



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, OR 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 BEGINNING 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 1/2 INCH UNDER BUILDINGS, PARKED 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 KEVED 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 30 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
5
4
3
2
1

HUGHES ASSOCIATES ARCHITECTS & ENGINEERS
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Virginia Department of Transportation
CHEMICAL STORAGE BUILDING
SALEM DISTRICT AIRPORT AHQ

VDOT
4330 THIRLANE RD, NW ROANOKE, VA 24019

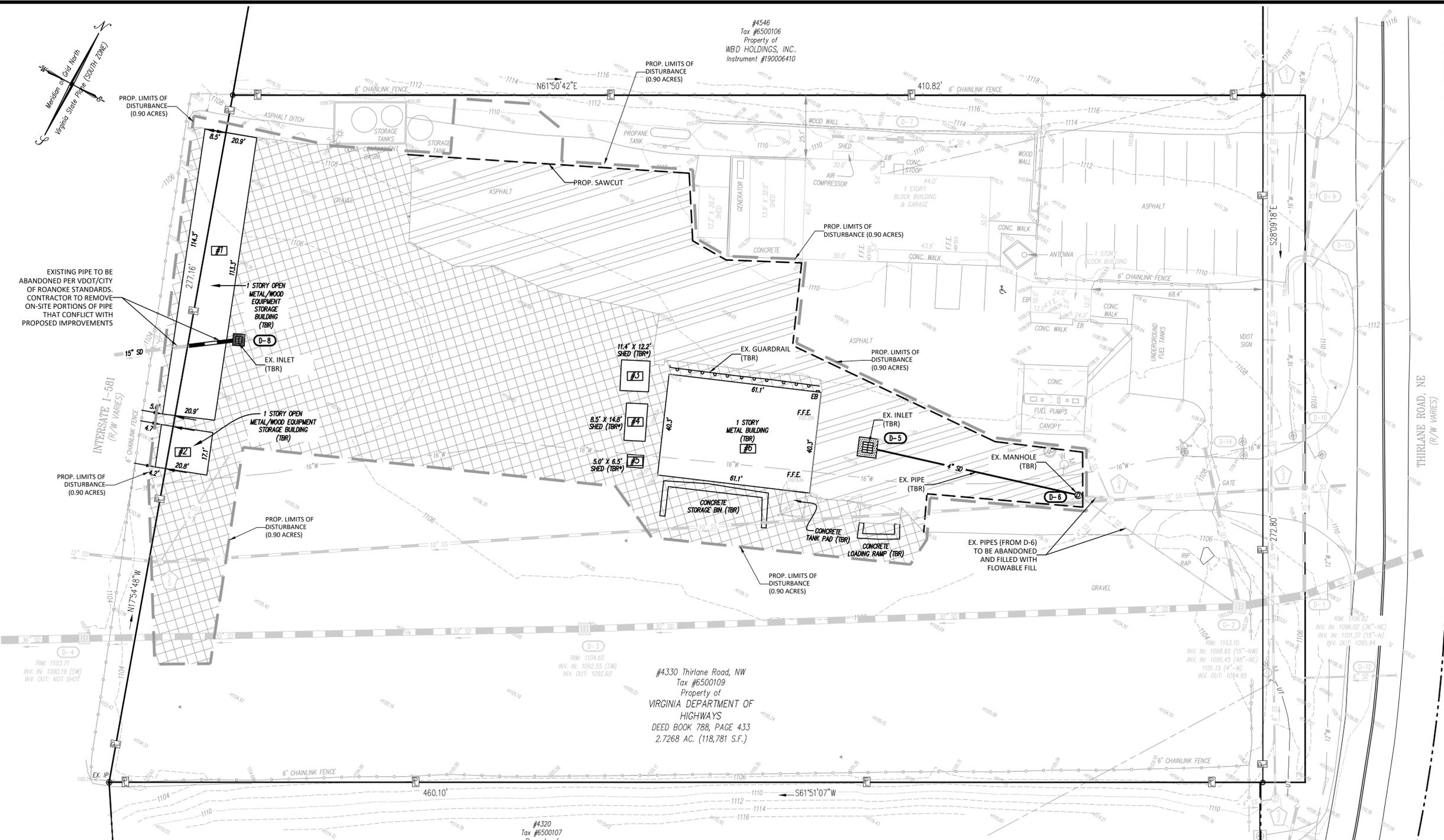
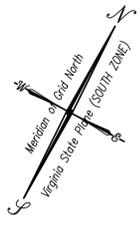
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GENERAL SITE CONSTRUCTION NOTES

PROJECT CODE: 501-18130-077

12/06/2024
JOHNATHAN C. BRODIE
Lic. No. 053540

COMMISSION No. 23027
SHEET C-101



**SYMBOL LEGEND**

	Existing Property Monument
	Property Corner
	Property Line
	Sign
	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
INV.	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
WWWA	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

**HUGHES ASSOCIATES**  
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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

**EXISTING CONDITIONS AND DEMOLITION PLAN**

PROJECT CODE: 501-18130-077



COMMISSION NO. 23027  
SHEET C-200

**SANITARY SEWER DATA TABLE**

#	STRUCTURE	RIM	INV.IN(1)	INV.IN(2)	INV.IN(3)	INV.OUT	WWWA#
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)	1097.72 (10" TCP)	128-3001.0
4	SSMH	1106.85	1096.71 (10" TCP-NE)	1099.12 (4" PVC-NW)	1103.12 (4" PVC-FROM SDMH)-W	1096.67 (10" TCP)	128-0112.0
5	SSMH	1104.54	1089.58 (10" TCP-NE)	1101.67 (4" PVC-N)		1089.49 (12" RCP)	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 54)	
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**

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

**Pattern Legend**

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

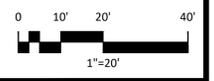
**Utilities Marked per Miss Utility Ticket #B311002511**

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)	Utiliquest	(703) 754-2116	(877) 866-4474	No
CRN (CRN207)	Stake Center Locating	(801) 364-1063	(855) 933-4237	No
LMS (LM5546)	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)	Utiliquest	(804) 286-1721	(888) 483-1233	No
WWW (WWW853)	Michelle Niday	(540) 283-2981	(540) 283-2981	Yes

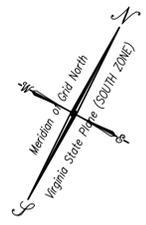
**VDOT SALEM DISTRICT AIRPORT AHQ EXISTING BUILDING TABLE**

Plan View Bldg #	Building Name	FAACS #	Construction Date	Action	Notes
1	Spreader Rack #1	2140849	1/1/1979	TBR	Asbestos report in Specs. Demo Permit Required
2	Spreader 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.



Drawing File: P:\2023\23027 - VDOT - Salem District Airport AHQ Chemical Storage Building\05.0 Drawings\A.S. AutoCAD\Civil\Site Plan\23027 - SITE.dwg 7/11/2024



#4546  
Tax #6500106  
Property of  
WBD HOLDINGS, INC.  
Instrument #190006410

#4330 Thirlane Road, NW  
Tax #6500109  
Property of  
VIRGINIA DEPARTMENT OF  
HIGHWAYS  
DEED BOOK 788, PAGE 433  
2.7268 AC. (118,781 S.F.)

#4320  
Tax #6500107  
Property of  
DOBSON BROTHERS  
EXTERMINATING COMPANY, INC.  
Instrument #970021854

**UTILITY NOTES:**

- 10,000 GALLON UNDERGROUND STORAGE SIZE IS ESTIMATED USING VIRGINIA DEQ'S CISTERN DESIGN SPREADSHEET BASED ON AREA DRAINING TO THE FACILITY AND NO WATER RE-USE.
- SEE DRAWING A4.2 FOR ADDITIONAL COMPONENTS AND DETAIL ASSOCIATED WITH THE UNDERGROUND STORAGE TANK.
- ADS WATER QUALITY UNIT TO BE 36" DIAMETER WITH A 20' LENGTH. CONTRACTOR TO INSTALL UNIT PER MANUFACTURER'S WRITTEN SPECIFICATIONS.
- PROPOSED 1" WATER LINE TO HAVE MINIMUM 3' COVER AND MINIMUM 1' CLEARANCE AT ALL UTILITY CROSSINGS.

**SITE NOTES:**

- CONTRACTOR TO COORDINATE WITH VDOT FOR FINAL RELOCATION OF BUILDINGS #3-#5 AS SHOWN ON THIS SHEET.

DATE: FEB. 5, 2024

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

DRAWN BY: JCB  
CHECKED BY: JCB

LAYOUT AND UTILITY PLAN

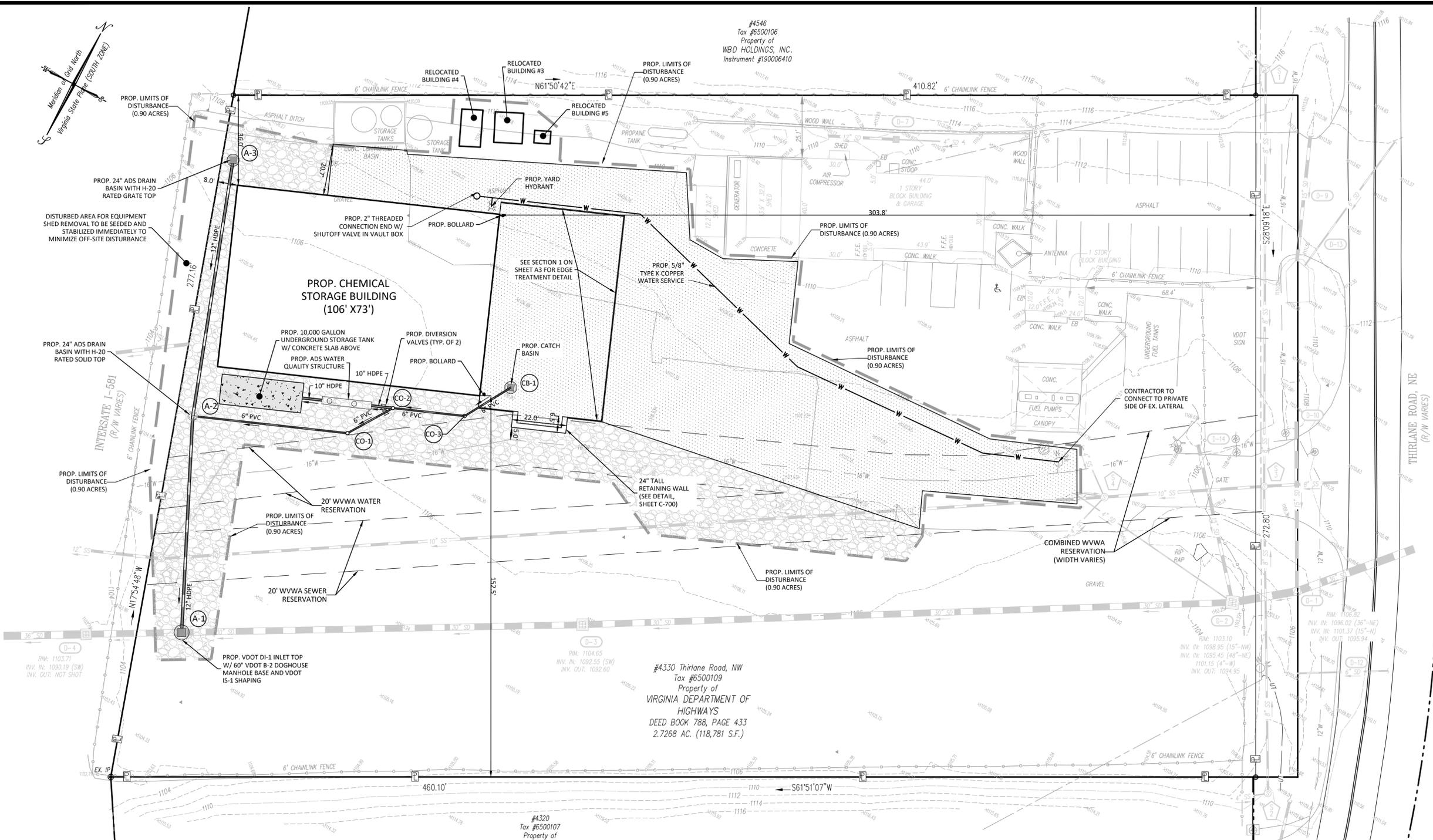
PROJECT CODE:  
501-18130-077



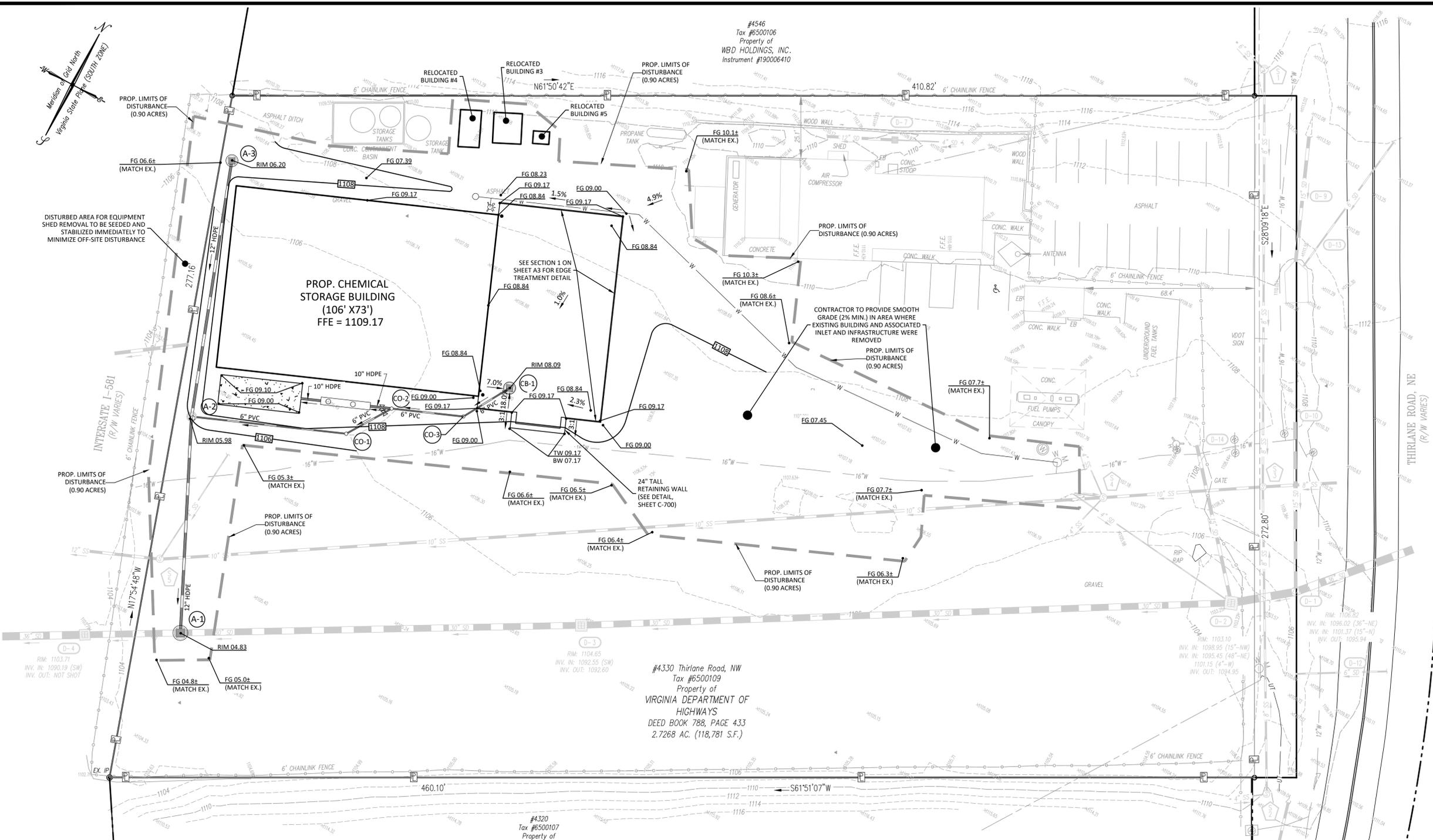
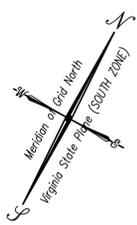
COMMISSION No.  
23027  
SHEET  
**C-300**

**LEGEND**

- LIMITS OF DISTURBANCE
- [Pattern] PROP. HEAVY DUTY ASPHALT PAVING
- [Pattern] PROP. COMPACTED 21A STONE
- [Pattern] PROP. CONCRETE SLAB



Drawing File: P:\2023\23027 - VDOT - Salem District Airport AHQ Chemical Storage Building\05.0 Drawings\05.2 AutoCAD\Civil\Site Plan\30027 - SITE.dwg  
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DATE: FEB. 5, 2024

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**GRADING PLAN**

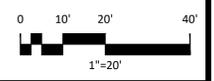
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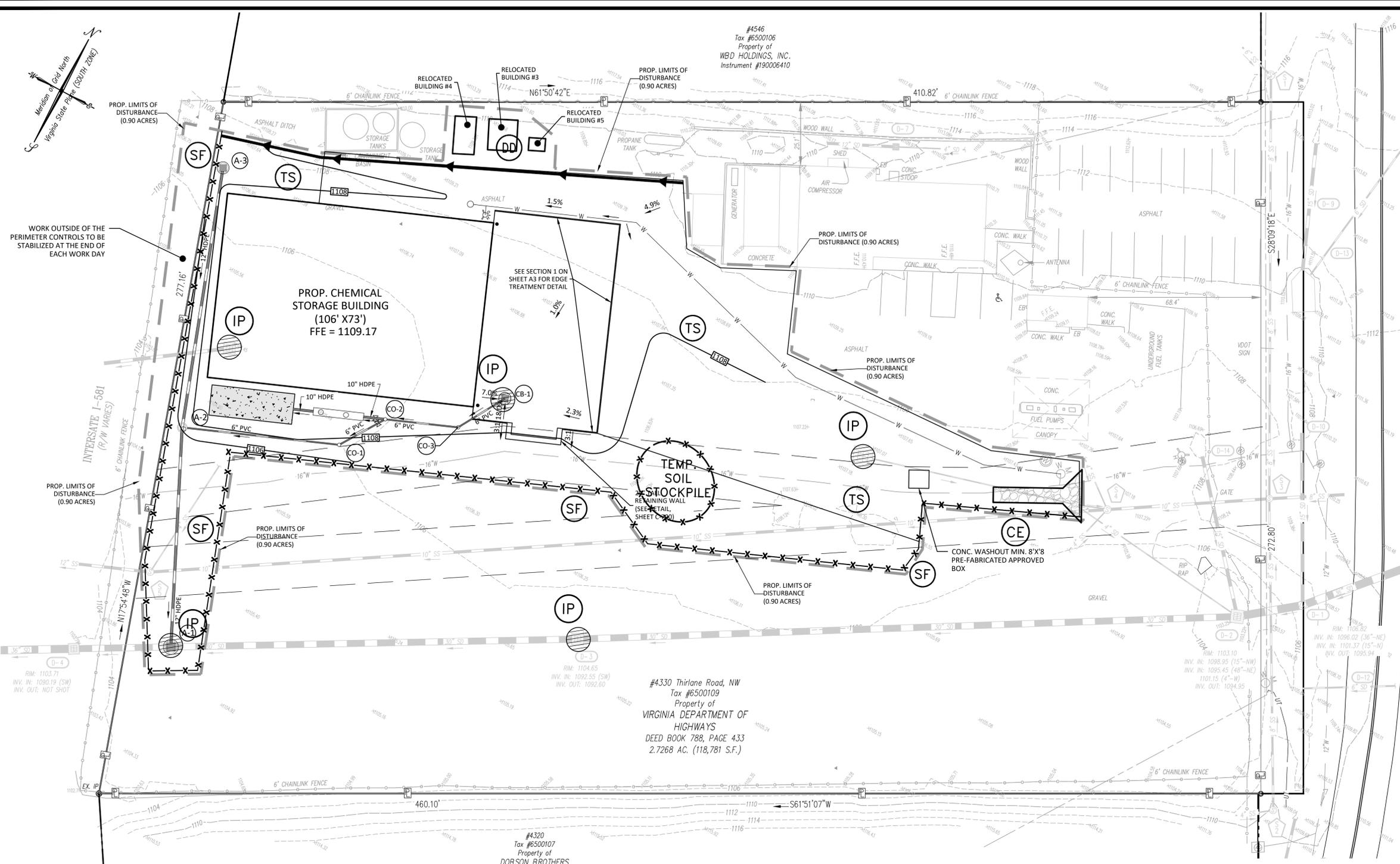
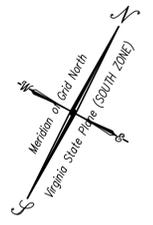
COMMISSION No.  
 23027  
 SHEET  
**C-400**

**LEGEND**

- FG XX.XX LIMITS OF DISTURBANCE
- FFE XX.XX FINISHED GRADE SPOT
- FINISHED FLOOR ELEVATION



Drawing File: P:\2023\23027 - 1807 - Salem District Airport AHQ Chemical Storage Building\05-D Drawings\02- AutoCAD\DWG\Site Plan\23027 - 0810.dwg  
 3/25/2024



**EROSION & SEDIMENT CONTROL NOTES:**

- REFER TO THE PLAN SET FOR E&S REQUIREMENTS AND SPECIFICATIONS AND THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 1992 EDITION.
- THE CONTRACTOR SHALL PLACE ALL EXCAVATED SPOILS ON THE UPPER SIDE OF THE TRENCH TO PREVENT SEDIMENT FROM LEAVING THE SITE.
- SEE EROSION AND SEDIMENT CONTROL DETAIL SHEETS FOR ADDITIONAL EROSION AND SEDIMENT CONTROL DETAILS.
- NO GRADING IS PERMITTED WITHOUT A DEQ/DCR CERTIFIED "RESPONSIBLE LAND DISTURBER" PRESENT.
- CONSTRUCTION SHOULD BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
- EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS A FIRST STEP OF CONSTRUCTION.
- 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.
- THE GRADING INSPECTION PERSONNEL SHALL REPAIR ALL DAMAGED OR DEFICIENT CONTROL MEASURES IMMEDIATELY UPON DISCOVERY OF DAMAGE OR UPON NOTIFICATION OF THE DEFICIENCY.
- ONCE THE SITE IS STABILIZED, REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL ITEMS.
- REMOVE ALL EXCAVATED AND EXCESS SOIL FROM THE SITE AND COMPACT AREA PRIOR TO PLACING AGGREGATE FOR THE BASE MATERIAL.
- 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.
- 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.
- 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.
- NO SLOPES SHALL BE STEEPER 3:1
- THE LOCATION OF THE SOIL STOCKPILE WILL MOVE WITHIN THE CONSTRUCTION LIMITS AS THE SITE DEVELOPS. THE PROJECT MAY REQUIRE MULTIPLE SOIL STOCKPILE LOCATIONS.
- 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
- 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:**

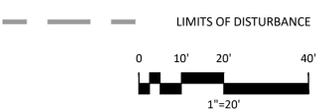
CONTRACTOR TO COORDINATE WITH CITY OF ROANOKE SITE INSPECTOR REGARDING THE NEED FOR CONSTRUCTION ENTRANCE AND/OR ALTERNATIVE LOCATION TO WHAT IS SHOWN ON THE PLANS. CONTRACTOR MAY UTILIZE THE EXISTING GRAVEL OR ASPHALT PAVING AND EXISTING ON-SITE WATER SOURCE TO ADEQUATELY CLEAN CONSTRUCTION VEHICLES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

**SUGGESTED SEQUENCE OF CONSTRUCTION:**

- CONTACT VIRGINIA 811 AND PRIVATE UTILITY LOCATING COMPANY TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES.
- 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.
- DEMOLISH EXISTING FEATURES AS NOTED IN THIS PLAN SET.
- INSTALL PROPOSED FACILITIES AS SHOWN IN THIS SITE PLAN.
- INSTALL PERMANENT STABILIZATION MEASURES.
- PERIMETER CONTROLS MAY BE REMOVED WITH PERMISSION FROM THE CITY OF ROANOKE E&S INSPECTOR ONCE UPSTREAM AREAS ARE STABILIZED.
- 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	3.07	
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



DATE: FEB. 5, 2024

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**EROSION AND SEDIMENT CONTROL PLAN**

PROJECT CODE:  
501-18130-077



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. RE-STABILIZATION 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 (VSMMP) 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 (VSMMP) 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 VSMMP 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 VSMMP 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 4VAC50-30 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.

Table with 2 columns: REVISIONS, DATE: FEB. 5, 2024. Contains revision symbols and a date entry.

HUGHES ASSOCIATES ARCHITECTS & ENGINEERS logo and contact information including address and website.

VDOT Virginia Department of Transportation logo and address for Chemical Storage Building, Salem District Airport AHQ.

DRAWN BY: JCB
CHECKED BY: JCB

EROSION AND SEDIMENT CONTROL NOTES

PROJECT CODE: 501-18130-077

Professional Engineer seal for Johnathan C. Brodie, License No. 053540, dated 12/06/2024.

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 (tolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 -100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (tolium 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/saw/e&s.htm#pubs>

**TABLE 3.32-C**  
(Revised June 2003)  
**PERMANENT SEEDING SPECIFICATIONS FOR APPALACHIAN/MOUNTAIN AREA**

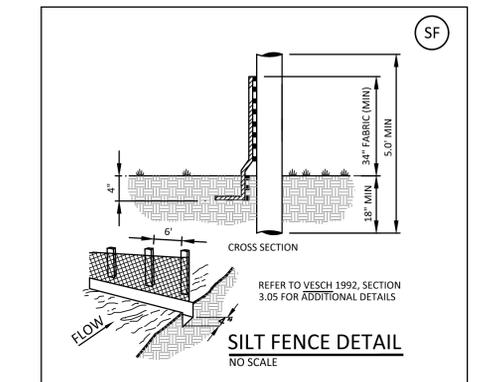
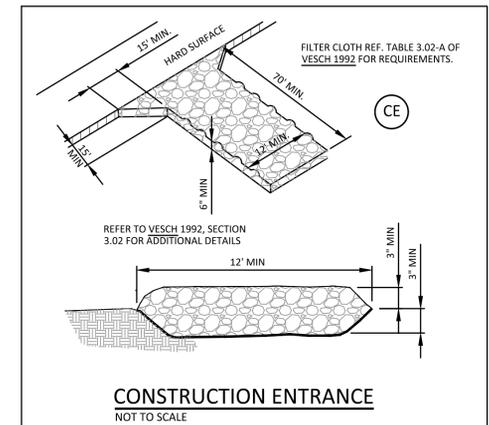
SEED		
LAND USE	SPECIES	APPLICATION RATES
Minimum Care Lawn (Commercial or Residential)	Tall Fescue <sup>1</sup>	90-100%
	Perennial Ryegrass <sup>2</sup> Kentucky Bluegrass <sup>2</sup>	0-10%
High-Maintenance Lawn	Minimum of three (3) up to five (5) varieties of Kentucky Bluegrass from approved list for use in Virginia <sup>1</sup>	TOTAL: 200-250 lbs
	Tall Fescue <sup>1</sup>	128 lbs
General Slope (3:1 or less)	Red Top Grass or Creeping Red Fescue	2 lbs
	Seasonal Nurse Crop <sup>3</sup>	20 lbs
Low-Maintenance Slope (Sleeper than 3:1)	Tall Fescue <sup>1</sup>	108 lbs
	Red Top Grass or Creeping Red Fescue	2 lbs
	Seasonal Nurse Crop <sup>3</sup>	20 lbs
	Crownvetch <sup>4</sup>	20 lbs
		TOTAL: 150 lbs

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seeds 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<sup>th</sup> ..... Annual Rye  
May 16<sup>th</sup> - August 15<sup>th</sup> ..... Foxtail Millet  
August 16<sup>th</sup> - September, October ..... Annual Rye  
November - February ..... Winter Rye  
4 - All legume seed must be properly inoculated. If Filapaea 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.)

