STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

CITY OF STAUNTON, VIRGINIA

SITE DATA

OWNER:
CITY OF STAUNTON
ATTN: LYLE HARTT, PE
CITY ENGINEER
116 WEST BEVERLEY STREET
STAUNTON, VA 24401
PHONE: 540-332-3858
EMAIL: HARTTLM@CI.STAUNTON.VA.US

ENGINEER:
TIMMONS GROUP
1001 BOULDERS PARKWAY, SUITE 300
RICHMOND, VA 23225
ATTN: BRUCE STRICKLAND JR, PE
PHONE: 804-200-6389
EMAIL: BRUCE.STRICKLAND@TIMMONS.COM



VICINITY MAP
SCALE: 1" = 1,000'

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SUBMITTED: JUNE 2, 2023
REVISED: MARCH 26, 2024

NOTE: AN EXEMPTION TO THE VSMP REGISTRATION STATEMENT REQUIREMENT IS REQUESTED IN ACCORDANCE WITH DEQ GUIDANCE MEMO NO. 15-2003.

Staunton Bid #D00424

MISS UTILITY OF VIRGINIA
THE CONTRACTOR SHALL CALL "MISS UTILITY" 48 HOURS PRIOR TO THE START OF EXCAVATION. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT THE ENGINEER IMMEDIATELY IF THE LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON THE PLAN, IF THERE APPEARS TO BE A CONFLICT, AND/OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON PLAN. THE DEVELOPER SHALL BE RESPONSIBLE FOR THE RELOCATION OF ANY UTILITY WITHIN THE EXISTING AND/OR RIGHT-OF-WAY REQUIRED BY THE DEVELOPMENT. CONTACT MISS UTILITY OF VIRGINIA: 1-800-552-7001 (TOLL FREE) OR DIALL 811.

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

THIS DRAWING PREPARED AT THE **CORPORATE OFFICE**
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	DATE
REVISED PER CITY COMMENTS	01/19/2024

DATE: 6/2/2023
DRAWN BY: Z. MOUNTJOY
DESIGNED BY: Z. MOUNTJOY
CHECKED BY: B. STRICKLAND
SCALE:

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
COVER

JOB NO. 49408
SHEET NO. G1.0

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EXISTING UTILITY OWNERS

SEWER AND WATER:

CITY OF STAUNTON
DEPARTMENT OF PUBLIC WORKS
1911 CRAIGMONT ROAD
STAUNTON, VA 24402
CONTACT: DAVID IRVIN
PHONE: (540) 332-3892
EMAIL: IRVINDH@CI.STAUNTON.VA.US

ELECTRICAL:

DOMINION ENERGY
2 TECHNOLOGY DRIVE
STAUNTON, VA 24401
PHONE: (866) 366-4357 ((866)-DOM-HELP)

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2023-AEA-8546-OE

Issued Date: 09/05/2023

Lyle Hartt
City of Staunton
116 W Beverley St
Staunton, VA 24401

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Water Tank Staunton Crossing EWST
Location:	Staunton, VA
Latitude:	38-08-02.44N NAD 83
Longitude:	79-01-48.97W
Heights:	1458 feet site elevation (SE) 239 feet above ground level (AGL) 1697 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M, Obstruction Marking and Lighting, a med-dual system-Chapters 4,8(M-Dual),&15.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Air Missions (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

This determination expires on 03/05/2025 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.

(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (404) 305-6337, or nick.goodly@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2023-AEA-8546-OE.

Signature Control No: 593342868-598417671 (DNE)
Nick Goodly
Technician

Attachment(s)
Case Description
Map(s)

RESTRAINED JOINT NOTES:

1. THRUST RESTRAINTS SHALL BE PROVIDED ON ALL VALVES, FITTINGS, BENDS, TEES, AND DEAD ENDS. THRUST RESTRAINTS SHALL EXTEND A MINIMUM OF ONE FULL JOINT OF PIPE IN EACH DIRECTION. ADDITIONAL RESTRAINED LENGTH SHALL BE PROVIDED AS INDICATED BELOW. THRUST RESTRAINTS SHALL BE MANUFACTURED BY EBAA IRON OR APPROVED EQUAL AND THE SERIES INDICATED BELOW:

DUCTILE IRON PIPE MECHANICAL JOINTS: SERIES 1100
DUCTILE IRON PIPE PUSH ON JOINTS: SERIES 1700

CALCULATION ASSUMPTIONS

SOIL TYPE:	MH (GRANULAR)
SAFETY FACTOR:	1.5 to 1.0
TRENCH TYPE:	3
DEPTH OF BURY:	3.0'
TEST PRESSURE:	200 psi

RESTRAINED LENGTHS SHALL APPLY IN EACH DIRECTION

FITTING	16" WATER MAIN
11.25° BEND	18'
22.5° BEND	18'
45° BEND	36'
90° BEND	90'
VALVE	126'
PLUG	126'

BURIED DUCTILE IRON PIPE NOTES:

1. GASKETS SHALL MEET THE REQUIREMENTS OF AWWA C111 AND ANSI A21.11 AND SHALL BE MADE OF FLOUROCARBON RATED TO 212 DEGREES FARENHEIT COMMONLY USED FOR AROMATIC HYDROCARBONS AND FUELS, ACIDS, VEGETABLE OILS, PETROLEUM PRODUCTS, CHLORINATED HYDROCARBONS, AND MOST CHEMICALS AND SOLVENTS.
2. POLYETHYLENE ENCASEMENT SHALL CONFORM TO AWWA C105 AND ANSI A21.5. THE POLYETHYLENE SHALL HAVE A MINIMUM THICKNESS OF 8 MIL, SHALL BE TUBING TYPE AND SHALL BE MANUFACTURED OF VIRGIN MATERIAL. THE TAPE USED FOR INSTALLATION OF POLYETHYLENE TUBING SHALL BE PLASTIC-BACKED ADHESIVE WITH A THICKNESS OF 12 MILS AND A MINIMUM WIDTH OF 1-1/2". THE TAPE SHALL BE CAPABLE OF BONDING TO METAL, BITUMINOUS COATING AND POLYETHYLENE AT A TEMPERATURE RANGE OF 32 TO 120 DEGREES FAHRENHEIT.

EXISTING	LEGEND	PROPOSED
	PROPERTY LINE	
	RIGHT-OF-WAY LINE	
	EASEMENT	
X	FENCE	X
	CONCRETE	
	ASPHALT	
	GRAVEL	
46.34 x	SPOT ELEVATION	
	LIGHT	
	SIGN	
50	CONTOUR	50
W	WATER LINE	W
SAN	SANITARY SEWER	SAN
FM	SANITARY SEWER FORCEMAIN	FM
S	SANITARY MANHOLE	S
	SANITARY CLEANOUT	
	SANITARY PRESSURE CONNECTION	
	STORM SEWER	
OHP	OVERHEAD ELECTRIC	
UGP	UNDERGROUND ELECTRIC	
UGT	UNDERGROUND TELECOM	
	ELECTRICAL MANHOLE	
E	ELECTRICAL PEDESTAL	
	TELECOM HANDHOLE	
T	TELECOM MANHOLE	
T	TELECOM PEDESTAL	
	MAILBOX	
	UTILITY POLE	
	FIRE HYDRANT	
	WATER STUB OUT	
	WATER VALVE	
	WATER METER	
	BUSH	
	CONIFEROUS TREE	
	DECIDUOUS TREE	

GENERAL NOTES:

1. THE CONTRACTOR SHALL PAY FOR AND OBTAIN ALL REQUIRED PERMITS AND DELIVER COPIES TO THE OWNER AT THE PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS (IN WRITING) OF ANY WORK SCHEDULED ADJACENT TO OR THROUGH THEIR PROPERTY A MINIMUM OF ONE WEEK IN ADVANCE PRIOR TO THE COMMENCEMENT OF ANY STAKING OR CONSTRUCTION ACTIVITY.
3. HORIZONTAL DATUM: NAD 83
   VERTICAL DATUM: NAVD 88
4. STAKING FOR CONSTRUCTION, TO ASSURE PROPER LOCATION OF PROJECT COMPONENTS SHALL BE PERFORMED BY A LICENSED LAND SURVEYOR.
5. ALL EXISTING PROPERTY MARKERS ARE TO REMAIN UNDISTURBED. IF DISTURBANCE OCCURS, REPLACEMENT MUST BE PERFORMED BY A LICENSED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
6. PREVIOUSLY ARRANGED ACCESS EASEMENTS, STAGING AREAS, STORAGE AREAS, ETC., IF ANY, ARE SHOWN ON THE DRAWINGS. ADDITIONAL LAND USE RIGHTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
7. WORK AREAS SHALL BE KEPT AT ALL TIMES FREE OF DEBRIS AND HAZARDOUS MATERIAL TO THE SATISFACTION OF THE INSPECTOR.
8. THE CONTRACTOR SHALL COORDINATE STORAGE OF MATERIALS, PARKING OF VEHICLES, AND RESTRICTIONS OF WORK WITH THE INSPECTOR.
9. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ALL EXISTING FEATURES (EXCEPT TREES), SUCH AS GUARDRAIL, SIDEWALKS, BRICKWORK, CULVERTS, FENCES, SHRUBS, PLANTERS, ETC. TO THEIR ORIGINAL LOCATION AND CONDITION WHICH EXISTED PRIOR TO CONSTRUCTION. TOTAL REPLACEMENT MAY BE NECESSARY.
10. THE LOCATION OF EXISTING UTILITIES ACROSS OR ALONG THE ROUTE OF THE PROPOSED WORK IS NOT NECESSARILY SHOWN ON THE PLANS, AND WHEN SHOWN, IS ONLY APPROXIMATELY CORRECT. IN ADDITION TO CONTACTING MISS UTILITY PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL, ON HIS OWN INITIATIVE, HORIZONTALLY AND VERTICALLY LOCATE ALL EXISTING UNDERGROUND LINES, FACILITIES, AND STRUCTURES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY UNDERGROUND LINES, FACILITIES, AND STRUCTURES DAMAGED.
11. CONTRACTOR SHALL COORDINATE WITH THE LOCAL UTILITY COMPANIES PRIOR TO CONSTRUCTING PORTIONS OF WORK IMMEDIATELY ADJACENT TO UTILITY STRUCTURES. THE COSTS OF POLE AND/OR OTHER STRUCTURE STABILIZATION DURING WORK SHALL BE BORNE BY THE CONTRACTOR.
12. ALL WORK SHALL BE SUBJECT TO INSPECTION BY BOTH STATE AND LOCAL INSPECTORS.
13. FINAL ACCEPTANCE BY THE OWNER WILL NOT BE MADE UNTIL ALL WORK SHOWN ON THE APPROVED CONTRACT DOCUMENTS IS COMPLETED, INCLUDING PAVING, GRADING, RESTORATION AND ALL ADJUSTMENTS.
14. CONTRACTOR SHALL RESTORE EXISTING DITCH TO ORIGINAL CONDITION AND ENSURE THAT POSITIVE DRAINAGE IS MAINTAINED WITHIN THE DITCH. PAVEMENT AND SHOULDERS MUST ALSO BE RESTORED TO THEIR ORIGINAL CONDITION.
15. CONTRACTOR SHALL ENSURE THAT PUBLIC AND PRIVATE ENTRANCE CULVERTS ARE FREE OF ANY CONSTRUCTION DEBRIS.
16. ALL MATERIALS AND CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION'S ROAD AND BRIDGE SPECIFICATIONS, ROAD AND BRIDGE STANDARDS AND WORK AREA PROTECTION MANUAL.
17. ANY WORK TO OCCUR WITHIN THE LIMITS OF DISTURBANCE OF THE CROSSING WAY ROAD EXTENSION SHALL BE COORDINATED WITH DPW AND VDOT PRIOR TO COMMENCING.
18. ANY RIGHT-OF-WAY OR ROADSIDE WORK THAT MAY AFFECT TRAFFIC WILL REQUIRE A TRAFFIC MAINTENANCE PLAN, AND MUST BE SUBMITTED TO AND APPROVED BY DPW PRIOR TO ANY WORK THAT MAY AFFECT TRAFFIC.
19. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES SHOWN ON PLANS IN AREAS OF CONSTRUCTION PRIOR TO STARTING WORK. CONTACT THE ENGINEER IMMEDIATELY IF LOCATION OR ELEVATION IS DIFFERENT FROM THAT SHOWN ON PLAN. IF THERE APPEARS TO BE A CONFLICT, OR UPON DISCOVERY OF ANY UTILITY NOT SHOWN ON THIS PLAN, CALL "MISS UTILITY" AT 811.
20. THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF ALL POINTS OF CONNECTION OR PROPOSED WORK TO EXISTING CURBS, SANITARY LINES, WATER LINES, ETC., PRIOR TO CONSTRUCTION.
21. SOIL STABILIZATION IS REQUIRED WITHIN 7 DAYS FOR ALL AREAS WHERE CLEARING, GRADING, EXCAVATION OR OTHER LAND DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED OR WHERE LAND DISTURBANCE ACTIVITIES HAVE BEEN TEMPORARILY SUSPENDED FOR AN ANTICIPATED DURATION OF GREATER THAN 7 DAYS, OR UPON COMPLETION OF GRADING OPERATIONS FOR A SPECIFIED AREA. SOIL STABILIZATION SHALL BEGIN AS SOON AS PRACTICABLE, BUT NOT LATER THAN THE SEVEN DAYS FOLLOWING THE DAY WHEN LAND DISTURBING ACTIVITIES TEMPORARILY OR PERMANENTLY CEASED.

SPECIAL NOTE:

THE PROJECT AREA CONTAINS EXISTING OVERHEAD AND UNDERGROUND UTILITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND CONFIRM THE LOCATION AND STATUS OF ALL EXISTING UTILITIES WITHIN THE PROJECT AREA PRIOR TO CONSTRUCTION.

ABBREVIATIONS

APPROX	APPROXIMATE	LOD	LIMITS OF DISTURBANCE
ARV	AIR RELEASE VALVE	MAX	MAXIMUM
ASSY	ASSEMBLY	MECH	MECHANICAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MH	MANHOLE
AWWA	AMERICAN WATER WORKS ASSOCIATION	MIN	MINIMUM
BI	BLACK IRON	N/F	NOW OR FORMERLY
BLDG	BUILDING	NIC	NOT IN CONTRACT
BM	BENCHMARK	NPT	NATIONAL PIPE THREAD
BMP	BEST MANAGEMENT PRACTICE	OC	ON CENTER
BV	BALL VALVE	OCEW	ON CENTER EACH WAY
CL	CLASS	OHE	OVERHEAD ELECTRIC
CO	CLEAN OUT	MPT	MALE PIPE THREAD
CONC	CONCRETE	PE	PLAIN END / POLYETHYLENE
DI	DUCTILE IRON	PEP	POLYETHYLENE PIPE
DIA	DIAMETER	PROP	PROPOSED
DIP	DUCTILE IRON PIPE	PVC	POLYVINYL CHLORIDE
EA	EACH	REQ	REQUIRED
ELEV	ELEVATION	RCP	REINFORCED CONCRETE PIPE
ESC	EROSION AND SEDIMENT CONTROL	ROW	RIGHT OF WAY
ESMT	EASEMENT	SCH	SCHEDULE
EX	EXISTING	SF	SQUARE FEET / SILT FENCE
FFE	FINISHED FLOOR ELEVATION	SS	STAINLESS STEEL
FH	FIRE HYDRANT	STA	STATION
FLG	FLANGE	STD	STANDARD
FO	FIBER OPTIC	STR	STRUCTURE
FPT	FEMALE PIPE THREAD	TW	TOP OF WALL
HDPE	HIGH DENSITY POLYETHELENE	TYP	TYPICAL
HORIZ	HORIZONTAL	VDOT	VIRGINIA DEPARTMENT OF TRANSPORTATION
INV	INVERT	WV	WATER VALVE
LOD	LIMITS OF DISTURBANCE	W/	WITH

WATER AND SEWER NOTES:

1. ALL CONSTRUCTION, MATERIALS AND INSTALLATIONS SHALL CONFORM TO THE LATEST EDITION OF STANDARDS AND SPECIFICATIONS, DEPARTMENT OF PUBLIC WORKS ("DPW"), CITY OF STAUNTON, VIRGINIA.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND SPECIFICATIONS FOR ALL PROPOSED PRODUCTS TO BE USED DURING UTILITY CONSTRUCTION TO DPW FOR REVIEW AND CONCURRENCE PRIOR TO PROCURING ANY MATERIALS. USING MARKINGS, HIGHLIGHTING AND/OR NOTES, SUBMITTAL SHEETS SHALL CLEARLY IDENTIFY THE SPECIFIC PRODUCT TO BE USED, AND THE PURPOSE TO WHICH IT IS TO BE PUT.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING DPW TO SCHEDULE A PRE-CONSTRUCTION MEETING AT LEAST 48 HOURS (TWO WORKING DAYS) PRIOR TO STARTING ANY WORK ON THIS PROJECT. ALL WORK SHALL BE SUBJECT TO INSPECTION. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS PRIOR TO REQUESTING A PRE-CONSTRUCTION MEETING.
4. CONTRACTOR SHALL INCLUDE IN HIS BID PRICE THE COSTS FOR LOCATING AND UNCOVERING ALL SEWER MANHOLES AND VALVE BOXES AFTER SURFACE TREATMENT OF ROADS, AND FOR ADJUSTING THEM TO THE FINAL ROAD GRADES AS NEEDED.
5. CONTRACTOR SHALL VERIFY LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES. THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES ACROSS OR ALONG THE LINE OF THE PROPOSED WORK MAY NOT BE SHOWN ON THE PLANS AND WHERE SHOWN MAY BE ONLY APPROXIMATELY CORRECT.
6. CONTRACTOR SHALL INCLUDE IN HIS BID PRICE THE COST OF LOCATING ALL UNDERGROUND LINES AND STRUCTURES AS NECESSARY TO COMPLETE THE WORK. NO CLAIMS FOR DAMAGES OR EXTRA COMPENSATION SHALL ACCRUE TO THE CONTRACTOR DUE TO THE PRESENCE OF EXISTING UTILITIES OR FROM ANY DELAY DUE TO REMOVAL OR REARRANGEMENT OF THE SAME. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO UNDERGROUND STRUCTURES.
7. CONTRACTOR SHALL CALL "MISS UTILITY" TOLL FREE AT 811 PRIOR TO START OF CONSTRUCTION.
8. DATUM FOR ALL ELEVATIONS SHOWN IS NATIONAL GEODETIC SURVEY.
9. SERVICE SADDLES MUST BE USED ON ALL WATER SERVICE CONNECTIONS.
10. FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DRAWING W-10.
11. ALL FIRE HYDRANTS SHALL BE NATIONAL STANDARD THREADS AND SHALL BE PAINTED TO AWWA STANDARDS.
12. MINIMUM DESIGN COVER OVER WATER LINES IS 3 FEET. EXCEPTIONS DUE TO UNUSUAL CIRCUMSTANCES IN THE FIELD MUST BE APPROVED BY DPW.
13. MINIMUM DESIGN COVER OVER GRAVITY SEWER LINES IS 3 FEET. EXCEPTIONS DUE TO UNUSUAL CIRCUMSTANCES IN THE FIELD MUST BE APPROVED BY DPW. DUCTILE IRON PIPE (DIP) MUST BE USED WHERE COVER IS LESS THAN 3 FEET, AND WHERE COVER IS MORE THAN 15 FEET IN OTHER AREAS.
14. MINIMUM DESIGN COVER OVER SANITARY SEWER FORCE MAINS IS 3.5 FEET. EXCEPTIONS DUE TO UNUSUAL CIRCUMSTANCES IN THE FIELD MUST BE APPROVED BY DPW.
15. A SANITARY SEWER CLEANOUT SHALL BE INSTALLED ON EACH SEWER SERVICE LATERAL AT THE EDGE OF THE ROW/UTILITY EASEMENT, IN ACCORDANCE WITH DPW STANDARDS.
16. VANDAL PROOF COVERS SHALL BE USED ON ALL MANHOLES IN EASEMENTS. WATERTIGHT COVERS SHALL BE USED IN FLOOD PLAINS.
17. DETECTABLE MARKING TAPE IS REQUIRED ON ALL BURIED LINES.
18. COPPER TRACER WIRE AND TRACER WIRE ACCESS BOXES SHALL BE INSTALLED ON ALL WATER MAINS AND ALL SEWAGE FORCE MAINS.
19. ON WATER SYSTEMS, TRACER WIRE ACCESS BOXES WITH MOW COLLARS SHALL BE INSTALLED ADJACENT TO ALL FIRE HYDRANTS.
20. ON SEWAGE FORCE MAINS TRACER WIRE ACCESS BOXES SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:
    a. ADJACENT TO THE BYPASS CONNECTION RISER ON THE PUMP STATION SITE.
    b. ADJACENT TO THE DISCHARGE MANHOLE FOR THE FORCE MAIN.
    c. OTHER INTERMEDIATE LOCATIONS AS DETERMINED BY DPW AND SHOWN ON THE PLANS.
21. GRAVITY SEWERS WHICH RECEIVE PUMPED FLOW SHALL BE PROTECTED AGAINST SULFIDE ATTACK FOR A DISTANCE OF 1,200 FEET DOWNSTREAM FROM THE POINT OF ENTRY OF THE PUMPED FLOW. THIS SHALL BE ACCOMPLISHED BY THE USE OF ACID-RESISTANT PIPE AND MANHOLES IN ACCORDANCE WITH DPW STANDARDS.
22. NO PERMANENT STRUCTURES OR TREES SHALL BE LOCATED WITHIN ANY UTILITY EASEMENT.
23. PRIOR TO REQUESTING ANY ACCEPTANCE INSPECTION, CONTRACTOR SHALL FLUSH AND CLEAN OUT GRAVITY SEWER MAINS AS NEEDED, PERFORM CCTV RECORDINGS OF ALL GRAVITY SEWER MAINS AND MANHOLES, AND SUBMIT CCTV RECORDINGS TO DPW FOR REVIEW.
24. FINAL ACCEPTANCE BY CITY WILL NOT OCCUR UNTIL ALL WORK SHOWN ON APPROVED UTILITY PLANS IS COMPLETED INCLUDING CURB & GUTTER, PAVING, GRADING AND ALL REQUIRED ADJUSTMENTS.
25. WETLANDS SHALL NOT BE IMPACTED ON THIS PROJECT.
26. DPW OR THEIR DESIGNEE WILL INSPECT ALL PUBLIC WATER AND SANITARY SEWER MAINS, CONNECTIONS AND APPURTENANCES THERETO, AS SHOWN ON THE APPROVED UTILITY PLANS, LOCATED WITHIN DEDICATED EASEMENTS AND/OR PUBLIC RIGHTS-OF-WAY. OTHER LINES TO BE INSTALLED ON SITE SUCH AS ROOF DRAINS, FOUNDATION DRAINS, PRIVATE WATER SUPPLY LINES, PRIVATE SANITARY SEWER LINES, ETC., MUST BE APPROVED BY THE DEPARTMENT OF BUILDING INSPECTIONS PRIOR TO INSTALLATION AND ARE TO BE INSPECTED BY THEM BEFORE BACKFILLING/COVERING.
27. CONCURRENT INSPECTIONS BY THE DEPARTMENT OF BUILDING INSPECTIONS AND DPW WILL BE PERFORMED FOR THE FOLLOWING: MAINLINE BACKFLOW PREVENTERS; MONITORING MANHOLES; GREASE TRAPS; EXCLUSION METERS; IRRIGATION METERS. DPW WILL INSPECT TO ENSURE THAT THE PROPER APPURTENANCE, AS SHOWN ON THE APPROVED UTILITY PLANS, HAS BEEN INSTALLED AND TESTED IN ACCORDANCE WITH DPW STANDARDS.

UTILITY NOTES:

1. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT AND MAINTAIN UNINTERRUPTED SERVICE EXCEPT AS ALLOWED BY THE INSPECTOR.
2. ANY DAMAGE TO EXISTING STRUCTURES SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE INSPECTOR, AT THE CONTRACTOR'S EXPENSE.
3. ALL TIE-IN CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR PRIOR TO BACKFILLING.
4. COMPACT EACH LAYER OF FILL OR BACKFILL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF THE MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D 698 (AASHTO T-99). REFER TO THE GEOTECHNICAL ENGINEERING REPORT FOR ADDITIONAL BACKFILL AND COMPACTION REQUIREMENTS.
   4.A. 100 PERCENT BENEATH AND WITHIN 25 FEET OF BUILDINGS AND STRUCTURES, INCLUDING THOSE SHOWN FOR FUTURE CONSTRUCTION.
   4.B. 95 PERCENT BENEATH PAVEMENTS, WALKS, AND ROAD SHOULDERS, INCLUDING THOSE SHOWN FOR FUTURE CONSTRUCTION.
   4.C. 90 PERCENT IN OTHER UNPAVED AREAS.
5. AFTER BACKFILLING, FINISHED GRADE ABOVE TRENCH SHALL BE RESTORED TO AS GOOD OR BETTER THAN EXISTING CONDITIONS WHICH EXISTED PRIOR TO CONSTRUCTION.
6. BLASTING OF ROCK IS STRICTLY PROHIBITED WITHOUT WRITTEN PRIOR AUTHORIZATION FROM THE OWNER.
7. TRENCHES WITHIN PRIVATE AND PUBLIC PAVED AREAS (GRAVEL, ASPHALT, CONCRETE, ETC.) SUBJECT TO VEHICULAR LOADS SHALL BE FULLY BACKFILLED WITH SELECT AGGREGATE MATERIAL (VDOT 21A OR 21B).

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

THIS DRAWING PREPARED AT THE
CORPORATE OFFICE
1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

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REVISION DESCRIPTION	DATE
REVISED PER CITY COMMENTS	01/19/2024
	DATE 6/2/2023

DRAWN BY: Z. MOUNTJOY
DESIGNED BY: Z. MOUNTJOY
CHECKED BY: B. STRICKLAND
SCALE: AS SHOWN

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
GENERAL NOTES

JOB NO. 49408
SHEET NO. G1.1

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L:\2019\49408-Staunton_Crossing_Utilities\eDWG\Sheet\CD\Phase 2\49408-201C-G1.0-COVER.dwg | Plotted on 4/19/2024 3:30 PM | by Zachary Mountjoy

EROSION AND SEDIMENT CONTROL NARRATIVE:

PROJECT DESCRIPTION
THE PURPOSE OF THIS PROJECT IS TO PROVIDE A NEW 1.0 MILLION GALLON (MG) ELEVATED WATER STORAGE TANK (EWST) TO SERVE THE STAUNTON CROSSING DEVELOPMENT IN STAUNTON, VIRGINIA. THE PROJECT WILL INCLUDE APPROXIMATELY 2,400 LINEAR FEET OF NEW 16" WATERLINE THAT CONNECTS TO THE 16" WATERLINE FROM PHASE 1 OF THIS PROJECT AND THE EWST. THE PROJECT WILL ALSO INCLUDE APPROXIMATELY 2,400 LINEAR FEET OF A NEW 16' GRAVEL ACCESS ROAD TO THE EWST.

AREA OF DISTURBANCE
TOTAL AREA DISTURBED: 5.80 ACRES
AREA TAKEN FROM CONSTRUCTION PLAN "LIMITS OF DISTURBANCE" (LOD).

EXISTING SITE CONDITIONS
THE PROJECT WILL MOSTLY TAKE PLACE IN UNDEVELOPED AREAS OF THE SITE THAT WERE PREVIOUSLY CLEARED AND CONSIST OF UNDERGROWTH.

ADJACENT AREAS
ADJACENT AREAS INCLUDE THE PREVIOUSLY DEVELOPED LAND TO THE NORTH, UNDEVELOPED FORESTED LAND TO THE EAST, INTERSTATE 81 TO THE SOUTH, STATE ROUTE 250 TO THE WEST.

OFFSITE AREAS
THERE WILL BE NO OFF-SITE LAND DISTURBANCES ASSOCIATED WITH THIS PROJECT. SPOILS WILL BE DISPOSED OF IN STRICT ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS.

SOIL TYPES AND CHARACTERISTICS
SOILS WERE EVALUATED BASED ON USGS SOIL SURVEY INFORMATION. SEE SOILS MAP ON THIS SHEET.

