





United States Department of Agriculture  
Forest Service

VIRGINIA  
SMYTH COUNTY

REGION 8 SOUTHERN REGION  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA

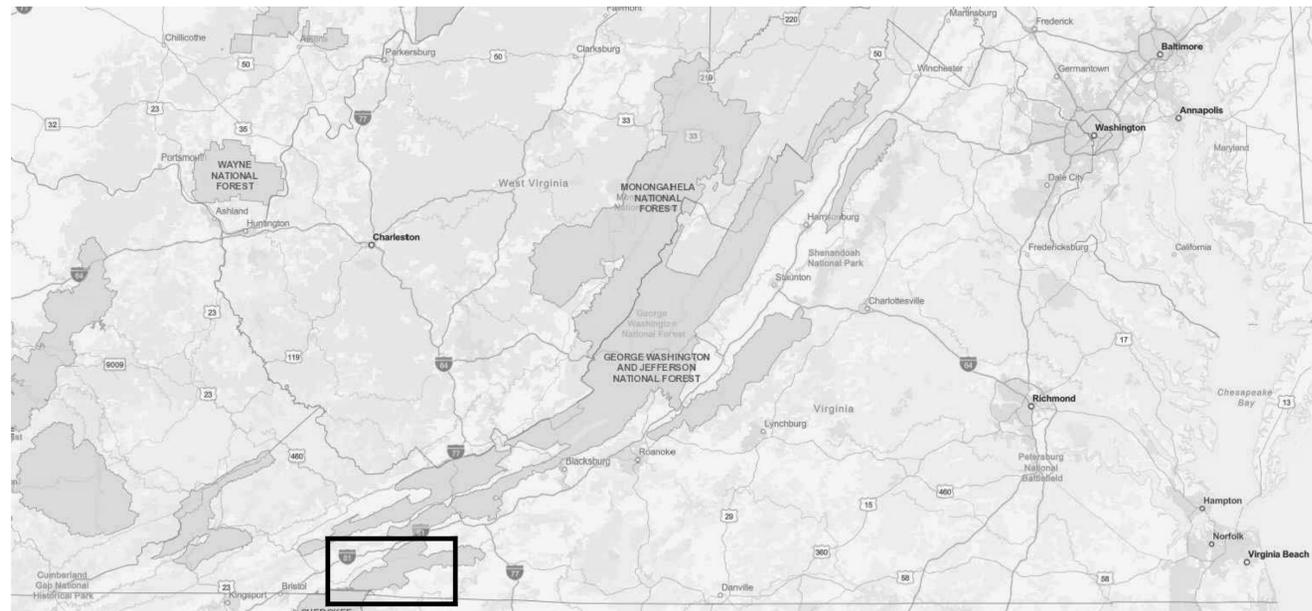
# GRINDSTONE RECREATION AREA WASTEWATER SYSTEM REPLACEMENT DESIGN CONTRACT NUMBER 12445122C0026

SHEET INDEX

- DEQ COVER SHEET
- G-100 - COVER SHEET
- G-101 - GENERAL NOTES
- G-102 - GENERAL NOTES
- G-103 - EROSION & SEDIMENT CONTROL NOTES
- C-100 - COLLECTION SYSTEM DEMOLITION
- C-200 - EROSION & SEDIMENT CONTROL
- C-300 - SANITARY SEWER 1 DESIGN
- C-301 - SANITARY SEWER 2 & 3 DESIGN
- C-302 - SANITARY SEWER 4, 5, & 6 DESIGN
- C-400 - TREATMENT SYSTEM AND DRAIN FIELD
- C-500 - DECOMMISSIONING OF LAGOONS
- C-600 - SANITARY SEWER DETAILS
- C-600.1 - SANITARY SEWER DETAILS
- C-600.2 - SANITARY SEWER DETAILS
- C-601 - TREATMENT DETAILS
- C-602 - TREATMENT DETAILS
- C-603 - TREATMENT DETAILS
- C-604 - AX20 & AX100 TANK DETAILS
- C-605 - EROSION AND SEDIMENT CONTROL DETAILS
- C-700 - OVERALL DRAINAGE MAPS
- C-701 - PRE & POST DRAINAGE MAPS
- C-702 - VIRGINIA RUNOFF REDUCTION METHOD MAP
- C-703 - VIRGINIA RUNOFF REDUCTION METHOD MAP
- E-100 - CONTROL PANEL DETAILS
- E-101 - CONTROL PANEL DETAILS

LEGEND

- |                              |   |
|------------------------------|---|
| <b>EXISTING</b>              | <b>PROPOSED</b>                             |
| IPF IRON PIN FOUND           | IPF IRON PIN SET                            |
| MON MONUMENT FOUND           | CLEANOUT                                    |
| ⊕ ELECTRIC POLE              | DRAIN PIPE                                  |
| ⊕ TELEPHONE PEDESTAL         | WATER LINE                                  |
| ⊕ WATER METER                | ⊕ SANITARY MANOLE                           |
| ⊕ WATER VALVE                | SS SANITARY SEWER LINE                      |
| ⊕ WATER MANHOLE              | --- CONSTRUCTION LIMITS                     |
| ⊕ FIRE HYDRANT               | --- CHAINLINK FENCE                         |
| ⊕ YARD HYDRANT               | --- SILT FENCE                              |
| ⊕ STORM MANHOLE              | ---3700 PROPOSED 10' CONTOUR                |
| ⊕ SITE POWER                 | ---3702 PROPOSED 2' CONTOUR                 |
| ⊕ TELEPHONE POLE             | CONCRETE                                    |
| ⊕ EDGE OF PAVEMENT           | RIPPRAP                                     |
| ⊕ EDGE OF GRAVEL             | DITCH/SWALE                                 |
| ⊕ EDGE OF WATER              | CE TEMP. STONE CONSTRUCTION ENTRANCE (3.02) |
| ⊕ BENCHMARK                  | SF SILT FENCE (3.05)                        |
| ⊕ SIGN                       | DV DIVERSION (3.12)                         |
| ⊕ EDGE OF WOODS              | ST TEMPORARY SEDIMENT TRAP (3.13)           |
| ⊕ FENCE                      | SCC STORMWATER CONVEYANCE CHANNEL (3.17)    |
| OH E OVERHEAD ELECTRIC       | LS LEVEL SPREADER (3.21)                    |
| UG T UG TELEPHONE LINE       | TS TEMPORARY SEEDING (3.31)                 |
| UG E UG ELECTRIC LINE        | PS PERMANENT SEEDING (3.32)                 |
| W UG WATER LINE              | MU MULCHING (3.35)                          |
| ---3700 EXISTING 10' CONTOUR | TO BE REMOVED OR DEMOLISHED                 |
| ---3702 EXISTING 2' CONTOUR  |   |
| CONCRETE                     |   |
| CULVERT                      |   |



PROJECT LOCATION MAP  
NOT TO SCALE



TRAVEL MAP  
NOT TO SCALE

TRAVEL DIRECTIONS

FROM THE SMYTH COUNTY PUBLIC LIBRARY MARION AT 118 S SHEFFEY ST, MARION, VA, 24354, HEAD NORTHWEST ON S SHEFFEY ST TOWARD W TOWN ST FOR 300 FT. CONTINUE ON US 11 S. THEN TAKE RIVERSIDE RD AND WHITETOP RD TO LAUREL VALLEY RD AND DESTINATION WILL BE TO YOUR RIGHT.

PROJECT SITE APPROXIMATE LATITUDE N 36.688282 AND LONGITUDE W 81.539877

GENERAL NOTES:

- TAX ID: JEFFERSON NATIONAL FOREST
- ADDRESS: 1946 LAUREL VALLEY ROAD, TROUTDALE, VA 24378.
- ZONED: C/R-P CONSERVATION/RECREATION-PUBLIC
- CURRENT USE: NATIONAL FOREST/ CAMPGROUND  
PROPOSED USE: NATIONAL FOREST/ CAMPGROUND
- THE SCOPE OF THIS PLAN SHALL INCLUDE THE DEMOLITION OF THE EXISTING SANITARY SEWER SYSTEM, AND DEMOLITION & DECOMMISSIONING OF EXISTING LAGOON SYSTEM, AND INSTALLATION OF NEW SEWER, DRAINFIELD, AND ASSOCIATED GRADING AND EROSION CONTROL. THE SUBJECT PROPERTY IS LOCATED IN NATIONAL FORESTS LANDS. A TOTAL OF 6.83 ACRES WILL BE GROUND DISTURBANCE AS A RESULT OF CONSTRUCTION ACTIVITIES.

EARTHWORK VOLUMES

LAGOON  
TOTAL CUT = 6160 CU YD  
TOTAL FILL = 5029 CU YD  
NET = 1131 CY YD OF CUT

DRAIN FIELD  
TOTAL CUT = 409 CU YD  
TOTAL FILL = 1544 CY YD  
NET = 1135 CY YD OF FILL  
(EXCESS FILL TO BE USED AT LAGOON SITE TO EVEN EARTHWORK OUT)

**REVIEWED BY:**  
VACANT  
FOREST ENGINEER / FACILITIES PROGRAM MANAGER  
GREGG SLEZAK  
ENGINEERING STAFF OFFICER  
EDWARD WRIGHT  
DISTRICT RANGER

**RECOMMENDED BY:**  
KIMBERLY BARNETT  
REGIONAL WATER / WASTEWATER PROGRAM MANAGER  
JOBY TIMM  
FOREST SUPERVISOR

**APPROVED BY:**  
BRADLEY ASHER  
REGIONAL DIRECTOR OF ENGINEERING

DATE \_\_\_\_\_  
DATE \_\_\_\_\_  
DATE \_\_\_\_\_  
DATE 7/25/25  
DATE \_\_\_\_\_  
DATE \_\_\_\_\_

VIRGINIA CERTIFIED RESPONSIBLE LAND DISTURBER

NAME - PRINTED SIGNATURE DATE  
PHONE # COMPANY  
ADDRESS

THE ENGINEER AND/OR SURVEYOR TAKES NO RESPONSIBILITY FOR THE LOCATION OR ACCURACY OF THE UTILITIES AS SHOWN HEREON OR ANY UTILITIES WITHIN THE PROJECT THAT MAY NOT BE SHOWN HEREON. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE UTILITY COMPANIES TO SEE IF ANY UTILITIES EXIST WITHIN THE AREA OF THE PROJECT BEFORE ANY CONSTRUCTION BEGINS. ANY COST INCURRED BY DAMAGING ANY UTILITY WITHIN THE PROJECT SHALL BE AT THE EXPENSE OF THE CONTRACTOR.

48 WORKING HOURS PRIOR TO STARTING THE WORK, THE CONTRACTOR SHALL CALL MISS UTILITY AT PHONE NUMBER 811 AND ADVISE THE NATURE AND LOCATION OF THE WORK.



**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA, 24501

ENVIRONMENTAL  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
GEO-TECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

COVER SHEET  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW



FINAL  
PLAN SET  
DESIGN CONTRACT  
NUMBER  
12445122C0026

HURT & PROFFITT  
SHEET NO. G-100  
REV. ---

NO.	DATE	COMMENTS
3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

THIS SHEET IS INTENDED TO BE REPRODUCED AT A DIFFERENT SIZE THAN INTENDED ON THIS SHEET. A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.

**GENERAL NOTES:**

- 1. PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR SHALL MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED AND ALL BONDS OR FEES HAVE BEEN PAID. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL APPROVED PLANS AND OTHER APPROVED DOCUMENTS.
- 2. EXISTING SITE FEATURES AND UTILITIES SHOWN HAVE BEEN BASED UPON SURVEYS AND OTHER SOURCES BELIEVED TO BE RELIABLE. THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION SHOWN IS NOT GUARANTEED. THE CONTRACTOR SHALL VERIFY ALL INFORMATION BEFORE COMMENCING WORK.
- 3. THE CONTRACTOR SHALL NOTIFY MISS UTILITY AT 811 A MINIMUM OF 72 HOURS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
- 4. THE CONTRACTOR SHALL MAINTAIN TRAFFIC PATTERNS AND SAFETY AT ALL TIMES ON SITE AND ON ADJACENT ROADWAYS.
- 5. NUMERICALLY WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE. NO SCALING OF DIMENSIONS TO BE ACCEPTED.
- 6. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL SITE IMPROVEMENTS AND UTILITIES. ALL DISCREPANCIES SHALL BE IDENTIFIED TO CONTRACTING OFFICER (CO) IN WRITING.
- 7. THE CONTRACTOR SHALL MAINTAIN A COPY OF THE DRAWINGS AND SPECIFICATIONS AT THE SITE AT ALL TIMES DURING THE CONSTRUCTION.
- 8. ALL WORK PERFORMED AND MATERIALS SUPPLIED SHALL CONFORM TO THE PLANS AND PROJECT SPECIFICATIONS. IN THE EVENT OF CONFLICT AMONG ANY OF THESE STANDARDS, SPECIFICATIONS OR PLANS, THE MOST STRINGENT SHALL GOVERN.
- 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES WHO MIGHT HAVE UTILITY LINES ON OR ABOUT THE PREMISES, OR WHO MIGHT BE AFFECTED BY CONSTRUCTION. THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEYS. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO CONTACT THE APPROPRIATE UTILITY COMPANIES. NO COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE OR ACTIVITIES.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING AIRBORNE DUST DURING CONSTRUCTION AND FOLLOWING CONSTRUCTION UNTIL SUCH TIME AS PROPER VEGETATION IS REESTABLISHED.
- 11. THE TOPOGRAPHICAL INFORMATION SHOWN HEREON WAS PREPARED FROM AN ACTUAL FIELD SURVEY PERFORMED BY HURT & PROFFITT, INC. IN NOVEMBER 2022. DATUM NAD83 (HORIZONTAL); NAVD98 (VERTICAL)
- 12. ALL CLEARED MATERIALS NOT DESIGNATED BY GOV TO REMAIN SHALL BE REMOVED FROM SITE AND DISPOSED OF LEGALLY AT THE CONTRACTOR'S EXPENSE.
- 13. THE CONTRACTING OFFICER RETAINS THE RIGHT OF FIRST REFUSAL FOR ANY SALVAGED OR ITEMS DESIGNATED FOR DEMOLITION.
- 14. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES THAT ARE TO REMAIN IN PLACE. ANY DAMAGED UTILITY LINE SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- 15. ALL UNSUITABLE MATERIAL AND OTHER CONSTRUCTION DEBRIS SHALL BE HAULED OFF SITE AND DISPOSED OF LEGALLY.
- 16. PRIOR TO DISCONNECTION AND/OR RELOCATION OF UTILITY SERVICES, CONTRACTOR TO CONTACT CONTRACTING OFFICER'S REPRESENTATIVE TO COORDINATE SUCH ACTIVITIES WITH UTILITY COMPANIES.
- 17. CONTRACTOR SHALL COMPLY WITH ALL OSHA STANDARDS AND REGULATIONS. CONTRACTOR TO PROVIDE SITE SPECIFIC SAFETY PLAN.
- 18. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL CONFINED SPACE ENTRY REGULATIONS.
- 19. ALL EXCAVATION SHALL BE UNCLASSIFIED. CONTRACTOR IS RESPONSIBLE FOR EXCAVATING ALL MATERIALS INCLUDING ROCK.
- 20. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION, SMYTH COUNTY, AND OTHER GOVERNING BODIES FOR PERMITS AND INSPECTIONS AS REQUIRED.
- 21. CONSTRUCTION LIMITS SHALL INCLUDE ALL DISTURBED AREAS. ALL DISTURBED AREAS SHALL BE SEEDED AND PROVIDED WITH EROSION CONTROL DURING AND AT THE END OF CONSTRUCTION.
- 22. ALL SLOPES STEEPER THAN 2:1 SHALL BE PROTECTED WITH VDOT EC-2 EROSION CONTROL MATTING FROM TOP OF SLOPE TO TOE OF SLOPE. THE CONTRACTOR SHALL ENSURE THE PROPER INSTALLATION OF SUCH MEASURES IN ACCORDANCE WITH VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS AND THE MANUFACTURER'S WRITTEN RECOMMENDATIONS.
- 23. MAINTAIN ALL OVERHEAD AND UNDERGROUND ELECTRICAL, TELEPHONE, WATER, AND GAS SERVICES AND ALL OTHER UTILITIES DURING ENTIRE CONSTRUCTION PERIOD. ANY UTILITY OUTAGES COORDINATED IN ADVANCE WITH CONTRACTING OFFICER'S REPRESENTATIVE.
- 24. THE CONTRACTOR SHALL MAINTAIN POSITIVE SURFACE DRAINAGE DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL PUMPS AND PIPING REQUIRED TO MAINTAIN POSITIVE SURFACE DRAINAGE.
- 25. THE CONTRACTOR SHALL BE FULLY LIABLE FOR REPAIR OF ANY DAMAGES ON PUBLIC OR PRIVATE PROPERTY CAUSED BY HIS CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL REPLACE ALL DISTURBED SURFACES IN KIND, AT NO ADDITIONAL COST TO THE OWNER.
- 26. ALL EXISTING SIGNS, CURBS, GUARDRAIL FENCING, STONE, STRUCTURES, LANDSCAPING, PLANTERS, SHRUBS, AND OTHER PHYSICAL IMPROVEMENTS TEMPORARILY REMOVED BY THE CONTRACTOR SHALL BE REPLACED TO ORIGINAL CONDITION, TO THE SATISFACTION OF THE CO.
- 27. ALL PROPERTY PINS OR MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY A LAND SURVEYOR LICENSED IN THE COMMONWEALTH OF VIRGINIA AT THE CONTRACTOR'S EXPENSE.
- 28. THE CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION FROM PROPERTY OWNERS FOR USE OF ANY ACCESS POINTS OTHER THAN THOSE LOCATED WITHIN RIGHT-OF-WAYS AND OBTAINED EASEMENTS. WRITTEN PERMISSION SHALL CONTAIN CONDITIONS FOR USE AND RESTORATION AGREEMENTS BETWEEN PROPERTY OWNER AND CONTRACTOR. COPIES OF WRITTEN PERMISSION SHALL BE PROVIDED TO THE CO PRIOR TO USING OTHER ACCESS POINTS.
- 29. TREES DESIGNATED TO REMAIN SHALL BE COORDINATED WITH CONTRACTING OFFICER'S REPRESENTATIVE PRIOR TO CONSTRUCTION ACTIVITIES. TREES AND SHRUBS TO REMAIN IN PLACE SHALL BE ROPED OFF DURING GRADING OPERATIONS TO KEEP EQUIPMENT AWAY FROM ROOT SYSTEMS. THE CONTRACTOR SHALL MAKE SELECT CUTTING OF TREES, TAKING THE SMALLEST TREES FIRST, THAT ARE MANDATORY FOR CONSTRUCTION. TREES NOT REQUIRING REMOVAL FOR INSTALLATION SHALL BE PROTECTED AND REMAIN UNDISTURBED.

**CONSTRUCTION SEQUENCE:**

- 1. INSTALL TRAFFIC CONTROL DEVICES PRIOR TO WORK IN VDOT RIGHT-OF-WAY.
- 2. INSTALL E&S CONTROLS AS REQUIRED PRIOR TO STARTING WORK.
- 3. INSTALL NEW SANITARY SEWER AND APPURTENANCES.
- 4. INSTALL NEW WWTP AND APPURTENANCES.
- 5. PRESSURE TEST NEW SANITARY SEWER LINES AND COMPLETE CCTV INSPECTION.
- 6. PERFORM SYSTEM START UP OF WWTP.
- 7. DECOMMISSION EXISTING WWTP SITE.
- 8. RESTORE ALL DISTURBANCES.

**VDOT NOTES:**

- 1. ALL WORK SHALL COMPLY WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS INCLUDING BUT NOT LIMITED TO: OSHA, NESC, DOT, ETC. GENERAL NOTES APPLY TO ALL DRAWINGS.
- 2. ALL WORK IN PUBLIC ROADS SHALL BE PERFORMED IN ACCORDANCE WITH THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE STANDARDS DATED 2016, REVISED MAY 2020, AND THE 2020 ROAD AND BRIDGE SPECIFICATIONS. ALL WORK IN PUBLIC ROADS AND RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL 2011 EDITION, REVISION 2: SEPTEMBER 1, 2019.
- 3. A VDOT LAND USE PERMIT IS REQUIRED FOR WORK PERFORMED WITHIN STATE RIGHT-OF-WAY. ACTIVITIES PERFORMED WITHIN STATE RIGHT-OF-WAY SHALL BE LIMITED TO THOSE EXPRESSLY COVERED BY THE PERMIT WORK DESCRIPTION.
- 4. PERMISSIONS GRANTED BY VDOT LAND USE PERMIT APPLY ONLY TO WORK PERFORMED INSIDE STATE RIGHT-OF-WAY AND IN NO WAY GRANTS PERMISSION FOR WORK TO BE PERFORMED ON PRIVATELY OWNED PROPERTY. CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE PERMISSION OF PRIVATE PROPERTY OWNERS WHEN PERFORMING WORK OUTSIDE OF STATE RIGHT-OF-WAY, INCLUDING ACTIVITIES PERFORMED WITHIN PRESCRIPTIVE EASEMENTS.
- 5. CONTRACTOR SHALL MAINTAIN APPROVED COPIES OF ALL PROJECT RELATED PERMITS AND REFERENCED APPROVED PLANS ON-SITE AT ALL TIMES.
- 6. VDOT LAND USE SECTION SHALL BE NOTIFIED 5 DAYS PRIOR TO INITIATING WORK WITHIN STATE RIGHT-OF-WAY. BRISTOL DISTRICT VDOT LAND USE SECTION POINTS OF CONTACT ARE LISTED BELOW BY COVERAGE AREA:  
- BRISTOL: ANDY FOWLER 276-228-2153
- 7. PRIOR TO INITIATING WORK WITHIN STATE RIGHT-OF-WAY, THE CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION CONFERENCE WITH CONTRACTING OFFICER, ENGINEER, LOCALITY, SUBCONTRACTORS, AND VDOT.
- 8. MAINTENANCE OF TRAFFIC (MOT) PLAN(S) SHALL BE PROVIDED BY THE CONTRACTOR FOR VDOT REVIEW PRIOR TO THE ISSUANCE OF A LAND USE PERMIT BY VDOT.
- 9. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING VDOT TRAFFIC OPERATIONS CENTER (540-375-0170) UPON ENTERING AND EXITING THE ROADWAY.
- 10. CONTRACTOR SHALL PROVIDE ALL NECESSARY SIGNS, FLAG PERSONS AND OTHER DEVICES (LIGHTS, BARRICADES, ETC.) PROVIDING PROTECTION FOR TRAFFIC AND WORKERS IN ACCORDANCE WITH THE VIRGINIA WORK AREA PROTECTION MANUAL 2011 EDITION, REVISION 2: SEPTEMBER 1, 2019 OR AS DIRECTED BY THE AREA LAND USE ENGINEER.
- 11. IMPLEMENTATION OF TEMPORARY LANE CLOSURES MUST BE ENTERED INTO THE VDOT LANE CLOSURE ADVISORY MANAGEMENT SYSTEM (LCAMS) AND VTRAFFIC A MINIMUM OF ONE (1) WEEK PRIOR TO THE PLANNED EXECUTION OF LANE CLOSURE ACTIVITIES ON STATE MAINTAINED HIGHWAYS ROUTES 603 AND ALL LIMITED ACCESS AS NOTED ON THE PLANS. THE PERMITTEE OR THEIR CONTRACTOR(S) MAY ENTER THEIR REQUESTS DIRECTLY OR PROVIDE WRITTEN EMAIL REQUESTS TO THE VDOT REGIONAL OPERATIONS CENTER AT: BRISTOL.SMARTTRAFFICCENTER@VDOT.VIRGINIA.GOV
- 12. CONTRACTOR SHALL ENSURE THAT ALL SIGNS ARE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE VIRGINIA WORK AREA PROTECTION MANUAL.
- 13. FOR ALL ACTIVITIES PERFORMED UNDER THE AUSPICES OF A VDOT LAND USE PERMIT INVOLVING THE INSTALLATION, MAINTENANCE, AND REMOVAL OF VDOT TRAFFIC CONTROL DEVICES, AT LEAST ONE INDIVIDUAL SHALL BE ON-SITE WHO IS VERIFIED BY VDOT IN BASIC WORK ZONE TRAFFIC CONTROL. AN INDIVIDUAL VERIFIED BY VDOT IN INTERMEDIATE WORK ZONE TRAFFIC CONTROL SHALL BE ON-SITE TO PROVIDE SUPERVISION DURING WORK ZONE ADJUSTMENTS OR CHANGES TO TRAFFIC CONTROL DUE TO FIELD CONDITIONS. INDIVIDUALS SHALL HAVE THEIR VERIFICATION CARDS WITH THEM WHILE ON THE WORK SITE.
- 14. UNLESS OTHERWISE APPROVED IN WRITING BY THE VDOT AREA LAND USE ENGINEER, ALL WORK IN PUBLIC ROADS CLASSIFIED AS "ARTERIAL" OR "COLLECTOR" SHALL BE LIMITED TO THE HOURS OF 9:00 AM TO 3:00 PM, MONDAY THROUGH FRIDAY, IN THE BRISTOL DISTRICT. PUBLIC ROADS CLASSIFIED AS "LOCAL" ROADS SHALL HAVE UNRESTRICTED WORK HOURS AND DAYS.
- 15. PERMITTED NON-EMERGENCY WORK WILL NOT BE ALLOWED ON PUBLIC ROADS CLASSIFIED AS "ARTERIAL" OR "COLLECTOR" FROM NOON ON THE PRECEDING WEEKDAY THROUGH THE FOLLOWING OBSERVED HOLIDAYS: NEW YEAR'S DAY, MLK DAY, GEORGE WASHINGTON'S BIRTHDAY, JUNETEENTH, COLUMBUS, VETERANS DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, AND CHRISTMAS DAY.
- 16. WORK IN THE VICINITY OF SCHOOL ENTRANCES AND ON SCHOOL ROADS SHOULD BE AVOIDED DURING THE HOURS OF ADMISSION AND DISMISSAL SO AS NOT TO DISRUPT SCHOOL TRAFFIC.
- 17. NO EQUIPMENT OR MATERIALS SHALL BE STORED ON ROAD SURFACES OR ALLOWED TO OCCUPY THE CLEAR ZONE DURING PERIODS OF INACTIVITY. SEE THE VIRGINIA WORK AREA PROTECTION MANUAL 2011 EDITION, REVISION 2: SEPTEMBER 1, 2019 (APPENDIX A, PAGE A-4) FOR CLEAR ZONE DEFINITIONS.
- 18. EXCAVATION MATERIALS SHALL BE STORED AWAY FROM PAVED ROADWAYS. ALL SPILLED MATERIALS SHALL BE IMMEDIATELY REMOVED FROM THE TRAVEL SURFACES AND SHOULDERS.
- 19. MUNICIPAL ROAD SIGNS, DELINEATORS, GUARDRAILS, ETC. SHALL NOT BE REMOVED WITHOUT PRIOR WRITTEN PERMISSION FROM THE APPROVING AUTHORITY.
- 20. DURING CONSTRUCTION, ALL VDOT DRAINAGE STRUCTURES SHALL BE PROTECTED AGAINST SILTATION BY SEDIMENT TRAPPING DEVICES, PROPERLY INSTALLED IN ACCORDANCE WITH VDOT STANDARDS AND SPECIFICATIONS AND VIRGINIA DEPARTMENT OF ENVIRONMENTAL (DEQ) STANDARDS. SEDIMENT TRAPPING DEVICES SHALL BE MAINTAINED UNTIL UPSTREAM STABILIZATION HAS BEEN ADEQUATELY ACHIEVED.
- 21. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL CONFORM TO THE CONTRACT DOCUMENTS INCLUDING APPROVED PERMITS, (VDOT) 2016 ROAD AND BRIDGE STANDARDS, REVISED MAY 2020, 2020 ROAD AND BRIDGE SPECIFICATIONS, AND 1992 DEQ VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK - THIRD EDITION.
- 22. CONTRACTOR IS RESPONSIBLE FOR CONTACTING MISS UTILITY (1-800-552-7001) TO IDENTIFY AND MARK THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES.
- 23. CONTRACTOR SHALL CONTACT VDOT TRAFFIC ENGINEERING SECTION (SMYTH COUNTY: (276-525-6460) A MINIMUM OF 7 DAYS PRIOR TO COMMENCEMENT OF INSTALLATION ACTIVITIES WITHIN 1,000 FEET OF SIGNALIZED INTERSECTIONS, FLASHING SIGNS, OR OTHER VDOT ELECTRICAL FACILITIES. THIS INCLUDES EXCAVATION, TRENCHING, PLOWING, OR BORING.

**SANITARY NOTES:**

- 1. ALL SANITARY SEWER LINES TO BE INSTALLED PER PLANS AND SPECIFICATIONS AT THE CONTRACTORS EXPENSE.
- 2. ANY CHANGES TO THE PLANS MUST BE APPROVED IN WRITING BY THE CONTRACTING OFFICER & IN COOPERATION W/ PERMITTING AUTHORITY.
- 3. ANY CRUSHED, OVAL SHAPED, OR OTHERWISE UNACCEPTABLE PIPE WILL BE REPLACED BY THE CONTRACTOR AT CONTRACTORS EXPENSE.
- 4. SANITARY SEWER TRENCH SHALL BE PER SHEET C-600
- 5. CONTRACTOR TO FIELD VERIFY ALL INVERTS AND CONNECTION POINTS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. IF POTENTIAL CONFLICTS ARE DETECTED, CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER IMMEDIATELY.
- 5. MAINTAIN 18" OF VERTICAL SEPARATION BETWEEN STORM SEWER LINES, WATER LINES AND SANITARY SEWER LINES PER SHEET C-600.
- 7. CONTRACTOR MUST MAINTAIN 10" HORIZONTAL SEPARATION BETWEEN WATER AND SANITARY SEWER LINES AT ALL TIMES.
- 8. DUCTILE IRON PIPE SHALL BE CEMENT LINED. ALL DUCTILE IRON PIPE INSTALLED BELOW GROUND OR IN CASING SHALL HAVE AN EXTERIOR COAT OF BITUMINOUS MATERIAL.
- 9. ALL LATERAL REPLACEMENTS TO BE APPROVED BY COR PRIOR TO INSTALLATION.
- 10. ALL PROPOSED SEWER SERVICE LATERALS SHALL BE 6" SDR 35 PVC FROM THE WYE TO THE CLEANOUT UNLESS OTHERWISE NOTED.
- 11. ALL LATERALS AND CLEANOUTS ARE TO BE REPLACED IN EXISTING LOCATION. ANY FIELD CHANGES MUST BE APPROVED IN WRITING BY CONTRACTING OFFICER.
- 12. ALL MANHOLES WILL BE CONCRETE UNLESS OTHERWISE NOTED.
- 13. CONTRACTOR SHALL VERIFY THE LOCATION AND ACTIVITY OF ALL LATERALS PRIOR TO CONNECTING THE EXISTING SEWER MAIN. THE CONTRACTOR SHALL PROPERLY REMOVE UNLESS OTHERWISE NOTED IN-ACTIVE SEWER LATERALS.
- 14. ALL EXISTING SURFACE IMPROVEMENTS DAMAGED DURING INSTALLATION OF SEWER LINES AND LATERALS SHALL BE REPLACED IN LIKE KIND AT CONTRACTORS EXPENSE.
- 15. LIMITS OF PAVEMENT DISTURBANCE IN PAVEMENT IS DEFINED BY THE LIMITS OF THE UTILITY TRENCH SEE DETAILS ON SHEET C-600.
- 16. NEW BUILDING LATERALS SHALL BE CONNECTED WITHIN 5' OF BUILDING, WITH CONNECTIONS MADE AT NEW MANHOLE OR NEW CLEANOUTS.
- 17. MIN. 3' COVER UNLESS OTHERWISE NOTED.
- 18. CLEARING LIMITS MAX. WIDTH SEE DETAILS ON C-600)

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED  
HANDP.COM  
LYNCHBURG, VA 24501  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES  
434-847-7796  
2524 LANGHORNE ROAD  
LP

**GENERAL NOTES**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW

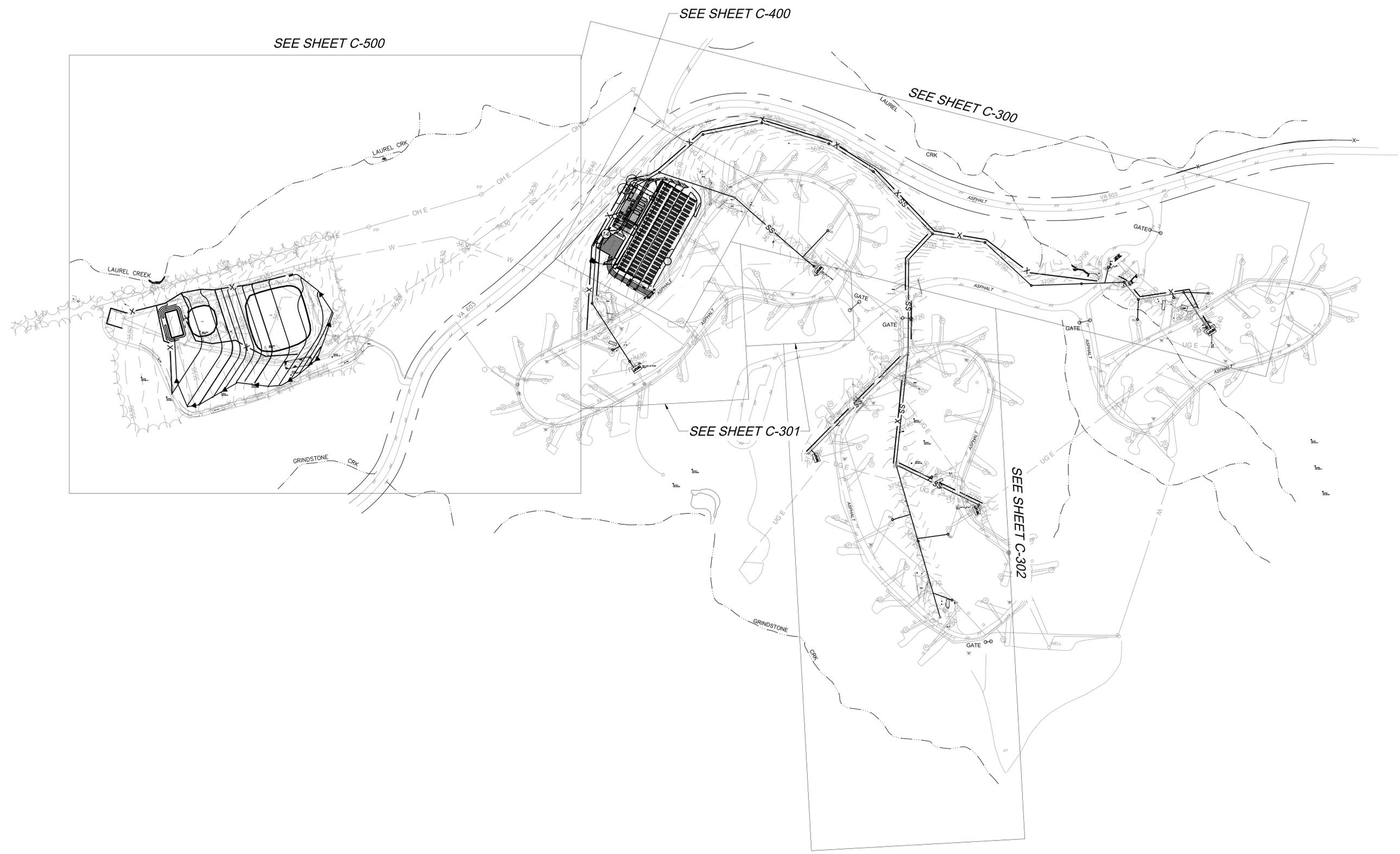


**FINAL PLAN SET**  
**DESIGN CONTRACT NUMBER**  
**12445122C0026**

**HURT & PROFFITT**  
SHEET NO. G-101  
REV. ---

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

THIS SHEET IS INTENDED TO BE REPRODUCED AT 24X36". REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



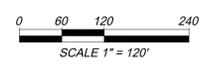
SEE SHEET C-500

SEE SHEET C-400

SEE SHEET C-300

SEE SHEET C-301

SEE SHEET C-302



**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

HP

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HANDP.COM  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**GENERAL NOTES**

GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	03/06/2023
DRAWN BY:	DBM
CHECKED BY:	MDW



**FINAL PLAN SET**

**DESIGN CONTRACT NUMBER**  
12445122C0026

**HURT & PROFFITT**

SHEET NO.	REV.
G-102	---

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

THIS SHEET IS INTENDED TO BE REPRODUCED AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET. J:\11.22.2025 - 4.65pm - 2.020202021254\Engineering\CAD\Sheeting\Sheet.dwg

### EROSION AND SEDIMENT CONTROL NARRATIVE

**PROJECT DESCRIPTION:** THE PROJECT IS LOCATED ALONG LAUREL VALLEY ROAD IN SMYTH COUNTY, VIRGINIA. THE SITE IS PART OF THE USDA-FS GRINDSTONE RECREATION AREA. THERE ARE TWO DISTINCT AREAS OF DISTURBANCE FOR THIS PROJECT. THE FIRST SITE CONSISTS OF 3 ACRES AND HAS AN OPERATING WASTEWATER SYSTEM WHICH HAS 2 OPEN LAGOONS AND A GRASS AREA SURROUNDING THEM. THE LAGOONS WILL BE DEMOLISHED AS PART OF THIS PROJECT AND THE AREA WILL BE RESTORED TO A GENTLY SLOPING LAWN. THE SECOND SITE CONSISTS OF 1.33 ACRES AND IS LOCATED WITHIN THE RECREATION AREA IN A WOODED AREA. THIS AREA WILL BE CLEARED, AND A NEW SUB SURFACE WASTEWATER SYSTEM WILL BE INSTALLED. THE AREA WILL ULTIMATELY BE RESTORED TO A MOSTLY GRASSED AREA WITH A SMALL GRAVEL PARKING AREA. THE LINEAR UTILITY PORTION OF THE PROJECT WILL INCLUDE APPROXIMATELY 2.5 ACRES OF DISTURBANCE TO BE RESTORED PER THE RECLAMATION PLAN.

