CITY OF ALEXANDRIA, VIRGINIA

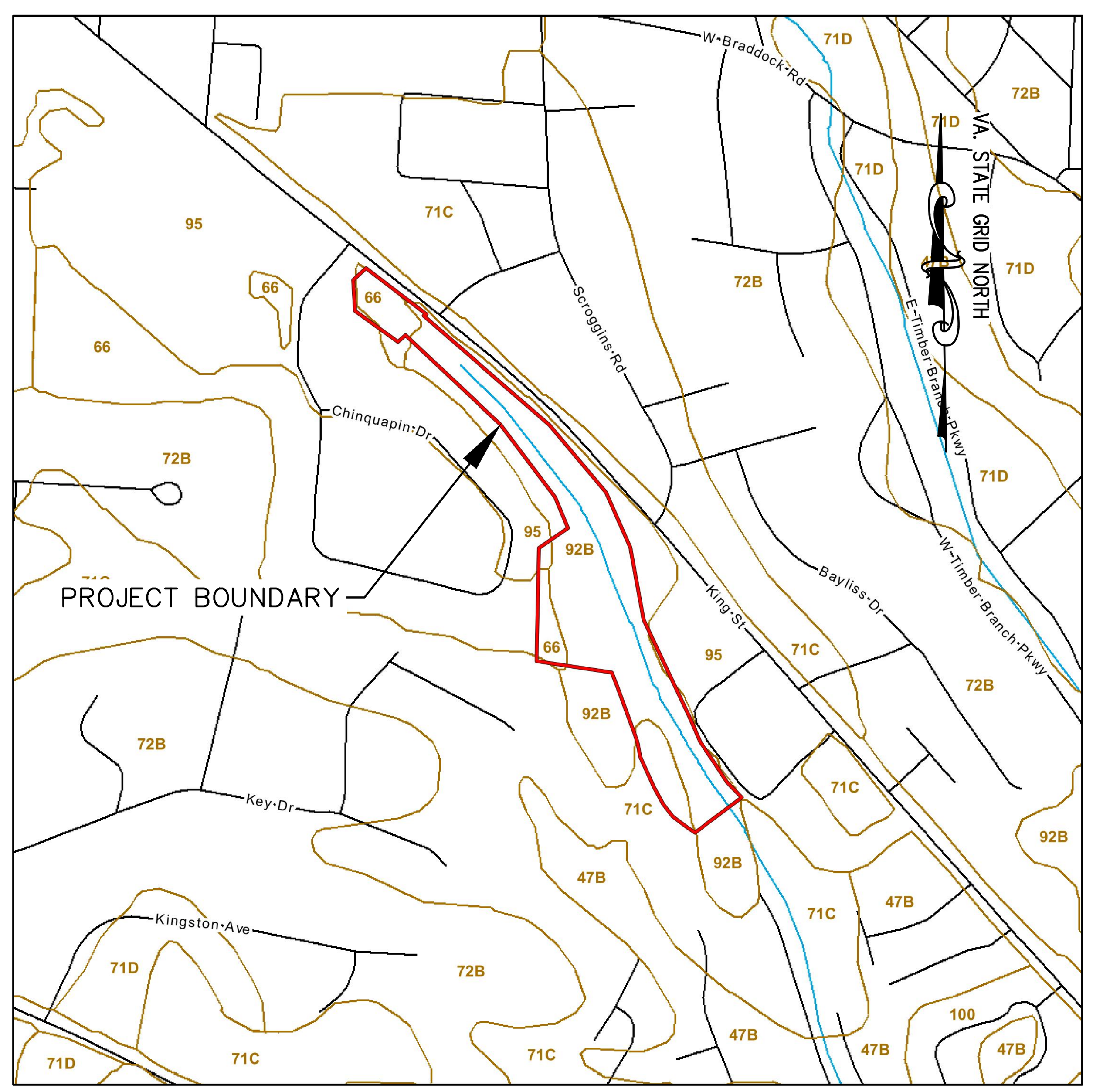
OWNER
CITY OF ALEXANDRIA
301 KING STREET, ROOM 3200
ALEXANDRIA, VA 22314

APPLICANT/DEVELOPER
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

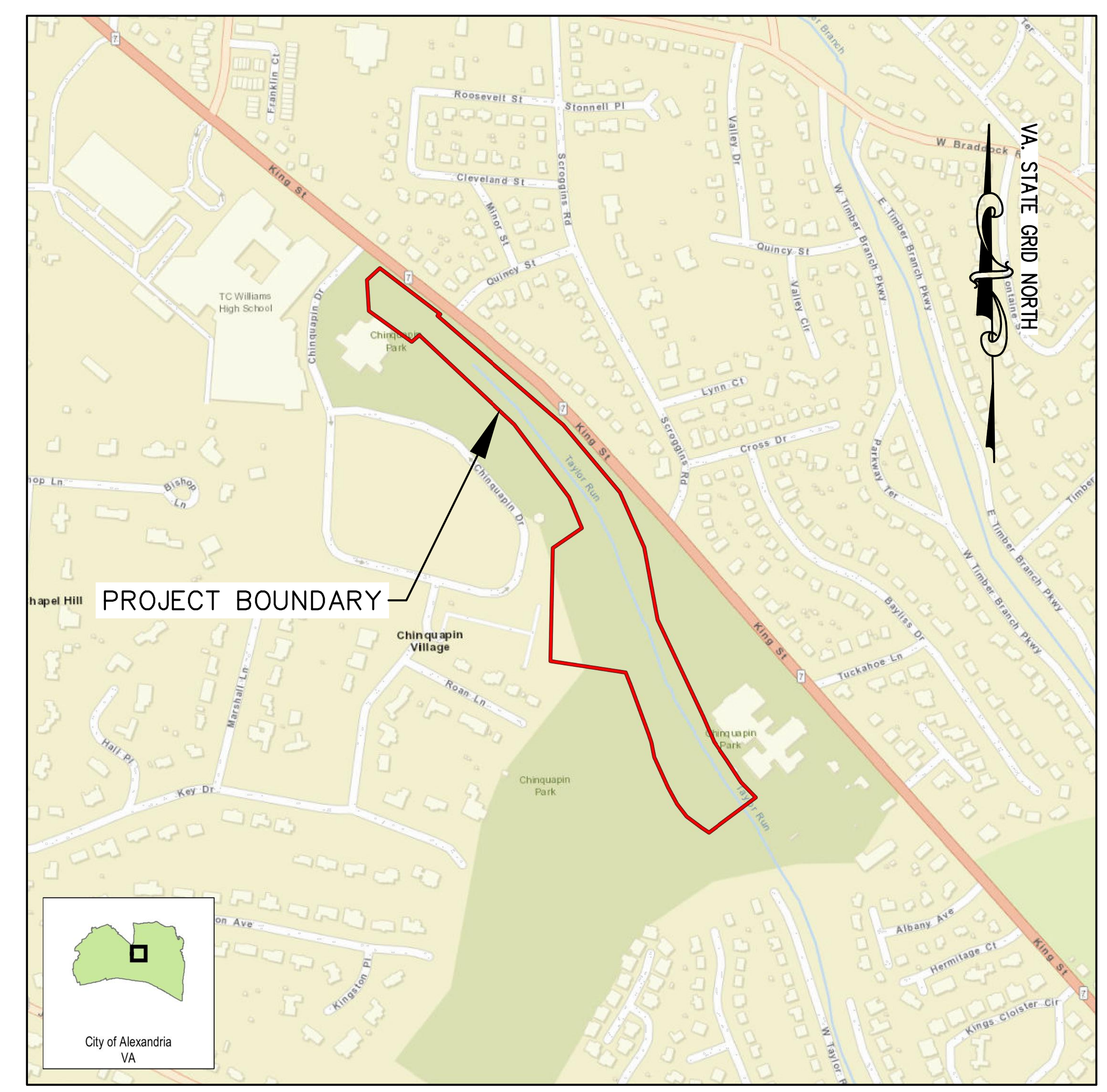
CITY OF ALEXANDRIA COMPREHENSIVE ENVIRONMENTAL SERVICES CONTRACT
CONTRACT NO. 00000292
PURCHASE ORDER NO. 200363

SHEET INDEX

TAYLOR RUN STREAM RESTORATION



SOILS MAP
SCALE 1" = 500'



VICINITY MAP
SCALE 1" = 500'

TOTAL DISTURBED AREA : 170,886 SF (3.92 AC)
INCREASE IN IMPERVIOUS AREA : 0 SF (0.00 AC)

JUNE 16, 2020

PROJECT DESCRIPTION:
THE OBJECTIVE OF THIS PROJECT IS TO MEET MUNICIPAL STORMWATER PERMIT REQUIREMENTS BY REDUCING POLLUTANT LOADS WHILE OFFERING GREATER ACCESSIBILITY AND AMENITIES TO PATRONS.

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES.

APPROVED
X ______ DATE: ______
DIRECTOR

RECOMMENDED FOR APPROVAL
X ______ DATE: ______
DEPUTY DIRECTOR OF OPERATIONS

RECOMMENDED FOR APPROVAL
X ______ DATE: ______
DEPUTY DIRECTOR OF INFRASTRUCTURE & ENVIRONMENTAL QUALITY

RECOMMENDED FOR APPROVAL
X ______ DATE: ______
DEPUTY DIRECTOR OF RIGHT-OF-WAY & DEVELOPMENT SERVICES

RECOMMENDED FOR APPROVAL
X ______ DATE: ______
DEPUTY DIRECTOR OF TRANSPORTATION

DEPARTMENT OF RECREATION, PARKS AND CULTURAL ACTIVITIES

APPROVED
X ______ DATE: ______
DIVISION CHIEF RPCA

DEPARTMENT OF PROJECT IMPLEMENTATION

APPROVED
X ______ DATE: ______
DIRECTOR

RECOMMENDED FOR APPROVAL
X ______ DATE: ______
DIVISION CHIEF

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PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

DATE	BY	REVISIONS DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY, Lic. No. 047145, 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

COVER SHEET

DRAWING
G – 01
SCALE AS NOTED
SHEET 1 OF 84

PROJECT NARRATIVE

THIS PROJECT ENTAILS THE STREAM RESTORATION OF APPROXIMATELY 2025 FEET OF TAYLOR RUN. THE TAYLOR RUN PROJECT AREA BEGINS AT THE 72" RCP CULVERT OUTFALL TO THE NORTHEAST OF THE CHINQUAPIN RECREATION CENTER ADJACENT TO KING STREET IN THE CITY OF ALEXANDRIA, VIRGINIA. THE STREAM FLOWS SOUTHEAST FOR APPROXIMATELY 2025 LINEAR FEET BEFORE REACHING AN EXISTING ROAD CROSSING (DRIVEWAY TO PARKING LOT FOR THE FIRST BAPTIST CHURCH OF ALEXANDRIA). THE STREAM TIES INTO A 2x60" RCP CULVERT AT THIS CROSSING. THE PROJECT AREA LIES ENTIRELY WITHIN THE CITY RESOURCE PROTECTION AREA (RPA) AND IS SURROUNDED BY HIGH-DENSITY RESIDENTIAL AND COMMERCIAL DEVELOPMENT. THE STREAM CORRIDOR IS HIGHLY DISTURBED, WITH SEVERE EROSION IN VARIOUS LOCATIONS, INCLUDING MULTIPLE ISOLATED SECTIONS OF 10-FT HIGH VERTICAL BANKS WHICH CURRENTLY THREATEN THE FOOTPATH ALONG THE WEST BANK OF THE STREAM. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH TWO EXPOSED CROSSINGS WITHIN THE RESTORATION AREA AND TWO MANHOLES THAT ARE IN EXTREMELY CLOSE PROXIMITY TO THE STREAM.

THE TAYLOR RUN WATERSHED AT THE DOWNSTREAM END OF THE RESTORATION REACH IS APPROXIMATELY 333 ACRES AND CONSISTS OF DENSELY DEVELOPED URBAN LAND. WATERSHED IMPERVIOUSNESS IS APPROXIMATELY 38%. A MAJORITY OF THE PROJECT LIES WITHIN A FEMA MAPPED ZONE AE SPECIAL FLOOD HAZARD AREA (SFHA).

EXISTING CONDITIONS SURVEY NOTES

1. HORIZONTAL DATUM: NAD83
   VERTICAL DATUM: NAVD88 (FOR ALL SOURCES: GIS, AERIAL TOPOGRAPHY, SURVEY)
2. UTILITY INFORMATION, AS SHOWN ON THIS PLAN, IS A COMBINATION OF GIS DIGITAL DATA, AERIAL TOPOGRAPHY, AND SURVEY PROVIDED BY THE CITY OF ALEXANDRIA, QUANTUM SPATIAL, AND WSSI, RESPECTIVELY. FOR EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES, NOTIFY "VA811" AT 811 OR 1-800-552-7001, 72 HOURS BEFORE THE START OF ANY EXCAVATION OR CONSTRUCTION.
3. LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR/ENGINEER SHOULD DIG TEST PITS BY HAND AT ALL UTILITY CROSSINGS TO VERIFY EXACT LOCATION.
4. SITE TOPOGRAPHY WAS SURVEYED AND PROVIDED BY WETLAND STUDIES AND SOLUTIONS (WSSI) FOR A TARGET HORIZONTAL MAP SCALE OF OF 1"=20' AT A CONTOUR INTERVAL OF 1'.
5. WSSI SURVEYED THE TOPOGRAPHY, EXISTING SANITARY SEWER STRUCTURE LOCATIONS, CULVERTS, STORM DRAINS, AND ADDITIONAL FEATURES FROM 9/6/2019 AND 10/29/2019.

CITY STANDARD GENERAL NOTES

1. "CITY" MEANS THE CITY OF ALEXANDRIA, A MUNICIPAL CORPORATION OF VIRGINIA AND ITS AUTHORIZED REPRESENTATIVES AND EMPLOYEES.
2. THE SUBJECT SITES ARE LOCATED ON CITY OF ALEXANDRIA ASSESSMENT MAP NO. 041.02, PARCELS 02-02 AND 02-06, AND MAP NO. 042.03, PARCELS 07-01 AND 07-02.
3. OWNERS: CITY OF ALEXANDRIA AND FIRST BAPTIST CHURCH OF ALEXANDRIA
4. TOTAL SITE AREA: LIMITS OF DISTURBANCE IS APPROXIMATELY 3.92 ACRES.
5. AREA TABULATION: THE PROPOSED PROJECT IS A STREAM RESTORATION USING NATURAL CHANNEL DESIGN. THE PROPOSED PROJECT RESULTS IN NO CHANGE IN IMPERVIOUS AREA OR PERVIOUS AREA.
6. THE NATURAL SOILS AT THE SITE CONSIST OF GRANULAR SOILS CLASSIFYING AS SASSAFRAS NEABSCO COMPLEX. THIS SOIL TYPE HAS MARGINAL DRAINAGE AND MEDIUM EROSION POTENTIAL.
7. THE SITE IS LOCATED IN THE CAMERON RUN WATERSHED.
8. THE SUBJECT PROPERTIES LIE WITHIN A RESOURCE PROTECTION AREA.
9. TOPOGRAPHIC INFORMATION FOR THE SUBJECT SITES IS FROM FIELD SURVEYS PROVIDED AERIAL TOPOGRAPHY AND WSSI SURVEY (SEE EXISTING CONDITIONS SURVEY NOTES)
10. THE BOUNDARY INFORMATION FOR THE SUBJECT SITES IS BASED ON FIELD SURVEYS PROVIDED BY DIGITAL GIS DATA FROM THE CITY OF ALEXANDRIA AND WSSI SURVEY (SEE EXISTING CONDITIONS SURVEY NOTES).
11. PUBLIC AND PRIVATE EASEMENTS ARE SHOWN OR KNOWN PUBLIC AND PRIVATE EASEMENTS ARE SHOWN.
12. ALL NEW CONSTRUCTION WILL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY AND/OR THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) STANDARDS AND SPECIFICATIONS.
13. ALL IMPROVEMENTS TO THE CITY RIGHT-OF-WAY SUCH AS CURB, GUTTER, SIDEWALK, AND DRIVEWAY APRONS, ETC., CONSTRUCTED AS PER THE CITY STANDARDS AND SPECIFICATIONS.
14. ALL STREET CUT AND PATCH WORK LOCATED IN PUBLIC RIGHT-OF-WAYS, REQUIRED FOR ANY UTILITY INSTALLATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CITY STANDARDS AND SPECIFICATIONS AND TO THE SATISFACTION OF THE CITY.
15. ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE PLACED AND MAINTAINED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY AND/OR THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).
16. ANY WORK IN THE PUBLIC RIGHT OF WAY SHALL REQUIRE A SEPARATE PERMIT FROM THE DIRECTOR OF TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES), CITY OF ALEXANDRIA.
17. COMPACTION OF BACKFILL IN UTILITY TRENCHES SHALL BE IN ACCORDANCE WITH THE CITY STANDARDS AND SPECIFICATIONS.
18. ALL SANITARY SEWERS SHALL BE CONSTRUCTED TO THE CITY STANDARDS AND SPECIFICATIONS.
19. ALL STORM SEWERS SHALL BE CONSTRUCTED TO THE CITY STANDARDS AND SPECIFICATIONS.
20. ALL WATER FACILITY CONSTRUCTION SHALL CONFORM TO VIRGINIA AMERICAN WATER COMPANY STANDARDS AND SPECIFICATIONS. CONTRACTOR SHALL CONTACT VIRGINIA AMERICAN WATER COMPANY AT (703) 549-7080 TO COORDINATE CONSTRUCTION AND INSPECTION OF WATER FACILITIES.
21. ELECTRIC POWER WILL BE PROVIDED BY DOMINION VIRGINIA POWER.
22. THERE IS NO OBSERVABLE EVIDENCE OF CEMETERIES OR BURIAL GROUNDS ON THIS PROPERTY.
23. A SEPARATE PERMIT IS REQUIRED FOR SIGN CONSTRUCTION.
24. SHOULD UTILITY CONSTRUCTION BE PERFORMED AFTER COMPLETING EARTHWORK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACHIEVING 98 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1551) COMPACTION IN ALL TRENCH BACKFILL.
25. GAS SERVICE IS PROVIDED BY WASHINGTON GAS.

DEMOLITION NOTES

1. NO DEMOLITION CAN BEGIN UNTIL ALL EROSION AND SEDIMENT CONTROLS ARE IN PLACE, AND IS APPROVED BY AN EROSION AND SEDIMENT CONTROL INSPECTOR OF THE CITY OF ALEXANDRIA DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES).
2. ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE MOST CURRENT APPLICABLE FEDERAL, STATE , AND LOCAL LAWS AND REGULATIONS, INCLUDING BUT NOT LIMITED, TO ENVIRONMENTAL PROTECTION AGENCY (EPA), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), VIRGINIA OCCUPATIONAL AND SAFETY HEALTH COMPLIANCE PROGRAM (VOSH ENFORCEMENT), VIRGINIA OVERHEAD HIGH VOLTAGE LINE SAFETY ACT, NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), AND NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH).
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF WORK WITH REPRESENTATIVE UTILITY COMPANIES AND FOR THE IMPLEMENTATION OF REQUIRED UTILITY-RELATED WORK.
4. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CITY UPON ENCOUNTERING ANY HAZARDOUS MATERIALS DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL DOCUMENT SAME TO THE CITY AND OBTAIN DIRECTION AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
5. DISCONNECTION OF SERVICES AND SYSTEMS SUPPLYING UTILITIES TO BE ABANDONED OR DEMOLISHED SHALL BE COMPLETED PRIOR TO OTHER SITE DEMOLITION IN FULL COMPLIANCE WITH APPLICABLE CODES, REGULATIONS, AND THE REQUIREMENTS OF UTILITY PURVEYORS HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE UTILITY PURVEYORS, PAYMENT OF ASSOCIATED FEES AND PROCUREMENT OF ALL NECESSARY PERMITS.
6. PRIOR TO REMOVAL OF MATERIALS OVER EXISTING UTILITY SYSTEMS, THE CONTRACTOR SHALL DOCUMENT EXISTING CONDITIONS AND, IF AT VARIANCE WITH CONDITIONS AS REPRESENTED ON THE PLANS, NOTIFY THE CITY AND OBTAIN DIRECTIONS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
7. PRIOR TO COMMENCING NEW WORK, THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING ADJACENT AREAS. ALL ADJACENT AREAS DAMAGED DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE CITY.
8. THE CONTRACTOR SHALL BACKFILL EXCAVATED AREAS WITH APPROVED MATERIALS AS PER THE REQUIREMENTS OF VIRGINIA DEPARTMENT OF TRANSPORTATION.
9. SHEETING AND SHORING REQUIRED FOR DEEP EXCAVATIONS AND TRENCHES SHALL BE DESIGNED AND SEALED/CERTIFIED BY THE CONTRACTOR OR THE CONTRACTOR'S ENGINEER AND APPROVED BY THE APPROPRIATE AUTHORITIES HAVING JURISDICTION PRIOR TO EXCAVATION AND TRENCHING ACTIVITIES BEING PERFORMED. COMPLY WITH OSHA AND OTHER APPLICABLE SAFETY CODES DURING EXCAVATION AND TRENCHING ACTIVITIES AND WHILE AN EXCAVATION OR TRENCH REMAINS OPEN AT THE PROJECT SITE.
10. THE CONTRACTOR SHALL PROTECT AND PREVENT DAMAGE TO EXISTING ON-SITE UTILITY DISTRIBUTION FACILITIES. ACTIVE UTILITY DISTRIBUTION FACILITIES ENCOUNTERED DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES SHALL BE SHUT OFF BY THE CONTRACTOR, AT THE SERVICE MAIN WITH THE APPROVAL OF THE CITY.
11. DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CITY UPON ENCOUNTERING ANY EXISTING UTILITIES AND/OR UTILITY SYSTEM STRUCTURES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL DOCUMENT SAME TO THE CITY AND OBTAIN DIRECTION AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.

PRESERVATION & PROTECTION OF EXISTING VEGETATION NOTES

1. ALL PLANS ARE TO BE APPROVED BY, AND QUESTIONS ABOUT PLANTING DETAILS SHOULD BE DIRECTED TO JOHN MARLIN, CITY ARBORIST AT 703-746-5499; JOHN.MARLIN@ALEXANDRIAVA.GOV.
2. VEGETATION TO BE REMOVED SHALL BE APPROVED BY THE CITY ARBORIST.
3. CONTRACTOR SHALL PROVIDE, IMPLEMENT AND FOLLOW A TREE CONSERVATION AND PROTECTION PROGRAM THAT IS DEVELOPED TO THE SATISFACTION OF THE CITY ARBORIST.
4. PROTECTION PROGRAM SHALL BE AUTHORED BY AN ARBORIST CERTIFIED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE.
5. LOCATION AND METHOD FOR PROTECTION AND PRESERVATION OF EXISTING TREES ON ALL PLAN SHEETS INCLUDING DEMOLITION, SEDIMENT AND EROSION CONTROL, SITE PLAN AND LANDSCAPE PLAN.
6. PROVIDE PROTECTION OF EXISTING VEGETATION IN COMPLIANCE WITH LANDSCAPE GUIDELINES OF THE CITY.
7. LOCATION AND METHOD FOR PROTECTION AND PRESERVATION OF EXISTING TREES SHALL BE APPROVED IN-FIELD BY THE CITY ARBORIST PRIOR TO COMMENCEMENT OF GROUND DISTURBING ACTIVITY. RCPA ALSO RESERVES THE RIGHT TO CONDUCT THESE APPROVALS.
8. CONTRACTOR MUST PROVIDE DOCUMENTATION OF COMMUNICATION WITH THE ADJACENT PROPERTY OWNER(S) VERIFYING NOTIFICATION OF CONSTRUCTION IMPACT, POTENTIAL FOR LOSS, AND AGREED UPON REMEDIAL MEASURES PERTAINING TO THE EXISTING TREE(S) ON ADJACENT PROPERTIES THAT WILL BE AFFECTED BY PROJECT WORK.
9. PROVIDE SPECIFIC CONSTRUCTION STAGING INFORMATION THAT INDICATES THE METHODS, AND PROCEDURES TO BE IMPLEMENTED FOR PROTECTION OF EXISTING ON-SITE AND OFF-SITE VEGETATION.
10. TREE PROTECTION SHALL BE PROVIDED WHERE SILT FENCE IS NOT ADEQUATE. PROTECTION SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE DRIP LINE OF THE TREES TO BE SAVED. THE CONTRACTOR WILL CONSULT THE SITE INSPECTOR BEFORE THE CONSTRUCTION STARTS. TREE PROTECTION FENCING MUST BE ESTABLISHED AND APPROVED BY THE CITY ARBORIST BEFORE ANY CLEARING OR CONSTRUCTION/DEMOLITION CAN BE STARTED. TO THE EXTENT POSSIBLE ALL TREE PROTECTION SHALL BE INSTALLED AT THE DRIP LINE OF THE TREE(S).

RODENT ABATEMENT NOTE

PRIOR TO THE ISSUANCE OF A DEMOLITION PERMIT OR LAND DISTURBANCE PERMIT, A RODENT ABATEMENT PLAN SHALL BE PREPARED AND SUBMITTED TO THE CITY OF ALEXANDRIA CODE ENFORCEMENT BUREAU. PLAN SHALL OUTLINE STEPS THAT WILL BE TAKEN TO PREVENT THE SPREAD OF RODENTS FROM THE CONSTRUCTION SITE TO THE SURROUNDING COMMUNITY AND SEWERS.

UTILITY WORKS NOTES

UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING MINIMUM STANDARDS DESCRIBED IN SECTION 4VAC50-30-40 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) AND ADDITIONAL APPLICABLE PRACTICES FOLLOWED BY THE CITY:

1. ALL PRIVATE UTILITIES SHALL BE LOCATED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY AND PUBLIC UTILITY EASEMENTS UNLESS THE UTILITY OWNERS HAVE FRANCHISE AGREEMENT WITH THE CITY OF ALEXANDRIA; HOWEVER, NO ELECTRIC TRANSFORMERS AND SWITCH GEARS/CONTROL BOXES SHALL BE PLACED IN THE PUBLIC RIGHT OF WAY.
2. ALL THE EXISTING AND PROPOSED PUBLIC AND PRIVATE UTILITIES AND EASEMENTS SHALL BE SHOWN AND A DESCRIPTIVE NARRATION OF VARIOUS UTILITIES SHALL BE PROVIDED ON THE PLAN.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN UTILITY SERVICES AT ALL TIMES DURING CONNECTION AND/OR CONSTRUCTION. ANY DISRUPTIONS TO UTILITIES TO REMAIN WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR OR REPLACE IN KIND WITH NO ADDITIONAL EXPENSE TO THE CITY.
4. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
5. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
6. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY AS CONFIRMED BY THE CITY.
7. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ACCORDANCE WITH THE CITY STANDARDS AND SPECIFICATIONS TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
8. SHOULD UTILITY CONSTRUCTION BE PERFORMED AFTER COMPLETING EARTHWORK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACHIEVING 98 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557) COMPACTION IN ALL TRENCH BACKFILL.
9. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE VIRGINIA REGULATIONS §4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS, VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).
10. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
11. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL CONTROL MEASURES AS NECESSARY TO PREVENT EROSION AND SEDIMENTATION, AS DETERMINED BY THE DIRECTOR OF T&ES, CITY OF ALEXANDRIA.
12. A REMEDIATION PLAN SHALL BE SUBMITTED DETAILING HOW CONTAMINATED SOILS AND/OR GROUNDWATER WILL BE DEALT WITH, INCLUDING PLANS TO REMEDIATE UTILITY CORRIDORS.
13. UTILITY CORRIDORS IN CONTAMINATED SOIL SHALL BE OVER EXCAVATED BY 2 FEET AND BACKFILLED WITH "CLEAN" SOIL.
14. GRADING CAN BE PERFORMED ON INSTALLATION OF UTILITIES.
15. ALL NEW INSTALLATIONS AND/OR REINSTALLATIONS OF UTILITIES SUCH AS ELECTRICAL LINES, GAS PIPES, COMMUNICATION CABLES INCLUDING WATER AND SEWER LATERALS BOTH ON PRIVATE PROPERTY AND IN THE PUBLIC RIGHT-OF-WAY IN THE CITY OF ALEXANDRIA SHALL BE PROVIDED WITH 3" AND 6" WIDE 5 MIL OVERALL THICKNESS DETECTABLE UNDERGROUND WARNING TAPES (DUWT). THE 3" DUWT SHALL BE INSTALLED AT DEPTHS OF 12" TO 18" AND 6" WIDE AT A DEPTH OF 24" SO AS TO MAKE UNDERGROUND INSTALLATIONS EASY TO FIND USING A NON-FERROUS LOCATOR. THE DUWT SHALL BE WITH ALUMINUM BACKING OR SOLID ALUMINUM CORE LAMINATED WITH A PROTECTIVE CLEAR FILM ON BOTH SIDES, SEALING AND PROTECTING THE GRAPHICS FROM UNDERGROUND MOISTURE, ACIDS, ALKALIS, AND OTHER SOIL SUBSTANCES. ALL DUWT TAPES SHALL BE PRINTED IN BLACK INK ON AMERICAN PUBLIC WORKS ASSOCIATION (APWA) APPROVED COLORS TO MEET OR EXCEED INDUSTRY STANDARDS. THE FOLLOWING ARE THE APWA COLOR CODES:

COLOR	CODES
RED	CAUTION BURIED ELECTRIC POWER LINES, CABLES, CONDUITS, AND LIGHTING CABLES
YELLOW	CAUTION GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	CAUTION COMMUNICATIONS, ALARM OR SIGNAL LINES, CABLES, OR CONDUITS
BLUE	CAUTION POTABLE WATER
PURPLE	CAUTION RECLAIMED WATER, IRRIGATION AND SLURRY LINES
GREEN	CAUTION SEWER, DRAIN LINES, AND FORCE MAIN

UTILITY CONTACTS

DOMINION ENERGY (MICHAEL SHIPE)	571-203-5242
VERIZON COMMUNICATIONS (BRIAN HARLOW)	703-819-6822
COMCAST (AMY GOAD)	301-625-3407
WASHINGTON GAS (MICHAEL STABLEIN)	703-750-4270
PEPCO	202-833-7500
VIRGINIA AMERICAN WATER (STEVEN CHEN)	703-706-3889
SANITARY SEWER - CITY OF ALEXANDRIA	703-746-4014

CONSTRUCTION NOTES

1. THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK AND FOR ANY DAMAGES WHICH MAY OCCUR BY HIS FAILURE TO LOCATE OR PRESERVE THESE UNDERGROUND UTILITIES. IF DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHOULD ENCOUNTER UTILITIES OTHER THAN THOSE SHOWN ON THE PLANS, HE SHALL IMMEDIATELY NOTIFY THE CITY AND TAKE NECESSARY ACTION AND PROPER STEPS TO PROTECT THE FACILITY AND ASSURE THE CONTINUATION OF SERVICE.
2. THE CONTRACTOR SHALL DIG TEST PITS AS REQUIRED FOLLOWING NOTIFICATION AND MARKING OF ALL EXISTING UTILITIES TO VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES TEST HOLES TO BE PERFORMED AT LEAST 30 DAYS PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE CITY. REDESIGN AND APPROVAL BY REVIEWING AGENCIES SHALL BE OBTAINED, IF REQUIRED.
3. THE CONTRACTOR SHALL VISIT THE SITE AND SHALL VERIFY EXISTING CONDITIONS PRIOR TO STARTING CONSTRUCTION.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISCONNECTION OF EXISTING UTILITIES PRIOR TO MOBILIZATION.
5. CONSTRUCTION VEHICLE ACCESS TO THE SITE WILL BE BETWEEN 9 AM AND 2 PM TO AVOID SCHOOL AND RUSH HOUR TRAFFIC.
6. DUE TO THE SENSITIVE NATURE OF THE PROJECT SITE THE CONTRACTOR SHALL CLEAR ONLY THOSE TREES/SHRUBS NECESSARY TO ALLOW SPECIFIED GRADING. LOD AREAS SHALL BE WALKED WITH THE CITY ARBORIST TO CONFIRM TREE REMOVAL PRIOR TO CLEARING.
7. ALL AREAS, ON OR OFF-SITE, WHICH ARE DISTURBED BY THIS CONSTRUCTION AND WHICH ARE NOT PAVED OR BUILT UPON, SHALL BE ADEQUATELY STABILIZED TO CONTROL EROSION AND SEDIMENTATION. THE MINIMUM ACCEPTABLE STABILIZATION SHALL CONSIST OF PERMANENT GRASS, SEED MIXTURE TO BE AS RECOMMENDED BY THE CITY AGENT. ALL SLOPES 3:1 AND STEEPER SHALL BE SODDED AND PEGGED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY OF ALEXANDRIA.
8. EXISTING WELLS SHALL BE PERMANENTLY ABANDONED IN ACCORDANCE WITH VIRGINIA STATE WATER CONTROL BOARD (VSWCB) REQUIREMENTS.
9. EXISTING SEPTIC FIELDS SHALL BE ABANDONED IN ACCORDANCE WITH VIRGINIA HEALTH DEPARTMENT STANDARDS AND SPECIFICATIONS.
10. ALL OVER HEAD POLE LINES SHALL BE RELOCATED AS REQUIRED BY THE OWNING UTILITY COMPANIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL ARRANGEMENTS AND COORDINATING ALL WORK REQUIRED FOR THE NECESSARY RELOCATIONS.
11. EXISTING PHYSICAL FEATURES ARE TO BE REMOVED BY THE CONTRACTOR AS REQUIRED.
12. EXISTING CONSTRUCTION SHALL BE REMOVED TO NEAREST JOINT. NEW CONSTRUCTION SHALL BE PROVIDED AS SHOWN AND ANY DAMAGED AREA SHALL BE REPAIRED TO MATCH CONDITIONS EXISTING PRIOR TO CONSTRUCTION.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO THE ADJACENT CURB, GUTTER, AND RIGHT-OF-WAY, IF DAMAGED DURING CONSTRUCTION ACTIVITY AS DETERMINED BY THE DIRECTOR OF T&ES, CITY OF ALEXANDRIA.
14. TOPS OF EXISTING STRUCTURES WHICH REMAIN IN USE ARE TO BE ADJUSTED IN ACCORDANCE WITH THE GRADING PLAN. ALL PROPOSED STRUCTURE TOP ELEVATIONS ARE TO BE VERIFIED BY THE CONTRACTOR WITH THE SITE GRADING PLANS. IN CASE OF CONFLICT, THE GRADING PLAN SHALL SUPERSEDE PROFILE ELEVATIONS. MINOR ADJUSTMENTS TO MEET FINISHED GRADE ELEVATIONS MAY BE REQUIRED.
15. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE SURE THAT ANY EXISTING LANDSCAPING WHICH IS TO BE RELOCATED ON THE SITE WILL BE CAREFULLY STORED IN A DESIGNATED AREA BEFORE BEING REPLANTED. COORDINATION WITH THE OWNER FOR MUTUALLY AGREEABLE STORAGE LOCATIONS FOR LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PLANT MATERIAL THAT DOES NOT SURVIVE STORAGE AND REPLANTING.
16. CONSTRUCTION STAKEOUT SHALL BE UNDER THE DIRECT SUPERVISION OF A LICENSED LAND SURVEYOR IN THE COMMONWEALTH OF VIRGINIA.
17. SMOOTH GRADE SHALL BE MAINTAINED FROM THE CENTERLINE OF THE EXISTING ROAD TO THE PROPOSED ENTRANCE AND/OR CURB & GUTTER TO PRECLUDE THE FORMING OF FALSE AND/OR THE PONDING OF WATER ON THE ROADWAY.
18. ALL STRIPPING TO MEET THE REQUIREMENTS OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
19. ALL EROSION CONTROLS SHALL CONFORM TO THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCHB) AND MUST BE SUBMITTED AND APPROVED BY T&ES.
20. ALL EARTHWORK OPERATIONS ARE TO BE PERFORMED UNDER THE FULL TIME, ON-SITE SUPERVISION OF A REGISTERED GEOTECHNICAL ENGINEER WITH GEOTECHNICAL TESTING IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS AND GEOTECHNICAL REPORT REQUIREMENTS.
21. THE CONTRACTOR MUST ENSURE THAT POSITIVE DRAINAGE OCCURS ON SITE TO PREVENT PONDING OR DRAINAGE PROBLEMS ON ADJACENT PROPERTIES.
22. CONTRACTOR MUST ENSURE THAT THERE IS NO DISTURBANCE ON ADJACENT PROPERTIES.
23. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN UTILITY SERVICES AT ALL TIMES DURING CONNECTION AND/OR CONSTRUCTION.
24. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL DURING CONSTRUCTION. NO SIDE AND/OR CROSS WALK SHALL BE CLOSED DURING CONSTRUCTION. IF ANY SIDE AND/OR CROSS WALKS NEED TO BE CLOSED TO FACILITATE THE CONSTRUCTION THEN THE CONTRACTOR SHALL PROVIDE A SIDE AND/OR CROSS WALK CLOSURE PLAN TO THE SATISFACTION OF THE DIRECTOR OF T&ES, CITY OF ALEXANDRIA.

ENVIRONMENTAL SITE ASSESSMENT NOTES

1. THE MAJORITY OF PROPOSED WORK IS WATER DEPENDENT AND IS LOCATED WITHIN THE RESOURCE PROTECTION AREA. MINOR TEMPORARY IMPACTS TO ISOLATED OVERBANK WETLANDS WILL OCCUR FROM PROPOSED MEASURES. THE CITY DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES, OFFICE OF ENVIRONMENTAL QUALITY MUST BE NOTIFIED IF UNUSUAL OR UNANTICIPATED CONTAMINATION OR UNDERGROUND STORAGE TANKS, DRUMS, AND CONTAINERS ARE ENCOUNTERED AT THE SITE. IF THERE IS ANY DOUBT ABOUT PUBLIC SAFETY OR A RELEASE TO THE ENVIRONMENT, THE ALEXANDRIA FIRE DEPARTMENT MUST BE CONTACTED IMMEDIATELY BY CALLING 911. THE TANK OR CONTAINER'S REMOVAL, ITS CONTENTS, ANY SOIL CONTAMINATION AND RELEASES TO THE ENVIRONMENT WILL BE HANDLED IN ACCORDANCE WITH FEDERAL, STATE, AND CITY REGULATIONS.
2. ALL WELLS TO BE DEMOLISHED IN THIS PROJECT, INCLUDING MONITORING WELLS MUST BE CLOSED IN ACCORDANCE WITH STATE WELL REGULATION. CONTACT JOE FIANDER AND COORDINATE WITH THE ALEXANDRIA HEALTH DEPARTMENT AT 703-838-4400 EXT 255.
3. CONSTRUCTION ACTIVITIES ARE PERMITTED TO OCCUR BETWEEN THE FOLLOWING HOURS:
   - MONDAY THROUGH FRIDAY FROM 8 AM TO 6 PM AND
   - SATURDAYS FROM 10 AM TO 5 PM.
   - NO CONSTRUCTION ACTIVITIES ARE PERMITTED ON SUNDAYS.

   PILE DRIVING IS FURTHER RESTRICTED TO THE FOLLOWING HOURS:
   - MONDAY THROUGH FRIDAY FROM 9 AM TO 6 PM AND
   - SATURDAYS FROM 10 AM TO 4 PM.

ARCHAEOLOGY NOTES

1. CALL ALEXANDRIA ARCHAEOLOGY (703-746-4399) TWO WEEKS PRIOR TO THE STARTING DATE OF ANY GROUND DISTURBANCE SO THAT AN INSPECTION SCHEDULE FOR CITY ARCHAEOLOGISTS CAN BE ARRANGED.
2. CALL ALEXANDRIA ARCHAEOLOGY DEPARTMENT (703-746-4399) IMMEDIATELY IF ANY STONE OR POTTERY, INDIAN ARTIFACTS OR HISTORICAL STRUCTURAL REMAINS, WALL FOUNDATIONS, PRIVIES, CISTERNS, ICE WELLS, ETC OR CONCENTRATION OF ARTIFACTS ARE FOUND DURING CONSTRUCTION WORK. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE TO RECORD THE FINDS.
3. THE APPLICANT MUST NOT ALLOW METAL DETECTION TO BE CONDUCTED ON THE PROPERTY UNLESS AUTHORIZED BY ALEXANDRIA ARCHAEOLOGY.
4. NO ARCHAEOLOGICAL PRESERVATION AREAS HAVE BEEN IDENTIFIED ON THIS SITE.

ITEM	QTY	UNIT
General Conditions		
Mobilization	1	LS
Construction Surveying		
Construction Stakeout	2,025	LF
As-Built	2,025	LF
CCTV		
CCTV Inspections	1	LS
Earthwork		
Excavation	2,500	CY
Load and Haul off-site	0	CY
Import of Clean Fill (Submittal Required)	1,600	CY
Imported Bed Material		
Main Channel Reinforced Bed Material (18" Thick Class 1 Bed Mix)	2,400	CY
Salvaged Bed Material		
Main Channel Harvest, Stockpile, and Reuse Existing Bed Material	1	LS
Access Road		
Deck Mats (Access, Staging, and Stream Crossings)	3,350	LF
Filter Fabric (placed beneath Deck Mats)	4,700	SY
Clearing and Demolition		
Light Clearing & Grubbing, Including Trees up to 6" Diameter	3.92	AC
Remove Trees, 12" Diameter	154	EA
Remove Trees, 13" - 24" Diameter	100	EA
Remove Trees, 25" - 36" Diameter	13	EA
Remove Trees, 37" - 45" Diameter	2	EA
Stream Restoration		
Modified Cross Vane	2	EA
Boulder Pool	16	EA
In-Stream Woody Debris	10	EA
Log Sill	9	EA
Log Vane with Rock Sill	3	EA
Utility Protection (Class II)	33	CY
Riprap Swales and pool lining (Class II) 2' deep	53	CY
Channel lining (Class III) 3' deep	156	CY
Filter Fabric - part of structures	1,235	SY
Remove and dispose 36" - 54" diameter pipes (all types) up to 8' depth (36" RCP)	10	LF
Remove and dispose 36" - 54" diameter pipes (all types) up to 8' depth (36" CMP)	8	LF
Remove and dispose of existing endwalls or end sections, 30" - 36" pipe	1	EA
End Section, 12" - 36" Pipes, Concrete (ES-1)	1	EA
Rock Wall	155	LF
Rock Steps	2	EA
Invasive Control		
Invasive Species Control	1	LS
Seeding		
Seed (Permanent) and Straw	16,450	SY
Trees and Shrubs		
Vegetation - 1 gal. Container (6' O.C.)	5,600	EA
Live Stakes		
Vegetation - Live Stakes (1' O.C.)	4,600	EA
Topsoil		
Salvage topsoil, stockpile onsite, and respread onsite (3" deep across entire LOD)	1,847	CY
Import of Topsoil (to supplement on-site salvage)	1,200	CY
Sewer Manhole Relocation		
Sanitary Sewer Bypass Pumping	14	DAY
Remove/Haul off existing Manhole	8	VF
Remove Old Pipe, New Pipe In Same Trench, Restore Trench	42	LF
Installation of 18" DIP (MJ Pipe)	34	LF
Rubber Boot MH to RCP Connection	2	EA
Install Manhole Inside Diameter 3'-6' with frame and cover	1	EA
Install Manhole Depth Below 6' (Vertical Separation of Top and Bottom)	6	VF
Standard Concrete Encasement (8"-21" Pipe)	82	LF
Excavation	75	CY
Backfill	55	CY
Sheet Pile Wall Removal	62	LF
Erosion/Sediment Control		
Temporary Construction Entrance w/ Wash Rack	1	EA
Super Silt Fence	645	LF
Tree Protection/Orange Mesh/Safety Fence	5,535	LF
Tree Planking (estimated for 50 trees)	1	LS
Tree Conservation and Protection Plan	1	LS
Pump Around (including pump, pipe, cofferdam, filter bag)	42	WK
Coir Fiber Matting	3,600	SY
Chain Link Fence	990	LF
Pedestrian Gate	1	EA
Temporary Bridge Crossing	4	EA
Riprap Inlet Protection (Estimated Quantity, Specified on Plan as "As Needed")	2	SY
Riprap Outlet Protection (Estimated Quantity, Specified on Plan as "As Needed")	6	SY
Signage and Bridges		
Educational Signs and Installation	4	EA
Floodplain Inundation Warning Signs and Installation	3	EA
Remove and Reinstall Historic Sign	3	EA
Remove and Reinstall Trail Marker	2	EA
Trail Detour Sign	2	EA
Removal, Repair (if necessary), and Replacement of Puncheon and Walking Bridge	1	LS
MAINTENANCE OF TRAFFIC		
Traffic Control	1	LS

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

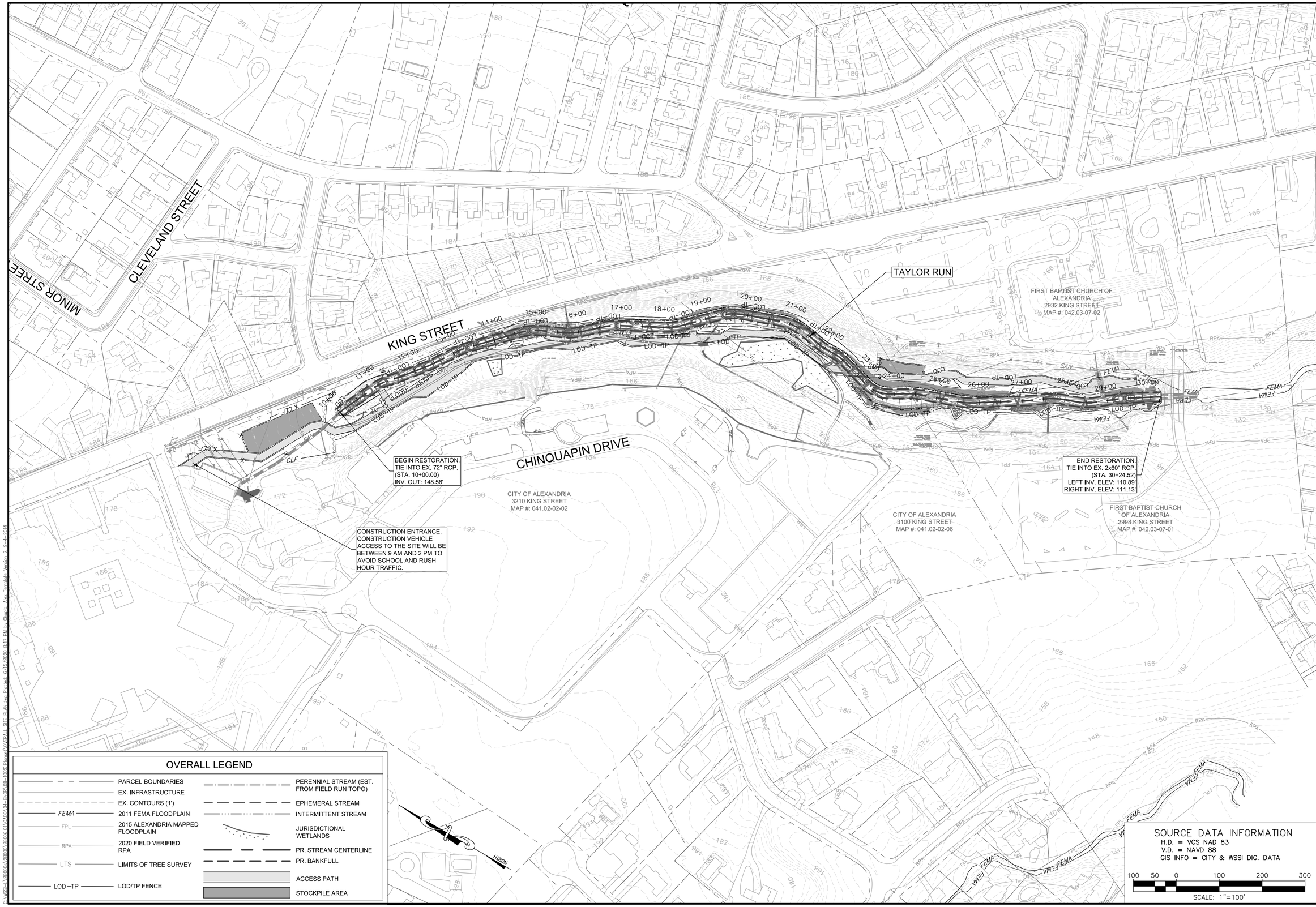
TAYLOR RUN STREAM RESTORATION

GENERAL NOTES

URS
12420 MILESTONE CENTER DR., SUITE 150
GERMANTOWN, MD 20876
(301) 820-3000

Wetland Studies and Solutions, Inc.
a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

DRAWING
G – 02
SCALE 1" = 20'



OVERALL LEGEND

- PARCEL BOUNDARIES
- EX. INFRASTRUCTURE
- EX. CONTOURS (1')
- FEMA — 2011 FEMA FLOODPLAIN
- FPL — 2015 ALEXANDRIA MAPPED FLOODPLAIN
- RPA — 2020 FIELD VERIFIED RPA
- LTS — LIMITS OF TREE SURVEY
- LOD—TP — LOD/TP FENCE
- PERENNIAL STREAM (EST. FROM FIELD RUN TOPO)
- EPHEMERAL STREAM
- INTERMITTENT STREAM
- JURISDICTIONAL WETLANDS
- PR. STREAM CENTERLINE
- PR. BANKFULL
- ACCESS PATH
- STOCKPILE AREA

SOURCE DATA INFORMATION

H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

100 50 0 100 200 300
SCALE: 1"=100'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE | BY | DESCRIPTION

ALEXANDRIA PROJECT NO.: 00-0000-00
DATE OF PLAN ISSUANCE: XX/XX/XX
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEALED BY COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER
NATHAN A. STALEY
Lic. No. 047145
6/16/2020

Wetland Studies & Solutions, Inc. — a URS company
5300 WESTONE CENTER DR., SUITE 100
FAIRFAX, VA 22030
(703) 471-3080

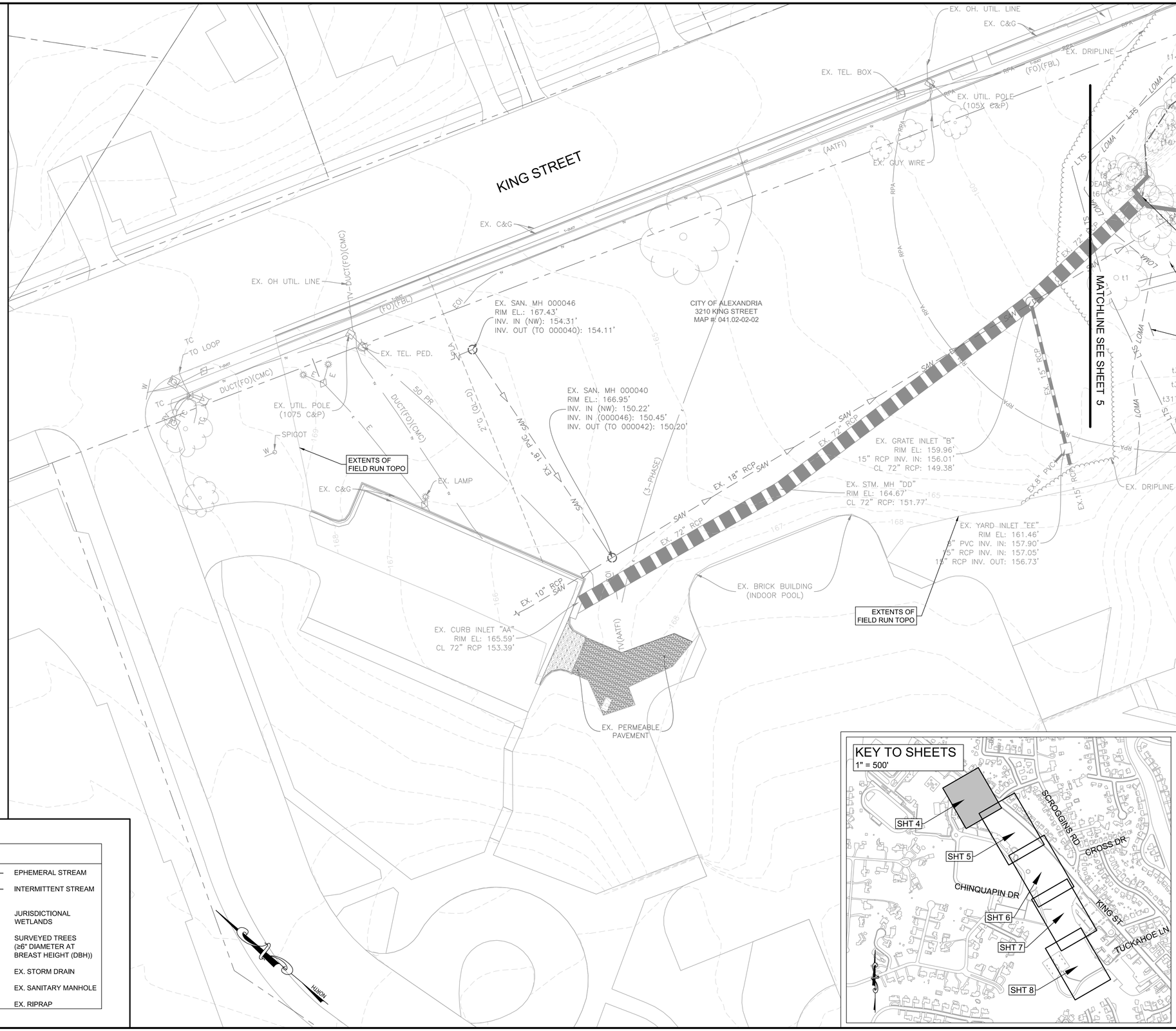
URS
1420 SPRING CENTER DR., SUITE 100
FAIRFAX, VA 22030
(703) 925-3000

TAYLOR RUN STREAM RESTORATION

OVERALL SITE PLAN

DRAWING
0 – 01
SCALE 1" = 100'
SHEET 3 OF 84

C:\WSS-L\28000s\28000\28006.01\CAD\104-ENGR\28-10SE Plans\[OVERALL SITE PLAN.dwg Plotted: 6/15/2020 8:17 PM by Chaplo, Alex Template Version 2 9-4-2014



EXISTING CONDITIONS GENERAL NOTES:

1. REFER TO THE TREE SAVE PLAN AND TREE INVENTORY SHEETS FOR INFORMATION REGARDING ALL TREES WITH A DIAMETER AT BREAST HEIGHT (DBH) ≥ 6" WITHIN THE LIMITS OF THE TREE SURVEY (LTS).
2. THE EXISTING SANITARY SEWER PIPE LABELED "CIPP" REFERS TO REINFORCED CONCRETE PIPE (RCP) THAT HAS BEEN LINED WITH CURED IN PLACE PIPE (CIPP).