CRITICAL AREAS
THE NEW ROAD FOLLOWS AN EXISTING RIDGE AND THE NEW EWST WILL BE CONSTRUCTED ON A LOCAL HIGH SPOT. THERE ARE DELINEATED WETLANDS AND STEEP SLOPES ADJACENT TO THE PROJECT.

PROPOSED TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES
SILT FENCE WILL SERVE AS THE PRIMARY EROSION CONTROL MEASURE THROUGHOUT CONSTRUCTION AND ROCK CHECK DAMS WILL PROVIDE EROSION CONTROL FOR EXISTING DITCHES. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED FIRST AND WILL BE MONITORED AND MAINTAINED THROUGHOUT ALL PHASES OF CONSTRUCTION.

MAINTENANCE
ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. ALL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER ALL RAIN EVENTS. IF THE SEDIMENT TRAPPING MEASURE IS NO LONGER USEFUL IT SHALL BE REPLACED.

STRUCTURAL PRACTICES AND MAINTENANCE PROCEDURES
THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL MEASURES NECESSARY TO PREVENT SOIL FROM ERODING OR BEING TRACKED ONTO ADJACENT PROPERTY, STREETS, DRAINAGE SYSTEMS, AND WATERWAYS. ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATION 9 VAC 25-840-40. THE MINIMUM STANDARDS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE FROM THE CITY OF STAUNTON.

3.02 TEMPORARY STONE CONSTRUCTION ENTRANCE

TEMPORARY STONE CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS OR AS DIRECTED BY COUNTY INSPECTOR. IF THIS MEASURE BECOMES COVERED WITH SOIL OR PUSHED INTO THE SOIL BY CONSTRUCTION TRAFFIC, IT SHALL BE REPLACED WITH A DEPTH OF STONE EQUAL TO THE ORIGINAL APPLICATION. THE CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED PRIOR TO ANY OTHER WORK TAKING PLACE.

3.05 SILT FENCE

A TEMPORARY SEDIMENT BARRIER CONSTRUCTED OF POSTS, FILTER FABRIC AND, IN SOME CASES, A WIRE SUPPORT FENCE, PLACED ACROSS OR AT THE TOE OF A SLOPE OR IN A MINOR DRAINAGE WAY TO INTERCEPT AND DETAIN SEDIMENT AND DECREASE FLOW VELOCITIES FROM DRAINAGE AREAS OF LIMITED SIZE; APPLICABLE WHERE SHEET AND RILL EROSION OR SMALL CONCENTRATED FLOWS MAY BE A PROBLEM. MAXIMUM EFFECTIVE LIFE OF 6 MONTHS.

3.20 ROCK CHECK DAM

SMALL, TEMPORARY STONE DAMS CONSTRUCTED ACROSS A DRAINAGE DITCH TO REDUCE THE VELOCITY OF CONCENTRATED FLOWS, REDUCING EROSION OF THE SWALE OR DITCH. LIMITED TO USE IN SMALL OPEN CHANNELS WHICH DRAIN 10 ACRES OR LESS; SHOULD NOT BE USED IN LIVE STREAMS.

3.31 TEMPORARY SEEDING

ESTABLISHMENT OF TEMPORARY VEGETATIVE COVER ON DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR PERIODS OF 30 DAYS TO ONE YEAR BY SEEDING WITH APPROPRIATE RAPIDLY GROWING PLANTS.

3.32 PERMANENT SEEDING

ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER BY PLANTING SEEDS ON ROUGH-GRADED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A YEAR OR MORE OR WHERE PERMANENT, LONG-LIVED VEGETATIVE COVER IS NEEDED ON FINE-GRADED AREAS.

3.35 MULCHING

APPLICATION OF PLANT RESIDUES OR OTHER SUITABLE MATERIALS TO THE SOIL SURFACE TO PREVENT EROSION BY PROTECTING THE SOIL FROM RAINDROP IMPACT AND REDUCING THE VELOCITY OF OVERLAND FLOW. AREAS WHICH HAVE BEEN PERMANENTLY SEEDED SHOULD BE MULCHED IMMEDIATELY FOLLOWING SEEDING.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

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 THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS 9VAC25-840.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

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

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 APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT 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 CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING ANY DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

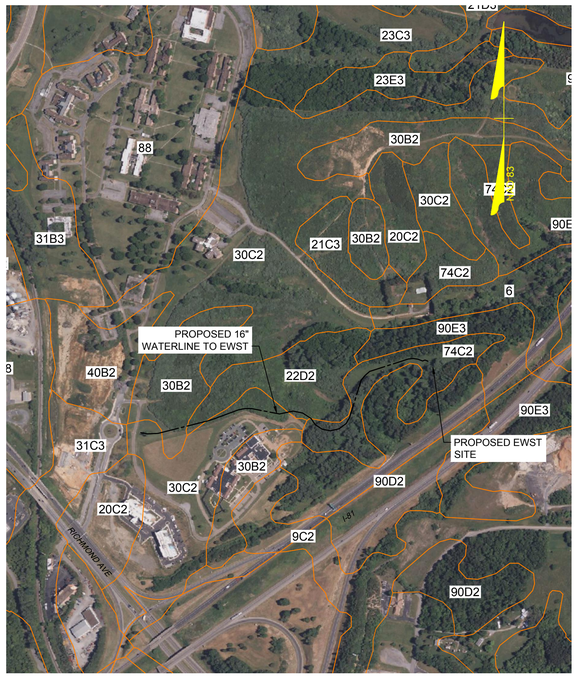
ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

MANAGEMENT STRATEGIES

1. PROVIDE SEDIMENT TRAPPING MEASURES AS A FIRST STEP IN GRADING AND SEED AND MULCH IMMEDIATELY FOLLOWING INSTALLATION.
2. PROVIDE TEMPORARY SEEDING OR OTHER STABILIZATION IMMEDIATELY AFTER GRADING.
3. ISOLATE TRENCHING FOR UTILITIES AND DRAINAGE FROM DOWNSTREAM CONVEYANCES IN ORDER TO MINIMIZE PERIMETER CONTROLS.
4. ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE MAINTAINED UNTIL THEY ARE NO LONGER REQUIRED TO COMPLY WITH THE CONTRACT DOCUMENTS OR STATE LAW.

PERMANENT STABILIZATION

ALL NON-PAVED AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. TOPSOIL SHALL BE PLACED TO A DEPTH OF 4" & SEEDING SHALL BE IN ACCORDANCE WITH STD. & SPEC. 3.32, PERMANENT SEEDING. IMPORTED TOPSOIL SHALL BE OBTAINED FROM A SITE WITH AN APPROVED ESC PLAN. SEED TYPE SHALL BE AS SPECIFIED FOR "MINIMUM CARE LAWNS" AND "GENERAL SLOPES" IN THE HANDBOOK. MULCH (STRAW OR FIBER) IN ACCORDANCE WITH STD. & SPEC. 3.35, SHALL BE USED ON ALL SEEDED SURFACES. EROSION CONTROL BLANKETS WILL BE INSTALLED OVER FILL SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT THE SLOPES FROM RILL & GULLY EROSION AND TO ALLOW THE SEED TO GERMINATE PROPERLY. IN ALL SEEDING OPERATIONS SEED, FERTILIZER AND LIME SHALL BE APPLIED PER RECOMMENDATIONS OF THE SOIL TEST PRIOR TO MULCHING.



EROSION AND SEDIMENT MINIMUM STANDARDS:

AN EROSION AND SEDIMENT CONTROL PROGRAM ADOPTED BY A DISTRICT OR LOCALITY MUST BE CONSISTENT WITH THE FOLLOWING CRITERIA, TECHNIQUES AND METHODS:

MS-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 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

MS-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.

MS-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.

MS-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.

MS-5: STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

MS-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.

A. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAPS HALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.

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 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A TWENTY-FIVE YEAR STORM OF 24-HOUR 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.

MS-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.

MS-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.

MS-9: WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.

MS-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.I

MS-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.

MS-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.

MS-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.

MS-14: ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORK IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.

MS-15: THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.

MS-16: UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

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

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

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.

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

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

f. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.

MS-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.

SOILS LEGEND

MAP UNIT SYMBOL	MAP UNIT NAME
6	AQUENTS, LOAMY-SKELETAL
9C2	BERKS-WEIKERY CHANNERY SILT LOAM, 7 TO 15 PERCENT SLOPES, ERODED
20C2	CHILHOWIE SILTY CLAY LOAM, 7 TO 15 PERCENT SLOPES, ERODED
21C3	CHILHOWIE CHANNERY SILTY CLAY LOAM, 7 TO 15 PERCENT SLOPES, SEVERELY ERODED
21D3	CHILHOWIE CHANNERY SILTY CLAY LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED
22D2	CHILHOWIE-EDOM COMPLEX, 15 TO 25 PERCENT SLOPES, ERODED
23C3	CHILHOWIE-EDOM SHALY SILTY CLAY LOAMS, 7 TO 15 PERCENT SLOPES, SEVERELY ERODED
23E3	CHILHOWIE-EDOM CHANNERY SILTY CLAY LOAMS, 15 TO 45 PERCENT SLOPES, SEVERELY ERODED
30B2	EDOM SILT LOAM, 2 TO 7 PERCENT SLOPES, ERODED
30C2	EDOM SILT LOAM, 7 TO 15 PERCENT SLOPES, ERODED
31B3	EDOM SILTY CLAY LOAM, 2 TO 7 PERCENT SLOPES, SEVERELY ERODED
31C3	EDOM SILTY CLAY LOAM, 7 TO 15 PERCENT SLOPES, SEVERELY ERODED
35B2	ENDCAV SILT LOAM, 2 TO 7 PERCENT SLOPES, ERODED
40B2	FREDERICK-CHRISTIAN SILT LOAMS, 2 TO 7 PERCENT SLOPES, ERODED
74C2	SEQUOIA-BERKS SILT LOAMS, 7 TO 15 PERCENT SLOPES, ERODED
88	URBAN LAND
90D2	WEIKERT-BERKS CHANNERY SILT LOAMS, 15 TO 25 PERCENT SLOPES, ERODED
90E3	WEIKERT-BERKS CHANNERY SILT LOAMS, 25 TO 50 PERCENT SLOPES, SEVERELY ERODED

MINIMUM STANDARDS (CONTINUED):

MS-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.

MS-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:

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

(2) 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 BANDS; AND

(3) 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

(4) 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 CHANNEL 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 IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH ARE SATISFACTORY TO THE PLAN-APPROVING AUTHORITY TO PREVENT DOWNSTREAM EROSION.

D. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.

E. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT OF THE SUBJECT PROJECT.

F. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION HE SHALL OBTAIN APPROVAL FROM THE LOCALITY OF A PLAN FOR MAINTENANCE REQUIREMENTS 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 DISSIPATERS SHALL BE PLACED AT THE END 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 ON 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 AL 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 THAT PRACTICES ARE 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 10.1-562 OR 10.1-5700 OF THE ACT.

M. FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF 10.1-561 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (10.1-603.2 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES ARE IN ACCORDANCE WITH 4VAC50-60-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATIONS.

N. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 4VAC50-60-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) PERMIT REGULATION SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF MINIMUM STANDARD 19.

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

THIS DRAWING PREPARED AT THE
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DESIGNED BY Z. MOUNTJOY
CHECKED BY B. STRICKLAND
SCALE AS SHOWN

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
EROSION AND SEDIMENT CONTROL NARRATIVE

JOB NO. 49408
SHEET NO. C1.0

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Linear Utility Project - Erosion & Sediment Control Notes

Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

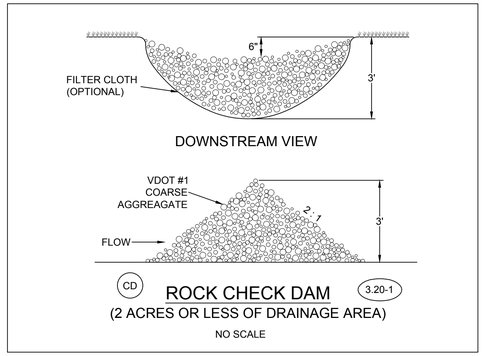
1. No more than 500 linear feet of trench may be opened at one time
2. Excavated material shall be placed on the uphill side of trenches
3. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not adversely affect flowing streams or off-site property
4. Material used for backfilling trenches shall be properly compacted in order to minimize erosion and promote stabilization
5. Soil stabilization shall be accomplished in accordance with the requirements in the *Standards & Specifications of the Department of Public Utilities*, and the *Virginia Erosion and Sediment Control Handbook*.
6. Contractor shall comply with applicable safety regulations at all times.
7. It shall be the Developer's responsibility to inspect all erosion control devices periodically and after every rainfall. Any necessary repairs or cleanup to maintain the effectiveness of the erosion control devices shall be made immediately.
8. No disturbed area will be denuded for more than 30 calendar days.
9. All erosion and siltation measures are to be put in place prior to or as the first step in clearing and grading.
10. All storm and sanitary sewer lines not in streets are to be mulched and seeded immediately after backfilling. No more than five hundred linear feet are to be open at one time.
11. All temporary earth berms, diversions, and silt dams are to be mulched and seeded for vegetative cover immediately after grading. Straw or hay mulch is required. The same applies to all soil stockpiles on site as well as soil (intentionally) transported from the project site.
12. During construction, all storm sewer inlets will be protected by silt traps, maintained and modified as required by construction progress.
13. Temporary seeding will be applied within seven days to denuded areas that may not be at final grade, but which may remain dormant (undisturbed) for longer than thirty days. For temporary seeding use 50% of recommended amounts used for permanent seeding of fertilizer and lime and 100% of required amounts of seed and mulch.
14. All erosion control devices must be installed and maintained in accordance with the latest edition of the *Virginia Erosion and Sediment Control Handbook*.
15. If during construction, additional erosion control devices are found necessary, they shall be installed as directed by the City Engineer.

Linear Utility Project – Stormwater Management Notes

In accordance with **VDEQ Guidance Memo No. 15-2003** (dated 23 April 2015) any linear utility project being constructed without General VPDES Permit Coverage for Stormwater Management, shall be conducted in the following manner:

1. The project will not significantly alter the predevelopment runoff characteristics of the land surface after the completion of construction and final stabilization.
2. The project will be managed so that less than one (1) acre of land disturbance occurs on a daily basis.
3. The disturbed land where work has been completed will be adequately stabilized on a daily basis.
4. The environment will be protected from erosion and sedimentation damage associated with the land-disturbing activity.
5. The engineer and contractor will design, install, implement and maintain pollution prevention measures to:
   - A. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters.
   - B. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on-site to precipitation and to stormwater.
   - C. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.
   - D. Prohibit the discharge of wastewater from the washout of concrete.
   - E. Prohibit the discharge of wastewater from the washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials.
   - F. Prohibit the discharge of fuels, oils or other pollutants used in vehicle and equipment operation and maintenance.

Form F-14
06/2020



CD ROCK CHECK DAM 3.20-1
(2 ACRES OR LESS OF DRAINAGE AREA)
NO SCALE

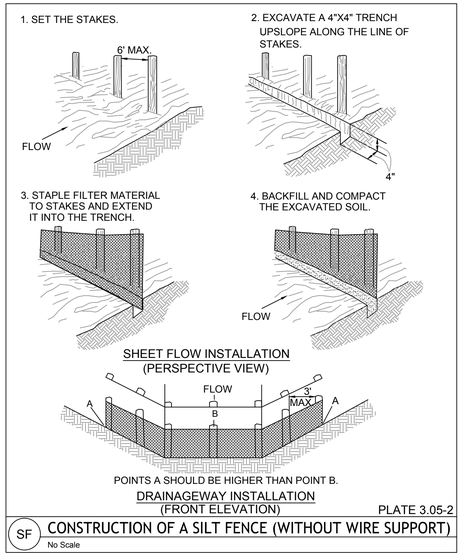
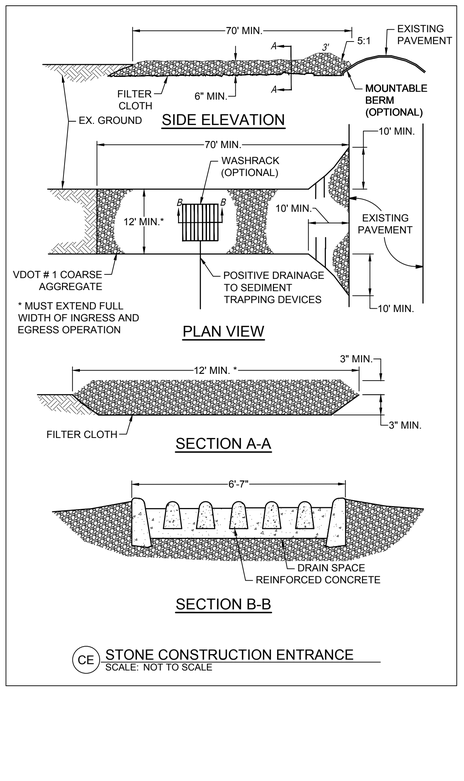


PLATE 3.05-2

SF CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)
No Scale



CE STONE CONSTRUCTION ENTRANCE
SCALE: NOT TO SCALE

EROSION CONTROL LEGEND

LABEL	SYMBOL	STANDARD NAME	SPEC.#
CE		CONSTRUCTION ENTRANCE	3.02
SF		SILT FENCE	3.05-2
CD		ROCK CHECK DAM	3.20
TS	TS	TEMPORARY SEEDNG	3.31
PS	PS	PERMANENT SEEDING	3.32
MU	MU	MULCHING	3.35
LOD	LOD	LIMITS OF DISTURBANCE	

*NOTE: PS AS LABELED ON PLAN SHEETS IS INTENDED TO INCLUDE MU

TABLE 3.32-C
SITE SPECIFIC SEEDING MIXTURES
FOR APPALACHIAN/MOUNTAIN AREA

MINIMUM CARE LAWN	TOTAL LBS. PER ACRE
COMMERCIAL OR RESIDENTIAL	200-250 LBS.
KENTUCKY 31 OR TURF-TYPE TALL FESCUE	90-100%
IMPROVED PERENNIAL RYEGRASS *	0-10%
KENTUCKY BLUEGRASS	0-10%
HIGH MAINTENANCE LAWN	
MINIMUM OF THREE (3) UP TO FIVE (5) VARIETIES OF BLUEGRASS FROM APPROVED LIST FOR USE IN VIRGINIA.	125 LBS.
GENERAL SLOPE (3:1 OR LESS)	
KENTUCKY 31 FESCUE	128 LBS.
RED TOP GRASS	2 LBS.
SEASONAL NURSE CROP **	20 LBS.
	150 LBS.
LOW-MAINTENANCE SLOPE (STEEPER THAN 3:1)	
KENTUCKY 31 FESCUE	108 LBS.
RED TOP GRASS	2 LBS.
SEASONAL NURSE CROP **	20 LBS.
CROWNVETCH ***	20 LBS.
	150 LBS.

* PERENNIAL RYEGRASS WILL GERMINATE FASTER AND AT LOWER SOIL TEMPERATURES THAN FESCUE, THEREBY PROVIDING COVER AND EROSION RESISTANCE FOR SEEDBED.

** USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:
MARCH, APRIL THROUGH MAY 15TH..... ANNUAL RYE
MAY 16TH THROUGH AUGUST 15TH..... FOXTAIL MILLET
AUGUST 16TH THROUGH SEPTEMBER, OCTOBER..... ANNUAL RYE
NOVEMBER THROUGH FEBRUARY..... WINTER RYE

*** IF FLATPEA IS USED, INCREASE TO 30 LBS./ACRE. ALL LEGUME SEED MUST BE PROPERLY INOCULATED. WEEPING LOVEGRASS MAY ALSO BE INCLUDED IN ANY SLOPE OR LOW-MAINTENANCE MIXTURE DURING WARMER SEEDING PERIODS; ADD 10-20 LBS./ACRE IN MIXES.

PS PERMANENT SEEDING
APPALACHIAN REGION
SCALE: NOT TO SCALE

TABLE 3.31-B
ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS
"QUICK REFERENCE FOR ALL REGIONS"

PLANTING DATES	SPECIES	RATE (LBS./ACRE)
SEPT. 1 - FEB. 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)	50-100
FEB. 16 - APR. 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60-100
MAY 1 - AUG. 31	GERMAN MILLET (SETARIA ITALICA)	50

TS TEMPORARY SEEDING
SCALE: NOT TO SCALE

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCH	MULCHING RATES		NOTES
	PER ACRE	PER 1000 SQ FT	
STRAW AND HAY	1.5 - 2 TONS (MIN 2 TONS FOR WINTER COVER)	70-90 LBS	FREE FROM WEEDS AND COARSE MATTER. MUST BE ANCHORED. SPREAD WITH MULCH BLOWER OR BY HAND.

MU MULCHING
SCALE: NOT TO SCALE

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
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PROFESSIONAL ENGINEER

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SCALE AS SHOWN

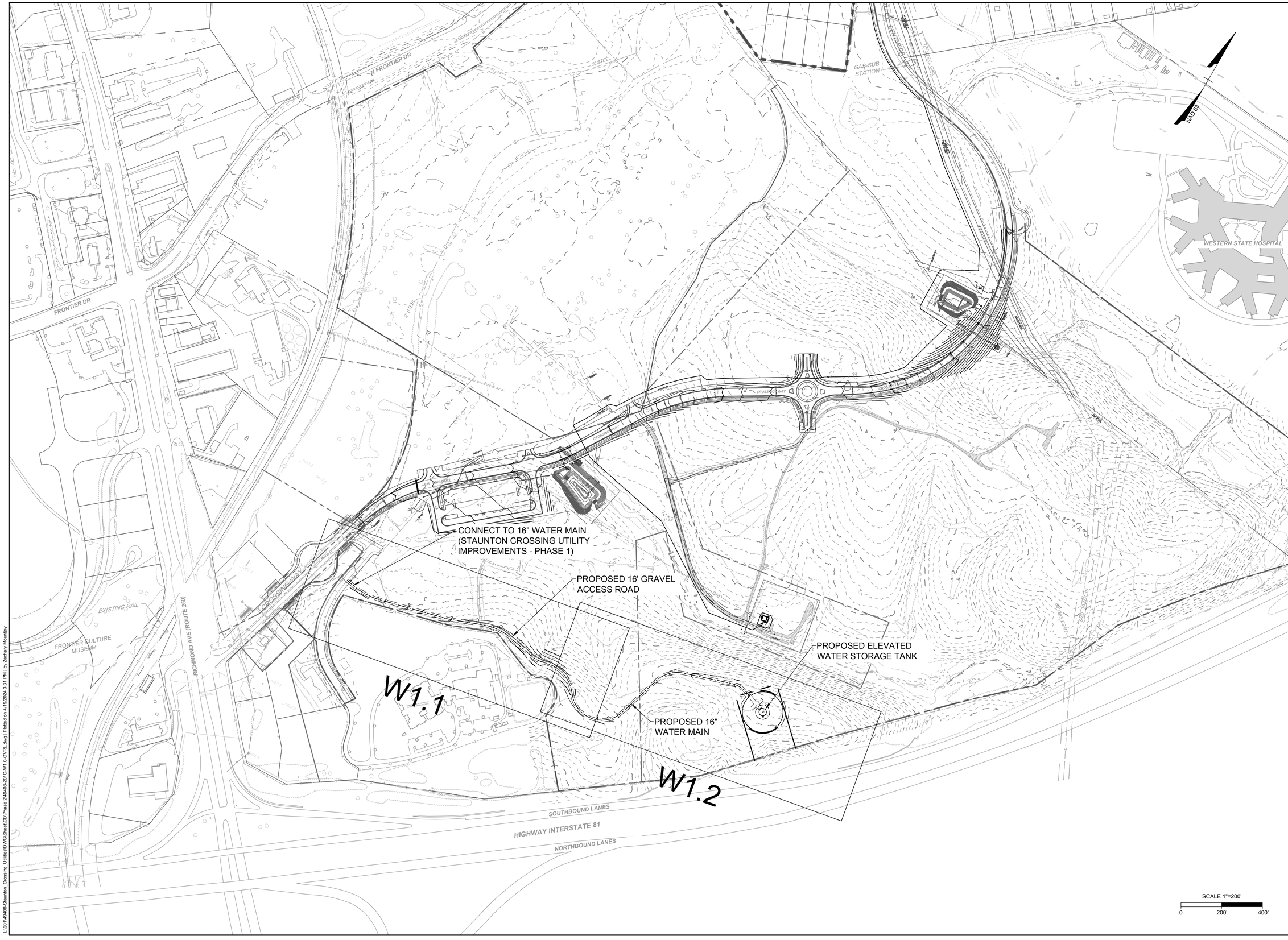
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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
EROSION AND SEDIMENT CONTROL DETAILS

JOB NO. 49408
SHEET NO. C1.1

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DESIGNED BY Z. MOUNTJOY
CHECKED BY B. STRICKLAND
SCALE 1" = 200'

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

CITY OF STAUNTON, VIRGINIA

WATER MAIN SHEET INDEX

JOB NO. 49408
SHEET NO. W1.0

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ABANDONED UTILITIES NOTE:
ABANDONED WATER AND SEWER UTILITIES (PIPE, VALVE BOXES, MANHOLES, ETC.) IN CONFLICT WITH THE PROPOSED UTILITIES SHALL BE DEMOLISHED AND REMOVED.

REFER TO STAUNTON CROSSING UTILITY IMPROVEMENTS - PHASE 1 PLAN SET (BY OTHERS)

STA. 43+92.50
REMOVE PLUG AND CONNECT TO 16" WATER MAIN (PHASE 1)

REALIGN FENCE AND PROVIDE 20' DOUBLE SWING GATE

STA. 46+19.30
16" X 6" HYDRANT TEE
FIRE HYDRANT ASSEMBLY

PROPOSED 16" CL. 350 D.I. WATER MAIN

PROPOSED VARIABLE WIDTH TEMPORARY CONSTRUCTION EASEMENT

STA.50+93.97
11.25° BEND

STA.51+86.26
11.25° BEND

STA.54+80.73
22.50° BEND

STA.55+48.69
22.50° BEND

STA.56+19.17
22.50° BEND

STA.56+71.47
22.50° BEND

STA.57+29.45
22.50° BEND

STA.57+50.00
2" AIR RELIEF VALVE
INSTALL AT ACTUAL HIGH POINT

STA.57+88.13
22.50° BEND

STA.44+32.56
11.25° BEND

STA.45+06.96
11.25° BEND

STA.44+48.00
2" AIR RELIEF VALVE
INSTALL AT ACTUAL HIGH POINT

ABANDONED 12" GRAVITY SEWER DEMOLISH AS NEEDED. PLUG PIPE ENDS AND FILL WITH FLOWABLE FILL

PROPOSED 20' UTILITY EASEMENT

STA.51+40.12
11.25° BEND

STA. 52+58.50
16" X 6" HYDRANT TEE
1 - 16" BUTTERFLY VALVE
FIRE HYDRANT ASSEMBLY
INSTALL AT ACTUAL HIGH POINT

STA.53+84.49
22.50° BEND

INV.=1445.50'
15" RCP

PAVED PARKING

EX. MH PER RECORD DRAWINGS

8' CHAIN LINK GATE

8' CHAIN LINK FENCE

EX. VALVE

MATCH LINE SHEET W1.2

SCALE 1"=50'
0 50' 100'

SEQUENCE OF CONSTRUCTION NOTES:
1. CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING WITH THE STAUNTON DPW INSPECTOR AT LEAST 7 DAYS PRIOR TO THE START OF CONSTRUCTION.
2. CONNECT TO EXISTING WATER MAINS AS SHOWN ON THE PLANS.
3. INSTALL TEMPORARY JUMPERS WITH BACKFLOW PREVENTION AS REQUIRED BY STAUNTON DPW.
4. INSTALL NEW WATER MAINS AND APPURTENANCES.
5. NEW WATER MAINS SHALL BE FLUSHED, TESTED, DISINFECTED, AND SAMPLED IN ACCORDANCE WITH STAUNTON DPW STANDARDS PRIOR TO BEING PLACED INTO OPERATION.
6. REMOVE TEMPORARY JUMPERS AND INSTALL FINAL CONNECTIONS.
7. PERFORM FINAL FLUSH TO REMOVE REMAINING AIR AND DEBRIS.

