STAUNTON CROSSING
ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA

SITE DATA

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VICINITY MAP
SCALE: 1" = 2,000'

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SUBMITTED: MARCH 31, 2023
REVISED: MARCH 26, 2024

Staunton Bid #D00324

NOTE: A VSMP REGISTRATION STATEMENT IS NOT REQUIRED FOR THIS LINEAR DEVELOPMENT PROJECT IN ACCORDANCE WITH DEQ GUIDANCE MEMO NO. 15-2003. ADDITIONALLY, THIS PROJECT ACHIEVES COMPLIANCE WITH PART IIB OF VSMP TECHNICAL CRITERIA BY A NEGLIGIBLE INCREASE IN IMPERVIOUSNESS AND NEGLIGIBLE CHANGE IN WATER QUALITY/QUANTITY.

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 DIAL 811.

DIG WITH CARE MISS UTILITY OF VIRGINIA SAVE

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

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REVISION DESCRIPTION	DATE
VDH SUBMITTAL	05-08-2023
REVISED PER CITY COMMENTS	06-30-2023
REVISED PER CITY COMMENTS	11-17-2023
REVISED PER CITY COMMENTS - SEWER AND WATER	03-26-2024

DATE: 3/31/2023
DRAWN BY: Z. MOUNTJOY
DESIGNED BY: B. STRICKLAND
CHECKED BY: B. STRICKLAND
SCALE:

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
COVER SHEET

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)

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

RESTRAINED LENGTHS SHALL APPLY IN EACH DIRECTION

CALCULATION ASSUMPTIONS
SOIL TYPE: MH (GRANULAR)
SAFETY FACTOR: 1.5 to 1.0
TRENCH TYPE: 3
DEPTH OF BURY: 3.0'
TEST PRESSURE: 150 psi

FITTING	12" FORCE MAIN	12" POLYWRAPPED FORCE MAIN
11.25° BEND	18'	18'
22.5° BEND	18'	18'
45° BEND	18'	36'
90° BEND	54'	72'
VALVE	72'	180'
PLUG	72'	180'

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

FITTING	16" WATER MAIN	16" POLYWRAPPED WATER MAIN	12" WATER MAIN	8" WATER MAIN
11.25° BEND	18'	18'	18'	18'
22.5° BEND	18'	36'	18'	18'
45° BEND	36'	54'	36'	18'
90° BEND	90'	126'	72'	54'
VALVE	126'	288'	108'	72'
PLUG	126'	288'	108'	72'

BURIED DUCTILE IRON PIPE NOTES:

1. POLYETHYLENE ENCASEMENT, WHERE REQUIRED, 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.

LEGEND

EXISTING		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:

DIG WITH CARE KEEP VIRGINIA SAFE

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
		MIN	MINIMUM
AWWA	AMERICAN WATER WORKS ASSOCIATION	N/F	NOW OR FORMERLY
BI	BLACK IRON	NIC	NOT IN CONTRACT
BLDG	BUILDING	NPT	NATIONAL PIPE THREAD
BM	BENCHMARK	OC	ON CENTER
BMP	BEST MANAGEMENT PRACTICE	OCEW	ON CENTER EACH WAY
		OHE	OVERHEAD ELECTRIC
BV	BALL VALVE	MPT	MALE PIPE THREAD
CL	CLASS	PE	PLAIN END / POLYETHYLENE
CO	CLEAN OUT		
CONC	CONCRETE	PEP	POLYETHYLENE PIPE
DI	DUCTILE IRON	PROP	PROPOSED
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE
DIP	DUCTILE IRON PIPE	REQ	REQUIRED
EA	EACH	RCP	REINFORCED CONCRETE PIPE
ELEV	ELEVATION		
ESC	EROSION AND SEDIMENT CONTROL	ROW	RIGHT OF WAY
		SCH	SCHEDULE
ESMT	EASEMENT	SF	SQUARE FEET / SILT FENCE
EX	EXISTING		
FFE	FINISHED FLOOR ELEVATION	SS	STAINLESS STEEL
		STA	STATION
FH	FIRE HYDRANT	STD	STANDARD
FLG	FLANGE	STR	STRUCTURE
FO	FIBER OPTIC	TW	TOP OF WALL
FPT	FEMALE PIPE THREAD	TYP	TYPICAL
HDPE	HIGH DENSITY POLYETHELENE	VDOT	VIRGINIA DEPARTMENT OF TRANSPORTATION
HORIZ	HORIZONTAL	WV	WATER VALVE
INV	INVERT	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 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 2,000 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 WITHIN THE PROJECT LIMITS OF THIS PLAN SET.
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

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YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
05-08-2023	VDH SUBMITTAL
06-30-2023	REVISED PER CITY COMMENTS
08-25-2023	REVISED PER CITY COMMENTS
03-26-2024	REVISED PER CITY COMMENTS - SEWER AND WATER

DATE 3/31/2023
DRAWN BY Z. MOUNTJOY
DESIGNED BY B. STRICKLAND
CHECKED BY B. STRICKLAND
SCALE AS SHOWN

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
GENERAL NOTES

JOB NO. 49408
SHEET NO. G1.1

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EROSION AND SEDIMENT CONTROL NARRATIVE:

PROJECT DESCRIPTION
THE PURPOSE OF THIS PROJECT IS TO PROVIDE NEW WATER AND UPGRADED SEWER SERVICE TO THE STAUNTON CROSSING DEVELOPMENT IN STAUNTON, VIRGINIA. THE PROJECT WILL INCLUDE A NEW 8" PUBLIC WATERLINE BETWEEN THE EXISTING 8" WATERLINE ON CROSSING WAY AND A NEW 16" WATERLINE ON CROSSING WAY. THE PROJECT WILL ALSO INCLUDE A NEW 16" PUBLIC WATERLINE BETWEEN AN EXISTING 12" WATERLINE ALONG THE CSX RAILWAY AND AN EXISTING 10" WATERLINE ALONG VALLEY CENTER DRIVE. THE PROJECT ALSO INCLUDES A REPLACEMENT WASTEWATER PUMP STATION, NEW 12" SEWER FORCE MAIN BETWEEN THE REPLACEMENT WASTEWATER PUMP STATION AND NATIONAL AVENUE AND NEW 15" SANITARY SEWER BETWEEN CROSSING WAY AND THE REPLACEMENT WASTEWATER PUMP STATION. THERE IS APPROXIMATELY 11,000 LINEAR FEET OF NEW PUBLIC WATERLINE, APPROXIMATELY 1,500 LINEAR FEET OF NEW SANITARY SEWER AND APPROXIMATELY 5,550 L.F. OF NEW SEWER FORCE MAIN.

AREA OF DISTURBANCE
TOTAL AREA DISTURBED: 11.94 ACRES
AREA TAKEN FROM CONSTRUCTION PLAN "LIMITS OF DISTURBANCE" (LOD).

EXISTING SITE CONDITIONS
THE PROJECT WILL MOSTLY TAKE PLACE IN PREVIOUSLY DEVELOPED AREAS ALONG THE NEWLY CONSTRUCTED EXTENSION OF CROSSING WAY.

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
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. ROCK CHECK DAMS AND CULVERT INLET PROTECTION WILL PROVIDE EROSION CONTROL FOR EXISTING DITCHES AND CULVERTS. 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 THE CITY 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.

3.08 CULVERT INLET PROTECTION

A SEDIMENT FILTER LOCATED AT THE INLET TO STORM SEWER CULVERTS WHICH PREVENTS SEDIMENT FROM ENTERING, ACCUMULATING IN, AND BEING TRANSFERRED BY THE CULVERT. IT ALSO PROVIDES EROSION CONTROL AT CULVERTS DURING THE PHASE OF A PROJECT WHERE ELEVATION AND DRAINAGE PATTERNS ARE CHANGING, CAUSING ORIGINAL CONTROL MEASURES TO BE INEFFECTIVE.

3.09 TEMPORARY DIVERSION DIKE

A RIDGE OF COMPACTED SOIL CONSTRUCTED AT THE TOP OR BASE OF A SLOPING DISTURBED AREA WHICH DIVERTS OFF-SITE RUNOFF AWAY FROM UNPROTECTED SLOPES AND TO A STABILIZED OUTLET, OR TODIVERT SEDIMENT-LADEN RUNOFF TO A SEDIMENT TRAPPING STRUCTURE. MAXIMUM EFFECTIVE LIFE IS 18 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.

3.21 LEVEL SPREADER

AN OUTLET FOR DIKES AND DIVERSIONS CONSISTING OF AN EXCAVATED DEPRESSION CONSTRUCTED AT ZERO GRADE ACROSS A SLOPE TO CONVERT CONCENTRATED, SEDIMENT-FREE RUNOFF TO SHEET FLOW AND RELEASE IT ONTO AREAS OF UNDISTURBED SOIL WHICH IS STABILIZED BY EXISTING VEGETATION.

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.

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.

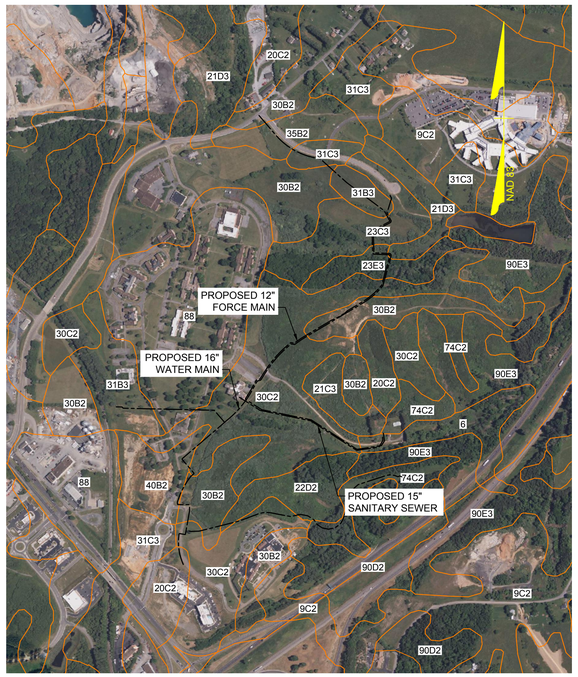
ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

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 TRAP SHALL 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.

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 BE 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

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REVISION DESCRIPTION	DATE
VDH SUBMITTAL	05-08-2023
REVISED PER CITY COMMENTS	06-30-2023
REVISED PER CITY COMMENTS	09-15-2023
REVISED PER CITY COMMENTS - SEWER AND WATER	03-26-2024

DATE: 3/31/2023
DRAWN BY: Z. MOUNTJOY
DESIGNED BY: B. STRICKLAND
CHECKED BY: B. STRICKLAND
SCALE: AS SHOWN

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
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

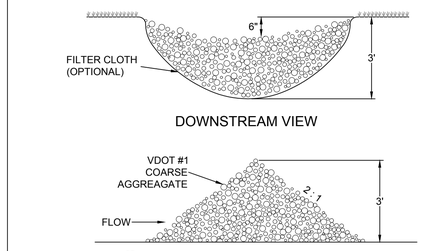
Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:

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:

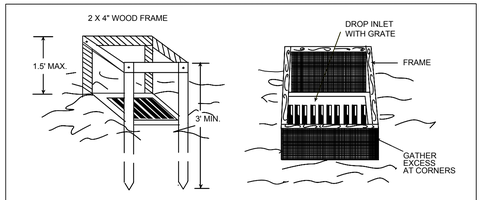
1. The project will not significantly alter the predevelopment runoff characteristics of the land surface after the completion of construction and final stabilization.
2. The project will be managed so that less than one (1) acre of land disturbance occurs on a daily basis.
3. The disturbed land where 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.



CD ROCK CHECK DAM 3.20-1

(2 ACRES OR LESS OF DRAINAGE AREA)

NO SCALE

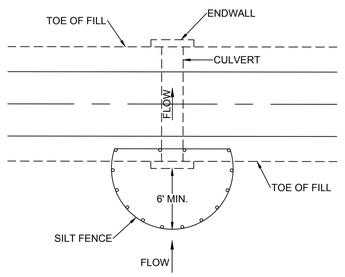


SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5%) WHERE THE INLET SHEET OR OVERLAND FLOWS (NOT EXCEEDING 1 C.F.S.) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

IP SILT FENCE DROP INLET PROTECTION 3.07-1

NO SCALE



CIP SILT FENCE CULVERT INLET PROTECTION 3.08-1

NO SCALE

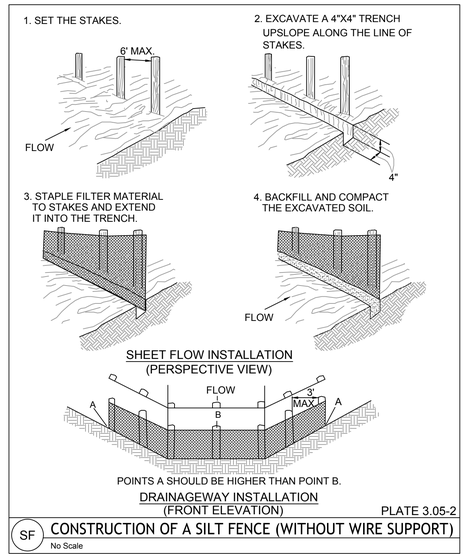
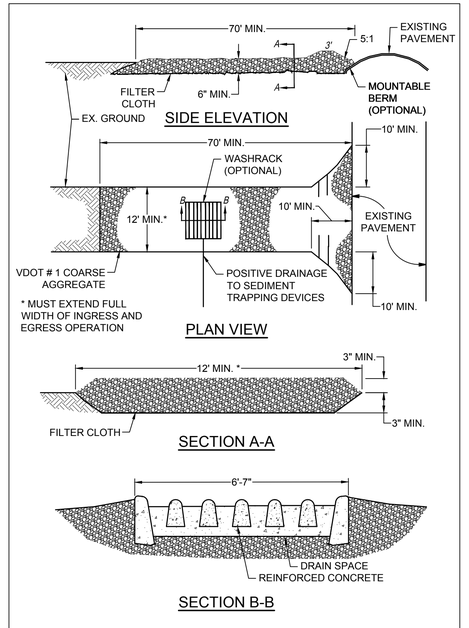


PLATE 3.05-2

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
IP		INLET PROTECTION	3.07-1
CIP		CULVERT INLET PROTECTION	3.08-1
DD		DIVERSION DIKE	3.09
CD		ROCK CHECK DAM	3.20
LS		LEVEL SPREADER	3.21
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

	TOTAL LBS. PER ACRE
MINIMUM CARE LAWN	
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
03/26/2024
PROFESSIONAL ENGINEER

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CHECKED BY: B. STRICKLAND
SCALE: AS SHOWN

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS

CITY OF STAUNTON, VIRGINIA

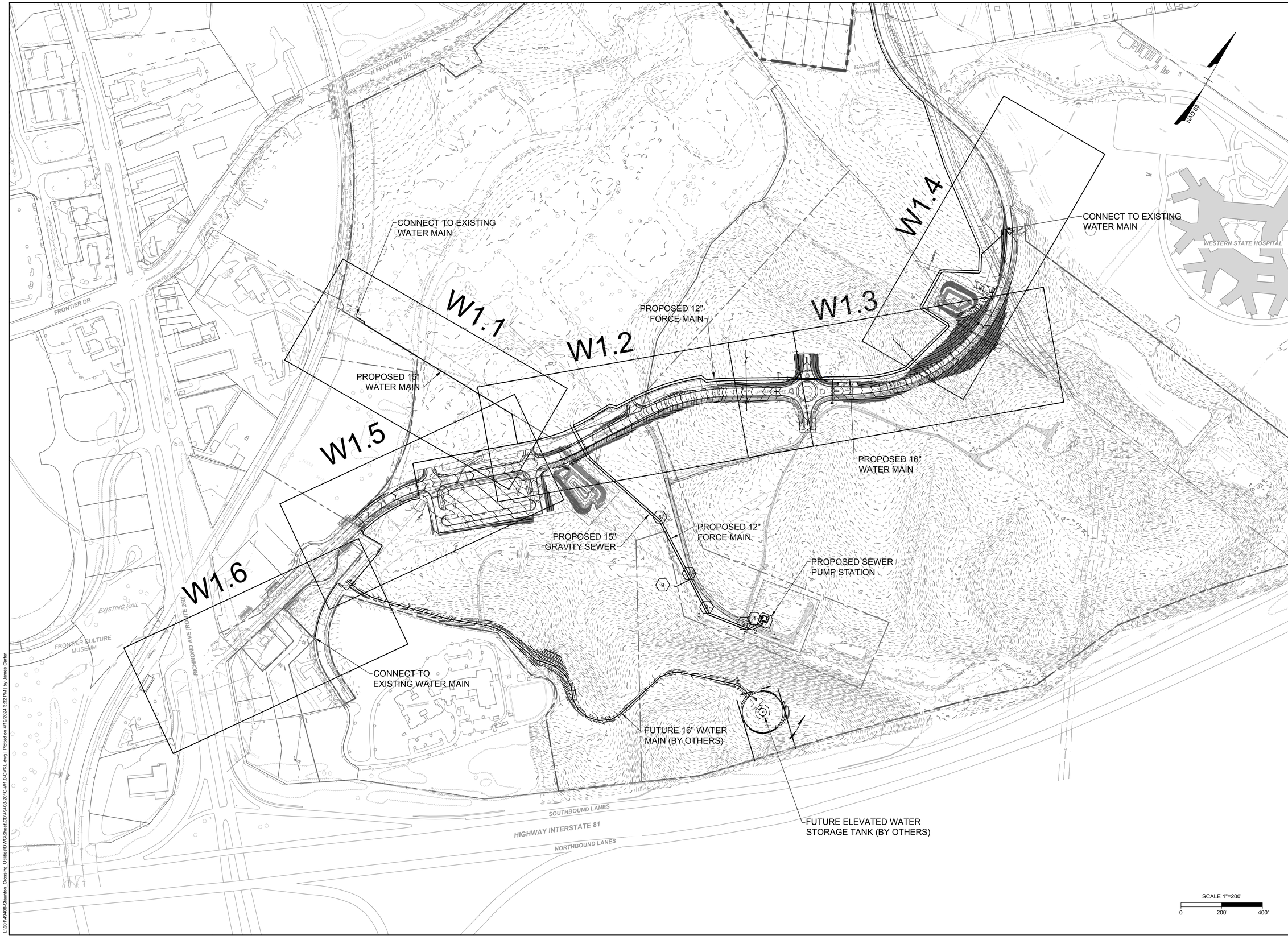
EROSION AND SEDIMENT CONTROL DETAILS

JOB NO. 49408

SHEET NO. C1.1

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DATE: 3/31/2023
DRAWN BY: J. CARTER
DESIGNED BY: J. CARTER
CHECKED BY: B. STRICKLAND
SCALE: 1" = 200'

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS

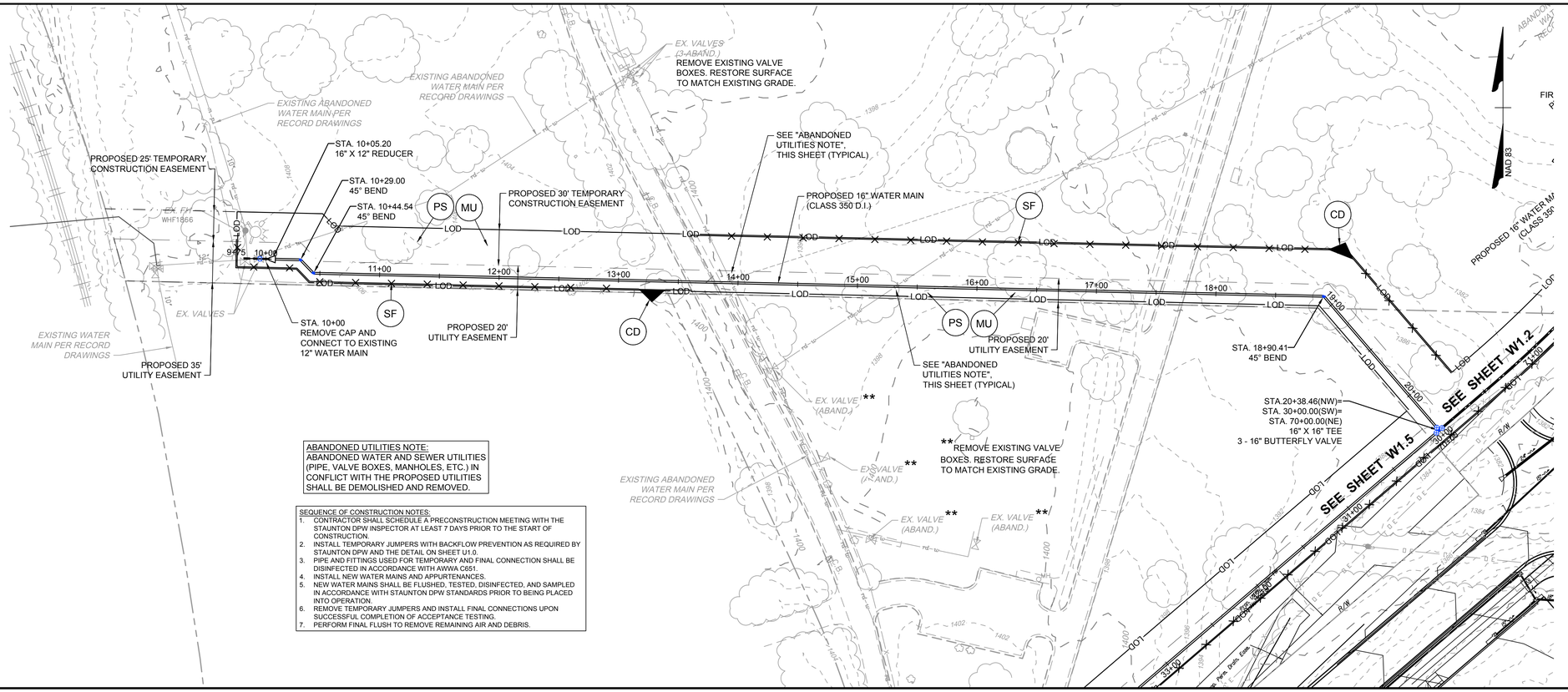
CITY OF STAUNTON, VIRGINIA

WATER MAIN SHEET INDEX

JOB NO. 49408
SHEET NO. W1.0

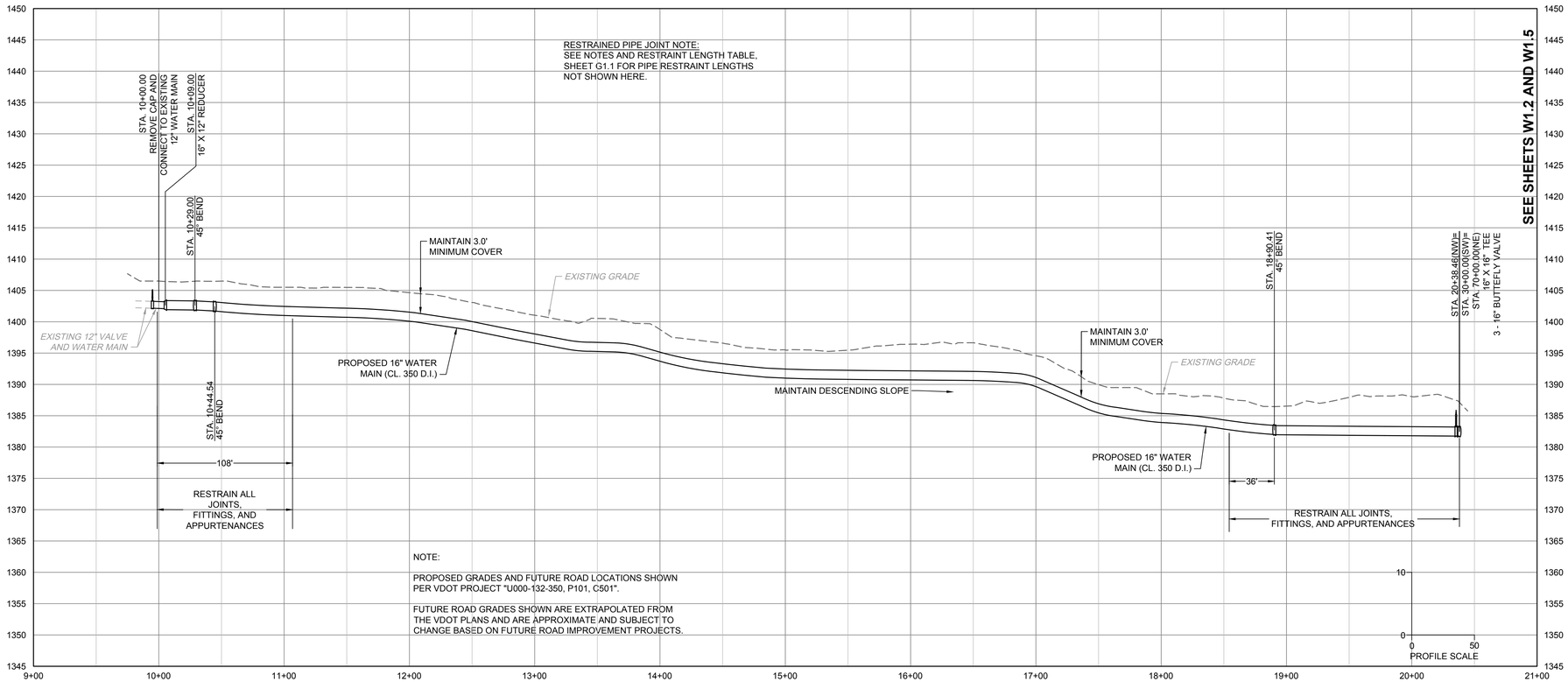
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ABANDONED UTILITIES NOTE:
ABANDONED WATER AND SEWER UTILITIES (PIPE, VALVE BOXES, MANHOLES, ETC.) IN CONFLICT WITH THE PROPOSED UTILITIES SHALL BE DEMOLISHED AND REMOVED.

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. INSTALL TEMPORARY JUMPERS WITH BACKFLOW PREVENTION AS REQUIRED BY STAUNTON DPW AND THE DETAIL ON SHEET U1.0.
3. PIPE AND FITTINGS USED FOR TEMPORARY AND FINAL CONNECTION SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651.
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 UPON SUCCESSFUL COMPLETION OF ACCEPTANCE TESTING.
7. PERFORM FINAL FLUSH TO REMOVE REMAINING AIR AND DEBRIS.



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

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
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.

** REMOVE EXISTING VALVE BOXES. RESTORE SURFACE TO MATCH EXISTING GRADE.

ABANDONED EXISTING WATER MAIN PER RECORD DRAWINGS

SEE "ABANDONED UTILITIES NOTE", THIS SHEET (TYPICAL)

PROPOSED 20' TEMPORARY CONSTRUCTION EASEMENT

STA. 74+93.73
45° BEND

STA. 73+91.28
16" X 6" HYDRANT TEE
FIRE HYDRANT ASSEMBLY

12" PLUG

SEE SHEET W1.6 FOR PROFILE

PROPOSED SEWER FORCE MAIN (BY SEPARATE PLAN)

PROPOSED 30' UTILITY EASEMENT

PROPOSED 20' TEMPORARY CONSTRUCTION EASEMENT

STA. 79+69.48
45° BEND

PROPOSED 16" WATER MAIN (CLASS 350 D.I.)

STA. 18+90.41
45° BEND

SEE SHEET W1.1

STA.20+38.46(NW)=
STA. 30+00.00(SW)=
STA. 70+00.00(NE)
16" X 16" TEE
3 - 16" BUTTERFLY VALVE

PROPOSED 16" WATER MAIN (CLASS 350 D.I.)

STA. 73+91.28
16" X 6" HYDRANT TEE
FIRE HYDRANT ASSEMBLY

EX. VALVE ** (ABAND.)

STA. 75+26.97
45° BEND

STA.76+32.67
16" X 12" TEE
1 - 12" GATE VALVE
2 - 16" BUTTERFLY VALVE

STA. 80+03.49
45° BEND

PROPOSED TEMPORARY CONSTRUCTION EASEMENT

MATCH LINE SHEET W1.3

SEE SHEET W1.5

CROSSING WAY

ABANDONED EX. SANITARY MANHOLE
RIM = 1388.13'
SE INV.=1378.69' 12" PVC
NE INV.=1378.57' 12" PVC

PROPOSED SEWER FORCE MAIN (BY SEPARATE PLAN)

PROPOSED 8" GRAVITY SEWER (BY SEPARATE PLAN)

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. INSTALL TEMPORARY JUMPERS WITH BACKFLOW PREVENTION AS REQUIRED BY STAUNTON DPW AND THE DETAIL ON SHEET U1.0.
3. PIPE AND FITTINGS USED FOR TEMPORARY AND FINAL CONNECTION SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651.
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 UPON SUCCESSFUL COMPLETION OF ACCEPTANCE TESTING.
7. PERFORM FINAL FLUSH TO REMOVE REMAINING AIR AND DEBRIS.

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.