**EXISTING SITE CONDITIONS:** SITE ONE IS CURRENTLY GRASSED WITH EXISTING LAGOONS. THE SITE SLOPES TO THE NORTH AND SHEET FLOWS INTO BIG LAUREL CREEK. SITE TWO IS WOODED AND SHEET FLOWS INTO THE ADJACENT ROADSIDE DITCH ALONG LAUREL VALLEY ROAD.

**ADJACENT AREAS:** THE ADJACENT AREAS ARE COMPLETELY WOODED.

**CRITICAL AREAS:** DRAINAGE INTO BIG LAUREL CREEK, GRINDSTONE BRANCH AND THE EXISTING ROADSIDE DITCH WILL BE THE CRITICAL AREAS OF THE PROJECT.

**SOILS DESCRIPTION:** FROM THE WEB SOIL SURVEY, THE MAJORITY OF THE SOILS APPEAR TO BE ATKINS LOAM, TATE LOAM, AND THUNDER VERY COBBLY LOAM.

**EROSION CONTROL MEASURES:** ALL EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES ARE SHOWN ON THE PLANS AND ARE TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND THE VDOT ROAD AND BRIDGE STANDARDS MANUAL. IF THE MEASURES AND DEVICES SPECIFIED DO NOT EFFECTIVELY CONTROL EROSION AND SEDIMENT LOADING, ADDITIONAL MEASURES MAY BE REQUIRED BY THE E & S OFFICIAL AND/OR THE DESIGN ENGINEER.

- CONSTRUCTION ENTRANCE (STD. 3.02) - CONSTRUCTION ENTRANCE IS PROPOSED AT THE ENTRANCE TO THE SITE, AS SHOWN ON PLANS. WHERE THE ENTRANCE IS PROPOSED IN PAVED AREAS CONTRACTOR SHALL REMOVE ALL MUD, DIRT, AND DEBRIS PRIOR TO ENTERING THE PUBLIC RIGHT OF WAY. CONTRACTOR SHALL INSTALL ADDITIONAL STONE STABILIZATION AS NECESSARY TO PREVENT TRACKING ONTO THE EXISTING ROADWAY WITHIN THE LIMITS OF CONSTRUCTION.
- SILT FENCE (STD. 3.05) - WILL BE INSTALLED AS SHOWN ON THE PLANS TO PROTECT THE SITE AND ADJOINING PROPERTIES FROM SEDIMENT LOADING.
- TEMPORARY DIVERSION DIKE (STD. 3.09) - A RIDGE OF COMPACTED SOIL WILL BE USED TO DIVERT SEDIMENT-LADEN RUNOFF TO THE SEDIMENT BASIN DURING INITIAL GRADING OPERATIONS.
- LEVEL SPREADER (STD. 3.21) - AN EXCAVATED DEPRESSION CONSTRUCTED AT ZERO GRADE ACROSS A SLOPE THAT CONVERTS CONCENTRATED RUNOFF TO SHEET FLOW.
- TEMPORARY SEDIMENT TRAP (STD. 3.13) - A SMALL PONDING AREA FORMED BY CONSTRUCTING AN EMBANKMENT WITH A STONE OUTLET ACROSS A SWALE. IT IS USED TO DETAIN SEDIMENT LADEN RUNOFF FROM DRAINAGE AREAS LESS THAN 3 ACRES FOR ENOUGH TIME TO ALLOW MOST OF THE SUSPENDED SOLIDS TO SETTLE OUT.
- TEMPORARY SEEDING (STD. 3.31) - WILL BE INSTALLED WHENEVER CONSTRUCTION SCHEDULES DO NOT PERMIT PERMANENT SEEDING WITHIN THE OPTIMUM SEEDING DATES, AS SPECIFIED IN THE GENERAL NOTES, OR WITHIN SEVEN DAYS ON AREAS DISTURBED THAT WILL HAVE NO CONSTRUCTION ACTIVITY FOR 21 DAYS OR LONGER.
- PERMANENT SEEDING (STD. 3.32) - WILL BE INSTALLED WITHIN THE OPTIMUM SEEDING DATES, AS SPECIFIED IN THE GENERAL NOTES, OR WITHIN SEVEN DAYS ON AREAS WHICH ARE DISTURBED AND WILL HAVE NO CONSTRUCTION ACTIVITY FOR 21 DAYS OR LONGER. IF SIGNIFICANT EROSION OF SLOPE FACES OCCURS BEFORE THEY ARE ADEQUATELY STABILIZED, THE DAMAGED SLOPES SHALL BE REPAIRED AND STABILIZATION MATTING SHALL BE INSTALLED AS DIRECTED BY THE PROGRAM ADMINISTRATOR.
- MULCHING (STD. 3.35) - APPLICATION OF PLANT RESIDUES OR OTHER SUITABLE MATERIALS TO DISTURBED SURFACES TO PREVENT EROSION AND REDUCE OVERLAND FLOW VELOCITIES. FOSTER PLANT GROWTH BY INCREASING AVAILABLE MOISTURE AND PROVIDING INSULATION AGAINST EXTREME HEAT OF COLD.

**PERMANENT STABILIZATION:** THE GRADED AREA, CUT AND FILL SLOPES AND ANY OTHER DENUDED AREAS WILL BE SEEDD AS SOON AS CONSTRUCTION ALLOWS. SEE PERMANENT SEEDING SPECIFICATIONS AND TEMPORARY SEEDING SCHEDULE ON DETAIL SHEET.

**STORMWATER MANAGEMENT:**  
QUANTITY:  
SITE 1 - THE LAGOON AREA WILL SEE A DECREASE IN IMPERMEABLE AREA AND THE RESTORED SITE WILL RETAIN THE SAME DRAINAGE PATTERN OF SHEET FLOW INTO THE ADJACENT STREAM. INCLUDED CALCULATIONS SHOW THAT THE REDUCTION IN IMPERVIOUS AREA SATISFIES THE ENERGY BALANCE ANALYSIS. THEREFORE, THIS SITE MEETS 9VAC25-870-66-B.3 FOR CHANNEL PROTECTION. THE INCLUDED CALCULATIONS ALSO SHOW THAT THE POST DEVELOPED 10-YEAR FLOW IS REDUCED FROM A PREDEVELOPED PEAK OF 8.2 CFS TO 6.7 CFS FROM THE SITE. A PROPOSED STORMWATER CONVEYANCE CHANNEL CARRIES RUNOFF FROM A DIVERSION AND NEW TEMPORARY SEDIMENT TRAP TO BIG LAUREL CREEK. INCLUDED CALCULATIONS SHOW THAT THE CHANNEL IS ADEQUATE TO HANDLE THE 2 AND 10 YEAR POST DEVELOPED FLOW TO THE LIMITS OF ANALYSIS WHERE THE CHANNEL ENTERS BIG LAUREL CREEK WITH A CONTRIBUTING DRAINAGE AREA WHICH IS GREATER THAN 100 TIMES THE SITE. THEREFORE, THIS SITE MEETS 9VAC25-870-66-C.1 AND 3 FOR FLOOD PROTECTION.

SITE 2 - THE PROPOSED DRAIN FIELD AREA WILL RESULT IN AN INCREASE IN FLOW FROM THE SITE DUE TO THE CHANGE LAND USE FROM THE CLEARING OF THE FORESTED AREA. THE DRAIN FIELD SHEET FLOWS INTO A CHANNEL AND DISCHARGERS THROUGH A LEVEL SPREADER. THE LEVEL SPREADER SHEET FLOWS INTO EXISTING ROADSIDE DITCH. THIS IS IN COMPLIANCE WITH GM22-2012.3.305. THIS DRAINAGE AREA FLOWS INTO THE ROADSIDE DITCH ALONG LAUREL VALLEY ROAD. THIS CHANNEL FLOWS TO GRINDSTONE BRANCH WHERE THE OVERALL DRAINAGE AREA IS 100 TIMES LARGER THAN THE LIMITS OF DISTURBANCE OF THE SITE AT 1.33 AC. THE INCLUDED CALCULATIONS SHOW THAT THE CHANNEL IS ADEQUATE TO FLOW THE 2 YEAR PEAK RATE WITHOUT CAUSING EROSION. THEREFORE, THE SITE MEETS 9VAC25-870-66-B.1A FOR CHANNEL PROTECTION. THE CALCULATIONS ALSO SHOW THE ROADSIDE CHANNEL THAT CONFINES POST DEVELOPED 10 YEAR PEAK FLOW RATE. THEREFORE, THIS SITE MEETS 9VAC25-870-66-C.1 AND 3 FOR FLOOD PROTECTION.

**QUALITY:**  
THE INCLUDED VRRM SPREADSHEETS FOR BOTH SITE 1 AND 2 SHOW A TP LOAD REDUCTION REQUIRED OF -0.46 AND 0.46. THIS RESULTS IN A TOTAL TP LOAD REDUCTION REQUIRED FOR THE PROJECT OF 0.00 LBS. THEREFORE NO FURTHER WATER QUALITY MEASURES WILL BE NEEDED.

**MAINTENANCE:** SEE EROSION AND SEDIMENT CONTROL NOTES AND GENERAL NOTES ON CONSTRUCTION DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE DURING CONSTRUCTION, AND OWNER IS RESPONSIBLE FOR MAINTENANCE AFTER CONSTRUCTION. ALL EROSION CONTROL PRACTICES SHALL BE INSPECTED AFTER EACH SIGNIFICANT RAINFALL OR AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

**CALCULATIONS:** STORMWATER CALCULATIONS ARE ATTACHED.

### EROSION & SEDIMENT CONTROL MINIMUM STANDARDS

- MS-1 STABILIZATION** - PERMANENT OF 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 GRADED BUT WILL REMAIN DORMANT LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
- MS-2 STOCKPILES, WASTE & BORROW AREAS** - 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 BORROWS AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
- MS-3 PERMANENT VEGETATION** - 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 FIRST STEP MEASURES** - 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 EARTHEN STRUCTURE STABILIZATION** - STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES, AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
- MS-6 TRAPS & BASINS** - SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.
  - 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.
  - SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF 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 25 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 & FILL SLOPES** - CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN 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 STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED.
- MS-8 CONCENTRATED RUNOFF** - 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 WATER STEEPS** - WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
- MS-10 INLET PROTECTION** - ALL STORM SEWER INLETS THAT ARE MADE OPERATIONAL DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
- MS-11 CONVEYANCE CHANNEL/OUTLET PROTECTION** - 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 WATERCOURSE CONSTRUCTION** - 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 IF ARMORED BY NONERODIBLE COVER MATERIALS.
- MS-13 TEMPORARY STEAM CROSSING** - 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 OTHER WATERCOURSE REGULATIONS** - ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
- MS-15 BED & BANK STABILIZATION** - THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
- MS-16 UNDERGROUND UTILITY LINE INSTALLATION** - UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA.
  - NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
  - EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
  - 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 OFFSITE PROPERTY.
  - MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
  - RE-STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
  - APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
- MS-17 VEHICULAR TRACKING, CONSTRUCTION ENTRANCE** - 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 PROVISIONS SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
- MS-18 CONTROL REMOVAL** - ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE 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 DOWNSTREAM & PROPERTY PROTECTION** - PROPERTIES AND WATERWAYS DOWNSTREAM FROM THE DEVELOPMENT SITE SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS:
  - 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.
  - ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
    - THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
    - (A) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
      - ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A 10-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
      - PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A 10-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
  - IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
    - IMPROVE THE CHANNELS TO A CONDITION WHERE A 10-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL, THE BED, OR THE BANKS; OR
    - IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE 10-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
    - 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 10-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL; OR
    - PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE VESCP AUTHORITY TO PREVENT DOWNSTREAM EROSION.
  - THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
  - ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
  - IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESCP OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.
  - OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.
  - ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
  - 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.
  - IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.
  - 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.
  - ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS IF THE PRACTICES 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 § 62.1-44, 15.54 OR 62.1-44, 15.65 OF THE ACT.
  - FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44, 15.52 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (§ 62.1-44, 15.24 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES ARE IN ACCORDANCE WITH 9VAC25-870-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) REGULATION OR ARE EXEMPT PURSUANT TO SUBDIVISION C 7 OF § 62.1-44, 15.34 OF THE ACT.
  - COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-870-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) REGULATION SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF THIS SUBDIVISION 19.

**EROSION AND SEDIMENT CONTROL DEVICES:**  
PERIMETER EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITY. AS CONSTRUCTION PROCEEDS, ALL ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS SOON AS POSSIBLE. EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLANS ARE A MINIMUM AND THE PROJECT CONDITIONS MAY DICTATE ADDITIONAL CONTROL. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PER CONTRACT DOCUMENTS, APPROVED PLANS/ PERMITS, AND THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

**EROSION AND SEDIMENT CONTROL MAINTENANCE:**  
THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EROSION CONTROL DEVICES FOR THE DURATION OF THE PROJECT. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE CHECKED WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL TO INSURE THAT ALL DEVICES ARE IN PLACE AND FUNCTIONING AS REQUIRED. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE MAINTAINED PER THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. IN GENERAL, IF THE SILT BUILT UP BEHIND A BARRIER BECOMES AS DEEP AS 9 INCHES, THE SILT IS TO BE REMOVED AND THE BARRIER REPAIRED OR REPLACED. AFTER COMPLETION OF THE PROJECT, AND PERMANENT SEEDING HAS BEEN ESTABLISHED, EROSION CONTROL DEVICES AND ANY SILT BUILT UP SHALL BE REMOVED. DISTURBED AREAS DUE TO THIS CLEANUP OPERATION SHALL BE REPAIRED, RESEEDD AND REMULCHED.

### EROSION AND SEDIMENT CONTROL NOTES:

- 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 (UNDISTURBED) FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
- EXCESS SUITABLE FILL IN LOCATION DESIGNATED BY CONTRACTING OFFICER WITHIN 10 MILES UNSUITABLE FILL CONTRACTOR HAULS OFFSITE. EXCESS EXCAVATION DISPOSED OF OFF THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH CONTRACT DOCUMENTS, APPROVED PERMITS/ PLANS, AND THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
- UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATION OF THE LATEST EDITION OF VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS AVAC30-30 EROSION AND SEDIMENT CONTROL REGULATIONS.
- EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED SO THAT SEDIMENT CARRYING RUNOFF FROM THE SITE WILL NOT ENTER STORM DRAINAGE FACILITIES.
- EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED UNTIL THE DISTURBED AREA IS STABILIZED.
- PROPERTIES ADJOINING THE SITE SHALL BE KEPT CLEAN OF MUD OR SILT CARRIED FROM THE SITE BY VEHICULAR TRAFFIC OR RUNOFF.
- THE DISPOSAL OF WASTE MATERIALS REMOVED FROM EROSION AND SEDIMENT CONTROL FACILITIES AND THE DISPOSAL OF THESE FACILITIES SHALL BE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. SETTLED, TRAPPED, AND FILTERED RESIDUES SHALL NOT BE REUSED AT THIS SITE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO PERIODICALLY INSPECT ALL SEDIMENT AND EROSION CONTROL DEVICES AND INSURE THAT THEY ARE IN GOOD WORKING ORDER. AT A MINIMUM, ALL DEVICES SHALL BE INSPECTED DAILY AND AFTER MAJOR RAINFALL EVENTS ANY DEVICE NEEDING REPAIRS SHALL BE REPAIRED WITHIN 24 HOURS.
- THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES IF, DURING THE COURSE OF CONSTRUCTION, CONTRACTING OFFICER IN COORDINATION W/ DESIGNATED INSPECTOR DETERMINES THAT THEY ARE REQUIRED.
- THE PLAN APPROVING AUTHORITY, CONTRACTING OFFICER MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITIES AND ONE WEEK PRIOR TO THE FINAL INSPECTION.
- A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
- 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 SUPPLEMENTAL EROSION AND SEDIMENT CONTROL PLAN TO THE CONTRACTING OFFICER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.
- DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
- THE CONTRACTOR SHALL MAINTAIN, REPAIR AND/OR REPLACE ANY EXISTING SEDIMENT CONTROL DEVICES ENCOUNTERED AND DISTURBED DURING THE COURSE OF CONSTRUCTION. AT THE END OF EACH DAY ALL MEASURES AND DEVICES SHALL BE REPAIRED OR REPLACED BEFORE LEAVING THE WORK SITE.
- ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THIS PLAN SET ARE TO BE INSTALLED PRIOR TO CONSTRUCTION.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE CONTRACT DOCUMENTS, APPROVED PLANS/ PERMITS, AND THE VESCP, 1992 EDITION OR LATER. THE CONTRACTOR SHALL MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES AS NECESSARY AND SHALL BE RESPONSIBLE FOR ALL ADDITIONAL MEASURES AS DETERMINED BY CONTRACTING OFFICER IN COORDINATION W/ DESIGNATED INSPECTOR.
- ALL PROPOSED DRAINAGE CHANNELS WILL NEED TO BE REVIEWED IN THE FIELD DURING AND AFTER CONSTRUCTION TO DETERMINE IF EROSION OR SCOUR IS OCCURRING AND IF SUCH IS FOUND, TO DETERMINE APPROPRIATE REMEDIAL CORRECTIVE MEASURES.
- CONTRACTOR TO TAKE SPECIAL CARE IN EXECUTING THE EROSION AND SEDIMENT CONTROL PLAN. THE CONTRACTOR WILL BE RESPONSIBLE FOR REMOVING SEDIMENT AND/OR CLEANING OUT STORM PIPES AS NECESSARY IF SEDIMENT COLLECTS WITHIN THE VDOT RIGHT OF WAY OR ON PRIVATE PROPERTY.
- EROSION AND SEDIMENT CONTROL AND STORM WATER MANAGEMENT SHALL CONFORM TO CONTRACT DOCUMENTS & APPROVED PLANS/ PERMITS AND SHALL BE ENFORCED BY DESIGNATED OFFICIALS.
- ALL DITCHES, SWALES, AND NATURAL WATERCOURSES DOWNSTREAM OF THIS PROJECT WILL BE FIELD REVIEWED DURING AND AFTER CONSTRUCTION TO ENSURE COMPLIANCE TO CONTRACT DOCUMENTS, APPROVED PLANS/PERMITS, AND THE MINIMUM STANDARD 19 (MS-19) (VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 1992). IF EROSION OR SCOUR IS OCCURRING, THE DEVELOPER SHALL BE RESPONSIBLE FOR ALL CORRECTIVE MEASURES.
- FOREST SERVICE NO WORK IN LIVE STREAMS OCT. 1ST - APR. 1ST DUE TO SENSITIVE SPECIES. NO TREE REMOVAL APR. 1ST - NOV. 15 DUE TO SENSITIVE SPECIES.

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434-847-7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HANDP.COM  
ENVIRONMENTAL  
SURVEYING • LAND DEVELOPMENT  
CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**EROSION & SEDIMENT CONTROL NOTES**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	03/06/2023
DRAWN BY:	DBM
CHECKED BY:	MDW



**FINAL PLAN SET**

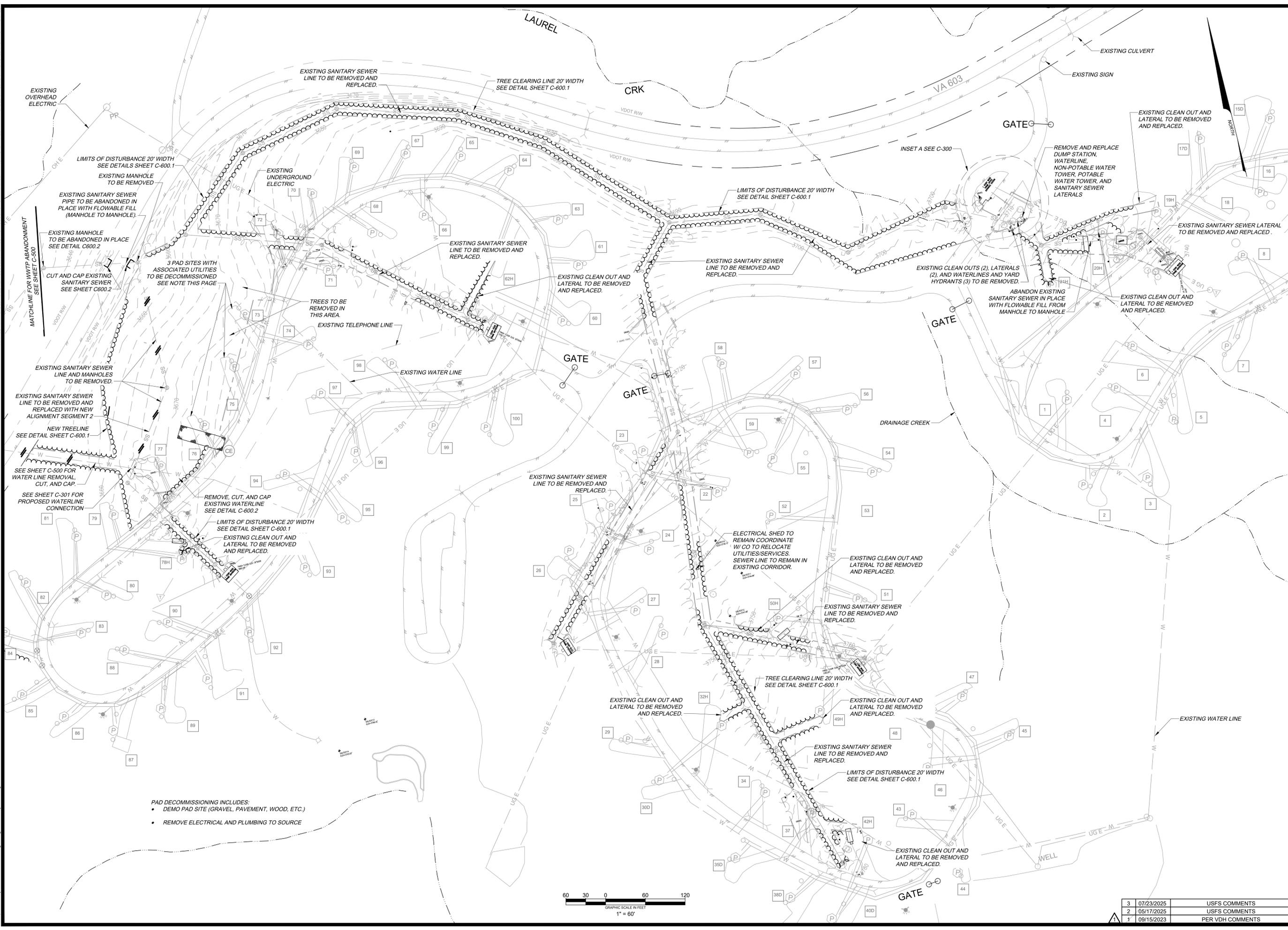
**DESIGN CONTRACT NUMBER**  
12445122C0026

**HURT & PROFFITT**

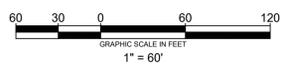
SHEET NO.	REV.
G-103	---

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

THIS SHEET IS INTENDED TO BE REPRODUCED AT 25% REDUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



- PAD DECOMMISSIONING INCLUDES:
- DEMO PAD SITE (GRAVEL, PAVEMENT, WOOD, ETC.)
  - REMOVE ELECTRICAL AND PLUMBING TO SOURCE



**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HANDP.COM  
SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
ENGINEERING • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**COLLECTION SYSTEM DEMOLITION**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE NATIONAL RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW



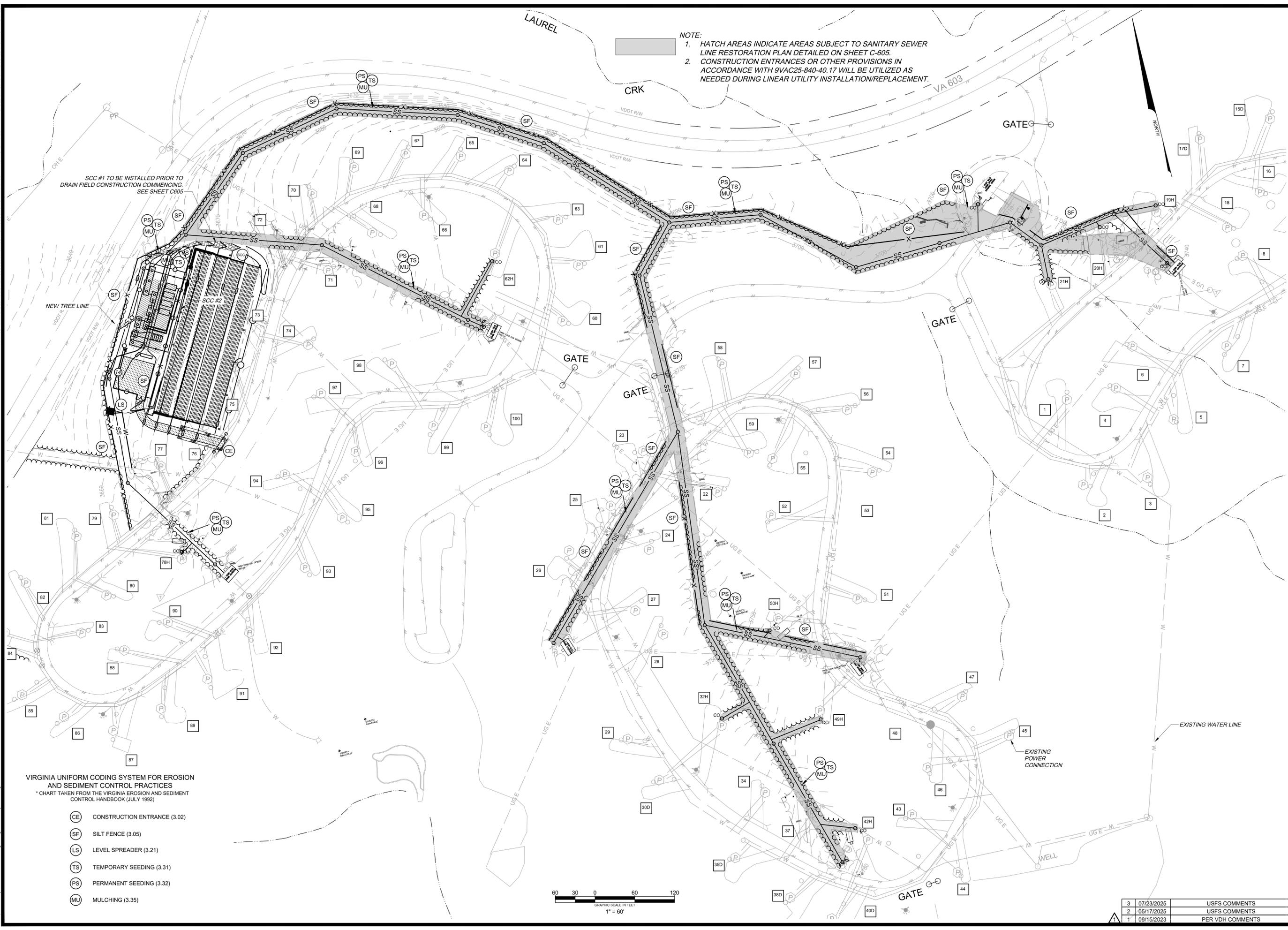
**FINAL PLAN SET**

**DESIGN CONTRACT NUMBER**  
12445122C0026

**HURT & PROFFITT**

3	07/23/2025	USFS COMMENTS	SHEET NO.	REV.
2	05/17/2025	USFS COMMENTS	C-100	---
1	09/15/2023	PER VDH COMMENTS		

THIS SHEET IS INTENDED TO BE REPRODUCED AT 1/8" = 1'-0" SCALE. REPRODUCTION OF THIS SHEET AT A DIFFERENT SCALE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.

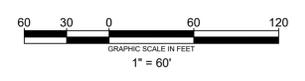


NOTE:  
1. HATCH AREAS INDICATE AREAS SUBJECT TO SANITARY SEWER LINE RESTORATION PLAN DETAILED ON SHEET C-605.  
2. CONSTRUCTION ENTRANCES OR OTHER PROVISIONS IN ACCORDANCE WITH 9VAC25-840-40.17 WILL BE UTILIZED AS NEEDED DURING LINEAR UTILITY INSTALLATION/REPLACEMENT.

SCC #1 TO BE INSTALLED PRIOR TO DRAIN FIELD CONSTRUCTION COMMENCING. SEE SHEET C605.

VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES  
\* CHART TAKEN FROM THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (JULY 1992)

- (CE) CONSTRUCTION ENTRANCE (3.02)
- (SF) SILT FENCE (3.05)
- (LS) LEVEL SPREADER (3.21)
- (TS) TEMPORARY SEEDING (3.31)
- (PS) PERMANENT SEEDING (3.32)
- (MU) MULCHING (3.35)



**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HANDP.COM  
SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
ENGINEERING • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**EROSION & SEDIMENT CONTROL**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW

COMMONWEALTH OF VIRGINIA  
MICHAEL D. WILSON  
Lic. No. 044203  
07/23/2025  
PROFESSIONAL ENGINEER

**FINAL PLAN SET**

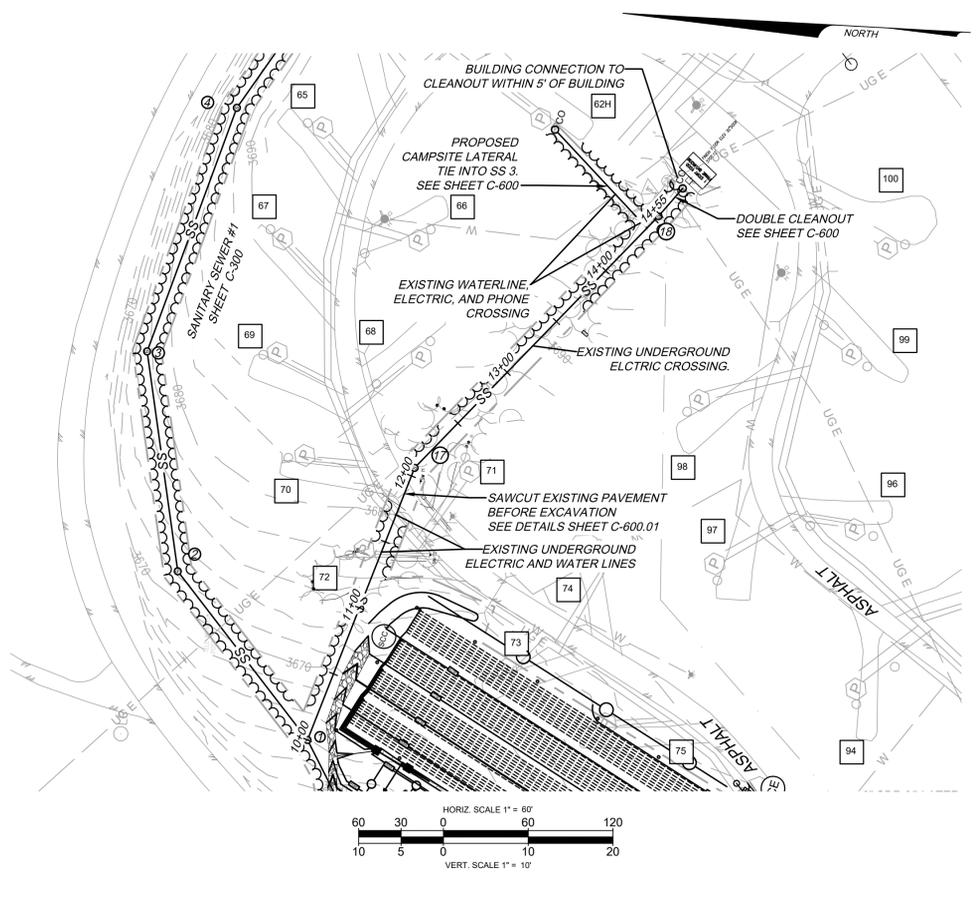
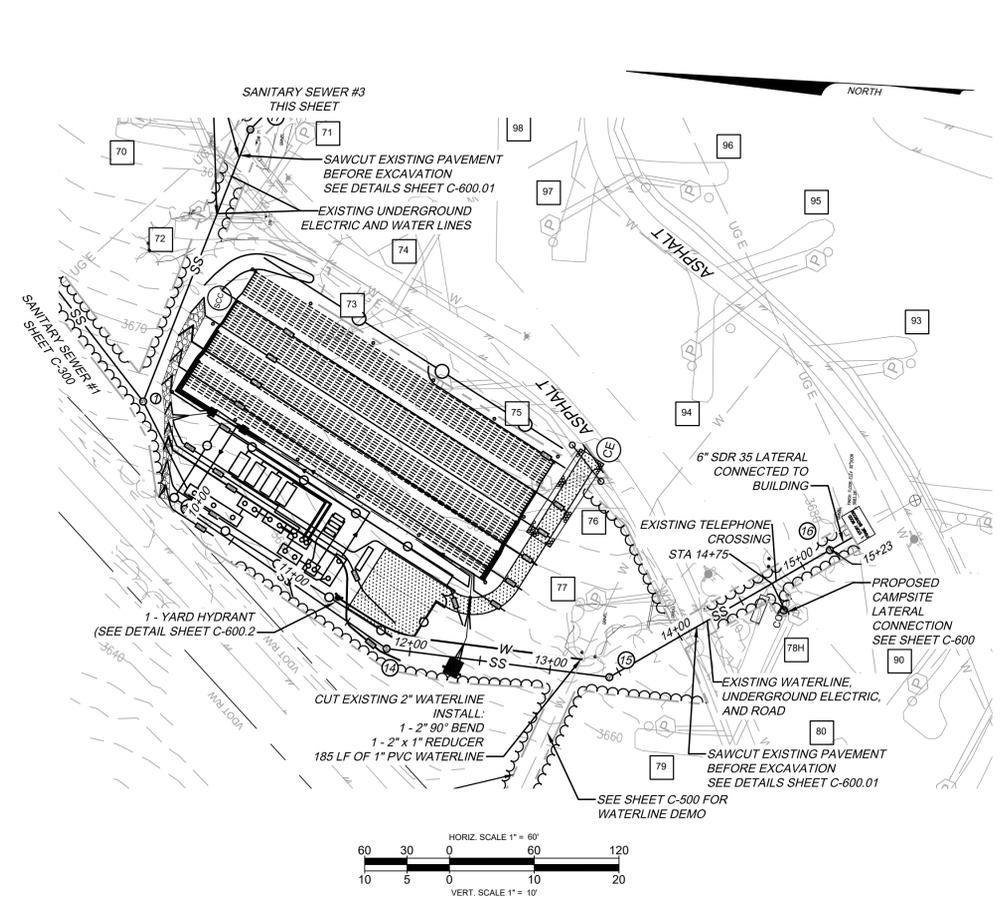
**DESIGN CONTRACT NUMBER**  
12445122C0026

**HURT & PROFFITT**

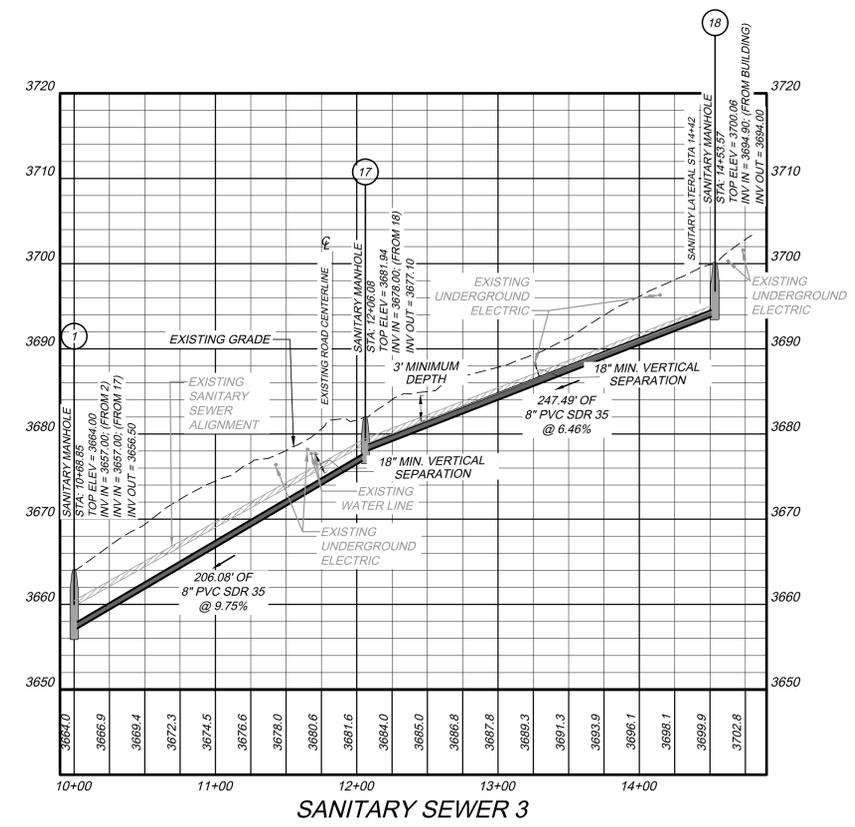
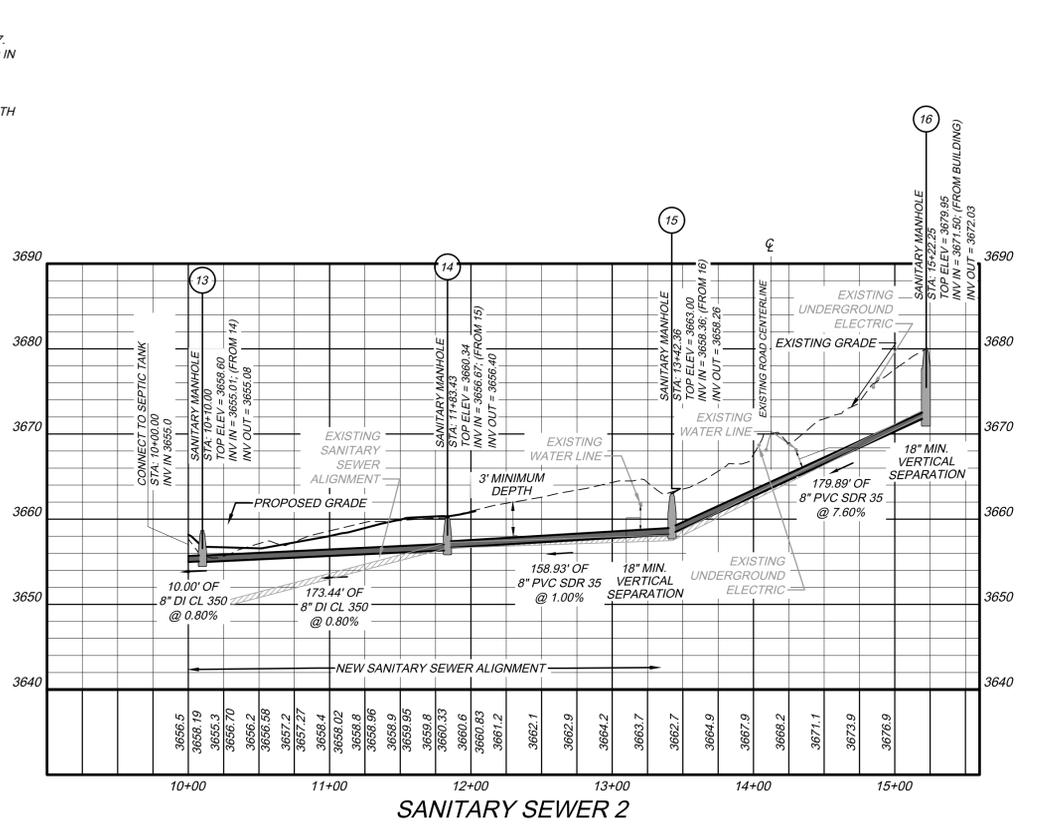
3	07/23/2025	USFS COMMENTS	SHEET NO. C-200	REV. ---
2	05/17/2025	USFS COMMENTS		
1	09/15/2023	PER VDH COMMENTS		



THIS SHEET IS INTENDED TO BE REPRODUCED AT 24X36. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



- NOTE:**
- 3 FOOT MINIMUM DEPTH DOES NOT APPLY TO STATIONS 10+10 TO 11+83 & 15+28.07 TO 15+47. EXISTING SANITARY SEWER TO BE REPLACED IN THE SAME TRENCH. NEW TRENCH MAY BE LOWER IN SOME LOCATIONS TO PROVIDE ADEQUATE COVER OVER PIPE.
  - CONTRACTOR TO VERIFY LOCATION AND DEPTH OF CROSSING UTILITIES.
  - STATION 10+00 TO 12+10 DOES NOT FOLLOW PREVIOUS SEWER ALIGNMENT AND WILL REQUIRE NEW EXCAVATION.
  - ALL UTILITIES TO HAVE A MINIMUM OF 18" OF VERTICAL SEPARATION FROM PROPOSED SANITARY SEWER.



- NOTE:**
- 3 FOOT MINIMUM DEPTH DOES NOT APPLY TO STATION 14+53.57 TO 14+80.
  - EXISTING SANITARY SEWER TO BE REPLACED IN THE SAME TRENCH (EXCEPT FOR MHS 13-15). NEW TRENCH MAY BE LOWER IN SOME LOCATIONS TO PROVIDE ADEQUATE COVER OVER PIPE.
  - CONTRACTOR TO VERIFY LOCATION AND DEPTH OF CROSSING UTILITIES.
  - ALL UTILITIES TO HAVE A MINIMUM OF 18" OF SEPARATION FROM PROPOSED SANITARY SEWER.

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HP  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**SANITARY SEWER 2 & 3 DESIGN**

GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW



**FINAL PLAN SET**

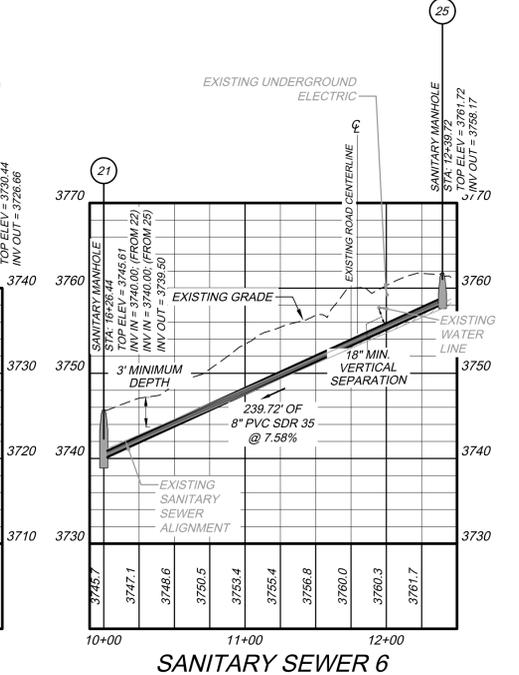
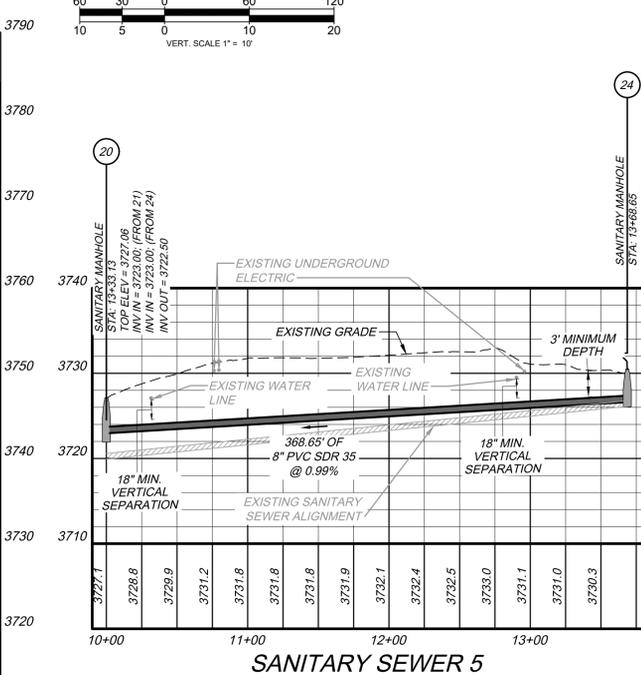
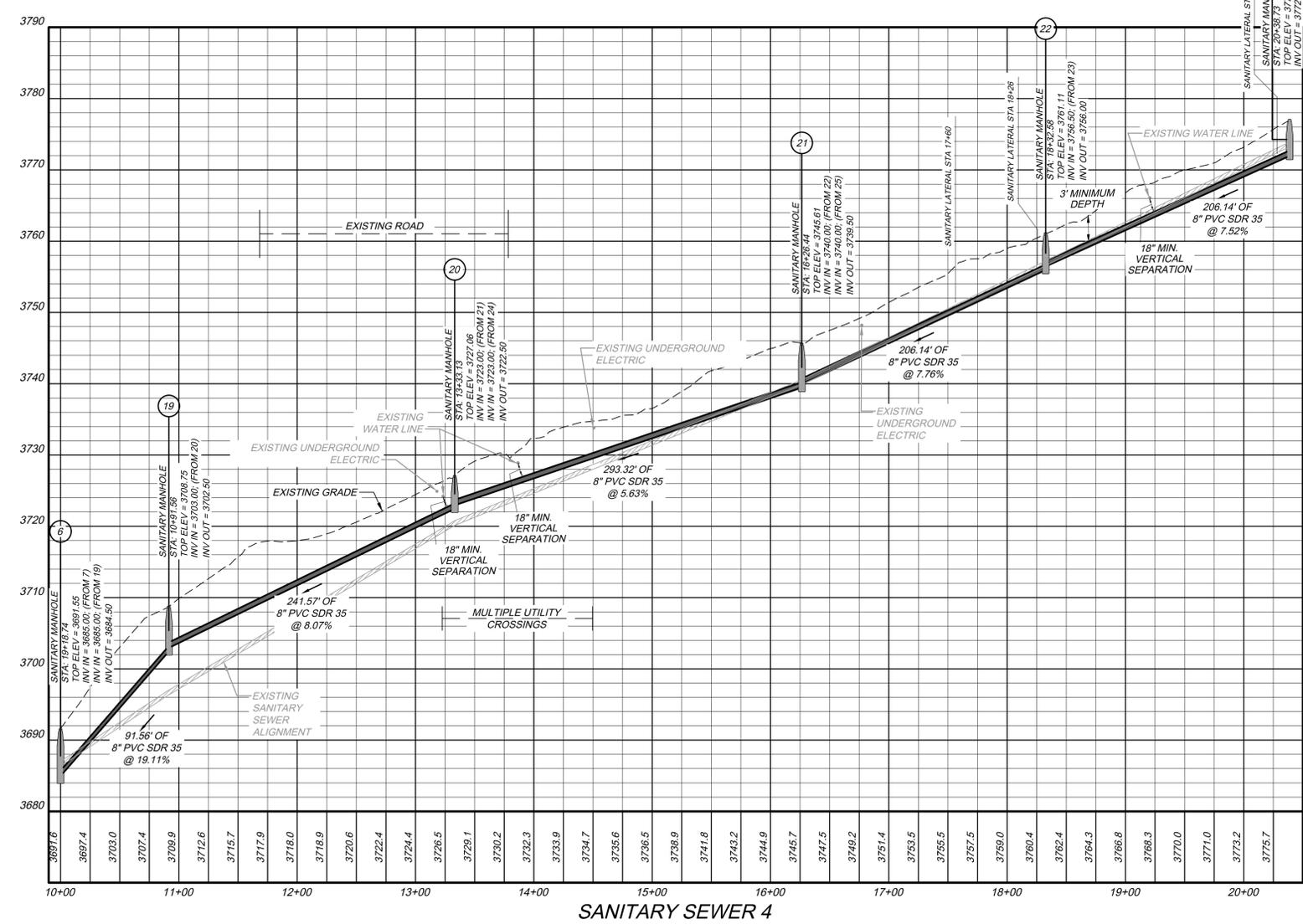
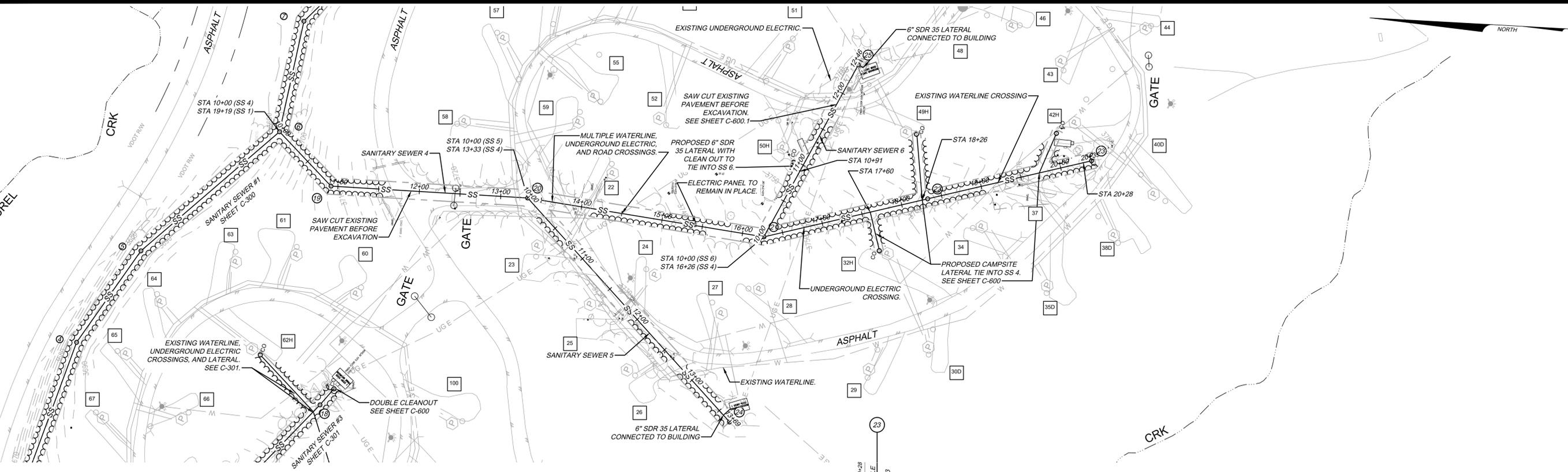
DESIGN CONTRACT NUMBER  
**12445122C0026**

**HURT & PROFFITT**

SHEET NO. **C-301** REV. ---

THIS SHEET IS INTENDED TO BE REPRODUCED AT 24X36. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.

Jul 22, 2025 - 5:01pm - Z:\020221254\Engineering\CAD\Sanitary Sewer.dwg



- NOTES:**
- SANITARY SEWER TO BE MINIMUM COVER OF 3 FEET DEEP.
  - EXISTING SANITARY SEWER TO BE REPLACED IN THE SAME TRENCH. NEW TRENCH MAY BE LOWER IN SOME LOCATIONS TO PROVIDE ADEQUATE COVER OVER PIPE.
  - CONTRACTOR TO VERIFY LOCATION AND DEPTH OF CROSSING UTILITIES.
  - ALL UTILITIES TO HAVE A MINIMUM OF 18" OF VERTICAL SEPARATION FROM PROPOSED SANITARY SEWER.

**HURT & PROFFITT**  
 INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
 2524 LANGHORNE ROAD  
 LYNCHBURG, VA 24501

HANDP.COM  
 SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
 ENGINEERING • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**SANITARY SEWER 4, 5, & 6 DESIGN**  
 GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
 MOUNT ROGERS NATIONAL RECREATION AREA  
 GRINDSTONE NATIONAL RECREATION AREA  
 WASTEWATER SYSTEM REPLACEMENT

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	03/06/2023
DRAWN BY:	DBM
CHECKED BY:	MDW



**FINAL PLAN SET**

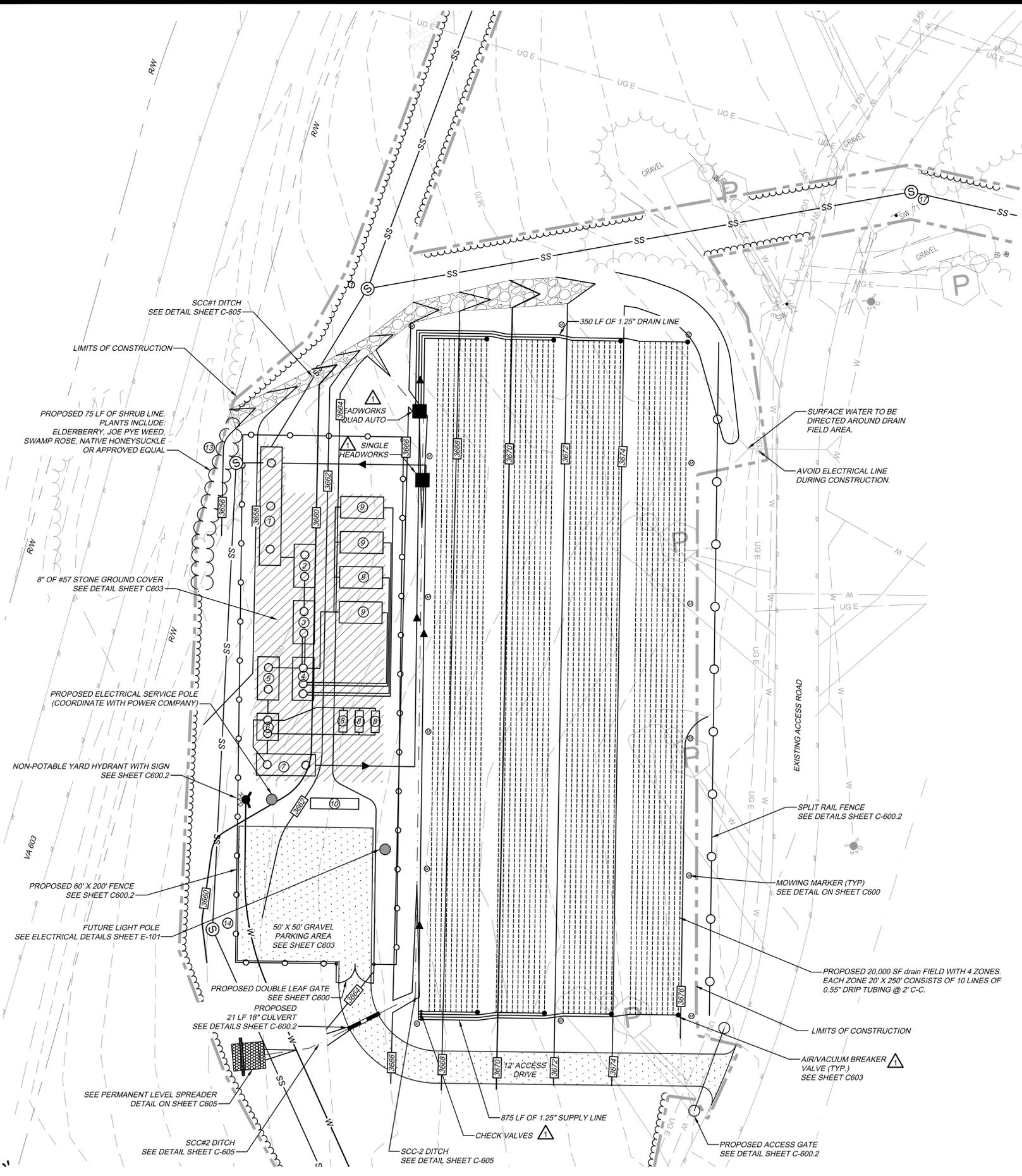
**DESIGN CONTRACT NUMBER**  
 12445122C0026

**HURT & PROFFITT**

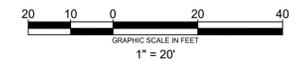
SHEET NO.	REV.
C-302	---

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

Jul 22, 2025 - 5:02pm - Z:\020221254\Engineering\CAD\Sanitary Sewer.dwg  
 THIS SHEET IS INTENDED TO BE REPRODUCED AT A DIFFERENT SIZE THAN INTENDED. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



- WWTP SYSTEM**  
(SEE SHEET C-601 FOR TANK SIZING AND GENERAL PIPING)
- ① SEPTIC TANK #1 16,000 GALLON  
G 3658.5  
2 - 8" INV IN 3655.0  
8" INV OUT 3654.9  
TANK INV 3647.9
  - ② SEPTIC TANK #2 8,000 GALLON  
G 3660  
8" INV IN 3654.858  
8" INV OUT 3654.75  
TANK INV 3647.75
  - ③ FLOW EQ TANK 5,000 GALLON  
G 3660  
8" INV IN 3654.7  
TANK INV 3647.7
  - ④ RECIRCULATION TANK #1 5,000 GALLON  
G 3660  
TANK INV 3647.7
  - ⑤ ANOXIC TANK 5,000 GALLON  
G 3659  
TANK INV 3647.6
  - ⑥ RECIRCULATION TANK #2 3,000 GALLON  
G 3659  
TANK INV 3647.5  
INV OUT 3654.5
  - ⑦ FIELD DOSE TANK 7,500 GALLON  
G 3660  
TANK INV 3647.4
  - ⑧ A X 20 PODS  
TOP 3665  
G 3665.5  
INV 3662.5
  - ⑨ A X 100 PODS  
TOP 3665  
G 3665.5  
INV 3661.5
  - ⑩ CONTROL PANEL



- GENERAL NOTES:**
- THE SEWAGE TREATMENT SYSTEM IS TO BE LOCATED ON EXISTING GROUND TO BEST UTILIZE THE NATURAL FALL OF SLOPES TO ALLOW FOR GRAVITY FLOW TO AND FROM ALL UNITS. NO DRAIN INLETS TO BE SET FLATTER THAN 1/8" : 1' OF FALL.
  - FIELD ELEVATIONS OF EACH UNIT MAY BE REVISED BY THE CONTRACTOR TO FIT EXISTING SLOPE UPON VERIFICATION AND APPROVAL OF ENGINEER. MINIMUM LINE SLOPE WILL BE 1/8" : 1'
  - IF CONTRACTING OFFICER REQUESTS MOVING OF TREATMENT UNITS TO LOCATIONS NOT SHOWN HEREIN, CONTRACTOR IS TO VERIFY PLACEMENT WITH ENGINEER PRIOR TO RELOCATION.
  - FIELD ADJUSTMENTS MAY BE MADE BY CONTRACTOR TO ALLOW FOR PROPER COVER OVER SEPTIC TANK AND TO PROVIDE FOR ADEQUATE SLOPE ON ALL GRAVITY PIPING. INLET LINE TO ORENCO TREATMENT UNIT TO BE 18" IN GROUND. CONTRACTOR TO MAINTAIN 18" TO 24" EARTH COVER MINIMUM OVER ALL PIPING IN SYSTEM. ALL TANKS/STRUCTURES MAY BE PLACED SUCH THAT THE LONG SIDE OF ANY SUCH STRUCTURE IS PARALLEL TO THE CONTOUR OF THE SLOPE.
  - CONTRACTOR TO CONTACT COR WHEN SYSTEM IS UNDER CONSTRUCTION TO ALLOW ENGINEER TIME TO SCHEDULE INSPECTION OF SYSTEM.
  - CONTRACTOR TO PROVIDE LETTER TO COR THAT SYSTEM HAS BEEN INSTALLED PER THE DESIGN PLANS AND SPECIFICATIONS. CONTRACTOR TO PROVIDE CO WITH AS-BUILT LOCATION DIMENSIONS FOR EACH UNIT SET IN SYSTEM. THE LOCATIONS OF EACH UNIT ARE TO BE MEASURED FROM TWO (2) DIFFERENT CORNERS OF NEW OR EXISTING STRUCTURES.
  - CONTRACTOR SHALL FIELD VERIFY ALL INVERTS AND CONNECTION POINTS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. IF POTENTIAL CONFLICTS ARE DETECTED, CONTRACTOR SHALL NOTIFY COR IMMEDIATELY.
  - THE MINIMUM REQUIRED DENSITY FOR BACKFILL FOR ALL TANKS AND FORCE MAIN COMPACTION SHALL BE 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN ± 2% OF THE OPTIMUM.
  - CONTRACTOR SHALL CALL MISS UTILITY AT 811 TO LOCATE EXISTING UTILITIES AT LEAST 72 HOURS PRIOR TO ANY EARTHWORK BEGINNING.
  - SERVICE ROUTINGS FOR ELECTRICAL SHALL BE COORDINATED BY THE CONTRACTOR WITH THE RESPECTIVE SUBCONTRACTORS AND UTILITY COMPANIES. THE CONTRACTOR SHALL MARK AND NOTIFY THE COR OF ACTUAL ROUTINGS IN THE FIELD.
  - ALL WWTP SANITARY SEWER PIPING SHALL BE PVC, SDR 35, OR SCH 80 UNLESS OTHERWISE NOTED.
  - INSTALLATION OF DRAIN FIELD AND DRAIN COMPONENTS SHALL BE BY A CONTRACTOR LICENSED BY THE VIRGINIA DPOR AS AN INTERIM ALTERNATIVE ONSITE SEWAGE SYSTEM PROFESSIONAL.
  - DRAIN FIELD AREA SHALL BE PROTECTED FROM HEAVY EQUIPMENT.
  - DRAIN FIELD AREA SHALL BE PROTECTED FROM COMPACTION BEFORE, DURING, AND AFTER DRIP LINE INSTALLATION. THE DRAIN FIELD AND ALL OF ITS COMPONENTS MUST BE PROTECTED FROM COMPACTION AND SHOULD NEVER CARRY TRAFFIC.
  - THE DRAIN FIELD SITE WILL NOT BE SUBJECT TO COMPACTION. CARE SHALL BE TAKEN DURING CONSTRUCTION PHASES THAT INVOLVE HEAVY EQUIPMENT TO AVOID THE DRAIN FIELD AREA.
  - ANY QUESTIONS REGARDING THE LOCATION OF THE DRAIN FIELD SHALL BE COORDINATED WITH THE ENGINEER OF RECORD AND SHALL BE STAKED & APPROVED BEFORE WORK BY ENGINEER OF RECORD.
  - CONTRACTOR SHALL INSTALL DRAIN FIELD COMPONENTS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
  - MAINTAIN A MINIMUM OF 5 FEET CLEARANCE BETWEEN ALL SYSTEM COMPONENTS AND PROPERTY LINES.
  - FINAL GRADE MUST BE SHAPED SO AS TO DRAIN SURFACE WATER AWAY FROM THE TANKAGE AND TREATMENT COMPONENTS. CONSULT THE COR A MINIMUM OF 48 HOURS PRIOR TO INSTALLATION IF LOCATION AND ARRANGEMENT APPEAR UNSUITABLE.
  - CONTRACTOR SHALL SCHEDULE SYSTEM START-UP WITH THE COR, ORENCO REPRESENTATIVE, AND SYSTEM OPERATOR.