RESTRAINED PIPE JOINT NOTE:
SEE NOTES AND RESTRAINT LENGTH TABLE, SHEET G1.1 FOR PIPE RESTRAINT LENGTHS NOT SHOWN HERE.

WATER STORAGE TANK ACCESS ROAD

STA. 43+92.50 REMOVE PLUG AND CONNECT TO 16" WATER MAIN (PHASE 1)
STA.44+32.56 11.25° BEND
STA. 44+48.00 2" AIR RELIEF VALVE INSTALL AT ACTUAL HIGH POINT
STA.45+06.96 11.25° BEND
STA. 46+19.30 16" X 6" HYDRANT TEE FIRE HYDRANT ASSEMBLY
STA.50+93.97 11.25° BEND
STA.51+40.12 11.25° BEND
STA.51+86.26 11.25° BEND
STA. 52+58.50 16" X 6" HYDRANT TEE FIRE HYDRANT ASSEMBLY INSTALL AT ACTUAL HIGH POINT
STA.53+84.49 22.50° BEND
STA.54+80.73 22.50° BEND
STA.55+48.69 22.50° BEND

EXISTING GRADE
PROPOSED GRADE- TANK ACCESS ROAD
MAINTAIN 3.0' MINIMUM COVER
PROPOSED 16" CL. 350 D.I. WATER MAIN
PROPOSED 16" CL. 350 D.I. WATER MAIN
REFER TO STAUNTON CROSSING UTILITY IMPROVEMENTS - PHASE 1 PLAN SET (BY OTHERS)
RESTRAIN ALL JOINTS, FITTINGS, AND APPURTENANCES (18')
RESTRAIN ALL JOINTS, FITTINGS, AND APPURTENANCES (18')
MATCH LINE SHEET W1.2
PROFILE SCALE 0 50 10 0

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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DESIGNED BY J. CARTER
CHECKED BY B. STRICKLAND
SCALE H: 1" = 50' V: 1" = 10'

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
WATER MAIN PLAN AND PROFILE

JOB NO. 49408
SHEET NO. W1.1

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ABANDONED UTILITIES NOTE:
ABANDONED WATER AND SEWER UTILITIES (PIPE, VALVE BOXES, MANHOLES, ETC.) IN CONFLICT WITH THE PROPOSED UTILITIES SHALL BE DEMOLISHED AND REMOVED.

SEQUENCE OF CONSTRUCTION NOTES:
1. CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING WITH THE STAUNTON DPW INSPECTOR AT LEAST 7 DAYS PRIOR TO THE START OF CONSTRUCTION.
2. CONNECT TO EXISTING WATER MAINS AS SHOWN ON THE PLANS.
3. INSTALL TEMPORARY JUMPERS WITH BACKFLOW PREVENTION AS REQUIRED BY STAUNTON DPW.
4. INSTALL NEW WATER MAINS AND APPURTENANCES.
5. NEW WATER MAINS SHALL BE FLUSHED, TESTED, DISINFECTED, AND SAMPLED IN ACCORDANCE WITH STAUNTON DPW STANDARDS PRIOR TO BEING PLACED INTO OPERATION.
6. REMOVE TEMPORARY JUMPERS AND INSTALL FINAL CONNECTIONS.
7. PERFORM FINAL FLUSH TO REMOVE REMAINING AIR AND DEBRIS.

STA.54+80.73 22.50° BEND
STA.55+48.69 22.50° BEND
STA.56+19.17 22.50° BEND
STA.56+71.47 22.50° BEND
STA.57+29.45 22.50° BEND
STA.57+50.00 2" AIR RELIEF VALVE INSTALL AT ACTUAL HIGH POINT
STA.57+88.13 22.50° BEND
STA.58+49.63 22.50° BEND
STA.59+11.35 22.50° BEND
STA.59+58.74 11.25° BEND
STA. 60+68.21 16" X 6" HYDRANT TEE 1 - 16" BUTTERFLY VALVE FIRE HYDRANT ASSEMBLY
STA.62+33.62 22.50° BEND
STA.62+76.76 11.25° BEND
STA.63+19.90 22.50° BEND
STA.66+03.03 11.25° BEND
STA.66+37.17 11.25° BEND
STA.66+71.28 11.25° BEND
STA.67+05.86 45° BEND
STA. 67+25.00 16" X 6" HYDRANT TEE 1 - 16" BUTTERFLY VALVE FIRE HYDRANT ASSEMBLY
STA.67+49.98 45° BEND
PROPOSED 16" CL. 350 D.I. WATER MAIN
PROPOSED 20' UTILITY EASEMENT
PROPOSED VARIABLE WIDTH TEMPORARY CONSTRUCTION EASEMENT
REFER TO EWST SITE PLAN FOR CONTINUATION
MATCH LINE SHEET W1.1
EX. MH PER RECORD DRAWINGS
8' CHAIN LINK FENCE
8' CHAIN LINK GATE
6" X 6" CONCRETE MONUMENT STAMPED "VDH"
LIMITED ACCESS R/W
INTERSTATE ROUTE 81
NAD 83
SCALE 1"=50'
0 50' 100'

RESTRAINED PIPE JOINT NOTE:
SEE NOTES AND RESTRAINT LENGTH TABLE, SHEET G1.1 FOR PIPE RESTRAINT LENGTHS NOT SHOWN HERE.

WATER STORAGE TANK ACCESS ROAD

EXISTING GRADE
PROPOSED GRADE- TANK ACCESS ROAD
MAINTAIN 3.0' MINIMUM COVER
MAINTAIN ASCENDING GRADE
PROPOSED 16" CL. 350 D.I. WATER MAIN
126' 126'
RESTRAIN ALL JOINTS, FITTINGS, AND APPURTENANCES
18'
RESTRAIN ALL JOINTS, FITTINGS, AND APPURTENANCES TO EWST
REFER TO EWST SITE PLAN FOR CONTINUATION
MATCH LINE SHEET W1.1
PROFILE SCALE 10 0 50

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BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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CHECKED BY B. STRICKLAND
SCALE H: 1" = 50' V: 1" = 10'

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
WATER MAIN PLAN AND PROFILE

JOB NO. 49408
SHEET NO. W1.2

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N. FRONTIER DRIVE

VALLEY CENTER DRIVE

US ROUTE 250
(RICHMOND AVENUE)

INTERSTATE 81

CROSSING WAY

CITY LIMITS

NORTH

J-1_EFH
J-2
J-3
J-4
J-5
J-6
J-7
J-8
J-9
J-10
J-11
J-12
J-13_EFH
J-14_EFH
J-15
J-16
J-17
J-18
J-19
J-20_EFH
J-21_EFH
J-22
J-23_EFH
J-24_EFH
J-25_EFH
J-26_EFH
J-27_EFH
J-28_EFH
J-29_EFH
J-30_EFH

P-1
P-2
P-3
P-4
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P-8
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P-26
P-27
P-28
P-29
P-30
P-31

FUTURE ELEVATED
WATER STORAGE TANK

T-1

PIPE LEGEND

- PHASE 2 PIPE
- "STAUNTON CROSSING UTILITY IMPROVMENTS - WATER" PIPE
- EXISTING PIPE

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DESIGNED BY S. HARVEY
CHECKED BY B. STRICKLAND
SCALE N.T.S.

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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

CITY OF STAUNTON - VIRGINIA

WATER SYSTEM HYDRAULIC ANALYSIS - LAYOUT

JOB NO. 49408
SHEET NO. W1.3

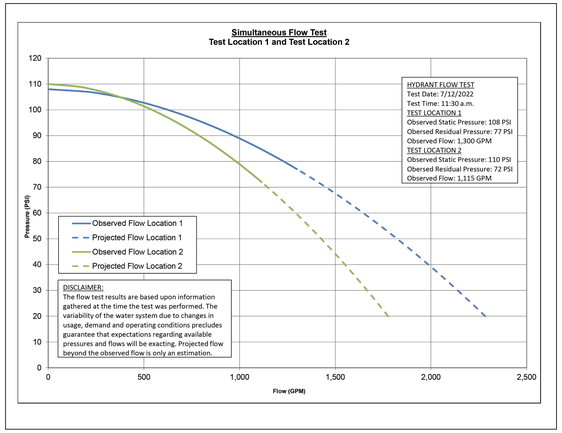
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L:\2021\49408 Staunton_Crossing_Utilities\Cad\Water\Water Model\DWG\2023-11-27 Phase 2\49408-WMDL-PH2.dwg | Plotted on 4/19/2024 3:32 PM | by Zachary Mountjoy

DESIGN CRITERIA

- AVAILABLE FLOW INFORMATION FOR THE EXISTING SYSTEM WAS OBTAINED FROM A SIMULTANEOUS FLOW TEST PERFORMED BY TIMMONS GROUP AND THE CITY OF STAUNTON DEPARTMENT OF PUBLIC WORKS (DPW) ON 7/12/2022. TEST LOCATION 1 IS THE EXISTING HYDRANT (DPW HYDRANT WHF 1866) LOCATED ALONG THE EXISTING RAILROAD TRACKS APPROXIMATELY 1,300 FEET NORTHWEST OF THE ROUNDABOUT ON CROSSING WAY. TEST LOCATION 2 IS THE EXISTING HYDRANT (DPW HYDRANT 1809) LOCATED ALONG VALLEY CENTER DRIVE APPROXIMATELY 1,000 FT SOUTHEAST OF THE INTERSECTION OF VALLEY CENTER DRIVE AND NORTH FRONTIER DRIVE. THE AVAILABLE FLOW CURVES ARE SHOWN ON THIS SHEET.
  - FOR SCENARIOS MODELED WITH THE FLOW CURVES ACTIVE ONLY, SYSTEM FLOW IS REPRESENTED AT J-1_EFH (TEST LOCATION 1) AND J-14_EFH (TEST LOCATION 2) IN THE INCLUDED WATER MODEL LAYOUT.
- RESULTS WERE ALSO PROVIDED SHOWING AVAILABLE FLOWS AND PRESSURES BASED ON A FIXED GRADE TANK SIMULATING THE PROPOSED STAUNTON CROSSING ELEVATED WATER STORAGE TANK (TANK). ELEVATION INFORMATION AND HYDRAULIC GRADE LINES (HGL) USED FOR THIS ANALYSIS ARE LISTED BELOW.
  - FOR SCENARIOS MODELED WITH ONLY THE TANK ACTIVE, SYSTEM FLOW IS REPRESENTED AT T-1 IN THE INCLUDED WATER MODEL LAYOUT.
    - TANK BASE ELEVATION = 1,458.5'
    - TANK EMPTY HGL (BOTTOM OF BOWL ELEVATION) = 1,642.0'
    - TANK FULL HGL (OVERFLOW ELEVATION) = 1,682.0'
- SCENARIOS WERE PERFORMED UNDER THE FOLLOWING FLOW CONDITIONS. SCENARIOS 2 AND 3 ARE FUTURE CONDITIONS THAT PROVIDE RESULTS BASED ON FLOW FROM THE FUTURE ELEVATED WATER STORAGE TANK.
  - SCENARIO 1 - SIMULTANEOUS FLOW CURVES ACTIVE (TANK INACTIVE)
  - SCENARIO 2 - TANK ACTIVE AT TANK EMPTY HGL (SIMULTANEOUS FLOW CURVES INACTIVE)
  - SCENARIO 3 - TANK ACTIVE AT TANK FULL HGL (SIMULTANEOUS FLOW CURVES INACTIVE)
- THIS WATER MODEL WAS PERFORMED TO EVALUATE AVAILABLE PRESSURE AND FLOW BASED ON THE INCLUDED WATER MODEL LAYOUT AND FLOW DEMAND CRITERIA.
- ALL WATERLINES WERE MODELED WITH A HAZEN-WILLIAMS ROUGHNESS COEFFICIENT OF 120.
- THE WATER MODEL LAYOUT IS BASED ON THE FOLLOWING INFORMATION:
  - SURVEY INFORMATION PROVIDED BY TRC COMPANIES.
  - EXISTING WATERLINE LAYOUT INFORMATION OUTSIDE OF THE PROJECT AREA IS BASED ON GIS INFORMATION PROVIDED BY THE CITY OF STAUNTON.
  - PROPOSED WATERLINE LAYOUT IS BASED ON INFORMATION PROVIDED BY TIMMONS GROUP AND THE PROPOSED CROSSING WAY ROAD EXTENSION PLANS PROVIDED BY THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT).
  - PIPES P-15 THROUGH P-18 ARE FUTURE AND ARE INACTIVE DURING SCENARIO 1.
- **THIS ANALYSIS IS INTENDED FOR PLANNING PURPOSES AND DOES NOT INCLUDE LOSSES FOR METERS, BACKFLOW PREVENTION OR SERVICE PIPING TO ANY PROPOSED DEVELOPMENT. RESULTS PROVIDED REFLECT AVAILABLE FLOWS AND RESIDUAL PRESSURES ON PUBLIC MAINLINE NODES. LOSSES FOR THESE APPURTENANCES MUST BE ACCOUNTED FOR BY OTHERS.**
- THE PROPOSED SYSTEM WAS EVALUATED BASED ON THE FOLLOWING:
  - MAINTAIN A MINIMUM RESIDUAL PRESSURE OF 45 PSI FOR THE AVERAGE DAILY AND MAXIMUM DAILY DEMAND SCENARIOS.
  - MAINTAIN A MINIMUM RESIDUAL PRESSURE OF 20 PSI FOR ALL FIRE FLOW SCENARIOS.

AVAILABLE FLOW CURVES



FLOW DEMAND CRITERIA

- AVERAGE DAILY DEMAND:
  - STAUNTON CROSSING FULL DEVELOPMENT
    - TOTAL DEMAND = 1,000,000 GPD
    - DURATION = 24 HOURS
    - AVERAGE DAILY DEMAND = 894.4 GPM
      - AVERAGE DAILY DEMAND WAS SPLIT EVENLY AND APPLIED AT THREE JUNCTIONS. SEE SHEET W1.0 FOR THE LOCATIONS OF THESE JUNCTIONS.
        - J-6 = 231.5 GPM
        - J-8 = 231.5 GPM
        - J-11 = 231.5 GPM
- MAXIMUM DAILY DEMAND = AVERAGE DAILY DEMAND X 1.75

CONCLUSION

- BASED ON THE INFORMATION PROVIDED, THE PROPOSED SYSTEM IS ADEQUATE TO MEET THE MINIMUM RESIDUAL PRESSURE REQUIREMENTS WHILE PROVIDING THE REQUIRED FLOWS FOR THE DOMESTIC SCENARIOS UNDER ALL SYSTEM CONDITIONS.
- AVAILABLE FIRE FLOW TABLES WERE PROVIDED FOR EACH SYSTEM CONDITION WHICH SHOW THE CALCULATED FLOW FROM EACH NODE, FLOWED NON-SIMULTANEOUSLY, WHILE MAINTAINING A MINIMUM SYSTEM PRESSURE LIMIT OF 20 PSI. THESE AVAILABLE FIRE FLOW RESULTS WERE RUN UNDER THE MAXIMUM DAILY DEMAND. THESE FLOWS ARE FOR REVIEW AND APPROVAL OF THE AUTHORITY HAVING JURISDICTION.
- PRESSURES IN THE SYSTEM EXCEED 80 PSI. PRESSURE REDUCING VALVES MAY BE REQUIRED PER CITY STANDARDS AND BUILDING CODE.
- IT IS ASSUMED THAT THE OFF-SITE WATER SYSTEM HAS ADEQUATE OPERATIONAL AND PERMIT CAPACITY.
- THE RESULTS PRESENTED ARE BASED UPON INFORMATION GATHERED AT THE TIME OF THIS ANALYSIS. THE VARIABILITY OF THE WATER SYSTEM DUE TO CHANGES IN USAGE, DEMAND, OPERATING CONDITIONS, AND LAYOUT PRECLUDES GUARANTEE THAT EXPECTATIONS REGARDING AVAILABLE PRESSURES AND FLOWS WILL BE EXACTING.
- THIS HYDRAULIC ANALYSIS DOES NOT MAKE ANY STATEMENTS REGARDING THE ABILITY TO MEET ANY FIRE CODES, STANDARDS, OR REGULATIONS. THESE RESULTS MAY BE USED BY OTHERS TO DETERMINE THE ADEQUACY OF THE SYSTEM TO MEET FIRE SAFETY REQUIREMENTS.

SCENARIO 1 RESULTS TABLE - SIMULTANEOUS FLOW CURVES ACTIVE (TANK INACTIVE)

FLOW SCENARIO	NODES																												
	J-1_EFH	J-2	J-3	J-4	J-5	J-6	J-7	J-8	J-9	J-10	J-11	J-12	J-13_EFH	J-14_EFH	J-15	J-16	J-17	J-18	J-19	J-20_EFH	J-21_EFH	J-22	J-23_EFH	J-24_EFH	J-25_EFH	J-26_EFH	J-27_EFH	J-28_EFH	J-29_EFH	J-30_EFH
ELEVATION (FT)	1,409.3	1,408.0	1,396.6	1,402.4	1,401.9	1,386.2	1,379.1	1,386.3	1,389.8	1,450.0	1,450.1	1,357.9	1,395.7	1,398.8	1,421.7	1,448.6	1,436.1	1,457.7	1,440.3	1,432.9	1,418.3	1,415.5	1,420.5	1,446.4	1,413.0	1,427.8	1,390.5	1,392.1	1,409.9	1,411.9
STATIC	108.0	108.6	113.5	111.0	111.2	118.0	121.1	118.0	116.5	90.4	90.4	130.3	113.9	112.6	102.7	(N/A)	(N/A)	(N/A)	94.6	97.8	104.1	105.3	103.2	92.0	106.4	100.0	116.2	115.5	107.8	106.9
AVERAGE DAILY DEMAND (PSI)	103.3	103.9	108.8	106.2	106.4	113.2	116.3	113.2	111.7	85.6	85.6	125.5	109.2	107.9	97.9	(N/A)	(N/A)	(N/A)	89.9	93.1	99.4	100.6	98.4	87.2	101.7	95.3	111.4	110.8	103.0	102.2
MAXIMUM DAILY DEMAND (PSI)	97.2	97.7	102.5	99.9	100.1	106.9	110.0	106.9	105.4	79.3	79.3	119.2	102.9	102.0	91.6	(N/A)	(N/A)	(N/A)	83.6	86.8	93.1	94.3	92.1	80.9	95.4	89.0	105.2	104.5	96.8	95.9
AVAILABLE FIRE FLOW*	2,289	2,279	2,270	2,263	2,263	2,263	2,257	2,256	2,254	2,244	2,243	2,252	2,259	2,307	2,265	(N/A)	(N/A)	(N/A)	2,141	2,119	2,066	1,992	1,943	1,773	1,943	2,041	2,175	2,196	2,225	2,251
PRESSURE AT FIRE FLOW NODE (PSI)	37.2	37.8	42.7	39.6	39.9	47.2	50.3	47.2	45.8	20.0	20.0	59.7	43.2	41.0	30.3	(N/A)	(N/A)	(N/A)	20.2	23.5	30.4	33.4	31.2	20.0	26.5	25.5	39.3	39.0	32.0	32.0
MINIMUM PRESSURE DURING FIRE FLOW (PSI)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.1	20.0	20.0	20.0	20.0	(N/A)	(N/A)	(N/A)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
NODE OF MINIMUM PRESSURE	J-10	J-10	J-10	J-10	J-10	J-10	J-10	J-10	J-10	J-11	J-11	J-11	J-11	J-11	J-10	(N/A)	(N/A)	(N/A)	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH

*AVAILABLE FIRE FLOW WAS RUN UNDER THE MAXIMUM DAILY DEMAND. THESE RESULTS REFLECT THE AVAILABLE, NON-SIMULTANEOUS FLOW, AT A SYSTEM MINIMUM RESIDUAL PRESSURE LIMIT OF 20 PSI.

PIPE TABLE

LABEL	LENGTH (FT)	DIA (IN.)
P-1	58	10
P-2	590	16
P-3	474	16
P-4	89	16
P-5	435	16
P-6	389	16
P-7	169	16
P-8	64	16
P-9	918	16
P-10	144	16
P-11	930	16
P-12	712	16
P-13	471	10
P-14	864	16
P-19	385	8
P-20	75	8
P-21	202	8
P-22	312	8
P-23	70	8
P-24	290	8
P-25	253	8
P-26	277	8
P-27	741	8
P-28	316	10
P-29	379	10
P-30	312	10
P-31	551	10
PHASE 2 PIPES		
P-15	882	16
P-16	732	16
P-17	739	16
P-18	70	16

FUTURE CONDITIONS

SCENARIO 2 RESULTS TABLE - TANK EMPTY HGL (SIMULTANEOUS FLOW CURVES INACTIVE)

FLOW SCENARIO	NODES																												
	J-1_EFH	J-2	J-3	J-4	J-5	J-6	J-7	J-8	J-9	J-10	J-11	J-12	J-13_EFH	J-14_EFH	J-15	J-16	J-17	J-18	J-19	J-20_EFH	J-21_EFH	J-22	J-23_EFH	J-24_EFH	J-25_EFH	J-26_EFH	J-27_EFH	J-28_EFH	J-29_EFH	J-30_EFH
ELEVATION (FT)	1,409.3	1,408.0	1,396.6	1,402.4	1,401.9	1,386.2	1,379.1	1,386.3	1,389.8	1,450.0	1,450.1	1,357.9	1,395.7	1,398.8	1,421.7	1,448.6	1,436.1	1,457.7	1,440.3	1,432.9	1,418.3	1,415.5	1,420.5	1,446.4	1,413.0	1,427.8	1,390.5	1,392.1	1,409.9	1,411.9
STATIC (PSI)	100.7	101.3	106.2	103.7	103.9	110.7	113.8	110.6	109.1	83.1	83.0	122.9	106.6	105.2	95.3	83.7	89.1	79.8	87.3	90.5	96.8	98.0	95.8	84.6	99.1	92.7	108.8	108.1	100.4	99.5
AVERAGE DAILY DEMAND (PSI)	100.1	100.7	105.6	103.2	103.4	110.1	113.2	110.0	108.5	82.4	82.4	122.3	105.9	104.6	94.9	83.4	88.9	79.7	86.9	90.1	96.4	97.5	95.4	84.2	98.6	92.2	108.3	107.6	99.9	99.0
MAXIMUM DAILY DEMAND (PSI)	99.1	99.7	104.6	102.3	102.4	109.1	112.1	108.9	107.4	81.3	81.3	121.2	104.8	103.4	94.2	83.0	88.7	79.7	86.1	89.3	95.6	96.7	94.5	83.3	97.8	91.3	107.3	106.6	98.9	98.0
AVAILABLE FIRE FLOW* (GPM)	7,646	7,692	7,650	8,190	8,081	7,612	7,176	7,007	6,950	6,258	6,166	6,167	6,167	5,036	9,594	12,538	15,000	15,000	5,310	5,220	4,879	4,261	3,941	3,104	3,573	4,460	5,533	5,746	5,835	6,273
PRESSURE AT FIRE FLOW NODE (PSI)	20.0	27.6	38.4	40.8	41.0	47.8	50.8	47.7	46.2	20.0	20.0	51.4	28.6	20.0	33.0	21.7	45.0	75.9	20.0	20.0	24.3	33.4	31.2	20.0	20.0	20.0	20.0	20.0	20.0	20.0
MINIMUM PRESSURE DURING FIRE FLOW (PSI)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	37.5	75.9	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
NODE OF MINIMUM PRESSURE	J-1_EFH	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-14_EFH	J-11	J-11	J-11	J-18	J-19	J-20_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-25_EFH	J-26_EFH	J-27_EFH	J-28_EFH	J-29_EFH	J-30_EFH

*AVAILABLE FIRE FLOW WAS RUN UNDER THE MAXIMUMM DAILY DEMAND. THESE RESULTS REFLECT THE AVAILABLE, NON-SIMULTANEOUS FLOW, AT A SYSTEM MINIMUM RESIDUAL PRESSURE LIMIT OF 20 PSI. AVAILABLE FLOW WAS LIMITED TO 15,000 GPM.

SCENARIO 3 RESULTS TABLE - TANK FULL HGL (SIMULTANEOUS FLOW CURVES INACTIVE)

FLOW SCENARIO	NODES																												
	J-1_EFH	J-2	J-3	J-4	J-5	J-6	J-7	J-8	J-9	J-10	J-11	J-12	J-13_EFH	J-14_EFH	J-15	J-16	J-17	J-18	J-19	J-20_EFH	J-21_EFH	J-22	J-23_EFH	J-24_EFH	J-25_EFH	J-26_EFH	J-27_EFH	J-28_EFH	J-29_EFH	J-30_EFH
ELEVATION (FT)	1,409.3	1,408.0	1,396.6	1,402.4	1,401.9	1,386.2	1,379.1	1,386.3	1,389.8	1,450.0	1,450.1	1,357.9	1,395.7	1,398.8	1,421.7	1,448.6	1,436.1	1,457.7	1,440.3	1,432.9	1,418.3	1,415.5	1,420.5	1,446.4	1,413.0	1,427.8	1,390.5	1,392.1	1,409.9	1,411.9
STATIC (PSI)	118.0	118.6	123.5	121.0	121.2	128.0	131.1	127.9	126.4	100.4	100.3	140.2	123.9	122.5	112.6	101.0	106.4	97.1	104.6	107.8	114.1	115.3	113.1	101.9	116.4	110.0	126.1	125.4	117.7	116.8
AVERAGE DAILY DEMAND (PSI)	117.4	118.0	122.9	120.5	120.7	127.4	130.5	127.3	125.8	99.7	99.7	139.6	123.2	121.9	112.2	100.7	106.2	97.0	104.2	107.4	113.7	114.8	112.7	101.5	115.9	109.5	125.6	124.9	117.2	116.3
MAXIMUM DAILY DEMAND (PSI)	116.4	117.0	121.9	119.6	119.7	126.4	129.4	126.2	124.7	98.6	98.6	138.5	122.1	120.7	111.5	100.3	106.0	97.0	103.4	106.6	112.9	114.0	111.8	100.6	115.1	108.6	124.6	123.9	116.2	115.3
AVAILABLE FIRE FLOW* (GPM)	8,591	8,945	8,895	9,510	9,386	8,850	8,346	8,150	8,084	7,277	7,170	7,171	7,171	5,616	11,122	14,493	15,000	15,000	6,062	5,925	5,600	4,886	4,517	3,554	3,998	5,043	6,131	6,374	6,538	7,043
PRESSURE AT FIRE FLOW NODE (PSI)	20.0	24.1	36.8	40.8	41.0	47.8	50.8	47.7	46.2	20.0	20.0	48.7	23.8	20.0	33.0	21.7	62.3	93.2	20.0	20.0	22.0	33.4	31.2	20.0	20.0	20.0	20.0	20.0	20.0	20.0
MINIMUM PRESSURE DURING FIRE FLOW (PSI)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	54.8	93.2	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
NODE OF MINIMUM PRESSURE	J-1_EFH	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-11	J-14_EFH	J-11	J-11	J-11	J-18	J-19	J-20_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-24_EFH	J-25_EFH	J-26_EFH	J-27_EFH	J-28_EFH	J-29_EFH	J-30_EFH

*AVAILABLE FIRE FLOW WAS RUN UNDER THE MAXIMUMM DAILY DEMAND. THESE RESULTS REFLECT THE AVAILABLE, NON-SIMULTANEOUS FLOW, AT A SYSTEM MINIMUM RESIDUAL PRESSURE LIMIT OF 20 PSI. AVAILABLE FLOW WAS LIMITED TO 15,000 GPM.

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1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
01/19/2024
PROFESSIONAL ENGINEER

REVISION DESCRIPTION	DATE
REVISED PER CITY COMMENTS	01/19/2024

DATE 6/2/2023
DRAWN BY S. HARVEY
DESIGNED BY S. HARVEY
CHECKED BY B. STRICKLAND
SCALE N.T.S.