CROSSING WAY

SEE SHEETS W1.1 AND W1.5

FUTURE ROAD

STA. 70+00.00(NE)=
STA. 20+38.46(NW)=
STA. 30+00.00(SW)
16"X 16" TEE
3 - 16" BUTTERFLY VALVE

STA. 70+10.34
45° VERTICAL BEND

STA. 70+10.78
45° VERTICAL BEND

PROJECTED FUTURE GRADE

MAINTAIN 3.0' MINIMUM COVER

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

MAINTAIN 18" MIN CLEARANCE

PROPOSED 15" SANITARY SEWER

PROPOSED 12" SANITARY SEWER FORCEMAIN

126'

RESTRAIN ALL JOINTS, FITTINGS, AND APPURTENANCES

EXISTING GRADE

STA. 74+93.73
45° BEND

STA. 75+26.97
45° BEND

PROJECTED FUTURE GRADE

FUTURE ROAD

STA. 76+32.67
16" X 12" TEE
1-12" GATE VALVE
2 - 16" BUTTERFLY VALVE

STA. 76+55.82
11.25° VERTICAL BEND

PIPE ANCHORS WHERE SLOPE EXCEEDS 20% (TYP.). SEE DETAIL ON SHEET U1.0

126'

36'

RESTRAIN ALL JOINTS, FITTINGS, AND APPURTENANCES

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

MAINTAIN 3.0' MINIMUM COVER

STA. 79+69.48
45° BEND

STA. 80+03.49
45° BEND

36'

36'

RESTRAIN ALL JOINTS, FITTINGS, AND APPURTENANCES

MATCH LINE SHEET W1.3

PROFILE SCALE
0 50
10
0

COMMONWEALTH OF VIRGINIA
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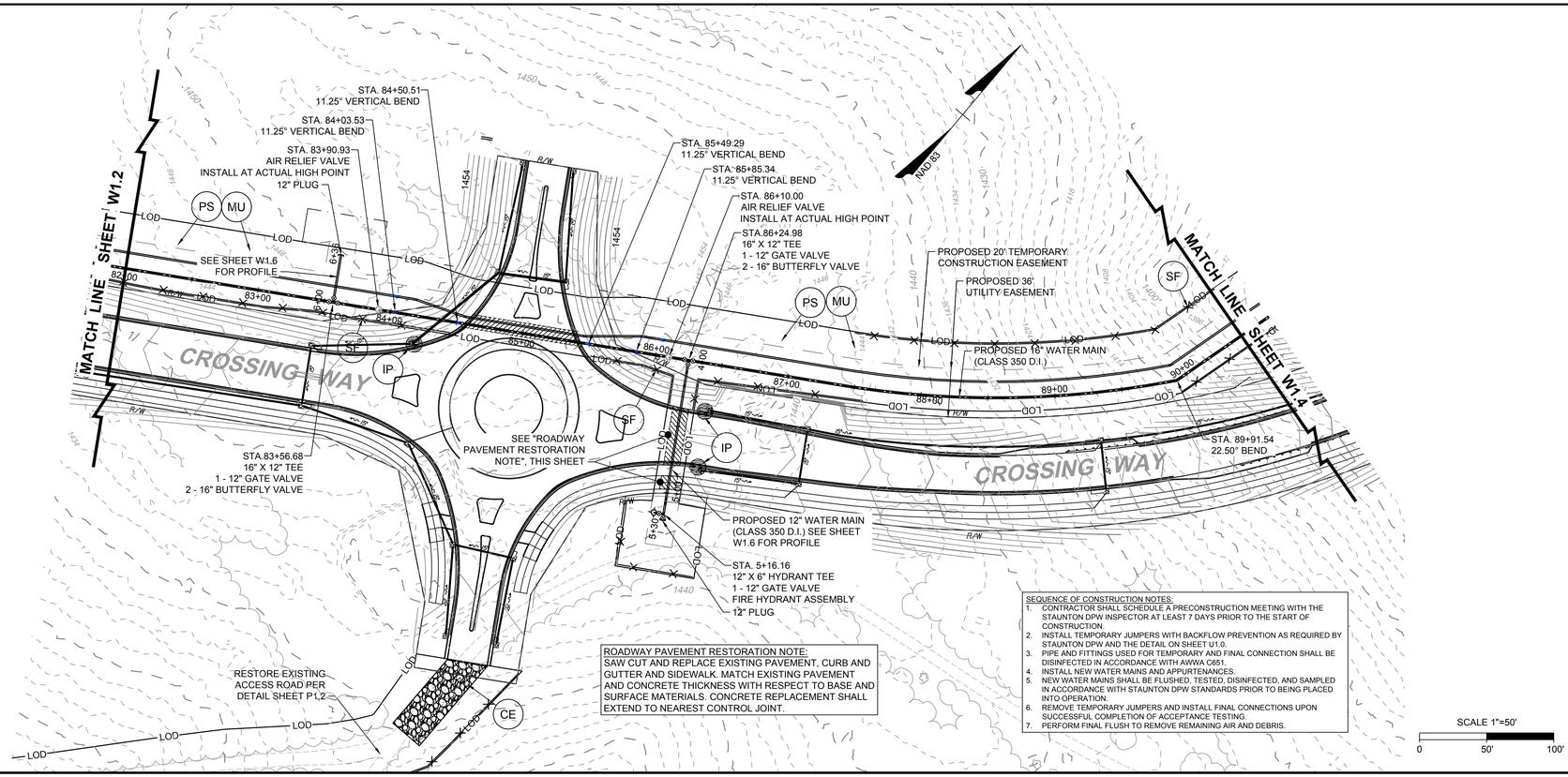
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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
WATER MAIN PLAN AND PROFILE

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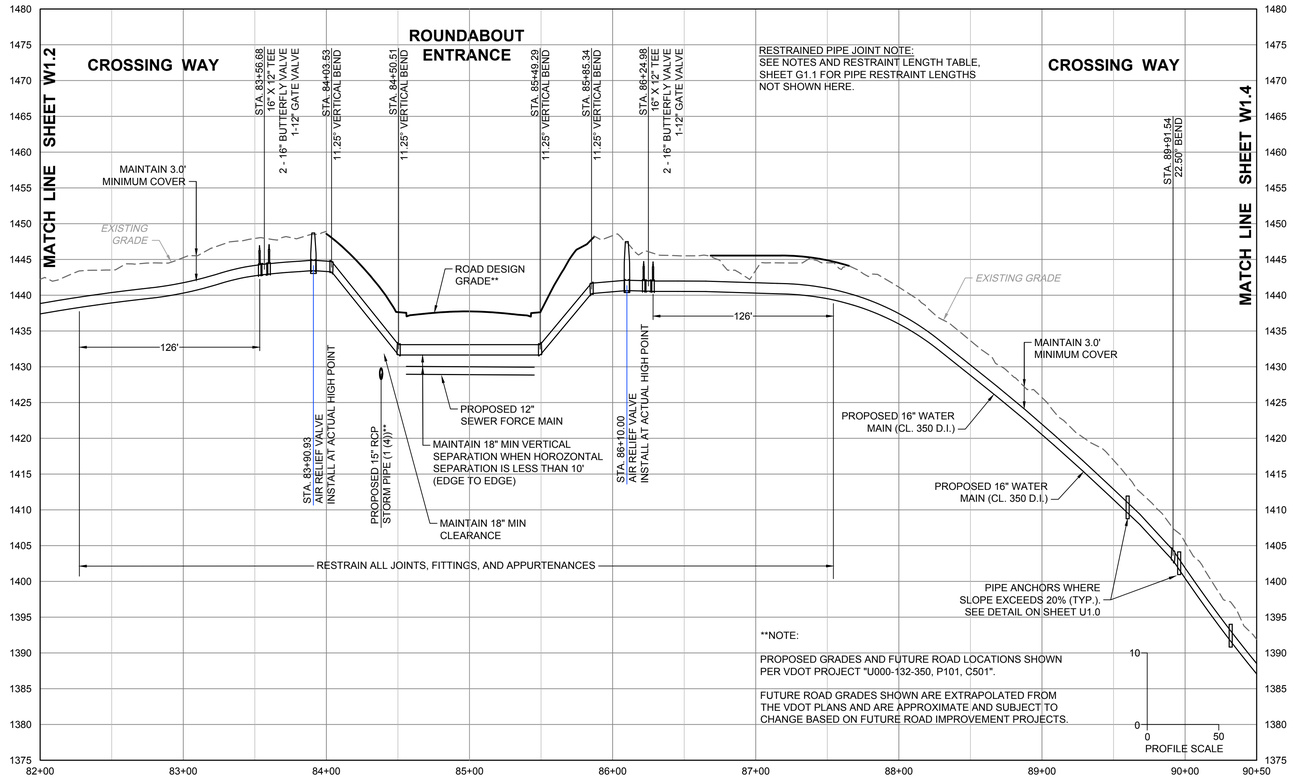
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ROADWAY PAVEMENT RESTORATION NOTE:
SAW CUT AND REPLACE EXISTING PAVEMENT, CURB AND GUTTER AND SIDEWALK. MATCH EXISTING PAVEMENT AND CONCRETE THICKNESS WITH RESPECT TO BASE AND SURFACE MATERIALS. CONCRETE REPLACEMENT SHALL EXTEND TO NEAREST CONTROL JOINT.

SEQUENCE OF CONSTRUCTION NOTES:
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3. PIPE AND FITTINGS USED FOR TEMPORARY AND FINAL CONNECTION SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651.
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.
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7. PERFORM FINAL FLUSH TO REMOVE REMAINING AIR AND DEBRIS.

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.

**NOTE:
PROPOSED GRADES AND FUTURE ROAD LOCATIONS SHOWN PER VDOT PROJECT "U000-132-350, P101, C501".

FUTURE ROAD GRADES SHOWN ARE EXTRAPOLATED FROM THE VDOT PLANS AND ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON FUTURE ROAD IMPROVEMENT PROJECTS.

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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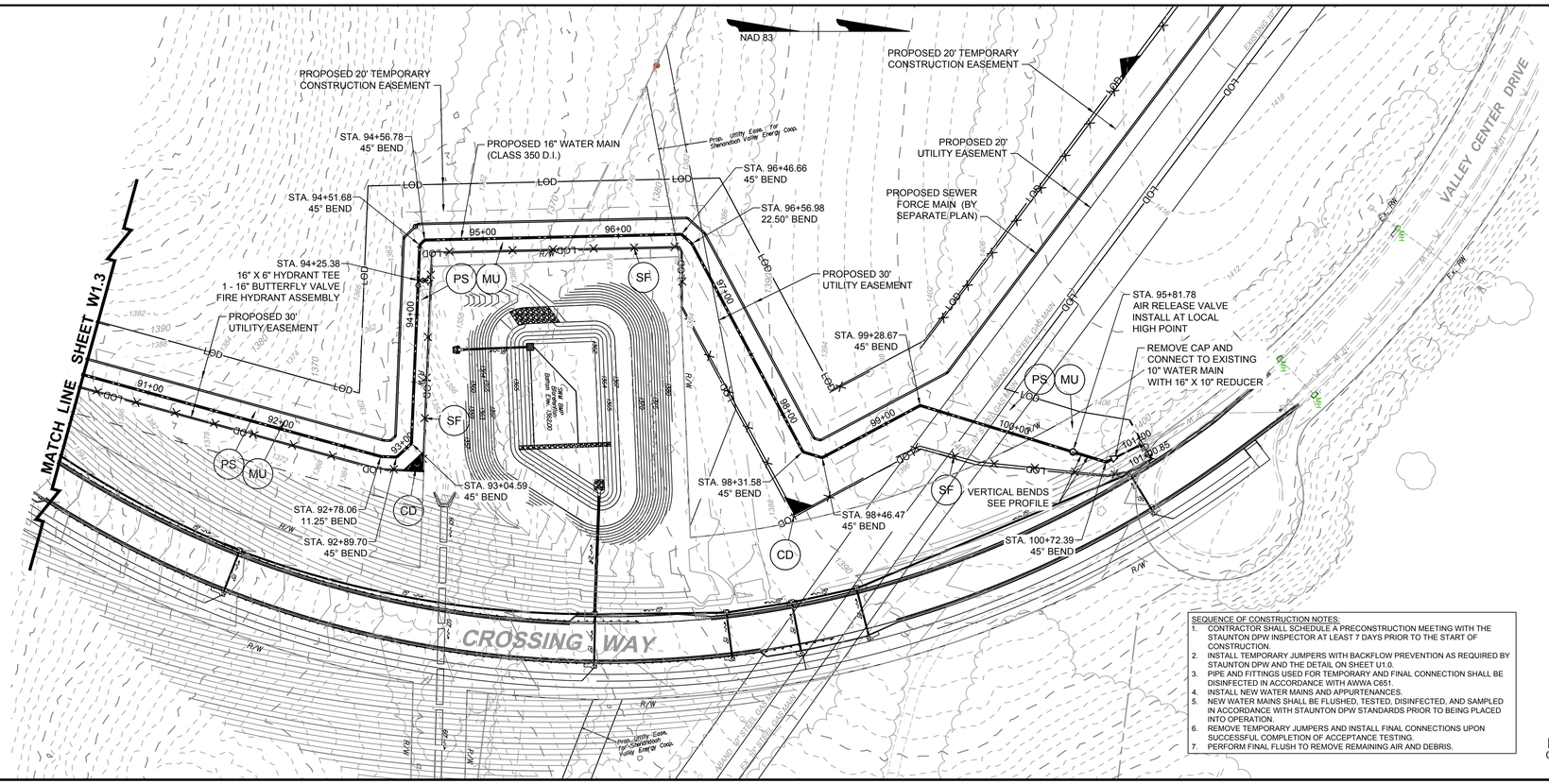
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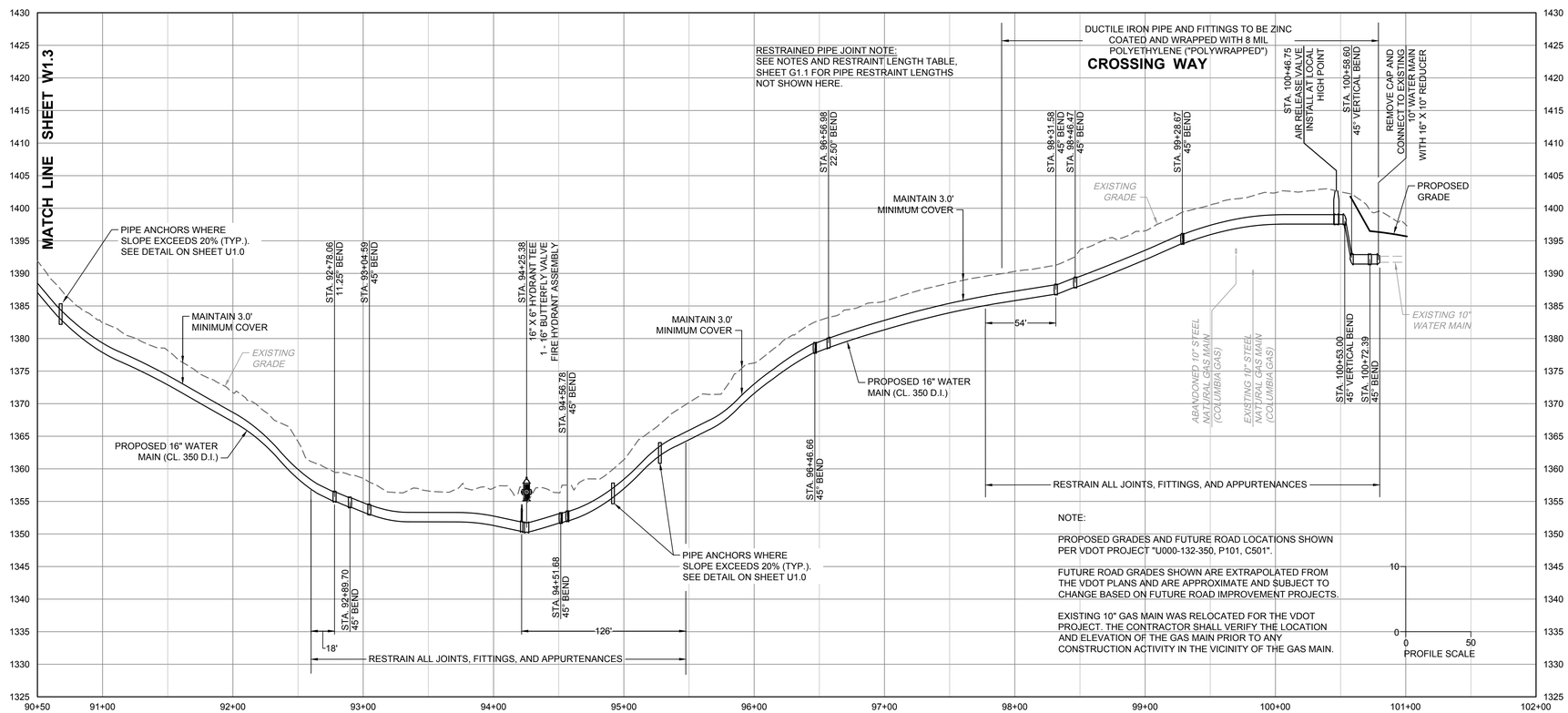
STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
WATER MAIN PLAN AND PROFILE

JOB NO. 49408
SHEET NO. W1.3

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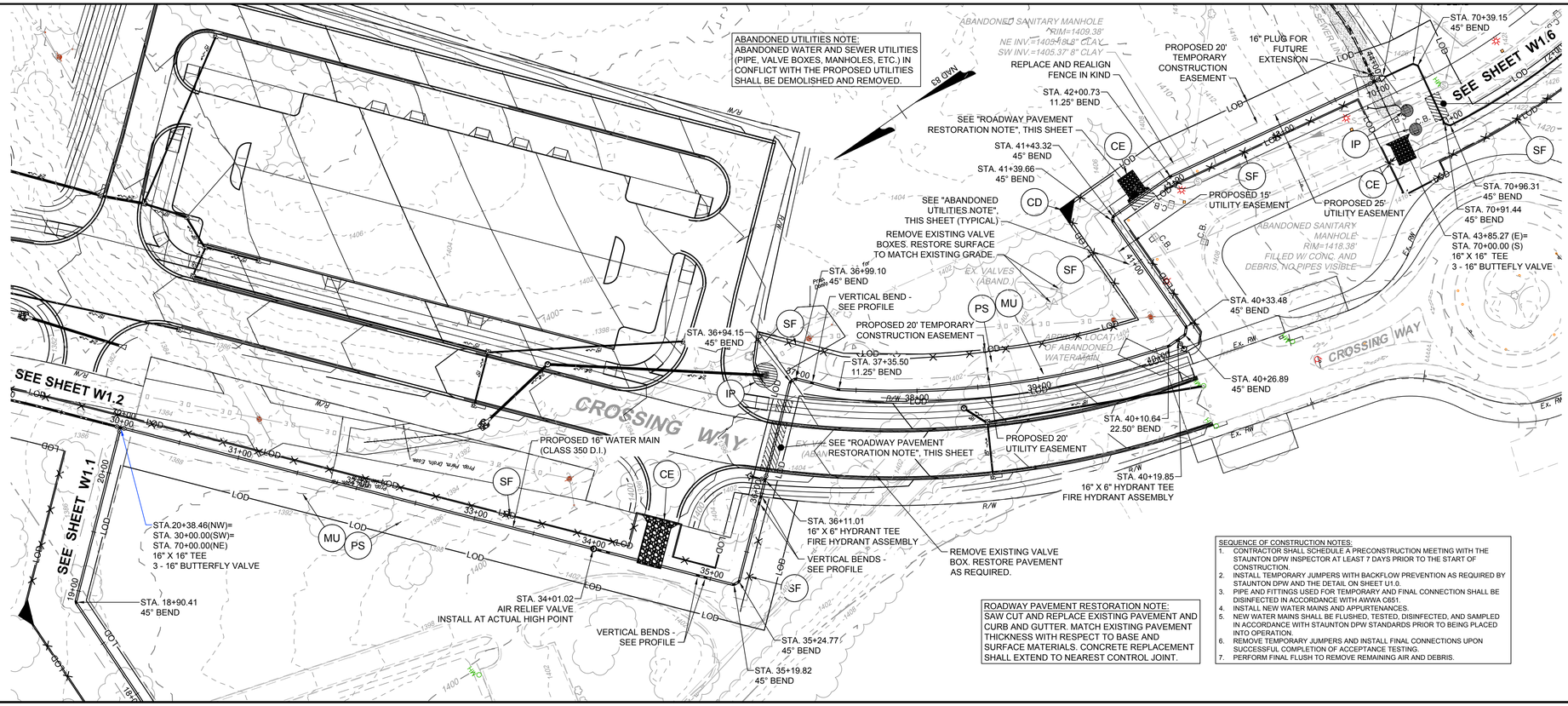
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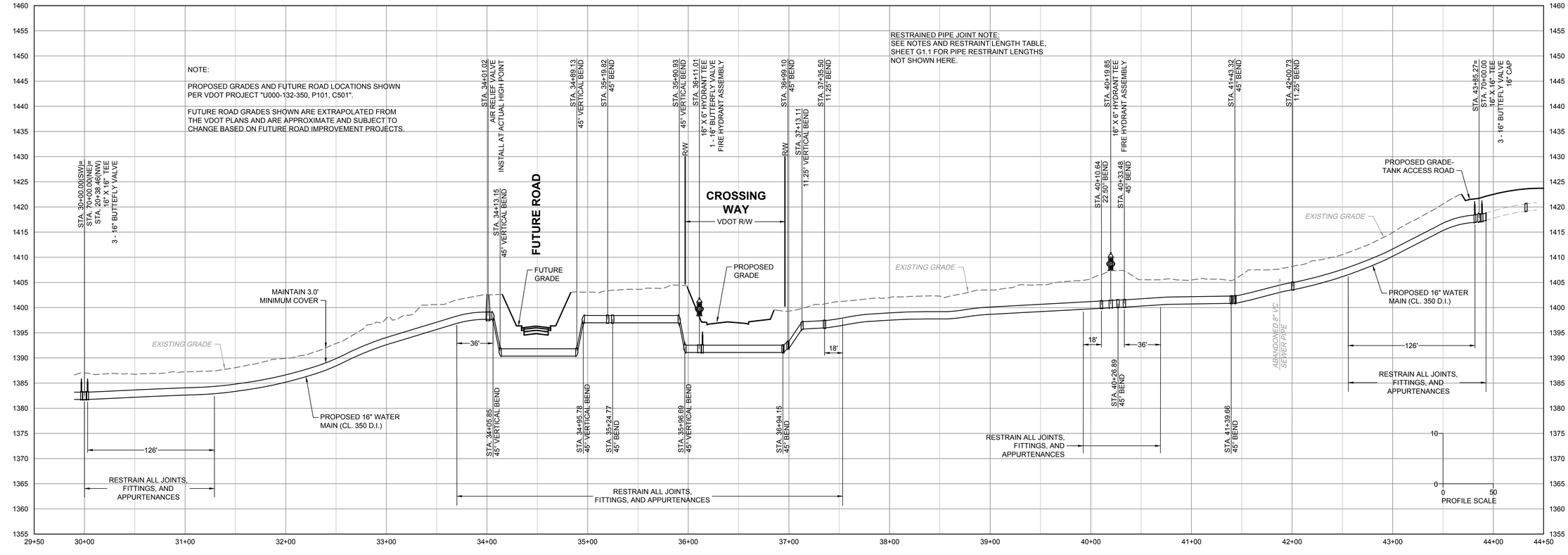
STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
WATER MAIN PLAN AND PROFILE

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SHEET NO. W1.4

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CITY OF STAUNTON, VIRGINIA
WATER MAIN PLAN AND PROFILE

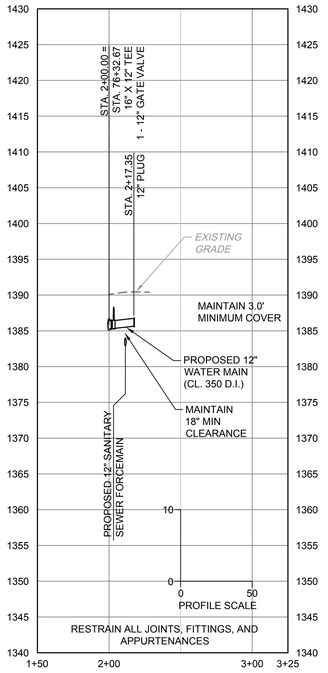
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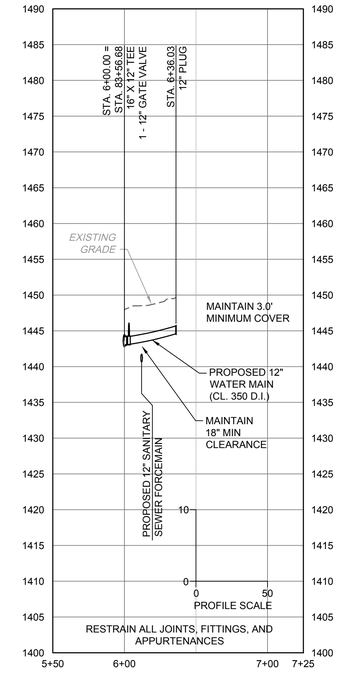
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UTILITY CROSSING PROFILES

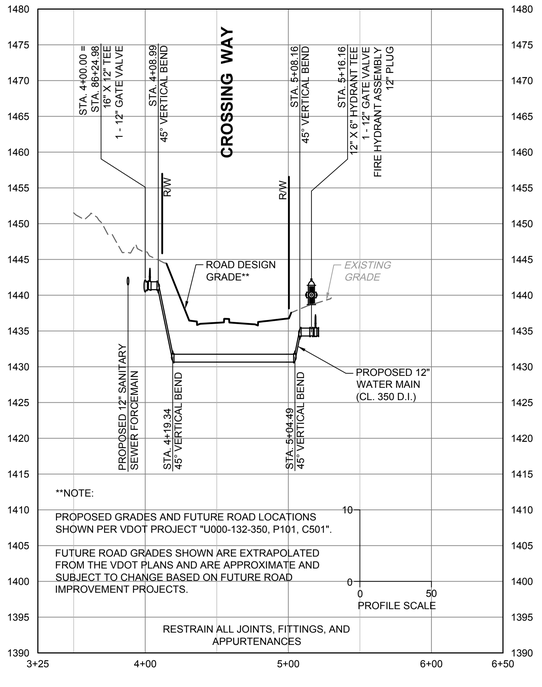
STA. 76+32.57
FORCEMAIN CROSSING



STA. 83+56.68
FORCEMAIN CROSSING



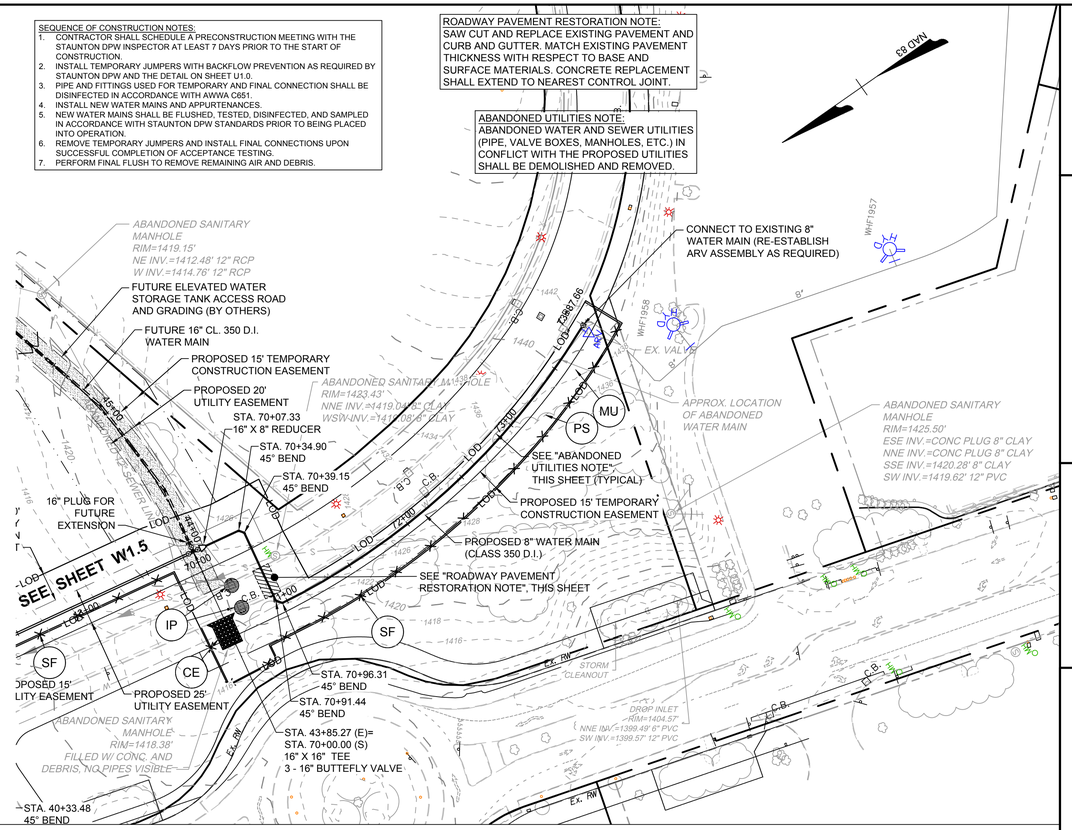
STA. 86+24.98
ROAD CROSSING



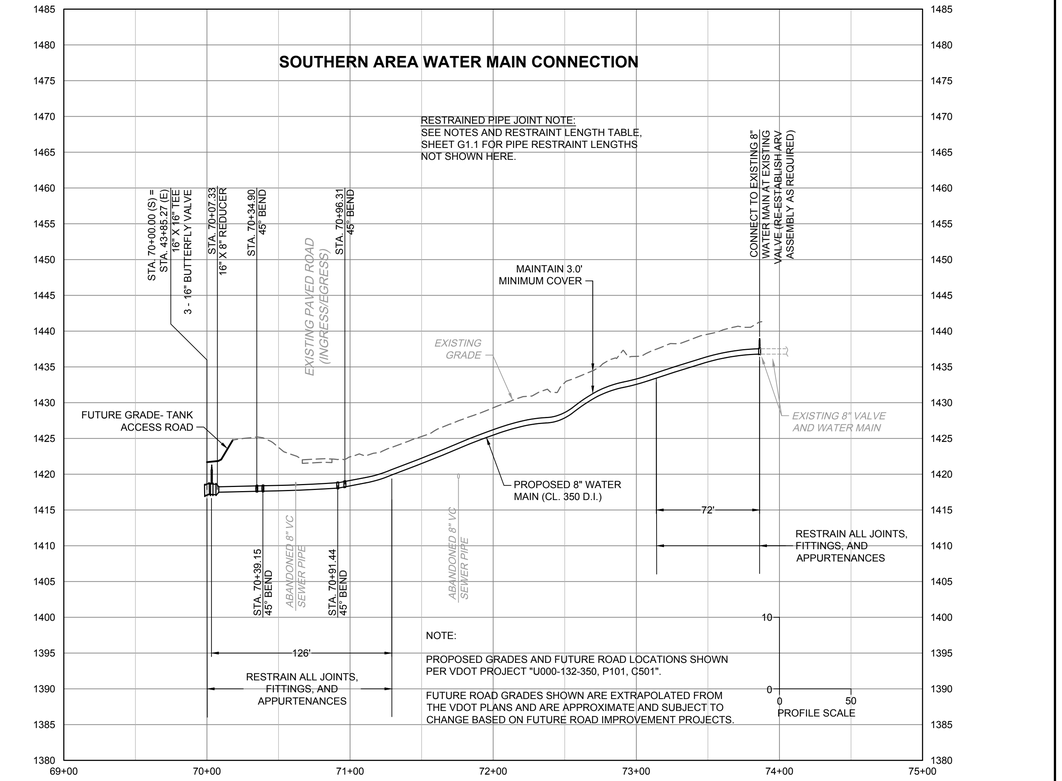
SEQUENCE OF CONSTRUCTION NOTES:
1. CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING WITH THE STAUNTON DPW INSPECTOR AT LEAST 7 DAYS PRIOR TO THE START OF CONSTRUCTION.
2. INSTALL TEMPORARY JUMPERS WITH BACKFLOW PREVENTION AS REQUIRED BY STAUNTON DPW AND THE DETAIL ON SHEET U1.0.
3. PIPE AND FITTINGS USED FOR TEMPORARY AND FINAL CONNECTION SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651.
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 UPON SUCCESSFUL COMPLETION OF ACCEPTANCE TESTING.
7. PERFORM FINAL FLUSH TO REMOVE REMAINING AIR AND DEBRIS.