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434-847-7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA 24501

HAND.COM  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**TREATMENT SYSTEM AND DRAIN FIELD**  
 GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
 MOUNT ROGERS NATIONAL RECREATION AREA  
 GRINDSTONE RECREATION AREA  
 WASTEWATER SYSTEM REPLACEMENT

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	03/06/2023
DRAWN BY:	DBM
CHECKED BY:	MDW



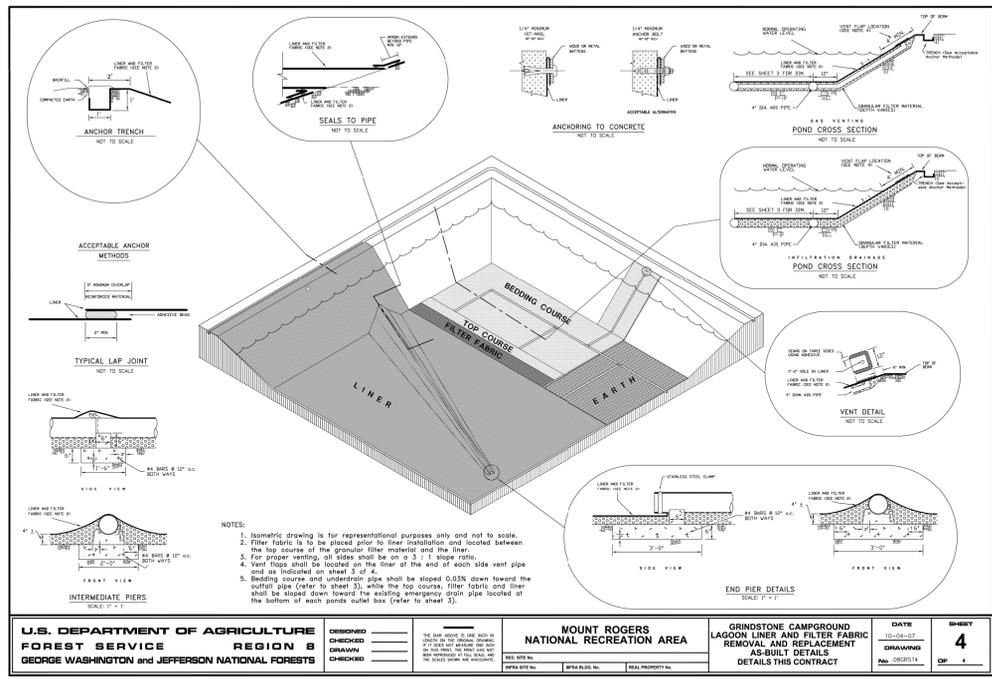
**FINAL PLAN SET**

**DESIGN CONTRACT NUMBER**  
12445122C0026

<b>HURT &amp; PROFFITT</b>	SHEET NO.	REV.
	C-400	---

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

THIS SHEET IS INTENDED TO BE REPRODUCED AT 100% REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



**NOTES FOR LAGOON DECOMMISSIONING:**

**LAGOON DRAINAGE:**

1. LIQUID FROM THE LAGOON SHOULD BE REMOVED (DECANTED) AT A CONTROLLED RATE SO THAT EFFLUENT LIMITS SPECIFIED IN THE VPDES PERMIT FOR THE FACILITY ARE NOT VIOLATED. THE LAGOON DISCHARGE SHOULD BE DISINFECTED UNLESS TESTING OF THE LAGOON CONTENTS VERIFIES THAT THE LIQUID CONTAINS AN ACCEPTABLE LEVEL OF PATHOGENIC ORGANISMS AS INDICATED BY A GEOMETRIC MEAN VALUE OF 126 FC/100 MILLILITERS, OR LESS. IN SOME CASES WHEN A TREATMENT FACILITY WITH ADEQUATE CAPACITY IS AVAILABLE NEARBY PER CONTRACT DOCUMENTS & APPROVED DECOMM. PLAN & PERMITS, IT MAY BE POSSIBLE TO PUMP THE LAGOON LIQUID CONTENTS TO THIS SEWAGE TREATMENT FACILITY FOR FURTHER TREATMENT.

**RESIDUALS STABILIZATION:**

2. THE LAGOON RESIDUAL MIXTURE LEFT AFTER DECANTING SHOULD BE ALLOWED TO AIR DRY UNTIL IT CAN BE WORKED WITH CONSTRUCTION EQUIPMENT. LIME CAN BE SPREAD OVER THE RESIDUAL MIXTURE (1.0 TO 2.0 POUNDS PER 100 SQUARE FEET) FOR DISINFECTION AND ODOR CONTROL. IT IS ACCEPTABLE TO BURY STABILIZED SOLIDS IN PLACE FOR VPDES PERMITTED FACILITIES RECEIVING ONLY DOMESTIC SEWAGE (VERIFIED BY A LETTER FROM THE CONTRACTING OFFICER). OTHERWISE, REPRESENTATIVE SAMPLES OF THE RESIDUAL MIXTURE MUST BE TESTED TO VERIFY THAT NO HAZARDOUS POLLUTANTS ARE PRESENT. ADDITIVES SUCH AS SOIL, SAND, LIME AND CEMENT HAVE BEEN USED TO DRAW MOISTURE OUT OF LIQUID SLUDGE MIXTURES TO FACILITATE BURIAL OR HANDLING AS DEWATERED SLUDGE. IN SOME SITUATIONS, BURIAL OF RESIDUALS IN PLACE MAY NOT BE APPROPRIATE BECAUSE OF HIGH GROUND WATER LEVEL.

**PIPING AND APPURTENANCES REMOVAL:**

3. ALL PIPING SHOULD BE REMOVED. THE FENCE SHOULD NOT BE REMOVED OR LEFT OPEN UNTIL AFTER GRADING OF THE SITE COMMENCES.

**LINER:**

4. EXISTING SYSTEM SHALL BE COMPLETELY REMOVED.

**GRADING:**

5. THE LAGOON SHOULD BE FILLED WITH COMPACTED LAYERS OF ON-SITE MATERIAL FREE OF BRUSH, TREE ROOTS, AND DEBRIS (NO MORE THAN TWELVE INCHES DEEP PER LAYER) IN ACCORDANCE WITH SPECIFICATIONS. BERM WALLS MAY BE UTILIZED AS FILL AND CAN BE PUSHED INTO THE FILL AREA. THE FINISHED SURFACE OF THE GRADED AREA SHOULD BE APPROXIMATELY LEVEL WITH SURROUNDING TOPOGRAPHY, ALTHOUGH THE CENTER OF THE GRADED AREA SHOULD BE SOMEWHAT ELEVATED TO FACILITATE DRAINAGE (ONE PERCENT OR MORE SLOPE FROM THE ELEVATED PORTION OUTWARD). IF SIGNIFICANT RESIDUAL SEDIMENT IS LEFT BEHIND IN THE LAGOON, THE GRADED AREA SHOULD BE CAPPED WITH AT LEAST THREE INCHES OF SLOWLY PERMEABLE SOIL (CLAYEY TEXTURE CLASSIFICATION, OR HYDRAULIC CONDUCTIVITY OF 10-5 CM/SEC OR LESS) AND THE LAGOON BOTTOM SHOULD BE COVERED BY AT LEAST TWO FEET OF FILL MATERIAL.

**SEEDING AND COVER VEGETATION:**

6. THE GRADED AND ALL DISTURBED AREAS SHOULD BE PROPERLY SEEDED TO PRODUCE AN EROSION RESISTANT VEGETATIVE COVER. PER CONTRACT DOCS/ SPECS FOR PERMANENT SEEDED. THE SEEDED PROCEDURE MAY HAVE TO BE REPEATED UNTIL ADEQUATE AND RESISTANT VEGETATIVE COVER IS ESTABLISHED.

**EROSION CONTROL:**

7. THE CLOSURE OPERATION MUST COMPLY WITH CONTRACT DOCUMENTS & APPROVED PLANS/PERMITS AND THE STANDARD EROSION AND SEDIMENT CONTROL PROCEDURES TYPICALLY REGULATED LOCALLY, OR THROUGH THE DEPARTMENT OF CONSERVATION AND RECREATION (DCR).

**DEED:**

8. THE DEED MUST BE AMENDED TO INDICATE THAT A CLOSED SEWAGE LAGOON EXISTS ON THE PROPERTY, AND SHOULD INCLUDE PERTINENT INFORMATION, SUCH AS TYPE OF WASTEWATER TREATED, AND RESULTS OF TESTS PERFORMED IF ANY ON RESIDUE SAMPLES. THE DEED SHOULD BE REGISTERED WITH THE CLERK OF THE CIRCUIT COURT, AND A COPY OF THE AMENDED DEED WILL BE SENT TO THE AREA ENGINEER & CONTRACTING OFFICER.

- EROSION CONTROL SEQUENCE:**
- ALL PERIMETER E&S MEASURES ARE TO BE INSTALLED PRIOR TO CONSTRUCTION.
  - TEMPORARY SEDIMENT TRAP SHALL BE INSTALLED AFTER PERIMETER SILT FENCE IS INSTALLED.
  - TEMPORARY DIVERSIONS TO BE INSTALLED AFTER THE TEMPORARY SEDIMENT TRAP IS INSTALLED.
  - SITE SHALL BE SEEDED AND STABILIZED WITH A STRAND OF GRASS BEFORE THE TRAP CAN BE REMOVED.
  - SEDIMENT TRAP TO BE DE-WATERED AND ANY SEDIMENT LAIDEN WATER SHALL BE PUMPED INTO AN APPROVED FILTERING DEVICE.
  - NO REMAINING WATER FROM THE TRAP SHALL BE ALLOWED TO ENTER LAUREL CREEK PRIOR TO FILTERING.
  - TEMPORARY DIVERSIONS TO BE REMOVED UPON AREA STABILIZATION, ALONG WITH LEVEL SPREADER BEING REMOVED.
  - TRAP TO BE REMOVED AND GRADED TO PRE-DEVELOPED CONTOUR, SEEDED, AND STABILIZED.
  - FINAL SILT FENCE SHOULD NOT BE REMOVED UNTIL AREA OF THE TRAP HAS BEEN STABILIZED.

**VIRGINIA UNIFORM CODING SYSTEM FOR EROSION AND SEDIMENT CONTROL PRACTICES**

\* CHART TAKEN FROM THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (JULY 1992)

CE	CONSTRUCTION ENTRANCE (3.02)
SF	SILT FENCE (3.05)
DD	DIVERSION DIKE (3.09)
ST	TEMPORARY SEDIMENT TRAP (3.13)
SCC	STORMWATER CONVEYANCE CHANNEL (3.17)
LS	LEVEL SPREADER (3.21)
TS	TEMPORARY SEEDED (3.31)
PS	PERMANENT SEEDED (3.32)
MU	MULCHING (3.35)

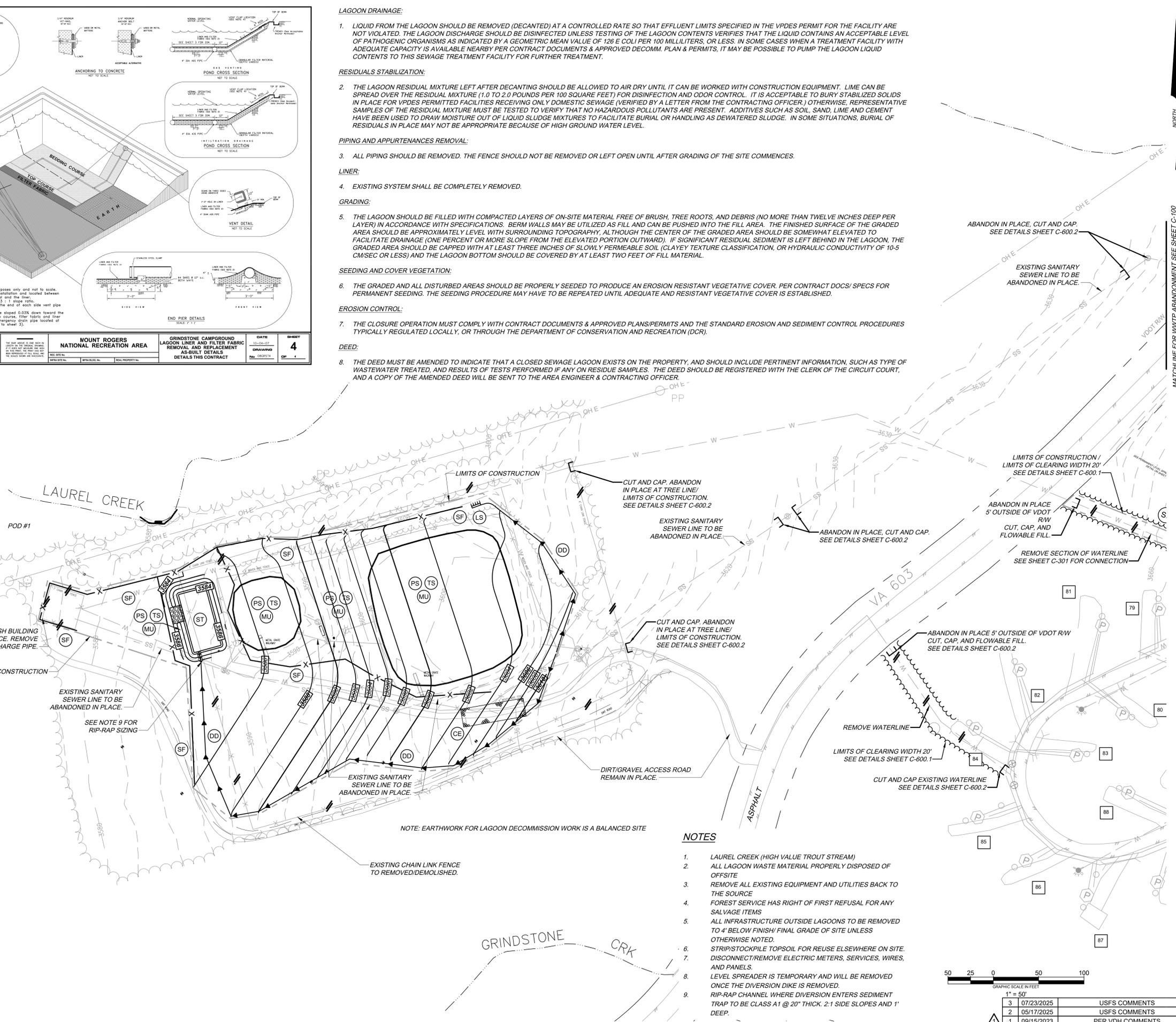
**TABLE 3.21-A**

**MINIMUM DIMENSIONS FOR LEVEL SPREADER**

Design Flow, Q <sub>10</sub> (cfs)	Depth (ft.)	Width of Lower Side Slope of Spreader (ft.)	Length (ft.)
0-10	0.5	6	10
10-20	0.6	6	20

Source: Va. DSWC

Spreader Lip	Design Flow (cfs)
Vegetated	0 - 4
Rigid	5 - 20



**NOTES**

- LAUREL CREEK (HIGH VALUE TROUT STREAM)
- ALL LAGOON WASTE MATERIAL PROPERLY DISPOSED OF OFFSITE
- REMOVE ALL EXISTING EQUIPMENT AND UTILITIES BACK TO THE SOURCE
- FOREST SERVICE HAS RIGHT OF FIRST REFUSAL FOR ANY SALVAGE ITEMS
- ALL INFRASTRUCTURE OUTSIDE LAGOONS TO BE REMOVED TO 4' BELOW FINISH/ FINAL GRADE OF SITE UNLESS OTHERWISE NOTED.
- STRIP/STOCKPILE TOPSOIL FOR REUSE ELSEWHERE ON SITE.
- DISCONNECT/REMOVE ELECTRIC METERS, SERVICES, WIRES, AND PANELS.
- LEVEL SPREADER IS TEMPORARY AND WILL BE REMOVED ONCE THE DIVERSION DIKE IS REMOVED.
- RIP-RAP CHANNEL WHERE DIVERSION ENTERS SEDIMENT TRAP TO BE CLASS A1 @ 20" THICK. 2:1 SIDE SLOPES AND 1' DEEP.



SHEET NO.	REV.	DATE	DESCRIPTION
3	07/23/2025		USFS COMMENTS
2	05/17/2025		USFS COMMENTS
1	09/15/2023		PER VDH COMMENTS

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HANDP.COM  
SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL ENGINEERING • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**DECOMMISSIONING OF LAGOONS**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE NATIONAL RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	03/06/2023
DRAWN BY:	DBM
CHECKED BY:	MDW

COMMONWEALTH OF VIRGINIA  
MICHAEL D. WILSON  
Lic. No. 044203  
07/23/2025  
PROFESSIONAL ENGINEER

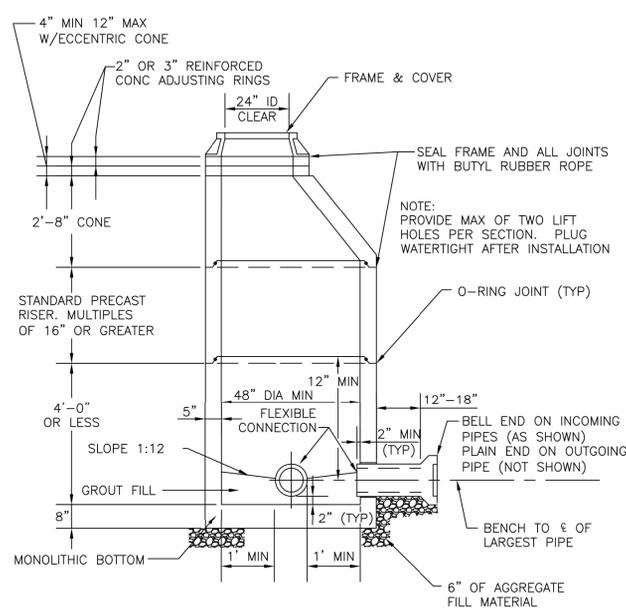
**FINAL PLAN SET**

**DESIGN CONTRACT NUMBER**  
12445122C0026

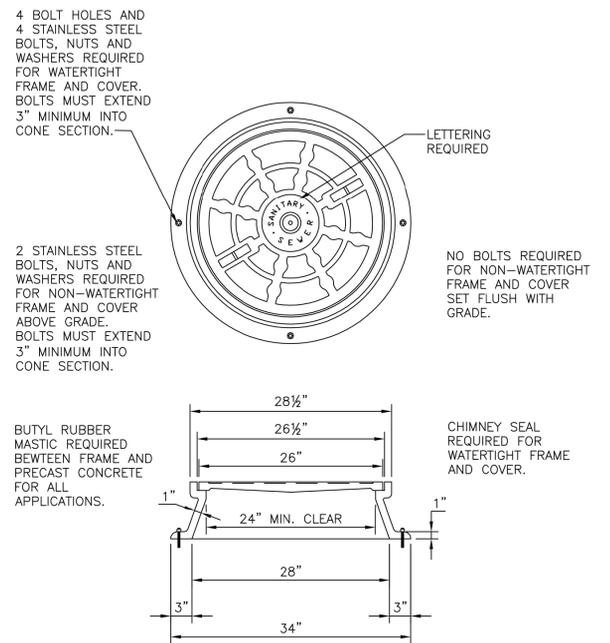
**HURT & PROFFITT**

SHEET NO. C-500 REV. ---

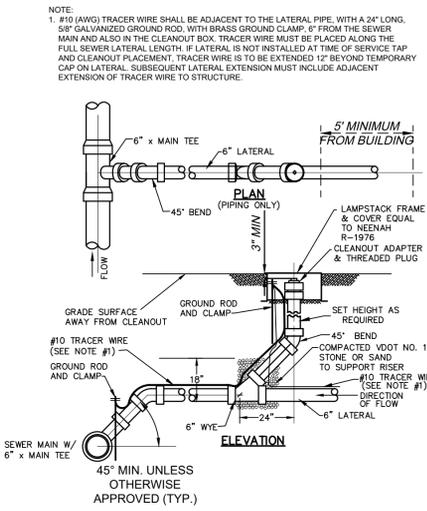
THIS SHEET IS INTENDED TO BE REPRODUCED AT THE SAME SCALE AS THE ORIGINAL SHEET. REPRODUCTION OF THIS SHEET AT A DIFFERENT SCALE SHALL VOID THE SCALE SHOWN ON THE SHEET.



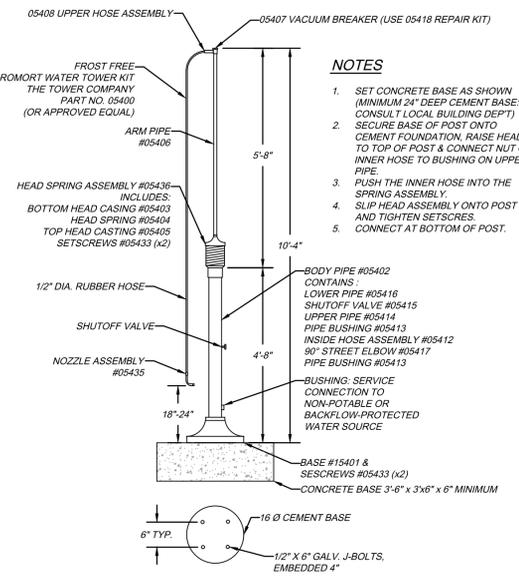
**STANDARD GRAVITY MANHOLE**  
NO SCALE 51-49



**WATERTIGHT M.H. FRAME AND COVER**  
NO SCALE 51-52

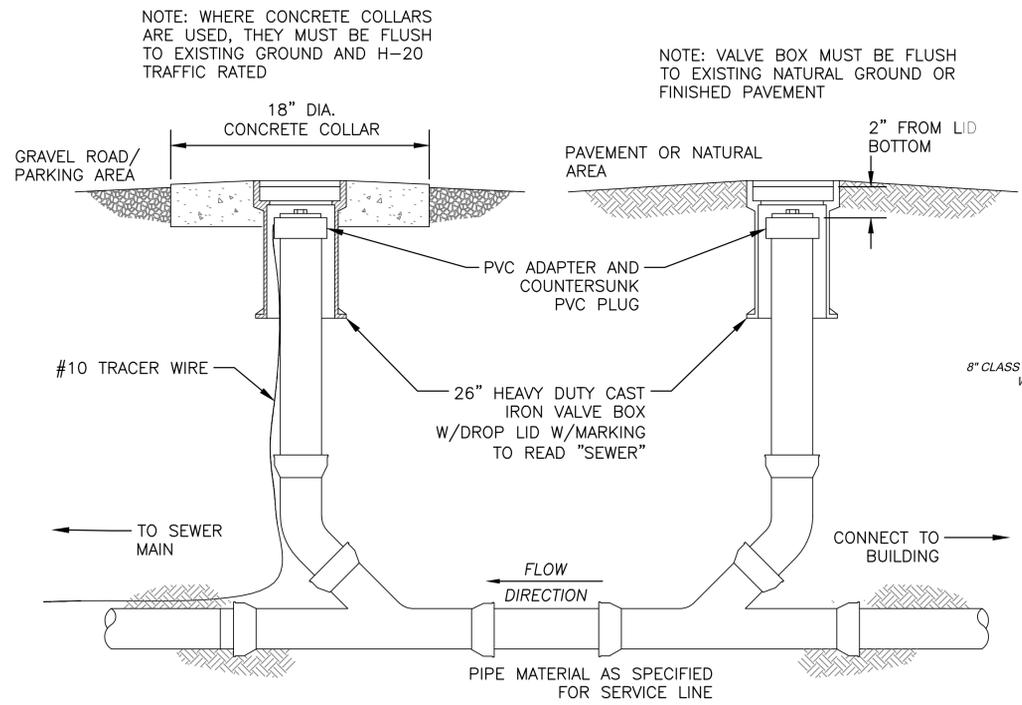


**CAMPSITE LATERAL CONNECTION TO MAIN**  
(WITH PRIVATE SEWER LATERAL TRACER WIRE)  
N.T.S.

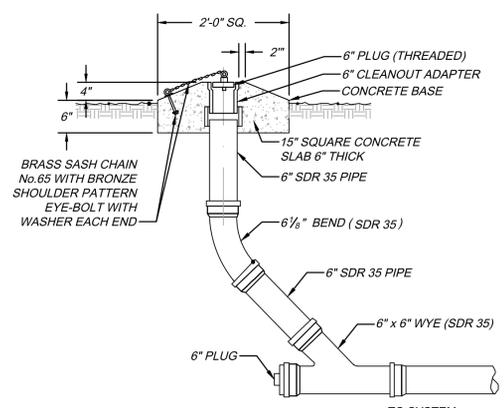


**MOUNTING PLAN WATER TOWER**  
N.T.S.

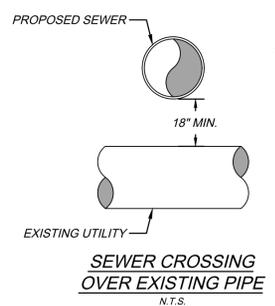
**NOTES**  
1. PROVIDE DOUBLE CLEANOUT WITHIN 10 FEET OF THE BUILDING, EVERY 100 FEET AND WHEN ACCUMULATED ALIGNMENT ANGLES EXCEED 90 DEGREES. SINGLE CLEANOUTS ARE NOT PERMITTED.



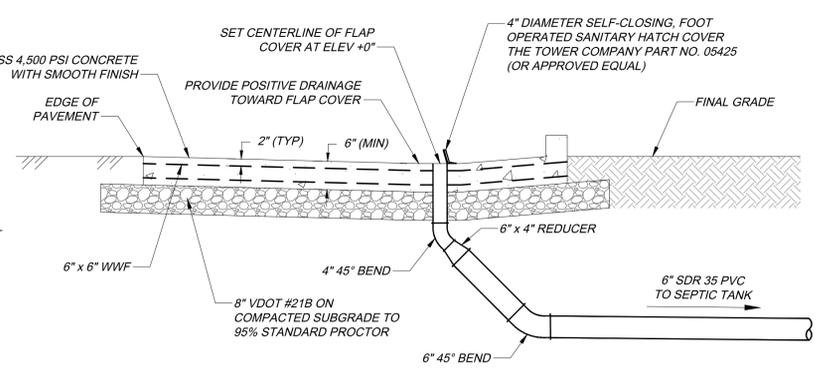
**DOUBLE CLEANOUT TO GRADE**  
N.T.S.



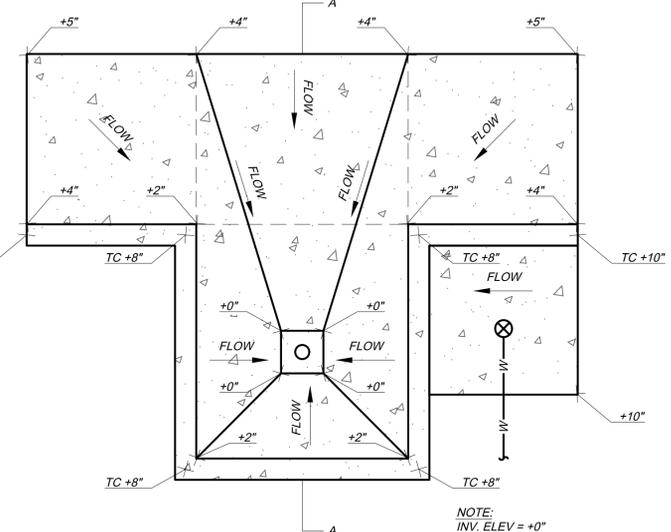
**CAMPSITE LATERAL CONNECTION / END OF LINE CLEANOUT**  
N.T.S.



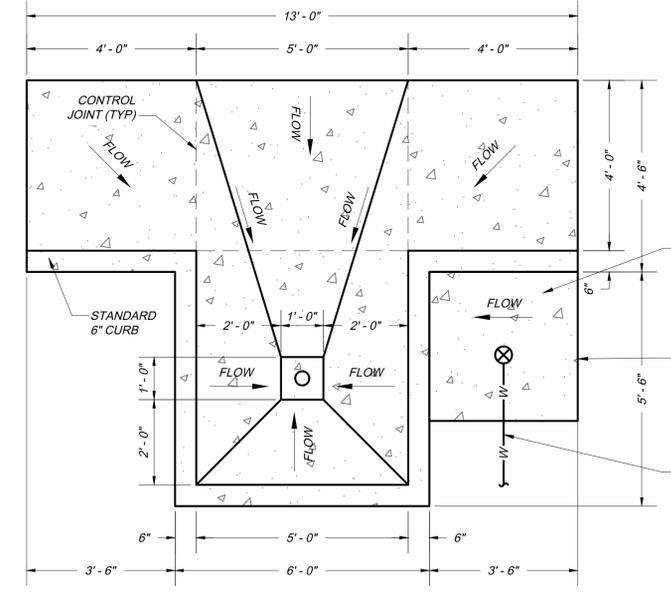
**SEWER CROSSING OVER EXISTING PIPE**  
N.T.S.



**SECTION A-A**



**PLAN VIEW ELEVATIONS**



**PLAN VIEW DIMENSIONS**

**RV DUMP STATION DETAILS**  
N.T.S.

07/23/2025	USFS COMMENTS
05/17/2025	USFS COMMENTS
09/15/2023	PER VDH COMMENTS

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434-847-7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA 24501

ENVIRONMENTAL ENGINEERING  
SURVEYING • LAND DEVELOPMENT  
CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**SANITARY SEWER DETAILS**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

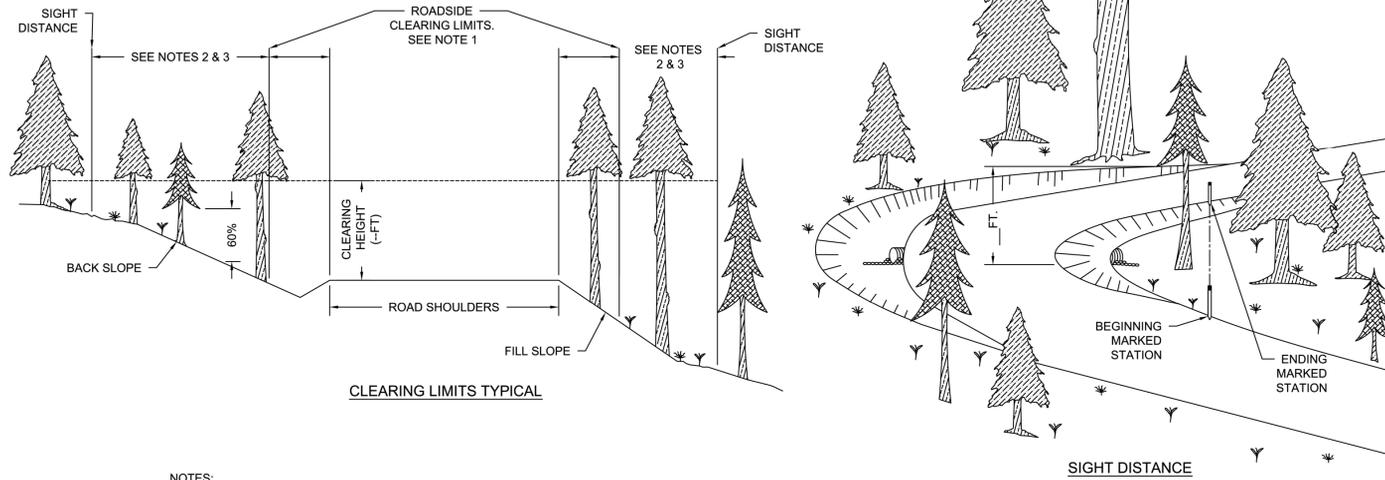
PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW

COMMONWEALTH OF VIRGINIA  
MICHAEL D. WILSON  
Lic. No. 044203  
07/23/2025  
PROFESSIONAL ENGINEER

**FINAL PLAN SET**  
**DESIGN CONTRACT NUMBER**  
12445122C0026  
**HURT & PROFFITT**  
SHEET NO. C-600  
REV. ---

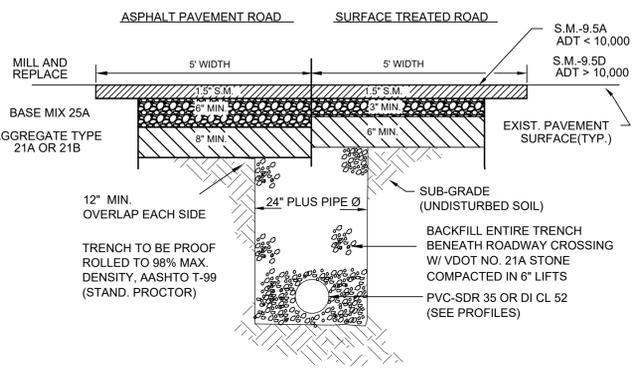
THIS SHEET IS INTENDED TO BE REPRODUCED AT 24X36. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.

**CLEARING DETAILS-G1-8**  
NOT TO SCALE



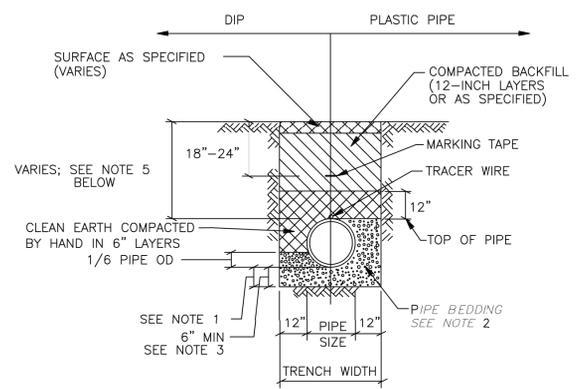
**NOTES:**

- ALL CONIFERS, HARDWOODS AND BRUSH WITHIN \_\_\_\_ FEET OF THE SHOULDERS OF THE ROAD OR THE BOTTOM OF THE DITCH SHALL BE REMOVED.
- THE AREA OF SIGHT DISTANCE CLEARING WILL BE FROM THE ROADSIDE CLEARING LIMIT, TO A LINE OF SIGHT BETWEEN THE BEGINNING AND ENDING STATIONS MARKED ON THE GROUND. CONIFERS WITHIN THIS AREA SHALL BE THINNED TO APPROXIMATELY A 2 FOOT TRUNK SPACING, EXCEPT WHERE MARKED WITH PAINT OR FLAGGING FOR REMOVAL TO AN ALTERNATE SPACING. ALL HARDWOODS AND BRUSH WITHIN THESE LIMITS SHALL BE REMOVED.
- BRANCHES ON REMAINING CONIFERS SHALL BE TRIMMED FROM GROUND LEVEL TO A CLEARING HEIGHT LIMIT FEET ABOVE THE ROADBED OR TO A LIMIT OF 60% OF THE TREE'S HEIGHT, WHICHEVER IS LESS. LIMBS OF VEGETATION SHALL BE CUT SO AS NOT TO PROTRUDE WITHIN THE CLEARING (ROADSIDE AND HEIGHT) LIMITS.



