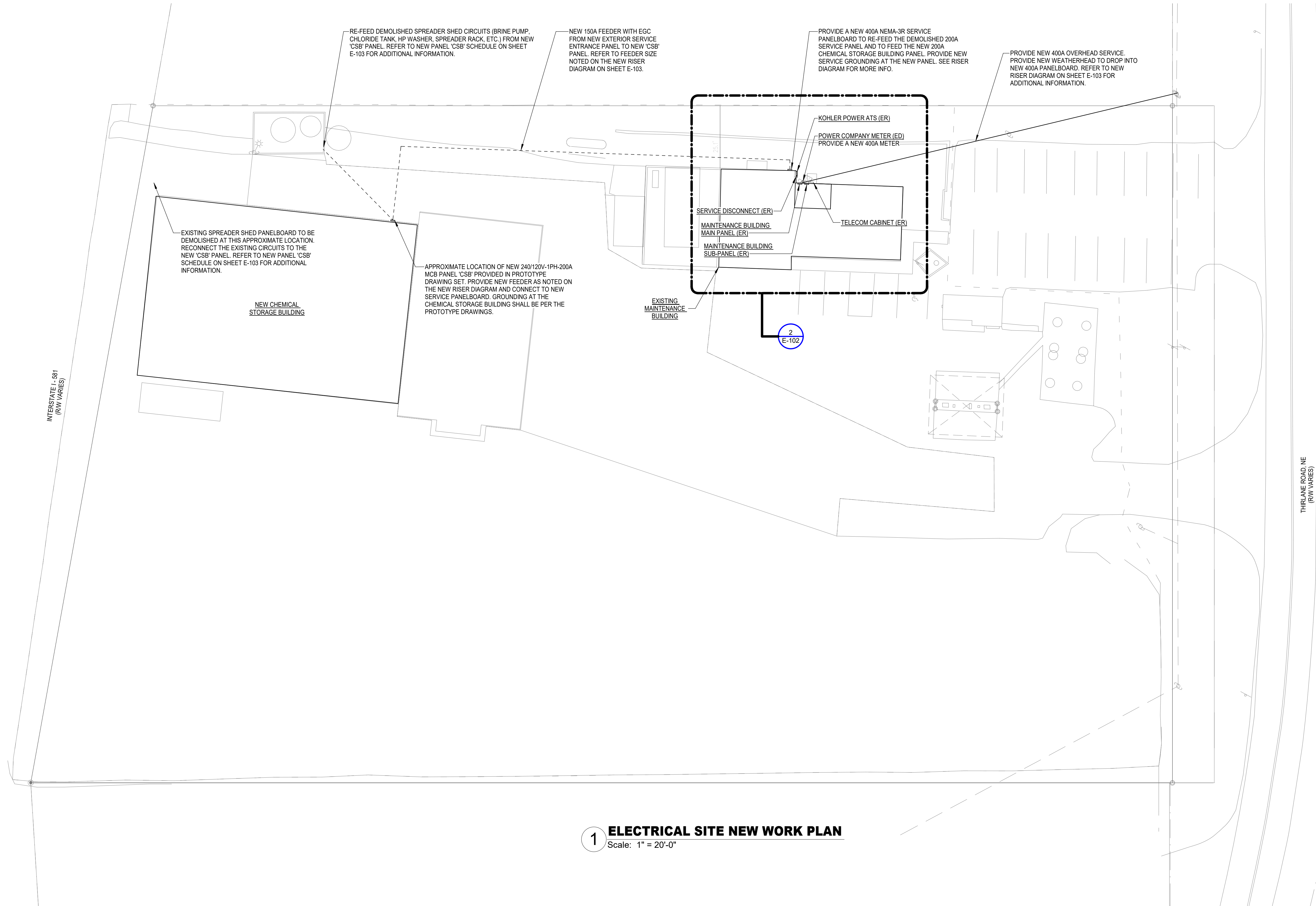
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ELECTRICAL SITE
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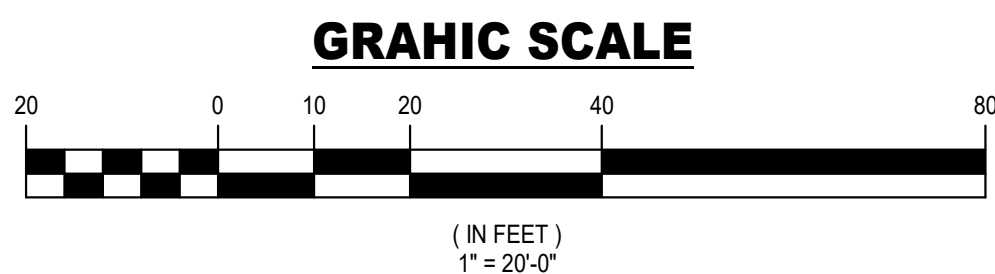
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1 ELECTRICAL SITE NEW WORK PLAN
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540.342.4002
www.hughesae.com

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ELECTRICAL SITE NEW
WORK PLAN

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12/06/2024
JUSTIN T. OBENCHAIN
Lic. No. 058765
PROFESSIONAL ENGINEER

COMMISSION No.
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ARCHITECTS & ENGINEERS
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540.342.4002
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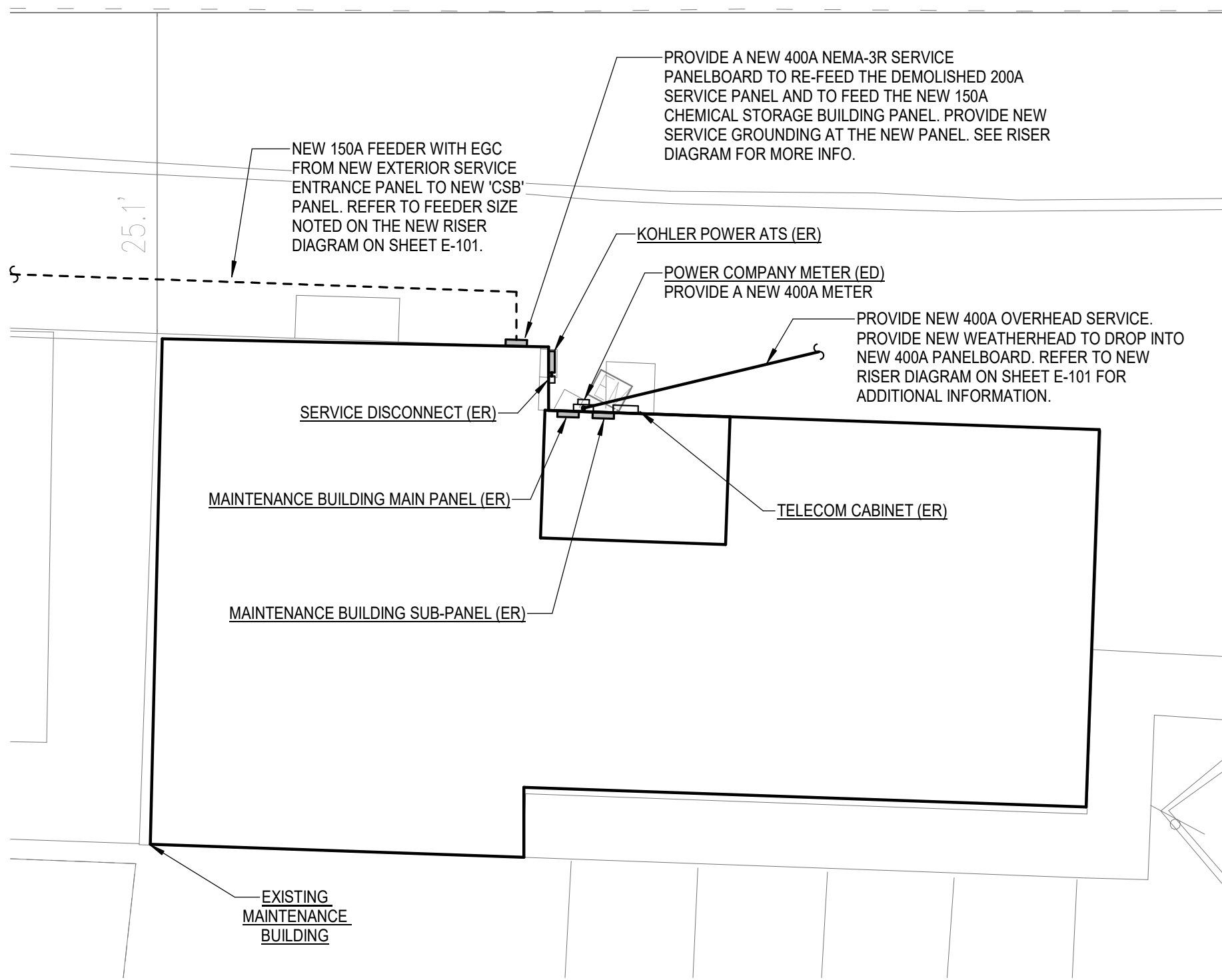
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ENLARGED ELECTRICAL
SERVICE SITE PLANS

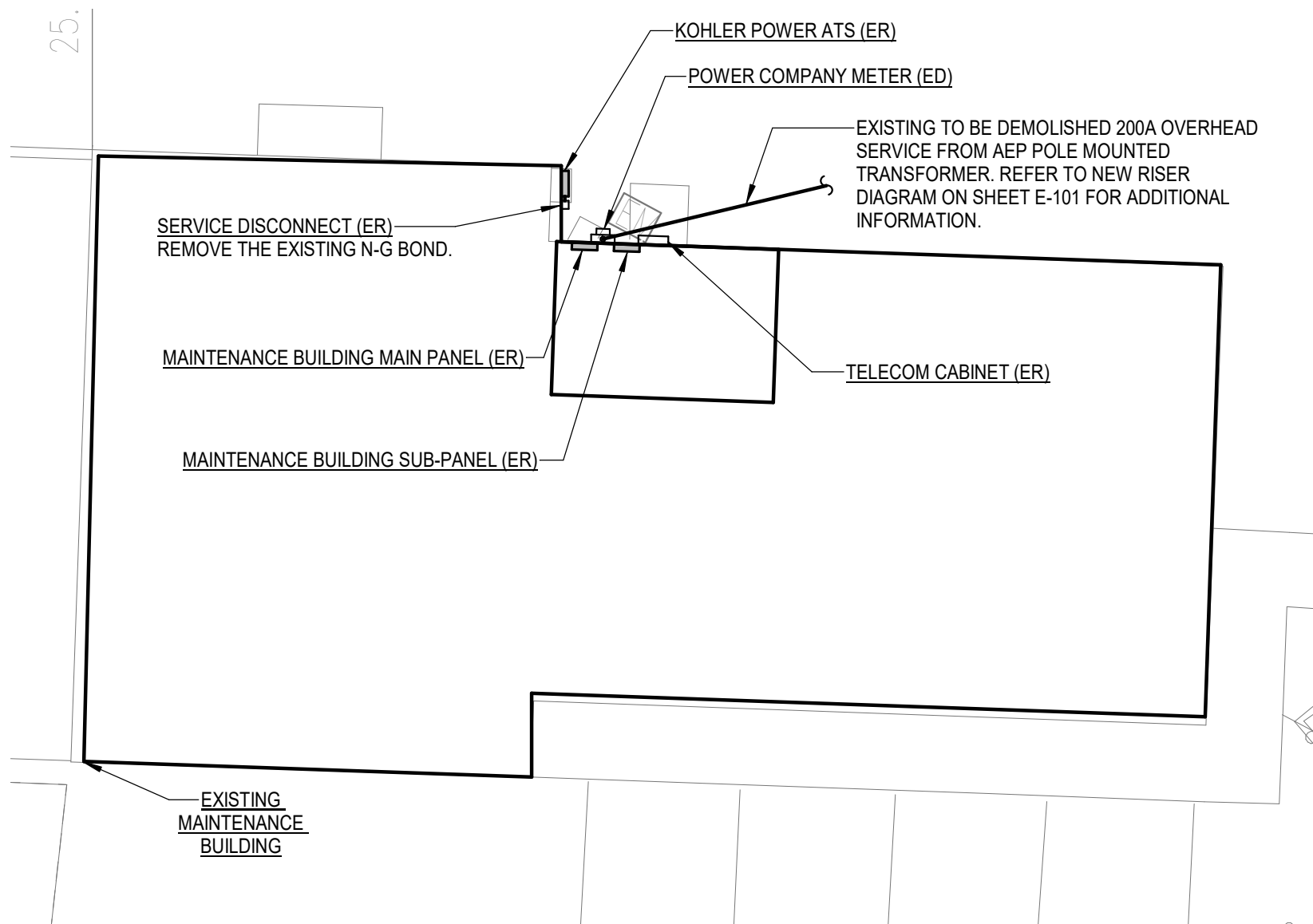
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12/06/2024
JUSTIN T. OBENCHAIN
Lic. No. 058765
PROFESSIONAL ENGINEER

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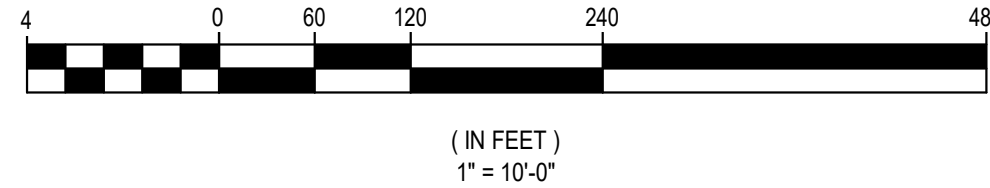


2 ENLARGED ELECTRICAL SITE NEW WORK PLAN
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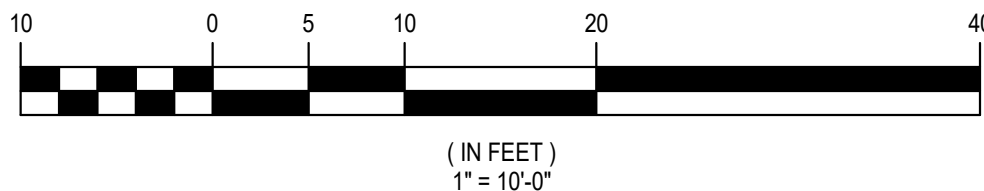


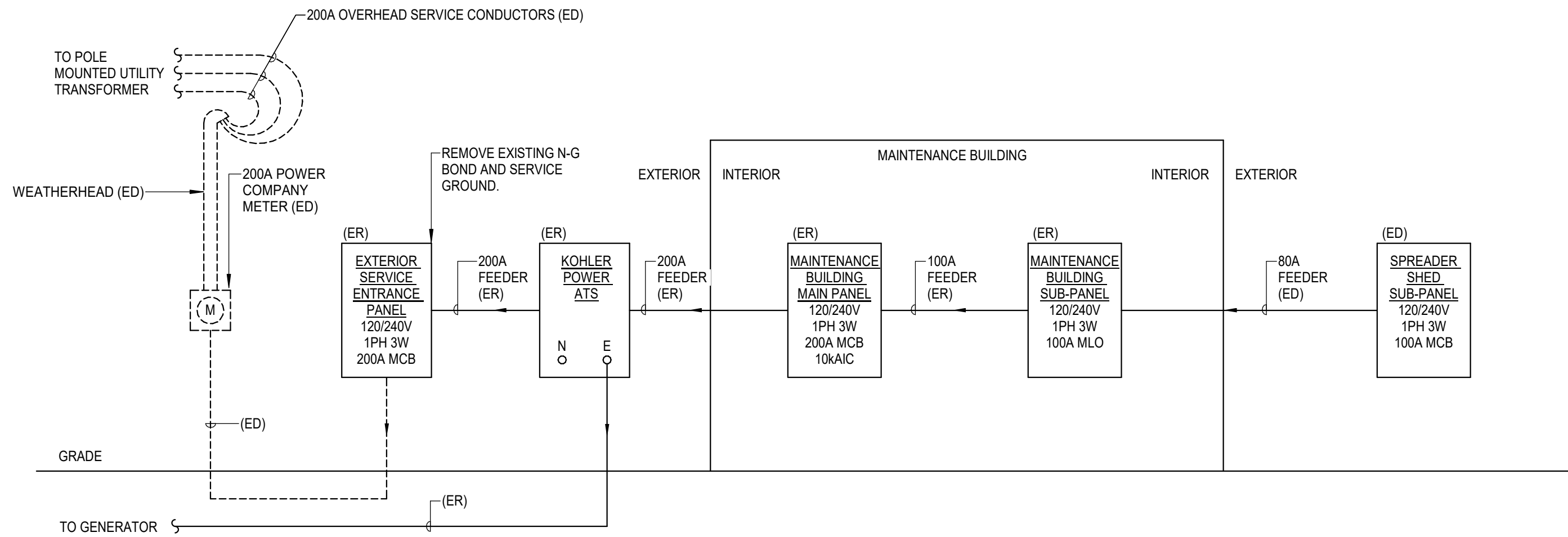
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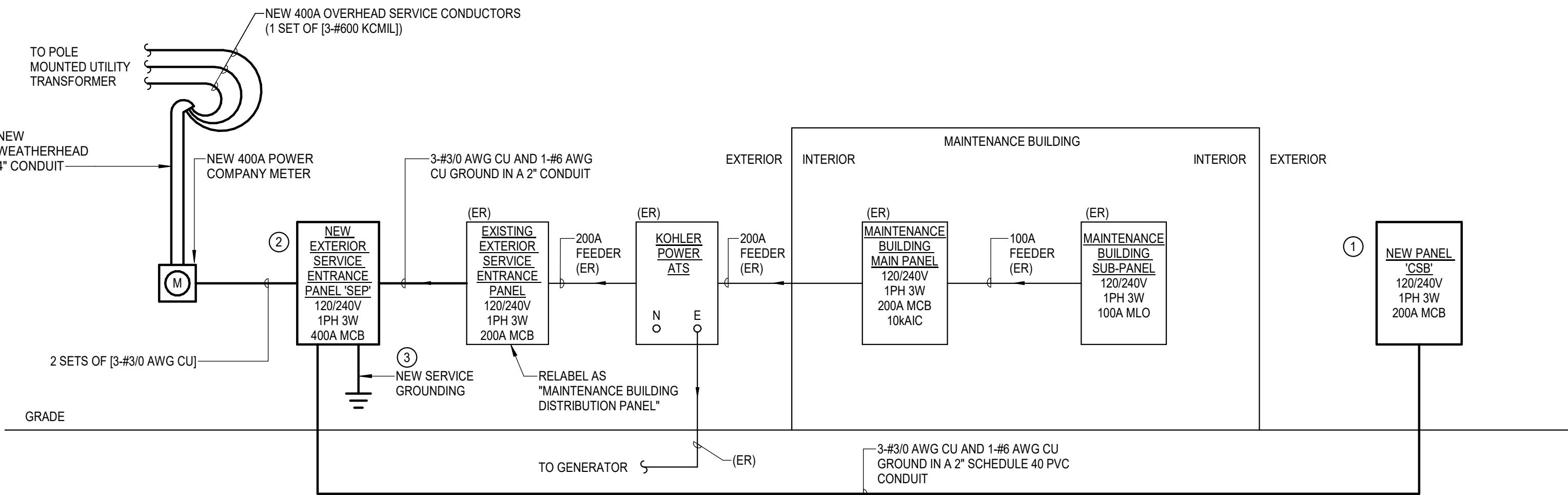


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1 EXISTING RISER DIAGRAM
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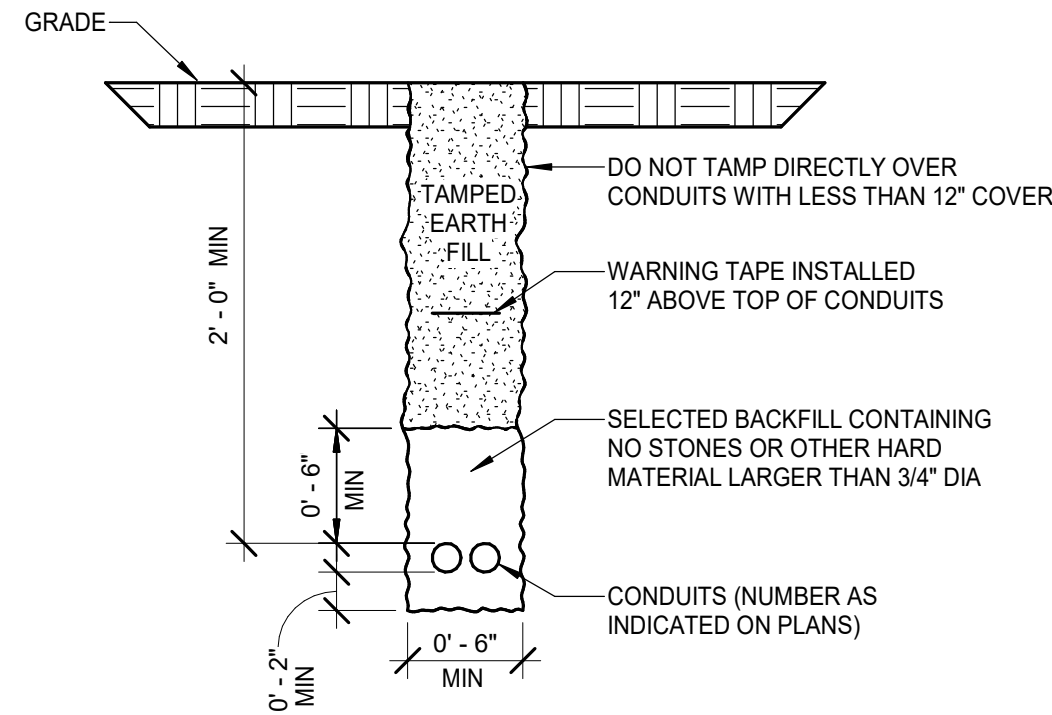
2 NEW RISER DIAGRAM
Scale: NONE

NEW RISER DIAGRAM KEYED NOTES: #

1. NEW PANEL CSB IS BEING PROVIDED AS PART OF THE CHEMICAL STORAGE BUILDING PROJECT OUTSIDE OF THE SCOPE OF THIS PROJECT. THIS PANELBOARD SHALL BE UTILIZED TO RE-FEED EXISTING LOADS AS INDICATED ON SHEET E-100. REFER TO THE PANELBOARD SCHEDULE ON THIS SHEET.
2. PROVIDE PANELBOARD WITH A NEMA 3R ENCLOSURE.
3. REFER TO GROUNDING SCHEMATIC ON SHEET E-104.

CONFIRM BREAKER SIZE IN THE FIELD PRIOR TO INSTALLATION

Branch Panel: CSB															
Location: Supply From: SEP Mounting: SURFACE						Volts: 120/240 Single Phases: 1 Wires: 3 Phase in kVA						A.I.C. Rating: 10,000 (MIN.) Enclosure: Type 4X Mains: 200A MCB			
NOTE	CKT	CIRCUIT DESCRIPTION	WIRE	GND	CONDUIT	BKR	A	B	BKR	CONDUIT	GND	WIRE	CIRCUIT DESCRIPTION	CKT	NOTE
	1	INTERIOR LIGHTING	ER	ER	ER	20 1	0.8 / 0.2		1 20	ER	ER	ER	RECEPTACLE CIRCUIT	2	
	3	INTERIOR LIGHTING	ER	ER	ER	20 1		0.8 / 0.2	1 20	ER	ER	ER	RECEPTACLE CIRCUIT	4	
	5	INTERIOR LIGHTING	ER	ER	ER	20 1	0.8 / 0.5		1 20	ER	ER	ER	LIGHTING CONTROL POWER	6	
	7	EXTERIOR LIGHTING	ER	ER	ER	20 1		0.5 / 0.7	1 20	1"	1#12	2#12	RECEPTACLES	8	SS,SB
	9	SIDE EXIT LIGHTING	ER	ER	ER	20 1	0.3 / 0.5		1 20	1"	1#12	2#12	DUSK-DAWN LIGHTING	10	SS,SB
SS,SB	11	CHLORIDE TANK	2#10	1#10	1"	20 1		1.4 / 0.5	1 20	1"	1#12	2#12	LIGHTING	12	SS,NB
	13	"RESERVED FOR SITE SPECIFIC..."	ER	ER	ER	60 2	5.8 / 0.5		1 20	1"	1#12	2#12	LIGHTING	14	SS,SB
	15						5.8 / 0.5		1 20	1"	1#12	2#12	EXISTING LOAD TITLED "RED"	16	SS,NB
	17						1.4 / 0.5		1 20	1"	1#12	2#12	DUSK-DAWN LIGHTING	18	SS,SB
SS,NB	19	BRINE PUMP	2#12	1#12	1"	20 2		1.4 / 2.9	2 40	1"	1#10	2#8	TANDUM SPREADER RACK	20	SS,NB
SS,NB	21	HP WASHER	2#10	1#10	1"	30 2	2.2 / 2.9							22	
	23						2.2 / 0.0		1 --	--	--	--	SPACE ONLY	24	--
--	25	SPACE ONLY	--	--	--	-- 1	0.0 / 0.0		1 --	--	--	--	SPACE ONLY	26	--
	27								2 50	ER	ER	ER	TYPE 1 SPD	28	
--	29	"RESERVED FOR SITE SPECIFIC..."	--	--	--	-- 2	0.0 / 0.1							30	
							Total Load: Total Amps:								
							16.4 kVA 137 A		16.9 kVA 141 A						
Load Classification			Connected Load			Demand Factor			Estimated Demand			Panel Totals			
Lighting			5.7 kVA			125.00%			7.1 kVA						
Miscellaneous			23.6 kVA			100.00%			23.6 kVA			Total Conn. Load: 33.3 kVA			
Motor			2.9 kVA			100.00%			2.9 kVA			Total Est. Demand: 34.7 kVA			
Receptacles			1.1 kVA			100.00%			1.1 kVA			Total Conn. Current: 139 A			
												Total Est. Demand Current: 145 A			
Notes:															
1. NEW PANEL CSB IS BEING PROVIDED AS PART OF THE CHEMICAL STORAGE BUILDING PROJECT OUTSIDE OF THE SCOPE OF THIS PROJECT. ALL CIRCUITS SHOWN WILL BE PROVIDED AS PART OF THE CHEMICAL STORAGE BUILDING PROJECT, UNLESS NOTED OTHERWISE.								Abbreviations: G - PROVIDE GFCI CIRCUIT BREAKER 1-L - REFER TO ELECTRICAL RISER DIAGRAMS							



4 TYPICAL UNDERGROUND CONDUIT INSTALLATION
Scale: 1 : 10

EQUIPMENT SERVED OR CIRCUIT NUMBER	CIRCUIT PHASE 1 = SINGLE 3 = THREE	CIRCUIT VOLTS (V)	TOTAL CIRCUIT AMPS (A)	TOTAL CIRCUIT LOAD (KVA)	NUMBER OF COND PER PHASE	COND TYPE 1 = CU 2 = AL	ONE WAY LENGTH OF CIRCUIT (FT)	ACTUAL CONDUCTOR SIZE USED (AWG/KCMIL)	RESULTS FOR CONDUCTOR USED			PROPORTIONAL EGC CALCULATIONS FOR UPSIZED CONDUCTOR			
									VOLTS DROP	% VOLTS DROP	FINAL VOLTAGE	ORIGINAL PH CONDUCTOR	ACTUAL PH CONDUCTOR	ORIGINAL EGC	PROPORTIONAL EGC
NEW CSB	1	240	200	48.00	1	1	200	3/0	6.13V	2.55%	233.87V	3/0	3/0	6	6

3 VOLTAGE DROP CALCULATOR
Scale: NONE

Branch Panel: SEP															
Location: Supply From: Mounting: SURFACE						Volts: 120/240 Single Phases: 1 Wires: 3 Phase in kVA				A.I.C. Rating: 22,000 Enclosure: Type 3R Mains: 400A MCB					
NOTE	CKT	CIRCUIT DESCRIPTION	WIRE	GND	CONDUIT	BKR	A	B	BKR	CONDUIT	GND	WIRE	CIRCUIT DESCRIPTION	CKT	NOTE
SF	1	NEW PANEL CSB	3#3/0	1#3	2"	150	16.4 / 19.5							2	
	3													4	
--	5	SPARE	--	--	--	20	0.0 / 0.0	16.9 / 19.5	2	200	2"	1#6	3#3/0	EXISTING SERVICE PANEL	6
	7							0.0 / 0.0	2	20	--	--	--	SPARE	8
--	9	SPARE	--	--	--	20	0.0 / 0.0		2	20	--	--	--	SPARE	10
	11							0.0 / 0.0	2	20	--	--	--	SPARE	12
--	13	SPARE	--	--	--	20	0.0 / 0.0		1	20	--	--	--	SPARE	14
	15	SPARE	--	--	--	20		0.0 / 0.0	2	30	--	--	--	SPD BREAKER	16
--	17	SPARE	--	--	--	20	0.0 / 0.0								18
Total Load:							35.9 kVA	36.4 kVA							
Total Amps:							299 A	304 A							
Load Classification				Connected Load		Demand Factor		Estimated Demand		Panel Totals					
Lighting				5.7 kVA		125.00%		7.1 kVA							
Miscellaneous				62.6 kVA		100.00%		62.6 kVA		Total Conn. Load: 72.3 kVA					
Motor				2.9 kVA		100.00%		2.9 kVA		Total Est. Demand: 73.7 kVA					
Receptacles				1.1 kVA		100.00%		1.1 kVA		Total Conn. Current: 301 A					
										Total Est. Demand Current: 307 A					
Notes:															
1. PROVIDE PANEL WITH INTEGRAL SPD. PROVIDE SPD BREAKER AND WIRE SIZED AS RECOMMENDED BY SPD MANUFACTURER.								Abbreviations:							
								G - PROVIDE GFCI CIRCUIT BREAKER							
								1-L - REFER TO ELECTRICAL RISER DIAGRAMS							

REVISIONS	DATE: FEB. 5, 2024
1	
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HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA 24018
www.hughesaec.com
540.342.4002

VDOT Virginia Department of Transportation
CHEMICAL STORAGE BUILDING
SALEM DISTRICT AIRPORT AHQ
4330 THIRLANE RD, NW ROANOKE, VA 24019

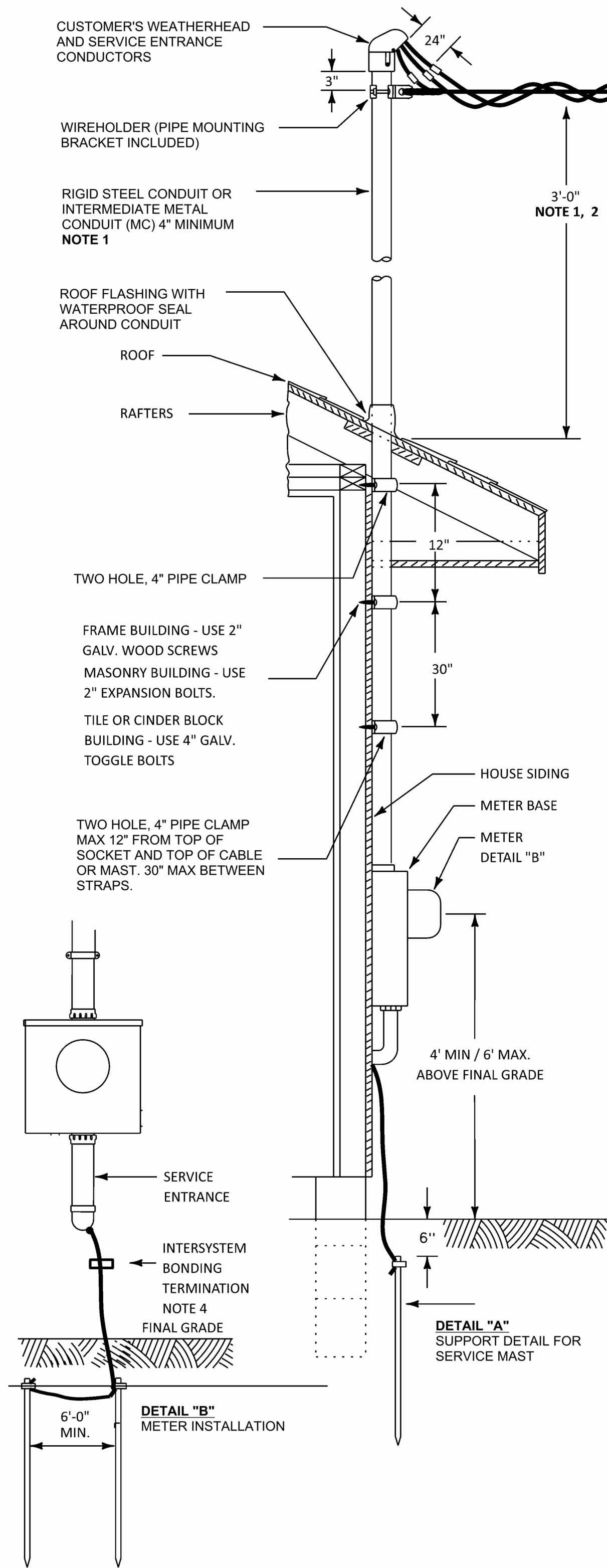
DRAWN BY: AMU
CHECKED BY: SRL

RISER DIAGRAMS,
PANEL SCHEDULES,
AND CALCULATIONS

PROJECT CODE:
501-18130-077

12/06/2024
JUSTIN T. OBENCHAIN
Lic. No. 058765
PROFESSIONAL ENGINEER

COMMISSION No.
23027
SHEET
E-103



3 SUPPORT DETAIL FOR SERVICE METER
Scale: NONE

GENERAL CONDITION NOTES:

METER BASE SHALL BE INSTALLED OUTSIDE THE BUILDING WALL NEAREST TO APCO SERVICE FACILITIES OR AT A LOCATION DESIGNATED BY AN APCO REPRESENTATIVE. LOCATION MUST BE EASILY ACCESSABLE AND OUT OF THE WAY OF PEDESTRIAN AND VEHICULAR TRAFFIC.

JACKETED SEU ENTRANCE CABLE SHALL BE USED FOR NON-PIPE MAST INSTALLATIONS. SINGLE RATED CABLE SHALL NOT BE USED.

OUTSIDE DISCONNECTS SHALL BE REQUIRED FOR MANUFACTURED HOMES OR ANY TIME THE ENTRANCE CABLE IS GREATER THAN 6' IN LENGTH ONCE IT PENETRATES THE EXTERIOR WALL. THE DISCONNECT MUST HAVE AN ADDITIONAL BREAKER THAT IS CAPABLE OF SERVING AN EXTERNAL LOAD. IF DISCONNECT IS INSTALLED, FOUR WIRE TRIPLE RATED ENTRANCE CONDUCTORS SHALL BE INSTALLED BETWEEN THE DISCONNECT AND THE MAIN PANEL. CONDUIT IS REQUIRED FOR THE ENTIRE RUN AND MUST BE SECURELY FASTENED TO THE UNDERSIDE OF THE HOME.

THE COMPANY WILL BE RESPONSIBLE FOR:

- DESIGNATING THE LOCATION OF THE SERVICE MAST AND THE METER.
- PROVIDING AND INSTALLING THE OVERHEAD SERVICE DROP. THE SERVICE DROP TENSION IS TO BE LIMITED TO 500 LBS. UNDER LOADED CONDITIONS.
- PROVIDING THE METER BASE TO THE CUSTOMER WHERE REQUIRED.
- INSTALLING AND REMOVING THE METER.

GENERAL CONSTRUCTION NOTES:

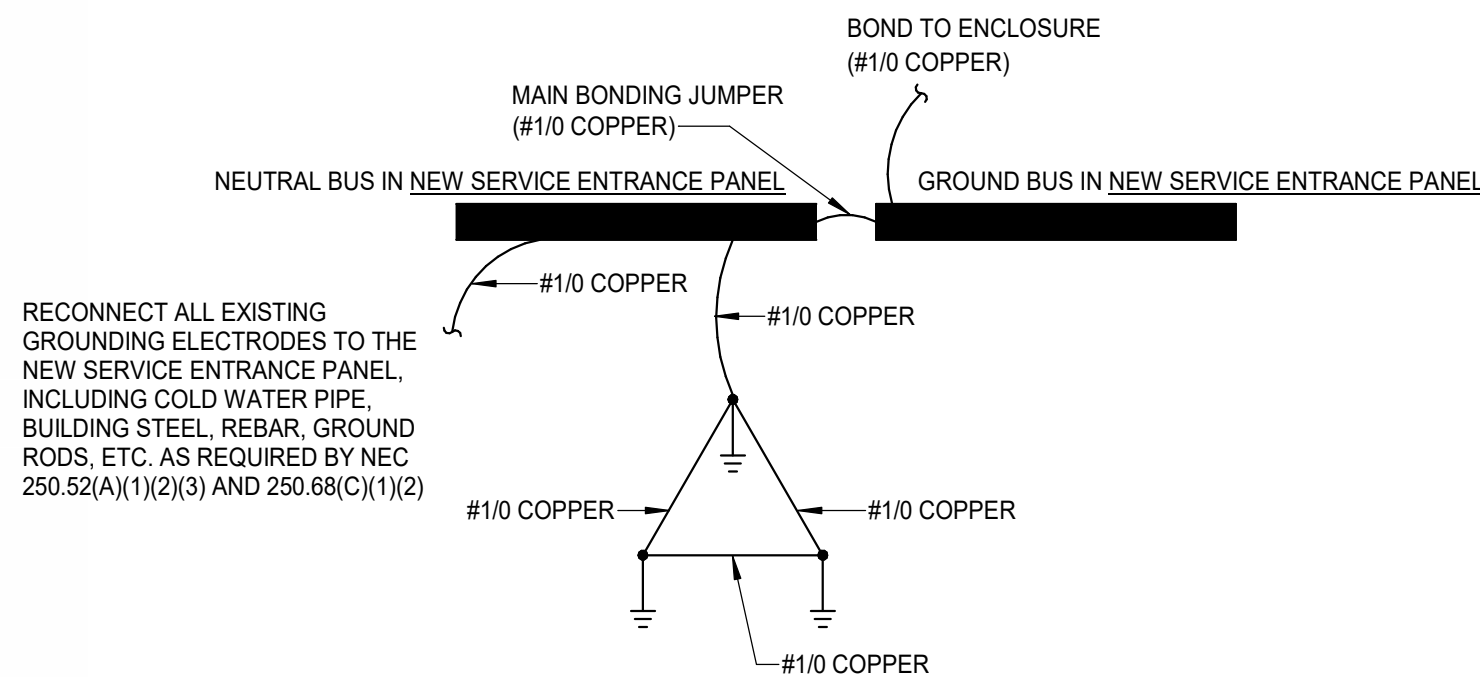
- FOR INSTALLATIONS ABOVE ROOF, MAST SHALL BE GALVANIZED RIGID CONDUIT OR IMC. MINIMUM 2" FOR SERVICES UP TO 200 AMPS AND 3" FOR 320 AMPS. ONLY POWER SERVICE CONDUCTORS ARE ALLOWED TO CONTACT THE SERVICE MAST, NEC (230-28).
- MINIMUM HEIGHT OF 18", MAXIMUM HEIGHT OF 36" WITHOUT GUYING.
- CUSTOMER GROUNDING SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE. THE GROUND WIRE MUST NOT BE CONNECTED OR PASS THROUGH THE METER SOCKET. CUSTOMER SHALL HAVE A MINIMUM OF 2 - 5/8"X 8' COPPER CLAD GROUND RODS AT LEAST 6' APART. MINIMUM #4 CU GROUND WIRE MUST BE CONTINUOUS THROUGH AND TO THE SECOND GROUND ROD. ON EXISTING INSTALLATIONS, THE SECOND GROUND ROD CAN BE ADDED WITHOUT CHANGING THE EXISTING GROUNDING CONDUCTOR AS LONG AS IT IS PROPERLY BONDED TO THE FIRST ROD. CLAMPS SHALL BE UL APPROVED.
- FOR NEW AND ALTERED INSTALLATIONS AN INTERSYSTEM BONDING TERMINATION SHALL BE PROVIDED EXTERNALLY TO ENCLOSURES AT THE SERVICE EQUIPMENT. A METER BOX GROUND CLAMP IS NOT PERMITTED.