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

EXISTING CONDITIONS LEGEND

PARCEL BOUNDARIES	EPHEMERAL STREAM
EX. INFRASTRUCTURE	INTERMITTENT STREAM
EX. CONTOURS (1')	
SAN — EX. SANITARY SEWER	JURISDICTIONAL WETLANDS
FEMA — 2011 FEMA FLOODPLAIN	
FPL — 2015 ALEXANDRIA MAPPED FLOODPLAIN	SURVEYED TREES (≥6" DIAMETER AT BREAST HEIGHT (DBH))
RPA — 2020 FIELD VERIFIED RPA	EX. STORM DRAIN
LTS — LIMITS OF TREE SURVEY	EX. SANITARY MANHOLE
PERENNIAL STREAM (EST. FROM FIELD RUN TOPO)	EX. RIPRAP

KEY TO SHEETS
1" = 500'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

Wetland Studies & Solutions, Inc. — a GAI company
5300 WESTBROOK MINE DRIVE, SUITE 500
MISSOURI CITY, TX 77459
(703) 679-5600

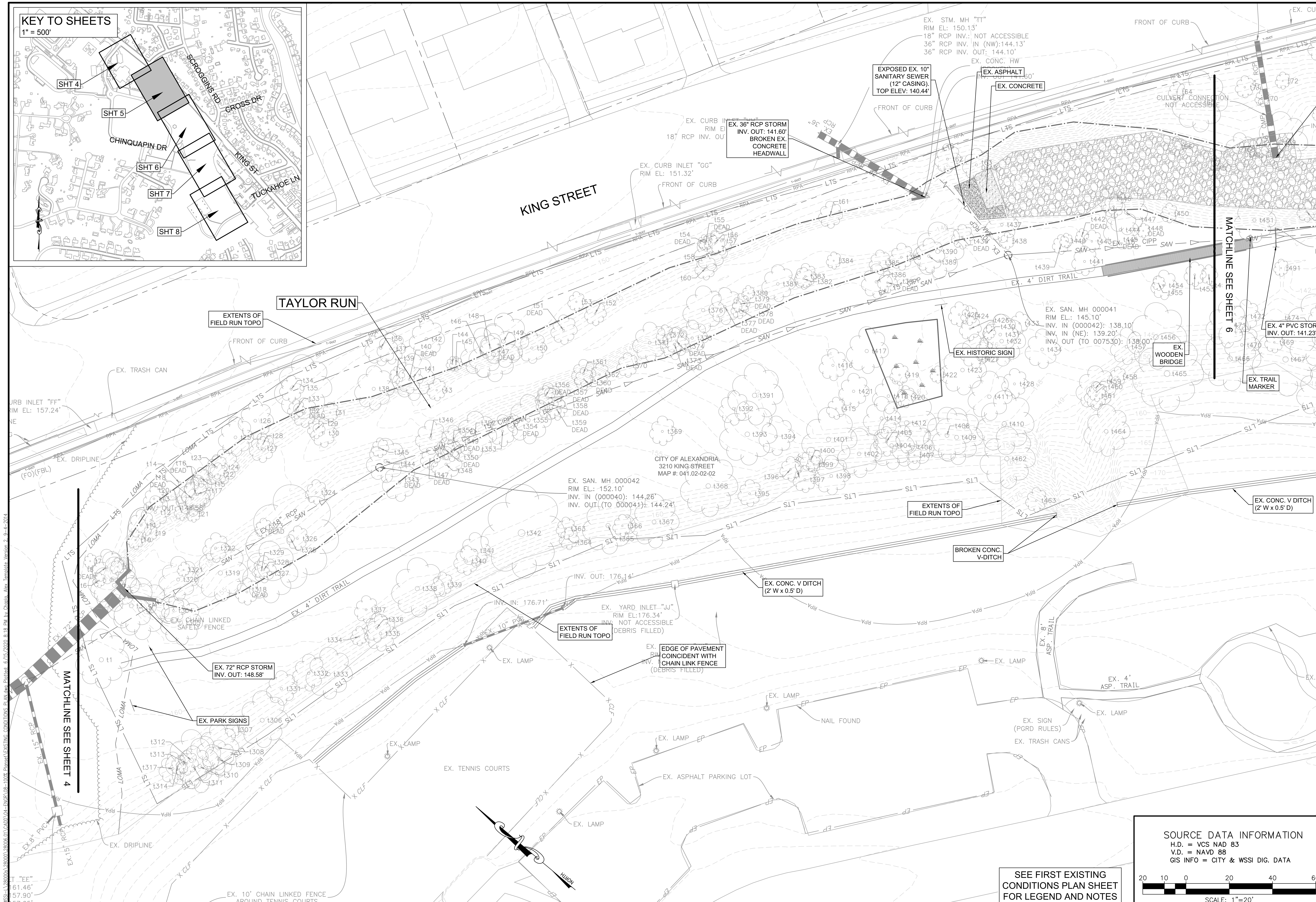
URS
11800 RESTON CENTER DR., SUITE 500
RESTON, VA 20190
(301) 820-3000

TAYLOR RUN STREAM RESTORATION

EXISTING CONDITIONS PLAN

DRAWING
EX – 01
SCALE 1" = 20'
SHEET 4 OF 84

C:\MOS~1\28000\28006.01\CADD\04-ENGR\08-10ft Planset\EXISTING CONDITIONS PLAN.dwg, PlotText: 6/15/2020, 8:17 PM, by Chaela, Alex Tennisfate, Version 2, 9-4-2014


KEY TO SHEETS
1" = 500'
SHT 4
SHT 5
SHT 6
SHT 7
SHT 8
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN
KING STREET
TAYLOR RUN
EXTENTS OF FIELD RUN TOPO
FRONT OF CURB
EX. TRASH CAN
EX. DRIPLINE
EX. CURB INLET "GG"
RIM EL: 151.32'
EX. 36" RCP STORM
INV. OUT: 141.60'
BROKEN EX. CONCRETE HEADWALL
EXPOSED EX. 10" SANITARY SEWER (12" CASING). TOP ELEV: 140.44'
EX. STM. MH "TT"
RIM EL: 150.13'
18" RCP INV.: NOT ACCESSIBLE
36" RCP INV. IN (NW):144.13'
36" RCP INV. OUT: 144.10'
EX. CONC. HW
EX. ASPHALT
EX. CONCRETE
CULVERT CONNECTION NOT ACCESSIBLE
EX. 4' DIRT TRAIL
EX. SAN. MH 000041
RIM EL.: 145.10'
INV. IN (000042): 138.10'
INV. IN (NE): 139.20'
INV. OUT (TO 007530): 138.00'
EX. HISTORIC SIGN
EX. WOODEN BRIDGE
EX. TRAIL MARKER
EX. 4" PVC STORM
INV. OUT: 141.23'
MATCHLINE SEE SHEET 6
CITY OF ALEXANDRIA
3210 KING STREET
MAP #: 041.02-02-02
EX. SAN. MH 000042
RIM EL.: 152.10'
INV. IN (000040): 144.26'
INV. OUT (TO 000041): 144.24'
EXTENTS OF FIELD RUN TOPO
EX. CONC. V DITCH (2' W x 0.5' D)
BROKEN CONC. V-DITCH
EX. 72" RCP STORM
INV. OUT: 148.58'
EX. CHAIN LINKED SAFETY FENCE
EX. YARD INLET "JJ"
RIM EL:176.34'
INV. NOT ACCESSIBLE (DEBRIS FILLED)
EDGE OF PAVEMENT COINCIDENT WITH CHAIN LINK FENCE
EX. PARK SIGNS
EX. LAMP
NAIL FOUND
EX. SIGN (PGRD RULES)
EX. TRASH CANS
EX. 4' ASP. TRAIL
EX. 8' ASP. TRAIL
EX. TENNIS COURTS
EX. ASPHALT PARKING LOT
EX. 10' CHAIN LINKED FENCE AROUND TENNIS COURTS
MATCHLINE SEE SHEET 4
NORTH

SEE FIRST EXISTING CONDITIONS PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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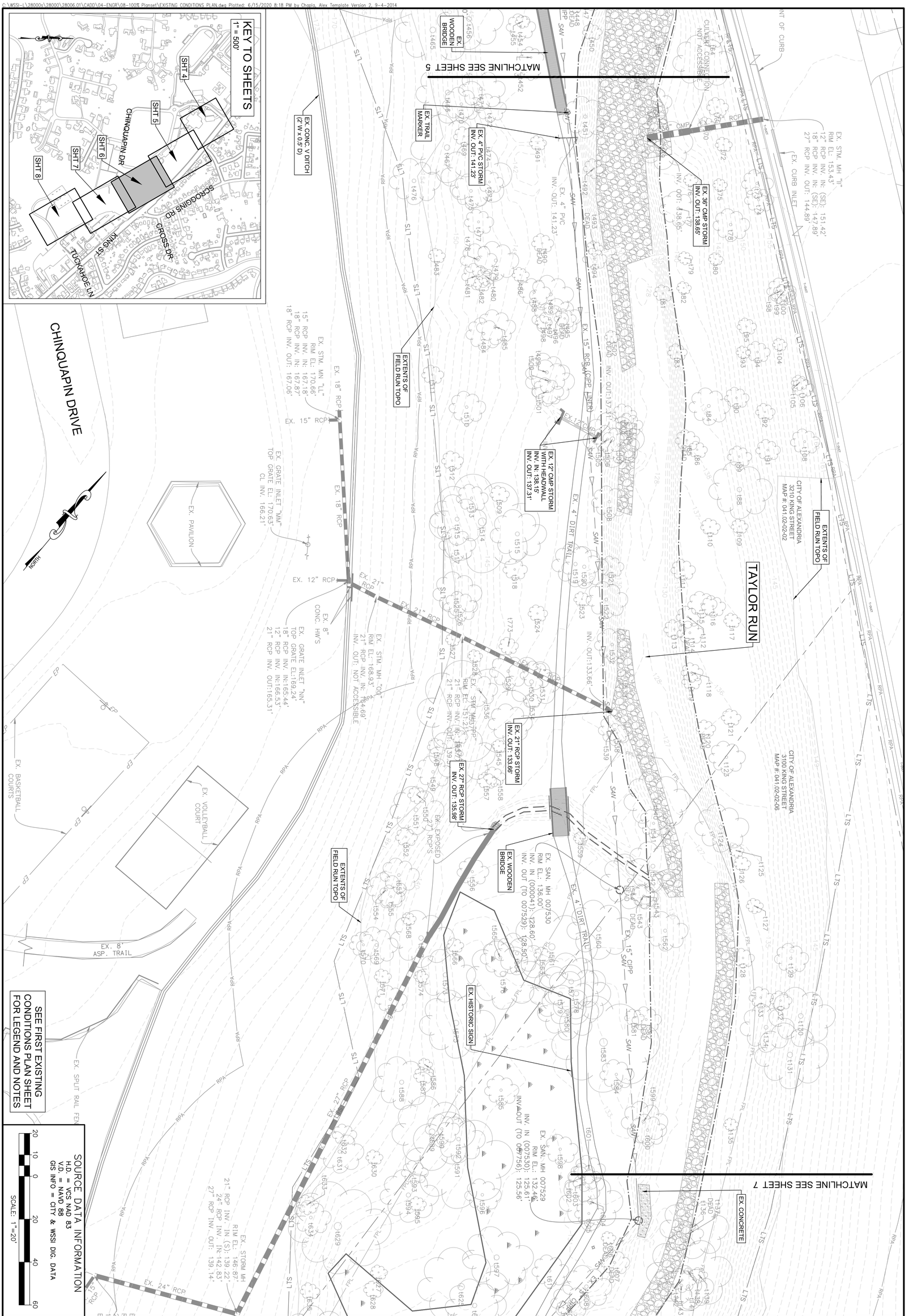
SEAL: COMMONWEALTH OF VIRGINIA, NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

URS
Wetland Studies and Solutions

TAYLOR RUN STREAM RESTORATION

EXISTING CONDITIONS PLAN (CONT'D)

DRAWING EX - 02
SCALE 1" = 20'



TAYLOR RUN STREAM RESTORATION

PRELIMINARY - NOT FOR CONSTRUCTION

DRAWING EX – 03

SCALE 1" = 20'

SHEET 6 OF 84

EXISTING CONDITIONS PLAN (CONT'D)

URS
12420 MILLENNIUM CENTER DR., SUITE 150
GERMANTOWN, MD 20876
(301) 820-3000

Wetland Studies and Solutions, Inc. a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

SEAL:
COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

CITY PROJECT NO.:	CIP-2020-00003
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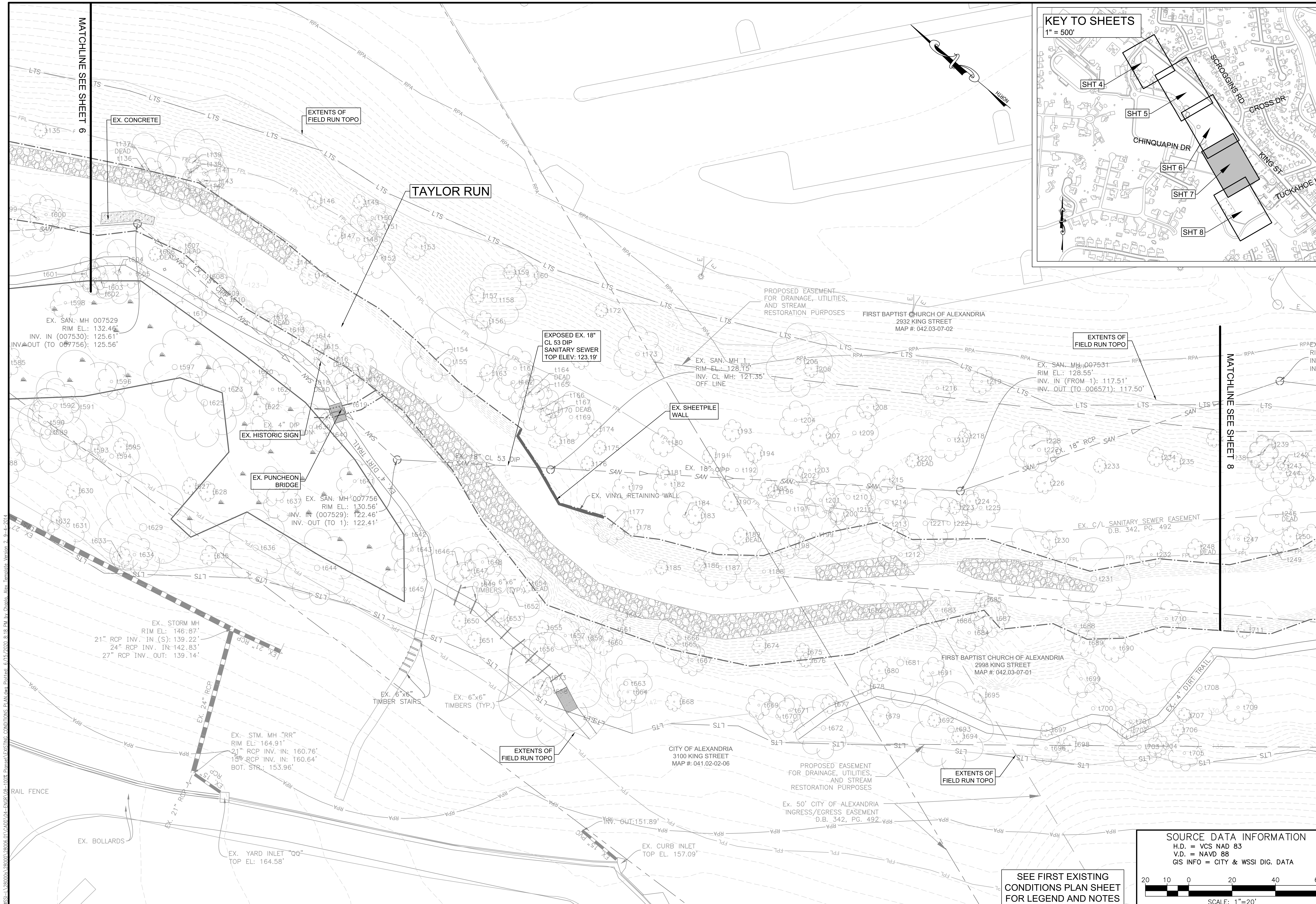
REVISIONS

DATE	BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

CITY OF ALEXANDRIA VIRGINIA



MATCHLINE SEE SHEET 6
MATCHLINE SEE SHEET 8
TAYLOR RUN
EX. CONCRETE
EXTENTS OF FIELD RUN TOPO
EX. SAN. MH 007529
RIM EL.: 132.46'
INV. IN (007530): 125.61'
INV. OUT (TO 007756): 125.56'
EXPOSED EX. 18" CL 53 DIP SANITARY SEWER TOP ELEV: 123.19'
EX. 4" DIP
EX. HISTORIC SIGN
EX. PUNCHEON BRIDGE
EX. SAN. MH 007756
RIM EL.: 130.56'
INV. IN (007529): 122.46'
INV. OUT (TO 1): 122.41'
EX. 4' DIRT TRAIL
EX. 18" CL 53 DIP
EX. SHEETPILE WALL
EX. VINYL RETAINING WALL
EX. 18" DIPP
EX. SAN. MH 1
RIM EL.: 128.15'
INV. CL MH: 121.35'
OFF LINE
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02
EX. SAN. MH 007531
RIM EL.: 128.55'
INV. IN (FROM 1): 117.51'
INV. OUT (TO 006571): 117.50'
EX. 18" RCP
EX. C/L SANITARY SEWER EASEMENT D.B. 342, PG. 492
EX. STORM MH
RIM EL: 146.87'
21" RCP INV. IN (S): 139.22'
24" RCP INV. IN: 142.83'
27" RCP INV. OUT: 139.14'
EX. 21" RCP
EX. 24" RCP
EX. 6"x6" TIMBERS (TYP.)
EX. 6"x6" TIMBER STAIRS
EX. STM. MH "RR"
RIM EL: 164.91'
21" RCP INV. IN: 160.76'
15" RCP INV. IN: 160.64'
BOT. STR.: 153.96'
EX. 15" RCP
RAIL FENCE
EX. BOLLARDS
EX. YARD INLET "QQ"
TOP EL: 164.58'
CITY OF ALEXANDRIA
3100 KING STREET
MAP #: 041.02-02-06
FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01
EX. 4' DIRT TRAIL
EX. 50' CITY OF ALEXANDRIA INGRESS/EGRESS EASEMENT D.B. 342, PG. 492
INV. OUT:151.89'
EX. CURB INLET
TOP EL. 157.09'
NORTH
KEY TO SHEETS
1" = 500'
SHT 4
SHT 5
SHT 6
SHT 7
SHT 8
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN

SEE FIRST EXISTING CONDITIONS PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20' (20 10 0 20 40 60)

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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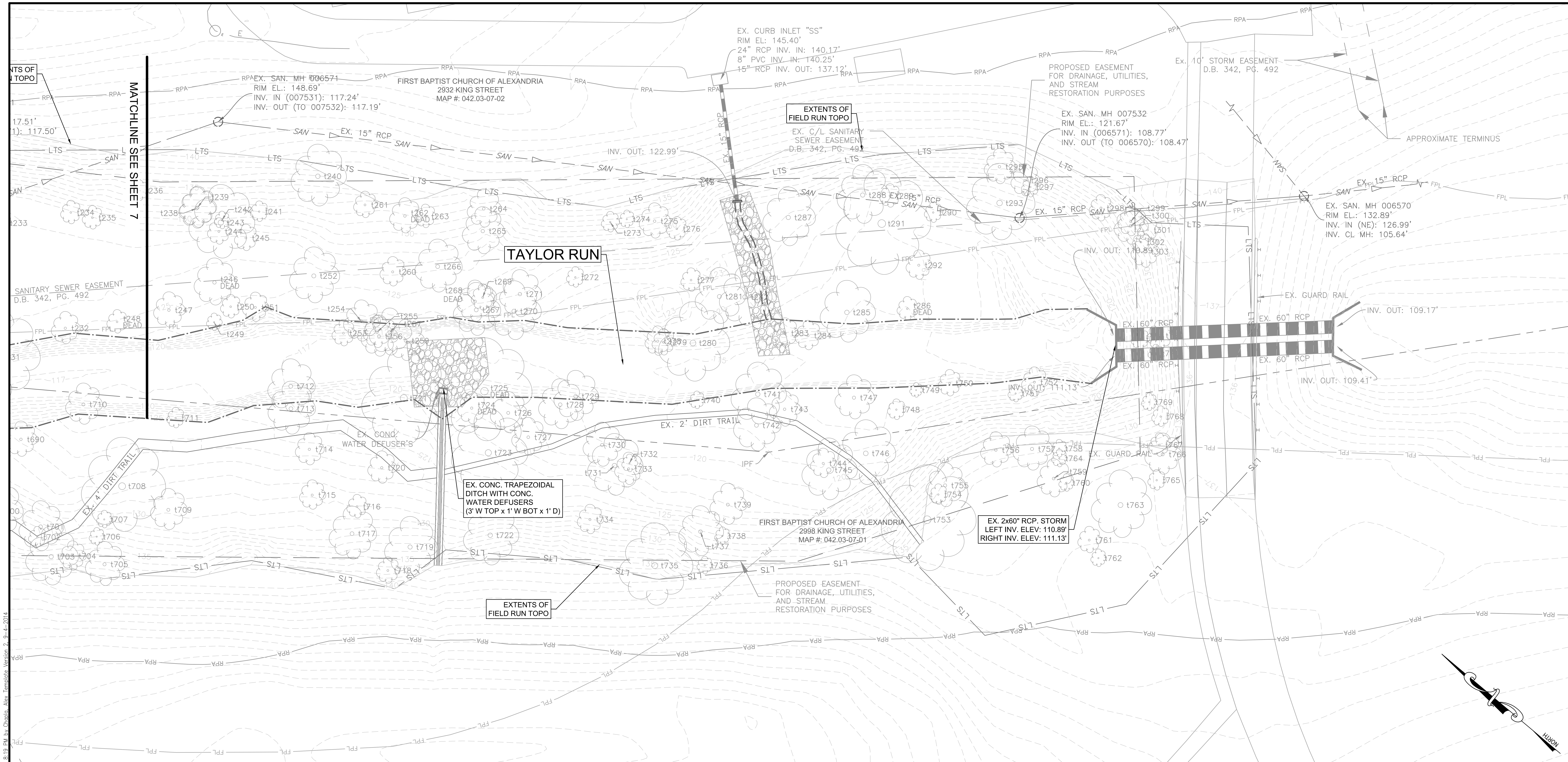
SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

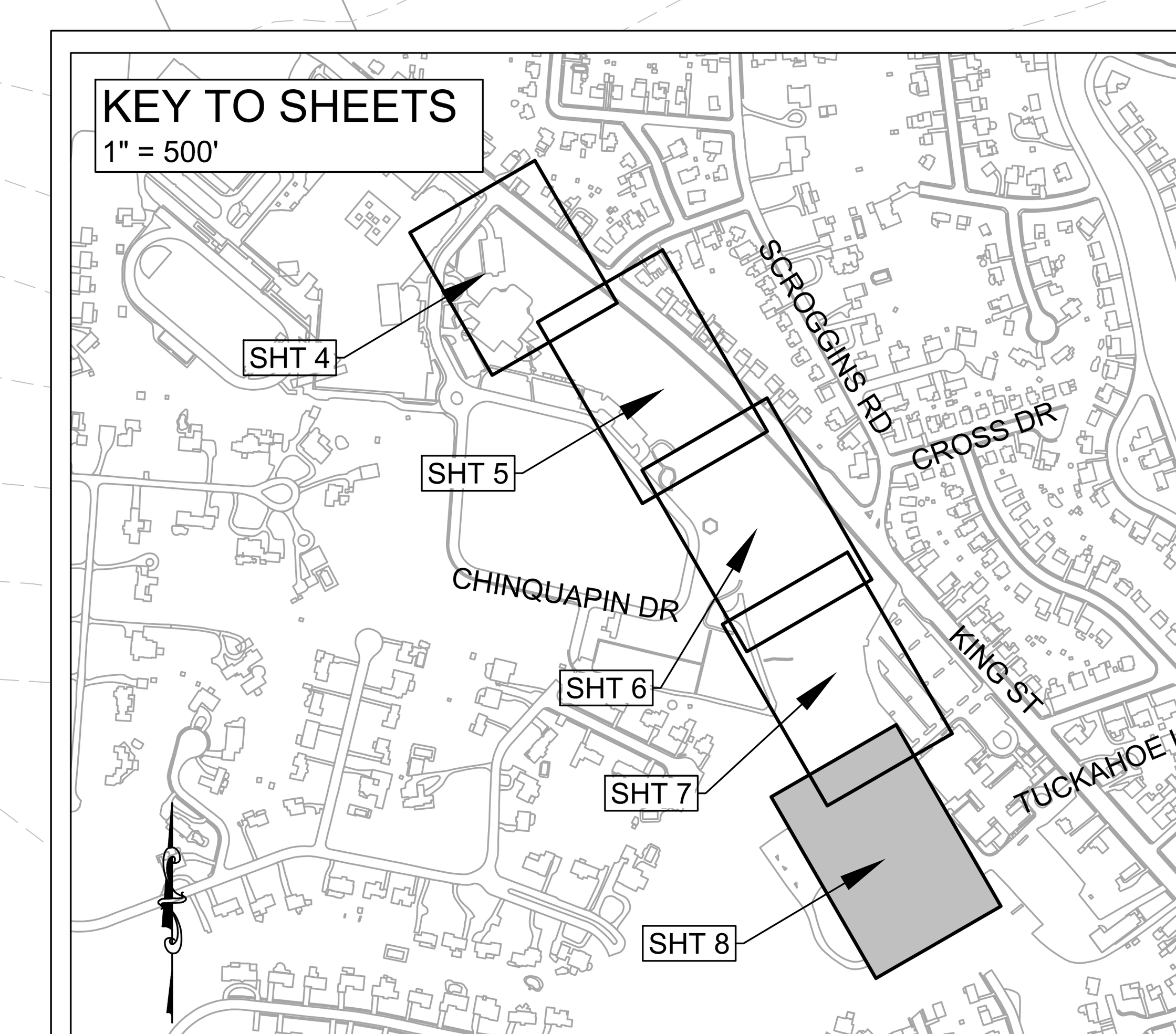
Wetland Studies and Solutions, Inc. — URS

TAYLOR RUN STREAM RESTORATION

EXISTING CONDITIONS PLAN (CONT'D)

DRAWING EX – 04
SCALE 1" = 20'
SHEET 7 OF 84


EX. CURB INLET "SS"
RIM EL: 145.40'
24" RCP INV. IN: 140.17'
8" PVC INV. IN: 140.25'
15" RCP INV. OUT: 137.12'
EX. SAN. MH 006571
RIM EL.: 148.69'
INV. IN (007531): 117.24'
INV. OUT (TO 007532): 117.19'
FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02
MATCHLINE SEE SHEET 7
EX. 15" RCP
INV. OUT: 122.99'
EXTENTS OF FIELD RUN TOPO
EX. C/L SANITARY SEWER EASEMENT
D.B. 342, PG. 492
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
EX. 10' STORM EASEMENT
D.B. 342, PG. 492
EX. SAN. MH 007532
RIM EL.: 121.67'
INV. IN (006571): 108.77'
INV. OUT (TO 006570): 108.47'
APPROXIMATE TERMINUS
EX. 15" RCP
EX. SAN. MH 006570
RIM EL.: 132.89'
INV. IN (NE): 126.99'
INV. CL MH: 105.64'
TAYLOR RUN
SANITARY SEWER EASEMENT
D.B. 342, PG. 492
INV. OUT: 110.89'
EX. GUARD RAIL
INV. OUT: 109.17'
EX. 60" RCP
INV. OUT: 109.41'
INV. OUT: 111.13'
EX. 2' DIRT TRAIL
EX. CONC. WATER DEFUSER'S
EX. 4' DIRT TRAIL
EX. CONC. TRAPEZOIDAL DITCH WITH CONC. WATER DEFUSERS (3' W TOP x 1' W BOT x 1' D)
FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01
EX. 2x60" RCP. STORM
LEFT INV. ELEV: 110.89'
RIGHT INV. ELEV: 111.13'
EXTENTS OF FIELD RUN TOPO
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
NORTH



SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

SEE FIRST EXISTING CONDITIONS PLAN SHEET FOR LEGEND AND NOTES

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

DATE	BY	REVISIONS DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

Wetland Studies and Solutions, Inc.
URS

TAYLOR RUN STREAM RESTORATION

EXISTING CONDITIONS PLAN (CONT'D)

DRAWING
EX – 05
SCALE 1" = 20'

CALL ALEXANDRIA ARCHAEOLOGY IMMEDIATELY (703-746-4399) IF ANY BURIED STRUCTURAL REMAINS (WALL FOUNDATIONS, WELLS, PRIVIES, CISTERNS, ETC.) OR CONCENTRATIONS OF ARTIFACTS ARE DISCOVERED DURING DEVELOPMENT. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE AND RECORDS THE FINDS.

THE APPLICANT SHALL NOT ALLOW ANY METAL DETECTION AND/OR ARTIFACT COLLECTION TO BE CONDUCTED ON THE PROPERTY, UNLESS AUTHORIZED BY ALEXANDRIA ARCHAEOLOGY. FAILURE TO COMPLY SHALL RESULT IN PROJECT DELAYS.

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

GRADING LEGEND

- PARCEL BOUNDARIES
- EX. INFRASTRUCTURE
- EX. CONTOURS (1')
- EX. SANITARY SEWER
- 2011 FEMA FLOODPLAIN
- 2015 ALEXANDRIA MAPPED FLOODPLAIN
- 2020 FIELD VERIFIED RPA
- LIMITS OF TREE SURVEY
- PERENNIAL STREAM (EST. FROM FIELD RUN TOPO)
- EPHEMERAL STREAM
- INTERMITTENT STREAM
- JURISDICTIONAL WETLANDS
- SURVEYED TREES (≥6" DIAMETER AT BREAST HEIGHT (DBH))
- EX. STORM DRAIN
- EX. SANITARY MANHOLE
- EX. RIPRAP
- ACCESS PATH
- STOCKPILE AREA
- PR. STREAM CENTERLINE
- PR. BANKFULL
- LOD/TP FENCE
- PR. CHAINLINK FENCE
- MODIFIED CROSS VANE
- IN-STREAM WOODY DEBRIS
- LOG VANE
- BOULDER POOL
- IN-STREAM HABITAT LOG
- PR. CLASS II RIPRAP
- PR. CLASS III RIPRAP

KING STREET

TEMPORARY CONSTRUCTION TRAILER SHALL BE LOCATED IN STOCKPILE AREA IF NEEDED. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING TEMPORARY POWER. LOCATION MAY BE MODIFIED SUBJECT TO CITY'S APPROVAL.

DECK MATTING SHALL BE USED IN STOCKPILE AREAS ADJACENT TO TREES TO BE SAVED AS SHOWN ON THE TREE REMOVAL PLAN TO PROTECT CRITICAL ROOTS. SEE EROSION & SEDIMENT CONTROL PLAN FOR DECK MATTING INFORMATION.

BEGIN RESTORATION DOWNSTREAM OF EXISTING 72" RCP, TYING INTO EXISTING OUTLET PROTECTION. CARE SHOULD BE TAKEN TO AVOID DAMAGE TO EXISTING WINGWALL/FOOTERS. (STA. 10+00.00) INV. OUT: 148.58'

10+30.00 147.52
10+24.00 147.60

MATCHLINE SEE SHEET 10

EX. SAN. MH 000046
RIM EL.: 167.43'
INV. IN (NW): 154.31'
INV. OUT (TO 000040): 154.11'

APPROXIMATELY 12.75' OF COVER OVER SANITARY LINE

STOCKPILE AREA

TEMPORARY ACCESS PATH

EX. SAN. MH 000040
RIM EL.: 164.95'
INV. IN (NW): 150.22'
INV. IN (000046): 150.45'
INV. OUT (TO 000042): 150.20'

EX. PARK SIGNS SHALL REMAIN

EXISTING WALKING TRAIL SHALL BE CLOSED DURING CONSTRUCTION. THE CITY WILL PROVIDE DETOUR INFORMATION FOR POSTING BY THE CONTRACTOR.

EX. GRATE INLET "B"
RIM EL: 159.96'
15" RCP INV. IN: 149.01'
72" RCP: 149.38'

EX. STM. MH "DD"
RIM EL: 164.67'
CL 72" RCP: 151.77'

EX. YARD INLET "EE"
RIM EL: 161.46'
8" PVC INV. IN: 157.90'
15" RCP INV. IN: 157.05'
15" RCP INV. OUT: 156.73'

EX. DRIPLINE

APPROXIMATELY 11' OF COVER OVER SANITARY LINE

EDUCATIONAL SIGN SHALL BE INSTALLED NEAR ENTRANCE OF TRAIL THROUGH POLLINATOR MEADOW. SEE PLANTING PLAN FOR TRAIL LOCATION. SEE CONSTRUCTION DETAILS FOR POST AND PEDESTAL DETAILS. SIGN CONTENT SHALL BE PROVIDED IN SEPARATE DOCUMENT.

CONSTRUCTION ENTRANCE. CONSTRUCTION VEHICLE ACCESS TO THE SITE WILL BE BETWEEN 9 AM AND 2 PM TO AVOID SCHOOL AND RUSH HOUR TRAFFIC.

EX ASPHALT PARKING LOT

EX. BRICK BUILDING (INDOOR POOL)

CITY OF ALEXANDRIA
3210 KING STREET
MAP #: 041.02-02-02

EX. CURB INLET "AA"
RIM EL: 165.59'
CL 72" RCP 153.39'

EX. PERMEABLE PAVEMENT

EX. 10" RCP SAN

EX. 72" RCP SAN

EX. 18" RCP SAN

EX. 15" RCP

EX. 8" PVC

PROPOSED CONTOURS ARE INTENDED TO DEPICT OVERALL GRADING CONCEPT. EXISTING CONDITIONS CONTOURS ARE SHOWN AT 1-FT C.I., HOWEVER PROPOSED CONTOURS ARE SHOWN AT 0.5-FT C.I. TO PROVIDE ADDITIONAL DETAIL FOR PROPOSED GRADING.

CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).

FLOOD INUNDATION SIGNS TO BE PLACED ALONG THE TRAIL AT LOCATIONS NOTED IN PLANS. SIGNAGE LANGUAGE TO BE AT THE DISCRETION OF THE CITY.

KEY TO SHEETS
1" = 500'
SHT 9
SHT 10
SHT 11
SHT 12
SHT 13
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS		
NO.	DESCRIPTION	BY	DATE

CITY PROJECT NO.: CP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

COMMONWEALTH OF VIRGINIA
NATHAN A. STANLEY
Lic. No. 047145
6/16/2020
SEALED AND SIGNED BY A VIRGINIA PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

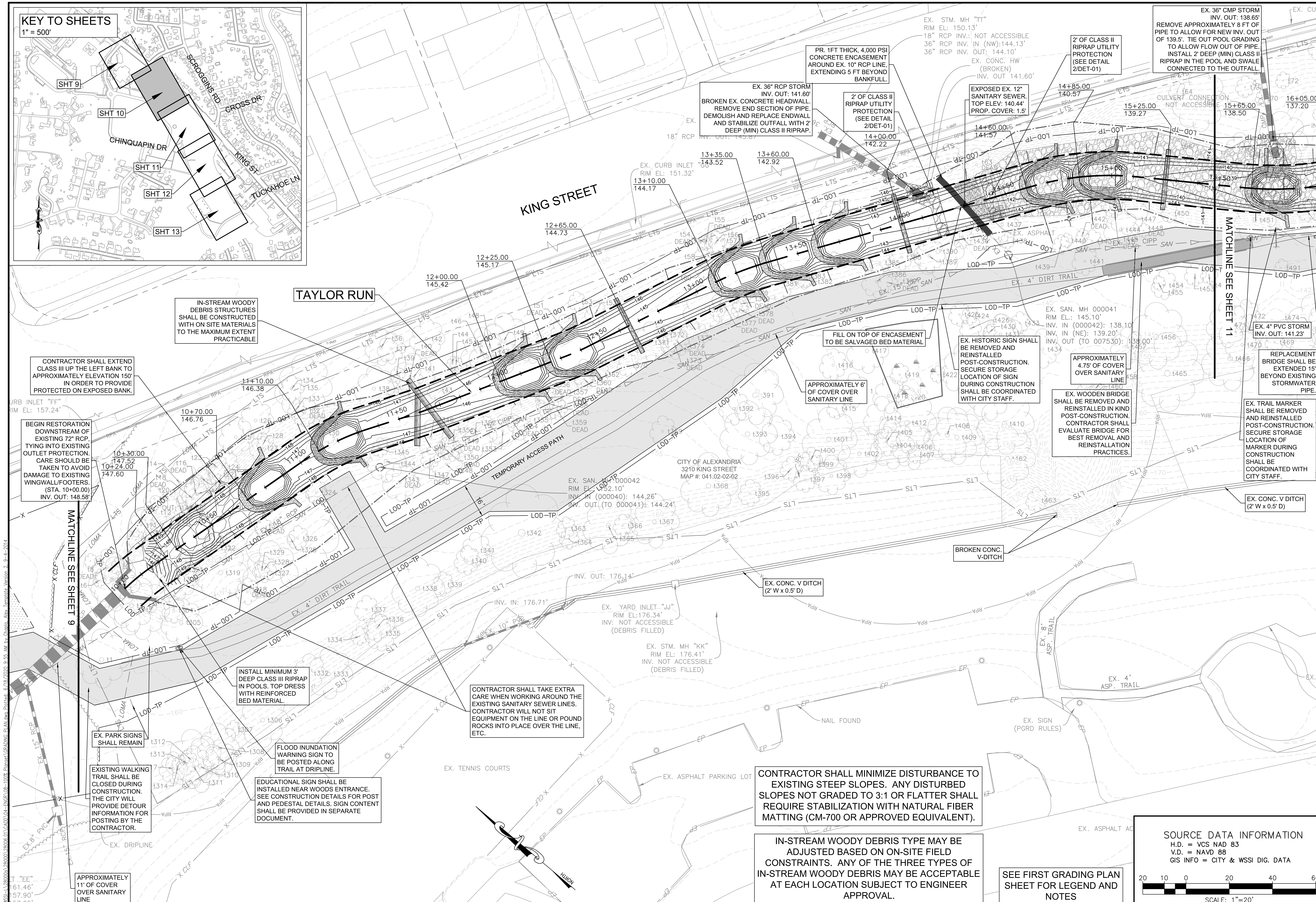
GRADING PLAN

Wetland Studies and Solutions, Inc.
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

URS
14020 THUNDERBOLT PLACE, SUITE 100
CHANTILLY, VA 20151
(703) 830-3300

DRAWING
GP – 01
SCALE 1" = 20'
SHEET 9 OF 84

C:\WSS-1\Z8000s\Z8000\Z8006.01\CAD\104-ENGR\GRADING PLAN.dwg Architect: 6/15/2020, 8:20 PM, by Chopko, Alex Template: Version 2, 9-4-2014


KEY TO SHEETS
1" = 500'
SHT 9
SHT 10
SHT 11
SHT 12
SHT 13
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN
KING STREET
TAYLOR RUN
MATCHLINE SEE SHEET 9
MATCHLINE SEE SHEET 11
TEMPORARY ACCESS PATH
EX. 4' DIRT TRAIL
CITY OF ALEXANDRIA
3210 KING STREET
MAP #: 041.02-02-02
IN-STREAM WOODY DEBRIS STRUCTURES SHALL BE CONSTRUCTED WITH ON SITE MATERIALS TO THE MAXIMUM EXTENT PRACTICABLE
CONTRACTOR SHALL EXTEND CLASS III UP THE LEFT BANK TO APPROXIMATELY ELEVATION 150' IN ORDER TO PROVIDE PROTECTION ON EXPOSED BANK.
BEGIN RESTORATION DOWNSTREAM OF EXISTING 72" RCP, TYING INTO EXISTING OUTLET PROTECTION. CARE SHOULD BE TAKEN TO AVOID DAMAGE TO EXISTING WINGWALL/FOOTERS. (STA. 10+00.00) INV. OUT: 148.58'
10+30.00
147.52
10+24.00
147.60
10+70.00
146.76
11+10.00
146.38
12+00.00
145.42
12+25.00
145.17
12+65.00
144.73
13+10.00
144.17
13+35.00
143.52
13+60.00
142.92
14+00.00
142.22
14+60.00
141.57
14+85.00
140.57
15+25.00
139.27
15+65.00
138.50
16+05.00
137.20
PR. 1FT THICK, 4,000 PSI CONCRETE ENCASEMENT AROUND EX. 10" RCP LINE, EXTENDING 5 FT BEYOND BANKFULL.
EX. 36" RCP STORM INV. OUT: 141.60' BROKEN EX. CONCRETE HEADWALL. REMOVE END SECTION OF PIPE. DEMOLISH AND REPLACE ENDWALL AND STABILIZE OUTFALL WITH 2' DEEP (MIN) CLASS II RIPRAP.
2' OF CLASS II RIPRAP UTILITY PROTECTION (SEE DETAIL 2/DET-01)
EX. STM. MH "TT"
RIM EL: 150.13'
18" RCP INV.: NOT ACCESSIBLE
36" RCP INV. IN (NW):144.13'
36" RCP INV. OUT: 144.10'
EX. CONC. HW (BROKEN) INV. OUT 141.60'
EXPOSED EX. 12" SANITARY SEWER. TOP ELEV: 140.44' PROP. COVER: 1.5'
2' OF CLASS II RIPRAP UTILITY PROTECTION (SEE DETAIL 2/DET-01)
EX. 36" CMP STORM INV. OUT: 138.65' REMOVE APPROXIMATELY 8 FT OF PIPE TO ALLOW FOR NEW INV. OUT OF 139.5'. TIE OUT POOL GRADING TO ALLOW FLOW OUT OF PIPE. INSTALL 2' DEEP (MIN) CLASS II RIPRAP IN THE POOL AND SWALE CONNECTED TO THE OUTFALL.
CULVERT CONNECTION NOT ACCESSIBLE
EX. CURB INLET "GG" RIM EL: 151.32'
FILL ON TOP OF ENCASEMENT TO BE SALVAGED BED MATERIAL
APPROXIMATELY 6' OF COVER OVER SANITARY LINE
EX. HISTORIC SIGN SHALL BE REMOVED AND REINSTALLED POST-CONSTRUCTION. SECURE STORAGE LOCATION OF SIGN DURING CONSTRUCTION SHALL BE COORDINATED WITH CITY STAFF.
EX. SAN. MH 000041
RIM EL.: 145.10'
INV. IN (000042): 138.10'
INV. IN (NE): 139.20'
INV. OUT (TO 007530): 138.00'
APPROXIMATELY 4.75' OF COVER OVER SANITARY LINE
EX. WOODEN BRIDGE SHALL BE REMOVED AND REINSTALLED IN KIND POST-CONSTRUCTION. CONTRACTOR SHALL EVALUATE BRIDGE FOR BEST REMOVAL AND REINSTALLATION PRACTICES.
EX. 4" PVC STORM INV. OUT: 141.23'
REPLACEMENT BRIDGE SHALL BE EXTENDED 15' BEYOND EXISTING STORMWATER PIPE.
EX. TRAIL MARKER SHALL BE REMOVED AND REINSTALLED POST-CONSTRUCTION. SECURE STORAGE LOCATION OF MARKER DURING CONSTRUCTION SHALL BE COORDINATED WITH CITY STAFF.
EX. CONC. V DITCH (2' W x 0.5' D)
EX. SAN. MH 000042
RIM EL.: 152.10'
INV. IN (000040): 144.26'
INV. OUT (TO 000041): 144.24'
BROKEN CONC. V-DITCH
EX. CONC. V DITCH (2' W x 0.5' D)
EX. YARD INLET "JJ" RIM EL:176.34' INV: NOT ACCESSIBLE (DEBRIS FILLED)
EX. STM. MH "KK" RIM EL: 176.41' INV. NOT ACCESSIBLE (DEBRIS FILLED)
INV. OUT: 176.14'
INV. IN: 176.71'
EX. 8' ASP. TRAIL
EX. 4' ASP. TRAIL
NAIL FOUND
EX. SIGN (PGRD RULES)
EX. TENNIS COURTS
EX. ASPHALT PARKING LOT
EX. ASPHALT AC
EX. DRIPLINE
INSTALL MINIMUM 3' DEEP CLASS III RIPRAP IN POOLS. TOP DRESS WITH REINFORCED BED MATERIAL.
CONTRACTOR SHALL TAKE EXTRA CARE WHEN WORKING AROUND THE EXISTING SANITARY SEWER LINES. CONTRACTOR WILL NOT SIT EQUIPMENT ON THE LINE OR POUND ROCKS INTO PLACE OVER THE LINE, ETC.
EX. PARK SIGNS SHALL REMAIN
FLOOD INUNDATION WARNING SIGN TO BE POSTED ALONG TRAIL AT DRIPLINE.
EXISTING WALKING TRAIL SHALL BE CLOSED DURING CONSTRUCTION. THE CITY WILL PROVIDE DETOUR INFORMATION FOR POSTING BY THE CONTRACTOR.
EDUCATIONAL SIGN SHALL BE INSTALLED NEAR WOODS ENTRANCE. SEE CONSTRUCTION DETAILS FOR POST AND PEDESTAL DETAILS. SIGN CONTENT SHALL BE PROVIDED IN SEPARATE DOCUMENT.
APPROXIMATELY 11' OF COVER OVER SANITARY LINE
EX. 15" RCP
EX. 8" PVC
NORTH

CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).