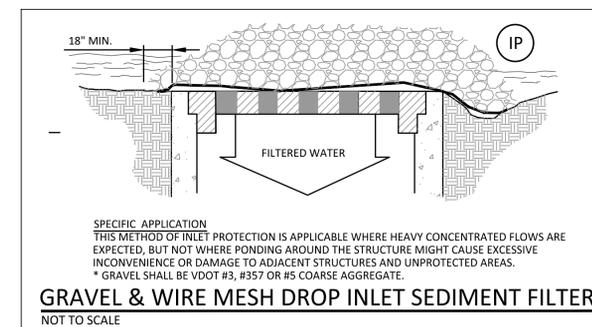
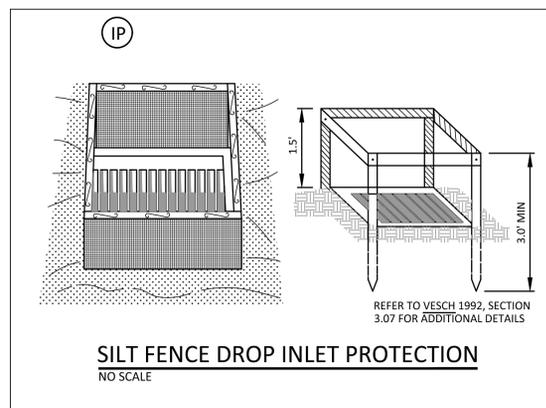
**NOTE:**  
- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.  
- Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.  
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin #4, 2003 Nutrient Management for Development Sites at <http://www.dcr.state.va.us/saw/e&s.htm#pubs>



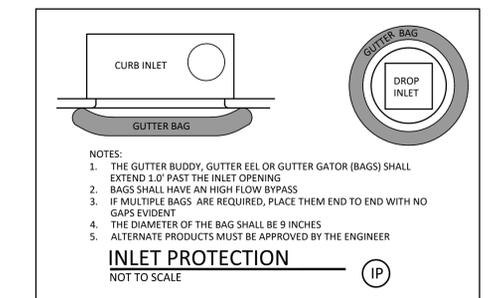
**MULCH:** STRAW OR FIBER MULCH SHALL BE USED OVER ALL SEEDING AREAS AND SHALL BE APPLIED IN ACCORDANCE WITH SECTION 1.75 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION

**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**



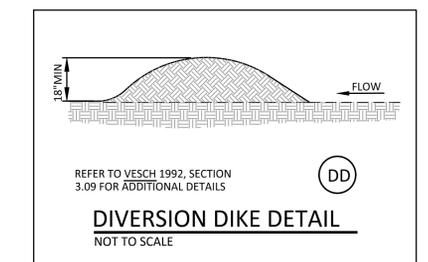
**NOTE:** GRAVEL MESH SEDIMENT FILTER MAY BE USED IN AREAS OUTSIDE OF LIMITS OF DISTURBANCE, IF PREFERRED, TO MINIMIZE DISRUPTIONS TO VEHICULAR FLOW.



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

**INLET PROTECTION**

NOT TO SCALE



DATE: FEB. 5, 2024

REVISIONS

**HUGHES ASSOCIATES**  
ARCHITECTS & ENGINEERS  
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA  
540-342-4002  
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**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

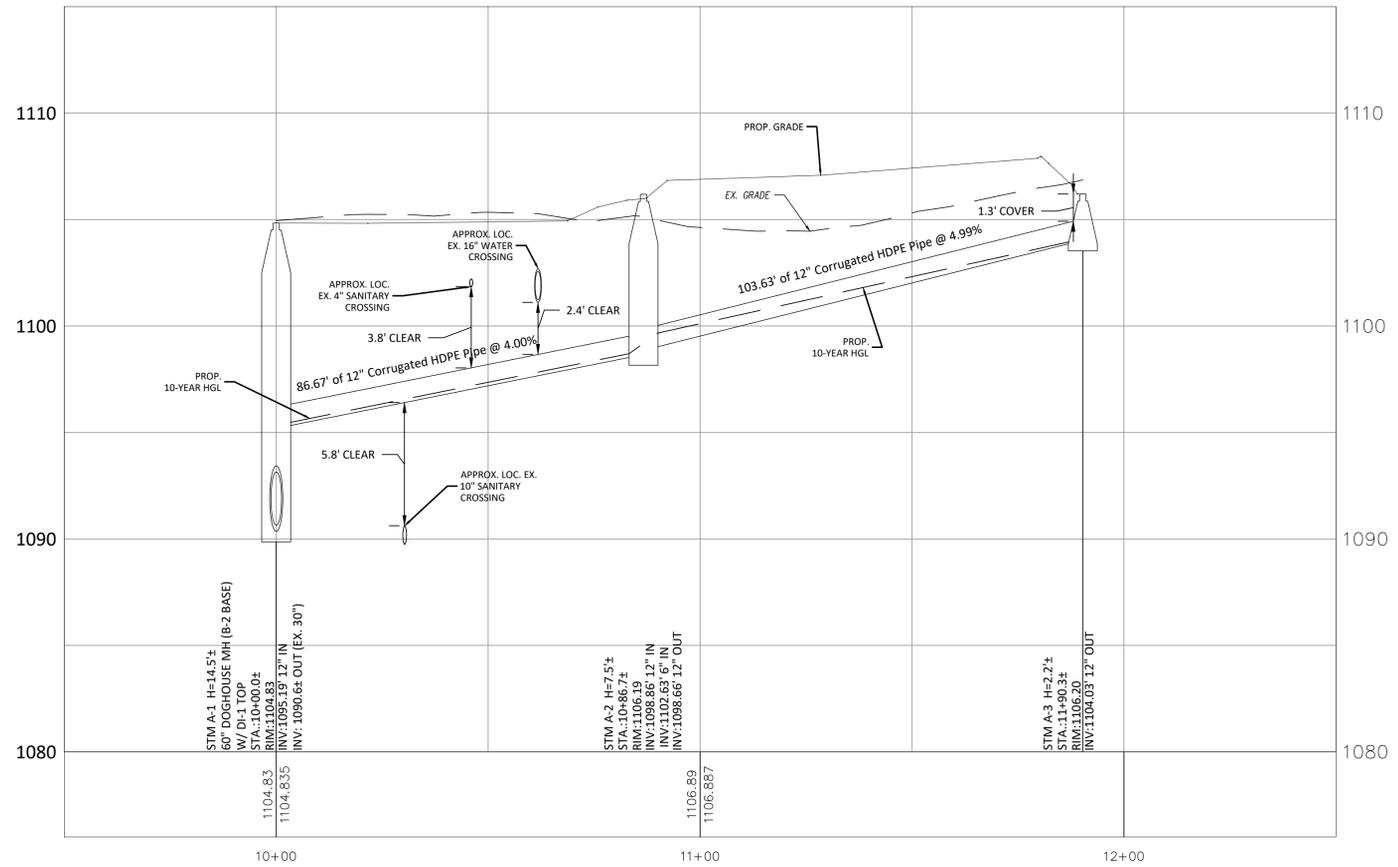
**EROSION AND SEDIMENT CONTROL DETAILS**

PROJECT CODE:  
501-18130-077

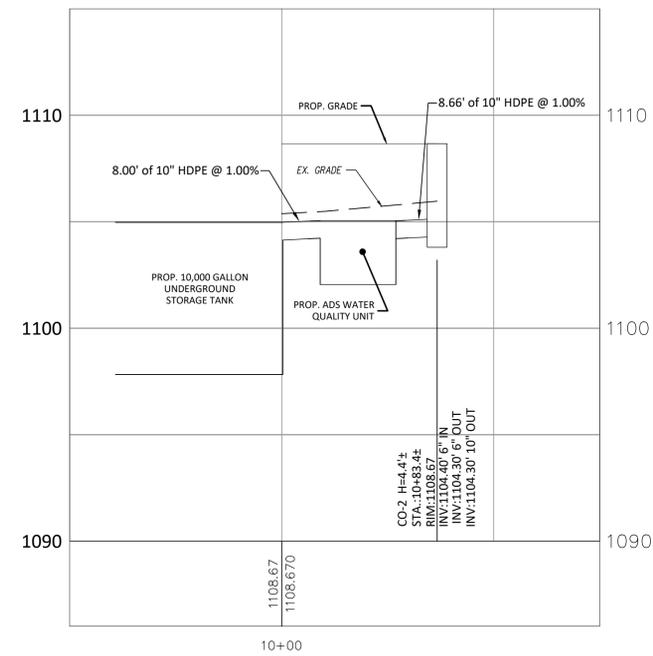
COMMISSION OF THE COMMONWEALTH OF VIRGINIA  
12/06/2024  
JOHNATHAN C. BRODIE  
Lic. No. 053540  
PROFESSIONAL ENGINEER

COMMISSION No.  
23027  
SHEET  
C-502

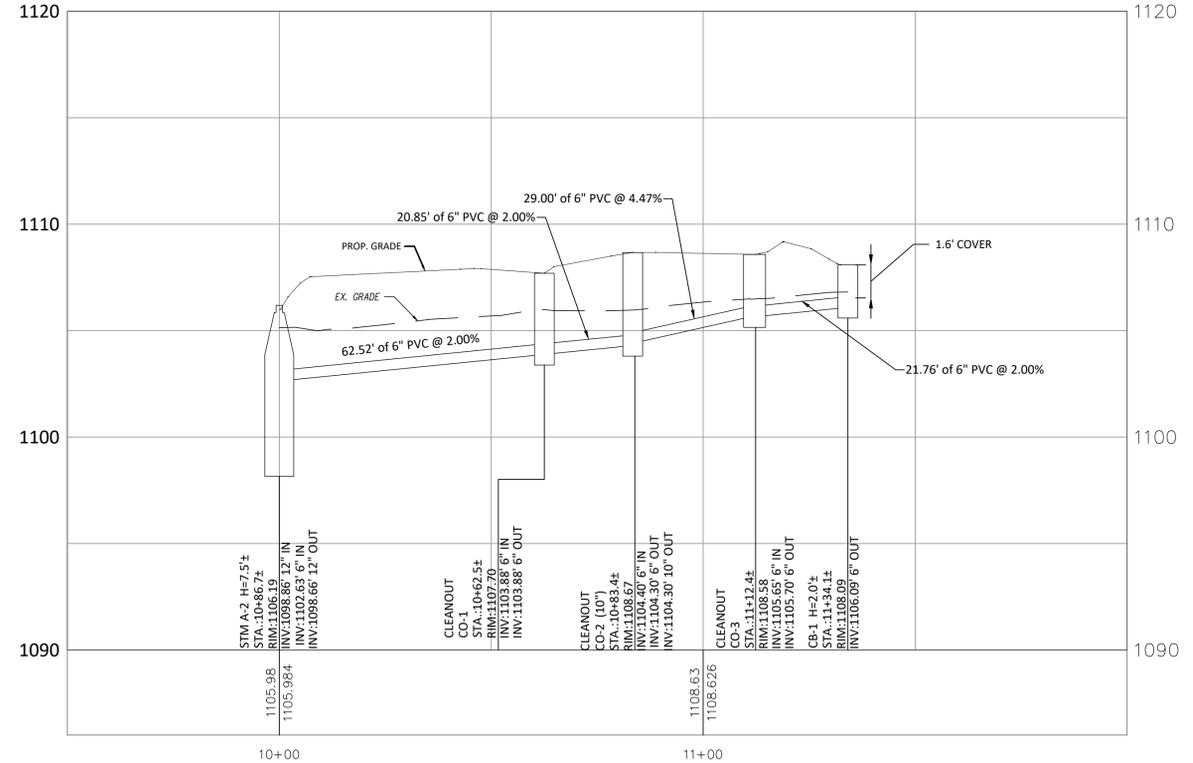
### STORM A-1 TO A-3



### UNDERGROUND STORAGE TO CO-2



### STORM A-2 TO CB-1



REVISIONS	DATE: FEB. 5, 2024
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**VDOT** Virginia Department of Transportation  
**CHEMICAL STORAGE BUILDING SALEM DISTRICT AIRPORT AHQ**  
4330 THIRLANE RD., NW ROANOKE, VA 24019

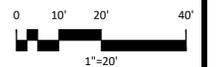
DRAWN BY: JCB  
CHECKED BY: JCB

### STORM PROFILES

PROJECT CODE:  
501-18130-077

COMMISSION No. 23027  
12/06/2024  
JOHNATHAN C. BRODIE  
Lic. No. 053540  
PROFESSIONAL ENGINEER

COMMISSION No. 23027  
SHEET  
**C-600**





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

0000-000-000, RW-000  
00 C-000 0

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.

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.

VDOT Individuals	Position	Qualifications (if required)	Responsibility
James Crumpacker	NPDES		NPDES coordinator or designee(s) responsible for the oversight inspection in accordance with IIM-LD-256
	Dist. Hyd. Engineer		District Hydraulic Engineer or designee(s) responsible for the review & the coordination approval of ESC SWM plan modification(s).
	ACE		Project Manager during Construction

\*14. The ESC and P2 inspections for this land disturbing (construction) activity shall follow (Select Schedule 1 or 2, if schedule #2 is used, void note #15) as defined in R&B Specifications identified on the title sheet except for Section 107 an Inspection Requirements Rain gauge notes apply only to Inspection Schedule 1.

If the operator must make the same repairs more than two times to the same control at the same location, even if the fix can be completed by the close of the next business day, the operator shall either:

- Complete work to fix any subsequent repeat occurrences of this same problem under the corrective action procedures in Part II H, including keeping any records of the condition and how it was corrected under Part II C: or
- Document in the inspection report under Part II G why the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix.

\*15. The location of the on-site rain gage that will be used to determine the occurrence of a measurable storm event for the purposes of ESC and Pollution Prevention inspections will be provided by the contractor and identified on the record set of plans or in other appropriate SWPPP documents for this land disturbance activity: (List location of rain gage).

The rain gage shall be observed daily at " " to determine the occurrence of a measurable storm event (i.e., 0.25 inches of rainfall or greater in a 24 hour period). A log book shall be maintained to record observation information which shall include (1) the date, (2) the time, (3) whether or not rainfall is occurring at the time of the observation, (4) the amount of accumulated rainfall in the gage, if any, and (5) whether or not an inspection is required based on the amount of accumulated rainfall in the gage.

A discharge caused by snow melt (from a snow event producing 3.25 inches or more of snow within a 24-hour period). The operator is required to conduct one inspection once the discharge of snow melt occurs. Additional inspections are only required if, following the discharge from the first snow melt, there is a discharge from a separate storm event.

If there is no rainfall occurring at the time of the observation, the observation information shall be noted in the log book and the rain gage emptied and replaced. An inspection is required if there is 0.25 inches or more accumulation noted in the rain gage. If there is rainfall occurring at the time of the observation, the observation information is to be noted in the log book. The rain gage is not to be emptied but left to accumulate additional rainfall until the conclusion of the rainfall event. At the conclusion of the rainfall event, an observation of the rain gage shall be made and the observation information shall be noted in the log book and the rain gage emptied and replaced. An inspection is required if there is 0.25 inches or more accumulation noted in the rain gage.

16. The following VDOT documents are applicable to a) permitted projects b) non-permitted projects in Chesapeake Bay Preservation Areas (CBPA) with 2,500 S.F. to 1.0 acre of land disturbance c) non-permitted projects requiring a SWPPP and d) Non-permitted, Non-CBPA with BMP projects that have a water quantity BMP:

- VDOT LD-445: Permitted projects, CBPA projects and Non-permitted, Non-CBPA with BMP projects that have a water quantity BMP and ESC projects > 10,000 s.f. but <1 acre.
- VDOT LD-445A: Permitted projects only.
- VDOT LD-445C: Projects that require a permit, ESC Plan, SWM, or SWPPP.
- VDOT LD-445D: Permitted projects, CBPA projects and Non-permitted, Non-CBPA with BMP projects that have a water quantity BMP.
- VDOT LD-445F: Emergency work projects (when applicable)
- VDOT LD-445H: Permitted projects only.
- VDOT C-107 Part I (All projects that require a SWPPP).
- VDOT C-107 Part II (Only for Permitted Projects).
- VDOT LD-445I: AS&S Approval Form (when applicable)
- VDOT LD-445J: Off-site Support/ Material Disposal Area

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

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

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

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)

DATE: FEB. 5, 2024

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3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA 24012  
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Virginia Department of Transportation  
**VDOT**  
CHEMICAL STORAGE BUILDING  
SALEM DISTRICT AIRPORT AHO  
4330 THIRLAINE RD., NW ROANOKE, VA 24019

DRAWN BY: JCB  
CHECKED BY: JCB

VDOT SWPPP  
PROJECT CODE:  
501-18130-077

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

COMMISSION No.  
23027  
SHEET  
**SW-1**

Activities Tracking Form  
Revised 7/25/24  
SWPPP Sheet 1 of 4

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Drawing Date: 9/20/2024 8:16 AM  
Drawing Title: Stormwater Pollution Prevention Plan

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:
  - a. Control the volume and velocity of stormwater runoff within the site to minimize erosion.
  - b. Control the peak flow rates, volume and velocity of stormwater discharges to minimize erosion at outlets and in downstream channels.
  - c. Minimize the amount of soil exposed.
  - d. Minimize the disturbance of steep slopes.
  - e. Minimize sediment discharge from the site.
  - f. Provide and maintain natural buffers around surface waters, direct stormwater runoff to vegetated areas and maximize stormwater infiltration, unless infeasible.
  - g. 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)	Regulation Modified(2)	Approval Date(3)	Description
n/a			

- (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

- 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.

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)
  - \* ~~A. 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.~~
  - \* B. 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)	Regulation Modified(2)	Approval Date(3)	Description
n/a			

- (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.



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CHECKED BY: JCB

VDOT SWPPP

PROJECT CODE: 501-18130-077



COMMISSION NO. 23027  
SHEET SW-2

Revised 7/25/24  
SWPPP Sheet 2 of 4

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

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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. Water used to control dust that is filtered, settled or similarly treated prior to discharge.
  - e. 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.

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

VDOT SWPPP

PROJECT CODE:  
501-18130-077



COMMISSION NO.  
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SWPPP Sheet 3 of 4

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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.

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DATE: FEB. 5, 2024

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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)	Perpetual Nutrient Credits Acquired for Project	
				LAT	LONG				Name of Nutrient Credit Generating Entity (6)	Nutrient Credits (lbs./TP./year) Acquired (6) (12)
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	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 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

NOTES:

- In decimal degrees to the nearest one ten-thousandth of a degree.
- For streams with no names, list "(Unnamed Tributary to downstream name)".
- Show acres treated to the nearest one hundredths acre.
- Include agreements with off-site BMP owners.
- Information pertains to the alternative BMP option location, where applicable. Exception - Not required for nutrient credit purchase option.
- Applies to the purchase of nutrient credits only.
- Virginia 6th Order HUC (VAHU6) Example - Y030.
- Final approved shop drawings of Manufactured Treatment Devices (MTDs) are to be included with the BMP information submitted with the LD-445D form.
- 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.
- 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.
- 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](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.
- Nutrient credits purchased to the nearest one hundredth pound.
- If level spreader is utilized as part of sheet flow to vegetative filter strip, report under that BMP type Table C.
- 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.

Table B: Alternative BMP Types

- Comprehensive SWM Plan (Regional) Facility
- Pollutant Loading Pro Rata Share Program
- Other Approved Options (List Type) (4)

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

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**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

VDOT SWPPP  
 PROJECT CODE:  
 501-18130-077

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

COMMISSION NO.  
 23027  
 SHEET  
**SW-4**  
DRAWINGS AND SPECIFICATIONS ARE PROPERTY OF THE COMMONWEALTH OF VIRGINIA

Revised 7/25/24  
 SWPPP Sheet 4 of 4  
 0000-000-000 0

Drawing File: P:\23027\23027 - SWPPP - Salem District Airfield - AHQ - Chemical Storage Building\050 - Drawings\05 - SWPPP\05-SWPPP-04.dwg  
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 User: JCB  
 Plot Date: 7/25/24 8:18 AM  
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 Plot Size: 11x17  
 Plot Orientation: Landscape  
 Plot Color: Black  
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 Plot Sheet: SW-4  
 Plot Project: 501-18130-077  
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 Plot Lineweight: 0.25  
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 Plot Font: Arial, 10  
 Plot Title: SWPPP Sheet 4 of 4  
 Plot Sheet: SW-4  
 Plot Project: 501-18130-077



**Legend**

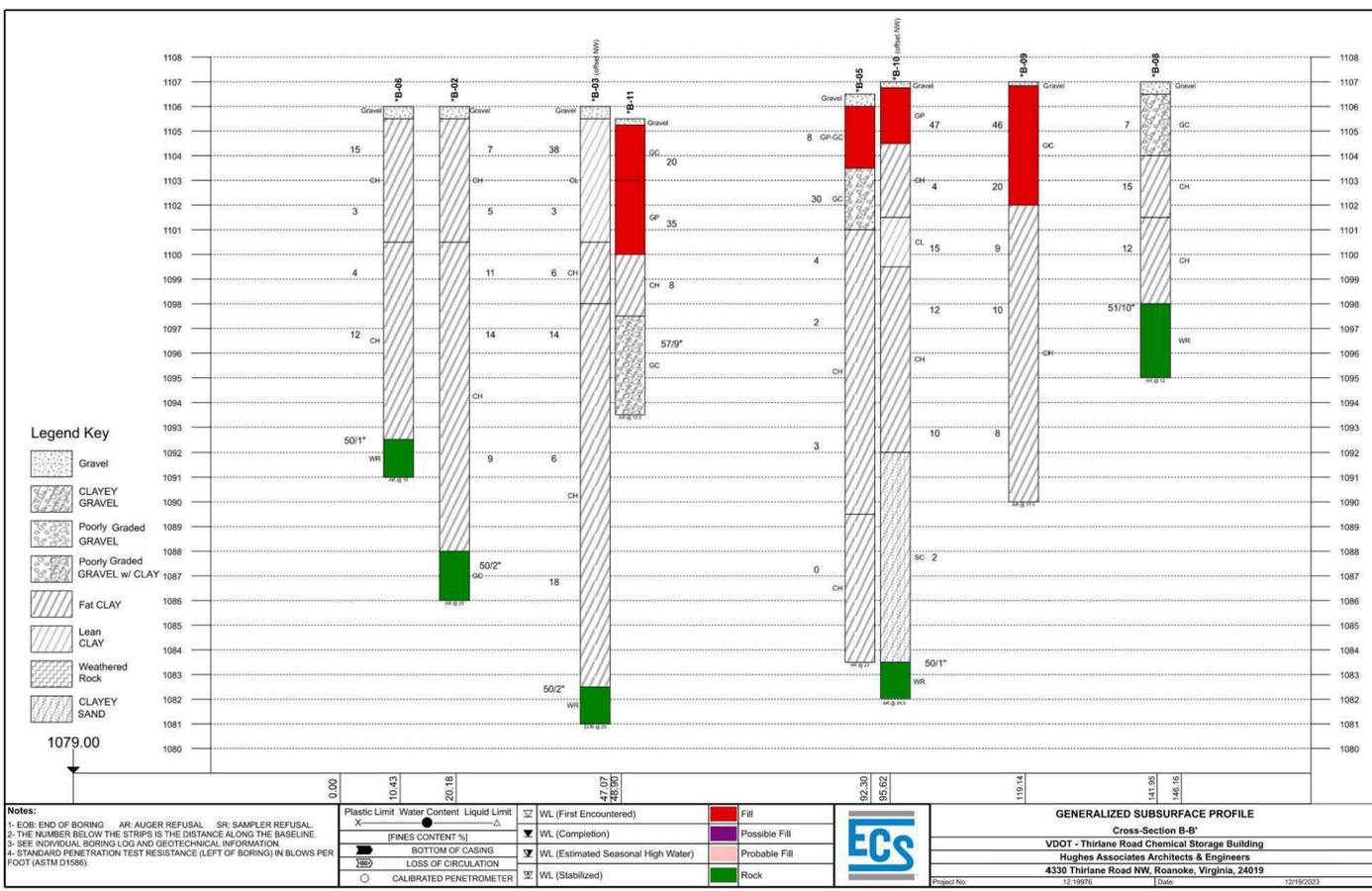
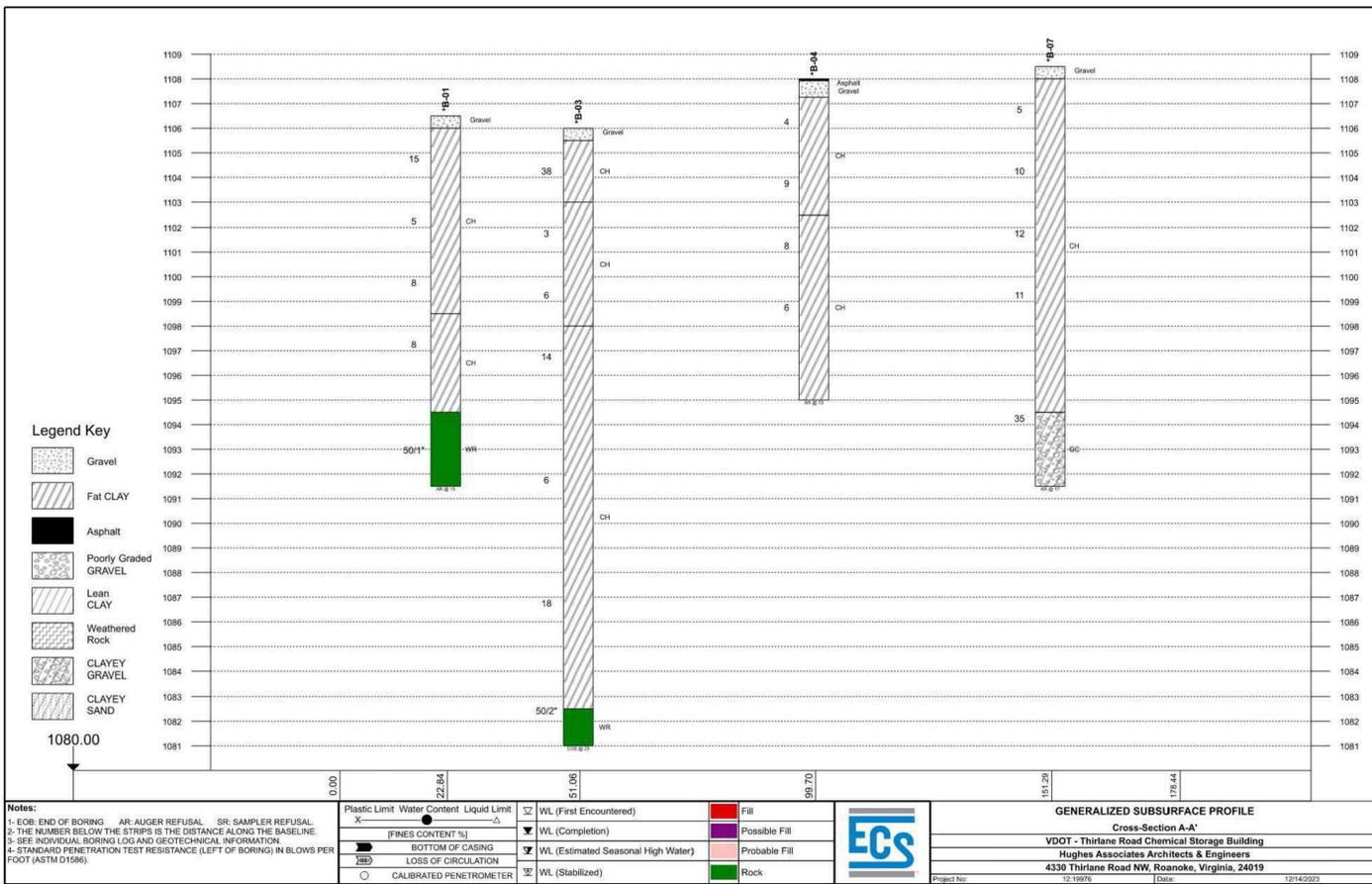
- Approximate September 2023 Boring Locations
- Approximate December 2023 Boring Locations
- Approximate Cross-Section Locations