ELECTRICAL GENERAL NOTES:
(NOTES APPLY TO ALL SHEETS)

- ALL CONDUCTORS SHALL BE COPPER, UNLESS OTHERWISE INDICATED.
- FOR ALL EXTERIOR ELECTRICAL EQUIPMENT, FURNISH AND INSTALL WITH NEMA 3R ENCLOSURES MINIMUM. IN THE EVENT THAT THERE IS A DISCREPANCY BETWEEN THIS REQUIREMENT AND INFORMATION LOCATED ELSEWHERE IN THE ELECTRICAL DOCUMENTS, THE CONTRACTOR SHALL BID ACCORDING TO THE MOST STRINGENT REQUIREMENT.
- SEE ARCHITECTURAL DRAWINGS FOR RATED WALL, FLOOR AND CEILING CONSTRUCTION, AND PROVIDE REQUIRED RATED DEVICES AND FIRE SEALANT FOR PENETRATIONS. WHERE NEW DEVICES ARE SHOWN RECESSED IN RATED PARTITIONS, CAREFULLY COORDINATE LOCATIONS AND OFFSETS.
- COORDINATE WITH OTHER DISCIPLINES IN THE FIELD TO ENSURE THAT THE INTEGRITY OF FIRE RATED CONSTRUCTION IS PRESERVED WHERE PENETRATING RATED WALLS, FLOORS AND CEILINGS.
- EXPOSED CONDUIT AND BOXES MAY BE USED IN UNFINISHED AREAS (MECHANICAL ROOMS, ELECTRICAL ROOMS, TELECOMMUNICATIONS ROOMS, ETC.).
- THE CONTRACTOR SHALL ROUTE ALL EXPOSED CONDUIT NEATLY AND TIGHT TO SUPPORTING SURFACES. IN THE EVENT THAT THE OWNER IS NOT SATISFIED WITH WORKMANSHIP, THE CONTRACTOR SHALL MAKE CORRECTIONS AT NO ADDITIONAL COST TO THE OWNER. MC CABLE IS NOT PERMITTED IN EXPOSED AREAS.
- FOR ALL CONDUIT RUNS SHOWN ON ELECTRICAL DRAWINGS, THE ROUTING IS APPROXIMATE. THE CONTRACTOR SHALL MAKE ROUTING ADJUSTMENTS AS REQUIRED BASED ON FIELD CONDITIONS AND COORDINATION WITH OTHER DISCIPLINES.
- FOR UNDERGROUND CONDUIT RUNS, PROVIDE ONE (1) PULL BOX FOR EVERY 500 FEET OF CONDUIT LENGTH AND FOR EVERY 360° OF CONDUIT BENDS, UNLESS OTHERWISE INDICATED MORE FREQUENTLY. FOR PULL BOXES LOCATED WITHIN DRIVABLE SURFACES, ENSURE THAT THE PULL BOX IS TRAFFIC RATED. IN THE EVENT THAT A PULL BOX IS REQUIRED ON A UTILITY CONDUIT RUN, ENSURE THAT THE PULL BOX MEETS ALL REQUIREMENTS OF THE RESPECTIVE UTILITY.
- LOAD SIDE CONDUCTOR AND CONDUIT SIZES FROM DISCONNECT SWITCHES, STARTERS AND VFDS TO EQUIPMENT SHALL BE THE SAME AS LINE SIDE CONDUCTORS AND CONDUIT.
- CAREFULLY COORDINATE ALL ELECTRICAL EQUIPMENT LOCATIONS WITH DUCTWORK, PIPING AND MECHANICAL EQUIPMENT. MAINTAIN ALL CLEARANCES AND SPACES REQUIRED BY THE NEC.
- WHERE MULTIPLE CIRCUITS ARE COMBINED IN A SINGLE CONDUIT, DERATE CONDUCTORS PER THE NEC. NOTIFY THE ENGINEER WHERE MULTIPLE CIRCUITS ARE COMBINED IN A SINGLE CONDUIT PRIOR TO INSTALLATION FOR APPROVAL.
- PROVIDE TYPED AS-BUILT PANEL SCHEDULES. HANDWRITTEN PANEL SCHEDULES WILL NOT BE ACCEPTED.
- FOR ALL EXTERIOR UNDERGROUND CONDUIT AND WIRING, CAREFULLY COORDINATE ALL WORK WITH EXISTING SOIL CONDITIONS AND WITH EXISTING AND NEW UTILITIES IN ORDER TO AVOID CONFLICTS. NOTIFY THE ENGINEER OF RECORD IF ROUTING MUST BE DIFFERENT FROM WHAT IS SHOWN ON THE DRAWINGS.
- THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING THEIR BID IN ORDER TO VERIFY ALL EXISTING CONDITIONS, TO DETERMINE THE FULL EXTENT OF DEMOLITION WORK REQUIRED, AND TO DETERMINE THE FULL EXTENT OF RELOCATION AND MODIFICATION WORK REQUIRED. THE CONTRACTOR IS FULLY RESPONSIBLE FOR COORDINATING ALL ELECTRICAL WORK WITH NEW AND EXISTING PIPING, DUCTWORK, CONDUIT, ETC. NO CHANGE ORDERS WILL BE APPROVED FOR ADDITIONAL WORK DUE TO THE CONTRACTOR NEGLECTING TO VISIT THE SITE AND GATHER ALL NECESSARY INFORMATION.

GROUNDING SCHEMATIC GENERAL NOTES:

- ALL GROUND ROD CONNECTIONS SHALL BE EXOTHERMIC WELD. THE THREE (3) GROUND RODS SHOWN IN THE TRIPOD SHALL BE 10 FEET APART.
- GROUNDING ELECTRODE CONDUCTORS SHALL BE IN CONDUIT WHERE REQUIRED BY NEC 250.64(B).



1 GROUNDING SCHEMATIC
Scale: NONE

REVISIONS	DATE: FEB. 5, 2024
1	
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HUGHES ASSOCIATES
ARCHITECTS & ENGINEERS
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA 24018
540.342.4002
www.hughesae.com

VDOT Virginia Department of Transportation
CHEMICAL STORAGE BUILDING
SALEM DISTRICT AIRPORT AHQ
4330 THIRLANE RD, NW ROANOKE, VA 24019

DRAWN BY: AMU
CHECKED BY: SRL

DETAILS AND NOTES

PROJECT CODE:
501-18130-077

COMMONWEALTH OF VIRGINIA
12/06/2024
JUSTIN T. OBENCHAIN
Lic. No. 058765
PROFESSIONAL ENGINEER

COMMISSION No.
23027
SHEET
E-104



PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON

PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032
FOR CONSTRUCTION

AUGUST 4, 2022

REV 1 FEBRUARY 24, 2023

GENERAL NOTES:

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED FOR USE AS FABRICATION DRAWINGS. THESE DRAWINGS INDICATE THE GENERAL AND APPROXIMATE SIZE AND LOCATION OF MATERIAL. FIELD VERIFY ALL DIMENSIONS AND LOCATIONS PRIOR TO BEGINNING WORK. ALL UTILITIES NOTED ON PLANS ARE APPROXIMATE AND CONTRACTOR SHALL FIELD VERIFY LOCATION.

2. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO, THE 2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (JULY 1, 2021) AND ASSOCIATED CODES OF REFERENCE. REFER TO APPLICABLE CODES LIST THIS DRAWING.

3. ALL MATERIAL SHALL BE NEW UNLESS OTHERWISE NOTED. MATERIALS ARE BASED ON THE INDICATED MANUFACTURERS/MODELS AND ARE INTENDED ONLY TO SHOW THE GENERAL SIZE, CONFIGURATION, LOCATION, CONNECTIONS, AND SUPPORT FOR INDICATED MATERIAL WITH RELATION TO OTHER BUILDING SYSTEMS. MATERIAL BY ANY MANUFACTURER THAT MEETS THE SCHEDULED CRITERIA IS ACCEPTABLE. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ACTUAL INSTALLED MATERIAL AND ASSOCIATED CHANGES.

4. CONTRACTOR SHALL COORDINATE THE WORK WITH EXISTING CONDITIONS, INCLUDING BEAMS, COLUMNS, SITE FEATURES, AND OTHER OBSTRUCTIONS, WHETHER OR NOT SUCH IS SHOWN ON DRAWINGS.

5. CONTACT MISS UTILITY AT 811, 1-800-552-7001, OR [HTTP://WWW.MISSUTILITYOFVIRGINIA.COM](http://www.missutilityofvirginia.com) NO LESS THAN 72 HOURS PRIOR TO EXCAVATION AND DO NOT DISTURB THE SOIL UNTIL DIG TICKET HAS BEEN PROCESSED.

6. CONTRACTOR SHALL COORDINATE THE WORK BETWEEN ALL TRADES. MATERIAL LOCATIONS SHALL BE COORDINATED BETWEEN CIVIL, ARCHITECTURAL, STRUCTURAL, ELECTRICAL, AND DEMOLITION PLANS TO AVOID CONFLICTS.

7. EXISTING MATERIAL TO BE REMOVED SHALL BE REMOVED CAREFULLY TO AVOID DAMAGING MATERIAL TO REMAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE THAT OCCURS TO EXISTING MATERIAL TO REMAIN OR TO BE RELOCATED DURING DEMOLITION AND CONSTRUCTION.

8. ALL MATERIAL SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, MAINTAINING ALL REQUIRED CLEARANCES AND WITH ALL COMPONENTS ACCESSIBLE AND SERVICEABLE.
9. CONTRACTOR SHALL KEEP PUBLIC AREAS FREE OF TRASH AND CONSTRUCTION DEBRIS AND CLEAN ENTIRE WORK AREA ON A DAILY BASIS.

10. CONTRACTOR SHALL PROTECT THE BUILDING, ADJACENT FEATURES, ROADWAYS, WALKWAYS, SITE IMPROVEMENTS, EXTERIOR PLANTINGS, LANDSCAPING, ETC. AS REQUIRED FROM DAMAGE AND CORRECT DAMAGE RESULTING FROM CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE OWNER.

11. CONTRACTOR SHALL COLLECT DEMOLISHED MATERIALS AND PLACE IN APPROPRIATE DISPOSAL CONTAINERS. DEMOLISHED MATERIALS SHALL BE PROMPTLY REMOVED FROM THE OWNER'S PROPERTY AND DISPOSED OF LEGALLY.

12. CONTRACTOR SHALL NOTIFY OWNER OF ANY INTERRUPTION OF UTILITIES INCLUDING BUT NOT LIMITED TO POWER, WATER, COMMUNICATIONS, ETC AND COORDINATE OUTAGE WITH OWNER AND ALL BUILDING TENANTS.

13. ANY ROAD/PARKING LOT CLOSURE SHALL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF THE VIRGINIA WORK AREA PROTECTION MANUAL.

14. DEFINITIONS:

FURNISH: SUPPLY AND DELIVER TO PROJECT SITE FOR INSTALLATION BY OTHERS.

INSTALL: INSTALL ITEMS FURNISHED BY OTHERS, INCLUDING UNLOADING, TEMPORARILY STORING, UNPACKING, AND ASSEMBLY.

PROVIDE: FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE.

REMOVE: DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF-SITE UNLESS INDICATED TO BE REMOVED AND SALVAGED OR REMOVED AND REINSTALLED.

REMOVE AND REINSTALL: DETACH ITEMS FROM EXISTING CONSTRUCTION, PREPARE FOR REUSE, AND REINSTALL WHERE INDICATED.

REMOVE AND SALVAGE: CAREFULLY DETACH FROM EXISTING CONSTRUCTION, IN A MANNER TO PREVENT DAMAGE, AND DELIVER TO OWNER.

PROTOTYPE SITE ADAPTATION NOTES:

1. THE PROTOTYPE DRAWINGS AND TECHNICAL SPECIFICATIONS PROVIDE BASE PLANS, ELEVATIONS, SECTIONS, DETAILS, SCHEMATICS, SCHEDULES, AND MATERIAL SPECIFICATIONS FOR THE BUILDING CONSTRUCTION ALONG WITH ASSOCIATED UTILITY ENTRANCE LOCATIONS. THE SITE ADAPTATION DESIGN SHALL PROVIDE DRAWINGS AND SPECIFICATIONS FOR SITE SPECIFIC INTEGRATION AND CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, GENERAL CONDITIONS, GEOTECHNICAL INFORMATION, BUILDING ORIENTATION, FENCING, PARKING, SITE LIGHTING, STORMWATER MANAGEMENT, OTHER STRUCTURES, OTHER SITE IMPROVEMENTS, AND UTILITIES INCLUDING, BUT NOT LIMITED TO, WATER, POWER, AND EMERGENCY POWER.

2. PROTOTYPE DRAWINGS AND TECHNICAL SPECIFICATIONS INCLUDE PROVISIONS FOR VARYING ELECTRIC SERVICE - THREE PHASE (208/120 - 3P/4W) OR SINGLE PHASE (120/240 - 1P/3W). UTILITY TYPE SHALL BE INDICATED ON THE SITE ADAPTATION PROJECT COVER SHEET.

3. PROTOTYPE DRAWINGS INCLUDING PROVISIONS FOR POWER NOTED AS "RESERVED FOR SITE SPECIFIC CONDITION" ON THE PANEL "CSB" SCHEDULE FOR THE FOLLOWING EQUIPMENT IF REQUIRED FOR SITE ADAPTATION. THE FOLLOWING ITEMS ARE ONLY INCORPORATED IF SPECIFIED AS PART OF THE SITE ADAPTATION DESIGN.
a. CALCIUM CHLORIDE PUMP
b. BRINE PUMP
4. DESIGN SOIL BEARING CAPACITY: REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR DESIGN SOIL BEARING CAPACITY.

5. MAXIMUM BASIC WIND SPEED IS 130 MPH. IF SITE BASIC WIND SPEED IS GREATER THAN 130 MPH, OR IS LOCATED IN A SPECIAL WIND REGION AS DEFINED IN ASCE 7-16 FIGURES 26.5-1B AND 26.5-2B, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR SITE SPECIFIC CONDITIONS. REFER TO VCC 1609.3 FOR ADDITIONAL INFORMATION ON SPECIAL WIND REGIONS, NEAR MOUNTAINOUS TERRAIN AND NEAR GORGES.

6. MAXIMUM SEISMIC DESIGN CATEGORY IS C. IF SITE SEISMIC SITE CLASS IS CLASS D, E, OR F, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR SITE SPECIFIC CONDITIONS.

7. IF THE SITE IS LOCATED WITHIN A FLOOD ZONE, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR SITE SPECIFIC CONDITIONS.

8. MAXIMUM GROUND SNOW LOAD IS 43 PSF. IF THE SITE IS LOCATED WITHIN A SITE SPECIFIC CASE STUDY AREA WITH GROUND SNOW LOAD GREATER THAN 43 PSF, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR SITE SPECIFIC CONDITIONS.

DRAWING LIST:

DRAWING NO	TITLE
T1 REV 1 2023-02-24	TITLE SHEET
A1	FLOOR PLAN, SCHEDULES, AND SECTION
A2	BUILDING ELEVATIONS AND SECTION
A3	WORK PAD PLAN, SECTIONS, AND DETAILS
A4.1	SALT POND PLAN, SECTIONS, AND DETAILS
A4.2 REV 1 2023-02-24	SALT STORAGE TANK
A5	MATERIAL SPECIFICATIONS
S1	FOUNDATION PLAN AND SCHEDULE
S2	FOUNDATION SECTION, DETAILS, AND SCHEDULE
S3	FOUNDATION SECTION, DETAILS, AND SCHEDULE
S4	GENERAL NOTES
E1	LEGEND, ABBREVIATIONS, AND NOTES
E2	SPECIFICATIONS AND DIAGRAMS
E3.1	BUILDING 1 ELECTRICAL PLAN
E3.2	BUILDING 2 ELECTRICAL PLAN
E3.3	BUILDING 3 ELECTRICAL PLAN
E4	SCHEDULES
E5	DETAILS
E6	CALCULATIONS

GENERAL INFORMATION:

PROJECT INFORMATION: AGENCY: PROJECT TITLE:	VIRGINIA DEPARTMENT OF TRANSPORTATION PROTOTYPE CHEMICAL STORAGE BUILDINGS 3,000 TON
BUILDING INFORMATION: WORK PERMITTED: PURPOSE/OCCUPANCY: USE GROUP CLASSIFICATION: TYPE OF CONSTRUCTION:	CONSTRUCTION OF A CHEMICAL STORAGE BUILDING SALT AND ABRASIVE STORAGE (S-2) LOW HAZARD STORAGE OCCUPANCY IIB 65'-0"x116'-0" BUILDING 1 OCCUPANT LOAD OF BUILDING: BUILDING HEIGHT (FEET): BUILDING HEIGHT (FEET): NUMBER OF STORIES: BUILDING AREA (GSF) - CPSM: BUILDING AREA (SF) - VCC: # OF EXITS:
	15; USING 500 GSF/PERSON FOR WAREHOUSE PER VCC TABLE 1004.5 (NOT TYPICALLY OCCUPIED) 40'-0"± ABOVE GRADE; 55' ALLOWED PER VCC TABLE 504.3 1; 3 ALLOWED PER VCC TABLE 504.4 7,540 GROSS SQUARE FEET PER CPSM 5.2.9.2 7,207 SQUARE FEET; 26,000 SF ALLOWED PER VCC TABLE 506.2 THE OPEN BUILDING FRONT AND SIDE EXIT SERVE AS THE REQUIRED TWO EXITS; TWO EXITS REQUIRED PER VCC TABLE 1006.2.1 AS COMMON PATH OF TRAVEL EXCEEDS 100'; WIDTH OF OPEN BUILDING FRONT IS LESS THAN HALF THE DIAGONAL DIMENSION (63.3') OF THE FLOOR AREA SERVED (OR THE SEPARATION DISTANCE REQUIRED BETWEEN TWO EXITS PER VCC 1007.1.1) REQUIRING A SIDE EXIT.
	73'-0"x106'-0" BUILDING 2 OCCUPANT LOAD OF BUILDING: BUILDING HEIGHT (FEET): BUILDING HEIGHT (FEET): NUMBER OF STORIES: BUILDING AREA (GSF) - CPSM: BUILDING AREA (SF) - VCC: # OF EXITS:
	15; USING 500 GSF/PERSON FOR WAREHOUSE PER VCC TABLE 1004.5 (NOT TYPICALLY OCCUPIED) 42'-0"± ABOVE GRADE; 55' ALLOWED PER VCC TABLE 504.3 1; 3 ALLOWED PER VCC TABLE 504.4 7,738 GROSS SQUARE FEET PER CPSM 5.2.9.2 7,420 SQUARE FEET; 26,000 SF ALLOWED PER VCC TABLE 506.2 THE OPEN BUILDING FRONT SERVES AS THE REQUIRED TWO EXITS; TWO EXITS REQUIRED PER VCC TABLE 1006.2.1 AS COMMON PATH OF TRAVEL EXCEEDS 100'; WIDTH OF OPEN BUILDING FRONT IS GREATER THAN HALF THE DIAGONAL DIMENSION (63.3') OF THE FLOOR AREA SERVED (OR THE SEPARATION DISTANCE REQUIRED BETWEEN TWO EXITS PER VCC 1007.1.1).
	83'-0"x95'-0" BUILDING 3 OCCUPANT LOAD OF BUILDING: BUILDING HEIGHT (FEET): BUILDING HEIGHT (FEET): NUMBER OF STORIES: BUILDING AREA (GSF) - CPSM: BUILDING AREA (SF) - VCC: # OF EXITS:
	16; USING 500 GSF/PERSON FOR WAREHOUSE PER VCC TABLE 1004.5 (NOT TYPICALLY OCCUPIED) 45'-0"± ABOVE GRADE; 55' ALLOWED PER VCC TABLE 504.3 1; 3 ALLOWED PER VCC TABLE 504.4 7,885 GROSS SQUARE FEET PER CPSM 5.2.9.2 7,583 SQUARE FEET; 26,000 SF ALLOWED PER VCC TABLE 506.2 THE OPEN BUILDING FRONT SERVES AS THE ONLY EXIT; ONE EXIT ALLOWED PER VCC TABLE 1006.2.1 BASED UPON OCCUPANT LOAD LESS THAN 29 AND COMMON PATH OF TRAVEL LESS THAN 100'.
OTHER:	THE BUILDING IS NOT TYPICALLY OCCUPIED THE BUILDING IS NOT FIRE SPRINKLERED THE BUILDING DOES NOT HAVE A FIRE ALARM SYSTEM MEANS OF EGRESS ILLUMINATION PROVIDED BY BUILDING MOUNTED LIGHTING POWERED BY THE SITE ELECTRICAL SUPPLY PER VCC 1008; EXCEPT FOR BUILDING 1 SIDE EXIT WHERE THE INTERIOR EXIT ACCESS RAMP IS ILLUMINATED BY LIGHTING WITH EMERGENCY BATTERY BACKUP PER VCC 1008.3.1 AND 1008.3.2 ITEM 1. EXIT SIGNS REQUIRED AT SIDE EXIT FOR BUILDING 1 ONLY. EXIT SIGNS NOT REQUIRED ELSEWHERE PER VCC SECTION 1013.1, EXCEPTIONS 1 AND 2.
APPLICABLE CODES & STANDARDS: BUILDING CODES:	2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE - VUSBC (EFFECTIVE JULY 1, 2021) VIRGINIA CONSTRUCTION CODE - VCC (2018) VIRGINIA MECHANICAL CODE - VMC (2018) VIRGINIA PLUMBING CODE - VPC (2018) VIRGINIA STATEWIDE FIRE PREVENTION CODE - VSFPC (2018) VIRGINIA ENERGY CONSERVATION CODE - VECC (2018) NATIONAL ELECTRICAL CODE - NFPA-70 (2017)
OTHER STANDARDS:	CONSTRUCTION AND PROFESSIONAL SERVICES MANUAL - CPSM 2021 EDITION, REVISION 1 (MARCH 1, 2022); SITE ADAPTATION SHALL BE PREPARED WITH THE CURRENT CPSM VERSION
NOTES: 1. VECC C401.2 COMPLIANCE:	ITEM 2 INCLUDING C405 AND C406.3 REDUCED LIGHTING POWER DENSITY. C402 IS NOT APPLICABLE AS THE BUILDING IS AN OPEN STRUCTURE EXEMPT FROM THE THERMAL ENVELOP PROVISIONS PER VECC SECTION C402.1.1. C403 IS NOT APPLICABLE AS THE BUILDING IS NOT CONDITIONED WITH MECHANICAL EQUIPMENT. C404 IS NOT APPLICABLE AS THE BUILDING DOES NOT CONTAIN SURFACE WATER HEATING. C408 IS ONLY APPLICABLE TO MAINTENANCE INFORMATION AS THERE ARE NO MECHANICAL SYSTEMS, SERVICE WATER HEATING SYSTEMS, AND LIGHTING CONTROLS THAT REQUIRE COMMISSIONING AND FUNCTIONAL TESTING.
2. THE BUILDING IS NOT CONDITIONED AND EXEMPT FROM COMPLIANCE WITH THE HIGH PERFORMANCE BUILDING ACT AND ASSOCIATED VIRGINIA ENERGY CONSERVATION AND ENVIRONMENTAL STANDARDS (VEES) PER CPSM APPENDIX V, SECTION 101.6.1.	

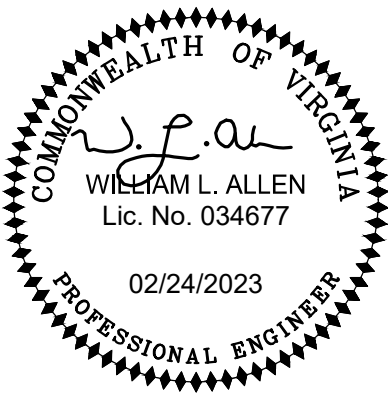
DELEGATED DESIGN SYSTEMS AND PRODUCTS:

1. THE FRAME-SUPPORTED MEMBRANE BUILDING IS INCLUDED IN THIS PROJECT AS A DELEGATED DESIGN SYSTEM AND SHALL COMPLY WITH THE LOAD CRITERIA INDICATED IN THE GENERAL NOTES ON DRAWING S4 AND SPECIFICATION SECTION 133421 - FRAME-SUPPORTED MEMBRANE BUILDING.

VIRGINIA A&E, PLLC
1115 VISTA PARK DRIVE
FOREST, VA 24551
PHONE: (434) 316-6001



VAE PROJECT NO: 21059



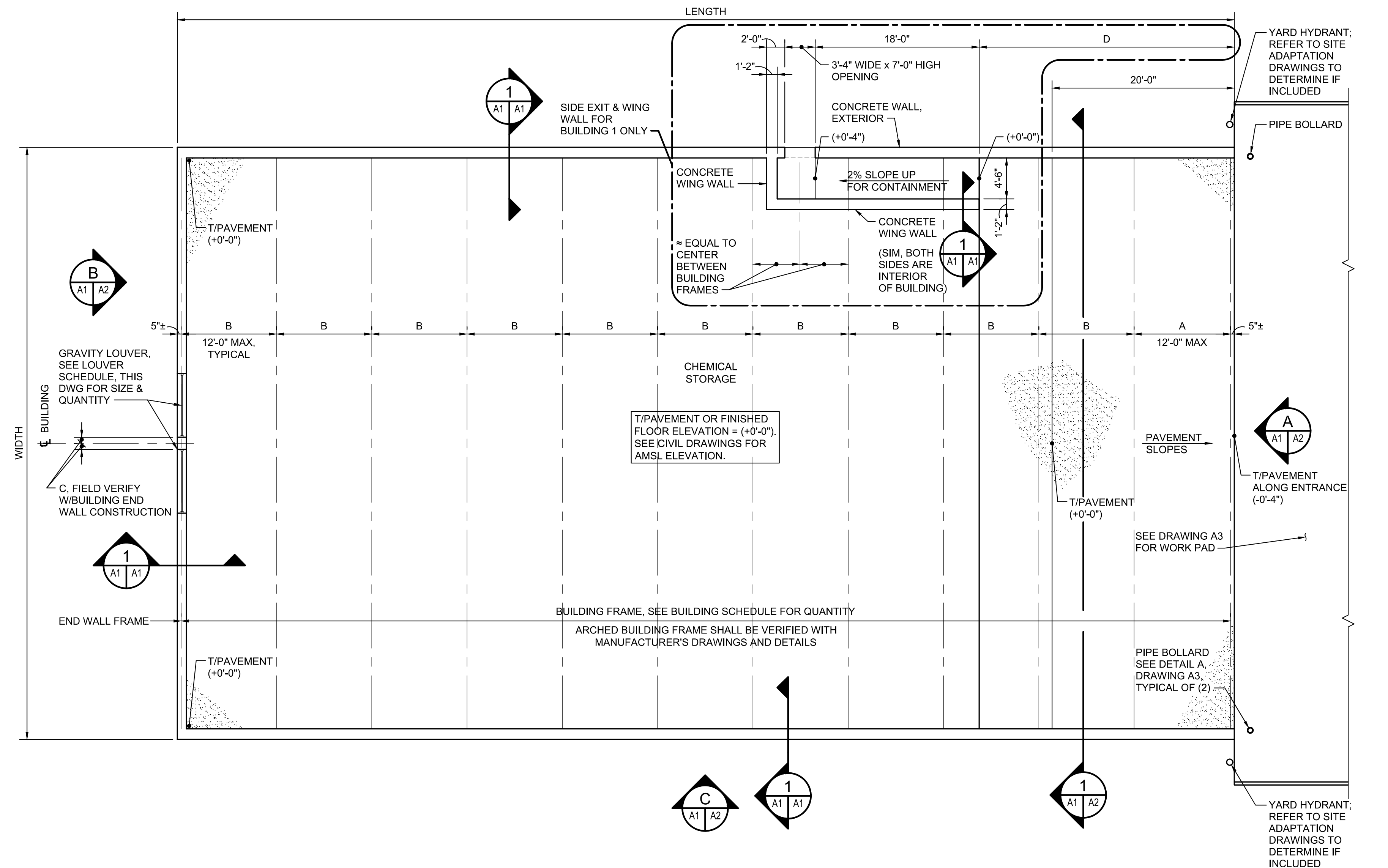
Project No.: 21059

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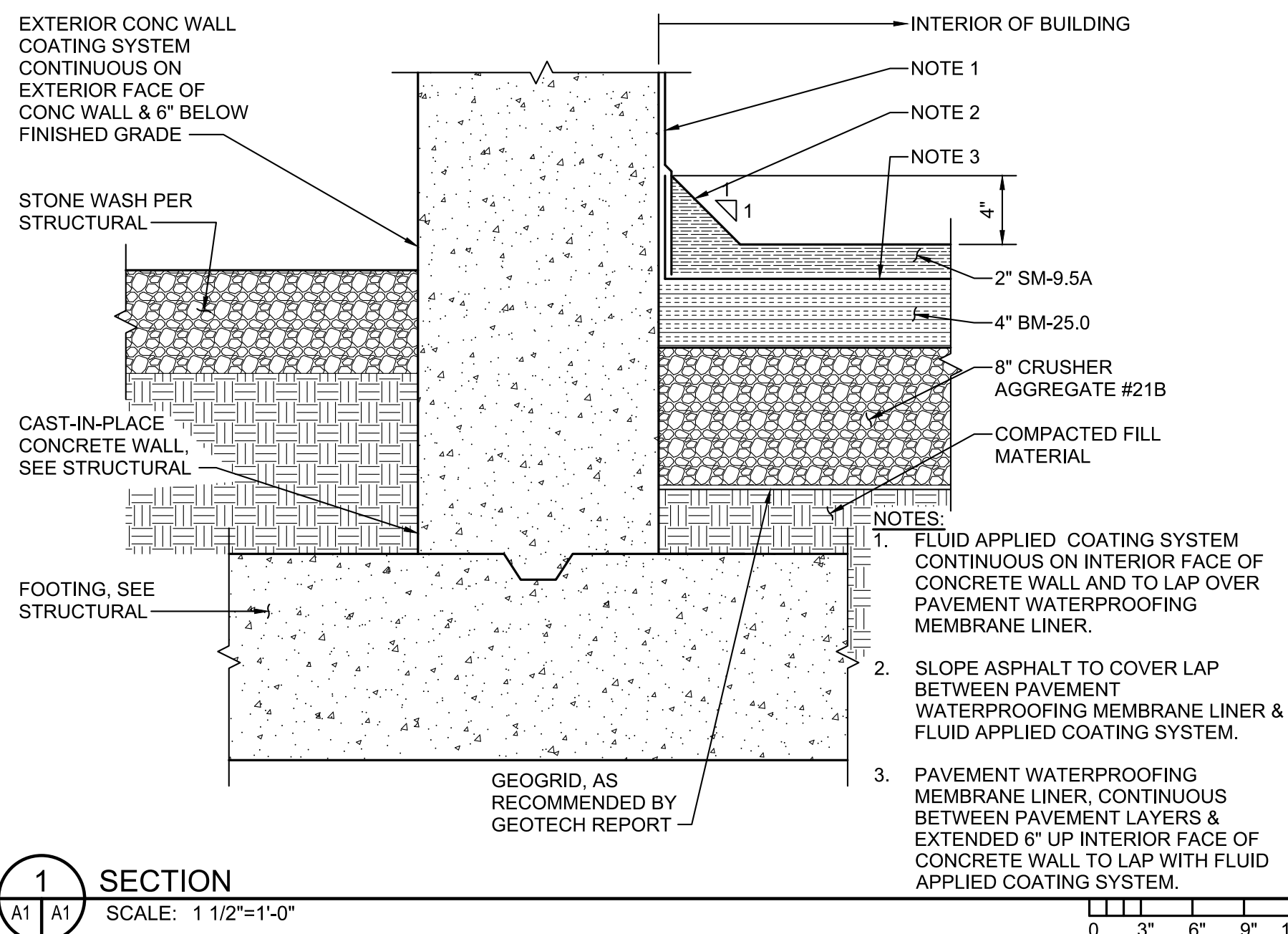
Drawing No.:

T1

3,000 TON BUILDING



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



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

3,000 TON BUILDING LOUVER SCHEDULE

MARK	BLDG	SERVICE	TYPE	SIZE (IN)	QTY	MATERIAL	FRAME DEPTH (IN)	MAX VELOCITY (FPM)	MAX PRESSURE DROP (INWG)	MIN WATER PENETRATION VELOCITY (FPM)	FINISH	ACCESSORIES	MANUFACTURERS/ PRODUCTS	B/LOUVER AFF
L-1	1	NATURAL VENTILATION	STATIONARY EXTRUDED	84"x84"	2	.081" 6063T5 EXTRUDED ALUMINUM	4	1000	0.25	1060	BAKED-ENAMEL COLOR SELECTION BY OWNER	3/4"x0.051" ALUMINUM BIRD SCREEN	GREENHECK EHH-401 RUSKIN EME420DD ARROW EA=475-DH	+28'-2"+/-
L-2	2	NATURAL VENTILATION	STATIONARY EXTRUDED	84"x84"	2	.081" 6063T5 EXTRUDED ALUMINUM	4	1000	0.25	1060	BAKED-ENAMEL COLOR SELECTION BY OWNER	3/4"x0.051" ALUMINUM BIRD SCREEN	GREENHECK EHH-401 RUSKIN EME420DD ARROW EA=475-DH	+32'-3"+/-
L-3	3	NATURAL VENTILATION	STATIONARY EXTRUDED	78"x78"	2	.081" 6063T5 EXTRUDED ALUMINUM	4	1000	0.25	1060	BAKED-ENAMEL COLOR SELECTION BY OWNER	3/4"x0.051" ALUMINUM BIRD SCREEN	GREENHECK EHH-401 RUSKIN EME420DD ARROW EA=475-DH	+25'-10"+/-

NOTE: LOUVERS MAY BE FABRICATED IN SECTIONS TO MAKEUP THE OVERALL LOUVER SIZE INDICATED.

GENERAL NOTES:

- REFER TO BUILDING SCHEDULE FOR DIMENSIONS A, B, AND C NOTED ON FLOOR PLAN.
- REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION RECOMMENDATIONS.
- REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR MODIFICATION TO THICKNESS OF PAVEMENT LAYERS INCLUDING SM-9.5D, BM-25.0, AND CRUSHER AGGREGATE #21B.
- REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR GEOGRID RECOMMENDATIONS.
- PROVIDE INVENTORY CONTROL MARKINGS ON INTERIOR WALLS OF BUILDING PER NOTES ON DRAWING A5.
- REFER TO DRAWING A5 FOR MATERIAL SPECIFICATIONS.

3,000 TON BUILDING SCHEDULE

	BUILDING 1	BUILDING 2	BUILDING 3
WIDTH	65'-0"	73'-0"	83'-0"
LENGTH	116'-0"	106'-0"	95'-0"
FRAME QUANTITY	12	11	10
FRAME CENTER 'A'	10'-7"+/-	10'-8"+/-	10'-6"+/-
FRAME CENTER 'B'	10'-5 1/2"+/-	10'-6"+/-	10'-5 1/2"+/-
LOUVER 'C'	8"+/-	8"+/-	8"+/-
SIDE EXIT SETBACK 'D'	28' (27' MINIMUM)	N/A	N/A

NOTES:

- MAXIMUM FRAME SPACING 'A' AND 'B' IS 12'-0".
- FLOOR PLAN, ELEVATIONS, AND BUILDING SECTION DRAWN AS BUILDING 1.

ABBREVIATIONS:

AMSL	ABOVE MEAN SEA LEVEL
CL	CENTERLINE
CONC	CONCRETE
CONT	CONTINUOUS
° DEG	DEGREE
Ø, DIA	DIAMETER
DWG	DRAWING
(E)	EXISTING
FF	FINISHED FLOOR
LBF	POUND-FORCE
MAX	MAXIMUM
MIN	MINIMUM
PSI	POUNDS PER SQUARE INCH
SIM	SIMILAR
SCH	SCHEDULE
T/	TOP OF
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
W/	WITH

VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

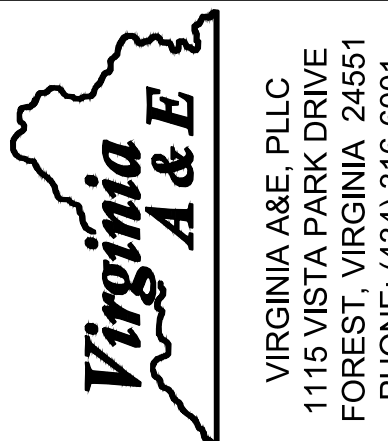
FLOOR PLAN,
SCHEDULES, AND SECTION

Full Scale Verification
0" 1"

Drawing No.:

A1

3,000 TON BUILDING



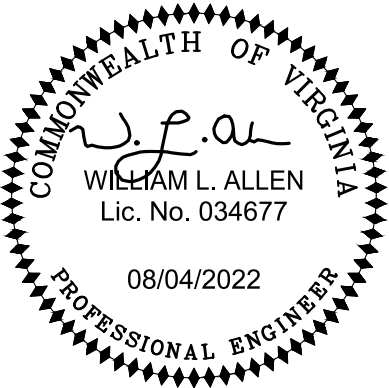
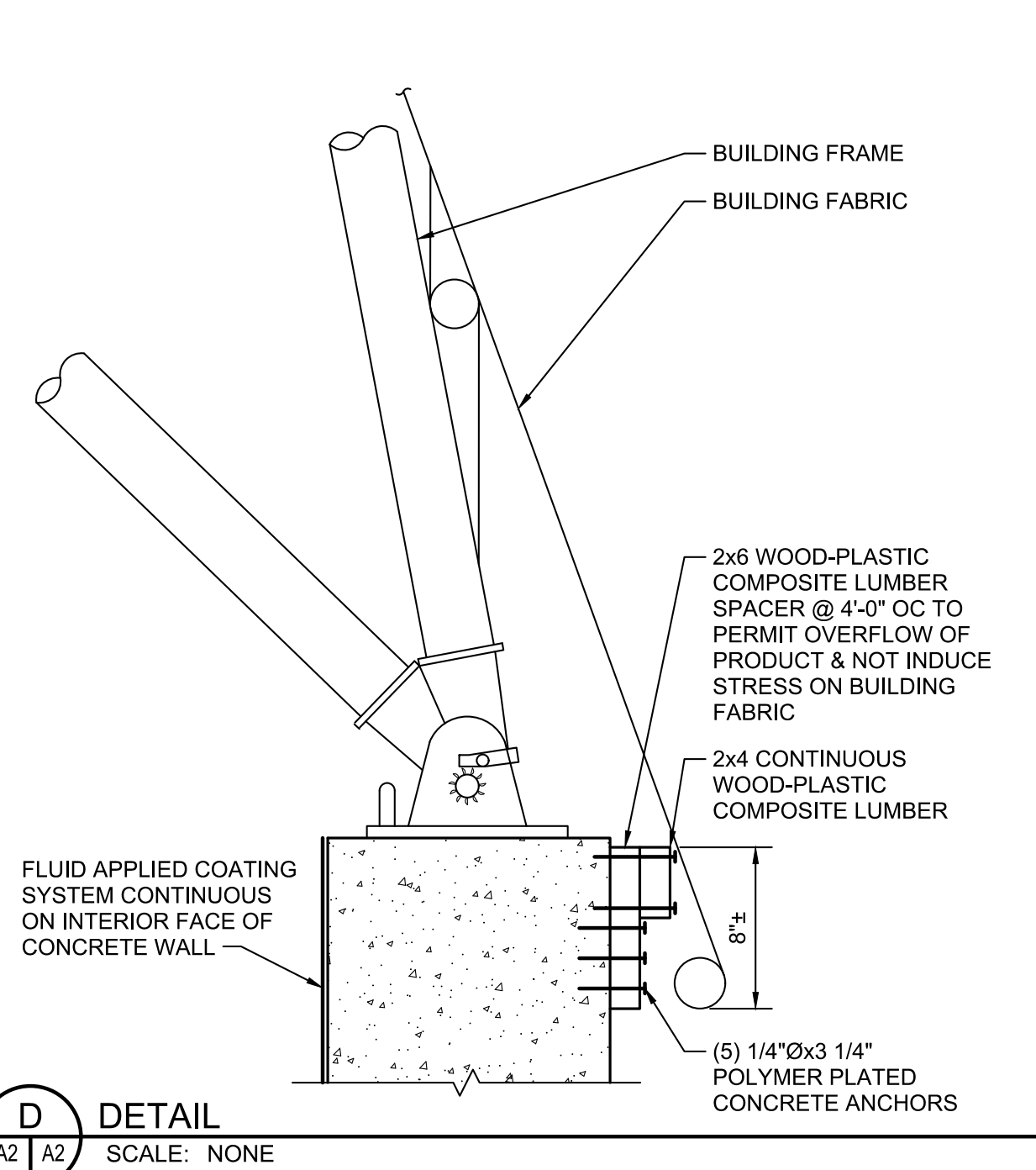
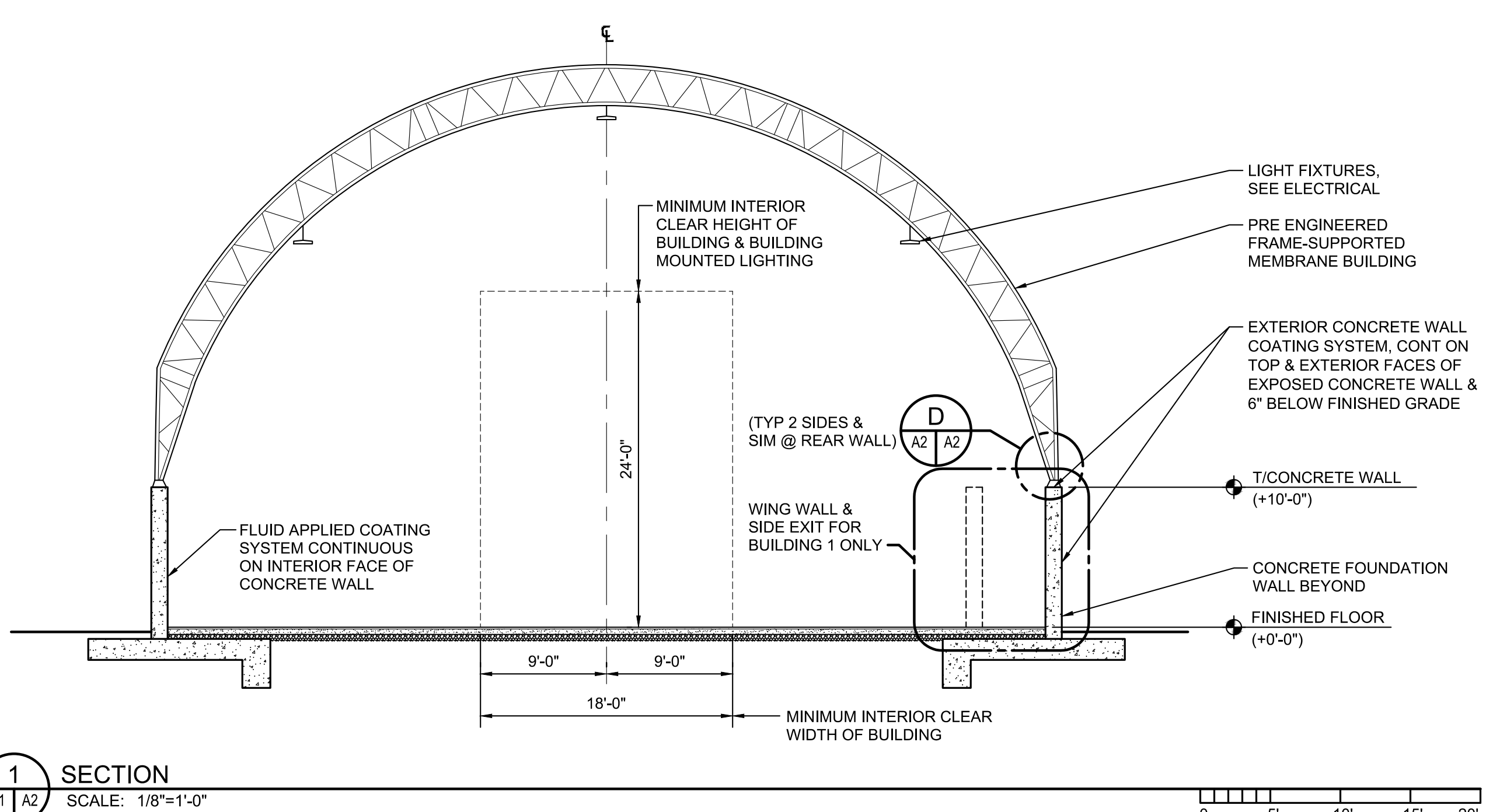
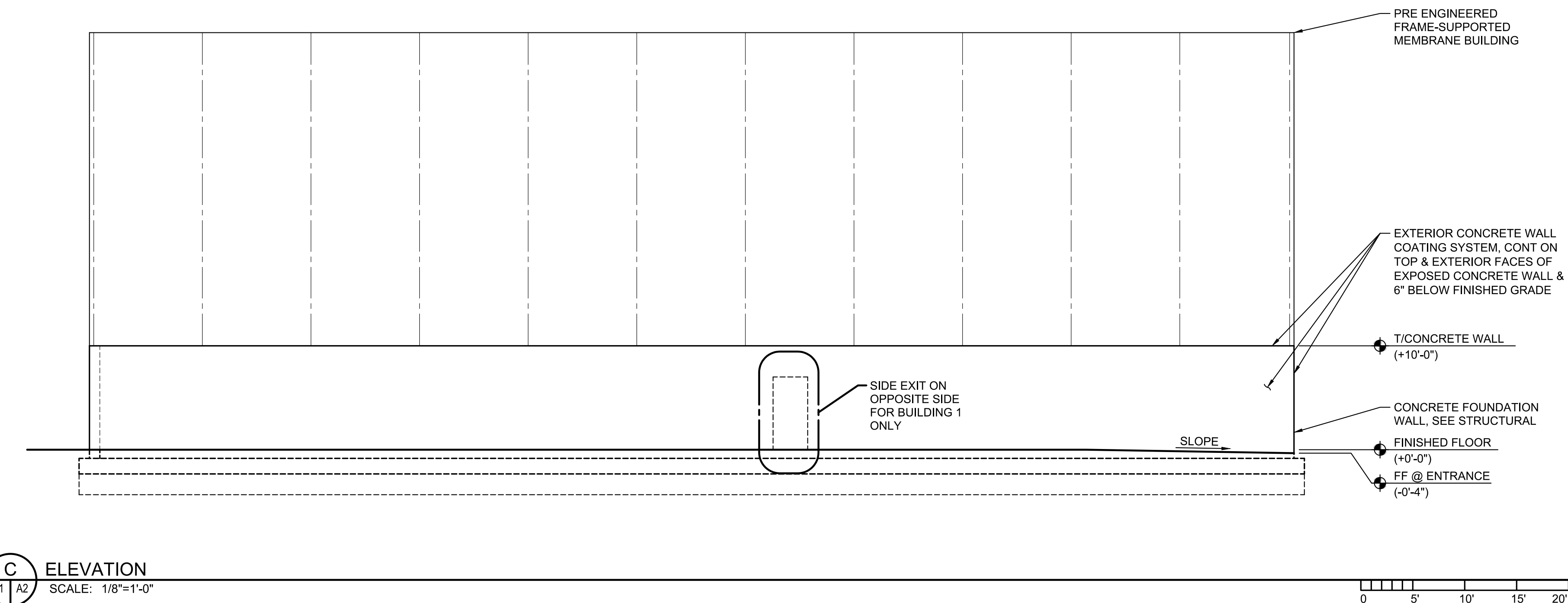
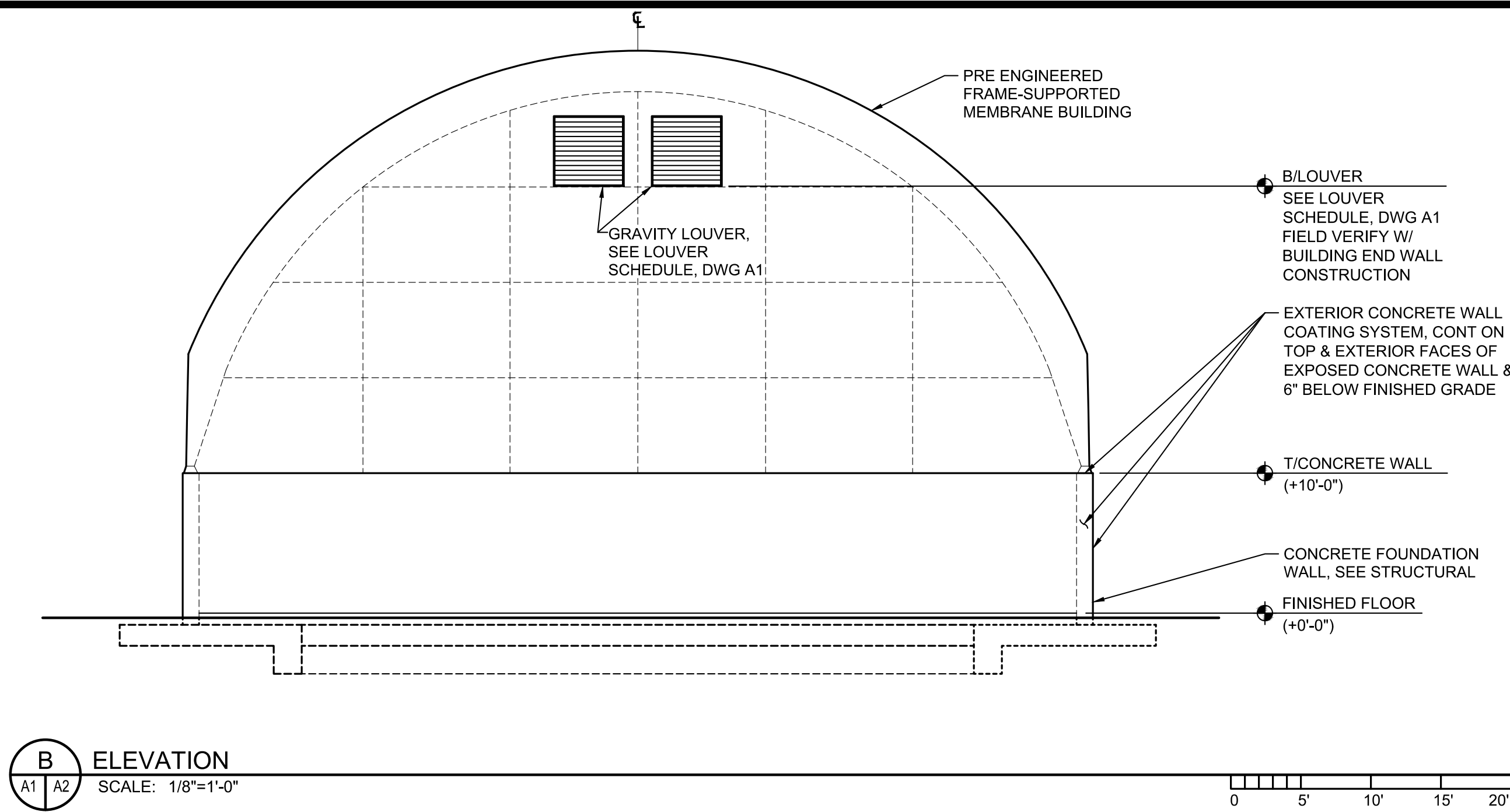
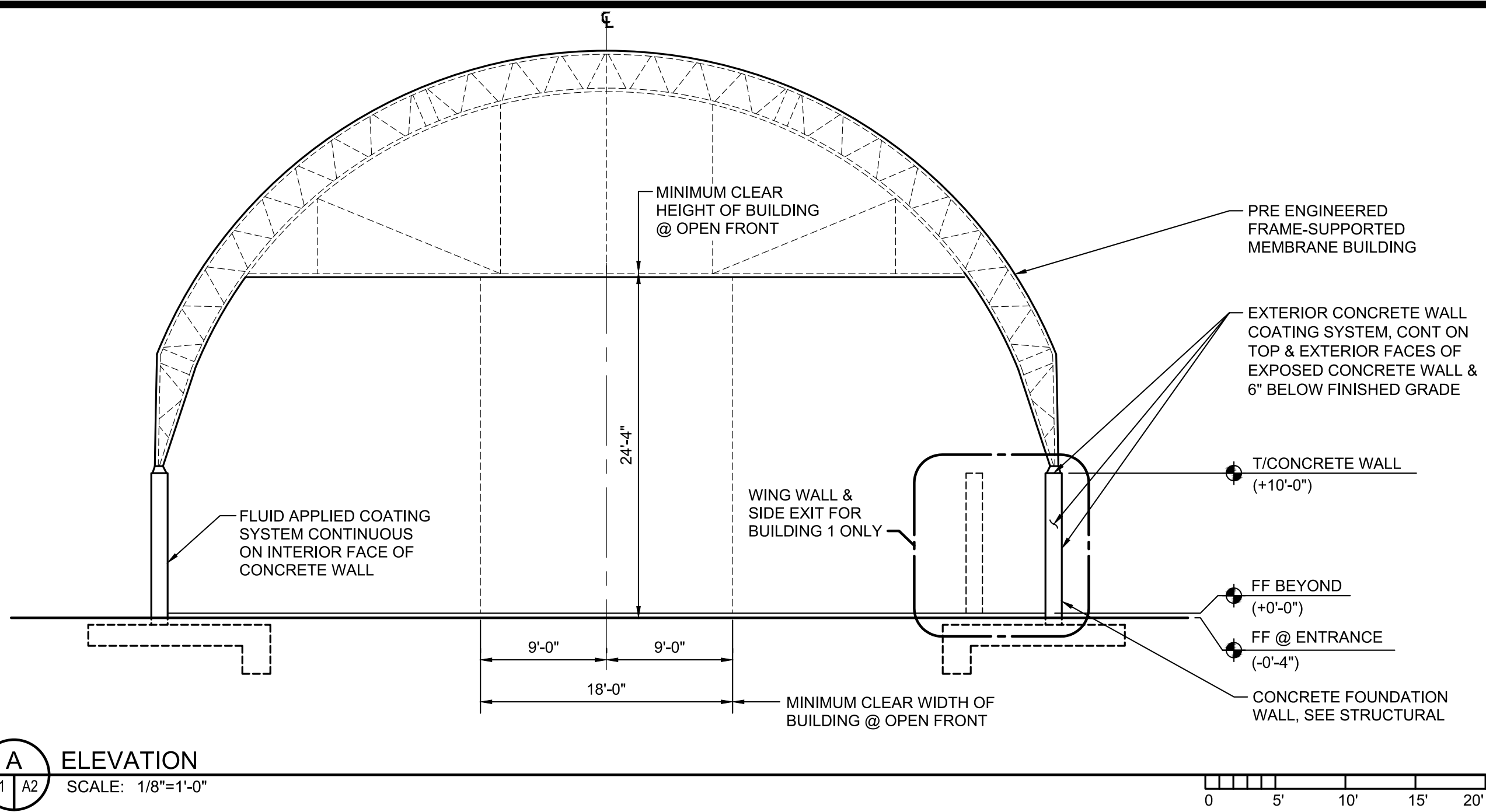
PROJECT NO. 21059
DATE: 2022-08-04

DATE

REVISIONS

BY

NO.



VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

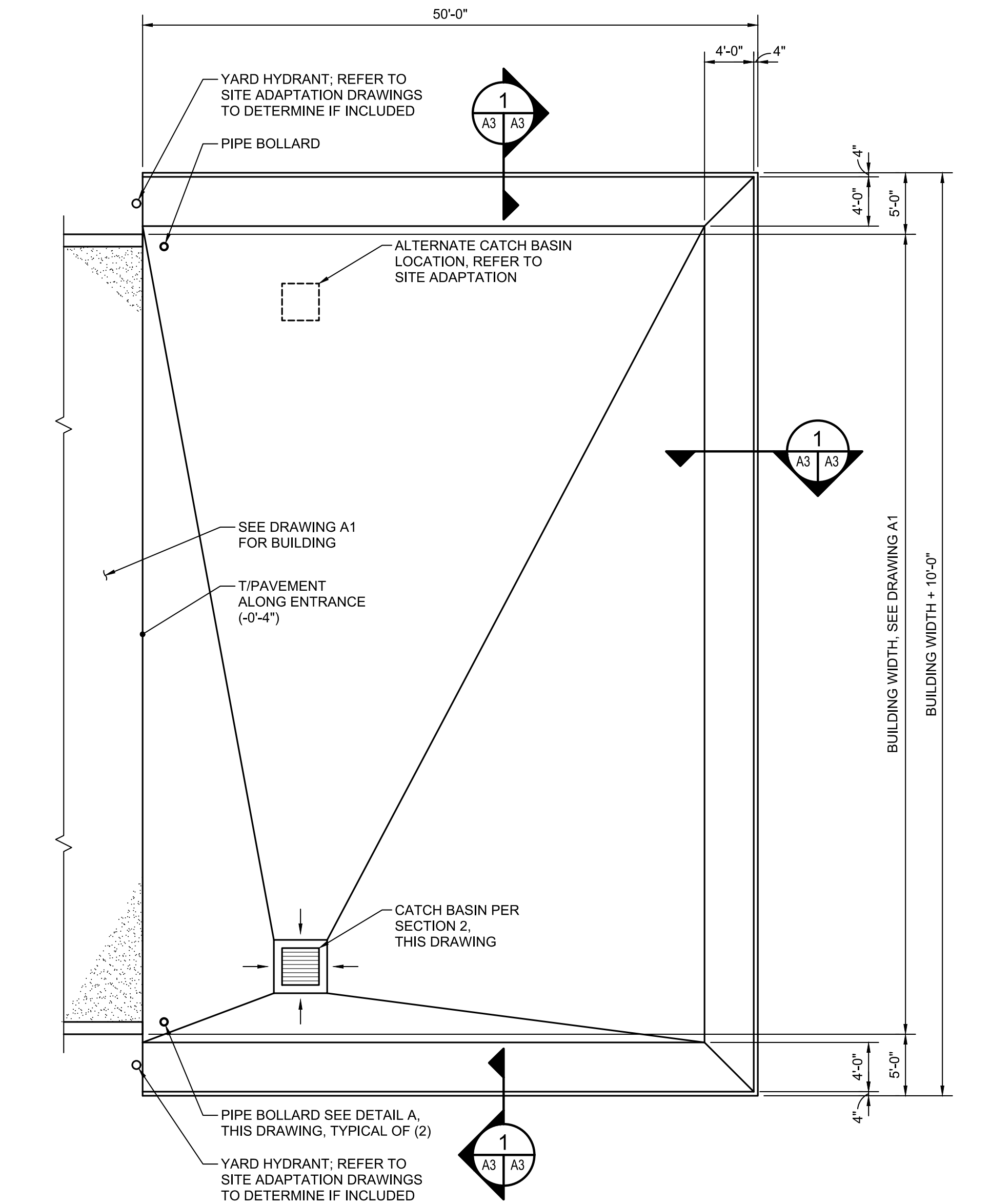
BUILDING ELEVATIONS
AND SECTION

Full Scale Verification
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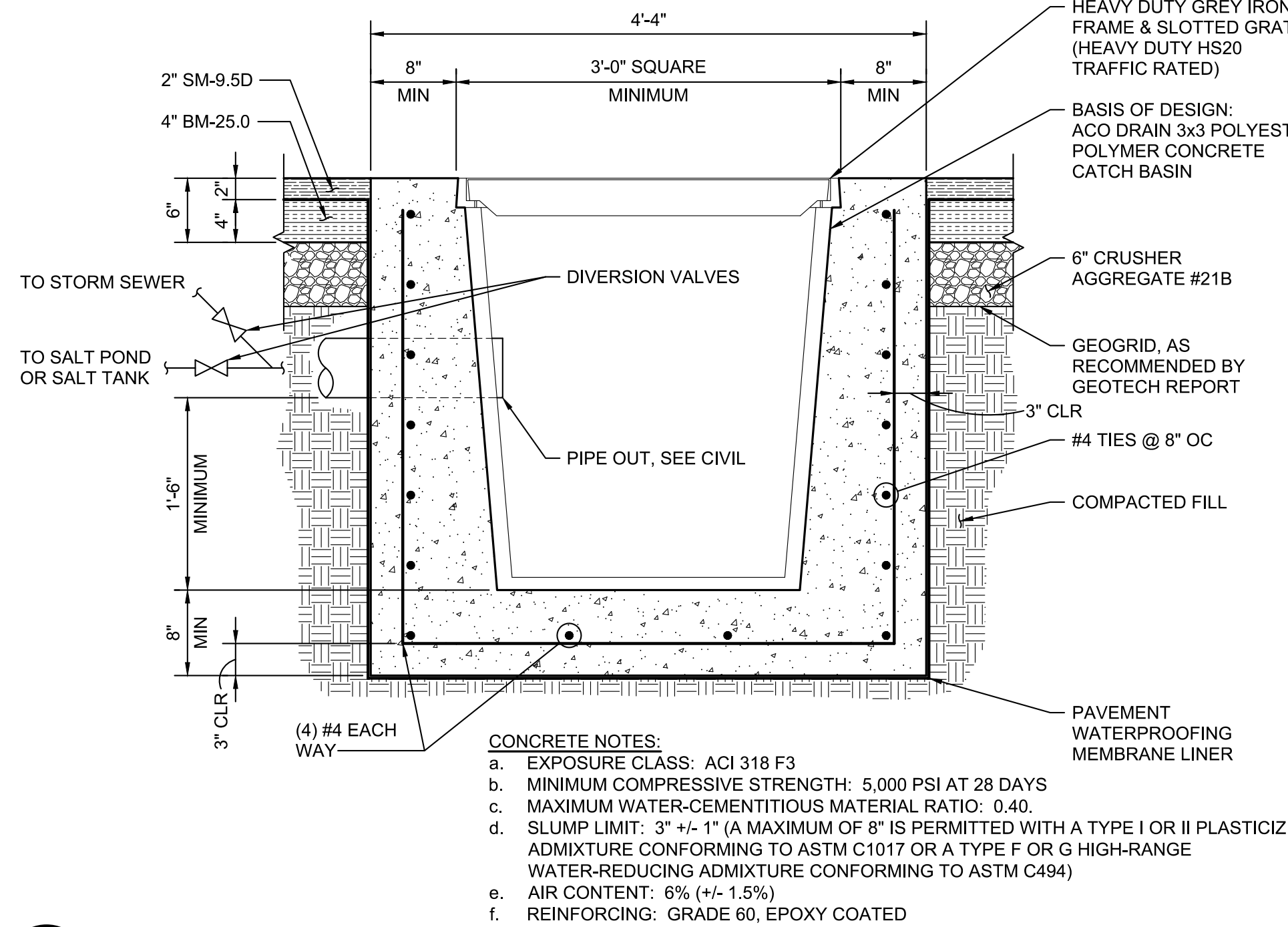
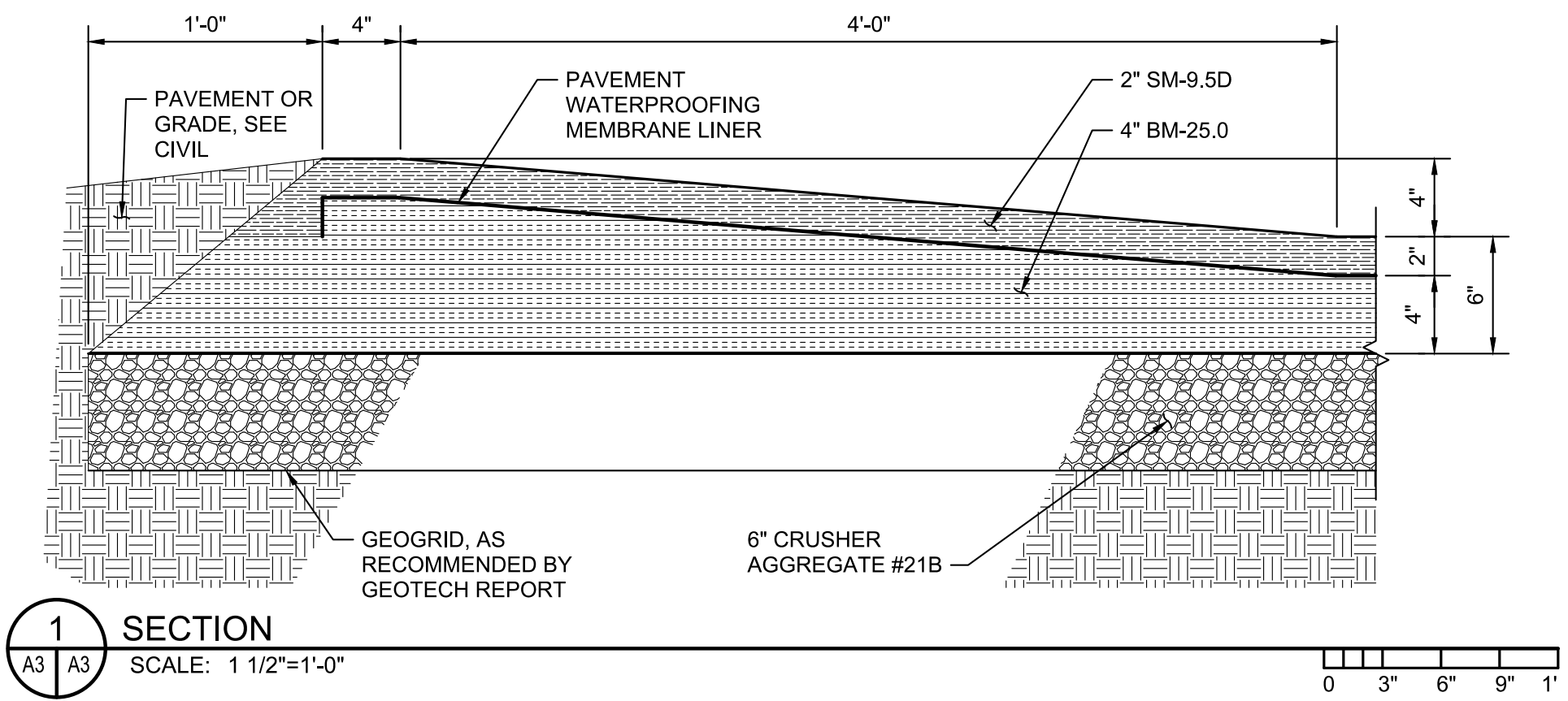
A2

3,000 TON BUILDING

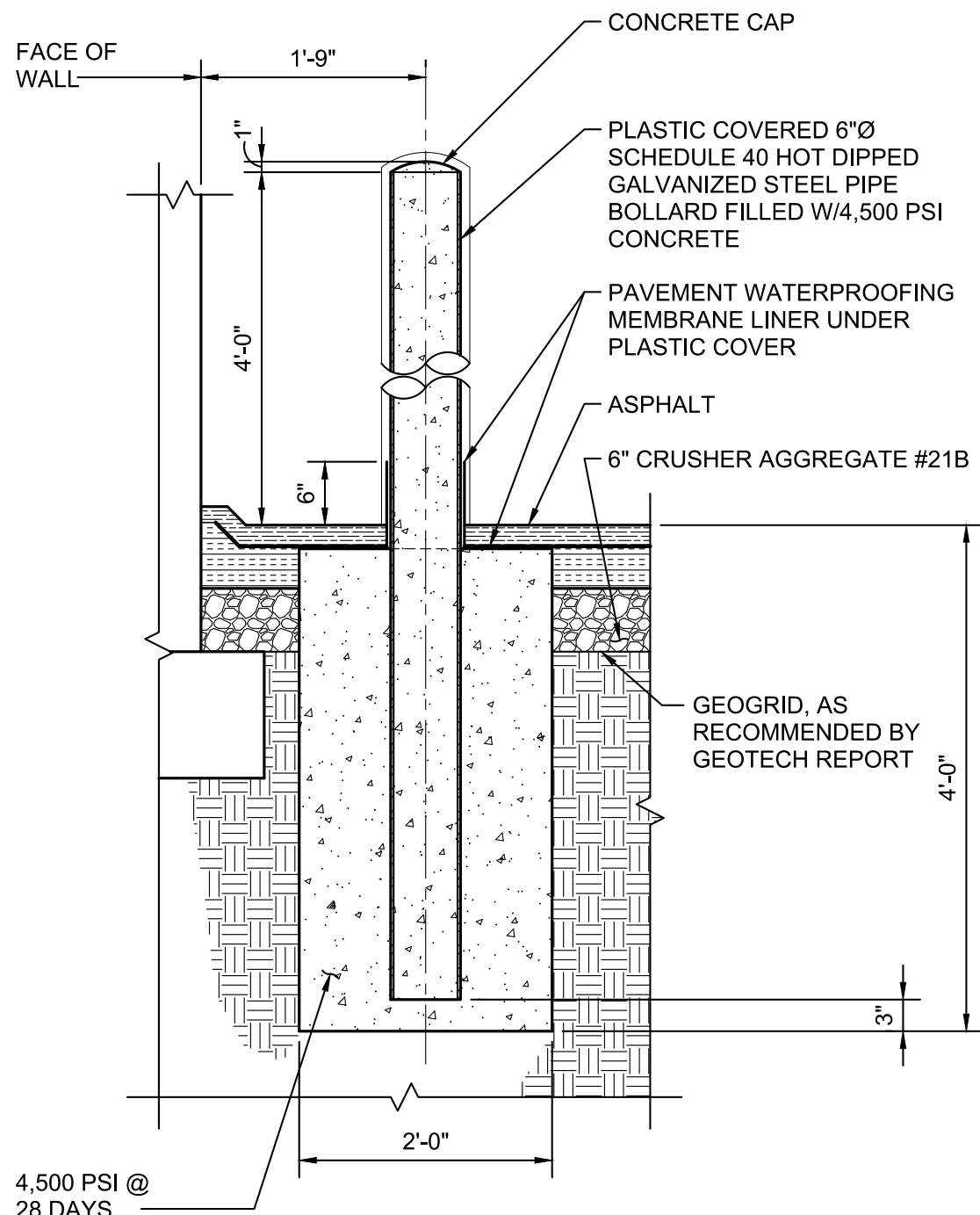
- GENERAL NOTES:
- REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION RECOMMENDATIONS.
 - REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR MODIFICATION TO THICKNESS OF PAVEMENT LAYERS INCLUDING SM-9.5D, BM-25.0, AND CRUSHER AGGREGATE #21B.
 - REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR GEOGRID RECOMMENDATIONS.
 - REFER TO SITE SPECIFIC CIVIL DRAWINGS FOR VARIATIONS IN WORK PAD DIMENSIONS, DRAINAGE, ELEVATIONS, AND PERIMETER TERMINATION TO WORK WITH SITE SPECIFIC TOPOGRAPHY AND VEHICULAR CIRCULATION.
 - DIVERSION VALVES FOR WORK PAD RUNOFF SHALL BE POST INDICATOR VALVES EQUIVALENT TO MEULLER MODEL A20806. VDOT'S OPERATIONAL PROCEDURES DICTATE WHEN VALVES ARE OPENED AND CLOSED FOR SALT HANDLING OPERATIONS.
 - REFER TO DRAWING A5 FOR MATERIAL SPECIFICATIONS.



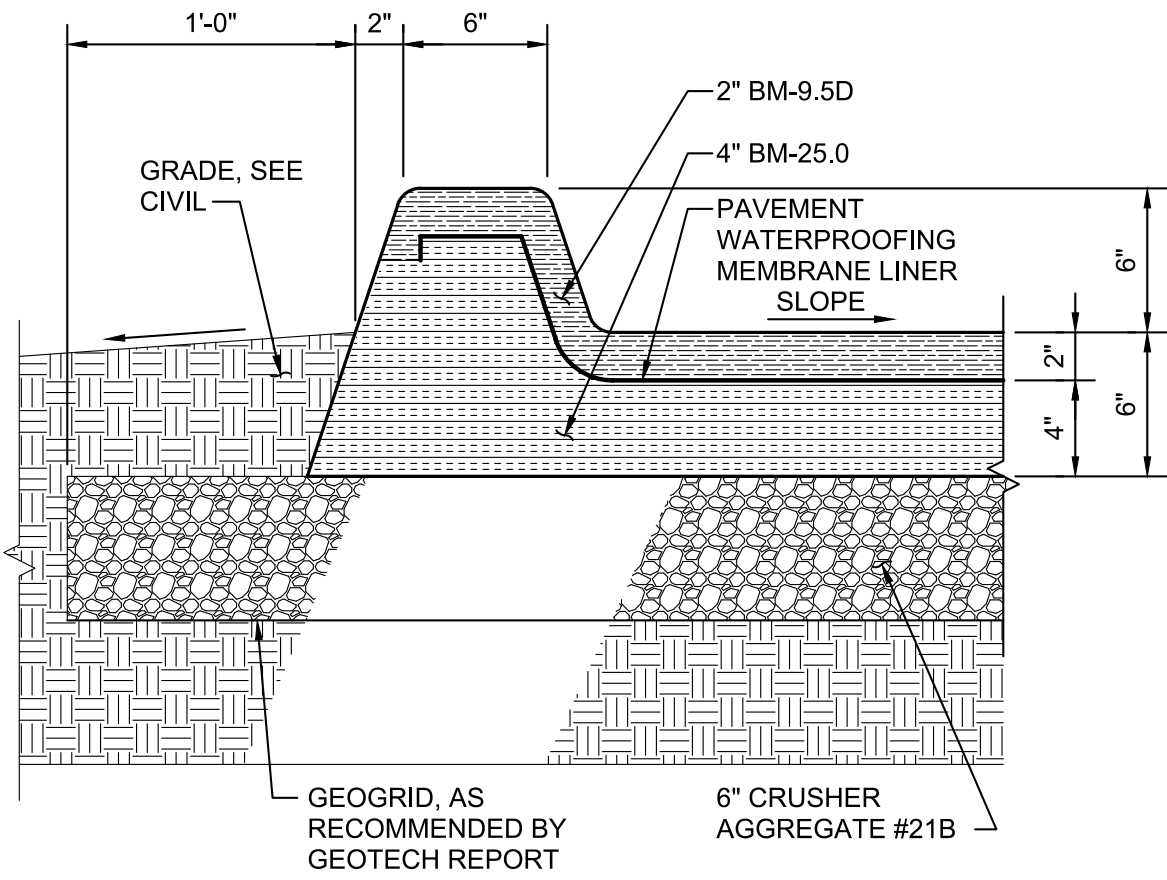
WORK PAD PLAN
SCALE: 1/8"=1'-0"



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



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



NOTES:
1. ALTERNATE WORKPAD PERIMETER TERMINATION TO SECTION 1, THIS DRAWING. SEE SITE SPECIFIC CIVIL DRAWINGS FOR LOCATION.

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

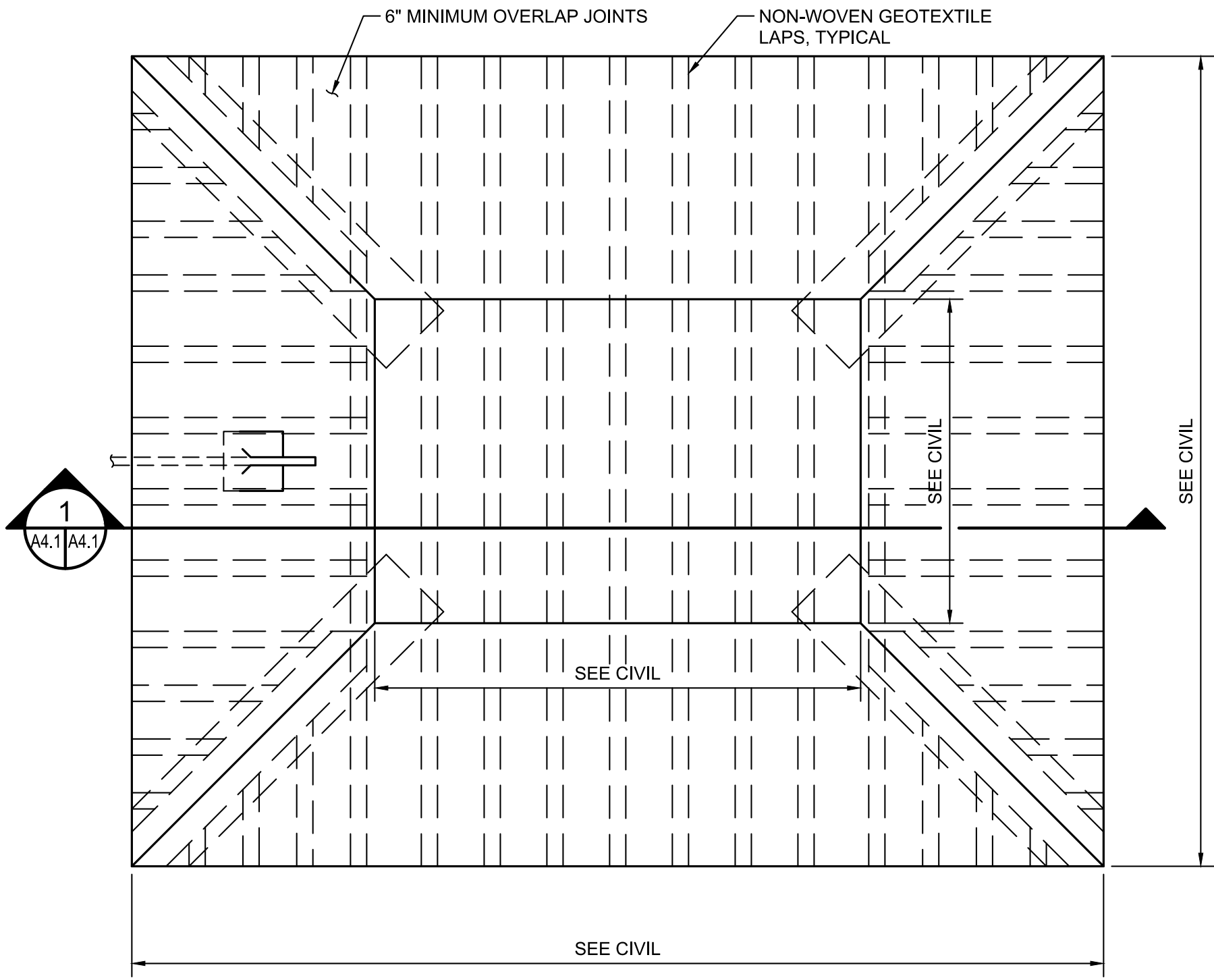


VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

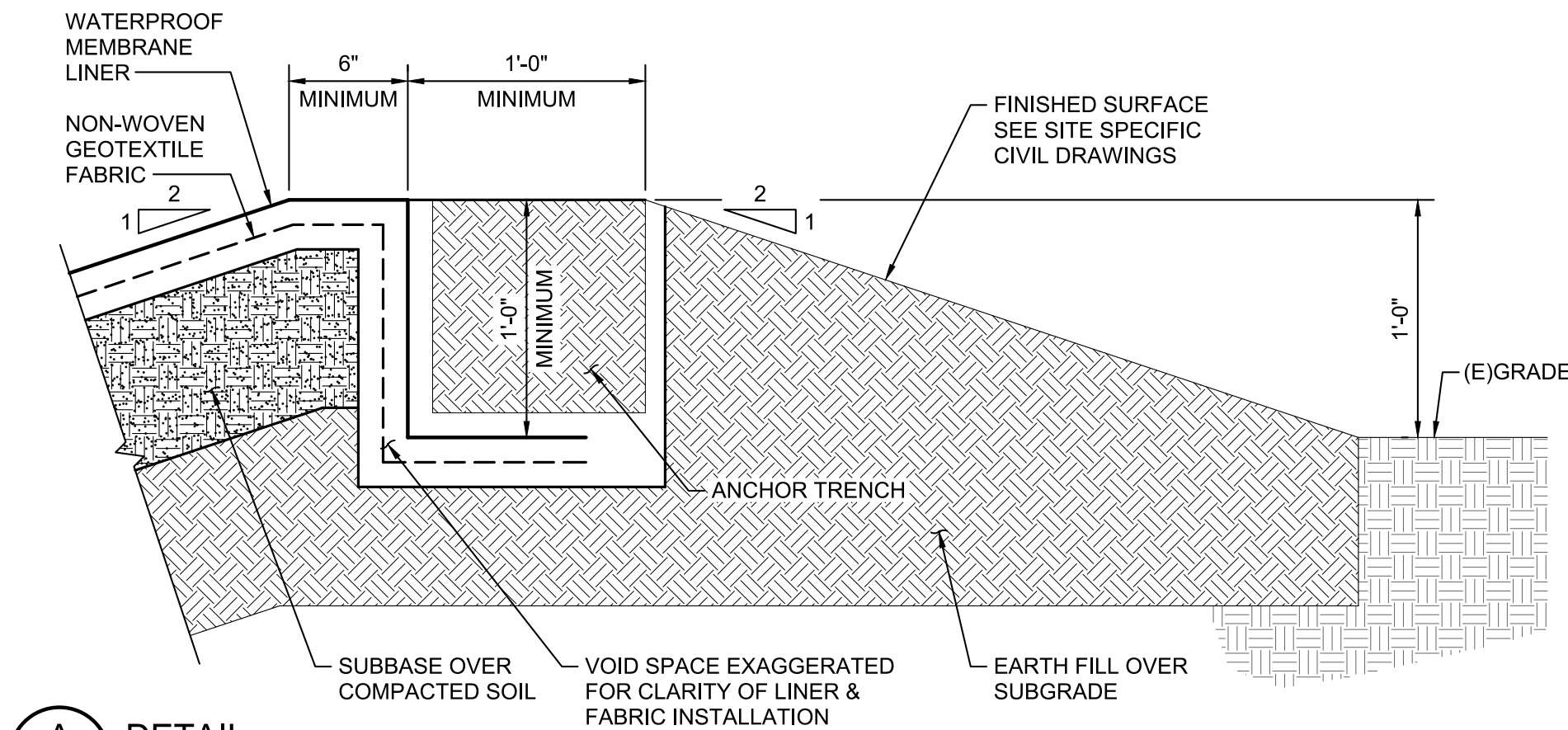
WORK PAD PLAN,
SECTIONS, AND DETAILS

Full Scale Verification
0" 1"