IN-STREAM WOODY DEBRIS TYPE MAY BE ADJUSTED BASED ON ON-SITE FIELD CONSTRAINTS. ANY OF THE THREE TYPES OF IN-STREAM WOODY DEBRIS MAY BE ACCEPTABLE AT EACH LOCATION SUBJECT TO ENGINEER APPROVAL.

SEE FIRST GRADING PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

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CONSULTANT PROJECT ID: 28006.02
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APPROVED BY: NAS DATE: 6/16/20

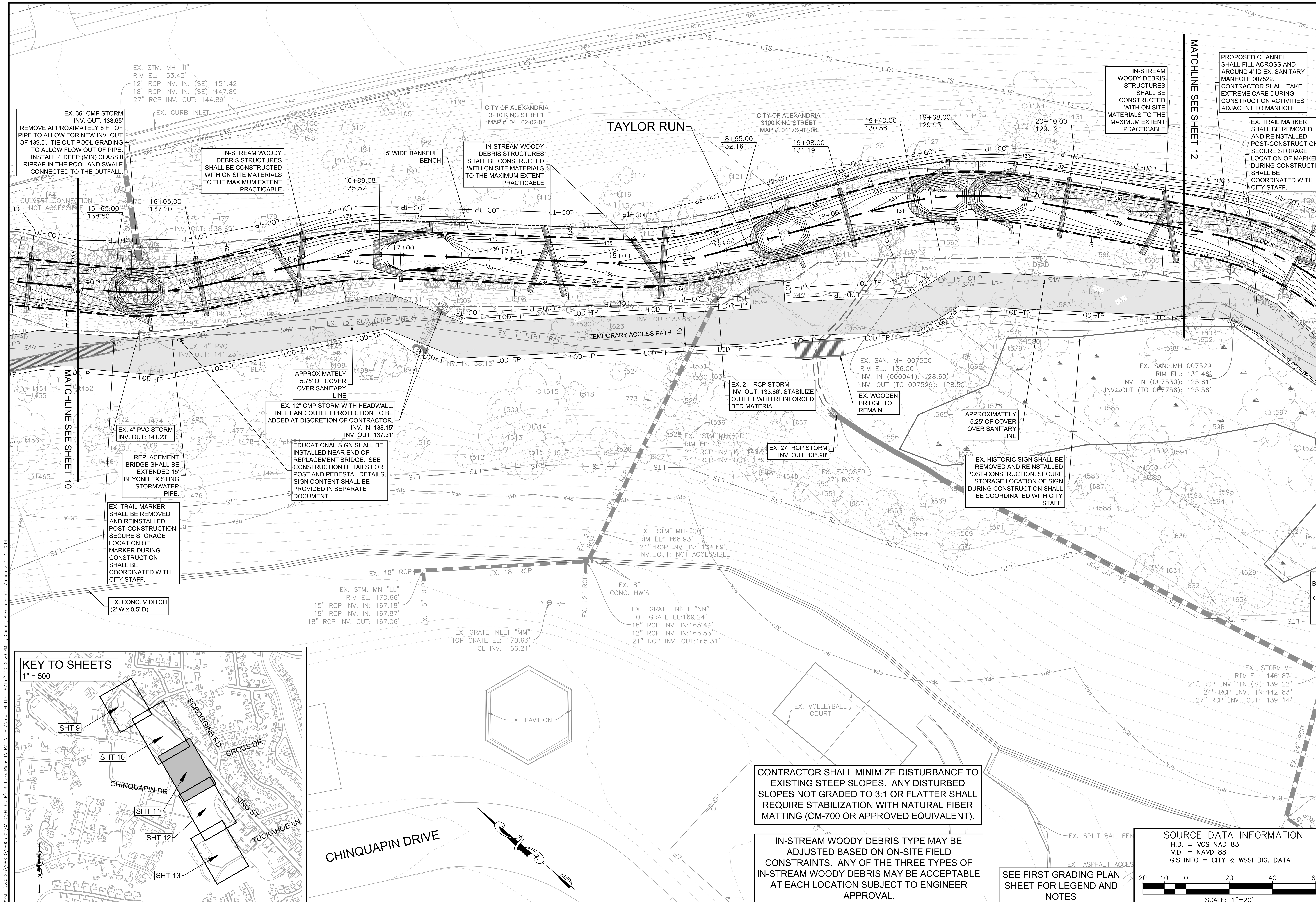
SEAL: COMMONWEALTH OF VIRGINIA, NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

GRADING PLAN (CONT'D)

Wetland Studies and Solutions, Inc. | URS

DRAWING GP - 02
SCALE 1" = 20'
SHEET 10 OF 84


TAYLOR RUN
MATCHLINE SEE SHEET 12
MATCHLINE SEE SHEET 10
CITY OF ALEXANDRIA 3210 KING STREET MAP #: 041.02-02-02
CITY OF ALEXANDRIA 3100 KING STREET MAP #: 041.02-02-06
EX. STM. MH "II" RIM EL: 153.43' 12" RCP INV. IN: (SE): 151.42' 18" RCP INV. IN: (SE): 147.89' 27" RCP INV. OUT: 144.89'
EX. CURB INLET
EX. 36" CMP STORM INV. OUT: 138.65' REMOVE APPROXIMATELY 8 FT OF PIPE TO ALLOW FOR NEW INV. OUT OF 139.5'. TIE OUT POOL GRADING TO ALLOW FLOW OUT OF PIPE. INSTALL 2' DEEP (MIN) CLASS II RIPRAP IN THE POOL AND SWALE CONNECTED TO THE OUTFALL.
IN-STREAM WOODY DEBRIS STRUCTURES SHALL BE CONSTRUCTED WITH ON SITE MATERIALS TO THE MAXIMUM EXTENT PRACTICABLE
5' WIDE BANKFULL BENCH
CULVERT CONNECTION NOT ACCESSIBLE
15+65.00 138.50
16+05.00 137.20
16+89.08 135.52
18+65.00 132.16
19+08.00 131.19
19+40.00 130.58
19+68.00 129.93
20+10.00 129.12
PROPOSED CHANNEL SHALL FILL ACROSS AND AROUND 4' ID EX. SANITARY MANHOLE 007529. CONTRACTOR SHALL TAKE EXTREME CARE DURING CONSTRUCTION ACTIVITIES ADJACENT TO MANHOLE.
EX. TRAIL MARKER SHALL BE REMOVED AND REINSTALLED POST-CONSTRUCTION. SECURE STORAGE LOCATION OF MARKER DURING CONSTRUCTION SHALL BE COORDINATED WITH CITY STAFF.
EX. 15" RCP (CIPP LINER)
EX. 4' DIRT TRAIL
TEMPORARY ACCESS PATH
EX. 4" PVC INV. OUT: 141.23'
APPROXIMATELY 5.75' OF COVER OVER SANITARY LINE
EX. 12" CMP STORM WITH HEADWALL. INLET AND OUTLET PROTECTION TO BE ADDED AT DISCRETION OF CONTRACTOR. INV. IN: 138.15' INV. OUT: 137.31'
EX. 4" PVC STORM INV. OUT: 141.23'
REPLACEMENT BRIDGE SHALL BE EXTENDED 15' BEYOND EXISTING STORMWATER PIPE.
EDUCATIONAL SIGN SHALL BE INSTALLED NEAR END OF REPLACEMENT BRIDGE. SEE CONSTRUCTION DETAILS FOR POST AND PEDESTAL DETAILS. SIGN CONTENT SHALL BE PROVIDED IN SEPARATE DOCUMENT.
EX. 21" RCP STORM INV. OUT: 133.66'. STABILIZE OUTLET WITH REINFORCED BED MATERIAL.
EX. WOODEN BRIDGE TO REMAIN
EX. SAN. MH 007530 RIM EL.: 136.00' INV. IN (000041): 128.60' INV. OUT (TO 007529): 128.50'
EX. SAN. MH 007529 RIM EL.: 132.46' INV. IN (007530): 125.61' INV. OUT (TO 007756): 125.56'
APPROXIMATELY 5.25' OF COVER OVER SANITARY LINE
EX. 27" RCP STORM INV. OUT: 135.98'
EX. STM. MH "PP" RIM EL: 151.21' 21" RCP INV. IN: 137 21" RCP INV. OUT: 139
EX. EXPOSED 27" RCP'S
EX. HISTORIC SIGN SHALL BE REMOVED AND REINSTALLED POST-CONSTRUCTION. SECURE STORAGE LOCATION OF SIGN DURING CONSTRUCTION SHALL BE COORDINATED WITH CITY STAFF.
EX. STM. MH "OO" RIM EL: 168.93' 21" RCP INV. IN: 154.69' INV. OUT: NOT ACCESSIBLE
EX. STM. MN "LL" RIM EL: 170.66' 15" RCP INV. IN: 167.18' 18" RCP INV. IN: 167.87' 18" RCP INV. OUT: 167.06'
EX. 18" RCP
EX. 8" CONC. HW'S
EX. GRATE INLET "NN" TOP GRATE EL:169.24' 18" RCP INV. IN:165.44' 12" RCP INV. IN:166.53' 21" RCP INV. OUT:165.31'
EX. GRATE INLET "MM" TOP GRATE EL: 170.63' CL INV. 166.21'
EX. CONC. V DITCH (2' W x 0.5' D)
EX. PAVILION
EX. VOLLEYBALL COURT
EX. STORM MH RIM EL: 146.87' 21" RCP INV. IN (S): 139.22' 24" RCP INV. IN: 142.83' 27" RCP INV. OUT: 139.14'
EX. SPLIT RAIL FENCE
EX. ASPHALT ACCESS
CHINQUAPIN DRIVE
NORTH
KEY TO SHEETS
1" = 500'
SHT 9
SHT 10
SHT 11
SHT 12
SHT 13
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN

CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).

IN-STREAM WOODY DEBRIS TYPE MAY BE ADJUSTED BASED ON ON-SITE FIELD CONSTRAINTS. ANY OF THE THREE TYPES OF IN-STREAM WOODY DEBRIS MAY BE ACCEPTABLE AT EACH LOCATION SUBJECT TO ENGINEER APPROVAL.

SEE FIRST GRADING PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

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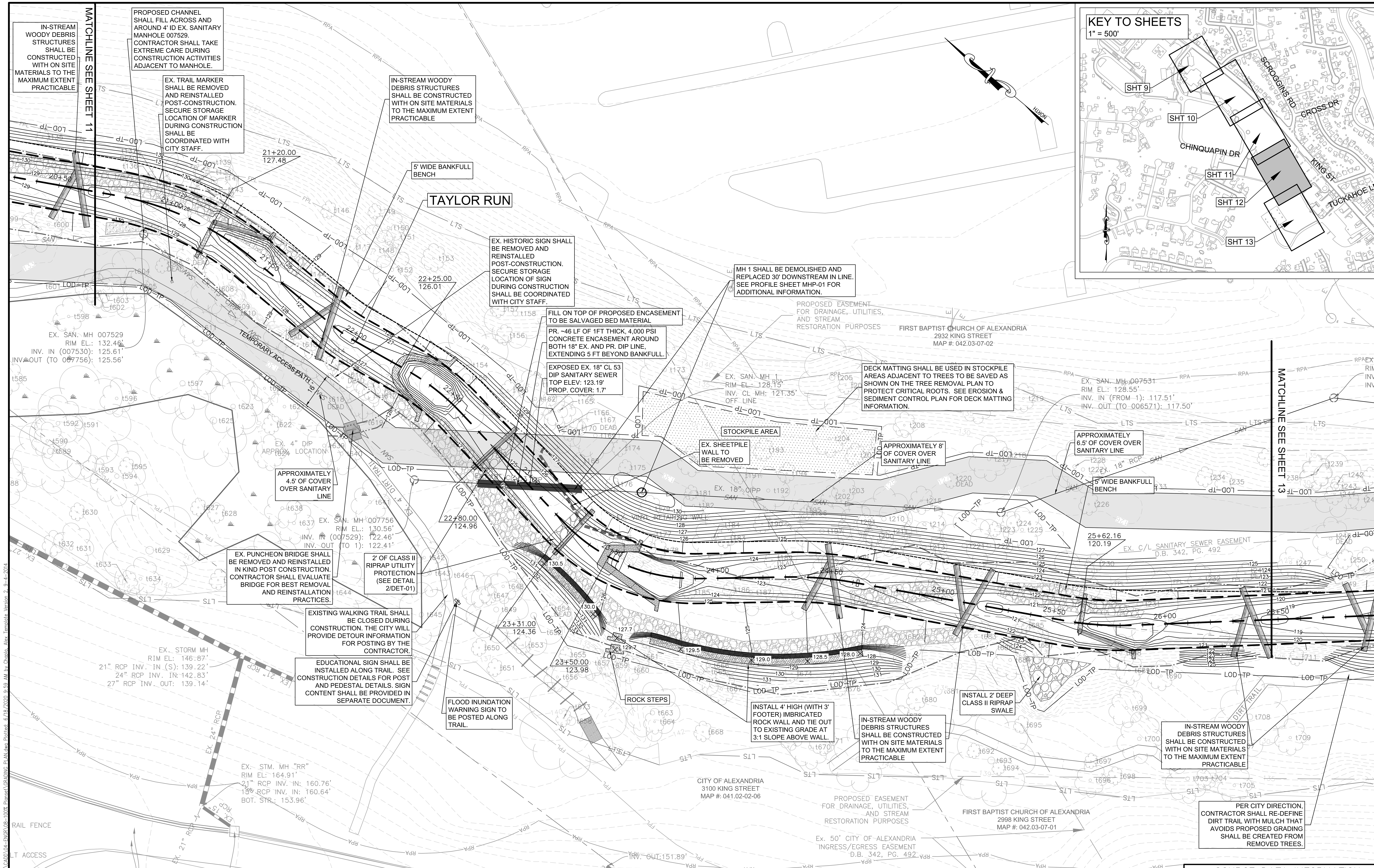
SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

GRADING PLAN (CONT'D)

DRAWING GP - 03

SCALE 1" = 20'



MATCHLINE SEE SHEET 11
IN-STREAM WOODY DEBRIS STRUCTURES SHALL BE CONSTRUCTED WITH ON SITE MATERIALS TO THE MAXIMUM EXTENT PRACTICABLE
PROPOSED CHANNEL SHALL FILL ACROSS AND AROUND 4' ID EX. SANITARY MANHOLE 007529. CONTRACTOR SHALL TAKE EXTREME CARE DURING CONSTRUCTION ACTIVITIES ADJACENT TO MANHOLE.
EX. TRAIL MARKER SHALL BE REMOVED AND REINSTALLED POST-CONSTRUCTION. SECURE STORAGE LOCATION OF MARKER DURING CONSTRUCTION SHALL BE COORDINATED WITH CITY STAFF.
21+20.00
127.48
5' WIDE BANKFULL BENCH
TAYLOR RUN
EX. HISTORIC SIGN SHALL BE REMOVED AND REINSTALLED POST-CONSTRUCTION. SECURE STORAGE LOCATION OF SIGN DURING CONSTRUCTION SHALL BE COORDINATED WITH CITY STAFF.
22+25.00
126.01
MH 1 SHALL BE DEMOLISHED AND REPLACED 30' DOWNSTREAM IN LINE. SEE PROFILE SHEET MHP-01 FOR ADDITIONAL INFORMATION.
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02
FILL ON TOP OF PROPOSED ENCASEMENT TO BE SALVAGED BED MATERIAL
PR. ~46 LF OF 1FT THICK, 4,000 PSI CONCRETE ENCASEMENT AROUND BOTH 18" EX. AND PR. DIP LINE, EXTENDING 5 FT BEYOND BANKFULL.
EXPOSED EX. 18" CL 53 DIP SANITARY SEWER TOP ELEV: 123.19' PROP. COVER: 1.7'
EX. SAN. MH 007529
RIM EL.: 132.46'
INV. IN (007530): 125.61'
INV. OUT (TO 007756): 125.56'
TEMPORARY ACCESS PATH
EX. SAN. MH 1
RIM EL.: 128.15'
INV. CL MH: 121.35'
OFF LINE
DECK MATTING SHALL BE USED IN STOCKPILE AREAS ADJACENT TO TREES TO BE SAVED AS SHOWN ON THE TREE REMOVAL PLAN TO PROTECT CRITICAL ROOTS. SEE EROSION & SEDIMENT CONTROL PLAN FOR DECK MATTING INFORMATION.
EX. SAN. MH 007531
RIM EL.: 128.55'
INV. IN (FROM 1): 117.51'
INV. OUT (TO 006571): 117.50'
MATCHLINE SEE SHEET 13
STOCKPILE AREA
EX. SHEETPILE WALL TO BE REMOVED
APPROXIMATELY 8' OF COVER OVER SANITARY LINE
APPROXIMATELY 6.5' OF COVER OVER SANITARY LINE
5' WIDE BANKFULL BENCH
EX. 4" DIP APPROX. LOCATION
APPROXIMATELY 4.5' OF COVER OVER SANITARY LINE
EX. SAN. MH 007756
RIM EL.: 130.56'
INV. IN (007529): 122.46'
INV. OUT (TO 1): 122.41'
22+80.00
124.96
EX. 18" DIPP
EX. VINYL RETAINING WALL
25+62.16
120.19
EX. C/L SANITARY SEWER EASEMENT D.B. 342, PG. 492
EX. PUNCHEON BRIDGE SHALL BE REMOVED AND REINSTALLED IN KIND POST CONSTRUCTION. CONTRACTOR SHALL EVALUATE BRIDGE FOR BEST REMOVAL AND REINSTALLATION PRACTICES.
2' OF CLASS II RIPRAP UTILITY PROTECTION (SEE DETAIL 2/DET-01)
EXISTING WALKING TRAIL SHALL BE CLOSED DURING CONSTRUCTION. THE CITY WILL PROVIDE DETOUR INFORMATION FOR POSTING BY THE CONTRACTOR.
23+31.00
124.36
EX. STORM MH
RIM EL: 146.87'
21" RCP INV. IN (S): 139.22'
24" RCP INV. IN: 142.83'
27" RCP INV. OUT: 139.14'
EDUCATIONAL SIGN SHALL BE INSTALLED ALONG TRAIL. SEE CONSTRUCTION DETAILS FOR POST AND PEDESTAL DETAILS. SIGN CONTENT SHALL BE PROVIDED IN SEPARATE DOCUMENT.
23+50.00
123.98
FLOOD INUNDATION WARNING SIGN TO BE POSTED ALONG TRAIL.
ROCK STEPS
INSTALL 4' HIGH (WITH 3' FOOTER) IMBRICATED ROCK WALL AND TIE OUT TO EXISTING GRADE AT 3:1 SLOPE ABOVE WALL.
IN-STREAM WOODY DEBRIS STRUCTURES SHALL BE CONSTRUCTED WITH ON SITE MATERIALS TO THE MAXIMUM EXTENT PRACTICABLE
INSTALL 2' DEEP CLASS II RIPRAP SWALE
IN-STREAM WOODY DEBRIS STRUCTURES SHALL BE CONSTRUCTED WITH ON SITE MATERIALS TO THE MAXIMUM EXTENT PRACTICABLE
EX. STM. MH "RR"
RIM EL: 164.91'
21" RCP INV. IN: 160.76'
15" RCP INV. IN: 160.64'
BOT. STR.: 153.96'
CITY OF ALEXANDRIA
3100 KING STREET
MAP #: 041.02-02-06
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01
PER CITY DIRECTION. CONTRACTOR SHALL RE-DEFINE DIRT TRAIL WITH MULCH THAT AVOIDS PROPOSED GRADING SHALL BE CREATED FROM REMOVED TREES.
Ex. 50' CITY OF ALEXANDRIA INGRESS/EGRESS EASEMENT D.B. 342, PG. 492
INV. OUT:151.89'
RAIL FENCE
EX. BOLLARDS
EX. YARD INLET "QQ"
TOP EL: 164.58'
EX. ASPHALT ACCESS
KEY TO SHEETS
1" = 500'
SHT 9
SHT 10
SHT 11
SHT 12
SHT 13
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN

CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).

IN-STREAM WOODY DEBRIS TYPE MAY BE ADJUSTED BASED ON ON-SITE FIELD CONSTRAINTS. ANY OF THE THREE TYPES OF IN-STREAM WOODY DEBRIS MAY BE ACCEPTABLE AT EACH LOCATION SUBJECT TO ENGINEER APPROVAL.

SEE FIRST GRADING PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS		
DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
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DESIGNED BY: AMC DATE: 6/16/20
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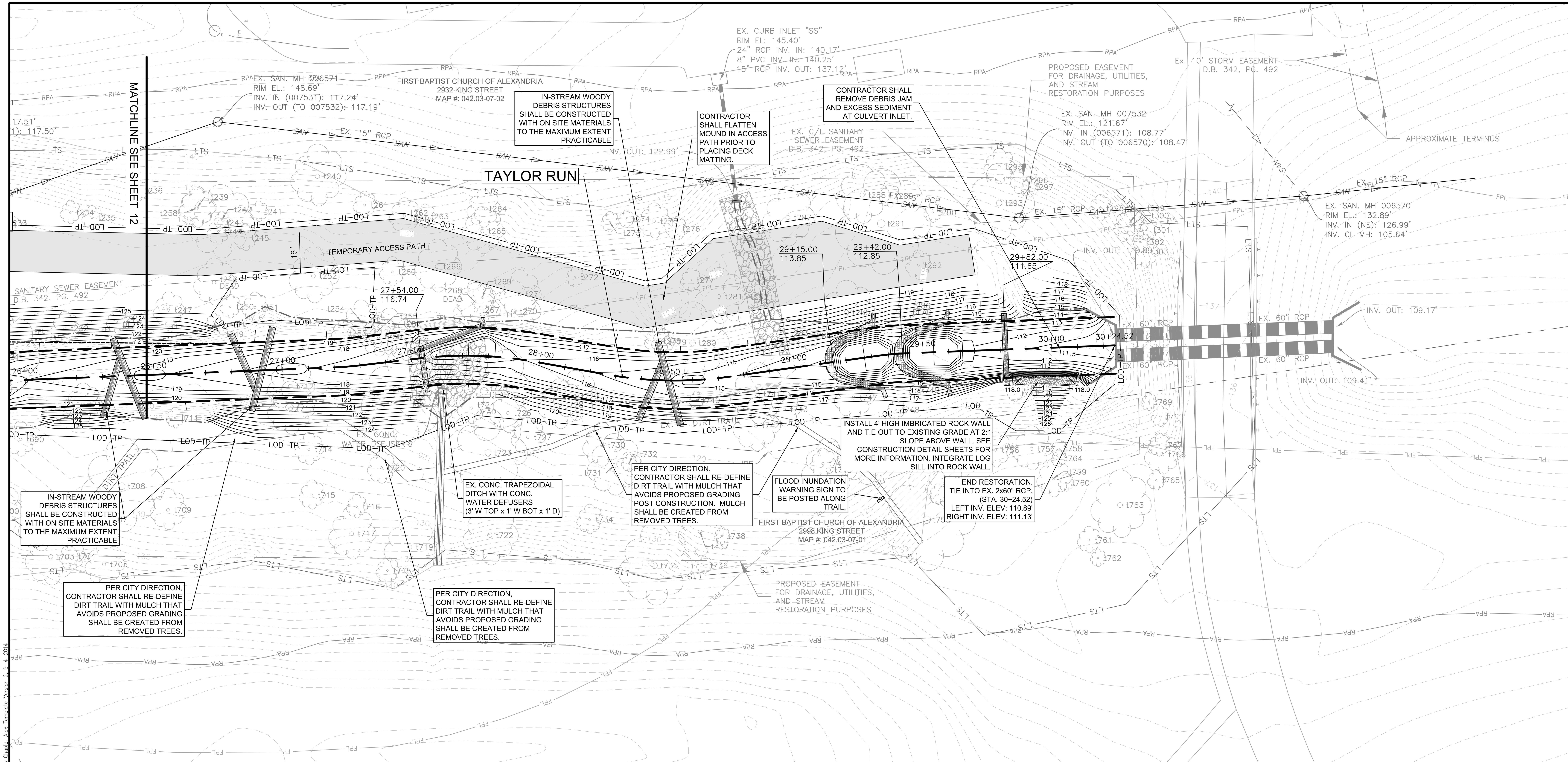
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA, NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION
GRADING PLAN (CONT'D)

DRAWING
GP - 04
SCALE 1" = 20'
SHEET 12 OF 84


MATCHLINE SEE SHEET 12
TAYLOR RUN
TEMPORARY ACCESS PATH
FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02
EX. SAN. MH 006571
RIM EL.: 148.69'
INV. IN (007531): 117.24'
INV. OUT (TO 007532): 117.19'
EX. CURB INLET "SS"
RIM EL: 145.40'
24" RCP INV. IN: 140.17'
8" PVC INV. IN: 140.25'
15" RCP INV. OUT: 137.12'
IN-STREAM WOODY DEBRIS STRUCTURES SHALL BE CONSTRUCTED WITH ON SITE MATERIALS TO THE MAXIMUM EXTENT PRACTICABLE
CONTRACTOR SHALL FLATTEN MOUND IN ACCESS PATH PRIOR TO PLACING DECK MATTING.
CONTRACTOR SHALL REMOVE DEBRIS JAM AND EXCESS SEDIMENT AT CULVERT INLET.
EX. C/L SANITARY SEWER EASEMENT
D.B. 342, PG. 492
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
EX. 10' STORM EASEMENT
D.B. 342, PG. 492
EX. SAN. MH 007532
RIM EL.: 121.67'
INV. IN (006571): 108.77'
INV. OUT (TO 006570): 108.47'
APPROXIMATE TERMINUS
EX. SAN. MH 006570
RIM EL.: 132.89'
INV. IN (NE): 126.99'
INV. CL MH: 105.64'
SANITARY SEWER EASEMENT
D.B. 342, PG. 492
27+54.00
116.74
29+15.00
113.85
29+42.00
112.85
29+82.00
111.65
EX. 60" RCP
INV. OUT: 109.17'
INV. OUT: 109.41'
INSTALL 4' HIGH IMBRICATED ROCK WALL AND TIE OUT TO EXISTING GRADE AT 2:1 SLOPE ABOVE WALL. SEE CONSTRUCTION DETAIL SHEETS FOR MORE INFORMATION. INTEGRATE LOG SILL INTO ROCK WALL.
EX. CONC. TRAPEZOIDAL DITCH WITH CONC. WATER DEFUSERS (3' W TOP x 1' W BOT x 1' D)
PER CITY DIRECTION, CONTRACTOR SHALL RE-DEFINE DIRT TRAIL WITH MULCH THAT AVOIDS PROPOSED GRADING POST CONSTRUCTION. MULCH SHALL BE CREATED FROM REMOVED TREES.
FLOOD INUNDATION WARNING SIGN TO BE POSTED ALONG TRAIL.
END RESTORATION. TIE INTO EX. 2x60" RCP. (STA. 30+24.52)
LEFT INV. ELEV: 110.89'
RIGHT INV. ELEV: 111.13'
FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01
IN-STREAM WOODY DEBRIS STRUCTURES SHALL BE CONSTRUCTED WITH ON SITE MATERIALS TO THE MAXIMUM EXTENT PRACTICABLE
PER CITY DIRECTION, CONTRACTOR SHALL RE-DEFINE DIRT TRAIL WITH MULCH THAT AVOIDS PROPOSED GRADING SHALL BE CREATED FROM REMOVED TREES.
PER CITY DIRECTION, CONTRACTOR SHALL RE-DEFINE DIRT TRAIL WITH MULCH THAT AVOIDS PROPOSED GRADING SHALL BE CREATED FROM REMOVED TREES.
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
NORTH

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

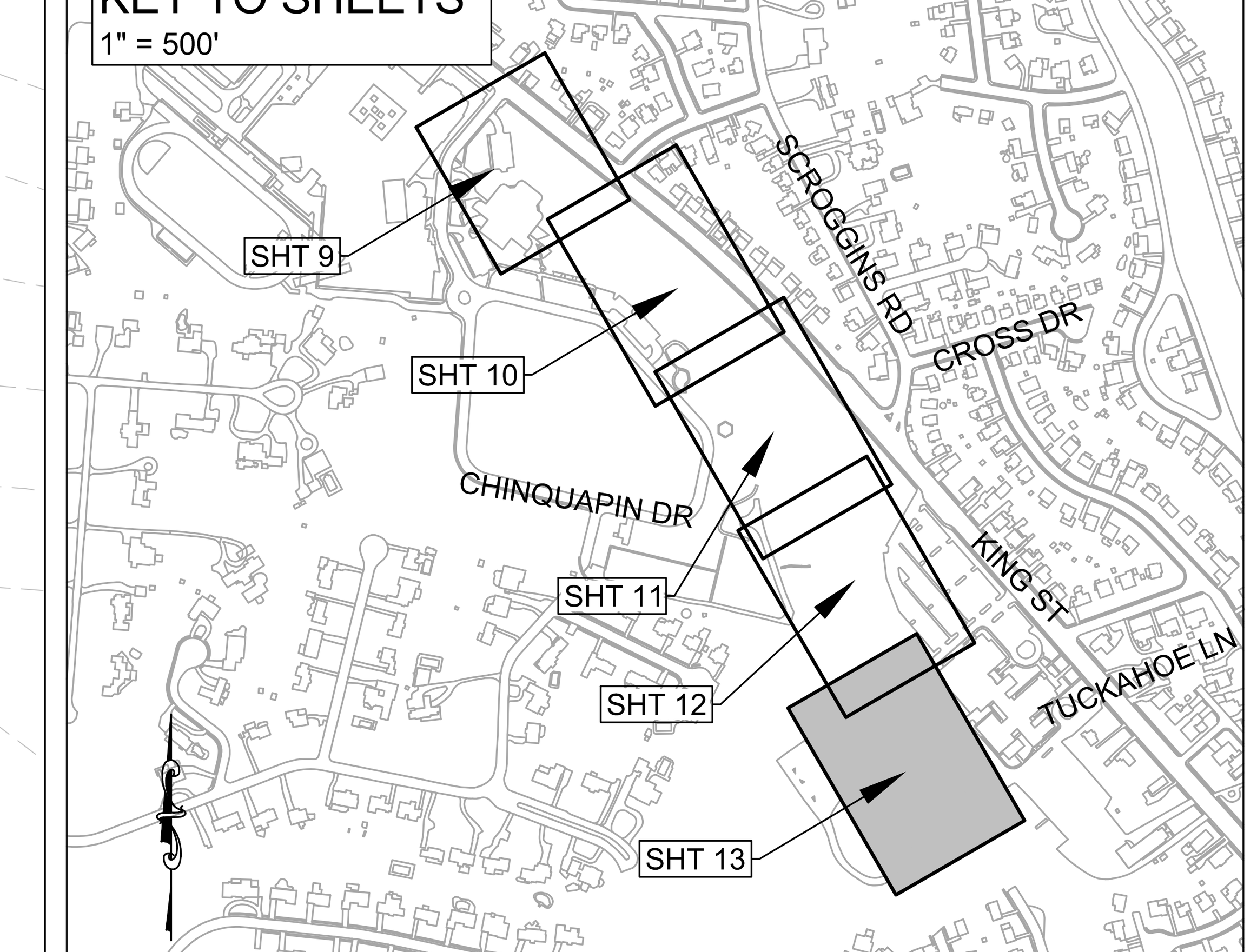
20 10 0 20 40 60
SCALE: 1"=20'

SEE FIRST GRADING PLAN SHEET FOR LEGEND AND NOTES

IN-STREAM WOODY DEBRIS TYPE MAY BE ADJUSTED BASED ON ON-SITE FIELD CONSTRAINTS. ANY OF THE THREE TYPES OF IN-STREAM WOODY DEBRIS MAY BE ACCEPTABLE AT EACH LOCATION SUBJECT TO ENGINEER APPROVAL.

CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).

KEY TO SHEETS
1" = 500'



PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
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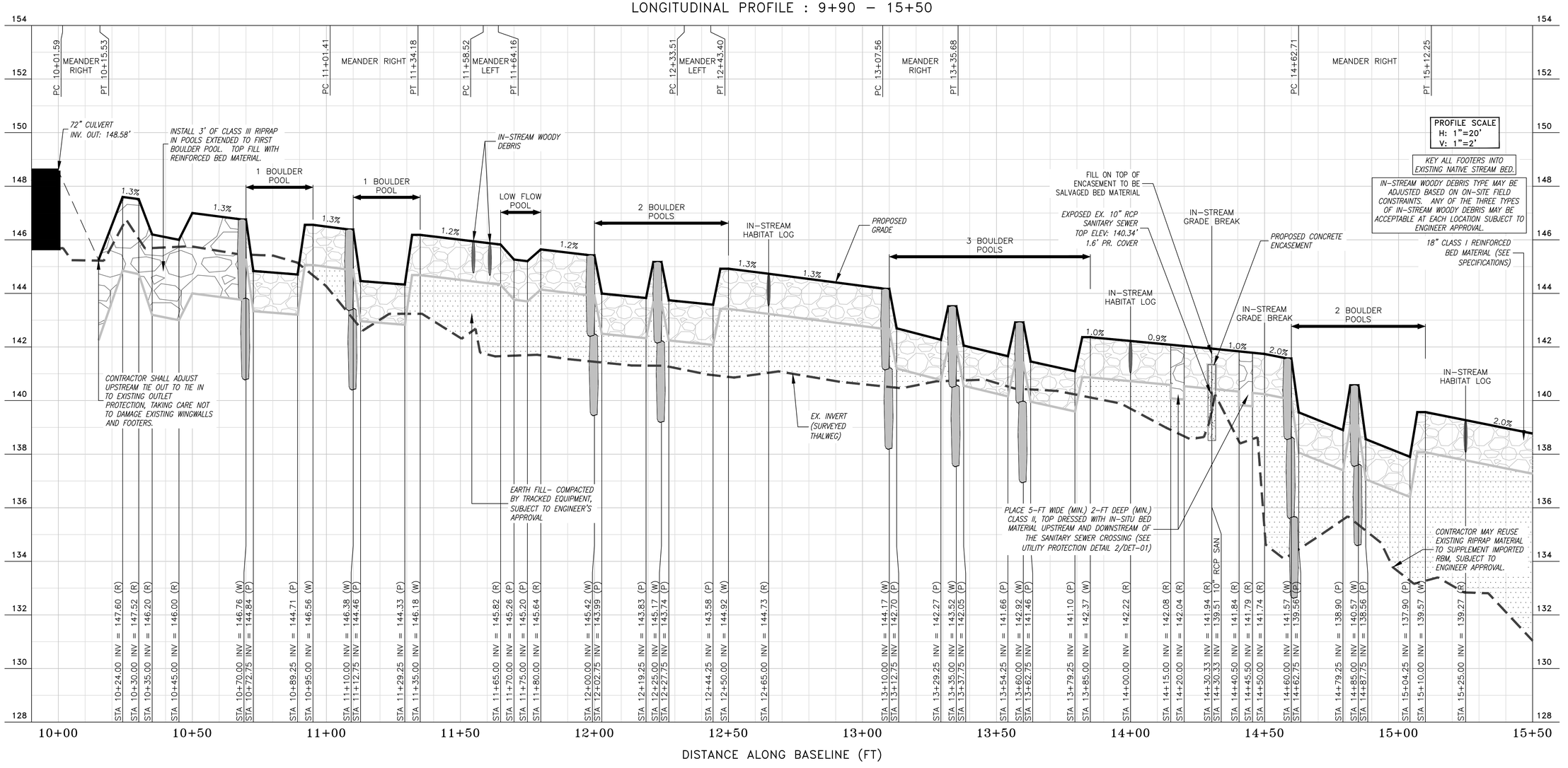
SEAL:
COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION
GRADING PLAN (CONT'D)

Wetland Studies and Solutions, Inc.
URS

DRAWING
GP - 05
SCALE 1" = 20'
SHEET 13 OF 84

LONGITUDINAL PROFILE : 9+90 – 15+50



PROFILE LEGEND

- EXISTING STREAM INVERT PROJECTED TO PROPOSED CENTERLINE
- PROPOSED STREAM INVERT ALONG PROPOSED CENTERLINE
- STRUCTURE ROCKS
- LOG SILL
- EX. CULVERT STRUCTURE
- PC = 0+50.00 MP PT = 1+00.00 — PC & PT LOCATIONS WITH LINE OR CURVE DESIGNATION REFERENCED FROM STAKEOUT DATA
- CLASS A1 RBM
- CLASS I RBM
- EARTH FILL

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
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ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

LONGITUDINAL PROFILE

URS — 11401 MILESTONE CENTER DR., SUITE 100, GERMANTOWN, MD 20876, (301) 820-3000

Wetland Restoration & Assessment Group — a GANNETT FLEMING company — 3300 WILLIAMS DRIVE, SUITE 100, FREDERICKSBURG, VA 22408, (703) 573-3600

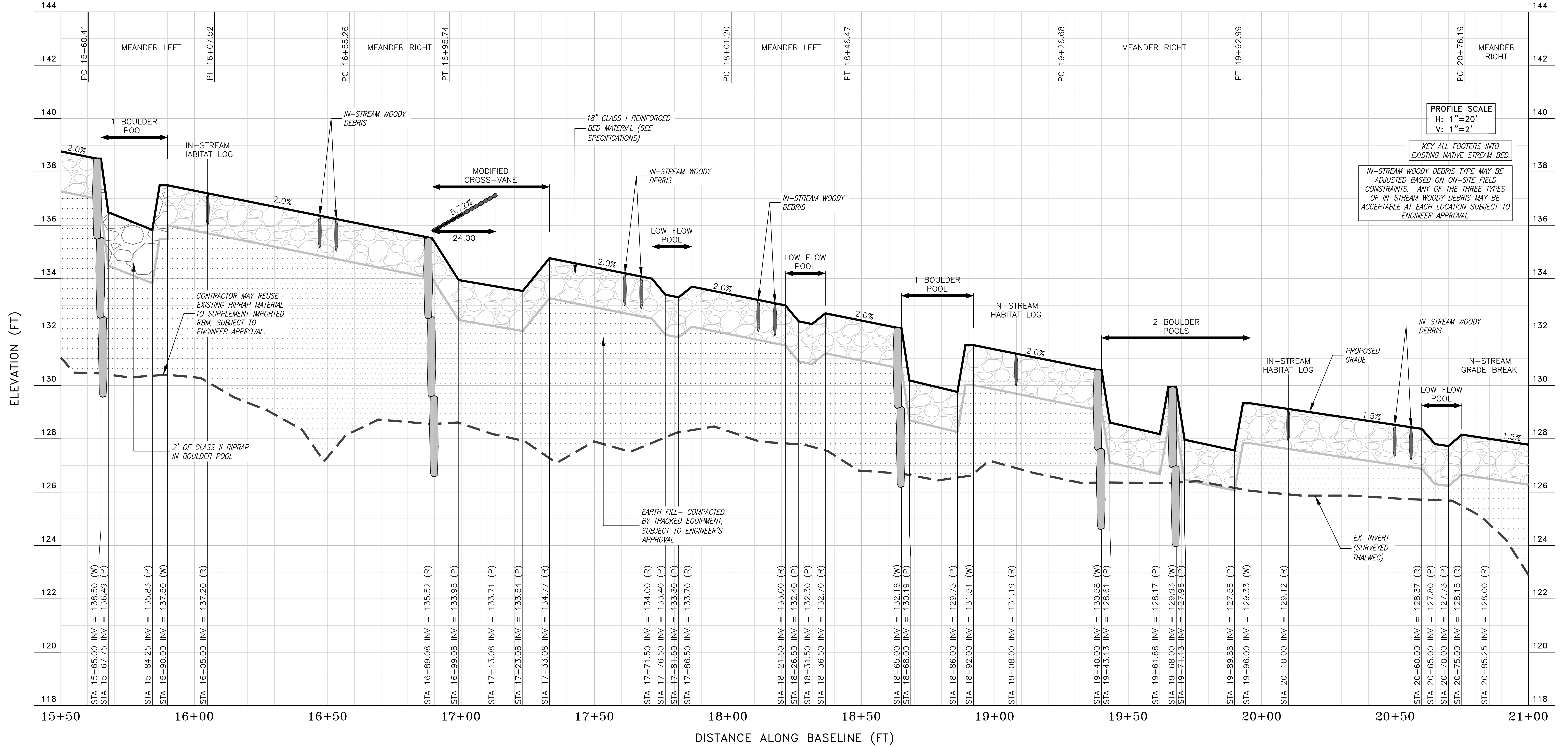
DRAWING
LP – 01

SCALE 1" = 20'

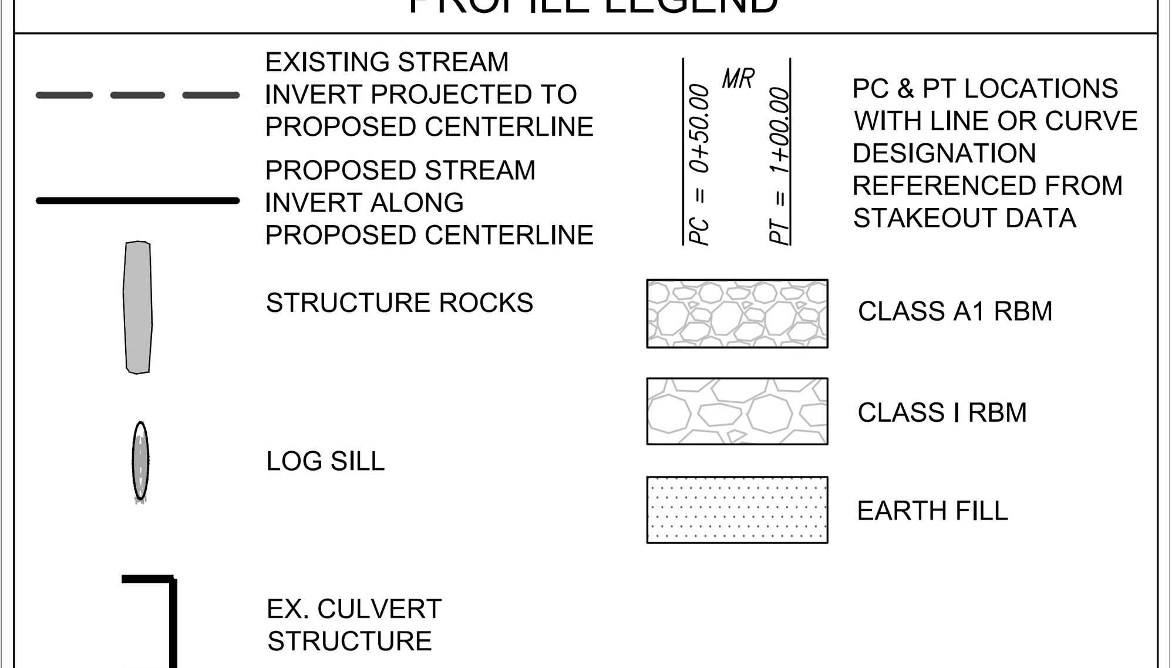
SHEET 14 OF 84

C:\MCSG-1\28000\28006.01\CAD\04-ENGR\08-100% Plans\LONGITUDINAL PROFILE.dwg, Plotted: 6/15/2020 8:22 PM by Chanda, Alex, Template Version 2, 9-4-2014

LONGITUDINAL PROFILE : 15+50 – 21+00



PROFILE LEGEND



PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

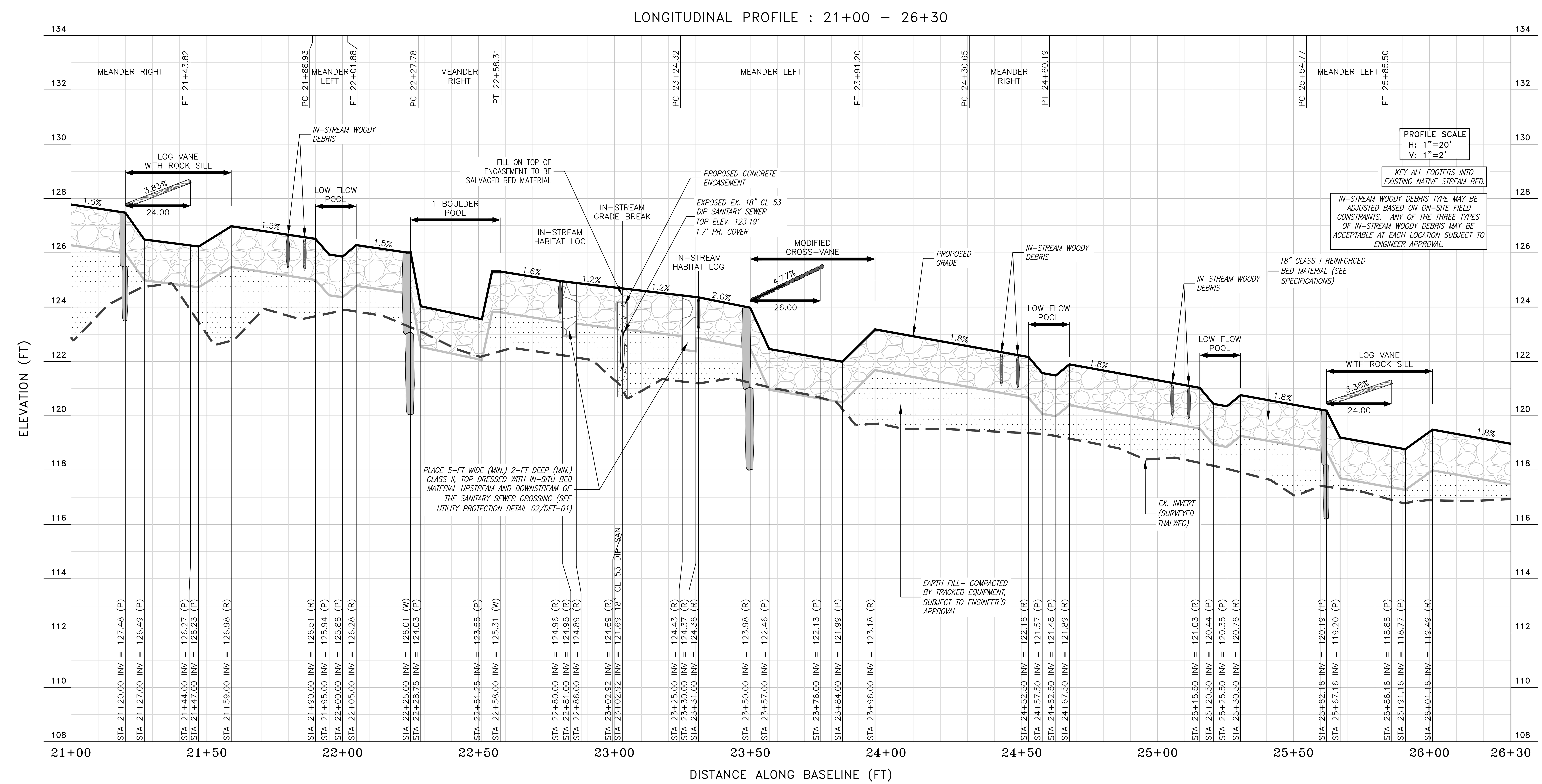
TAYLOR RUN STREAM RESTORATION

LONGITUDINAL PROFILE (CONT'D)

URS — Wetland Studies and Solutions, Inc.