**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.  
 12-19976  
 FIGURE  
 1 OF 1  
 DATE  
 12/14/2023



DATE: FEB. 5, 2024

REVISIONS


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

DRAWN BY: JCB  
 CHECKED BY: JCB

SOIL BORING LOGS

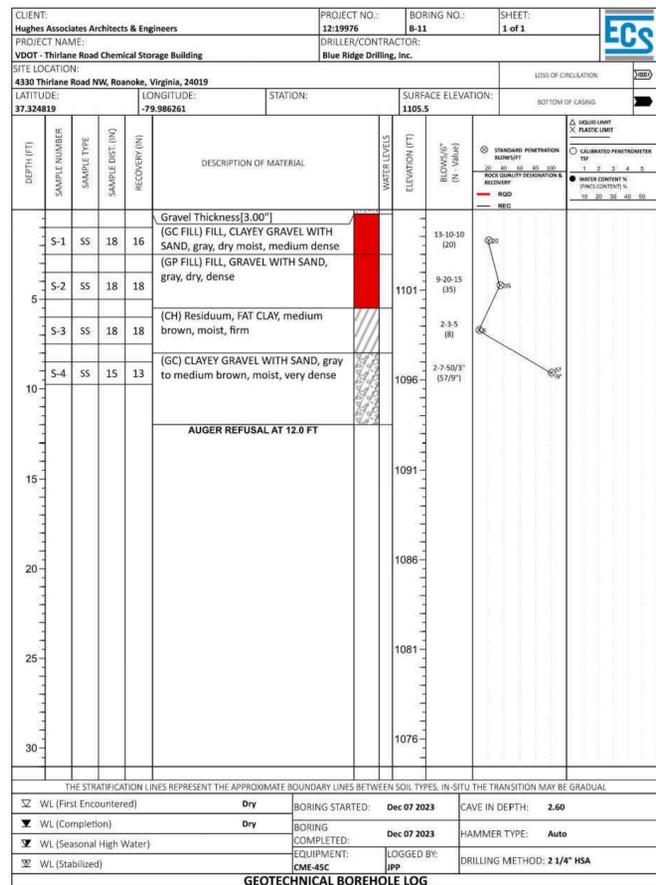
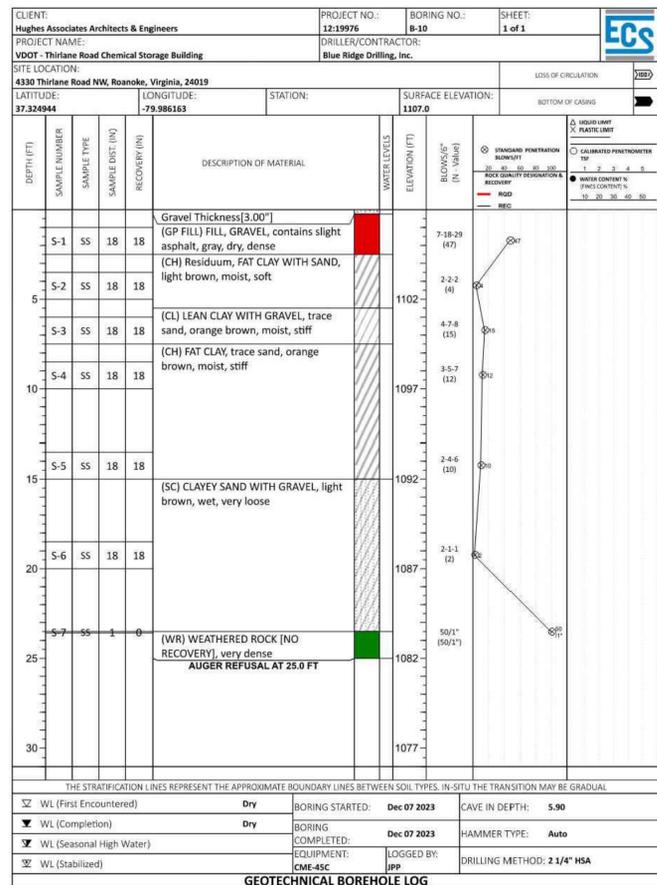
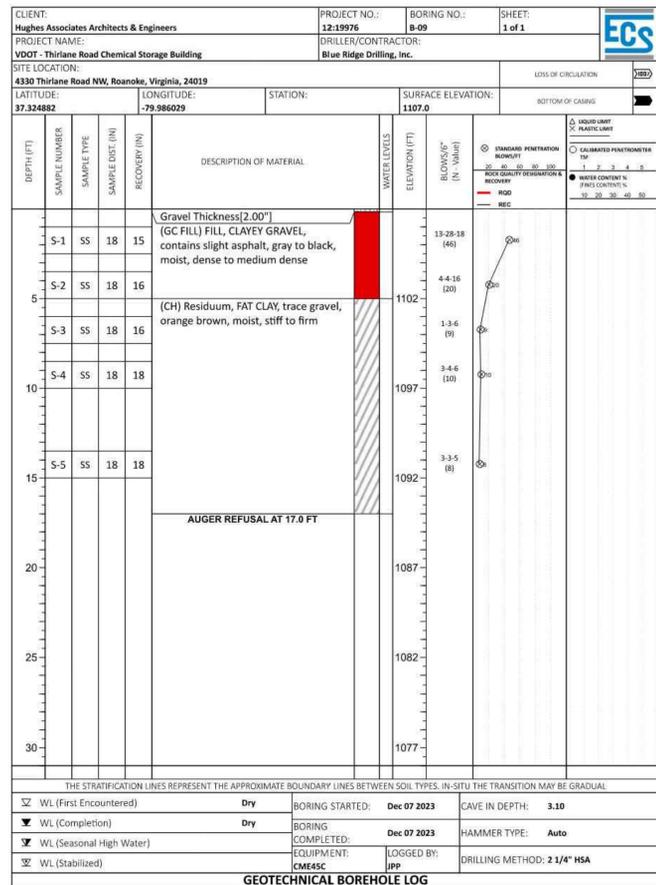
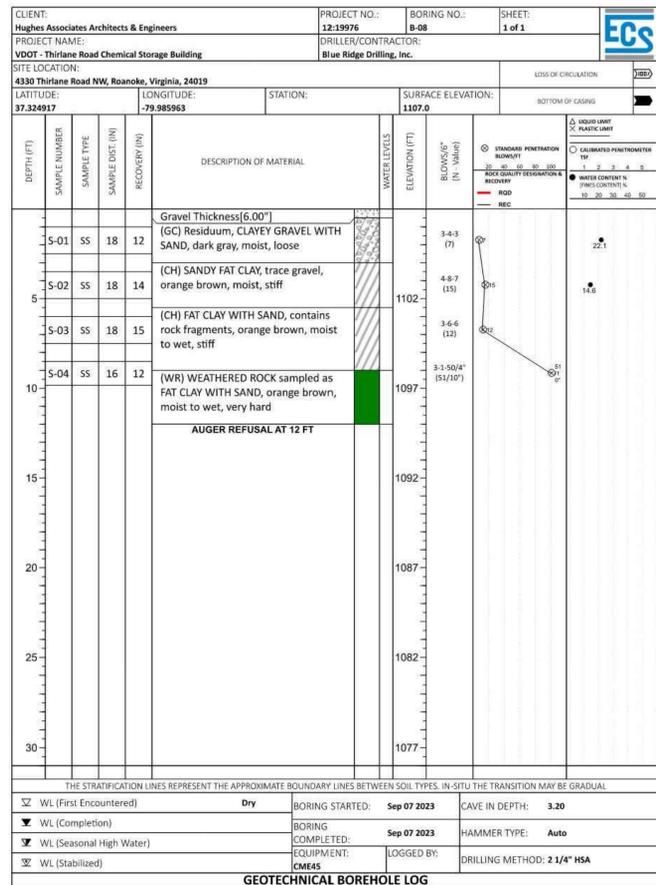
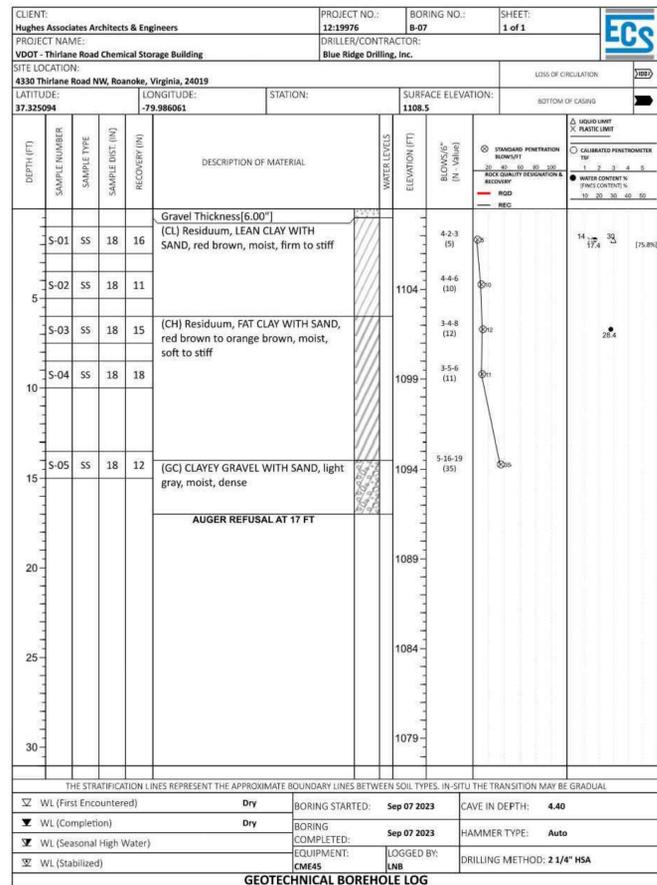
PROJECT CODE:  
 501-18130-077

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

COMMISSION No.  
 23027  
 SHEET  
 B-1

Drawing: 501-18130-077 - VDOT - Salem District Airport AHQ Chemical Storage Building - 05.0 Drawings - 02 AutoCAD Civil Site Plan - 12/06/2024 - 7/11/2024 12:28 PM  
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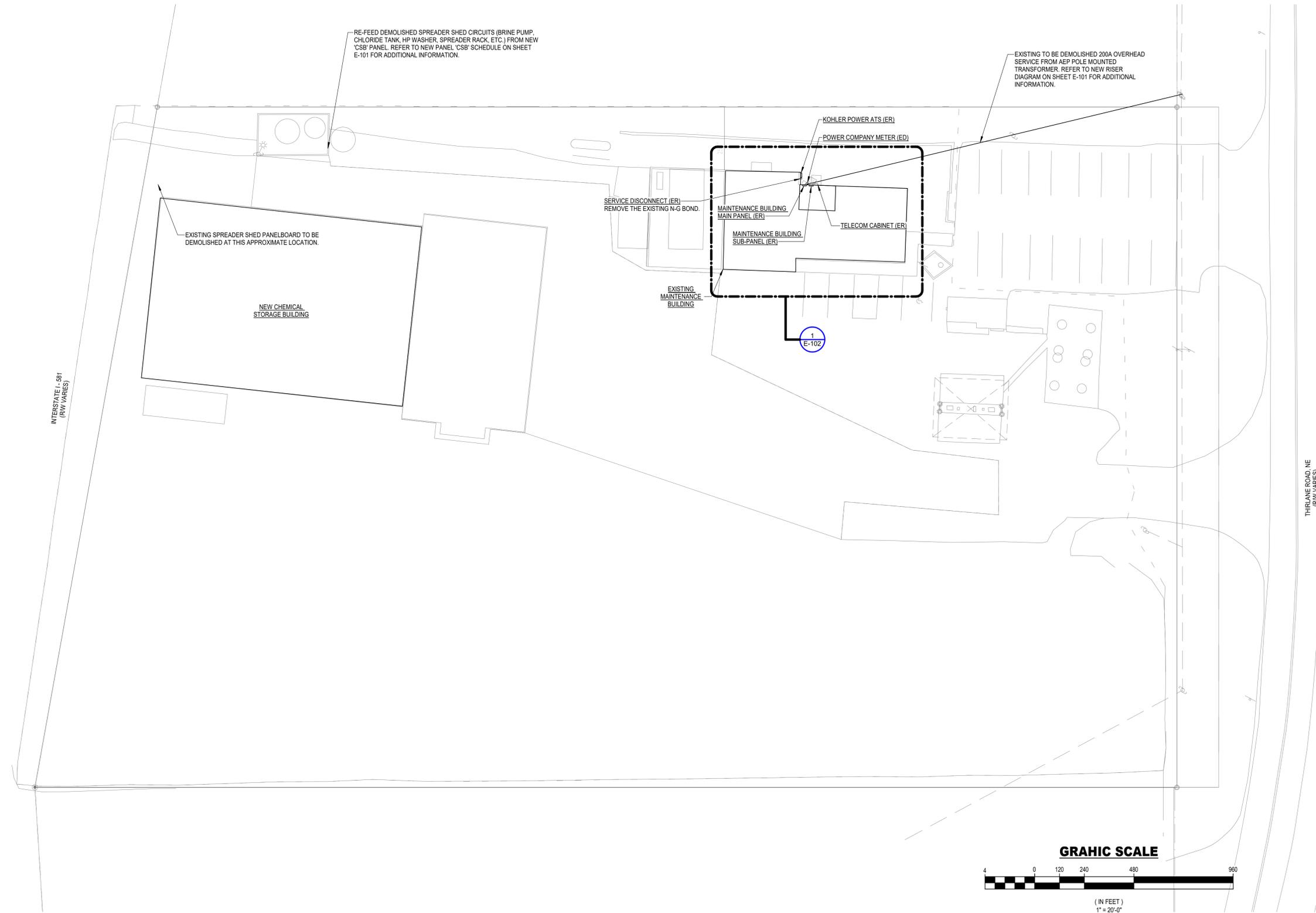
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CHECKED BY: JCB

SOIL BORING LOGS

PROJECT CODE:  
501-18130-077

12/06/2024  
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B-3



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DATE: FEB. 5, 2024

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CHECKED BY: SRL

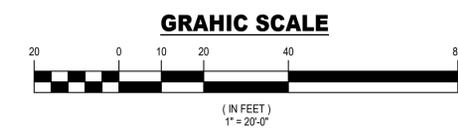
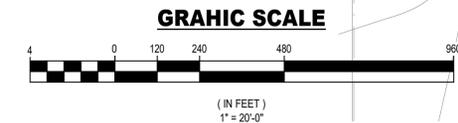
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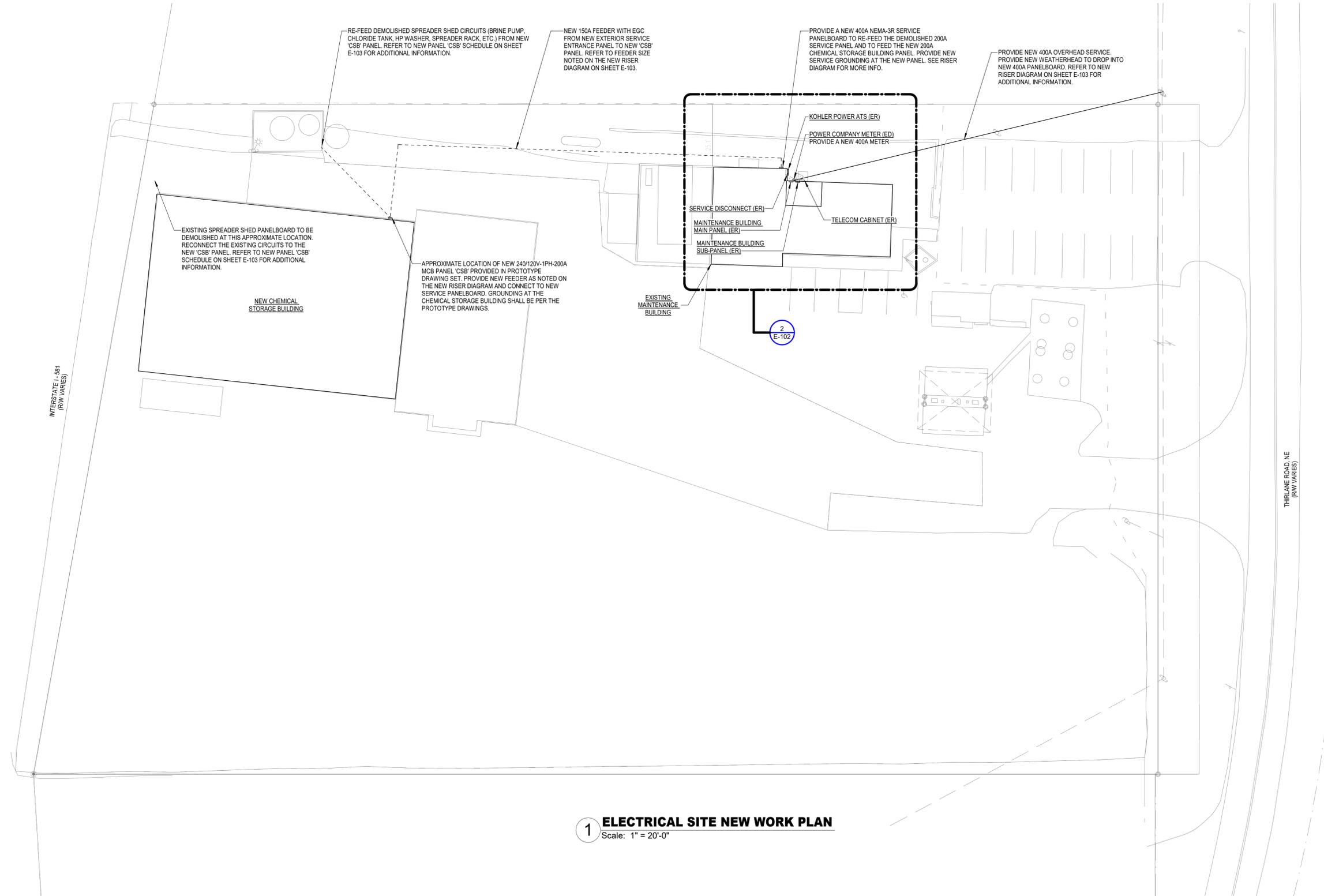
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501-18130-077

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

COMMISSION No.  
23027  
SHEET  
E-100

**1 ELECTRICAL SITE DEMOLITION PLAN**  
Scale: 1" = 20'-0"





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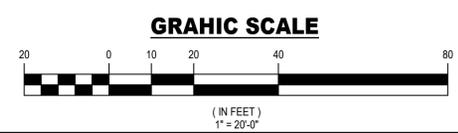
ELECTRICAL SITE NEW WORK PLAN

PROJECT CODE:  
501-18130-077

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12/06/2024  
JUSTIN T. OBENCHAIN  
Lic. No. 058765  
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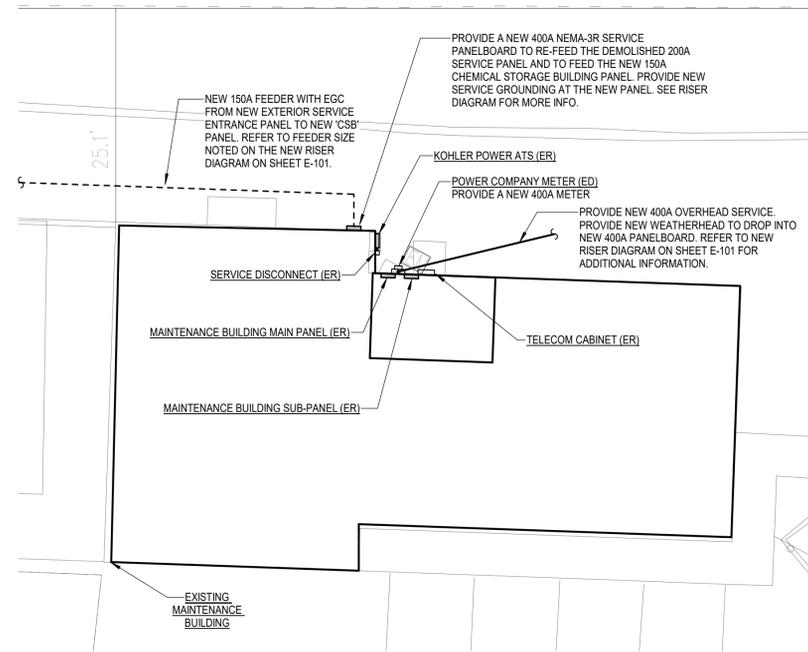
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23027  
SHEET  
E-101

**1 ELECTRICAL SITE NEW WORK PLAN**  
Scale: 1" = 20'-0"

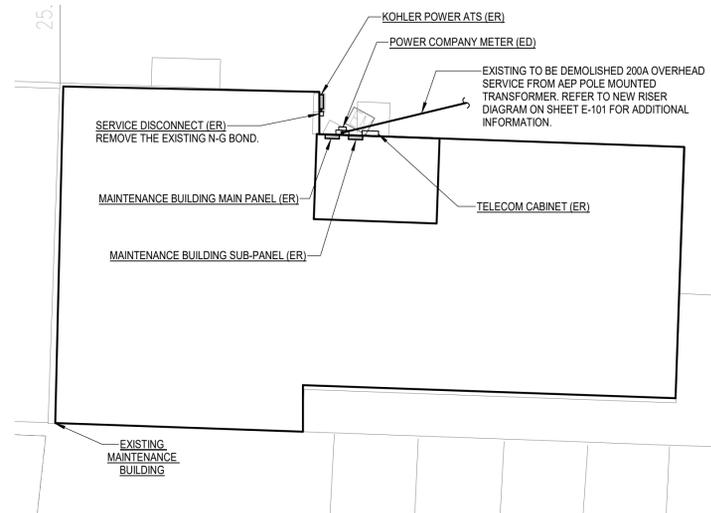


DATE: FEB. 5, 2024

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2 ENLARGED ELECTRICAL SITE NEW WORK PLAN  
Scale: 1" = 10'-0"



1 ENLARGED ELECTRICAL SITE DEMOLITION PLAN  
Scale: 1" = 10'-0"

GRAPHIC SCALE



(IN FEET)  
1" = 10'-0"

GRAPHIC SCALE



(IN FEET)  
1" = 10'-0"

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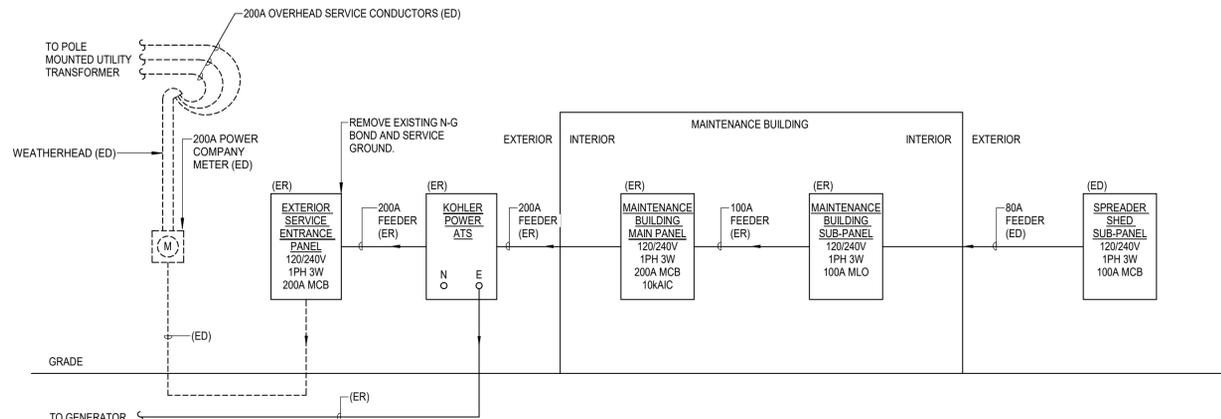
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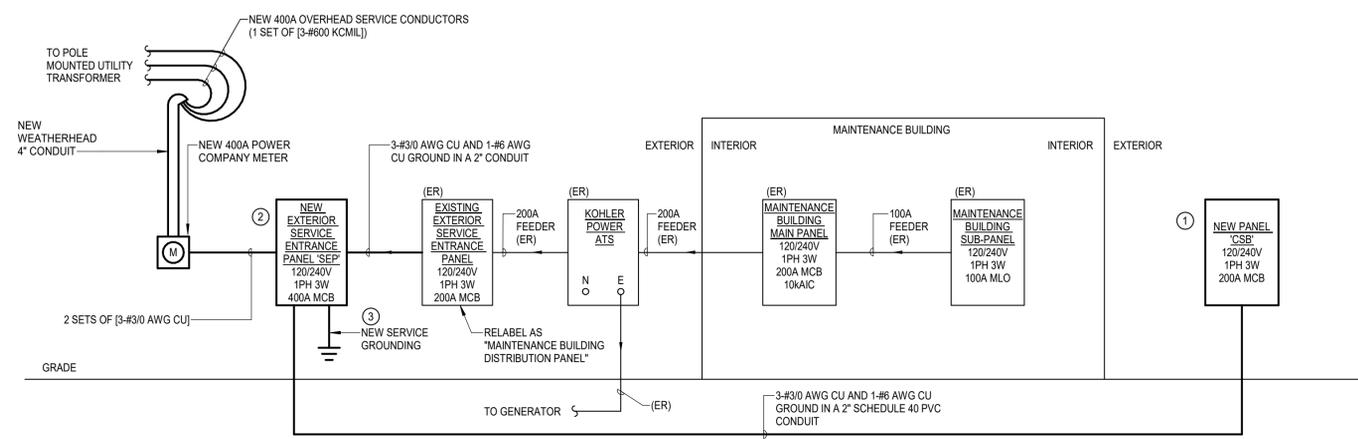
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23027  
SHEET  
E-102



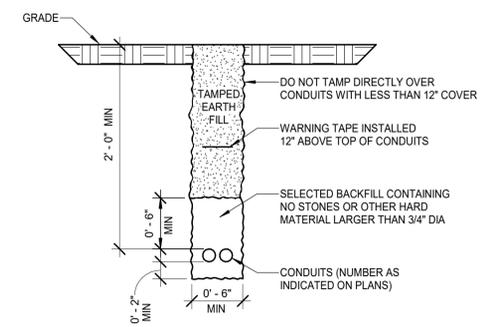
1 EXISTING RISER DIAGRAM  
Scale: NONE



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.