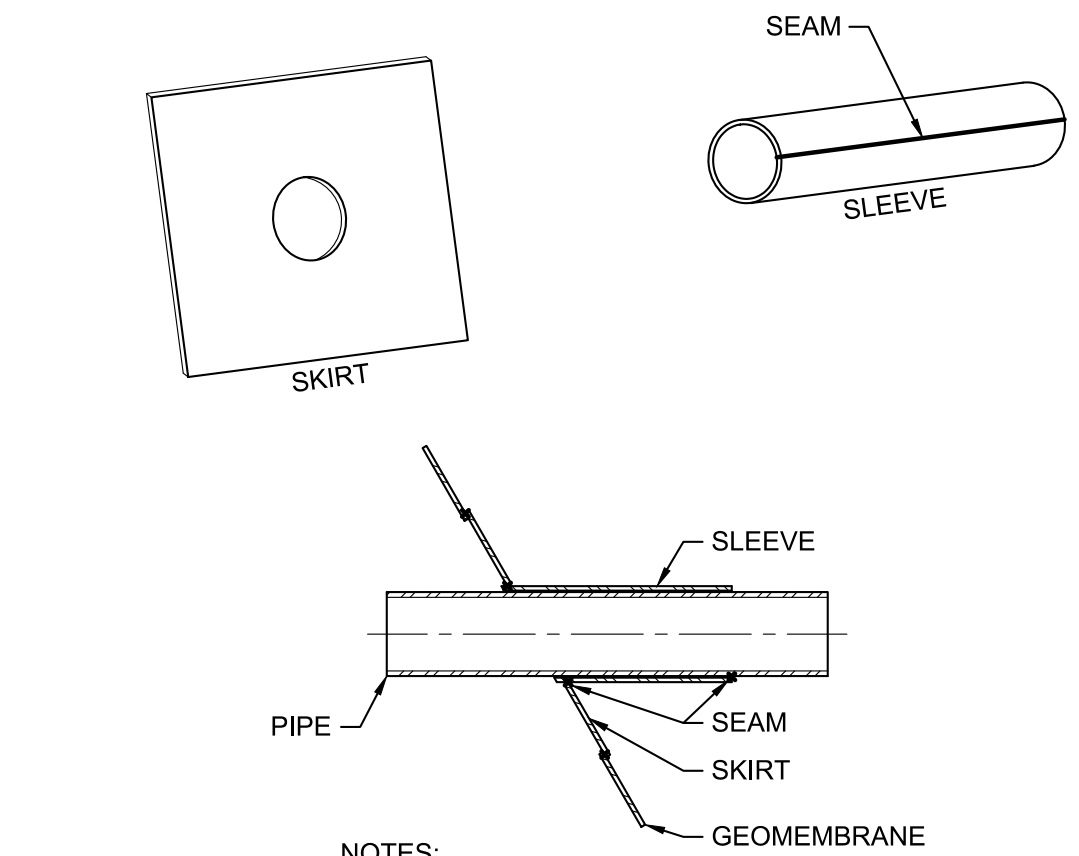
A3
3,000 TON BUILDING



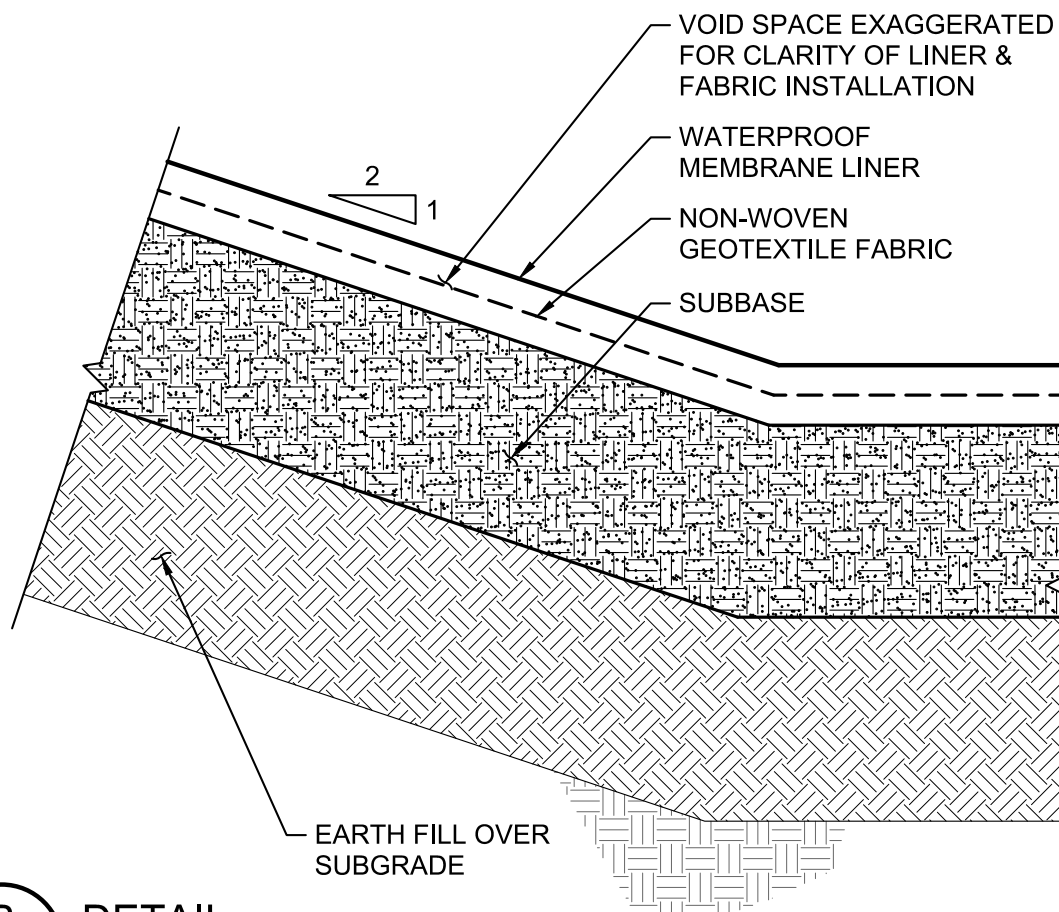
SALT POND PLAN
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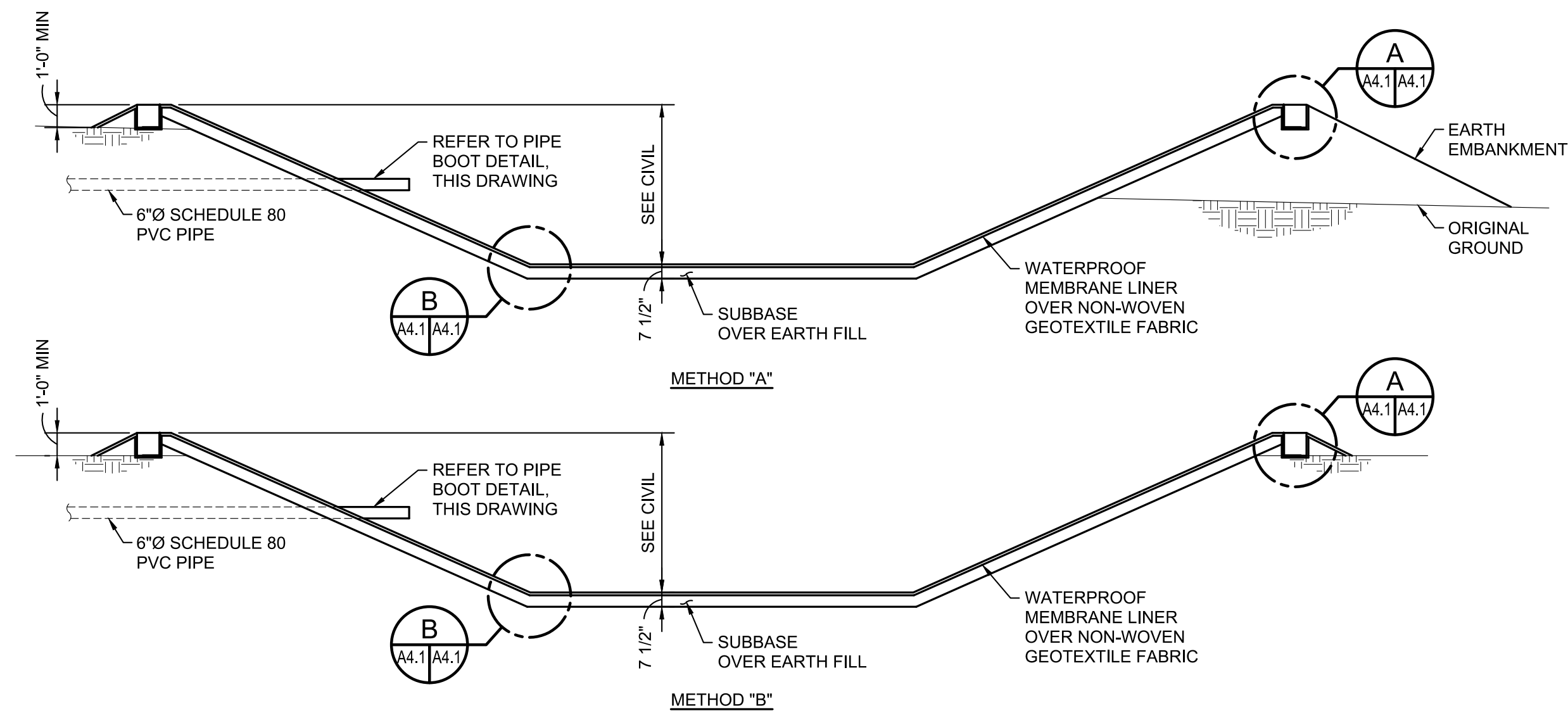
DETAIL A
SCALE: NONE



PIPE BOOT DETAIL
SCALE: NONE



DETAIL B
SCALE: NONE



SECTION 1
SCALE: NONE

GENERAL NOTES:

THE FOLLOWING SPECIFICATION OUTLINES THE REQUIREMENTS FOR SALTWATER PONDS AT VDOT CHEMICAL STORAGE FACILITIES.

- REFER TO SITE SPECIFIC CIVIL DRAWINGS FOR POND SIZE AND CONFIGURATION.
- POND SIZE TO BE DETERMINED BASED UPON 1.4 CUBIC FEET OF STORAGE PER 1.0 SQUARE FEET OF PAD AREA, UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC CIVIL DRAWINGS. THIS ACCOUNTS FOR THE AVERAGE TOTAL WINTER PRECIPITATION AND NEGLECTS EVAPORATION AND PUMPING FOR USE AS A BRINE SOLUTION.
- BASIN GEOMETRY SHALL HAVE SLOPES NOT EXCEEDING 2H AND 1V WITH MINIMUM 18 INCHES WIDE BERM ALONG THE TOP OF THE BASIN.
- SITE SHALL BE STRIPPED AND GRUBBED OR FILLED TO SUBGRADE TO A DEPTH OF TWO FEET PRIOR TO ANY PLACEMENT AND COMPACTION OF EARTH FILL.
- SOIL STANDARDS FOR EARTH FILL:
 - SOILS USED FOR THE CONSTRUCTION OF EMBANKMENTS (BERMS) SHALL BE CLASSIFIED ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487).
 - ACCEPTABLE SOILS INCLUDE THOSE CLASSIFIED AS GC, GM, SC, SM, CL OR ML. ALL SOILS MUST CONTAIN A MINIMUM OF 20% OF LARGER THAN NO. 200 SIEVE AND BE WELL GRADED WITH NO COBBLES OR BOULDER SIZE MATERIAL.
 - MAXIMUM PARTICLE SIZE MUST BE NO GREATER THAN 6".
- SOIL COMPACTION FOR EARTH FILL:
 - COMPACTION OF SOILS SHALL BE DONE IN LIFTS WITH A LOOSE THICKNESS OF 9" OR LESS.
 - EACH LIFT SHALL HAVE A MINIMUM OF 5 PASSES OF COMPACTION EQUIPMENT OVER THE ENTIRE SURFACE.
 - SOILS SHALL BE COMPACTED TO VISIBLE NON-MOVEMENT OF THE MATERIAL WITHOUT EXCEEDING THE OPTIMUM MOISTURE.
- SUBBASE:
 - SUBBASE SHALL BEAR THE WEIGHT OF THE LINER SYSTEM AND WATER WITHOUT CAUSING OR ALLOWING A FAILURE OF THE LINER SYSTEM.
 - SUBBASE SHALL ACCOMMODATE POTENTIAL SETTLING WITHOUT DAMAGE TO THE LINER SYSTEM.
 - SUBBASE SHALL COVER THE BOTTOM AND SIDEWALLS OF THE BASIN.
 - SUBBASE SHALL BE HARD, UNIFORM, SMOOTH AND FREE OF DEBRIS, ROCK FRAGMENTS, PLANT AND OTHER FOREIGN MATERIAL.
 - SUBBASE SHALL BE FREE OF COARSE ROCK FRAGMENTS GREATER THAN 0.75" IN DIAMETER AND FREE OF OTHER FOREIGN MATERIAL SUCH AS TRASH, BRUSH, AND FALLEN TREES.
 - SUBBASE SHALL HAVE A MINIMUM THICKNESS OF 6" AFTER COMPACTION.
 - SUBBASE SHALL BE COMPACTED TO 95 PERCENT OF ITS MAXIMUM DENSITY AT ITS OPTIMUM MOISTURE CONTENT AS MEASURED BY THE STANDARD PROCTOR METHOD IN ACCORDANCE WITH ASTM D698.
 - HYDRAULIC CONDUCTIVITY OF THE SUBBASE (INCLUDING BOTTOM AND SIDEWALLS OF THE BASIN) SHALL BE A MAXIMUM OF 1X10-6 CM/SEC BASED ON LABORATORY AND FIELD TESTING IN ACCORDANCE WITH ASTM D5084.
- NON-WOVEN GEOTEXTILE FABRIC:
 - NONWOVEN NEEDLE-PUNCHED GEOTEXTILE, MANUFACTURED FOR SUBSURFACE DRAINAGE APPLICATIONS, MADE FROM POLYOLEFINS OR POLYESTERS, WITH ELONGATION GREATER THAN 50 PERCENT; COMPLYING WITH AASHTO M288 AND THE FOLLOWING, MEASURED PER TEST METHODS REFERENCED:
 - SURVIVABILITY: CLASS 2; AASHTO M288.
 - GRAB TENSILE STRENGTH: 157 LBF; ASTM D4632.
 - SEWN SEAM STRENGTH: 142 LBF; ASTM D4632.
 - TEAR STRENGTH: 56 LBF; ASTM D4533.
 - PUNCTURE STRENGTH: 56 LBF; ASTM D4833.
 - THE NON-WOVEN GEOTEXTILE FABRIC WILL SERVE AS A CUSHION LAYER UNDER THE WATERPROOF MEMBRANE LINER.
 - THE SEAMS OF THIS FABRIC DO NOT REQUIRE MECHANICAL OR CHEMICAL BONDING, BUT SHOULD BE OVERLAPPED AT LEAST 6 INCHES.
 - TO PREVENT MOVEMENT OF THIS CUSHION LAYER DURING INSTALLATION, ROOFING NAILS SHALL BE PLACED PERIODICALLY AROUND THE PERIMETER OF THE BASIN TO HOLD THE MATERIAL IN PLACE. THESE NAILS SHALL BE DRIVEN FLUSH WITH THE SURFACE OF THE CUSHION LAYER TO PREVENT DAMAGE TO THE WATERPROOF MEMBRANE LINER DURING INSTALLATION.
 - OPENINGS FOR THE INLET PIPE SHOULD BE CUT INTO THE GEOTEXTILE CUSHION LAYER DURING PLACEMENT. ENSURE THAT THIS OPENING IS NOT EXCESSIVELY LARGE.
 - FOLLOWING THE PLACEMENT OF THE CUSHION LAYER, THE WATERPROOF MEMBRANE LINER MAY BE INSTALLED.
- WATERPROOF MEMBRANE LINER MATERIALS:
 - ALL LINERS SHALL BE CONSTRUCTED FROM SYNTHETIC GEOMEMBRANE MATERIALS INCLUDING HIGH DENSITY POLYETHYLENE (HDPE) TEXTURED OR LINEAR LOW-DENSITY POLYETHYLENE (LLDPE) TEXTURED.
 - MINIMUM THICKNESS: 30 MILS (60 MILS IF HDPE)
 - SHALL BE SHOWN TO BE CHEMICALLY COMPATIBLE WITH CHLORIDES AND PETROLEUM HYDROCARBONS PER EPA METHOD 9090A OR SIMILAR METHODS.

- SHALL BE SUITABLE FOR EXPOSED APPLICATIONS AND RESISTANT TO UV RADIATION.
 - SHALL BE IMPERMEABLE TO WATER, CHLORIDES, AND PETROLEUM HYDROCARBONS.
 - SHALL MEET THE RELEVANT PHYSICAL SPECIFICATIONS LISTED BELOW OR APPROVED BY RESPONSIBLE VDOT PERSONNEL. AN OVERVIEW OF THESE SPECIFICATIONS IS PROVIDED IN TABLE 1 BELOW.
 - HDPE TEXTURED: GRI-GM13 (GRI-GM19A FOR SEAMS)
 - LLDPE TEXTURED: GRI-GM17 (GRI-GM19A FOR SEAMS)
- WATERPROOF MEMBRANE LINER SEAMS:
 - USE OF FIELD SEAMS SHOULD BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE.
 - ALL SEAMS (BOTH FACTORY AND FIELD SEAMS) SHOULD MEET THE SPECIFICATIONS OUTLINED IN GRI-GM19A OR GRI-GM19B IN BOTH SHEAR AND PEEL MODES.
 - SEAMS SHALL BE ORIENTED VERTICALLY ON THE BERM OF THE POND. ADDITIONALLY, NO HORIZONTAL SEAMS SHOULD BE PLACED WITHIN 5 FEET ABOVE AND BELOW THE TOE OF THE BERM.
 - FIELD WELDED SEAMS SHALL BE TESTED TO CONFIRM INTEGRITY PER ASTM D4437. THE APPROPRIATE TESTING PROCEDURE SHALL BE SELECTED BASED ON THE LINER MATERIAL AND METHOD USED TO CONSTRUCT THE SEAM. ALTERNATIVE TEST METHODS ARE PERMITTED BASED ON MATERIAL MANUFACTURER'S RECOMMENDATIONS AND GOOD ENGINEERING PRACTICES.
 - ALL SEAMS SHALL HAVE A MINIMUM OVERLAP OF 4 INCHES.
 - WATERPROOF MEMBRANE LINER PENETRATIONS (I.E., PIPE BOOTS, MECHANICAL ATTACHMENTS):
 - PENETRATIONS OF THE WATERPROOF MEMBRANE LINER SUCH AS THOSE FOR PIPE BOOTS AND ANCHOR BOLTS, SHOULD BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE.
 - ALL PENETRATIONS SHALL BE INSTALLED ACCORDING TO MANUFACTURER RECOMMENDATIONS OR IN ACCORDANCE WITH THE METHODS OUTLINED IN ASTM D6497. REFER TO SAMPLE PIPE BOOT DETAIL, THIS DRAWING.
 - ANY SEAMS ASSOCIATED WITH THE INSTALLATION OF PIPE BOOTS OR OTHER PENETRATIONS SHOULD MEET THE SAME SPECIFICATIONS AS THOSE OUTLINED ABOVE OR IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
 - WHEN AVAILABLE, FACTORY PRE-FABRICATED PIPE BOOTS SHOULD BE USED IN PLACE OF PIPE BOOTS FABRICATED IN THE FIELD.
 - WATERPROOF MEMBRANE LINER ANCHOR TRENCH:
 - SHALL RUN CONTINUOUSLY AROUND THE ENTIRE PERIMETER OF THE POND AND BE LOCATED ON TOP OF OR OUTSIDE OF THE BERM WALL TO PREVENT THE RELEASE OF COLLECTED WATER SHOULD THE MAXIMUM DESIGN CAPACITY OF THE SALT POND BE EXCEEDED.
 - SHALL BE A MINIMUM OF 12" x 12" (DEEP x WIDE). REFER TO DETAIL A, THIS DRAWING.
 - THE WATERPROOF MEMBRANE LINER AND NON-WOVEN GEOTEXTILE FABRIC SHALL LAY IN THE SHAPE OF AN L IN THE ANCHOR TRENCH, WITH AT LEAST 6" COVERING THE TRENCH BOTTOM. REFER TO DETAIL A, THIS DRAWING.
 - BACKFILLING OF THE ANCHOR TRENCH SHALL BE DONE WITH THE SAME SOIL REMOVED DURING THE EXCAVATION OF THE TRENCH. THIS MATERIAL SHALL BE FREE OF DEBRIS, ROCK OR ASPHALT FRAGMENTS LARGER THAN 0.75" IN DIAMETER, OR ANY OTHER MATERIAL THAT COULD POTENTIALLY PUNCTURE OR OTHERWISE COMPROMISE THE INTEGRITY OF THE WATERPROOF MEMBRANE LINER.
 - CORNERS AND EDGES OF ANCHOR TRENCH SHALL BE ROUNDED AND MADE UNIFORM TO PREVENT LOCALIZED TENSION IN THE WATERPROOF MEMBRANE LINER. AREAS OF LOCALIZED TENSION CAN LEAD TO PREMATURE FAILURE OF THE WATERPROOF MEMBRANE LINER.
 - WATERPROOF MEMBRANE LINER INSTALLATION:
 - LINER SYSTEM SHALL BE INSTALLED SO THAT BOTH THE NON-WOVEN GEOTEXTILE AND WATERPROOF MEMBRANE LINER LAY FLAT AGAINST THE SUBBASE WITH NO EXCESS TENSION IN THE MATERIAL. PARTICULAR ATTENTION SHALL BE GIVEN TO PREVENT BRIDGING OF THESE MATERIALS AT THE CORNERS AND VALLEYS OF THE POND ONCE INSTALLATION IS COMPLETED.
 - FOLDS, CREASES, AND WRINKLES OF THE NON-WOVEN GEOTEXTILE AND WATERPROOF MEMBRANE LINER SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE.
 - CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE WATERPROOF MEMBRANE LINER AND NON-WOVEN GEOTEXTILE CUSHION LAYER WHEN COMPACTING MATERIAL IN THE ANCHOR TRENCH. ANY DAMAGE TO THE WATERPROOF MEMBRANE LINER SHALL BE REPAIRED PRIOR TO FINAL COMPACTION OF THE ANCHOR TRENCH.
 - PIPE BOOTS SHALL BE INSTALLED SO THAT THE SKIRT OF THE BOOT IS FLUSH WITH THE WATERPROOF MEMBRANE LINER.

TABLE 1		MATERIAL SPECIFICATIONS FOR HIGH DENSITY POLYETHYLENE (HDPE) AND LINEAR LOW-DENSITY POLYETHYLENE (LLDPE) GEOMEMBRANE LINERS		
PHYSICAL PROPERTY	ASTM TEST METHOD	SPECIFICATION SOURCE: GRI-GM13 *GRI-GM19A	HDPE TEXTURED (60 MILS) LLDPE TEXTURED (30 MILS)	
			SPECIFICATION SOURCE: GRI-GM17 *GRI-GM19A	
THICKNESS (MIN AVE.) - MILS	D 5994	NOM. -5%	NOM. -5%	
				-10
				-15
				16
				0.94
TENSILE PROPERTIES (BOTH MACHINE AND CROSS MACHINE DIRECTION)	D 7466	D1505 / D792	16	0.939
			126	-
				-
				-
				250
MAX. 2% MODULUS (LB/IN)	D6693 TYPE IV	D5323	-	1800
				16
				33
				30
				-
OXIDATIVE INDUCTION TIME (MIN. AVE.)	D4218	D8117	100	100
				400
				35
				60
				35
HOT WEDGE SEAMS *	D5397 (APP.)	D5885	50	45
				50
				38
				25
				45
EXTRUSION FILLET SEAMS *	D6392	D5885	50	50
				34
				25



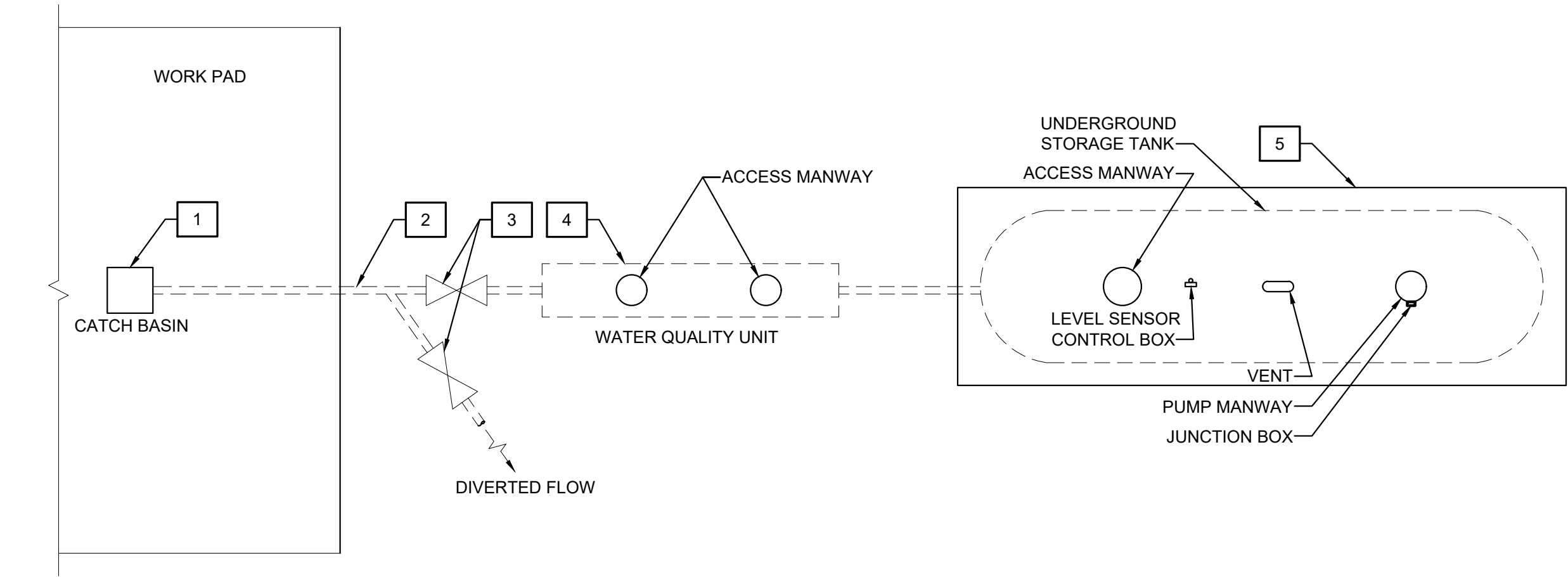
VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

SALT POND PLAN
SECTIONS, AND DETAILS

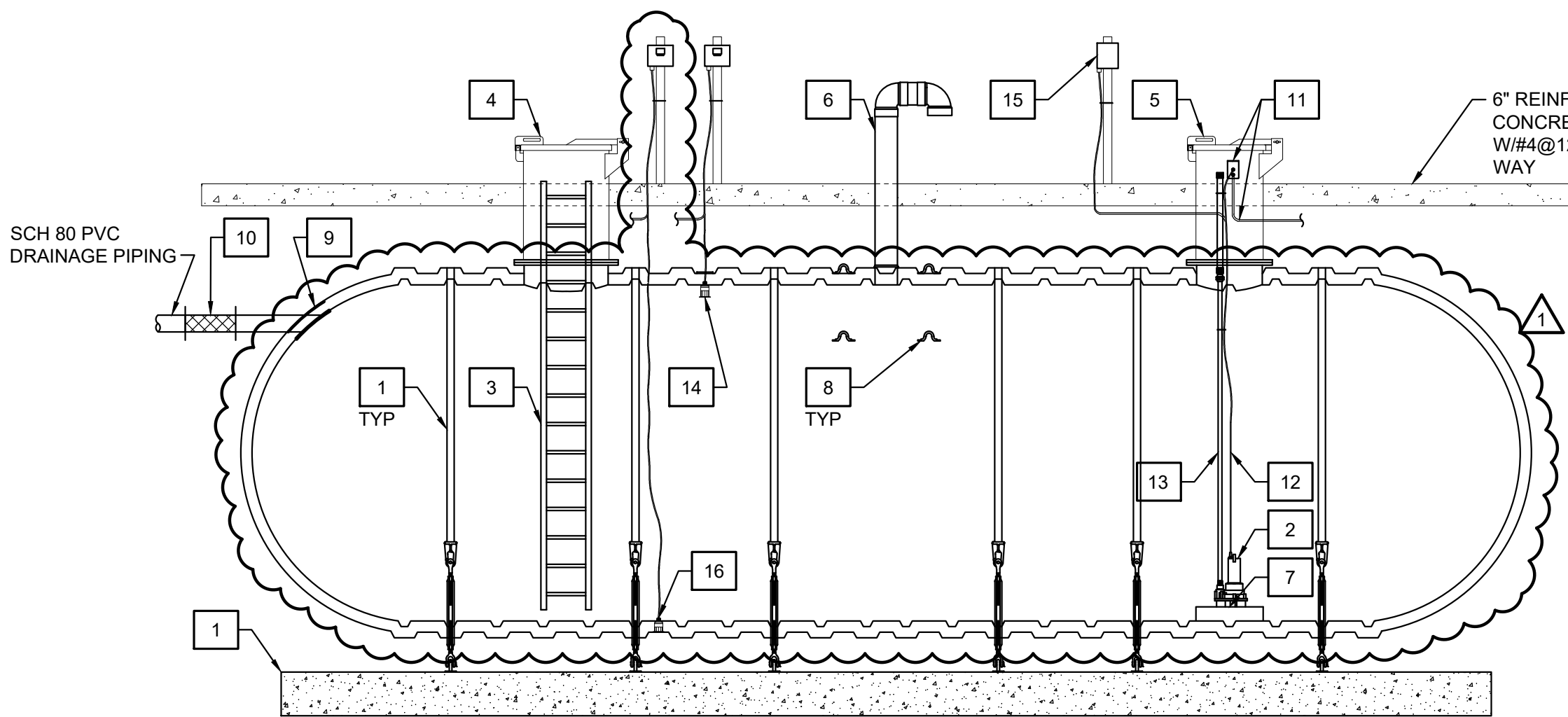
PROJECT NO: 21059
DATE: 2022-08-04

Full Scale Verification
0" 1"
Drawing No.:

A4.1
3,000 TON BUILDING

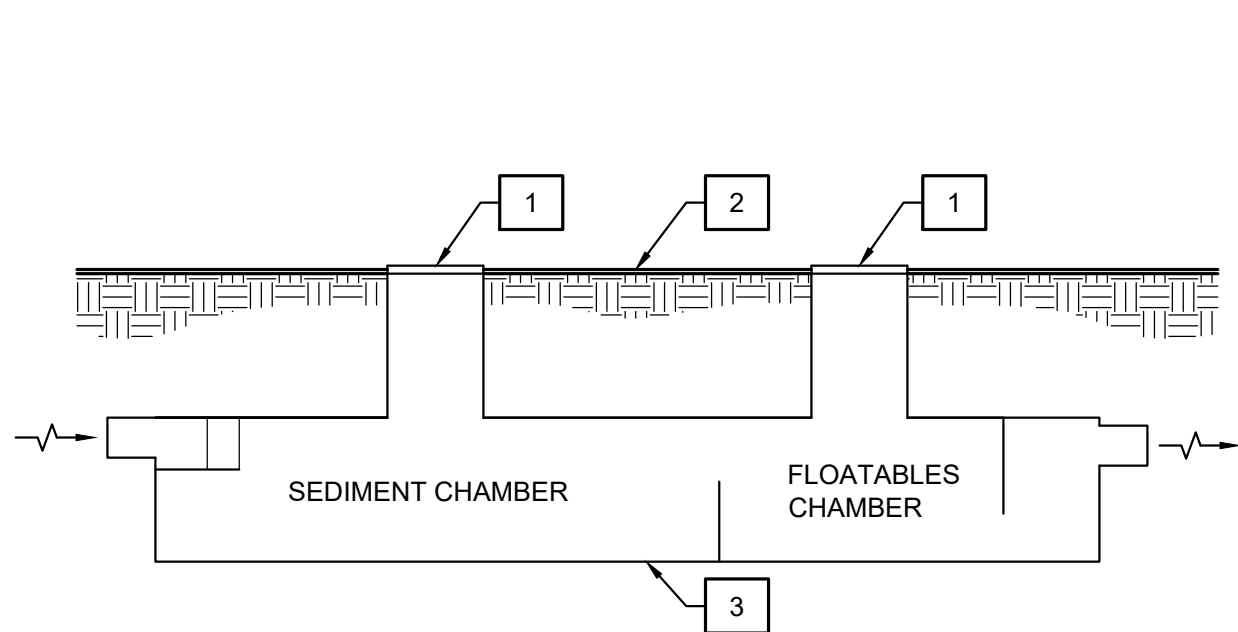


RUNOFF COLLECTION SCHEMATIC
SCALE: NONE

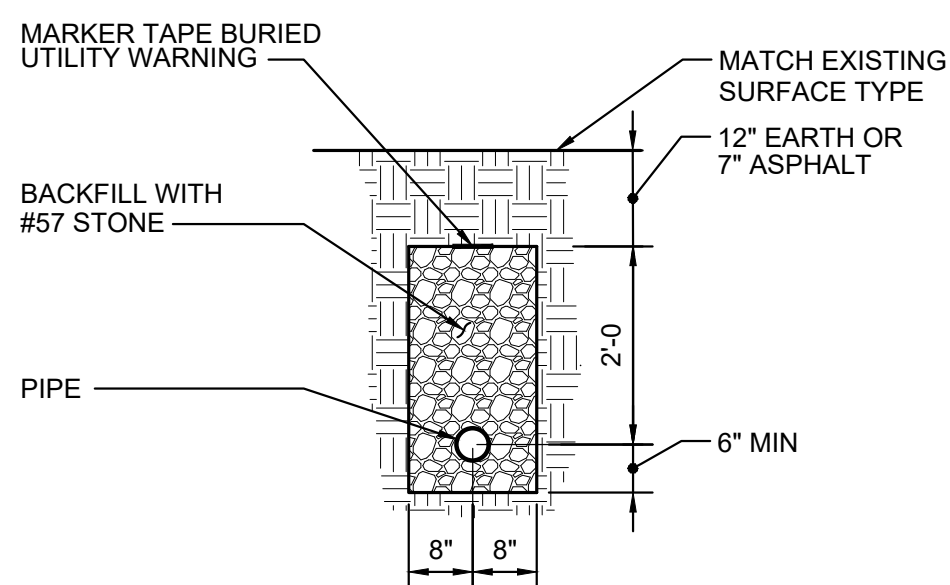


- CONCRETE SLAB NOTES:**
- EXPOSURE CLASS: ACI 318 F3
 - MINIMUM COMPRESSIVE STRENGTH: 5,000 PSI AT 28 DAYS
 - MAXIMUM WATER-CEMENTITIOUS MATERIAL RATIO: 0.40
 - SLUMP LIMIT: 3" +/- 1" (A MAXIMUM OF 8" IS PERMITTED WITH A TYPE I OR II PLASTICIZING ADMIXTURE CONFORMING TO ASTM C1017 OR A TYPE F OR G HIGH-RANGE WATER-REDUCING ADMIXTURE CONFORMING TO ASTM C494)
 - AIR CONTENT: 6% (+/- 1.5%)
 - REINFORCING: GRADE 60, EPOXY COATED
 - PLACE REINFORCING 2" CLEAR BELOW TOP OF SLAB

UNDERGROUND STORAGE TANK
SCALE: NONE



WATER QUALITY UNIT
SCALE: NONE



PIPE BEDDING DETAIL
SCALE: NONE

CONSTRUCTION NOTES:

XX RUNOFF COLLECTION SCHEMATIC:

- REFER TO DRAWING A2 FOR CATCH BASIN.
- UNDERGROUND DRAINAGE PIPE SHALL BE SCH 80 PVC, MIN 6" DIAMETER. INCREASE PIPE DIAMETER AS REQUIRED TO ACCOMMODATE DRAINAGE AT SPECIFIC SITE.
- REFER TO DRAWING A3 FOR WORKPAD DIVERSION VALVES.
- INCLUDE WATER QUALITY UNIT (ADVANCED DRAINAGE SYSTEMS WQU, OR EQUAL) IF RUN-OFF IS TO BE HARVESTED FOR BRINE PRODUCTION; OMIT OTHERWISE. REFER TO WATER QUALITY UNIT DETAIL ON THIS SHEET. UNIT SHALL BE SIZED TO SERVE ANTICIPATED RUN-OFF AT SPECIFIC SITE. LOCATE UNIT SUCH THAT MANWAYS CAN BE ACCESSED BY A TRUCK TO PUMP AND REMOVE COLLECTED SEDIMENTS AND POLLUTANTS. MANWAYS SHALL BE TRAFFIC RATED IF INSTALLED IN PAVED AREAS.
- PROVIDE CONCRETE SLAB OVER UNDERGROUND STORAGE TANK LOCATION. SLAB PERIMETER SHALL EXTEND A MINIMUM OF 18" BEYOND EDGE OF TANK. REFER TO SITE SPECIFIC DRAWINGS FOR BOLLARDS AS NEEDED TO PROTECT SLAB. EXTEND SLAB DIMENSIONS AS REQUIRED TO LOCATE 6"Ø BOLLARDS A MINIMUM OF 12" BEYOND EDGE OF TANK. ALLOW FOR SUFFICIENT ABOVE-GROUND ACCESS TO PUMP MANWAY IN ORDER TO PUMP AND EMPTY TANK.

XX UNDERGROUND STORAGE TANK:

- PROVIDE DEADMAN ANCHORS AND ANCHOR STRAPS PER TANK MANUFACTURER'S DESIGN AND INSTRUCTIONS.
- PROVIDE COMPLETE PUMPING STATION INSIDE TANK WITH TSURUMI VANC'S SERIES SUBMERSIBLE TITANIUM PUMP, OR EQUAL. THE PUMP SHALL HAVE MINIMUM CAPACITY OF 60 GALLONS PER MINUTE AT 15' TDH AND MINIMUM OF 1/2 HP. THE PUMP SHALL HAVE 60HZ/115V/1PH ELECTRICAL SUPPLY AND MANUAL CONTROL, UNLESS SPECIFIED OTHERWISE ON THE SITE SPECIFIC DRAWINGS. THE PUMP SHALL BE CORROSION-RESISTANT AND SUITABLE FOR WATER SOLUTIONS CONTAINING CALCIUM CHLORIDE, SODIUM CHLORIDE, MAGNESIUM CHLORIDE, AND SAND. ALL EXPOSED FASTENERS, COVERS, HOUSINGS, AND SHAFTS SHALL BE TITANIUM. THE IMPELLER SHALL BE HEAVY-DUTY FIBERGLASS REINFORCED NON-CORROSIVE TYPE. THE MOTOR SHALL BE AIR-FILLED WITH DOUBLE INSIDE SEALS WITH SILICON CARBIDE FACES RUNNING IN AN OIL-FILLED CHAMBER. PROVIDE AIR-RELIEF VALVE ON PUMP CASING.
- PROVIDE 16" WIDE FIBERGLASS LADDER FROM TANK BOTTOM TO GRADE. ATTACH LADDER TO FACTORY-INSTALLED FLANGES WITH STAINLESS STEEL FASTENERS.
- PROVIDE 30" DIAMETER MANWAY WITH HINGED, LOCKABLE COVER. MANWAY SHALL PROTRUDE ABOVE GRADE WITH SUFFICIENT CLEARANCE TO OPERATE LOCKING MECHANISM.
- PROVIDE 24" DIAMETER MANWAY WITH HINGED, LOCKABLE COVER. MANWAY SHALL PROTRUDE ABOVE GRADE WITH SUFFICIENT CLEARANCE TO OPERATE LOCKING MECHANISM AND TO PROVIDE ROOM FOR MOUNTING NEMA ENCLOSURE.
- PROVIDE 8" DIAMETER PVC VENT PIPE AND HOOD WITH TERMINATION AT 24" ABOVE SLAB. PROVIDE STAINLESS STEEL INSECT SCREEN.
- PROVIDE FACTORY-MOUNTED 24"x24" FIBERGLASS PUMP PLATFORM.
- PROVIDE FACTORY-MOUNTED LIFTING LUGS WITH A MINIMUM CAPACITY OF TWICE THE WEIGHT OF EMPTY TANK.
- THE TANK INLET SHALL BE AS HIGH AS ALLOWED BY MANUFACTURER WHILE ALLOWING FOR ADEQUATE PIPE SLOPE FROM CATCH BASIN OUTLET PIPE AND WATER QUALITY UNIT. COORDINATE WITH MANUFACTURER TO LOCATE INLET ON END OR SIDE OF TANK AS APPROPRIATE FOR SPECIFIC SITE LAYOUT. PROVIDE REINFORCEMENT AT INLET OPENING PER MANUFACTURER.
- PROVIDE STAINLESS STEEL AND EDPM FLEXIBLE COUPLING.
- PROVIDE SCH 80 PVC CONDUIT FOR PUMP POWER SUPPLY. PROVIDE NEMA WEATHER-TIGHT JUNCTION BOX MOUNTED ON MANWAY. SEAL OPENINGS IN MANWAY WATER-TIGHT.
- PUMP POWER CABLE SHALL BE EPDM, CONTINUOUS, WATERPROOF, AND NON-WICKING WITH BUILT-IN STRAIN RELIEF AND A THREE-WAY MECHANICAL COMPRESSION SEAL WITH A FATIGUE-REDUCING/THERMAL EXPANSION BOOT SUITABLE FOR SUBMERSIBLE PUMP APPLICATIONS.
- PROVIDE PUMP DISCHARGE PIPE WITH MIN 2" DIAMETER TO MATCH PUMP OUTPUT. PIPE SHALL BE SCH 80 STAINLESS STEEL COATED WITH TEFLON (OR EQUAL) TO PREVENT CORROSION. VERIFY THREADS TO COORDINATE WITH PUMP AND ATTACHMENT REQUIREMENTS AT DISCHARGE END. SECURE PIPE AT MANWAY WITH AN APPROVED NON-CORROSIVE FLANGE AND STAINLESS STEEL FASTENERS. PROVIDE AND INSTALL A 2" STAINLESS STEEL COUPLING AT THE DISCHARGE END OF THE STAINLESS STEEL LINE BENEATH THE MANWAY. THE COUPLING SHALL TRANSITION FROM THE THREADED END OF THE PIPE TO A 2" STAINLESS STEEL CAM LOCK COUPLING. VERIFY THREADS AND SIZE WITH THE OWNER PRIOR TO PURCHASING AND INSTALLING.