DRAWING
LP – 02
SCALE 1" = 20'
SHEET 15 OF 84

LONGITUDINAL PROFILE : 21+00 – 26+30



PROFILE LEGEND

— — —	EXISTING STREAM INVERT PROJECTED TO PROPOSED CENTERLINE	PC = 0+50.00 MR / PT = 1+00.00	PC & PT LOCATIONS WITH LINE OR CURVE DESIGNATION REFERENCED FROM STAKEOUT DATA
———	PROPOSED STREAM INVERT ALONG PROPOSED CENTERLINE		
	STRUCTURE ROCKS		CLASS A1 RBM
			CLASS I RBM
	LOG SILL		EARTH FILL
	EX. CULVERT STRUCTURE		

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

LONGITUDINAL PROFILE (CONT'D)

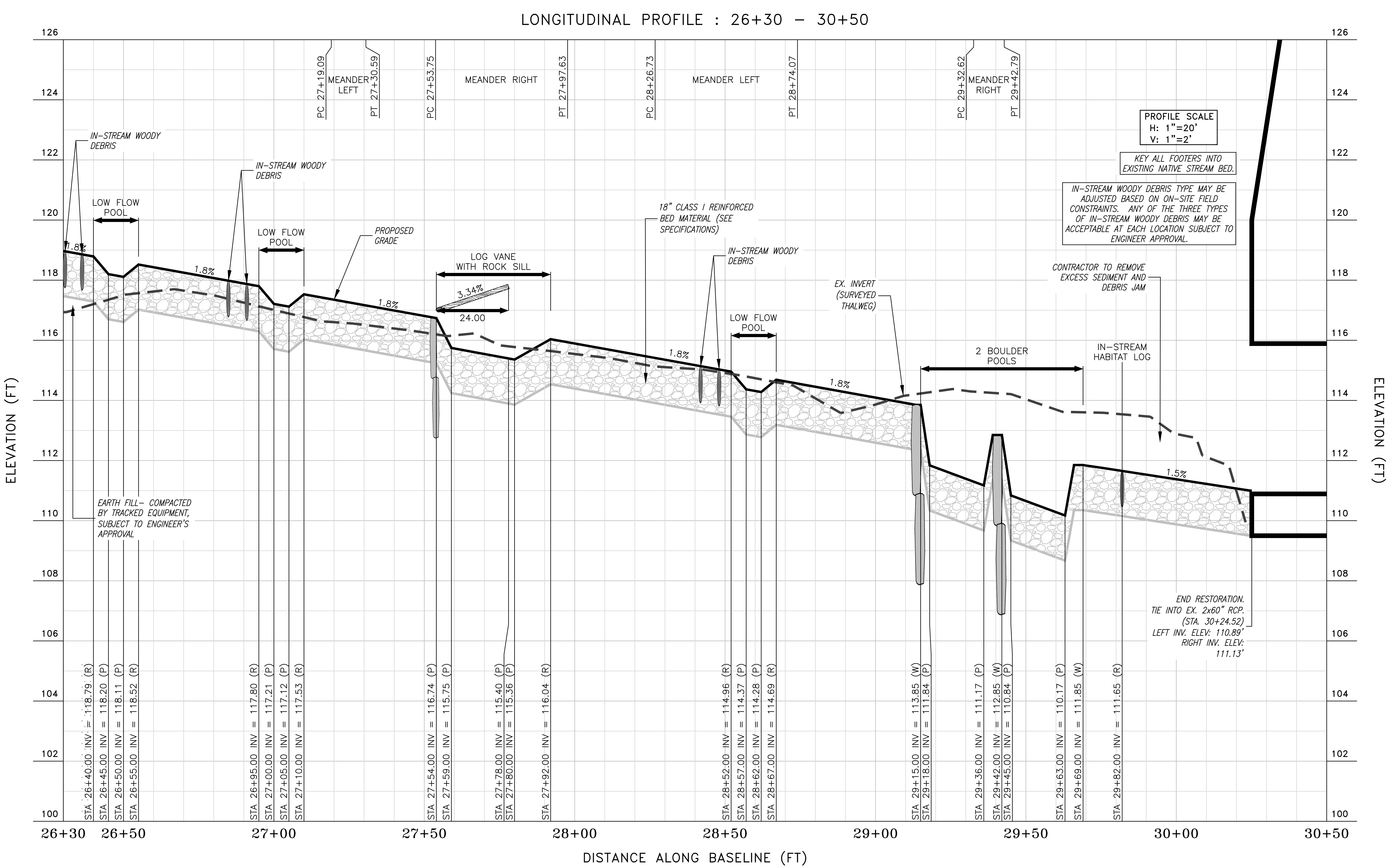
Wetland Studies and Solutions, Inc. — URS

DRAWING LP – 03

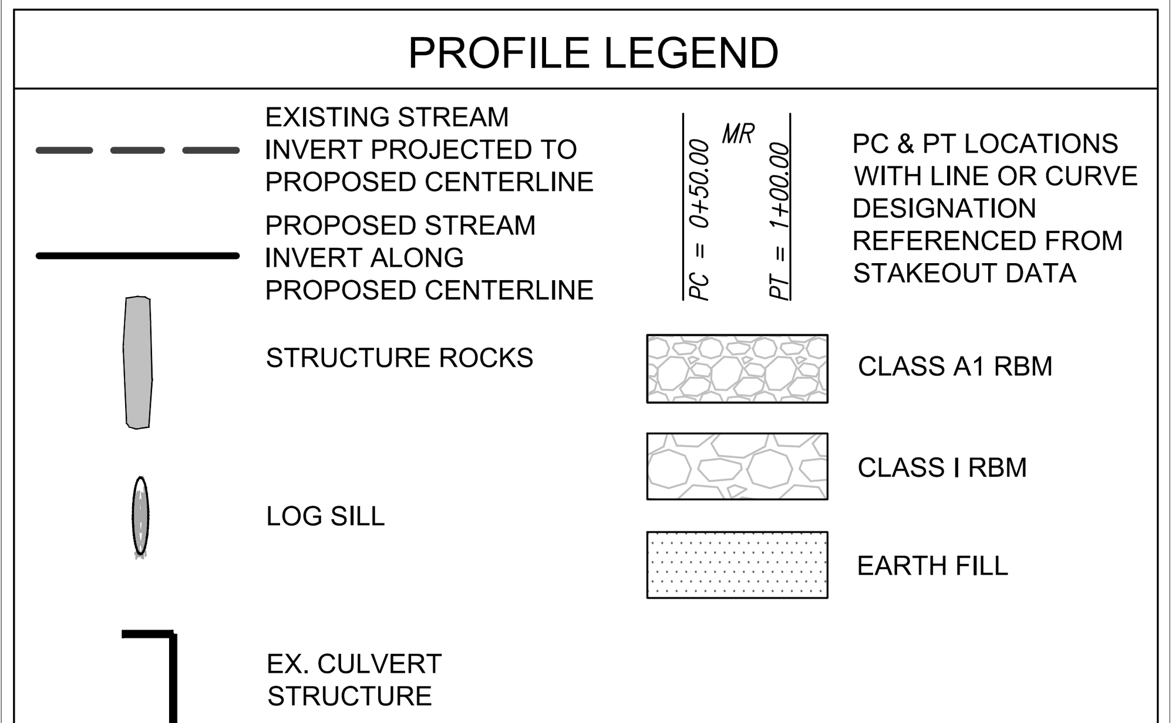
SCALE 1" = 20'

SHEET 16 OF 84

LONGITUDINAL PROFILE : 26+30 – 30+50



PROFILE LEGEND



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ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

LONGITUDINAL PROFILE (CONT'D)

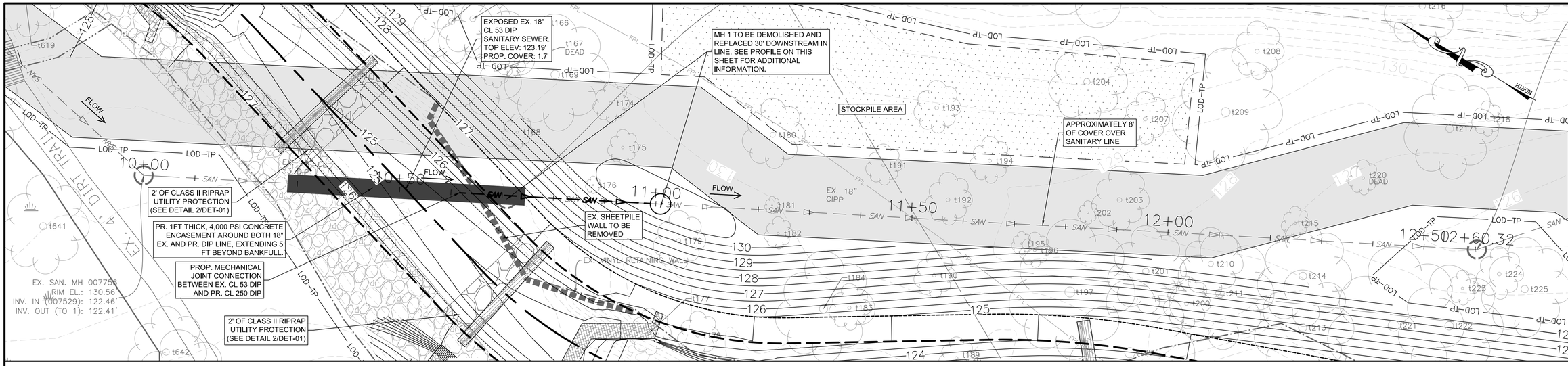
Wetland Studies and Solutions, Inc.

URS

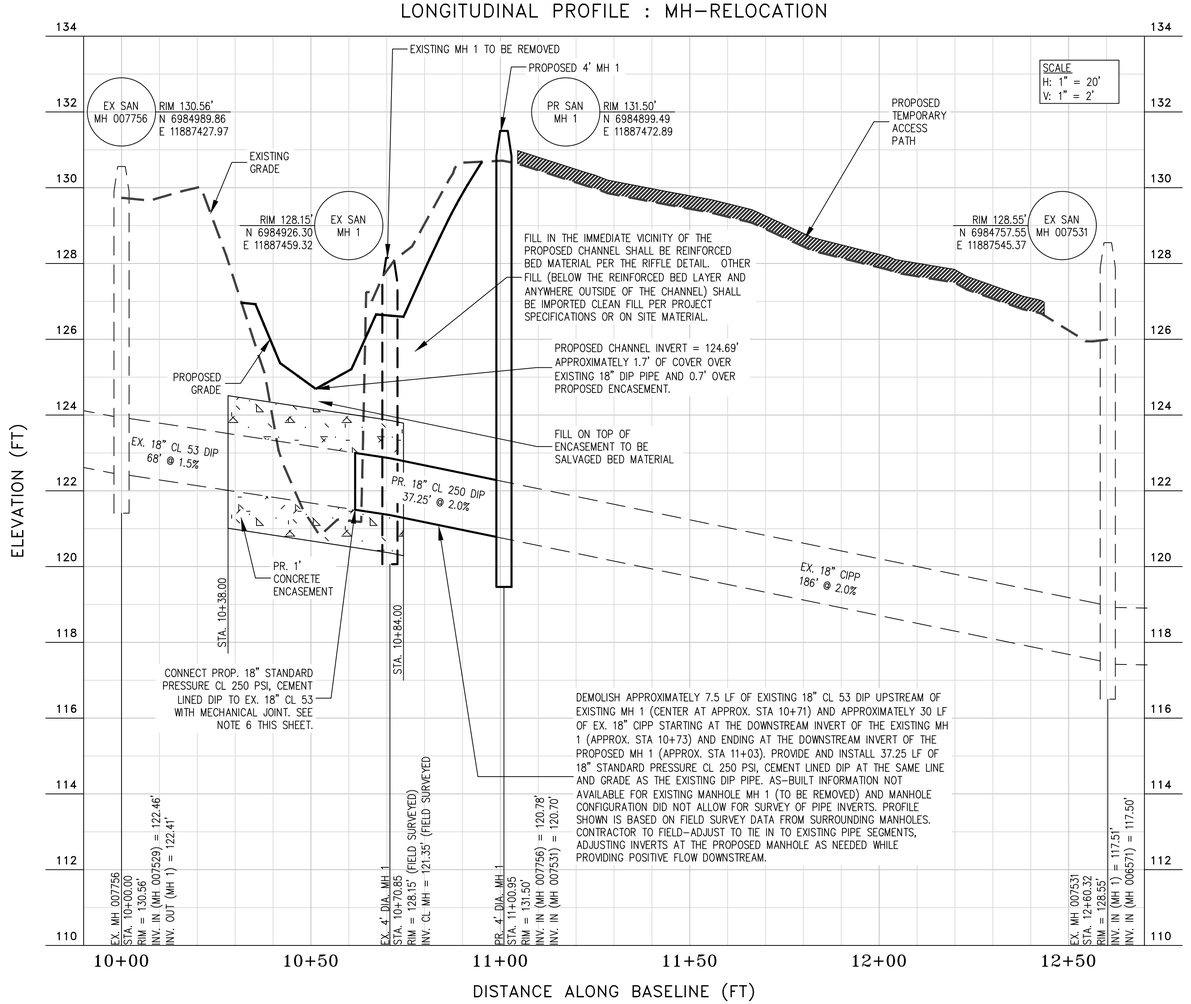
DRAWING LP – 04

SCALE 1" = 20'

SHEET 17 OF 84



LONGITUDINAL PROFILE : MH–RELOCATION



AFTER TEMPORARY STREAM DIVERSION DIKES AND SANITARY SEWER PUMP AROUND (TO BE DESIGNED BY CONTRACTOR) ARE IN PLACE:

1. SAWCUT EX. 18" CL 53 DIP 2 LF UPSTREAM OF EX. VINYL SHEET PILE WALL PENETRATION AND PROVIDE TERMPORARY CAP.
2. DEMOLISH AND REMOVE APPROXIMATELY 7.5 LFT EX. CL 53 DIP (BETWEEN SHEET PILE WALL AND MH 1), VINYL SHEET PILE WALL, GEOTEXTILE, DRAINAGE STONE, TIE-ROD(S), AND TIMBER PILE(S) WITHIN PROP. STREAM ALIGNMENT (TO NORTH BANKFULL ELEVATION); CONTRACTOR TO PROVIDE STRUCTURAL SUPPORT OF SOIL AND MATERIAL BEHIND WALL AS NEEDED AND IN COMPLIANCE WITH OSHA AND OTHER APPLICABLE STANDARDS.
3. DEMOLISH EX. MH 1.
4. SAWCUT AND DEMOLISH 30 LF OF 18" CIPP (RCP). SAWCUT TO BE MADE AT INTERIOR WALL OF PROP. MH 1 ON DOWNSTREAM SIDE OF MANHOLE.
5. CONSTRUCT PROP. 48" DIA. PRECAST MANHOLE, MH 1, 30 FEET DOWNSTREAM FROM EX. LOCATION, IN LINE AND GRADE, AND PROVIDE WATERTIGHT CONNECTION BETWEEN MANHOLE AND EX. 18" CIPP (RCP).
6. REMOVE TEMPORARY CAP, INSTALL 37.25 LF OF PROP. 18" CL 250 DIP, AND CONNECT TO EX. 18" CL 53 DIP USING MECHANICAL JOINT PIPE TO MAKE A WATERTIGHT CONNECTION.
7. EXPOSE EX. DIP SEWER LINE ACROSS STREAM AND ENCASE PIPE WITH 1-FT THICK 4,000 PSI CONCRETE, 10 LF BEYOND THE BANKFULL LINE TO EITHER SIDE OF THE STREAM.
8. BACKFILL AND PROCEED WITH STREAM RESTORATION.

SEE SHEET MHD-01 & 02 FOR DETAILS.

SEE FIRST GRADING PLAN SHEET (GP-01) FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

10 5 0 10 20 30
SCALE: 1"=10'

PRELIMINARY - NOT FOR CONSTRUCTION

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SEAL: COMMONWEALTH OF VIRGINIA SARAH J. NAPIER Lic. No. 47791 6/16/2020 PROFESSIONAL ENGINEER

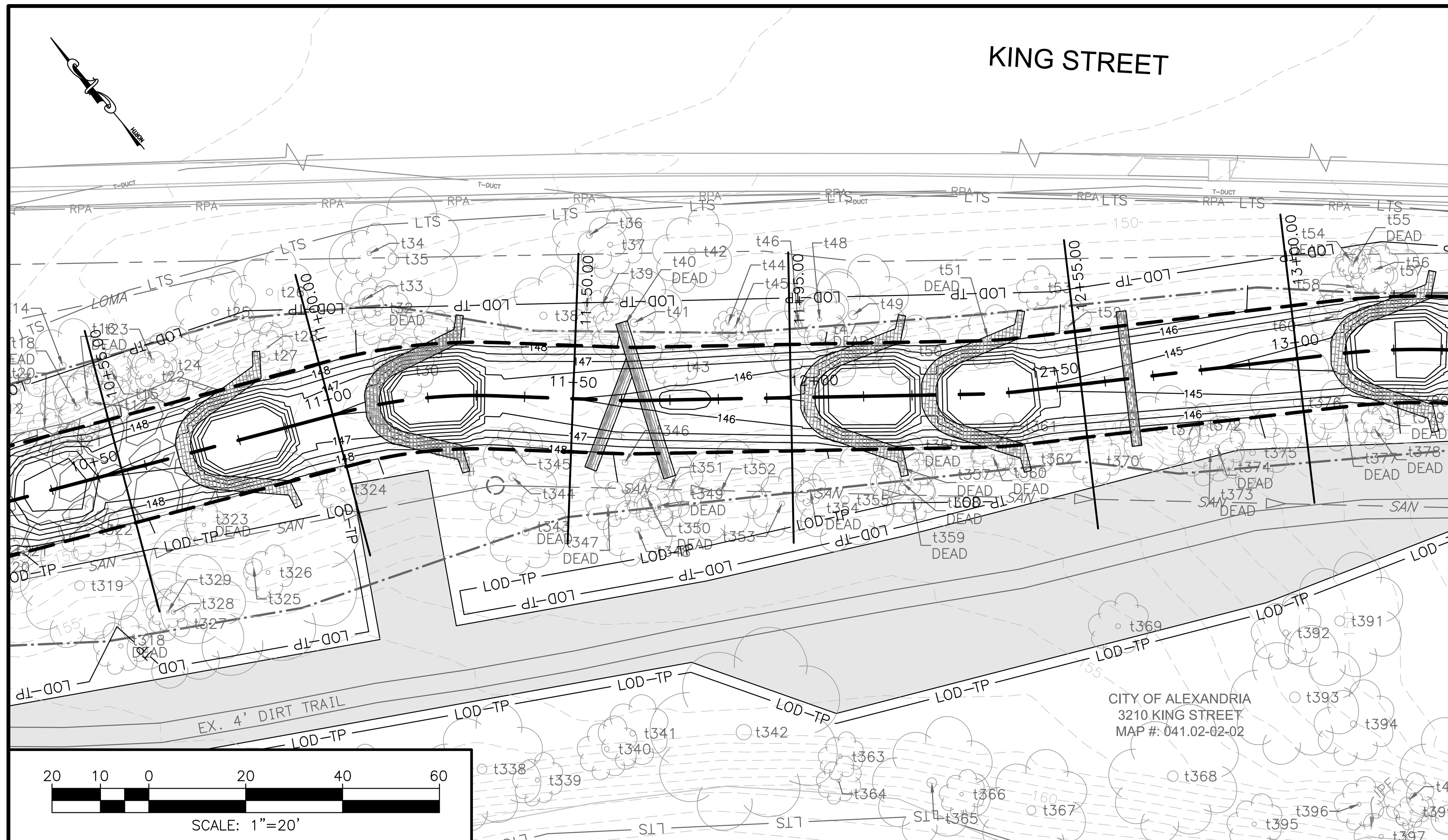
TAYLOR RUN STREAM RESTORATION

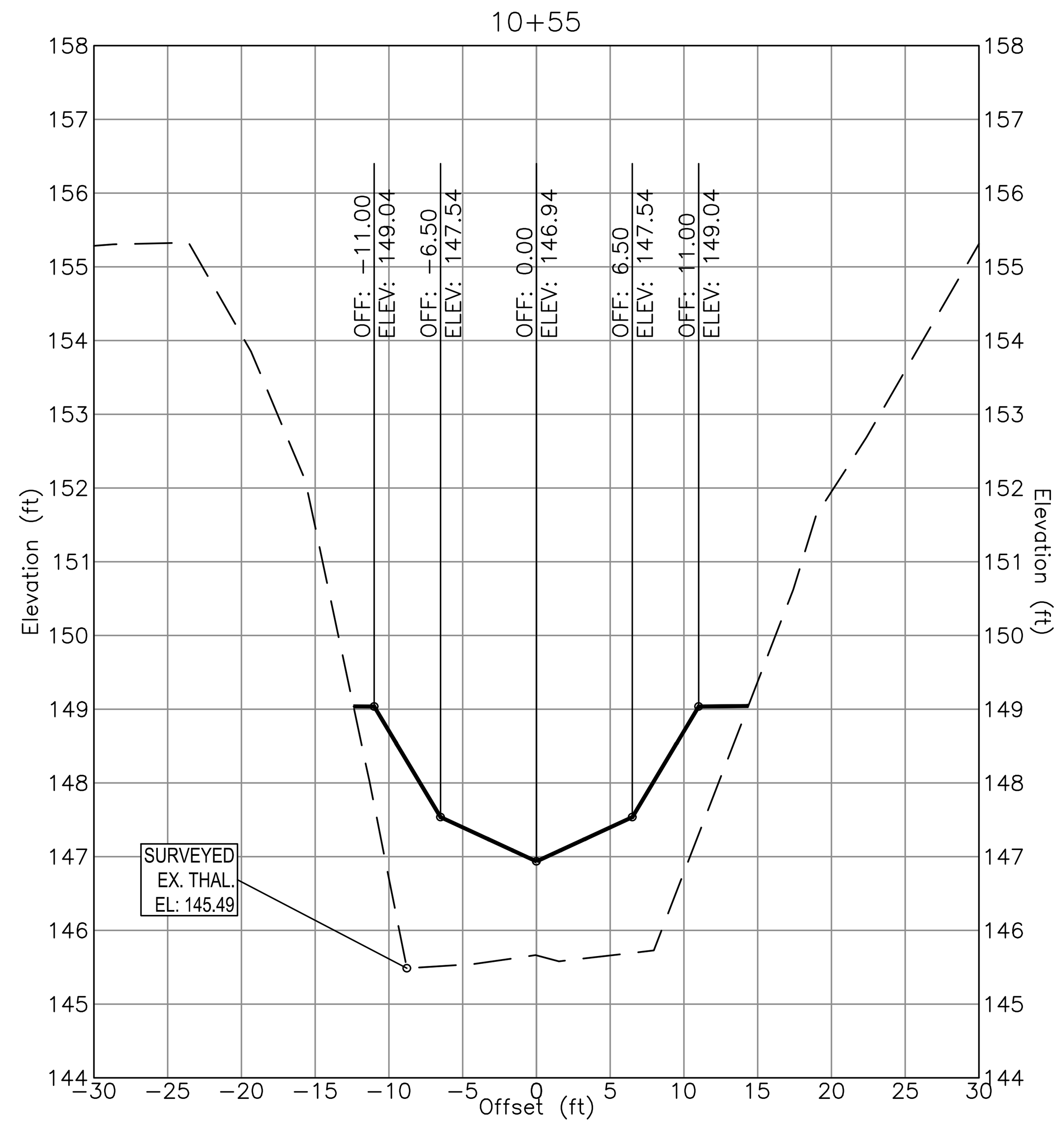
MANHOLE RELOCATION PLAN

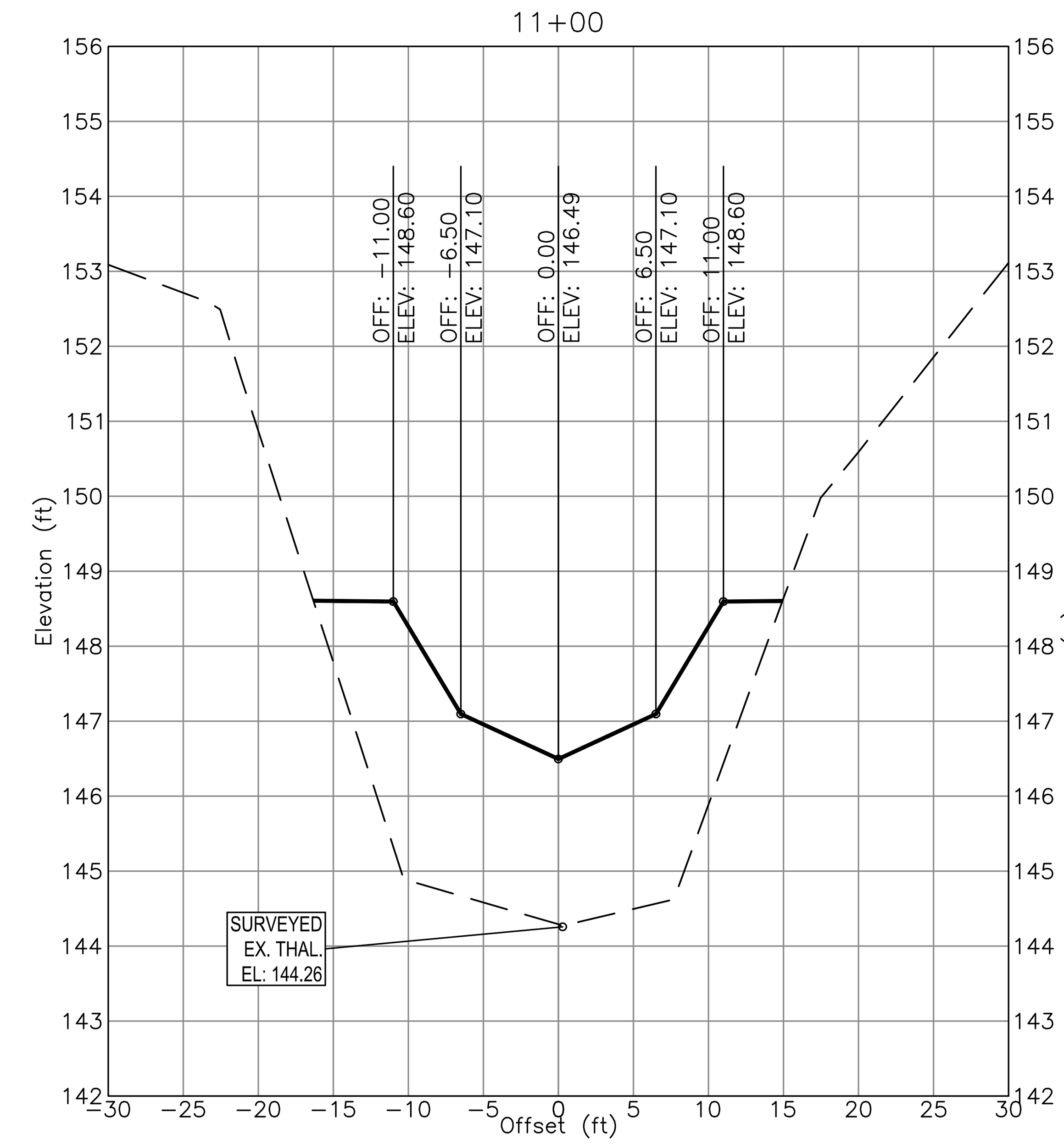
Wetland Studies and Solutions, Inc. a GAMEL Company
URS
13450 SUNRISE VALLEY DRIVE, SUITE 100 HERNDON, VA 20171 (703) 478-3600
13450 SUNRISE CENTER DR., SUITE 100 HERNDON, VA 20171 (703) 834-3500

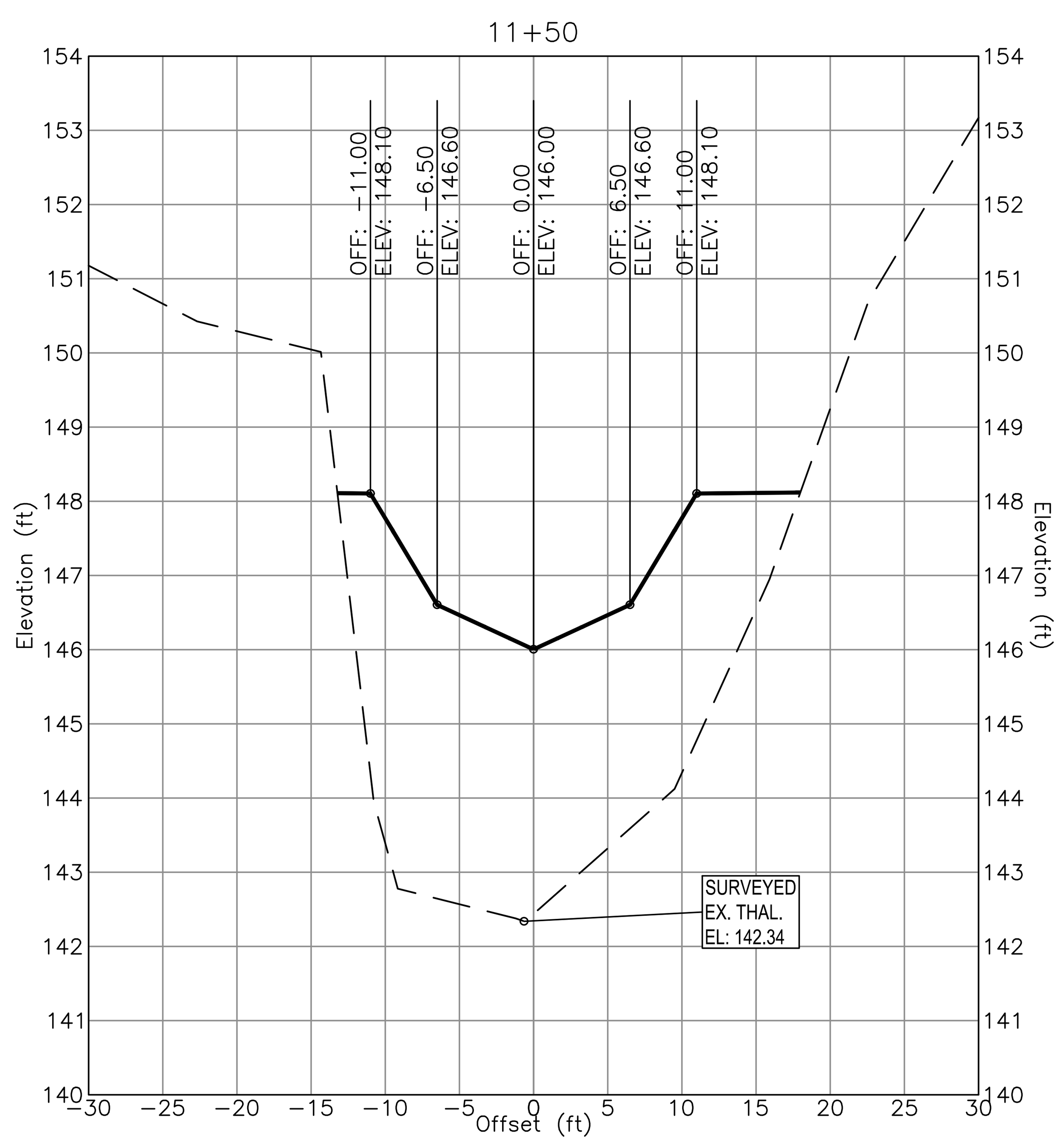
DRAWING
MHP – 01
SCALE 1" = 10'
SHEET 18 OF 84

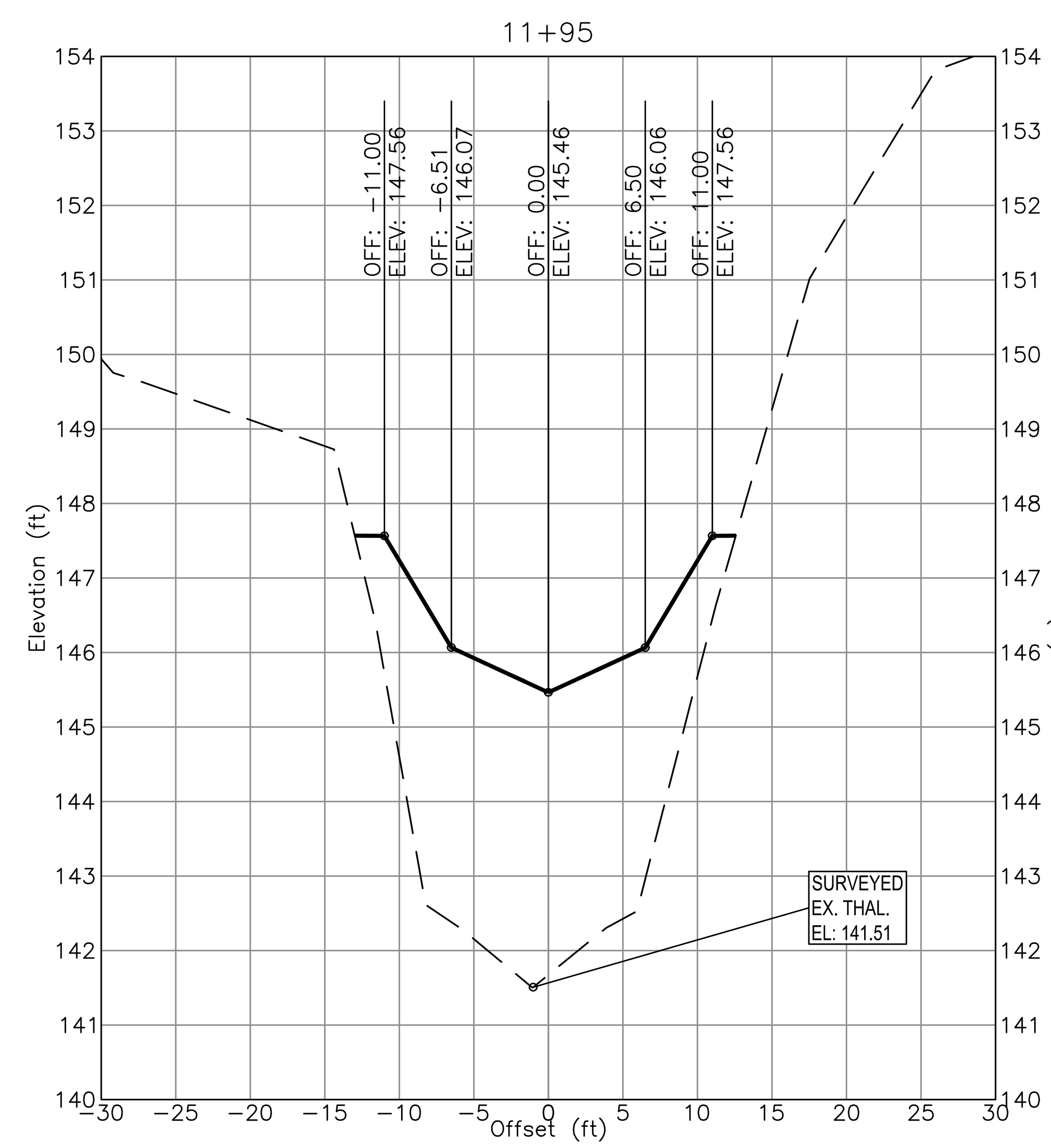
C:\WSS–L\28000s\28000\28006.01\CAD\04–ENGR\08–110PE Pioneer\MANHOLE RELOCATION PLAN.dwg, PlotSet: 6/18/2020 9:56 AM by Chonlio, Alex, Template Version 2, 9–4–2014

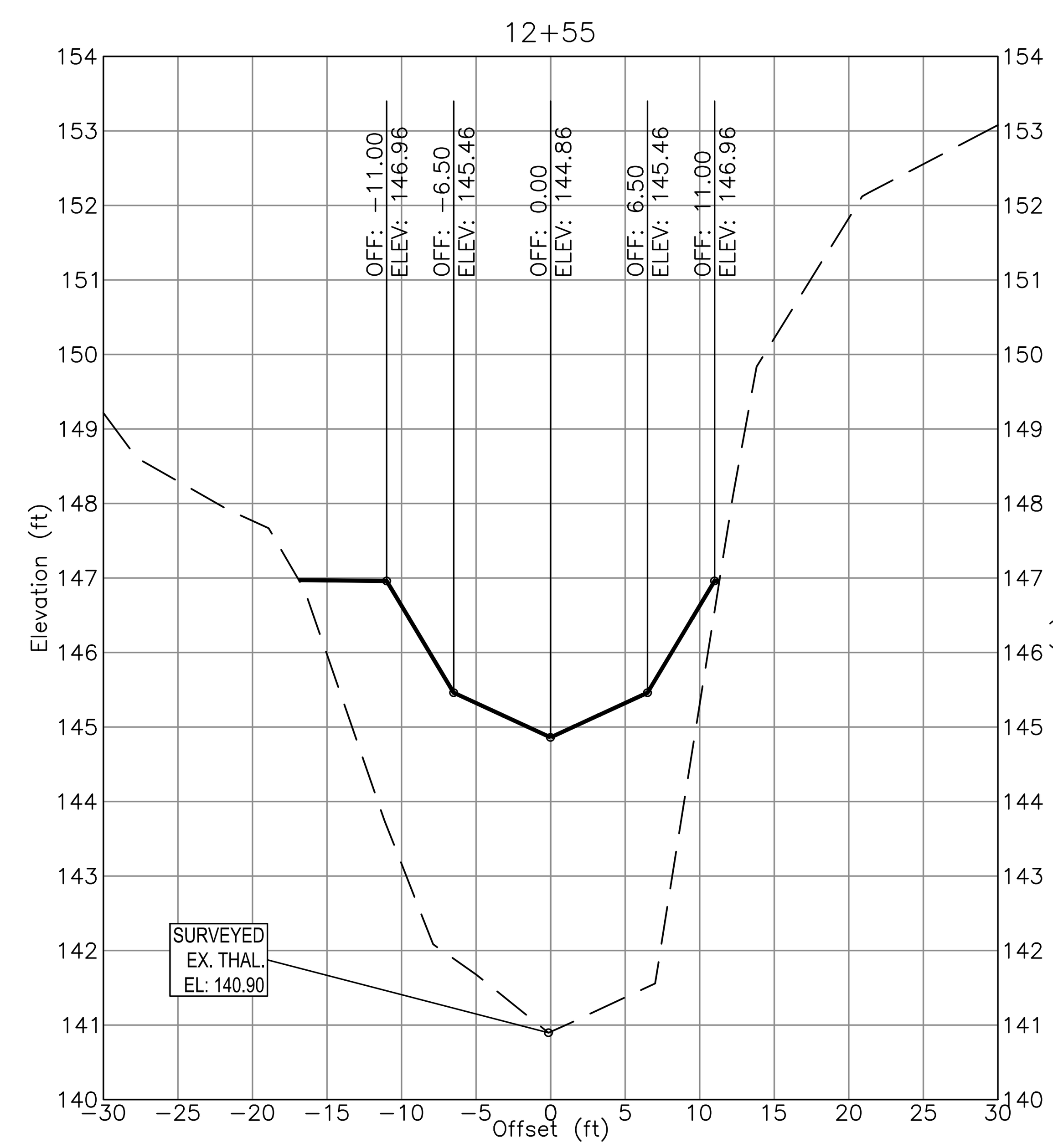


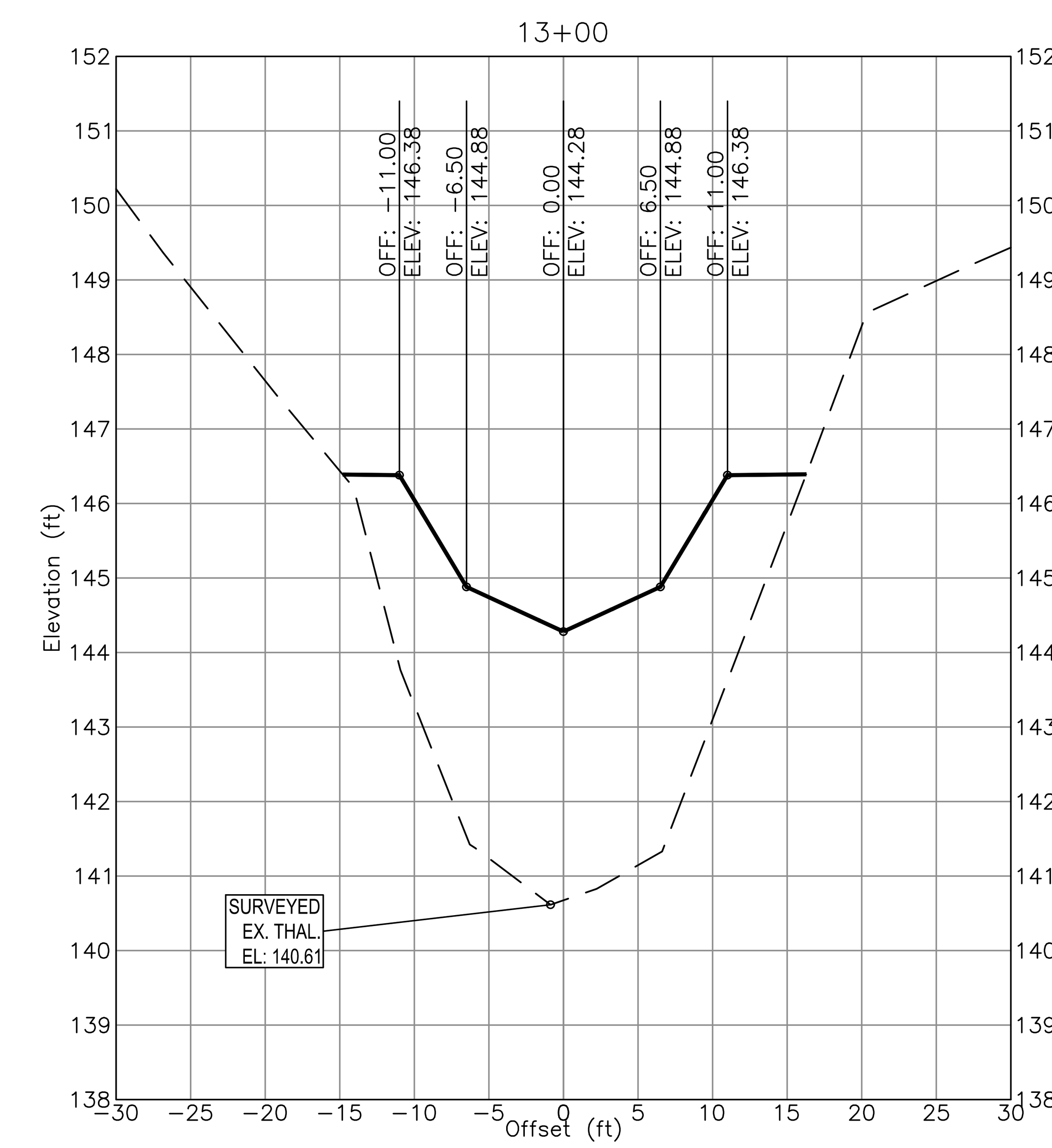












CROSS SECTION LEGEND

— — — — — —	EXISTING STREAM CROSS SECTION
————————	PROPOSED STREAM CROSS SECTION

CROSS SECTION NOTES

1. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).
2. MINOR ADJUSTMENTS TO LOCATION AND ELEVATION OF TIE OUTS TO EXISTING GRADE MAY BE NECESSARY DUE TO CHANGES IN CHANNEL CONDITIONS SINCE THE TIME OF SURVEY OR OTHER LOCAL SITE CONDITIONS. ANY SUCH ADJUSTMENTS SHALL NOT NECESSITATE ADDITIONAL TREE REMOVAL OR RESULT IN DISTURBANCE OUTSIDE THE LOD WITHOUT THE APPROVAL OF CITY STAFF OR THE DESIGN ENGINEER.
3. SEE PLANVIEW, PROFILE, AND TYPICAL DETAIL SHEETS FOR ADDITIONAL INFORMATION.

SECTION SCALE
H: 1" = 10'
V: 1" = 2'

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

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ALEXANDRIA, VA 22314

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SEAL:

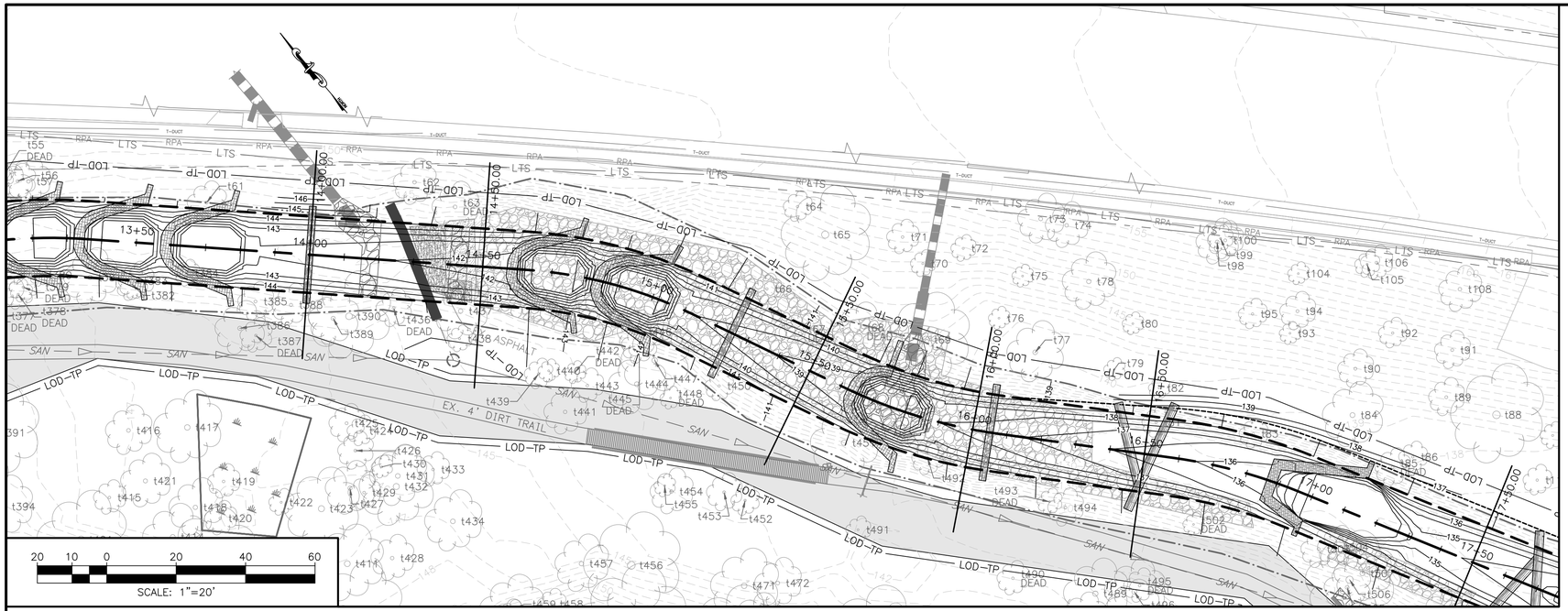
Wetland Studies and Solutions, Inc.