ROADWAY PAVEMENT RESTORATION NOTE:
SAW CUT AND REPLACE EXISTING PAVEMENT AND CURB AND GUTTER. MATCH EXISTING PAVEMENT THICKNESS WITH RESPECT TO BASE AND SURFACE MATERIALS. CONCRETE REPLACEMENT SHALL EXTEND TO NEAREST CONTROL JOINT.

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



SOUTHERN AREA WATER MAIN CONNECTION



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DATE: 3/31/2023
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DESIGNED BY: J. CARTER
CHECKED BY: B. STRICKLAND
SCALE: H: 1" = 50' V: 1" = 10'

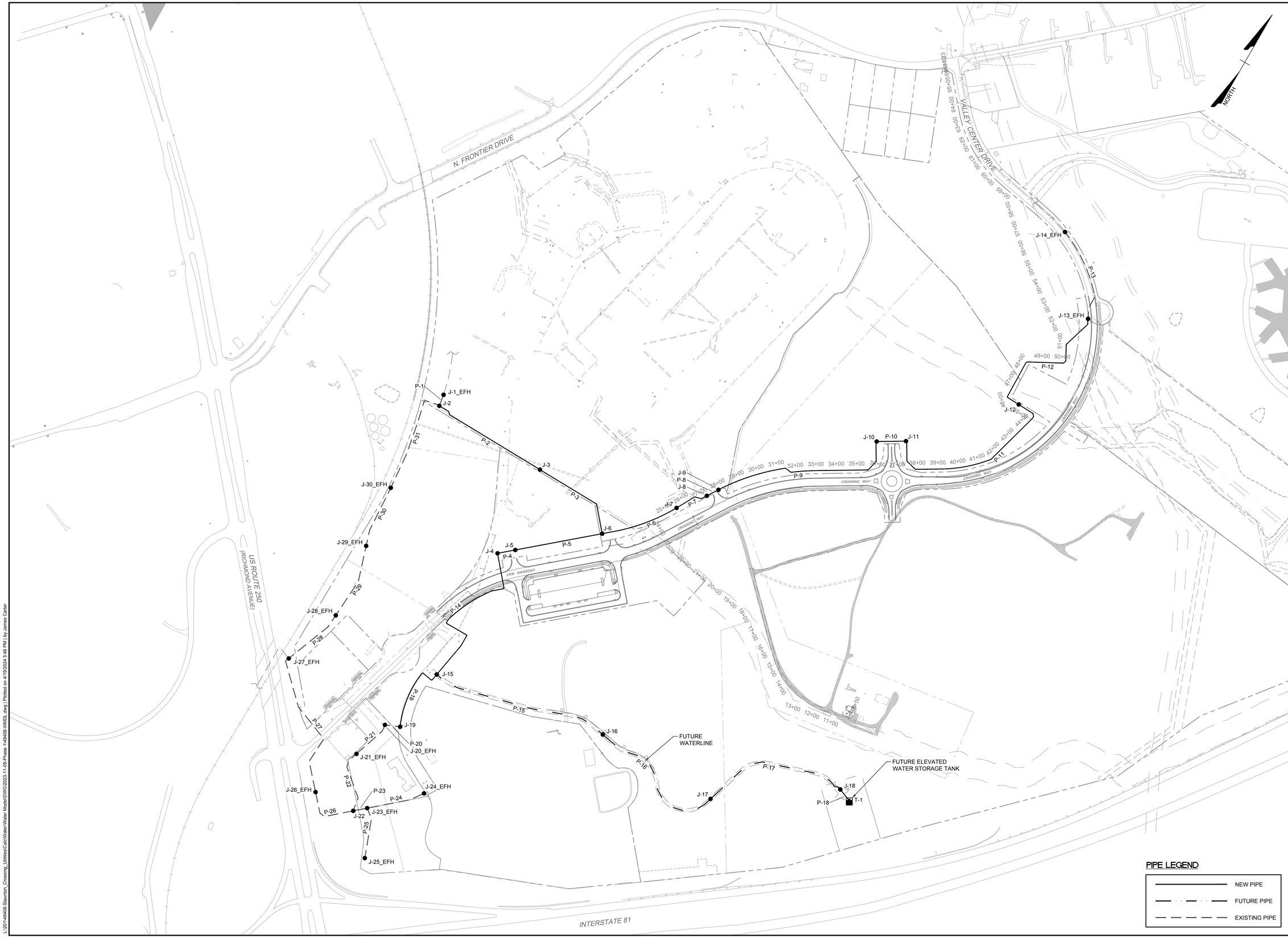
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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
WATER MAIN PLAN AND PROFILE - UTILITY CROSSING PROFILES

JOB NO. 49408
SHEET NO. W1.6

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DATE 04/14/2023
DRAWN BY S. HARVEY
DESIGNED BY S. HARVEY
CHECKED BY B. STRICKLAND
SCALE N.T.S.

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA
WATER SYSTEM HYDRAULIC ANALYSIS - LAYOUT

JOB NO. 49408
SHEET NO. W1.7

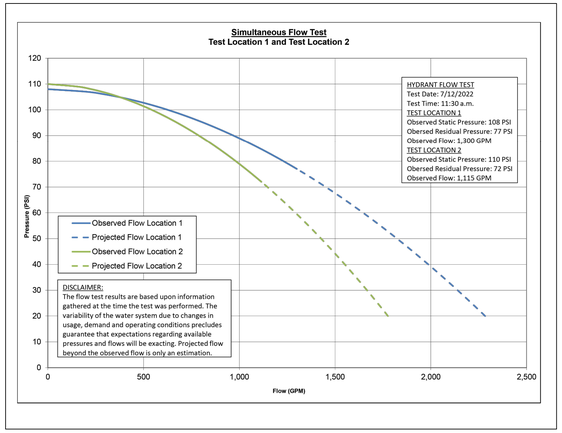
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L:\2021\49408 Staunton_Crossing_Utilities\Cad\r\Water\Water Model\DWG\2023-11-09-Phase 1\49408-WMDL.dwg | Plotted on 4/19/2024 3:45 PM | by James Carter

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 = 694.4 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.

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
Lic. No. 056612
11/17/2023
PROFESSIONAL ENGINEER

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11-17-2023	REVISED PER CITY COMMENTS

DATE 04/14/2023
DRAWN BY S. HARVEY
DESIGNED BY S. HARVEY
CHECKED BY B. STRICKLAND
SCALE N.T.S.

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA
WATER SYSTEM HYDRAULIC ANALYSIS - RESULTS

JOB NO. 49408
SHEET NO. W1.8

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L:\2021\49408 Staunton_Crossing_Utilities\Civil\Water Model\DWG\2023-11-09 Phase 1\49408-WM0L.dwg | Plotted on 4/19/2024 3:46 PM | by James Carter

S1.1

FUTURE ELEVATED WATER STORAGE TANK (BY OTHERS)

FUTURE 12" GRAVITY SEWER (BY OTHERS)

PROPOSED 15" GRAVITY SEWER

PROPOSED 12" FORCE MAIN

PROPOSED SEWER PUMP STATION

RESTORE EXISTING ACCESS ROAD PER DETAIL, SHEET P1.2 (APPROXIMATELY 1,700 L.F.)

PROPOSED 16" WATER MAIN

PROPOSED 12" FORCE MAIN

CROSSING WAY

NAD 83

SCALE 1"=100'

0 100' 200'

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
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03/26/2024
PROFESSIONAL ENGINEER

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03-26-2024	REVISED PER CITY COMMENTS - SEWER AND WATER

DATE 3/31/2023
DRAWN BY J. CARTER
DESIGNED BY J. CARTER
CHECKED BY B. STRICKLAND
SCALE 1" = 100'

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS

CITY OF STAUNTON, VIRGINIA

SANITARY SEWER SHEET INDEX

JOB NO. 49408

SHEET NO. S1.0

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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.

EXISTING SAN. M.H. (ABANDONED) PER RECORD DRAWING

EXISTING SEWER LINE PER RECORD DRAWING

EXISTING SAN. M.H. (ABANDONED) PER RECORD DRAWING

N: 6732614.27
E: 11329714.13

N: 6732577.67
E: 11329918.70 3

PROPOSED 20' UTILITY EASEMENT

FUTURE SANITARY SEWER (BY OTHERS)

PROPOSED 10' TEMPORARY CONSTRUCTION EASEMENT

ABANDONED EXISTING WATER MAIN PER RECORD DRAWINGS

N: 6732852.79
E: 11329491.53 5

PROPOSED 10' TEMPORARY CONSTRUCTION EASEMENT

N: 6732949.52
E: 11329021.38 7

N: 6732923.33
E: 11329148.71 6

PROPOSED 16" WATER MAIN (BY OTHERS)

N: 6733046.10
E: 11328869.48 8

PROPOSED 10' TEMPORARY CONSTRUCTION EASEMENT

N: 6732606.83
E: 11330126.39 2

PROPOSED 12" SEWER FORCE MAIN

N: 6732681.53
E: 11329757.44 4

PROPOSED 30' UTILITY EASEMENT

PROPOSED 20' TEMPORARY CONSTRUCTION EASEMENT

ABANDONED EXISTING WATER MAIN PER RECORD DRAWINGS

N: 6732671.18
E: 11330162.39 1

WHERE EXISTING ABANDONED UTILITIES CONFLICT WITH PROPOSED UTILITIES, THE ABANDONED UTILITIES SHALL BE REMOVED (TYPICAL)

SEE PUMP STATION SITE PLAN

EXISTING PUMP STATION ACCESS ROAD

PROPOSED 12" SEWER FORCE MAIN

WHERE EXISTING ABANDONED UTILITIES CONFLICT WITH PROPOSED UTILITIES, THE ABANDONED UTILITIES SHALL BE REMOVED (TYPICAL)

PROPOSED 30' UTILITY EASEMENT

SEE "ROADWAY PAVEMENT RESTORATION NOTE", THIS SHEET

PROPOSED 20' TEMPORARY CONSTRUCTION EASEMENT

EXISTING SAN. M.H. (ABANDONED) RIM = 1388.13
SE INV.= 1378.59 12" PVC
NE INV.= 1378.57 12" PVC

CROSSING WAY

ROADWAY PAVEMENT RESTORATION NOTE:
SAW CUT AND REPLACE EXISTING PAVEMENT AND CURB AND GUTTER. MATCH EXISTING PAVEMENT THICKNESS WITH RESPECT TO BASE AND SURFACE MATERIALS. CONCRETE REPLACEMENT SHALL EXTEND TO NEAREST CONTROL JOINT. (SEE "CROSSING WAY PAVEMENT RESTORATION DETAIL", SHEET U1.1)

SCALE 1"=50'
0 50' 100'

STA 9+72.00
WET WELL
INV IN: 1347.98 (15" S)
SUMP ELEV.= 1339.50

1 STA 10+01.52
TOP 1358.02
INV IN: 1348.34 (15" SW)
INV IN: 1351.81 (4" E)(FORCE MAIN BYPASS)
INV OUT: 1348.24 (15" N)

2 STA 10+73.52
TOP 1355.91
INV IN: 1349.07 (15" W)
INV OUT: 1348.97 (15" NE)

PROPOSED 12" SANITARY SEWER FORCEMAIN

3 STA 12+83.54
TOP 1358.00
INV IN: 1351.02 (15" NW)
INV OUT: 1350.92 (15" E)

4 STA 14+75.35
TOP 1361.13
INV IN: 1352.81 (15" NW)
INV IN: 1352.91 (12" SW) (FUTURE BY OTHERS)
INV OUT: 1352.71 (15" SE)

5 STA 17+91.64
TOP 1365.97
INV IN: 1357.34 (15" W)
INV OUT: 1357.24 (15" SE)

6 STA 21+41.64
TOP 1369.33
INV IN: 1362.34 (15" W)
INV OUT: 1362.24 (15" E)

7 STA 22+71.64
TOP 1374.33
INV IN: 1366.86 (15" NW)
INV OUT: 1366.76 (15" E)

8 STA 24+51.64
TOP 1382.37
INV OUT: 1371.11 (15" SE)

R/W
PROPOSED 18" RCP STORM SEWER**
CROSSING WAY (UNDER CONSTRUCTION)
R/W
PROPOSED 16" WATER MAIN (BY OTHERS)

**NOTE:
AT THE TIME OF UTILITY DESIGN, CROSSING WAY WAS UNDER CONSTRUCTION. THE PROPOSED GRADES SHOWN WERE TAKEN FROM THE ROADWAY PLANS AND HAVE NOT BEEN CONFIRMED.

PROPOSED GRADE**
EXISTING GRADE
MAINTAIN 18" MINIMUM CLEARANCE

72.00 L.F. OF 15" SDR 35 PVC SANITARY SEWER @ 0.88%
29.52 L.F. OF 15" SDR35 PVC SANITARY SEWER @ 0.88%
210.01 L.F. OF 15" SDR35 PVC SANITARY SEWER @ 0.88%
191.81 L.F. OF 15" SDR35 PVC SANITARY SEWER @ 0.88%
316.29 L.F. OF 15" SDR35 PVC SANITARY SEWER @ 1.40%
350.00 L.F. OF 15" SDR35 PVC SANITARY SEWER @ 1.40%
130.00 L.F. OF 15" SDR35 PVC SANITARY SEWER @ 3.40%
180.00 L.F. OF 15" SDR35 PVC SANITARY SEWER @ 2.36%

NOTE:

PROPOSED GRADES AND FUTURE ROAD LOCATIONS SHOWN PER VDOT PROJECT "U000-132-350, P101, C501".

FUTURE ROAD GRADES SHOWN ARE EXTRAPOLATED FROM THE VDOT PLANS AND ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON FUTURE ROAD IMPROVEMENT PROJECTS.

PROFILE SCALE
0 50
10
0

FUTURE SANITARY SEWER (BY OTHERS)

4 STA 14+75.35
TOP 1361.13
INV IN: 1352.81 (15" NW)
INV IN: 1352.91 (12" SW)
INV OUT: 1352.71 (15" SE)

9 STA 13+43.91
TOP 1361.26
INV OUT: 1353.39 (12" NE)

EXISTING GRADE
C/L SWALE
* 20 L.F. CONCRETE ENCASEMENT PER DETAIL S-9
80.00 L.F. OF 12" SDR 35 Ductile Iron @ 0.60%

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
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03/26/2024
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REVISED PER CITY COMMENTS	11-17-2023
REVISED PER CITY COMMENTS - SEWER AND WATER	03-26-2024

DATE 3/31/2023
DRAWN BY J. CARTER
DESIGNED BY B. STRICKLAND
CHECKED BY B. STRICKLAND
SCALE H: 1" = 50' V: 1" = 10'

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
SANITARY SEWER PLAN AND PROFILE

JOB NO. 49408
SHEET NO. S1.1

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PROPOSED 16"
WATER MAIN

12" PLUG (FOR STAUNTON
CROSSING DOWNSTREAM
SEWER UPGRADES BY OTHERS)

PROPOSED 12"
FORCE MAIN

F1.4

F1.2

PROPOSED 12"
FORCE MAIN

F1.3

F1.1

PROPOSED 15"
GRAVITY SEWER

RESTORE EXISTING ACCESS
ROAD PER DETAIL, SHEET P1.2
(APPROXIMATELY 1,700 L.F.)

PROPOSED 12"
FORCE MAIN

PROPOSED SEWER
PUMP STATION

FUTURE ELEVATED WATER
STORAGE TANK (BY OTHERS)

PROPOSED 16"
WATER MAIN

SCALE 1"=150'
0 150' 300'

NAD 83

COMMONWEALTH OF VIRGINIA
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11-17-2023	REVISED PER CITY COMMENTS
03-26-2024	REVISED PER CITY COMMENTS - SEWER AND WATER

DATE 3/31/2023
DRAWN BY J. CARTER
DESIGNED BY J. CARTER
CHECKED BY B. STRICKLAND
SCALE 1" = 150'

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
FORCE MAIN SHEET INDEX

JOB NO. 49408
SHEET NO. F1.0

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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.

ROADWAY PAVEMENT RESTORATION NOTE:
SAW CUT AND REPLACE EXISTING PAVEMENT AND CURB AND GUTTER. MATCH EXISTING PAVEMENT THICKNESS WITH RESPECT TO BASE AND SURFACE MATERIALS. CONCRETE REPLACEMENT SHALL EXTEND TO NEAREST CONTROL JOINT. (SEE "CROSSING WAY PAVEMENT RESTORATION DETAIL", SHEET U1.1)

EXISTING SAN. M.H. (ABANDONED) PER RECORD DRAWING
EXISTING SEWER LINE PER RECORD DRAWING
WHERE EXISTING ABANDONED UTILITIES CONFLICT WITH PROPOSED UTILITIES, THE ABANDONED UTILITIES SHALL BE REMOVED (TYPICAL)
PROPOSED 20' UTILITY EASEMENT
FUTURE SANITARY SEWER (BY OTHERS)
PROPOSED 10' TEMPORARY CONSTRUCTION EASEMENT
PROPOSED 15" PVC GRAVITY SEWER
STA. 10+75.69 45° BEND
STA. 10+22.09 45° BEND
STA. 10+15.37
STA. 10+05 CONNECT TO PUMP STATION EFFLUENT LINE
PUMP STATION WET WELL
WHERE EXISTING ABANDONED UTILITIES CONFLICT WITH PROPOSED UTILITIES, THE ABANDONED UTILITIES SHALL BE REMOVED (TYPICAL)
SEE PUMP STATION SITE PLAN
EMERGENCY PUMP CONNECTION (SEE SHEET P1.2 FOR DETAILS)
PROPOSED 12" SEWER FORCE MAIN (CL. 350 D.I. WITH PROTECTO 401 LINING)
STA. 13+04.59 45° BEND
PROPOSED 30' UTILITY EASEMENT
EXISTING PUMP STATION ACCESS ROAD
EXISTING PUMP STATION ACCESS ROAD TO BE UTILIZED
STA. 18+10.79 22.50° BEND
PROPOSED 12" SEWER FORCE MAIN (CL. 350 D.I. WITH PROTECTO 401 LINING)
EXISTING SAN. M.H. (ABANDONED) RIM= 1388.13 SE INV.= 1378.59 12" PVC NE INV.= 1378.57 12" PVC
CROSSING WAY
STA. 22+79.56 22.50° BEND
PROPOSED 30' UTILITY EASEMENT
PROPOSED 20' TEMPORARY CONSTRUCTION EASEMENT
SEE "ROADWAY PAVEMENT RESTORATION NOTE", THIS SHEET
PROPOSED 16" WATER MAIN (BY OTHERS)
STA. 24+57.04 45° BEND
STA. 24+63.82 45° BEND
MATCH LINE SHEET F1.2
SCALE 1"=50'
0 50' 100'

EASEMENT

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

**NOTE:
AT THE TIME OF UTILITY DESIGN, CROSSING WAY WAS UNDER CONSTRUCTION. THE PROPOSED GRADES SHOWN WERE TAKEN FROM THE ROADWAY PLANS AND HAVE NOT BEEN CONFIRMED.

STA. 10+15.37 10" X 10" TEE
3-10" PLUG VALVE (SEE SHEET P1.2 FOR EFFLUENT PUMP CONNECTION DETAILS)
STA. 10+22.09 45° BEND
STA. 10+75.69 45° BEND
PROPOSED 15" GRAVITY SEWER
STA. 10+05 CONNECT TO PUMP STATION EFFLUENT MAIN
STA. 10+19.69 12" x 10" REDUCER
STA. 13+04.59 45° BEND
STA. 18+10.79 22.50° BEND
STA. 22+79.56 22.50° BEND
PROPOSED 18" RCP STORM PIPE (6)**
CROSSING WAY
PROPOSED 16" WATER MAIN (BY OTHERS)
STA. 24+63.87 45° BEND
STA. 24+57.04 45° BEND
PROPOSED GRADE**
EXISTING GRADE
MAINTAIN 3.0' MINIMUM COVER OVER FORCE MAIN
MAINTAIN 18" MINIMUM CLEARANCE
MAINTAIN 18" MIN. CLEARANCE
PROPOSED 12" SEWER FORCE MAIN (CL. 350 D.I. WITH PROTECTO 401 LINING)
PROPOSED 10" CL. 350 D.I. SEWER FORCE MAIN WITH PROTECTO 401 LINING
RESTRAIN ALL PIPES, FITTINGS AND APPURTENANCES
18'
VDOT R/W
R/W
SHEET F1.2
MATCH LINE

NOTE:
PROPOSED GRADES AND FUTURE ROAD LOCATIONS SHOWN PER VDOT PROJECT "U000-132-350, P101, C501".

FUTURE ROAD GRADES SHOWN ARE EXTRAPOLATED FROM THE VDOT PLANS AND ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON FUTURE ROAD IMPROVEMENT PROJECTS.

PROFILE SCALE
10
0
0 50

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

THIS DRAWING PREPARED AT THE
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REVISED PER CITY COMMENTS	06-30-2023
REVISED PER CITY COMMENTS	11-17-2023
REVISED PER CITY COMMENTS - SEWER AND WATER	03-26-2024

DATE 3/31/2023
DRAWN BY J. CARTER
DESIGNED BY J. CARTER
CHECKED BY B. STRICKLAND
SCALE H: 1" = 50' V: 1" = 10'

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
FORCE MAIN PLAN AND PROFILE

JOB NO. 49408
SHEET NO. F1.1

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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.

WHERE EXISTING ABANDONED UTILITIES CONFLICT WITH PROPOSED UTILITIES, THE ABANDONED UTILITIES SHALL BE REMOVED (TYPICAL)

ABANDONED EXISTING WATER MAIN PER RECORD DRAWINGS

STA. 26+65.75
45° BEND

STA. 26+99.48
45° BEND

STA. 28+10.97
22.50° VERTICAL BEND

STA. 28+08.38
12" PLUG VALVE

PROPOSED 30' UTILITY EASEMENT

PROPOSED 20' TEMPORARY CONSTRUCTION EASEMENT

PROPOSED 12" SEWER FORCE MAIN (CL. 350 D.I. WITH PROTECTO 401 LINING)

STA. 31+46.19
45° BEND

STA. 31+80.36
45° BEND

PROPOSED 16" WATER MAIN (BY OTHERS)

PROPOSED 12" SEWER FORCE MAIN (CL. 350 D.I. WITH PROTECTO 401 LINING)

STA. 35+90.48
11.25° VERTICAL BEND

STA 35+76.00
AIR RELEASE VALVE
(VAL-MATIC MODEL 802 ASBW)

STA. 37+62.02
11.25° VERTICAL BEND

STA 37+78.00
AIR RELEASE VALVE
(VAL-MATIC MODEL 802 ASBW)

MATCH LINE · SHEET F1.1

MATCH LINE · SHEET F1.3

CROSSING WAY

PROPOSED 16" WATER MAIN (BY OTHERS)

PROPOSED TEMPORARY CONSTRUCTION EASEMENT

EX. VALVE (ABAND.)

ABANDONED EX. SANITARY MANHOLE
RIM = 1388.13'
SE INV.=1378.69' 12" PVC
NE INV.=1378.57' 12" PVC

STA. 22+79.56
22.50° BEND

STA. 36+29.39
11.25° VERTICAL BEND

STA. 37+19.61
11.25° VERTICAL BEND

RESTORE EXISTING ACCESS ROAD PER DETAIL SHEET P1.2

SCALE 1"=50'
0 50' 100'

NAD 83

NOTE:
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FUTURE ROAD GRADES SHOWN ARE EXTRAPOLATED FROM THE VDOT PLANS AND ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON FUTURE ROAD IMPROVEMENT PROJECTS.

**NOTE:
AT THE TIME OF UTILITY DESIGN, CROSSING WAY WAS UNDER CONSTRUCTION. THE PROPOSED GRADES SHOWN WERE TAKEN FROM THE ROADWAY PLANS AND HAVE NOT BEEN CONFIRMED.

FUTURE ROAD

PROJECTED FUTURE GRADE**

EXISTING GRADE

ROTATE BENDS AS NECESSARY

MAINTAIN 3.0' MINIMUM COVER OVER FORCE MAIN

MAINTAIN 18" MINIMUM CLEARANCE

PIPE ANCHORS WHERE SLOPE EXCEEDS 20%. SEE DETAIL ON SHEET U1.0

PROPOSED 12" WATER MAIN (BY OTHERS)

PROPOSED 12" SEWER FORCE MAIN (CL. 350 D.I. WITH PROTECTO 401 LINING)

18'

RESTRAIN ALL PIPES, FITTINGS AND APPURTENANCES

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

18" MINIMUM CLEARANCE

2° AIR RELEASE VALVE

11.25° VERTICAL BEND

ROUNDABOUT

DESIGN ROAD GRADE**

PROPOSED 15" RCP STORM PIPE (4)**

PROPOSED 16" WATER MAIN

MAINTAIN 18" MIN VERTICAL SEPARATION WHEN HOROZONTAL SEPARATION IS LESS THAN 10' (EDGE TO EDGE)

**NOTE:
AT THE TIME OF UTILITY DESIGN, CROSSING WAY WAS UNDER CONSTRUCTION. THE PROPOSED GRADES SHOWN WERE TAKEN FROM THE ROADWAY PLANS AND HAVE NOT BEEN CONFIRMED.