- PROVIDE ULTRASONIC LEVEL TRANSMITTER SYSTEM, ABB LST400-C15 (OR EQUAL), CAPABLE OF MEASURING LIQUID LEVEL IN MAXIMUM DIAMETER TANK OF 10FT OR DIAMETER OF TANK SIZE SHOWN ON SITE SPECIFIC DRAWINGS. PROVIDE FACTORY-INSTALLED, NON-CORROSIVE MOUNTING FLANGE COMPATIBLE WITH SENSOR MANUFACTURER INSTALLATION INSTRUCTIONS. PROVIDE CONTROL PANEL RATED FOR EXTERIOR INSTALLATION. PROVIDE AUDIBLE AND VISUAL ANNUNCIATOR ALARM SYSTEM RATED FOR EXTERIOR INSTALLATION USING RELAY OUTPUTS FROM LEVEL TRANSMITTER. COORDINATE WITH OWNER FOR DESIRED CONTROL PANEL AND ALARM LOCATION UNLESS INDICATED ON SITE SPECIFIC DRAWINGS. PROVIDE MOUNTING POLE IF THERE ARE NO SUITABLE WALL LOCATIONS AND A SUNSHADE PER MANUFACTURER'S REQUIREMENTS. LEVEL TRANSMITTER AND INTERSTITIAL MOISTURE SENSOR BY THE SAME MANUFACTURER MAY BE INTEGRATED WITH THE SAME CONTROL PANEL.

- PROVIDE PUMP CONTROL PANEL FOR MANUAL PUMP OPERATION. CONTROL PANEL SHALL HAVE LOCKABLE ENCLOSURE SUITABLE FOR EXTERIOR INSTALLATION. COORDINATE WITH OWNER FOR DESIRED CONTROL PANEL. PROVIDE MOUNTING POLE IF THERE ARE NO SUITABLE WALL LOCATIONS AND A SUNSHADE PER MANUFACTURER'S REQUIREMENTS.

- PROVIDE INTERSTITIAL MOISTURE SENSOR, OMNTEC LWF (OR EQUAL), CAPABLE OF DETECTING MOISTURE IN ANNULAR SPACE OF A MAXIMUM TANK DIAMETER OF 10' OR DIAMETER OF TANK SHOWN ON THE SITE SPECIFIC DRAWINGS. INSTALL SENSOR PER MANUFACTURER'S INSTRUCTIONS. PROVIDE CONTROL PANEL RATED FOR EXTERIOR INSTALLATION. PROVIDE AUDIBLE AND VISUAL ANNUNCIATOR ALARM SYSTEM RATED FOR EXTERIOR INSTALLATION. COORDINATE WITH OWNER FOR DESIRED CONTROL PANEL AND ALARM LOCATION UNLESS INDICATED ON SITE SPECIFIC DRAWINGS. PROVIDE MOUNTING POLE IF THERE ARE NO SUITABLE WALL LOCATIONS AND A SUNSHADE PER MANUFACTURER'S REQUIREMENTS. INTERSTITIAL MOISTURE SENSOR AND LEVEL TRANSMITTER BY THE SAME MANUFACTURER MAY BE INTEGRATED WITH THE SAME CONTROL PANEL.

XX WATER QUALITY UNIT:

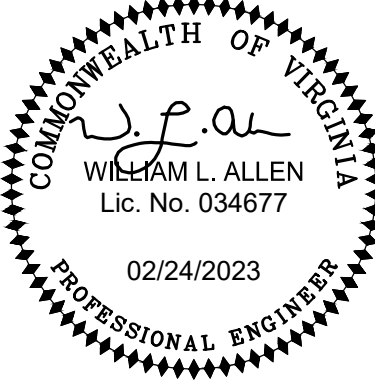
- PROVIDE 24" NYLOPLAST H-25 SOLID MANWAY COVER, OR EQUAL.
- FOLLOW MANUFACTURER RECOMMENDATIONS FOR INSTALLATION, BACKFILL, AND ANY REQUIRED PROTECTIVE PAVEMENT.
- WATER QUALITY UNIT SHALL BE HIGH-DENSITY POLYETHYLENE WITH SMOOTH INTERIOR AND CORRUGATED EXTERIOR, MEETING REQUIREMENTS OF ASTM F2737. WEIR AND BAFFLE PLATES SHALL BE WELDED AT ALL INTERFACES BETWEEN THE PLATE AND WATER QUALITY UNIT. FIRST WEIR PLATE SHALL INCORPORATE A SAW TOOTH DESIGN AND SHALL BE REINFORCED WITH DOWNSTREAM STIFFENERS.

GENERAL NOTES:

- THE SCHEMATIC SHOWS COMPONENTS OF RUNOFF COLLECTION SYSTEM WITH UNDERGROUND STORAGE TANK OPTION. A/E OF RECORD SHALL ADAPT SIZING AND LAYOUT OF SYSTEM COMPONENTS IN ORDER TO PROPERLY SERVE THE SPECIFIC SITE LOCATION.
- REFER TO SITE SPECIFIC CIVIL DRAWINGS FOR LOCATIONS, ELEVATIONS, INVERTS, AND ANY CONNECTIONS TO ON-SITE BRINE PRODUCTION SYSTEM OR OTHER SYSTEMS.

UNDERGROUND STORAGE TANK SPECIFICATIONS:

- PROTOTYPE DESIGN ASSUMES 20,000 GALLON DOUBLE-WALLED UNDERGROUND FIBERGLASS STORAGE TANK. A/E OF RECORD SHALL CONFIRM RUNOFF CAPACITY REQUIRED AT SPECIFIC SITE AND ALTER TANK CAPACITY ACCORDINGLY. COORDINATE WITH TANK MANUFACTURER FOR PIPE INLET LOCATION(S) APPROPRIATE FOR SPECIFIC SITE. IF MULTIPLE TANKS ARE REQUIRED, ADDITIONAL PIPING SHALL MANIFOLD THE TANKS TOGETHER. REFER TO UNDERGROUND STORAGE TANK DETAIL THIS DRAWING FOR TYPICAL TANK REQUIREMENTS.
- THE TANK, MANWAYS, LADDERS, STILLWAYS, AND COVERS SHALL BE FULLY COATED TO PROTECT THEM FROM CALCIUM CHLORIDE, SODIUM CHLORIDE, AND MAGNESIUM CHLORIDE.
- ALL ATTACHMENT FLANGES, OPENINGS, AND PUMP STAND SHALL BE INSTALLED BY THE TANK MANUFACTURER AND BE NON-CORROSIVE.
- COAT ALL THREADS WITH PIPE SEALANT/LUBRICANT PRIOR TO INSTALLATION.
- PAINT ALL EXPOSED PVC CONDUIT WHITE WITH A PAINT SPECIFICALLY DESIGNED FOR PVC PIPE. THE PVC SHALL BE PRIMED AND PAINTED WITH A MINIMUM OF TWO COATS OF TOPCOAT TO ENSURE ADEQUATE PROTECTION FROM THE SUNLIGHT.
- FOLLOW MANUFACTURER INSTRUCTIONS FOR TANK INSTALLATION AND TESTING. PROVIDE MINIMUM OF 18" BACK FILL PLUS 6" REINFORCED CONCRETE SLAB. REFER TO SITE SPECIFIC DRAWINGS FOR TANK DEPTH IN ORDER TO ACHIEVE ADEQUATE PIPE SLOPE. THE MAXIMUM BURIAL DEPTH OF A STANDARD FIBERGLASS TANK IS 7'-0".



VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

SALT STORAGE TANK

Full Scale Verification
0" 1"

Drawing No.:

A4.2

3,000 TON BUILDING

PROJECT NO: 21059
DATE: 2022-09-04

DATE
2023-02-24

REVISIONS

BY

NO.

1

WLA

STORAGE TANK REVISION

EXTERIOR CONCRETE WALL COATING SYSTEM NOTES:

1. THE OUTSIDE OF THE CHEMICAL STORAGE BUILDING CONCRETE WALLS AND TOP OF INTERIOR CONCRETE WALLS SHALL HAVE ALL VOIDS FILLED INCLUDING HOLES FROM FORM WORK TIES AND ALL FINIS REMOVED BEFORE APPLYING THE TWO-PART CEMENTITIOUS COATING SYSTEM SPECIFIED BELOW. WALLS SHALL BE CLEANED OF ANY LOOSE CONCRETE MATERIAL AND ALL TIE WIRES SHALL BE GROUND DOWN FLUSH TO THE CONCRETE SURFACE.
2. TWO-PART CEMENTITIOUS COATING SYSTEM SHALL COMPLY WITH THE FOLLOWING PROPERTIES AS DETERMINED BY TEST METHODS INDICATED:

a. COMPRESSIVE STRENGTH: NOT LESS THAN 400 PSI (27.6 MPA) AT 28 DAYS ACCORDING TO ASTM C 109M.

b. FLEXURAL STRENGTH: NOT LESS THAN 800 PSI (5.5 MPS) AT 28 DAYS ACCORDING TO ASTM C 348.

c. WATER-VAPOR TRANSMISSION: NOT LESS THAN 12.0 PERMS (690 NG/PA x S x SQ M) ACCORDING TO ASTM E 96.

d. ACCELERATED WEATHERING: NO FAILURE AFTER 5000 HOURS ACCORDING TO ASTM G 26.
3. SUBMIT PRODUCT DATA FOR EACH PART (BASE COAT AND FINISH COAT) OF THE TWO-PART CEMENTITIOUS COATING SYSTEM SPECIFIED INCLUDING THE FOLLOWING:

a. MATERIALS LIST: AN INCLUSIVE LIST OF EACH REQUIRED COATING MATERIAL. INCLUDE EACH MATERIAL AND CROSS-REFERENCE THE SPECIFIC COATING FINISH SYSTEM, AND APPLICATION. IDENTIFY EACH MATERIAL BY MANUFACTURER'S CATALOG NUMBER AND GENERAL CLASSIFICATION.

b. MANUFACTURER'S INFORMATION: MANUFACTURER'S COLOR CHARTS SHOWING THE FULL RANGE OF COLORS AND TEXTURES AVAILABLE FOR EACH TYPE OF FINISH COAT MATERIAL INDICATED.

c. SAMPLES FOR INITIAL SELECTION: MANUFACTURER'S COLOR CHARTS SHOWING THE FULL RANGE OF COLORS AND TEXTURES AVAILABLE FOR EACH TYPE OF FINISH COAT MATERIAL INDICATED. AFTER COLOR SELECTION, THE ARCHITECT / ENGINEER WILL RETURN THE COLOR CHIPS INDICATING COLORS SELECTED FOR SURFACES TO BE COATED.
4. QUALITY ASSURANCE REQUIREMENTS FOLLOW:

a. APPLICATOR QUALIFICATIONS: ENGAGE AN EXPERIENCED APPLICATOR THAT HAS COMPLETED COATING SYSTEM APPLICATIONS SIMILAR IN MATERIAL AND EXTENT TO THOSE INDICATED FOR THIS PROJECT AND WITH A RECORD OF SUCCESSFUL IN-SERVICE PERFORMANCE.

b. SOURCE LIMITATIONS: OBTAIN CEMENTITIOUS COATING MATERIALS FROM ONE SOURCE AND BY A SINGLE MANUFACTURER.
5. DELIVERY, STORAGE, AND HANDLING: STORE MATERIALS NOT IN USE IN TIGHTLY COVERED CONTAINERS IN A WELL-VENTILATED AREA AT A MINIMUM AMBIENT TEMPERATURE OF 45 DEG F (7 DEG C). MAINTAIN CONTAINERS IN STORAGE USED FOR COATINGS IN A CLEAN CONDITION, FREE FROM FOREIGN MATERIALS AND RESIDUE. PROTECT CEMENTITIOUS COATING MATERIALS FROM FREEZING. KEEP MATERIALS DRY AND STORAGE AREA NEAT AND ORDERLY. REMOVE WASTE DAILY. TAKE NECESSARY MEASURES TO ENSURE THAT WORKERS AND WORK AREA ARE PROTECTED FROM HEALTH HAZARDS RESULTING FROM HANDLING, MIXING, AND APPLYING THE COATINGS.
6. TEMPERATURE CONDITIONS: APPLY COATINGS ONLY WHEN THE TEMPERATURE OF SURFACES TO BE COATED AND SURROUNDING AIR TEMPERATURE ARE BETWEEN 50 AND 90 DEG F (10 AND 32 DEG C), UNLESS OTHERWISE PERMITTED BY THE MANUFACTURER'S WRITTEN INSTRUCTIONS. DO NOT APPLY COATINGS IF AMBIENT OR SURFACE TEMPERATURES ARE EXPECTED TO FALL BELOW 45 DEG F (7 DEG C) WITHIN 12 HOURS.
7. WEATHER CONDITIONS: DO NOT APPLY CEMENTITIOUS COATINGS IN SNOW, RAIN, FOG, OR MIST WHEN RELATIVE HUMIDITY EXCEEDS 85 PERCENT, OR AT TEMPERATURES LESS THAN 5 DEG F (3 DEG C) ABOVE DEW POINT. ALLOW SURFACES TO ATTAIN TEMPERATURE AND CONDITIONS SPECIFIED BEFORE PROCEEDING WITH OR CONTINUING COATING OPERATIONS.
8. MANUFACTURERS AND PRODUCTS, SUBJECT TO COMPLIANCE WITH REQUIREMENTS ABOVE, WHICH MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO THE PRODUCTS LISTED:

1) BASE COAT (CEMENTITIOUS COATING):

a)MASTERSEAL 581 BY BASF.

b) CONCRETE FINISHER BY EUCLID CHEMICAL COMPANY.

c)SURE COAT BY PROSPEC WITH TEC PATCH ADDITIVE.

2) FINISH COAT (ACRYLIC WATERPROOFING):

a)MASTERPROTECT HB400 BY BASF.

b)TAMMSCOAT OR TAMMSCOAT 35 BY EUCLID CHEMICAL COMPANY.

c)LOXON XP OR CONFLEX XL BY SHERWIN WILLIAMS.

FLUID APPLIED COATING SYSTEM NOTES:

1. THE INTERIOR OF THE CHEMICAL STORAGE BUILDING CONCRETE WALLS SHALL HAVE ALL VOIDS FILLED INCLUDING HOLES FROM FORM WORK TIES AND ALL FINIS REMOVED BEFORE APPLYING THE FLUID APPLIED COATING SYSTEM. WALLS SHALL BE CLEANED OF ANY LOOSE CONCRETE MATERIAL, AND ALL TIE WIRES SHALL BE GROUND DOWN FLUSH TO THE CONCRETE SURFACE. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
2. FLUID APPLIED COATING SYSTEM

A.COLD PROCESS ASPHALT-BASE ROOF COATING SYSTEM

B.COLOR: BLACK

C.DRY MIL THICKNESS: 36.5 MILS AT 3 GALLONS PER 100 SQUARE FEET

D.RESISTANT TO MILD ACIDS AND BASES, CORROSION, WATER AND WATER VAPOR. SATURATED SOLUTIONS OF VARIOUS SALTS, AND SUNLIGHT

E.APPLICATION: HEAVY BRUSH OR SPRAY

F.PHYSICAL REQUIREMENTS:

a. DENSITY: 0.97 GRAMS/CC

b. WEIGHT PER VOLUME AT 60 DEGREES FAHRENHEIT: 7.83 LBS/GALLON

c. FLASH POINTS, PMCC (ASTM D-93), MINIMUM: 105 DEGREES FAHRENHEIT

d. ASPHALT CONTENT, WT %: 64.23

e. MINERAL FILLER, WT %: 4.47

f. NON-ASBESTOS FIBER, WT %: 0.89

g. PHOSPHORUS, WT %: 0.88

h. PENETRATION, TENTH OF A MM AT 77 DEGREES FAHRENHEIT: 240-320

i. SHELF LIFE: 3 TO 7 YEARS

j. DOES NOT RUN AT 200 DEGREES FAHRENHEIT

k. RESIST CRACKING DOWN TO -40 DEGREES FAHRENHEIT

G.BASIS OF DESIGN PRODUCT: MIGHTY PLATE ROOF COATING SYSTEM MANUFACTURED BY TEXAS REFINERY CORPORATION

PAVEMENT WATERPROOFING MEMBRANE LINER NOTES:

1. PAVEMENT WATERPROOFING MEMBRANE LINER MATERIAL SHALL COMPLY WITH THE FOLLOWING:

A. THICKNESS: 4 MM (1 60MLG).

B. SOFTENING POINT: 280 DEG TO 3 10 DEG.

C. ELONGATION (ASTM D 5 147): 70% LONGITUDINAL.

D. TENSILE STRENGTH (ASTM D 5147): 115-LBF.

E. LOW TEMPERATURE: MATERIALS SHALL SHOW NO CRACKING WHEN BENT AROUND A 1-INCH MANDREL AT + 15 DEG F.

F. OUTDOOR COATINGS: ATACTIC POLYPROPYLENE (APP) MODIFIED ASPHALT AND IS NONSURFACED.

G. INNER REINFORCEMENT: NON-WOVEN POLYESTER MAT.

H. EXTERIOR COATINGS: ATACTIC POLYPROPYLENE (APP) MODIFIED ASPHALT.

I. DEGRADATION TO SALT: NO DEGRADATION OF THE PRODUCT SHALL BE EVIDENT AFTER 10 DAYS IMMERSION IN A SALT MIXTURE OF 50 ML. WATER AND 100 GRAMS ROAD SALT.

J. IMPERMEABILITY: SHALL BE IMPERMEABLE TO WATER.

K. BASIS-OF-DESIGN PRODUCT: APPEX 4S BY JOHNS MANVILLE.
2. INSTALL PER MANUFACTURER'S INSTRUCTION USING HEAT-WELD INSTALLATION WITH 4" MINIMUM LAPS ALONG SIDES AND 6" MINIMUM LAPS ALONG ENDS.
3. PAVEMENT WATERPROOFING MEMBRANE LINER SHALL EXTEND A MINIMUM OF 6" ABOVE TOP OF ASPHALT AROUND ALL PENETRATIONS SUCH AS PIPE BOLLARDS, CONDUITS, ETC IN ALL PAVED AREAS WITH PAVEMENT WATERPROOFING MEMBRANE LINER SIMILAR TO PIPE BOLLARD DETAIL A ON DRAWING A3.

INTERIOR INVENTORY CONTROL MARKING NOTES:

1. PROVIDE INVENTORY CONTROL MARKINGS ON THE FLUID APPLIED COATING SYSTEM INSTALLED ON THE INTERIOR FACE OF THE CONCRETE WALLS.
2. MARK USING EXTERIOR GRADE SPRAY PAINT IN COLOR TO CONTRAST THE FLUID APPLIED COATING SYSTEM. LETTERING SHALL BE STENCILED AND 6 INCHES TALL. LINES SHALL BE 4" WIDE.
3. MARK THE HEIGHT FROM FINISHED FLOOR IN 2 FOOT INCREMENTS (2', 4', 6', 8', AND 10') TO THE TOP OF THE CONCRETE WALL ON THE REAR AND SIDE WALLS AT SPACING NOT TO EXCEED 20 FEET ON CENTER AND STARTING 2 FEET FROM THE REAR INTERIOR CORNERS AND EXTENDING TO WITHIN 20 FEET OF THE BUILDING FRONT.
4. MARK THE DISTANCE ALONG THE INTERIOR SIDE WALLS OF THE BUILDING IN 5 FOOT INCREMENTS (5', 10', 15', 20', 25', ETC) FROM THE REAR WALL TO WITHIN 20 FEET OF THE BUILDING FRONT WITH MARKINGS LOCATED NEAR THE TOP OF CONCRETE WALL AT APPROXIMATELY 9'-6" ABOVE FINISHED FLOOR.
5. PROVIDE A LINE INDICATING THE TOP OF THE STORAGE PILE ON THE REAR AND SIDE WALLS. START LINE AT FINISHED FLOOR AT 20 FEET FROM THE BUILDING FRONT ON BOTH SIDE WALLS AND SLOPE UP AT 32 DEGREES TO THE TOP OF WALL. CONTINUE LINE ALONG THE TOP OF THE WALL ON SIDE AND REAR WALLS OF THE BUILDING.

						DATE
						REVISIONS
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VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
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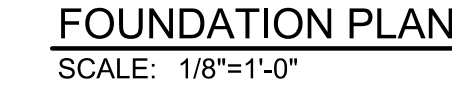
MATERIAL SPECIFICATIONS

PROJECT NO:
21089

DATE:
2022-08-04

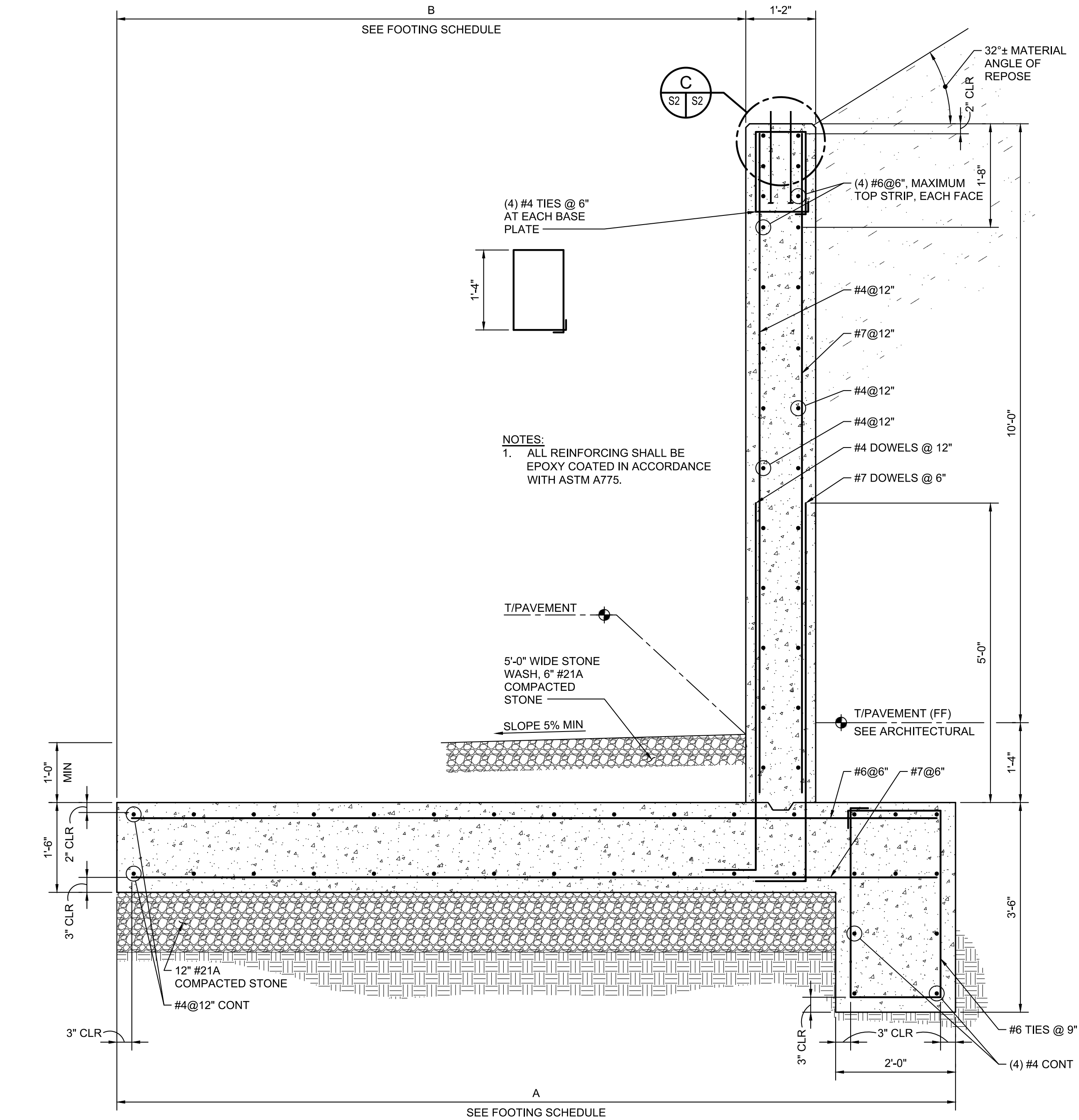
Full Scale Verification
0" 1"

Drawing No.:
A5
3,000 TON BUILDING

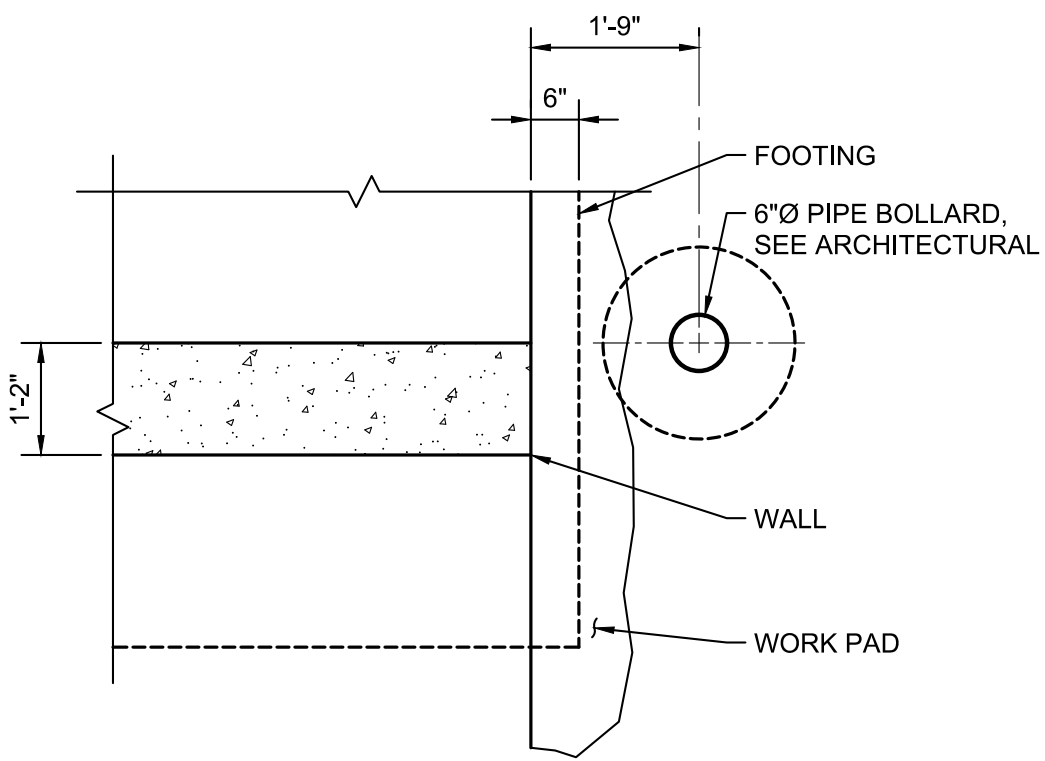


3,000 TON BUILDING

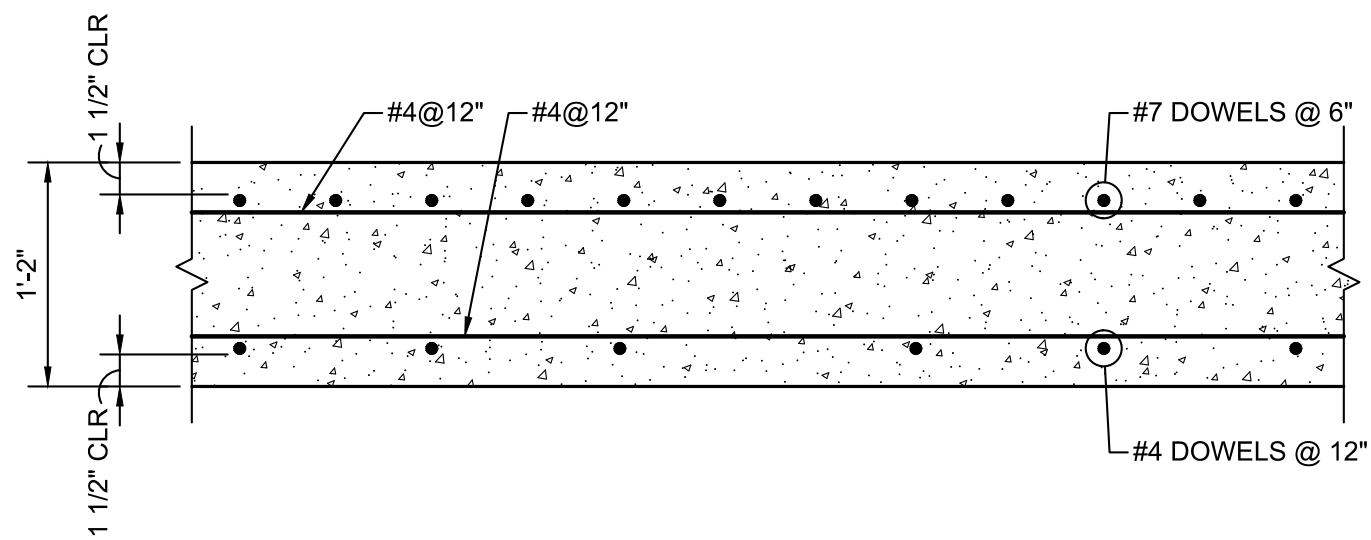
FOOTING SCHEDULE				
3,000 TON BUILDING				
SIDE WALL SECTION				
ALLOWABLE SOIL BEARING CAPACITY/ MAXIMUM TOE PRESSURE	KEY	1,500 PSF	2,000 PSF	2,500 PSF
DIMENSIONS				
FOOTING WIDTH	A	14'-0"	14'-0"	14'-0"
TOE TO WALL WIDTH	B	10'-6"	8'-6"	7'-0"
NOTE: REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR ALLOWABLE SOIL BEARING AND MAXIMUM TOE PRESSURE.				



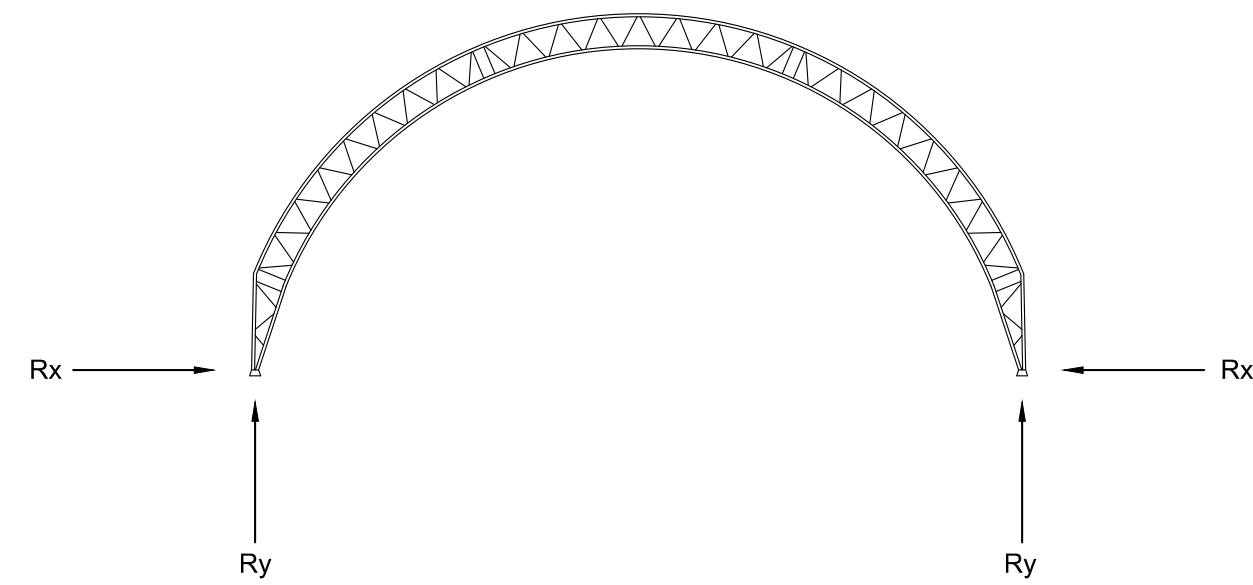
1 SIDE WALL SECTION
SCALE: NONE



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



B DETAIL
SCALE: 1"=1'-0"

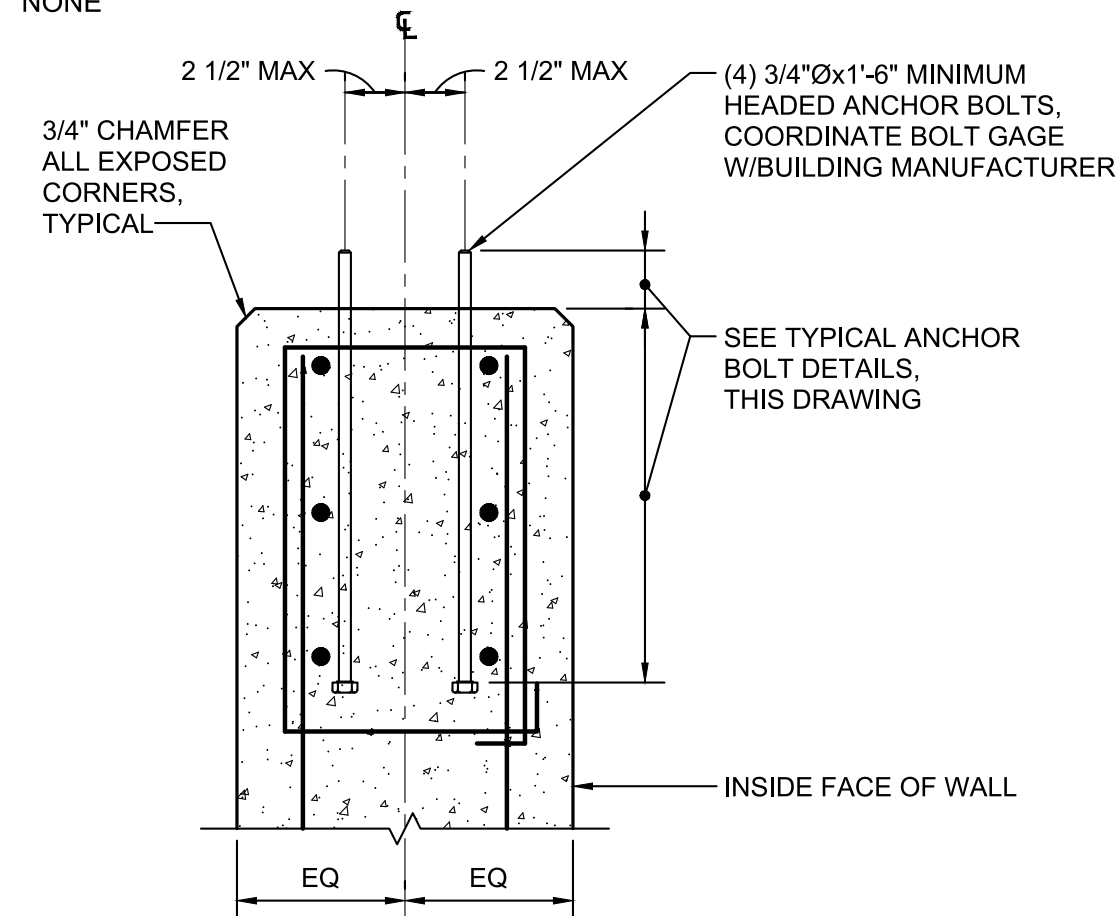


ESTIMATED CONTROLLING AND COMBINATION REACTION LOADS TO CONSIDER AT TYPICAL BASES.

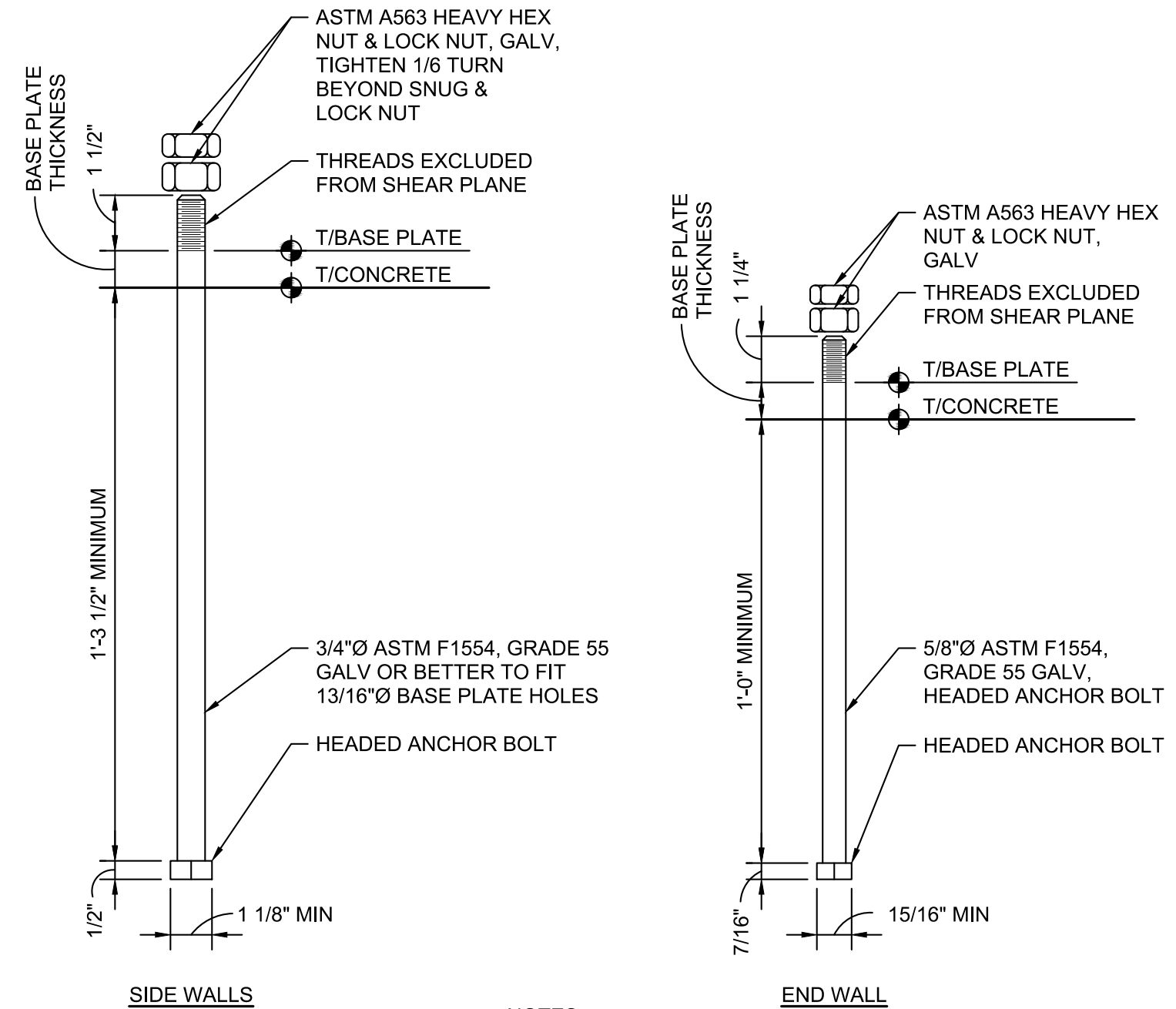
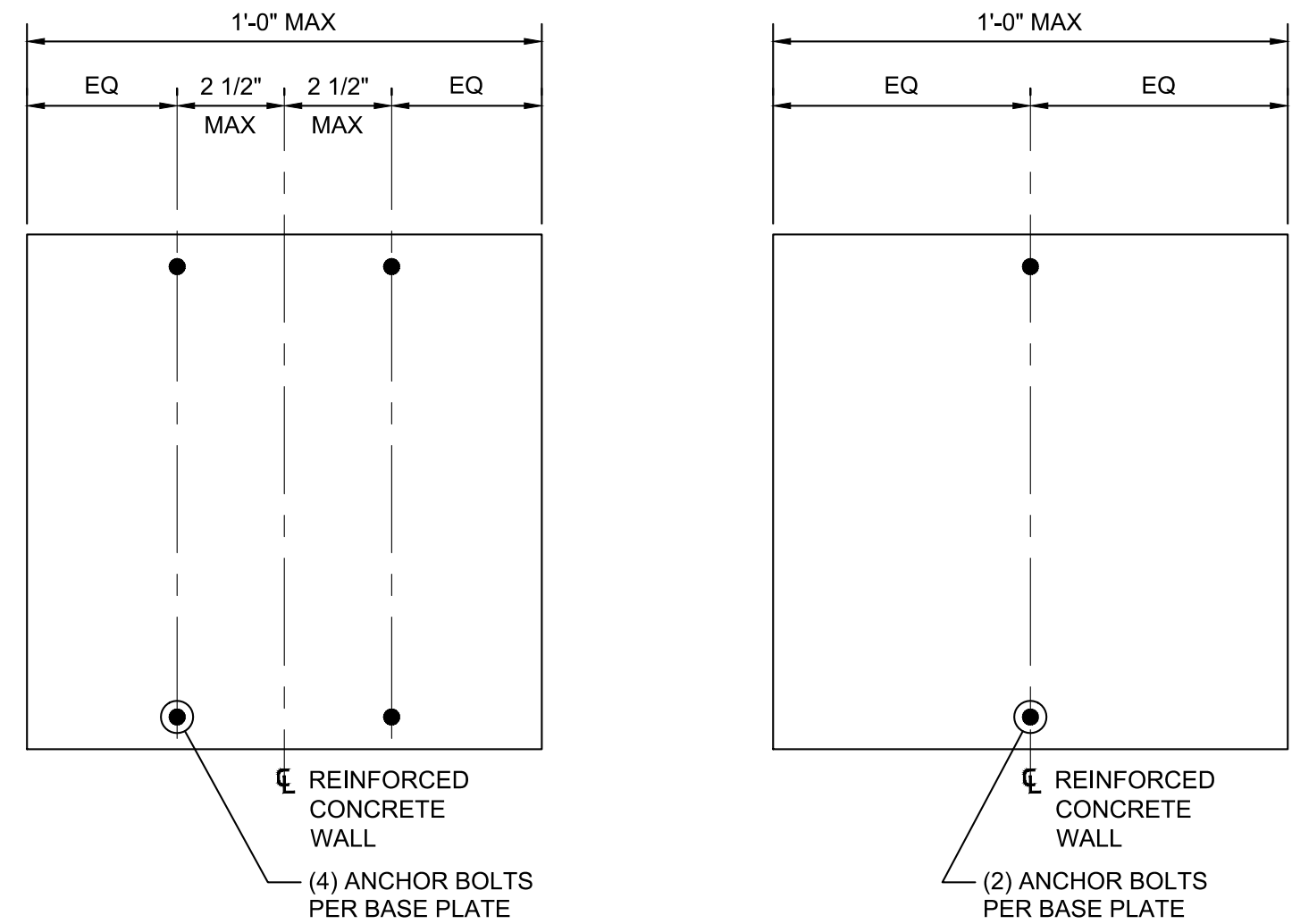
BUILDING	Rx (KIPS PER LINEAR FOOT)	Ry (KIPS PER LINEAR FOOT)
3,000 TON	1.600	1.854

- NOTES:
- BUILDING LOADS PROVIDED ARE PER LINEAR FOOT OF BUILDING LENGTH AND SHALL BE MULTIPLIED BY TRUSS SPACING TO ACHIEVE MAXIMUM ALLOWABLE LOAD AT TRUSS BEARING.
 - IF LOADS PROVIDED BY BUILDING MANUFACTURER EXCEED THE GIVEN LOADS, THEN BUILDING FOUNDATIONS MUST BE DESIGNED BY OTHERS FOR SPECIFIC SITE CONDITION.
 - MAXIMUM TRUSS SPACING SHALL BE 12'-0".