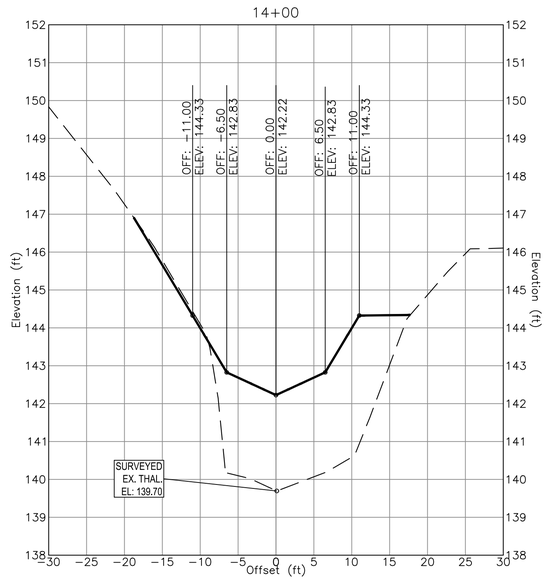
URS

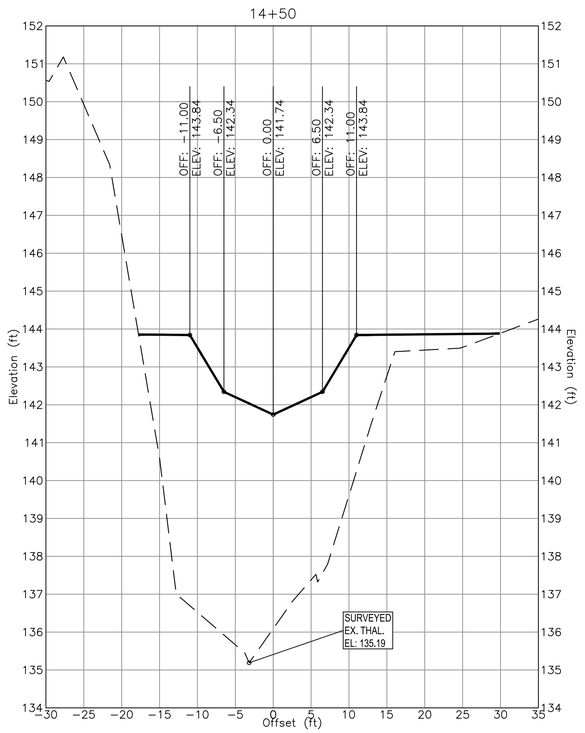
TAYLOR RUN STREAM RESTORATION

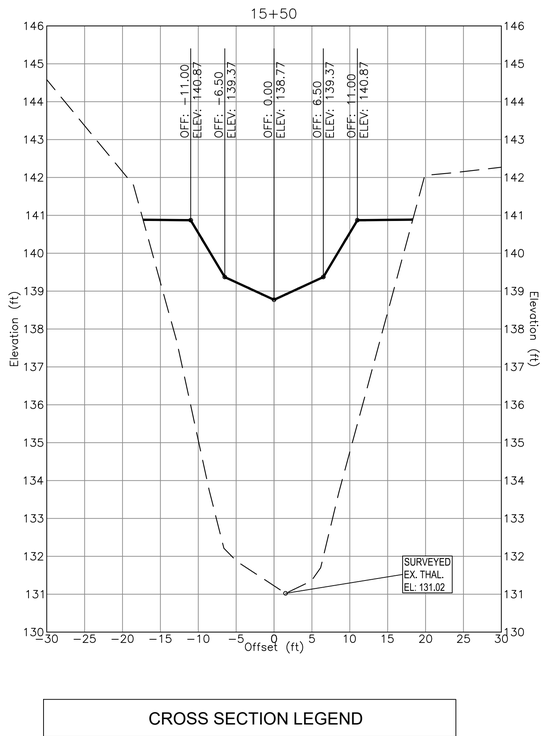
CROSS SECTIONS

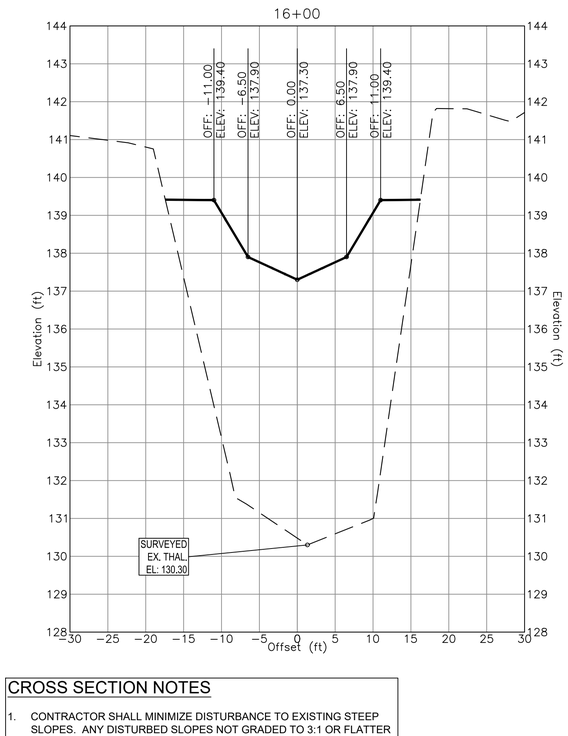
DRAWING
CS - 01
SCALE 1" = 10'

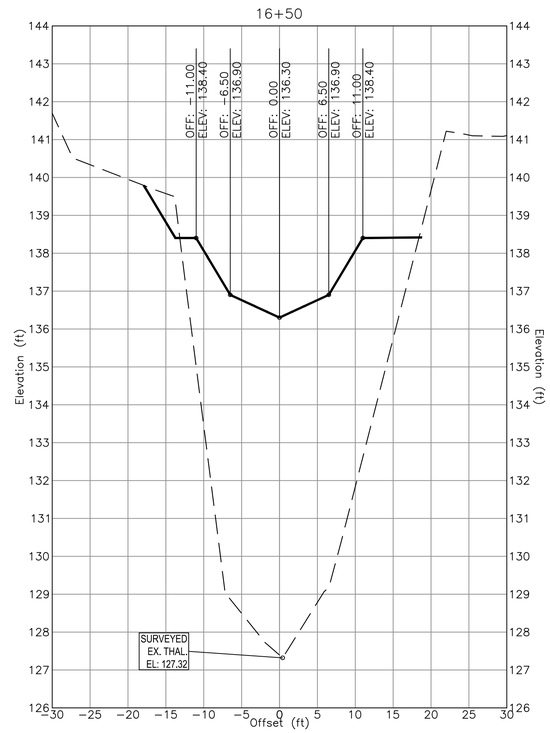












CROSS SECTION LEGEND

- EXISTING STREAM CROSS SECTION
- PROPOSED STREAM CROSS SECTION

CROSS SECTION NOTES

1. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).
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3. SEE PLANVIEW, PROFILE, AND TYPICAL DETAIL SHEETS FOR ADDITIONAL INFORMATION.

SOURCE DATA INFORMATION

H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SECTION SCALE
H: 1" = 10'
V: 1" = 2'

20 10 0 20 40 60
SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
BY DESCRIPTION
DATE

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA PROFESSIONAL ENGINEER
MATTHEW A. SPALEK
Lic. No. 047145
6/16/2020

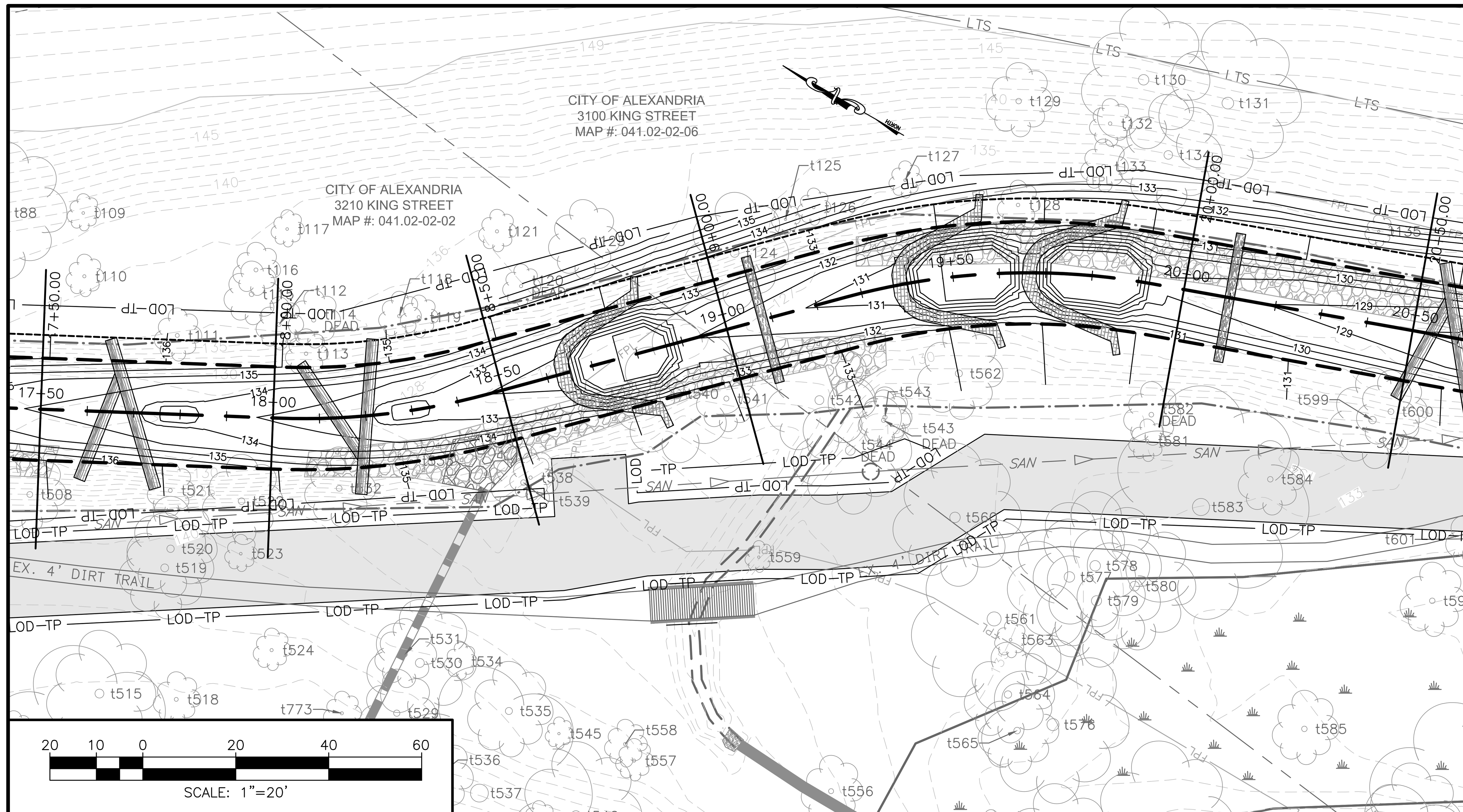
Wetland Studies & Solutions, Inc. a GAINEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

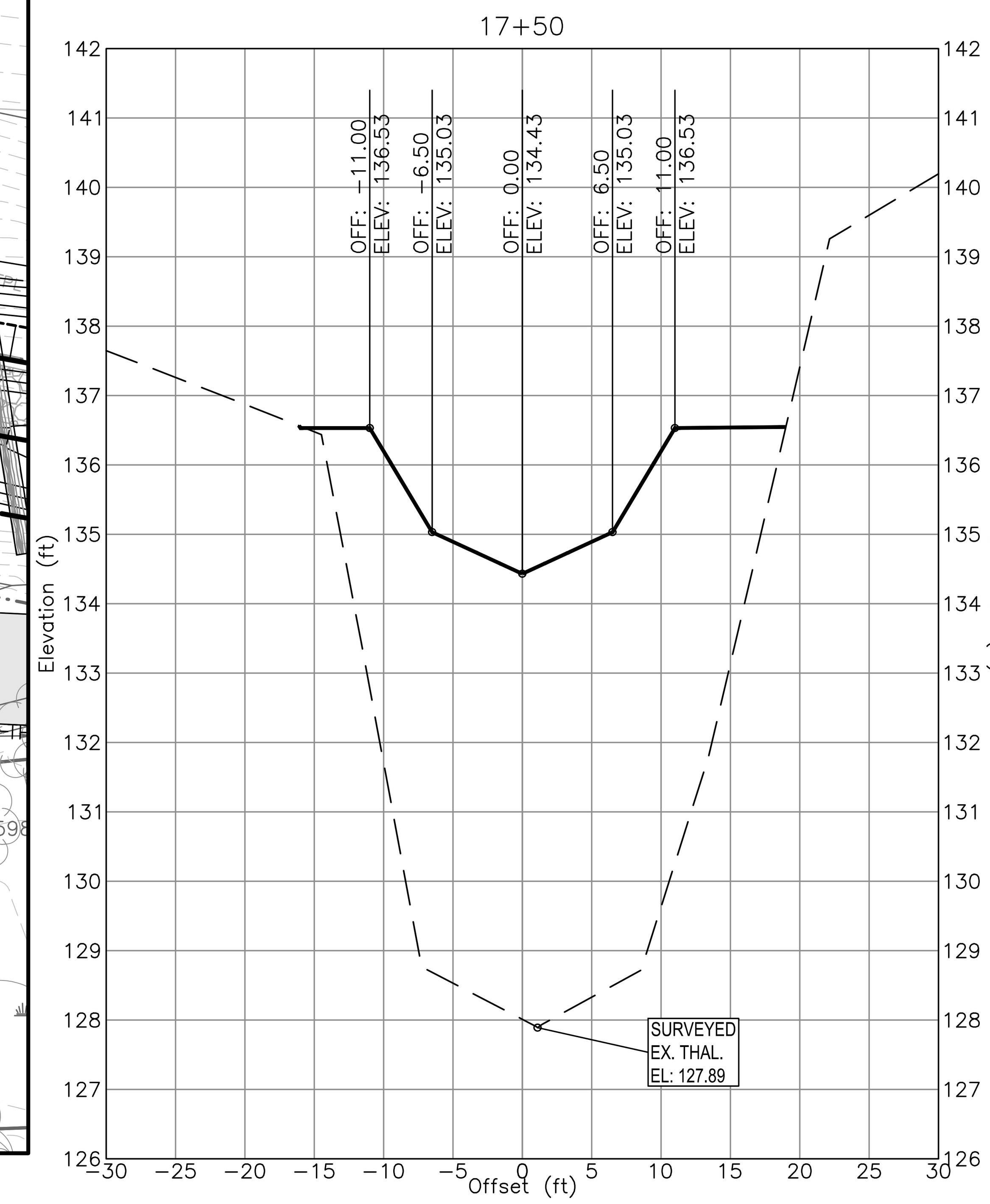
URS
14020 THUNDERBOLT PLACE, SUITE 150
CHANTILLY, VIRGINIA 20151
(703) 830-3000

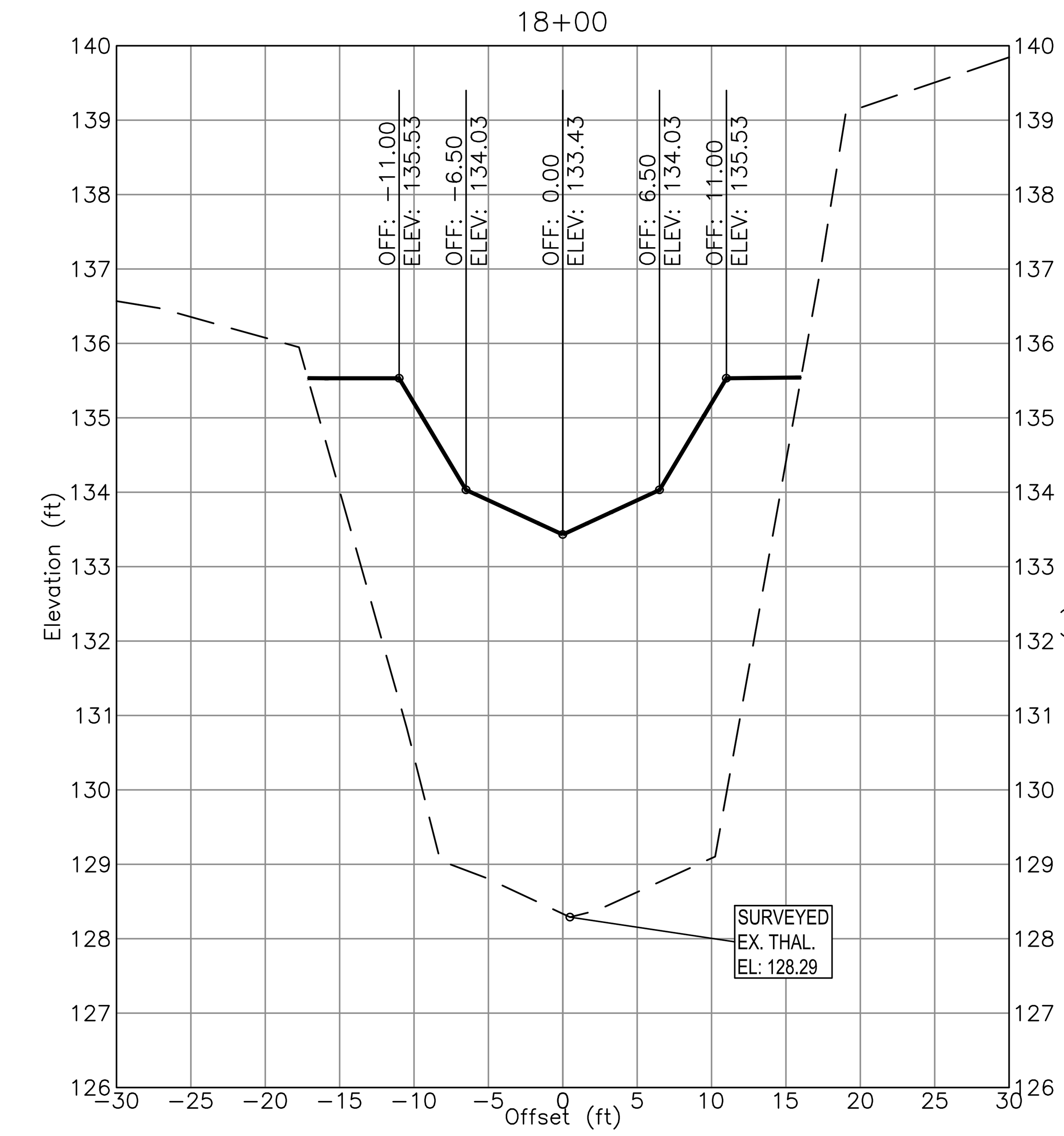
TAYLOR RUN STREAM RESTORATION
CROSS SECTIONS (CONT'D)

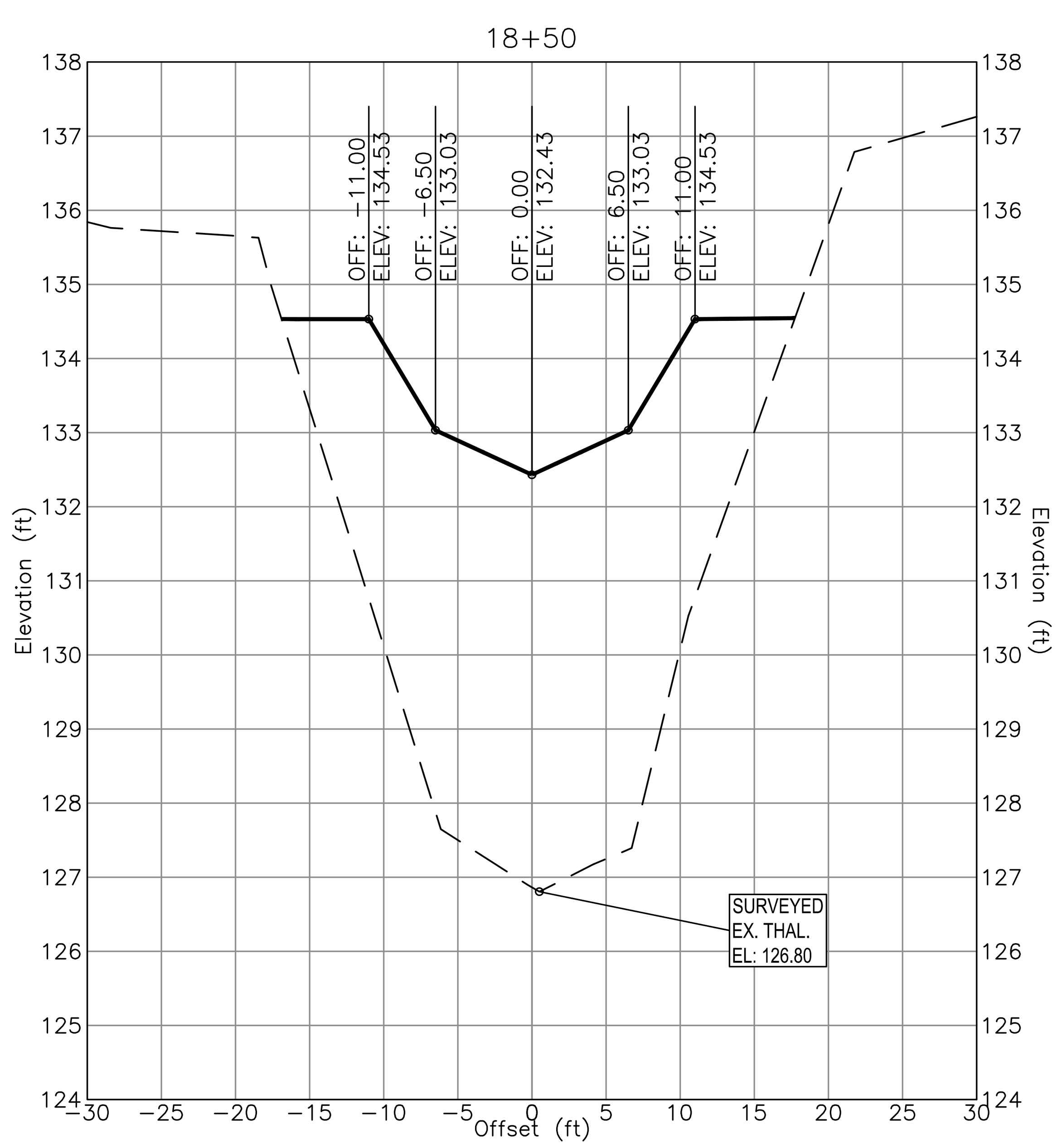
DRAWING
CS – 02
SCALE 1" = 10'
SHEET 20 OF 84

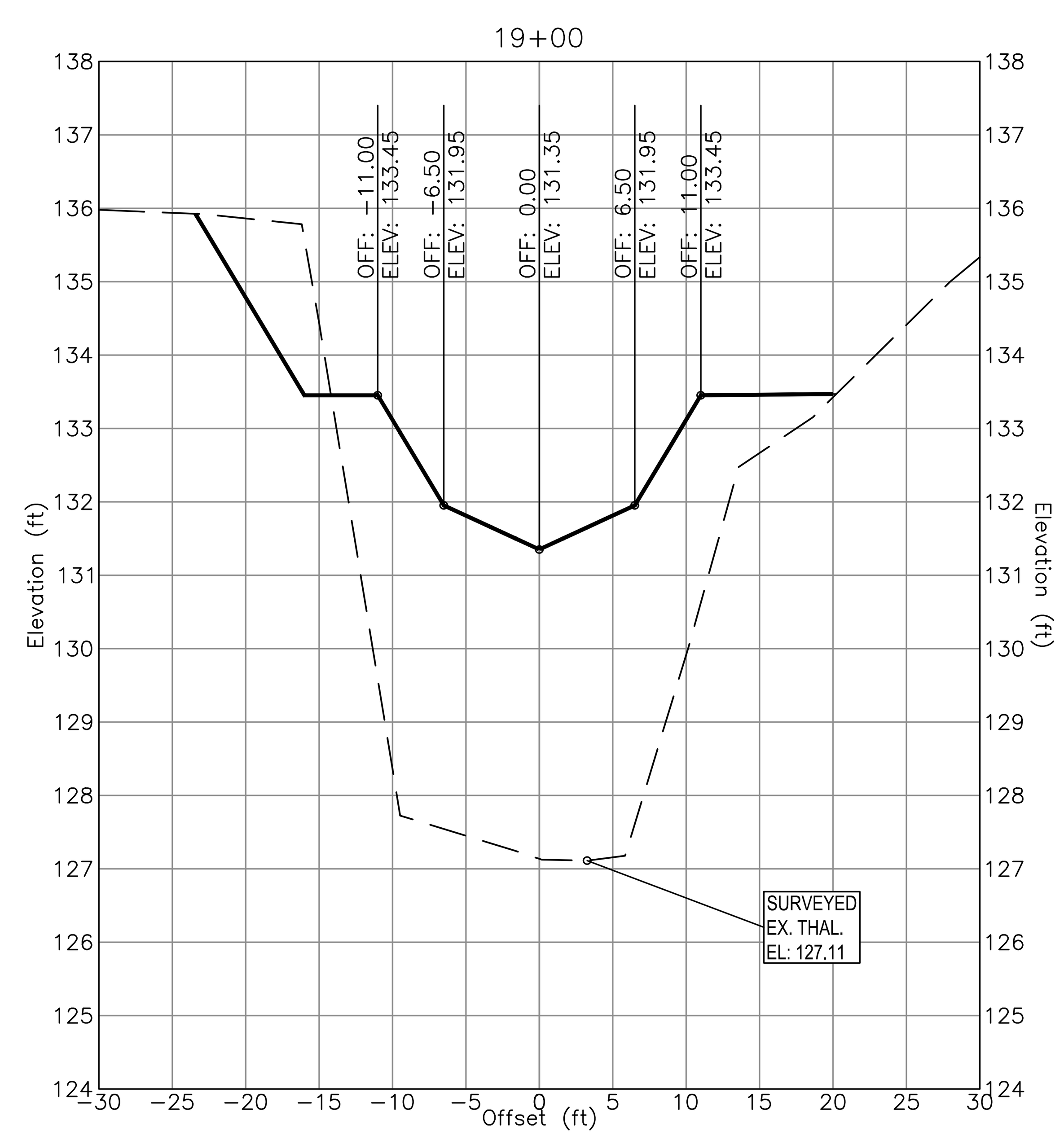
C:\WSS-L1\28000\28000\28006.01\CAD\104-ENGR\08-100ft Planset\CROSS SECTIONS.dwg Plotted: 6/15/2020, 8:24 PM by Chaida, Alex Template Version 2, 9-4-2014

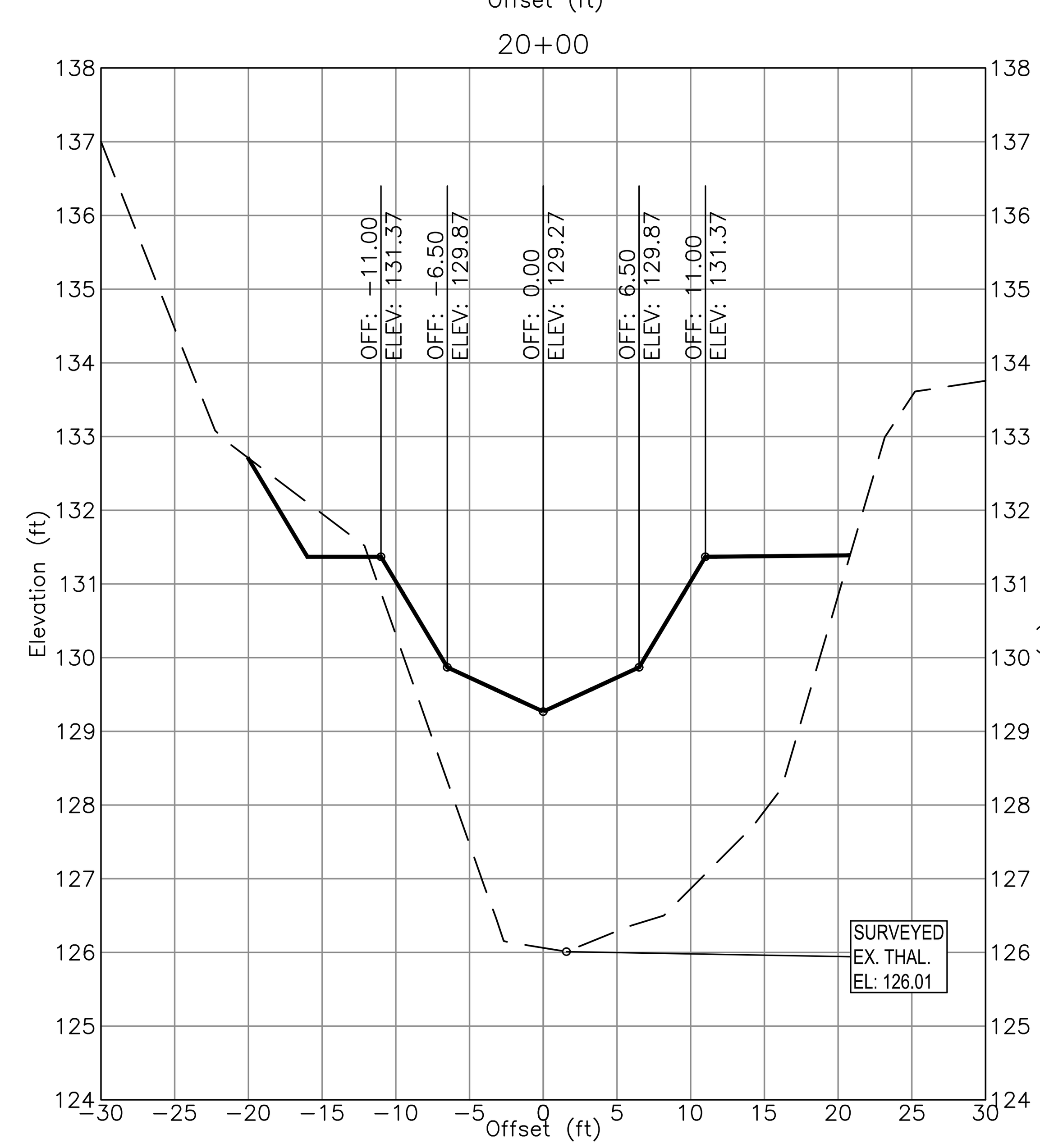


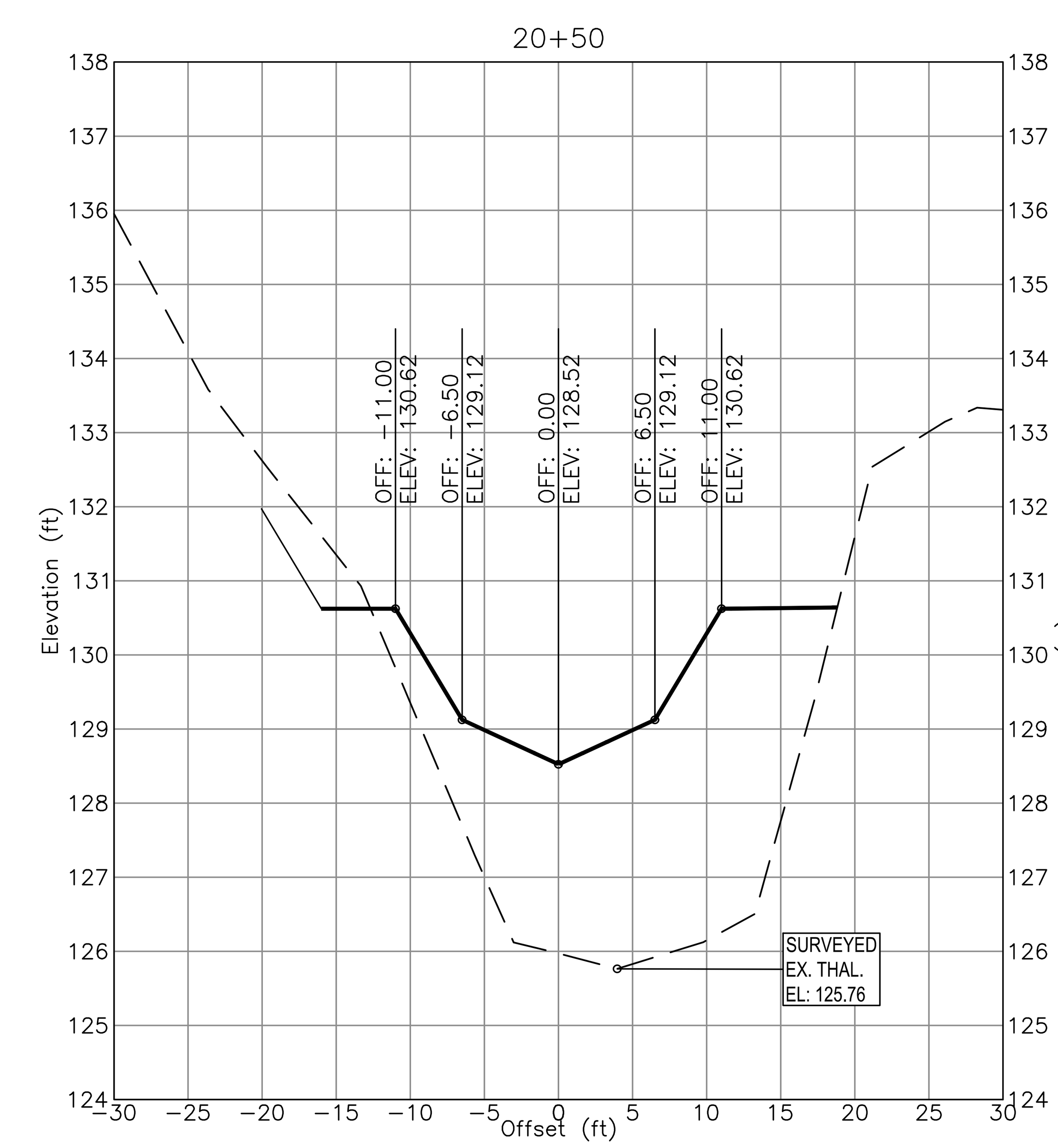












CROSS SECTION LEGEND

- EXISTING STREAM CROSS SECTION (dashed line)
- PROPOSED STREAM CROSS SECTION (solid line)

CROSS SECTION NOTES

1. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).
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SECTION SCALE
H: 1" = 10'
V: 1" = 2'

SOURCE DATA INFORMATION

H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

TAYLOR RUN STREAM RESTORATION

CROSS SECTIONS (CONT'D)

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS		
DATE	BY	DESCRIPTION

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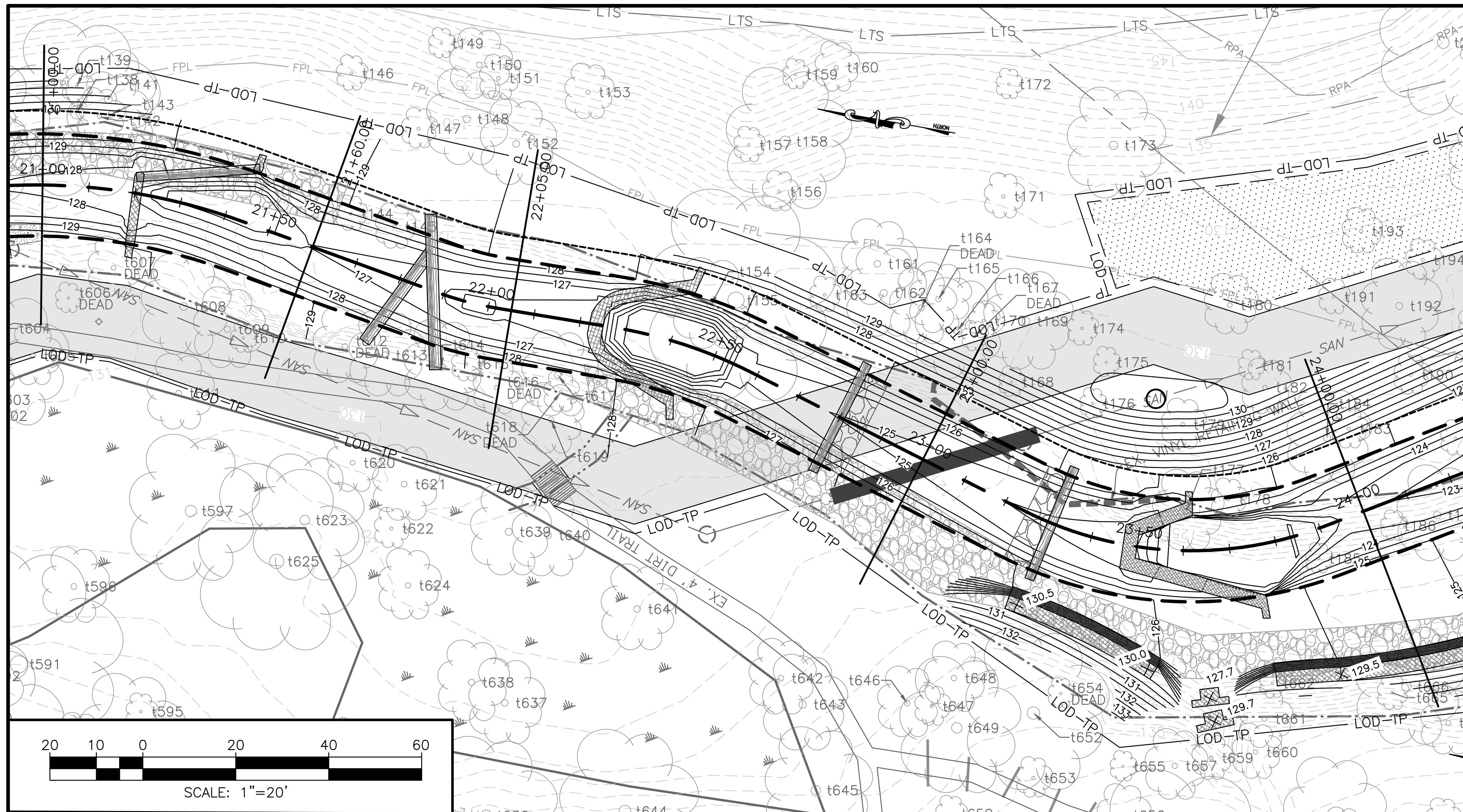
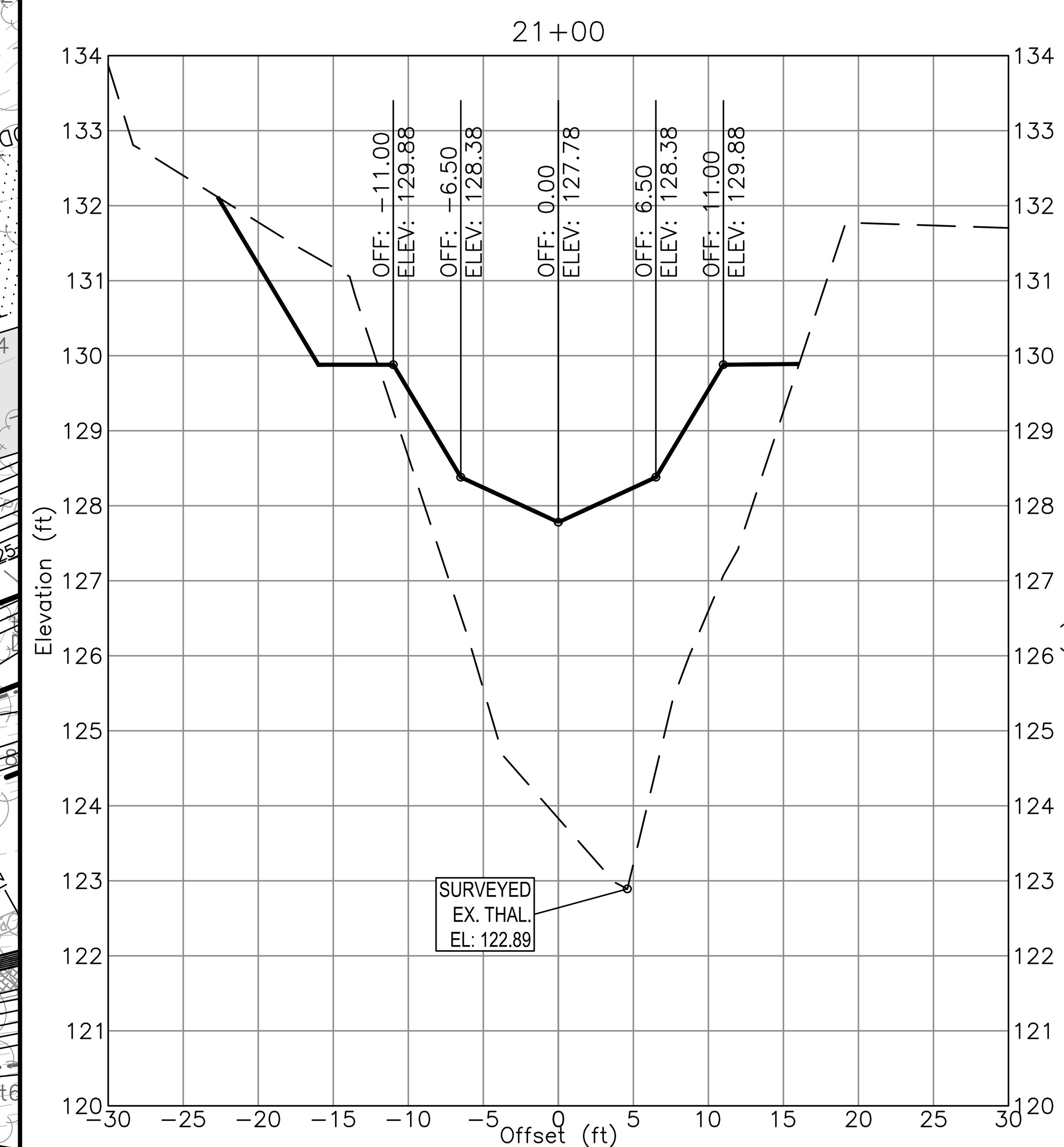
APPROVED BY: NAS DATE: 6/16/20

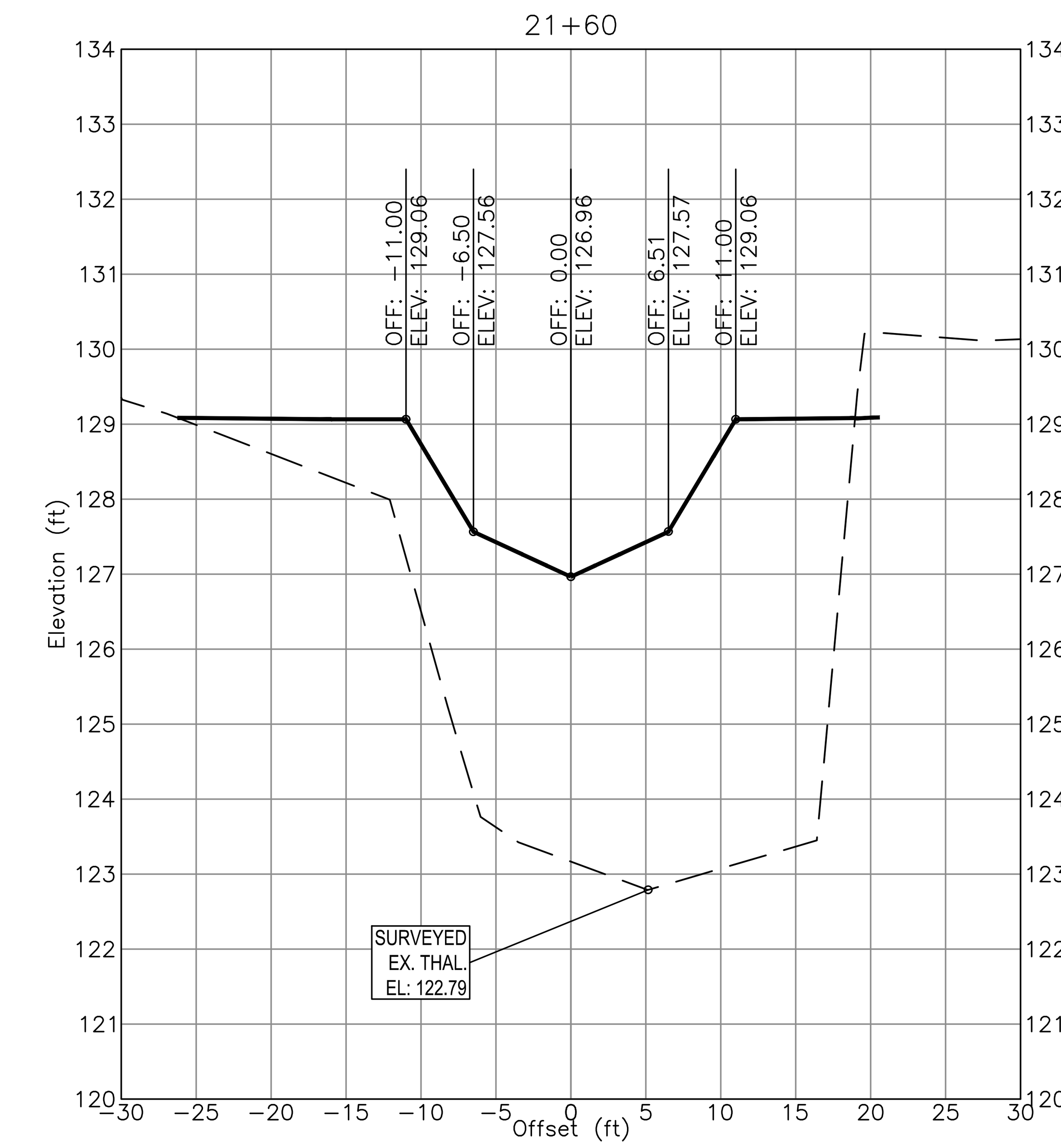
SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