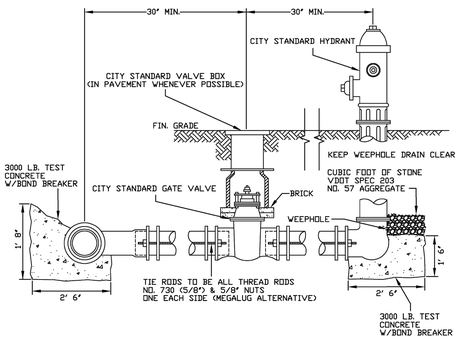
TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON - VIRGINIA
WATER SYSTEM HYDRAULIC ANALYSIS - RESULTS

JOB NO. 49408
SHEET NO. W1.4

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L:\2021\49408 Staunton_Crossing_Utilities\Civil\Water Model\DWG\2023-11-27 Phase 2\49408-WMDL-PH2.dwg | Plotted on 4/19/2024 3:32 PM | by Zachary Mountjoy

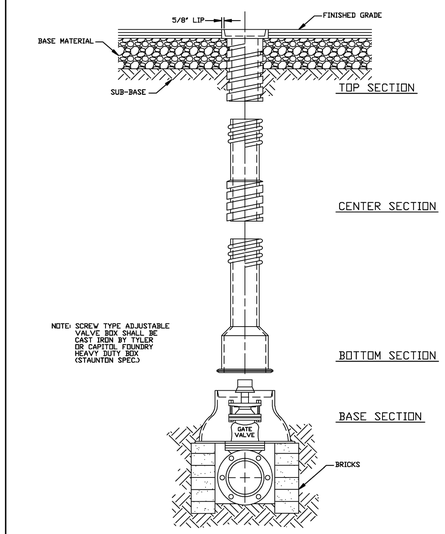


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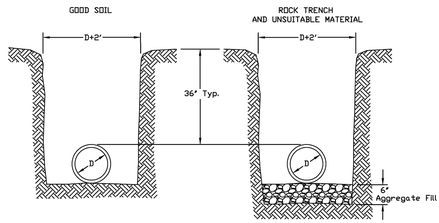
LOCATE VALVE IN PAVEMENT WHERE APPLICABLE

WEEP HOLES SHALL BE LOCATED ABOVE THE SEASONAL WATER TABLE

CITY OF STAUNTON, VA	**STANDARD FIRE HYDRANT ASSEMBLY**	Draw No. **W-10**

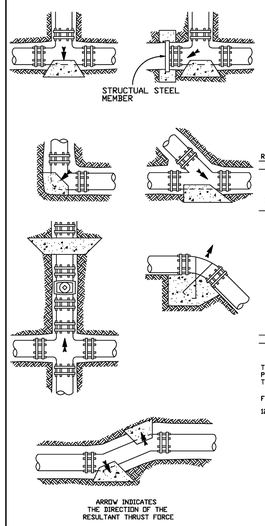


CITY OF STAUNTON, VA	**SCREW - TYPE ADJUSTABLE VALVE BOX**	Draw No. **W-11**



NOTE:
1. ALL BEDDING SHALL BE CONTINUOUS AND UNIFORM
2. EXCAVATION IS REQUIRED TO ENSURE THERE IS NO ROCK WITHIN 6' OF THE BOTTOM OF THE PIPE

CITY OF STAUNTON, VA	**WATER PIPE INSTALLATION**	Draw No. **W-12**



UTILIZE: TO DETERMINE THE THRUST TO BE RESTRAINED BY A THRUST BLOCK

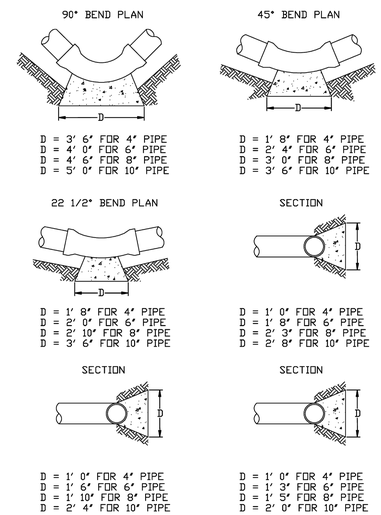
RESULTANT THRUST AT FITTINGS AT 100 PSI WATER PRESSURE

	TOTAL POUNDS				
NOM. PIPE DIA. IN.	DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4	1,810	2,559	1,385	706	355
6	3,739	5,288	2,862	1,459	733
8	6,433	9,097	4,923	2,510	1,261
10	9,677	13,685	7,406	3,776	1,897
12	13,685	19,353	10,474	5,340	2,683
14	18,385	26,001	14,073	7,174	3,604
16	23,779	33,628	18,199	9,278	4,661
18	29,865	42,235	22,858	11,653	5,855
20	36,644	51,822	28,046	14,298	7,183
24	52,279	73,934	40,013	20,398	10,249
30	80,425	113,738	61,554	31,380	15,766
36	115,209	162,931	88,177	44,952	22,585
42	155,528	219,950	119,036	60,684	30,489
48	202,683	286,627	155,127	79,083	39,733
54	256,072	362,140	195,989	99,914	50,199

TO DETERMINE THRUST AT PRESSURES OTHER THAN 100 PSI, MULTIPLY THE THRUST OBTAINED IN THE TABLE BY THE RATIO OF THE PRESSURE TO 100

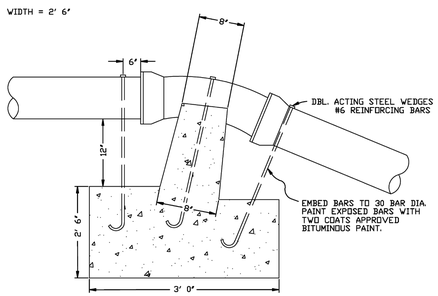
FOR EXAMPLE, THE THRUST ON A 12 INCH, 90° BEND AT 125 PSI IS 19,353 X $\frac{125}{100}$ = 24,191 POUNDS

CITY OF STAUNTON, VA	**THRUST BLOCK TABLES XXV,XXIV**	Draw No. **W-13**



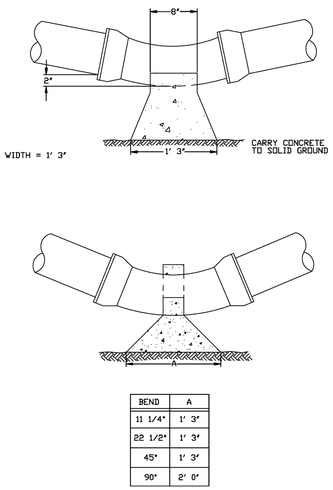
MEGA-LUG ALTERNATIVE FOR BENDS 22 1/2" AND LESS

CITY OF STAUNTON, VA	**THRUST BLOCK DETAILS**	Draw No. **W-14**



MEGA-LUG ALTERNATIVE FOR BENDS 22 1/2" OR LESS

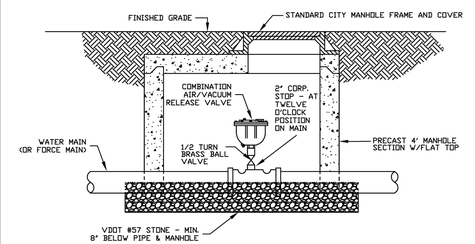
CITY OF STAUNTON, VA	**THRUST BLOCK VERTICAL BEND**	Draw No. **W-15**



BEND	A
11 1/4°	1' 3"
22 1/2°	1' 3"
45°	1' 3"
90°	2' 0"

MEGA-LUG ALTERNATIVE FOR BENDS 22 1/2" OR LESS

CITY OF STAUNTON, VA	**THRUST BLOCK HORIZONTAL & VERTICAL BENDS**	Draw No. **W-16**



NOTES:
1. MIN 36" COVER OVER PIPELINE REQUIRED MIN. 6" CLEARANCE BETWEEN APPARATUS & MANHOLE REQUIRED.
2. STANDARD CITY MANHOLE & FRAME AND COVER REQUIRED FOR TRAFFIC BEARING LOCATIONS.
3. COMBINATION AIR/VACUUM RELEASE VALVES TO BE VAL-MATIC SERIES 200C OR EQUAL FOR WATER. (VAL-MATIC SERIES 800C OR EQUAL FOR SEWER FORCE MAIN).
4. INSTALL AT LOCAL HIGH POINT IN MAIN.

REVISED: 2023-10-20

CITY OF STAUNTON, VA	COMBINATION AIR/VACUUM RELEASE VALVE	Drawing No. W-18

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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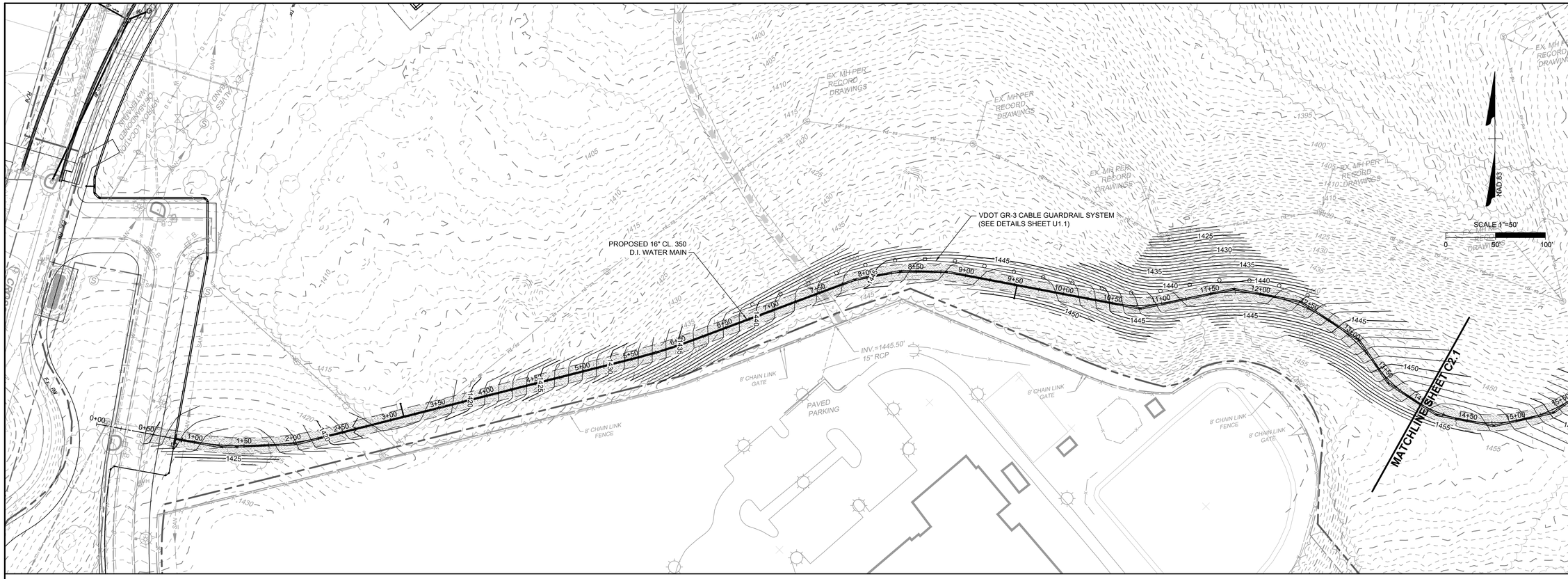
REVISION DESCRIPTION	DATE
REVISED PER CITY COMMENTS	01/19/2024
	DATE 6/2/2023
	DRAWN BY Z. MOUNTJOY
	DESIGNED BY Z. MOUNTJOY
	CHECKED BY B. STRICKLAND
	SCALE AS SHOWN

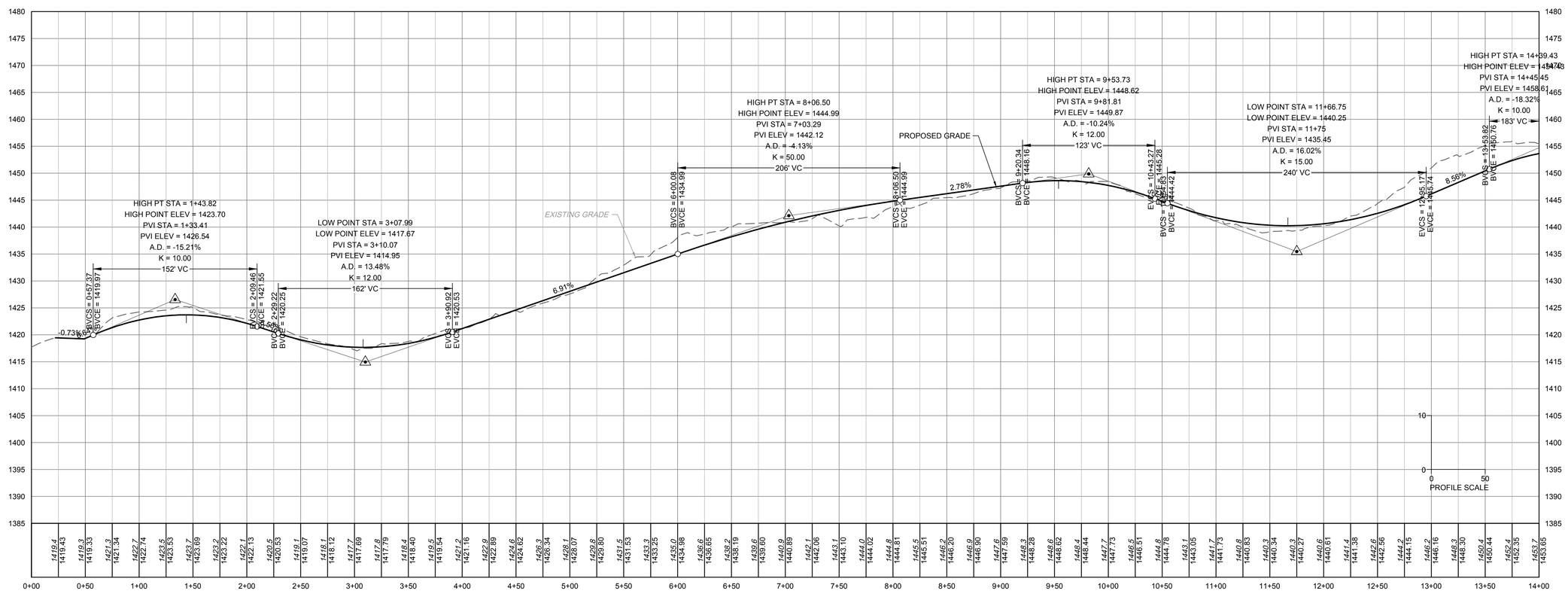
STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
WATER DETAILS

JOB NO. 49408
SHEET NO. W2.0

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BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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CHECKED BY: B. STRICKLAND
SCALE: H: 1" = 50' V: 1" = 10'

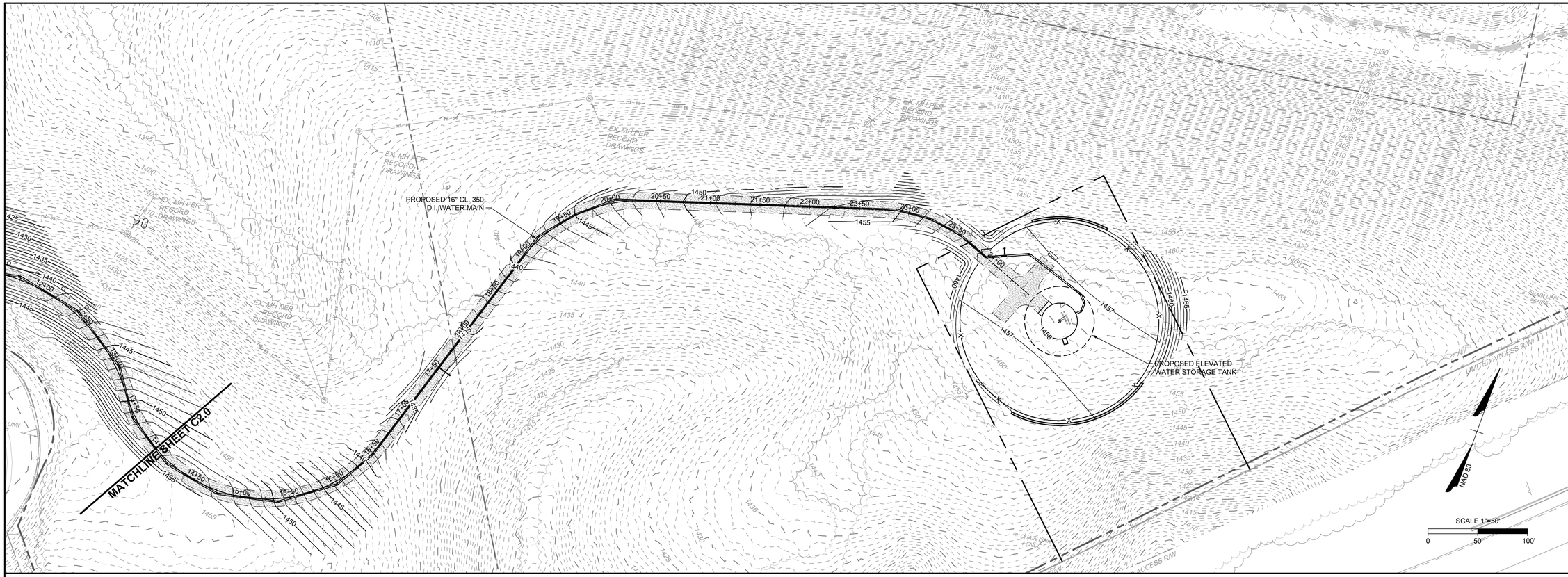
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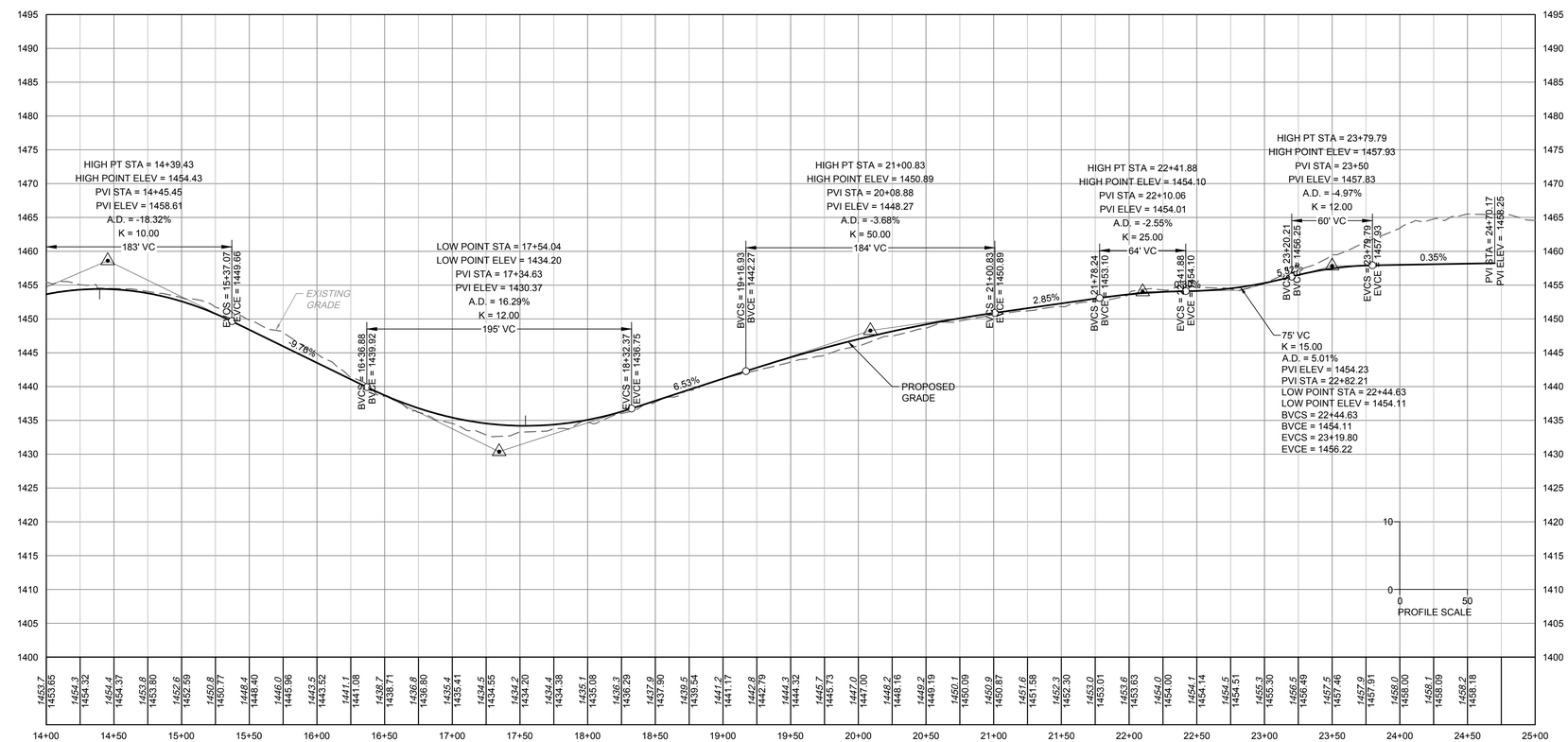
STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
ACCESS ROAD PLAN AND PROFILE

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SHEET NO. R1.0

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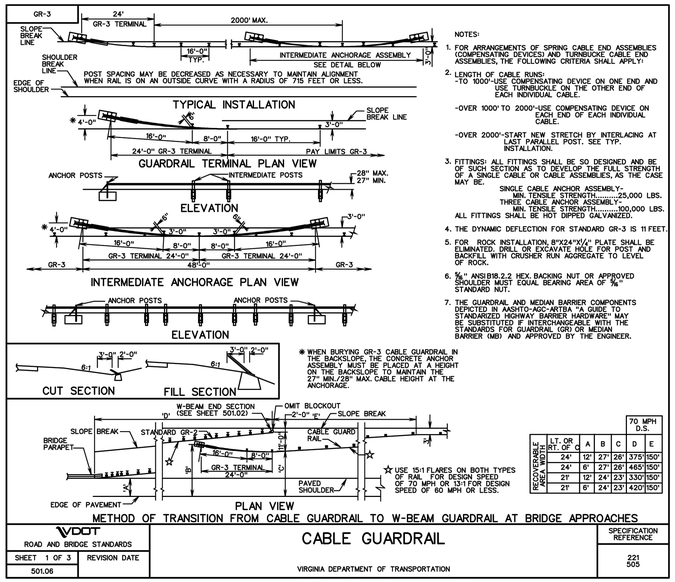
STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
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ACCESS ROAD PLAN AND PROFILE

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2016 ROAD & BRIDGE STANDARDS



NOTES:

1. FOR ARRANGEMENTS OF SPRING CABLE END ASSEMBLIES (COMPENSATING DEVICES) AND TURNBUCKLE CABLE END ASSEMBLIES, THE FOLLOWING CRITERIA SHALL APPLY:
2. LENGTH OF CABLE RUNS:
   - TO 1000' USE COMPENSATING DEVICE ON ONE END AND USE TURNBUCKLE ON THE OTHER END OF EACH INDIVIDUAL CABLE.
   - OVER 1000' TO 2000' USE COMPENSATING DEVICE ON EACH END OF EACH INDIVIDUAL CABLE.
   - OVER 2000' START NEW STRETCH BY INTERLACING AT LAST PARALLEL POST. SEE TYP. INSTALLATION.
3. FITTINGS: ALL FITTINGS SHALL BE SO DESIGNED AND BE OF SUCH SECTION AS TO DEVELOP THE FULL STRENGTH OF A SINGLE CABLE OR CABLE ASSEMBLIES, AS THE CASE MAY BE:
   SINGLE CABLE ANCHOR ASSEMBLY–
   MIN. TENSILE STRENGTH.....25,000 LBS.
   THREE CABLE ANCHOR ASSEMBLY–
   MIN. TENSILE STRENGTH.....100,000 LBS.
   ALL FITTINGS SHALL BE HOT DIPPED GALVANIZED.
4. THE DYNAMIC DEFLECTION FOR STANDARD GR-3 IS 11 FEET.
5. FOR ROCK INSTALLATION, 8"X24"X1/4" PLATE SHALL BE ELIMINATED. DRILL OR EXCAVATE HOLE FOR POST AND BACKFILL WITH CRUSHER RUN AGGREGATE TO LEVEL OF ROCK.
6. ⅝" ANSI B18.2.2 HEX. BACKING NUT OR APPROVED SHOULDER NUT EQUAL BEARING AREA OF ⅝" STANDARD NUT.
7. THE GUARDRAIL AND MEDIAN BARRIER COMPONENTS DEPICTED IN AASHTO-AGC-ARTBA "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE" MAY BE SUBSTITUTED IF INTERCHANGEABLE WITH THE STANDARDS FOR GUARDRAIL (GR) OR MEDIAN BARRIER (MB) AND APPROVED BY THE ENGINEER.

✱ WHEN BURYING GR-3 CABLE GUARDRAIL IN THE BACKSLOPE, THE CONCRETE ANCHOR ASSEMBLY MUST BE PLACED AT A HEIGHT ON THE BACKSLOPE TO MAINTAIN THE 27" MIN./28" MAX. CABLE HEIGHT AT THE ANCHORAGE.

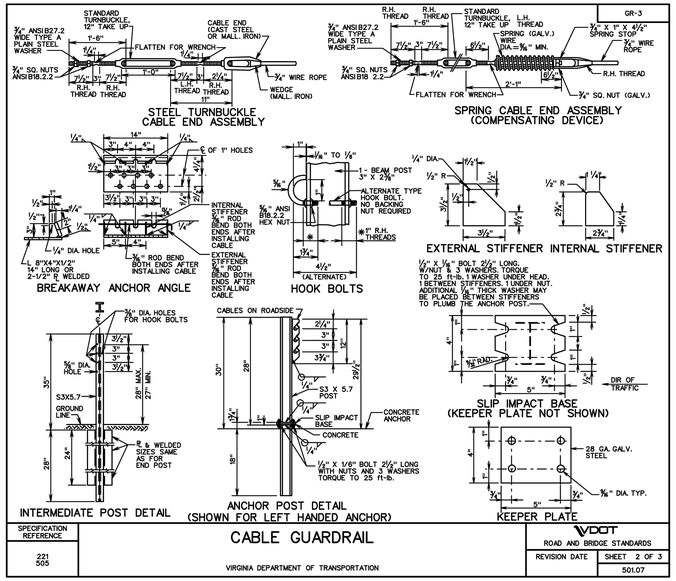
☆ USE 15:1 FLARES ON BOTH TYPES OF RAIL FOR DESIGN SPEED OF 70 MPH OR 13:1 FOR DESIGN SPEED OF 60 MPH OR LESS.