BUILDING LOAD SCHEMATIC
SCALE: NONE



C DETAIL
SCALE: NONE



TYPICAL ANCHOR BOLT DETAIL
SCALE: NONE



VIRGINIA DEPARTMENT OF TRANSPORTATION
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3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

FOUNDATION
SECTION, DETAILS,
AND SCHEDULE

Full Scale Verification
0" 1"

Drawing No.:

S2

3,000 TON BUILDING

PROJECT NO. 21059
DATE: 2022-08-04

DATE

REVISIONS

BY

NO.

STRUCTURAL LOAD CRITERIA:

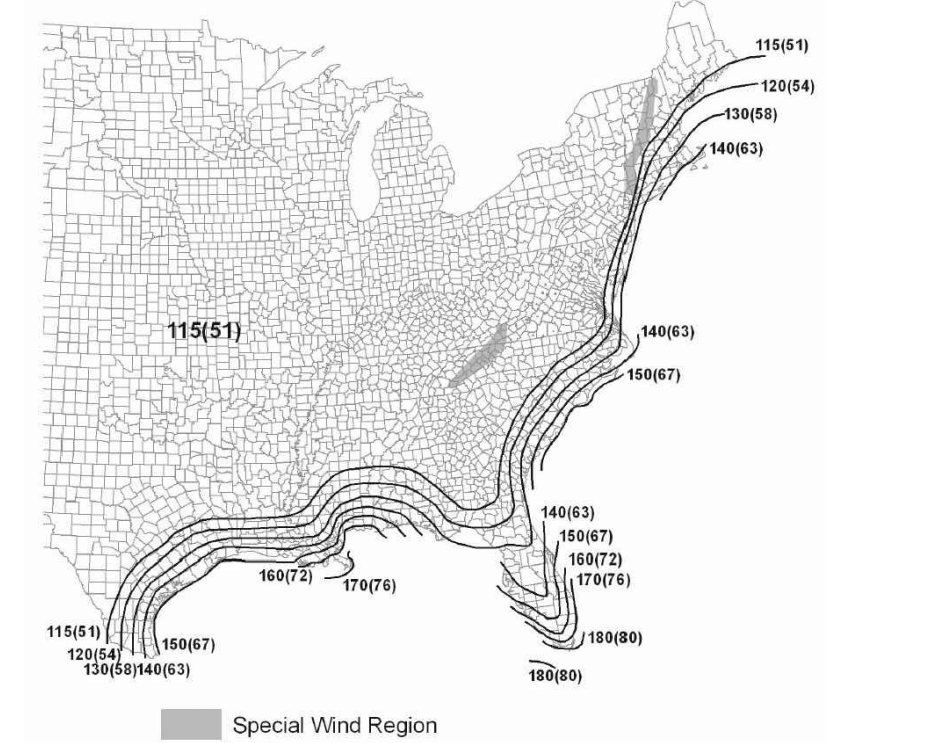
1. STRUCTURAL LOAD CRITERIA WAS DEVELOPED FOR TWO REGIONS IN VIRGINIA FOR CHEMICAL STORAGE BUILDING FOUNDATION DESIGN. THE 115 MPH WIND SPEED CONTOUR LINE IN FIGURE 1609.3 (1) OF THE 2018 VIRGINIA CONSTRUCTION CODE DIVIDES THE TWO REGIONS.
2. FOR LOCATIONS IN VIRGINIA THAT ARE WEST OF THE 115 MPH WIND SPEED CONTOUR LINE, THE WORST-CASE SCENARIO ROOF LIVE, SNOW AND SEISMIC LOADINGS WERE INCORPORATED, ALONG WITH A 115 MPH BASIC WIND SPEED, TO DEVELOP THE LOAD CRITERIA FOR THAT REGION. THE WORST-CASE GROUND SNOW LOAD IN THE 115 MPH WIND SPEED REGION IS 43 PSF IN AUGUSTA COUNTY, STAUNTON AND WAYNESBORO AND THE WORST-CASE SEISMIC LOADING OCCURS IN MULTIPLE LOCALITIES.
3. FOR LOCATIONS IN VIRGINIA EAST OF THE 115 MPH WIND SPEED CONTOUR LINE, THE WORST-CASE SCENARIO ROOF LIVE, SNOW AND SEISMIC LOADINGS WERE INCORPORATED, ALONG WITH A 130 MPH BASIC WIND SPEED, TO DEVELOP THE LOAD CRITERIA FOR THAT REGION. THE WORST-CASE GROUND SNOW LOAD IN THE 130 MPH WIND SPEED REGION IS 20 PSF IN MIDDLESEX COUNTY, LANCASTER COUNTY, AND NORTHHUMBERLAND COUNTY AND THE WORST-CASE SEISMIC LOADING OCCURS IN MULTIPLE LOCALITIES.
4. THE LOADS GENERATED FROM THE 115 MPH WIND SPEED REGION LOAD CRITERIA CONTROLLED THE LOAD COMBINATIONS OVER THE 130 MPH WIND SPEED REGION LOADS EXCEPT FOR UPLIFT ANCHOR DESIGN. THE 115 MPH WIND SPEED REGION LOAD CRITERIA WAS THEREFORE USED IN DESIGN OF THE PROTOTYPE CHEMICAL STORAGE BUILDING FOUNDATION SYSTEMS. THE SUPER-STRUCTURE, COMPONENTS, AND CLADDING OF THE CHEMICAL STORAGE BUILDING SHALL BE DESIGNED BASED ON THE LOAD CRITERIA BELOW THAT CORRESPONDS WITH THE SITE-SPECIFIC LOCATION WEST OR EAST OF THE 115 MPH WIND SPEED CONTOUR LINE. SITE ADAPTATION ARCHITECT/ENGINEER OF RECORD SHALL STATE ON THE SITE SPECIFIC CONSTRUCTION DOCUMENTS WHICH LOAD CRITERIA SET OF THE TWO (2) BELOW IS APPLICABLE TO THE SITE SPECIFIC LOCATION.

115 MPH WIND SPEED REGION (FOR ALL LOCATIONS IN VIRGINIA ON OR WEST OF THE 115 MPH WIND SPEED CONTOUR LINE IN FIGURE 1609.3 (1) OF 2018 VCC)

1. GOVERNING BUILDING CODE:
2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE
2. MINIMUM DESIGN SUPERIMPOSED LOAD CRITERIA: FOR FLAT ROOFS AND ROOFS WITH A SLOPE OF LESS THAN FOUR (4) INCHES PER FOOT, ACTUAL DESIGN LOADS SHALL BE CALCULATED FOR LIVE LOAD, SNOW LOAD, ICE, WATER AND COMBINATIONS OF THESE LOADS, BUT SHALL BE NO LESS THAN THE MINIMUM SUPERIMPOSED LOAD PER CP5M 6.1.4.1. 30 PSF
3. ROOF LIVE LOAD:
ROOF LIVE LOAD: 20 PSF
4. WIND LOAD CRITERIA:
ULTIMATE DESIGN WIND SPEED (3-SEC GUST): 115 MPH
NOMINAL DESIGN WIND SPEED: 89.08 MPH
BUILDING RISK CATEGORY: II
WIND EXPOSURE CONDITION: D
INTERNAL PRESSURE COEFFICIENT (GC_{pi}): 0.55 +/-
COMPONENTS AND CLADDING WIND PRESSURE: REFER TO DRAWING S3
5. SNOW LOAD CRITERIA:
GROUND SNOW LOAD (P_g): 43 PSF
FLAT ROOF SNOW LOAD (P_f): 43.34 PSF
SNOW EXPOSURE FACTOR (C_e): 1.2
SNOW IMPORTANCE FACTOR (I_s): 1.0
SNOW THERMAL FACTOR (C_t): 1.2
6. SEISMIC LOAD CRITERIA:
BUILDING RISK CATEGORY: II
SEISMIC IMPORTANCE FACTOR (I_s): 1.0
MAPPED SPECTRAL RESPONSE COEFFICIENT, (S_s): 0.33
MAPPED SPECTRAL RESPONSE COEFFICIENT, (S₁): 0.11
SITE CLASS (ASSUMED): D
SPECTRAL RESPONSE COEFFICIENT, (S_{ps}): 0.34
SPECTRAL RESPONSE COEFFICIENT, (S_{pt}): 0.18
SEISMIC DESIGN CATEGORY: C
SEISMIC FORCE RESISTING SYSTEM: BEARING WALL SYSTEM, REINF. CONC. SHEAR WALLS
DESIGN BASE SHEAR: 53.9 KIPS
SEISMIC RESPONSE COEFFICIENT, (C_s): 0.08
RESPONSE MODIFICATION FACTOR (R): 4.0
ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE
7. COLLATERAL ROOF LOAD: 3 PSF
(IN ADDITION TO LOADS REQUIRED BY VCC AND INDICATED IN THE STRUCTURAL LOAD CRITERIA ON THIS DRAWING)

130 MPH WIND SPEED REGION (FOR ALL LOCATIONS IN VIRGINIA EAST OF THE 115 MPH WIND SPEED CONTOUR LINE IN FIGURE 1609.3 (1) OF 2018 VCC)

1. GOVERNING BUILDING CODE:
2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE
2. MINIMUM DESIGN SUPERIMPOSED LOAD CRITERIA: FOR FLAT ROOFS AND ROOFS WITH A SLOPE OF LESS THAN FOUR (4) INCHES PER FOOT, ACTUAL DESIGN LOADS SHALL BE CALCULATED FOR LIVE LOAD, SNOW LOAD, ICE, WATER AND COMBINATIONS OF THESE LOADS, BUT SHALL BE NO LESS THAN THE MINIMUM SUPERIMPOSED LOAD PER CP5M 6.1.4.1. 20 PSF
3. ROOF LIVE LOAD:
ROOF LIVE LOAD: 20 PSF
4. WIND LOAD CRITERIA:
ULTIMATE DESIGN WIND SPEED (3-SEC GUST): 130 MPH
NOMINAL DESIGN WIND SPEED: 100.7 MPH
BUILDING RISK CATEGORY: II
WIND EXPOSURE CONDITION: D
INTERNAL PRESSURE COEFFICIENT (GC_{pi}): 0.55 +/-
COMPONENTS AND CLADDING WIND PRESSURE: REFER TO DRAWING S3
5. SNOW LOAD CRITERIA:
GROUND SNOW LOAD (P_g): 20 PSF
FLAT ROOF SNOW LOAD (P_f): 20.16 PSF
SNOW EXPOSURE FACTOR (C_e): 1.2
SNOW IMPORTANCE FACTOR (I_s): 1.0
SNOW THERMAL FACTOR (C_t): 1.2
6. SEISMIC LOAD CRITERIA:
BUILDING RISK CATEGORY: II
SEISMIC IMPORTANCE FACTOR (I_s): 1.0
MAPPED SPECTRAL RESPONSE COEFFICIENT, (S_s): 0.11
MAPPED SPECTRAL RESPONSE COEFFICIENT, (S₁): 0.05
SITE CLASS (ASSUMED): D
SPECTRAL RESPONSE COEFFICIENT, (S_{ps}): 0.12
SPECTRAL RESPONSE COEFFICIENT, (S_{pt}): 0.08
SEISMIC DESIGN CATEGORY: B
SEISMIC FORCE RESISTING SYSTEM: BEARING WALL SYSTEM, REINF. CONC. SHEAR WALLS
DESIGN BASE SHEAR: 18.7 KIPS
SEISMIC RESPONSE COEFFICIENT, (C_s): 0.03
RESPONSE MODIFICATION FACTOR (R): 4.0
ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE
7. COLLATERAL ROOF LOAD: 3 PSF
(IN ADDITION TO LOADS REQUIRED BY VCC AND INDICATED IN THE STRUCTURAL LOAD CRITERIA ON THIS DRAWING)



WIND DESIGN SPEED MAP
SCALE: NONE

GENERAL NOTES:

- GENERAL:**
1. DISCLAIMER: PROTOTYPE CHEMICAL STORAGE BUILDING DESIGN IS BASED UPON STATED LOAD CRITERIA. IN AREAS WITH LOAD CRITERIA EXCEEDING THE LOADS USED IN THIS DESIGN, BUILDING FOUNDATIONS MUST BE DESIGNED BY OTHERS USING THE GREATER SITE-SPECIFIC LOAD CRITERIA.
2. RAINFALL LOAD:
STRUCTURE SHALL WITHSTAND THE EFFECTS OF RAINFALL UP TO 4 INCHES PER HOUR FOR A MINIMUM OF 2 HOURS.
3. DEFLECTION LIMIT IN STRUCTURAL FRAMEWORK:
L/180 FOR COMBINATION OF DESIGN LOADS.
4. SUBMIT SHOP DRAWINGS AND MATERIAL CERTIFICATIONS FOR REVIEW FOR THE FOLLOWING ITEMS. DO NOT FABRICATE MATERIALS UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND ALL EXCEPTIONS HAVE BEEN RESOLVED.
- A. CONCRETE MIX DESIGNS, TESTS, AND CERTIFICATES PER ACI 301
B. CONCRETE REINFORCING STEEL SHOP DRAWINGS
C. REBAR AND WWF PRODUCT DATA
D. JOINT FILLER
E. ANCHOR BOLTS
F. ISOLATION JOINT MATERIAL
G. FRAME-SUPPORTED MEMBRANE BUILDING SHOP DRAWINGS INCLUDING LOAD AND REACTION INFORMATION.
a. SITE ADAPTATION ARCHITECT/ENGINEER OF RECORD SHALL CONFIRM THAT THE MAXIMUMS OF ALL LOAD COMBINATIONS SUBMITTED ON THE SHOP DRAWINGS DO NOT EXCEED THE REACTIONS STATED ON THE BUILDING LOAD SCHEMATIC ON DRAWING S2.
5. CONTRACT DRAWINGS SHALL NOT BE MARKED AND SUBMITTED AS SHOP DRAWINGS.
6. THE CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS, DIMENSIONS, AND ELEVATIONS BEFORE PROCEEDING WITH CONSTRUCTION. THE CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND PROTECT FROM DAMAGE DURING EXCAVATION AND BACKFILLING OPERATIONS.
7. ALL STRUCTURAL MATERIALS, COMPONENTS, AND SYSTEMS SHALL BE TESTED AND INSPECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODE AND THE COMMONWEALTH OF VIRGINIA'S CONSTRUCTION AND PROFESSIONAL SERVICE MANUAL. CO-6A "STATEMENT OF STRUCTURAL AND SPECIAL INSPECTIONS" AND CO-6B LIST OF REQUIRED INSPECTIONS INCLUDED IN THE PROJECT MANUAL BY AN INDEPENDENT TESTING AND INSPECTION FIRM PROVIDED BY THE OWNER. TEST FIRM SHALL PROVIDE WRITTEN REPORTS FOR REVIEW BY THE ENGINEER AND OWNER INCLUDING, BUT NOT LIMITED TO:
A. SUBGRADE COMPACTION
B. REINFORCEMENT PLACEMENT
C. CONCRETE COMPRESSIVE STRENGTH
D. CONCRETE SLUMP
E. CONCRETE AIR CONTENT
F. CONCRETE TEMPERATURE
G. CONCRETE PLACEMENT
H. INSTALLATION OF HIGH-STRENGTH BOLTS
I. STEEL FRAMING AND CONNECTIONS

FOUNDATIONS:

1. DESIGN SOIL BEARING CAPACITY SHALL BE BASED UPON SITE SPECIFIC GEOTECHNICAL REPORT PREPARED BY OTHERS AND INCLUDED IN THE PROJECT MANUAL. FOUNDATION SIZE SHALL BE SELECTED FROM PROTOTYPE FOOTING SCHEDULE AND BASED UPON DESIGN SOIL BEARING CAPACITY. DISCLAIMER: IN AREAS WHERE DESIGN SOIL BEARING CAPACITIES ARE LOWER THAN 1,500 PSF OR WHERE SOIL CONDITIONS REQUIRE DEEP FOUNDATION SYSTEMS, BUILDING FOUNDATIONS MUST BE DESIGNED BY OTHERS FOR SPECIFIC SITE SOIL CONDITIONS.
2. DESIGN ASSUMPTIONS FOR THE FOUNDATION SYSTEM ARE AS FOLLOWS:
A. OVERTURN MOMENT IS ACHIEVED BY APPLYING LOAD COMBINATIONS FOR GOVERNING OUTWARD MOTION. MOMENT IS TAKEN AROUND THE OUTSIDE TOE OF FOOTING AT BEARINGS. A SAFETY FACTOR OF 1.5 IS USED FOR OVERTURN STABILITY.
B. SOIL TOE PRESSURE IS DETERMINED AT THE OUTSIDE TOE OF FOOTING AT BEARING FOR APPLICABLE LOAD COMBINATIONS.
C. BUILDING FORCES, ACTIVE SALT STORAGE PRESSURE, AND ACTIVE EARTH PRESSURES ARE USED TO DETERMINE OUTWARD FORCE ON FOUNDATION. PASSIVE EARTH PRESSURE IS USED TO DETERMINE KEY DEPTH FOR STABILITY. THE ACTIVE SALT PRESSURE COEFFICIENTS ASSUMED FOR FOUNDATION DESIGN IS AS FOLLOWS:
b. "ACTIVE" SALT PRESSURE COEFFICIENT 0.77
D. MAXIMUM ESTIMATED WALL LOADS ARE 20.0 KIPS PER LINEAL FOOT (K/LF).
3. WHERE FOOTING AND PAVEMENT ARE TO BE PLACED ON FILL, ALL TOPSOIL, ROOTS, TRASH, AND OTHER EXTRANEOUS MATERIALS SHALL BE REMOVED AND REPLACED WITH SELECT FILL COMPACTED TO A MINIMUM OF 98% OF ITS MAXIMUM DENSITY AT ITS OPTIMUM MOISTURE CONTENT AS MEASURED BY THE STANDARD PROCTOR METHOD (ASTM D698). EACH LAYER OF FILL SHALL BE NO GREATER THAN 8" THICK AND SHALL BE COMPACTED AS SPECIFIED PRIOR TO PLACEMENT OF THE FOLLOWING LAYER.
4. OWNER SHALL ENGAGE A TESTING AND INSPECTION FIRM WITH A QUALIFIED GEOTECHNICAL ENGINEER LICENSED IN THE COMMONWEALTH OF VIRGINIA TO INSPECT AND APPROVE THE SUBGRADE INCLUDING FILL AND BACKFILL MATERIALS AND OPERATIONS. ALL FOUNDATION BEARING STRATA SHALL BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO ANY CONCRETE PLACEMENT. IF UNSUITABLE SOILS ARE ENCOUNTERED, THE GEOTECHNICAL ENGINEER AND THE PROJECT ENGINEER SHALL DETERMINE THE MEANS OF CORRECTIVE ACTION.
5. FOOTING EXCAVATIONS SHALL NOT BE LEFT OPEN OVER NIGHT WHEN RAIN IS FORECAST. OPEN EXCAVATIONS LEFT EXPOSED TO RAIN, SNOW, OR ICE SHALL HAVE A LAYER OF 3" LEAN CONCRETE PLACED AHEAD OF WEATHER CONDITIONS FOR PROTECTION.
6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE WELL-BRACED SHORING AT EXCAVATIONS NEAR EXISTING BUILDINGS AND CONSTRUCTION TO PREVENT SETTLEMENT OR CAVE-INS.
7. CONCRETE NOT CAST AGAINST EARTH SHALL BE FORMED WITH WOOD OR METAL FORMING MATERIALS TO THE DIMENSIONS SHOWN ON THE DRAWINGS, UNLESS OTHERWISE NOTED OR APPROVED BY THE ENGINEER.
8. BEFORE PLACING CONCRETE FOOTINGS, VERIFY ELECTRICAL GROUNDING CONNECTIONS TO REBAR ARE IN PLACE AND TESTED. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.
9. PLACE CONCRETE IN CONTINUOUS STRIPS AND PROVIDE CONTROL JOINTS OR CONSTRUCTION JOINTS AT LOCATIONS INDICATED ON PLAN.

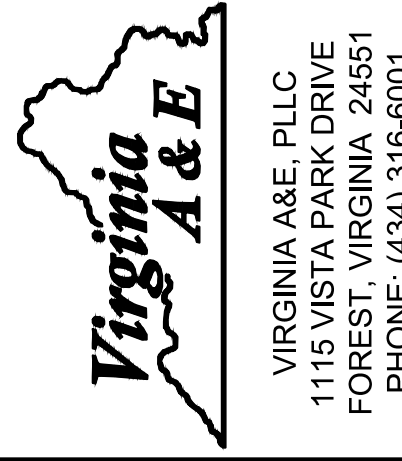
CONCRETE:

1. CONCRETE MIXTURES SHALL COMPLY WITH ACI 301. PREPARE NORMAL-WEIGHT CONCRETE (145 PCF) DESIGN MIXES UNLESS OTHERWISE NOTED, PROPORTIONED ACCORDING TO ACI 301, AS FOLLOWS:
CLASS A: FOOTINGS;
A. EXPOSURE CLASS: ACI 318 F1
B. MINIMUM COMPRESSIVE STRENGTH: 3500 PSI AT 28 DAYS.
C. MAXIMUM WATER-CEMENTITIOUS MATERIALS RATIO: 0.55
D. SLUMP LIMIT: 4 INCHES +/- 1 INCH WITH A MAXIMUM OF 8 INCHES IF A TYPE I OR II PLASTICIZING ADMIXTURE CONFORMING TO ASTM C1017/C1017M OR A TYPE F OR G HIGH-RANGE WATER-REDUCING ADMIXTURE CONFORMING TO ASTM C494/C494M IS PERMITTED.
4.5% (+/- 1.5%)
- E. AIR CONTENT:
CLASS B: RETAINING WALLS;
A. EXPOSURE CLASS: ACI 318 F2
B. MINIMUM COMPRESSIVE STRENGTH: 4500 PSI AT 28 DAYS.
C. MAXIMUM WATER-CEMENTITIOUS MATERIALS RATIO: 0.45
D. SLUMP LIMIT: 4 INCHES +/- 1 INCH WITH A MAXIMUM OF 8 INCHES IF A TYPE I OR II PLASTICIZING ADMIXTURE CONFORMING TO ASTM C1017/C1017M OR A TYPE F OR G HIGH-RANGE WATER-REDUCING ADMIXTURE CONFORMING TO ASTM C494/C494M IS PERMITTED.
6% (+/- 1.5%)
2. READY MIXED CONCRETE PRODUCER SHALL CONFORM TO QUALIFICATIONS BY ASTM C94.
3. MEASURE, BATCH, MIX, AND DELIVER CONCRETE ACCORDING TO ASTM C94 AND ASTM C1116. WHEN AIR TEMPERATURE IS ABOVE 90 DEG F, REDUCE MIXING AND DELIVERY TIME TO 60 MINUTES.
4. ALL DETAILING, FABRICATION AND PROCEDURES OF CONCRETE PLACEMENT SHALL CONFORM WITH THE LATEST EDITIONS OF ACI 301 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 315 - "DETAILS AND METHODS OF CONCRETE REINFORCEMENT", AND ACI 318 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
5. REINFORCING BARS SHALL CONFORM TO ASTM A615 AND BE GRADE 60 DEFORMED AND SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775. SPLICES SHALL BE 48 BAR DIAMETERS MINIMUM AND SHALL BE STAGGERED IN LOCATION FROM NEIGHBORING REINFORCING.
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR ALL REINFORCEMENT, UNLESS OTHERWISE NOTED:
A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
B. CONCRETE EXPOSED TO EARTH OR WEATHER: #6 THROUGH #18 BARS 2"
#5 BAR AND SMALLER 1 1/2"
C. CONCRETE NOT EXPOSED TO EARTH OR WEATHER: SLABS, WALLS, AND JOISTS 3/4"
BEAMS AND COLUMNS 1 1/2"
7. PROVIDE CORNER BARS AT ALL WALL AND FOOTING STEPS AND CORNERS UNLESS OTHERWISE NOTED. CORNER BARS SHALL BE A MINIMUM OF 2'-6"x2'-6" LONG, EXCEPT AS NOTED BELOW, AND SHALL HAVE THE SAME SIZE AND SPACING AS THE HORIZONTAL REINFORCING.
8. ALL REINFORCING SHALL BE SECURELY WIRED TOGETHER IN FORMS AS CALLED FOR IN "PLACING REINFORCING BARS" BY CRSI.
9. NO TORCH CUTTING, HEAT BENDING, OR WELDING OF REINFORCING SHALL BE DONE UNLESS OTHERWISE NOTED.
10. CHAMFER EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED.
11. SHORING FOR FORMS SHALL NOT BE REMOVED UNTIL THE CONCRETE IT SUPPORTS IS CAPABLE OF SUPPORTING ITSELF AND ALL SUPERIMPOSED LOADS.
12. CEMENTITIOUS MATERIAL: USE CEMENTITIOUS MATERIALS, OF THE SAME TYPE, BRAND, AND SOURCE, THROUGHOUT PROJECT. PORTLAND CEMENT SHALL BE ASTM C150, TYPE 1/11, GRAY, SUPPLEMENT WITH FLY ASH IN ACCORDANCE WITH ASTM C618, CLASS F OR C AND GROUND GRANULATED BLAST-FURNACE SLAG IN ACCORDANCE WITH ASTM C989, GRADE 100 OR 120. SILICA FUME SHALL BE ASTM C1240, AMORPHOUS SILICA.
13. NORMAL-WEIGHT AGGREGATES: ASTM C33, CLASS 3S COARSE AGGREGATE OR BETTER, GRADED. PROVIDE AGGREGATES FROM A SINGLE SOURCE WITH DOCUMENTED SERVICE RECORD DATA OF AT LEAST 10 YEARS' SATISFACTORY SERVICE IN SIMILAR APPLICATIONS AND SERVICE CONDITIONS USING SIMILAR AGGREGATES AND CEMENTITIOUS MATERIALS. MAXIMUM COARSE-AGGREGATE SIZE SHALL BE 1 INCH NOMINAL. FINE AGGREGATES SHALL BE FREE OF MATERIALS WITH DELETERIOUS REACTIVITY TO ALKALI IN CEMENT.
14. WATER SHALL BE ASTM C94 AND POTABLE.
15. AIR-ENTRAINING ADMIXTURE SHALL CONFORM TO ASTM C260.
16. CHEMICAL ADMIXTURES SHALL CONFORM TO ASTM C494 AND BE WATER REDUCING. CONTRACTOR SHALL NOT USE CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE.
17. CONSTRUCT FORMWORK ACCORDING TO ACI 301 AND MAINTAIN TOLERANCES AND SURFACE IRREGULARITIES WITHIN ACI 347 R LIMITS OF CLASS C, 1/2 INCH FOR OTHER CONCRETE SURFACES.
18. COMPLY WITH CRSI'S "MANUAL OF STANDARD PRACTICE" FOR FABRICATING, PLACING, AND SUPPORTING REINFORCEMENT.
19. BEFORE PLACING CONCRETE, VERIFY THAT INSTALLATION OF FORMWORK, REINFORCEMENT, AND EMBEDDED ITEMS IS COMPLETE AND THAT ALL REQUIRED INSPECTIONS HAVE BEEN PERFORMED.
20. PLACE CONCRETE IN A CONTINUOUS OPERATION AND CONSOLIDATE USING MECHANICAL VIBRATING EQUIPMENT.
21. PROTECT CONCRETE FROM PHYSICAL DAMAGE, PREMATURE DRYING, AND REDUCED STRENGTH DUE TO HOT OR COLD WEATHER DURING MIXING, PLACING, AND CURING.
22. FORMED SURFACES SHALL BE FINISHED BY THE FOLLOWING METHODS:
A. ROUGH FORMED FINISHES SHALL BE APPLIED TO CONCRETE SURFACES NOT EXPOSED TO PUBLIC VIEWS. AS-CAST CONCRETE TEXTURE IMPARTED BY FORM-FACING MATERIAL WITH THE HOLES AND DEFECTS REPAIRED AND PATCHED. REMOVE FINS AND OTHER PROJECTIONS THAT EXCEED SPECIFIED LIMITS ON FORMED-SURFACE IRREGULARITIES.
B. SMOOTH-FORMED FINISHES SHALL BE APPLIED TO CONCRETE SURFACES EXPOSED TO PUBLIC VIEW OR TO BE COVERED WITH A COATING OR COVERING MATERIAL APPLIED DIRECTLY TO CONCRETE. AS-CAST CONCRETE TEXTURE IMPARTED BY FORM-FACING MATERIAL, ARRANGED IN AN ORDERLY AND SYMMETRICAL MANNER WITH A MINIMUM OF SEAMS. REPAIR AND PATCH THE HOLES AND DEFECTS. REMOVE FINS AND OTHER PROJECTIONS THAT EXCEED SPECIFIED LIMITS ON FORMED-SURFACE IRREGULARITIES.

23. UNFORMED SURFACES SUCH AS TOPS OF WALLS, HORIZONTAL OFFSETS, AND SIMILAR UNFORMED SURFACES ADJACENT TO FORMED SURFACES, STRIKE OFF SMOOTH AND FINISH WITH A TEXTURE MATCHING ADJACENT FORMED SURFACES. CONTINUE FINAL SURFACE TREATMENT OF FORMED SURFACES UNIFORMLY ACROSS ADJACENT UNFORMED SURFACES UNLESS OTHERWISE NOTED.
24. PROTECT CONCRETE FROM DAMAGE. REPAIR SURFACE DEFECTS IN FORMED CONCRETE AND SLABS.
25. DO NOT ADD WATER TO CONCRETE DURING DELIVERY, AT PROJECT SITE, OR DURING PLACEMENT UNLESS APPROVED BY ENGINEER.
26. DEPOSIT CONCRETE CONTINUOUSLY IN ONE LAYER OR IN HORIZONTAL LAYERS OF SUCH THICKNESS THAT NO NEW CONCRETE WILL BE PLACED ON CONCRETE THAT HAS HARDENED ENOUGH TO CAUSE SEAMS OR PLANES OF WEAKNESS. IF A SECTION CANNOT BE PLACED CONTINUOUSLY, PROVIDE CONSTRUCTION JOINTS AS INDICATED. DEPOSIT CONCRETE TO AVOID SEGREGATION. DEPOSIT CONCRETE IN HORIZONTAL LAYERS OF DEPTH TO NOT EXCEED FORMWORK DESIGN PRESSURES AND IN A MANNER TO AVOID INCLINED COLD JOINTS. CONSOLIDATE PLACED CONCRETE WITH MECHANICAL VIBRATING EQUIPMENT ACCORDING TO ACI 301. DO NOT USE VIBRATORS TO TRANSPORT CONCRETE INSIDE FORMS. INSERT AND WITHDRAW VIBRATORS VERTICALLY AT UNIFORMLY SPACED LOCATIONS TO RAPIDLY PENETRATE PLACED LAYER AND TO EXTEND AT LEAST 6 INCHES INTO PRECEDING LAYER. DO NOT INSERT VIBRATORS INTO LOWER LAYERS OF CONCRETE THAT HAVE BEGUN TO LOSE PLASTICITY. AT EACH INSERTION, LIMIT DURATION OF VIBRATION TO TIME NECESSARY TO CONSOLIDATE CONCRETE AND COMPLETE EMBEDMENT OF REINFORCEMENT AND OTHER EMBEDDED ITEMS WITHOUT CAUSING MIXTURE CONSTITUENTS TO SEGREGATE.
27. COLD-WEATHER PLACEMENT: COMPLY WITH ACI 306.1 AND AS FOLLOWS. PROTECT CONCRETE WORK FROM PHYSICAL DAMAGE OR REDUCED STRENGTH THAT COULD BE CAUSED BY FROST, FREEZING ACTIONS, OR LOW TEMPERATURES. WHEN AVERAGE HIGH AND LOW TEMPERATURE IS EXPECTED TO FALL BELOW 40 DEG F FOR THREE SUCCESSIVE DAYS, MAINTAIN DELIVERED CONCRETE MIXTURE TEMPERATURE WITHIN THE TEMPERATURE RANGE REQUIRED BY ACI 301. DO NOT USE FROZEN MATERIALS OR MATERIALS CONTAINING ICE OR SNOW. DO NOT PLACE CONCRETE ON FROZEN SUBGRADE OR ON SUBGRADE CONTAINING FROZEN MATERIALS. DO NOT USE CALCIUM CHLORIDE, SALT, OR OTHER MATERIALS CONTAINING ANTIFREEZE AGENTS OR CHEMICAL ACCELERATORS UNLESS OTHERWISE SPECIFIED AND APPROVED IN MIXTURE DESIGNS.
28. HOT WEATHER PLACEMENT SHALL COMPLY WITH ACI 301. MAINTAIN CONCRETE TEMPERATURE BELOW 90 DEG F AT TIME OF PLACEMENT. CHILLED MIXING WATER OR CHOPPED ICE MAY BE USED TO CONTROL TEMPERATURE, PROVIDED WATER EQUIVALENT OF ICE IS CALCULATED TO TOTAL AMOUNT OF MIXING WATER. USING LIQUID NITROGEN TO COOL CONCRETE IS CONTRACTOR'S OPTION. FOG-SPRAY FORMS, STEEL-REINFORCEMENT, AND SUBGRADE JUST BEFORE PLACING CONCRETE. KEEP SUBGRADE UNIFORMLY MOIST WITHOUT STANDING WATER, SOFT SPOTS, OR DRY AREAS.
29. CURE CONCRETE ACCORDING TO ACI 308.1. MOISTURE CURING: KEEP SURFACES CONTINUOUSLY MOIST FOR NOT LESS THAN SEVEN DAYS WITH WATER, CONTINUOUS WATER-FOG SPRAY, ABSORPTIVE COVER, WATER SATURATED, AND KEPT CONTINUOUSLY WET. COVER CONCRETE SURFACES AND EDGES WITH 12 INCH LAP OVER ADJACENT ABSORPTIVE COVERS.
30. REFER TO ACI 301 2.3.2 AND 5.3.6 AND REMOVE FORMS AFTER CONCRETE REACHES ITS DESIGN STRENGTH OR SEVEN (7) DAYS. ALTERNATIVELY, FORMS MAY BE REMOVED FROM WALLS FIVE (5) DAYS AFTER CONCRETE PLACEMENT BUT WALLS MUST BE WET-CURED UNTIL A MINIMUM OF TWO (2) TEST CYLINDER BREAKS VERIFY THAT THE CONCRETE HAS REACHED 70 PERCENT OF ITS DESIGN STRENGTH, IN ACCORDANCE WITH ACI 301 5.3.6.1.a.
31. OWNER SHALL ENGAGE A TESTING AND INSPECTION FIRM TO PERFORM FIELD TESTS ON CONCRETE AND REBAR AND TO SUBMIT TEST REPORTS FOR VALIDATION WITH DESIGN PARAMETERS NOTED ABOVE.
32. INSPECTIONS SHALL INCLUDE STEEL REINFORCEMENT PLACEMENT, VERIFICATION OF USE OF REQUIRED DESIGN MIXTURE, CONCRETE PLACEMENT, INCLUDING CONVEYING AND DEPOSITING, AND CURING PROCEDURES AND MAINTENANCE OF CURING TEMPERATURE.
33. CONCRETE TESTS: TESTING OF COMPOSITE SAMPLES OF FRESH CONCRETE OBTAINED ACCORDING TO ASTM C172. TESTING FREQUENCY: OBTAIN ONE COMPOSITE SAMPLE FOR EACH DAY'S POUR OF EACH CONCRETE MIXTURE EXCEEDING 5 CUBIC YARDS, BUT LESS THAN 25 CUBIC YARDS, PLUS ONE SET FOR EACH ADDITIONAL 50 CUBIC YARDS OR FRACTION THEREOF.
34. SLUMP: ASTM C143; ONE TEST AT POINT OF PLACEMENT FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIXTURE. PERFORM ADDITIONAL TESTS WHEN CONCRETE CONSISTENCY APPEARS TO CHANGE.
35. AIR CONTENT: ASTM C231, PRESSURE METHOD, FOR NORMAL-WEIGHT CONCRETE; ONE TEST FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIXTURE.
36. CONCRETE TEMPERATURE: ASTM C1064; ONE TEST HOURLY WHEN AIR TEMPERATURE IS 40 DEG F AND BELOW AND WHEN 80 DEG F AND ABOVE, AND ONE TEST FOR EACH COMPOSITE SAMPLE.
37. COMPRESSION TEST CYLINDERS: ACI 318; CAST AND LABORATORY CURE THREE SETS OF TWO 6 x 12 INCH CYLINDERS OR THREE SETS OF THREE 4 x 8 INCH CYLINDERS FOR EACH COMPOSITE SAMPLE. TEST ONE SET OF LABORATORY CURED CYLINDERS AT 7 DAYS AND ONE SET AT 28 DAYS. HOLD ONE SET OF LABORATORY CURED CYLINDERS IN RESERVE. ALSO, CAST AND FIELD CURE ONE SET OF TWO 6 x 12 INCH CYLINDERS OR ONE SET OF THREE 4 x 8 INCH CYLINDERS. THE FIELD CURE CYLINDERS ARE TO BE HELD IN RESERVE AND ONLY BROKEN IF THE LABORATORY CURED CYLINDERS FAIL. A COMPRESSIVE STRENGTH TEST SHALL BE THE AVERAGE OF THE STRENGTHS OF ONE SET OF TWO 6 x 12 INCH CYLINDERS OR ONE SET OF THREE 4 x 8 INCH CYLINDERS MADE FROM THE SAME COMPOSITE SAMPLE. CONTRACTOR SHALL EVALUATE OPERATIONS AND PROVIDE CORRECTIVE PROCEDURES FOR PROTECTING AND CURING IN-PLACE CONCRETE.
38. STRENGTH OF EACH CONCRETE MIXTURE WILL BE SATISFACTORY IF EVERY AVERAGE OF ANY THREE CONSECUTIVE COMPRESSIVE-STRENGTH TESTS EQUALS OR EXCEED SPECIFIED COMPRESSIVE STRENGTH AND NO COMPRESSIVE STRENGTH TEST VALUE FALLS BELOW SPECIFIED COMPRESSIVE STRENGTH BY MORE THAN 500 PSI.
39. TEST RESULTS SHALL BE REPORTED IN WRITING TO OWNER, A/E, AND CONTRACTOR WITHIN 48 HOURS OF TESTING. REPORTS OF COMPRESSIVE-STRENGTH TESTS SHALL CONTAIN PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE PLACEMENT, NAME OF CONCRETE TESTING AND INSPECTION FIRM, LOCATION OF CONCRETE BATCH IN WORK, DESIGN COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE MIXTURE PROPORTIONS AND MATERIALS, COMPRESSIVE BREAKING STRENGTH, AND TYPE OF BREAK FOR BOTH 7- AND 28-DAY TESTS.
40. NONDESTRUCTIVE TESTING: IMPACT HAMMER, SONOSCOPE, OR OTHER NONDESTRUCTIVE DEVICE MAY BE PERMITTED, BUT WILL NOT BE USED AS SOLE BASIS FOR APPROVAL OR REJECTION OF CONCRETE.
41. ADDITIONAL TESTS: TESTING AND INSPECTION FIRM SHALL MAKE ADDITIONAL TESTS OF CONCRETE WHEN TEST RESULTS INDICATE THAT SLUMP, AIR ENTRAINMENT, COMPRESSIVE STRENGTHS, OR OTHER REQUIREMENTS HAVE NOT BEEN MET. TESTING AND INSPECTION FIRM MAY CONDUCT TESTS TO DETERMINE ADEQUACY OF CONCRETE BY CORED CYLINDERS COMPLYING WITH ASTM C42 OR BY OTHER METHODS.
42. ADDITIONAL TESTING AND INSPECTING, AT CONTRACTOR'S EXPENSE, WILL BE PERFORMED TO DETERMINE COMPLIANCE OF REPLACED OR ADDITIONAL WORK WITH SPECIFIED REQUIREMENTS.
43. CORRECT DEFICIENCIES IN THE WORK THAT TEST REPORTS AND INSPECTIONS INDICATE DO NOT COMPLY WITH THE CONTRACT DOCUMENTS.