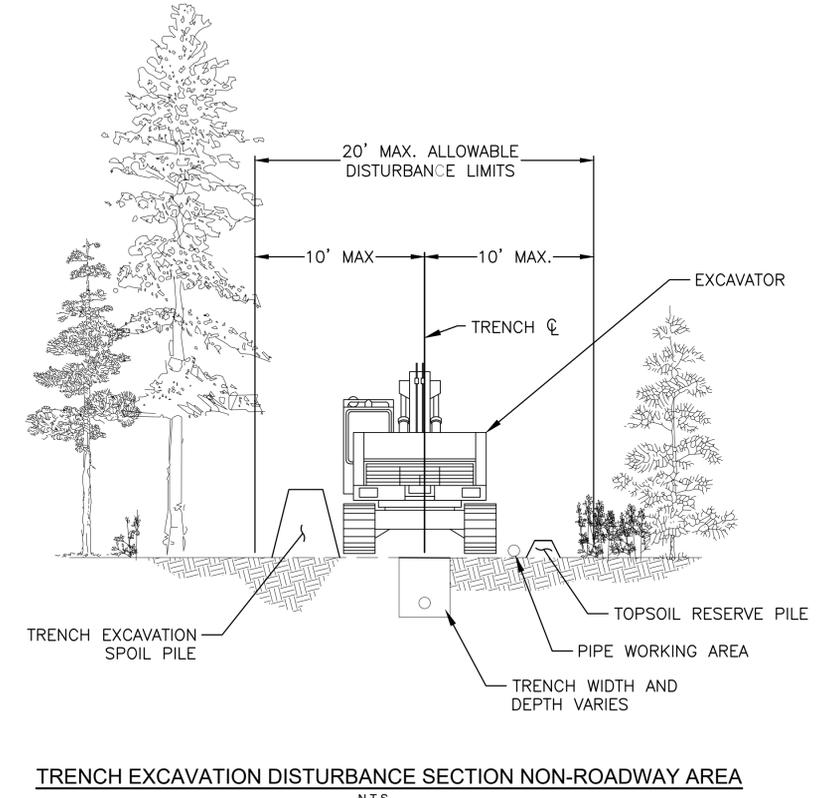
- NOTES:**
- A TRENCH BOX SHOULD BE USED IN ROAD AREAS WHERE THE DEPTH IS GREATER THAN 5'.
  - FOR LONGITUDINAL CUTS, MILL / REPLACEMENT SHALL EXTEND 12 INCHES BEYOND BASE MIX.

**OPEN CUT TRENCH/ROAD REPAIR**  
**WATER & SEWER**  
N.T.S.

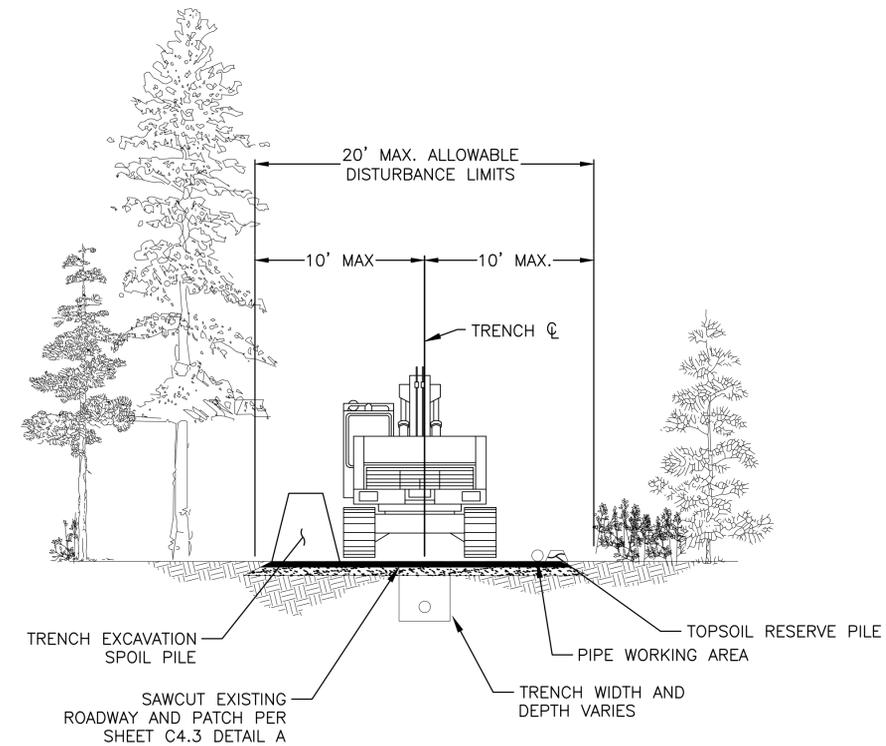


- NOTES:**
- 4" MIN BEDDING REQUIRED FOR DUCTILE IRON PIPE LARGER THAN 12", AND FOR ALL PIPE SIZES WHEN COVER EXCEEDS 10 FEET.
  - BEDDING FOR PLASTIC PIPE SHALL BE FROM TOP OF PIPE TO 6" MIN. BELOW PIPE.
  - DEPTH OF BEDDING FOR ALL TYPES OF PIPE SHALL BE 6" WHEN TRENCH BOTTOM IS LOCATED IN ROCK.
  - BEDDING STONE SHALL BE #57 OR #68.
  - MIN COVER FOR WATER PIPE SHALL BE 36" MIN FOR PIPE DIAMETERS SMALLER THAN 12" AND 48" FOR PIPE DIAMETERS 12" AND GREATER. MIN COVER FOR SEWER PIPE SHALL BE 36". MIN COVER IF WITHIN RIGHT OF WAY SHALL BE 36" BELOW EDGE OF PAVEMENT.

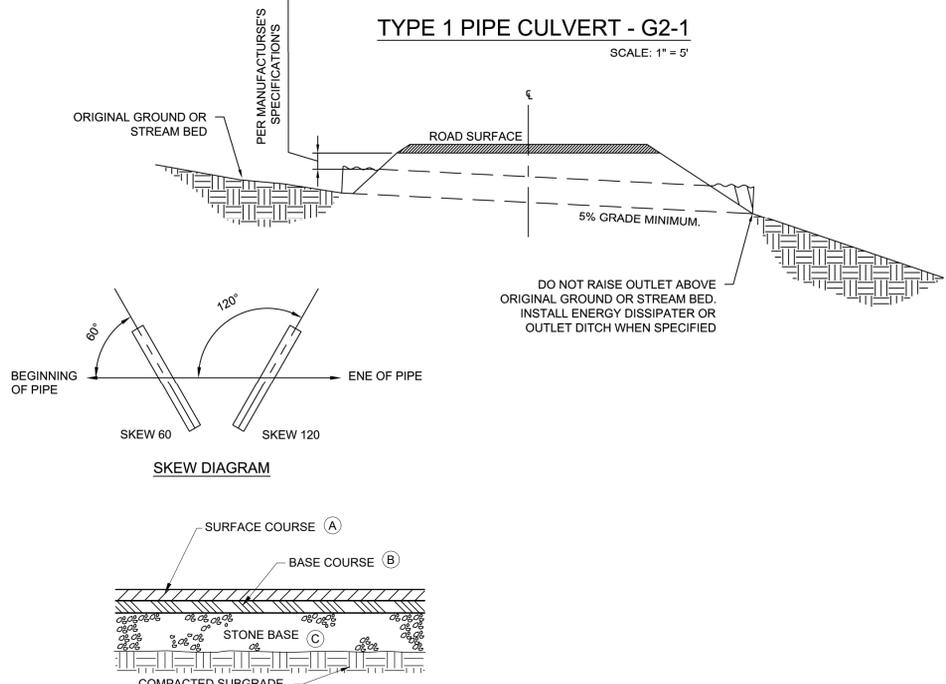
**SANITARY SEWER TRENCH**  
N.T.S.



**TRENCH EXCAVATION DISTURBANCE SECTION NON-ROADWAY AREA**  
N.T.S.



**TRENCH EXCAVATION DISTURBANCE SECTION ROADWAY AREA**  
N.T.S.



**TYPE 1 PIPE CULVERT - G2-1**  
SCALE: 1" = 5'

	DEPTH	MATERIAL
(A) SURFACE COURSE:	1.5"	VDOT TYPE SM-9.5A
(B) BASE COURSE:	3"	VDOT TYPE BM-25.0A
(C) STONE BASE:	6"	VDOT TYPE NO. 21B

- NOTE:**
- APPLICATION OF TACK AT JOINTS, ADJACENT TO CURBS, GUTTERS OR OTHER APPURTENANCES SHALL BE APPLIED BY HAND WAND AT THE RATE OF 0.3 GAL./SQ.YD.
  - ACTUAL PAVING SECTIONS TO BE BASED ON CBR RESULTS. ONSITE TESTING IS THE RESPONSIBILITY OF THE CONTRACTOR
  - ALL WORK SHALL CONFIRM WITH VDOT STANDARDS, INCLUDING APPLICATION RATES.

**STANDARD PAVEMENT REPLACEMENT SECTION**  
N.T.S.

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HANDP.COM  
ENVIRONMENTAL  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
GEO-TECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**SANITARY SEWER DETAILS**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW

COMMONWEALTH OF VIRGINIA  
MICHAEL D. WILSON  
Lic. No. 044203  
07/23/2025  
PROFESSIONAL ENGINEER

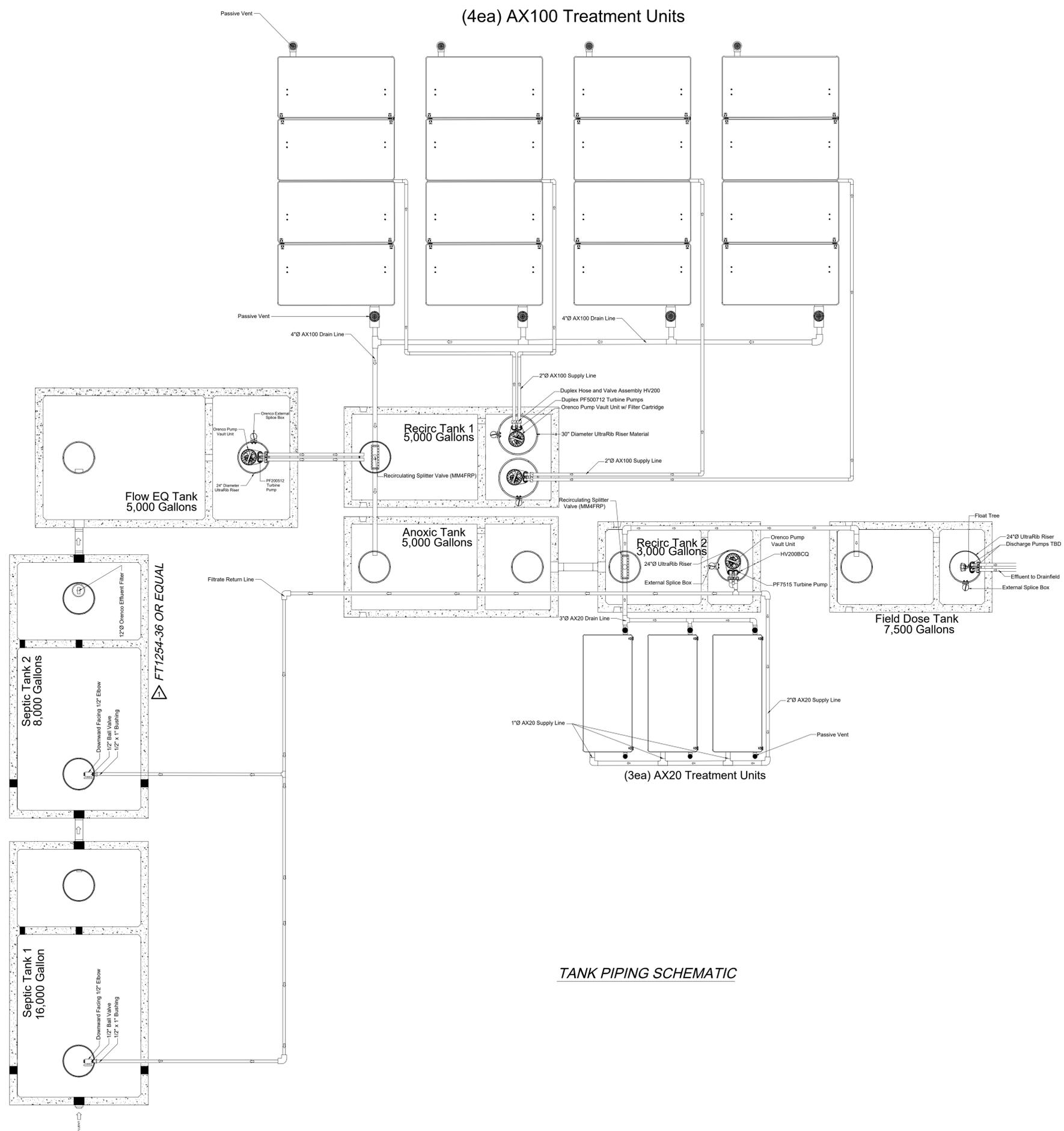
**FINAL PLAN SET**  
**DESIGN CONTRACT NUMBER**  
**12445122C0026**

**HURT & PROFFITT**  
SHEET NO. C-600.1  
REV. ---

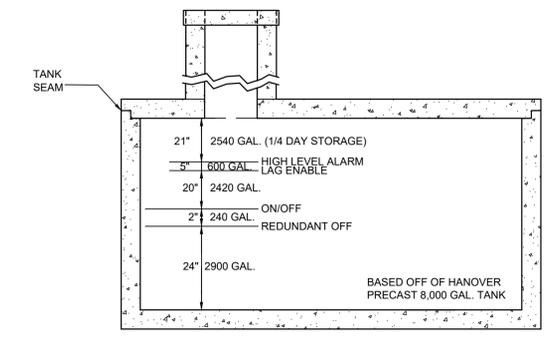
NO.	DATE	REVISION
3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS



THIS SHEET IS INTENDED TO BE REPRODUCED AT 1/8" = 1'-0". REPRODUCTION OF THIS SHEET AT A DIFFERENT SCALE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



TANK PIPING SCHEMATIC



DISCHARGE TANK  
FLOAT FUNCTION ELEVATIONS  
N.T.S.

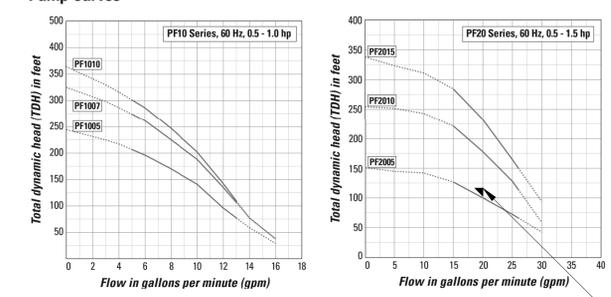
NOTE: THE ADVANTECH AX20(VIRGINIA) SYSTEM CONTAINS AN ADDITIONAL EMERGENCY SURGE STORAGE VOLUME OF 476 GALLONS

Technical Data Sheet **Crenco**  
SYSTEMS

Materials of Construction

Discharge	Glass-filled polypropylene or stainless steel
Discharge bearing	Engineered thermoplastic (PEEK)
Diffusers	Glass-filled PPO (Noryl GFN3)
Impellers	Celcor® acetal copolymer on 10-, 20-, and 30-gpm models; 50-gpm impellers are Noryl GFN3
Intake screen	Polypropylene
Suction connection	Stainless steel
Drive shaft	7/16-in. hexagonal stainless steel, 300 series
Coupling	Sintered stainless steel, 300 series
Shell	Stainless steel, 300 series
Motor	Franklin motor exterior constructed of stainless steel. Motor filled with deionized water and propylene glycol for constant lubrication. Hermetically sealed motor housing ensures moisture-free windings. All thrust absorbed by Kingsbury-type thrust bearing. Rated for continuous duty. Single-phase motors are equipped with surge arrestors for added security. Single-phase motors through 1.5 hp (1.11 kW) have built-in thermal overload protection, which trips at 203-221° F (95-105° C).

Pump Curves



PUMP MODEL:  
PF 200512 DESIGN POINT  
19.9 GPM @ 121.8' TDH

Crenco Systems® • 800-348-9843 • +1 541-459-4448 • www.crenco.com

WFO-P10-PF-1  
Rev. 10 © 01/21  
Page 3 of 4

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HP  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
GEO-TECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

TREATMENT DETAILS

GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW



FINAL  
PLAN SET

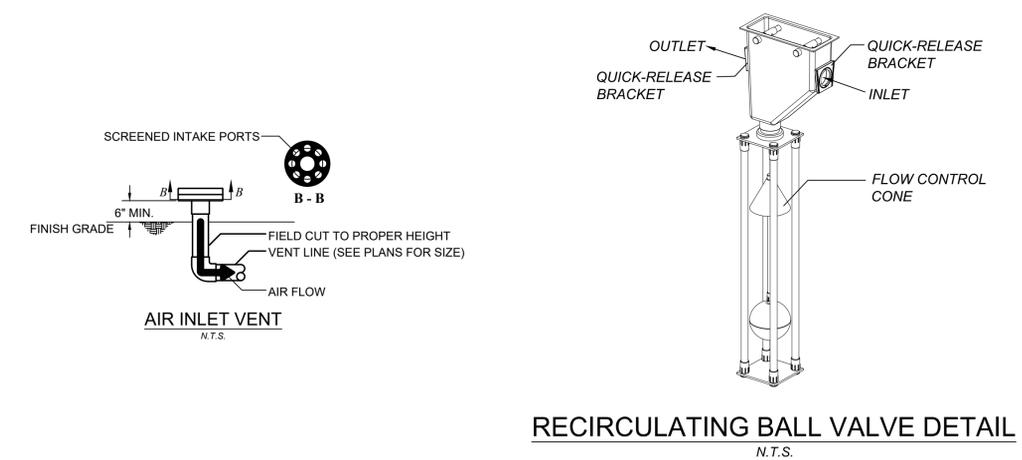
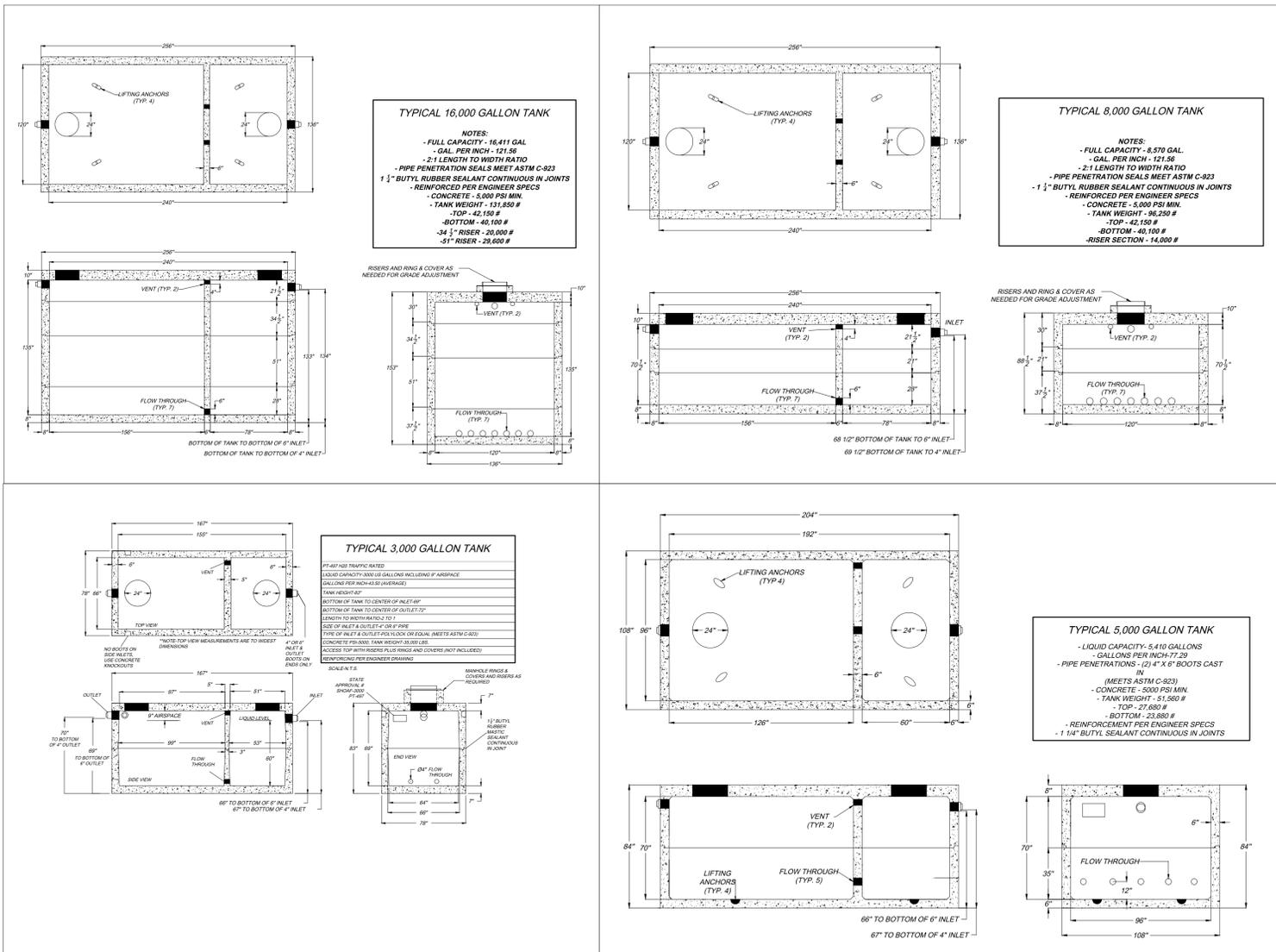
DESIGN CONTRACT  
NUMBER  
12445122C0026

**HURT & PROFFITT**

SHEET NO.	REV.
C-601	---

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

THIS SHEET IS INTENDED TO BE REPRODUCED AT 100% SCALE. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



**Worksheet - Pump Sizing**

**Section 1 - Summary from Worksheet 1**

Flow required to dose field	12.50	gpm
Flow required to flush field	7.40	gpm
Flow required to dose & flush field	19.90	gpm
Filter	AP4E-1.5F	
No. of Zones	4	zones
Zone valve	SVLVB-100	
Dripline	Wasteflow PC - 1/2gph	
Dripline longest lateral	250.00	ft.

**Section 2**

	Ft of head	Pressure
<b>A. Flush line - Losses through return line</b>		
Select Pipe from dropdown menu	PVC schedule 40	
Select Flush Line Diameter	1-1/4" inch	
Length of return line	250 ft.	
Equivalent length of fittings	62.5 ft.	
Elevation change, (if downhill enter 0)	0 ft.	
Pressure loss in 100 ft of pipe	0.95 ft.	0.41 psi
Total pressure loss from end of dripline to return	3.0 ft.	1.28 psi
<b>B. Dripline - Losses through Wasteflow dripline</b>		
Length of longest dripline lateral	250 ft.	
Minimum dosing pressure required at end of dripline	23.10 ft.	10.00 psi
Loss through dripline during flushing	4.97 ft.	2.13 psi
Total minimum required dripline pressure	28.07 ft.	12.15 psi
<b>A+B. Minimum Pressure required at beginning of dripline</b>		
CALCULATED pressure required at beginning	37.03 ft.	13.43 psi
SPECIFIED pressure at beginning of dripline	57.8 ft.	25.00 psi
Great! SPECIFIED Pressure is greater than CALCULATED Pressure requirement. Go to next step.		
<b>C. Drip components - Losses through headworks</b>		
Filter	0.9 ft.	2.05 psi
Zone valve pressure loss (not in diagram)	4.00 ft.	2.00 psi
Flow meter pressure loss (not in diagram)	4.60 ft.	1.99 psi
Other pressure losses	-	- psi
Total loss through drip components	9.50 ft.	6.07 psi
<b>D. Supply line - Minimum Pressure head required to get from pump tank to top of dripline</b>		
Select Pipe from dropdown menu	PVC schedule 40	
Select Supply line diameter	1-1/4" inch	
Length of supply line	250 ft.	
Equivalent length of fittings	62.5 ft.	
Height from pump to tank outlet	6 ft.	
Elevation change, (if downhill enter 0)	30 ft.	
Pressure loss/gain in 100 ft. of pipe	5.93 ft.	2.57 psi
Total gain or loss from pump to field	54.5 ft.	23.61 psi
Total dynamic head	121.8 ft.	52.72 psi
Pump capacity * - Field Flush Flow	19.9 gpm	52.72 psi
- Field Dose Flow	12.5 gpm	
- Filter Flush Flow	-	- psi
Pump Model Number	PF2010-12	
Voltz / Hp / phase	0240/1/1	

**Worksheet 1 - Field Flow**

**Total field**

Total Quantity of effluent to be disposed per day	5,000	gallons / day	note
Hydraulic loading rate	0.25	gallons / sq. ft. / day	note
Minimum Dispersal Field Area	20,000	square ft.	note
Total Dispersal Field Area	20,000	square ft.	note

**Flow per zone**

Number of Zones	4	zone(s)	note
Dispersal area per zone	5,000	square ft.	note
Choose line spacing between WASTEFLOW lines	2	ft.	note
Choose emitter spacing between WASTEFLOW lines	2	ft.	note
Total linear ft per zone (minimum required)	2,500	ft. per zone	note
Total number of emitters per zone	1,250	emitters per zone	note
Select Wasteflow dripline (16mm)	Wasteflow PC - 1/2gph	dripline	note
Pressure at the beginning of the dripline	25	psi	note
Feet of Head at the beginning of the dripline	57.75	ft.	note
What is the flow rate per emitter in gph?	0.6	gph	note
Dose flow per zone	12.50	gpm	note

Note: A few States or Counties require additional flow for flushing. Please check your local regulations. Flush velocity calculation below is for PC dripline. Classic dripline requires less flow to flush than PC. Please refer to Geoflow's spreadsheet "Design Flow and Flush Curves" at [www.geoflow.com](http://www.geoflow.com) or call 800-828-3388.

If required, choose flush velocity	1	ft/sec	note
How many lines of WASTEFLOW per zone?	10	lines	note
Fill in the actual length of longest dripline lateral	250	ft.	note
Flush flow required at the end of each dripline	0.74	gpm	note
Total Flow required to achieve flushing velocity	7.40	gpm	note
Total Flow per zone - worst case scenario	19.90	gpm	note

**Select Filters and zone valves**

Select Filter Type	Vortex Screen Filter		note
Recommended Filter (item no.)	AP4E-1.5F	Screen Filter 0-20gph	Use 1-1/2 in vortex
Select Zone Valve Type	Electric Solenoid		note
Recommended Zone Valve (item no.)	SVLVB-100	1-in. Solenoid valve	note

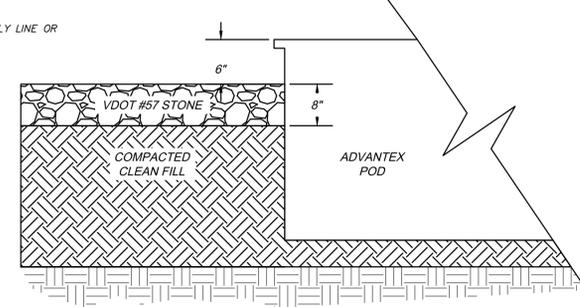
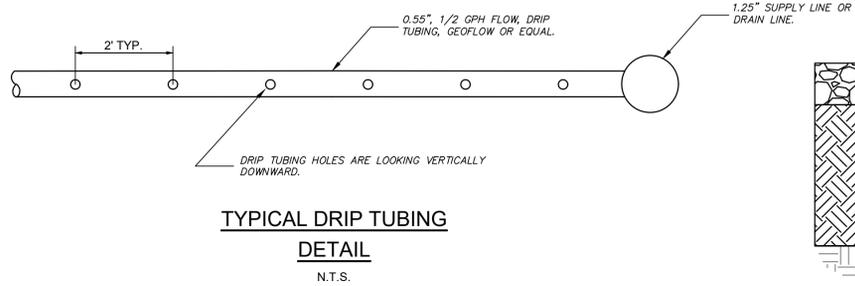
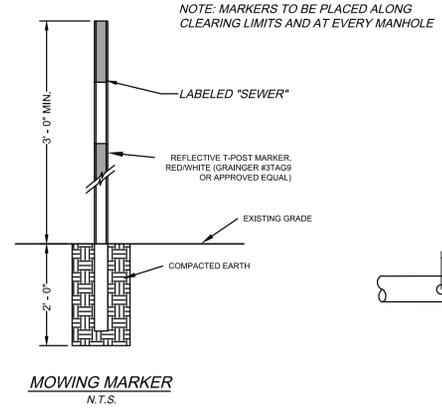
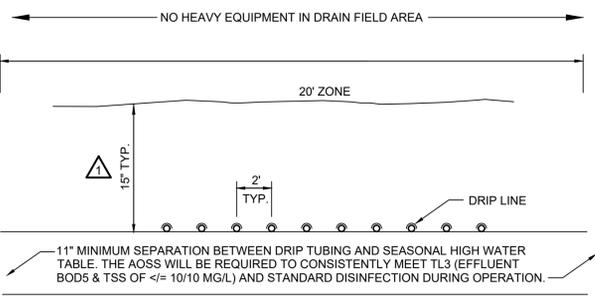
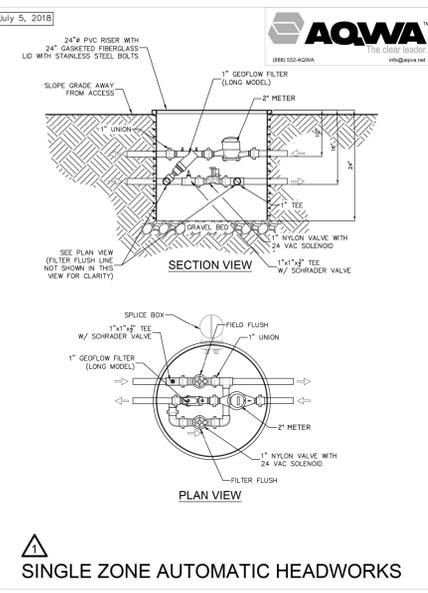
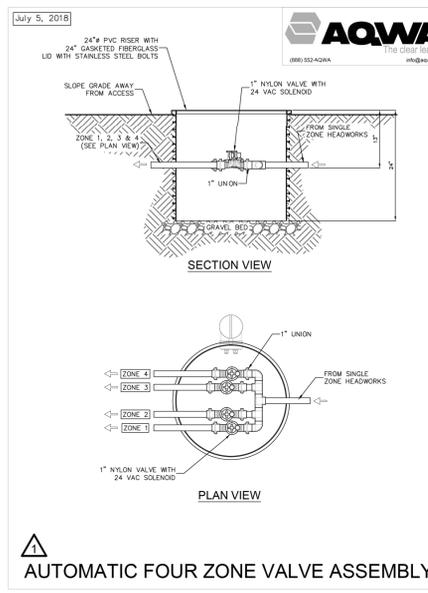
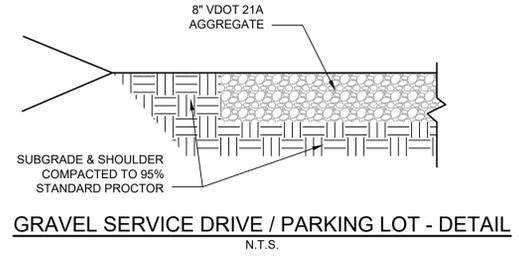
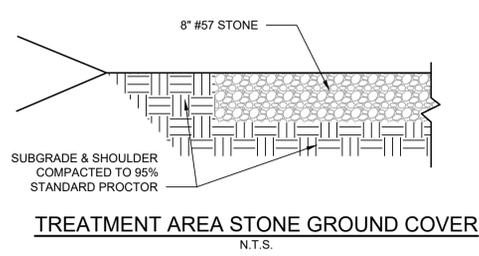
**Dosing**

Number of doses per day / zone:	6	doses	note
Timer ON Pump run time per dose/zone:	16.40	mins.secs	16.67
Timer OFF Pump off time between doses	3.43	hrs.mins	3.72
Per Zone - Pump run time per day/zone:	1.40	hrs.mins	1.67
All Zones - Number of doses per day / all zone	24	doses / day	
Allow time for field to pressurize	0:00:30	hrs.mins.secs	0.500
Filter flush timer	0:00:20	hrs.mins.secs	0.333
Drain timer	0:01:00	hrs.mins.secs	1.000
Field flush timer	0:00:30	hrs.mins.secs	0.500
Field flush counter	3	cycles	note
Time required to complete all functions per zone	7:36	hrs.mins	7.6
Dose volume per zone	208	gallons per dose	note

Allow time in the day for controller to have pressurization and drainage time.

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

THIS SHEET IS INTENDED TO BE REPRODUCED AT 24X36. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.