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: CSB																
Location: SEP				Volts: 120/240 Single				A.I.C. Rating: 10,000 (MIN.)								
Supply From: SEP				Phases: 1				Enclosure: Type 4X								
Mounting: SURFACE				Wires: 3				Mains: 200A MCB								
Phase in kVA																
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	RECEPTACLE CIRCUIT	2		
	3	INTERIOR LIGHTING	ER	ER	ER	20	1	0.8 / 0.2	1	20	ER	ER	RECEPTACLE CIRCUIT	4		
	5	INTERIOR LIGHTING	ER	ER	ER	20	1	0.8 / 0.5	1	20	ER	ER	LIGHTING CONTROL POWER	8		
	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	*RESERVED FOR SITE SPECIFIC...	ER	ER	ER	60	2	5.8 / 0.5	1	20	1"	1#12	2#12 EXISTING LOAD TITLED "RED"	16	SS,NB	
	17	*RESERVED FOR SITE SPECIFIC...	ER	ER	ER	60	2	5.8 / 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 / 0.5	1	20	1"	1#12	2#8 TANDUM SPREADER RACK	20	SS,NB	
SS,NB	21	HP WASHER	2#10	1#10	1"	30	2	2.2 / 2.9	1	20	1"	1#10	2#8	22	SS,NB	
	23	SPACE ONLY	--	--	--	1	--	2.2 / 0.0	1	--	--	--	SPACE ONLY	24	--	
	25	SPACE ONLY	--	--	--	1	--	0.0 / 0.0	1	--	--	--	SPACE ONLY	26	--	
	27	*RESERVED FOR SITE SPECIFIC...	--	--	--	2	50	0.0 / 0.1	2	50	ER	ER	TYPE 1 SPD	28		
	29	*RESERVED FOR SITE SPECIFIC...	--	--	--	2	50	0.0 / 0.1	2	50	ER	ER	TYPE 1 SPD	30		
<b>Total Load:</b>							16.4 kVA	16.9 kVA								
<b>Total Amps:</b>							137 A	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												
Motor		2.9 kVA	100.00%	2.9 kVA												
Receptacles		1.1 kVA	100.00%	1.1 kVA												
					<b>Total Conn. Load:</b> 72.3 kVA											
					<b>Total Est. Demand:</b> 73.7 kVA											
					<b>Total Conn. Current:</b> 301 A											
					<b>Total Est. Demand Current:</b> 307 A											
<b>Notes:</b>							<b>Abbreviations:</b>									
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.							G - PROVIDE GFCI CIRCUIT BREAKER 1-L - REFER TO ELECTRICAL RISER DIAGRAMS									

Branch Panel: SEP																
Location: SURFACE				Volts: 120/240 Single				A.I.C. Rating: 22,000								
Supply From: SEP				Phases: 1				Enclosure: Type 3R								
Mounting: SURFACE				Wires: 3				Mains: 400A MCB								
Phase in kVA																
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	2	16.4 / 19.5	2	200	2"	1#6	3#3/0	EXISTING SERVICE PANEL	2	SF
--	5	SPARE	--	--	--	20	2	0.0 / 0.0	2	20	--	--	SPARE	6	--	
--	7	SPARE	--	--	--	20	2	0.0 / 0.0	2	20	--	--	SPARE	10	--	
--	9	SPARE	--	--	--	20	2	0.0 / 0.0	2	20	--	--	SPARE	12	--	
--	11	SPARE	--	--	--	20	1	0.0 / 0.0	1	20	--	--	SPARE	14	--	
--	13	SPARE	--	--	--	20	1	0.0 / 0.0	1	20	--	--	SPARE	16	--	
--	15	SPARE	--	--	--	20	1	0.0 / 0.0	1	20	--	--	SPD BREAKER	18	--	
--	17	SPARE	--	--	--	20	1	0.0 / 0.0	1	20	--	--	SPD BREAKER	18	--	
<b>Total Load:</b>							35.9 kVA	36.4 kVA								
<b>Total Amps:</b>							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												
Motor		2.9 kVA	100.00%	2.9 kVA												
Receptacles		1.1 kVA	100.00%	1.1 kVA												
					<b>Total Conn. Load:</b> 72.3 kVA											
					<b>Total Est. Demand:</b> 73.7 kVA											
					<b>Total Conn. Current:</b> 301 A											
					<b>Total Est. Demand Current:</b> 307 A											
<b>Notes:</b>							<b>Abbreviations:</b>									
1. PROVIDE PANEL WITH INTEGRAL SPD. PROVIDE SPD BREAKER AND WIRE SIZED AS RECOMMENDED BY SPD MANUFACTURER.							G - PROVIDE GFCI CIRCUIT BREAKER 1-L - REFER TO ELECTRICAL RISER DIAGRAMS									

DATE: FEB. 5, 2024

REVISIONS

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HUGHES ASSOCIATES ARCHITECTS & ENGINEERS  
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA 24018  
www.hughesaec.com

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

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

COMMISSION No.  
23027  
SHEET  
E-103

DATE: FEB. 5, 2024

REVISIONS	
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ARCHITECTS & ENGINEERS  
3800 ELECTRIC ROAD | STE 300 | ROANOKE, VIRGINIA 24018  
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540.342.4002

**VDOT** Virginia Department of Transportation  
CHEMICAL STORAGE BUILDING  
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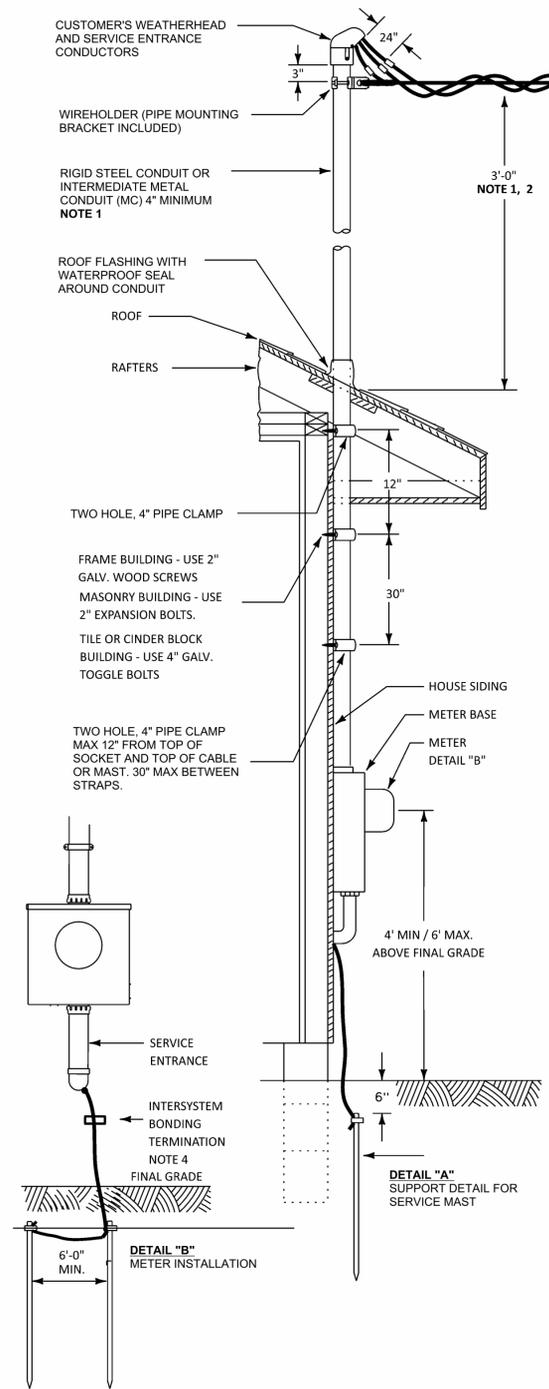
DRAWN BY: AMU  
CHECKED BY: SRL

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



**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 ACCESSIBLE 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:**
- (a) DESIGNATING THE LOCATION OF THE SERVICE MAST AND THE METER.
  - (b) PROVIDING AND INSTALLING THE OVERHEAD SERVICE DROP. THE SERVICE DROP TENSION IS TO BE LIMITED TO 500 LBS. UNDER LOADED CONDITIONS.
  - (c) PROVIDING THE METER BASE TO THE CUSTOMER WHERE REQUIRED.
  - (d) INSTALLING AND REMOVING THE METER.

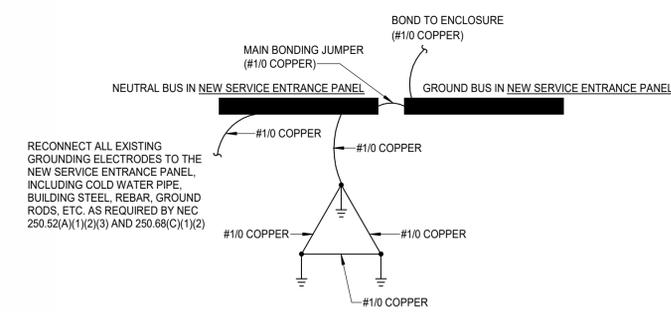
- GENERAL CONSTRUCTION NOTES:**
1. FOR INSTALLATIONS ABOVE ROOF, MAST SHALL BE GALVANIZED RIGID CONDUIT OR IMC. MINIMUM 2" FOR SERVICES UP TO 200 AMPS AND 3" FOR 320 AMPS. ONLY POWER SERVICE CONDUCTORS ARE ALLOWED TO CONTACT THE SERVICE MAST, NEC (230-28).
  2. MINIMUM HEIGHT OF 18", MAXIMUM HEIGHT OF 36" WITHOUT GUYING.
  3. 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.
  4. 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)**

1. ALL CONDUCTORS SHALL BE COPPER, UNLESS OTHERWISE INDICATED.
2. 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.
3. 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.
4. COORDINATE WITH OTHER DISCIPLINES IN THE FIELD TO ENSURE THAT THE INTEGRITY OF FIRE RATED CONSTRUCTION IS PRESERVED WHERE PENETRATING RATED WALLS, FLOORS AND CEILING.
5. EXPOSED CONDUIT AND BOXES MAY BE USED IN UNFINISHED AREAS (MECHANICAL ROOMS, ELECTRICAL ROOMS, TELECOMMUNICATIONS ROOMS, ETC.).
6. 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.
7. 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.
8. 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.
9. LOAD SIDE CONDUCTOR AND CONDUIT SIZES FROM DISCONNECT SWITCHES, STARTERS AND VFDS TO EQUIPMENT SHALL BE THE SAME AS LINE SIDE CONDUCTORS AND CONDUIT.
10. CAREFULLY COORDINATE ALL ELECTRICAL EQUIPMENT LOCATIONS WITH DUCTWORK, PIPING AND MECHANICAL EQUIPMENT. MAINTAIN ALL CLEARANCES AND SPACES REQUIRED BY THE NEC.
11. 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.
12. PROVIDE TYPED AS-BUILT PANEL SCHEDULES. HANDWRITTEN PANEL SCHEDULES WILL NOT BE ACCEPTED.
13. 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.
14. 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:**

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



**1 GROUNDING SCHEMATIC**  
Scale: NONE



# PROTOTYPE CHEMICAL STORAGE BUILDINGS 3,000 TON

PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

FOR CONSTRUCTION

AUGUST 4, 2022

REV 1 FEBRUARY 24, 2023

### 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 NOTES:

- 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.
- 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.
- 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.
- CONTRACTOR SHALL COORDINATE THE WORK WITH EXISTING CONDITIONS, INCLUDING BEAMS, COLUMNS, SITE FEATURES, AND OTHER OBSTRUCTIONS, WHETHER OR NOT SUCH IS SHOWN ON DRAWINGS.
- 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.
- CONTRACTOR SHALL COORDINATE THE WORK BETWEEN ALL TRADES. MATERIAL LOCATIONS SHALL BE COORDINATED BETWEEN CIVIL, ARCHITECTURAL, STRUCTURAL, ELECTRICAL, AND DEMOLITION PLANS TO AVOID CONFLICTS.
- 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.
- ALL MATERIAL SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, MAINTAINING ALL REQUIRED CLEARANCES AND WITH ALL COMPONENTS ACCESSIBLE AND SERVICEABLE.
- CONTRACTOR SHALL KEEP PUBLIC AREAS FREE OF TRASH AND CONSTRUCTION DEBRIS AND CLEAN ENTIRE WORK AREA ON A DAILY BASIS.
- 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.
- 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.
- 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.
- ANY ROAD/PARKING LOT CLOSURE SHALL BE DONE IN ACCORDANCE WITH THE LATEST VERSION OF THE VIRGINIA WORK AREA PROTECTION MANUAL.
- 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:

- 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.
- 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.
- 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
- DESIGN SOIL BEARING CAPACITY: REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR DESIGN SOIL BEARING CAPACITY.
- 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.
- 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.
- IF THE SITE IS LOCATED WITHIN A FLOOD ZONE, A STRUCTURAL DESIGN SHALL BE PREPARED BY OTHERS FOR SITE SPECIFIC CONDITIONS.
- 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.

### GENERAL INFORMATION:

- PROJECT INFORMATION:**  
AGENCY: VIRGINIA DEPARTMENT OF TRANSPORTATION  
PROJECT TITLE: PROTOTYPE CHEMICAL STORAGE BUILDINGS 3,000 TON
- BUILDING INFORMATION:**  
WORK PERMITTED: CONSTRUCTION OF A CHEMICAL STORAGE BUILDING  
PURPOSE/OCCUPANCY: SALT AND ABRASIVE STORAGE  
USE GROUP CLASSIFICATION: (S-2) LOW HAZARD STORAGE OCCUPANCY  
TYPE OF CONSTRUCTION: IIB
- 65'-0"x116'-0" BUILDING 1**  
OCCUPANT LOAD OF BUILDING: 15; USING 500 GSF/PERSON FOR WAREHOUSE PER VCC TABLE 1004.5 (NOT TYPICALLY OCCUPIED)  
BUILDING HEIGHT (FEET): 40'-0"± ABOVE GRADE; 55' ALLOWED PER VCC TABLE 504.3  
NUMBER OF STORIES: 1; 3 ALLOWED PER VCC TABLE 504.4  
BUILDING AREA (GSF) - CPSM: 7,540 GROSS SQUARE FEET PER CPSM 5.2.9.2  
BUILDING AREA (SF) - VCC: 7,207 SQUARE FEET; 26,000 SF ALLOWED PER VCC TABLE 506.2  
# OF EXITS: 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: 15; USING 500 GSF/PERSON FOR WAREHOUSE PER VCC TABLE 1004.5 (NOT TYPICALLY OCCUPIED)  
BUILDING HEIGHT (FEET): 42'-0"± ABOVE GRADE; 55' ALLOWED PER VCC TABLE 504.3  
NUMBER OF STORIES: 1; 3 ALLOWED PER VCC TABLE 504.4  
BUILDING AREA (GSF) - CPSM: 7,738 GROSS SQUARE FEET PER CPSM 5.2.9.2  
BUILDING AREA (SF) - VCC: 7,420 SQUARE FEET; 26,000 SF ALLOWED PER VCC TABLE 506.2  
# OF EXITS: 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: 16; USING 500 GSF/PERSON FOR WAREHOUSE PER VCC TABLE 1004.5 (NOT TYPICALLY OCCUPIED)  
BUILDING HEIGHT (FEET): 45'-0"± ABOVE GRADE; 55' ALLOWED PER VCC TABLE 504.3  
NUMBER OF STORIES: 1; 3 ALLOWED PER VCC TABLE 504.4  
BUILDING AREA (GSF) - CPSM: 7,885 GROSS SQUARE FEET PER CPSM 5.2.9.2  
BUILDING AREA (SF) - VCC: 7,583 SQUARE FEET; 26,000 SF ALLOWED PER VCC TABLE 506.2  
# OF EXITS: 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:

- 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

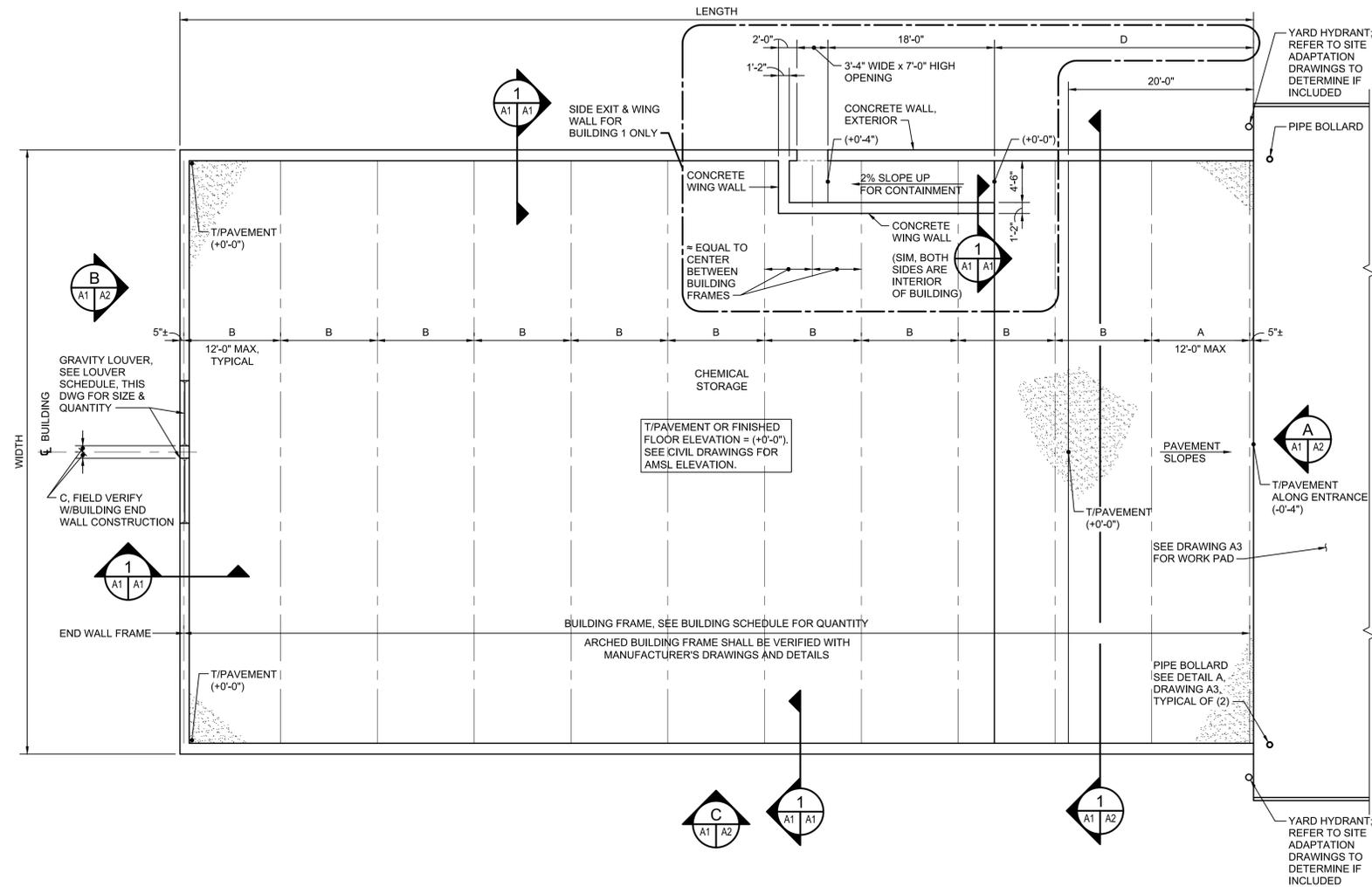
Full Scale Verification

0" 1"

Drawing No.:

# T1

3,000 TON BUILDING



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

- 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.

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



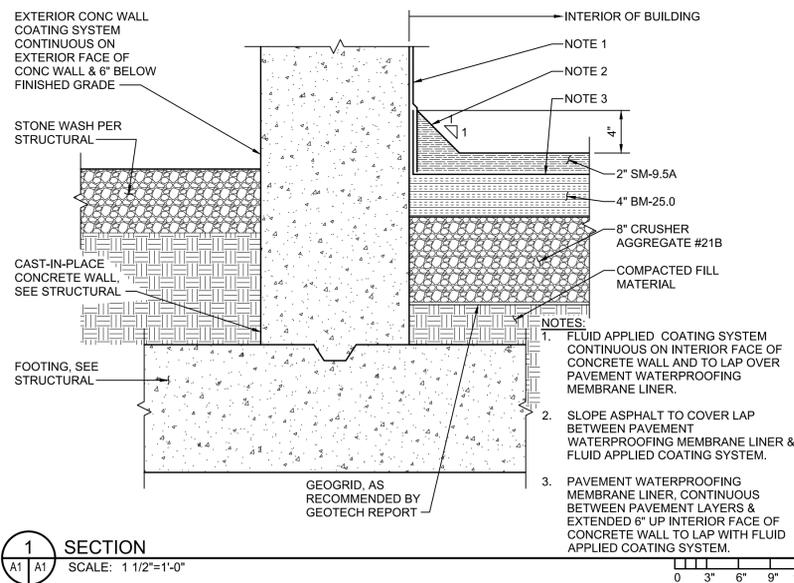
VIRGINIA DEPARTMENT OF TRANSPORTATION  
 PROTOTYPE CHEMICAL STORAGE BUILDINGS  
 3,000 TON  
 PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

**ABBREVIATIONS:**

AMSL	ABOVE MEAN SEA LEVEL
CL	CENTERLINE
CONC	CONCRETE
CONT	CONTINUOUS
°	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/	TYPICAL
UN	UNLESS OTHERWISE NOTED
W/	WITH

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 MAKE UP THE OVERALL LOUVER SIZE INDICATED.



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

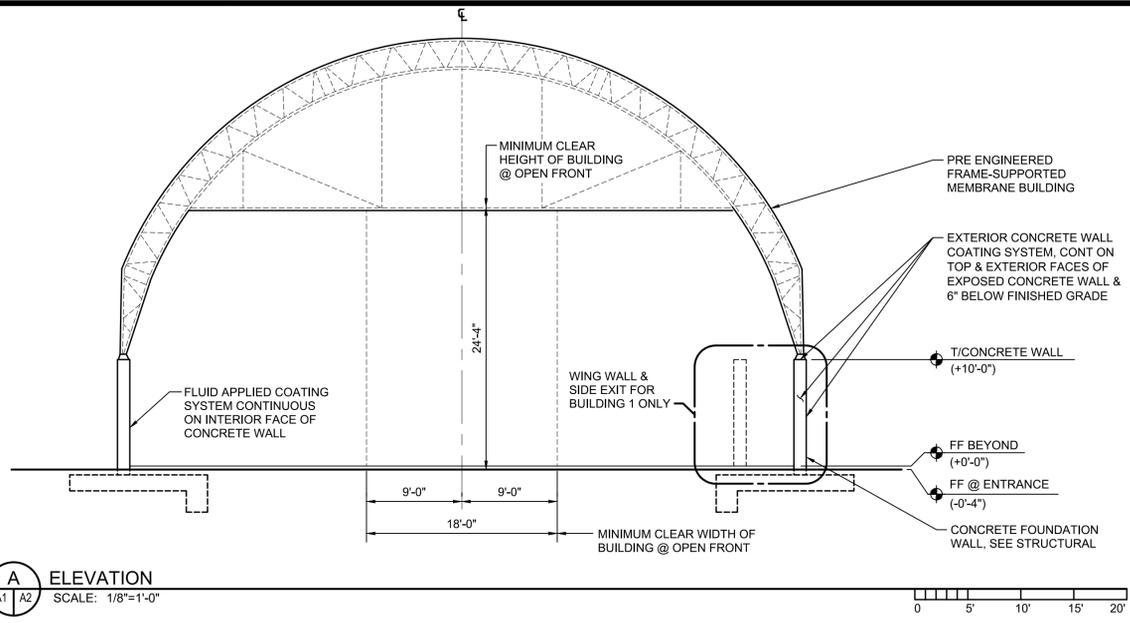
FLOOR PLAN, SCHEDULES, AND SECTION

Full Scale Verification  
 0' 1'