RECOVERABLE SLOPE	LT. OR RT. OF ℄	A	B	C	70 MPH D.S. D	E
6:1	24'	12'	27'	26'	375'	150'
	24'	6'	27'	26'	465'	150'
4:1	21'	12'	24'	23'	330'	150'
	21'	6'	24'	23'	420'	150'

VDOT ROAD AND BRIDGE STANDARDS		CABLE GUARDRAIL	SPECIFICATION REFERENCE
SHEET 1 OF 3	REVISION DATE	VIRGINIA DEPARTMENT OF TRANSPORTATION	221 505
501.06			

2016 ROAD & BRIDGE STANDARDS

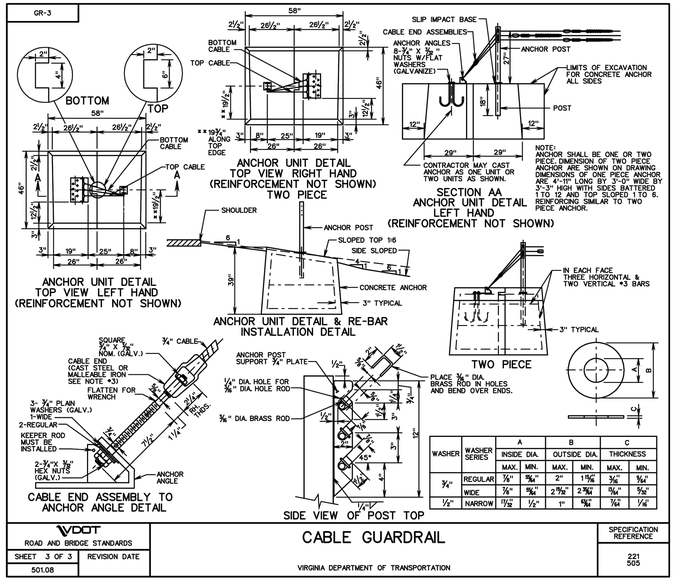
2016 ROAD & BRIDGE STANDARDS



SPECIFICATION REFERENCE	CABLE GUARDRAIL	VDOT ROAD AND BRIDGE STANDARDS
221 505	VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE / SHEET 2 OF 3 / 501.07

2016 ROAD & BRIDGE STANDARDS

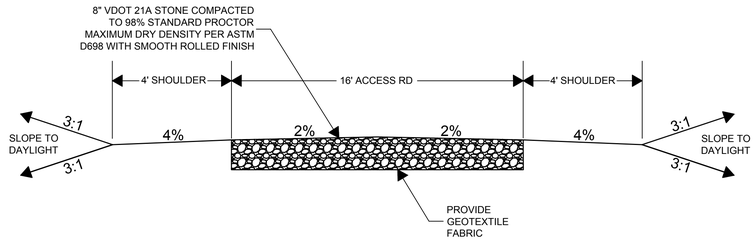
2016 ROAD & BRIDGE STANDARDS



WASHER	WASHER SERIES	A		B		C	
		INSIDE DIA.		OUTSIDE DIA.		THICKNESS	
		MAX.	MIN.	MAX.	MIN.	MAX.	MIN.
¾"	REGULAR	7/8"	13/16"	2"	1 15/16	3/16	11/64
	WIDE	7/8"	13/16"	2 5/16	2 3/16	7/64	5/64
½"	NARROW	11/16	½"	1"	15/16	7/64	1/16

VDOT ROAD AND BRIDGE STANDARDS		CABLE GUARDRAIL	SPECIFICATION REFERENCE
SHEET 3 OF 3	REVISION DATE	VIRGINIA DEPARTMENT OF TRANSPORTATION	221 505
501.08			

2016 ROAD & BRIDGE STANDARDS



TYPICAL ACCESS ROAD SECTION WITH CROWN

SCALE: NOT TO SCALE

8" VDOT 21A STONE COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY PER ASTM D698 WITH SMOOTH ROLLED FINISH

4' SHOULDER — 16' ACCESS RD — 4' SHOULDER

SLOPE TO DAYLIGHT 3:1 / 3:1 — 4% — 2% — 4% — 3:1 / 3:1 SLOPE TO DAYLIGHT

PROVIDE GEOTEXTILE FABRIC

TYPICAL ACCESS ROAD SECTION WITH CROSS SLOPE

SCALE: NOT TO SCALE

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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DESIGNED BY: Z. MOUNTJOY
CHECKED BY: B. STRICKLAND
SCALE: AS SHOWN

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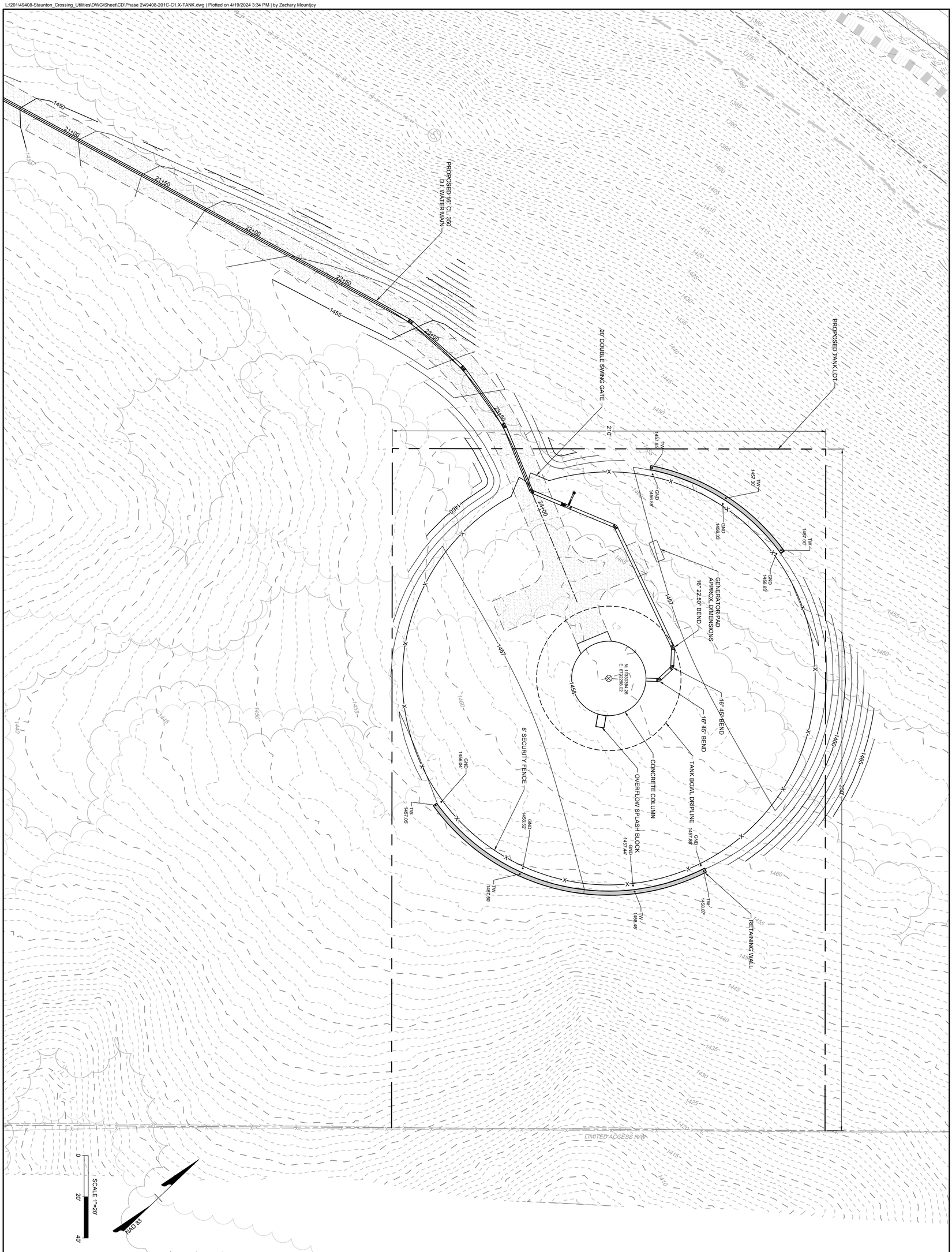
STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
ACCESS ROAD DETAILS

JOB NO. 49408
SHEET NO. R2.0

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Lic. No. 056602
PROFESSIONAL ENGINEER
04/26/2024

SHEET NO.	JOB NO.
T1.0	49408

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

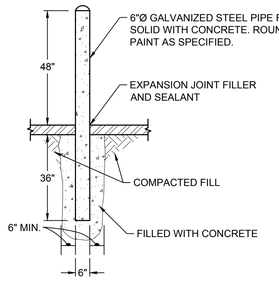
CITY OF STAUNTON, VIRGINIA

TANK SITE LAYOUT

SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
1" = 20'	B. STRICKLAND	B. STRICKLAND	J. MARSHALL	6/2/2023

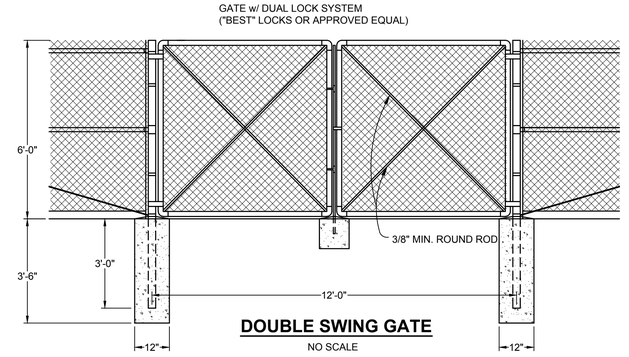
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SITE BOLLARD

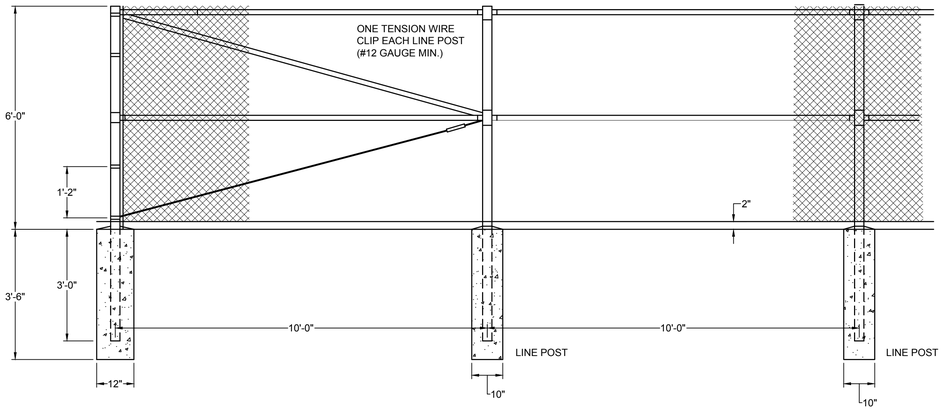
NO SCALE



DOUBLE SWING GATE

NO SCALE

NOTE:
FENCE POSTS, SUPPORTS, AND FABRIC SHALL BE BLACK PVC CLAD



SITE FENCE AND GATE

NO SCALE

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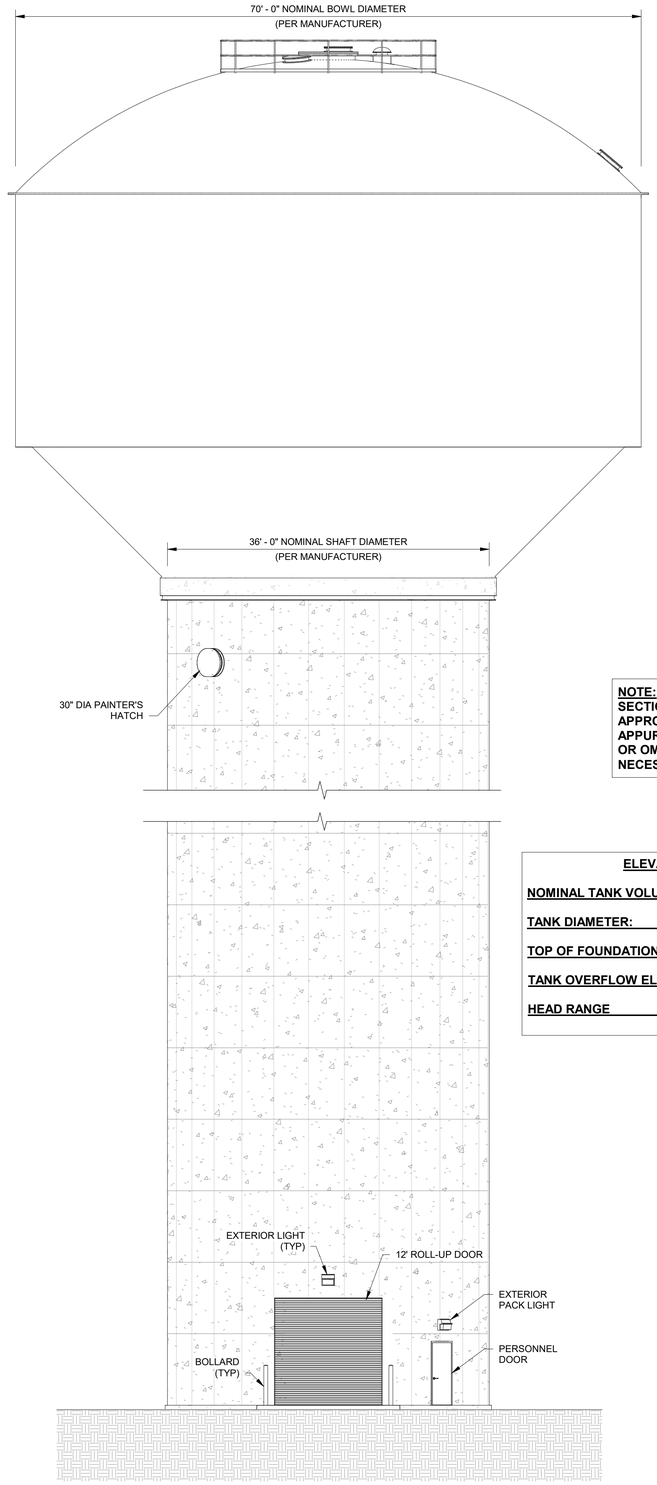
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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
TANK SITE DETAILS

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SHEET NO. T2.0

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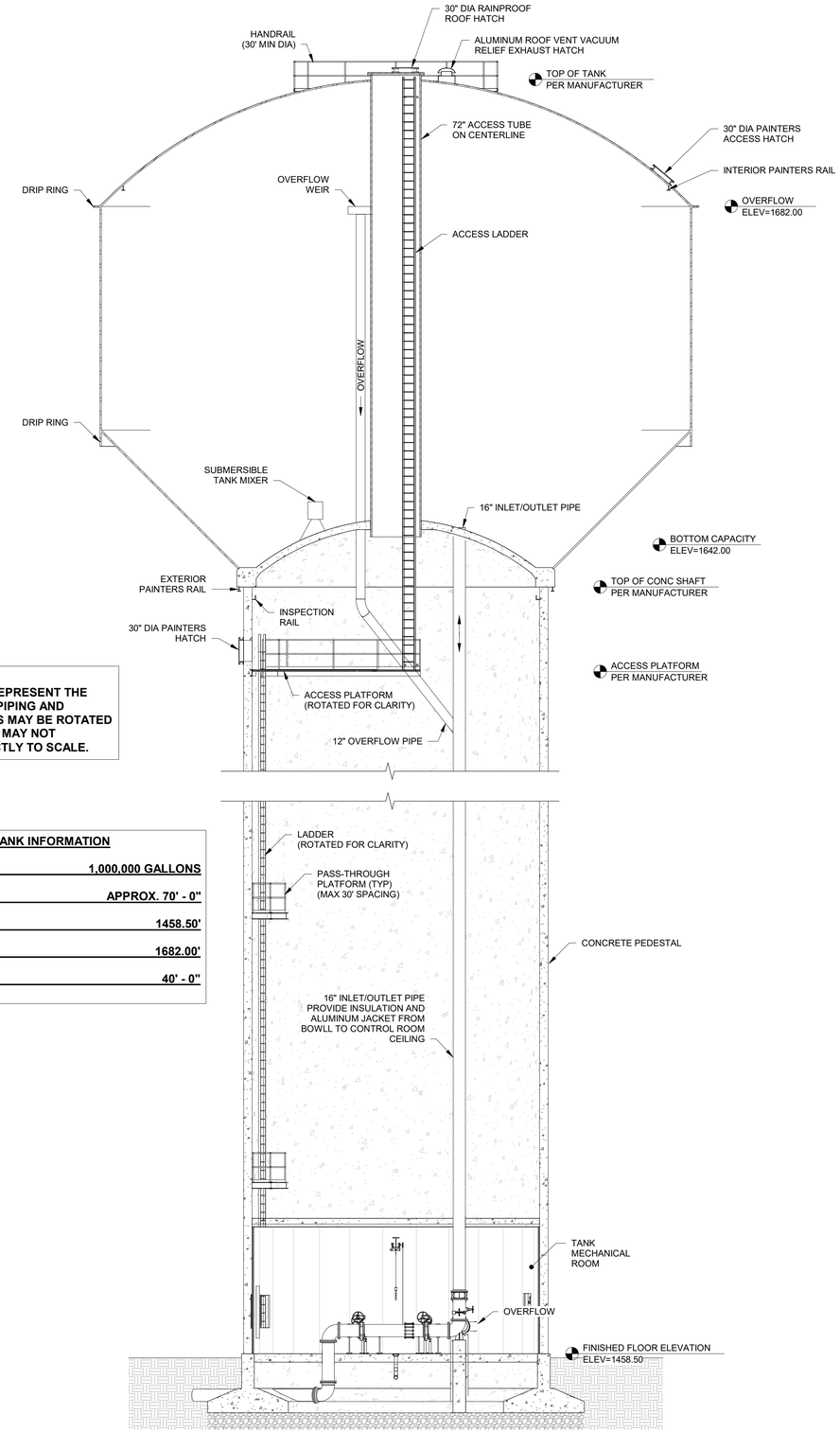


1 SOUTH ELEVATION
1/8" = 1'-0"

NOTE:
SECTIONS ARE INTENDED TO REPRESENT THE APPROXIMATE LOCATION FOR PIPING AND APPURTENANCES. SOME ITEMS MAY BE ROTATED OR OMITTED FOR CLARITY AND MAY NOT NECESSARILY BE DRAWN EXACTLY TO SCALE.

ELEVATED WATER STORAGE TANK INFORMATION

NOMINAL TANK VOLUME:	**1,000,000 GALLONS**
TANK DIAMETER:	**APPROX. 70' - 0"**
TOP OF FOUNDATION ELEVATION:	**1458.50'**
TANK OVERFLOW ELEVATION:	**1682.00'**
HEAD RANGE	**40' - 0"**



2 TANK SECTION
1/8" = 1'-0"

ELEVATED TANK GENERAL NOTES

1. FINAL DESIGN BASE DIAMETER AND DIMENSIONS OF FOUNDATION SHALL BE DETERMINED BY THE TANK CONTRACTOR.
2. A LADDER SAFETY DEVICE WITH HARNESS MEETING OSHA STANDARDS SHALL BE PROVIDED. PROVIDE ALUMINUM SAFETY RAILS ON ALL LADDERS.
3. ALL MANHOLES AND SCUTTLES ABOVE THE WATERLINE SHALL BE FRAMED AT LEAST SIX INCHES ABOVE THE SURFACE OF THE ROOF AT THE OPENING, BE FITTED WITH A SOLID WATERTIGHT COVER WHICH OVERLAPS THE FRAMED OPENING AND EXTENDS VERTICALLY DOWN 2" MIN. AROUND THE FRAME (SHOEBOX TYPE), AND BE HINGED AT ONE SIDE AND FITTED WITH A LOCKING DEVICE.
4. ALL VENTS ABOVE THE WATERLINE SHALL BE CONSTRUCTED TO PREVENT THE ENTRANCE OF SURFACE WATER AND SHALL BE PROVIDED WITH A FOUR-MESH NON-CORRODABLE SCREEN TO EXCLUDE BIRDS, ANIMALS, INSECTS, AND DUST.
5. PROVIDE HANGERS, BRACKETS, PIPE SUPPORTS AND THRUST RESTRAINT AS REQUIRED.
6. PROVIDE 1/2" ISOLATION JOINT AT ALL FLOOR PENETRATIONS. CAP WITH SELF LEVELING SEALANT.
7. PROVIDE EXPANSION JOINT ON INLET/OUTLET RISER TO ACCOMMODATE MAXIMUM POTENTIAL DIFFERENTIAL MOVEMENT.
8. SAWCUT FLOOR CONTROL JOINTS 1 1/2" DEEP AT 20 FEET MAXIMUM CENTERS.
9. PROVIDE ANTENNA BRACKETS EVERY 20' FROM THE BASE TO THE ROOF.
10. ALL INLET AND OUTLET PIPING ABOVE THE VALVE ROOM AND ANY PIPING THAT WILL HOLD WATER WITHIN THE TANK SUPPORT STRUCTURE SHALL BE INSULATED AND CLAD WITH ALUMINUM JACKET AND HEAT TRACED FOR FREEZE PROTECTION.
11. ANTENNAS AND CABLES SHALL BE MOUNTED SO AS TO MINIMIZE THEIR VISUAL IMPACT AND ANY ANTENNAS SHALL BE MOUNTED ON TOP OF THE TANK.
12. EXCEPT FOR SECURITY LIGHTING OVER THE ACCESS DOORS AT THE BASE OF THE TANK, THE EXTERIOR OF THE TANK, TANK BASE, AND COMMUNICATIONS EQUIPMENT SHALL NOT BE LIGHTED.

TANK DESIGN CRITERIA

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE (VUSBC) LATEST EDITION, AND THE AMERICAN WATER WORKS ASSOCIATION STANDARD D107 FOR COMPOSITE ELEVATED TANKS, LATEST EDITION.
2. THE TANK MANUFACTURER SHALL PROVIDE ALL ENGINEERING DESIGN CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER FOR THE COMMONWEALTH OF VIRGINIA.
3. LOADS
   - A. FLOOR LIVE LOAD — 100 PSF
   - B. ROOF LIVE LOAD — 20 PSF
   - C. SNOW LOADS
     - a. GROUND SNOW LOAD — 20 PSF
     - b. ROOF SNOW LOAD — 25 PSF
   - D. WIND LOADS
     - a. BASIC WIND SPEED (3 SECOND GUST) — 90 MPH
     - b. WIND IMPORTANCE FACTOR, I_W — 1.15
     - c. BUILDING CATEGORY — IV
     - d. WIND EXPOSURE — C
     - e. INTERNAL PRESS COEFFICIENT — 0.18±
     - f. DESIGN PRESSURE — BY MNFR
   - E. SEISMIC DESIGN DATA
     - a. MAPPED SPECTRAL RESPONSE ACCEL, S_S — 0.25g
     - b. MAPPED SPECTRAL RESPONSE ACCEL, S_1 — 0.07g
     - c. SEISMIC IMPORTANCE FACTOR, I_E — 1.50
     - d. SEISMIC DESIGN CATEGORY — C
     - e. SITE CLASS — C
     - f. SEISMIC FORCE RESISTING SYSTEM — BY MNFR
     - g. SEISMIC RESPONSE COEFFICIENT, R — BY MNFR
4. ALL CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF ACI 318-05 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". CONCRETE STRENGTH SHALL BE SPECIFIED BY THE TANK MANUFACTURER INCLUDING HIGH-EARLY STRENGTH.
   - a. MIN CONC COMPRESSIVE STRENGTH — 4,000 psi
   - b. WATER/CEMENT — 0.50
   - c. AIR CONTENT — 6%
   - d. SLUMP — 1" to 3"
   - e. REINFORCING STEEL — ASTM A615 GR 60
5. ALL STRUCTURAL STEEL WORK SHALL CONFORM TO THE REQUIREMENTS OF AISC "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS," LATEST EDITION
   - a. STRUCTURAL STEEL (UON) — ASTM A36 MIN
   - b. WIDE FLANGE BEAMS — ASTM A992
   - c. HOLLOW STRUCTURAL SECTIONS — ASTM A500 GR B
   - d. STRUCTURAL PIPE MEMBERS — ASTM A53 GR B
   - e. HIGH STRENGTH BOLTS — ASTM A325
   - f. WELDING ELECTRIDES — E70XX SERIES
   - g. ANCHOR BOLTS — ASTM F1554 GR 36
6. ALL STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
7. THE TANK SHALL BE SUPPORTED ON A CONCRETE FOUNDATION AS DESIGNED BY THE TANK MANUFACTURER.
8. FINAL TANK LOADS AND SEISMIC DESIGN DATA SHALL BE DETERMINED BY THE CONTRACTOR IN ACCORDANCE WITH THE LATEST EDITIONS OF AWWA D107 AND ASCE 7.

ELEVATED TANK COLOR NOTES

1. SEE CONTRACT SPECIFICATIONS FOR STEEL TANK COATING REQUIREMENTS.
2. COLORS SHALL BE AS FOLLOWS:
   - TANK -- WATER GREEN
   - DOORS -- WATER GREEN
   - PEDESTAL -- CONCRETE GRAY WITH ANTI-GRAFFITI COATING FROM GRADE TO 16' MIN. ABOVE GRADE
3. ALL EXTERIOR COMMUNICATIONS EQUIPMENT MOUNTED TO THE TANK, JUNCTION AND ACCESS BOXES SHALL BE PAINTED TO MATCH THE TANK.

PLAN LEGEND

SYMBOL	DESCRIPTION
1	SCHEDULED FITTING
1	SCHEDULED EQUIPMENT
1 / M1.0/M1.1	BUILDING SECTION
2 / M2.0/M2.1	DETAIL SECTION
3 / M3.0/M3.1	DETAIL REFERENCE
	ELEVATION MARKER
ELEV	LIQUID ELEVATION

0 5' 10' 15' 30'
1/8" = 1'-0"

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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SCALE AS NOTED

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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

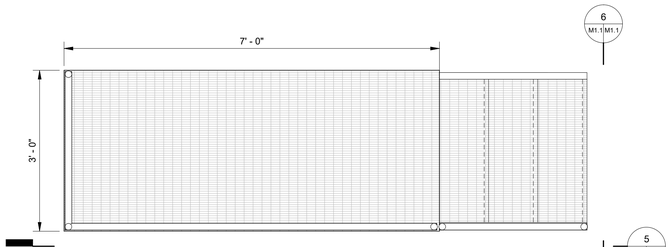
CITY OF STAUNTON, VIRGINIA

TANK ELEVATION AND SECTION

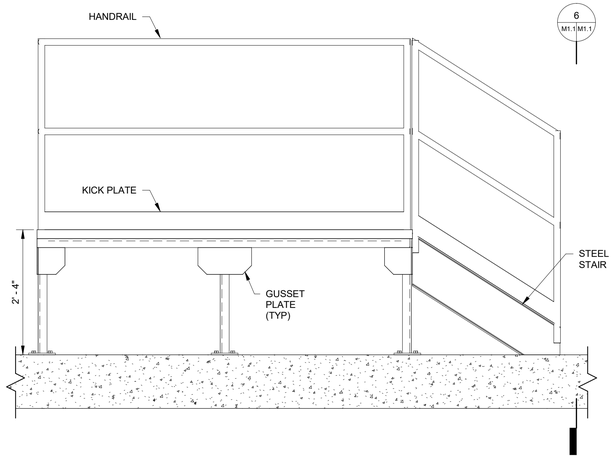
JOB NO. 49408.003
SHEET NO. M1.0

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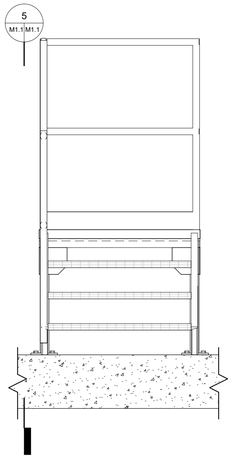
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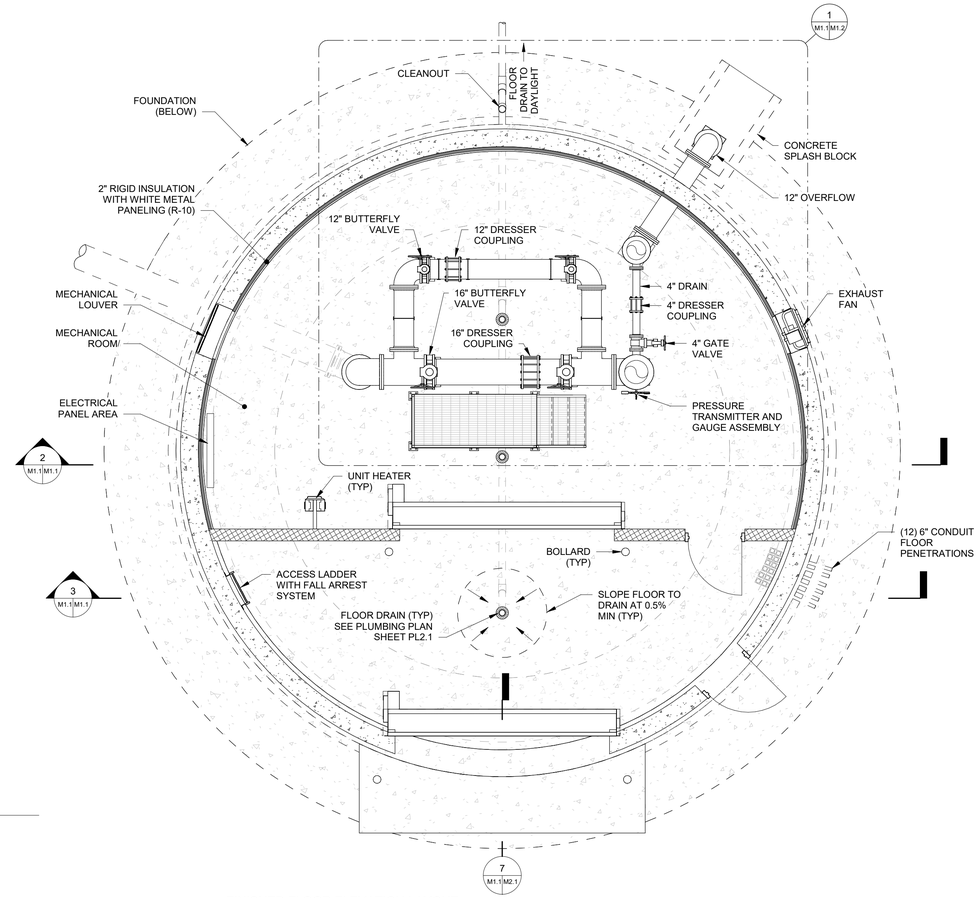
4 ACCESS PLATFORM LAYOUT
3/4" = 1'-0"