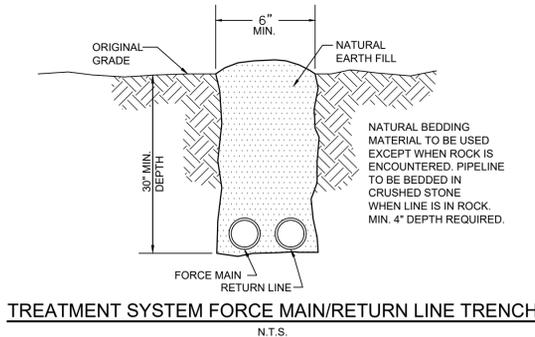
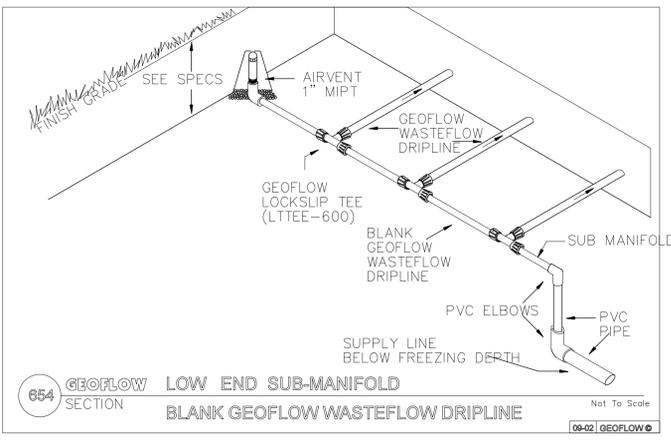
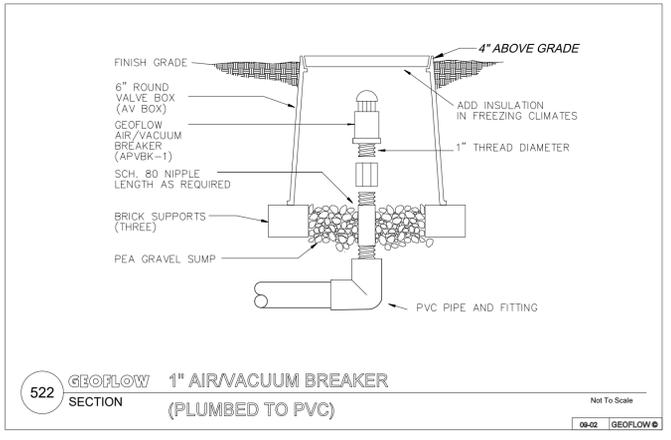
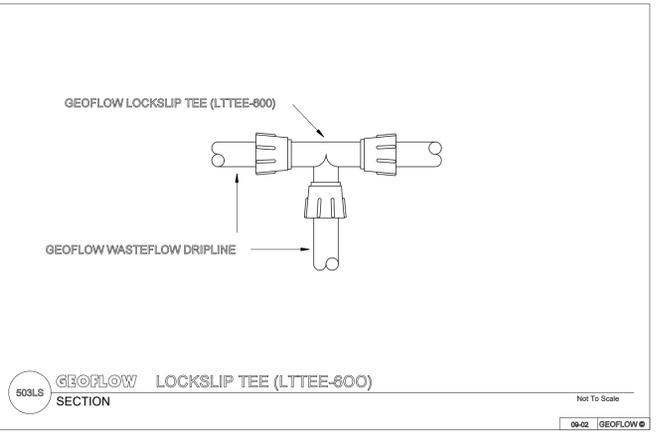
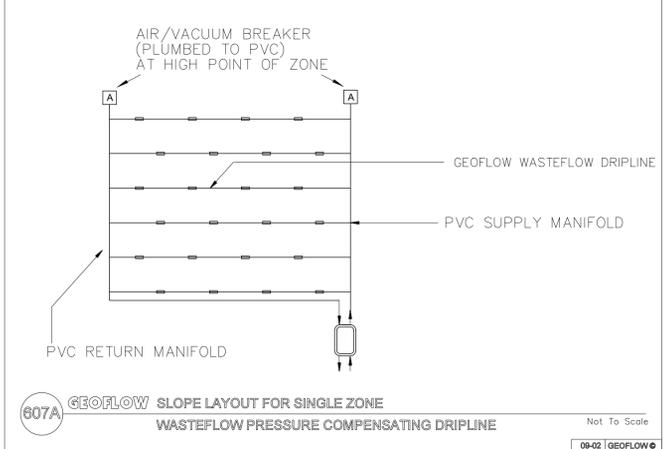
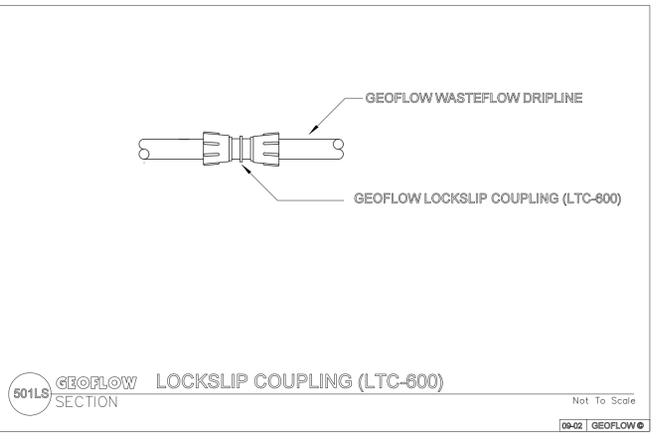


If required, choose flush velocity	0.5 ft/sec
How many lines of WASTEFLOW?	10 lines
Flush flow required at the end of each dripline	0.37 gpm
Total Flow required to achieve flushing velocity	3.70 gpm
<b>Total System Flow - worst case scenario</b>	<b>14.74 gpm</b>
Select pipe diameters for manifolds and submains	1.25 inch
Select Vortex Filter (item no.)	AP4E-1F/5 (1in.)
Select Zone Valve (item no.)	SVLV-100
Maximum length of each WASTEFLOW line.	424 ft.

For additional technical flow, pressure and flushing data please refer to Geoflow's Design Manual and WASTEFLOW hydraulics worksheet.

Check below to choose quantity and length of daily dose:

<b>Dosing</b>	
Number of doses per day / zone:	6 doses
Pump run time per dose/zone (minutes):	18.87 minutes
Pump run time per day/zone (hours):	1.89 hours / day
Number of doses per day / all zones:	24
Pump run time per day/all zones (hours):	7.55 hours
Dose volume per zone	208 gallons per dose



3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

HP  
434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HANDP.COM  
SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL ENGINEERING • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**TREATMENT DETAILS**

GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW

COMMONWEALTH OF VIRGINIA  
MICHAEL D. WILSON  
Lic. No. 044203  
07/23/2025  
PROFESSIONAL ENGINEER

**FINAL PLAN SET**

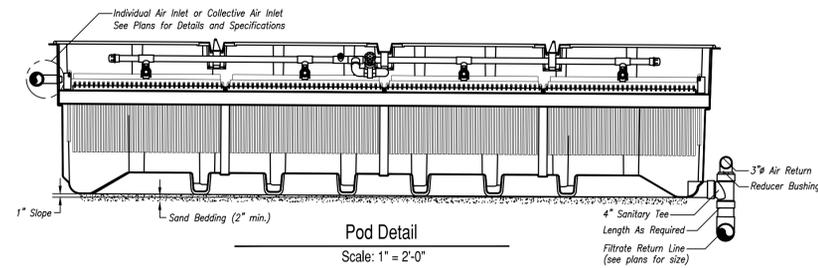
DESIGN CONTRACT NUMBER  
12445122C0026

**HURT & PROFFITT**

SHEET NO. C-603 REV. ---

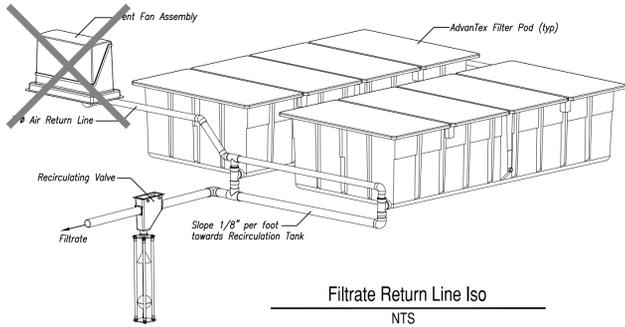
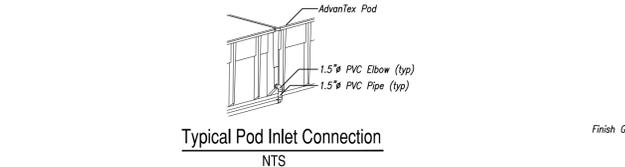
THIS SHEET IS INTENDED TO BE REPRODUCED AT 20X SIZE. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.

**AdvanTex® AX100 System**  
Ventilation Details

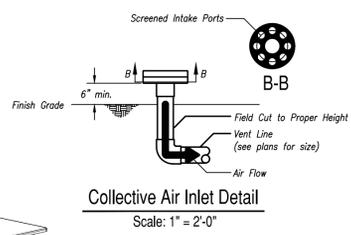


Pod Detail  
Scale: 1" = 2'-0"

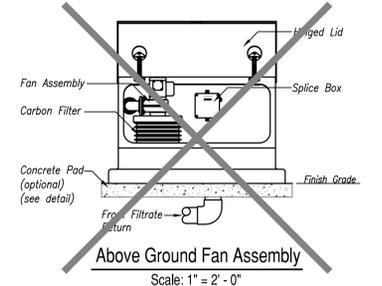
Typical Pod Inlet Connection  
NTS



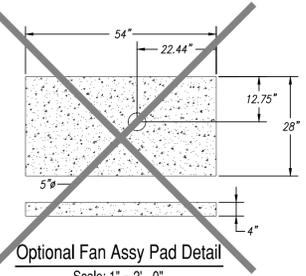
Filtrate Return Line Iso  
NTS



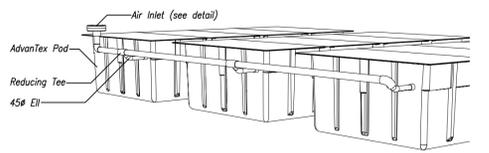
Collective Air Inlet Detail  
Scale: 1" = 2'-0"



Above Ground Fan Assembly  
Scale: 1" = 2'-0"



Optional Fan Assy Pad Detail  
Scale: 1" = 2'-0"



Collective Air Inlet Option  
Scale: NTS

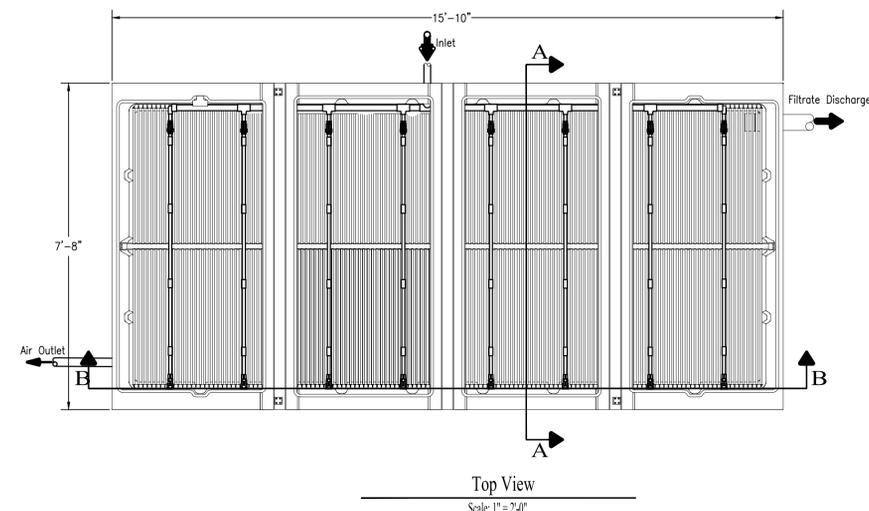
Copyright © 2011  
Oreco Systems®, Inc.

**UNAUTHORIZED CHANGES & USES**  
Oreco has prepared these drawings for use by the design engineer. Oreco will not be responsible or liable for unauthorized changes to or uses of these drawings. All changes to these drawings must be made in writing and must be approved by the design engineer.

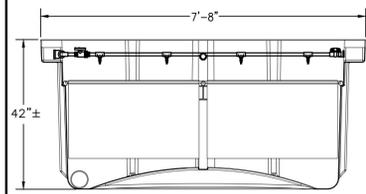
PRODUCT CONFIGURATION DRAWINGS



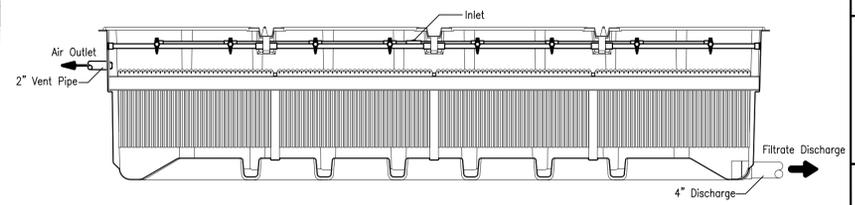
Drawn By: BEN SMITH	Project: AdvanTex® AX100 System	Scale: As Shown
Drawn For:	Typical Ventilation System	Sheet: 1 OF 1
	Title: Collective air inlet details	Rev: A-02 Date: 8/17/2011



Top View  
Scale: 1" = 2'-0"



Section A-A  
Scale: 1" = 2'-0"



Section B-B  
Scale: 1" = 2'-0"

	Title: Typical AdvanTex Details	Scale: As Shown
	Drawn By: Chris Jordan	Revision: 2/2018
Designed By: Engineering	Drawing No.:	
Approved By:	Date:	
Sole Approver:		
U.S. Patents 4,439,323 and 5,462,635 Pending Foreign Patents © 1998 Oreco Systems®, Inc.		

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HP  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
GEO-TECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**AX20 & AX100 TANK DETAILS**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	03/06/2023
DRAWN BY:	DBM
CHECKED BY:	MDW

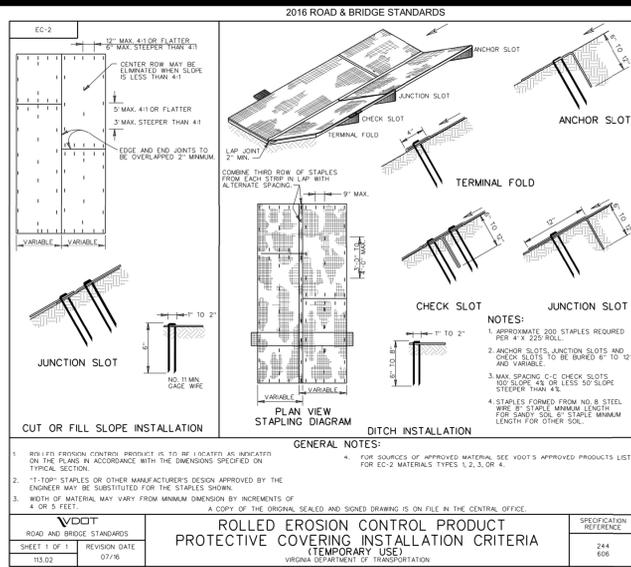


**FINAL PLAN SET**  
DESIGN CONTRACT NUMBER  
12445122C0026  
**HURT & PROFFITT**

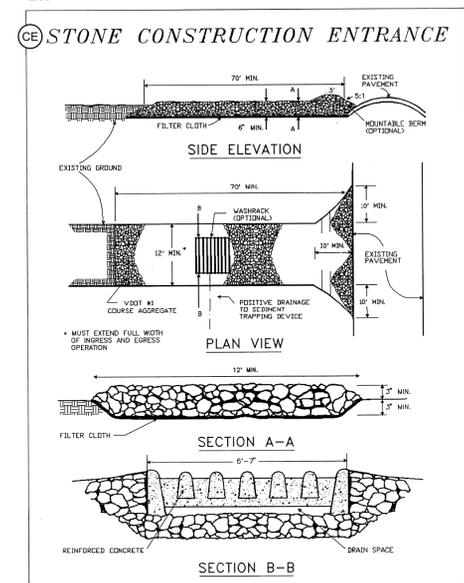
3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

SHEET NO.	REV.
C-604	---

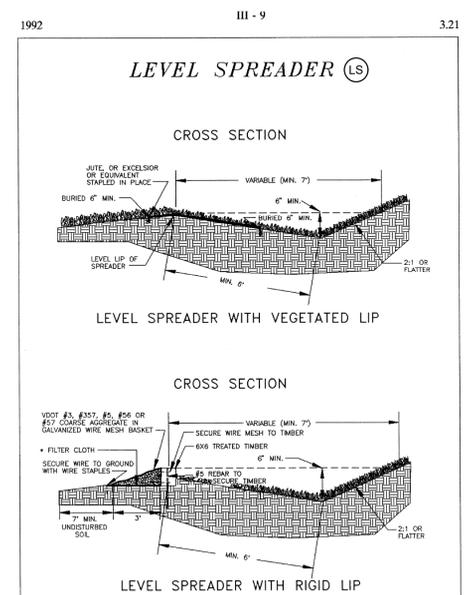
Jul 22, 2025 - 5:15pm Z:\2022\0221254\Engineering\CAD\Sanitary Sewer.dwg



1992 3.02 2016 ROAD & BRIDGE STANDARDS



Source: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC Plate 3.02-1



Source: Va. DSWC and N.C. Erosion and Sediment Control Planning and Design Manual Plate 3.21-2

**TABLE 3.31-B (REVISED JUNE 2003) TEMPORARY SEEDING SPECIFICATIONS QUICK REFERENCE FOR ALL REGIONS**

APPLICATION DATES	SEED SPECIES	APPLICATION RATES
SEPT. 1 - FEB. 15	90% MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)	50 - 100 (LBS/ACRE)
FEB. 16 - APR. 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60 - 100 (LBS/ACRE)
MAY 1 - AUG. 31	GERMAN MILLET	50 (LBS/ACRE)

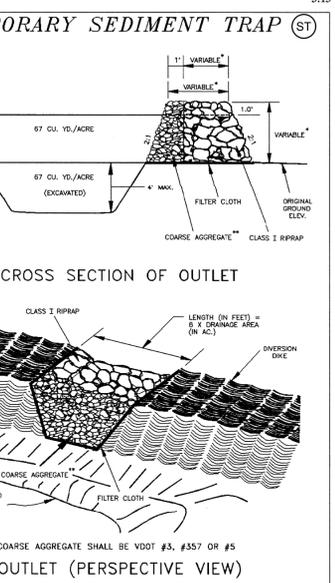
**FERTILIZER & LIME**

- APPLY 10-10-10 FERTILIZER AT A RATE OF 450 LBS / ACRE (OR 10 LBS / 1,000 SQ.FT.)
- APPLY PULVERIZED AGRICULTURAL LIMESTONE AT A RATE OF 2 TONS/ACRE (OR 90 LBS / 1,000 SQ. FT.)

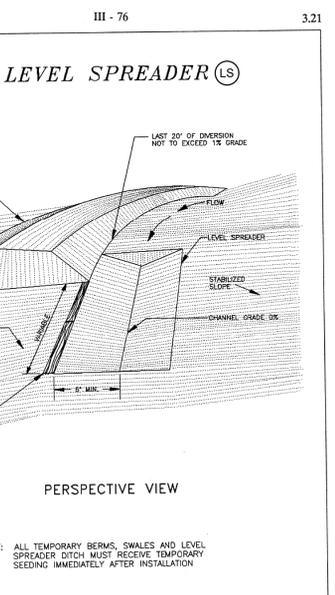
**NOTE:**

- A SOIL TEST IS NECESSARY TO DETERMINE THE ACTUAL AMOUNT OF LIME REQUIRED TO ADJUST THE SOIL PH OF SITE
- INCORPORATE THE LIME AND FERTILIZER INTO THE TOP 4 - 6 INCHES OF THE SOIL BY DISKING OR BY OTHER MEANS.
- WHEN APPLYING SLOWLY AVAILABLE NITROGEN, USE RATES AVAILABLE IN EROSION & SEDIMENT CONTROL TECHNICAL BULLETIN #4, 2003 NUTRIENT MANAGEMENT FOR DEVELOPMENT SITES AT [HTTP://WWW.DCR.STATE.VA.US/SW/E&S.HTM#PUBS](http://www.dcr.state.va.us/sw/e&s.htm#pubs)

1992 3.31



Source: Va. DSWC Plate 3.13-2



Source: Adapted from N.C. Erosion and Sediment Control Planning and Design Manual Plate 3.21-1

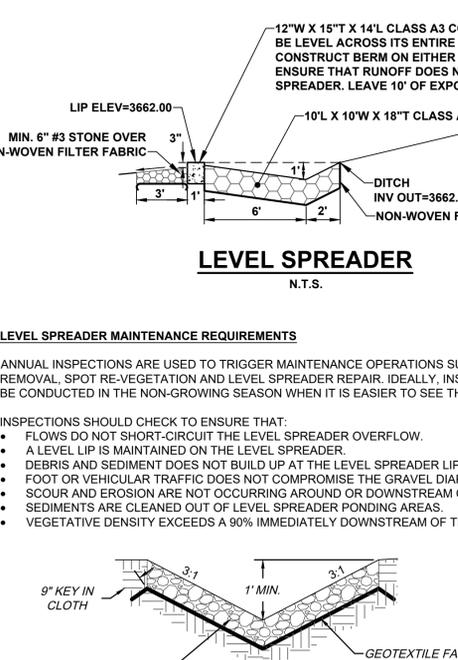
**TABLE 3.32-C SITE SPECIFIC SEEDING MIXTURES FOR APPALACHIAN/MOUNTAIN AREA**

Minimum Care Lawn	DRIP FIELD LAGOON	Total Lbs. Per Acre
- Commercial or Residential	- Kentucky 31 or Turf Type Tall Fescue	200-250 lbs.
- Improved Perennial Ryegrass *	- Kentucky Bluegrass	0-10%
- Kentucky Bluegrass		0-10%
<b>High-Maintenance Lawn</b>		
Minimum of three (3) up to five (5) varieties of bluegrass from approved list for use in Virginia.		125 lbs.
<b>General Slope (3:1 or less)</b>		
- Kentucky 31 Fescue		128 lbs.
- Red Top Grass		2 lbs.
- Seasonal Nurse Crop		20 lbs.
- Weeping Lovegrass		150 lbs.
<b>Low-Maintenance Slope (Steeper than 3:1)</b>		
- Kentucky 31 Fescue		108 lbs.
- Red Top Grass		2 lbs.
- Seasonal Nurse Crop **		20 lbs.
- Crownvetch ***		150 lbs.

**NOTE:**

- Perennial Ryegrass will germinate faster and at lower soil temperatures than March, April through May 15th
- Annual Ryegrass
- May 16th through August 15th
- Foxtail Millet
- August 16th through September, October
- Annual Ryegrass
- November through February
- Winter Ryegrass

\*\*\* 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.



Source: Va. DSWC Plate 3.09-1

**TABLE 3.35-A ORGANIC MULCH MATERIALS AND APPLICATION RATES**

MULCHES:	RATES:		NOTES:
	PER ACRE	PER 1000 SQ.FT.	
STRAW	1 1/2" - 2 TONS (MINIMUM 2 TONS FOR WINTER COVER)	70 - 90 LBS.	FREE FROM NOXIOUS WEEDS, INVASIVE SPECIES, AND COARSE MATTER. MUST BE ANCHORED, SPREAD WITH A MULCH BLOWER OR BY HAND.

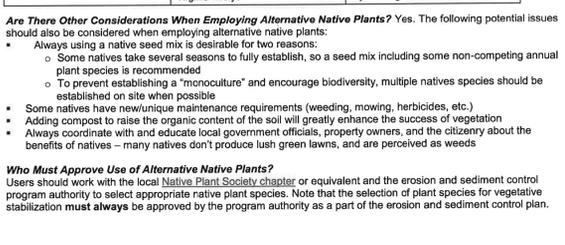
**Invasive Non-Native Species**

Common Name	Alternative Virginia Native	Scientific Name
Common Reed	Great bulrush	<i>Scirpus tabernaemontani</i>
Common Cattail	Common Cattail	<i>Typha latifolia</i>
Roundheaded bushclover	Lespedeza bushclover	<i>Lespedeza capitata</i>
Butterflyweed	Asclepias tuberosa	<i>Asclepias tuberosa</i>
Joe-pye weed	Eutrochium cubium	<i>Eutrochium cubium</i>
Black-eyed Susan	Rudbeckia fulgida	<i>Rudbeckia fulgida</i>
Big blue stem	Andropogon gerardii	<i>Andropogon gerardii</i>
Indian grass	Sorghastrum nutans	<i>Sorghastrum nutans</i>
Side oats grama	Bouteloua curtipendula	<i>Bouteloua curtipendula</i>
Roundheaded bushclover	Lespedeza capitata	<i>Lespedeza capitata</i>
Patridge pea	Chamaecrista fasciculata	<i>Chamaecrista fasciculata</i>
Big blue stem	Andropogon gerardii	<i>Andropogon gerardii</i>
Little blue stem	Schizachyrium scoparium	<i>Schizachyrium scoparium</i>
Indian grass	Sorghastrum nutans	<i>Sorghastrum nutans</i>
Switchgrass	Panicum virgatum	<i>Panicum virgatum</i>
Big blue stem	Andropogon gerardii	<i>Andropogon gerardii</i>
Little blue stem	Schizachyrium scoparium	<i>Schizachyrium scoparium</i>
Indian grass	Sorghastrum nutans	<i>Sorghastrum nutans</i>
Switchgrass	Panicum virgatum	<i>Panicum virgatum</i>
Broomsedge	Andropogon virginicus	<i>Andropogon virginicus</i>
Deertongue	Dichanthium clandestinum	<i>Dichanthium clandestinum</i>
Side oats grama	Bouteloua curtipendula	<i>Bouteloua curtipendula</i>
Canadian wildrye	Elymus canadensis	<i>Elymus canadensis</i>
Botchgrass	Elymus hystrix	<i>Elymus hystrix</i>
Virginia wildrye	Elymus virginicus	<i>Elymus virginicus</i>

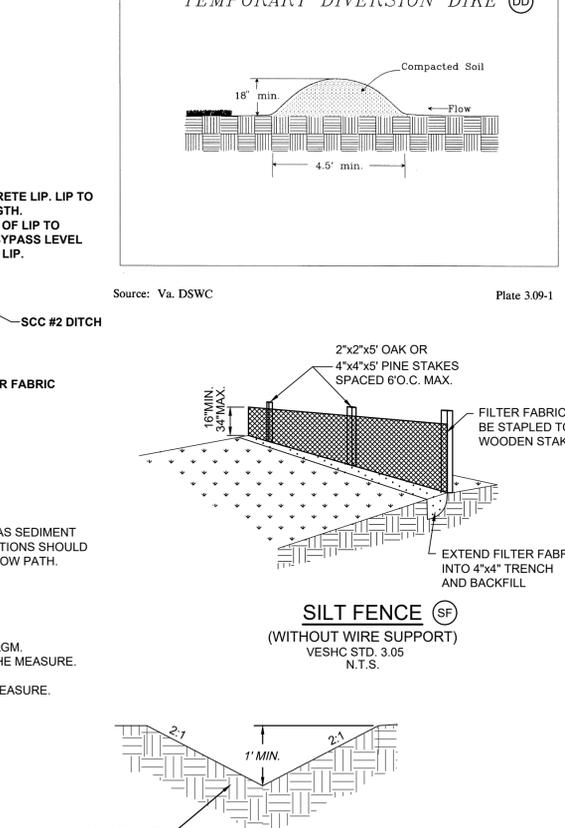
**Are There Other Considerations When Employing Alternative Native Plants?** Yes. The following potential issues should also be considered when employing alternative native plants:

- Always using a native seed mix is desirable for two reasons:
  - Some natives take several seasons to fully establish, so a seed mix including some non-competing annual plant species is recommended
  - To prevent establishing a "monoculture" and encourage biodiversity, multiple natives species should be established on site when possible
- Some natives have new/unique maintenance requirements (weeding, mowing, herbicides, etc.)
- Adding compost to raise the organic content of the soil will greatly enhance the success of vegetation
- Always coordinate with and educate local government officials, property owners, and the citizenry about the benefits of natives - many natives don't produce lush green lawns, and are perceived as weeds

**Who Must Approve Use of Alternative Native Plants?** Users should work with the local Native Plant Society chapter or equivalent and the erosion and sediment control program authority to select appropriate native plant species. Note that the selection of plant species for vegetative stabilization must always be approved by the program authority as a part of the erosion and sediment control plan.



Source: Va. DSWC Plate 3.09-1



Source: Va. DSWC Plate 3.09-1

**SANTARY SEWER LINE RESTORATION PLAN**

**OBJECTIVE:** THE OBJECTIVE OF THE SANITARY SEWER RESTORATION PLAN IS TO RESTORE THE AREA WHERE THE EXISTING SANITARY SEWER IS REMOVED AND REPLACE BACK TO ORIGINAL CONDITIONS. NOTE THAT THIS AREA WILL BE RESTORED TO EXISTING CONDITIONS AS IT IS CURRENTLY A WOODED AND GRASS AREA.

- RESTORE THE SEWER CORRIDOR TO THE ORIGINAL CONTOURS. CONTRACTOR TO ENSURE THAT THE DRAINAGE PATTERNS ARE THE SAME AS THEY WERE PRIOR TO THE INITIATION OF WORK.
- THE AREA WHERE THE EXCAVATION TOOK PLACE SHALL BE DECOMPACTED USING SUBSURFACE TILLER OR RIPPER TO BREAK UP COMPACTED LAYERS WITHIN THE CORRIDOR. THE RIPPER SHALL PENETRATE TO A DEPTH OF AT LEAST 12 INCHES OR AS DETERMINED BY SITE CONDITIONS.
- USE A GRADER OR SIMILAR EQUIPMENT TO RESHAPE THE CORRIDOR SURFACE AFTER DECOMPACTION. THIS HELPS RESTORE PROPER DRAINAGE AND ELIMINATE AREAS OF CONCENTRATED FLOW.
- CONDUCT A FINAL GRADING PASS TO ENSURE THE CORRIDOR SURFACE IS UNIFORM AND FREE FROM ANY LARGE IRREGULARITIES.
- AFTER DECOMPACTION AND RESHAPING, USE THE WATER TRUCK TO LIGHTLY MOISTEN THE CORRIDOR TO HELP SETTLE THE NEWLY LOOSENED MATERIAL.
- INSPECT THE DECOMPACTION CORRIDOR TO ENSURE THAT THE LAYERS HAVE BEEN ADEQUATELY BROKEN UP AND THAT THE SURFACE IS EVEN AND PROPERLY GRADED.
- TEST THE CORRIDORS COMPACTION USING APPROPRIATE TESTING EQUIPMENT (E.G., DENSITY TESTS) TO ENSURE THAT THE COMPACTION IS WITHIN ACCEPTABLE LIMITS.
- REMOVE ANY EXCESS DEBRIS OR MATERIAL GENERATED DURING THE DECOMPACTION PROCESS.
- SEED, STRAW AND OR MULCH THE AREA FOLLOWING PERMANENT STABILIZATION PRACTICES. MONITOR THE AREA AS THE VEGETATION IS ESTABLISHED TO ENSURE THAT CONCENTRATED FLOWS DO NOT DEVELOP IN RILLS. UTILIZE THE RECOMMENDED USFS SEEDING SPECIFICATIONS.