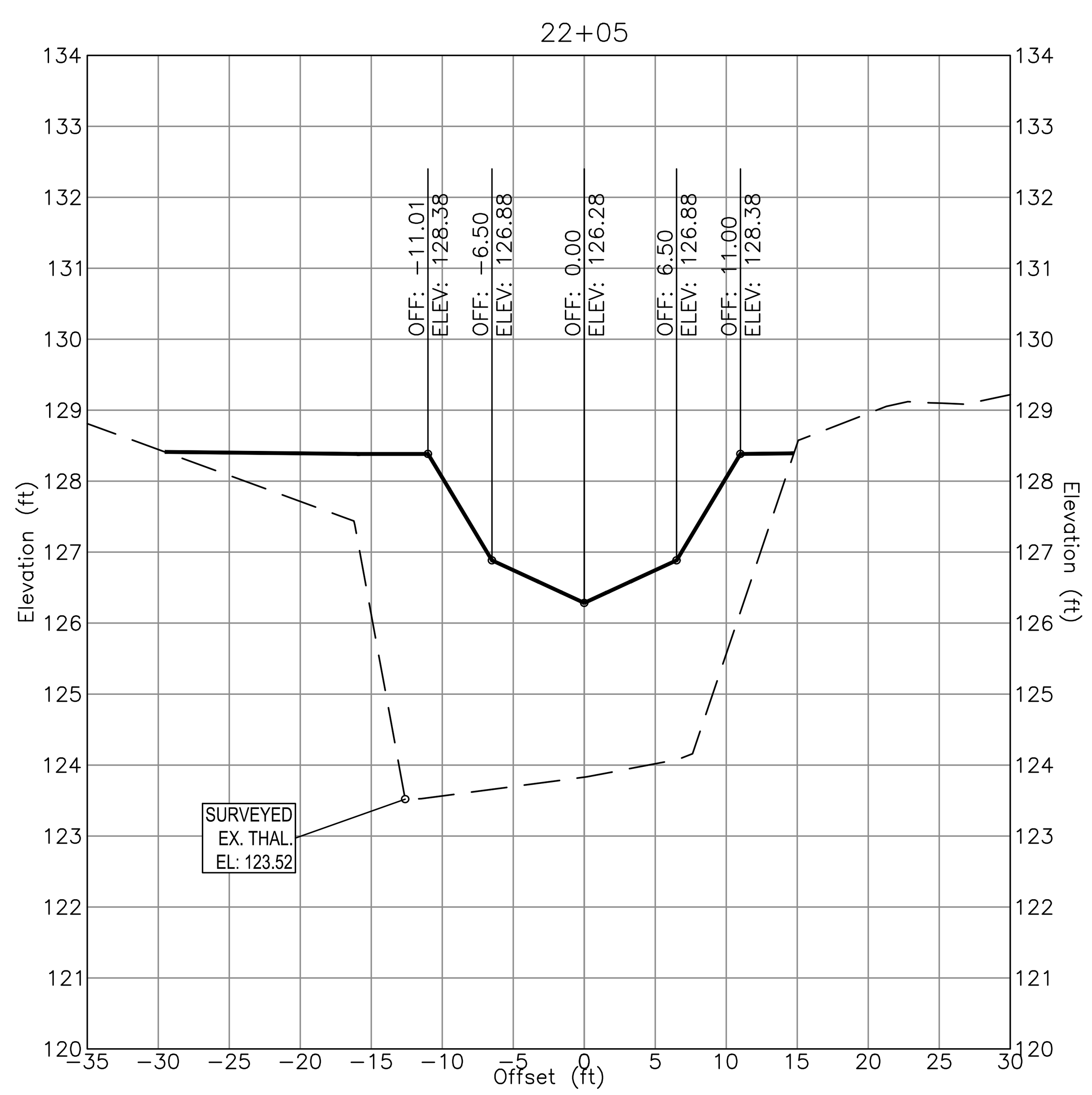
Wetland Studies and Solutions, Inc.
URS

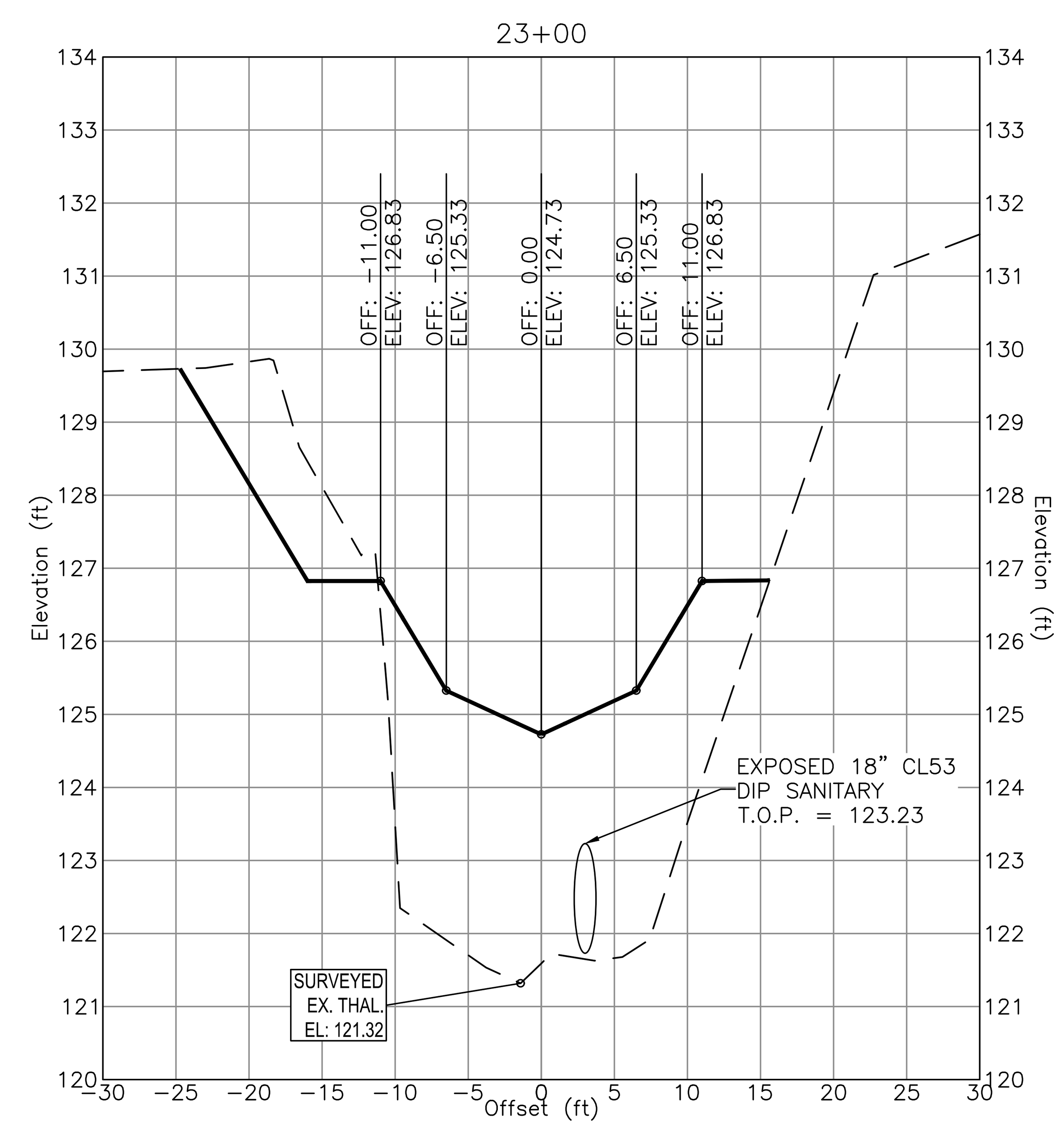
DRAWING
CS - 03
SCALE 1" = 10'
SHEET 21 OF 84

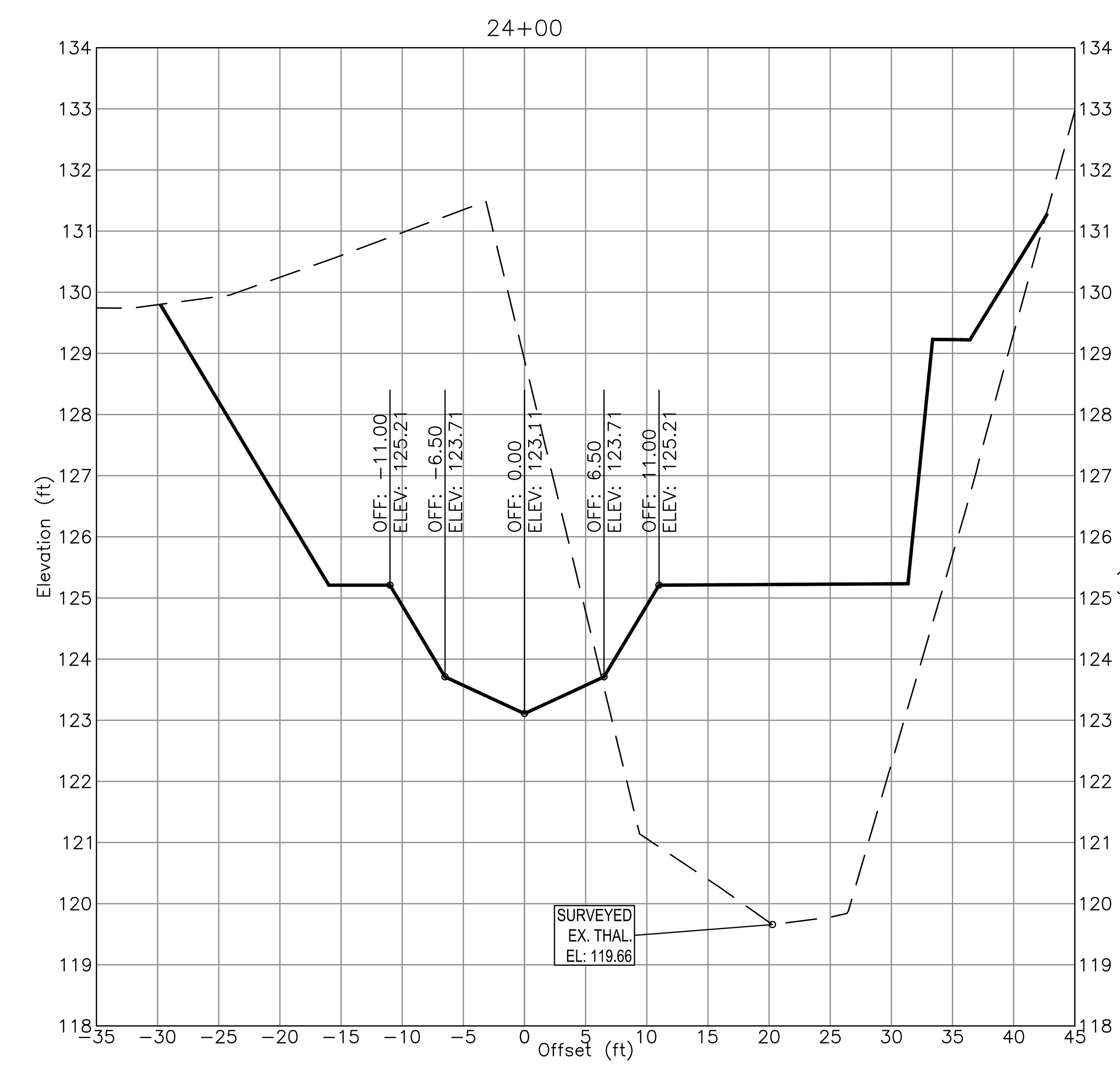












CROSS SECTION LEGEND

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———	PROPOSED STREAM CROSS SECTION

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DEPARTMENT OF PROJECT IMPLEMENTATION
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SEAL: COMMONWEALTH OF VIRGINIA, NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

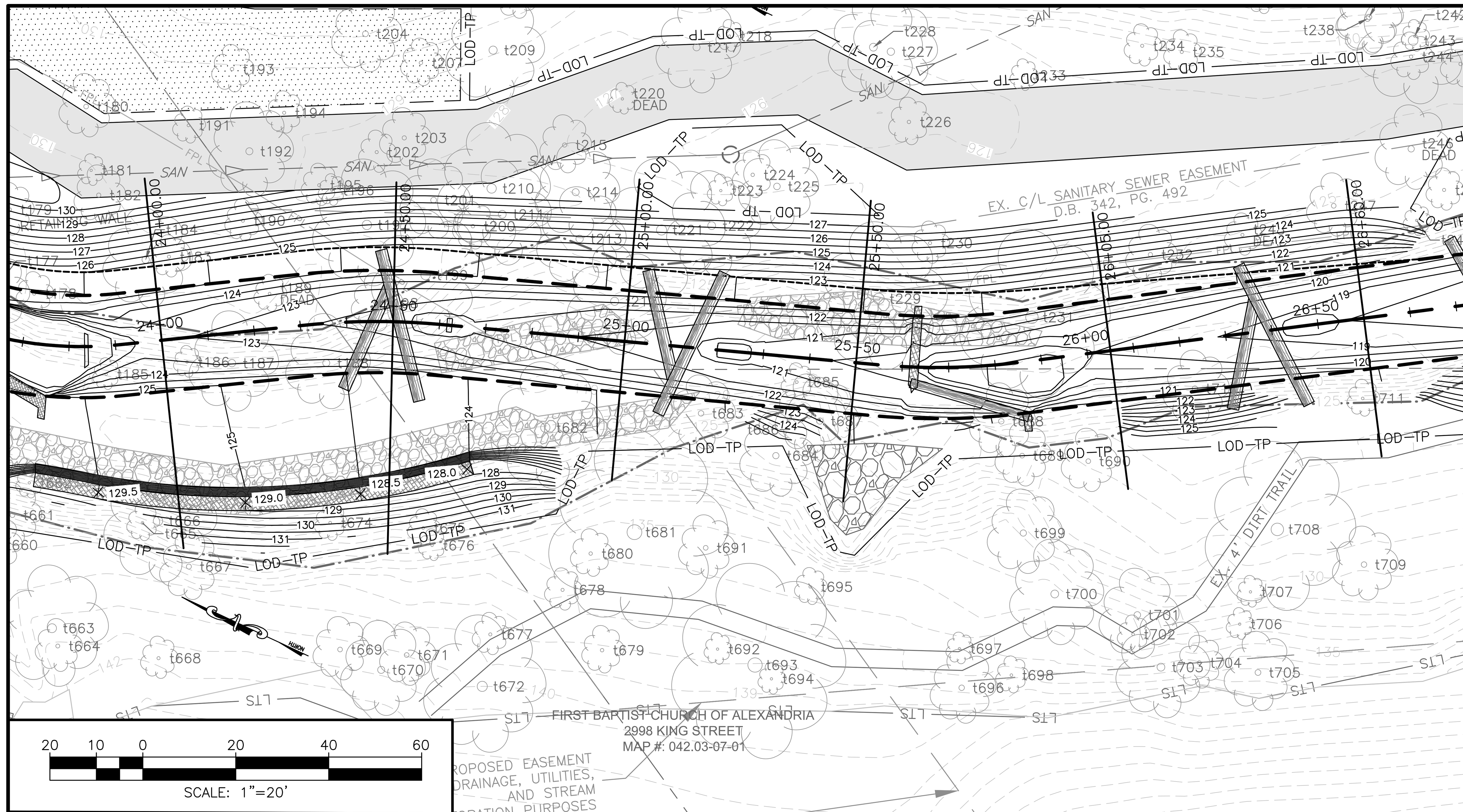
TAYLOR RUN STREAM RESTORATION

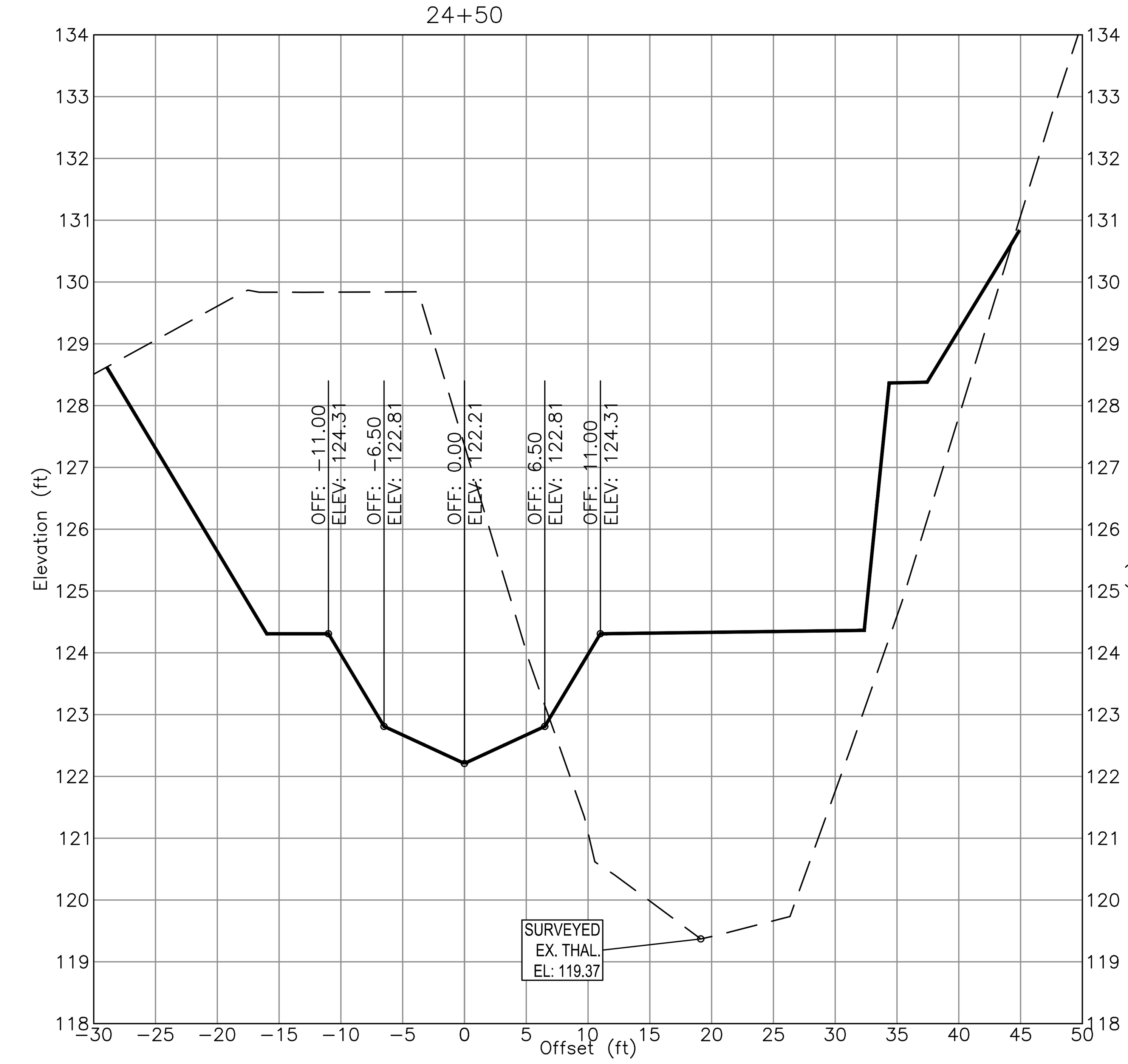
CROSS SECTIONS (CONT'D)

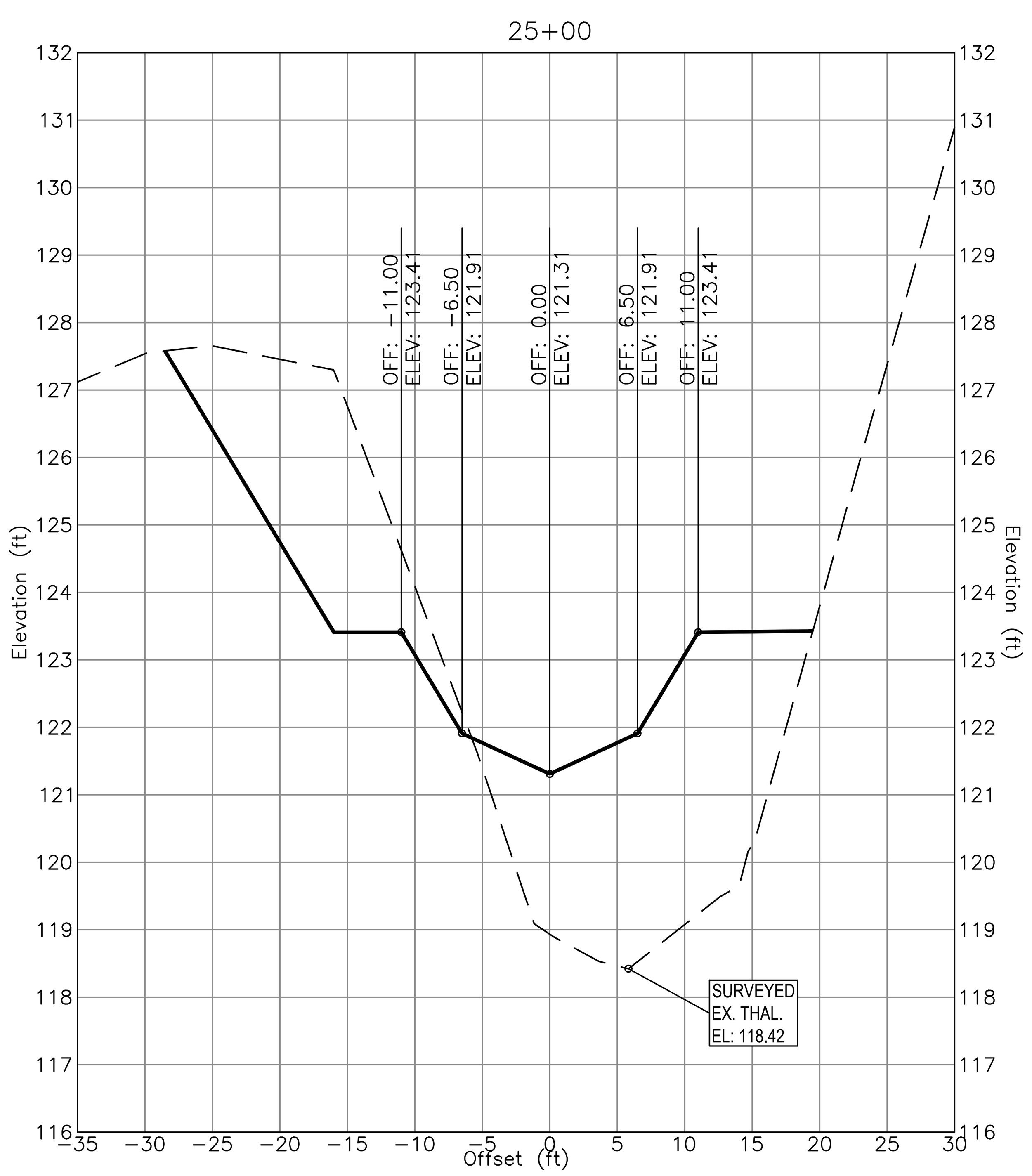
Wetland Studies and Solutions, Inc.

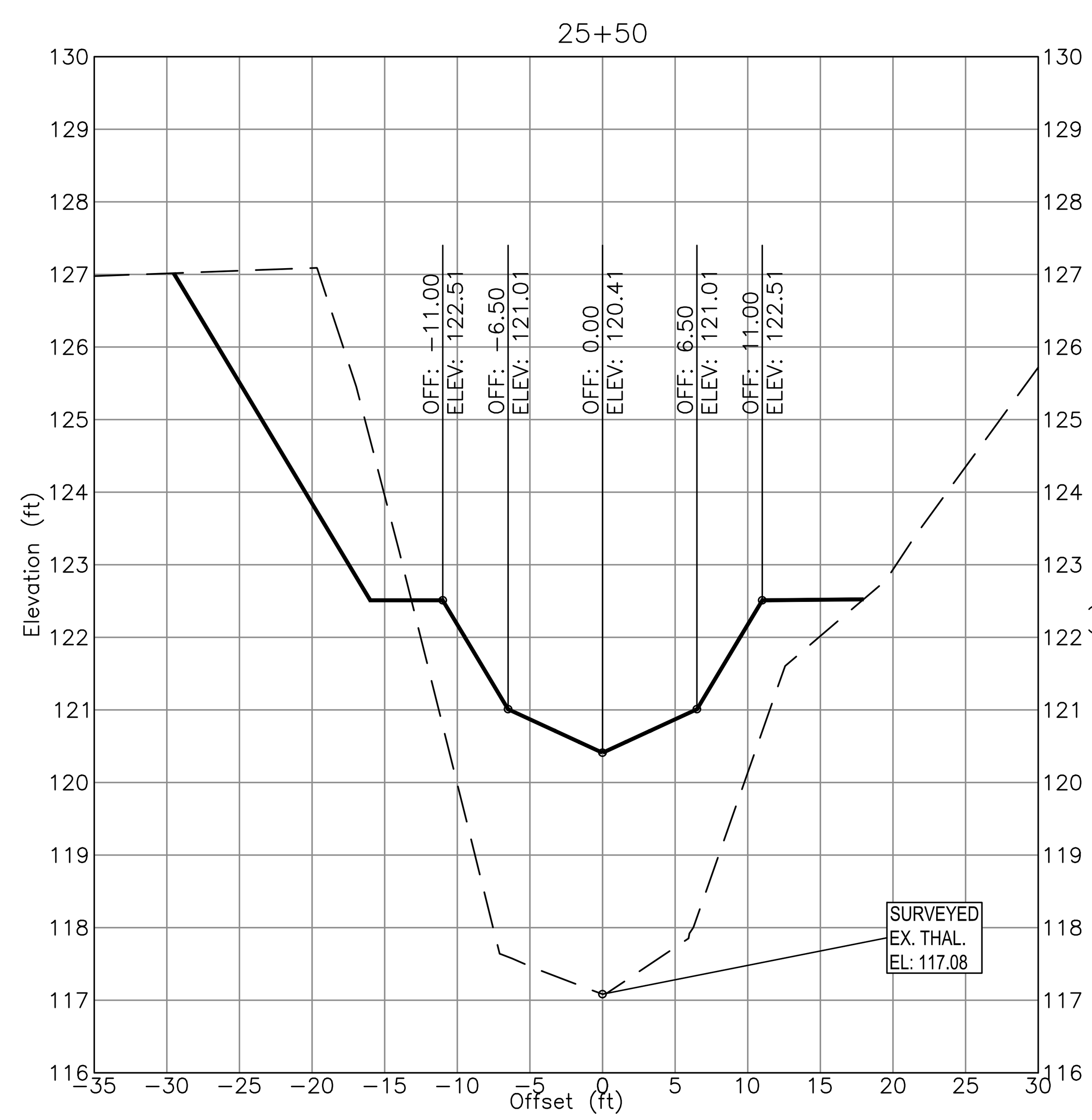
URS

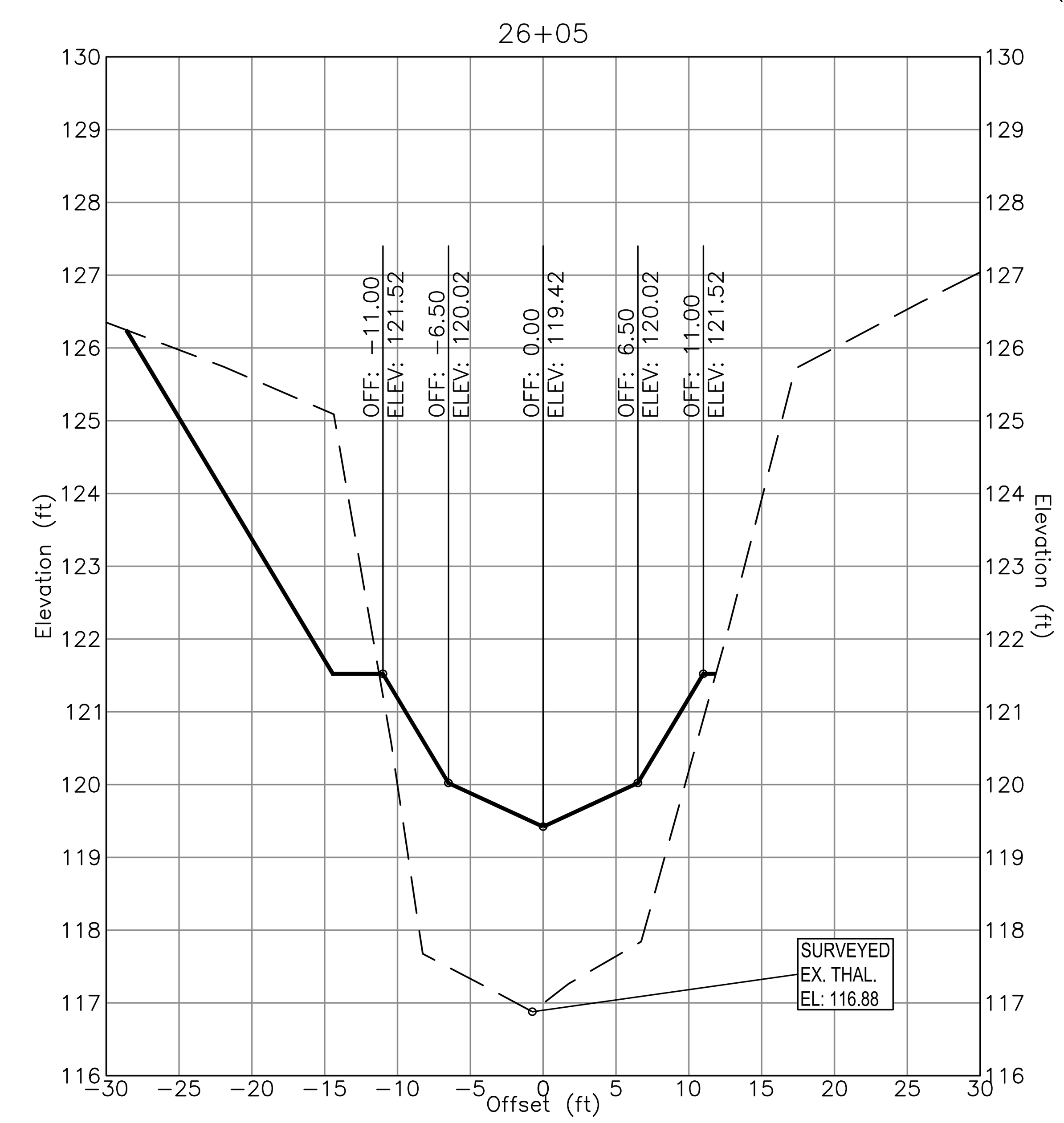
DRAWING CS - 04
SCALE 1" = 10'
SHEET 22 OF 84

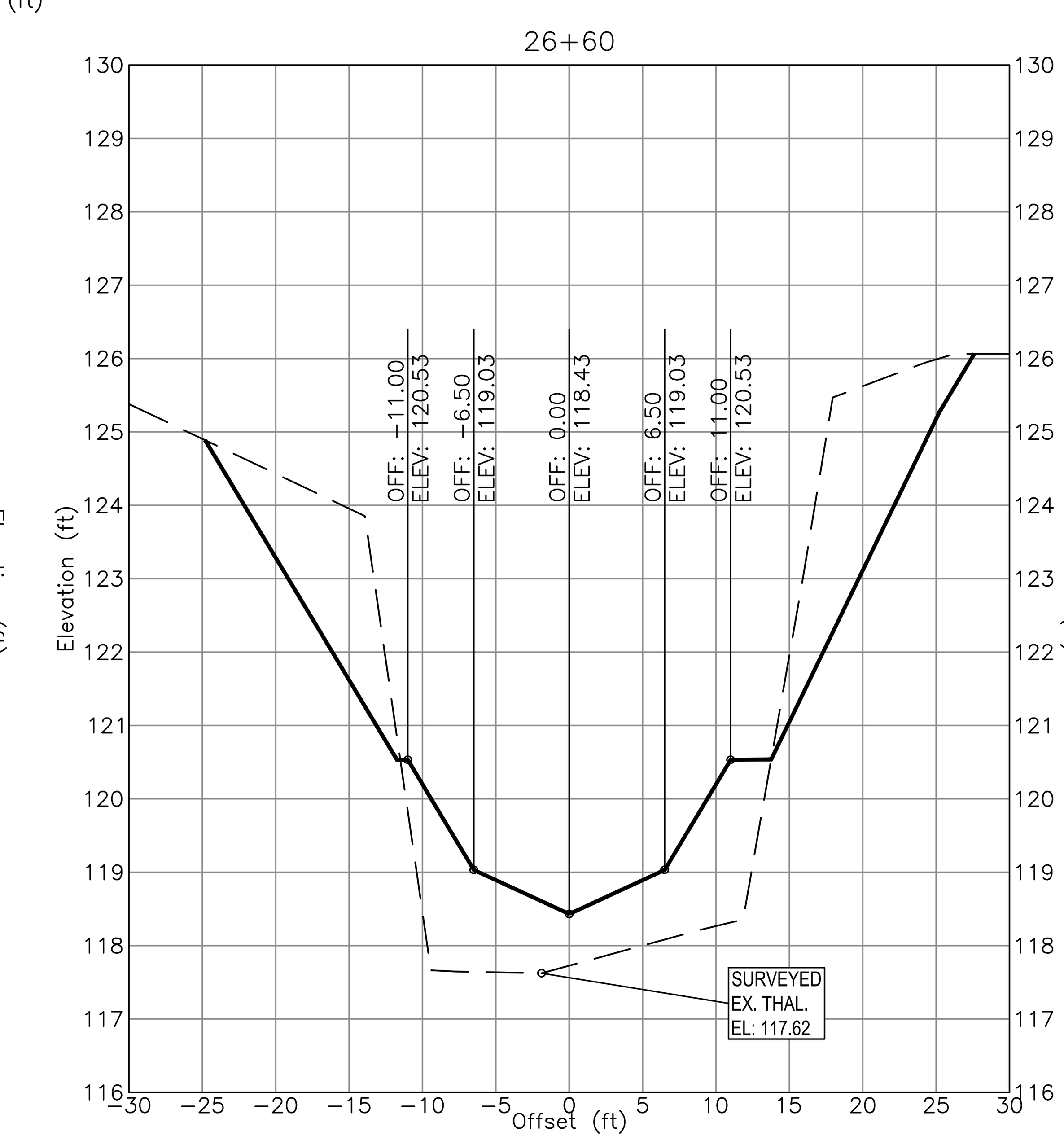












CROSS SECTION LEGEND

— — — — —	EXISTING STREAM CROSS SECTION
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ALEXANDRIA, VA 22314

REVISIONS

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SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

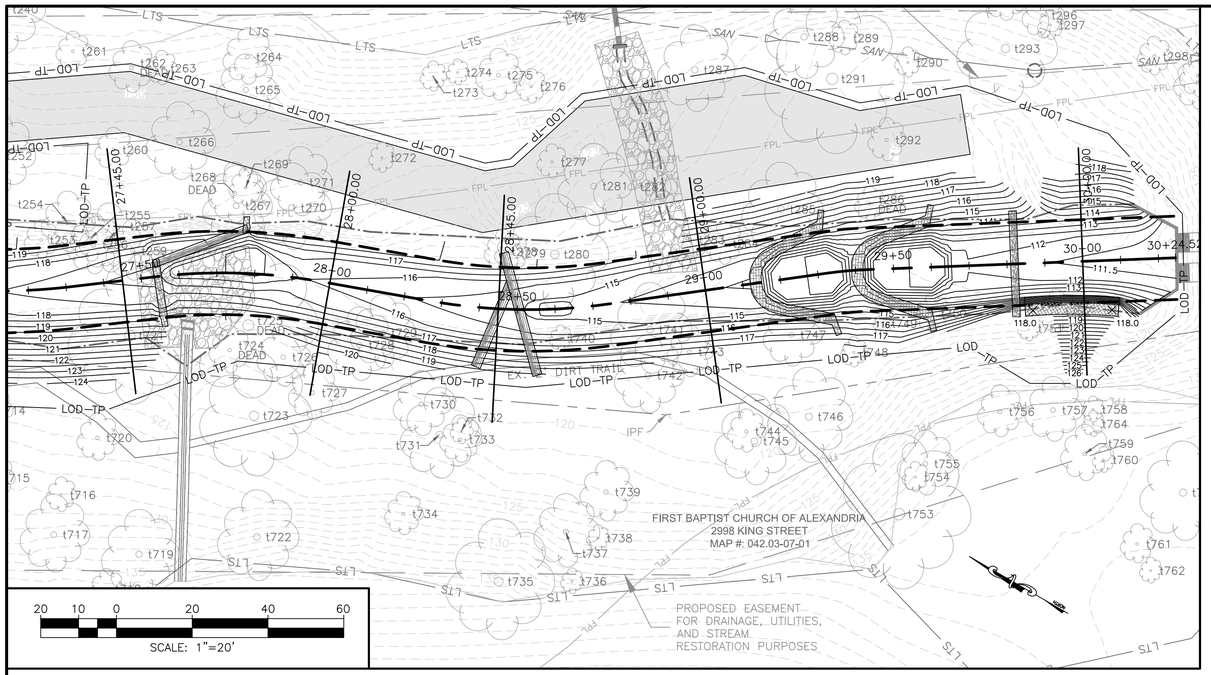
URS

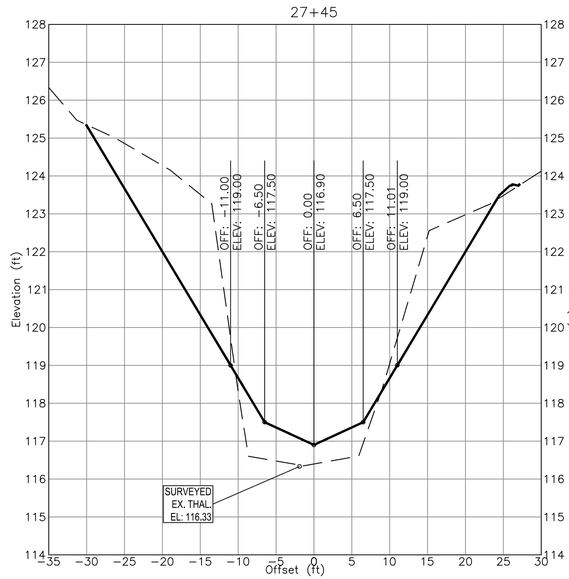
Wetland Studies and Solutions, Inc.

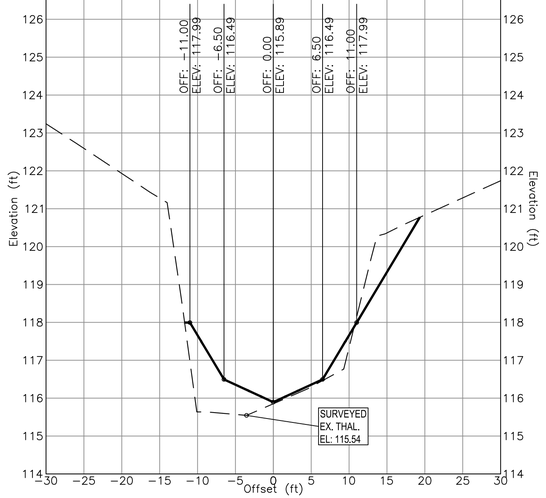
TAYLOR RUN STREAM RESTORATION

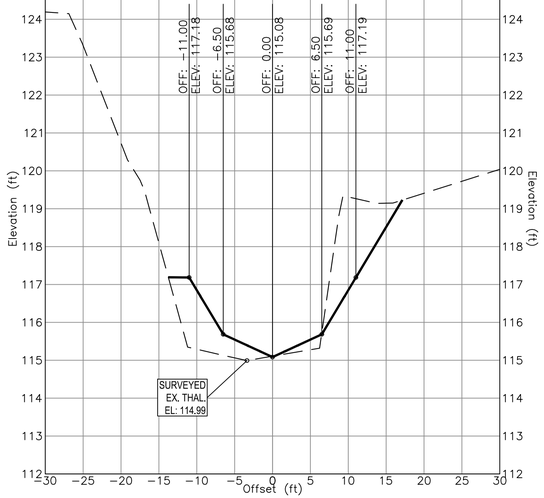
CROSS SECTIONS (CONT'D)

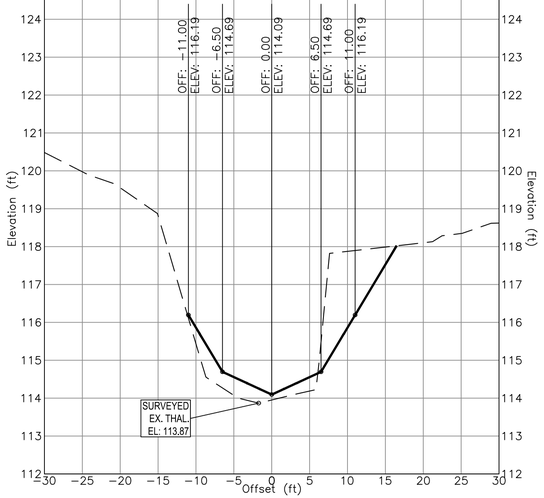
DRAWING CS - 05
SCALE 1" = 10'
SHEET 23 OF 84

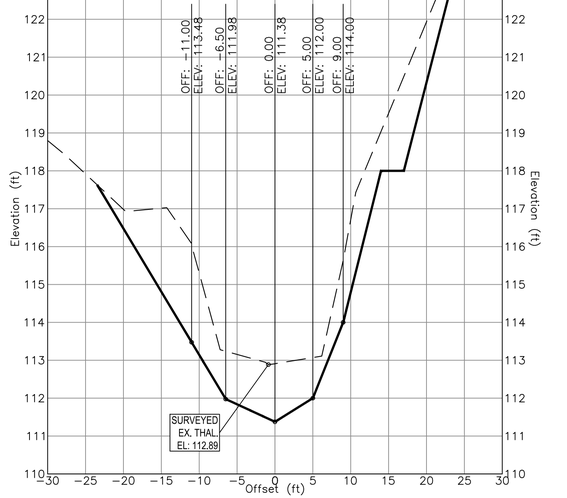












CROSS SECTION LEGEND

EXISTING STREAM CROSS SECTION

PROPOSED STREAM CROSS SECTION

CROSS SECTION NOTES

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20 10 0 20 40 60
SCALE: 1"=20'

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CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
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REVISIONS		
BY	DESCRIPTION	DATE

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STILLEY — LIC. NO. 047145 — PROFESSIONAL ENGINEER — 6/16/2020

URS — Wetland Studies and Solutions, Inc. (a URS company)
1300 WILSON BOULEVARD, SUITE 500, ARLINGTON, VA 22209 (703) 276-3000
12420 MILLENNIUM DRIVE, SUITE 100, LOS ANGELES, CA 90094 (310) 820-3000

TAYLOR RUN STREAM RESTORATION

CROSS SECTIONS (CONT'D)

DRAWING
CS – 06

SCALE 1" = 10'

SHEET 24 OF 84

C:\WSS-1\28000s\28000\28006.01\CAD\04-ENGR\08-10%Plans\CROSS SECTIONS.dwg, PlotTable, 6/15/2020 8:23 PM, by Chanda, Alex, Template Version 2, 9-4-2014

THIS SHEET TO BE USED ONLY FOR TREE CLEARING OPERATIONS. SEE TL-01 TO TL-04 FOR ADDITIONAL INFORMATION.

CONTRACTOR WILL IDENTIFY WHICH TREES HAVE POTENTIAL FOR DAMAGE DUE TO CONSTRUCTION ACTIVITIES. THESE TREES WILL BE PLANKED PER TRUNK ARMORING DETAIL ON SHEET ESC-01. THE CITY MAY REQUEST FOR ADDITIONAL TREES TO BE PLANKED AT THEIR DISCRETION.

TREE REMOVAL NOTES

1. TREES ARE TO BE TRIMMED ALONG THE ACCESS PATH AND STOCKPILE AREAS TO ALLOW FOR EQUIPMENT AND VEHICLE CLEARANCE WHERE NECESSARY.
2. ALL TREES TO BE REMOVED SHALL BE FLUSH CUT WITH STUMPS AND ROOTS LEFT IN PLACE FOR STABILIZATION AND HABITAT UNLESS THE AREA REQUIRES GRADING.
3. TO REDUCE SOIL COMPACTION FOLLOWING CONSTRUCTION, THE TEMPORARY ACCESS PATH AND ALL STOCKPILE AREAS SHALL BE SURFACED WITH 8-12" OF MULCH AND TIMBER DECK MATTING. AFTER CONSTRUCTION, DECK MATS WILL BE REMOVED AND STOCKPILE AREAS WILL BE ROTOTILLED AND SEEDED WITH RIPARIAN, POLLINATOR MEADOW, AND OR TURF GRASS SEED MIX (ADD PER THE APPROVED PLANTING PLAN).
4. ALL ASH TREES SHALL BE CHIPPED AND THEN DISPOSED OF OFF-SITE WITH ANY OTHER CHIPPED MATERIAL. IF SPECIFIED IN THE PLAN, ASH LOGS MAY BE USED IN HABITAT FEATURES.
5. IT IS ASSUMED THAT ALL TREES WITHIN THE LIMITS OF DISTURBANCE WILL NOT BE REMOVED. PRIOR TO CONSTRUCTION, THE LIMITS OF DISTURBANCE (LOD) SHALL BE WALKED BY WSSI, CONTRACTOR, AND CITY ARBORIST TO CONFIRM TREE REMOVAL. IN THE EVENT THAT THE CONTRACTOR BELIEVES A TREE WITHIN THE LOD COULD BE SAVED, THE CONTRACTOR SHALL CONTACT WETLAND STUDIES AND SOLUTIONS, INC. AND HAVE THE CITY DETERMINE IF THE TREE SHOULD BE SAVED OR REMOVED.

SOURCE DATA INFORMATION

H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

KING STREET

APPROXIMATE TREE LOCATION FROM AERIAL

EX. SAN. MH 000046
RIM EL.: 167.43'
INV. IN (NW): 154.31'
INV. OUT (TO 000040): 154.11'

EX. SAN. MH 000040
RIM EL.: 164.95'
INV. IN (NW): 150.22'
INV. IN (000046): 150.45'
INV. OUT (TO 000042): 150.20'

EX. 18" PVC SAN

EX. 18" RCP SAN

EX. 72" RCP SAN

EX. 10" RCP SAN

EX. 15" RCP

EX. 8" PVC

EX. GRATE INLET "B"
RIM EL: 159.96'
15" RCP INV. IN: 151.01'
72" RCP: 149.38'

EX. STM. MH "DD"
RIM EL: 164.67'
CL 72" RCP: 151.77'

EX. YARD INLET "EE"
RIM EL: 161.46'
8" PVC INV. IN: 157.90'
15" RCP INV. IN: 157.05'
15" RCP INV. OUT: 156.73'

EX. CURB INLET "AA"
RIM EL: 165.59'
CL 72" RCP 153.39'

EX. BRICK BUILDING (INDOOR POOL)

EX. PERMEABLE PAVEMENT

EX. DRIPLINE

10+30.00
147.52
10+24.00
147.60

MATCHLINE SEE SHEET 26

HARON

TREE SAVE LEGEND

- PARCEL BOUNDARIES
- EX. INFRASTRUCTURE
- EX. CONTOURS (1')
- SAN — EX. SANITARY SEWER
- FEMA — 2011 FEMA FLOODPLAIN
- FPL — 2015 ALEXANDRIA MAPPED FLOODPLAIN
- RPA — 2020 FIELD VERIFIED RPA
- LTS — LIMITS OF TREE SURVEY
- JURISDICTIONAL WETLANDS
- PERRENIAL STREAM (EST. FROM FIELD RUN TOPO)
- EPHEMERAL STREAM
- INTERMITTENT STREAM
- LOD—TP — LOD/TP FENCE
- 1494 — SURVEYED TREES (≥6" DIAMETER AT BREAST HEIGHT (DBH))
- TREE TO BE REMOVED
- EX. STORM DRAIN
- EX. SANITARY MANHOLE

KEY TO SHEETS
1" = 500'

SHT 25
SHT 26
SHT 27
SHT 28
SHT 29
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE | DESCRIPTION | BY

CITY PROJECT NO.: CP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEALED BY COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
LIC. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

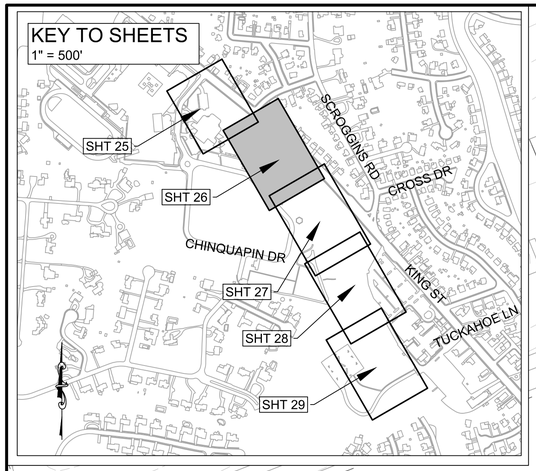
TREE SAVE PLAN

Wetland Studies and Solutions, Inc. (a URS company)
5300 WESTERN AVENUE, SUITE 100
CHEVY CHASE, MD 20815
(202) 479-3080

URS
14020 THUNDERBOLT PLACE, SUITE 100
CHANTILLY, VA 20151
(703) 830-3300

DRAWING
TS – 01
SCALE 1" = 20'
SHEET 25 OF 84

C:\WSS-L\28000s\28000\28006.01\CAD\04-ENGR\28-110TE Planset\TREE SAVE PLAN.dwg, Plotted: 6/15/2020, 8:26 PM, by Chandra Alex Tennyson, Version 2, 9-4-2014



KING STREET

MATCHLINE SEE SHEET 25

MATCHLINE SEE SHEET 27

EX. STM. MH "TT"
RIM EL: 150.13'
18" RCP INV.: NOT ACCESSIBLE
36" RCP INV. IN (NW):144.13'
36" RCP INV. OUT: 144.10'

EX. CONC. HW
(BROKEN)
INV. OUT 141.60'

EX. CURB INLET "HH"
RIM EL: 150.40'
18" RCP INV. OUT: 145.87'

EX. CURB INLET "II"
RIM EL: 151.32'

EX. SAN. MH 000041
RIM EL.: 145.10'
INV. IN (000042): 138.10'
INV. IN (NE): 139.20'
INV. OUT (TO 007530): 138.00'

EX. SAN. MH 000042
RIM EL.: 152.10'
INV. IN (000040): 144.26'
INV. OUT (TO 000041): 144.24'

EX. YARD INLET "JJ"
RIM EL:176.34'
INV: NOT ACCESSIBLE
(DEBRIS FILLED)

EX. STM. MH "KK"
RIM EL: 176.41'
INV. NOT ACCESSIBLE
(DEBRIS FILLED)

EX. 4' DIRT TRAIL

EX. 4' ASP. TRAIL

EX. 8' ASP. TRAIL

EX. WOOD BRIDGE (W/WOOD RAILS)

EX. BIRD HOUSE

EX. SIGN (PGRD RULES)

EX. TRASH CANS

EX. TRASH CAN

EX. DRIPLINE

EX. TENNIS COURTS

EX. ASPHALT PARKING LOT

EX. 10' CHAIN LINKED FENCE AROUND TENNIS COURTS

EX. 8" PVC

EX. 15" RCP

EX. 10" PVC

CONTRACTOR WILL IDENTIFY WHICH TREES HAVE POTENTIAL FOR DAMAGE DUE TO CONSTRUCTION ACTIVITIES. THESE TREES WILL BE PLANKED PER TRUNK ARMORING DETAIL ON SHEET ESC-01. THE CITY MAY REQUEST FOR ADDITIONAL TREES TO BE PLANKED AT THEIR DISCRETION.