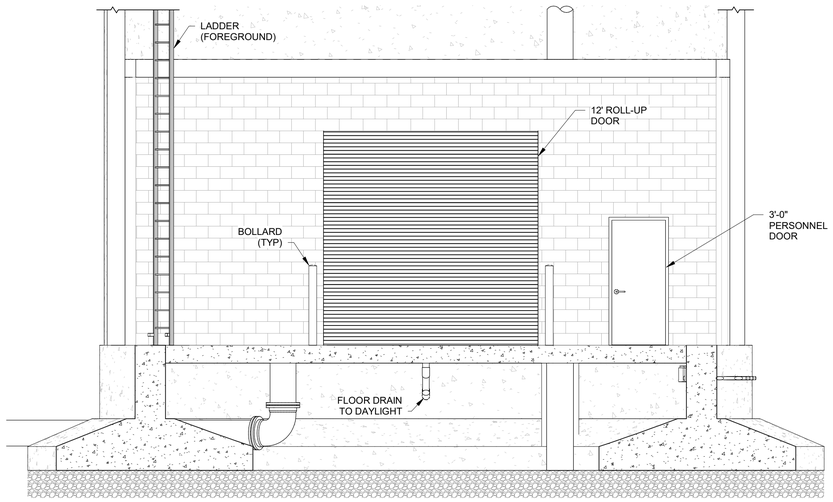
5 ACCESS PLATFORM ELEVATION
3/4" = 1'-0"



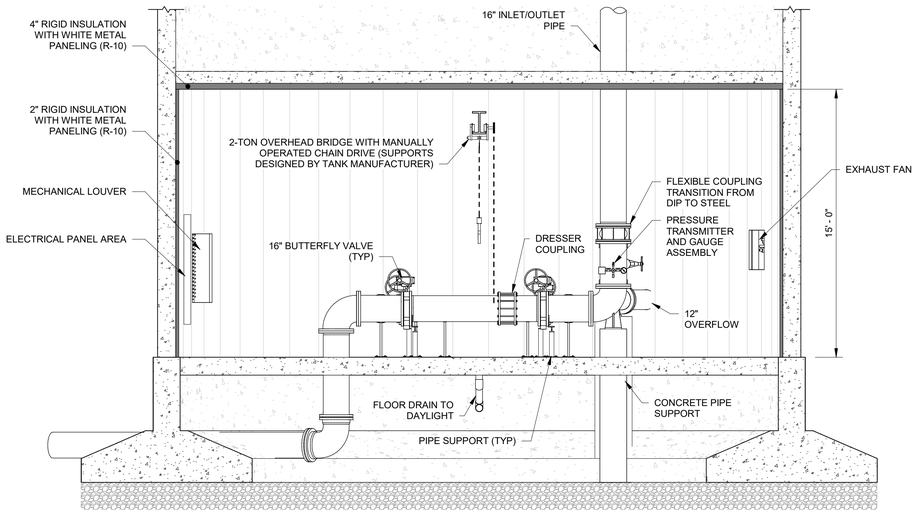
6 ACCESS PLATFORM ELEVATION
3/4" = 1'-0"



1 FINISHED FLOOR ELEVATION LAYOUT
1/4" = 1'-0"



3 TANK SECTION
1/4" = 1'-0"



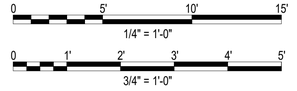
2 TANK SECTION
1/4" = 1'-0"

GENERAL ELEVATED TANK INTERIOR NOTES

1. CONTRACTOR TO POUR CONCRETE VEHICULAR AND PEDESTRIAN PADS FOLLOWING FILLING OF WATER TANK.
2. PRIOR TO FILLING THE WATER TANK, THE INLET/OUTLET PIPE SHALL BE UNCOVERED TO THE NEAREST PIPE BEND TO ALLOW THE PIPE TO SETTLE WITH THE TANK. THE PIPE EXCAVATION SHALL BE BACK FILLED IN ACCORDANCE WITH THE SPECIFICATIONS.
3. CONTRACTOR TO PROVIDE TWO (2) SIGNS CAUTIONING OWNER OF MAXIMUM FLOOR LOADING. SIGNS SHALL BE 4'x4' WITH TEXT AS FOLLOWS:

   CAUTION!!!
   CEILING NOT DESIGNED FOR
   MATERIAL OR EQUIPMENT STORAGE

4. HOIST SHALL BE 2 TON CAPACITY CHAIN HOIST WITH HAND GEARED TROLLEY WITH STRAIGHT WIDE FLANGE BEAM BY MANUFACTURER.
5. PEDESTRIAN DOOR: 3' WIDE x 7' HIGH, HOLLOW METAL DOOR WITH 16 GA. FRAME AND HEAVY DUTY CLOSURE.
6. VEHICLE DOOR: 12' WIDE x 12' HIGH ROLLING STEEL WITH 22 GA. GALVANIZED SLATS AND MANUAL CHAIN OPERATOR.
7. PROVIDE MONOLITHIC REINFORCED CONCRETE INTERNAL BUTTRESS SECTION ON EACH SIDE OF VEHICLE DOOR. BUTTRESS TO BE MINIMUM 3'-6" WIDE AND 6" THICKER THAN NOMINAL WALL DIMENSION.
8. PROVIDE 1/2" ISOLATION JOINT BETWEEN FLOOR AND WALL AND AT ALL FLOOR PENETRATIONS. CAP WITH SELF LEVELING SEALANT.
9. PROVIDE EXPANSION JOINT ON INLET/OUTLET RISER TO ACCOMMODATE MAXIMUM POTENTIAL DIFFERENTIAL MOVEMENT.
10. SAWCUT CONTROL JOINTS 1 1/2" DEEP AT 20 FEET MAXIMUM CENTERS.
11. SLOPE SLAB MINIMUM 0.5% TO FLOOR DRAINS.
12. NO CABLES, WIRES, OR EQUIPMENT, OTHER THAN THE SAFETY CLIMB SYSTEM, SHALL BE ATTACHED TO ANY LADDERS.
13. CONTRACTOR HAS THE OPTION OF USING STAINLESS STEEL PIPING IN LIEU OF DUCTILE IRON PIPING IN THE CONTROL ROOM, PROVIDED THAT ALL FLANGES SHOWN ON THE BYPASS LINE ARE INCLUDED.



COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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DESIGNED BY
B. STRICKLAND

CHECKED BY
B. STRICKLAND

SCALE
AS NOTED

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

CITY OF STAUNTON, VIRGINIA

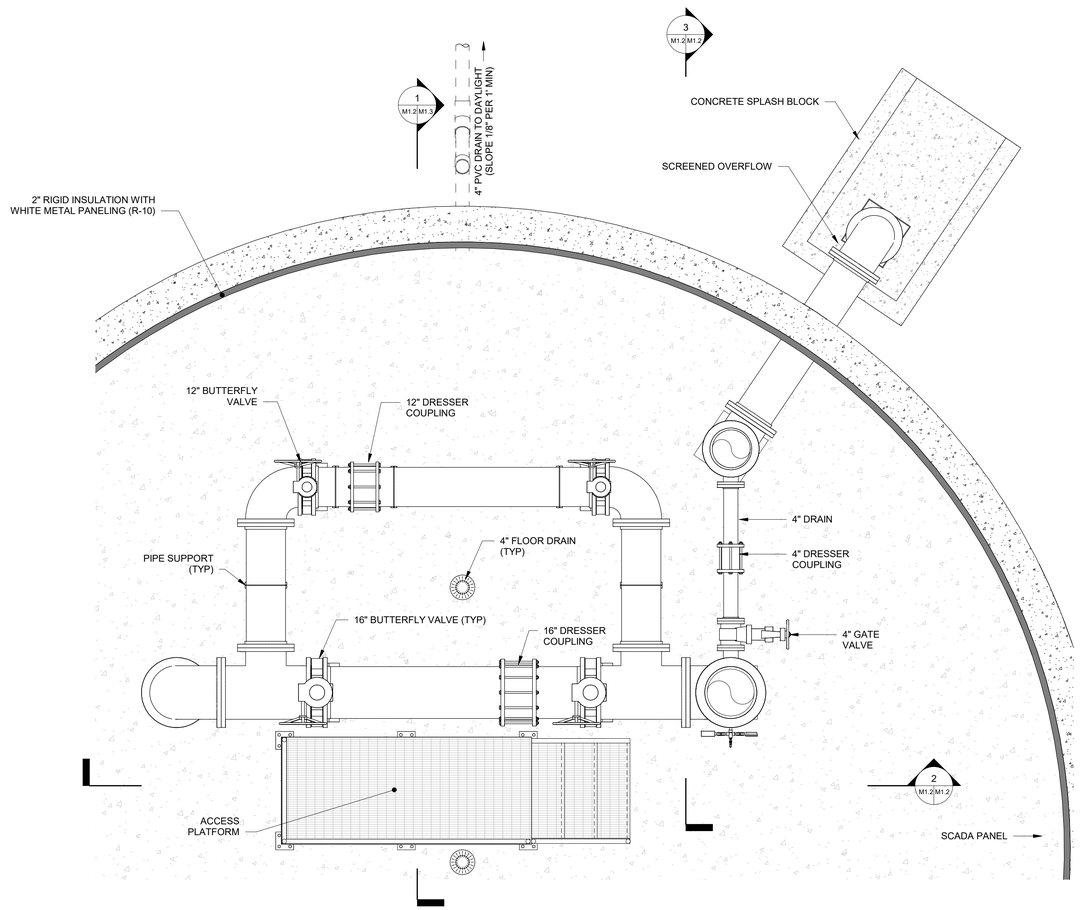
TANK MECHANICAL FLOOR PLAN AND SECTIONS

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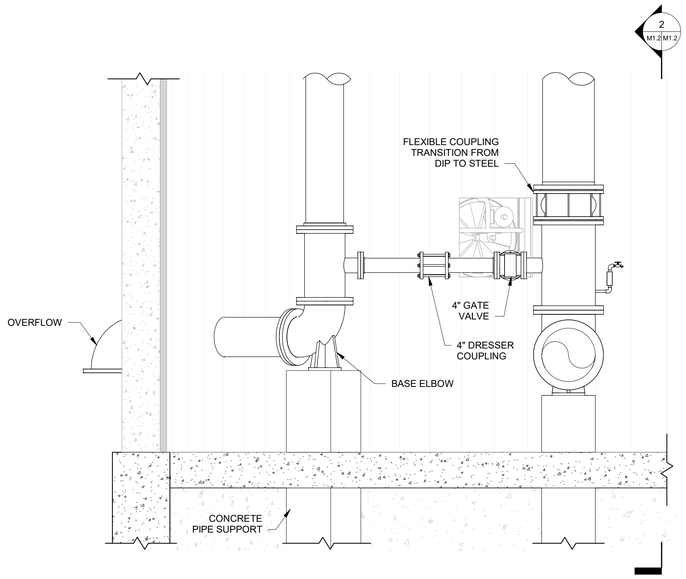
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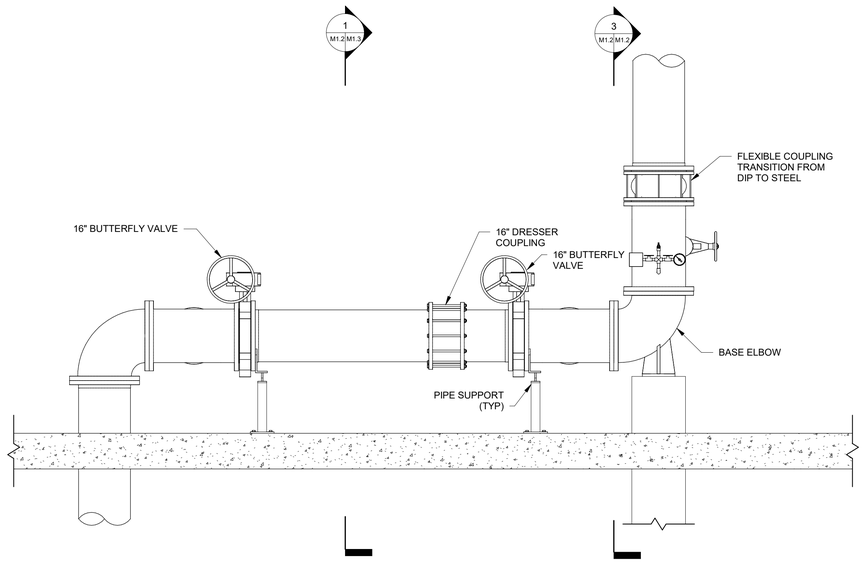
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1 02.03_00-M1.2 FFE-VALVE ROOM
1/2" = 1'-0"



3 02.03_00-M1.2 DRAIN VALVING
1/2" = 1'-0"



2 02.03_00-M1.2 VAULT ROOM
1/2" = 1'-0"

SEE ***GENERAL ELEVATED TANK INTERIOR NOTES*** SHEET M1.1

0 1' 2' 3' 4' 5'
1/2" = 1'-0"

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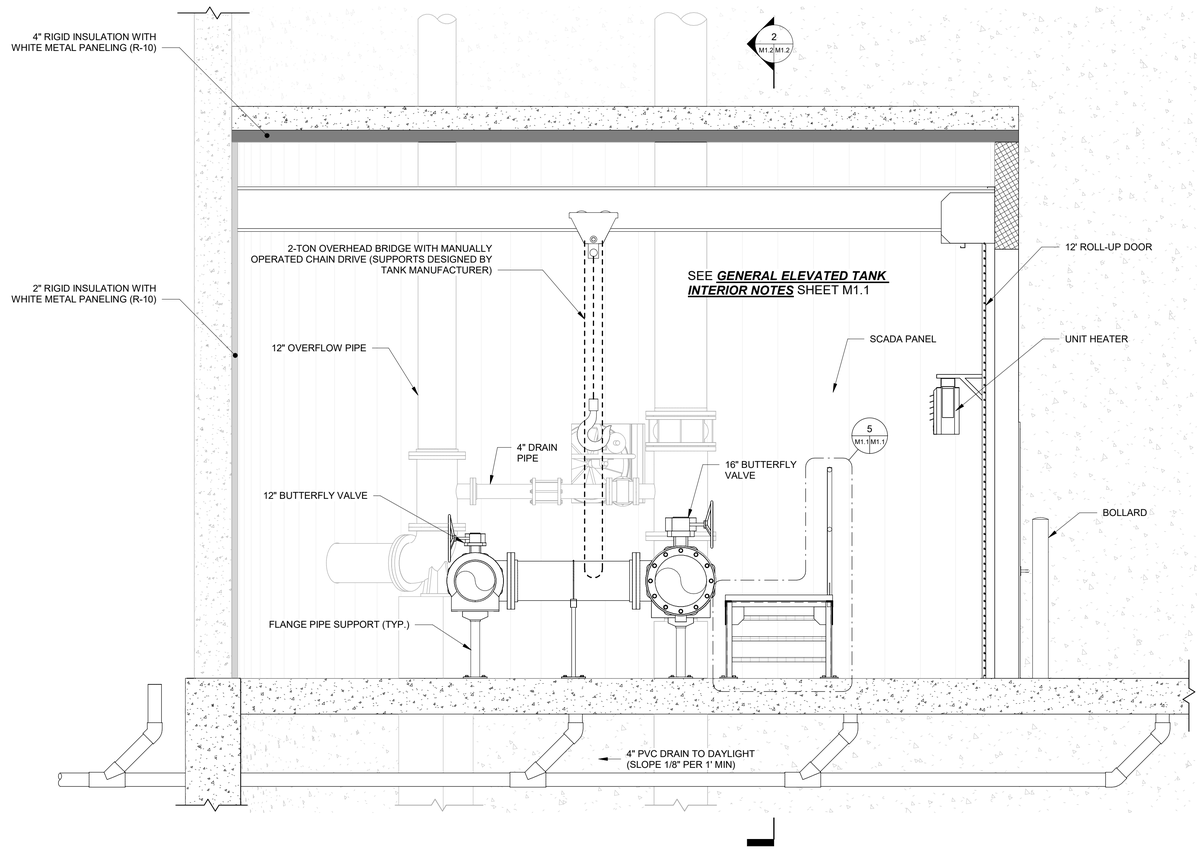
STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA

VALVE ROOM PLAN AND SECTIONS

JOB NO. 49408.003
SHEET NO. M1.2

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1 02.03_00-M1.2 GANTRY
1/2" = 1'-0"

SEE ***GENERAL ELEVATED TANK INTERIOR NOTES*** SHEET M1.1

0 1' 2' 3' 4' 5'
1/2" = 1'-0"

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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

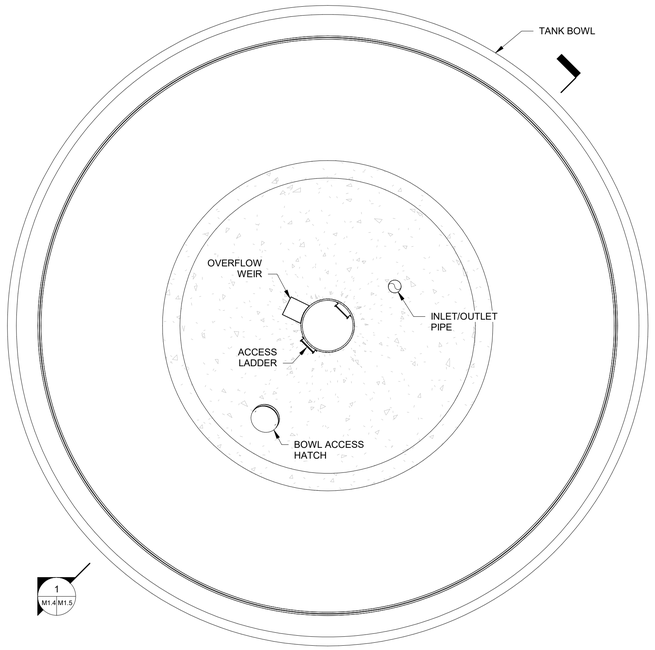
CITY OF STAUNTON, VIRGINIA

VALVE ROOM SECTION

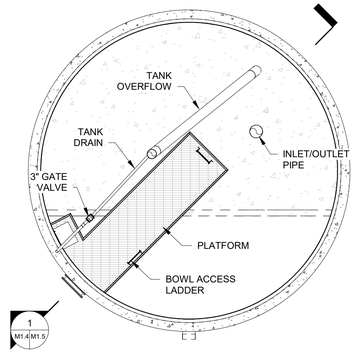
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SHEET NO. M1.3

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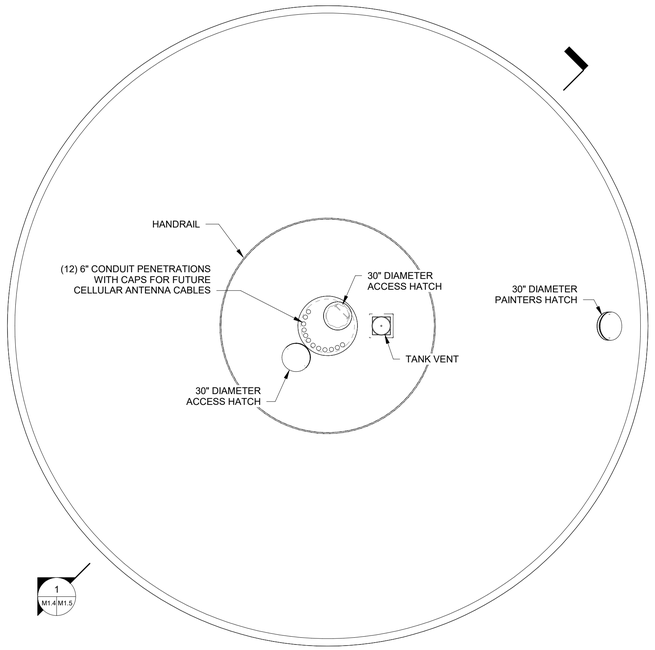
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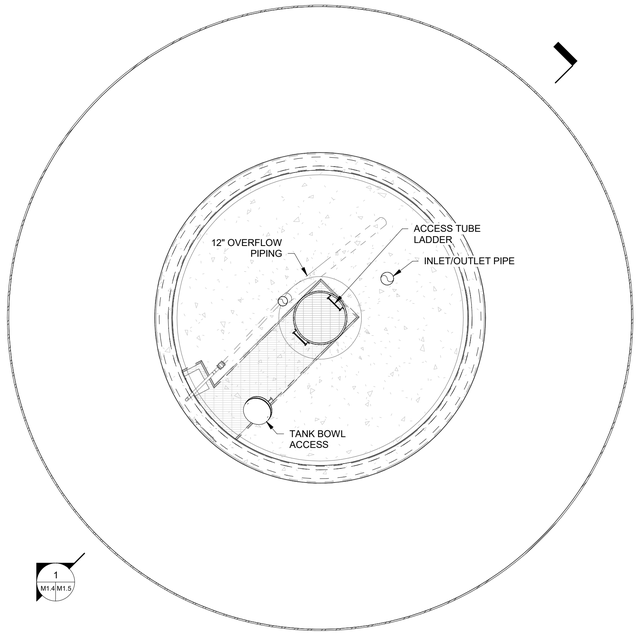
3 TANK OVERFLOW LAYOUT
1/8" = 1'-0"



1 ACCESS PLATFORM LAYOUT
1/8" = 1'-0"



4 TANK ROOF LAYOUT
1/8" = 1'-0"



2 TANK ACCESS TOP OF SHAFT LAYOUT
1/8" = 1'-0"

0 5' 10' 15' 30'
1/8" = 1'-0"

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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

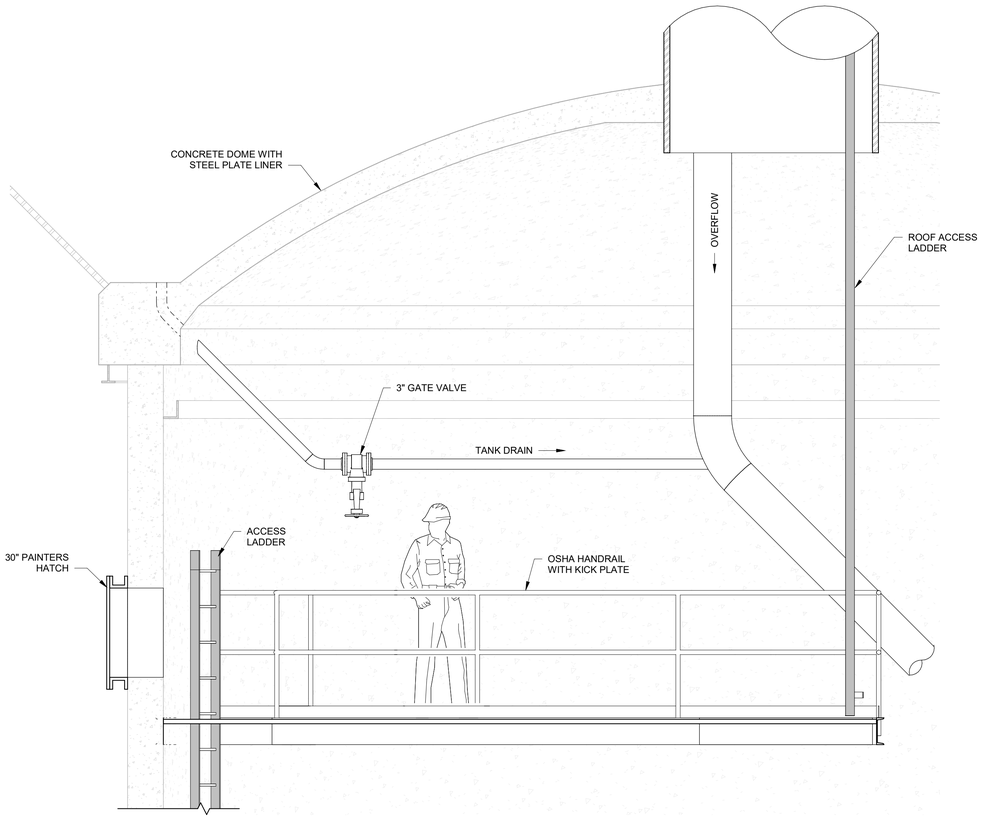
CITY OF STAUNTON, VIRGINIA

TANK LEVEL LAYOUT AND SECTIONS

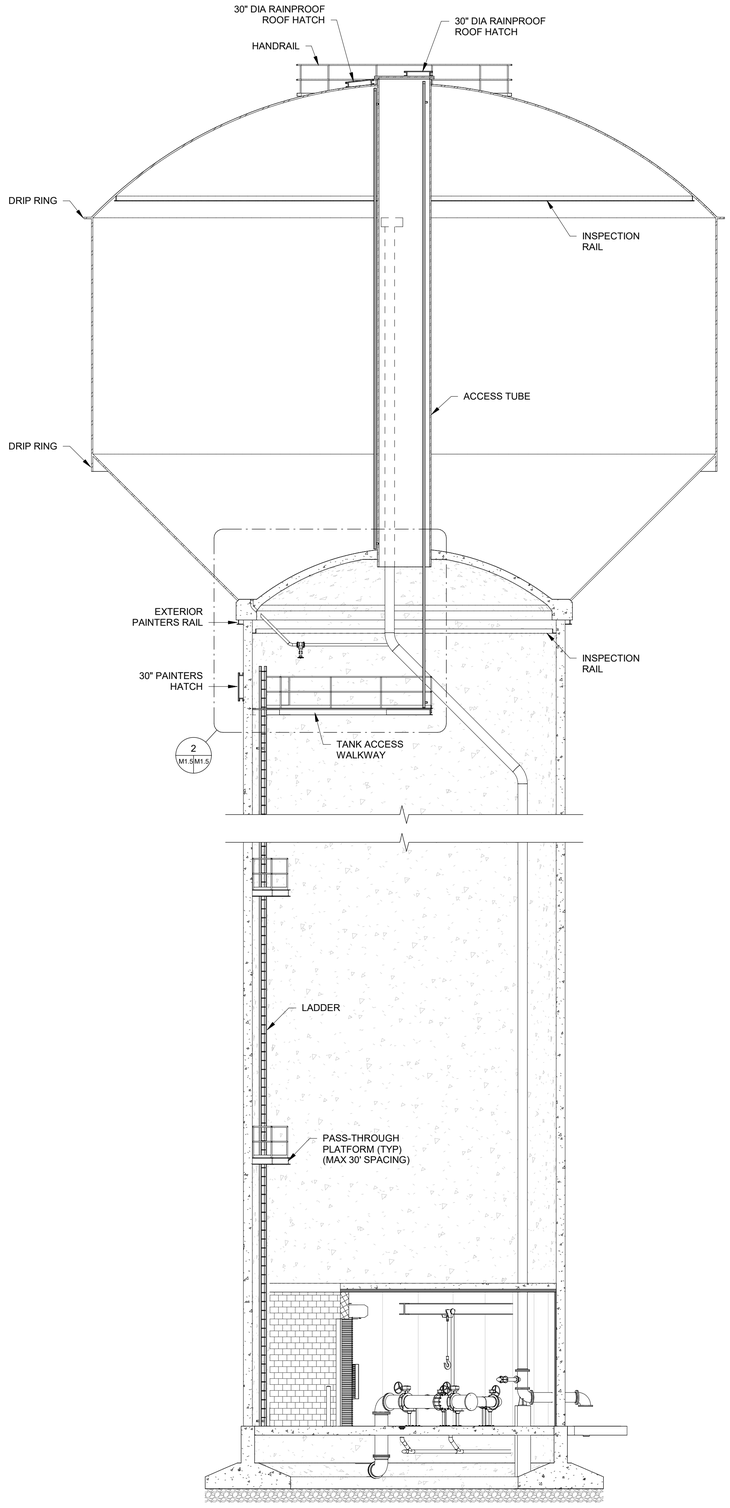
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2 UPPER WALKWAY AND DRAIN DETAIL
1/2" = 1'-0"