**SEDIMENT TRAP DESIGN WORKSHEET**

JOB:

DATE:

SEDIMENT TRAP - PERMANENT TRAP AT RIVER

AREA = 3 Acres  
REQ'D TOTAL STORAGE (134 CY/ACRE) = 402 CY  
10,854 CF

DEPTH BELOW STONE OUTLET = 3.0 FT (Maximum Depth = 4')  
VOLUME 1 (1/2 OF REQ'D STORAGE) = 5,427 CF Wet Storage  
VOLUME 2 = 0.85 x A1 x D1 A1 = 2,128 CF Surface Area of Wet Storage

Trial Dimension of Wet Storage Surface Area based on a minimum 2:1 length to width ratio  
L = 65 FT  
W = 33 FT

Ho = (Outlet Height) 3.0 FT  
(This is also D2, Depth of Dry Storage)  
H = (Embankment Height) 4 FT  
W = (Minimum Top Width) See table at left

**CHECK VOLUMES (Wet Storage & Dry Storage):**

**WET STORAGE**  
DEPTH (D1) = 3.0 Excavated Depth below stone outlet  
BOTTOM WIDTH = 29 FT 1:1 SIDE SLOPES  
BOTTOM LEN. = 64 FT 1:1 SIDE SLOPES  
TOP WIDTH = 35 FT  
TOP LEN. = 70 FT 2 x WIDTH

WET VOLUME = (BOT. AREA + TOP AREA) X 2 X DEPTH  
WET VOLUME (V1) = 6459 CF > OR = 5,427

LEN OF OUTLET = 18 FT

**DRY STORAGE**  
Ho (D2) = 3  
BOTTOM WIDTH = 35 FT  
BOTTOM LEN. = 70 FT 2 x WIDTH  
TOP WIDTH = 47 FT 2:1 SLOPE  
TOP LEN. = 82 FT 2:1 SLOPE

DRY VOLUME = (BOT. AREA + TOP AREA) X 2 X DEPTH  
DRY VOLUME (V2) = 9456 CF

TOTAL VOL. = 15,915 CF  
REQ'D VOL. = 10,854 CF

Source: Va. DSWC Plate 3.09-1

**HURT & PROFFIT**  
INSPIRED / RESPONSIVE / TRUSTED

**EROSION AND SEDIMENT CONTROL DETAILS**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

**FINAL PLAN SET**

**DESIGN CONTRACT NUMBER 12445122C0026**

**HURT & PROFFIT**

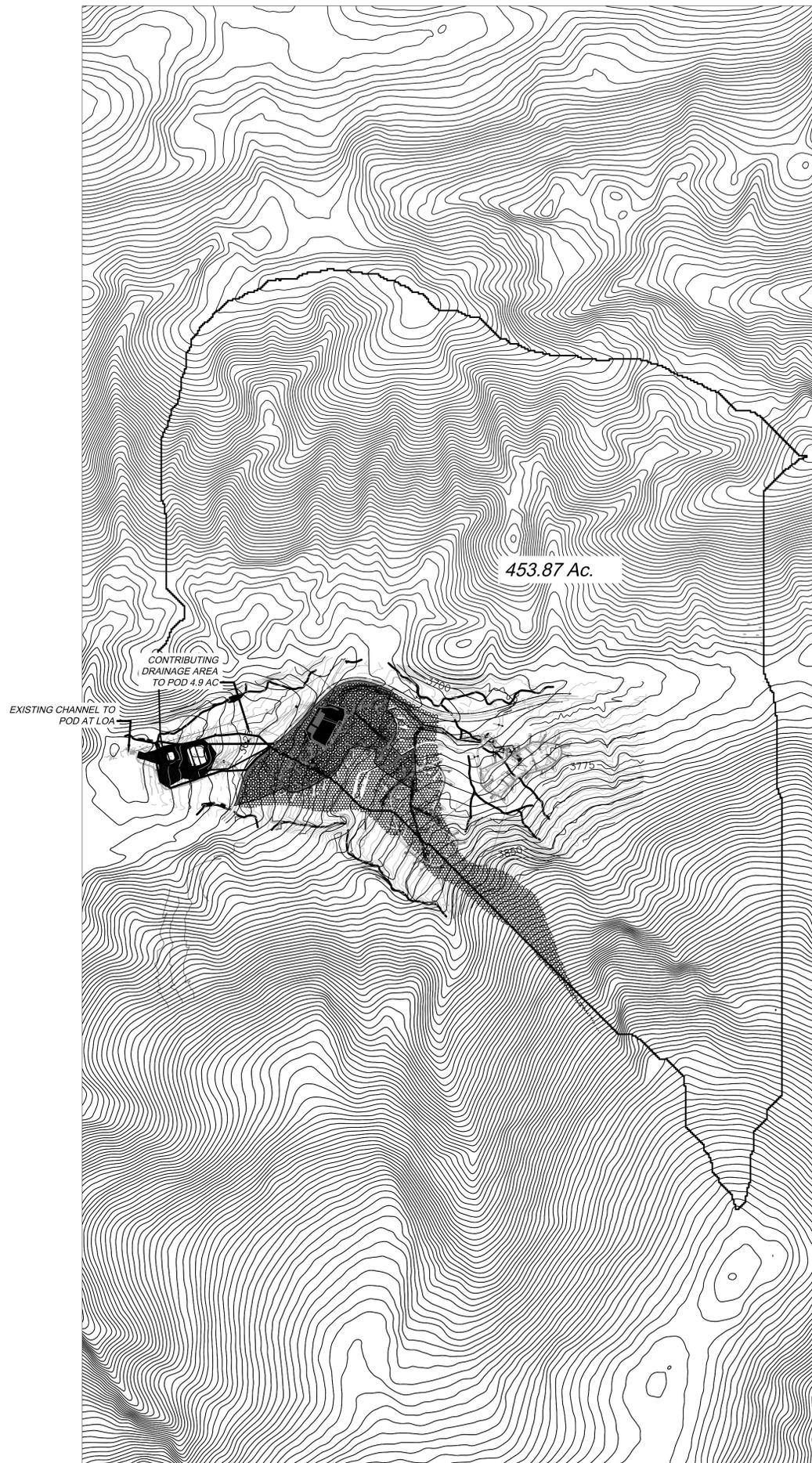
SHEET NO. C-605 REV. ---

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW

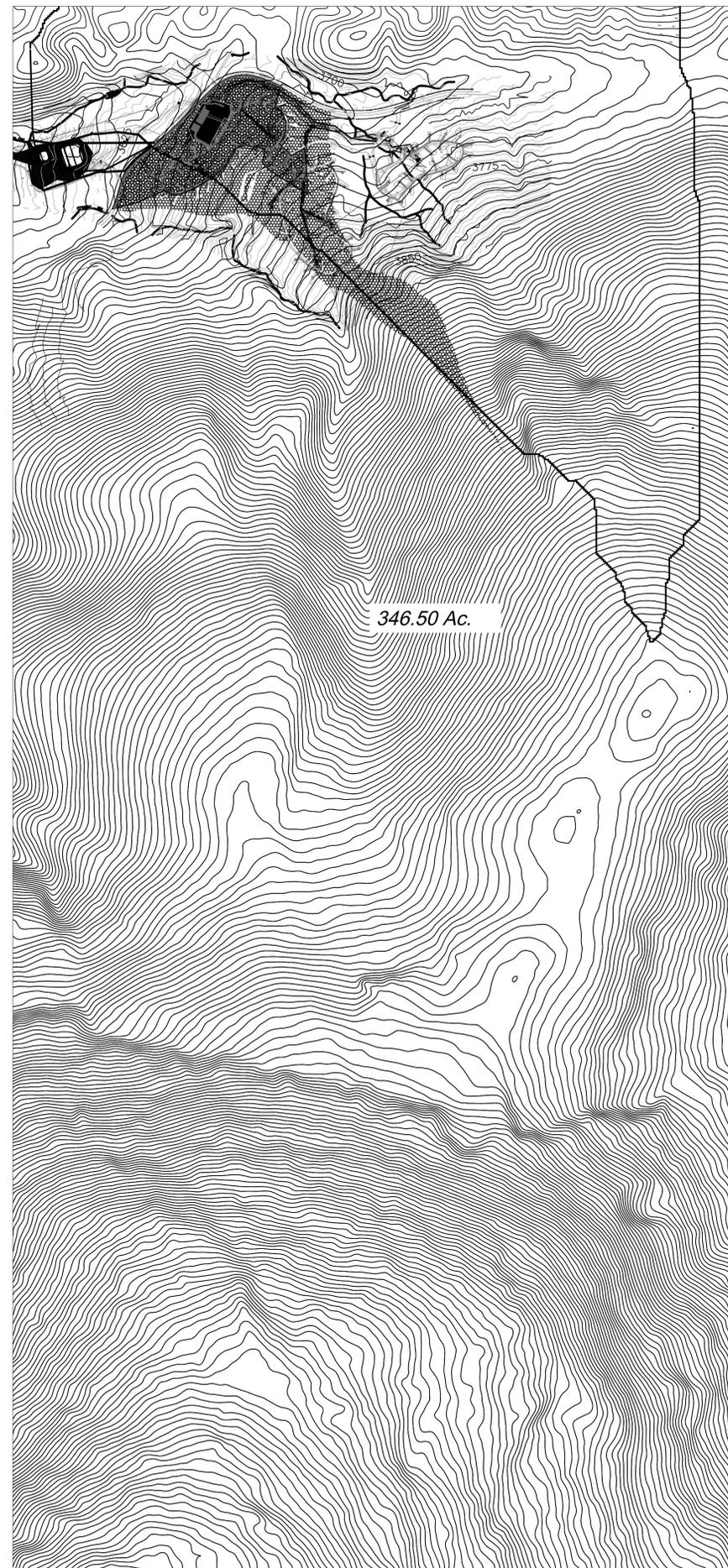
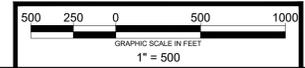
COMMONWEALTH OF VIRGINIA  
MICHAEL D. WILSON  
Lic. No. 044203  
07/23/2025  
PROFESSIONAL ENGINEER

3 07/23/2025 USFS COMMENTS  
2 05/17/2025 USFS COMMENTS  
1 09/15/2023 PER VDH COMMENTS

THIS SHEET IS INTENDED TO BE REPRODUCED AT 24X36". REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



LAUREL CREEK DRAINAGE MAP



GRINDSTONE CREEK DRAINAGE MAP



3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

**HURT & PROFFITT**  
 INSPIRED / RESPONSIVE / TRUSTED

434.847.7796  
 2524 LANGHORNE ROAD  
 LYNCHBURG, VA 24501

HANDP.COM  
 LYNCHBURG, VA 24501

ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
 GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**OVERALL DRAINAGE MAPS**

GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
 MOUNT ROGERS NATIONAL RECREATION AREA  
 GRINDSTONE NATIONAL RECREATION AREA  
 WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
 LAT. 36.688282°  
 LONG. -81.539877°  
 DATE: 03/06/2023  
 DRAWN BY: DBM  
 CHECKED BY: MDW



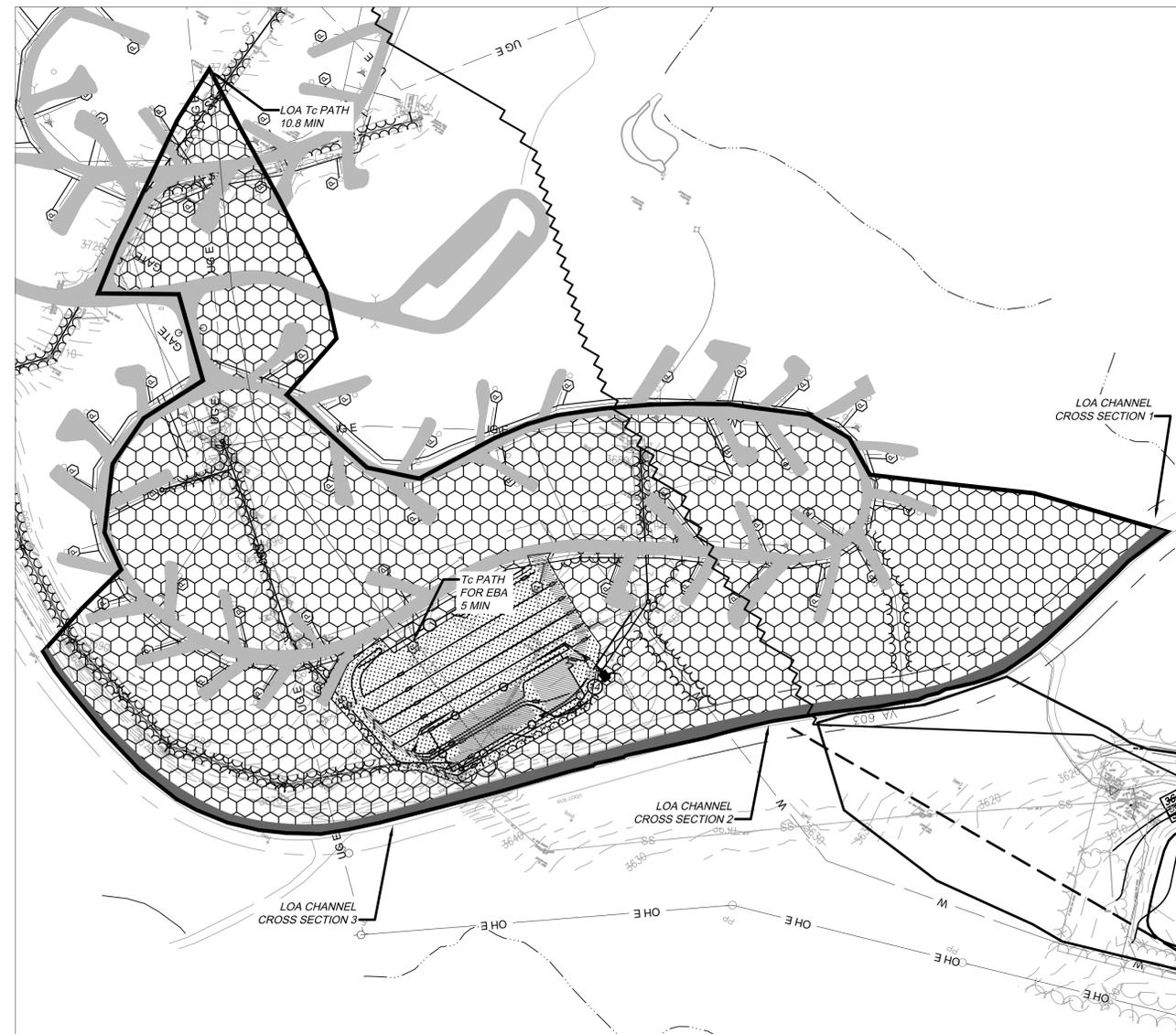
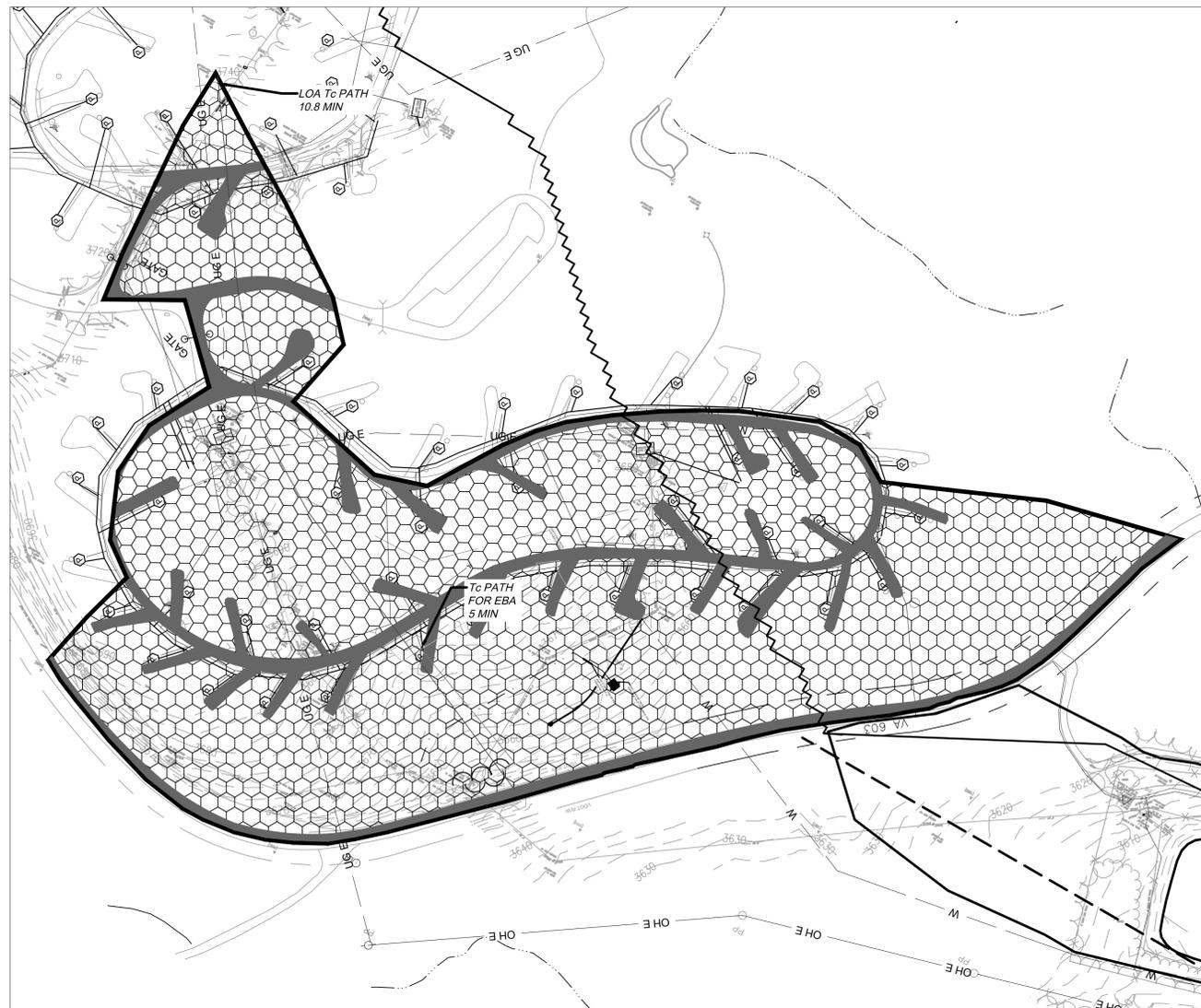
**FINAL PLAN SET**

DESIGN CONTRACT NUMBER  
 12445122C0026

**HURT & PROFFITT**

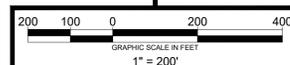
SHEET NO. C-700 REV.

THIS SHEET IS INTENDED TO BE REPRODUCED AT 24X36". REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



\*ALL SOILS ARE HYDRAULIC SOIL GROUP B

LAND USE	DA-1:PRE
PRE DEVELOPMENT IMPERVIOUS CN 98	0.00 Ac.
PRE DEVELOPMENT GRAVEL CN 85	2.16 Ac.
PRE DEVELOPMENT GRASS CN 61	0.00 Ac.
PRE DEVELOPMENT WOODS CN 55	11.77 Ac.
<b>TOTALS</b>	<b>13.57 Ac.</b>



\*ALL SOILS ARE HYDRAULIC SOIL GROUP B

LAND USE	DA-1:POST
POST DEVELOPMENT IMPERVIOUS CN 98	0.00 Ac.
POST DEVELOPMENT GRAVEL CN 85	2.35 Ac.
POST DEVELOPMENT GRASS CN 61	1.08 Ac.
POST DEVELOPMENT WOODS CN 55	10.13 Ac.
<b>TOTALS</b>	<b>13.57 Ac.</b>

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED



HANDP.COM  
LYNCHBURG, VA. 24501  
2524 LANGHORNE ROAD  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**PRE AND POST DRAINAGE MAPS**  
GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 03/06/2023  
DRAWN BY: DBM  
CHECKED BY: MDW



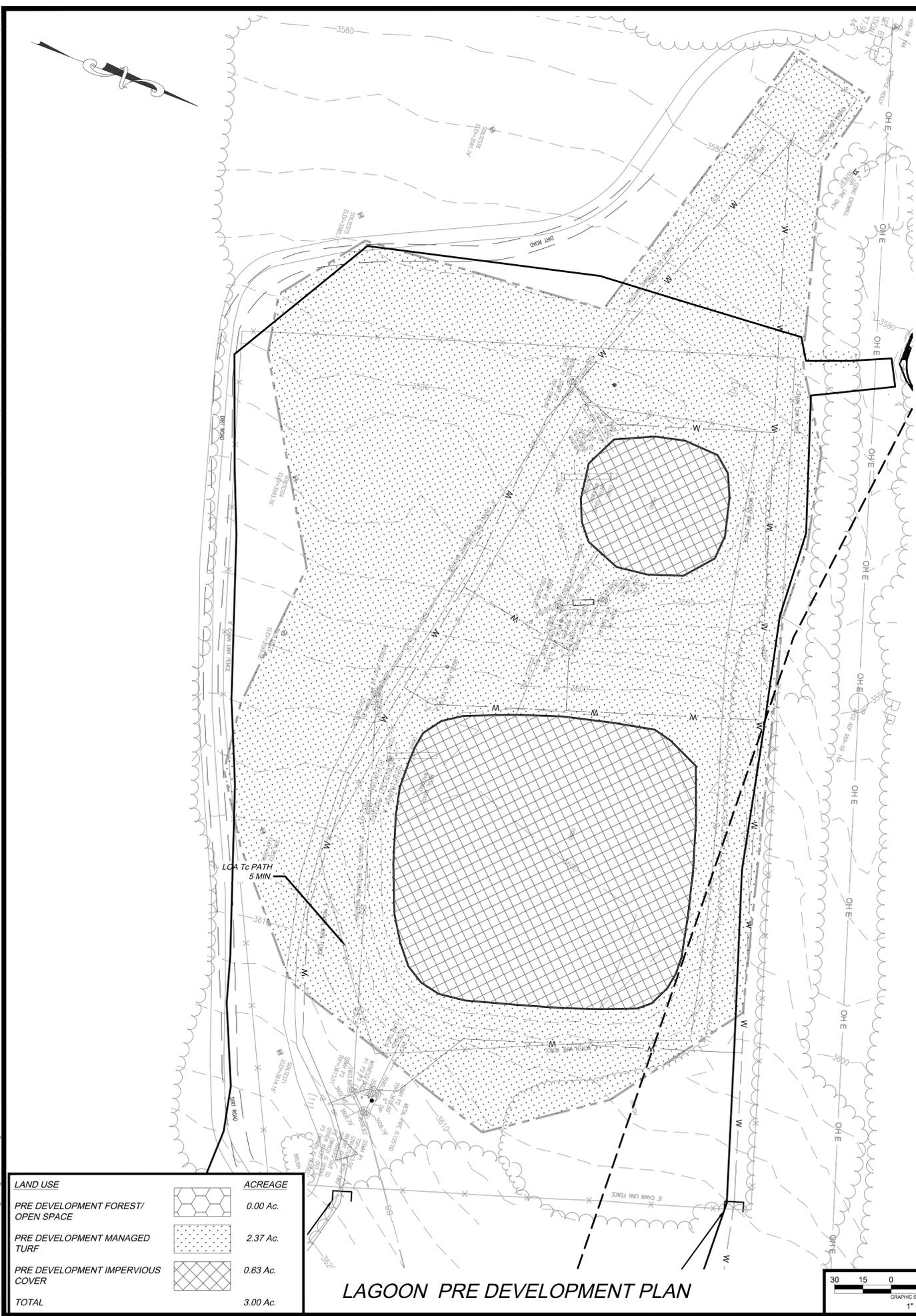
**FINAL  
PLAN SET**

**DESIGN CONTRACT  
NUMBER  
12445122C0026**

**HURT & PROFFITT**

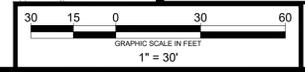
SHEET NO. **C-701** REV.

THIS SHEET IS INTENDED TO BE REPRODUCED AT 24"X36". REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



LAND USE	ACREAGE
PRE DEVELOPMENT FOREST/ OPEN SPACE	0.00 Ac.
PRE DEVELOPMENT MANAGED TURF	2.37 Ac.
PRE DEVELOPMENT IMPERVIOUS COVER	0.63 Ac.
<b>TOTAL</b>	<b>3.00 Ac.</b>

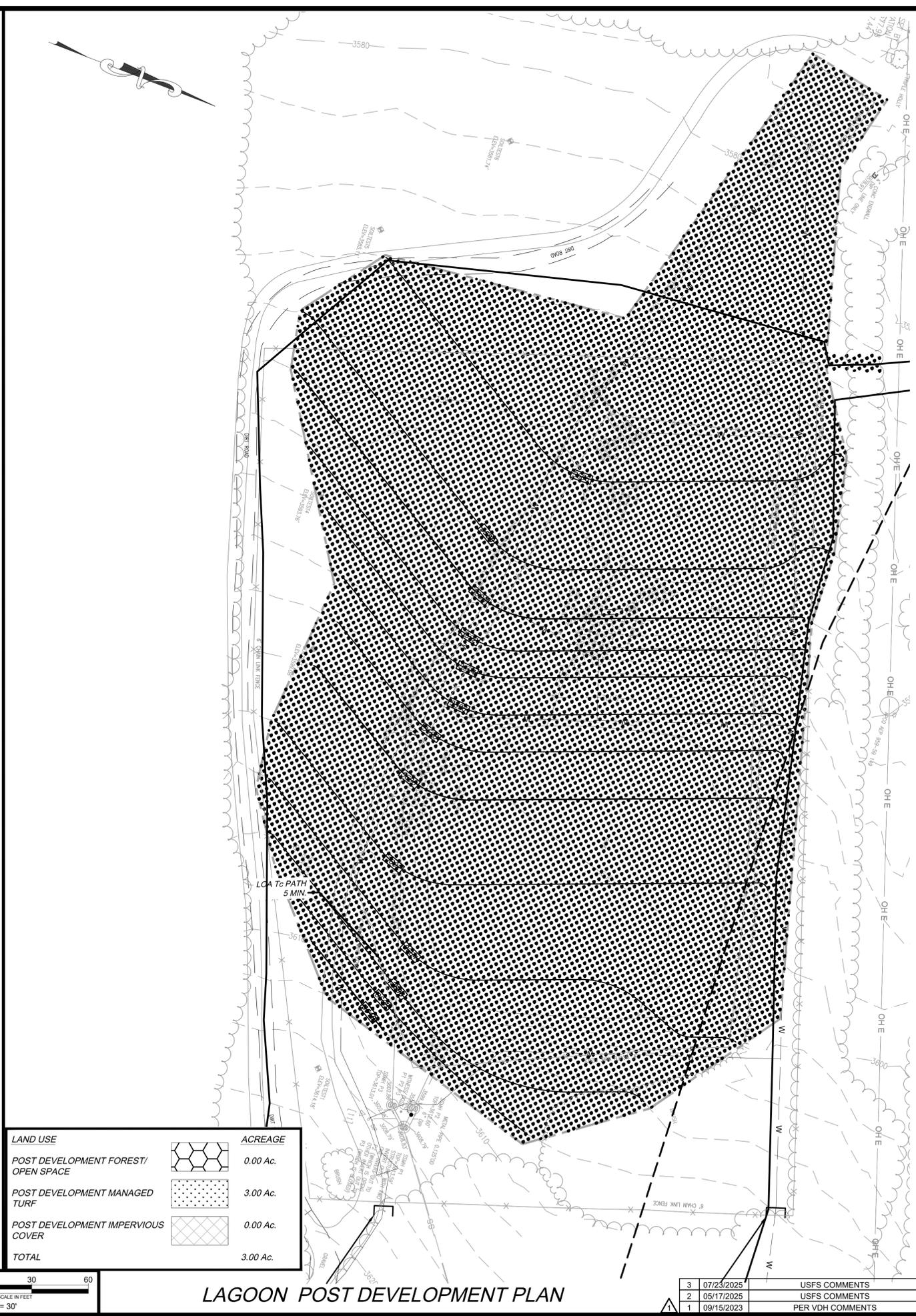
**LAGOON PRE DEVELOPMENT PLAN**



LAND USE	ACREAGE
POST DEVELOPMENT FOREST/ OPEN SPACE	0.00 Ac.
POST DEVELOPMENT MANAGED TURF	3.00 Ac.
POST DEVELOPMENT IMPERVIOUS COVER	0.00 Ac.
<b>TOTAL</b>	<b>3.00 Ac.</b>

**LAGOON POST DEVELOPMENT PLAN**

NO.	DATE	COMMENTS
3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS



**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

HP

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA 24501

HANDP.COM  
ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
GEOTECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**VRRM MAP**

**GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS**  
**MOUNT ROGERS NATIONAL RECREATION AREA**  
**GRINDSTONE NATIONAL RECREATION AREA**  
**WASTEWATER SYSTEM REPLACEMENT**

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	03/06/2023
DRAWN BY:	DBM
CHECKED BY:	MDW

COMMONWEALTH OF VIRGINIA

*Michael D. Wilson*

MICHAEL D. WILSON  
Lic. No. 044203  
07/23/2025

PROFESSIONAL ENGINEER

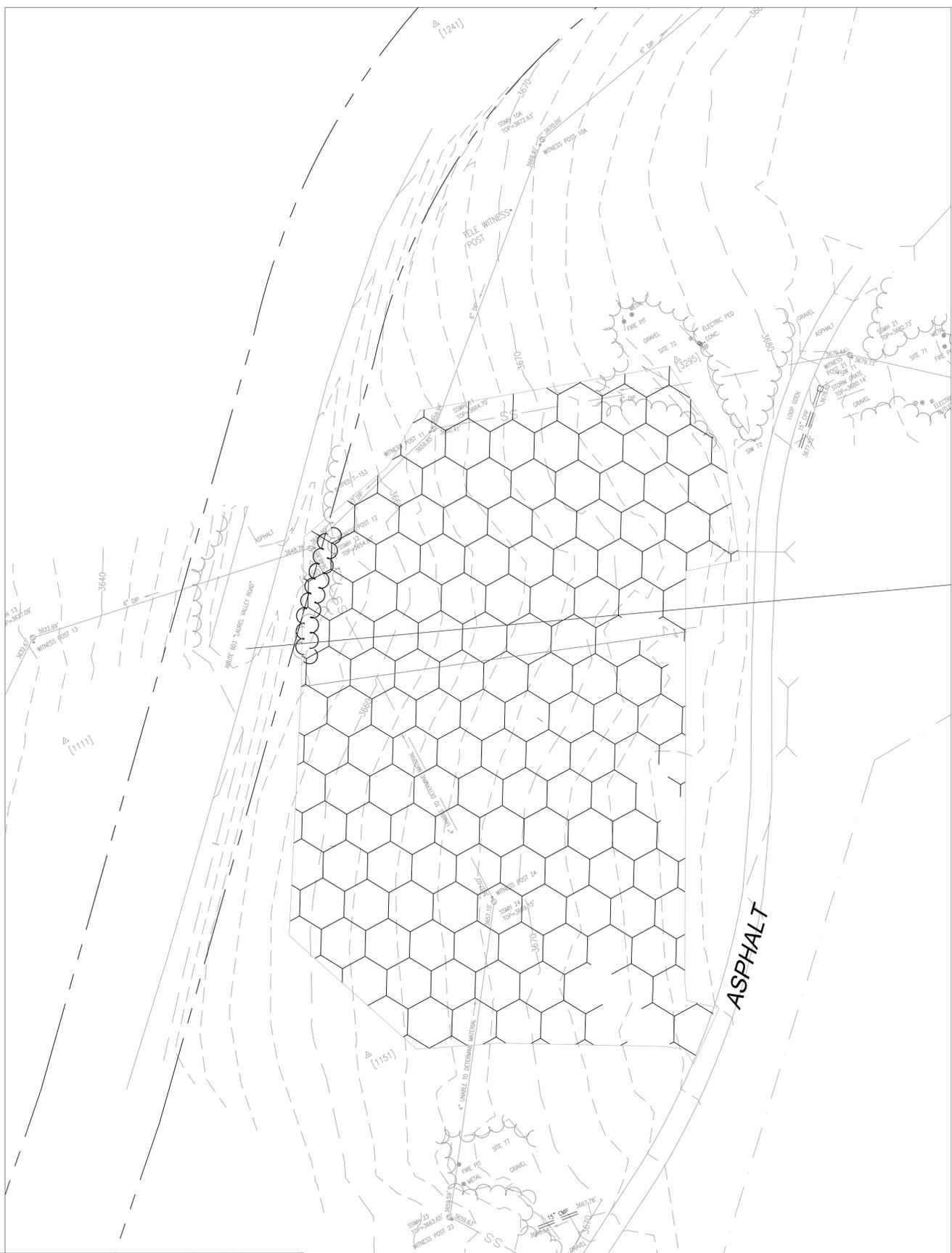
**FINAL PLAN SET**

**DESIGN CONTRACT NUMBER**  
**12445122C0026**

**HURT & PROFFITT**

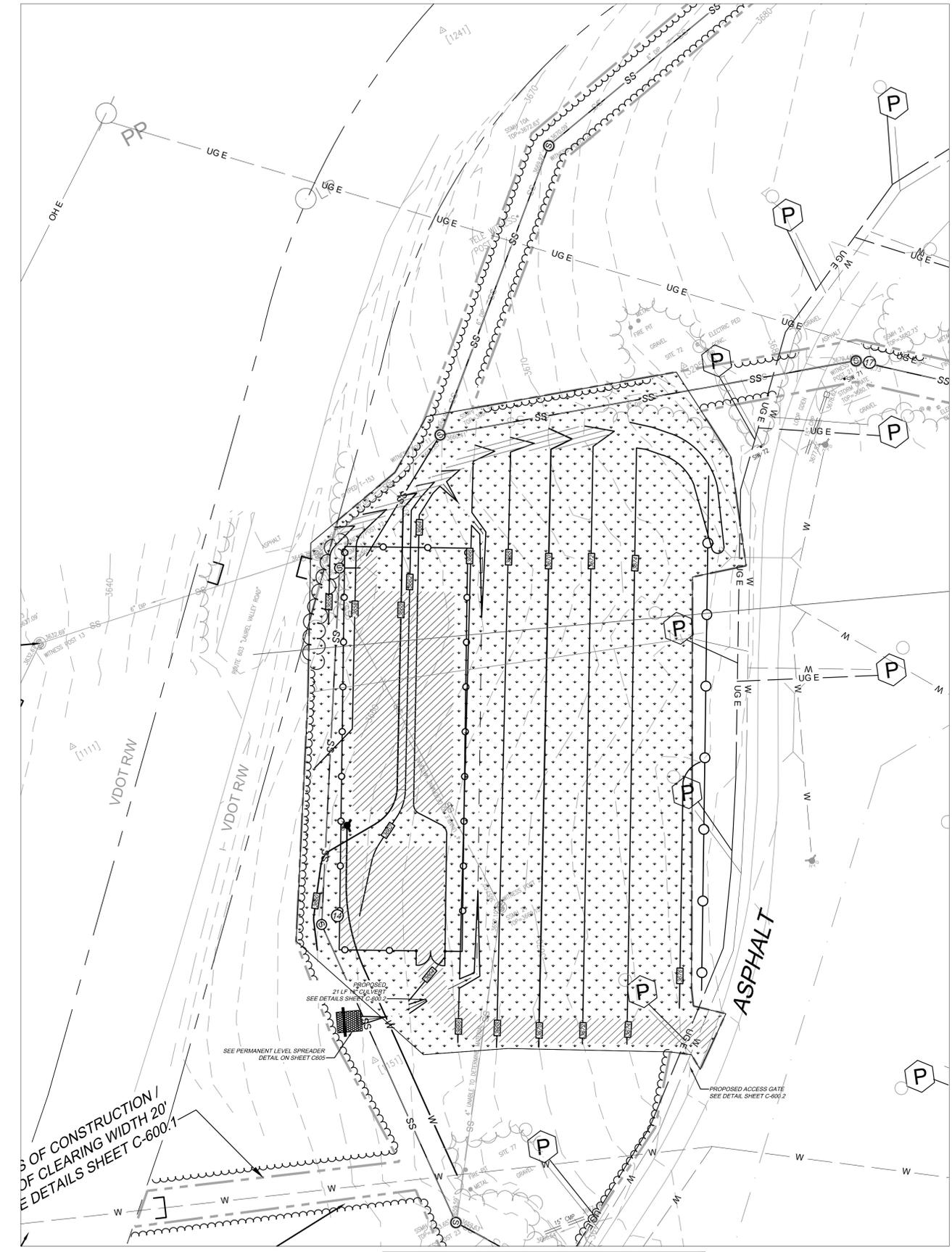
SHEET NO.	REV.
C-702	

THIS SHEET IS INTENDED TO BE REPRODUCED AT 24X36". REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



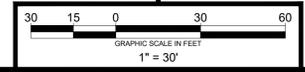
LAND USE	ACREAGE
PRE DEVELOPMENT FOREST/ OPEN SPACE	1.33 Ac.
PRE DEVELOPMENT MANAGED TURF	0.00 Ac.
PRE DEVELOPMENT IMPERVIOUS COVER	0.00 Ac.
<b>TOTAL</b>	<b>1.33 Ac.</b>

**WWTP PRE DEVELOPMENT PLAN**



LAND USE	ACREAGE
POST DEVELOPMENT FOREST/ OPEN SPACE	0.00 Ac.
POST DEVELOPMENT MANAGED TURF	1.09 Ac.
POST DEVELOPMENT IMPERVIOUS COVER	0.24 Ac.
<b>TOTAL</b>	<b>1.33 Ac.</b>

**WWTP POST DEVELOPMENT PLAN**



**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

HP

434.847.7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA. 24501

HANDP.COM  
LYNCHBURG, VA. 24501

ENGINEERING • SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL  
GEO TECHNICAL • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**VRRM MAP**

**GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT**

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	03/06/2023
DRAWN BY:	DBM
CHECKED BY:	MDW

COMMONWEALTH OF VIRGINIA

Michael D. Wilson

Lic. No. 044203  
07/23/2025

PROFESSIONAL ENGINEER

**FINAL PLAN SET**

**DESIGN CONTRACT NUMBER**  
**12445122C0026**

**HURT & PROFFITT**

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

SHEET NO. **C-703** REV.