PROFILE SCALE
10
0
0 50

25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 39+50

1365 1370 1375 1380 1385 1390 1395 1400 1405 1410 1415 1420 1425 1430 1435 1440 1445 1450 1455 1460 1465 1470

COMMONWEALTH OF VIRGINIA
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03-26-2024	REVISED PER CITY COMMENTS - SEWER AND WATER

DATE
3/31/2023

DRAWN BY
J. CARTER

DESIGNED BY
J. CARTER

CHECKED BY
B. STRICKLAND

SCALE
H: 1" = 50'
V: 1" = 10'

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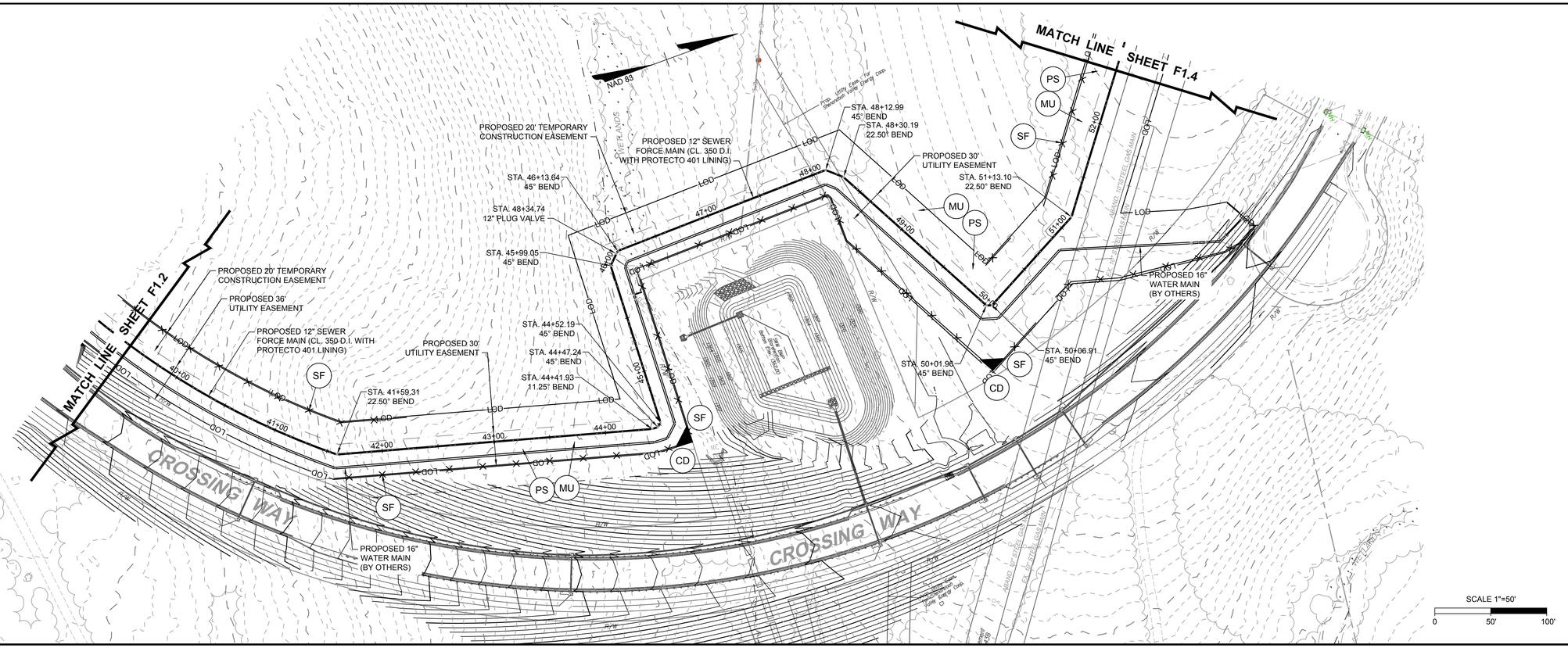
STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
FORCE MAIN PLAN AND PROFILE

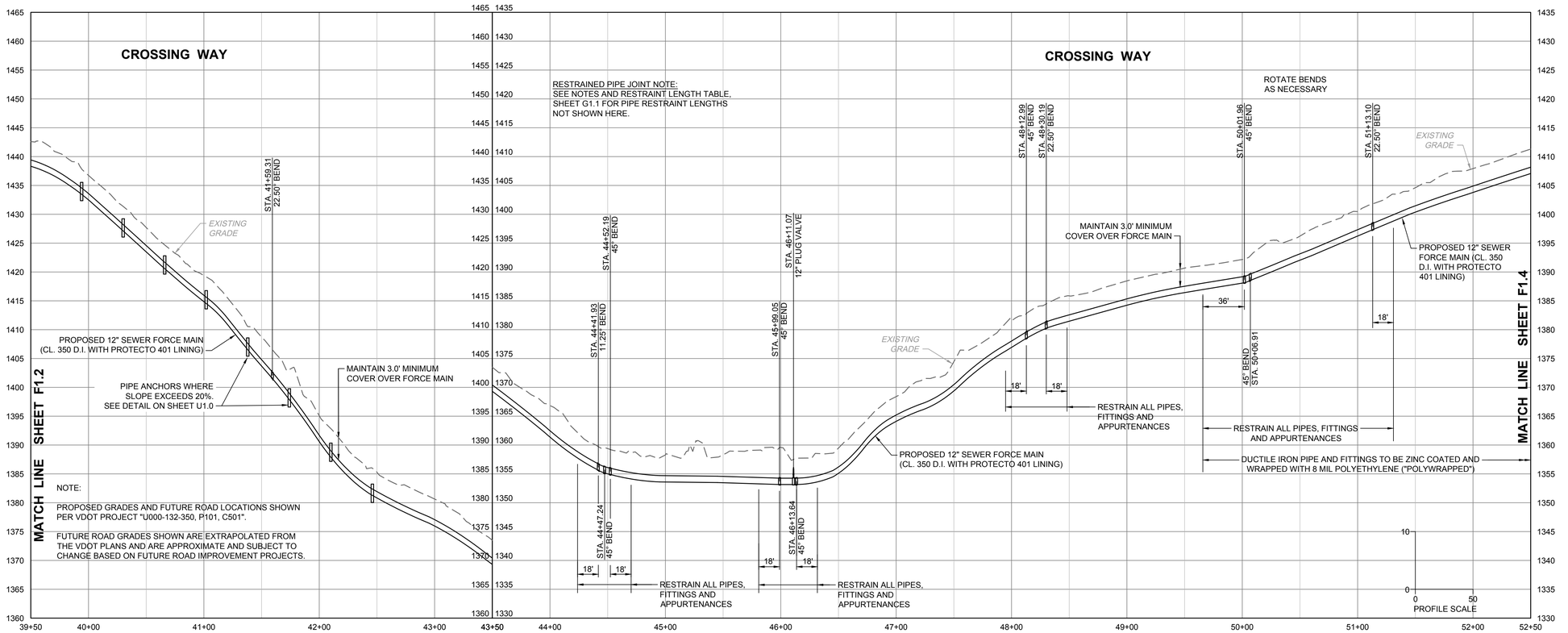
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49408

SHEET NO.
F1.2

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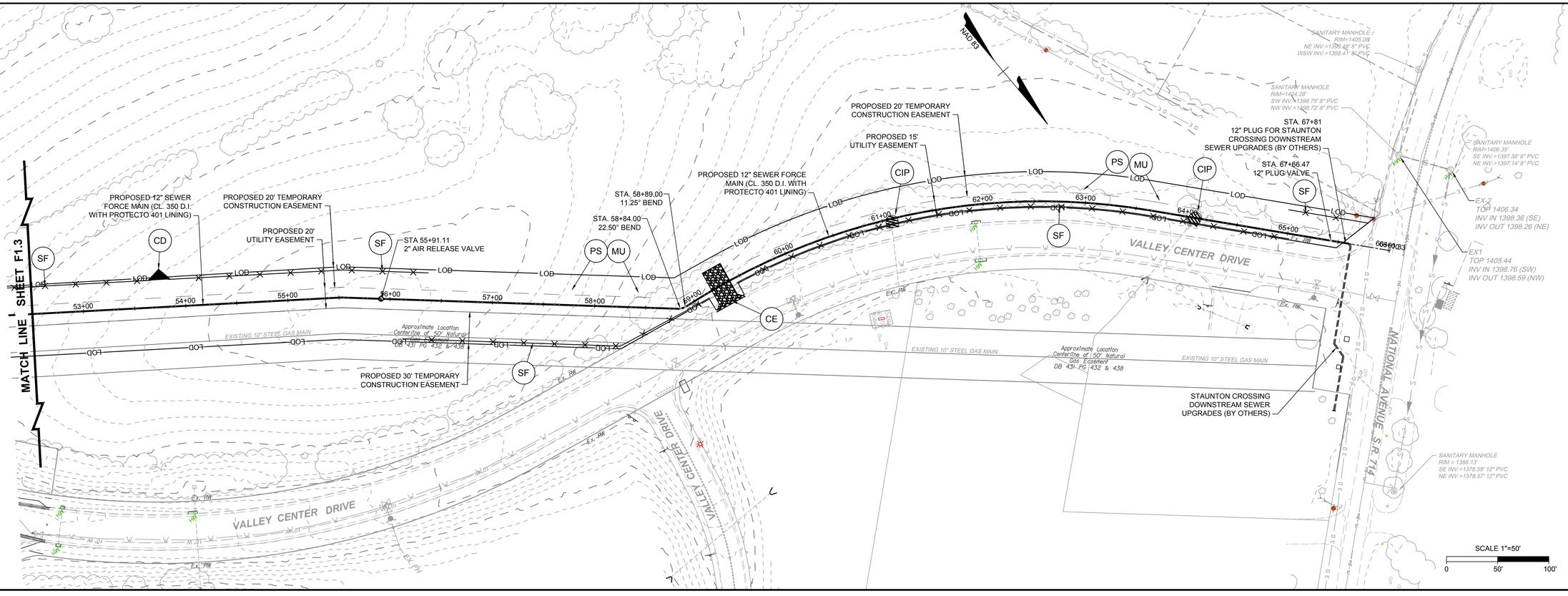
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SCALE: H: 1" = 50' V: 1" = 10'

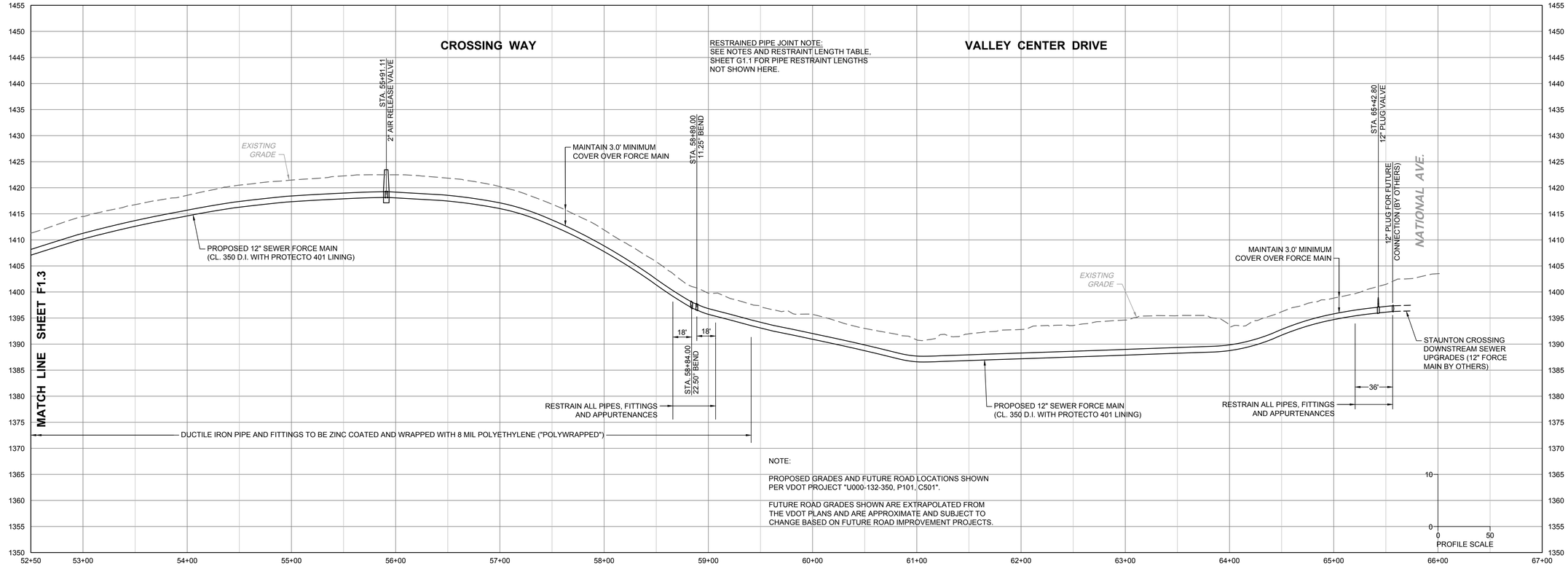
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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
FORCE MAIN PLAN AND PROFILE

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DATE 3/31/2023
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SCALE H: 50 V: 1" = 10'

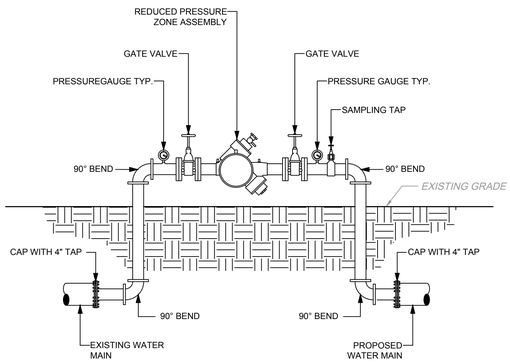
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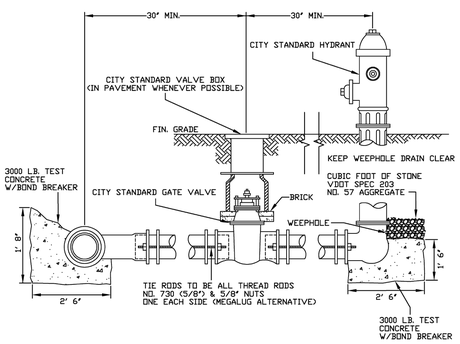
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NOTES:

1. ONCE AUTHORIZED BY THE OWNER, REMOVE CAPS, TEMPORARY JUMPER, AND CONNECT PROPOSED PIPE TO EXISTING PIPE WITH RESTRAINED COUPLING.
2. DISINFECT PIPE AND FITTINGS USED TO MAKE FINAL CONNECTION IN ACCORDANCE WITH AWWA C601.
3. RESTORE DISTURBED AREA PER REQUIREMENTS OF THE DESIGN PLANS AND SPECIFICATIONS.

TEMPORARY JUMPER CONNECTION

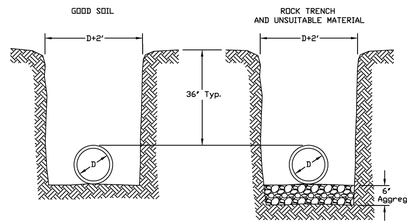


NOTES:

LOCATE VALVE IN PAVEMENT WHERE APPLICABLE

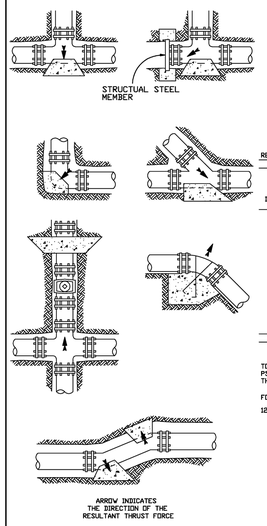
WEEP HOLES SHALL BE LOCATED ABOVE THE SEASONAL WATER TABLE

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



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

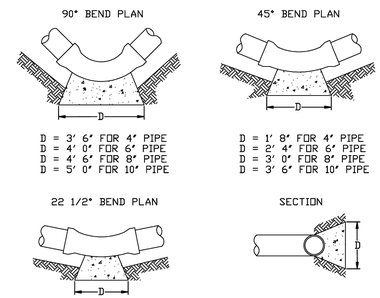
RESULTANT THRUST AT FITTINGS AT 100 PSI WATER PRESSURE

	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	14,072	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	52,579	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	44,958	22,585
42	155,529	219,950	119,036	60,684	30,489
48	202,683	286,637	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**



D = 3' 6" FOR 4" PIPE
D = 4' 0" FOR 6" PIPE
D = 4' 6" FOR 8" PIPE
D = 5' 0" FOR 10" PIPE

D = 1' 8" FOR 4" PIPE
D = 2' 4" FOR 6" PIPE
D = 3' 0" FOR 8" PIPE
D = 3' 6" FOR 10" PIPE

D = 1' 8" FOR 4" PIPE
D = 2' 0" FOR 6" PIPE
D = 2' 10" FOR 8" PIPE
D = 3' 6" FOR 10" PIPE

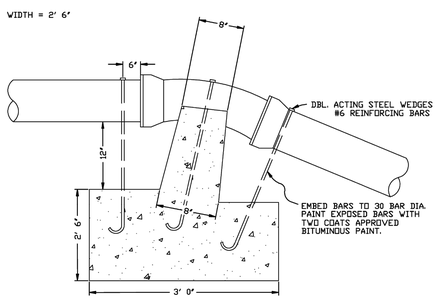
D = 1' 0" FOR 4" PIPE
D = 1' 8" FOR 6" PIPE
D = 2' 3" FOR 8" PIPE
D = 2' 8" FOR 10" PIPE

D = 1' 0" FOR 4" PIPE
D = 1' 6" FOR 6" PIPE
D = 1' 10" FOR 8" PIPE
D = 2' 4" FOR 10" PIPE

D = 1' 0" FOR 4" PIPE
D = 1' 3" FOR 6" PIPE
D = 1' 5" FOR 8" PIPE
D = 2' 0" FOR 10" PIPE

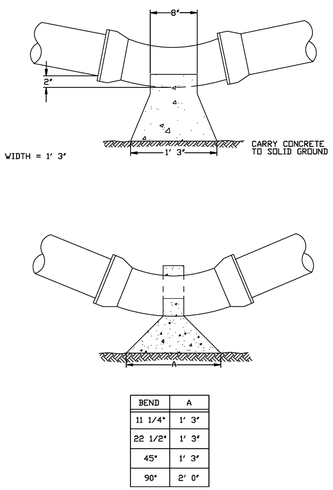
MEGA-LUG ALTERNATIVE FOR BENDS 22 1/2° AND LESS

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



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

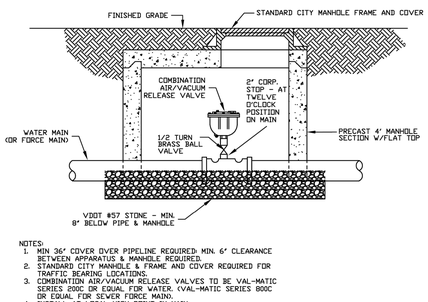
CITY OF STAUNTON, VA	**THRUST BLOCK VERTICAL BEND**	Draw No. **W-15**



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
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03-26-2024	REVISED PER CITY COMMENTS - SEWER AND WATER

DATE 3/31/2023
DRAWN BY J. CARTER
DESIGNED BY J. CARTER
CHECKED BY B. STRICKLAND
SCALE AS SHOWN

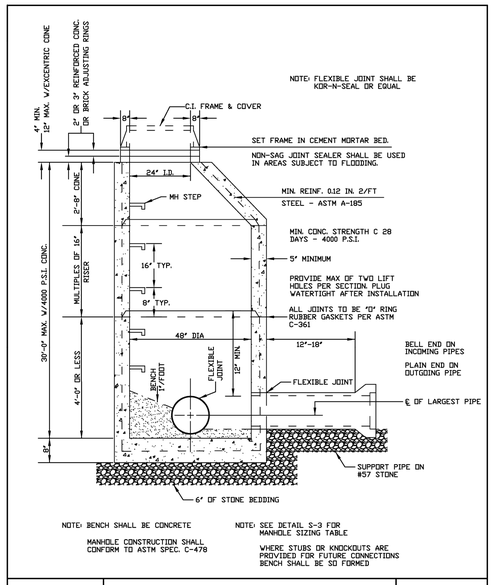
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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
UTILITY DETAILS

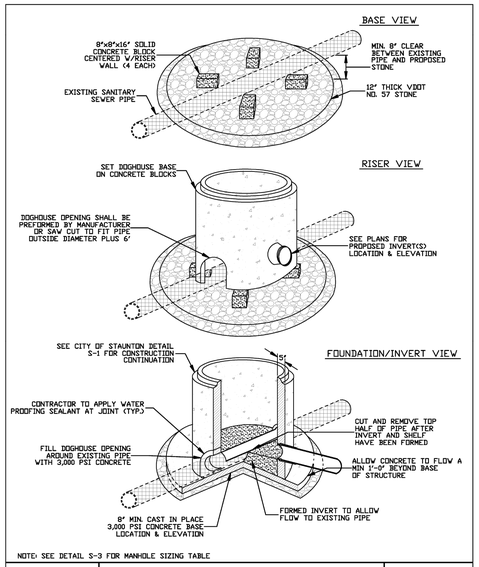
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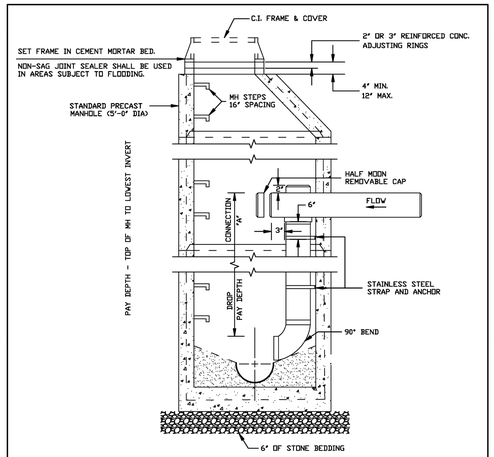
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CITY OF STAUNTON, VA	**STANDARD PRECAST CONCRETE MANHOLE**	Draw No. **S-1**



CITY OF STAUNTON, VA	**STANDARD PRECAST DOGHOUSE MANHOLE**	Draw No. **S-1A**

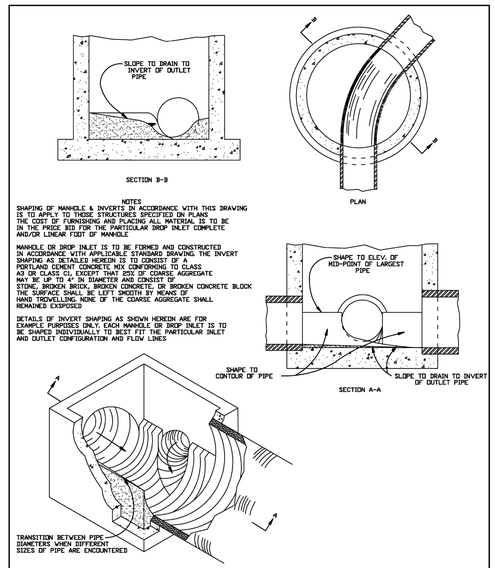


NOTE: WHERE "A" DISTANCE IS LESS THAN 2'-6" THE INCOMING SEWER SHALL BE LOWERED SO THAT THE TOP OF THE INCOMING SEWER IS NOT MORE THAN 6" ABOVE THE TOP OF THE OUTGOING SEWER

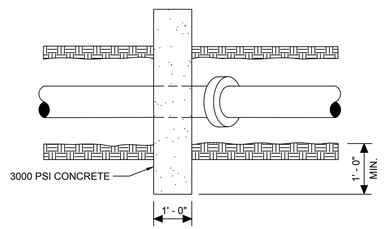
WHERE "A" DISTANCE IS GREATER THAN 2'-6" USE STANDARD DROP CONNECTION

A 5' - 0" MANHOLE IS REQUIRED

CITY OF STAUNTON, VA	**DROP CONNECTION 8" MAIN AND SMALLER**	Draw No. **S-2**



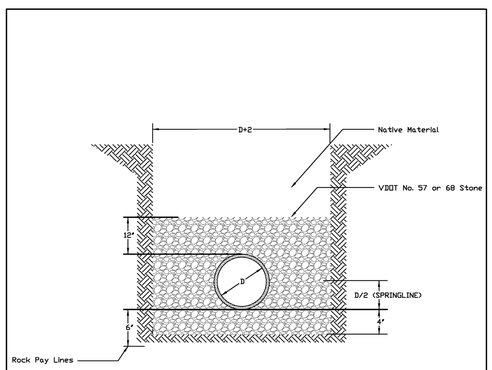
CITY OF STAUNTON, VA	**STANDARD METHOD OF SHAPING MANHOLE & INLET INVERTS**	Draw No. **S-4**



NOTES:

1. CONCRETE TO BE POURED AGAINST UNDISTURBED EARTH
2. SPACING OF ANCHORS:
   SLOPES: 20%-30% - EVERY 2 LENGTHS OF PIPE
   30%-50% - EVERY 1 1/2 LENGTHS OF PIPE
   OVER 50% - EVERY LENGTH OF PIPE

PIPE ANCHORAGE IN SLOPES GREATER THAN OR EQUAL TO 20%

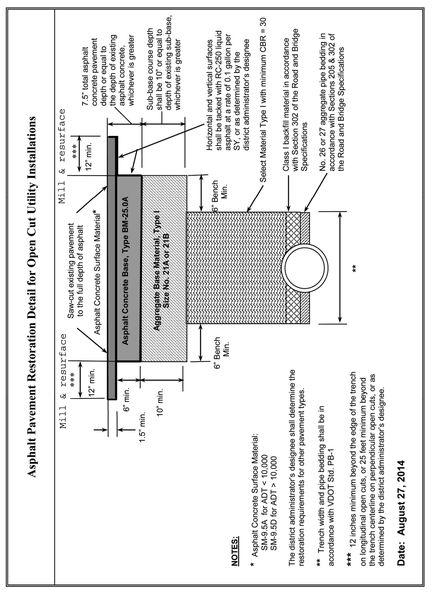


BACKFILL SHALL BE PLACED IN 6" LAYERS FROM THE BOTTOM OF THE TRENCH TO A POINT AT LEAST 6" ABOVE THE PIPE AND THOROUGHLY TAMPED BY HAND OR PNEUMATIC TAMPER, HOWEVER DO NOT TAMP DIRECTLY OVER THE PIPE

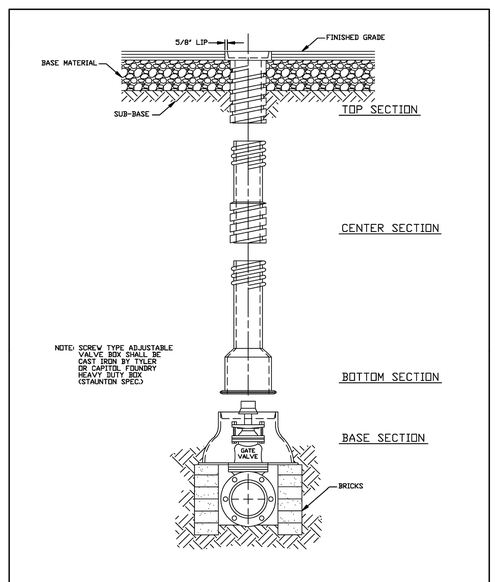
FINAL BACKFILL MAY BE PLACED IN LAYER THICKNESSES WHICH WILL PERMIT COMPACTION TO A DENSITY OF AT LEAST 95%

REINFORCED CONCRETE AND DUCTILE IRON PIPE SHALL BE BACKFILLED W/57 OR 68 TO SPRINGLINE ONLY

CITY OF STAUNTON, VA	**SEWER PIPE INSTALLATION**	Draw No. **S-8**



CROSSING WAY
PAVEMENT RESTORATION DETAIL



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

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

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03-26-2024	REVISED PER CITY COMMENTS - SEWER AND WATER