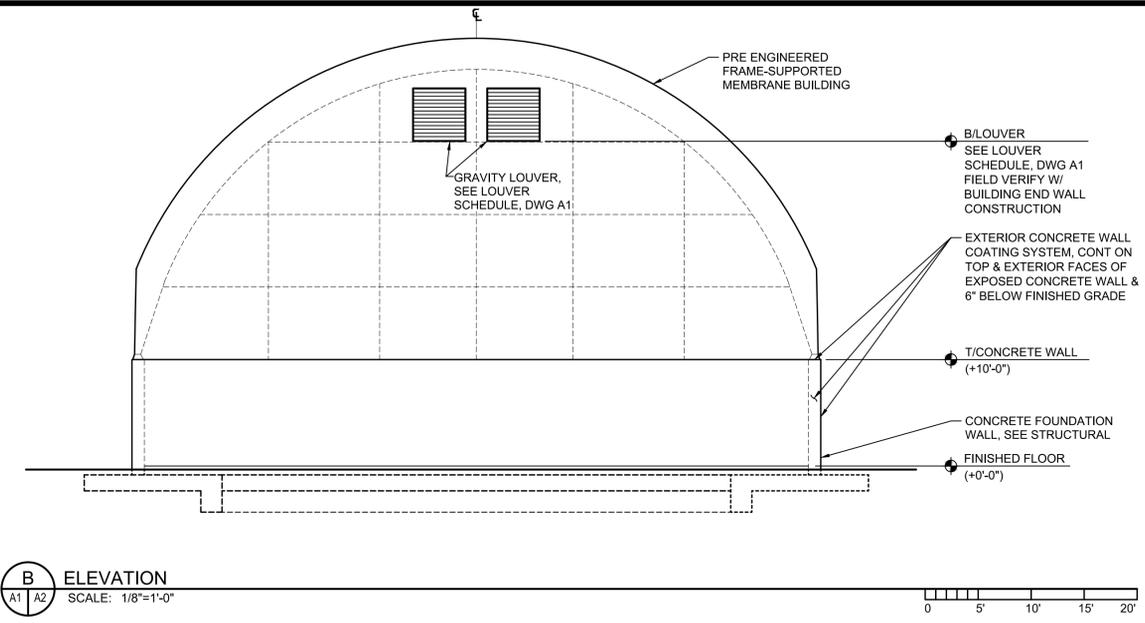
Drawing No. **A1**

3,000 TON BUILDING

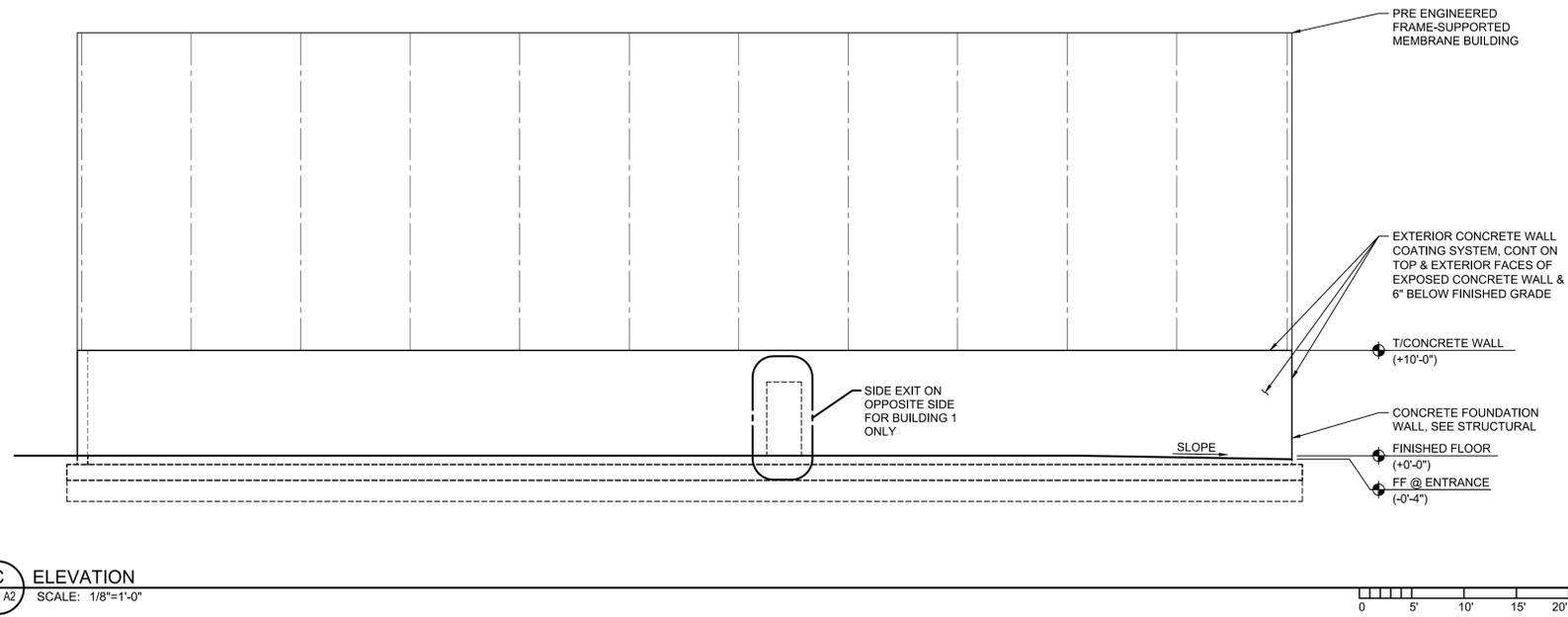
PROJECT NO. 21059  
 DATE: 2022-08-04



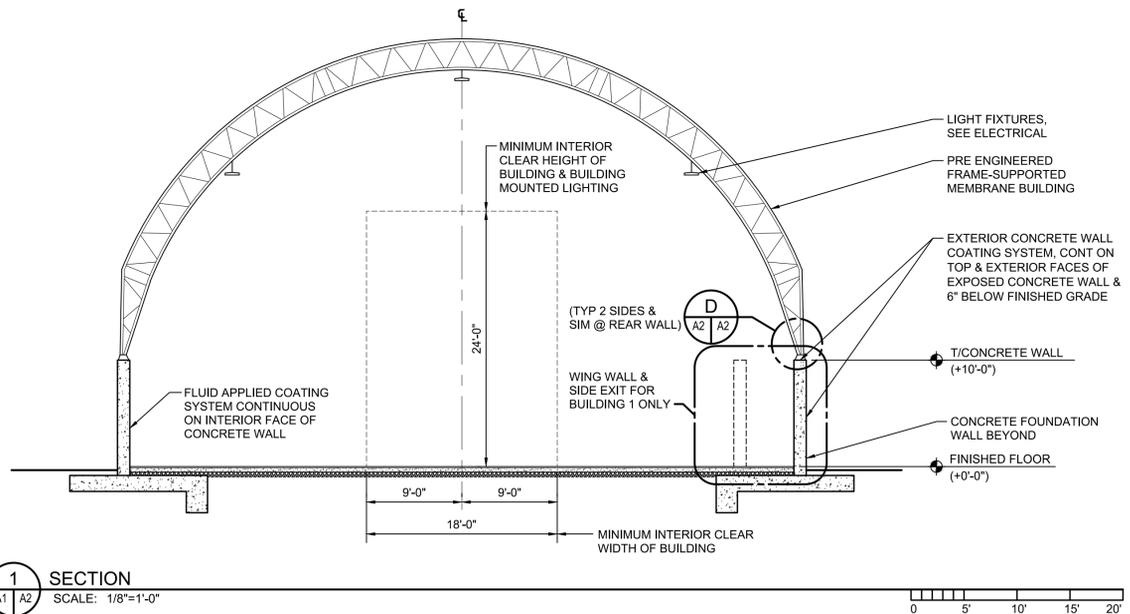
**A** ELEVATION  
A1 A2 SCALE: 1/8"=1'-0"



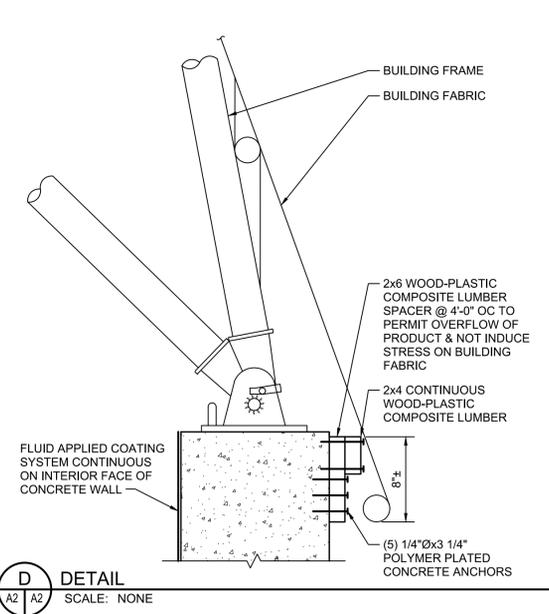
**B** ELEVATION  
A1 A2 SCALE: 1/8"=1'-0"



**C** ELEVATION  
A1 A2 SCALE: 1/8"=1'-0"



**1** SECTION  
A1 A2 SCALE: 1/8"=1'-0"



**D** DETAIL  
A2 A2 SCALE: NONE



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

BUILDING ELEVATIONS  
AND SECTION  
PROJECT NO. 21059  
DATE: 2022-08-04

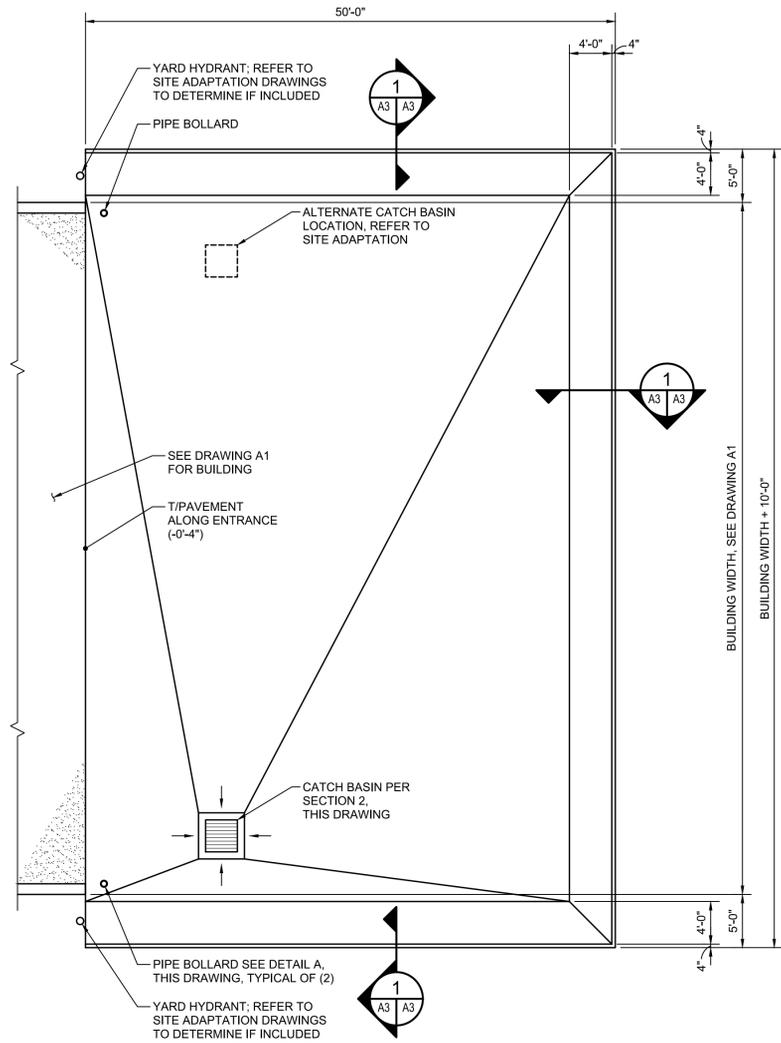
Full Scale Verification  
0" 1"  
Drawing No.

**A2**  
3,000 TON BUILDING

NO.	BY	REVISIONS	DATE

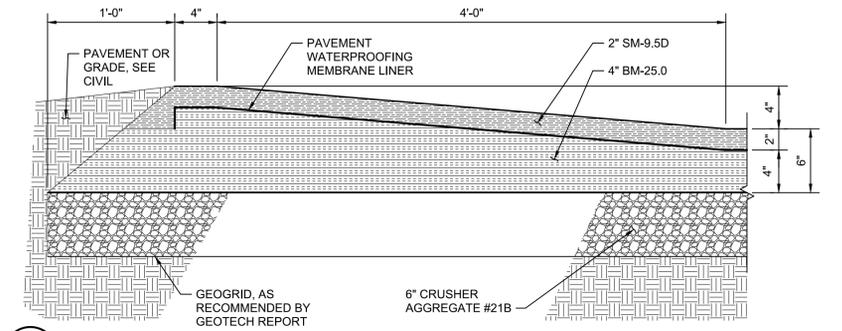
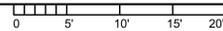
**GENERAL NOTES:**

- 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.



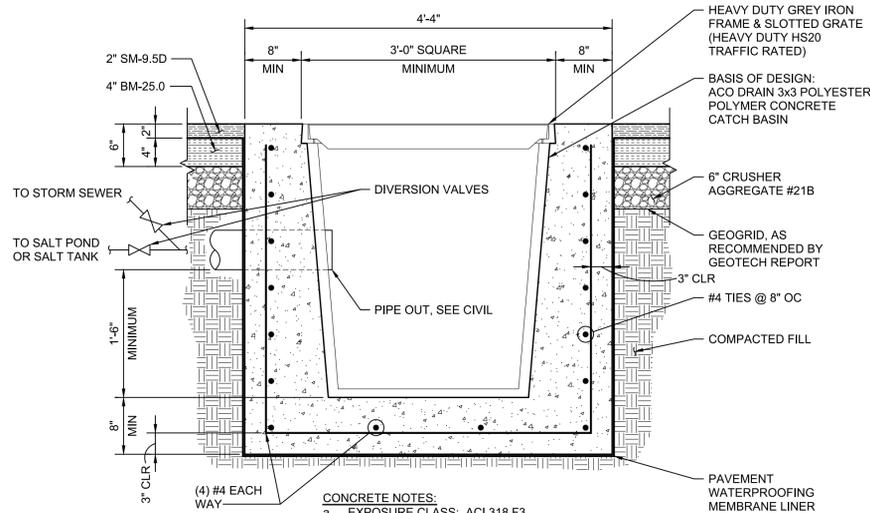
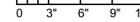
**WORK PAD PLAN**

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



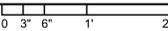
**SECTION 1**

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

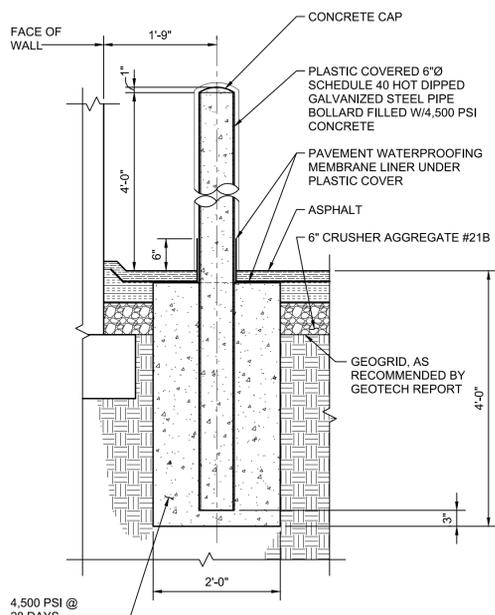


**SECTION 2**

SCALE: 1"=1'-0"

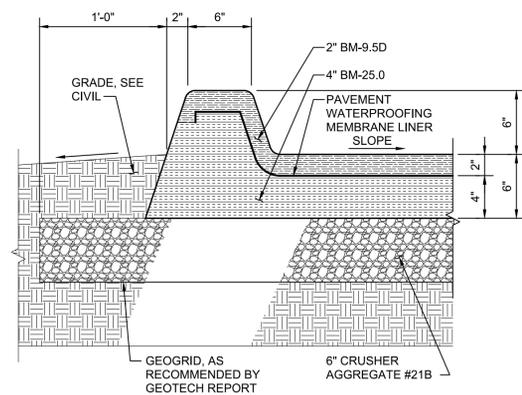


- CONCRETE NOTES:**
- EXPOSURE CLASS: ACI 318 F3
  - MINIMUM COMPRESSIVE STRENGTH: 5,000 PSI AT 28 DAYS
  - MAXIMUM WATER-CEMENTITIOUS MATERIAL RATIO: 0.40
  - SLUMP LIMIT: 3" +/- 1" (A MAXIMUM OF 8" IS PERMITTED WITH A TYPE I OR II PLASTICIZING ADMIXTURE CONFORMING TO ASTM C1017 OR A TYPE F OR G HIGH-RANGE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



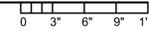
**DETAIL A**

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



**CURB DETAIL**

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



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



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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"

Drawing No.

**A3**

3,000 TON BUILDING

NO.	BY	REVISIONS	DATE

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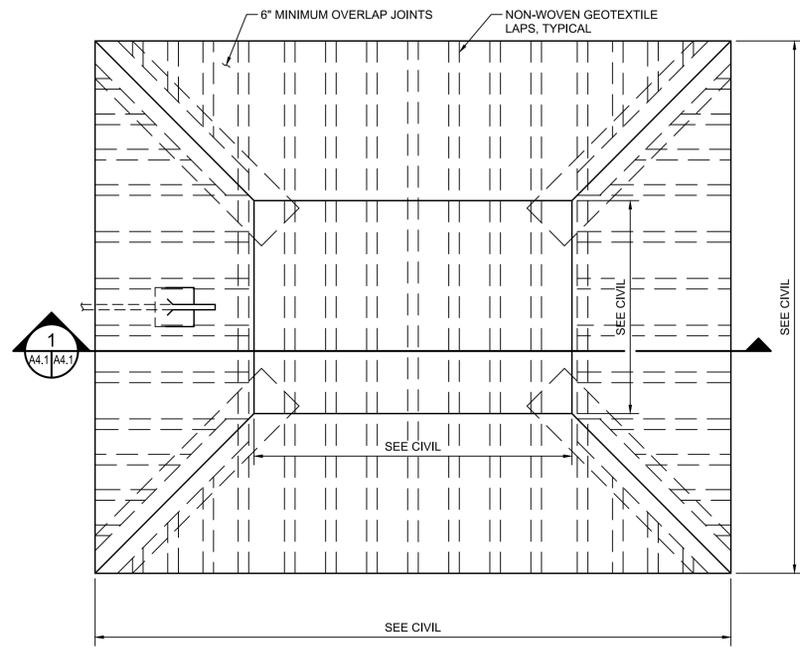
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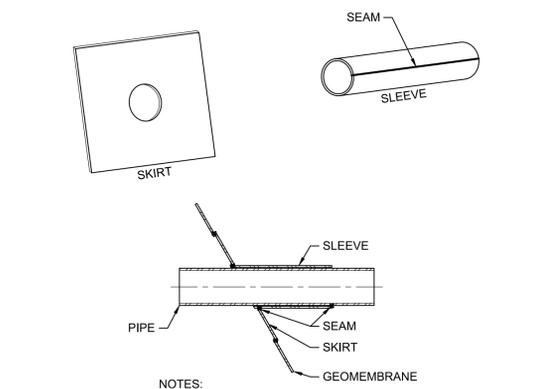
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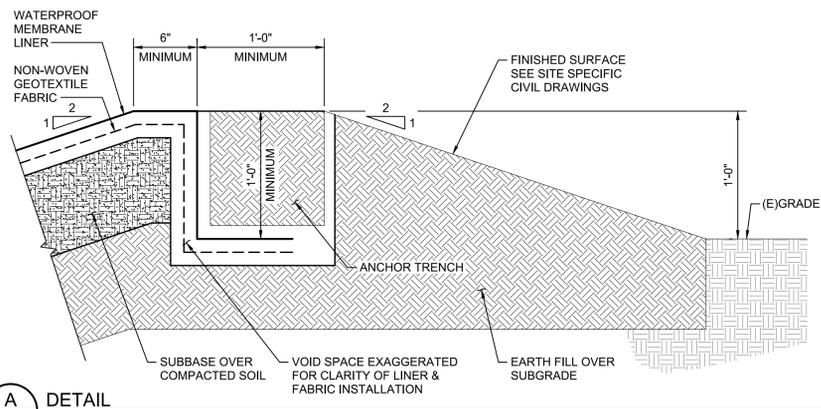
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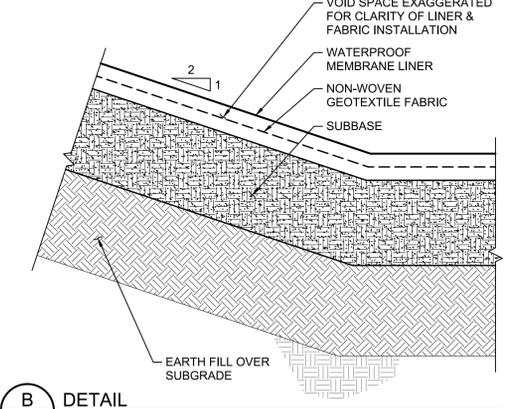
**SALT POND PLAN**  
SCALE: NONE



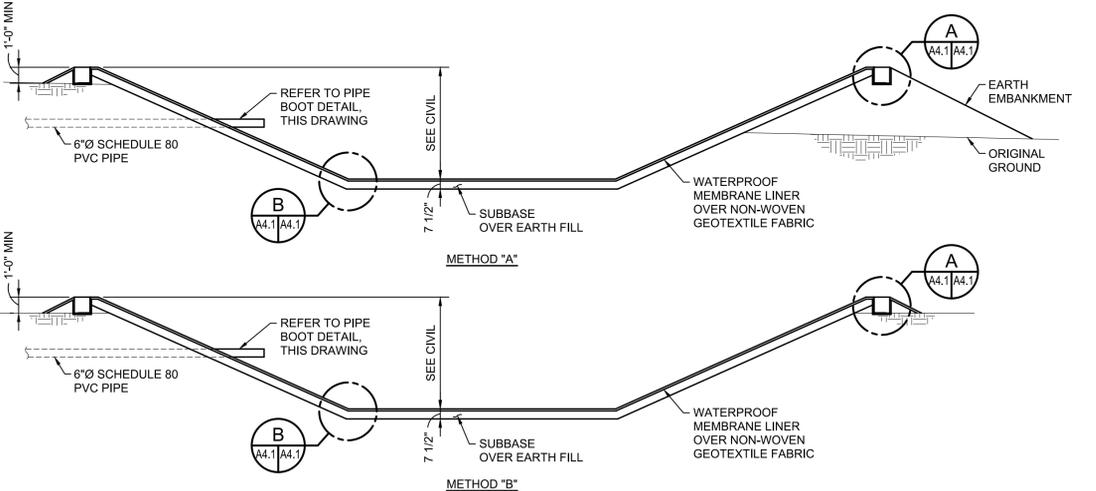
**PIPE BOOT DETAIL**  
SCALE: NONE



**DETAIL A**  
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.
      - TENSILE STRENGTH: 157 LBF; ASTM D4632.
      - SEW 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:		
		HDPE TEXTURED (60 MILS)	LLDPE TEXTURED (30 MILS)	
THICKNESS (MIN AVE.) - MILS	-LOWEST INDIVIDUAL FOR 8 OUT OF 10 VALUES - %	NOM. -5%	NOM. -5%	
	-LOWEST INDIVIDUAL FOR ANY OF THE 10 VALUES - %	-10	-10	
	ASPERITY HEIGHT (MIN. AVE.) - MILS	16	16	
	FORMULATED DENSITY (G/CC)	0.94	0.939	
TENSILE PROPERTIES (BOTH MACHINE AND CROSS MACHINE DIRECTION)	YIELD STRENGTH (LB/IN)	126	-	
	BREAK STRENGTH (LB/IN)	90	45	
	YIELD ELONGATION (%)	12	-	
	BREAK ELONGATION (%)	100	250	
	MAX. 2% MODULUS (LB/IN)	D5323	-	1800
	MIN. AVE. TEAR RESISTANCE (LB)	D1004	42	16
	MIN. AVE. PUNCTURE RESISTANCE (LB)	D4833	90	30
OXIDATIVE INDUCTION TIME (MIN. AVE.)	MIN. AXI-SYMMETRIC BREAK RESISTANCE STRAIN (%)	D5617	500	-
	STRESS CRACK RESISTANCE (HR.)	D5397 (APP.)	500	-
	CARBON BLACK CONTENT (%)	D4218	2 TO 3	2 TO 3
	STANDARD	D8117	100	100
	HIGH PRESSURE	D5885	400	400
OXIDATIVE INDUCTION TIME @85° C (MIN. AVE.)	STANDARD (% RETAINED AFTER 90 DAYS)	D8117	55	35
	HIGH PRESSURE (% RETAINED AFTER 90 DAYS)	D5885	80	60
UV RESISTANCE	HIGH PRESSURE OIT (MIN. AVE.) % RETAINED AFTER 1600 HRS	D5885	50	35
	SHEAR STRENGTH (LB/IN)		120	45
HOT WEDGE SEAMS *	SHEAR ELONGATION AT BREAK (%)		50	50
	PEEL STRENGTH (LB/IN)		91	38
	PEEL SEPARATION (%)		25	25
	SHEAR STRENGTH (LB/IN)	D6392	120	45
EXTRUSION FILLET SEAMS *	SHEAR ELONGATION AT BREAK (%)		50	50
	PEEL STRENGTH (LB/IN)		78	34
	PEEL SEPARATION (%)		25	25



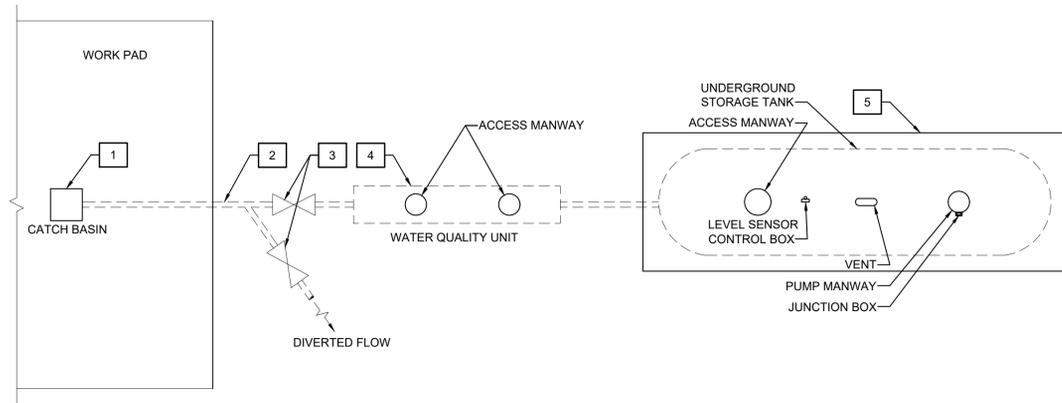
VIRGINIA DEPARTMENT OF TRANSPORTATION  
PROTOTYPE CHEMICAL STORAGE BUILDINGS  
3,000 TON  
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

SALT POND PLAN,  
SECTIONS, AND DETAILS

Full Scale Verification  
0" 1"  
Drawing No.

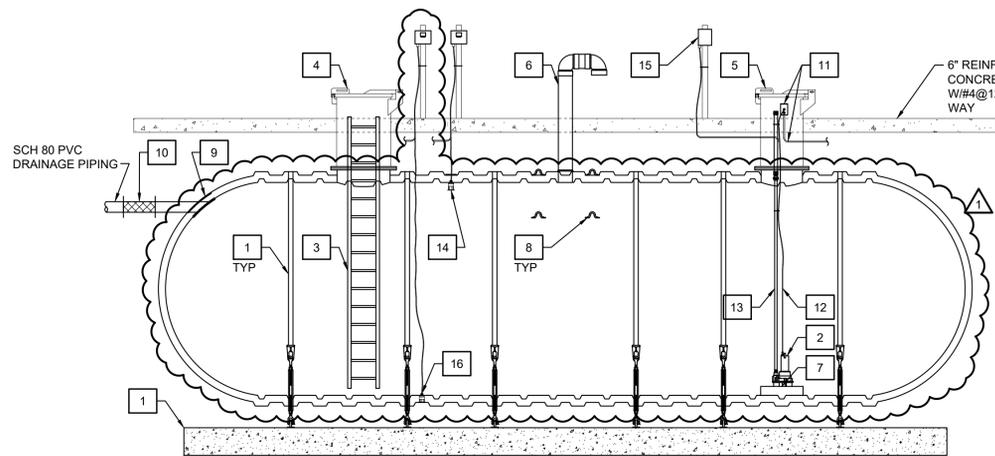
**A4.1**  
3,000 TON BUILDING

NO.	BY	REVISIONS	DATE



**RUNOFF COLLECTION SCHEMATIC**

SCALE: NONE

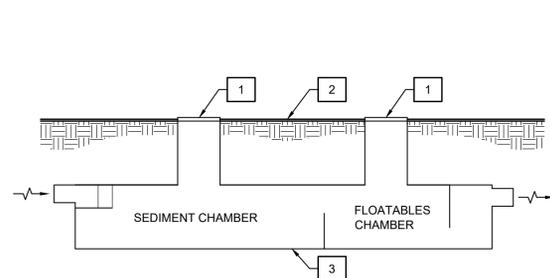


**CONCRETE SLAB NOTES:**

- a. EXPOSURE CLASS: ACI 318 F3
- b. MINIMUM COMPRESSIVE STRENGTH: 5,000 PSI AT 28 DAYS
- c. MAXIMUM WATER-CEMENTITIOUS MATERIAL RATIO: 0.40
- d. 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)
- e. AIR CONTENT: 6% (+/- 1.5%)
- f. REINFORCING: GRADE 60, EPOXY COATED
- g. PLACE REINFORCING 2" CLEAR BELOW TOP OF SLAB

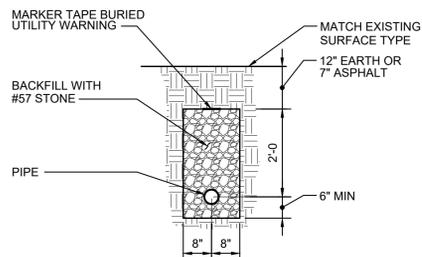
**UNDERGROUND STORAGE TANK**

SCALE: NONE



**WATER QUALITY UNIT**

SCALE: NONE



**PIPE BEDDING DETAIL**

SCALE: NONE

**CONSTRUCTION NOTES:**

**XX RUNOFF COLLECTION SCHEMATIC:**

1. REFER TO DRAWING A2 FOR CATCH BASIN.
2. UNDERGROUND DRAINAGE PIPE SHALL BE SCH 80 PVC, MIN 6" DIAMETER. INCREASE PIPE DIAMETER AS REQUIRED TO ACCOMMODATE DRAINAGE AT SPECIFIC SITE.
3. REFER TO DRAWING A3 FOR WORKPAD DIVERSION VALVES.
4. 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.
5. 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:**

1. PROVIDE DEADMAN ANCHORS AND ANCHOR STRAPS PER TANK MANUFACTURER'S DESIGN AND INSTRUCTIONS.
2. PROVIDE COMPLETE PUMPING STATION INSIDE TANK WITH TSURUMI VANCS 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.
3. PROVIDE 16" WIDE FIBERGLASS LADDER FROM TANK BOTTOM TO GRADE. ATTACH LADDER TO FACTORY-INSTALLED FLANGES WITH STAINLESS STEEL FASTENERS.
4. PROVIDE 30" DIAMETER MANWAY WITH HINGED, LOCKABLE COVER. MANWAY SHALL PROTRUDE ABOVE GRADE WITH SUFFICIENT CLEARANCE TO OPERATE LOCKING MECHANISM.
5. 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.
6. PROVIDE 8" DIAMETER PVC VENT PIPE AND HOOD WITH TERMINATION AT 24" ABOVE SLAB. PROVIDE STAINLESS STEEL INSECT SCREEN.
7. PROVIDE FACTORY-MOUNTED 24"x24" FIBERGLASS PUMP PLATFORM.
8. PROVIDE FACTORY-MOUNTED LIFTING LUGS WITH A MINIMUM CAPACITY OF TWICE THE WEIGHT OF EMPTY TANK.
9. 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.
10. PROVIDE STAINLESS STEEL AND EDPM FLEXIBLE COUPLING.
11. PROVIDE SCH 80 PVC CONDUIT FOR PUMP POWER SUPPLY. PROVIDE NEMA WEATHER-TIGHT JUNCTION BOX MOUNTED ON MANWAY. SEAL OPENINGS IN MANWAY WATER-TIGHT.
12. 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.
13. 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.