**ELECTRICAL SPECIFICATIONS**

**RACEWAYS AND BOXES**

- A. MATERIALS:
  - RSC - ANSI C80, 1, THREADED COUPLINGS ONLY, MIN SIZE 3/4-INCH
  - RNC - NEMA TC2 WITH TC3 FITTINGS, MIN SIZE 3/4-INCH
  - LFMC - MIN SIZE 3/4-INCH
  - WIREWAYS - SHEET METAL WITH SCREW COVERS
  - SET SCREW FITTINGS SHALL NOT BE USED
- B. RACEWAY APPLICATIONS:
  - ABOVEGROUND: RSC.
  - BOXES AND ENCLOSURES: NEMA 250 TYPE 3R, UON
- C. UNDERGROUND RACEWAY APPLICATIONS: USE DIRECT BURIED SCHEDULE 80 TYPE DB RNC. MINIMUM DEPTH IS 24 INCHES OR GREATER AS REQUIRED BY NATIONAL ELECTRICAL CODE. USE FABRICATED LONG RADIUS RSC ELBOWS FOR TURNS APPROACHING 90 DEGREES. TRANSITION TO RSC BEFORE TURNING UP.
- D. LEAVE 1-INCH MINIMUM CONCRETE COVER FOR EMBEDDED RACEWAY. USE MANUFACTURED RSC ELBOW TO TURN OUT OF CONCRETE.
- E. USE UP TO 72 INCHES OF LFMC FOR CONNECTION TO VIBRATING EQUIPMENT INCLUDING TRANSFORMERS AND MOTOR-DRIVEN EQUIPMENT.
- F. PROVIDE 65-LB TEST PULL STRING TIED OFF AT EACH END IN ALL EMPTY CONDUITS.

**WIRING METHODS**

- A. SINGLE CONDUCTORS SHALL BE COPPER, #12 MINIMUM CONDUCTOR SIZE, SOLID FOR #10 AWG AND SMALLER, STRANDED FOR #8 AWG AND LARGER. FOR ABOVE-GROUND APPLICATIONS USE THHN-THWN, 600VAC INSULATION. FOR CIRCUITS WHERE ANY PART OF THE CIRCUIT IS BELOW GRADE USE CONDUCTORS WITH XHHW-2, 600 VAC RATED INSULATION.
- B. RACEWAY APPLICATIONS:
  - SERVICE CONDUCTORS: SINGLE CONDUCTORS IN RACEWAY, UON
  - FEEDEE CONDUCTORS: SINGLE CONDUCTORS IN RACEWAY, UON
  - BRANCH CIRCUITS: SINGLE CONDUCTORS IN RACEWAY, UON
  - CLASS 2 CONTROL CIRCUITS: SINGLE CONDUCTORS IN RACEWAY, UON.
- C. MINIMIZE SPLICES AND PLACE ONLY IN ACCESSIBLE JUNCTION BOXES AND ENCLOSURES THAT ARE SIZED AND RATED FOR SUCH.

**ELECTRICAL IDENTIFICATION**

- A. EQUIPMENT IDENTIFICATION: PROVIDE LABELS FOR PANELBOARDS, ELECTRICAL CABINETS, DISCONNECT SWITCHES, ENCLOSED CIRCUIT BREAKERS, MOTOR STARTERS, PUSH-BUTTON STATIONS, CONTACTORS AND AS ADDITIONALLY INDICATED. LABELS SHALL BE LAMINATED ACRYLIC, WITH 1/2-INCH ENGRAVED BLACK LETTERING ON 1-1/2-INCH WHITE STOCK ATTACHED WITH SCREWS.
- B. MARK EACH DISCONNECTING MEANS TO INDICATE ITS CIRCUIT SOURCE. MARK DISCONNECTING MEANS TO INDICATE WHAT LOAD IS SERVED.
- C. DEVICE CIRCUIT IDENTIFICATION: PROVIDE SELF-ADHESIVE 1/4-INCH HEIGHT CLEAR LABELS WITH 1/8-INCH BLACK PRINTED TEXT WITH EACH RECEPTACLE INDICATING PANELBOARD AND BRANCH CIRCUIT.
- D. RACEWAY AND CABLE LABELS: PROVIDE PRE-TENSIONED, PRE-PRINTED, WRAPAROUND PLASTIC SLEEVES THAT ARE SIZED TO SUIT THE DIAMETER OF THE ITEM IDENTIFIED.
- E. USE VINYL OR VINYL-CLOTH, SELF-ADHESIVE, WRAPAROUND TYPE TAPE MARKERS FOR WIRE. FOLLOW THESE WIRE COLOR CODING CONVENTIONS.

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

**SUPPORT AND ANCHORAGE**

- A. PROVIDE SUPPORT AND ANCHORAGE THAT ARE ADEQUATE IN TENSION, SHEAR, AND PULLOUT FORCE TO RESIST MAXIMUM LOADS CALCULATED OR IMPOSED WITH A MINIMUM STRUCTURAL SAFETY FACTOR OF FIVE.
- B. STEEL SLOTTED SUPPORT SYSTEMS: COMPLY WITH MFMA-3 FACTORY FABRICATED COMPONENTS FOR FIELD ASSEMBLY WITH FINISH SUITABLE FOR THE ENVIRONMENT.
- C. FOR ATTACHMENT TO CONCRETE AND SOLID MASONRY, USE WEDGE-TYPE, ZINC-COATED STEEL EXPANSION ANCHOR FASTENERS. DRILL HOLES AT LOCATIONS AND DEPTHS THAT AVOID REINFORCING BARS. FOR CONNECTIONS TO HOLLOW MASONRY USE ALL-STEEL SPRINGHEAD TYPE TOGGLE BOLTS.
- D. FOR CLAMPING TO STEEL STRUCTURAL ELEMENTS USE WELDED STEEL STUDS, BEAM CLAMPS OR SPRING-TENSION CLAMPS.
- E. FOR CONNECTIONS TO WOOD USE LAG SCREWS OR THROUGH BOLTS.
- F. FOR CONNECTIONS TO LIGHT STEEL USE SHEET METAL SCREWS.
- G. SEPARATE DISSIMILAR METALS AND METAL PRODUCTS FROM CONTACT WITH WOOD OR CEMENTITIOUS MATERIALS BY PAINTING EACH METAL SURFACE IN AREA OF CONTACT WITH A BITUMINOUS COATING OR BY OTHER PERMANENT SEPARATION.

**ENCLOSED SWITCHES**

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

**DEVICES**

- A. STRAIGHT BLADE RECEPTACLES: HEAVY-DUTY INDUSTRIAL GRADE CONVENIENCE RECEPTACLES, 125 V, 20 A; COMPLY WITH NEMA WD 1, NEMA WD 6 CONFIGURATION 5-20R, AND UL 498.
- B. GFCI RECEPTACLES: STRAIGHT BLADE, FEED-THROUGH TYPE. COMPLY WITH NEMA WD 1, NEMA WD 6, UL 498, AND UL 943, CLASS A, 125 V, 20 A, AND INCLUDE INDICATOR LIGHT THAT IS LIGHTED WHEN DEVICE IS TRIPPED.
- C. SNAP SWITCHES: 20A, 600VAC, HEAVY DUTY, SINGLE POLE - SINGLE THROW OR AS OTHERWISE INDICATED. COMPLY WITH NEMA WD 1 AND UL 20.
- D. COVER PLATES: PROVIDE SINGLE AND COMBINATION TYPES TO MATCH CORRESPONDING WIRING DEVICES. PROVIDE GALVANIZED STEEL. FOR WET OR DAMP LOCATIONS PROVIDE THERMOPLASTIC "WEATHERPROOF WHILE IN USE" LOCKABLE COVER.

**E. DEVICE COLORS: GRAY.**

**LIGHTING**

- A. ALL LUMINAIRES SHALL BE PROVIDED WITH LAMPS.
- B. LED LAMPS SHALL HAVE A MINIMUM CRI OF 80. LAMP TEMPERATURES SHALL BE 5000K UNLESS OTHERWISE NOTED.
- C. DRIVERS SHALL BE WARRANTED FOR A MINIMUM OF 60 MONTHS FROM DATE OF MANUFACTURE.

**PANELBOARDS**

- A. NEW PANELBOARDS: PROVIDE AS SCHEDULED. PANELBOARDS SHALL HAVE COPPER PHASE BUSES, COPPER GROUND BUS, AND 100 PERCENT RATED COPPER NEUTRAL BUS. ALL CIRCUIT BREAKERS ARE TO BE BOLT-ON TYPE. ALL ENCLOSURES ARE TO HAVE DOOR-WITHIN-DOOR OR HINGED FRONT COVER.
- B. MODIFIED PANELBOARDS: PROVIDE BREAKERS AS INDICATED. NEW BREAKERS SHALL BE FROM SAME MANUFACTURER AS PANELBOARD AND SHALL HAVE SUITABLE FAULT CURRENT RATINGS.
- C. PROVIDE TYPED PANELBOARD INDEXES FOR ALL NEW AND MODIFIED PANELBOARDS.

**GROUNDING**

- A. PROVIDE GROUNDING IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND ADDITIONALLY AS INDICATED.
- B. PROVIDE TWO OR MORE 10'X3/4" COPPER CLAD GROUND RODS AS INDICATED. PLACE RODS NO LESS THAN 36 INCHES FROM EQUIPMENT RACK. CONNECT GROUND RODS TO WWTP PANEL PER SINGLE LINE DIAGRAM. BURIED UNDERGROUND CONNECTIONS TO GROUND RODS SHALL USE EXOTHERMICALLY WELDED CONNECTIONS. ACCESSIBLE GROUND ROD CONNECTIONS SHALL USE CLAMPS. USE EXOTHERMIC CONNECTIONS FOR ALL UNDERGROUND SPLICES.

**EXCAVATIONS**

- A. CONTACT MISS UTILITY AT 811, 1-800-552-7001, OR [HTTP://WWW.MISSUTILITYOFVIRGINIA.COM](http://www.missutilityofvirginia.com) NO LESS THAN 72 HOURS PRIOR TO EXCAVATION AND DO NOT DISTURB THE SOIL UNTIL THE DIG TICKET HAS BEEN PROCESSED.
- B. MISS UTILITY WILL NOT MARK PRIVATE UTILITIES WHICH MAY BE PRESENT ON THIS SITE. ENSURE THAT ALL UTILITIES, PUBLIC AND PRIVATE, ARE MARKED PRIOR TO EXCAVATION.

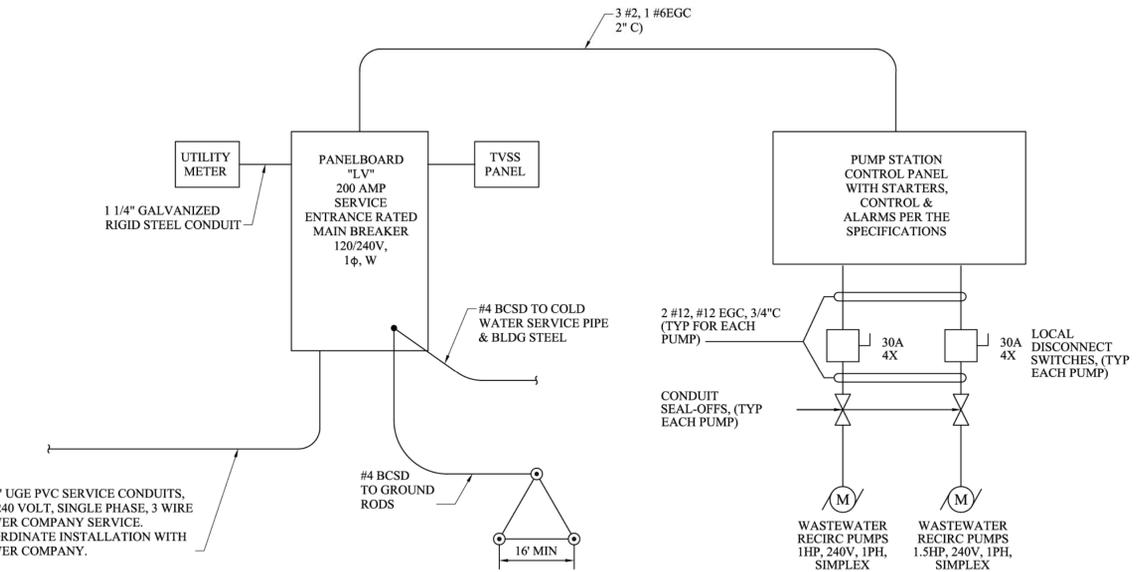
**SURGE PROTECTION**

- A. PROVIDE TYPE 1 SURGE PROTECTION DEVICE (SPDS) WHERE INDICATED. TYPE 1 SPDS SHALL BE UL 1449 CERTIFIED.
- B. PROVIDE TELECOMMUNICATIONS SPDS WHERE INDICATED. TELECOMMUNICATION SPDS SHALL BE TYPE 66 BLOCK MOUNTED AND UL 497A CERTIFIED.
- C. PROVIDE COAXIAL CABLE RADIO ANTENNA LEAD-IN SPDS WHERE INDICATED. RADIO ANTENNA LEAD-IN SPDS SHALL BE SELECTED BASED ON RADIO SYSTEM FREQUENCY AND POWER LEVEL AND UL 497E CERTIFIED.

- 1. PROVIDE PRODUCT DATA SUBMITTALS FOR ALL PROPOSED SPDS

**ELECTRICAL GENERAL NOTES:**

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE THE GENERAL AND APPROXIMATE LOCATION OF EQUIPMENT AND EXISTING CONSTRUCTION. FIELD-VERIFY ALL DIMENSIONS AND LOCATIONS. INDICATED UNDERGROUND OBSTRUCTIONS WERE DEVELOPED FROM EXISTING RECORDS AND ABOVE-GROUND INSPECTION. ACCURACY OR COMPLETENESS OF LOCATION AND DEPTH OF UNDERGROUND UTILITIES AND STRUCTURES CANNOT BE GUARANTEED. VERIFY LOCATION AND DEPTH OF ALL UNDERGROUND FACILITIES BEFORE STARTING WORK.
2. THESE DRAWINGS MAY NOT INDICATE ALL FITTINGS, PARTS AND ACCESSORIES THAT ARE REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM. NO EXCLUSION FROM OR LIMITATION IN THE SYMBOLISM USED ON THE DRAWINGS FOR THE WORK, OR THE LANGUAGE USED IN THE SPECIFICATIONS FOR THE WORK SHALL BE INTERPRETED AS A REASON FOR OMITTING THE APPURTENANCES OR ACCESSORIES NECESSARY TO COMPLETE THE REQUIRED WORK, SYSTEM, OR ITEM OF EQUIPMENT TO MEET THE NATIONAL ELECTRICAL CODE REQUIREMENTS.
3. ALL ELECTRICAL WORK ON THIS PROJECT SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 VIRGINIA UNIFORM STATEWIDE BUILDING CODE AND THE NFPA 70-2017 (NATIONAL ELECTRICAL CODE).
4. CONTRACTOR SHALL PROVIDE ELECTRICAL POWER, WIRE AND CONDUIT, DEDICATED CIRCUIT BREAKERS, CONTROL WIRE AND CONDUIT FOR ALL ELECTRICAL LOADS THAT ARE INDICATED OR SPECIFIED ON THIS PROJECT WHETHER THESE ELECTRICAL WIRES, CONDUIT, AND APPURTENANCES ARE SHOWN OR NOT, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
5. MATERIALS, EQUIPMENT, AND SYSTEMS SHALL MEET ALL PERTINENT REQUIREMENTS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM), THE UNDERWRITERS LABORATORY (UL), THE NATIONAL ELECTRIC MANUFACTURER'S ASSOCIATION (NEMA), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), AND OTHER NATIONALLY RECOGNIZED AGENCIES.
6. COORDINATE ARRANGEMENT, MOUNTING, AND SUPPORT OF ELECTRICAL EQUIPMENT TO AVOID INTERFERENCES WITH ELECTRICAL AND OTHER TRADES. COORDINATE WORK WITH EXISTING CONDITIONS INCLUDING BEAMS, COLUMNS, SITE FEATURES, AND OTHER CONSTRUCTION WHETHER OR NOT SUCH IS SHOWN ON THE DRAWINGS. SET SLEEVES IN CAST-IN-PLACE CONCRETE AND MASONRY WALLS, AS THEY ARE CONSTRUCTED. COORDINATE LOCATION OF ACCESS PANELS AND DOORS FOR ELECTRICAL EQUIPMENT THAT ARE BEHIND FINISHED SURFACES OR ARE OTHERWISE CONCEALED. COORDINATE AMPACITY, VOLTAGE, PHASING, OVERCURRENT PROTECTION, AND LOCAL DISCONNECT REQUIREMENTS WITH ACTUAL EQUIPMENT PROVIDED.
7. MAINTAIN A SET OF AS-BUILT RED-LINE MARKUPS INDICATING ACTUAL INSTALLATION. DELIVER TO THE CO AT CONCLUSION OF PROJECT.
8. PROVIDE PRODUCT DATA SUBMITTALS FOR THE FOLLOWING EQUIPMENT: PANELBOARDS, ENCLOSED CONTROLLERS, ENCLOSED SWITCHES, LUMINAIRES, AND DEVICES. MATERIALS INSTALLED PRIOR TO OBTAINING AN APPROVED SUBMITTAL ARE AT CONTRACTOR'S RISK.
9. CONTRACTOR SHALL ADVISE THE CO IMMEDIATELY OF DISCREPANCIES WITHIN DRAWINGS. MINOR DEVIATIONS FROM THE PLANS MAY BE MADE TO AVOID MINOR CONFLICTS. WHERE MAJOR CONFLICTS ARE ENCOUNTERED, THE AFFECTED WORK SHALL NOT BE INSTALLED UNTIL THE CONFLICT HAS BEEN RESOLVED. THE A/E IS NOT RESPONSIBLE FOR THE CONSEQUENCES OF PROCEEDING WITH WORK BASED ON CONTRACTOR INTERPRETATION OR ON DIRECTION FROM OTHER PARTIES.
10. ADVANTEX EQUIPMENT REQUIRES CELLULAR BASED CONNECTIVITY.



**WWTP ELECTRICAL SERVICE DIAGRAM**

SCALE: NONE

**ABBREVIATIONS**

A, AMP	AMPERE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GROUND
BCSD	BARE COPPER SOFT DRAWN
BKR	BREAKER
C	CONDUIT
CKT	CIRCUIT
CONC	CONCRETE
DWG	DRAWING
ECB	ENCLOSED CIRCUIT BREAKER
EGC	EQUIPMENT GROUNDING CONDUCTOR
FVNR	FULL VOLTAGE NON-REVERSING
GFI	GROUND FAULT INDICATOR
HP	HORSEPOWER
HZ	HERTZ
kcmil	THOUSAND CIRCULAR MILS
kVA	KILOVOLT AMPERE
kW	KILOWATT
MCB	MAIN CIRCUIT BREAKER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTD	MOUNTED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N, NEUT	NEUTRAL
PH	PHASE
PSKVA	PEAK STARTING KILOVOLT AMPERES
PVC	POLYVINYL CHLORIDE CONDUIT
RMS	ROOT MEAN SQUARE
SCH	SCHEDULE
SYM	SYMMETRICAL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TWSP	TWISTED SHIELDED PAIR
TYP	TYPICAL
UGC	UNDERGROUND CONDUIT
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER

**LEGEND**

→	HOMERUN TO POWER PANEL
—	CONDUIT RUN
—	CONDUIT RUN BELOW GRADE
—	GROUND CONDUCTOR
○	GROUND CONDUIT TURNING UP
○	CONDUIT TURNING DOWN
S	SINGLE POLE SWITCH
⊕	SINGLE POLE SWITCH
⊙	JUNCTION BOX
Ⓜ	MOTOR
□	SAFETY SWITCH, NONFUSIBLE
Ⓜ	MOLDED CASE CIRCUIT BREAKER
⊙	COPPER CLAD 3/4" DIAMETER x 10' LONG GROUND ROD, PROVIDE 24" MINIMUM COVER
⊕	GROUND
⊗CS	CONDUIT SEAL-OFF

**HURT & PROFFITT**  
INSPIRED / RESPONSIVE / TRUSTED

434-847-7796  
2524 LANGHORNE ROAD  
LYNCHBURG, VA, 24501

HANDP.COM  
SURVEYING • LAND DEVELOPMENT • ENVIRONMENTAL ENGINEERING • CONSTRUCTION TESTING & INSPECTION • CULTURAL RESOURCES

**CONTROL PANEL DETAILS**

GEORGE WASHINGTON & JEFFERSON NATIONAL FORESTS  
MOUNT ROGERS NATIONAL RECREATION AREA  
GRINDSTONE RECREATION AREA  
WASTEWATER SYSTEM REPLACEMENT

PROJECT NO.	20221254
LAT.	36.688282°
LONG.	-81.539877°
DATE:	01/15/2024
DRAWN BY:	WKH
CHECKED BY:	BLC

COMMONWEALTH OF VIRGINIA  
MICHAEL D. WILSON  
Lic. No. 044203  
07/23/2025  
PROFESSIONAL ENGINEER

**FINAL PLAN SET**

**DESIGN CONTRACT NUMBER**  
**12445122C0026**

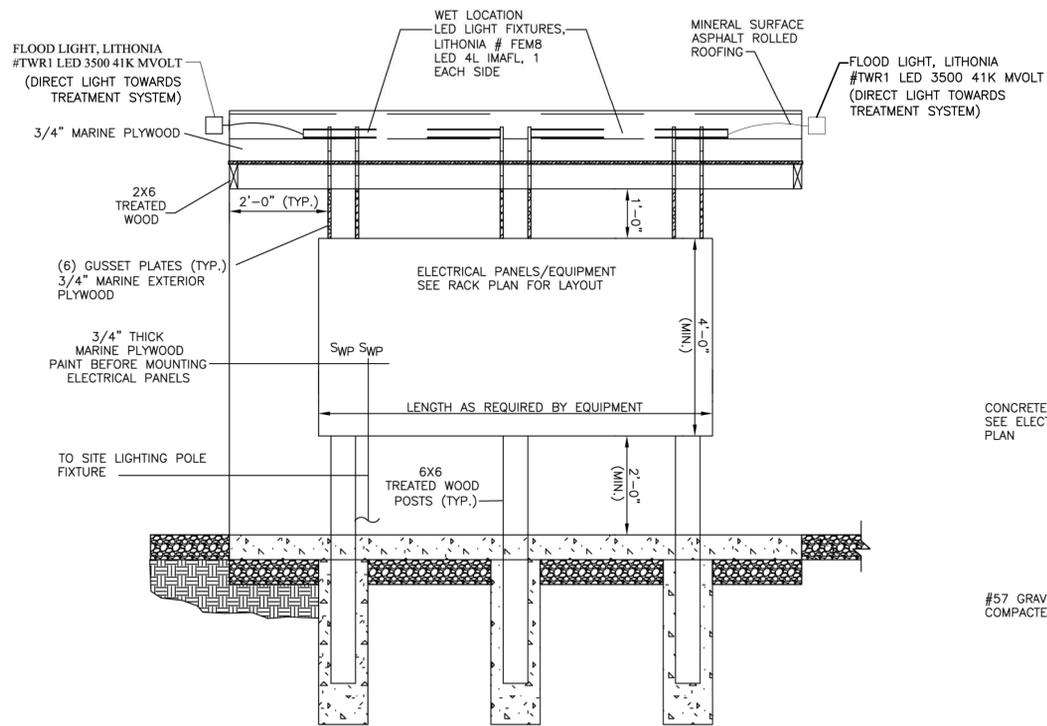
<b>SHEET NO.</b>	<b>REV.</b>
<b>E-100</b>	---

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS

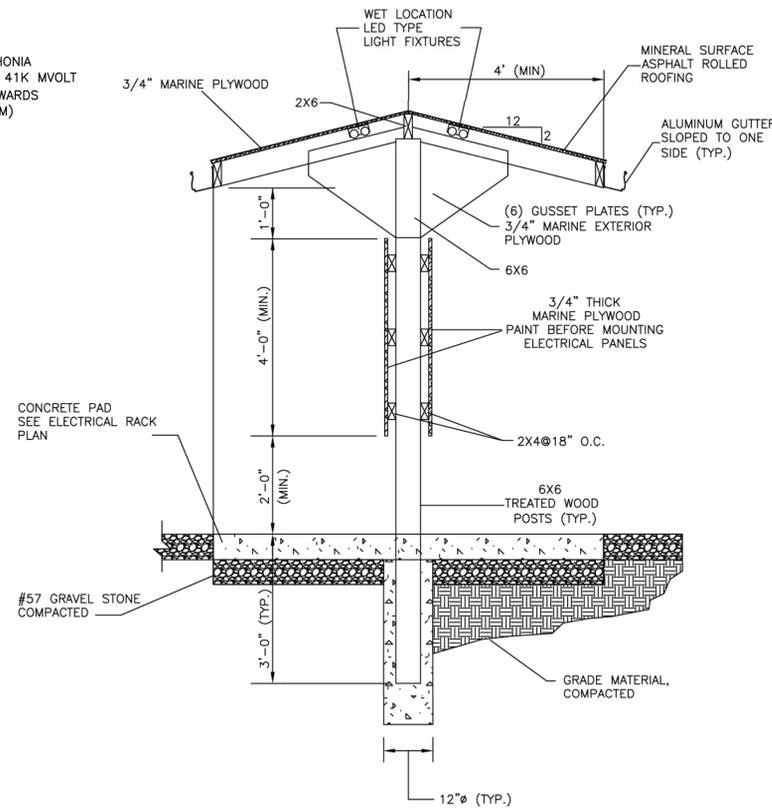
THIS SHEET IS INTENDED TO BE REPRODUCED AT ZAXXP. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.

Jul 23, 2025 - 9:05am Update101Project20221254EngineeringCAD\$emily Sawyer.dwg

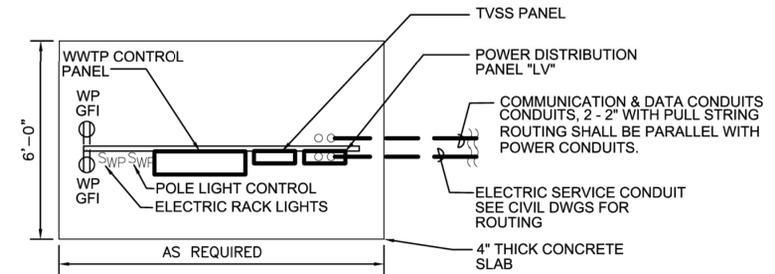
THIS SHEET IS INTENDED TO BE REPRODUCED AT 2X SIZE. REPRODUCTION OF THIS SHEET AT A DIFFERENT SIZE THAN INTENDED SHALL VOID THE SCALE SHOWN ON THE SHEET.



**ELECTRICAL SERVICE RACK FRONT ELEVATION**



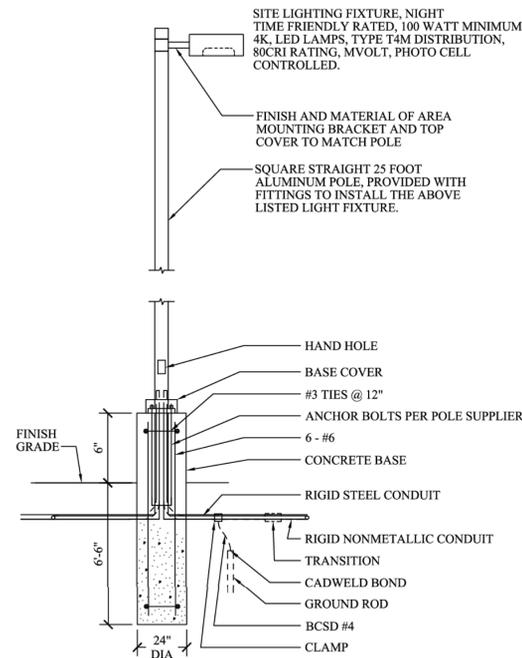
**ELECTRICAL SERVICE RACK END ELEVATION**



NOTE: ALL ELECTRICAL EQUIPMENT ENCLOSURES ON RACK SHALL BE NEMA 3R RATED UNLESS OTHERWISE INDICATED IN THE SPECIFICATIONS.

**ELECTRICAL SERVICE RACK PLAN VIEW DETAIL**  
NOT TO SCALE

PANEL "LV" SCHEDULE											
PANEL BOARD CHARACTERISTICS:											
VOLTS: 120/240											
PHASES: 1											
WIRES: 3											
SOLID NEUTRAL, GROUND BAR											
PHASE TO PHASE VOLTS: 240											
PHASE TO NEUT. VOLTS: 120											
200 AMP MAIN BREAKER											
MINIMUM SHORT CIRCUIT RATING: 14,000 RMS SYM AMPS											
SERVICE ENTRANCE RATED											
CKT. NO.	POLE NO.	DESCRIPTION	LOAD TYPE	CONN. KVA	CONN. AMPS	BREAKER	NO. & WIRE SIZE			COND. SIZE	
A	B	P	A.T	PHASE	NEUT.	GND					
1	1	WASTEWATER TREATMENT CONTROL PANEL	E			2	90	2	2	6	2"
3	3							2			
5	5	TVSS PANEL				2	60	6	6	6	1"
7	7							6			
9	9	SPARE				1	20				
11	11	SPARE				1	20				
13	13	SPARE				1	20				
15	15	SPARE				1	20				
17	17	SPARE				1	20				
19	19	SPARE				1	20				
21	21	SPARE				1	20				
23	23	SPARE				1	20				
25	25	SPARE				1	20				
27	27	SPARE				1	20				
29	29	SPARE				1	20				
31	31	SPARE				1	20				
33	33	SPARE				1	20				
35	35	SPARE				1	20				
37	37	SPARE				1	20				
39	39	SPARE				1	20				
2	2	SHED LIGHTING	L	0.5	4.2	1	20	12	12	12	3/4"
4	4	SHED RECEPTACLE	R	0.5	4.2	1	20	12	12	12	3/4"
6	6	SPARE				2	30				
10	10	UV DISINFECTION SYSTEM (FUTURE N.I.C.)	E	1.5	12.5	1	20	12	12	12	3/4"
12	12	AIR VENT FAN ASSEMBLY	E	0.2	1.7	1	20	12	12	12	3/4"
14	14	EFFLUENT FLOW METER	E	0.2	1.7	1	20	12	12	12	3/4"
16	16	SITE LIGHTING (FUTURE N.I.C.)	L	0.5	4.2	1	20	12	12	12	3/4"
18	18	SPARE				1	20				
20	20	SPARE				1	20				
22	22	SPARE				1	20				
24	24	SPARE				1	20				
26	26	SPARE				1	20				
28	28	SPARE				1	20				
30	30	SPARE				1	20				
32	32	SPARE				1	20				
34	34	SPARE				1	20				
36	36	SPARE				1	20				
38	38	SPARE				1	20				
40	40	SPARE				1	20				
TOTALS				3.4	18.3	10.0					



**POLE MOUNTED LIGHT FIXTURE & POLE BASE DETAIL**  
NOT TO SCALE  
FUTURE NOT INCLUDED IN CONTRACT (N.I.C.)



CONTRACTOR SHALL COORDINATE WITH THE CAMP GROUND FOR THE STYLE AND MANUFACTURER OF LIGHT FIXTURE DESIRED. THE FIXTURE SHALL BE NIGHT TIME FRIENDLY RATED WITH BUILDING CODES.

**POLE MOUNTED SITE LIGHT FIXTURE**  
SCALE: NONE

FUTURE NOT INCLUDED IN CONTRACT (N.I.C.)

PROJECT NO. 20221254  
LAT. 36.688282°  
LONG. -81.539877°  
DATE: 01/15/2024  
DRAWN BY: WKH  
CHECKED BY: BLC



**FINAL PLAN SET**  
DESIGN CONTRACT NUMBER  
12445122C0026  
**HURT & PROFFITT**

SHEET NO. E-101  
REV. ---

3	07/23/2025	USFS COMMENTS
2	05/17/2025	USFS COMMENTS
1	09/15/2023	PER VDH COMMENTS