DATE: 3/31/2023
DRAWN BY: J. CARTER
DESIGNED BY: J. CARTER
CHECKED BY: B. STRICKLAND
SCALE: AS SHOWN

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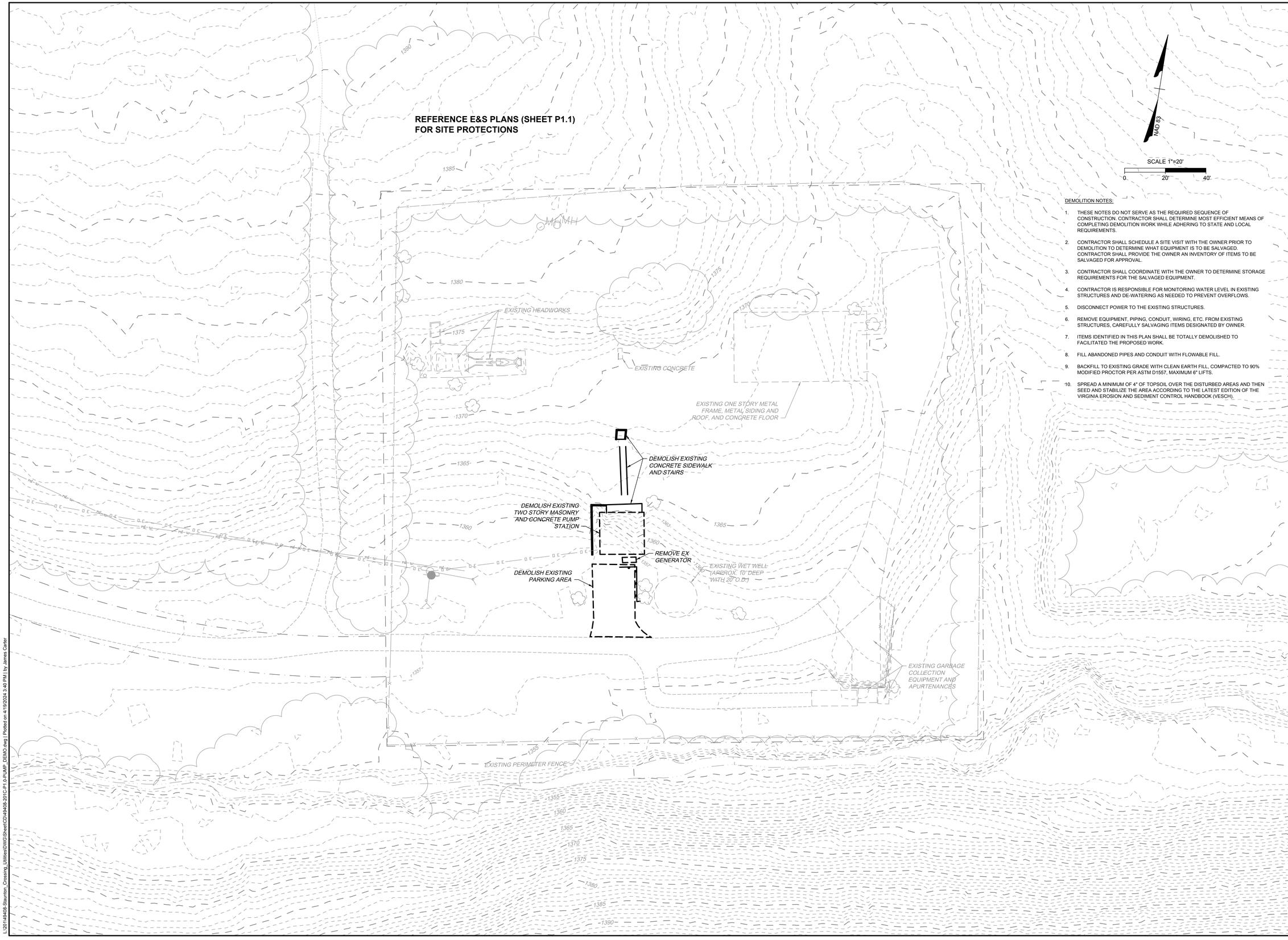
STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
UTILITY DETAILS

JOB NO. 49408
SHEET NO. U1.1

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REFERENCE E&S PLANS (SHEET P1.1)
FOR SITE PROTECTIONS



DEMOLITION NOTES:

1. THESE NOTES DO NOT SERVE AS THE REQUIRED SEQUENCE OF CONSTRUCTION. CONTRACTOR SHALL DETERMINE MOST EFFICIENT MEANS OF COMPLETING DEMOLITION WORK WHILE ADHERING TO STATE AND LOCAL REQUIREMENTS.
2. CONTRACTOR SHALL SCHEDULE A SITE VISIT WITH THE OWNER PRIOR TO DEMOLITION TO DETERMINE WHAT EQUIPMENT IS TO BE SALVAGED. CONTRACTOR SHALL PROVIDE THE OWNER AN INVENTORY OF ITEMS TO BE SALVAGED FOR APPROVAL.
3. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO DETERMINE STORAGE REQUIREMENTS FOR THE SALVAGED EQUIPMENT.
4. CONTRACTOR IS RESPONSIBLE FOR MONITORING WATER LEVEL IN EXISTING STRUCTURES AND DE-WATERING AS NEEDED TO PREVENT OVERFLOWS.
5. DISCONNECT POWER TO THE EXISTING STRUCTURES.
6. REMOVE EQUIPMENT, PIPING, CONDUIT, WIRING, ETC. FROM EXISTING STRUCTURES, CAREFULLY SALVAGING ITEMS DESIGNATED BY OWNER.
7. ITEMS IDENTIFIED IN THIS PLAN SHALL BE TOTALLY DEMOLISHED TO FACILITATED THE PROPOSED WORK.
8. FILL ABANDONED PIPES AND CONDUIT WITH FLOWABLE FILL.
9. BACKFILL TO EXISTING GRADE WITH CLEAN EARTH FILL, COMPACTED TO 90% MODIFIED PROCTOR PER ASTM D1557, MAXIMUM 6" LIFTS.
10. SPREAD A MINIMUM OF 4" OF TOPSOIL OVER THE DISTURBED AREAS AND THEN SEED AND STABILIZE THE AREA ACCORDING TO THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).

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REVISED PER CITY COMMENTS - SEWER AND WATER	03-26-2024

DATE: 3/31/2023
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CHECKED BY: B. STRICKLAND
SCALE:

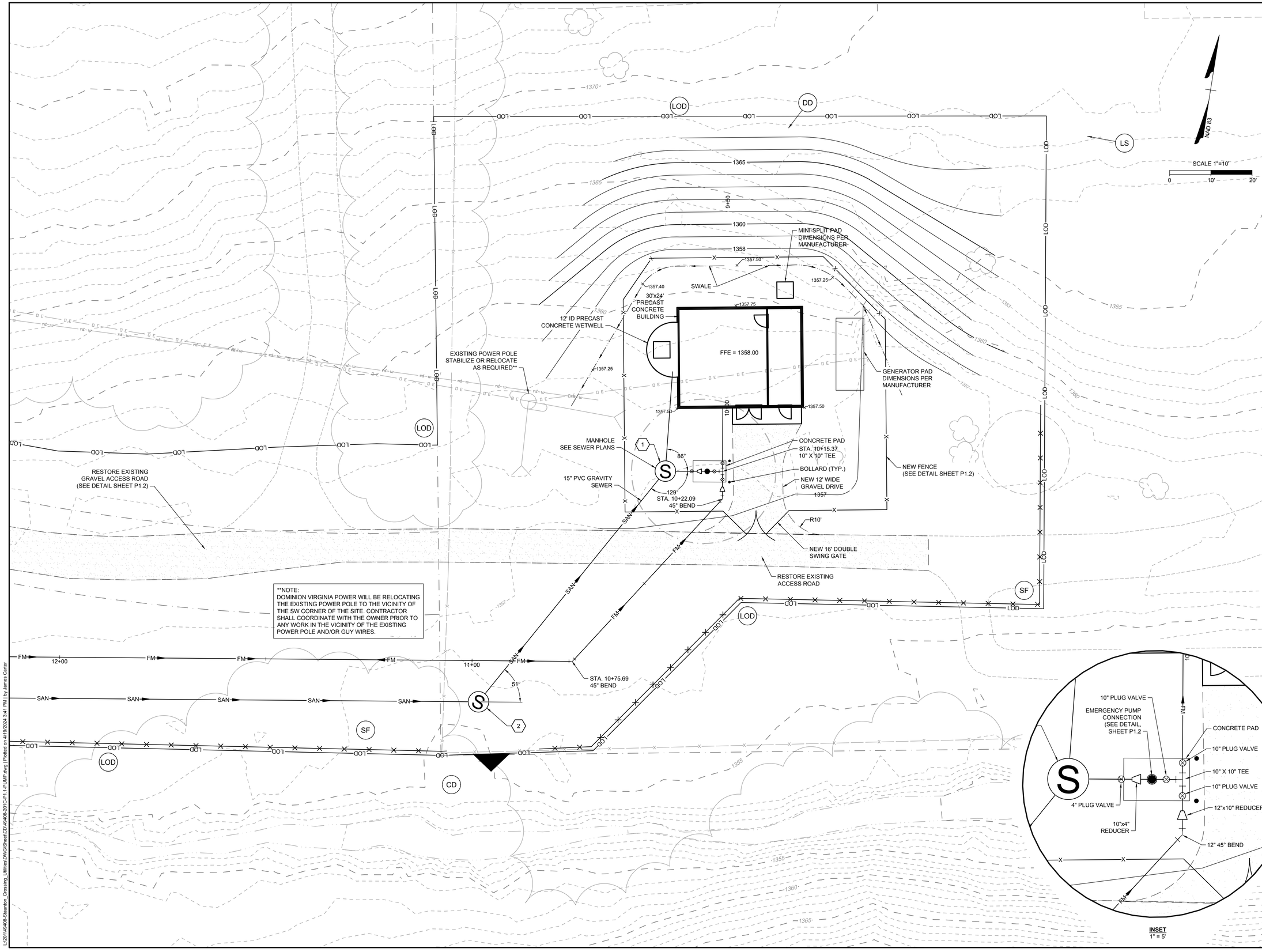
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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
PUMP STATION SITE DEMOLITION PLAN

JOB NO. 49408
SHEET NO. P1.0

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DESIGNED BY B. STRICKLAND
CHECKED BY B. STRICKLAND
SCALE

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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
PUMP STATION SITE LAYOUT

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NAD 83

SCALE 1"=50'
0 50' 100'

ABANDONED EXISTING WATER MAIN PER RECORD DRAWINGS

PROPOSED 15" GRAVITY SEWER

PROPOSED 12" FORCE MAIN

EXISTING PUMP STATION ACCESS ROAD

RESTORE EXISTING ACCESS ROAD PER DETAIL SHEET P1.2

PROPOSED 16" WATER MAIN

CROSSING WAY

PROPOSED WASTEWATER PUMP STATION

EX. MH PER RECORD DRAWINGS

CD SF MU PS CE

COMMONWEALTH OF VIRGINIA
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03-26-2024	REVISED PER CITY COMMENTS - SEWER AND WATER
02-09-2024	ADDENDUM 1

DATE
3/31/2023

DRAWN BY
Z. MOUNTJOY

DESIGNED BY
Z. MOUNTJOY

CHECKED BY
B. STRICKLAND

SCALE
1" = 50'

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS

CITY OF STAUNTON, VIRGINIA

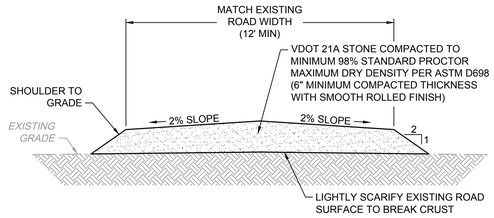
PUMP STATION ACCESS ROAD

JOB NO.
49408

SHEET NO.
P1.1A

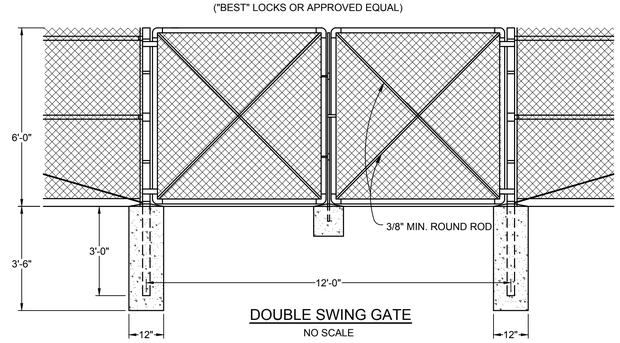
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GRAVEL ROAD RESTORATION

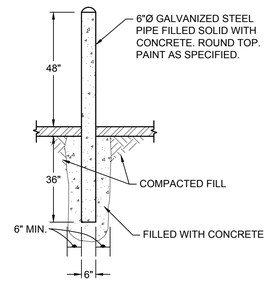
NO SCALE



DOUBLE SWING GATE

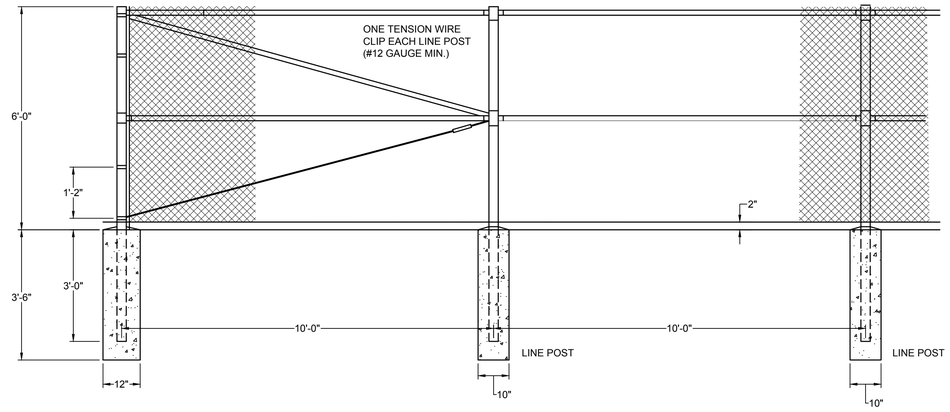
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NOTE:
FENCE POSTS, SUPPORTS, AND FABRIC SHALL BE BLACK PVC CLAD



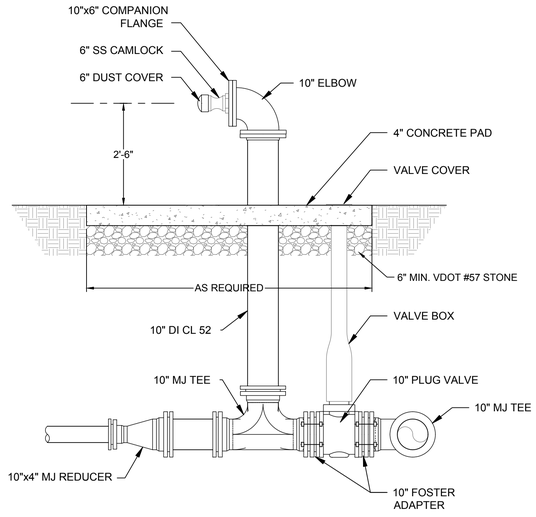
SITE BOLLARD

NO SCALE



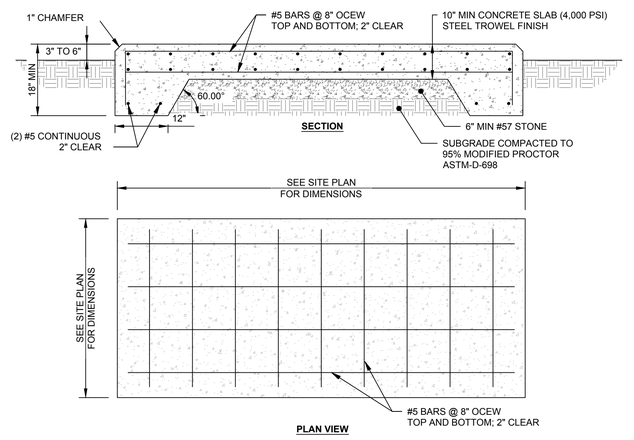
SITE FENCE AND GATE

NO SCALE



EMERGENCY PUMP CONNECTION

NO SCALE



CONCRETE GENERATOR PAD

NO SCALE

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
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SCALE:

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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
PUMP STATION SITE DETAILS

JOB NO. 49408
SHEET NO. P1.2

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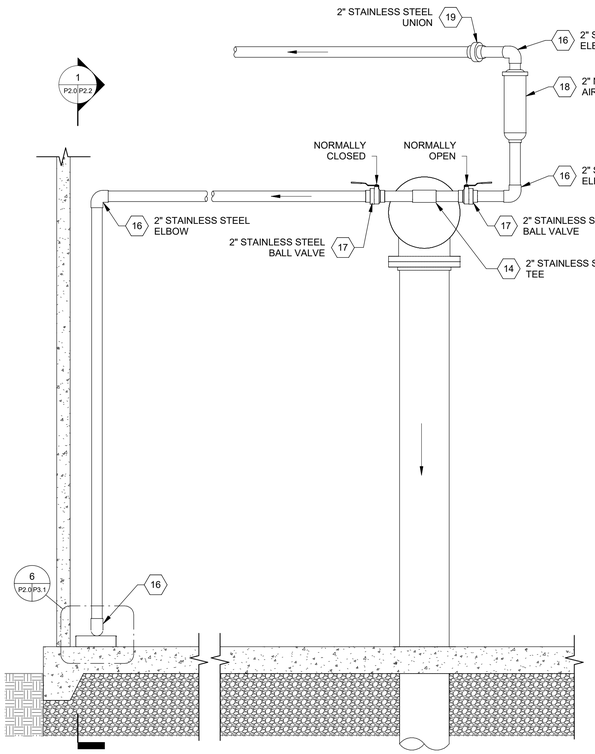
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GENERAL NOTES

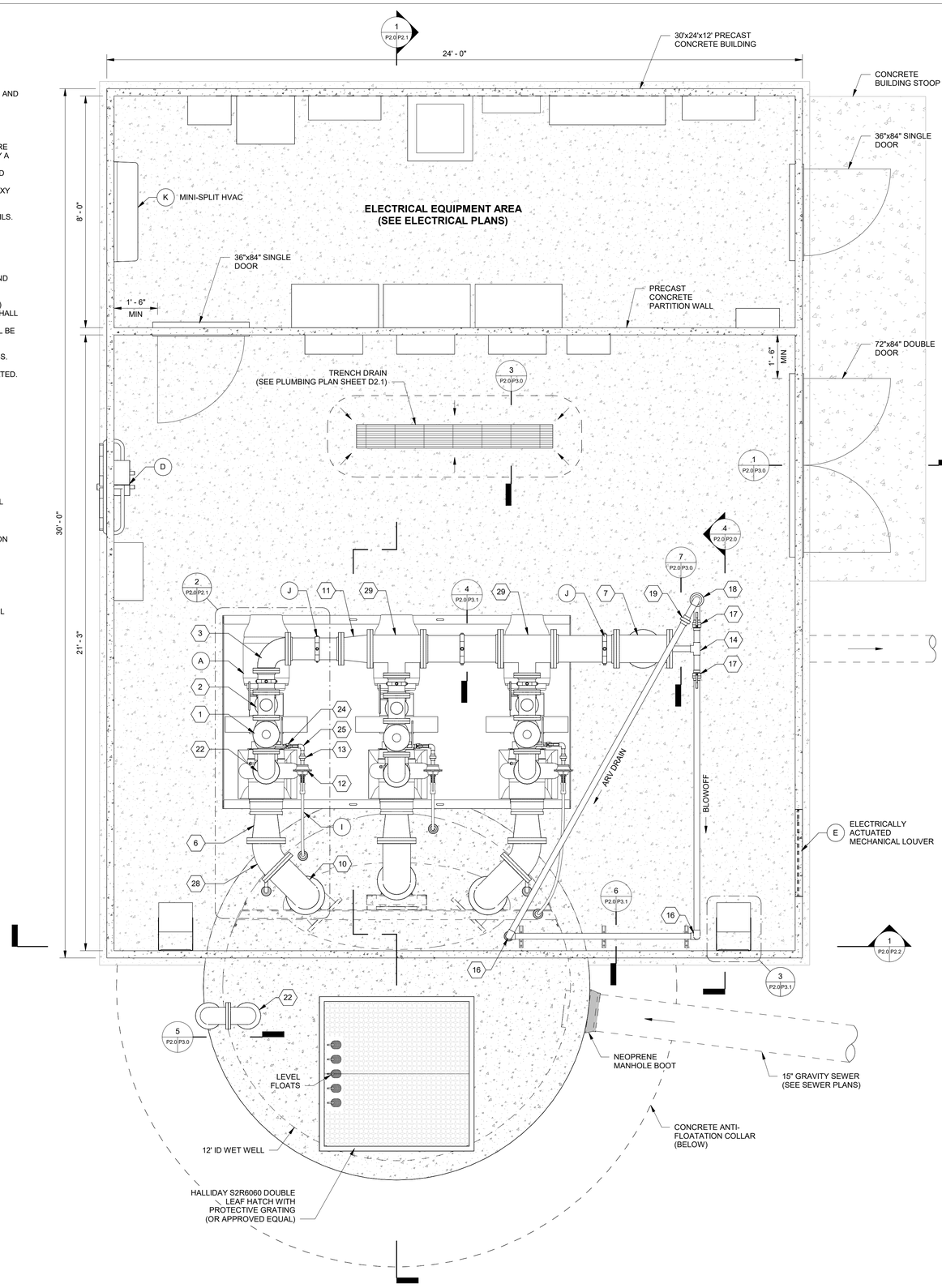
1. SECTIONS ARE INTENDED TO REPRESENT THE APPROXIMATE LOCATION FOR PIPING AND APPURTENANCES. SOME ITEMS MAY BE ROTATED OR OMITTED FOR CLARITY.
2. REFER TO ELECTRICAL DRAWINGS FOR PANEL DETAILS, LOAD REQUIREMENTS, WIRE SIZES AND CONDUITS, ETC.
3. ALL SAFETY EQUIPMENT TO BE OSHA COMPLIANT.
4. PIPE SUPPORTS AND HANGERS REMOVED FOR CLARITY, SUPPORTS NOT SHOWN WILL BE NECESSARY. PIPING SHALL BE SUPPORTED AND BRACED TO HOLD THE PIPE OR APPURTENANCE IN A FIRM, SUBSTANTIAL MANNER.
5. ALL UNISTRUT SUPPORTS SHALL BE STAINLESS STEEL.

WASTEWATER PUMP STATION NOTES

1. THE WET WELL AND BUILDING SHALL BE CONSTRUCTED OF PRECAST CONCRETE. THE PRECAST SUPPLIER SHALL SIZE THE STRUCTURE WALLS, TOP AND BASE TO ACCOUNT FOR THE ANTICIPATED LOADS, DEPTH AND FLOATATION AND PROVIDE CALCULATIONS SIGNED BY A VIRGINIA LICENSED PROFESSIONAL ENGINEER WITH THE SUBMITTALS.
2. PRECAST STRUCTURES SHALL HAVE A MONOLITHIC BASE SECTION. THE JOINTS BETWEEN PRECAST SECTIONS SHALL BE TONGUE AND GROOVE WITH AN O-RING RUBBER GASKET. A FLEXIBLE JOINT SEALANT IS REQUIRED BETWEEN PRECAST STRUCTURE SECTIONS.
3. THE ENTIRE EXTERIOR SURFACE OF ALL BELOW GRADE PRECAST CONCRETE STRUCTURES SHALL BE COATED WITH A COAL-TAR EPOXY TYPE BITUMINOUS COATING TO A MINIMUM 23 MIL THICKNESS. AN EXTERNAL WRAP SHALL BE USED AT ALL JOINTS WHERE PRECAST CONCRETE SECTIONS JOIN TOGETHER. THE WRAP SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM C877 TYPE III AND C990.
4. THE PRECAST CONCRETE WET WELL INTERIOR SHALL BE COATED WITH RAVEN 405 EPOXY LINING TO A MINIMUM THICKNESS OF 120 MILS.
5. ALL MISCELLANEOUS METAL IN THE WET WELL SHALL BE STAINLESS STEEL ALLOY DESIGNED FOR USE IN SEWAGE STRUCTURES. ALL BOLTS, NUTS AND OTHER FASTENERS IN WET WELLS SHALL BE 316 OR 304 STAINLESS STEEL.
6. CONTRACTOR SHALL SUPPLY ALL EQUIPMENT REQUIRED TO PROVIDE A COMPLETE OPERATING SYSTEM.
7. PUMPS SHALL BE EXPLOSION PROOF.
8. FLOATS AND TRANSDUCER SHALL BE INTRINSICALLY SAFE.
9. CONTRACTOR SHALL CONFIRM PENETRATION SIZES AND LOCATIONS PRIOR TO ORDERING PRECAST STRUCTURES.
10. ALL PACKAGED PUMP STATION COMPONENTS SHALL BE SUPPLIED BY A UNITARY SOURCE INCLUDING PUMPS, MOTORS, CONTROLS AND CONTROL PANEL.
11. FLOATS SHALL BE POSITIONED TO PREVENT INFLUENT FLOW FROM AFFECTING PROPER OPERATION OF THE PUMP STATION.
12. CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS (INCLUDING ADEQUATE WATER SUPPLIES FOR SEVERAL PUMPING CYCLES) NECESSARY TO CONDUCT MANUFACTURER'S STARTUP PROCEDURE, TRAINING, AND PUMP PERFORMANCE TESTING. CONTRACTOR SHALL SUBMIT MANUFACTURER'S CERTIFIED STARTUP DOCUMENTATION TO THE ENGINEER FOR REVIEW.
13. ALL EXPOSED PIPE 4" AND GREATER SHALL BE FLANGED CLASS 53 DUCTILE IRON AND ALL BELOW GRADE PIPE 4" AND GREATER SHALL BE MECHANICAL JOINT CLASS 52 DUCTILE IRON UNLESS OTHERWISE STATED. ALL DUCTILE IRON PIPING SHALL INCLUDE PROTECTO 401 INTERNAL LINING. RESTRAIN ALL JOINTS.
14. ALL DUCTILE IRON PIPE SUBMERGED IN RAW WASTEWATER SHALL HAVE A COAL TAR EPOXY COATING TO A MINIMUM 16 MIL THICKNESS.
15. ENSURE ACCESS TO AND OPERABILITY OF ALL VALVES.
16. ALL PIPES, VALVES, AND FITTINGS LESS THAN 4" DIAMETER SHALL BE STAINLESS STEEL, BRASS, OR COPPER UNLESS OTHERWISE STATED.