14. 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.
15. 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.
16. 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:**

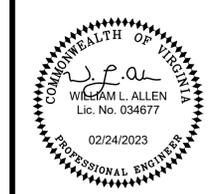
1. PROVIDE 24" NYLOPLAST H-25 SOLID MANWAY COVER, OR EQUAL.
2. FOLLOW MANUFACTURER RECOMMENDATIONS FOR INSTALLATION, BACKFILL, AND ANY REQUIRED PROTECTIVE PAVEMENT.
3. WATER QUALITY UNIT SHALL BE HIGH-DENSITY POLYETHYLENE WITH SMOOTH INTERIOR AND CORRUGATED EXTERIOR. MEETING REQUIREMENTS OF ASTM F2737. 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:**

1. 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.
2. 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:**

1. 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.
2. THE TANK, MANWAYS, LADDERS, STILLWAYS, AND COVERS SHALL BE FULLY COATED TO PROTECT THEM FROM CALCIUM CHLORIDE, SODIUM CHLORIDE, AND MAGNESIUM CHLORIDE.
3. ALL ATTACHMENT FLANGES, OPENINGS, AND PUMP STAND SHALL BE INSTALLED BY THE TANK MANUFACTURER AND BE NON-CORROSIVE.
4. COAT ALL THREADS WITH PIPE SEALANT/LUBRICANT PRIOR TO INSTALLATION.
5. 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.
6. 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".



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

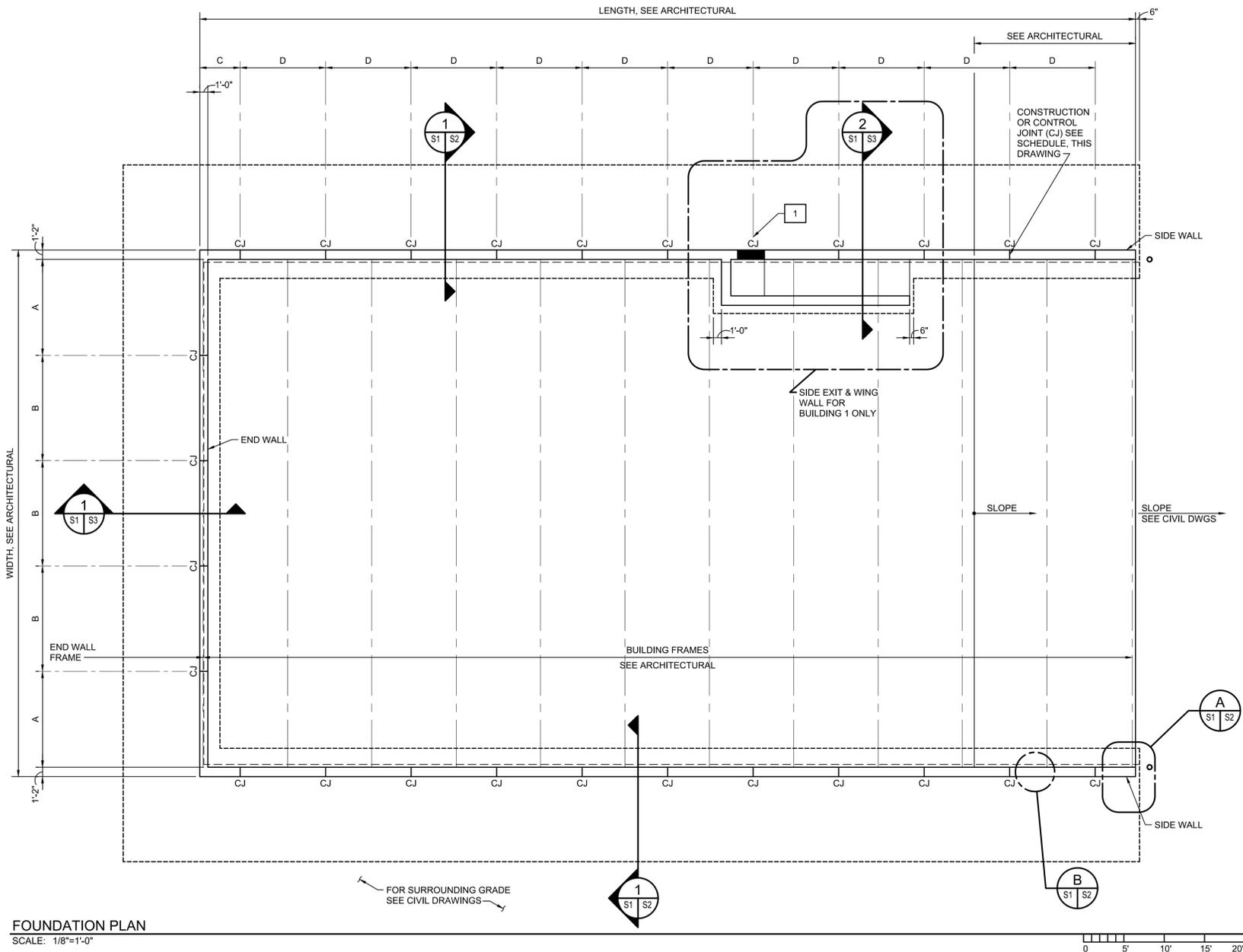
SALT STORAGE TANK  
 PROJECT NO. 21059  
 DATE: 2022-08-04

Full Scale Verification  
 0" | 1"  
 Drawing No.:

**A4.2**  
 3,000 TON BUILDING

DATE	2023-02-24
REVISIONS	WLA BY
NO.	1





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

**GENERAL NOTES:**

- SEE SECTIONS, DETAILS, AND SCHEDULES ON DRAWINGS S2 AND S3 FOR FOOTING SIZES AND REINFORCEMENT.

**CONSTRUCTION NOTES:**

- FOR BUILDING 1 ONLY: FRAME CONCRETE OPENING WITH (2) #6 EACH SIDE AND ABOVE, EACH FACE. LOCATE CONTROL JOINT 0'-8" EITHER SIDE OF OPENING. REFER TO ARCHITECTURAL FOR LOCATION OF OPENING.

**CONSTRUCTION OR CONTROL JOINT (CJ) SCHEDULE**

3,000 TON

	BUILDING 1	BUILDING 2	BUILDING 3
QUANTITY PER SIDE WALL	11	10	9
QUANTITY AT END WALL	4	4	5
END DIMENSION 'A'	11'-10"	12'-10"	12'-4"
CENTER DIMENSION 'B'	13'-0"	15'-0"	14'-0"
END DIMENSION 'C'	5'-0"	5'-0"	5'-0"
CENTER DIMENSION 'D'	EQUAL*	EQUAL*	EQUAL*

\*SPACING TO BE EQUAL AND CJ'S TO BE LOCATED 1'-0" OR GREATER FROM CENTERLINE OF TRUSSES

NOTE: FOUNDATION PLAN DRAWN AS BUILDING 1

**ABBREVIATIONS:**

AMSL	ABOVE MEAN SEA LEVEL
CL	CENTERLINE
CJ	CONTROL / CONSTRUCTION JOINT
CLR	CLEAR
CONC	CONCRETE
CONT	CONTINUOUS
Ø	DIAMETER
(E)	EXISTING
EQ	EQUAL
FF	FINISHED FLOOR
GALV	GALVANIZED
MAX	MAXIMUM
MIN	MINIMUM
MPH	MILES PER HOUR
OC	ON CENTER
PSI	POUNDS PER SQUARE INCH
PSF	POUNDS PER SQUARE FOOT
REINF	REINFORCEMENT
T/	TOP OF
TYP	TYPICAL
W/	WITH



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

FOUNDATION PLAN  
AND SCHEDULE

PROJECT NO.  
21059

DATE:  
2022-06-04

Full Scale Verification  
0' 1"

Drawing No.

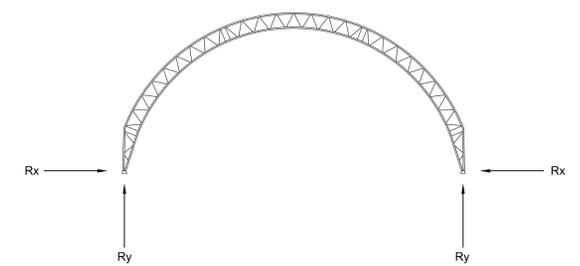
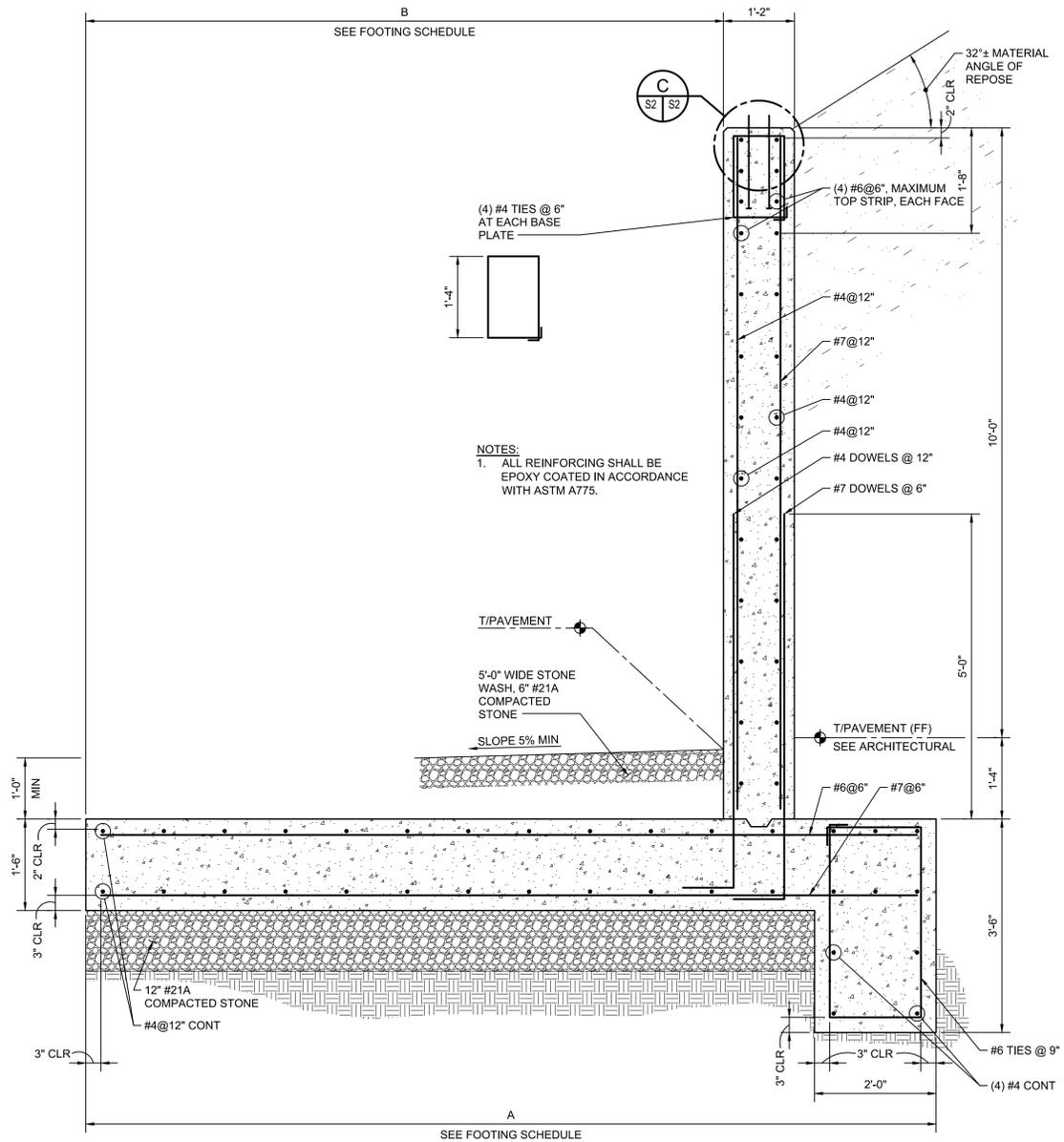
**S1**

3,000 TON BUILDING

REVISIONS  
BY  
NO.

DATE

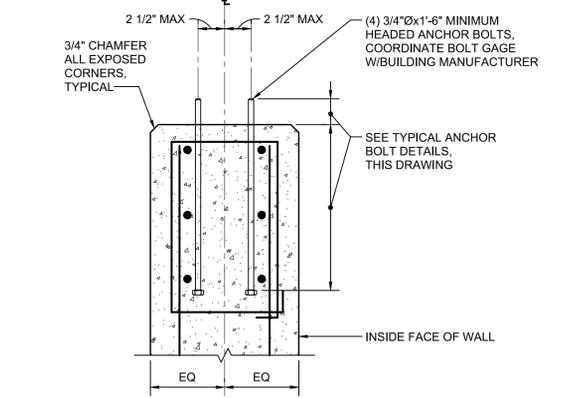
FOOTING SCHEDULE					
3,000 TON BUILDING					
SIDE WALL SECTION					
ALLOWABLE SOIL BEARING CAPACITY/ MAXIMUM TOE PRESSURE	KEY	1,500 PSF	2,000 PSF	2,500 PSF	3,000 PSF
DIMENSIONS					
FOOTING WIDTH	A	14'-0"	14'-0"	14'-0"	14'-0"
TOE TO WALL WIDTH	B	10'-6"	8'-6"	7'-0"	6'-0"
NOTE: REFER TO SITE SPECIFIC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



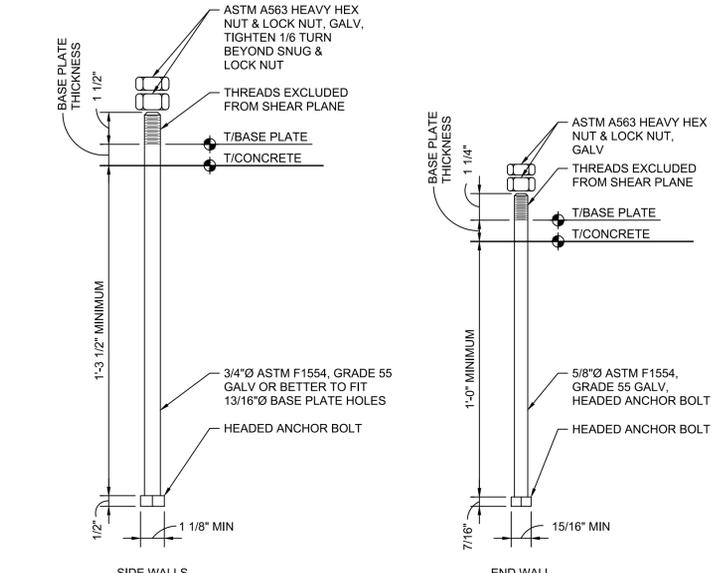
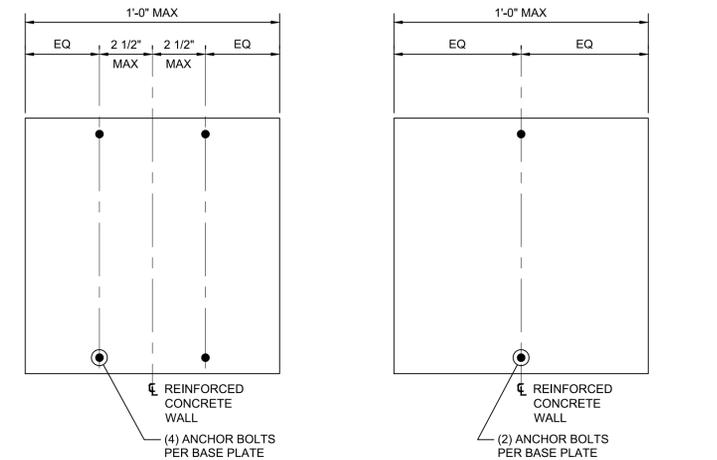
NOTES:

- 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



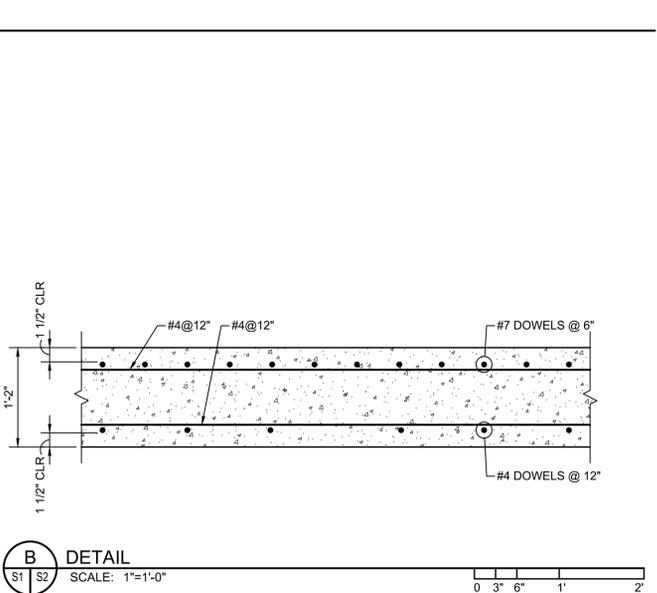
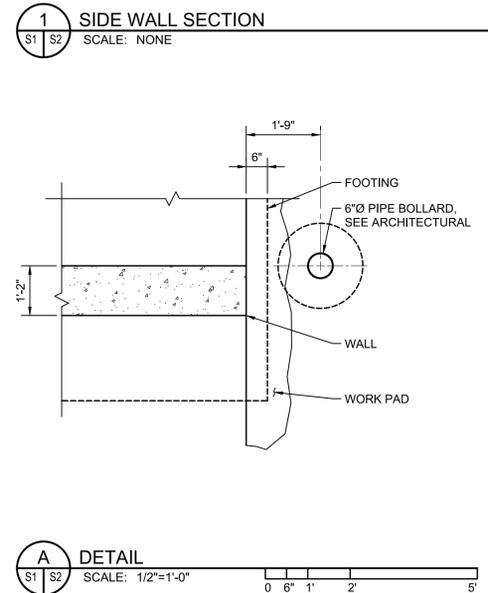
**C DETAIL**  
SCALE: NONE



**TYPICAL ANCHOR BOLT DETAIL**  
SCALE: NONE

NOTES:

- LOCATE AND PLACE TO ALIGN W/VENDOR'S PLATES.
- EPOXY ANCHOR BOLTS ARE NOT PERMITTED.



**C DETAIL**  
SCALE: NONE



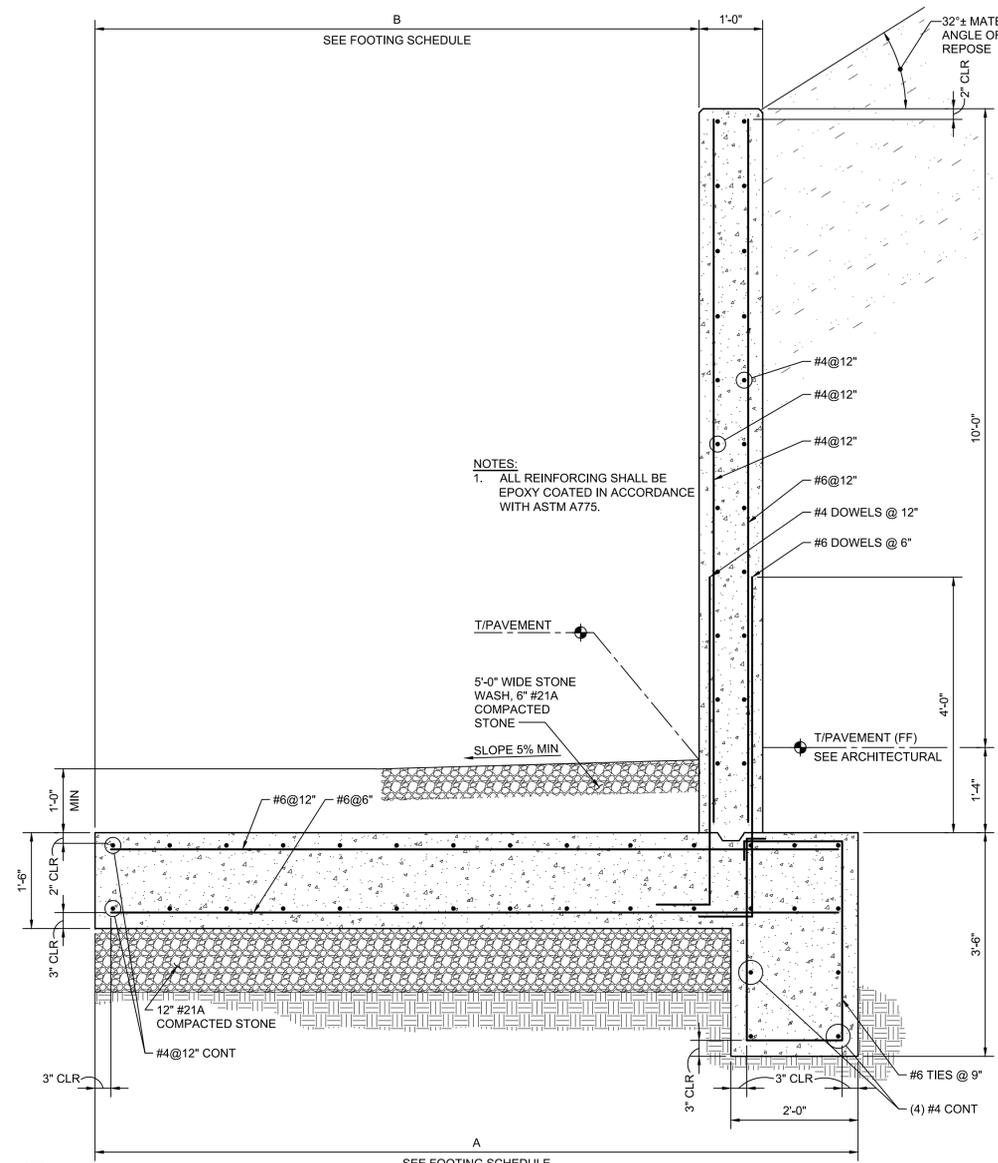
VIRGINIA DEPARTMENT OF TRANSPORTATION  
PROTOTYPE CHEMICAL STORAGE BUILDINGS  
3,000 TON  
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

FOUNDATION SECTION, DETAILS, AND SCHEDULE

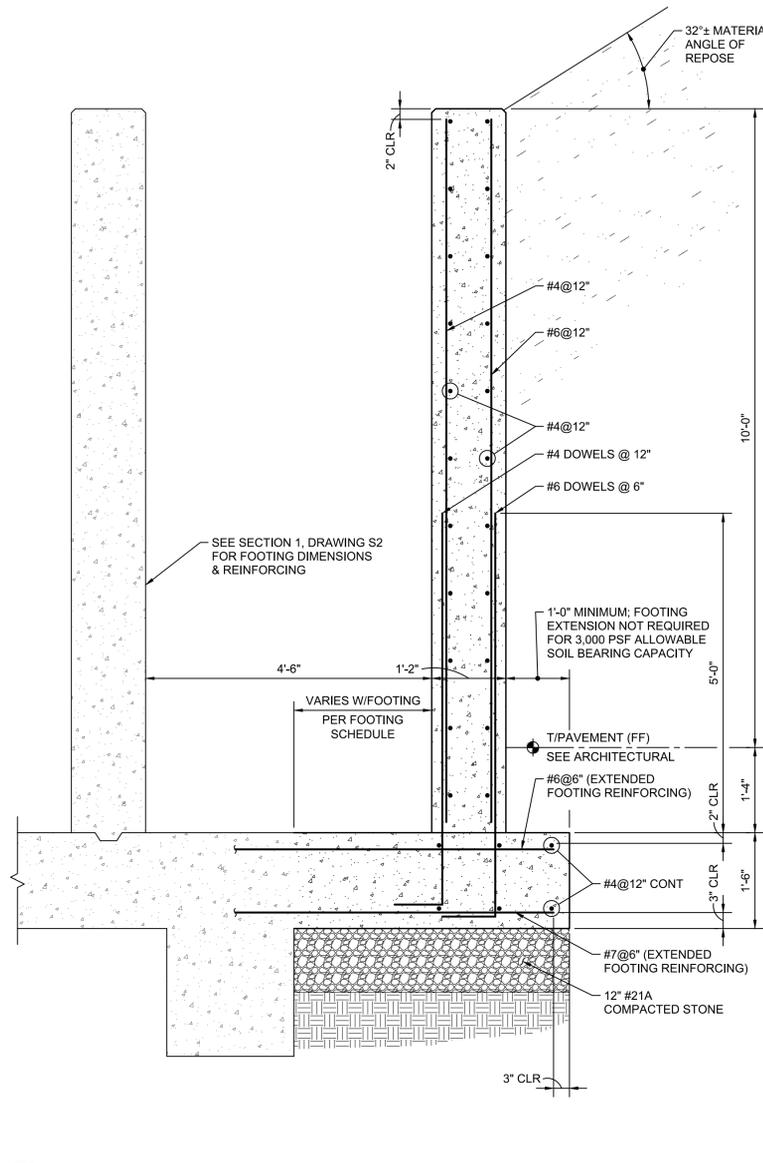
PROJECT NO. 2-1059  
DATE: 2022-06-04

Full Scale Verification  
0" 1"  
Drawing No. **S2**  
3,000 TON BUILDING

NO.	BY	REVISIONS	DATE



1 END WALL SECTION  
SCALE: NONE



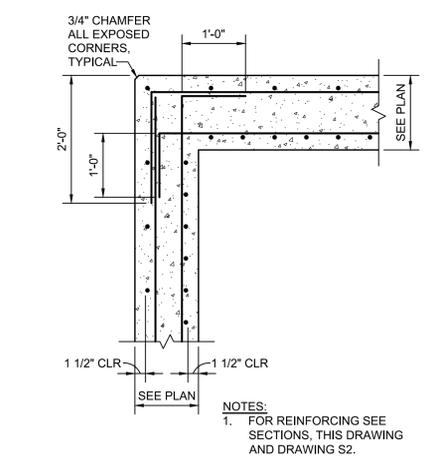
2 SIDE WALL WITH WING WALL SECTION - BUILDING 1 ONLY  
SCALE: NONE

FOOTING SCHEDULE					
3,000 TON BUILDING					
END WALL SECTION					
ALLOWABLE SOIL BEARING CAPACITY/ MAXIMUM TOE PRESSURE	KEY	1,500 PSF	2,000 PSF	2,500 PSF	3,000 PSF
DIMENSIONS					
FOOTING WIDTH	A	12'-0"	11'-0"	11'-0"	11'-0"
TOE TO WALL WIDTH	B	9'-6"	8'-0"	6'-6"	6'-0"

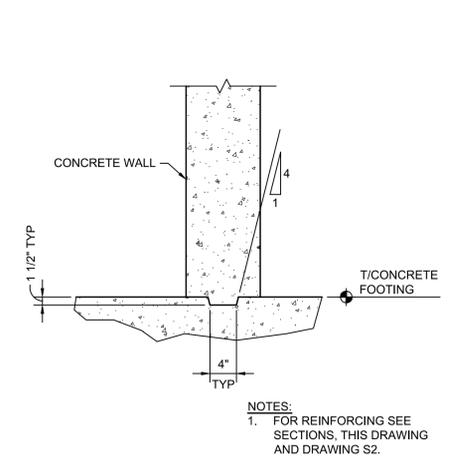
NOTE: REFER TO SITE SPECIFIC GEOTECHNICAL REPORT FOR ALLOWABLE SOIL BEARING AND MAXIMUM TOE PRESSURE.