TREE REMOVAL NOTES

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2. ALL TREES TO BE REMOVED SHALL BE FLUSH CUT WITH STUMPS AND ROOTS LEFT IN PLACE FOR STABILIZATION AND HABITAT UNLESS THE AREA REQUIRES GRADING.
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THIS SHEET TO BE USED ONLY FOR TREE CLEARING OPERATIONS. SEE TL-01 TO TL-04 FOR ADDITIONAL INFORMATION.

SEE FIRST TREE SAVE PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

NORTH

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — LIC. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

TREE SAVE PLAN (CONT'D)

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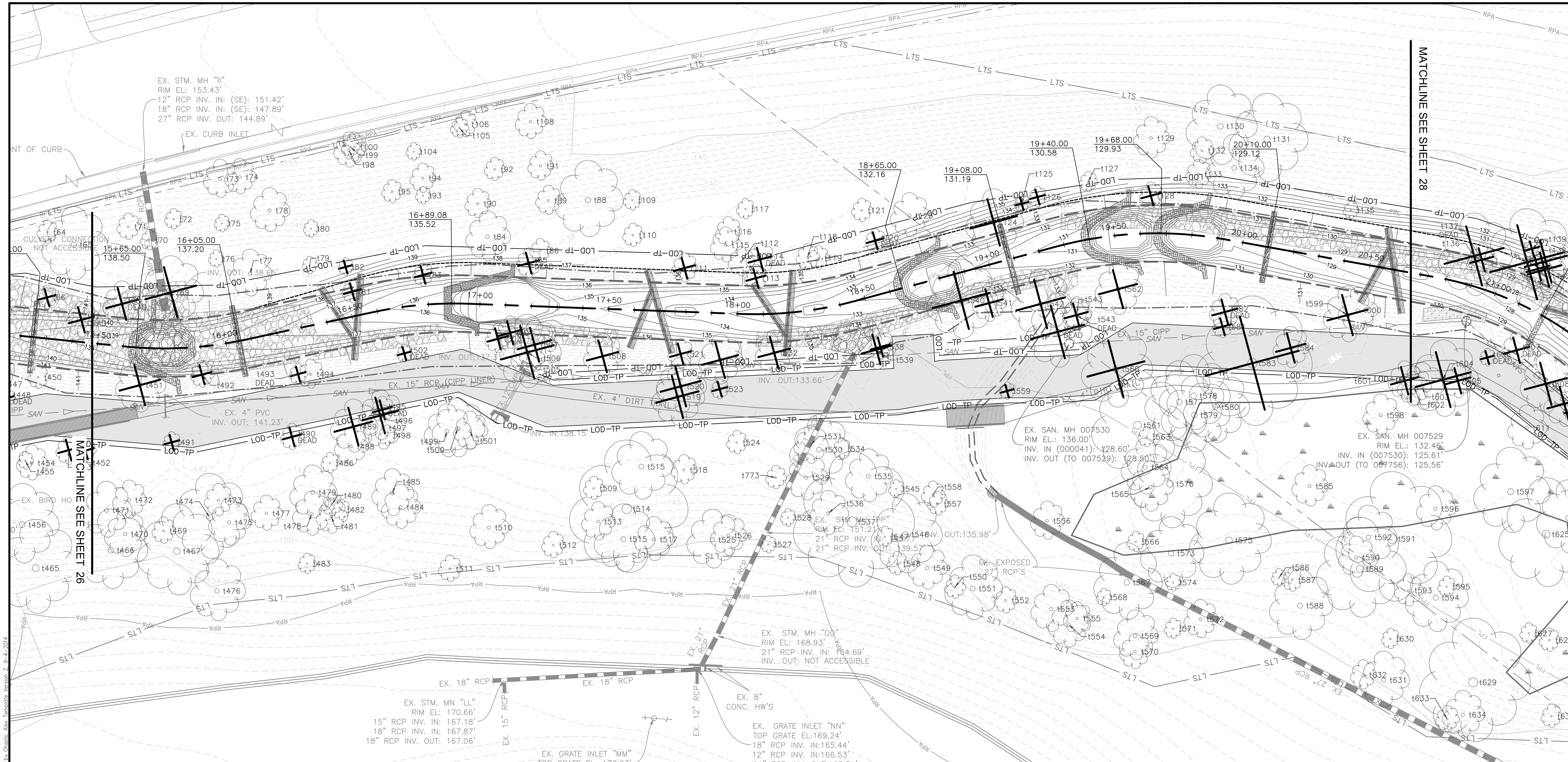
5300 WESTERN AVENUE, SUITE 100
CHEVY CHASE, MD 20815
(703) 679-3080

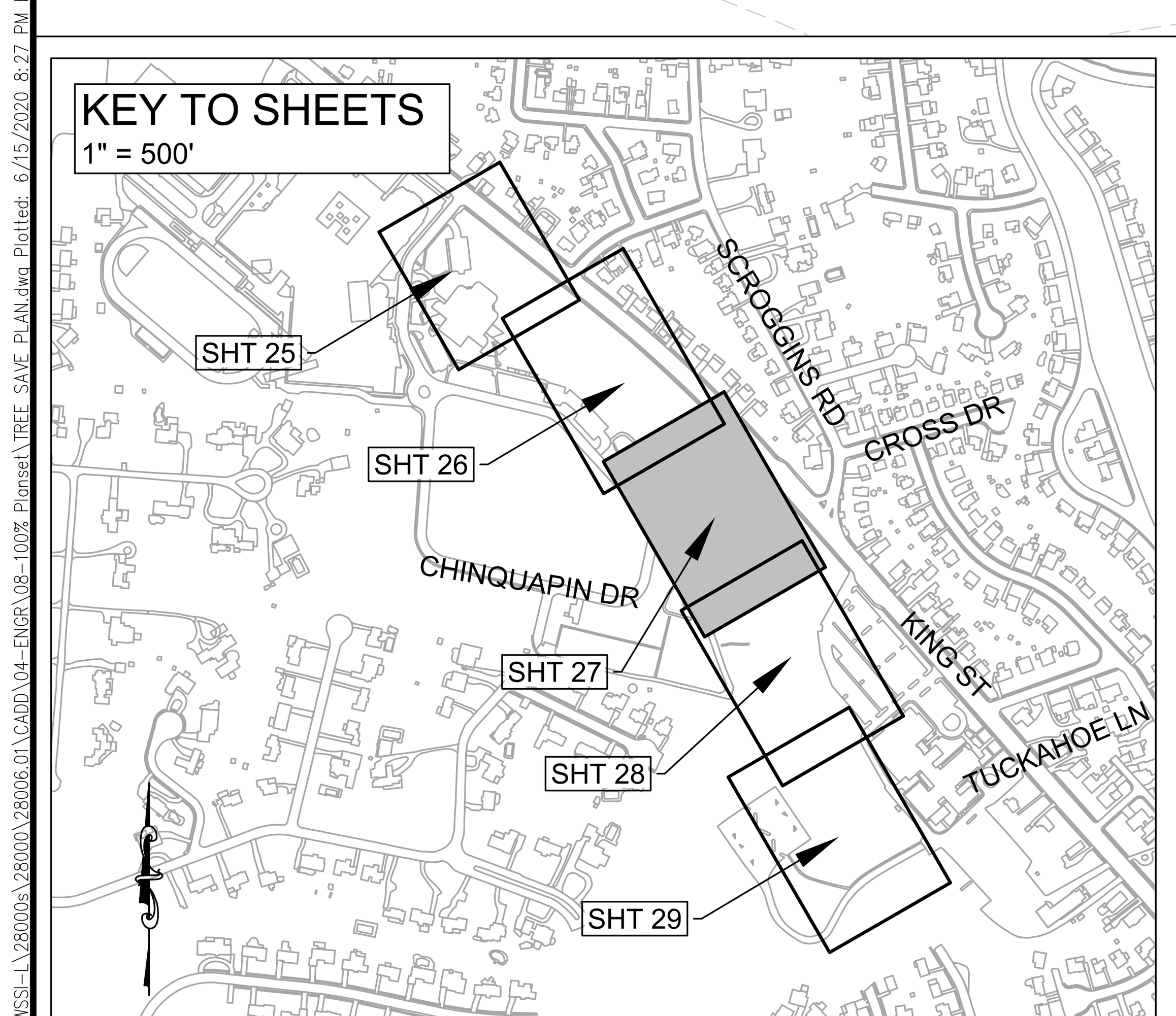
URS
14020 THUNDERBOLT PLACE, SUITE 100
CHANTILLY, VA 20151
(703) 830-3300

DRAWING
TS – 02
SCALE 1" = 20'
SHEET 26 OF 84

C:\WSS-L\28000s\28000\28006.01\CAD\04-ENGR\04-10TE Plans\1 TREE SAVE PLAN.dwg, Plotted: 6/15/2020 8:26 PM by Chaves, Alex, Template Version 2, 9-4-2014



MATCHLINE SEE SHEET 28
MATCHLINE SEE SHEET 26
EX. STM. MH "II"
RIM EL: 153.43'
12" RCP INV. IN: (SE): 151.42'
18" RCP INV. IN: (SE): 147.89'
27" RCP INV. OUT: 144.89'
EX. CURB INLET
EX. 15" RCP (CIPP LINER)
EX. 4' DIRT TRAIL
EX. 4" PVC
INV. OUT: 141.23'
EX. SAN. MH 007530
RIM EL.: 136.00'
INV. IN (000041): 128.60'
INV. OUT (TO 007529): 128.50'
EX. SAN. MH 007529
RIM EL.: 132.46'
INV. IN (007530): 125.61'
INV. OUT (TO 007756): 125.56'
EX. STM. MH "OO"
RIM EL: 168.93'
21" RCP INV. IN: 164.69'
INV. OUT: NOT ACCESSIBLE
EX. STM. MN "LL"
RIM EL: 170.66'
15" RCP INV. IN: 167.18'
18" RCP INV. IN: 167.87'
18" RCP INV. OUT: 167.06'
EX. 18" RCP
EX. 8" CONC. HW'S
EX. GRATE INLET "NN"
TOP GRATE EL:169.24'
18" RCP INV. IN:165.44'
12" RCP INV. IN:166.53'
21" RCP INV. OUT:165.31'
EX. GRATE INLET "MM"
TOP GRATE EL: 170.63'
CL INV. 166.21'
EX. PAVILION
EX. STORM MH
RIM EL: 146.87'
21" RCP INV. IN (S): 139.22'
24" RCP INV. IN: 142.83'
27" RCP INV. OUT: 139.14'
CHINQUAPIN DRIVE



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SEE FIRST TREE SAVE PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

TREE SAVE PLAN (CONT'D)

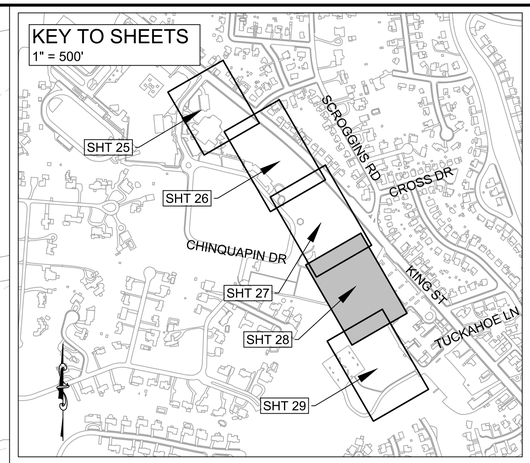
URS — Wetland Studies and Solutions, Inc.

DRAWING TS - 03
SCALE 1" = 20'

MATCHLINE SEE SHEET 27

MATCHLINE SEE SHEET 29

KEY TO SHEETS
1" = 500'



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TAYLOR RUN STREAM RESTORATION

TREE SAVE PLAN (CONT'D)

Wetland Studies and Solutions, Inc. — a URS company
5300 WESTONE CENTER DR., SUITE 100, FAIRFAX, VA 22030 (703) 934-3000

URS
14428 METROPOLITAN CENTER DR., SUITE 100, CHANTILLY, VA 20151 (703) 830-3000

DRAWING
TS – 04

SCALE 1" = 20'

SHEET 28 OF 84

EX. SAN. MH 007529
RIM EL.: 132.46'
INV. IN (007530): 125.61'
INV. OUT (TO 007756): 125.56'

EX. SAN. MH 007756
RIM EL.: 130.56'
INV. IN (007529): 122.46'
INV. OUT (TO 1): 122.41'

EX. SAN. MH 1
RIM EL.: 128.15'
INV. CL MH: 121.35'
OFF LINE

EX. SAN. MH 007531
RIM EL.: 128.55'
INV. IN (FROM 1): 117.51'
INV. OUT (TO 006571): 117.50'

EX. STORM MH
RIM EL: 146.87'
21" RCP INV. IN (S): 139.22'
24" RCP INV. IN: 142.83'
27" RCP INV. OUT: 139.14'

STM. MH "RR"
EL: 164.91'
RCP INV. IN: 160.76'
RCP INV. IN: 160.64'
STR.: 153.96'

INV. OUT:151.89'

EX. CURB INLET
TOP EL. 157.09'

EX. 4" DIP
APPROX. LOCATION

EX. PUNCHEON (BRIDGE)

EX. 6"x6" TIMBER STAIRS

EX. 6"x6" TIMBERS (TYP.)

EX. 4' DIRT TRAIL

EX. 18" RCP

EX. 18" CMP

EX. 21" RCP

EX. 24" RCP

EX. 27" RCP

VINYL RETAINING WALL

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

Ex. 50' CITY OF ALEXANDRIA INGRESS/EGRESS EASEMENT D.B. 342, PG. 492

EX. C/L SANITARY SEWER EASEMENT D.B. 342, PG. 492

21+20.00
127.48

21+50

21+80.00

22+00

22+25.00
126.01

22+50

22+80.00
124.96

23+00

23+31.00
124.36

23+50.00
123.98

24+00

24+50

25+00

25+50

25+62.16
120.19

26+00

26+50

LOD–TP

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SEE FIRST TREE SAVE PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

C:\WSS-L1\28000\128000\28006.01\CAD\104-ENGR\08-10\TE Phase1\TREE_SAVE_PLAN.dwg, RichTech: 6/15/2020, 8:27 PM, by Chonda, Alex, Template Version 2, 9-4-2014

MATCHLINE SEE SHEET 28

EX. SAN. MH 006571
RIM EL.: 148.69'
INV. IN (007531): 117.24'
INV. OUT (TO 007532): 117.19'

EX. CURB INLET "SS"
RIM EL: 145.40'
24" RCP INV. IN: 140.17'
8" PVC INV. IN: 140.25'
15" RCP INV. OUT: 137.12'

EX. C/L SANITARY SEWER EASEMENT D.B. 342, PG. 492

INV. OUT: 122.99'

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

EX. SAN. MH 007532
RIM EL.: 121.67'
INV. IN (006571): 108.77'
INV. OUT (TO 006570): 108.47'

Ex. 10' STORM EASEMENT D.B. 342, PG. 492

APPROXIMATE TERMINUS

EX. 15" RCP

EX. SAN. MH 006570
RIM EL.: 132.89'
INV. IN (NE): 126.99'
INV. CL MH: 105.64'

INV. OUT: 109.17'

EX. 60" RCP

INV. OUT: 109.41'

SANITARY SEWER EASEMENT D.B. 342, PG. 492

EX. 4' DIRT TRAIL

EX. DIRT TRAILS

WATER DIVERSIONS BY SOND

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

27+54.00
116.74

29+15.00
113.85

29+42.00
112.85

29+82.00
111.65

30+00

30+24.52

29+50

27+00

28+00

28+50

26+00

SOURCE DATA INFORMATION

H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

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HUNTER

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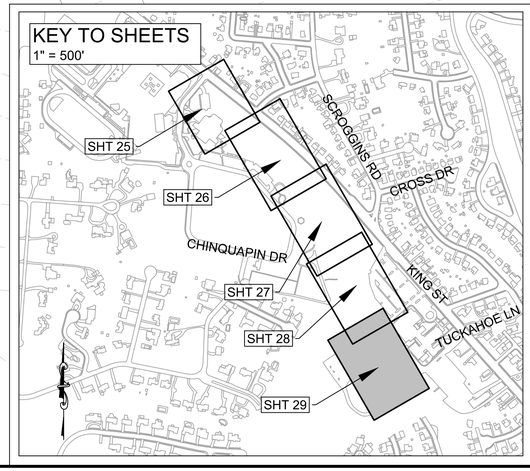
1" = 500'



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SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 PROFESSIONAL ENGINEER 6/16/2020

TAYLOR RUN STREAM RESTORATION

TREE SAVE PLAN (CONT'D)

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5300 WESTBARD AVENUE, SUITE 100
BETHESDA, MD 20816
(703) 679-5600

URS
12420 MILLENNIUM CENTER DR., SUITE 100
RESTON, VA 20190
(301) 820-3000

DRAWING
TS – 05

SCALE 1" = 20'

SHEET 29 OF 84

C:\WSS-1\2\28000\28006\01\CAD\04-ENGR\08-10ft Plotset\TREE SAVE PLAN.dwg, PlotText, 6/15/2020 8:27 PM, by Chaplo, Alex, Template Version 2, 9-4-2014

TREE #	NORTHING	EASTING	STEMS	DIAMETER (INCHES)	COMMON NAME	CRITICAL ROOT ZONE (FEET)	HEALTH RATING (1-4)	STATUS		
								DEAD	TBR	TRUNK ARMOR
t1	6985941.503	11886740.780	1	24	black locust	24	2			
t2	6985937.240	11886769.853	1	25	black locust	25	4		X	
t3	6985941.985	11886769.296	1	22	white mulberry	22	4			
t4	6985955.834	11886775.186	1	22	black locust	22	4	X		
t5	6985953.550	11886773.618	1	22	black locust	22	4	X		
t6	6985960.744	11886772.012	1	6	black locust	6	4			
t7	6985968.782	11886777.698	1	6	black locust	6	2			
t8	6985960.844	11886779.042	1	14	unknown tree	14	4	X	X	
t9	6985956.543	11886781.757	1	7	American elm	7	4			
t10	6985955.519	11886796.681	1	8	white mulberry	8	4			
t11	6985956.737	11886803.956	1	12	white mulberry	12	4			
t12	6985953.982	11886812.261	1	13	black locust	13	4			
t13	6985957.633	11886817.419	1	10	white mulberry	10	4			
t14	6985950.949	11886829.649	1	17	tree of heaven	17	4			
t15	6985943.808	11886836.682	1	8	green ash	8	4			
t16	6985942.061	11886828.915	1	13	tree of heaven	13	4	X	X	
t17	6985941.279	11886829.298	1	15	tree of heaven	15	4		X	
t18	6985942.392	11886826.382	1	15	tree of heaven	15	4	X	X	
t19	6985951.164	11886802.784	1	7	white mulberry	7	4		X	
t20	6985943.531	11886818.501	1	7	boxelder	7	4		X	
t21	6985938.323	11886820.478	1	7	boxelder	7	4		X	
t22	6985937.686	11886842.043	1	9	black cherry	9	4			
t23	6985939.822	11886844.489	1	10	littleleaf linden	10	3			
t24	6985937.264	11886846.149	1	14	black locust	14	3			
t25	6985939.204	11886860.883	1	16	tree of heaven	16	4			
t26	6985935.152	11886872.128	1	16	black locust	16	4			
t27	6985926.026	11886862.643	1	12	red maple	12	3		X	
t28	6985926.652	11886864.579	1	6	red maple	6	3			
t29	6985908.814	11886882.713	1	8	mimosa	8	4		X	
t30	6985904.918	11886882.978	1	12	American elm	12	4		X	
t31	6985906.962	11886892.737	1	8	boxelder	8	4		X	
t32	6985917.300	11886886.433	1	12	black locust	12	4		X	
t33	6985921.355	11886885.963	1	8	unknown tree	8	4	X		
t34	6985928.007	11886893.047	1	11	white mulberry	11	4			
t35	6985923.889	11886896.101	1	26	white mulberry	26	4			
t36	6985901.677	11886930.262	1	15	black locust	15	3			
t37	6985897.436	11886932.291	1	13	black locust	13	4			
t38	6985895.047	11886912.311	1	18	black locust	18	4			
t39	6985888.937	11886922.978	1	7	sweet cherry	7	3			
t40	6985882.940	11886924.252	1	12	black locust	12	4	X	X	
t41	6985881.911	11886925.688	1	19	black locust	19	3			
t42	6985885.479	11886944.386	1	16	black locust	16	3			
t43	6985869.531	11886926.303	1	9	American elm	9	4		X	
t44	6985869.254	11886940.436	1	6	American holly	6	3			
t45	6985867.830	11886941.165	1	6	American holly	6	3			
t46	6985859.844	11886951.474	1	20	black locust	20	4	X	X	
t47	6985855.040	11886953.789	1	23	black locust	23	4	X	X	
t48	6985857.828	11886955.537	1	10	red maple	10	4			
t49	6985854.048	11886961.373	1	22	black cherry	22	4			
t50	6985841.173	11886965.208	1	13	silver maple	13	3		X	
t51	6985832.556	11886979.666	1	12	black locust	12	4	X	X	
t52	6985823.785	11886993.565	1	10	black cherry	10	4		X	
t53	6985834.037	11886993.988	1	8	white mulberry	8	4			
t54	6985796.710	11887047.287	1	6	unknown tree	6	4	X	X	
t55	6985795.645	11887046.977	1	6	unknown tree	6	4	X	X	
t56	6985792.123	11887049.583	1	10	black locust	10	4			
t57	6985790.062	11887051.936	1	12	black locust	12	4			
t58	6985791.684	11887044.598	2	15,14	black cherry	22	4		X	
t60	6985790.045	11887037.359	1	10	American elm	10	4		X	
t61	6985752.399	11887087.331	1	11	black walnut	11	4		X	
t62	6985718.390	11887136.988	1	12	chestnut oak	12	3			
t63	6985705.441	11887141.347	1	13	black locust	13	4	X	X	
t64	6985642.098	11887216.980	1	8	tree of heaven	8	4			
t65	6985630.788	11887217.900	1	25	black locust	25	4			
t66	6985629.591	11887194.960	1	8	tuliptree	8	4		X	
t67	6985613.640	11887194.122	1	12	tuliptree	12	4	X	X	
t68	6985603.099	11887207.366	1	15	black locust	15	4	X	X	
t69	6985588.936	11887220.675	1	24	silver maple	24	4		X	
t70	6985606.316	11887234.067	1	7	black locust	7	3			
t71	6985615.927	11887234.518	1	9	black locust	9	4			
t72	6985602.203	11887245.795	1	7	black walnut	7	3			
t73	6985594.361	11887268.352	1	13	tree of heaven	13	4			
t74	6985588.147	11887272.875	1	12	tree of heaven	12	4			
t75	6985585.111	11887253.771	1	6	black cherry	6	2			
t76	6985580.170	11887240.763	1	6	black walnut	6	3			
t77	6985565.939	11887242.437	1	16	black locust	16	4			
t78	6985571.629	11887267.364	1	15	black walnut	15	2			
t79	6985547.508	11887256.721	1	6	red maple	6	3			
t80	6985554.185	11887269.272	1	6	black cherry	6	4			
t81	6985528.086	11887256.122	1	8	sweet cherry	8	4		X	
t82	6985535.132	11887263.148	1	6	red maple	6	4		X	
t83	6985507.582	11887275.466	1	8	black locust	8	4		X	
t84	6985493.324	11887300.813	1	17	black walnut	17	2			
t85	6985474.364	11887299.947	1	10	black locust	10	4	X	X	
t86	6985472.924	11887306.363	1	8	black cherry	8	4			
t88	6985466.736	11887332.639	2	26,17	eastern cottonwood	33	3			
t89	6985479.911	11887324.829	1	10	black walnut	10	2			
t90	6985503.036	11887310.041	1	10	common persimmon	10	3			
t91	6985489.230	11887334.868	1	10	black locust	10	4	X		
t92	6985503.994	11887324.867	1	8	black cherry	8	4			
t93	6985522.960	11887302.153	1	6	tree of heaven	6	4			
t94	6985526.450	11887307.922	1	10	tree of heaven	10	4	X		
t95	6985534.160	11887297.487	1	8	tree of heaven	8	4	X		
t98	6985556.621	11887303.046	4	12,11,9,6	tree of heaven	28	4			
t99	6985556.729	11887304.380	1	7	tree of heaven	7	4			
t100	6985555.456	11887305.093	3	10,10,6	tree of heaven	20	4			
t104	6985534.595	11887315.062	1	6	tree of heaven	6	4			
t105	6985523.896	11887331.945	1	7	tree of heaven	7	4			
t106	6985522.577	11887334.334	1	9	tree of heaven	9	4			
t108	6985501.233	11887347.835	2	12,10	Norway maple	17	4			
t109	6985451.785	11887341.200	1	7	black cherry	7	3			
t110	6985444.774	11887329.526	1	8	black cherry	8	3			
t111	6985421.088	11887328.489	1	10	red maple	10	3		X	
t112	6985403.297	11887341.502	1	10	black cherry	10	3			
t113	6985395.117	11887338.969	1	9	red maple	9	3		X	
t114	6985397.340	11887346.060	1	11	unknown tree	11	4	X	X	
t115	6985411.675	11887344.194	1	12	black locust	12	4			
t116	6985413.464	11887349.179	1	10	black cherry	10	4			
t117	6985412.057	11887360.147	1	7	green ash	7	4			
t118	6985381.779	11887355.997	1	9	red maple	9	3			
t119	6985378.043	11887357.894	1	8	black cherry	8	3			
t120	6985362.328	11887374.683	1	8	unknown tree	8	4	X	X	
t121	6985372.699	11887382.297	1	8	red maple	8	3			
t123	6985355.653	11887389.768	2	15,14	black cherry	22	3			
t124	6985326.082	11887403.841	1	22	white oak	22	3		X	
t125	6985320.238	11887415.573	1	6	white oak	6	2		X	
t126	6985316.278	11887420.845	1	7	red maple	7	4		X	
t127	6985302.161	11887435.746	1	7	American elm	7	3			
t128	6985278.444	11887443.279	1	9	tuliptree	9	2		X	
t129	6985289.494	11887462.694	1	14	black locust	14	4			
t130	6985268.504	11887480.118	1	27	unknown tree	27	4	X		
t131	6985250.299	11887484.826	1	30	chestnut oak	30	4			
t132	6985270.024	11887468.353	1	9	chestnut oak	9	4			
t133	6985266.600	11887459.658	1	10	black locust	10	4			
t134	6985255.815	11887468.767	1	22	chestnut oak	22	3			
t135	6985208.382	11887477.164	1	6	common hackberry	6	2			
t136	6985158.151	11887485.744	1	28	tuliptree	28	3		X	
t137	6985154.815	11887485.929	1	11	unknown tree	11	4	X	X	
t138	6985139.121	11887493.922	1	35	tuliptree	35	3		X	
t139	6985140.135	11887499.329	1	7	American elm	7	3		X	
t141	6985133.007	11887497.819	2	20,16	tuliptree	27	3		X	
t142	6985134.183	11887493.773	1	11	green ash	11	3		X	
t143	6985131.795	11887494.773	1	16	green ash	16	3		X	
t144	6985077.340	11887482.622	1	7	red maple	7	3		X	
t145	6985067.590	11887481.502	1	9	red maple	9	3		X	
t146	6985082.453	11887512.387	1	7	American elm	7	4			
t147	6985066.138	11887503.164	1	8	American elm	8	4			
t148	6985056.307	11887507.020	1	19	tuliptree	19	2			
t149	6985064.508	11887522.084	1	6	American elm	6	3			
t150	6985055.654	11887518.943	1	14	tuliptree	14	3			
t151	6985051.087	11887516.879	1	9	tuliptree	9	3			
t152	6985044.890	11887503.609	1	17	tuliptree	17	2			
t153	6985031.588	11887517.215	1	11	tuliptree	11	3			
t154	6984997.603	11887476.665	1	18	red maple	18	3		X	
t155	6984992.461	11887478.672	1	42	red maple	42	2		X	
t156	6984987.366	11887503.291	1	8	honeylocust	8	4			
t157	6984995.577	11887512.050	1	7	tuliptree	7	2			
t158	6984987.932	11887514.158	1	28	eastern cottonwood	28	3			
t159	6984988.308	11887528.735	1	6	American elm	6	3			
t160	6984979.953	11887531.777	1	10	American elm	10	3			
t161	6984963.871	11887491.680	1	17	black locust	17	4			
t162	6984961.404	11887485.728	1	18	tuliptree	18	3			
t163	6984973.904	11887483.145	1	7	white mulberry	7	4		X	
t164	6984952.893	11887483.983	1	15	unknown tree	15	4	X	X	
t165	6984949.589	11887486.487	1	14	tuliptree	14	3			
t166	6984944.405	11887480.504	1	20	tuliptree	20	2			
t167	6984940.590	11887479.913	1	6	unknown tree	6	4	X	X	
t168	6984931.028	11887471.640	1	6	slippery elm	6	3		X	
t169	6984930.211	11887485.052	1	20	tuliptree	20	3		X	
t170	6984939.239	11887483.584	1	7	red maple	7	2			
t171	6984939.688	11887510.662	1	9	slippery elm	9	3			
t172	6984942.732	11887534.639	1	6	slippery elm	6	3			
t173	6984918.213	11887525.602	1	22	American sycamore	22	2			
t174	6984918.073	11887485.645	1	7	red maple	7	2		X	
t175	6984911.694	11887479.345	1	6	black cherry	6	4		X	
t176	6984913.033	11887470.088	1	6	red maple	6	3		X	
t177	6984889.141	11887450.698	1	16	black cherry	16	4		X	
t178	6984880.737	11887454.897	1	8	red maple	8	3		X	
t179	6984893.152	11887469.022	1	10	red maple	10	2		X	
t180	6984887.630	11887496.103	1	12	red maple	12	2		X	
t181	6984880.842	11887484.117	1	6	tuliptree	6	2		X	
t182	6984877.098	11887479.970	1	11	red maple	11	2		X	
t183	6984857.802	11887474.338	1	8	red maple	8	3		X	
t184	6984862.080	11887471.669	1	19	black cherry	19	3		X	
t185	6984859.364	11887445.713	1	6	tuliptree	6	2		X	
t186	6984844.710	11887455.450	1	6	red maple	6	3		X	
t187	6984835.845	11887459.330	1	19	tuliptree	19	3		X	
t188	6984817.458	11887467.917	1	18	red maple	18	3		X	
t189	6984834.819	11887476.307	1	7	unknown tree	7	4	X	X	
t190	6984846.659	11887488.096	1	8	red maple	8	4		X	
t191	6984865.952	11887501.731	1	7	red maple	7	3		X	
t192	6984851.708	11887502.223	1	18	black locust	18	4		X	
t193	6984862.570	11887516.661	1	9	red maple	9	3		X	
t194	6984848.431	11887512.882	1	8	red maple	8	2		X	
t195	6984835.007	11887501.955	1	8	red maple	8	2		X	
t196	6984832.103	11887502.113	1	6	unknown tree	6	4	X		
t197	6984822.104	11887498.536	1	24	tuliptree	24	3		X	
t198	6984813.206	11887484.115	1	11	sassafras	11	3		X	
t199	6984806.087	11887494.114	1	24	tuliptree	24	2		X	
t200	6984801.311	11887507.936	1	9	slippery elm	9	4		X	
t201	6984811.337	11887509.438	1	15	tuliptree	15	3		X	
t202	6984826.802	11887513.639	1	8	red maple	8	3		X	
t203	6984822.723	11887518.920	1	11	red maple	11	2		X	
t204	6984839.755	11887535.690	1	15	black locust	15	4		X	
t205	6984852.214	11887559.709	1	30	slippery elm	30	3			
t206	6984845.315	11887559.748	1	7	black cherry	7	4			
t207	6984826.287	11887535.069	1	9	red maple	9	2		X	
t208	6984813.990	11887557.410	1	10	red maple	10	2			
t209	6984813.375	11887544.113	1	21	black locust	21	4			
t210	6984801.083	11887516.996	1	24	tuliptree	24	2		X	
t211	6984796.654	11887512.919	1	20	tuliptree	20	2		X	
t212	6984766.836	11887506.186	1	21	tuliptree	21	4		X	
t213	6984779.338	11887515.168	1	19	tuliptree	19	3		X	
t214	6984784.351	11887523.923	1	18	tuliptree	18	2		X	
t215	6984790.806	11887532.116	1	11	tuliptree	11	3		X	
t216	6984790.501	11887581.173	1	15	tuliptree	15	4			
t217	6984773.942	11887563.164	1	18	tuliptree	18	3		X	
t218	6984768.557	11887568.345	1	6	red maple	6	4			
t219	6984774.314	11887594.049	1	11	unknown tree	11	4	X		
t220	6984783.727	11887546.359	1	6	unknown tree	6	4	X	X	
t221	6984764.173	11887524.365	1	26	black cherry	26	4		X	
t222	6984754.783	11887529.764	1	20	tuliptree	20	3		X	
t223	6984756.195	11887537.424	1	6	red maple	6	4			
t224	6984751.398	11887543.400	1	9	red maple	9	4			
t225	6984745.620	11887543.347	1	17	tuliptree	17	3			
t226	6984725.743	11887567.930	1	9	green ash	9	4		X	
t227	6984735.654	11887579.995	1	19	slippery elm	19	4			
t228	6984739.477	11887579.279	1	20	tuliptree	20	3			
t229	6984715.575	11887530.717	1	28	tuliptree	28	4		X	
t230	6984710.620	11887546.230	1	8	sassafras	8	4		X	
t231	6984684.014	11887541.031	1	32	tuliptree	32	4		X	
t232	6984666.582	11887564.017	1	11	tuliptree	11	4		X	
t233	6984707.648	11887587.433	1	6	slippery elm	6	4			
t234	6984687.183	11887603.992	1	8	white mulberry	8	4			
t235	6984678.904	11887606.401	1	8	slippery elm	8	4			
t236	6984668.359	11887624.615	2	7,7	slippery elm	11	4			
t238	6984645.705	11887629.756	1	14	black locust	14	4			
t239	6984645.552	11887630.234	2	14,12	black locust	20	4			
t240	6984611.211	11887664.076	1	21	slippery elm	21	4			
t241	6984624.060	11887640.812	1	7	slippery elm	7	4			
t242	6984634.904	11887630.668	1	6	slippery elm	6	4			
t243	6984634.827	11887629.649	1	25	black locust	25	4			
t244	6984633.742	11887626.313	1	9	slippery elm	9	4		X	
t245	6984623.425	11887629.394	1	9	slippery elm	9	4		X	
t246	6984625.353	11887608.347	1	16	unknown tree	16	4	X	X	
t247	6984635.280	11887590.197	1	12	slippery elm	12	3		X	
t248	6984650.427	11887576.220	1	8	unknown tree	8	4	X	X	
t249	6984617.762	11887594.896	1	6	slippery elm	6	4		X	
t250	6984615.200	11887603.336	1	8	slippery elm	8	4			
t251	6984606.779	11887607.888	1	10	slippery elm	10	4			

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

TREE LIST

Wetland Studies and Solutions, Inc. — a DAVEY company — 5300 WELLINGTON BRANCH DR., SUITE 100, GAINESVILLE, VA 20155, (703) 679-5600

URS — 12420 MILESTONE CENTER DR., SUITE 150, GERMANTOWN, MD 20876, (301) 820-3000

DRAWING TL – 01

SCALE N/A

TREE #	NORTHING	EASTING	STEMS	DIAMETER (INCHES)	COMMON NAME	CRITICAL ROOT ZONE (FEET)	HEALTH RATING (1-4)	STATUS: DEAD	STATUS: TBR	STATUS: TRUNK ARMOR
t252	6984593.245	11887629.792	1	19	tuliptree	19	3			
t253	6984572.168	11887616.308	1	9	red maple	9	4		X	
t254	6984568.449	11887623.776	1	14	black cherry	14	3			
t255	6984561.091	11887623.242	1	11	red maple	11	4		X	
t256	6984559.617	11887622.128	1	14	red maple	14	4		X	
t257	6984556.765	11887625.548	1	16	sweet gum	16	4		X	
t259	6984549.803	11887625.865	2	14,9	red maple	18	4		X	
t260	6984567.528	11887646.458	1	10	slippery elm	10	3			
t261	6984589.811	11887663.595	1	9	silver maple	9	3			
t262	6984574.257	11887667.603	1	12	black cherry	12	4	X	X	
t263	6984567.311	11887671.454	1	8	slippery elm	8	3			
t264	6984549.181	11887685.343	1	13	slippery elm	13	4			
t265	6984545.165	11887677.635	1	16	black locust	16	4			
t266	6984553.437	11887656.953	1	18	black locust	18	4		X	
t267	6984532.074	11887649.879	1	18	red maple	18	4		X	
t268	6984534.145	11887652.479	1	14	red maple	14	4	X	X	
t269	6984532.312	11887655.310	1	9	red maple	9	4		X	
t270	6984519.106	11887656.764	1	20	black locust	20	4			
t271	6984520.465	11887663.683	1	16	black locust	16	4		X	
t272	6984505.126	11887680.065	1	7	tuliptree	7	2		X	
t273	6984504.112	11887705.378	1	7	black locust	7	3			
t274	6984499.094	11887709.555	1	6	red maple	6	2			
t275	6984489.389	11887714.302	1	12	tuliptree	12	2			
t276	6984480.414	11887716.052	1	8	tuliptree	8	2			
t277	6984465.697	11887701.575	1	8	red maple	8	3		X	
t278	6984465.056	11887674.591	1	10	red maple	10	4		X	
t279	6984462.892	11887675.327	1	9	common persimmon	9	4		X	
t280	6984452.849	11887680.823	1	27	sweet gum	27	4			
t281	6984452.985	11887701.535	1	19	black cherry	19	3		X	
t282	6984444.341	11887706.316	1	20	black locust	20	4		X	
t283	6984423.806	11887702.002	1	10	red maple	10	4		X	
t284	6984415.628	11887705.608	1	10	red maple	10	4		X	
t285	6984407.074	11887720.946	1	21	red maple	21	4		X	
t286	6984387.510	11887733.880	1	8	black locust	8	4	X	X	
t287	6984445.181	11887741.467	1	20	American elm	20	2			
t288	6984424.543	11887763.434	1	20	American sycamore	20	3			
t289	6984415.198	11887768.444	1	8	American elm	8	4			
t290	6984397.456	11887771.244	1	7	American elm	7	3			
t291	6984412.590	11887757.558	1	36	American sycamore	36	3			
t292	6984392.086	11887750.735	1	10	black cherry	10	4		X	
t293	6984376.994	11887787.309	2	26,17	silver maple	33	3			
t295	6984384.064	11887799.469	1	12	American elm	12	4			
t296	6984372.875	11887799.837	1	11	red maple	11	4			
t297	6984369.763	11887798.651	1	7	American elm	7	4			
t298	6984342.015	11887805.160	1	9	tree of heaven	9	4			
t299	6984329.336	11887806.509	1	10	American elm	10	4			
t300	6984328.534	11887805.061	1	13	American elm	13	4			
t301	6984322.011	11887806.985	1	8	tree of heaven	8	4			
t302	6984321.866	11887801.606	1	7	tree of heaven	7	4			
t303	6984318.705	11887799.186	1	11	tree of heaven	11	4			
t304	6985924.085	11886777.199	1	11	slippery elm	11	4			
t305	6985918.274	11886774.070	1	19	slippery elm	19	4			
t306	6985863.096	11886753.771	1	23	black locust	23	4			
t307	6985872.700	11886743.167	1	7	slippery elm	7	3			
t308	6985874.725	11886732.442	1	19	black locust	19	4			
t309	6985871.420	11886728.138	1	15	white mulberry	15	4			
t310	6985877.325	11886720.767	1	22	black locust	22	4			
t311	6985880.089	11886719.333	1	16	white mulberry	16	4			
t312	6985882.216	11886721.300	2	24,12	black locust	27	4	X		
t313	6985883.255	11886719.069	1	10	white mulberry	10	4			
t314	6985886.205	11886715.774	2	7,6	unknown tree	10	4	X		
t317	6985887.688	11886713.726	2	13,12	white mulberry	19	4			
t318	6985898.864	11886801.597	1	11	unknown tree	11	4	X	X	
t319	6985913.895	11886803.089	1	24	silver maple	24	4			
t320	6985929.309	11886790.707	1	18	slippery elm	18	4		X	
t321	6985929.389	11886795.827	1	6	silver maple	6	4		X	
t322	6985921.576	11886811.917	1	12	silver maple	12	4		X	
t323	6985906.980	11886830.838	1	8	unknown tree	8	4	X	X	
t324	6985894.183	11886857.452	1	10	white mulberry	10	4		X	
t325	6985893.755	11886833.106	1	42	silver maple	42	4			
t326	6985890.962	11886834.653	1	10	unknown tree	10	4	X		
t327	6985894.223	11886814.321	1	25	black locust	25	4			
t328	6985897.238	11886814.376	2	11,7	white mulberry	14	4			
t329	6985898.017	11886813.540	1	7	unknown tree	7	4	X		
t331	6985862.713	11886770.834	1	14	green ash	14	4			
t332	6985855.340	11886783.312	1	15	silver maple	15	4			
t333	6985847.226	11886787.517	1	21	black cherry	21	4			
t334	6985843.625	11886809.758	1	8	unknown tree	8	4	X		
t335	6985835.788	11886815.858	1	15	white mulberry	15	4			
t336	6985838.548	11886817.153	1	12	unknown tree	12	4	X		

TREE #	NORTHING	EASTING	STEMS	DIAMETER (INCHES)	COMMON NAME	CRITICAL ROOT ZONE (FEET)	HEALTH RATING (1-4)	STATUS: DEAD	STATUS: TBR	STATUS: TRUNK ARMOR
t337	6985847.025	11886822.033	1	11	unknown tree	11	4	X		
t338	6985831.438	11886842.387	1	24	silver maple	24	4			
t339	6985822.324	11886849.652	1	10	unknown tree	10	4	X		
t340	6985818.048	11886864.792	1	12	white mulberry	12	4			
t341	6985817.088	11886870.962	1	14	Norway maple	14	4			
t342	6985802.524	11886888.709	1	38	silver maple	38	4			
t343	6985863.109	11886880.734	1	16	black locust	16	4	X	X	
t344	6985873.569	11886885.970	1	18	black walnut	18	4		X	
t345	6985878.899	11886889.946	1	8	slippery elm	8	3		X	
t346	6985861.001	11886905.725	1	14	black locust	14	4		X	
t347	6985856.290	11886897.156	1	9	unknown snag	9	4	X	X	
t348	6985848.611	11886898.790	1	14	black locust	14	4			
t349	6985849.601	11886905.392	1	9	unknown snag	9	4	X	X	
t350	6985852.545	11886904.583	1	9	unknown snag	9	4	X	X	
t351	6985850.955	11886909.466	1	13	slippery elm	13	4		X	
t352	6985843.671	11886916.975	1	19	black locust	19	4		X	
t353	6985833.639	11886925.103	1	13	white mulberry	13	4		X	
t354	6985831.953	11886931.318	1	6	unknown snag	6	4	X	X	
t355	6985825.848	11886935.535	1	20	black cherry	20	4		X	
t356	6985824.613	11886949.175	1	8	unknown snag	8	4	X	X	
t357	6985823.190	11886948.913	1	12	unknown snag	12	4	X	X	
t358	6985820.904	11886946.871	1	13	unknown snag	13	4	X	X	
t359	6985816.843	11886946.316	1	9	unknown snag	9	4	X	X	
t360	6985813.140	11886964.735	1	9	unknown snag	9	4	X	X	
t361	6985814.646	11886966.911	1	11	Norway maple	11	4		X	
t362	6985807.913	11886970.175	1	9	white mulberry	9	4		X	
t363	6985785.822	11886900.719	1	9	unknown snag	9	4	X		
t364	6985782.232	11886897.214	1	9	unknown snag	9	4	X		
t365	6985769.578	11886911.703	1	24	black cherry	24	4			
t366	6985763.807	11886914.880	1	9	unknown tree	9	4	X		
t367	6985752.001	11886923.823	1	22	black locust	22	4			
t368	6985738.616	11886950.714	1	26	green ash	26	4			
t369	6985769.632	11886961.975	1	12	silver maple	12	3		X	
t370	6985798.813	11886980.287	1	10	black cherry	10	4		X	
t371	6985795.223	11886994.620	1	16	white mulberry	16	4		X	
t372	6985790.928	11887001.154	1	8	Norway maple	8	4			
t373	6985784.922	11886999.666	1	13	unknown snag	13	4	X	X	
t374	6985784.840	11887001.500	1	11	unknown tree	11	4	X	X	
t375	6985779.239	11887006.298	1	14	slippery elm	14	4		X	
t376	6985781.282	11887019.977	1	19	black locust	19	4		X	
t377	6985773.409	11887026.349	1	15	black locust	15	4	X	X	
t378	6985766.978	11887028.750	1	8	sweet cherry	8	4	X	X	
t379	6985767.662	11887031.217	1	8	unknown snag	8	4	X	X	
t380	6985767.197	11887037.187	1	6	green ash	6	4		X	
t381	6985757.463	11887047.749	1	15	silver maple	15	4		X	
t382	6985748.343	11887055.757	1	9	white mulberry	9	4		X	
t383	6985748.178	11887057.206	1	10	white mulberry	10	4		X	
t384	6985740.450	11887069.953	1	7	silver maple	7	4		X	
t385	6985721.513	11887079.799	1	10	black cherry	10	4		X	
t386	6985718.510	11887071.371	1	14	slippery elm	14	4		X	
t387	6985713.929	11887073.591	1	9	unknown snag	9	4	X	X	
t388	6985714.187	11887087.005	1	11	Norway maple	11	4		X	
t389	6985703.395	11887093.809	1	14	black cherry	14	4		X	
t390	6985700.937	11887097.713	1	23	black locust	23	4		X	
t391	6985741.023	11886997.722	1	25	American sycamore	25	3			
t392	6985746.345	11886987.604	1	14	silver maple	14	4			
t393	6985734.930	11886980.480	1	26	silver maple	26	4			
t394	6985722.876	11886986.227	1	16	silver maple	16	3			
t395	6985720.248	11886957.208	1	11	unknown tree	11	4	X		
t396	6985709.486	11886976.422	1	10	sassafras	10	3			
t397	6985701.406	11886975.655	1	11	sassafras	11	3			
t398	6985691.705	11886983.211	1	16	red maple	16	3			
t399	6985701.343	11886983.683	1	7	sassafras	7	3			
t400	6985703.523	11886984.833	1	10	sassafras	10	3			
t401	6985701.228	11886997.209	1	25	tuliptree	25	4			
t402	6985685.642	11886998.494	2	20,20	tuliptree	30	3			
t404	6985674.552	11887009.356	1	20	tuliptree	20	3			
t405	6985677.446	11887009.537	1	12	tuliptree	12	3			
t406	6985665.766	11887013.558	1	19	tuliptree	19	3			
t407	6985663.138	11887010.770	1	7	red maple	7	4			
t408	6985654.687	11887026.187	1	22	tuliptree	22	3			
t409	6985650.378	11887027.638	1	23	tuliptree	23	4			
t410	6985634.354	11887044.053	1	26	tuliptree	26	4			
t411	6985646.644	11887051.502	1	20	slippery elm	20	4			
t412	6985673.710	11887021.878	2	26,23	tuliptree	37	4			
t414	6985684.863	11887017.930	1	17	tuliptree	17	4			
t415	6985705.286	11887011.263	1	9	silver maple	9	3			
t416	6985716.573	11887027.885	1	13	slippery elm	13	4			
t417	6985706.339	11887041.425	1	19	silver maple	19	4			
t418	6985687.211	11887028.408	1	15	silver maple	15	4			