FRAME-SUPPORTED MEMBRANE BUILDING:

1. REFER TO SPECIFICATION SECTION 133421.



VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

GENERAL NOTES

Full Scale Verification

0" 1"

Drawing No.:

S4

3,000 TON BUILDING

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RAYCEWAYS AND BOXES

A. MATERIALS:
RSC - ANSI C80.1, MIN SIZE 3/4-INCH
RAC - ANSI C80.5 AND UL6A, MIN SIZE 3/4-INCH
LFMC - MIN SIZE 3/4-INCH
RNC - NEMA TC2 WITH TC3 FITTINGS, MIN SIZE 3/4-INCH

B. INDOOR RACEWAY APPLICATIONS:
EXPOSED OR CONCEALED: PVC COATED RSC, UON
EXPOSED OR CONCEALED ABOVE 2' AFF: SCHEDULE 40 RNC
EMBEDDED UNDER CONCRETE: SCHEDULE 40 RNC
FIXTURE CONNECTIONS: TYPE SODOW CORD
BOXES AND ENCLOSURES: NEMA 4X, POLYCARBONATE

C. OUTDOOR RACEWAY APPLICATIONS:
ABOVE GROUND EXPOSED: PVC COATED RSC,
ABOVE GROUND CONCEALED: RNC,
BELOW GROUND AND UNDER PAVED AREAS: SCHEDULE 80 TYPE DB RNC,
BOXES AND ENCLOSURES: NEMA 4X, UON

D. UNDERGROUND RACEWAY APPLICATIONS: USE DIRECT BURIED SCHEDULE 80 TYPE DB RNC, MINIMUM DEPTH IS 24 INCHES OR GREATER AS REQUIRED BY NATIONAL ELECTRICAL CODE. USE FABRICATED LONG RADIUS RSC ELBOWS FOR TURNS APPROACHING 90 DEGREES. TRANSITION TO PVC COATED RSC BEFORE TURNING UP TO COME OUT OF GROUND.

E. PROVIDE CONCRETE COVER FOR EMBEDDED RACEWAY, USE MANUFACTURED RSC ELBOW TO TURN OUT OF CONCRETE.

F. USE UP TO 72 INCHES OF LFMC FOR CONNECTION TO VIBRATING EQUIPMENT INCLUDING TRANSFORMERS AND MOTOR-DRIVEN EQUIPMENT.

G. PROVIDE 65-LB TEST PULL STRING TIED OFF AT EACH END IN ALL EMPTY CONDUITS.

WIRING METHODS

A. SINGLE CONDUCTORS SHALL BE COPPER, #12 MINIMUM CONDUCTOR SIZE, SOLID FOR #10 AWG AND SMALLER, STRANDED FOR #8 AWG AND LARGER. FOR ABOVE-GROUND APPLICATIONS USE THHN-THWN, 600VAC INSULATION. FOR CIRCUITS WHERE ANY PART OF THE CIRCUIT IS BELOW GRADE USE CONDUCTORS WITH XHHW-2, 600 VAC RATED INSULATION. ALUMINUM CONDUCTORS ARE NOT ACCEPTABLE.

B. INSTALL RAYCEWAYS AND CABLES CONCEALED WITHIN FINISHED WALLS, CEILINGS, AND FLOORS, UON.

C. RACEWAY APPLICATIONS:
SERVICE CONDUCTORS: SINGLE CONDUCTORS IN RACEWAY, UON
FEEDER CONDUCTORS: SINGLE CONDUCTORS IN RACEWAY, UON
BRANCH CIRCUITS: SINGLE CONDUCTORS IN RACEWAY, UON.

D. MINIMIZE SPLICES AND PLACE ONLY IN ACCESSIBLE JUNCTION BOXES AND ENCLOSURES THAT ARE SIZED AND RATED FOR SUCH.

ELECTRICAL IDENTIFICATION

A. EQUIPMENT IDENTIFICATION: PROVIDE LABELS FOR PANELBOARDS, ELECTRICAL CABINETS, DISCONNECT SWITCHES, ENCLOSED CIRCUIT BREAKERS, HAND OFF, AUTOMATIC SWITCHES, LIGHTING CONTACTORS, AND AS ADDITIONALLY INDICATED. LABELS SHALL BE LAMINATED ACRYLIC, WITH 1/2-INCH ENGRAVED BLACK LETTERING ON 1-1/2-INCH WHITE STOCK ATTACHED WITH ADHESIVE.

B. MARK EACH DISCONNECTING MEANS TO INDICATE ITS CIRCUIT SOURCE. MARK DISCONNECTING MEANS TO INDICATE WHAT LOAD IS SERVED.

C. DEVICE CIRCUIT IDENTIFICATION: PROVIDE SELF-ADHESIVE 1/4-INCH HEIGHT CLEAR LABELS WITH 1/8-INCH BLACK PRINTED TEXT WITH EACH RECEPTACLE INDICATING PANELBOARD AND BRANCH CIRCUIT.

D. RACEWAY AND CABLE LABELS: PROVIDE PRE-TENSIONED, PRE-PRINTED, WRAPAROUND PLASTIC SLEEVES THAT ARE SIZED TO SUIT THE DIAMETER OF THE ITEM IDENTIFIED.

E. PROVIDE FLASH HAZARD WARNING LABELS STATING: "WARNING: ARC FLASH HAZARD APPROXIMATE PER REQUIRED FAILURE TO COMPLY CAN RESULT IN DEATH OR INJURY. REFER TO NFPA 70E." HAZARD WARNING LABELS ARE TO COMPLY WITH ANSI Z535.4.

F. USE VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND TYPE TAPE MARKERS FOR WIRE. FOLLOW THESE WIRE COLOR CODING CONVENTIONS.

CONDUCTOR	240/120V	208/120V
PHASE A	BLACK	BLACK
PHASE B	RED	RED
PHASE C	-----	BLUE
NEUTRAL	WHITE	WHITE
GROUND	GREEN	GREEN

A. CONCRETE WALLS AND FLOORS: IN CONCRETE SLABS AND WALLS, INSTALL SLEEVES FOR PENETRATIONS. INSTALL SLEEVES DURING ERECTION OF SLABS AND WALLS. EXTEND SLEEVES INSTALLED IN FLOORS 2 INCHES ABOVE FINISHED FLOOR LEVEL. SELECT SLEEVE SIZE TO ALLOW FOR 1/2-INCH ANNULAR CLEAR SPACE BETWEEN RACEWAY AND SLEEVES.

B. BELOW-GRADE EXTERIOR WALL PENETRATIONS: SEAL PENETRATIONS USING SLEEVES AND MECHANICAL SLEEVE SEALS.

C. ABOVE-GRADE EXTERIOR WALL PENETRATIONS: SEAL PENETRATIONS USING SLEEVES AND CAULK, UON.

- A. PROVIDE SUPPORT AND ANCHORAGE THAT ARE ADEQUATE IN TENSION, SHEAR, AND PULLOUT FORCE TO RESIST MAXIMUM LOADS CALCULATED OR IMPOSED WITH A MINIMUM STRUCTURAL SAFETY FACTOR OF FIVE.
- B. STEEL SLOTTED SUPPORT SYSTEMS: COMPLY WITH MFMA-3 FACTORY FABRICATED COMPONENTS FOR FIELD ERECTION.
- C. FOR ATTACHMENT TO CONCRETE, USE WEDGE-TYPE, STAINLESS STEEL EXPANSION ANCHOR FASTENERS. DRILL HOLES AT LOCATIONS AND DEPTHS THAT AVOID REINFORCING BARS.
- D. FOR CLAMPING TO STEEL STRUCTURAL ELEMENTS USE WELDED STEEL STUDS, BEAM CLAMPS OR SPRING-TENSION CLAMPS.
- E. HANGER RODS TO BE THREADED STAINLESS STEEL.
- F. FOR CONNECTIONS TO LIGHT STEEL USE STAINLESS SHEET METAL SCREWS.
- G. FASTEN HANGERS AND SUPPORTS SECURELY IN PLACE WITH PROVISIONS FOR STRUCTURAL AND THERMAL MOVEMENT.
- H. SEPARATE DISSIMILAR METALS AND METAL PRODUCTS FROM CONTACT WITH WOOD OR CEMENTITIOUS MATERIALS BY PAINTING EACH METAL SURFACE IN AREA OF CONTACT WITH A BITUMINOUS COATING OR BY OTHER PERMANENT SEPARATION.
- I. ALL SUPPORT AND ANCHORAGE MATERIALS BELOW THE TOP OF THE WALL SHALL BE STAINLESS STEEL. ALL SUPPORT AND ANCHORAGE MATERIALS ABOVE THE TOP OF THE WALL SHALL BE HOT-DIPPED GALVANIZED.
- J. RESISTANCE TO CORROSION BY OPENINGS THROUGH STRUCTURAL MEMBERS AS PERMITTED IN NFPA-70.
- K. RACEWAY SUPPORT INTERVALS

RAWEAYE TYPE	MAX DISTANCE TO FIRST SUPPORT	MAX SUPPORT INTERVAL	MAX LENGTH OF RUN
FMC LFMC	<u>12 INCHES</u>	<u>50 INCHES</u>	<u>72 INCHES</u>
RSC/RAC < 1" DIA	36 INCHES	120 INCHES	NONE
RSC/RAC 1" DIA	36 INCHES	144 INCHES	NONE
RSC/RAC > 1" DIA	36 INCHES	PER NEC	NONE
RNC	NEC 388-30 "ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS."		

A. NEMA KS 1, TYPE HD, WITH LOCKABLE HANDLE, INTERLOCKED WITH COVER. IF INDICATED, PROVIDE SPECIFIED FUSES, APPROPRIATE CLIPS, BREAKERS AND ACCESSORIES.

- A. STRAIGHT BLADE RECEPTACLES: HEAVY-DUTY CONVENIENCE RECEPTACLES, 125 V, 2, 30 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, AND UL 498.
- B. TWIST LOCK RECEPTACLES SUITABLE FOR IP68: HEAVY DUTY SIMPLEX RECEPTACLE, 125V, 20 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 15-20R, UL 498, AND PROVIDE RECEPTACLE CONFIGURATION TO MATCH PLUG LOAD OF INSTALLED LED HIGH BAY LIGHT FIXTURES.
- C. CORD AND PLUG SETS: MATCH VOLTAGE, CURRENT RATINGS AND NUMBER OF CONDUCTORS TO REQUIREMENTS OF EQUIPMENT BEING CONNECTED.
- D. CORD: RUBBER-INSULATED, STRANDED-COPPER CONDUCTORS, WITH TYPE SOOW/A JACKET, WITH GREEN-INSULATED GROUNDING CONDUCTOR AND 15 AMPACITY OF AT LEAST 130 PERCENT OF EQUIPMENT RATING.
- E. GFI RECEPTACLES: STRAIGHT BLADE, FEED-THROUGH TYPE, COMPLY WITH NEMA WD 1, NEMA WD 6, UL 498, AND UL 943, CLASS A, 125 V, 20 A, AND INCLUDE INDICATOR LIGHT THAT IS LIGHTED WHEN DEVICE IS TRIPPED.
- F. WALL COVER PLATES: PROVIDE SINGLE AND COMBINATION TYPES TO MATCH CONDUIT AND CONDUIT DEVICES. FINISHES, FINISHES, FINISHES PROVIDE STEEL WITH WHITE BAKED ENAMEL. FOR UNFINISHED SPACES PROVIDE UNPAINTED STEEL. FOR WET OR DAMP LOCATIONS RECEPTACLES PROVIDE EXTRA-DUTY RATED METALLIC COVERS THAT ARE WEATHERPROOF WHILE IN USE AND WEATHERPROOF WHILE NOT IN USE.
- F. DEVICE COLORS: DEVICES: BLACK, COVERPLATES: STAINLESS STEEL.
- G. PROVIDE CAST ALUMINUM BACKBOXES FOR RECEPTACLES. PROVIDE ADDITIONAL BACKBOX BELOW RECEPTACLE BACKBOX TO TRANSITION FROM CIRCUIT CONDUCTOR TO #12 WHERE INDICATED.

A. ALL LUMINAIRES SHALL BE PROVIDED WITH LAMPS.
B. LED LAMPS SHALL HAVE A MINIMUM CRI OF 80. LAMP TEMPERATURES SHALL BE 5000K, UNLESS OTHERWISE NOTED.
C. PROVIDE STAINLESS STEEL CHANNEL STRUT SUSPENDED WITH STAINLESS STEEL THREADED RODS FROM THE STRUCTURE. THE SUSPENDED STRUT WILL SUPPORT THE LIGHT FIXTURES, FIXTURE HANGERS AND PLUGS, WIRING BOXES, RECEPTACLES, CONDUITS AND CONDUCTORS. THE SUSPENDED STRUT WILL BE BRACED TO THE STRUCTURE TO PREVENT SWAYING.
D. PROVIDE INTERNAL DRIVERS THAT HAVE HARMONIC DISTORTION OF LESS THAN 10 PERCENT. DRIVERS TO BE OF DIMMABLE TYPE.
E. EXIT SIGNS, COMPLY WITH UL 924. PROVIDE EXIT SIGNS THAT ARE POWERED FROM VOLTAGE TRANSFORMERS. EXIT SIGNS SHALL BE SINGLE OR DOUBLE ENDED, INDICATED WITH RED LETTERS WITHIN WHITE THERMOPLASTIC HOUSING. EXIT SIGNS TO EACH INCLUDE NICKEL-CADMIUM BATTERY AND CHARGING SYSTEM. BATTERIES TO OPERATE SIGN LIGHTING FOR A MINIMUM OF 90 MINUTES. EXIT SIGN TO INCLUDE LED LAMPS WITH A MINIMUM OF 50,000 HOURS RATED LIFE.
F. EMERGENCY LIGHTING SHALL OPERATE INDICATED NUMBER OF LAMPS FOR 90 MINUTES. IF INDICATOR LIGHT AND TEST SWITCH ARE NOT INTEGRAL WITH LUMINAIRE, INSTALL FLUSH IN WALL OR CEILING ADJACENT TO LUMINAIRE.

A. PHOTOCELLS: OUTDOOR PHOTOELECTRIC SWITCHES: SOLID STATE, DPST WITH DRY CONTACTS RATED FOR 250W LED. LIGHT-LEVEL MONITORING RANGE: 1.5 TO 10 FC (16.14 TO 108 LX), WITH AN ADJUSTMENT FOR TURN-ON AND TURN-OFF LEVELS WITHIN THAT RANGE. TIME DELAY: 15-SECOND MINIMUM. SURGE PROTECTION: METAL OXIDE VARISTOR.

A. PANELBOARDS: PROVIDE AS SCHEDULED. PANELBOARDS SHALL HAVE COPPER PHASE BUSES, COPPER GROUND BUS, AND 100 PERCENT RATED COPPER NEUTRAL BUS. ALL CIRCUIT BREAKERS ARE TO BE BOLT-ON TYPE. ALL ENCLOSURES ARE TO BE NEMA 4X RATED ENCLOSURES HAVING HINGED FRONT COVERS.

B. PROVIDE TYPED PANELBOARD INDEXES FOR ALL PANELBOARDS.

C. PROVIDE LABEL TO INDICATE POWER SOURCE FOR PANELBOARD.

A. DESCRIPTION: FACTORY-FABRICATED CONNECTORS AND SPLICES OF SIZE, AMPACITY RATING, MATERIAL, TYPE, AND CLASS FOR APPLICATION AND SERVICE INDICATED; LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED LOCATION AND APPLICATION. USE SINGLE OR MULTI-TAP INSULATED CONNECTORS TO FIT THE APPLICATION.

B. MAKE SPLICES, TERMINATIONS, AND TAPS THAT ARE COMPATIBLE WITH CONDUCTOR MATERIAL AND THAT POSSESS EQUIVALENT OR BETTER MECHANICAL STRENGTH AND INSULATION RATING AS THE ORIGINAL WIRING DEVICES.

C. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A-486B.

A. PROVIDE EXCAVATION AND SHAPING OF TRENCH BOTTOMS TO PROVIDE UNIFORM BEARING AND SUPPORT OF CONDUITS(S). SHAPE SUBGRADE TO PROVIDE CONTINUOUS SUPPORT FOR JOINTS, FITTINGS AND BODIES OF CONDUITS. REMOVE PROJECTING STONES AND SHARP OBJECTS ALONG TRENCH SUBGRADE. EXCAVATE TRENCHES 6 INCHES DEEPER THAN ELEVATION REQUIRES IN ROCK OR OTHER UNYIELDING BEARING MATERIAL TO ALLOW FOR BEDDING COURSE IN THE BOTTOM OF THE TRENCH.

A.REFER TO SITE SPECIFIC ELECTRICAL DRAWINGS.

A. PROVIDE GROUNDING IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND ADDITIONALLY AS INDICATED.

B. PROVIDE CONCRETE ENCASED GROUNDING ELECTRODE (UFER GROUND):

FABRICATE USING A MINIMUM OF 20 FEET OF BARE COPPER CONDUCTOR NOT SMALLER THAN NUMBER 2 AWG. BOND GROUNDING CONDUCTOR TO REINFORCING STEEL IN AT LEAST FOUR LOCATIONS AND TO ANCHOR BOLTS WHERE INDICATED. EXTEND GROUNDING CONDUCTOR BELOW GRADE AND CONNECT TO GROUNDING ELECTRODE AT TEST WELL.

C. BOND TO UTILITY SERVICE WHEN BASED ON SITE SPECIFIC CONDITIONS

IF METALLIC WATER PIPING IS UTILIZED, GROUND CONNECTIONS TO THESE SERVICES SHALL BE AT LOCATION AS WATER SERVICE PASSES BY BUILDING AND ACCESSIBLE FOR INSPECTION. PROVIDE BONDING JUMPERS ACROSS METERS AND VALVES TO ASSURE ELECTRICAL CONTINUITY.

D. THE BUILDING STEEL IS TO BE GROUNDED USING GROUND RODS (AS INDICATED) AT EACH OF THE FOUR BUILDING CORNERS. PLACE RODS NO LESS THAN 36 INCHES FROM THE BUILDING. CONNECT GROUND RODS TO GROUND SYSTEM USING MINIMUM #2 COPPER CABLE. BURIED UNDERGROUND CONNECTIONS TO GROUND RODS ARE TO BE PROVIDED USING EXOTHERMICALLY WELDED CONNECTIONS. ACCESSIBLE GROUND ROD CONNECTIONS SHALL USE CLAMPS. USE EXOTHERMIC CONNECTIONS FOR ALL UNDERGROUND SPLICES.

E. PROVIDE A GROUND SYSTEM TEST WELL NEAR THE CSB ELECTRICAL PANEL AS INDICATED.

F. PROVIDE GROUND SYSTEM RESISTANCE AND PROVIDE ADDITIONAL GROUND RODS TO BRING GROUND SYSTEM RESISTANCE TO LESS THAN 5 OHMS. PROVIDE A MINIMUM OF 10 FEET SEPARATION FROM EXISTING RODS FOR SUPPLEMENTAL GROUND RODS.

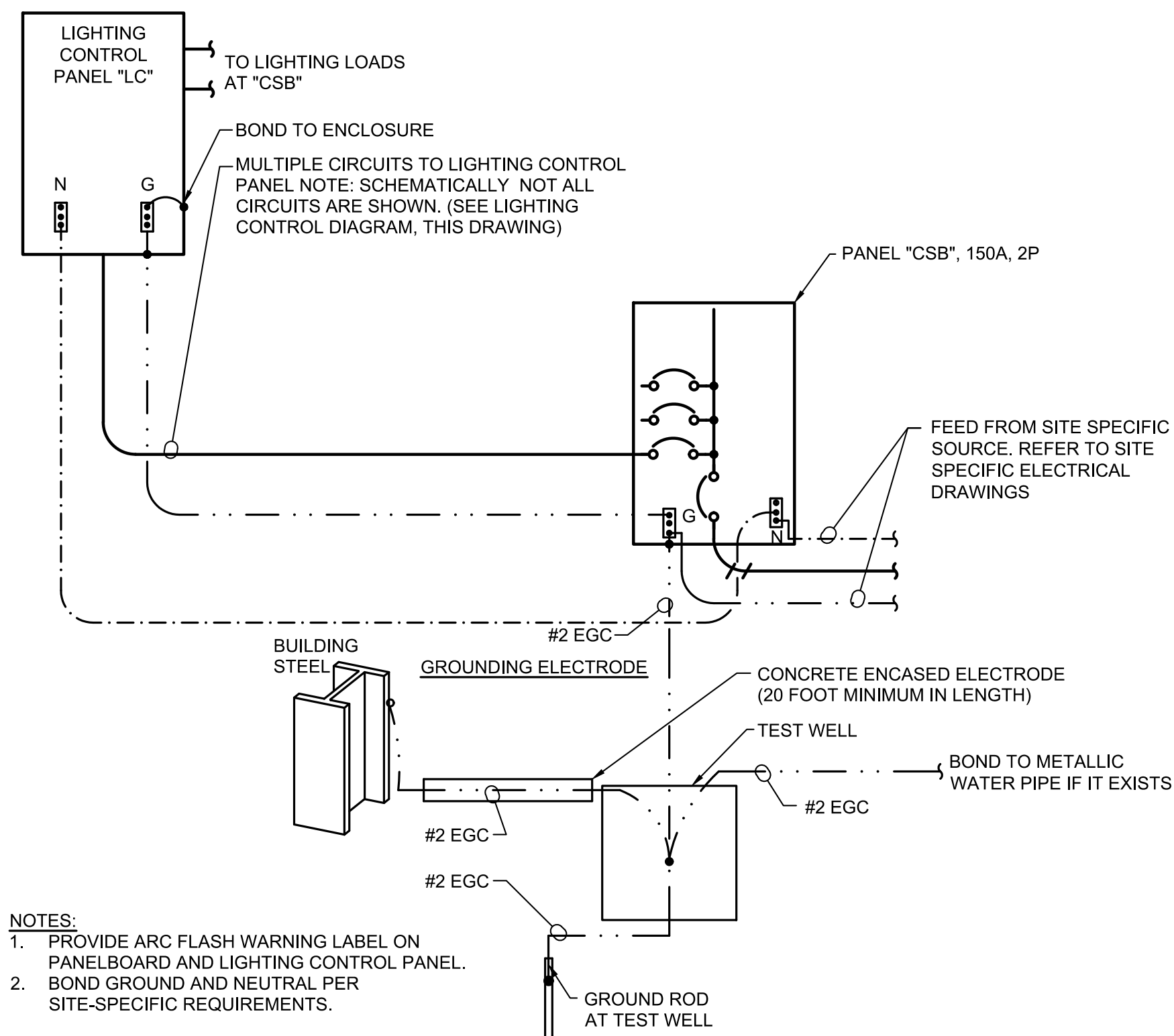
G. BOND ALL DEVICES, LIGHT FIXTURES, AND EQUIPMENT. PROVIDE INSULATED EQUIPMENT GROUNDING CONDUCTORS WITH ALL FEEDERS AND BRANCH CIRCUITS.

A. CONTACT MISS UTILITY AT 811, 1-800-552-7001, OR [HTTP://WWW.MISSUTILITYOFVIRGINIA.COM](http://www.missutilityofvirginia.com) NO LESS THAN 72 HOURS PRIOR TO EXCAVATION AND DO NOT DISTURB THE SOIL UNTIL THE DIG TICKET HAS BEEN PROCESSED.

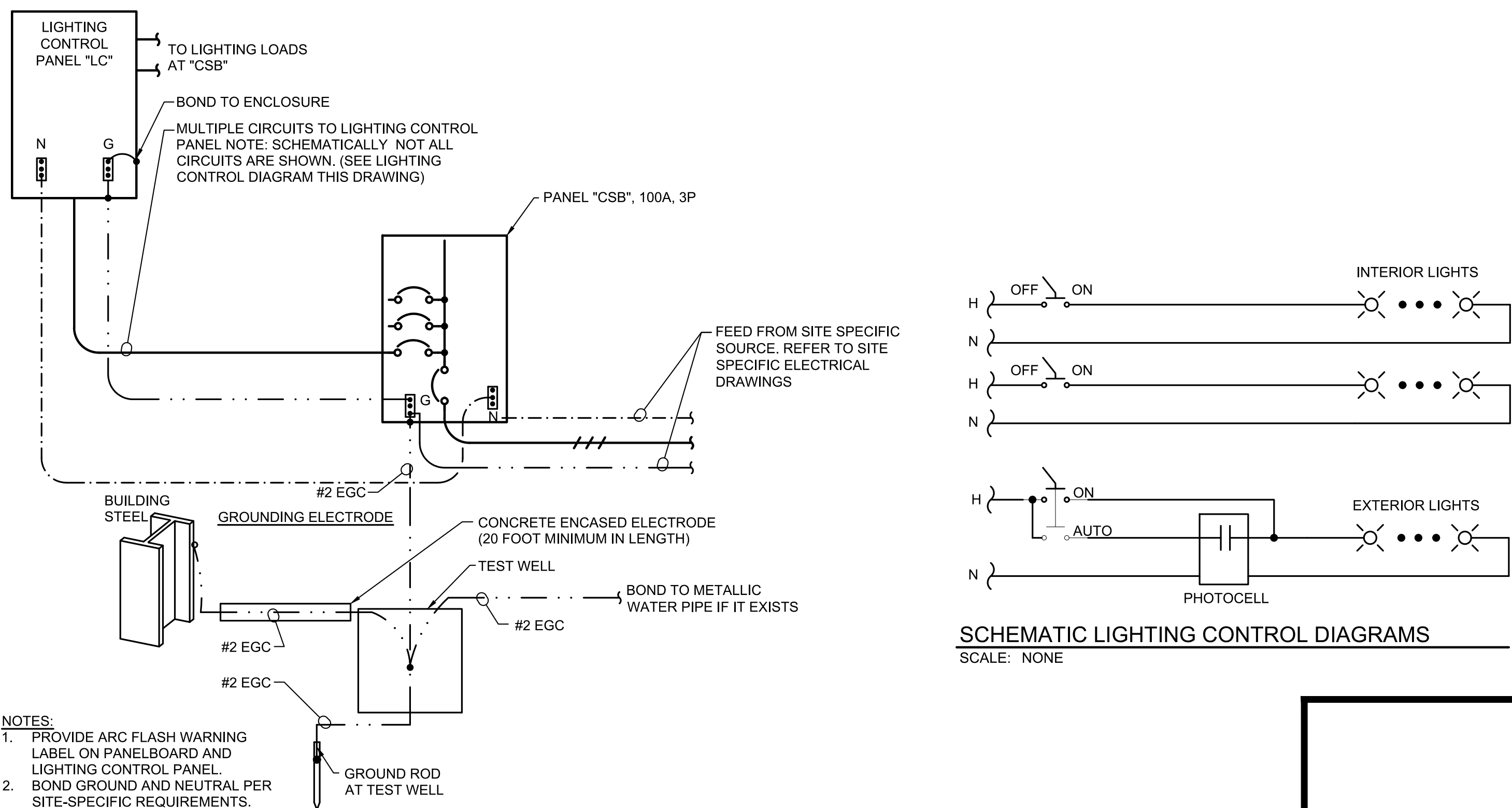
B. MISS UTILITY WILL NOT MARK PRIVATE UTILITIES WHICH MAY BE PRESENT ON THIS SITE. ENSURE THAT ALL UTILITIES, PUBLIC AND PRIVATE, ARE MARKED PRIOR TO EXCAVATION.

A. PROVIDE TYPE 1 SURGE PROTECTION DEVICES (SPD) WHERE INDICATED. TYPE 1 SPDs SHALL BE UL 1449 CERTIFIED. PROVIDE 50 AMP BREAKER FEEDS TO THIS TYPE SPD.

B. PROVIDE PRODUCT DATA SUBMITTALS FOR ALL PROPOSED SPDs.






PARTIAL RISER DIAGRAM DETAIL FOR 120/240 VOLT, 150A, SINGLE PHASE SERVICE
SCALE: NONE



SCHEMATIC LIGHTING CONTROL DIAGRAMS

PARTIAL RISER DIAGRAM DETAIL FOR 208/120 VOLT, 100A, THREE PHASE SERVICE
SCALE: NONE

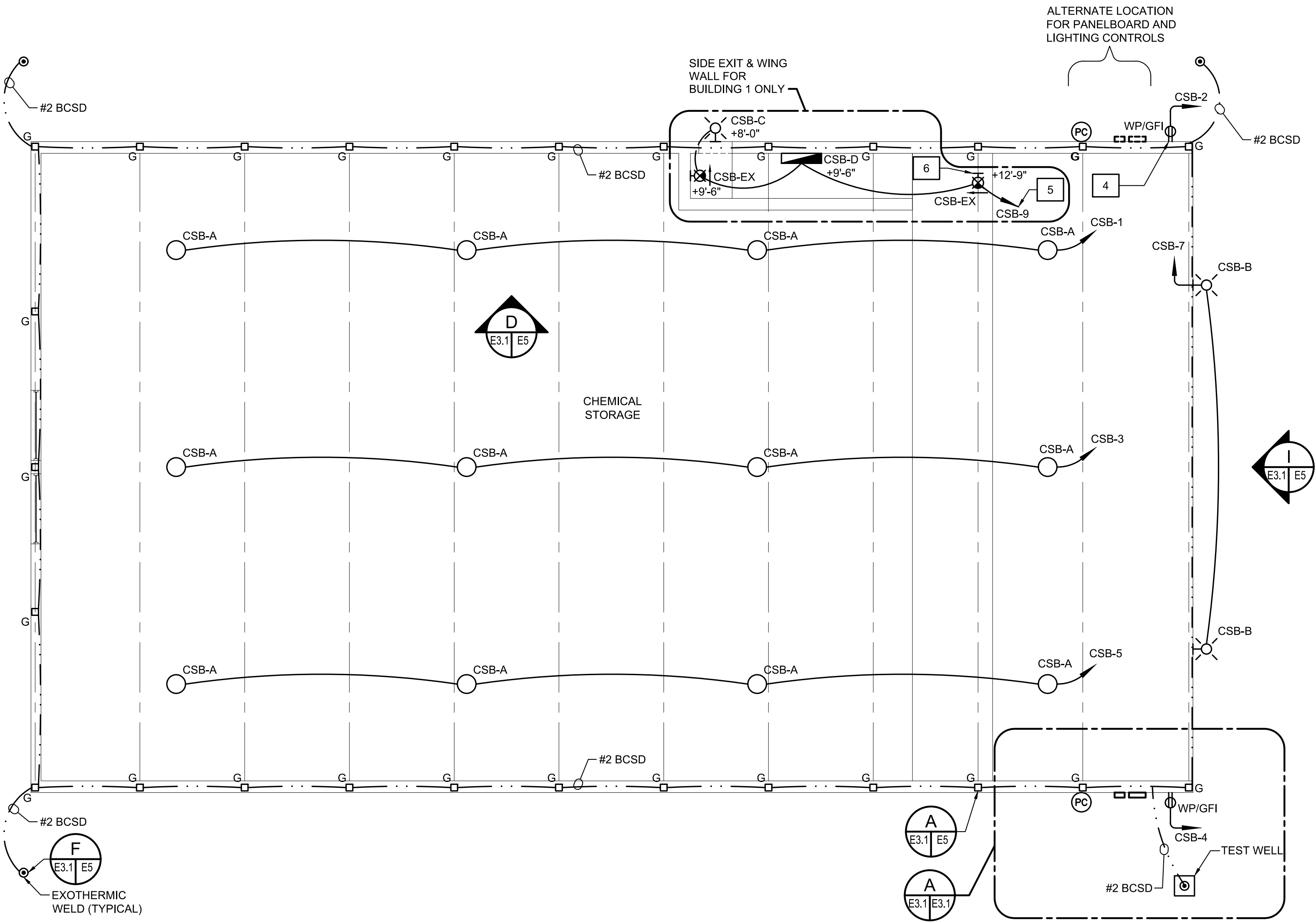
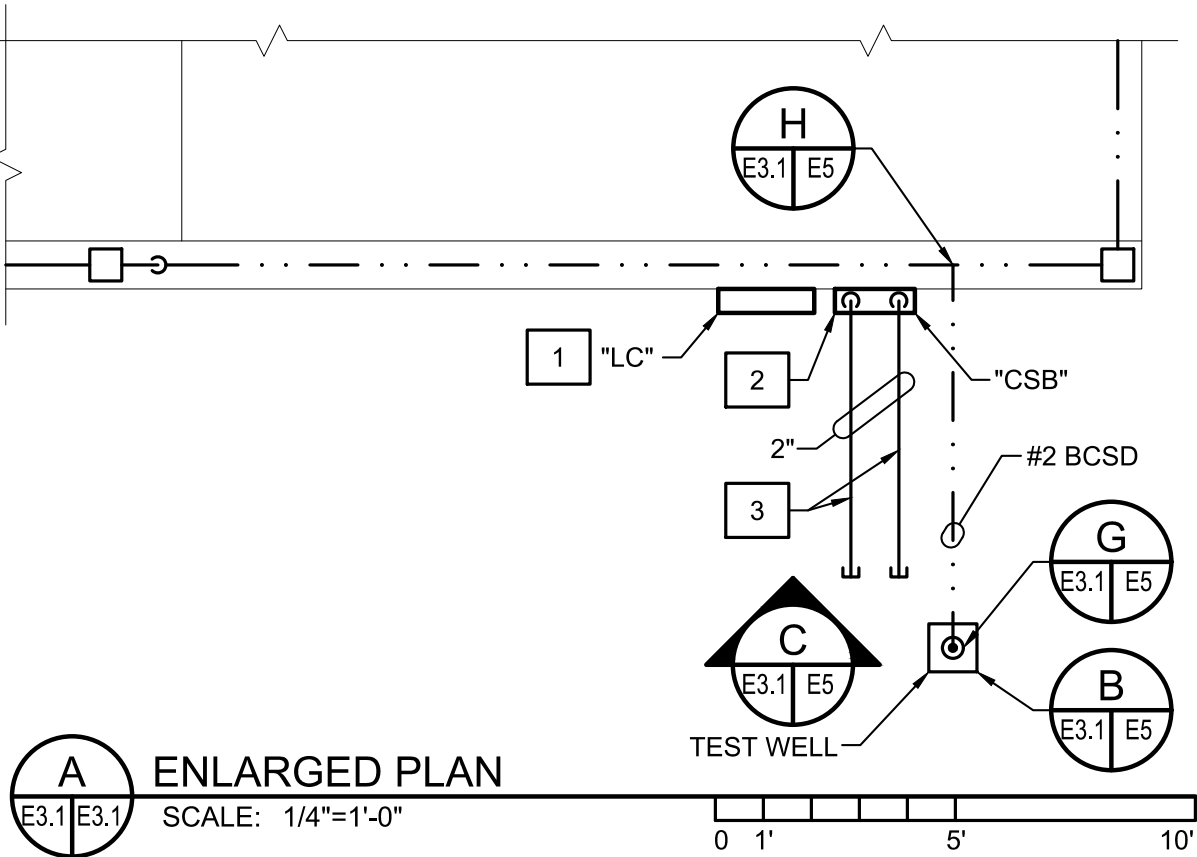
<p>Full Scale Verification</p> <p>0"  1"</p> <p>Drawing No.:</p> <p>E2</p> <p>3,000 TON BUILDING</p>	<p>SPECIFICATIONS AND DIAGRAMS</p>	<p>VIRGINIA DEPARTMENT OF TRANSPORTATION PROTOTYPE CHEMICAL STORAGE BUILDINGS 3,000 TON PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032</p>	 <p>VIRGINIA A&E, PLLC 1115 VISTA PARK DRIVE FOREST, VIRGINIA 24551 PHONE: (434) 316-6001</p>		NO.	BY	REVISIONS	DATE

DRAWING NOTES:

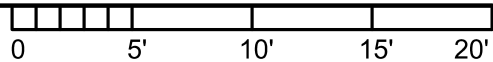
- GROUND LOOP ON OPEN END OF THE BUILDING TO BE UNDERGROUND.
- MOUNT PHOTOCELL NEAR LIGHTING CONTROLLER.
- MOUNT EXTERIOR LIGHTS CENTERED VERTICALLY ON THE ROOF STRUCTURE TRUSS.
- SLEEVE ALL CONCRETE WALL PENETRATIONS.

CONSTRUCTION NOTES:

- EXTEND LIGHTING CONDUITS AND CONDUCTORS TO LIGHTING CONTROL ENCLOSURE. SEE LIGHTING CONTROL DIAGRAM ON DRAWING E2. SEE LIGHTING CONTROL PANEL ON DRAWING E5.
- PANEL "CSB". SEE SITE SPECIFIC DRAWINGS FOR LOCATION OF PANELBOARDS, LIGHTING CONTROLLER PANEL, AND PHOTOCELLS ON THIS SIDE OR WHERE SHOWN DASHED ON OPPOSITE SIDE OF BUILDING FRONT.
- PROVIDE CONDUIT STUBS WITH CONDUIT MARKERS OUT 6 FEET FROM BUILDING.
- PROVIDE TRANSITION BACK BOX BELOW RECEPTACLE BACK BOX.
- NOT CONTROLLED BY LIGHTING CONTROL PANEL.
- ATTACH TO BUILDING FRAME.