4 PUMP STATION SECTION
3/4" = 1'-0"



1 PUMP STATION LAYOUT
1/2" = 1'-0"

FITTING AND EQUIPMENT SCHEDULE

LABEL	DESCRIPTION
1	6" FLG CHECK VALVE (GORMAN RUPP)
2	6" FLG PLUG VALVE (GORMAN RUPP)
3	8"x6" FLG REDUCING ELBOW
6	10"x8" FLG ECCENTRIC REDUCER
7	10" FLG TEE
10	10" FLG LONG RADIUS ELBOW
11	10"x8" FLG CONCENTRIC REDUCER
12	ARV (GORMAN RUPP)
13	1" STAINLESS STEEL UNION
14	2" STAINLESS STEEL TEE
16	2" STAINLESS STEEL ELBOW
17	2" STAINLESS STEEL BALL VALVE
18	2" NPT COMBINATION AIR VALVE
19	2" STAINLESS STEEL UNION
22	6" FLG 90 DEGREE ELBOW
24	1" STAINLESS STEEL BALL VALVE
25	1" STAINLESS STEEL ELBOW
28	10" FLG 45 DEGREE BEND
29	10"x6" FLG REDUCING TEE
A	TRIPLEX GORMAN RUPP PUMP SKID
D	EXHAUST FAN
E	ELECTRICALLY ACTUATED MECHANICAL LOUVER
I	FLEXIBLE HOSE WITH CAMLOCK FITTINGS
J	CLEVIS HANGER
K	MINI-SPLIT HVAC

MECHANICAL ABBREVIATIONS

APPROX	APPROXIMATE
ARV	AIR RELEASE VALVE
AVG	AVERAGE
CHEM	CHEMICAL
ELEV	ELEVATION
EX	EXISTING
FE	FLANGED END
GE	GROOVED END
GPM	GALLONS PER MINUTE
HP	HORSE POWER
ID	INSIDE DIAMETER
LF	LINEAR FOOT (FEET)
MAX	MAXIMUM
MIN	MINIMUM
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
No	NUMBER
NPT	NATIONAL PIPE THREAD
OC	ON CENTER
OCEW	ON CENTER EACH WAY
PE	PLAIN END
PNL	PANEL
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
RQD	REQUIRED
SCH	SCHEDULE
SIM	SIMILAR (TO)
SS	STAINLESS STEEL
TYP	TYPICAL

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

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

COMMONWEALTH OF VIRGINIA
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CHECKED BY B. STRICKLAND
SCALE AS NOTED

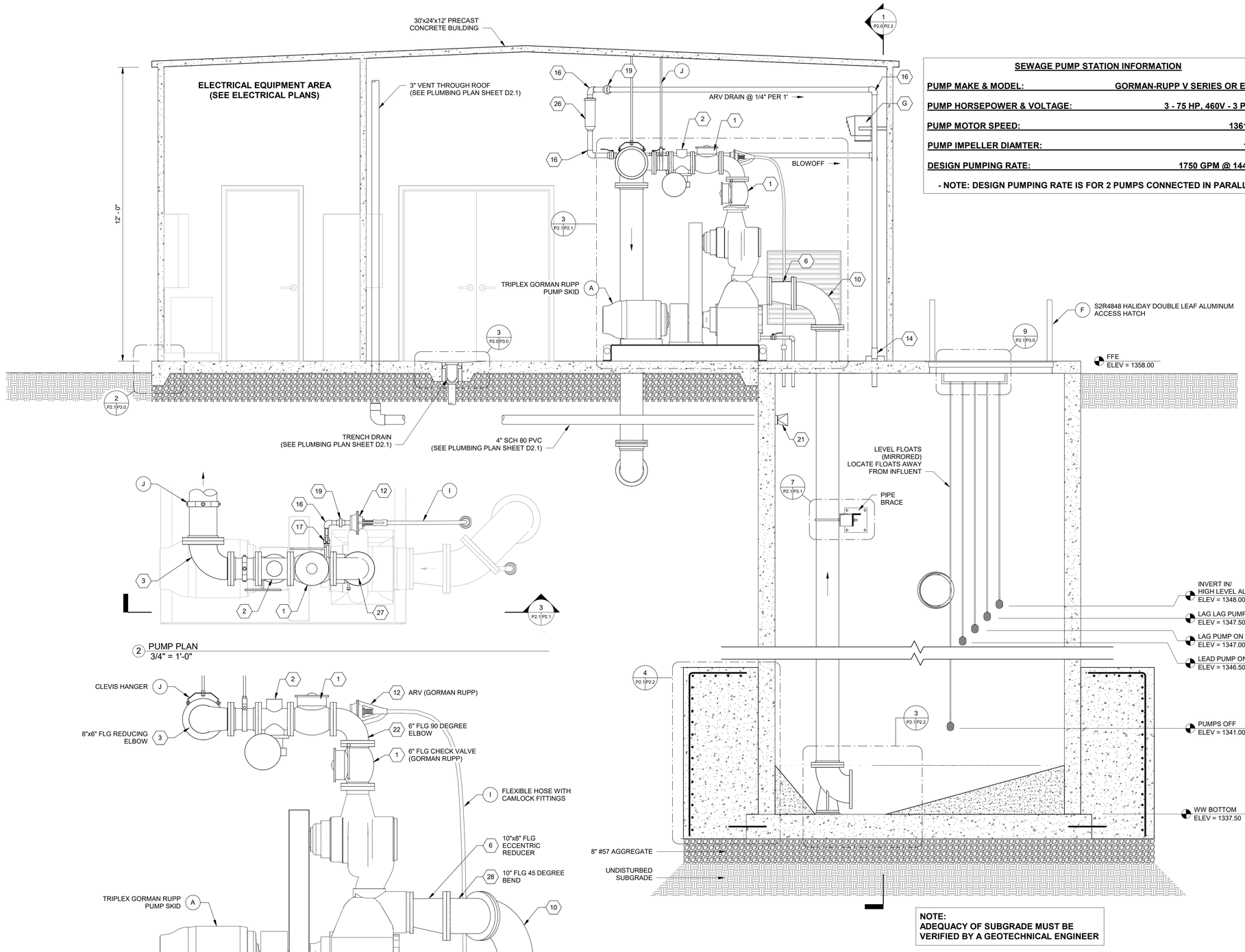
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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA
PUMP STATION LAYOUT

JOB NO. 49408.003
SHEET NO. P2.0

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1 PUMP STATION SECTION
1/2" = 1'-0"

2 PUMP PLAN
3/4" = 1'-0"

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

SEWAGE PUMP STATION INFORMATION

PUMP MAKE & MODEL:	GORMAN-RUPP V SERIES OR EQUAL
PUMP HORSEPOWER & VOLTAGE:	3 - 75 HP, 460V - 3 PHASE
PUMP MOTOR SPEED:	1361 RPM
PUMP IMPELLER DIAMTER:	12.38"
DESIGN PUMPING RATE:	1750 GPM @ 144' TDH

- NOTE: DESIGN PUMPING RATE IS FOR 2 PUMPS CONNECTED IN PARALLEL

FITTING AND EQUIPMENT SCHEDULE

LABEL	DESCRIPTION
1	6" FLG CHECK VALVE (GORMAN RUPP)
2	6" FLG PLUG VALVE (GORMAN RUPP)
3	8"x6" FLG REDUCING ELBOW
6	10"x8" FLG ECCENTRIC REDUCER
10	10" FLG LONG RADIUS ELBOW
12	ARV (GORMAN RUPP)
14	2" STAINLESS STEEL TEE
15	1 1/4" CAMLOCK COUPLING
16	2" STAINLESS STEEL ELBOW
17	2" STAINLESS STEEL BALL VALVE
19	2" STAINLESS STEEL UNION
21	4" TIDEFLEX CHECK VALVE
22	6" FLG 90 DEGREE ELBOW
24	1" STAINLESS STEEL BALL VALVE
25	1" STAINLESS STEEL ELBOW
26	10" MJ 90 DEGREE ELBOW
27	6" FLG 90 DEGREE ELBOW
28	10" FLG 45 DEGREE BEND
A	TRIPLEX GORMAN RUPP PUMP SKID
F	S2R4848 HALIDAY DOUBLE LEAF ALUMINUM ACCESS HATCH
G	UNIT HEATER
I	FLEXIBLE HOSE WITH CAMLOCK FITTINGS
J	CLEVIS HANGER

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

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

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CHECKED BY B. STRICKLAND
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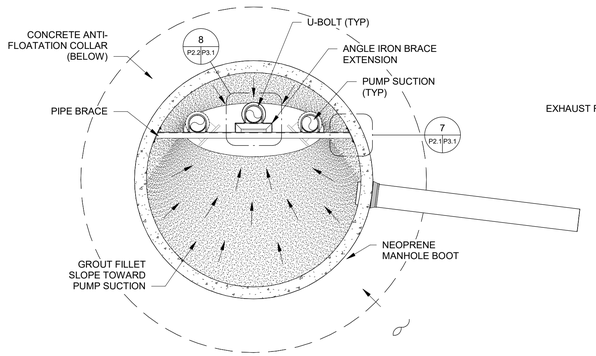
TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA
PUMP STATION SECTIONS

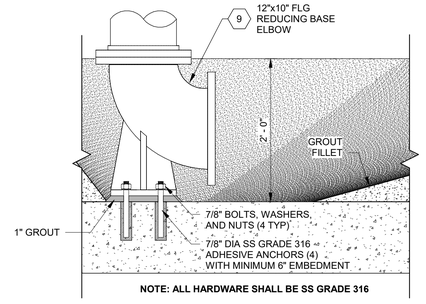
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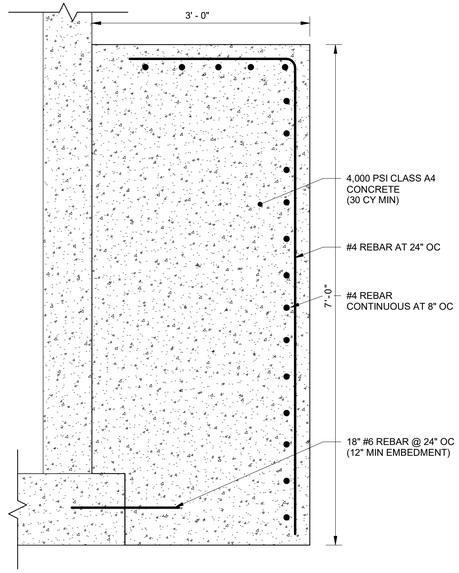
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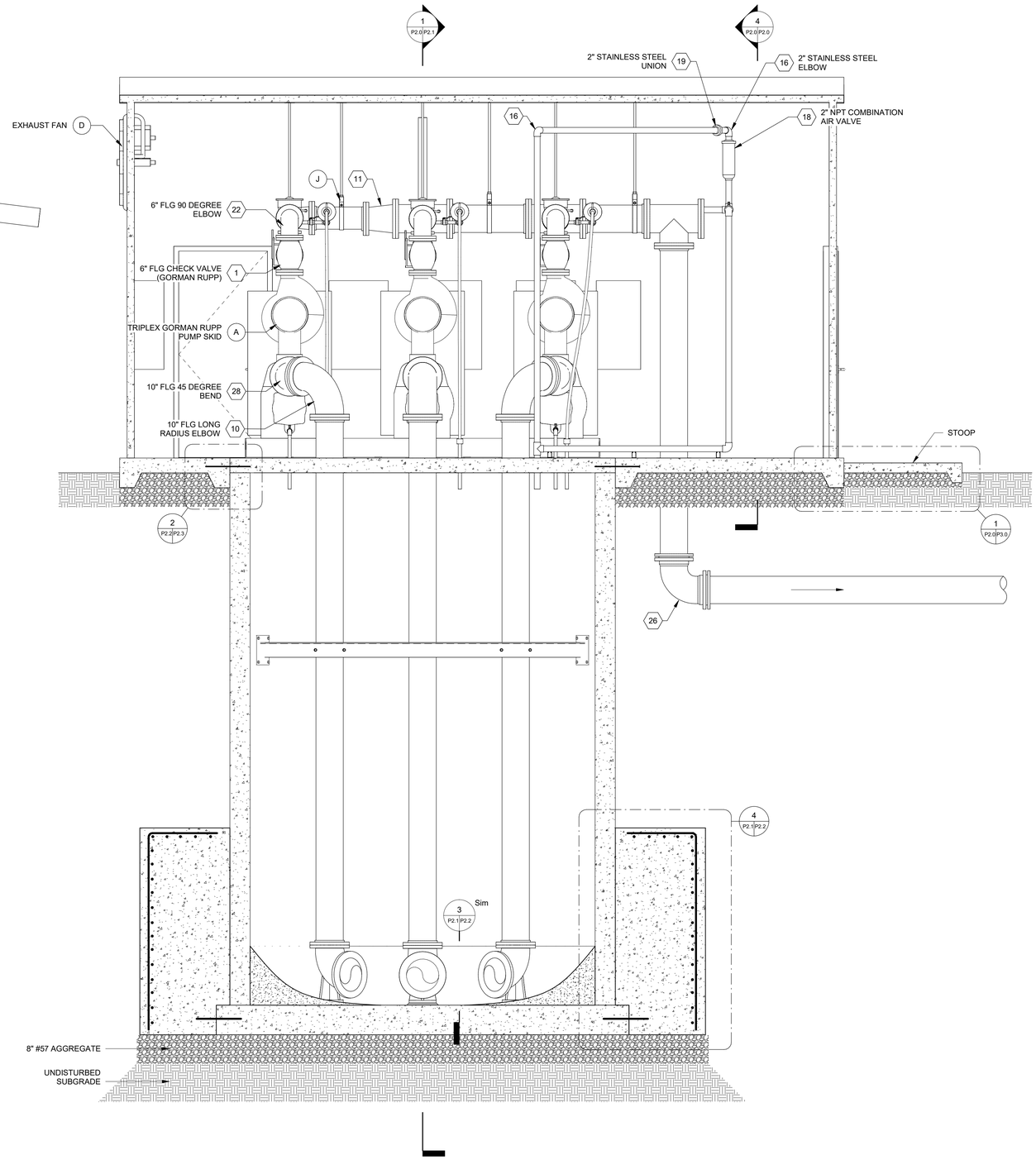
2 WET WELL FILLET PLAN
1/4" = 1'-0"



3 BASE ELBOW SUCTION
1" = 1'-0"



4 ANTI-FLOTATION COLLAR
1" = 1'-0"



1 PUMP STATION SECTION
1/2" = 1'-0"

FITTING AND EQUIPMENT SCHEDULE	
LABEL	DESCRIPTION
1	6" FLG CHECK VALVE (GORMAN RUPP)
9	12"x10" FLG REDUCING BASE ELBOW
10	10" FLG LONG RADIUS ELBOW
11	10"x8" FLG CONCENTRIC REDUCER
16	2" STAINLESS STEEL ELBOW
18	2" NPT COMBINATION AIR VALVE
19	2" STAINLESS STEEL UNION
22	6" FLG 90 DEGREE ELBOW
26	10" MJ 90 DEGREE ELBOW
28	10" FLG 45 DEGREE BEND
A	TRIPLEX GORMAN RUPP PUMP SKID
D	EXHAUST FAN
J	CLEVIS HANGER

PLAN LEGEND

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

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

0 1' 2' 3'
1" = 1'-0"

0 5' 10' 15'
1/4" = 1'-0"

COMMONWEALTH OF VIRGINIA
BRUCE W. STRICKLAND JR.
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03/26/2024
PROFESSIONAL ENGINEER

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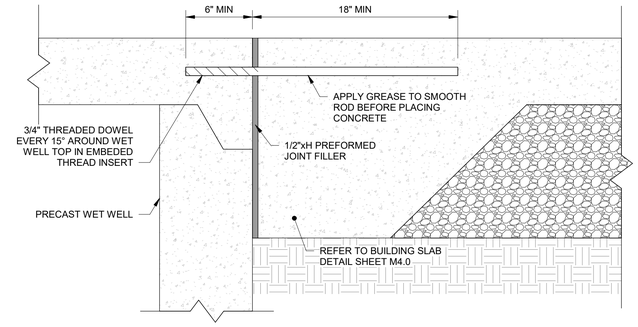
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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA
PUMP STATION SECTIONS

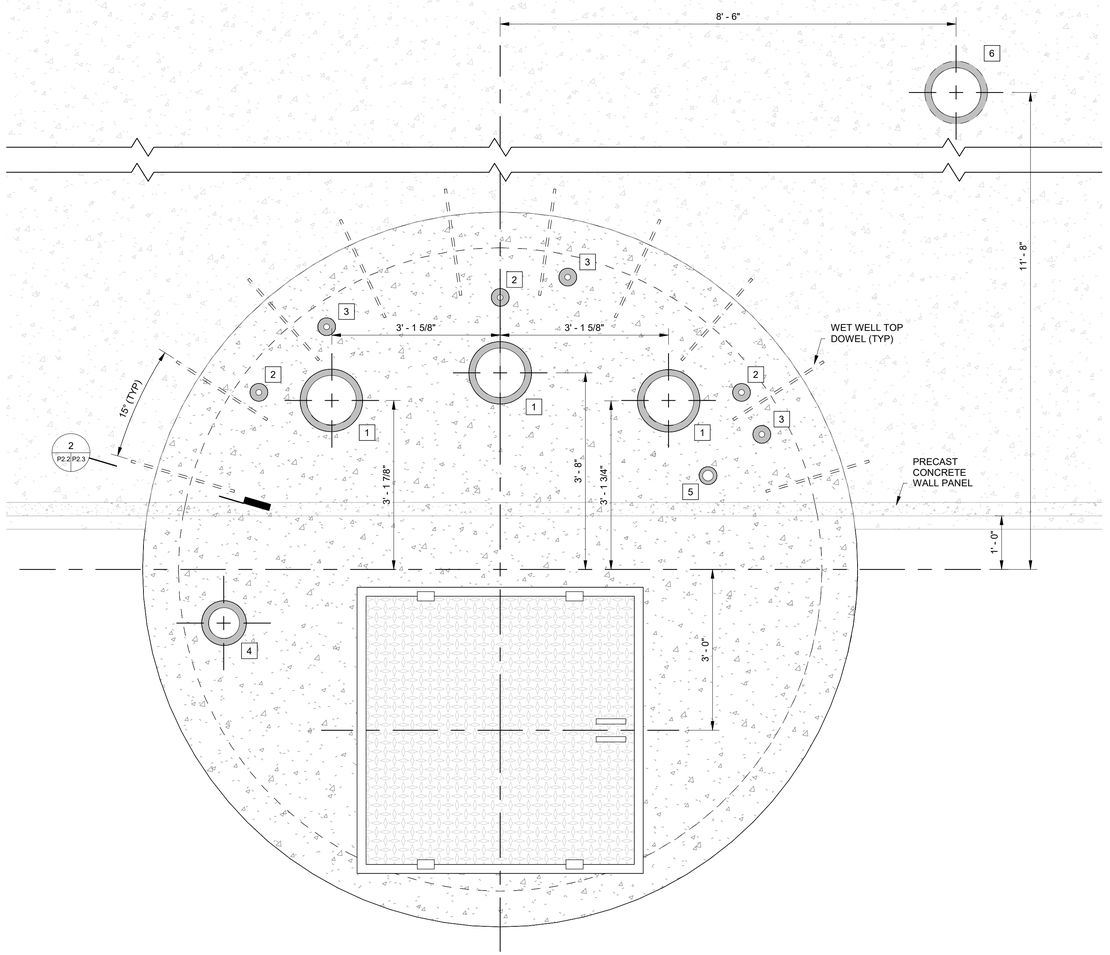
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2 WET WELL TOP DOWELS
NOT TO SCALE



PENETRATION SCHEDULE				
PENETRATION	PIPE MATERIAL	PIPE NOMINAL DIAMETER	PENETRATION DIAMETER	DESCRIPTION
1	DUCTILE IRON	10"	14"	PUMP SUCTION
2	STAINLESS STEEL	1"	4"	PUMP DRAIN
3	STAINLESS STEEL	1.25"	4"	GORMAN RUPP ARV DRAIN
4	DUCTILE IRON	6"	10"	WET WELL VENT
5	STAINLESS STEEL	2"	4"	ARV DRAIN
6	DUCTILE IRON	10"	14"	PUMP DISCHARGE

1 PIPE PENETRATION DETAIL
3/4" = 1'-0"

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 1' 2' 3'
1" = 1'-0"

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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA

WET WELL PENETRATION DETAIL

JOB NO. 49408.003
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Wastewater Pump Station Calculations

Project: Staunton Crossing
Project No: 49408

Prepared by: B. Strickland / Z. Mountjoy
Prepared on:
Date Revised: 04/12/2024

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Pump Station Capacity

Description	Value	Units	Notes
Average Daily Flowrate	700	gpm	*Assume 1 MGD*
Peak Factor Used	2.50		
Design Peak Influent Rate	1,750	gpm	
Design Pumping Rate	1,750	gpm	*Must be greater than Design Influent Rate*
			Update based on pump / system curves

Wet Well Sizing

Description	Value	Units	Notes
Wetwell Diameter	12.0	feet	
Minimum Pump Cycle Time	10	min	
Unit Volume	845.97	gal/ft	
Wet Well Drawdown Volume	4375.00	gal	Based on $V = \frac{TP}{4}$
Average Pump Run Time	4.43	min	*Based on control settings below*
Average Pump Cycle Time	11.08	min	*Time between pump starts*
Peak Pump Run Time	#DIV/0!	min	
Peak Pump Cycle Time	#DIV/0!	min	
Minimum Operating Depth	5.17	ft	

Control Settings

Description	Value	Units	Notes
100-year Flood Plain Elevation	0.00	ft AMSL	*N/A*
Top of Wet Well Elevation	1358.00	ft AMSL	*From drawings*
Lowest Invert In Elevation	1348.00	ft AMSL	
High Level Alarm Elevation	1347.50	ft AMSL	**0.50' Below Influent Line**
Lag Pump On Elevation	1347.00	ft AMSL	**0.50' Below High Level Alarm**
Lead Pump On Elevation	1346.50	ft AMSL	**0.50' Below Lag Pump On**
Both Pumps Off Elevation	1341.00	ft AMSL	**5.50' Below Lead Pump On**
Pump entrance diameter	12.46	inches	
Minimum Submergence	2.94	ft	H.I. Stds: S=(1+2.3*F*)D where ***F***=v(gD)$^{-0.5}$
Suction Entrance Elevation	1338.00	ft AMSL	**3.00' Below Both Pump Off**
Wetwell Floor Elevation	1337.50	ft AMSL	**6" Below Suction Entrance**
Depth of Wet Well	20.50	ft	

Pump Station Head Loss - Discharge Side

Description	Value	Units	Notes
Pump Station Pipe Diameter 1	6.22	inch	*From drawings*
Pump Station Pipe Velocity	9.24	fps	
Pump Station Pipe "c" value	120		*(Hazen-Williams)*
Equivalent Length of Fittings	120.00	ft	*From Fitting Friction Loss Table Below*
Straight Pipe Quantity	5.00	ft	*From drawings*
Total Equivalent Length	125.00	ft	
Pump Station Head Loss 1	7.07	ft	
Pump Station Pipe Diameter 2	8.33	inch	*From drawings*

Wastewater Pump Station Calculations

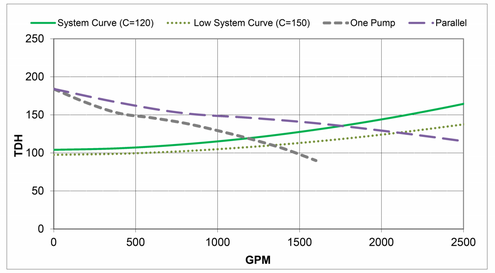
Project: Staunton Crossing
Project No: 49408

Prepared by: B. Strickland / Z. Mountjoy
Prepared on:
Date Revised: 04/12/2024

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Force Main Head Loss

Description	Value	Units	Notes
Force Main "c" Value	120		*(Hazen Williams)*
Force Main Nominal Diameter	12	in	
Force Main Material	DI - Class 52		
Force Main Inside Diameter	12.46	in	*From Pipe Properties Table*
Flowrate	1750	gpm	
Velocity	4.60	fps	
Force Main Length	2760	ft	*Measured From Drawings*
Equivalent Length of Fittings	285.9	ft	*From Fitting Friction Loss Table*
Total Equivalent Length	3045.9	ft	
Force Main Friction Loss	21.15	ft	
Force Main High Point Elev.	1445.00	ft AMSL	*Check FM / HGL plot for special design*
Manifold Condition?	No		*considerations*
~~Manifold Elevation~~	~~0.0~~	~~ft AMSL~~	
~~Peak Residual Pressure Head~~	~~0.0~~	~~ft~~	~~*At manifold connection*~~
~~Minimum Residual Pressure Head~~	~~0.0~~	~~ft~~	~~*At manifold connection*~~
Pump Station LWL	1341	ft AMSL	
System Static Head	104	ft	
Total Dynamic Head	135.2	ft	



Pump Station Buoyancy Calculations

Project: Staunton Crossing
Project No: 49408

Prepared by: B. Strickland / Z. Mountjoy
Prepared on:
Date Revised: 04/12/2024

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Wet Well Buoyancy

Description	Value	Units	Notes
Inner Diameter	12.0	ft	
Outer Diameter	13.3	ft	**8-inch wall thickness**
Depth	20.5	ft	
Concrete Volume	543.84	ft^3	
Wetwell Weight	78,857	lb	**Based on 145-lb/ft3 for concrete**
Displaced Volume	2,862	ft^3	
Buoyancy Force	-178,610	lb	**Based on 62.4-lb/ft3 for water**
Buoyant Weight of Wetwell	-99,753	lbs	**Structure is buoyant without base**

Base Buoyancy Credit

Description	Value	Units	Notes
Base Diameter	15.3	ft	**12 inches beyond WW outer diameter**
Base Thickness	12.0	in	*Base Thickness should be no greater than 12"*
Concrete / Displaced Volume	184.66	ft^3	
Base Weight	26,775	lb	*Based on 145-lb/ft3 for concrete*
Buoyancy Force	-11,523	lb	*Based on 62.4-lb/ft3 for water*
Buoyant Weight of Base	15,253	lb	
Buoyant Weight of Structure	-84,500	lb	**Structure is buoyant without AF collar**

(Optional) Anti-Flotation Collar Credit

Description	Value	Units	Notes
Collar Inner Diameter	13.3	ft	
Collar Thickness	3.00	ft	*If no collar used, set thickness to "0"*
Collar Height	7.0	ft	
Concrete / Displaced Volume	1,077.57	ft^3	
Base Weight	156,247	lb	*Based on 145-lb/ft3 for concrete*
Buoyancy Force	-67,240	lb	*Based on 62.4-lb/ft3 for water*
Buoyant Weight of Collar	89,007	lb	
Buoyant Weight of Structure	4,507	lb	Structure is not buoyant without soil

Note: The buoyancy calculations above reflect the worst case scenario during construction with the wet well empty, the excavation pit flooded and the absence of overbearing soil. Minimum concrete thicknesses were used for the wall and base sections to ensure a conservative approach. Actual wall and base thicknesses may increase per the manufacturer shop drawings which would reduce the size of the anti-flotation collar. Consideration would also be given to reducing the size of the anti-flotation collar if positive drainage away from the excavation could be maintained during construction.

Net Positive Suction Head Calculations

Project: Staunton Crossing
Project No: 49408

Prepared by: B. Strickland / Z. Mountjoy
Prepared on:
Date Revised: 04/12/2024

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Suction Lift

Description	Value	Units	Notes
LWL	1341.00	ft	From PS Calcs
Pump Suction C/L	1360.50	ft	From Plans
Static (LWL to Pump)	19.50	ft	
Suction Pipe Diameter	10.4	in	
"c" Factor	120		
Length of Suction Pipe	25.00	ft	**From Plans - Enter zero if Submersible**
Equivalent Length of Fittings	78.32	ft	From Fitting Friction Loss Table Below
Total Equivalent Length	103.32	ft	
Suction Line Friction	0.48	ft	Q/2 for parallel pumps
SUCTION LIFT	19.98	ft	

NPSH Verification

Description	Value	Units	Notes
Site Elevation	1358.00	ft AMSL	From Site Plan - Grade Adjacent to Wet well
NPSHa at Site Elevation	32.41	ft	Interpolated From Air Properties Table
Total Suction Lift	19.98	ft	
Vapor Pressure 74° Liquid	1.00	ft	By Gorman-Rupp
Safety Factor	2.00	ft	By Gorman-Rupp
NPSHa for Design	9.43	ft	
NPSHr for Design	8.75	ft	From Pump Curve
NPSH EXCESS	0.68	ft	Okay

Reprime Lift

Description	Value	Units	Notes
Reprime Lift Available	20.00	ft	From Manufacturer's Information
Reprime Lift Required	14.00	ft	Okay

Wastewater Pump Station Calculations

Project: Staunton Crossing
Project No: 49408

Prepared by: B. Strickland / Z. Mountjoy
Prepared on:
Date Revised: 04/12/2024

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Force Main Retention Time

Description	Value	Units	Notes
Daily Flowrate	1,008,000	gpd	
Force Main Volume	17,481.32	gals	
Force Main Retention Time	0.42	hours	
Pump Cycles Req'd to Flush FM	0.90	cycles	
Pump Cycles per Day	130	cycles	*Based on Average Daily Flow Rate*

Pump Station Buoyancy Calculations

Project: Staunton Crossing
Project No: 49408

Prepared by: B. Strickland / Z. Mountjoy
Prepared on:
Date Revised: 04/12/2024

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Soil Impact

Description	Value	Units	Notes
Angle of Influence	15.0	degrees	
Angle of Influence	0.262	radians	
Top of Triangle	5	ft	
Top Diameter	26	ft	
Bottom Diameter	15	ft	
Saturated Soil Density	110.0	lb/ft^3	*From Geotechnical Report or Estimate*
Depth of Soil above Base	20.5	ft	
Volume of Soil	4,283	ft^3	*Volume of Soil (frustrum of cone, less wetwell)*
Buoyant Weight of Soil	203,871	lb	

Buoyancy Float Check

Description	Value	Units	Notes
Total Difference After Backfill	208,378	lb	*Structure is not buoyant after backfill*

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PROFESSIONAL ENGINEER

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DATE
3/31/23

DRAWN BY
J. MARSHALL

DESIGNED BY
B. STRICKLAND

CHECKED BY
B. STRICKLAND

SCALE
AS NOTED

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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA

PUMP DATA

JOB NO.
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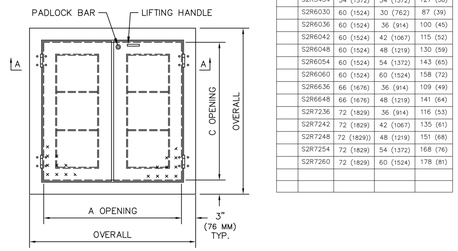
SERIES S2R ACCESS DOOR

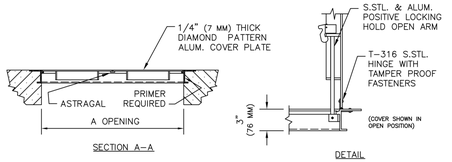
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Fax 407-298-4534
Sales@HallidayProducts.com

STANDARD FEATURES:

- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- NON-CORROSIVE PADLOCK BAR
- DOUBLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

STANDARD SIZES				
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	S2R4242	42 (1067)	42 (1067)	93 (42)
	S2R4842	48 (1219)	42 (1067)	99 (45)
	S2R4848	48 (1219)	48 (1219)	110 (50)
	S2R5442	54 (1372)	42 (1067)	108 (49)
	S2R5448	54 (1372)	48 (1219)	119 (54)
	S2R5454	54 (1372)	54 (1372)	127 (58)
	S2R6030	60 (1524)	30 (762)	87 (39)
	S2R6036	60 (1524)	36 (914)	100 (45)
	S2R6042	60 (1524)	42 (1067)	115 (52)
	S2R6048	60 (1524)	48 (1219)	130 (59)
	S2R6054	60 (1524)	54 (1372)	143 (65)
	S2R6060	60 (1524)	60 (1524)	158 (72)
	S2R6636	66 (1676)	36 (914)	109 (49)
	S2R6648	66 (1676)	48 (1219)	141 (64)
	S2R7236	72 (1829)	36 (914)	116 (53)
	S2R7242	72 (1829)	42 (1067)	135 (61)
	S2R7248	72 (1829)	48 (1219)	151 (68)
	S2R7254	72 (1829)	54 (1372)	168 (76)
	S2R7260	72 (1829)	60 (1524)	178 (81)





10 ACCESS HATCH
NOT TO SCALE

SERIES J CABLE HOLDER

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STANDARD FEATURES:

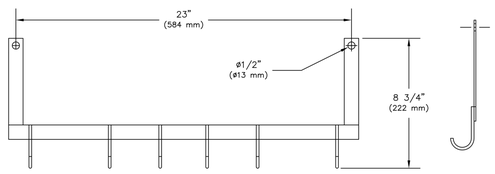
- STAINLESS STEEL CONSTRUCTION
- 6 HOOKS STANDARD - FOR FLOAT SWITCHES
- AVAILABLE STANDARD DUTY OR HEAVY DUTY

MODEL	CABLE HOLDER
J6A	STD., 1/8" (3 mm) BODY, #3/16" (4 mm) HOOK (T-316 S.STL. ONLY)
J4J	H.D., 3/16" (4 mm) BODY, #1/4" (7 mm) HOOKS (T-304 S.STL)
J6J	H.D., 3/16" (4 mm) BODY, #1/4" (7 mm) HOOKS (T-316 S.STL)

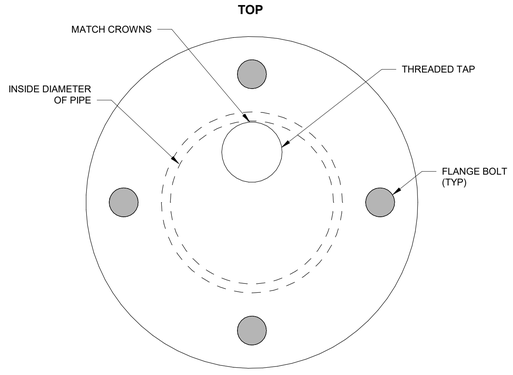
QUANITITY J6A

QUANITITY J4J

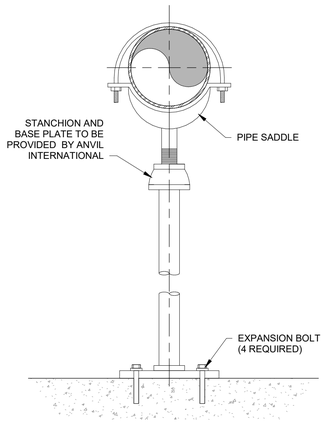
QUANITITY J6J



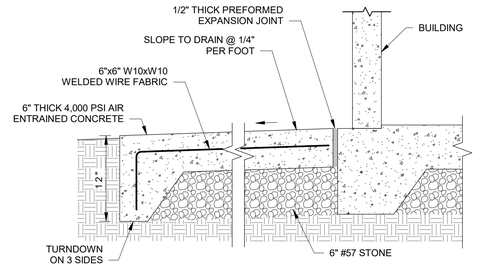
11 CABLE HOLDER
NOT TO SCALE



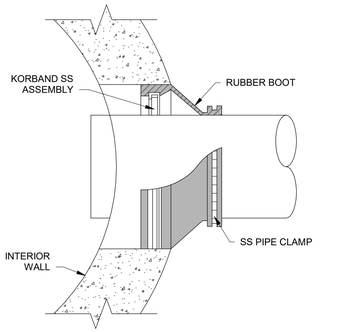
7 TAPPED BLIND FLANGE FOR COMBINATION AIR VALVE
NOT TO SCALE



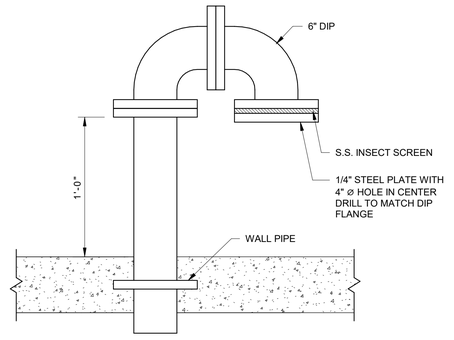
4 ADJUSTABLE PIPE SUPPORT
NOT TO SCALE



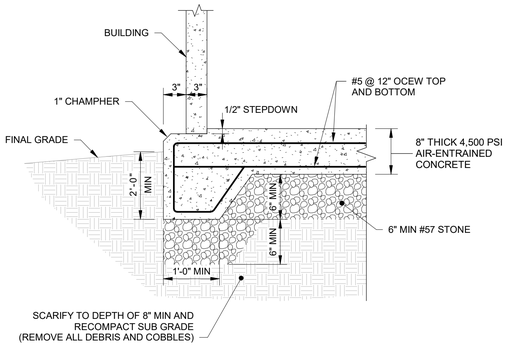
1 BUILDING STOOP
NOT TO SCALE



8 MANHOLE BOOT
NOT TO SCALE

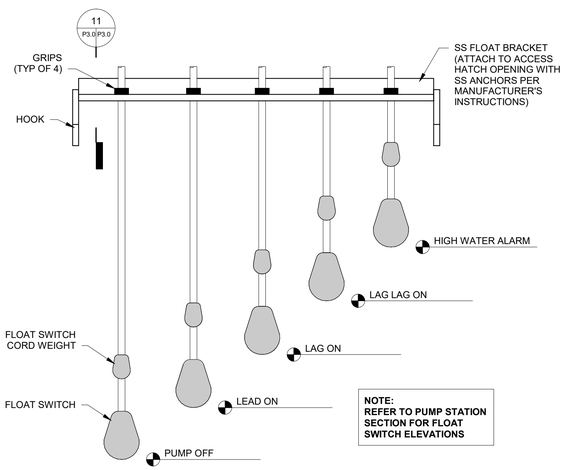


5 WET WELL VENT
NOT TO SCALE



NOTE:
SLOPE FINAL GRADE AWAY FROM STRUCTURES AS SHOWN ON GRADING PLANS.

2 BUILDING SLAB ON GRADE
NOT TO SCALE

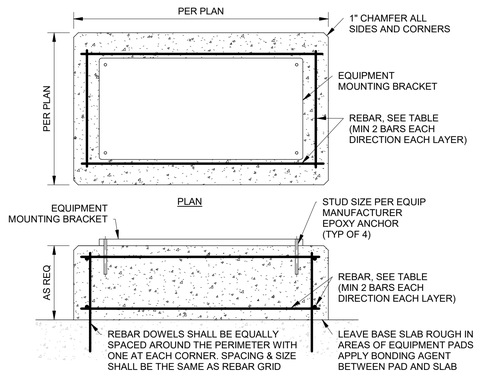


NOTE:
REFER TO PUMP STATION SECTION FOR FLOAT SWITCH ELEVATIONS

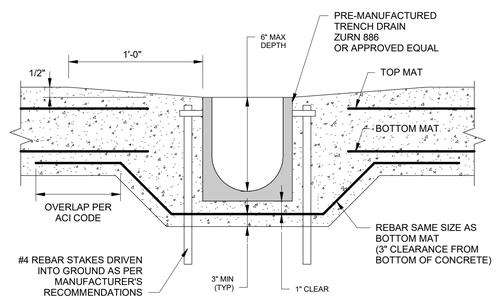
9 LEVEL FLOAT AND CABLE HOLDER
NOT TO SCALE

PAD THICKNESS	REBAR SIZE	MAX SPACING	TOP CLEARANCE	SIDE CLEARANCE
4"	3	13"	2"	2"
6"	4	16"	2"	2"
8"	4	12"	2"	2"
10"	5	15"	2"	2"
12"	5	12"	2"	2"

NOTES:
1. EMBEDMENT SHALL BE 3" OR 1/2 THE SLAB THICKNESS, WHICHEVER IS GREATER.
2. EDGE OF PAD SHALL EXTEND A MINIMUM OF 6" FROM THE EQUIPMENT BASE.



6 CONCRETE HOUSEKEEPING PAD
NOT TO SCALE



3 TRENCH DRAIN
NOT TO SCALE

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23225
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REVISION DESCRIPTION	DATE

DATE 3/31/23
DRAWN BY J. MARSHALL
DESIGNED BY B. STRICKLAND
CHECKED BY B. STRICKLAND
SCALE AS NOTED

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA

PUMP STATION MECHANICAL DETAILS

JOB NO. 49408.003
SHEET NO. P3.0

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OPTIONAL PROTECTIVE GRATING PANEL

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

STANDARD FEATURES:

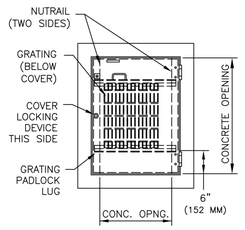
- ALUMINUM "I" BAR CONSTRUCTION
- ALL T-316 STAINLESS STEEL HARDWARE
- LOCKABLE WITH OWNER-SUPPLIED PADLOCK
- HINGED WITH POSITIVE LATCH TO MAINTAIN UPRIGHT POSITION
- LOAD RATED CONSISTENT WITH ACCESS COVER
- VIEW AREA FOR OBSERVATION AND LIMITED MAINTENANCE
- SAFETY ORANGE POWDER-COATED FINISH
- NUTRAIL W/S.STL. SPRING NUTS (300 LBS. PSF [1464 KG. PER METER] LOADED DOORS ONLY)
- LIFETIME GUARANTEE

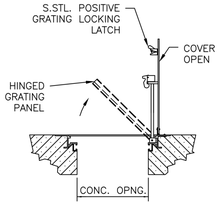
APPLICATIONS:

THE OPTIONAL PROTECTIVE GRATING PANEL SHOULD BE SPECIFIED FOR APPLICATIONS IN AREAS THAT REQUIRE ADDITIONAL PROTECTION SHOULD THE ACCESS COVER BE LEFT IN THE OPEN POSITION. THIS OPTION SHOULD ALSO BE CONSIDERED WHEN A SINGLE PERSON INSPECTION OF WET WELLS IS DESIRABLE. THE GRATING PANEL HAS PROVISIONS FOR AN OWNER-SUPPLIED PADLOCK THAT WOULD PROVIDE SECONDARY PROTECTION AGAINST UNAUTHORIZED PERSONNEL OPENING THE ACCESS COVER. THIS OPTION IS NOT AVAILABLE FOR ALL ACCESS COVERS MODELS. PLEASE CONSULT THE FACTORY.

HALLIDAY PRODUCTS OPTIONAL PROTECTIVE GRATING PANEL IS EQUIPPED WITH ALL T-316 STAINLESS STEEL HARDWARE. THIS LOCKABLE GRATING PANEL CAN BE FACTORY INSTALLED ON MOST MODELS IN OUR EXTENSIVE LINE OF QUALITY ACCESS COVERS. EACH GRATING PANEL IS POWDER COAT FINISHED IN SAFETY ORANGE COLOR, AND IS EQUIPPED WITH A T-316 STAINLESS STEEL POSITIVE LATCH WITH RELEASE HANDLE THAT SECURES THE GRATING PANEL IN THE OPEN POSITION. THE GRATING SUPPORT LEDGES FEATURE BUILT-IN NUTRAIL. EACH UNIT IS SUPPLIED WITH FOUR STAINLESS STEEL SPRING NUTS USED TO MOUNT PUMP BRACKETS AND CABLE HOLDERS.

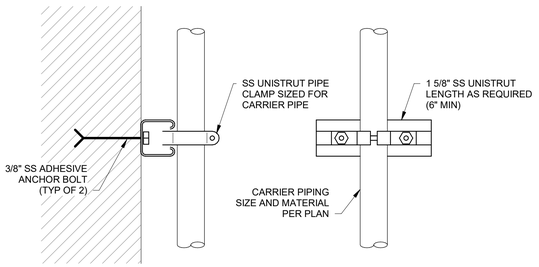
- CONSULT FACTORY FOR ALL PRICING
- FOR ADDITIONAL INFORMATION VISIT US AT: HallidayProducts.com



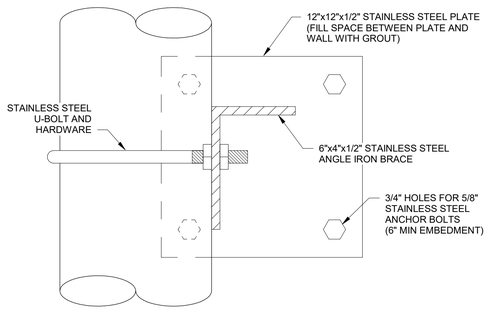


OPT-GRATE-N 07/29/05

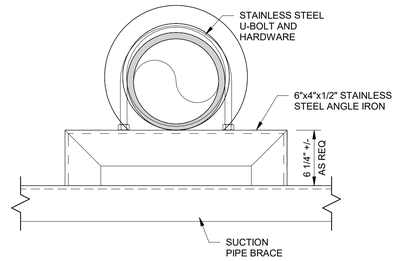
10 SAFETY GRATE
NOT TO SCALE



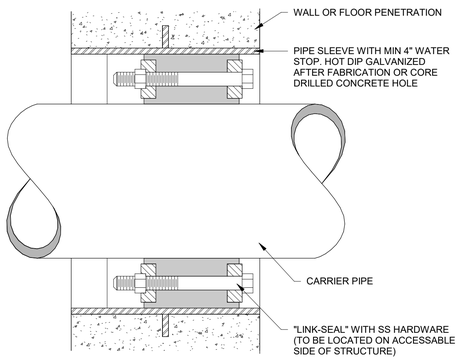
6 UNISTRUT PIPE SUPPORT
NOT TO SCALE



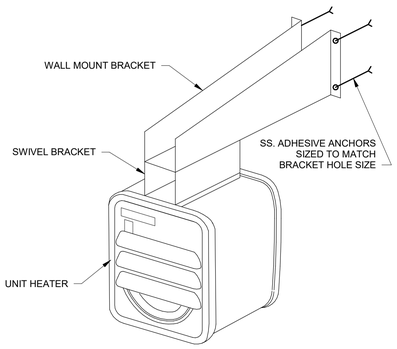
7 SUCTION PIPE BRACE
NOT TO SCALE



8 ANGLE IRON BRACE EXTENSION
NOT TO SCALE

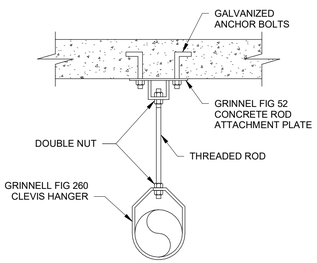


9 LINK SEAL
NOT TO SCALE



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

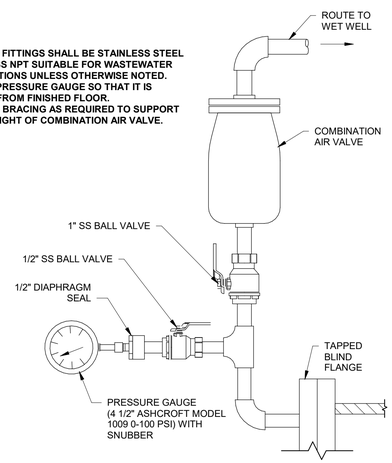
3 UNIT HEATER
NOT TO SCALE



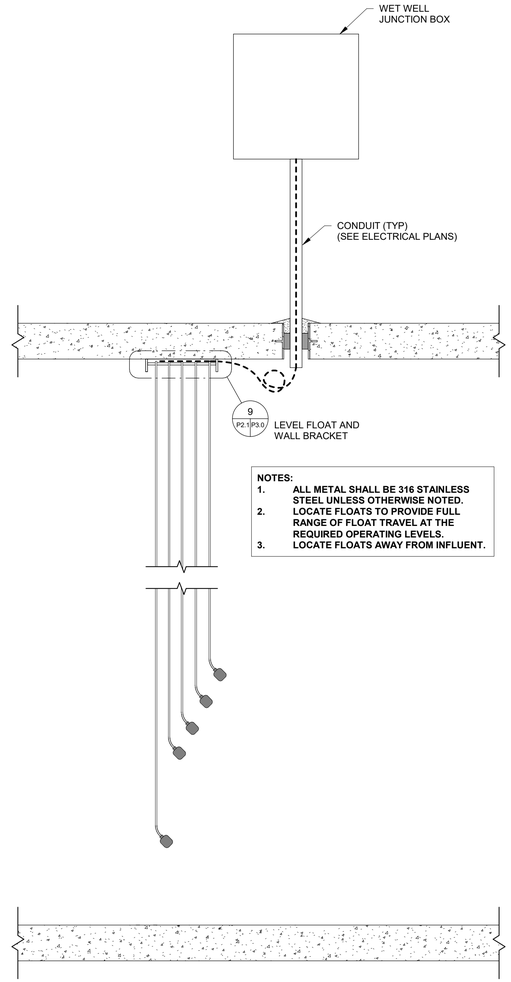
PIPE SIZE	ROD SIZE	ANCHOR BOLT SIZE
12"	7/8"	5/8"
10"	7/8"	5/8"
8"	3/4"	5/8"
6"	3/4"	5/8"
4"	5/8"	1/2"
3"	1/2"	1/2"

4 CLEVIS HANGER IN CONCRETE
NOT TO SCALE

NOTE:
1. **ALL PIPE FITTINGS SHALL BE STAINLESS STEEL OR BRASS NPT SUITABLE FOR WASTEWATER APPLICATIONS UNLESS OTHERWISE NOTED.**
2. **ORIENT PRESSURE GAUGE SO THAT IT IS VISIBLE FROM FINISHED FLOOR.**
3. **PROVIDE BRACING AS REQUIRED TO SUPPORT FULL WEIGHT OF COMBINATION AIR VALVE.**



5 COMBINATION AIR VALVE
NOT TO SCALE



NOTES:
1. **ALL METAL SHALL BE 316 STAINLESS STEEL UNLESS OTHERWISE NOTED.**
2. **LOCATE FLOATS TO PROVIDE FULL RANGE OF FLOAT TRAVEL AT THE REQUIRED OPERATING LEVELS.**
3. **LOCATE FLOATS AWAY FROM INFLUENT.**

1 SSWR LEVEL FLOATS AND PRESSURE TRANSDUCER ASSEMBLY
NOT TO SCALE

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

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DRAWN BY J. MARSHALL
DESIGNED BY B. STRICKLAND
CHECKED BY B. STRICKLAND
SCALE AS NOTED

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA

PUMP STATION MECHANICAL DETAILS

JOB NO. 49408.003
SHEET NO. P3.1

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Power Distribution Diagram

480Y/277Vac,3ø,4W,60Hz
U.G. POWER FROM UTILITY

4"C Schedule–40 PVC with Mule Rope extended from the CT Cabinet to the Utility Power Pole @2FT below grade (2 Sets) Reference Civil Site plan for locations and distances.

REFERENCE NOTE 1.2. REFERENCE THE CIVIL SITE PLAN FOR LOCATIONS AND DISTANCES AND COORDINATE WITH THE UTILITY AS REQUIRED.

UTILITY CT & METERBASE

4"C W/4–350MCM (2 Sets)

MBDS 600Amp(LSI)/3P/4W/60Hz

480Y/277Vac,3ø,4W,60Hz,65kAIC SERVICE ENTRANCE RATED MAIN CIRCUIT BREAKER WITH PAD LOCKABLE PROVISIONS IN THE OFF POSITION

SPD Note–3.1 Alarm

¾"C W/4–#14 & 1–#14 GND → To Panel CSP

1/0 CU

4"C W/4–350MCM & 1–1/0 GND (2 Sets)

TO PANELBOARD PB

250KW Diesel Generator
CAT Model D250GC
480Y/277Vac,3ø,4W,60Hz
Service Rated Main Circuit Breaker

400Amp(LSI) GMB

Generator Running
Generator Fault
Generator Common Alarm

Block Heater

Battery Charger

¾"C Spare

ATS
AUTOMATIC TRANSFER SWITCH
Outdoor Rated NEMA–3R Enclosure
480/277Vac,3ø,4W,60Hz/600AMP/3–Pole
Solid Neutral, Open Transfer in both Directions with Adjustable Delay Timers

MBD NORMAL | OFF | GMB EMERGENCY

Generator/ATS Status Signals
- Utility Position
- Utility Power ON
- Emergency Position
- Emergency Power ON
- Generator Start Signal
- Generator Running
- Generator Fault
- Generator Common Alarm

4"C W/4–500MCM & 1–#1 GND

¾"C W/12–#14 & 1–#12 GND

¾"C W/2–#12 & 1–#12 GND → TO PB1

¾"C W/2–#12 & 1–#12 GND → TO PB1

¾"C W/6–#14 & 1–#12 GND

4"C W/4–350MCM & 1–1/0 GND (2 Sets)

¾"C W/12–#18 & 1–#14 GND → To Panel CSP

Pump Station Control Panel PSCP

Panelboard MDP
480Y/277Vac/3ø
60Hz
65kAIC

VFD–1 Shown: Typical for Pump–1, Pump–2 and Pump–3 (Reference the typical VFD Control Panel Schematic)

2"C W/3–1/0 & 1–#2 GND

¾"C W/2–#14 ATS in Generator Position

Panel VFD–1

Line Reactor

75HP VFD

¾"C W/CAT–6 Enet Cable

¾"C W/2–2c/18awg STP Cables

¾"C W/18–#14 & 1–#14 GND

¾"C W/4–#14 & 1–#14 GND
2"C W/VFD Power Cable

200A/3P Disc w/2 Aux Contacts

¾"C W/4–#14 & 1–#14 GND
2"C W/VFD Power Cable

Pump Skid Junction Box

¾"C W/4–#14 & 1–#14 GND
2"C W/VFD Power Cable

Tstats
75HP Pump–x

¾"C W/6–#14 & 1–#14 GND → To VFD–2

¾"C W/6–#14 & 1–#14 GND → To VFD–3

Two Pump Operation – Interlock Circuits while on Generator Power

¾"C W/14–#14 & 1–#14 GND → To Panel CSP

Typical for Unit Heater–1 and Unit Heater–2

¾"C W/3–#12 & 1–#12 GND → Disc 30A/3P → ¾"C W/3–#12 & 1–#12 GND → Unit Heater–x 3.3kW/480Vac/3ø with Integral Tstat

1"C W/3–#6 & 1–#8 GND → 30kVA/3ø 480Vac–208Y/120Vac Dry Type Distribution Transformer

Panelboard PB
208Y/120Vac/3ø
60Hz
22kAIC

2"C W/4–#1 & 1–#6 GND

¾"C W/2–#12 & 1–#12 GND

¾"C W/2–#12 & 1–#12 GND → Disc 30A/2P → ¾"C W/2–#12 & 1–#12 GND

¾"C W/2–#12 & 1–#12 GND → Disc 30A/2P → ¾"C W/2–#12 & 1–#12 GND
- Split System Heat Pump Indoor Unit AHU–1 → ¾"C W/Manuf. Tstat Cable → T3
- Split System Heat Pump Outdoor Unit CU–1 → ¾"C W/Manuf. Control Cable

¾"C W/2–#12 & 1–#12 GND → Exhaust Fan Control Panel FCP

- ¾"C W/1–#12, 1–#12N & 1–#12 GND → EF Exhaust Fan
- ¾"C W/1–#12, 1–#12N & 1–#12 GND → LM Louver Motor
- ¾"C W/2–#14 & 1–#14 GND → Louver Open Limit Switch
- ¾"C W/2–#14 & 1–#14 GND → T4 Exhaust Fan Tstat (Closes on High Temp)
- ¾"C W/4–#14 & 1–#14 GND

¾"C W/2–#12 & 1–#12 GND

¾"C W/2–#12 & 1–#12 GND → Lighting Control Panel LCP

- ¾"C W/1–#12, 1–#12N & 1–#12 GND → B Light Fixture–B Typical–3
- ¾"C W/2–#12, 1–#12N & 1–#12 GND → PC Photocell

½"C W/2–#12 & 1–#12 GND → Multiple Conduits/Wire as required for building receptacles. All receptacles shall be Weatherproof GFI Duplex type with in–use cover

½"C W/2–#12 & 1–#12 GND → Multiple Conduits/Wire as required for building interior lights.

½"C W/2–#12 & 1–#12 GND → Multiple Conduits/Wire as required for building exterior lights.

½"C W/2–#12 & 1–#12 GND → OUTDOOR RATED 120VAC NEMA–4X RED GLOBE ALARM BEACON AND ALARM HORN

¾"C W/2–#12 & 1–#12 GND

SBR for for each Float.

¾"C W/12–#14 & 1–#14 GND

¾"C W/10–#14 & 1–#14 GND

City SCADA Panel CSP

- ¾"C W/2–#14 & 1–#14 GND → T1 Electrical Room High Temperature Thermostat (Contact Opens on High Temp)
- ¾"C W/2–#14 & 1–#14 GND → T2 Electrical Room Low Temperature Thermostat (Contact Opens on Low Temp)
- ¾"C W/2–#14 & 1–#14 GND → T5 Pump Room High Temperature Thermostat (Contact Opens on High Temp)
- ¾"C W/2–#14 & 1–#14 GND → T6 Pump Room Low Temperature Thermostat (Contact Opens on Low Temp)
- ¾"C W/2–#14 & 1–#14 GND → DS1 Electrical Room Building Door Switch (Contact Opens when Door Opens)
- ¾"C W/2–#14 & 1–#14 GND → DS2 Pump Room Building Door Switch (Contact Opens when Door Opens)

PVC Coated RGS Conduit Extension & Sleeve through the top slab of the wet well under WWJB. Size sleeve as required for associated cables (typ.)

Stainless Steel Hook Assembly with a Kellums Mesh Style Cable Grip support for each Sensor Cable.

Conduit End Bells (typ.)

NEMA–4X CORD GRIP (typ.)

WWJB Nema–4X Float Cable Junction Box

Float Cable
Float Cable
Float Cable
Float Cable
Sensor Cable

High Water Level Alarm Float (HWL)
Lag–Lag Pump Start Float
Lag Pump Start Float
Lead Pump Start Float
Pumps Stop Float

Hazardous Location: Class–1 Division–1 Group–D

Cable Cage Detail–E

Reference WWJB, Wet Well and Cable Cage Installation Detail on E–3

Typical VFD Control Panel Schematic

480Vac/3ø Power from MDP

480Vac/3ø Main Breaker

480Vac/3ø Splitter Block

Nema–3R 3ø Line Reactor

480Vac/3ø

Coordinate VFD operating AMP rating with pump Full Load Amps

VFD Cable

Pump
L1
L2
L3
Gnd

Tstat–1
Tstat–2

To VFD External Fault

480Vac/3ø Breaker

480Vac/3ø 24Vdc/20Amp Power Supply

24Vdc– | 24Vdc+

24Vdc 5 Amp Breaker

Pump Stop Note–A

VIR | OTR

H O A

XOO | OOX

Panel PSCP Common
PSCP Input HOA in Hand
PSCP Input HOA in Auto
Panel CSP Common
CSP Input HOA in Hand
CSP Input HOA in Auto

PSCP Start/Stop

Speed Reference + / – → 4–20mA → Speed Ref. from PSCP

Speed Status + / – → 4–20mA → Speed Status to PSCP

Enet Cable to PSCP

VFD Start

VFD Fault

R–Flt A2 A1 Faulted A

Relays Note–B (Typ)

R–Run A2 A1 Running R

VFD Running Contact opens when VFD is stopped and output Hz=0

OTR Pump Over–Temp Alarm Relay A2 A1

Motor Tstat–1

Motor Tstat–2

External Fault

ATS in Generator Position

VFD2 R–Run

VFD3 R–Run

VIR A2 A1

24Vdc 5 Amp Breaker

Enclosure Fan

VFD Interlock Relay (VIR): For operation while on Generator Power, provide and install conduit/wire as required to to extend a run contact from each of the other two VFDs to prevent this VFD from running if the other two are running.