1 TANK SECTION
1/8" = 1'-0"

0 5' 10' 15' 30'
1/8" = 1'-0"

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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA

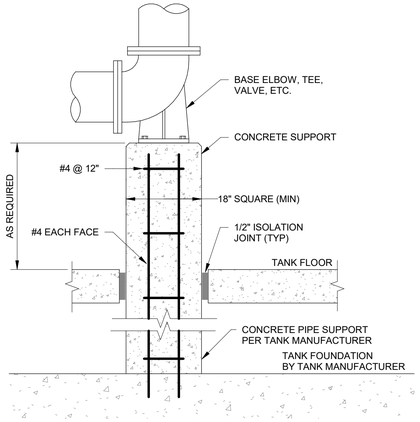
TANK SECTION

JOB NO.
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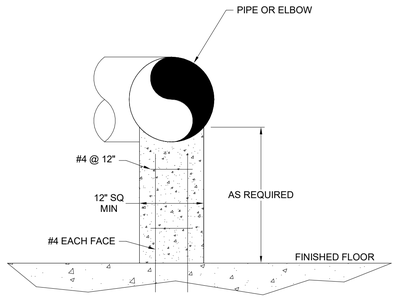
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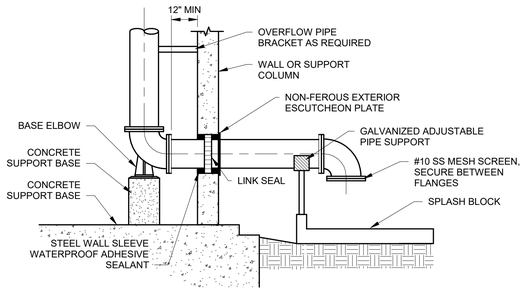
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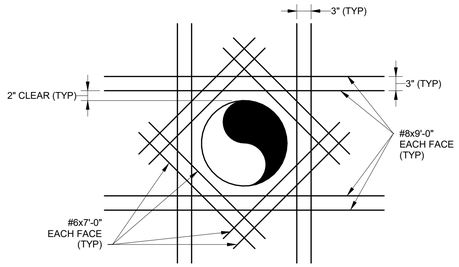
7 CONCRETE PIPE SUPPORT - TYPE A
NOT TO SCALE



10 CONCRETE PIPE SUPPORT TYPE B
NOT TO SCALE



4 OVERFLOW PIPE DETAIL
NOT TO SCALE



1 FLOOR PENETRATION
NOT TO SCALE

11 UNISTRUT PIPE SUPPORT
NOT TO SCALE

5 FLOOR DRAIN WITH CLEANOUT
NOT TO SCALE

NOTES:
1. MINIMUM MOUNTING HEIGHT 7'-0" PREFERRED HEIGHT 8'-0"
2. WALL MOUNT BRACKET TO BE SIZED AND SUPPLIED BY MANUFACTURER AS PART OF HEATER

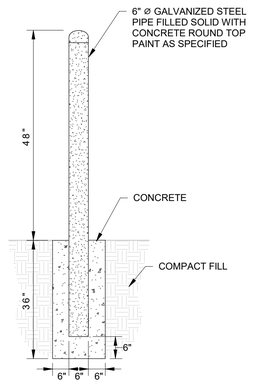
8 UNIT HEATER
NOT TO SCALE

NOTES:
1. HANDRAIL SHALL BE DESIGNED BY TANK MANUFACTURER AND SHALL BE OSHA COMNLIANT.
2. HANDRAIL SHALL BE DESIGNED TO SUPPORT UP TO 12 CELL PHONE ANTENNAS SPREAD AROUND THE CIRCUMPHERENCE OF THE HANDRAIL.
3. HANDRAIL SHALL HAVE A MINIMUM DIAMETER OF 24'

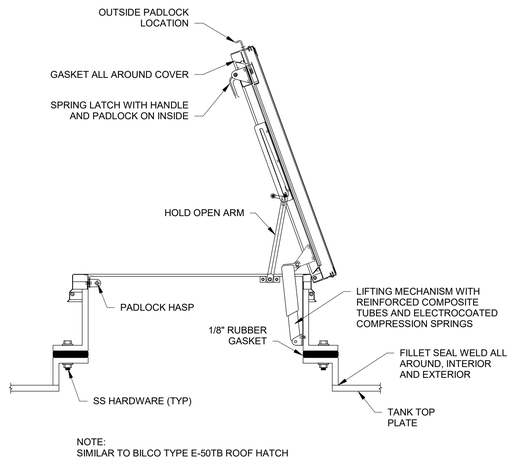
2 TANK HANDRAIL
NOT TO SCALE

ADHESIVE ANCHOR BOLTS		
SIZE	MINIMUM EMBEDMENT LENGTH	CONCRETE STRENGTH
3/8"	3 1/2"	4,000 PSI
1/2"	4 1/4"	4,000 PSI
5/8"	5"	4,000 PSI
3/4"	6 5/8"	4,000 PSI
NOTES:		
1.	ADHESIVE ANCHORS BASED UPON HILTI HVA OR HIT SYSTEM.	
2.	ALL ANCHOR BOLTS, NUTS AND WASHERS TO BE A MINIMUM OF 304 STAINLESS STEEL.	
3.	ANCHOR BOLTS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.	

12 ADHESIVE ANCHOR BOLTS
NOT TO SCALE

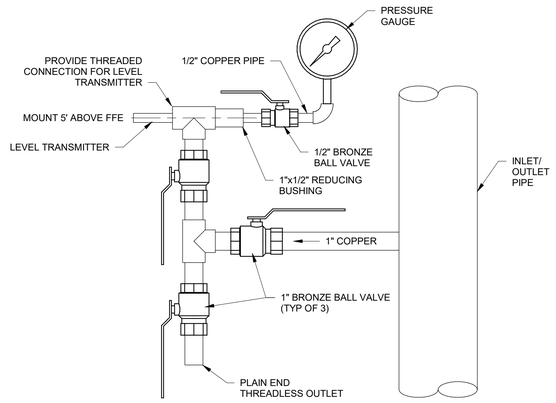


9 BOLLARD
NOT TO SCALE



NOTE:
SIMILAR TO BILCO TYPE E-50TB ROOF HATCH

6 ROOF HATCH
NOT TO SCALE



3 PRESSURE TRANSMITTER AND GAUGE ASSEMBLY
NOT TO SCALE

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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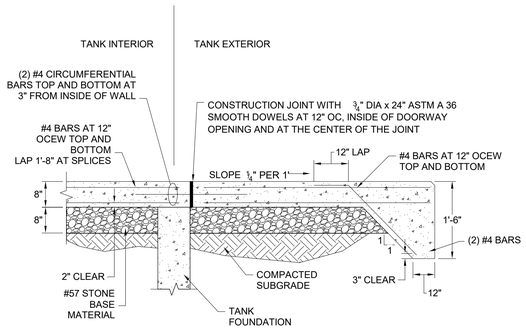
DATE 6/2/2023
DRAWN BY J. MARSHALL
DESIGNED BY B. STRICKLAND
CHECKED BY B. STRICKLAND
SCALE AS NOTED

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
MECHANICAL DETAILS

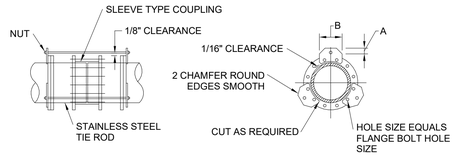
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SHEET NO. M2.0

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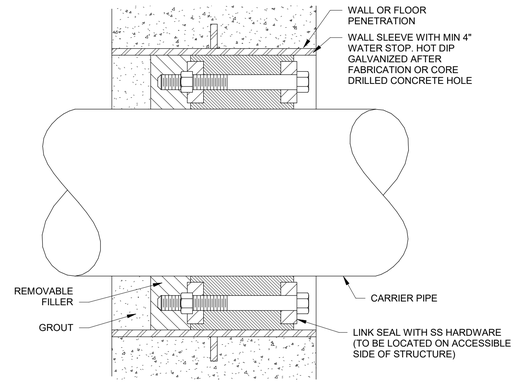
7 VEHICLE ENTRY PAD
NOT TO SCALE



NOTE:
1. TIE RODS SHALL BE EQUALLY SPACED AROUND PIPE.
2. HOLE SIZE EQUALS TIE ROD DIA. + 1/8"

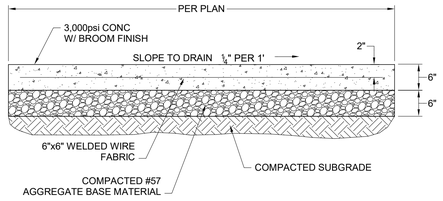
PIPE SIZE	TIERODS		FLANGE CLAMP			
	NO.	DIA.	THICKNESS	NO. OF FLANGE BOLTS PER CLAMP	"A"	"B"
6"	2	1/2"	1/2"	2	2"	7 3/4"
8"	2	5/8"	1/2"	2	2"	8 5/8"
10"	3	3/4"	1/2"	2	2"	7 3/4"
12"	3	1"	1/2"	2	2"	8 1/2"
14"	3	1 1/8"	3/4"	2	2"	9"
16"	4	1 1/8"	1"	2		
18"	5	1 1/8"	1"	2		
20"	6	1 1/8"	1"	2		
24"	9	1 1/8"	1"	2		
ALL, PLATES, RODS, & NUTS TO BE STAINLESS STEEL						

4 SLEEVE COUPLING RESTRAINT
NOT TO SCALE

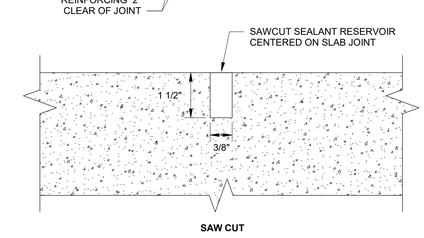


NOTE:
HOLE SIZE AND LINK SEAL SIZE TO BE COORDINATED AS PER MANUFACTURER'S REQUIREMENTS

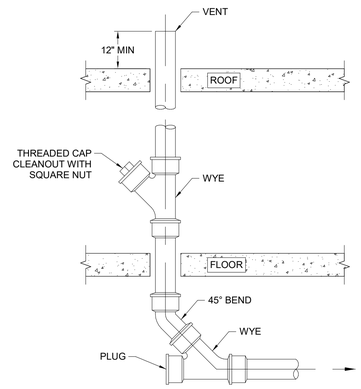
1 WALL / FLOOR SLEEVE
NOT TO SCALE



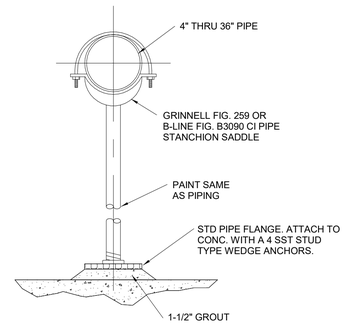
5 PEDESTRIAN ENTRY PAD
NOT TO SCALE



2 BLDG_SLAB CONTROL JOINT
NOT TO SCALE



6 DRAIN VENT WITH CLEANOUT
NOT TO SCALE



3 PIPE SUPPORT (4" THROUGH 36")
NOT TO SCALE

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
03/26/2024
PROFESSIONAL ENGINEER

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DATE 6/2/2023
DRAWN BY J. MARSHALL
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SCALE AS NOTED

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
MECHANICAL DETAILS

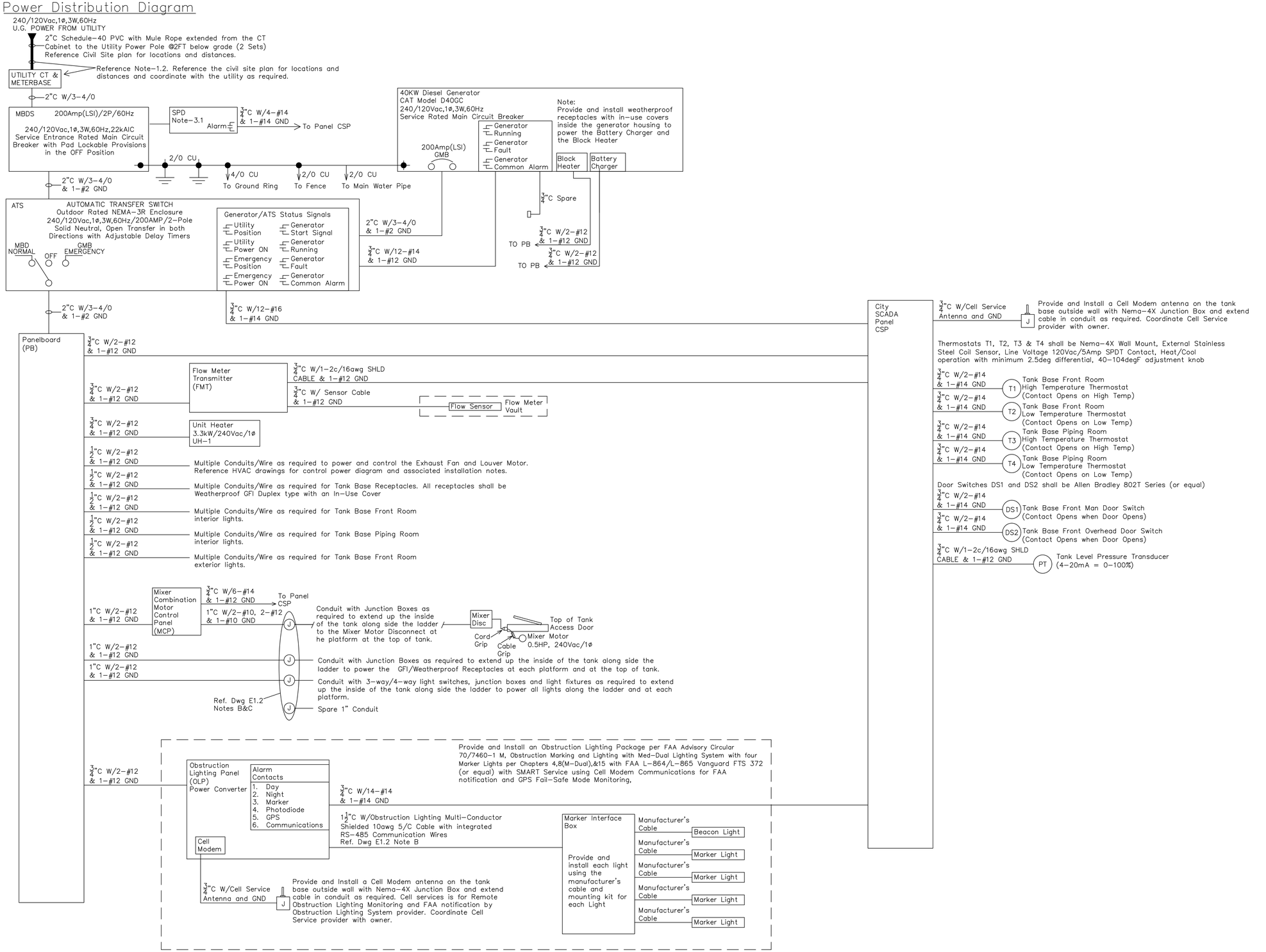
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EWST ELECTRICAL DISTRIBUTION

Power Distribution Diagram



COMMONWEALTH OF VIRGINIA
D. L. Glasscock
Lic. No.036309
01/19/24
PROFESSIONAL ENGINEER

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1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
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DATE
01-19-2024

DRAWN BY
D. GLASSCOCK

DESIGNED BY
D. GLASSCOCK

CHECKED BY
D. GLASSCOCK

SCALE
AS SHOWN

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA

EWST ELECTRICAL POWER DISTRIBUTION AND NOTES

JOB NO.
49408

SHEET NO.
E1.0

ELECTRICAL ENGINEERING
DCS
CONSULTING SERVICES
Dominion Control Systems, Inc.
Ashland, VA (804) 370-6373
DominionControls@verizon.net

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C:\DCS Business Files\DCS Backup\Job\files\6485 - TIMMONS Staunton WWPS and Tank\Dwgs\ESTE1.0 Staunton EWST Power Distribution 01-19-2024.dwg | Plotted by Douglas Glasscock

ELECTRICAL NOTES:

1. THE CONTRACTOR SHALL PERFORM THE FOLLOWING FOR POWER SERVICE:
   - 1.1. COORDINATE WITH THE LOCAL POWER COMPANY AS REQUIRED FOR THE EXTENSION OF POWER TO THE SITE. INSTALL ALL UTILITY SUPPLIED EQUIPMENT PER THE UTILITY INSTALLATION REQUIREMENTS AND STANDARDS.
   - 1.2. PROVIDE AND INSTALL UNDERGROUND CONDUIT WITH CONDUCTORS FROM THE UTILITY POWER POLE AND/OR TRANSFORMER LOCATION TO THE UTILITY CT CABINET AT THE BUILDING. PROVIDE ONE SPARE CONDUIT AND COORDINATE WITH THE UTILITY FOR THE CONDUIT TYPE/SIZE AND CABLE TYPE/SIZE FOR THE SERVICE EXTENSION. CONDUCTOR SIZE SHOWN IS BASED ON COPPER. COORDINATE INSTALLATION WITH THE UTILITY TO ENSURE COMPLIANCE WITH ALL UTILITY REQUIREMENTS AND STANDARDS.
   - 1.3. COORDINATE WITH THE UTILITY TO ENSURE THAT PANEL MBDS AND PANELBOARD PB IS FULLY RATED WITH AN AIC RATING WHICH EXCEEDS THAT WHICH IS DELIVERABLE TO THE SITE.
   - 1.4. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF AN ELECTRICAL PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VIRGINIA FOR THE FOLLOWING: GENERATE AND PROVIDE A LOAD LETTER TO THE POWER COMPANY, OBTAIN A FAULT CURRENT LETTER AND TRANSFORMER IMPEDANCES FOR THE PUMP STATION UTILITY SERVICE. PERFORM A COORDINATION STUDY TO ENSURE PROPER COORDINATION (TO 0.01 SECONDS) OF ALL SHORT CIRCUIT PROTECTION DEVICES AND PROPER AIC/DUTY RATINGS OF ALL DEVICES AND PANELS TO BE INSTALLED FOR THIS PROJECT. PROVIDE AN ARC FLASH STUDY AND INSTALL ARC FLASH LABELS. PROVIDE A SIGNED AND SEALED DETAILED REPORT FOR EACH STUDY.
2. PROVIDE AND INSTALL BONDING BUSHINGS ON ALL SERVICE CONNECTIONS AND GROUNDING LOCKNUTS ON ALL PANEL CONNECTORS.
3. LIGHTNING/SURGE ARRESTOR:
   - 3.1. FOR PANEL MBDS: PROVIDE AND INSTALL THOR SYSTEMS SURGE PROTECTION DEVICE, UL LISTED TSri (OR EQUAL) UL1449 4th EDITION, UL1283–5TH EDITION, PARALLEL, 240/120Vac/1ø, 80kAIC, NEMA–4X FIBERGLASS ENCLOSURE, INTEGRAL FUSED DISCONNECT SWITCH, 200kA PER MODE, FIELD REPLACEABLE SURGE TILES, HYBRID 3–TIER, SURGE COUNTER, MULTIFUNCTION ALARM RELAY CONTACT, #6AWG ROPE–LAY CONNECTION CABLE (OR EQUAL).
   - 3.2. PANELBOARD PB: PROVIDE AND INSTALL UL 1449 LIGHTNING/SURGE ARRESTOR AS AN INTEGRAL COMPONENT TO EACH PANELBOARD. COORDINATE INSTALLATION REQUIREMENTS AND CIRCUIT BREAKER SELECTION WITH THE PANELBOARD MANUFACTURER.
4. ALL WIRE INSTALLED UNDER THIS CONTRACT SHALL BE STRANDED COPPER (THHN/THWN) UNLESS OTHER SPECIFIC CABLE TYPES ARE REQUIRED BY EQUIPMENT MANUFACTURERS.
5. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES AND REGULATIONS.
6. ALL EQUIPMENT SHALL BE PROVIDED WITH LAMICOID NAMEPLATES (3/16" LETTERING MIN.).
7. ALL PANELBOARD SCHEDULES SHALL BE TYPED AND REFLECT AS–BUILT CONDITIONS.
8. COORDINATE THE TYPE OF ALL ALARM SIGNALS TO ENSURE COMPATIBILITY WITH THE CITY SCADA PANEL (CSP). INSTALL THE CITY SCADA PANEL AND EXTEND ALL CONDUIT/WIRE AS SHOWN ON THE POWER DISTRIBUTION DIAGRAM. TERMINATE ALL WIRING AS DIRECTED BY THE CSP PROVIDER. COORDINATE WITH THE CSP PROVIDER TO ENSURE THAT ALL SIGNALS ARE CONNECTED AND FUNCTIONAL. REFERENCE THE SCADA SPECIFICATION FOR THE ASSOCIATED INPUT/OUTPUT LIST.
9. ALL ENCLOSURES SHALL BE AS FOLLOWS UNLESS SPECIFICALLY NOTED OTHERWISE:
   - 9.1. UL LISTED FOR THE INTENDED PURPOSE. THIS INCLUDES UL508A FOR "ENCLOSED INDUSTRIAL CONTROL PANELS".
   - 9.2. ENCLOSURES MOUNTED INSIDE THE TANK FRONT ROOM: NEMA–12.
   - 9.3. ENCLOSURES MOUNTED INSIDE PIPING ROOM: NEMA–4X.
   - 9.4. ALL ENCLOSURES SHALL BE PROVIDED WITH AMBIENT COMPENSATION AS REQUIRED BY THE INSTALLED EQUIPMENT. (ie. AIR CONDITIONER, HEATER, COOLING FANS, ETC.)
10. NOT USED
11. REFERENCE THE CIVIL SITE PLAN FOR ALL EQUIPMENT LOCATIONS AND DISTANCES.
12. GROUNDING RING:
    - 12.1. EXTEND 4/0 COPPER FROM THE TANK SERVICE/FEEDER MAIN BREAKER TO ASSOCIATED GROUND RING. PROVIDE AND INSTALL GROUND ROD AT EACH QUADRANT OF THE TANK TO FORM A GROUND RING AROUND THE BASE OF THE TANK. COORDINATE CLEARANCE FROM TANK FOUNDATION WITH TANK MANUFACTURER/INSTALLER. THE 4/0 CONDUCTOR SHALL BE CAD WELDED TO EACH GROUND ROD.
    - 12.2. GROUND RING CONDUCTOR SHALL BE MINIMUM 30" BELOW GRADE.
    - 12.3. REFERENCE GROUNDING SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
    - 12.4. EACH GROUND ROD SHALL BE 3/4"DIA X 10FT COPPER CLAD WITH THE TOP LOCATED BELOW OR AT GRADE (MIN).
    - 12.5. ALL CONNECTIONS TO GROUND RODS SHALL BE BARE COPPER CAD WELDED.
    - 12.6. PROVIDE A CONCRETE ENCASED ELECTRODE IN A FOOTING OF THE TANKS POURED CONCRETE FOUNDATION PER NEC 250.52(A)(3) AND CONNECT TO GROUNDING SYSTEM AS REQUIRED.
    - 12.7. PROVIDE A GROUND ROD ACCESS CHAMBER AT ONE QUADRANT OF THE TANK.
    - 12.8. EXTEND 2/0 BARE COPPER CONDUCTOR TO GROUND THE TANK SURROUNDING FENCE SYSTEM.

ABBREVIATIONS:

(A Number Designates the Unit where applicable)

AH – ALARM HORN
AL – ALARM LIGHT
CSP – CITY SCADA PANEL
Disc – DISCONNECT SWITCH
DS – DOOR SWITCH
EF – EXHAUST FAN
FCP – EXHAUST FAN CONTROL PANEL
ISBR – INTRINSICALLY SAFE BARRIER RELAY
J – JUNCTION BOX
JB – PUMP SKID TERMINATION JUNCTION BOX
LS – LIGHT SWITCH
MB – UTILITY METERBASE
MCB – MAIN CIRCUIT BREAKER
MDP – MAIN DISTRIBUTION PANELBOARD
MTS – MANUAL TRANSFER SWITCH
PB – 240/120 DISTRIBUTION PANELBOARD
OCP – ODOR SYSTEM CONTROL PANEL
PCP – PUMP CONTROL PANEL
R – RECEPTACLE
RGS – RIGID GALVANIZED STEEL
T – THERMOSTAT
TX – TRANSFORMER
UG – UNDER GROUND
UH – UNIT HEATER

PANELBOARD: PB, SERVICE RATED, 22kAIC — MAIN BUSS: 200AMP, COPPER
MOUNTING: SURFACE — VOLTAGE: 240/120VAC,1ø,3W,60Hz
ENCLOSURE: NEMA–12 (30–Ckt min.) — INTERIOR: 200AMP MAIN CIRCUIT BREAKER

LOAD DESCRIPTION	CB SIZE	# POLE	CKT NO	AMPS/PH øA	AMPS/PH øB	CKT NO	# POLE	CB SIZE	LOAD DESCRIPTION
TANK BASE FRONT ROOM LIGHTS	20	1	1	5		2	1	20	RECEPTACLES
TANK BASE PIPING ROOM LIGHTS	20	1	3		8	4	1	20	RECEPTACLES
GENERATOR GFI RECEPTACLE BATTERY CHARGER	20	1	5	5		6	1	20	GENERATOR GFI RECEPTACLE BLOCK HEATER
CITY SCADA PANEL (CSP)	20	1	7		12	8	1	20	TANK OUTSIDE WALL PACK LIGHTS
OBSTRUCTION LIGHTING PACKAGE	20	1	9	10		10	1	20	TANK LADDER/PLATFORM LIGHTS
TANK PIPING ROOM EXHAUST FAN/LOUVER	20	1	11		5	12	1	20	TANK LADDER/PLATFORM RECEPTACLES
SPARE BREAKER	20	1	13	--		14	1	20	SPARE BREAKER
MIXER MOTOR	20	2	15		6	16	2	20	UNIT HEATER UH–1
			17	6		18			
PREPARED SPACE	--	1	19		--	20	1	--	PREPARED SPACE
PREPARED SPACE	--	1	21	--		22	1	--	PREPARED SPACE
PREPARED SPACE	--	1	23		--	24	1	--	PREPARED SPACE
PREPARED SPACE	--	1	25	--		26	1	--	PREPARED SPACE
LIGHTNING/SURGE ARRESTOR Reference Note–3	**	2	27		1	28	1	--	PREPARED SPACE
			29	1		30	1	--	PREPARED SPACE
				66	64	TOTAL AMPS PER PHASE			

LIGHTING FIXTURE SCHEDULE

FIXTURES SHALL BE AS NOTED OR APPROVED EQUAL

TYPE	MANUF.	CAT. NUMBER	FIXTURE STYLE MOUNTING	TYPE	VOLTS
A	Lithonia	CSVT–L48–4000LM–MVOLT–40K–80CRI–STSL–MHCH36SS Wet Location Fittings	Surface/ Pendant	LED	120VAC
AE	Lithonia	CSVT–L48–4000LM–MVOLT–40K–80CRI–STSL–MHCH36SS Wet Location Fittings and Emergency Battery Pack	Surface/ Pendant	LED	120VAC
B	NLS	NV–W–T2–32L–7–40K7–UNV–WM–PC–20KA–EMCP–BRZ Weatherproof, Emergency Battery Pack, Full Cutoff Wallpack	Surface	LED	120VAC
EX	Philips Chloride	ER55LD–3–R–Die Cast Aluminum/Emergency Battery, Universal Mounting Kit	Surface	LED	120VAC
F	Lithonia	OLVTWM, 4000k MVolt (120–277Vac) LED Wet Location Vapor Tight with Wall Mount Junction Box	Surface	LED	120VAC