ELECTRICAL PLAN - GROUNDING, LIGHTING, AND POWER (BUILDING 1)
SCALE: 1/8"=1'-0"



VIRGINIA DEPARTMENT OF TRANSPORTATION
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BUILDING 1
ELECTRICAL PLAN

PROJECT NO.
21059
DATE:
2022-08-04

Full Scale Verification
0" 1"

Drawing No.:

E3.1

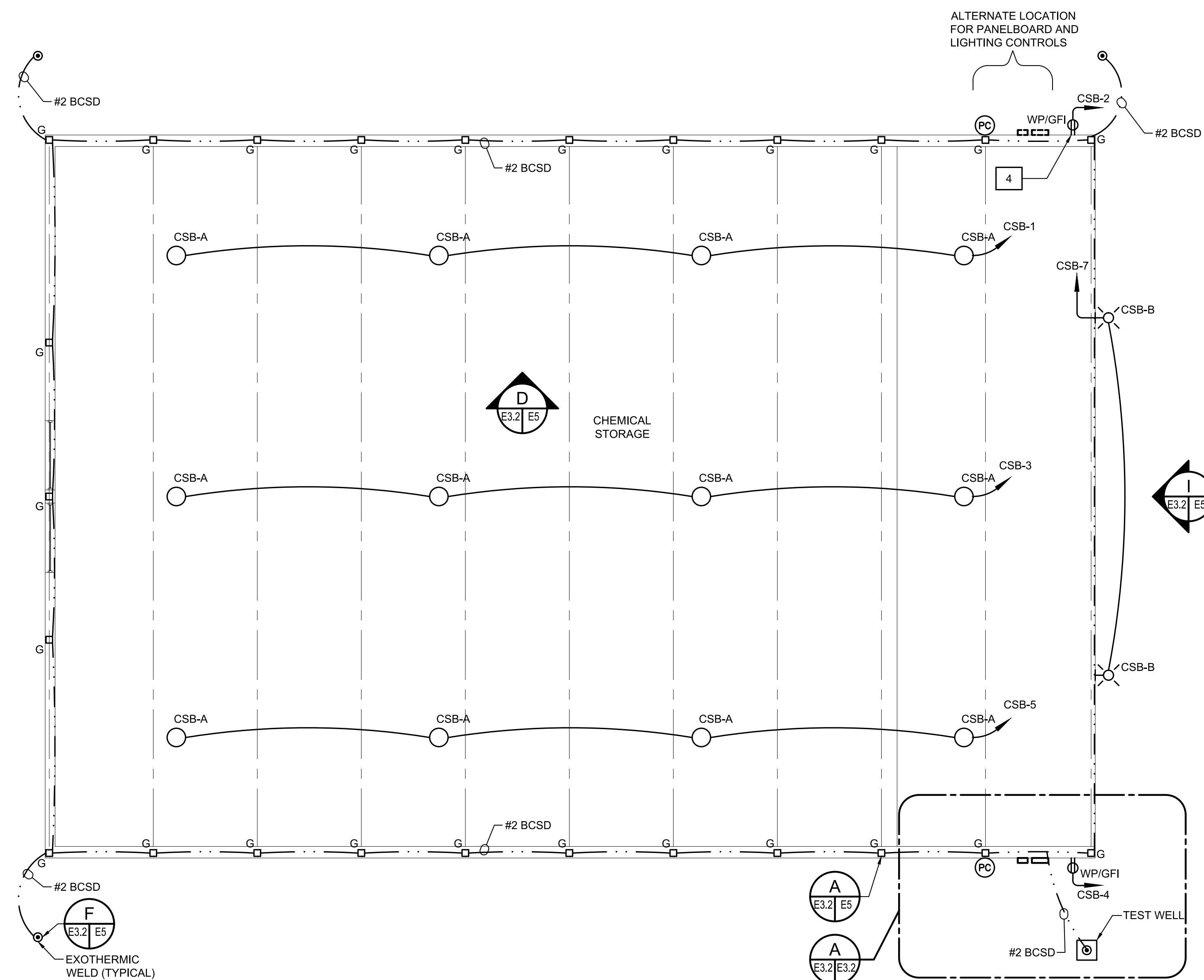
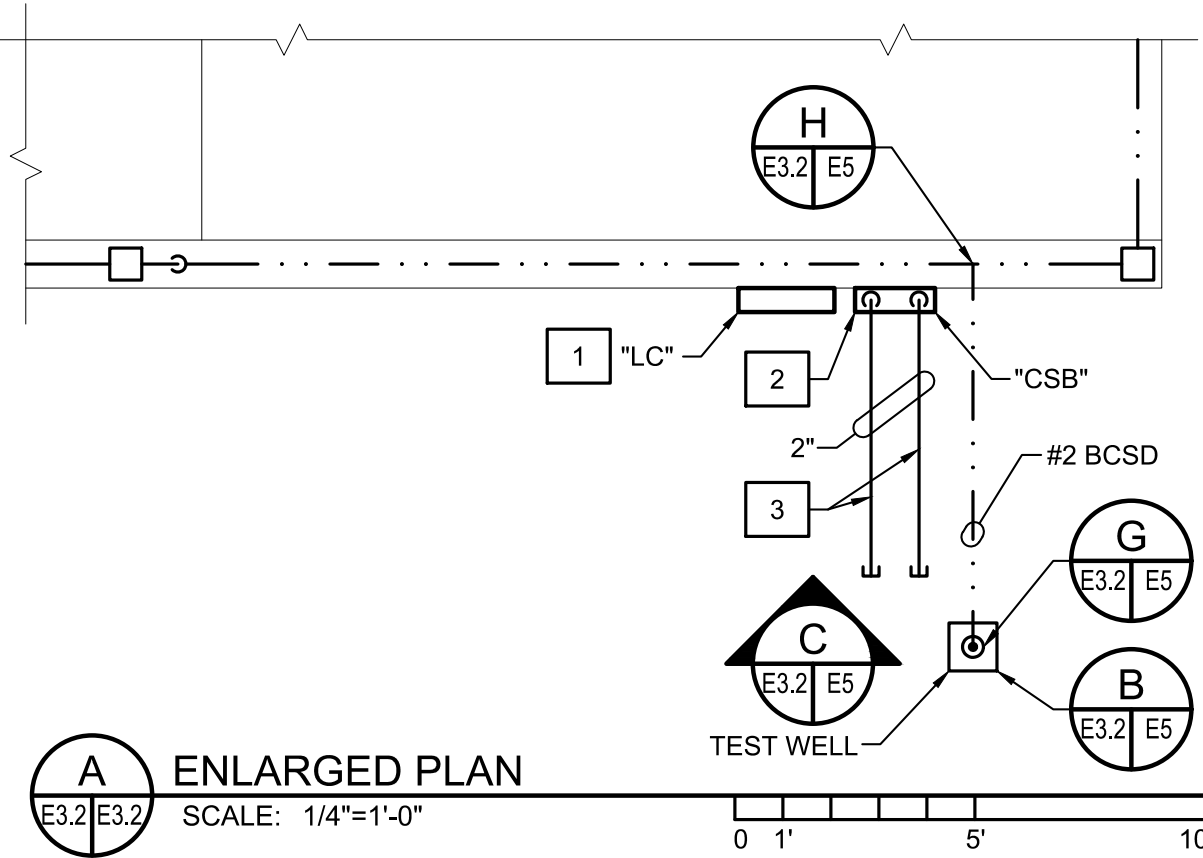
3,000 TON BUILDING

DRAWING NOTES:

1. GROUND LOOP ON OPEN END OF THE BUILDING TO BE UNDERGROUND.
2. MOUNT PHOTOCELL NEAR LIGHTING CONTROLLER.
3. MOUNT EXTERIOR LIGHTS CENTERED VERTICALLY ON THE ROOF STRUCTURE TRUSS.
4. SLEEVE ALL CONCRETE WALL PENETRATIONS.

XX CONSTRUCTION NOTES:

1. EXTEND LIGHTING CONDUITS AND CONDUCTORS TO LIGHTING CONTROL ENCLOSURE. SEE LIGHTING CONTROL DIAGRAM ON DRAWING E2. SEE LIGHTING CONTROL PANEL ON DRAWING E5.
2. PANEL "CSB": SEE SITE SPECIFIC DRAWINGS FOR LOCATION OF PANELBOARDS, LIGHTING CONTROLLER PANEL, AND PHOTOCELLS ON THIS SIDE OR WHERE SHOWN DASHED ON OPPOSITE SIDE OF BUILDING FRONT.
3. PROVIDE CONDUIT STUBS WITH CONDUIT MARKERS OUT 6 FEET FROM BUILDING.
4. PROVIDE TRANSITION BACK BOX BELOW RECEPTACLE BACK BOX.



ELECTRICAL PLAN - GROUNDING, LIGHTING, AND POWER (BUILDING 2)
SCALE: 1/8"=1'-0"

[illegible]

VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

BUILDING 2 ELECTRICAL PLAN

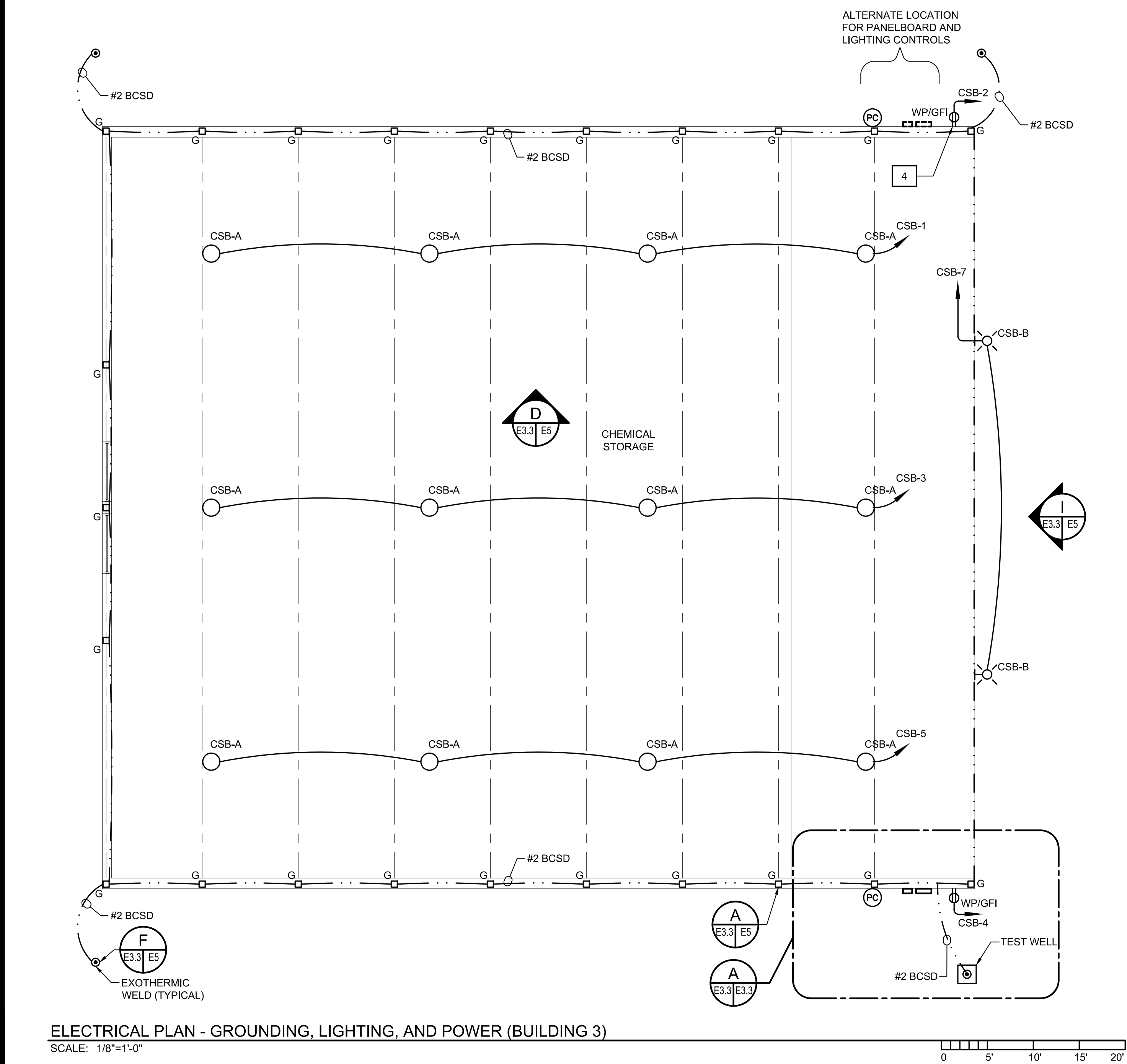
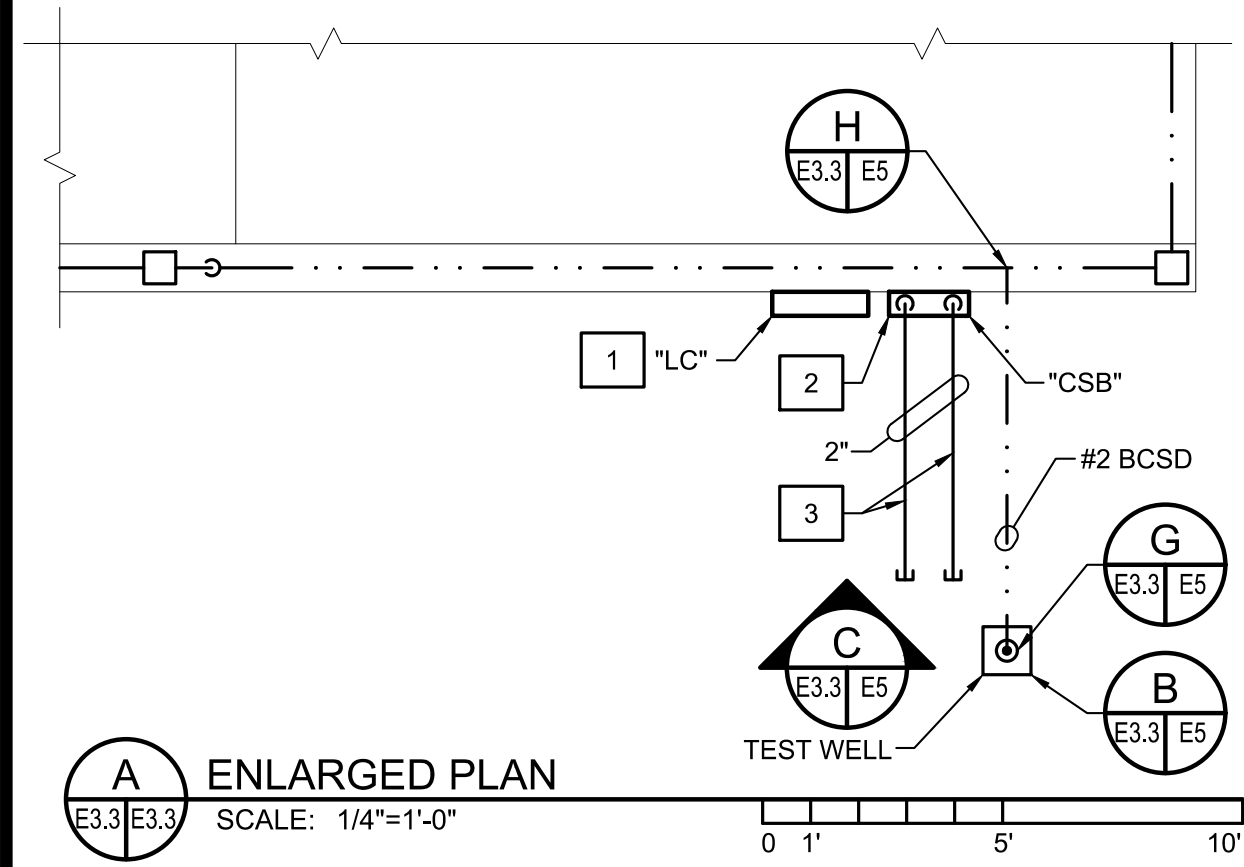
PROJECT NO:	DATE:
21059	2022-08-04

Full Scale Verification

0" |-----| 1"

Drawing No.:

E3.2



DRAWING NOTES:

- GROUND LOOP ON OPEN END OF THE BUILDING TO BE UNDERGROUND.
- MOUNT PHOTOCELL NEAR LIGHTING CONTROLLER.
- MOUNT EXTERIOR LIGHTS CENTERED VERTICALLY ON THE ROOF STRUCTURE TRUSS.
- SLEEVE ALL CONCRETE WALL PENETRATIONS.

CONSTRUCTION NOTES:

- EXTEND LIGHTING CONDUITS AND CONDUCTORS TO LIGHTING CONTROL ENCLOSURE. SEE LIGHTING CONTROL DIAGRAM ON DRAWING E2. SEE LIGHTING CONTROL PANEL ON DRAWING E5.
- PANEL "CSB". SEE SITE SPECIFIC DRAWINGS FOR LOCATION OF PANELBOARDS, LIGHTING CONTROLLER PANEL, AND PHOTOCELLS ON THIS SIDE OR WHERE SHOWN DASHED ON OPPOSITE SIDE OF BUILDING FRONT.
- PROVIDE CONDUIT STUBS WITH CONDUIT MARKERS OUT 6 FEET FROM BUILDING.
- PROVIDE TRANSITION BACK BOX BELOW RECEPTACLE BACK BOX.



VIRGINIA DEPARTMENT OF TRANSPORTATION
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BUILDING 3
ELECTRICAL PLAN

PROJECT NO. 21059
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Full Scale Verification
0" 1"

Drawing No.:

E3.3

3,000 TON BUILDING

DATE

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NO.

PANEL "CSB" 3000 T BLDG 1-3 SCHEDULE

PANELBOARD CHARACTERISTICS:
VOLTS: 120/240

PHASES: 1

WIRES: 3

SOLID NEUTRAL, GROUND BAR

PHASE TO PHASE, PHASE TO NEUT VOLTS: 240 120
150 AMP MAIN CIRCUIT BREAKER, 150 AMP LUGS

MINIMUM SHORT CIRCUIT RATING: 10,000 OR GREATER RMS SYMETRIC AMPS. SEE NOTE 4.

ENCLOSURE: SURFACE/NEMA 4X WITH HINGED DOOR

POLE NO.	DESCRIPTION	LOAD TYPE	CONN. KVA	CONN. AMPS A	CONN. AMPS B	BREAKER P	AT	NO. & WIRE SIZE PHASE	NEUT.	GND	COND SIZE	NOTES
1	INTERIOR LIGHTING	L	0.8	6.7		1	20	8	8	8	3/4"	
3	INTERIOR LIGHTING	L	0.8		6.7	1	20	8	8	8	3/4"	
5	INTERIOR LIGHTING	L	0.8	6.7		1	20	8	8	8	3/4"	
7	EXTERIOR LIGHTING	L	0.5		4.5	1	20	12	12	12	3/4"	
9	SIDE EXIT LIGHTING	L	0.3	2.1		1	20	12	12	12	3/4"	6
11	SPARE					1	20					
13	"RESERVED FOR SITE SPECIFIC CONDTIONS"	E	11.5	48.0		2	60				2"	
15					48.0							
17	AVAILABLE SPACE											
19	AVAILABLE SPACE											
21	AVAILABLE SPACE											
23	AVAILABLE SPACE											
25	AVAILABLE SPACE											
27	"RESERVED FOR SITE SPECIFIC CONDTIONS"										2"	
29												
2	RECEPTACLE CIRCUIT	R	0.2	1.7		1	20	6	6	6	3/4"	3.5
4	RECEPTACLE CIRCUIT	R	0.2		1.7	1	20	12	12	12	3/4"	3
6	LIGHTING CONTROL POWER	E	0.5	4.2		1	20	12	12	12	3/4"	
8	SPARE					1	20					
10	SPARE					1	20					
12	AVAILABLE SPACE											
14	SPARE					1	20					
16	AVAILABLE SPACE											
18	SPARE					1	20					
20	AVAILABLE SPACE											
22	AVAILABLE SPACE											
24	AVAILABLE SPACE											
26	AVAILABLE SPACE											
28	TYPE 1 SPD	E	0.1		0.4	2	50					1
30												
TOTALS			15.8	69.3	61.3							2

NOTES:

- NO WIRE SIZE GIVEN BECAUSE INSTALLED WITH PIGTAIL THAT COMES WITH SPD.
- PROVIDE BALANCING OF LOAD BETWEEN PHASES TO BRING PANEL WITHIN 10 PERCENT OF A BALANCED LOAD CONDITION. PROVIDE PRINTED PANEL DIRECTORY IN LEXAN COVER INSIDE DOOR OF ENCLOSURE AFTER BALANCING IS COMPLETED.
- WHEN SERVICE IS PROVIDED ON THE OPPOSITE SIDE, MIRROR THE CIRCUIT DESIGNATION TO KEEP THE LARGER WIRE SIZED ON THE LONGER CIRCUITS.
- PROVIDE PANEL WITH KAIC RATING GREATER THAN FAULT CURRENT AVAILABLE PER SITE SPECIFIC CALCULATIONS. PROVIDE 10KAIC MINIMUM RATED PANEL.
- CONNECT #12 TO BREAKER. TRANSITION #12 TO LARGER CONDUCTOR WITH A BUTT SPLICE WITHIN PANEL.
- SPARE AT BUILDINGS 2 AND 3. NO WIRE AND CONDUIT REQUIRED.

PANEL "CSB" 3000 T BLDG 1-3 SCHEDULE

PANELBOARD CHARACTERISTICS:
VOLTS: 208/120

PHASES: 3

WIRES: 4

SOLID NEUTRAL, GROUND BAR

PHASE TO PHASE VOLTS: 208
PHASE TO NEUT. VOLTS: 120
100 AMP MAIN BREAKER
MINIMUM SHORT CIRCUIT RATING: 10,000 OR GREATER RMS SYM AMPS, SEE NOTE 4.
ENCLOSURE: SURFACE/NEMA 4X WITH HINGED DOOR

POLE NO.	DESCRIPTION	LOAD TYPE	CONN. KVA	CONN. AMPS A	CONN. AMPS B	CONN. AMPS C	BREAKER P	AT	NO. & WIRE SIZE PHASE	NEUT.	GND	COND SIZE	NOTES
1	INTERIOR LIGHTING	L	0.8	6.7			1	20	8	8	8	3/4"	
3	INTERIOR LIGHTING	L	0.8		6.7		1	20	8	8	8	3/4"	
5	INTERIOR LIGHTING	L	0.8			6.7	1	20	8	8	8	3/4"	
7	EXTERIOR LIGHTING	L	0.5	4.5			1	20	12	12	12	3/4"	
9	SIDE EXIT LIGHTING	L	0.3		2.1		1	20	12	12	12	3/4"	6
11	SPARE						1	20					
13	"RESERVED FOR SITE SPECIFIC CONDITIONS"	E	17.3	48.0			3	60				2"	
15					48.0								
17						48.0							
19	AVAILABLE SPACE												
21	AVAILABLE SPACE												
23	AVAILABLE SPACE												
25	AVAILABLE SPACE												
27	"RESERVED FOR SITE SPECIFIC CONDITIONS"											2"	
29													
2	RECEPTACLE CIRCUIT	R	0.2	1.7			1	20	6	6	6	3/4"	3.5
4	RECEPTACLE CIRCUIT	R	0.2		1.7		1	20	12	12	12	3/4"	3
6	LIGHTING CONTROL POWER	E	0.5			4.2	1	15	12	12	12	3/4"	
8	SPARE						1	20					
10	SPARE						1	20					
12	AVAILABLE SPACE												
14	SPARE						1	20					
16	AVAILABLE SPACE												
18	SPARE						1	20					
20	AVAILABLE SPACE												
22	AVAILABLE SPACE												
24	AVAILABLE SPACE												
26	TYPE 1 SPD	E	0.1		0.3		3	50					1
28					0.3								
30						0.3							
TOTALS			NOTE 4 21.5	61.1	58.7	59.1							2

NOTES:

- NO WIRE SIZE GIVEN BECAUSE INSTALLED WITH PIGTAIL THAT COMES WITH SPD.
- PROVIDE BALANCING OF LOAD BETWEEN PHASES TO BRING PANEL WITHIN 10 PERCENT OF A BALANCED LOAD CONDITION. PROVIDE PRINTED PANEL DIRECTORY IN LEXAN COVER INSIDE DOOR OF ENCLOSURE AFTER BALANCING IS COMPLETED.
- WHEN SERVICE IS PROVIDED ON THE OPPOSITE SIDE, MIRROR THE CIRCUIT DESIGNATION TO KEEP THE LARGER WIRE SIZES ON THE LONGER CIRCUITS.
- PROVIDE PANEL WITH KAIC RATING GREATER THAN FAULT CURRENT AVAILABLE PER SITE SPECIFIC CALCULATIONS. PROVIDE 10KAIC MINIMUM RATED PANEL.
- CONNECT #12 TO BREAKER. TRANSITION #12 TO LARGER CONDUCTOR WITH A BUTT SPLICE WITHIN PANEL.
- SPARE AT BUILDINGS 2 AND 3. NO WIRE AND CONDUIT REQUIRED.

LIGHTING FIXTURE SCHEDULE

SYM	DESCRIPTION	MINIMUM LUMENS	VOLTS	VOLT-AMPS	CRI MINIMUM	COLOR TEMP	LAMP TYPE	DISTRIBUTION	FINISH
CSB-A	INTERIOR LIGHT FIXTURE SHALL BE DESIGNED FOR DUST, MOISTURE, AND CHEMICAL CONTACT, MINUS 40 DEGREE C AMBIENT TEMPERATURE. DRIVER HOUSING AND OPTICAL HOUSING SHALL BE SEPARATED FOR MAXIMUM HEAT DISSIPATION. HOUSINGS SHALL BE DIE-CAST ALUMINUM FOR CORROSION RESISTANCE AND SHALL HAVE RUBBER GASKETING TO SEAL THE OPTICAL AND DRIVER COMPARTMENTS FROM DUST AND MOISTURE. OPTICS SHALL BE ONE PIECE PRECISION MOLDED 0.375" THICK GLASS THAT IS SILICONE RUBBER GASKETED. LED DRIVERS SHALL BE NON-CLASS 2 TYPE FOR MAXIMUM LIFE AT HIGH TEMPERATURES AND LESS THAN 10% THD AND PF GREATER THAN 90. SUPPORT OF THE FIXTURE SHALL BE BY A 3/4" NPS THREADED HUB SUITABLE FOR PENDANT MOUNTING. FIXTURE SHALL BE CSA OR UL CERTIFIED, WET LOCATION LISTED AND IP65 RATED AND WITH A MINIMUM OF 5 YEAR WARRANTY.	24,000	120	200	80	5000 K	LED	WIDE	WHITE DURABLE POWDER COATED, MINIMUM 5000 HOURS SALT AND MOISTURE RATING PER ASTM B117
CSB-B	THE EXTERIOR LIGHT FIXTURE SHALL BE DESIGNED FOR OUTDOOR ENVIRONMENT, MINUS 40 DEGREE C AMBIENT TEMPERATURE. HOUSINGS SHALL BE RUGGED DIE-CAST ALUMINUM FOR CORROSION RESISTANCE, SHALL HAVE HEAT DISSIPATING FINS AND FLOW-THRU VENTING TO PROVIDE OPTIMAL THERMAL MANAGEMENT FOR LED PERFORMANCE AND EXTENDS COMPONENT LIFE. LIGHT FIXTURE SHALL BE PROVIDED WITH ADJUSTABLE SLIPFITTER FOR 2 3/8" OD TENON, STEEL FLOOD RIGHT ANGLE WALL BRACKET 2 3/8" TENON SIZE, 8" RADIUS CURVE, FINISH TO MATCH FIXTURE, PROVIDE (4) 5/8" DIAMETER STAINLESS STEEL BOLTS, LOCK WASHER, AND NUTS TO MOUNT WALL BRACKETS TO BUILDING STRUCTURE. BUILDING MANUFACTURER SHALL PROVIDE MOUNTING PLATES OF SAME MATERIAL AND FINISH AS BUILDING STRUCTURE. OPTICS SHALL BE ONE PIECE PRECISION ACRYLIC REFRACTIVE LENS. LED DRIVERS SHALL BE HIGH EFFICACY LEDS, CLASS 1 DRIVERS, LESS THAN 10% THD AND PF GREATER THAN 90. FIXTURE SHALL BE CSA OR UL CERTIFIED, WET LOCATION LISTED AND IP65 RATED AND WITH A MINIMUM OF 5 YEAR WARRANTY.	27,000	120	210	80	5000 K	LED	TYPE 4	WHITE POWDER COATED
CSB-C	WALL MOUNTED EXTERIOR LED OVER THE DOOR LUMINAIRE WITH INDIVIDUAL PHOTOCCELL, WHITE FINISH, CAST, ALUMINUM, BATTERY BACKUP, WET LOCATION, -30C RATED, 5 YEAR WARRANTY.	1,550	120	11		5000 K	LED		WHITE POWDER COATED
CSB-D	4' VAPOR TIGHT LED STRIP LIGHT, WALL MOUNTED, POLYCARBONATE HOUSING, FROSTED POLYCARBONATE LENS, POURED IN PLACE POLYURETHANE GASKET, POLYCARBONATE LATCHES, 1/2" WET LOCATION FITTING, PIR ON/OFF OCCUPANCY SENSOR, -30C RATED, BATTERY BACKUP, 5 YEAR WARRANTY.	4,000	120	1	80	5000 K	LED	WIDE	
CSB-EX	EXIT LIGHT FIXTURE, UNIVERSAL MOUNTING, BATTERY BACKUP, WET LOCATION RATED, -40C RATED, 5 YEAR WARRANTY, WASH-DOWN RATED.	250	1				LED		
NOTES: 1. PROVIDE SUBMITTALS FOR APPROVAL. MANUFACTURER'S SHALL BE GENERAL ELECTRIC, HUBBELL, OR LITHONIA.									



TYPE CSB-A



TYPE CSB-B



TYPE CSB-C



TYPE CSB-D

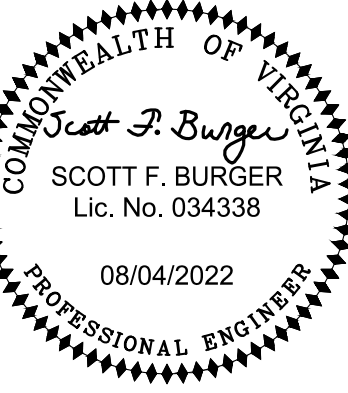


TYPE CSB-EX

SIDE EXIT FIXTURES
CSB-C, CSB-D, &
CSB-EX FOR
BUILDING 1 ONLY

LIGHT FIXTURE TYPES

SCALE: NONE



VIRGINIA A&E, PLLC
1115 VISTA PARK DRIVE
FOREST, VIRGINIA 24551
PHONE: (434) 316-6001

VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

SCHEDULES

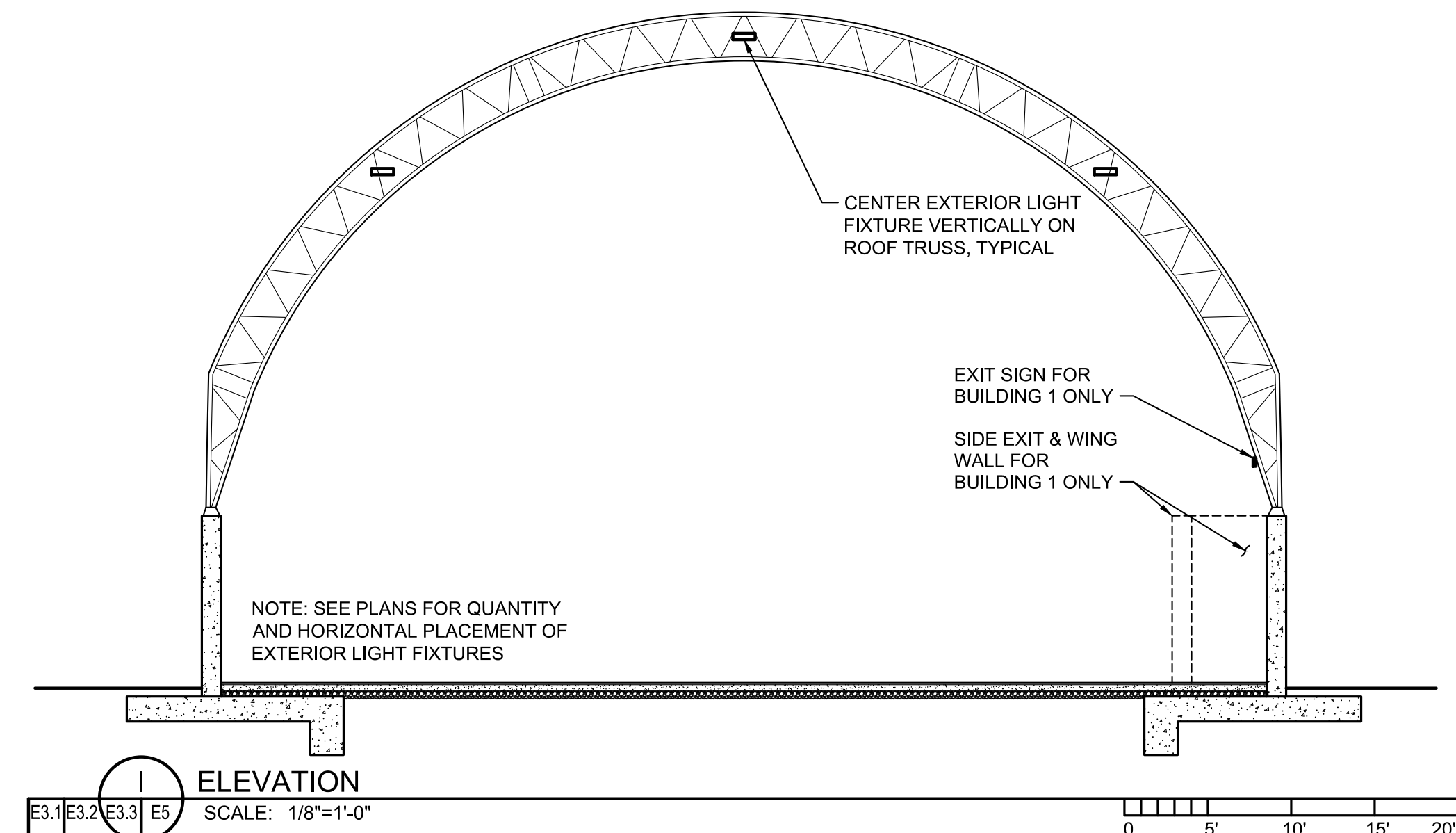
PROJECT NO: 21089
DATE: 2022-08-04

Full Scale Verification
0" 1"

Drawing No.:

E4

3,000 TON BUILDING

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ROOM DATA												FIXTURE DATA				CALCULATED VALUES				
No.	Description	MIN DESIGN FC	MAX DESIGN FC	Len	Wid	Mtg Ht	C-WVF	Task Fact	Reflectance	Maint Fact	Fixture Count	Style	Lamps	Lamp Type	L/L	Area	C R	Fixture Lumens	C U	Actual FC
3T1	3000 Ton Building 1	10	20	116	65	40	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7540	4.5	24000	0.63	18
	+20%	10	20	116	65	48	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7540	5.5	24000	0.56	16
	-20%	10	30	116	65	32	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7540	3.5	24000	0.72	21
3T2	3000 Ton Building 2	10	20	106	73	42	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7738	4.6	24000	0.62	17
	+20%	10	20	106	73	50.4	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7738	5.5	24000	0.56	16
	-20%	10	30	106	73	33.6	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7738	3.6	24000	0.71	20
3T3	3000 Ton Building 3	10	20	95	83	45	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7885	4.8	24000	0.61	17
	+20%	10	20	95	83	54	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7885	5.8	24000	0.54	15
	-20%	10	30	95	83	36	2.5	80-50-20	0.75	12		CSB-A	1	LED	24000	7885	3.8	24000	0.69	19

NOTES:

1. THESE CALCULATIONS ARE PERFORMED FOR A RANGE OF ROOF TRUSS HEIGHTS SINCE ROOF TRUSS SHAPES VARY BY MANUFACTURER

VDOT PROTYPE CSB - 3000 TON BUILDING 1
LIGHTING POWER CALCULATION

FIXTURE COUNT	12
WATTS PER FIXTURE	200
TOTAL WATTS	2400
TOTAL BUILDING AREA (SF)	7200
WATTS/SF	0.333
WATTS ALLOWANCE (C405.3)	0.48 W/SF
WATTS ALLOWANCE (C406.3)	0.432 W/SF

VDOT PROTYPE CSB - 3000 TON BUILDING 2
LIGHTING POWER CALCULATION

FIXTURE COUNT	12
WATTS PER FIXTURE	200
TOTAL WATTS	2400
TOTAL BUILDING AREA (SF)	7400
WATTS/SF	0.324
WATTS ALLOWANCE (C405.3)	0.48 W/SF
WATTS ALLOWANCE (C406.3)	0.432 W/SF

VDOT PROTYPE CSB - 3000 TON BUILDING 3
LIGHTING POWER CALCULATION

FIXTURE COUNT	12
WATTS PER FIXTURE	200
TOTAL WATTS	2400
TOTAL BUILDING AREA (SF)	7550
WATTS/SF	0.318
WATTS ALLOWANCE (C405.3)	0.48 W/SF
WATTS ALLOWANCE (C406.3)	0.432 W/SF

VDOT PROTYPE CSB - 3000 TON BUILDING 1 VAE Project 21059
 Low Voltage Drop Calculations 8-Dec-21

		CSB-1, CSB-3, CSB-5	CSB-2	CSB-4	CSB-7
Basic Circuit Information	Circuit From	INTERIOR LIGHTS	RECEPTACLE	RECEPTACLE	EXTERIOR LIGHTING
	Circuit To				
	Voltage P-P	120	120	120	120
	OCPD	20	20	20	20
	Current	6.7	12	12	4.5
	Length	200	125	10	85
	Type	Cu	Cu	Cu	Cu
Minimum per OCPD	Sets	1	1	1	1
	Size	#12	#12	#12	#12
	Mils	6,530	6,530	6,530	6,530
	EGC	#12	#12	#12	#12
	EGC Mils	6,530	6,530	6,530	6,530
Actual Circuit Design	Sets	1	1	1	1
	Size	#8	#6	#12	#12
	Mils	16,510	26,240	6,530	6,530
	Ohms/kf	0.778	0.491	1.93	1.93
	Drop in Volts 1-Way	1.0	0.7	0.2	0.7
Ground Upsize	Calculated Minimum Mils	16,510	26,240	6,530	6,530
	Actual Mils	16,510	26,240	6,530	6,530
	Size	#8	#6	#12	#12
Calculated Percentage Voltage Drop	120V/1P L-N	1.7%	1.2%	0.4%	1.2%
	208V/3P L-L				
	208V/1P L-L				
	240V/1P L-L				
	240V/3P L-L				
	277V/1P L-N				
	480V/3P L-L				

VDOT PROTOTYPE CSB - 3000 TON BUILDING 2 VAE Project 21059
 Low Voltage Drop Calculations 8-Dec-21

		CSB-1, CSB-3, CSB-5	CSB-2	CSB-4	CSB-7
Basic Circuit Information	Circuit From	INTERIOR LIGHTS	RECEPTACLE	RECEPTACLE	EXTERIOR LIGHTING
	Circuit To				
	Voltage P-P	120	120	120	120
	OCPD	20	20	20	20
	Current	6.7	12	12	4.5
	Length	170	135	10	80
	Type	Cu	Cu	Cu	Cu
Minimum per OCPD	Sets	1	1	1	1
	Size	#12	#12	#12	#12
	Mils	6,530	6,530	6,530	6,530
	EGC	#12	#12	#12	#12
	EGC Mils	6,530	6,530	6,530	6,530
Actual Circuit Design	Sets	1	1	1	1
	Size	#8	#6	#12	#10
	Mils	16,510	26,240	6,530	10,380
	Ohms/kf	0.778	0.491	1.93	1.21
	Drop in Volts 1-Way	0.9	0.8	0.2	0.4
Ground Upsize	Calculated Minimum Mils	16,510	26,240	6,530	10,380
	Actual Mils	16,510	26,240	6,530	10,380
	Size	#8	#6	#12	#10
Calculated Percentage Voltage Drop	120V/1P L-N	1.5%	1.3%	0.4%	0.7%
	208V/3P L-L				
	208V/1P L-L				
	240V/1P L-L				
	240V/3P L-L				
	277V/1P L-N				
	480V/3P L-L				

VDOT PROTOTYPE CSB - 3000 TON BUILDING 3 VAE Project 21059
 Low Voltage Drop Calculations 8-Dec-21

		CSB-1, CSB-3, CSB-5	CSB-2	CSB-4	CSB-7
	Circuit From				
	Circuit To	INTERIOR LIGHTS	RECEPTACLE	RECEPTACLE	EXTERIOR LIGHTING
Basic Circuit Information	Voltage P-P	120	120	120	120
	OCPD	20	20	20	20
	Current	6.7	12	12	4.5
	Length	160	145	10	80
	Type	Cu	Cu	Cu	Cu
Minimum per OCPD	Sets	1	1	1	1
	Size	#12	#12	#12	#12
	Mils	6,530	6,530	6,530	6,530
	EGC	#12	#12	#12	#12
	EGC Mils	6,530	6,530	6,530	6,530
Actual Circuit Design	Sets	1	1	1	1
	Size	#8	#6	#12	#12
	Mils	16,510	26,240	6,530	6,530
	Ohms/kf	0.778	0.491	1.93	1.93
	Drop in Volts 1-Way	0.8	0.9	0.2	0.7
Ground Upsize	Calculated Minimum Mils	16,510	26,240	6,530	6,530
	Actual Mils	16,510	26,240	6,530	6,530
	Size	#8	#6	#12	#12
Calculated Percentage Voltage Drop	120V/1P L-N	1.4%	1.4%	0.4%	1.2%
	208V/3P L-L				
	208V/1P L-L				
	240V/1P L-L				
	240V/3P L-L				
	277V/1P L-N				
	480V/3P L-L				

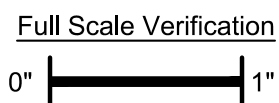


VIRGINIA DEPARTMENT OF TRANSPORTATION
PROTOTYPE CHEMICAL STORAGE BUILDINGS
3,000 TON
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

CALCULATIONS

PROJECT NO:
21059

DATE:
2022-08-04



Drawing No.:

E6

3,000 TON BUILDING