Component	Zone	Eff. area (ft2)	+GCp	-GCp	Pres (+ve) (psf)	Pres (-ve) (psf)
<=10 sf	4	10	0.9	-0.99	57.5	-61.1
50 sf	4	50	0.79	-0.88	53.1	-56.7
200 sf	4	200	0.69	-0.78	49.3	-52.9
>500 sf	4	500.1	0.63	-0.72	46.8	-50.4
<=10 sf	5	10	0.9	-1.26	57.5	-71.8
50 sf	5	50	0.79	-1.04	53.1	-63
200 sf	5	200	0.69	-0.85	49.3	-55.4
>500 sf	5	500.1	0.63	-0.72	46.8	-50.4

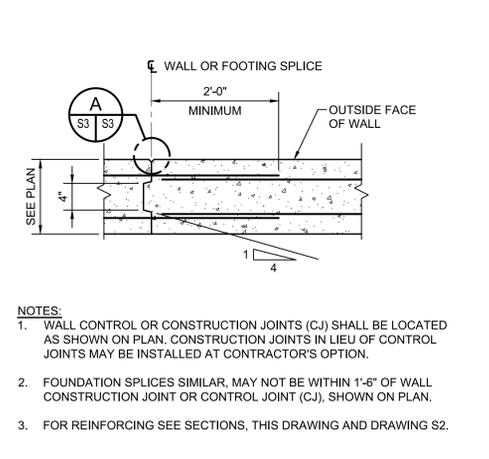
Component	Zone	Eff. area (ft2)	+GCp	-GCp	Pres (+ve) (psf)	Pres (-ve) (psf)
<=10 sf	2e	10	0.9	-1.8	57.5	-93.2
25 sf	2e	25	0.86	-1.4	55.9	-77.4
50 sf	2e	50	0.83	-1.1	54.7	-65.5
>100 sf	2e	100.1	0.8	-0.8	53.5	-53.5
<=10 sf	2n	10	0.9	-2	57.5	-101.1
50 sf	2n	50	0.83	-1.46	54.7	-79.8
100 sf	2n	100	0.8	-1.23	53.5	-70.7
>200 sf	2n	200.1	0.8	-1	53.5	-61.5
<=2 sf	3e	2	0.9	-3.2	57.5	-148.7
10 sf	3e	10	0.9	-2.49	57.5	-120.7
100 sf	3e	100	0.8	-1.48	53.5	-80.6
>300 sf	3e	300.1	0.8	-1	53.5	-61.5
<=10 sf	3r	10	0.9	-2	57.5	-101.1
50 sf	3r	50	0.83	-1.46	54.7	-79.8
100 sf	3r	100	0.8	-1.23	53.5	-70.7
>200 sf	3r	200.1	0.8	-1	53.5	-61.5
<=10 sf	4	10	0.9	0.01	57.5	-21.4
20 sf	4	20	0.87	0.01	56.3	-21.4
50 sf	4	50	0.83	0.01	54.7	-21.4
>100 sf	4	100.1	0.8	0.01	53.5	-21.4
<=10 sf	5	10	0.9	-1.09	57.5	-64.9
20 sf	5	20	0.87	-1.09	56.3	-64.9
50 sf	5	50	0.83	-1.09	54.7	-64.9
>100 sf	5	100.1	0.8	-1.09	53.5	-64.9
<=10 sf	6	10	0.9	-0.6	57.5	-45.6
20 sf	6	20	0.87	-0.6	56.3	-45.6
50 sf	6	50	0.83	-0.6	54.7	-45.6
>100 sf	6	100.1	0.8	-0.6	53.5	-45.6



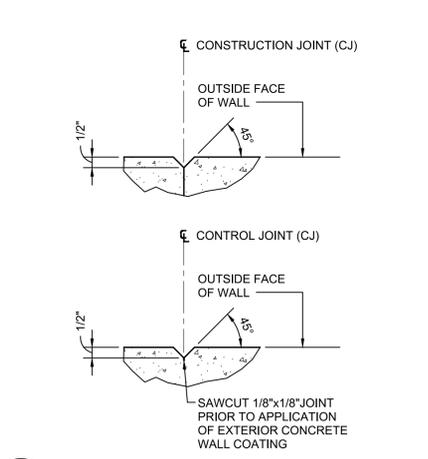
CORNER REINFORCING DETAIL  
SCALE: 3/4"=1'-0"



TYPICAL WALL KEY DETAIL  
SCALE: 3/4"=1'-0"



TYPICAL CONSTRUCTION JOINT (CJ) DETAIL  
SCALE: 3/4"=1'-0"



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



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

FOUNDATION SECTIONS, DETAILS, AND SCHEDULE

Full Scale Verification  
0" 1"

**S3**  
3,000 TON BUILDING

NO.	REVISIONS	BY	DATE



SYMBOLS		LEGEND		ABBREVIATIONS		GENERAL NOTES			
<p><b>1</b> CONSTRUCTION NOTE</p> <p><b>POWER</b></p> <p>DUPLEX RECEPTACLE, WALL MOUNTED 18" AFF. UON. WP = WEATHERPROOF WITH GROUND FAULT CIRCUIT PROTECTION GFI = GROUND FAULT PROTECTION</p> <p>400A 300A FUSED SWITCH SWITCH SIZE FUSE SIZE</p> <p>400AF 300AT CIRCUIT BREAKER AMP FRAME AMP TRIP</p> <p>N E TRANSFER SWITCH</p> <p>LP3 120/208 3P/4W 225A MCB</p> <p>PANELBOARD PANELBOARD NUMBER VOLTAGE POLES, WIRES AMP RATING</p> <p>EQUIPMENT WITH BUS INDICATED FOR RISER</p>		<p><b>LIGHTING</b></p> <p>A a HIGH BAY LED LIGHT FIXTURE. UPPERCASE LETTER INDICATES FIXTURE TYPE. LOWERCASE LETTER INDICATES SWITCHING.</p> <p>T a WALL-MOUNTED LED FIXTURE. UPPERCASE LETTER INDICATES FIXTURE TYPE. LOWERCASE LETTER INDICATES SWITCHING.</p> <p>(PC) PHOTOCELL, 2 POLE, 20 AMP, 125V RATED, MOUNT 8" AFG</p> <p>(XXX) FOOT CANDLES ≥ GREATER THAN OR EQUAL TO</p> <p><b>GROUNDING</b></p> <p>⊕ GROUND ROD</p> <p>⊙ GROUND TEST WELL</p> <p>G □ GROUND POINT TO STRUCTURAL STEEL SEE DETAIL A ON DRAWING E5</p> <p>G □ GROUND BAR</p> <p>N □ NEUTRAL BAR</p>		<p><b>CONDUCTORS AND RACEWAYS</b></p> <p>----- CONDUIT RUN CONCEALED UNDER FLOOR</p> <p>----- CONDUIT RUN EXPOSED OR ABOVE CEILING</p> <p>(3)#12 IN 3/4" HOMERUN CIRCUIT TO OTHER CIRCUIT. CONDUCTORS AND RACEWAY SIZE AS NOTED.</p> <p>HOMERUN TO PANEL AND CIRCUIT NUMBER AS INDICATED. CONDUCTOR AND RACEWAY SIZE AS INDICATED IN PANELBOARD SCHEDULE, UON.</p> <p>MDP-1</p> <p>INDICATES MULTIPLE HOMERUN CIRCUITS FROM SINGLE PANEL/CIRCUIT.</p> <p>MDP-1</p> <p>⊕ JUNCTION BOX</p> <p>○ CONDUIT TURNING DOWN</p> <p>○ CONDUIT TURNING UP</p> <p>----- NEUTRAL</p> <p>----- GROUND</p> <p>LETTER INDICATES DETAIL OR ENLARGED PLAN</p> <p>DRAWING NUMBER WHERE DETAIL IS DRAWN</p> <p>DRAWING NUMBER WHERE DETAIL IS TAKEN FROM</p> <p>NUMBER INDICATES SECTION</p> <p>DRAWING NUMBER WHERE SECTION IS DRAWN</p> <p>DRAWING NUMBER WHERE SECTION IS TAKEN FROM</p> <p>LETTER INDICATES ELEVATION</p> <p>DRAWING NUMBER WHERE ELEVATION IS DRAWN</p> <p>DRAWING NUMBER WHERE ELEVATION IS TAKEN FROM</p>		<p>A AMPERE</p> <p>A/E ARCHITECT/ENGINEER</p> <p>AF AMP FRAME</p> <p>AFF ABOVE FINISHED FLOOR</p> <p>AT AMP TRIP</p> <p>APPROX APPROXIMATE</p> <p>AWG AMERICAN WIRE GAUGE</p> <p>BCSD BARE COPPER SOFT DRAWN CONDUIT</p> <p>C CIRCUIT BREAKER</p> <p>CSB CHEMICAL STORAGE BUILDING</p> <p>DB DIRECT BURIAL</p> <p>DWG DRAWING</p> <p>(E) EXISTING</p> <p>ECB ENCLOSED CIRCUIT BREAKER</p> <p>EMT ELECTRICAL METALLIC TUBING</p> <p>FC FOOT CANDLES</p> <p>FD FUSED DISCONNECT</p> <p>FMC FLEXIBLE METALLIC CONDUIT FEED THROUGH LUGS</p> <p>FTL FULL VOLTAGE NON REVERSING GROUND</p> <p>FVNR GROUND FAULT INTERRUPTING</p> <p>GFI HAND-OFF-AUTO</p> <p>HP HORSEPOWER</p> <p>HVAC HEATING, VENTILATING, AND AIR CONDITIONING</p> <p>JB JUNCTION BOX</p> <p>KA KILOAMPERES</p> <p>KA/KIC KILOAMPERE INTERRUPTING CAPACITY</p> <p>KVA KILOVOLTAMPS</p> <p>LFMC LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT</p> <p>MAX MAXIMUM</p> <p>MC METAL CLAD CABLE</p> <p>MCA MIN CIRCUIT AMPACITY</p> <p>MCB MAIN CIRCUIT BREAKER</p> <p>MIN MINIMUM</p> <p>MLO MAIN LUGS ONLY</p> <p>MOPD MAX OVERCURRENT PROTECTION DEVICE</p> <p>N NEUTRAL</p> <p>NF NON FUSED</p> <p>NOT IN CONTRACT</p> <p>OCPD OVERCURRENT PROTECTION DEVICE</p> <p>P PHASES OR POLES</p> <p>PB PUSHBUTTON</p> <p>RNC RIGID NONMETALLIC CONDUIT</p> <p>RSC RIGID STEEL CONDUIT</p> <p>STP SHIELDED TWISTED PAIR</p> <p>TVSS TRANSIENT VOLTAGE SURGE SUPPRESSION TYPICAL</p> <p>UG UNDERGROUND</p> <p>UON UNLESS OTHERWISE NOTED</p> <p>UTP UNSHIELDED TWISTED PAIR</p> <p>V VOLTS</p> <p>VFD VARIABLE FREQUENCY DRIVE</p> <p>W WIRES</p> <p>W/ WITH</p> <p>W/O WITHOUT</p> <p>WP WEATHERPROOF</p> <p>XFMR TRANSFORMER</p>		<p>1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE THE GENERAL AND APPROXIMATE LOCATION OF EQUIPMENT IN THE PROTOTYPE BUILDING. FIELD VERIFY A. SITE SPECIFIC CONDITIONS, DIMENSIONS AND LOCATIONS. VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND FACILITIES BEFORE STARTING WORK. DESIGN CHOICES INCLUDE THREE BUILDING CHOICES FOR EACH BUILDING SIZE AND ELECTRICAL PANEL VOLTAGE AND CONFIGURATION ARE SITE SPECIFIC BASED UPON AVAILABLE CAPACITY, VOLTAGES AND OTHER CHARACTERISTICS FOR EACH BUILDING SIZE. ONCE THE SITE SPECIFIC DESIGNER HAS REVIEWED SITE CONDITIONS AND THE BUILDING CHOICE IS MADE FOR THE SITE THE APPROPRIATE ELECTRICAL PANEL SCHEDULE IS CHOSEN BETWEEN SINGLE PHASE 240/120V, 150 AMP PANEL AND THREE PHASE 208/120V, 100 AMP PANEL. IF CAPACITY IS NOT AVAILABLE ON SITE FOR A FEEDER TO SERVE THE CSB, THEN THE SITE SPECIFIC DESIGN MAY INCLUDE AN UPGRADE OR SEPARATELY METERED SERVICE TO THE CSB FROM THE UTILITY. IN THE LATTER CASE THE PANEL SCHEDULE WOULD NEED TO BE DESIGNATED AS SERVICE ENTRANCE RATED WITH NEUTRAL TO GROUND BONDING WITHIN THE CSB PANEL. THE FEEDER SIZE OR SERVICE ENTRANCE WIRE SIZE IS SITE SPECIFIC AND NOT GIVEN ON THESE PROTOTYPE PLANS. COORDINATE WITH GEOTECHNICAL REPORT AND SITE SPECIFIC DRAWINGS FOR SITE SPECIFIC COMPACTION, UTILITY ROUTING, AND OTHER REQUIREMENTS. COORDINATE WITH SITE SPECIFIC CONDITIONS FOR EQUIPMENT NEEDS INDICATED AS "RESERVED FOR SITE SPECIFIC CONDITIONS" AS GIVEN ON PANEL SCHEDULES OR AT OTHER LOCATIONS. FEEDER SIZES WILL NEED TO BE CALCULATED BASED UPON SITE SPECIFIC INFORMATION SUCH AS EQUIPMENT SERVED, LARGEST MOTOR, LENGTH OF FEEDER, AND OTHER LOAD CHARACTERISTICS.</p> <p>2. THESE DRAWINGS MAY NOT INDICATE ALL FITTINGS, PARTS AND ACCESSORIES THAT ARE REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM. NO EXCLUSION FROM OR LIMITATION IN THE SYMBOLS USED ON THE DRAWINGS FOR THE WORK, OR THE LANGUAGE USED IN THE SPECIFICATIONS FOR THE WORK SHALL BE INTERPRETED AS A REASON FOR OMITTING THE APPURTENANCES OR ACCESSORIES NECESSARY TO COMPLETE THE REQUIRED WORK, SYSTEM, OR ITEM OF EQUIPMENT.</p> <p>3. ALL ELECTRICAL WORK ON THIS PROJECT SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE, NFPA 70-2017 (NATIONAL ELECTRICAL CODE), AND CONSTRUCTION AND PROFESSIONAL SERVICES MANUAL: CPSM - CURRENT EDITION.</p> <p>4. MATERIALS, EQUIPMENT, AND SYSTEMS SHALL MEET ALL PERTINENT REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM), THE UNDERWRITERS LABORATORY (UL), THE NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION (NEMA), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), AND OTHER NATIONALLY RECOGNIZED AGENCIES.</p> <p>5. COORDINATE ARRANGEMENT, MOUNTING, AND SUPPORT OF ELECTRICAL EQUIPMENT TO AVOID INTERFERENCES WITH ELECTRICAL AND OTHER TRADES. COORDINATE WORK WITH EXISTING CONDITIONS INCLUDING BEAMS, COLUMNS, SITE FEATURES, AND OTHER CONSTRUCTION WHETHER OR NOT SUCH IS SHOWN ON THE DRAWINGS. SET SLEEVES IN CAST-IN-PLACE CONCRETE WALLS, AS THEY ARE CONSTRUCTED. COORDINATE LOCATION OF ACCESS PANELS AND DOORS FOR ELECTRICAL EQUIPMENT THAT ARE BEHIND FINISHED SURFACES OR ARE OTHERWISE CONCEALED. COORDINATE AMPACITY, VOLTAGE, PHASING, OVERCURRENT PROTECTION, AND LOCAL DISCONNECT REQUIREMENTS WITH ACTUAL EQUIPMENT PROVIDED.</p> <p>6. MAINTAIN A SET OF AS-BUILT RED-LINE MARKUPS INDICATING ACTUAL INSTALLATION.</p> <p>7. PROVIDE PRODUCT DATA SUBMITTALS FOR THE FOLLOWING EQUIPMENT: PANELBOARDS; ENCLOSED SWITCHES AND BREAKERS; CONDUITS; LUMINAIRES; LIGHTING, EQUIPMENT CONTROLLERS AND ACCESSORIES; DEVICES; HAND-OFF-AUTOMATIC SWITCHES; SURGE PROTECTION DEVICES; AND TRANSFORMERS. SUBMITTALS ARE TO INCLUDE MANUFACTURER INSTALLATION INSTRUCTIONS. MATERIALS INSTALLED PRIOR TO OBTAINING AN APPROVED SUBMITTAL ARE AT CONTRACTOR'S RISK.</p> <p>8. CUT EXISTING CONSTRUCTION AS NEEDED FOR DEMOLITION AND CONSTRUCTION. USE CUTTING METHODS THAT MINIMIZE DAMAGE TO FINISHED AND ADJACENT SURFACES. PATCH EXISTING AND NEW CONSTRUCTION AND REPAIR ALL DAMAGED SURFACES TO MATCH EXISTING. PATCH UNUSED AND ABANDONED PENETRATIONS.</p> <p>9. CONTRACTOR SHALL ADVISE A/E IMMEDIATELY OF DISCREPANCIES WITHIN DRAWINGS. MINOR DEVIATIONS FROM THE PLANS MAY BE MADE TO AVOID MINOR CONFLICTS. WHERE MAJOR CONFLICTS ARE ENCOUNTERED, THE AFFECTED WORK SHALL NOT BE INSTALLED UNTIL THE CONFLICT HAS BEEN RESOLVED. THE A/E IS NOT RESPONSIBLE FOR THE CONSEQUENCES OF PROCEEDING WITH WORK BASED ON CONTRACTOR INTERPRETATION OR ON DIRECTION FROM OTHER PARTIES.</p> <p>10. CONTACT INFORMATION: REFER TO SITE SPECIFIC ELECTRICAL DRAWINGS FOR VDOT SITE REPRESENTATIVE AND ELECTRIC UTILITY CONTACT INFORMATION.</p>	

**VECC COMPLIANCE:**

- COMPLIANCE PATH: THE ELECTRICAL DESIGN, LIGHTING, AND LIGHTING CONTROLS FOR THIS BUILDING MEET THE REQUIREMENTS OF VECC C401.2.2.
- VECC SECTIONS C402-C404 ARE NOT APPLICABLE.
- LIGHTING CONTROLS: THE LIGHTING CONTROLS FOR THIS BUILDING MEET THE REQUIREMENTS OF VECC C405.2.1.
- VECC C405.2.1/C405.2.2/C405.2.2.2: THIS BUILDING WILL USE TIME-SWITCH AND MANUAL CONTROLS PER C405.2.2 IN LIEU OF OCCUPANT SENSOR CONTROLS. MANUAL CONTROLS ARE PROVIDED IN LIEU OF TIME-SWITCH CONTROLS AS ALLOWED BY EXCEPTION 2 OF C405.2.2. SINCE THE SPACE USES LESS THAN 0.6 WATTS PER SQUARE FOOT, LIGHT REDUCTION CONTROLS PER VECC C405.2.2.2 ARE NOT REQUIRED SINCE VECC C405.2.2.1 EXCEPTION 2.2.2 IS APPLICABLE.
- VECC C405.2.3 AND C405.2.4 ARE NOT APPLICABLE.
- MANUAL BUILDING LIGHTING CONTROLS COMPLY WITH VECC C405.2.5.
- THE EXTERIOR BUILDING LIGHTS ARE AUTOMATICALLY TURNED COMPLETELY OFF WHEN DAYLIGHT IS PRESENT AS SENSED BY A PHOTOCELL MEETING THE REQUIREMENTS OF VECC C405.2.6.1. SECTIONS C405.2.6.2, C504.2.6.3 AND C405.2.6.4 ARE NOT APPLICABLE.
- THE STANDARD LIGHTING POWER ALLOWANCE FOR A WAREHOUSE IS 0.48 WATTS PER SQUARE FOOT IN ACCORDANCE WITH VECC TABLE C405.3.2(1). THE LIGHTING POWER FOR THIS BUILDING IS LESS THAN THE ALLOWANCE WHICH MEETS THE REQUIREMENTS OF VECC C405.3.
- VECC C405.4 IS MET BY EXCEPTION 10 OF C405.4.1.
- VECC C405.6, C405.7, AND C405.8 ARE NOT APPLICABLE.
- VECC C405.9 REQUIRES A COMBINED FEEDER AND BRANCH CIRCUIT VOLTAGE DROP OF LESS THAN 5%. THIS BUILDING DESIGN INCLUDES BRANCH CIRCUITS ONLY. BRANCH CIRCUIT VOLTAGE DROPS HAVE BEEN DESIGNED TO BE LESS THAN 2%. THIS EXCEEDS THE SUGGESTION OF NFPA 70-2017 SECTION 210.19(A) INFORMATIONAL NOTE 4. THIS WILL ALLOW FEEDER CONDUCTORS SIZED AS PART OF SITE ADAPTATION, TO BE UP TO 3% VOLTAGE DROP PER NFPA 70-2017 SECTION 215.2(A)(1)(b) INFORMATIONAL NOTE 2.
- BUILDING LIGHTING MEETS VECC C406.3. THE LIGHTING POWER IS FOR THIS BUILDING IS LESS THAN 90% OF 0.48 W/SF ALLOWED FOR A WAREHOUSE.
- THIS BUILDING DOES NOT INCLUDE TIME-SWITCH CONTROLS, OCCUPANT SENSOR CONTROLS, OR DAYLIGHT-RESPONSIVE CONTROLS. AS SUCH, VECC C408 DOES NOT APPLY.

**STATEMENT OF RISK ASSESSMENT FOR LIGHTNING PROTECTION SYSTEM**

IN ACCORDANCE WITH THE PROVISIONS OF THE MOST RECENT VERSIONS OF NFPA 780 AND THE CPSM MANUAL: THE TOTAL RISK (R) IS LESS THAN THE MAXIMUM TOLERABLE RISK (RT) AS CALCULATED USING THE DETAILED RISK ASSESSMENT METHOD.

- SINCE THE CHEMICAL STORAGE SPACE IS NORMALLY AN UNOCCUPIED SPACE WITH A LOW FIRE RISK, THE RESULT OF RISK ASSESSMENT INDICATES THAT THE RISK OF HUMAN LOSS IS ACCEPTABLE WITHOUT THE USE OF A LIGHTNING PROTECTION SYSTEM.
- RISK OF LOSS OF SERVICE TO PUBLIC IS ALSO ACCEPTABLE WITHOUT A LIGHTNING PROTECTION SYSTEM SINCE THE LIGHTNING STRIKE WOULD LIKELY NOT OCCUR DURING A CHEMICAL NEEDS EVENT.
- LOSS OF CULTURAL HERITAGE RISK IS ALSO ACCEPTABLE WITHOUT LIGHTNING PROTECTION, SINCE THE STORAGE BUILDING HAS NO CULTURAL HERITAGE VALUE.

**VECC COMPLIANCE - BUILDING 1 ONLY:**

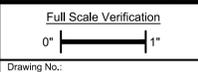
- COMPLIANCE PATH: THE ELECTRICAL DESIGN, LIGHTING, AND LIGHTING CONTROLS FOR THIS BUILDING MEET THE REQUIREMENTS OF VECC C401.2.2.
- VECC SECTIONS C402-C404 ARE NOT APPLICABLE.
- LIGHTING CONTROLS: THE LIGHTING CONTROLS FOR THIS BUILDING MEET THE REQUIREMENTS OF VECC C405.2.1.
- VECC C405.2.1/C405.2.2/C405.2.2.2: THIS BUILDING WILL USE TIME-SWITCH AND MANUAL CONTROLS PER C405.2.2 IN LIEU OF OCCUPANT SENSOR CONTROLS. MANUAL CONTROLS ARE PROVIDED IN LIEU OF TIME-SWITCH CONTROLS AS ALLOWED BY EXCEPTION 2 OF C405.2.2. SINCE THE SPACE USES LESS THAN 0.6 WATTS PER SQUARE FOOT, LIGHT REDUCTION CONTROLS PER VECC C405.2.2.2 ARE NOT REQUIRED SINCE VECC C405.2.2.1 EXCEPTION 2.2.2 IS APPLICABLE.
- VECC C405.2.3 AND C405.2.4 ARE NOT APPLICABLE.
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- VECC C405.4 IS MET BY EXCEPTION 10 OF C405.4.1.
- VECC C405.6, C405.7, AND C405.8 ARE NOT APPLICABLE.
- VECC C405.9 REQUIRES A COMBINED FEEDER AND BRANCH CIRCUIT VOLTAGE DROP OF LESS THAN 5%. THIS BUILDING DESIGN INCLUDES BRANCH CIRCUITS ONLY. BRANCH CIRCUIT VOLTAGE DROPS HAVE BEEN DESIGNED TO BE LESS THAN 2%. THIS EXCEEDS THE SUGGESTION OF NFPA 70-2017 SECTION 210.19(A) INFORMATIONAL NOTE 4. THIS WILL ALLOW FEEDER CONDUCTORS SIZED AS PART OF SITE ADAPTATION, TO BE UP TO 3% VOLTAGE DROP PER NFPA 70-2017 SECTION 215.2(A)(1)(b) INFORMATIONAL NOTE 2.
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- THIS BUILDING DOES NOT INCLUDE TIME-SWITCH CONTROLS, OCCUPANT SENSOR CONTROLS, OR DAYLIGHT-RESPONSIVE CONTROLS. AS SUCH, VECC C408 DOES NOT APPLY.
- THE EXIT SIGNS ON THIS BUILDING MEET VECC 405.3 REQUIREMENTS.