ELECTRICAL LEGEND

ALL SYMBOLS MAY NOT BE USED ON THIS CONTRACT

- EX — LED EXIT LIGHT – NO. DENOTES FACES
- J — JUNCTION BOX
- OUTSIDE LED WALL PACK LIGHT
- WET LOCATION LED LIGHT
- WET LOCATION LED LIGHT W/EMERG BALLAST AND BATTERY PACK
- EMERG — EMERGENCY LIGHT
- PH — PHOTOCELL
- +44" — WALL MOUNTED TOGGLE SWITCH – HEIGHT A.F.F.
- 3 — WALL MOUNTED TOGGLE SWITCH – NO. INDICATES 3–WAY, ETC.
- RECEPTACLE
- CONDUIT RUN (— — — ENCASED IN CONCRETE SLAB)
- INDICATES NO. OF WIRES (1–HOT,1–NEUTRAL & 1–GROUND)
- INDICATES A "HOMERUN" (3–HOTS & 1–GROUND)
- GROUND ROD FOR GROUND RING

COMMONWEALTH OF VIRGINIA
D. L. Glasscock
Lic. No.036309
01/19/24
PROFESSIONAL ENGINEER

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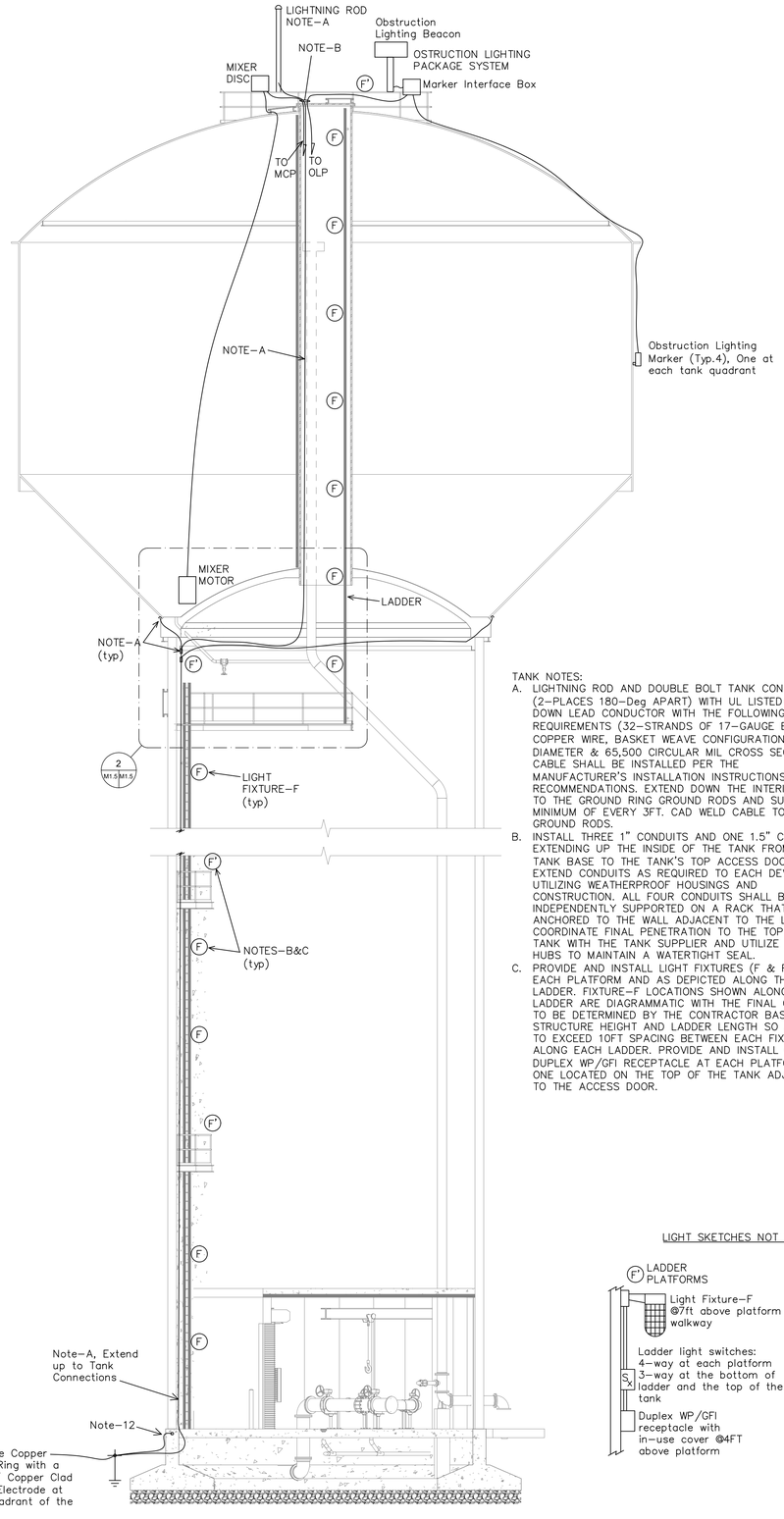
STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON, VIRGINIA
EWST ELECTRICAL SCHEDULES NOTES AND DIAGRAMS

JOB NO. 49408
SHEET NO. E1.1

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ELECTRICAL ENGINEERING CONSULTING SERVICES
Dominion Control Systems, Inc.
Ashland, VA (804) 370-6373
DominionControls@verizon.net

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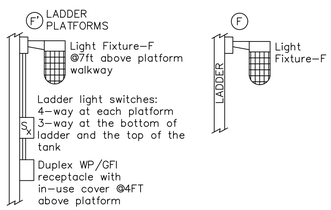
TANK NOTES:

A. LIGHTNING ROD AND DOUBLE BOLT TANK CONNECTORS (2–PLACES 180–Deg APART) WITH UL LISTED MAIN DOWN LEAD CONDUCTOR WITH THE FOLLOWING MINIMUM REQUIREMENTS (32–STRANDS OF 17–GAUGE BARE COPPER WIRE, BASKET WEAVE CONFIGURATION, 7/16" DIAMETER & 65,500 CIRCULAR MIL CROSS SECTION). CABLE SHALL BE INSTALLED PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS. EXTEND DOWN THE INTERIOR WALL TO THE GROUND RING GROUND RODS AND SUPPORT MINIMUM OF EVERY 3FT. CAD WELD CABLE TO THE GROUND RODS.

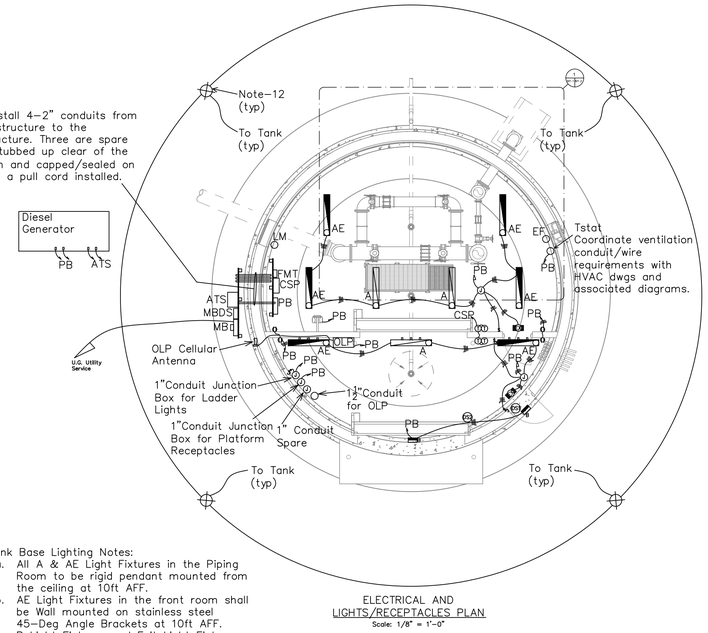
B. INSTALL THREE 1" CONDUITS AND ONE 1.5" CONDUIT EXTENDING UP THE INSIDE OF THE TANK FROM THE TANK BASE TO THE TANK'S TOP ACCESS DOOR. EXTEND CONDUITS AS REQUIRED TO EACH DEVICE UTILIZING WEATHERPROOF HOUSINGS AND CONSTRUCTION. ALL FOUR CONDUITS SHALL BE INDEPENDENTLY SUPPORTED ON A RACK THAT IS ANCHORED TO THE WALL ADJACENT TO THE LADDER. COORDINATE FINAL PENETRATION TO THE TOP OF THE TANK WITH THE TANK SUPPLIER AND UTILIZE MYERS HUBS TO MAINTAIN A WATERTIGHT SEAL.

C. PROVIDE AND INSTALL LIGHT FIXTURES (F & F') AT EACH PLATFORM AND AS DEPICTED ALONG THE LADDER. FIXTURE–F LOCATIONS SHOWN ALONG EACH LADDER ARE DIAGRAMMATIC WITH THE FINAL QUANTITY TO BE DETERMINED BY THE CONTRACTOR BASED ON STRUCTURE HEIGHT AND LADDER LENGTH SO AS NOT TO EXCEED 10FT SPACING BETWEEN EACH FIXTURE–F ALONG EACH LADDER. PROVIDE AND INSTALL ONE DUPLEX WP/GFI RECEPTACLE AT EACH PLATFORM AND ONE LOCATED ON THE TOP OF THE TANK ADJACENT TO THE ACCESS DOOR.

LIGHT SKETCHES NOT TO SCALE



Provide and install 4–2" conduits from the electrical structure to the meterbase structure. Three are spare and shall be stubbed up clear of the tank foundation and capped/sealed on both ends with a pull cord installed.



Tank Base Lighting Notes:

a. All A & AE Light Fixtures in the Piping Room to be rigid pendant mounted from the ceiling at 10ft AFF.
b. AE Light Fixtures in the front room shall be Wall mounted on stainless steel 45–Deg Angle Brackets at 10ft AFF.
c. B Light Fixtures and Exit Light Fixtures shall be mounted 1FT above door frame.

ELECTRICAL AND
LIGHTS/RECEPTACLES PLAN
Scale: 1/8" = 1'–0"

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DESIGNED BY
D. GLASSCOCK

CHECKED BY
D. GLASSCOCK

SCALE
AS SHOWN

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

CITY OF STAUNTON, VIRGINIA

EWST ELECTRICAL PLAN AND ELEVATION VIEWS AND DETAILS

JOB NO.
49408

SHEET NO.
E1.2

ELECTRICAL ENGINEERING
DCS
CONSULTING SERVICES
Dominion Control Systems, Inc.
Ashland, VA (804) 370-6373
DominionControls@verizon.net

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C:\DCS Business Files\DCS Backup\Jobfiles\5485 - TIMMONS Staunton WWPS and Tank\Dwgs EST\E1.2 Staunton EWST Plan Views and Details 01-19-2024.dwg | Plotted by Douglas Glasscock

HVAC LEGEND

SYMBOL	DESCRIPTION
	PROPELLER FAN
M	MOTOR OPERATED DAMPER
M	MOTOR
T	THERMOSTAT
ES	END SWITCH
ST	STARTER
A / H-1 | H-2	A = SECTION LETTER DESIGNATOR H-1 = SHEET WHERE SECTION IS CUT H-2 = SHEET WHERE SECTION APPEARS
	'P' TRAP

ABBREVIATIONS

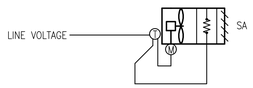
A	AMPERES
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AMSL	ABOVE MEAN SEA LEVEL
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CU FT	CUBIC FEET
CUH	CABINET UNIT HEATER
CU IN	CUBIC INCHES
D	DRAIN LINE
DB	DRY BULB
DWG	DRAWING
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
EL	ELEVATION
ELEC	ELECTRIC
EWB	ENTERING WET BULB TEMPERATURE
EXH	EXHAUST AIR
F	FILTER
°F	DEGREES FAHRENHEIT
FG	FINISHED GRADE
FF	FINISHED FLOOR
FLA	FULL LOAD AMPERES
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET
HP	HORSEPOWER
HR	HOUR
HZ	FREQUENCY
IN	INCH OR INCHES
KW	KILOWATT
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LDB	LEAVING DRY BULB TEMPERATURE
LWB	LEAVING WET BULB
MAX	MAXIMUM
MBH	BRITISH THERMAL UNITS/HOUR, THOUSANDS
MIN	MINIMUM
NO.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
PD	PRESSURE DROP
PH	PHASE
RHG	REFRIGERANT HOT GAS DISCHARGE
RL	REFRIGERANT LIQUID
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
SP	STATIC PRESSURE
SPEC	SPECIFICATION
TEMP	TEMPERATURE
TYP	TYPICAL
UH	UNIT HEATER
W	WIDTH
W/	WITH
W/O	WITHOUT

ELECTRIC UNIT HEATER SCHEDULE: SPECIFICATION SECTION 238239.16

UNIT NO.	SERVING	UNIT TYPE	TOTAL CAPACITY BTUH	AIR DATA		ELECTRIC DATA				MOTOR DATA			SELECTION BASED ON		REMARKS
				CFM	EAT °F	KW	FLA	VOLT	PH	HP	VOLT	PH	MANUFACTURER	MODEL	
UH-1	WATER ROOM	HORIZONTAL	11200	400	50	3.3	13.8	240	1	1/125	240	1	TRANE	UHRA-031GAAT	PROVIDE WITH DISCONNECT AND UNIT MOUNTED THERMOSTAT

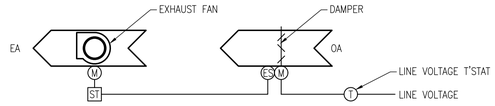
FAN SCHEDULE: SPECIFICATION SECTION 233423

UNIT NO.	SERVING	TYPE	CFM	WHEEL DIA, IN.	BLADE TYPE	TOTAL STATIC, IN. WG.	DRIVE	FAN RPM	MOTOR DATA				SELECTION BASED ON		REMARKS
									HP	RPM	VOLT	PH	MANUFACTURER	MODEL	
EF-1	WATER ROOM	SIDEWALL	1700	16	PROPELLER	0.375"	DIRECT	1310	1/2	1750	120	1	GREENHECK	SE1-16-428-A	PROVIDE SPEED CONTROLLER & REMOTE THERMOSTAT



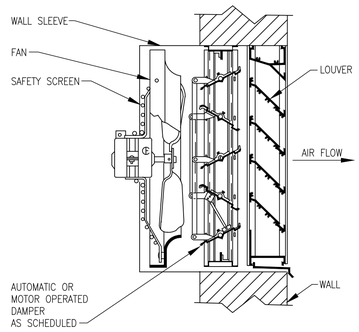
UNIT HEATER CONTROL DIAGRAM
NO SCALE

UNIT HEATER
1. ON A CALL FOR HEATING FROM THE UNIT MOUNTED THERMOSTAT, THE UNIT HEATER FAN SHALL START AND THE HEATING COIL SHALL ENERGIZE.
2. WHEN THE UNIT MOUNTED THERMOSTAT IS SATISFIED, THE HEATING COIL SHALL DE-ENERGIZE AND THE FAN SHALL STOP.



EXHAUST FAN (THERMOSTAT) CONTROL DIAGRAM
NO SCALE

EXHAUST FAN – THERMOSTAT
1. ON A CALL FROM THE LINE VOLTAGE SPACE THERMOSTAT (ADJUSTABLE, INITIALLY SET FOR 80°F), THE OA DAMPER SHALL OPEN. WHEN THE OA DAMPER IS PROVEN OPEN VIA END SWITCH, THE EXHAUST FAN SHALL START.
2. WHEN THE LINE VOLTAGE THERMOSTAT IS SATISFIED, THE EXHAUST FAN SHALL STOP AND THE OA DAMPER SHALL CLOSE.



PROPELLER WALL FAN
NO SCALE

COMMONWEALTH OF VIRGINIA
James S. Fuller
Lic. No. 033505
1-19-24
STAUNTON CROSSING PH 2
PROFESSIONAL ENGINEER

THIS DRAWING PREPARED AT THE
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1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

JS FULLER ENGINEERING
9702 CAXTON ROAD #238
RICHMOND, VIRGINIA 23238
(804) 690-2027

REVISION DESCRIPTION

DATE

DATE 1/19/2024

DRAWN BY JSF

DESIGNED BY JSF

CHECKED BY JSF

SCALE AS NOTED

TIMMONS GROUP

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK

CITY OF STAUNTON - VIRGINIA

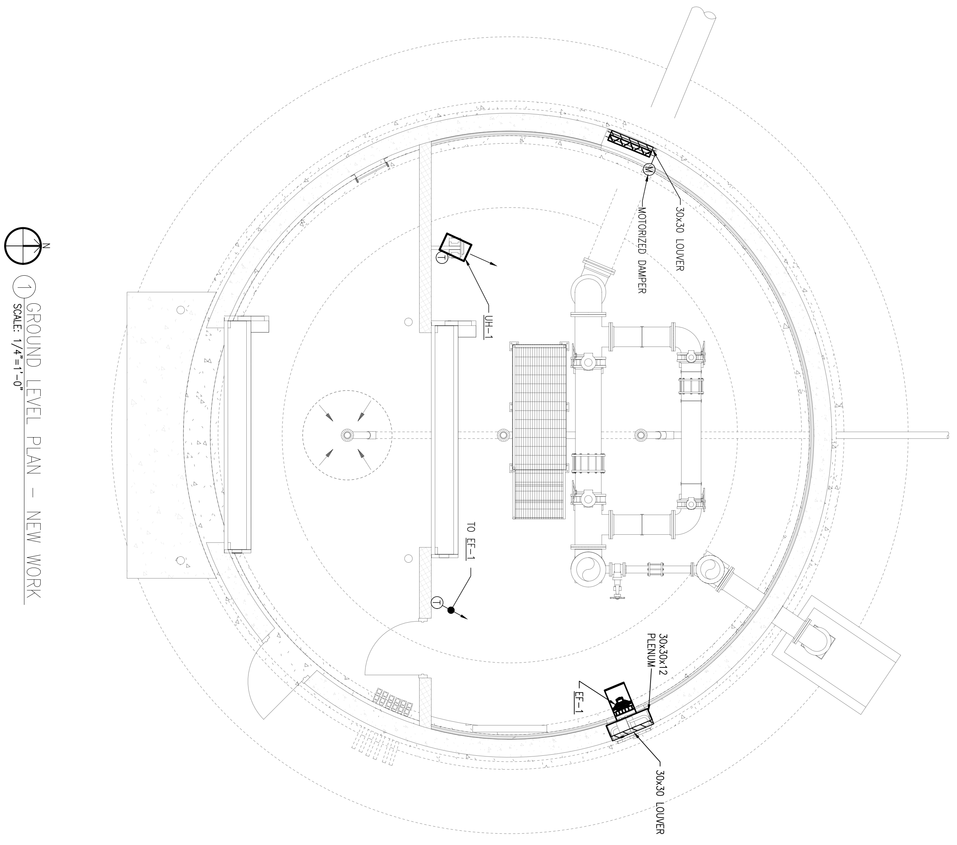
HVAC LEGEND, ABBREVIATIONS, SCHEDULES AND DETAILS

JOB NO. 49408

SHEET NO. H1.1

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1 GROUND LEVEL PLAN – NEW WORK
SCALE: 1/4"=1'-0"

SCALE: 1/4" = 1'-0"
0'
5'
15'

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JS FULLER ENGINEERING
9702 GAYTON ROAD #238
RICHMOND, VIRGINIA 23238
(804) 690-2027

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1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
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James S. Fuller
Lic. No. 033595
PROFESSIONAL ENGINEER

SHEET NO.	JOB NO.	SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
H2.1	49408	AS NOTED	JSF	JSF	JSF	1/19/2024

STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON - VIRGINIA
HVAC PLAN

DATE	REVISION DESCRIPTION

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PLUMBING INSULATION SCHEDULE:

SPECIFICATION SECTION 220700

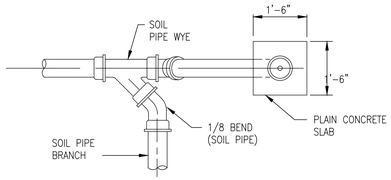
APPLICATION	SECTION	LOCATION	FLUID TEMPERATURE RANGE (F)	THICKNESS (IN)	FACTORY APPLIED JACKET	FIELD APPLIED JACKET	PAINT	INSULATION TYPE	REMARKS
PIPE INSULATION REQUIREMENTS									
DOMESTIC COLD WATER, (CW)	1" AND SMALLER	EXPOSED	40-80	1"	ASJ-SSL	PVC	NO	MINERAL FIBER	
DOMESTIC COLD WATER, (CW)	GREATER THAN 1"	EXPOSED	40-80	1"	ASJ-SSL	PVC	NO	MINERAL FIBER	

LEGEND

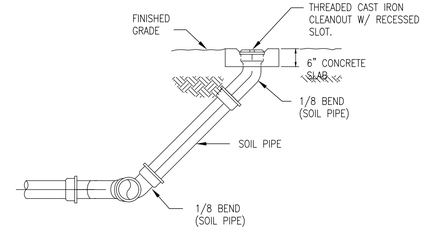
- DEMOLITION OF EXISTING PIPING
- EXISTING DOMESTIC COLD WATER PIPING
- EXISTING DOMESTIC HOT WATER PIPING
- EXISTING DOMESTIC HOT WATER RETURN PIPING
- EXISTING SANITARY VENT PIPING
- SAN — EXISTING SANITARY PIPING
- W — EXISTING WASTE PIPING
- ST — EXISTING STORM PIPING
- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- DOMESTIC HOT WATER RETURN PIPING
- SANITARY VENT PIPING
- SAN — SANITARY PIPING
- SAN — SANITARY PIPING BELOW
- W — WASTE PIPING
- W — WASTE PIPING BELOW
- ST — STORM PIPING
- PD — PUMP DISCHARGE
- G — GAS PIPING
- PIPE TURNING UP
- PIPE TURNING DOWN
- DIRECTION OF FLOW IN PIPE
- SLOPE PIPE IN DIRECTION OF FLOW

- GATE VALVE
- BALL VALVE
- STRAINER
- C.V. — CHECK VALVE, HORIZONTAL SWING
- UNION
- GAS COCK
- BC — BALANCING COCK
- DRAIN VALVE
- WHA — WATER HAMMER ARRESTOR
- THERMOMETER
- PRESSURE GAUGE
- UNION COUPLING
- P.G. — PIPE GUIDE
- P.A. — PIPE ANCHOR
- "P" TRAP
- PRESSURE RELIEF VALVE
- WH — WALL HYDRANT
- HB — HOSE BIBB
- FLOOR CLEAN OUT
- C.O. — CLEAN OUT
- A.P. — ACCESS PANEL

- ADA — AMERICANS WITH DISABILITIES ACT
- AD — ACCESS DOOR
- O.D. — OVERFLOW DRAIN
- PDI — WATER HAMMER ARREST DESIGNATION
- RPZ — REDUCED PRESSURE ZONE BACK FLOW PREVENTER
- V.T.R. — VENT THROUGH ROOF
- WCO — WALL CLEAN OUT
- P-1A — PLUMBING FIXTURE DESIGNATION
- S / 1 — WASTE AND VENT RISER DIAGRAM
- W / 1 — WATER RISER DIAGRAM
- CONNECT NEW TO EXISTING SERVICE
- REMOVE EXISTING TO THIS POINT
- EXISTING SPRINKLER PIPING
- SPRINKLER PIPING
- PENDENT TYPE SPRINKLER HEAD
- UPRIGHT TYPE SPRINKLER HEAD
- FIRE DEPARTMENT CONNECTION TO WALL
- OPEN STEM & YOKE VALVE
- FS — FLOW SWITCH
- TS — TAMPER SWITCH

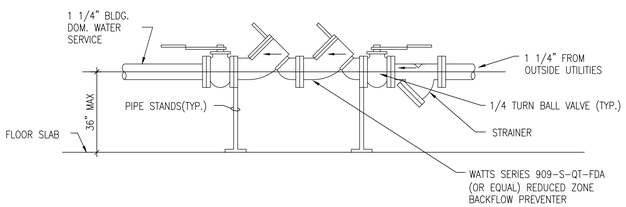


PLAN

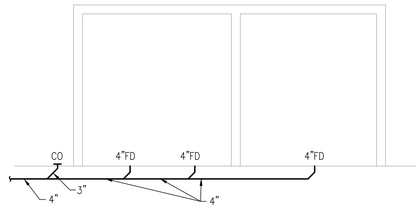


ELEVATION

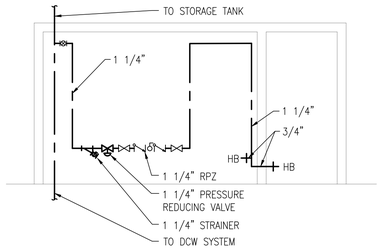
1 TYPICAL CLEANOUT DETAIL
SCALE: NONE



2 DOMESTIC WATER SERVICE ENTRANCE DETAIL
SCALE: NONE



3 WASTE & VENT RISER DIAGRAM
NO SCALE



4 DOMESTIC WATER RISER DIAGRAM
NO SCALE

JAMES S. FULLER
COMMONWEALTH OF VIRGINIA
Lic. No. 033505
1-19-24
STAUNTON CROSSING PH 2
PROFESSIONAL ENGINEER

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TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

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9702 CAYTON ROAD #238
RICHMOND, VIRGINIA 23238
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DRAWN BY: JSF
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CHECKED BY: JSF
SCALE: AS NOTED

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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON - VIRGINIA

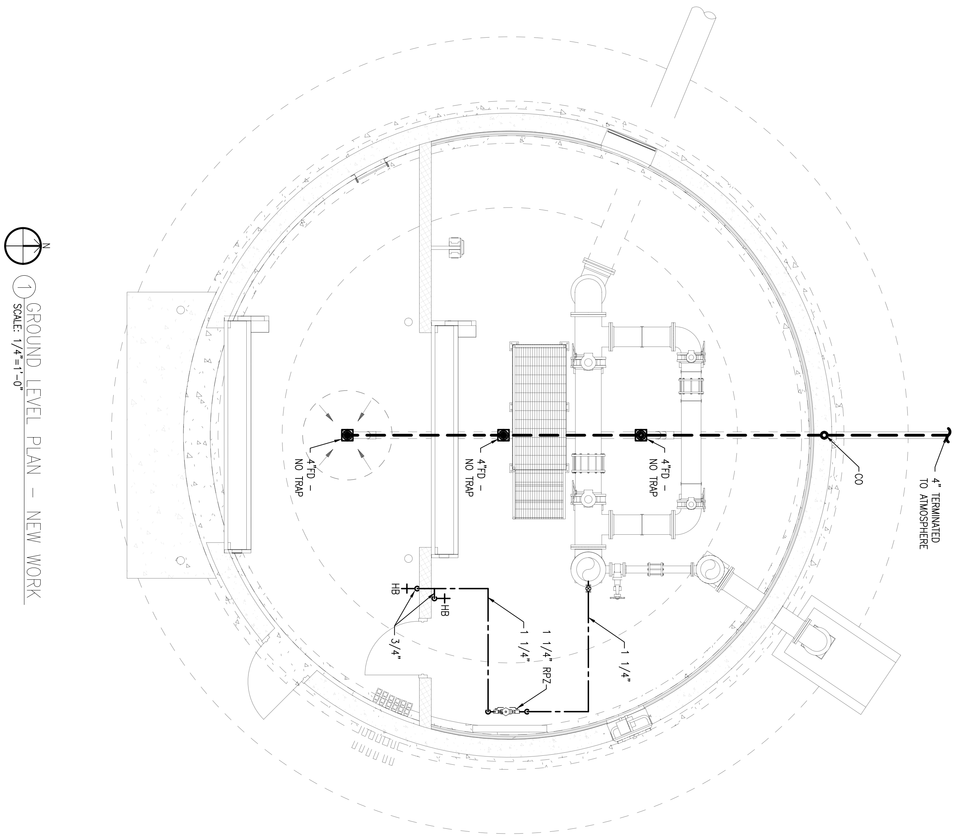
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1 GROUND LEVEL PLAN – NEW WORK
SCALE: 1/4"=1'-0"

0'
SCALE: 1/4" = 1'-0"
5'
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STAUNTON CROSSING - ELEVATED WATER STORAGE TANK
CITY OF STAUNTON - VIRGINIA
PLUMBING PLAN

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