Notes:
A. Provide and install a remote Pump Stop Button located near the pump. The button shall be a maintained button and housed in a Pad–Lockable Nema–4X enclosure.
B. Provide each of the following relays as 4PDT with individual Form–C Dry Contacts for the following:
Relay R–Flt: Panel PSCP, Panel CSP, Spare, Spare
Relay R–Run: Panel PSCP, Panel CSP, VFD–2, VFD–3
Relay OTR: Panel PSCP, Panel CSP, Start Interlock, Spare
Relay VIR: Panel PSCP, Panel CSP, Start Interlock, Spare

Dominion Control Systems, Inc.
Ashland, VA (804) 370–6373
DominionControls@verizon.net

COMMONWEALTH OF VIRGINIA
D. L. Glasscock
Lic. No.036309
11/17/23
PROFESSIONAL ENGINEER

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REVISION DESCRIPTION

DATE

DATE 11-17-2023
DRAWN BY D. GLASSCOCK
DESIGNED BY D. GLASSCOCK
CHECKED BY D. GLASSCOCK
SCALE AS SHOWN

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA

ELECTRICAL POWER DISTRIBUTION AND NOTES

JOB NO. 49408
SHEET NO. E1.0

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C:\DCS Business Files\DCS Backup\Jobfiles\5485 - TIMMONS Staunton WWPS and Tank\Dwg\E1.0 Staunton WWPS Power Distribution 11-17-2023.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 MDP 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 AND 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, 480/277Vac, 100kAIC, 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 MDP AND 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 ELECTRICAL ROOM: NEMA–12.
   - 9.3. ENCLOSURES MOUNTED OUTSIDE AND IN THE PUMP 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. NEMA–4X 316 STAINLESS STEEL JUNCTION BOX (WWJB):
    - 10.1. MINIMUM 24" CLEARANCE BETWEEN THE BOTTOM OF THE ENCLOSURE AND THE WET WELL TOP SURFACE. MINIMUM 60" HORIZONTAL CLEARANCE FROM THE VENT PIPE OPENING.
    - 10.2. PROVIDE AND INSTALL A STAINLESS STEEL UNISTRUT MOUNTING FRAME ANCHORED TO THE WALL OF THE PUMP STATION BUILDING WHERE SHOWN AND SIZED AS REQUIRED TO PROPERLY SUPPORT THE ENCLOSURE.
    - 10.3. WHERE REQUIRED BY THE PUMP SKID MANUFACTURER, COORDINATE CABLE ENTRY INTO THE WET WELL TO MAINTAIN THE HAZARDOUS LOCATION SEAL–OFF AND SEPARATION.
    - 10.4. ALL CABLES IN THE WET WELL SHALL BE SUPPORTED ON A STAINLESS STEEL HOOK ASSEMBLY WITH MESH STYLE CABLE STRAIN RELIEF HOLDERS ALLOWING FULL ACCESS FROM THE WET WELL HATCH.
    - 10.5. ALL WIRING IN WWJB SHALL TERMINATE ON DIN RAIL MOUNTED FINGER–SAFE TERMINALS WITH PROPER RATINGS AND MARKED WITH THE TERMINAL MANUFACTURER'S TAGGING SYSTEM. PROVIDE PVC WIREWAY, OR EQUAL, FOR THE ROUTING OF ALL WIRE AND CABLE INSIDE WWJB. TERMINALS AND WIRING SHALL BE SEPARATED BY TYPE. (ie. POWER, CONTROL, SIGNAL). SPLIT BOLTS, WIRENUTS, BUTT–SPLICES AND THE LIKE ARE NOT ACCEPTABLE.
    - 10.6. THE WWJB ENCLOSURE SIZE SHALL BE MINIMUM (20"X20"X8" HxWxD MIN.). CONTRACTOR SHALL INCREASE THE SIZE OF THE JUNCTION BOX ENCLOSURE AS REQUIRED PER NEC AND TO ALLOW FOR ALL CONDUIT AND CABLE PENETRATIONS.
11. REFERENCE THE CIVIL SITE PLAN FOR ALL EQUIPMENT LOCATIONS AND DISTANCES.
12. GROUNDING RING:
    - 12.1. EXTEND 4/0 COPPER FROM THE BUILDING SERVICE/FEEDER MAIN BREAKER, DISCONNECT, OR PANELBOARD TO ASSOCIATED GROUND RING. PROVIDE AND INSTALL A 4/0 GROUND RING W/A GROUND ROD AT EACH CORNER OF THE BUILDING.
    - 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 24" BELOW 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 BUILDINGS 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 CORNER OF THE BUILDING.

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: MDP, SERVICE RATED, 65kAIC
MOUNTING: SURFACE
ENCLOSURE: NEMA–12 (30–Ckt min.)
BOLT–ON BREAKERS
MAIN BUSS: 600AMP, COPPER
VOLTAGE: 480Y/277VAC,3ø,4W,60Hz
INTERIOR: 600AMP/LSI/65kAIC MCB

LOAD DESCRIPTION	CB SIZE	# POLE	CKT NO	AMPS/PHASE øA	AMPS/PHASE øB	AMPS/PHASE øC	CKT NO	# POLE	CB SIZE	LOAD DESCRIPTION
PUMP–1 VFD CONTROL PANEL SUPPLY WITH BREAKER LOCKOUT DEVICE	150	3	1	96			2	3	150	PUMP–2 VFD CONTROL PANEL SUPPLY WITH BREAKER LOCKOUT DEVICE
			3		96		4			
			5			96	6			
PUMP–3 VFD CONTROL PANEL SUPPLY WITH BREAKER LOCKOUT DEVICE	150	3	7	96			8	3	60	TRANSFORMER, 30KVA 480–208/120VAC,3ø SUPPLY WITH BREAKER LOCKOUT DEVICE
			9		96		10			
			11			96	12			
UNIT HEATER–1 3.3kW/3ø	20	3	13	4			14	2	20	UNIT HEATER–2 3.3kW/3ø
			15		4		16			
			17			4	18			
LIGHTNING/SURGE ARRESTOR Reference Note–3	–	3	19	--			20	--	--	PREPARED SPACE
			21		--		22			
			23			--	24			
				332	332	332	TOTAL AMPS			

PANELBOARD: PB, SERVICE RATED, 22kAIC
MOUNTING: SURFACE
ENCLOSURE: NEMA–12 (30–Ckt min.)
MAIN BUSS: 200AMP, COPPER
VOLTAGE: 208/120VAC,3ø,4W,60Hz
INTERIOR: 110AMP MAIN CIRCUIT BREAKER

LOAD DESCRIPTION	CB SIZE	# POLE	CKT NO	AMPS/PH øA	AMPS/PH øB	AMPS/PH øC	CKT NO	# POLE	CB SIZE	LOAD DESCRIPTION
INSIDE LIGHTS ELECTRICAL ROOM	20	1	1	5			2	1	20 GFI	RECEPTACLES
INSIDE LIGHTS PUMP ROOM	20	1	3		8		4	1	20 GFI	RECEPTACLES
GENERATOR GFI RECEPTACLE BATTERY CHARGER	20	1	5			8	6	1	20	GENERATOR GFI RECEPTACLE BLOCK HEATER
COUNTY SCADA PANEL (CSP)	20	1	7	10			8	1	20	BUILDING WALL PACK LIGHTS
PUMP STATION CONTROL PANEL (PSCP)	20	1	9		12		10	1	15	MINI–SPLIT INDOOR UNIT
SPARE BREAKER	20	--	11			12	12	1	20	SPARE BREAKER
LIGHTNING/SURGE ARRESTOR Reference Note–3	**	3	13	--			14	--	--	PREPARED SPACE
			15		--		16	--	--	PREPARED SPACE
			17			--	18	--	--	PREPARED SPACE
				28	37	32	TOTAL AMPS PER PHASE			

LIGHTING FIXTURE SCHEDULE

FIXTURES SHALL BE AS NOTED OR APPROVED EQUAL

TYPE	MANUF.	CAT. NUMBER	FIXTURE STYLE MOUNTING	FIXTURE STYLE TYPE	FIXTURE STYLE 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

ELECTRICAL LEGEND

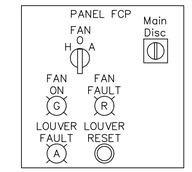
ALL SYMBOLS MAY NOT BE USED ON THIS CONTRACT

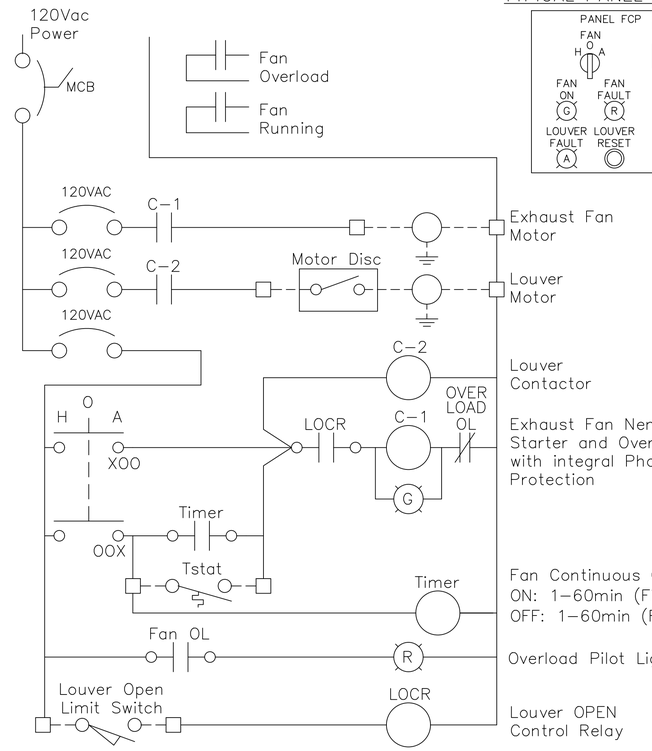
- EXIT (2) — LED EXIT LIGHT – NO. DENOTES FACES
- J — JUNCTION BOX
- OUTSIDE LED WALL PACK LIGHT
- WET LOCATION LED LIGHT
- WET LOCATION LED LIGHT W/EMERG BALLAST AND BATTERY PACK
- EMERG — EMERGENCY LIGHT
- PH — PHOTOCELL
- +44" S — WALL MOUNTED TOGGLE SWITCH – HEIGHT A.F.F.
- S3 — WALL MOUNTED TOGGLE 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

TYPICAL EXHAUST FAN CONTROL PANEL (FCP) SCHEMATIC

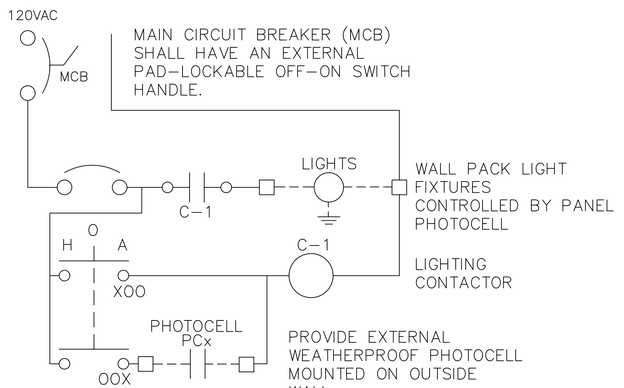
This Diagram shows a 120Vac/1ø powered fan and an Electric Louver with Open Limit Switch. All components shown shall be provided and installed. Provide the Main Circuit Breaker (MCB) with a door mounted pad–lockable operator handle OFF–ON Switch. Reference the HVAC specifications and drawings for Fan/Louver specifications and electrical details. Size all electrical equipment per the NEC and coordinate with the motor horse power or wattage.

TYPICAL PANEL LAYOUT





TYPICAL LIGHTING CONTACTOR CONTROL PANEL (LCP) SCHEMATIC



COMMONWEALTH OF VIRGINIA
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11/17/23

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DRAWN BY D. GLASSCOCK
DESIGNED BY D. GLASSCOCK
CHECKED BY D. GLASSCOCK
SCALE AS SHOWN

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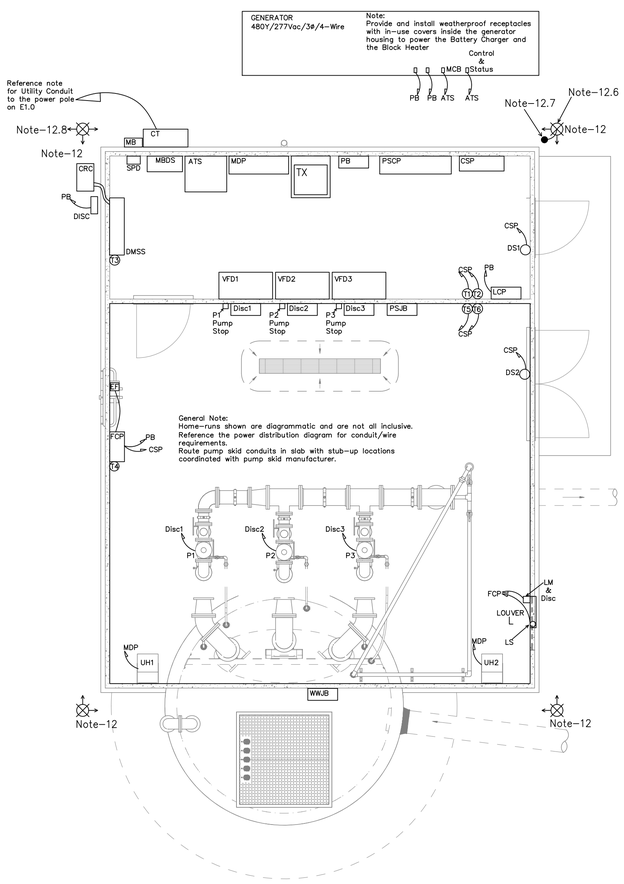
STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA
ELECTRICAL SCHEDULES NOTES AND DIAGRAMS

JOB NO. 49408
SHEET NO. E1.1

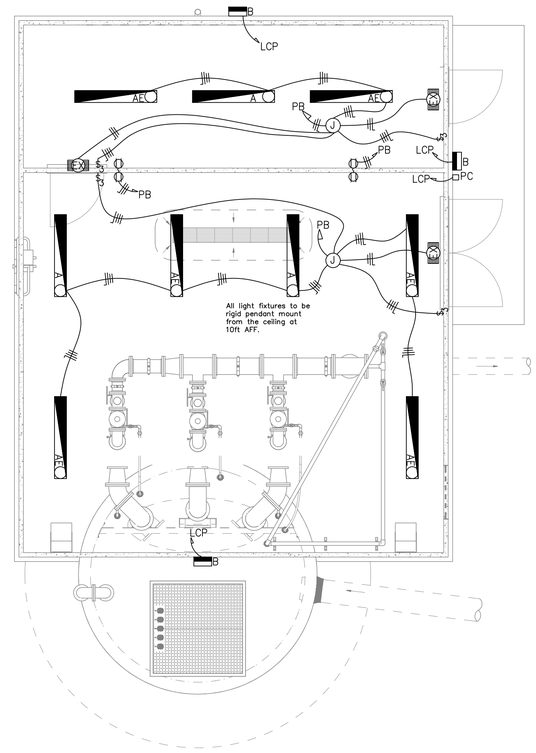
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ELECTRICAL ENGINEERING DCS CONSULTING SERVICES
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Ashland, VA (804) 370-6373
DominionControls@verizon.net

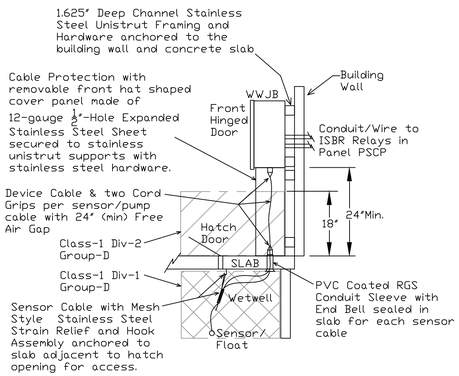
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POWER DISTRIBUTION PLAN
SCALE: 1/2" = 1'-0"



LIGHTS/RECEPTACLES DISTRIBUTION PLAN
SCALE: 1/2" = 1'-0"



WWJB, Wet Well and Cable
Cable Installation Detail

C:\DCS Business Files\DCS Backup\Jobfiles\5485 - TIMMONS Staunton WWPS and Tank\Dwg\E1.2 Staunton WWPS Plan Views and Details 11-17-2023.dwg | Plotted by Douglas Glasscock

COMMONWEALTH OF VIRGINIA
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REVISION DESCRIPTION

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11-17-2023

DRAWN BY
D. GLASSCOCK

DESIGNED BY
D. GLASSCOCK

CHECKED BY
D. GLASSCOCK

SCALE
AS SHOWN

TIMMONS GROUP

STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON, VIRGINIA

ELECTRICAL PLAN VIEWS AND DETAILS

JOB NO.
49408

SHEET NO.
E1.2

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HVAC LEGEND

SYMBOL	DESCRIPTION
	PROPELLER FAN
M	MOTOR OPERATED DAMPER
T	THERMOSTAT
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 SECTIONS 238239.16 AND 238139.19

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	PUMP ROOM	HORIZONTAL	11200	400	50	3.3	4	480	3	1/125	480	3	TRANE	UHRA-033DAAT	PROVIDE WITH DISCONNECT AND UNIT MOUNTED THERMOSTAT
UH-2	PUMP ROOM	HORIZONTAL	11200	400	50	3.3	4	480	3	1/125	480	3	TRANE	UHRA-033DAAT	PROVIDE WITH DISCONNECT AND UNIT MOUNTED THERMOSTAT

FAN SCHEDULE: SPECIFICATION SECTION 233423

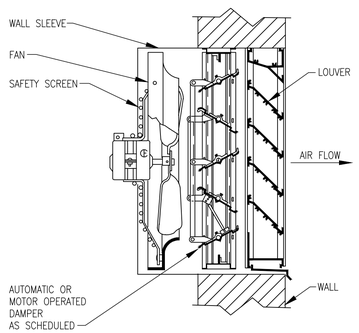
UNIT NO.	SERVING	TYPE	CFM	WHEEL DIA, IN.	DRIVE	BLADE TYPE	TOTAL STATIC, IN. WG.	FAN RPM	MOTOR DATA				SELECTION BASED ON		REMARKS
									HP	RPM	VOLT	PH	MANUFACTURER	MODEL	
EF-1	PUMP ROOM	SIDEWALL	1230	12	DIRECT	PROPELLER	0.25"	1719	1/4	1750	120	1	GREENHECK	SE1-12-432-A	PROVIDE SPEED CONTROLLER & REMOTE THERMOSTAT

SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE: SPECIFICATION SECTION 28126

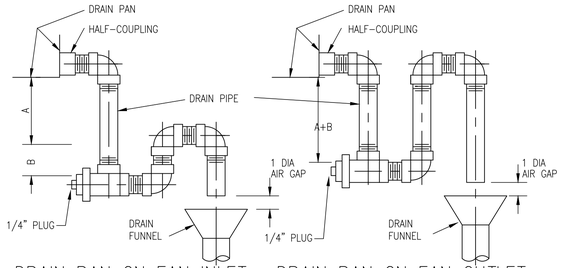
UNIT NO.	SERVING	OA CFM	SUPPLY FAN DATA				COOLING DATA					UNIT ELECTRIC DATA				SELECTION BASED ON		REMARKS
			CFM	ESP In, H2O	FLA	RPM	TOTAL CAPACITY BTUH	SENSIBLE CAPACITY BTUH	EAT °F		SEER @ARI	VOLT	PH	MCA	MOCP	MANUFACTURER	MODEL	
									DB °F	WB °F								
AHU-1	ELECTRIC ROOM	0	738	0	0.76	HIGH	22500	22500	80	67	20.5	230	1	1	20	MITSUBISHI	MSY-GL24NA-U1	MR. SLIM MINI-SPLIT UNIT. POWER FEED FROM CU-1

SPLIT SYSTEM AIR COOLED CONDENSING UNIT SCHEDULE: SPECIFICATION SECTION 238126

UNIT NO.	SERVING	UNIT DATA			FAN MOTOR(S)		COMPRESSOR(S)			UNIT ELECTRIC DATA				SELECTION BASED ON		REMARKS
		CAPACITY BTUH	COND. EAT °F	REFRIG. TYPE	NO.	FLA	NO.	LRA	RLA	MCA	MOCP	VOLT	PH	MANUFACTURER	MODEL	
CU-1	AHU-1	22500	93	410	1	0.93	1	16.1	12.9	17.1	20	230	1	MITSUBISHI	MUY-GL24NA	MR. SLIM MINI SPLIT UNIT

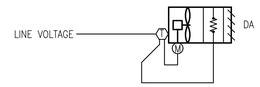


PROPELLER WALL FAN
NO SCALE



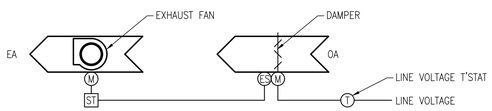
NOTE:
1. DRAIN PIPE TO BE SAME SIZE AS UNIT OUTLET, BUT NOT LESS THAN 1" PIPE SIZE.
2. "A"=SYSTEM STATIC IN INCHES AT DRAIN POINT.
"B"=1/2 SYSTEM STATIC IN INCHES AT DRAIN POINT.

AIR HANDLING UNIT DRAINS
NO SCALE



UNIT HEATER CONTROL DIAGRAM
NO SCALE

UNIT HEATER – (TYPICAL OF 2)
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 (TYPICAL OF 1)
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.
3. ALARMS SHALL BE PROVIDED AS FOLLOWS:
   A. HIGH SPACE TEMPERATURE: WHEN SPACE TEMPERATURE EXCEEDS A (ADJUSTABLE) HIGH LIMIT. FOR A (ADJUSTABLE) SPECIFIED TIME PERIOD. INITIAL SETTINGS ARE 100°F AND 30 MINUTES.

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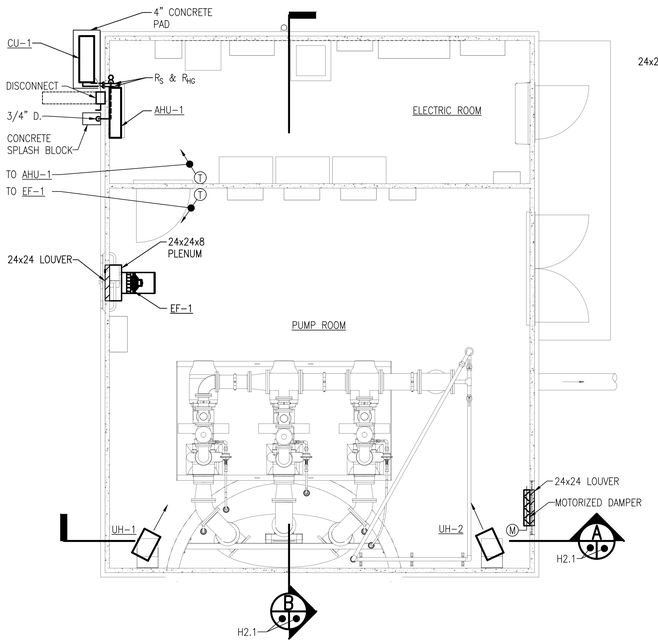
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CITY OF STAUNTON - VIRGINIA
HVAC LEGEND, ABBREVIATIONS, SCHEDULES AND DETAILS

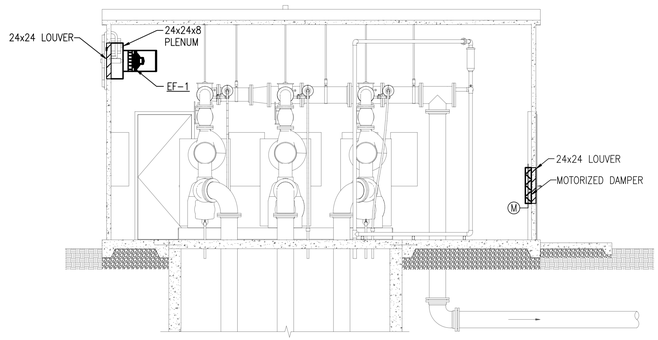
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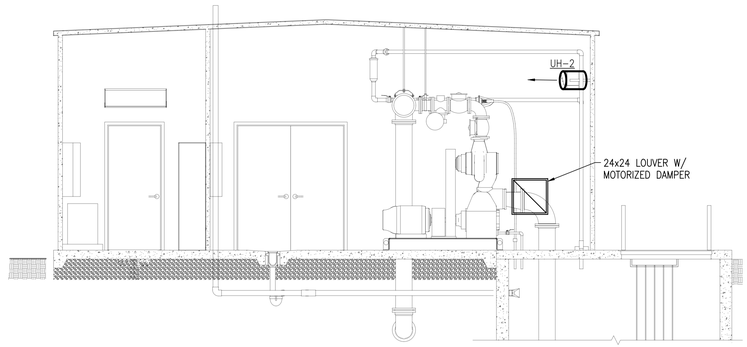
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1 GROUND LEVEL PLAN – HVAC
SCALE: 1/4"=1'-0"



A SECTION
H2.1 H2.1 SCALE: 1/4" = 1'-0"



B SECTION
H2.1 H2.1 SCALE: 1/4" = 1'-0"

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

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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS

CITY OF STAUNTON - VIRGINIA

HVAC PLAN

JOB NO.
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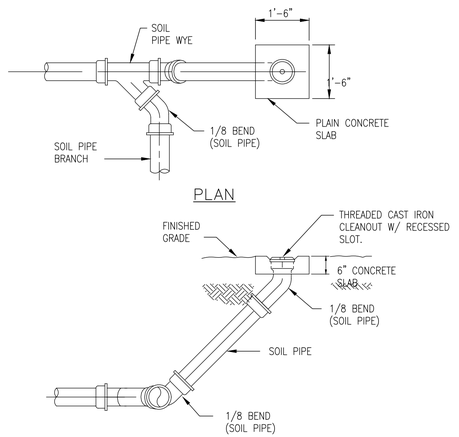
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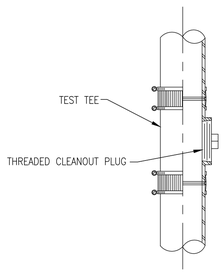
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LEGEND

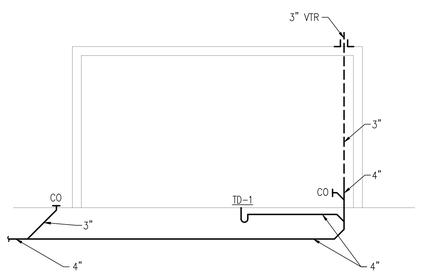
	DEMOLITION OF EXISTING PIPING		GATE VALVE	ADA	AMERICANS WITH DISABILITIES ACT
	EXISTING DOMESTIC COLD WATER PIPING		BALL VALVE	AD	ACCESS DOOR
	EXISTING DOMESTIC HOT WATER PIPING		STRAINER	O.D.	OVERFLOW DRAIN
	EXISTING DOMESTIC HOT WATER RETURN PIPING	C.V.	CHECK VALVE, HORIZONTAL SWING	PDI–	WATER HAMMER ARREST DESIGNATION
	EXISTING SANITARY VENT PIPING		UNION	RPZ	REDUCED PRESSURE ZONE BACK FLOW PREVENTER
SAN	EXISTING SANITARY PIPING		GAS COCK	V.T.R.	VENT THROUGH ROOF
W	EXISTING WASTE PIPING	BC	BALANCING COCK	WCO	WALL CLEAN OUT
ST	EXISTING STORM PIPING		DRAIN VALVE	P–1A	PLUMBING FIXTURE DESIGNATION
	DOMESTIC COLD WATER PIPING	WHA	WATER HAMMER ARRESTOR		
	DOMESTIC HOT WATER PIPING		THERMOMETER	S/1	WASTE AND VENT RISER DIAGRAM
	DOMESTIC HOT WATER RETURN PIPING		PRESSURE GAUGE	W/1	WATER RISER DIAGRAM
	SANITARY VENT PIPING		UNION COUPLING		
SAN	SANITARY PIPING	P.G.	PIPE GUIDE		CONNECT NEW TO EXISTING SERVICE
SAN	SANITARY PIPING BELOW	P.A.	PIPE ANCHOR		REMOVE EXISTING TO THIS POINT
W	WASTE PIPING		"P" TRAP		EXISTING SPRINKLER PIPING
W	WASTE PIPING BELOW		PRESSURE RELIEF VALVE		SPRINKLER PIPING
ST	STORM PIPING				PENDENT TYPE SPRINKLER HEAD
PD	PUMP DISCHARGE	WH	WALL HYDRANT		UPRIGHT TYPE SPRINKLER HEAD
G	GAS PIPING	HB	HOSE BIBB		FIRE DEPARTMENT CONNECTION TO WALL
	PIPE TURNING UP		FLOOR CLEAN OUT		OPEN STEM & YOKE VALVE
	PIPE TURNING DOWN	C.O.	CLEAN OUT	FS	FLOW SWITCH
	DIRECTION OF FLOW IN PIPE	A.P.	ACCESS PANEL	TS	TAMPER SWITCH
	SLOPE PIPE IN DIRECTION OF FLOW				



1 **TYPICAL CLEANOUT DETAIL**
SCALE: NONE



2 **NO–HUB CLEAN OUT**
SCALE: NONE



3 **WASTE & VENT RISER DIAGRAM**
NO SCALE

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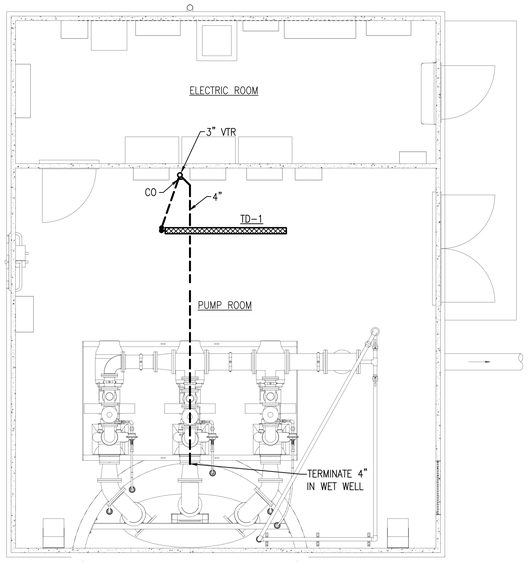
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STAUNTON CROSSING ONSITE WATER AND SEWER EXTENSIONS
CITY OF STAUNTON - VIRGINIA
PLUMBING LEGEND, ABBREVIATIONS, SCHEDULES AND DETAILS

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N

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



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

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CITY OF STAUNTON - VIRGINIA

PLUMBING PLAN

JOB NO.
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