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

LEGEND, ABBREVIATIONS, AND NOTES

PROJECT NO.: 2-1059  
DATE: 2022-08-04



Full Scale Verification  
Drawing No.: **E1**  
3,000 TON BUILDING

DATE  
REVISIONS  
BY  
NO.

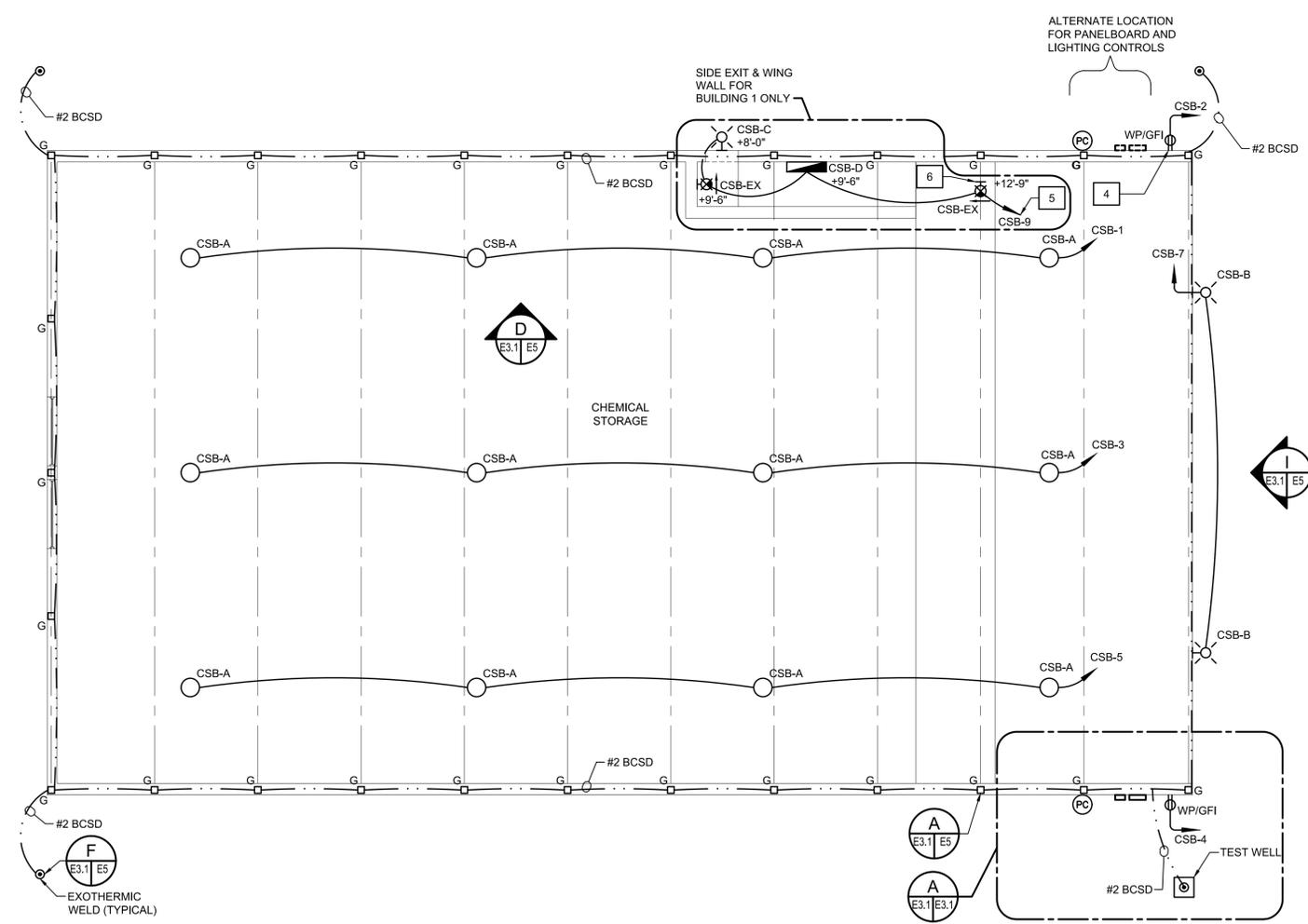
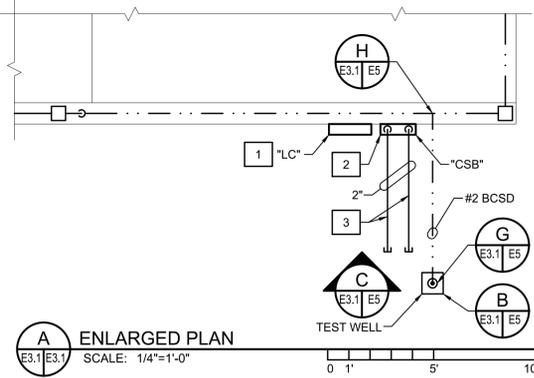


**DRAWING NOTES:**

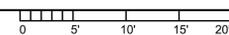
- GROUND LOOP ON OPEN END OF THE BUILDING TO BE UNDERGROUND.
- MOUNT PHOTOCELL NEAR LIGHTING CONTROLLER.
- MOUNT EXTERIOR LIGHTS CENTERED VERTICALLY ON THE ROOF STRUCTURE TRUSS.
- SLEEVE ALL CONCRETE WALL PENETRATIONS.

**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.



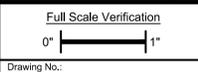
**ELECTRICAL PLAN - GROUNDING, LIGHTING, AND POWER (BUILDING 1)**  
SCALE: 1/8"=1'-0"



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

**BUILDING 1  
ELECTRICAL PLAN**

PROJECT NO. 21059  
DATE: 2022-06-04



Full Scale Verification  
Drawing No. **E3.1**  
3,000 TON BUILDING

NO.	BY	REVISIONS	DATE

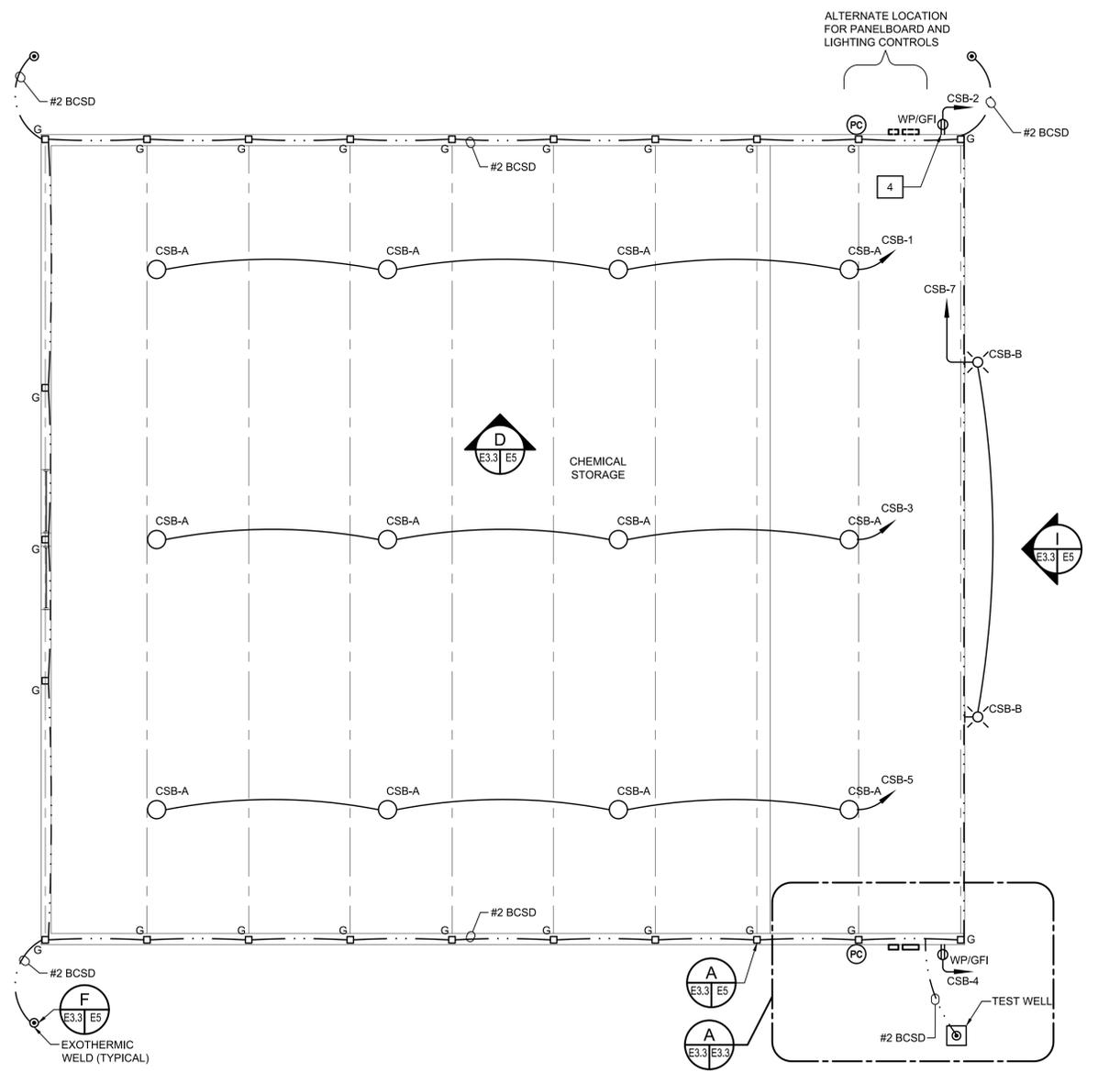
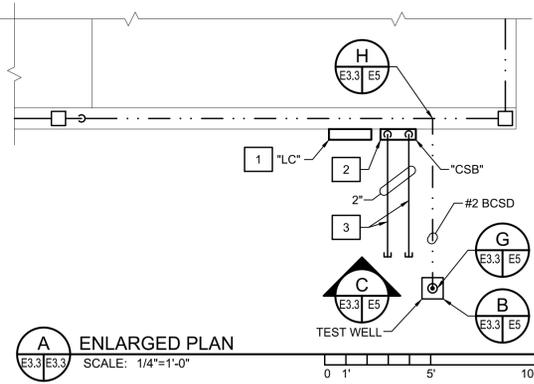


**DRAWING NOTES:**

- 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.

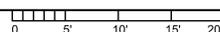
**CONSTRUCTION NOTES:**

- 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.



**ELECTRICAL PLAN - GROUNDING, LIGHTING, AND POWER (BUILDING 3)**

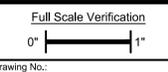
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VIRGINIA DEPARTMENT OF TRANSPORTATION  
PROTOTYPE CHEMICAL STORAGE BUILDINGS  
3,000 TON  
PROTOTYPE DESIGN PROJECT CODE: 501-B1501-032

BUILDING 3  
ELECTRICAL PLAN

PROJECT NO. 21059  
DATE: 2022-08-04



**E3.3**

3,000 TON BUILDING

NO.	BY	REVISIONS	DATE

**PANEL "CSB" 3000 T BLDG 1-3 SCHEDULE**

PANELBOARD CHARACTERISTICS:  
VOLTS: 120/240

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

PHASES: 1

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

WIRES: 3

ENCLOSURE: SURFACE/NEMA 4X WITH HINGED DOOR

SOLID NEUTRAL, GROUND BAR

POLE NO.	DESCRIPTION	LOAD TYPE	CONN. KVA	CONN. AMPS			BREAKER		NO. & WIRE SIZE			COND SIZE	NOTES
				A	B	C	P	AT	PHASE	NEUT.	GND		
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	11.5	48.0			2	60				2"	
15													
17	AVAILABLE SPACE												
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	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

PHASE TO PHASE VOLTS: 208  
PHASE TO NEUT. VOLTS: 120

PHASES: 3

100 AMP MAIN BREAKER  
MINIMUM SHORT CIRCUIT RATING: 10,000 OR GREATER RMS SYM AMPS, SEE NOTE 4.

WIRES: 4  
SOLID NEUTRAL, GROUND BAR

ENCLOSURE: SURFACE/NEMA 4X WITH HINGED DOOR

POLE NO.	DESCRIPTION	LOAD TYPE	CONN. KVA	CONN. AMPS			BREAKER		NO. & WIRE SIZE			COND SIZE	NOTES
				A	B	C	P	AT	PHASE	NEUT.	GND		
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													
17													
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													
30													
TOTALS			21.5	61.1	58.7	59.1							2

NOTES:

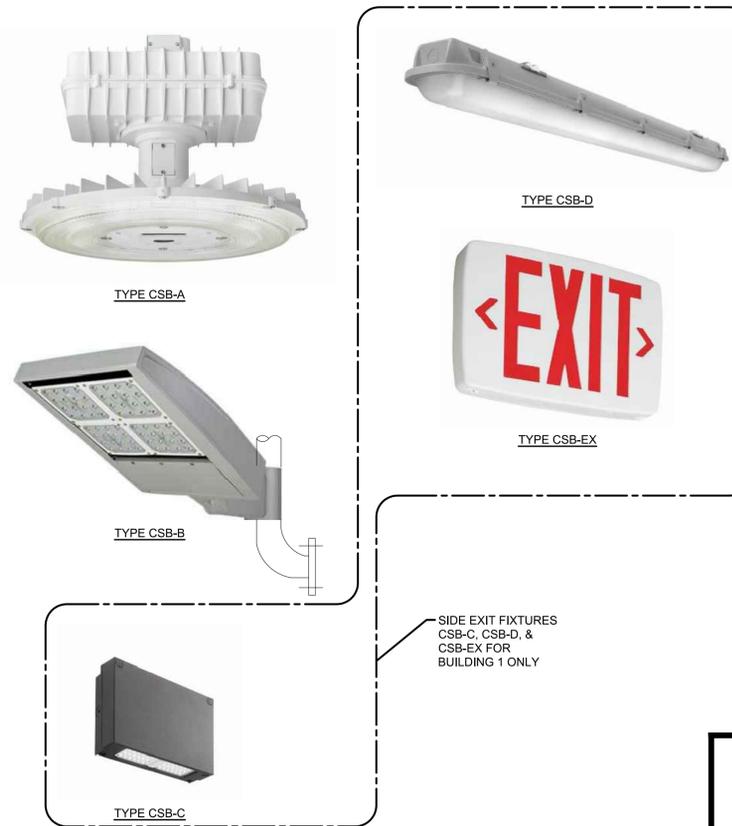
- NO WIRE SIZE GIVEN BECAUSE INSTALLED WITH PIGTAIL THAT COMES WITH SPD.
- PROVIDE BALANCING OF LOAD BETWEEN PHASES TO BRING PANEL WITHIN 10 PERCENT OF A BALANCED LOAD CONDITION. PROVIDE PRINTED PANEL DIRECTORY IN LEXAN COVER INSIDE DOOR OF ENCLOSURE AFTER BALANCING IS COMPLETED.
- WHEN SERVICE IS PROVIDED 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 LEDES, 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 PHOTOCELL, 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:

- PROVIDE SUBMITTALS FOR APPROVAL. MANUFACTURER'S SHALL BE GENERAL ELECTRIC, HUBBELL, OR LITHONIA.



**LIGHT FIXTURE TYPES**  
SCALE: NONE



**Virginia A & E**  
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1115 VISTA PARK DRIVE  
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PHONE: (434) 316-6001

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

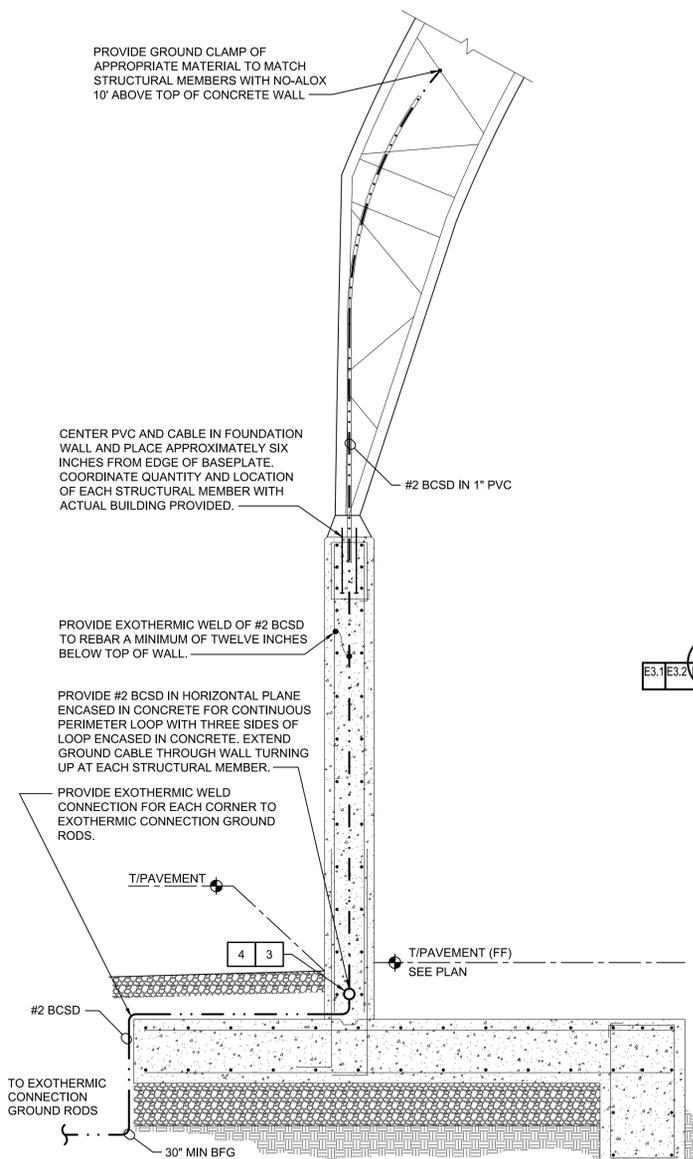
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PROJECT NO. 2-1059  
DATE: 2022-08-04

Full Scale Verification  
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Drawing No.

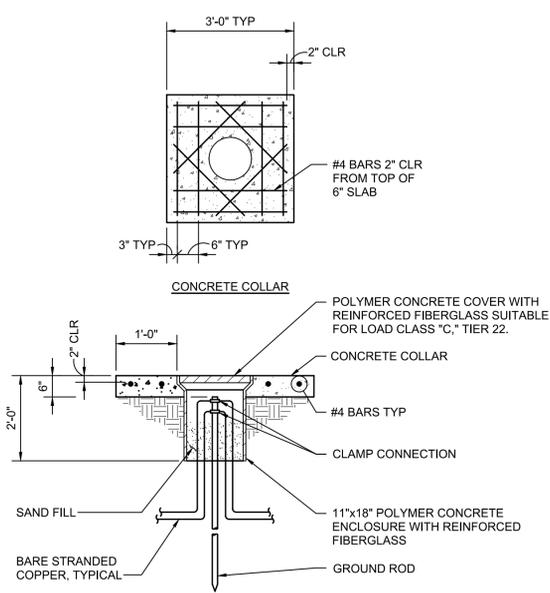
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3,000 TON BUILDING

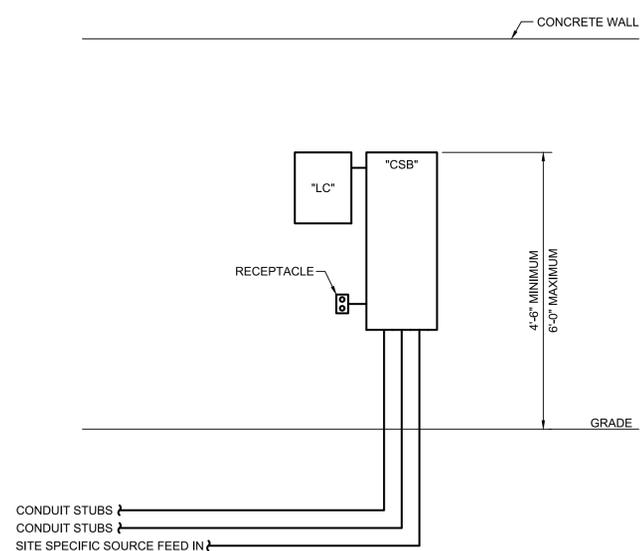
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REVISIONS  
BY  
NO.



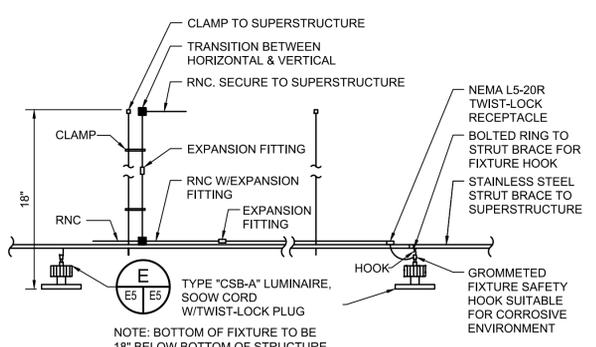
**A** TYPICAL BUILDING GROUND DETAIL AT CORNERS  
 SCALE: 1/2"=1'-0"  
 E3.1 E3.2 E3.3 E5



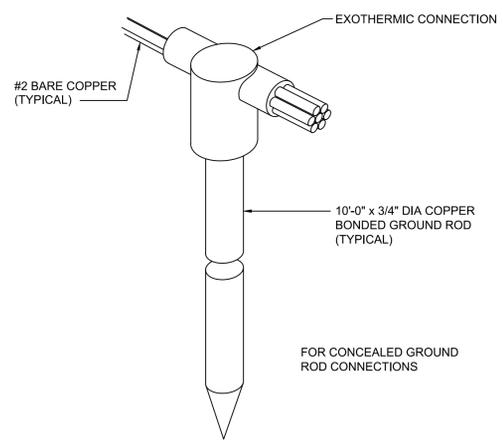
**B** GROUND ROD TEST WELL DETAIL  
 SCALE: NONE  
 E3.1 E3.2 E3.3 E5



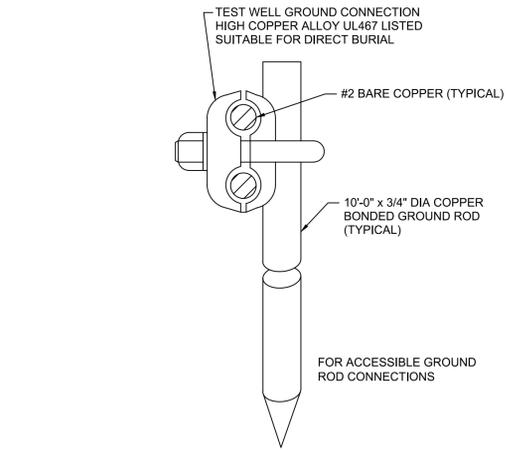
**C** POWER DISTRIBUTION CSB ELEVATION  
 SCALE: 1/2"=1'-0"  
 E3.1 E3.2 E3.3 E5



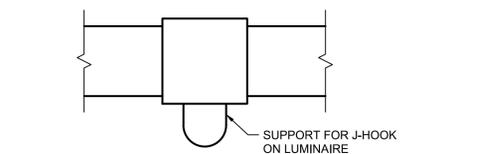
**D** LUMINAIRE MOUNTING SYSTEM  
 SCALE: 1/4"=1'-0"  
 E3.1 E3.2 E3.3 E5



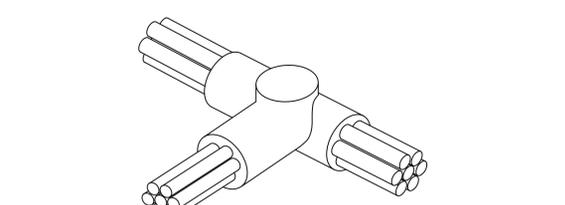
**F** TYPICAL EXOTHERMIC CONNECTION WIRE TO GROUND ROD  
 SCALE: NONE  
 E3.1 E3.2 E3.3 E5



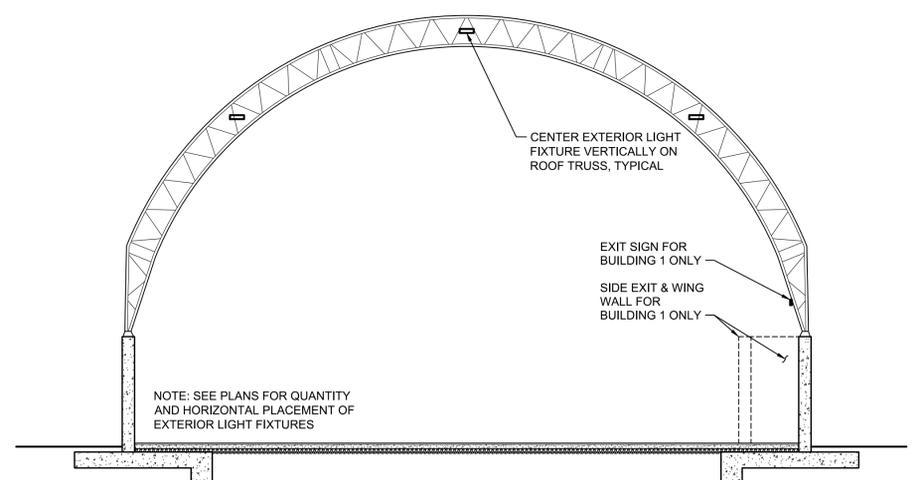
**G** CLAMP CONNECTION TO GROUND ROD  
 SCALE: NONE  
 E3.1 E3.2 E3.3 E5



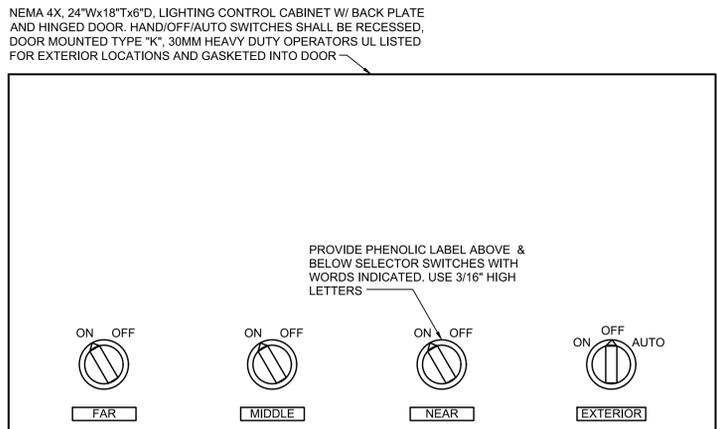
**E** MOUNTING BRACKET FOR LUMINAIRE "CSB-A"  
 SCALE: NONE  
 E5 E5



**H** TYPICAL EXOTHERMIC CONNECTION WIRE TO WIRE  
 SCALE: NONE  
 E3.1 E3.2 E3.3 E5



**I** ELEVATION  
 SCALE: 1/8"=1'-0"  
 E3.1 E3.2 E3.3 E5



**LC** CSB LIGHTING CONTROL PANEL "LC"  
 SCALE: NONE

DATE	
REVISIONS	
BY	
NO.	
VIRGINIA A & E 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	
DETAILS	PROJECT NO. 2-1059 DATE: 2022-08-04
Full Scale Verification 0" = 1" Drawing No.	
<h1 style="font-size: 2em;">E5</h1>	
3,000 TON BUILDING	