TREE #	NORTHING	EASTING	STEMS	DIAMETER (INCHES)	COMMON NAME	CRITICAL ROOT ZONE (FEET)	HEALTH RATING (1-4)	STATUS: DEAD	STATUS: TBR	STATUS: TRUNK ARMOR
t419	6985687.700	11887039.431	1	9	red maple	9	4			
t420	6985680.191	11887031.901	1	9	silver maple	9	4			
t421	6985702.291	11887022.276	1	14	slippery elm	14	4			
t422	6985672.445	11887048.283	1	7	green ash	7	4			
t423	6985663.581	11887055.973	1	21	silver maple	21	4			
t424	6985673.371	11887079.169	1	8	slippery elm	8	4			
t425	6985677.763	11887077.356	1	10	slippery elm	10	4			
t426	6985670.101	11887074.217	1	10	slippery elm	10	4			
t427	6985662.811	11887066.080	1	14	silver maple	14	4			
t428	6985639.566	11887062.436	1	12	unknown snag	12	4	X		
t429	6985659.240	11887068.374	1	9	red maple	9	4			
t430	6985661.606	11887077.056	1	6	slippery elm	6	4			
t431	6985656.665	11887078.895	1	16	silver maple	16	3			
t432	6985654.593	11887076.601	1	21	silver maple	21	4			
t433	6985651.559	11887087.859	1	9	silver maple	9	4			
t434	6985636.433	11887082.636	1	16	unknown tree	16	4	X		
t436	6985694.442	11887109.069	1	10	unknown tree	10	4	X	X	
t437	6985681.424	11887123.295	1	15	slippery elm	15	4		X	
t438	6985675.505	11887117.925	1	7	willow oak	7	3			
t439	6985653.120	11887128.822	1	8	American elm	8	4		X	
t440	6985651.936	11887131.657	1	6	black cherry	6	4		X	
t441	6985639.814	11887127.677	1	12	black locust	12	4		X	
t442	6985646.705	11887137.112	1	6	unknown snag	6	4	X	X	
t443	6985641.495	11887137.390	1	9	white mulberry	9	4		X	
t444	6985632.667	11887148.637	1	16	black cherry	16	4			
t445	6985640.894	11887156.407	1	10	unknown tree	10	4	X	X	
t446	6985643.569	11887159.062	1	13	red maple	13	4		X	
t447	6985634.599	11887156.971	1	19	slippery elm	19	4		X	
t448	6985623.373	11887153.506	1	6	unknown tree	6	4	X	X	
t450	6985617.036	11887166.455	1	8	red maple	8	4			
t451	6985581.354	11887183.498	1	19	slippery elm	19	4		X	
t452	6985586.941	11887150.977	1	8	American elm	8	4		X	
t453	6985592.626	11887147.865	1	10	slippery elm	10	4		X	
t454	6985602.557	11887136.357	1	12	slippery elm	12	4			
t455	6985605.098	11887135.960	1	6	American elm	6	4			
t456	6985593.709	11887113.854	1	27	tuliptree	27	3			
t457	6985603.299	11887103.152	1	15	red maple	15	4			
t458	6985599.896	11887089.075	1	8	American beech	8	3			
t459	6985606.084	11887079.114	1	18	American beech	18	3			
t460	6985604.822	11887078.139	1	8	American beech	8	3			
t461	6985604.169	11887076.598	1	11	unknown snag	11	4	X		
t462	6985625.339	11887030.696	1	25	chestnut oak	25	4			
t463	6985603.885	11887020.785	1	10	black cherry	10	4			
t464	6985591.862	11887064.620	1	21	unknown snag	21	4	X		
t465	6985580.820	11887101.787	1	32	chestnut oak	32	2			
t466	6985559.047	11887122.414	1	27	black oak	27	3			
t467	6985536.661	11887134.953	2	31,24	tuliptree	42	3			
t469	6985545.134	11887139.215	1	9	blackgum	9	4			
t470	6985557.475	11887130.616	1	16	unknown snag	16	4	X		
t471	6985568.287	11887134.978	1	19	tuliptree	19	3			
t472	6985562.674	11887142.887	1	13	pin oak	13	3			
t473	6985532.636	11887160.074	1	11	green ash	11	4			
t474	6985532.163	11887152.590	1	29	unknown snag	29	4	X		
t475	6985524.726	11887154.697	1	16	tuliptree	16	3			
t476	6985515.506	11887129.365	1	21	tuliptree	21	3			
t477	6985513.963	11887164.991	1	12	unknown snag	12	4	X		
t478	6985498.589	11887173.547	1	15	blackgum	15	3			
t479	6985502.435	11887180.995	1	18	black cherry	18	4			
t480	6985493.659	11887180.650	1	8	blackgum	8	4			
t481	6985491.466	11887176.571	1	12	blackgum	12	3			
t482	6985489.530	11887180.727	1	7	blackgum	7	4			
t483	6985490.522	11887155.959	1	7	black walnut	7	3			
t484	6985470.031	11887193.074	1	15	tuliptree	15	3			
t485	6985475.589	11887196.207	1	16	unknown snag	16	4	X		
t486	6985502.337	11887194.175	2	7,6	red maple	10	4			
t488	6985498.487	11887203.829	1	13	tuliptree	13	4			
t489	6985501.530	11887211.009	1	18	tuliptree	18	4		X	
t490	6985520.189	11887195.660	1	9	unknown snag	9	4	X	X	
t491	6985559.566	11887170.474	1	7	white mulberry	7	4		X	
t492	6985562.493	11887199.117	1	9	tuliptree	9	4		X	
t493	6985530.308	11887217.907	1	7	unknown snag	7	4	X	X	
t494	6985526.069	11887220.330	1	10	slippery elm	10	4			
t495	6985495.101	11887222.265	1	9	unknown tree	9	4	X	X	
t496	6985494.698	11887219.940	1	17	tuliptree	17	3		X	
t497	6985491.407	11887216.272	1	15	red maple	15	3			
t498	6985488.460	11887214.572	1	7	red maple	7	3			
t499	6985469.151	11887227.583	1	18	tuliptree	18	4			
t500	6985466.128	11887230.589	1	20	tuliptree	20	4			
t501	6985461.461	11887232.212	1	13	slippery elm	13	3			
t502	6985498.648	11887245.486	1	6	American elm	6	4	X	X	

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

TREE LIST (CONT'D)

URS — 12420 MILESTONE CENTER DR., SUITE 150, GERMANTOWN, MD 20876, (301) 820-3000

Wetland Studies and Solutions, Inc. — a DAVEY company — 5300 WELLINGTON BRANCH DR., SUITE 100, GAINESVILLE, VA 20155, (703) 679-5600

DRAWING TL - 02

SCALE N/A

SHEET 31 OF 84

TREE #	NORTHING	EASTING	STEMS	DIAMETER (INCHES)	COMMON NAME	CRITICAL ROOT ZONE (FEET)	HEALTH RATING (1-4)	STATUS: DEAD	STATUS: TBR	STATUS: TRUNK ARMOR
t503	6985470.049	11887268.541	1	10	tuliptree	10	3		X	
t504	6985467.044	11887272.929	1	11	tuliptree	11	3		X	
t505	6985456.284	11887267.722	1	13	red maple	13	3			
t506	6985457.528	11887269.684	1	25	red maple	25	3		X	
t507	6985456.576	11887273.666	1	16	slippery elm	16	3		X	
t508	6985431.467	11887283.006	1	15	red maple	15	3		X	
t509	6985408.834	11887236.848	1	8	tuliptree	8	3			
t510	6985436.424	11887203.392	1	15	slippery elm	15	3			
t511	6985441.525	11887181.931	1	9	tuliptree	9	4			
t512	6985411.463	11887209.949	1	9	white oak	9	3			
t513	6985400.884	11887226.566	1	13	unknown tree	13	4	X		
t514	6985393.746	11887236.442	1	45	tuliptree	45	1			
t515	6985388.992	11887225.617	1	23	black cherry	23	3			
t515	6985397.051	11887253.385	1	23	black cherry	23	3			
t517	6985378.687	11887231.355	1	15	black cherry	15	3			
t518	6985382.117	11887260.575	1	10	tuliptree	10	3			
t519	6985398.416	11887283.840	1	20	red maple	20	3		X	
t520	6985399.389	11887288.037	1	19	red maple	19	3		X	
t521	6985405.708	11887298.879	1	10	slippery elm	10	3		X	
t522	6985391.278	11887304.526	1	17	tuliptree	17	3		X	
t523	6985385.767	11887294.666	1	7	red maple	7	3		X	
t524	6985369.644	11887280.008	2	8,3	tuliptree	9	3			
t525	6985359.012	11887242.613	1	20	black cherry	20	4			
t526	6985354.487	11887247.139	1	14	white oak	14	3			
t527	6985339.259	11887251.890	1	6	sassafras	6	3			
t528	6985337.890	11887264.704	1	6	sassafras	6	3			
t529	6985339.534	11887281.723	1	16	tuliptree	16	3			
t530	6985340.650	11887293.575	1	23	black locust	23	4			
t531	6985344.374	11887293.538	1	13	slippery elm	13	3			
t532	6985374.478	11887317.427	1	15	black cherry	15	3		X	
t533	6985364.008	11887330.330	1	7	red mulberry	7	2			
t534	6985333.250	11887298.218	1	7	slippery elm	7	2			
t535	6985318.872	11887294.194	1	18	tuliptree	18	3			
t536	6985325.207	11887273.994	2	8,15	black cherry	17	3	X		
t537	6985315.550	11887275.720	1	46	black cherry	46	3			
t538	6985339.952	11887340.004	1	9	black cherry	9	3		X	
t539	6985340.750	11887338.341	1	14	black locust	14	4		X	
t540	6985321.835	11887371.325	1	27	tuliptree	27	3		X	
t541	6985311.968	11887375.822	1	13	red maple	13	3		X	
t542	6985294.466	11887385.538	2	23,6	silver maple	24	2		X	
t543	6985280.334	11887388.687	1	11	black locust	11	4	X	X	
t544	6985283.292	11887379.498	1	25	black locust	25	4	X	X	
t545	6985307.116	11887295.376	1	6	sugar maple	6	3			
t546	6985295.110	11887281.849	1	27	black cherry	27	3			
t547	6985301.585	11887277.101	1	7	sassafras	7	3			
t548	6985292.302	11887270.441	1	8	sassafras	8	3			
t549	6985281.339	11887274.793	1	15	black locust	15	4			
t550	6985268.339	11887273.713	1	8	sassafras	8	3			
t551	6985262.050	11887276.753	1	22	black locust	22	4			
t552	6985248.713	11887279.122	1	9	sassafras	9	3			
t553	6985231.734	11887285.108	1	16	black cherry	16	3			
t554	6985222.839	11887283.300	1	16	black locust	16	3			
t555	6985221.169	11887286.909	1	11	black locust	11	4	X		
t556	6985250.207	11887313.922	1	13	red maple	13	3			
t557	6985290.207	11887298.421	1	8	red mulberry	8	4	X		
t558	6985293.641	11887300.537	1	9	black walnut	9	4			
t559	6985288.868	11887349.756	1	6	slippery elm	6	3		X	
t560	6985256.571	11887378.286	1	27	red maple	27	3		X	
t561	6985238.350	11887363.561	1	36	tuliptree	36	3			
t562	6985271.332	11887405.519	1	18	red maple	18	3		X	
t563	6985233.029	11887361.444	1	7	red maple	7	3			
t564	6985227.644	11887350.974	2	19,16	red maple	25	3			
t565	6985222.059	11887345.233	1	17	red maple	17	4	X		
t566	6985216.362	11887324.078	1	7	red maple	7	4	X		
t567	6985211.472	11887308.712	1	26	black cherry	26	3			
t568	6985216.320	11887299.197	1	6	slippery elm	6	3			
t569	6985198.269	11887292.366	2	17,15	blackgum	23	2			
t570	6985195.291	11887287.007	1	12	black locust	12	4	X		
t571	6985186.957	11887302.114	1	7	red maple	7	4			
t572	6985179.564	11887310.588	1	13	black locust	13	4	X		
t573	6985202.229	11887327.045	2	24,15	red maple	28	2			
t574	6985195.870	11887317.603	1	6	slippery elm	6	3			
t575	6985185.287	11887342.643	1	31	tuliptree	31	3			
t576	6985216.020	11887350.188	1	31	red maple	31	3			
t577	6985228.852	11887379.489	1	27	tuliptree	27	3			
t578	6985225.240	11887384.338	1	27	tuliptree	27	2			
t579	6985221.225	11887377.959	1	26	tuliptree	26	2			
t580	6985215.726	11887384.779	1	25	red maple	25	3			
t581	6985228.970	11887413.171	1	8	red maple	8	3		X	
t582	6985231.033	11887418.545	1	12	black locust	12	4	X	X	

TREE #	NORTHING	EASTING	STEMS	DIAMETER (INCHES)	COMMON NAME	CRITICAL ROOT ZONE (FEET)	HEALTH RATING (1-4)	STATUS: DEAD	STATUS: TBR	STATUS: TRUNK ARMOR
t583	6985211.845	11887406.670	1	44	red maple	44	1		X	
t584	6985201.910	11887419.301	2	6,14	red maple	15	3		X	
t585	6985168.706	11887376.454	1	14	red maple	14	3			
t586	6985161.260	11887339.767	1	6	American holly	6	3			
t587	6985156.420	11887341.534	1	8	black cherry	8	3			
t588	6985148.752	11887334.485	1	24	scarlet oak	24	2			
t589	6985135.750	11887358.361	1	34	tuliptree	34	3			
t590	6985139.248	11887361.583	1	14	tuliptree	14	3			
t591	6985130.853	11887374.750	1	44	tuliptree	44	1			
t592	6985139.045	11887370.719	1	21	white oak	21	1			
t593	6985115.282	11887360.604	1	11	hickory species	11	3			
t594	6985104.746	11887363.482	1	24	tuliptree	24	2			
t595	6985103.222	11887369.272	1	7	red maple	7	3			
t596	6985122.075	11887393.284	1	15	red maple	15	3			
t597	6985100.140	11887413.642	1	29	tuliptree	29	3			
t598	6985158.653	11887414.083	1	14	red maple	14	3			
t599	6985189.231	11887441.325	1	19	red maple	19	3		X	
t600	6985186.711	11887444.889	1	15	red maple	15	3			
t601	6985157.271	11887430.314	1	13	red maple	13	3		X	
t602	6985153.064	11887430.152	3	13,8,7	red maple	17	3			
t603	6985150.155	11887431.692	1	16	red maple	16	3			
t604	6985144.541	11887438.196	1	26	red maple	26	3		X	
t605	6985139.365	11887440.611	1	12	red maple	12	3		X	
t606	6985134.034	11887454.154	1	6	unknown tree	6	4	X	X	
t607	6985125.590	11887462.283	1	12	tuliptree	12	3	X	X	
t608	6985109.262	11887456.690	1	20	red maple	20	3		X	
t609	6985099.163	11887453.525	1	16	red maple	16	3		X	
t610	6985095.443	11887452.273	1	6	red maple	6	3		X	
t611	6985107.097	11887438.155	1	15	red maple	15	3			
t612	6985073.610	11887454.245	1	15	black locust	15	3	X	X	
t613	6985064.797	11887453.918	1	17	tuliptree	17	3		X	
t614	6985052.274	11887453.532	1	18	red maple	18	3		X	
t615	6985047.223	11887455.090	1	7	unknown tree	7	4	X		
t616	6985039.972	11887451.237	1	11	black locust	11	3	X	X	
t617	6985027.420	11887456.149	1	17	red maple	17	3		X	
t618	6985026.193	11887452.624	1	8	black locust	8	4	X	X	
t619	6985027.219	11887446.472	1	14	black cherry	14	4			
t620	6985067.628	11887429.915	1	12	red maple	12	3			
t621	6985055.880	11887427.286	1	15	red maple	15	3			
t622	6985056.975	11887417.435	1	8	red maple	8	3			
t623	6985075.614	11887415.967	1	25	tuliptree	25	3			
t624	6985051.304	11887405.989	1	14	red maple	14	3			
t625	6985080.039	11887406.169	1	37	willow oak	37	4	X		
t627	6985066.584	11887369.493	1	7	red maple	7	3			
t628	6985058.327	11887371.261	1	8	red maple	8	3			
t629	6985075.735	11887342.307	3	21,28,42	tuliptree	55	1			
t630	6985111.988	11887340.868	1	7	unknown tree	7	4	X		
t631	6985106.284	11887325.661	1	19	black cherry	19	3	X		
t632	6985114.143	11887323.462	1	10	red maple	10	3			
t633	6985077.331	11887324.868	1	9	red maple	9	3			
t634	6985072.950	11887329.380	1	16	black cherry	16	4	X		
t635	6985042.897	11887346.021	1	8	sassafras	8	3	X		
t636	6985026.122	11887360.100	2	28,30	tuliptree	41	2			
t637	6985026.427	11887384.719	1	17	common persimmon	17	3			
t638	6985034.213	11887387.814	1	16	red maple	16	3			
t639	6985031.980	11887421.116	1	18	red maple	18	3			
t640	6985023.517	11887421.876	1	17	red maple	17	3			
t641	6985001.890	11887409.556	1	17	red maple	17	4	X		
t642	6984968.857	11887400.266	2	9,15	red maple	17	3			
t643	6984963.219	11887395.499	1	19	tuliptree	19	4	X		
t644	6984996.882	11887366.235	3	24,31,24	tuliptree	46	2			
t645	6984957.228	11887377.822	1	24	red maple	24	3			
t646	6984941.135	11887399.694	1	14	white oak	14	3	X		
t647	6984935.882	11887399.965	2	8,6	hickory species	10	3			
t648	6984932.160	11887406.747	1	14	white oak	14	3			
t649	6984929.688	11887396.299	1	27	southern red oak	27	2			
t650	6984927.785	11887377.854	1	7	slippery elm	7	3			
t651	6984917.328	11887373.526	1	7	red maple	7	3			
t652	6984914.005	11887402.322	2	32,13	tuliptree	35	2	X		
t653	6984911.622	11887388.548	1	8	slippery elm	8	3			
t654	6984908.940	11887407.458	1	6	unknown tree	6	4	X	X	
t655	6984893.048	11887394.316	1	6	white oak	6	4	X		
t656	6984891.294	11887383.933	1	12	blackgum	12	3			
t657	6984882.099	11887396.426	1	14	red maple	14	3			
t658	6984876.160	11887370.122	1	46	tuliptree	46	1	X		
t659	6984874.691	11887399.450	1	9	red maple	9	3			
t660	6984865.470	11887402.333	1	11	red maple	11	3			
t661	6984864.831	11887409.707	1	12	southern red oak	12	3		X	
t662	6984864.482	11887417.555	1	6	tuliptree	6	3		X	
t663	6984846.829	11887391.273	1	23	Virginia pine	23	3			

TREE #	NORTHING	EASTING	STEMS	DIAMETER (INCHES)	COMMON NAME	CRITICAL ROOT ZONE (FEET)	HEALTH RATING (1-4)	STATUS: DEAD	STATUS: TBR	STATUS: TRUNK ARMOR
t664	6984844.089	11887388.304	1	10	black cherry	10	3			
t665	6984838.759	11887420.034	1	7	red maple	7	3		X	
t666	6984835.913	11887421.824	1	24	tuliptree	24	2		X	
t667	6984825.745	11887415.730	1	13	red maple	13	3			
t668	6984823.330	11887395.114	1	8	sugar maple	8	3			
t669	6984788.718	11887413.298	1	12	sassafras	12	4	X		
t670	6984778.847	11887413.075	1	18	Virginia pine	18	3			
t671	6984775.227	11887418.294	1	12	white oak	12	3			
t672	6984757.631	11887419.041	1	26	tuliptree	26	1			
t673	6984879.768	11887369.575	1	7	slippery elm	7	3			
t674	6984802.182	11887437.153	1	7	tuliptree	7	3		X	
t675	6984783.556	11887444.567	1	7	red maple	7	3		X	
t676	6984780.234	11887441.980	1	6	tuliptree	6	3			
t677	6984760.785	11887429.913	1	8	red maple	8	3			
t678	6984750.749	11887445.174	1	8	red maple	8	3			
t679	6984737.557	11887436.997	2	8,9	blackgum	12	3			
t680	6984748.558	11887454.812	1	9	red maple	9	3			
t681	6984741.975	11887462.960	3	38,34,18	tuliptree	54	2			
t682	6984768.868	11887475.240	1	24	tuliptree	24	3		X	
t683	6984739.787	11887492.179	1	14	tuliptree	14	3		X	
t684	6984721.345	11887490.749	1	16	tuliptree	16	3			
t685	6984723.948	11887507.011	1	7	tuliptree	7	3		X	
t686	6984718.563	11887501.654	1	15	tuliptree	15	3		X	
t687	6984715.923	11887501.492	1	16	tuliptree	16	3		X	
t688	6984680.528	11887517.942	1	14	tuliptree	14	3		X	
t689	6984673.326	11887513.143	1	12	sweet gum	12	3			
t690	6984659.922	11887518.075	1	12	tuliptree	12	3			
t691	6984726.662	11887466.390	1	12	black cherry	12	3	X		
t692	6984715.137	11887447.715	1	6	American holly	6	3			
t693	6984706.367	11887448.023	1	37	southern red oak	37	1			
t694	6984701.907	11887446.815	1	6	red maple	6	3			
t695	6984702.719	11887468.302	1	7	red maple	7	3			
t696	6984664.007	11887462.377	1	14	black locust	14	4	X		
t697	6984668.007	11887469.805	1	6	tuliptree	6	3			
t698	6984655.454	11887469.359	1	7	black cherry	7	3			
t699	6984666.062	11887498.165	1	16	red maple	16	3			
t700	6984654.382	11887489.135	2	20,10	black cherry	22	3			
t701	6984636.369	11887492.550	1	17	black cherry	17	3			
t702	6984635.452	11887488.390	1	7	red maple	7	3			
t703	6984627.011	11887484.521	1	20	tuliptree	20	3			
t704	6984619.943	11887488.858	1	10	tuliptree	10	3			
t705	6984607.603	11887492.297	1	15	tuliptree	15	3			
t706	6984615.575	11887500.372	1	6	tuliptree	6	3			
t707	6984616.405	11887507.331	1	6	tuliptree	6	3			
t708	6984616.843	11887521.977	1	32	red maple	32	3			
t709	6984596.743	11887522.995	2	13,14	blackgum	19	3			
t710	6984645.709	11887541.928	1	14	tuliptree	14	3		X	
t711	6984612.113	11887555.271	1	7	red maple	7	3			
t712	6984579.587	11887588.227	1	18	tuliptree	18	3		X	
t713	6984575.168	11887580.767	2	16,18	red maple	24	3		X	
t714	6984561.115	11887570.666	1	11	red maple	11	3			
t715	6984551.266	11887555.845	1	10	black locust	10	4	X		
t716	6984533.970	11887560.663	1	8	red maple	8	4	X		
t717	6984530.394	11887550.619	1	18	tuliptree	18	3			
t718	6984511.211	11887545.175	1	9	black cherry	9	4			
t719	6984508.303	11887557.389	1	20	tuliptree	20	3			
t720	6984533.204	11887578.533	1	11	white oak	11	4	X		
t721	6984539.295	11887606.188	1	33	tuliptree	33	2		X	
t722	6984483.662	11887576.886	1	21	tuliptree	21	3			
t723	6984500.305	11887604.234	1	29	tuliptree	29	3			
t724	6984514.552	11887616.007	1	11	red maple	11	4	X	X	
t725	6984513.556	11887624.158	1	35	tuliptree	35	2	X	X	
t726	6984501.361	11887621.484	1	14	red maple	14	3			
t727	6984489.893	11887617.201	1	13	red maple	13	3			
t728	6984485.483	11887634.334	1	17	red maple	17	3		X	
t729	6984481.912	11887640.129	1	17	red maple	17	3		X	
t730	6984463.571	11887628.909	1	15	red maple	15	3			
t731	6984455.451	11887624.378	1	21	red maple	21	3			
t732	6984450.863	11887628.070	1	6	red maple	6	4	X		
t733	6984450.022	11887626.001	1	11	red maple	11	3			
t734	6984453.201	11887601.490	1	10	red maple	10	4			
t735	6984422.490	11887598.620	2	28,27	tuliptree	39	3			
t736	6984405.788	11887608.340	1	6	red maple	6	3			
t737	6984413.726	11887618.860	1	17	black cherry	17	3			
t738	6984405.556	11887621.626	1	6	red maple	6	3			
t739	6984409.779	11887633.244	2	10,14	red maple	17	3			
t740	6984440.447	11887662.342	1	6	tuliptree	6	3		X	
t741	6984421.132	11887676.175	2	9,21	red maple	23	2		X	
t742	6984415.538	11887665.442	2	14,18	red maple	23	2			
t743	6984409.212	11887676.310	1	12	red maple	12	3		X	

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

TREE LIST (CONT'D)

URS — Wetland Studies and Solutions, Inc.

DRAWING TL – 03

SCALE N/A

SHEET 32 OF 84

TREE #	NORTHING	EASTING	STEMS	DIAMETER (INCHES)	COMMON NAME	CRITICAL ROOT ZONE (FEET)	HEALTH RATING (1-4)	STATUS		
								DEAD	TBR	TRUNK ARMOR
t744	6984385.725	11887665.605	1	10	red maple	10	3			
t745	6984382.595	11887664.439	1	21	red maple	21	3			
t746	6984373.371	11887677.248	1	22	American elm	22	3			
t747	6984388.142	11887693.655	1	15	red maple	15	3		X	
t748	6984371.591	11887697.859	1	7	American elm	7	3		X	
t749	6984368.738	11887708.240	2	4,5	American elm	6	3		X	
t750	6984358.802	11887717.064	1	9	red maple	9	3		X	
t751	6984334.676	11887726.440	1	6	American elm	6	3			
t752	6984330.571	11887733.863	3	10,8,6	red maple	14	3		X	
t753	6984339.896	11887666.858	1	36	American elm	36	2			
t754	6984341.022	11887677.464	1	7	American elm	7	3			
t755	6984340.509	11887681.839	2	15,13	American elm	20	3			
t756	6984330.309	11887703.587	1	12	black cherry	12	3			
t757	6984318.394	11887710.979	1	15	American elm	15	3			
t758	6984309.358	11887716.361	1	6	royal paulownia	6	3			
t759	6984305.369	11887705.227	1	13	royal paulownia	13	3			
t760	6984300.251	11887706.260	1	6	royal paulownia	6	3			
t761	6984281.496	11887691.446	1	9	unknown tree	9	4	X		
t762	6984274.908	11887687.158	1	6	royal paulownia	6	3			
t763	6984277.784	11887709.276	1	23	black walnut	23	3			
t764	6984307.410	11887713.082	1	6	black locust	6	4			
t765	6984270.438	11887724.639	1	7	tree of heaven	7	4			
t766	6984273.434	11887734.486	1	14	tree of heaven	14	4			
t767	6984276.413	11887736.983	1	8	black locust	8	3			
t768	6984281.474	11887746.798	1	7	tree of heaven	7	4			
t769	6984288.130	11887749.422	1	6	American elm	6	3			
t770	6984295.340	11887767.078	1	6	American elm	6	3			
t771	6984303.381	11887768.784	1	7	black locust	7	4	X		
t772	6984297.483	11887773.794	1	10	tree of heaven	10	3			
t773	6985349.759	11887275.806	1	8	tuliptree	8	3			

HEALTH RATING KEY
1 - Tree is in excellent condition and requires little to no management/treatment
2 - Tree is in good condition and could use minor management/treatment
3 - Tree is stressed and requires significant management/treatment
4 - Tree is in serious decline or dead

ABBREVIATION KEY
TBR - To Be Removed
DND - Do Not Disturb
TST - Total Surveyed Trees

SPECIES SUMMARY - TAYLOR RUN

COMMON NAME	<6" (SAPLING)				6-17" (SMALL)				18-29" (MEDIUM)				30"+ (LARGE)				TOTAL			
	Living	Dead	Total	TBR	Living	Dead	Total	TBR	Living	Dead	Total	TBR	Living	Dead	Total	TBR	Living	Dead	Total	TBR
American Beech	---	---	---	---	2	---	2	---	1	---	1	---	---	---	---	---	3	---	3	---
American Elm	1	---	1	1	27	1	28	8	2	---	2	---	1	---	1	---	30	1	31	9
American Holly	---	---	---	---	4	---	4	---	---	---	---	---	---	---	---	---	4	---	4	---
American Sycamore	---	---	---	---	---	---	---	---	3	---	3	---	1	---	1	---	4	---	4	---
Black Cherry	---	---	---	---	36	4	40	12	14	1	15	4	1	---	1	---	51	5	56	16
Black Locust	---	---	---	---	33	20	53	20	21	6	27	10	---	---	---	---	54	26	80	30
Black Oak	---	---	---	---	---	---	---	---	1	---	1	---	---	---	---	---	1	---	1	---
Black Walnut	---	---	---	---	8	---	8	1	2	---	2	1	---	---	---	---	10	---	10	2
Blackgum	---	---	---	---	9	---	9	---	---	---	---	---	---	---	---	---	9	---	9	---
Boxelder	---	---	---	---	3	---	3	3	---	---	---	---	---	---	---	---	3	---	3	3
Chestnut Oak	---	---	---	---	2	---	2	---	2	---	2	---	2	---	2	---	6	---	6	---
Common Hackberry	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	1	---	1	---
Common Persimmon	---	---	---	---	3	---	3	1	---	---	---	---	---	---	---	---	3	---	3	1
Eastern Cottonwood	---	---	---	---	---	---	---	---	2	---	2	---	---	---	---	---	2	---	2	---
Green Ash	---	---	---	---	9	---	9	4	1	---	1	---	---	---	---	---	10	---	10	4
Hickory Species	---	---	---	---	2	---	2	---	---	---	---	---	---	---	---	---	2	---	2	---
Honeylocust	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	1	---	1	---
Littleleaf Linden	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	1	---	1	---
Mimosa	---	---	---	---	1	---	1	1	---	---	---	---	---	---	---	---	1	---	1	1
Norway Maple	---	---	---	---	5	---	5	2	---	---	---	---	---	---	---	---	5	---	5	2
Pin Oak	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	1	---	1	---
Red Maple	---	---	---	---	118	7	125	53	23	---	23	15	4	---	4	2	145	7	152	70
Red Mulberry	---	---	---	---	1	1	2	---	---	---	---	---	---	---	---	---	1	1	2	---
Royal Paulownia	---	---	---	---	4	---	4	---	---	---	---	---	---	---	---	---	4	---	4	---
Sassafras	---	---	---	---	12	2	14	2	---	---	---	---	---	---	---	---	12	2	14	2
Scarlet Oak	---	---	---	---	---	---	---	---	1	---	1	---	---	---	---	---	1	---	1	---
Silver Maple	---	---	---	---	16	---	16	6	9	---	9	2	2	---	2	---	27	---	27	8
Slippery Elm	---	---	---	---	46	---	46	15	7	---	7	3	1	---	1	---	54	---	54	18
Southern Red Oak	---	---	---	---	1	---	1	1	1	---	1	---	1	---	1	---	3	---	3	1
Sugar Maple	---	---	---	---	2	---	2	---	---	---	---	---	---	---	---	---	2	---	2	---
Sweet Cherry	---	---	---	---	2	1	3	2	---	---	---	---	---	---	---	---	2	1	3	2
Sweet Gum	---	---	---	---	2	---	2	1	1	---	1	---	---	---	---	---	3	---	3	1
Tree of Heaven	---	---	---	---	21	4	25	3	---	---	---	---	---	---	---	---	21	4	25	3
Tuliptree	---	---	---	---	53	2	55	25	51	1	52	19	13	3	16	4	117	6	123	48
Unknown Snag	---	---	---	---	---	22	22	15	---	2	2	---	---	---	---	---	---	24	24	15
Unknown Tree	---	---	---	---	---	38	38	21	---	1	1	---	---	---	---	---	---	39	39	21
Virginia Pine	---	---	---	---	---	---	---	---	2	---	2	---	---	---	---	---	2	---	2	---
White Mulberry	---	---	---	---	23	---	23	10	2	---	2	---	---	---	---	---	25	---	25	10
White Oak	---	---	---	---	5	3	8	1	2	---	2	1	---	---	---	---	7	3	10	2
Willow Oak	---	---	---	---	1	---	1	---	---	---	---	---	---	1	1	---	1	1	2	---
TOTAL	**1**	**---**	**1**	**1**	**455**	**105**	**560**	**207**	**148**	**11**	**159**	**55**	**26**	**4**	**30**	**6**	**629**	**120**	**749**	**269**

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE | BY | DESCRIPTION

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APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

TREE LIST (CONT'D)

URS
1300 WILSON BOULEVARD, SUITE 500
ARLINGTON, VA 22209
(703) 876-5000
Wetland Studies and Solutions, Inc. (A URS Company)
12420 MILLENNIUM DRIVE, SUITE 100
RESTON, VA 20190
(703) 834-3500

DRAWING
TL – 04
SCALE N/A
SHEET 33 OF 84

GRADING NOTES

1. PROPOSED CONTOURS ARE INTENDED TO DEPICT OVERALL GRADING CONCEPT. EXISTING CONDITIONS CONTOURS ARE SHOWN AT 1-FT C.I., HOWEVER PROPOSED CONTOURS ARE SHOWN AT 0.5-FT C.I. TO PROVIDE ADDITIONAL DETAIL FOR PROPOSED GRADING. DUE TO IRREGULARITY OF ROCK SHAPES, CONTOURS DEPICTING POOL GRADING WITHIN STRUCTURES ARE APPROXIMATE. SPECIFICATIONS FOR GRADING IN VICINITY OF STRUCTURES ARE PROVIDED BELOW. THE SPECIFICATIONS BELOW TAKE PRECEDENCE OVER THE CONTOURS DEPICTED ON THE GRADING PLAN.
2. TREE PROTECTION FENCE SHALL BE ORANGE PLASTIC (AS SPECIFIED ON THE EROSION AND SEDIMENT CONTROL DETAILS SHEET) AND SHALL BE PLACED AROUND ALL AREAS OF TREES TO BE PRESERVED ADJACENT TO THE LIMITS OF CLEARING AND GRADING.
3. IT IS ASSUMED THAT ALL TREES WITHIN THE LIMITS OF CLEARING WILL NOT BE REMOVED. PRIOR TO CONSTRUCTION THE LIMITS OF DISTURBANCE (LOD) SHALL BE WALKED BY THE DESIGN TEAM AND CITY STAFF ALONG WITH THE CONTRACTOR TO CONFIRM TREE REMOVAL. IN THE EVENT THAT THE CONTRACTOR BELIEVES A TREE WITHIN THE LOD COULD BE SAVED, THE CONTRACTOR SHALL CONTACT THE DESIGN TEAM AND HAVE THE PROJECT ENGINEER AND CITY ARBORIST DETERMINE IF THE TREE SHOULD BE SAVED OR REMOVED.
4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE LIMITS OF DISTURBANCE SHALL BE MARKED ON SITE FOR REVIEW WITH THE CITY ARBORIST AND THE CONTRACTOR. ADJUSTMENTS MAY BE MADE WHERE POSSIBLE TO PRESERVE ADDITIONAL CRITICAL ROOT ZONE TO IMPROVE THE SURVIVABILITY OF TREES SHOWN TO BE SAVED. THE LOD SHOULD BE CLEARLY MARKED ON THE SITE WITH A CONTINUOUS LINE OF FLAGGING.
5. REFER TO THE GEOMETRY PLAN FOR TRAVERSE LOCATIONS AND ELEVATIONS.
6. ALL STREAM BEDS REQUIRE A MINIMUM DEPTH OF 18" OF REINFORCED BED MATERIAL EXCEPT WHERE OTHERWISE NOTED. FOR CLARITY, IT IS NOT SHOWN IN THE PLAN VIEW WHERE GRADING IS DEPICTED. FOR ADDITIONAL DETAILS ON REINFORCED BED MATERIAL PLACEMENT REFER TO THE PROFILE.
7. CONTRACTOR SHALL SALVAGE STREAM BED MATERIAL AS CONSTRUCTION PROGRESSES DOWNSTREAM AND TOP DRESS THE RESTORED STREAM AS SHOWN ON THE TYPICAL RIFFLE CROSS SECTION.
8. ALL HABITAT LOGS AND ROOT WADS SHALL BE SECURED WITH DUCK BILL ANCHORS AND/OR ANCHOR ROCKS AS DEPICTED IN THE STRUCTURE DETAILS. HABITAT LOGS AND ROOTWADS SHALL CONSIST OF ON-SITE HARDWOOD TREES HARVESTED DURING THE CLEARING AND GRUBBING PROCESS.
9. ALL FILL MATERIAL SHALL BE APPROVED BY SITE GEOTECHNICAL ENGINEER. IN THE EVENT THAT SUITABLE FILL MATERIAL IS NOT AVAILABLE ON-SITE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPORT SUITABLE FILL MATERIAL.
10. ALL PLACED FILL MATERIAL AND REINFORCED BED MATERIAL SHALL BE COMPACTED WITH THE TRACK HOE BUCKET TO A REASONABLE COMPACTION AS DETERMINED BY THE SITE ENGINEER/CITY INSPECTOR (TYPICALLY 80-85%).
11. TOPSOIL SHALL CONSIST OF A MIXTURE OF 3 INCHES OF IMPORTED TOPSOIL MIXED WITH THE TOP 4-6 INCHES OF SALVAGED IN-SITU SOIL. TOPSOIL SHALL BE PLACED ON ALL AREAS WITHIN THE LOD TO A MINIMUM DEPTH OF 6 INCHES (EXCEPT WHERE REINFORCED BED MATERIAL, ASPHALT, OR CONCRETE IS SPECIFIED AND ALONG THE TEMPORARY ACCESS PATHS). ALL SALVAGED SOIL SHALL BE FROM THE "O" OR "A" HORIZONS (SEE SOIL HORIZON DETAIL - THIS SHEET). HORIZONS "B" AND "C" SHALL ONLY BE USED FOR FILL MATERIAL. SALVAGED SOIL SHALL ONLY BE HARVESTED FROM AREAS DESIGNATED TO BE GRADED. NO TOPSOIL SHALL BE REMOVED FROM THE SITE AND A SOIL HARVEST CAN HAPPEN AT ANY GIVEN TIME DURING CONSTRUCTION. ALL HARVESTED SOIL MUST BE PROPERLY STORED IN A STOCKPILE/STAGING AREA AND ADHERE TO ALL E&S GUIDELINES. THE TOPSOIL MIXTURE SHALL BE WELL MIXED AND SEEDED PER THE PLANTING PLAN IMMEDIATELY FOLLOWING INSTALLATION AND PRIOR TO STRAW AND MATTING PLACEMENT.
12. FOLLOWING CONSTRUCTION, ALL GRADES (OUTSIDE OF SPECIFIED STREAM RESTORATION AREAS) SHALL BE RETURNED TO EXISTING CONDITIONS AND ANY OTHER DAMAGE TO EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR. BRIDGES ARE TO BE REPLACED IN KIND.

RIFFLE:

DEPTH: ±0.2 FT (TOTAL DEPTH AS WELL AS ACTUAL ELEVATION)
WIDTH: ±5% OF DESIGN WIDTH (INCLUDES BOTH TOP WIDTH AND WIDTH AT BASE OF THE TIE-OUT SLOPE.

STEP POOLS/ROCK STEPS:

DESIGN DROP-HEIGHT (FT)	***TOLERANCE (FT)***	***COMMENT***
0.0 - 0.3	±0.1	NO GREATER THAN 0.3' (NO POOL REINFORCEMENT REQUIRED)
0.3 - 0.7		NO GREATER THAN 0.7' (POOL LINED WITH REINFORCED BED MIX)
>0.7		POOL LINED WITH BOULDER REINFORCEMENT

POOL LENGTH/POOL WIDTH: 1.2-1.4
HORIZONTAL LOCATION (ALONG THALWEG): ±1.5 FT FROM DESIGN
LATERAL LOCATION: ±0.5 FT FROM DESIGN

CROSS VANES:

ARM SLOPE : ±2% FROM DESIGN SLOPE (AS LONG AS SLOPE IS BETWEEN 2-7%)
DEFLECTION ANGLE: ±3° FROM DESIGN ANGLE (AS LONG AS BETWEEN 20-30°)
INVERT: ±0.1 FT (ACTUAL ELEVATION)
POOL DEPTH: ±6 IN. (POOL LENGTHS MAY BE "OVER-DUG" UP TO 5 FT)
HORIZONTAL HEAD OF STRUCTURE LOCATION ALONG THALWEG: ±1.5 FT FROM DESIGN LOCATION
LATERAL LOCATION: ±0.5 FT FROM DESIGN LOCATION

NOTE: THE ABOVE TOLERANCES CAN BE ADJUSTED AS NECESSARY TO REFLECT FIELD CONDITIONS, WITH THE PRIOR WRITTEN APPROVAL OF THE DESIGN ENGINEER AND/OR HIS DESIGNATED REPRESENTATIVE IF THE ENGINEER DOES NOT BELIEVE THAT THE DESIGN INTEGRITY AND STABILITY OF THE WORK WILL BE AFFECTED. HOWEVER, ALL POINTS WITHIN A GIVEN STRUCTURE (STEP POOL, ROCK STEP, OR CROSS VANE) MUST BE SHIFTED EQUALLY TO MAINTAIN DIMENSIONAL INTEGRITY. ANY SUCH CHANGE MUST BE NOTED ON THE AS-BUILT DRAWING, INCLUDING THE JUSTIFICATION FOR THE CHANGE.

"REINFORCED BED MIXTURE" (RBM) SPECIFICATIONS

REINFORCED BED MIXTURE (RBM) IS UTILIZED IN THE BED OF THE STREAM, AND IN SOME CASES OTHER AREAS, TO PROVIDE A STABLE SUBSTRATE OR FILL AREA. THE RBM PRODUCT VARIES IN ITS MATERIAL, MANUFACTURING PROCESS AND INSTALLATION EXECUTION, AS DESCRIBED BELOW:

MATERIAL: GENERALLY, RBM SHALL CONSIST OF ROCK (RIP RAP) MIXED WITH BANK RUN GRAVEL, COARSE SAND AND TOPSOIL. THERE ARE TWO (2) TYPES OF RBM USED IN TAYLOR RUN, EACH CATEGORIZED BY THEIR LARGEST ROCK SIZE WHICH RANGES FROM VDOT CLASS A1 TO VDOT CLASS I. THEY ARE REFERRED TO AS "CL A1 RBM" AND "CL I RBM" THROUGHOUT THESE PLANS.

EACH TYPE OF RBM MUST MEET THE MATERIAL SPECIFICATIONS PROVIDED IN TABLE 1 BELOW.

TABLE 1		**PORTION BY VOLUME**
MATERIAL CATEGORY	**MATERIAL SIZE RANGE**	**CL I RBM**
ROCK	**VDOT CL I RIPRAP - D50 = 13.2"**	35 - 40%
BANK RUN GRAVEL	WELL GRADED GRAVEL (0.08" - 2.5") D50 = 1.3"	35 - 40%
COARSE SAND	0.04" - 0.08" (1 - 2 mm)	12 - 17%
TOPSOIL	LOAM OR SILT LOAM WITH 3 - 5% ORGANIC CONTENT	7 - 12%

1. EACH RBM TYPE SHALL CONTAIN THE PERCENTAGE BY VOLUME OF THE MATERIALS AS SPECIFIED IN TABLE 1.
2. THE ROCK PORTION OF ANY RBM MIXTURE SHALL CONSIST OF DIABASE STONE AND/OR RIVER WASHED COBBLE (SIMILAR IN COLOR TO THE NATIVE MATERIAL FOUND ON SITE) AND SHALL HAVE A D50 SIZE AS SPECIFIED IN TABLE 1 ABOVE FOR THE TYPE OF RBM SPECIFIED.
3. THE BANK RUN GRAVEL MAY INCLUDE UP TO 5% CLAY, SILT AND/OR SAND AND UP TO 25% COBBLE (D50 = 3" - 8"). THE GRAVEL MUST HAVE A NATURAL COLOR SIMILAR TO THE NATIVE MATERIAL FOUND ON SITE.
4. THE SAND PORTION OF THE MIXTURE SHALL CONSIST OF A WELL MIXED SAND PREDOMINANTLY 1.0 - 2.0 MM IN SIZE AND SUBJECT TO THE PROJECT ENGINEER'S APPROVAL. WASHED CONCRETE IS NOT REQUIRED, BUT SAND MUST HAVE A NATURAL COLOR SIMILAR TO THE NATIVE MATERIAL FOUND ON SITE.
5. THE TOPSOIL PORTION OF THE MIXTURE SHALL CONSIST OF 50% SIFTED, UNWASHED COARSE SAND (WITH FINES ALLOWED), 25% COMPOSTED LEAF/BARK MULCH, AND 25% MINERAL SILT OR FINER MATERIAL (STONE DUST FROM ROCK CRUSHING OPERATIONS OR ANY SILT/CLAY).
6. DUE TO INCONSISTENCIES IN MATERIAL NORMALLY ENCOUNTERED IN THE BANK RUN GRAVEL, SAND AND TOPSOIL COMPONENTS, EACH MIX MUST BE REVIEWED AND APPROVED BY THE ENGINEER BEFORE INSTALLATION.

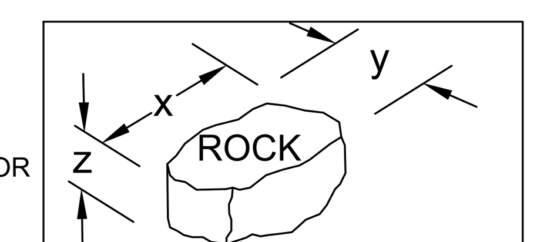
MANUFACTURING PROCESS

7. CL I RBM TYPE MUST BE MIXED BY THE MANUFACTURER AT THEIR FACILITY. THE MIXTURE MUST BE APPROVED BY THE PROJECT ENGINEER AT THE SITE FOR CONFORMANCE WITH MATERIAL SIZE AND MIXTURE PERCENTAGES PROVIDED IN TABLE 1 PRIOR TO BEING PLACED AS SPECIFIED IN THE PLANS.

INSTALLATION/EXECUTION PROCESS

8. THE CONTRACTOR SHALL PREPARE THE SUBGRADE IN PREPARATION OF RBM INSTALLATION TO THE DEPTH REQUIRED TO ACHIEVE THE RBM DEPTH, WIDTH AND INVERTS INDICATED ON THE LONGITUDINAL PROFILE AND TYPICAL DETAILS.
9. FOR CL I RBM WITH INSTALLATION DEPTHS EQUAL TO OR LESS THAN 18 INCHES, THE PREMIXED PRODUCT MAY BE PLACED IN A SINGLE LIFT. FOR DEPTHS GREATER THAN 18 INCHES, THE RBM MUST BE PLACED IN LIFTS NO GREATER THAN 12 INCHES. THE CONTRACTOR SHALL INSPECT THE INSTALLATION OF RBM TO ENSURE THE PRODUCT IS INSTALLED AS A HOMOGENEOUS MIXTURE VISUALLY FREE OF VOIDS GREATER THAN 1 SQUARE INCH.
10. REFER TO THE GRADING PLAN AND LONGITUDINAL PROFILE FOR THE LIMITS OF PLACEMENT, TYPE AND DEPTH OF THE RBM. ADDITIONAL DETAIL REGARDING PLACEMENT IS PROVIDED IN SPECIFIC STRUCTURE AND FEATURE CONSTRUCTION DETAILS.

STRUCTURE ROCK NOTES



3 PRIMARY DIMENSIONS OF ROCK:
x = LONGEST DIMENSION
y = INTERMEDIATE DIMENSION
z = SHORTEST DIMENSION

1. HEADER AND FOOTER ROCKS SHALL HAVE AN INTERMEDIATE DIMENSION OF AT LEAST **36 INCHES** UNLESS OTHERWISE CALLED FOR IN THE PROJECT SPECIFICATIONS.
2. IF THE STREAM IS NARROW, THE VANE HEADER ROCKS MAY BE CONFIGURED TO TAKE THE PLACE OF THE CENTER HEADER ROCK AS LONG AS ALL DIMENSIONS OF THE STRUCTURE ARE MAINTAINED.
3. THE SILL ROCKS SHALL HAVE AN INTERMEDIATE DIMENSION OF AT LEAST **12 INCHES**. REFER TO TYPICAL CROSS-SECTION DETAILS FOR PLACEMENT OF COIR FABRIC ALONG THE STREAM.
4. TOP OF FRONT HEADER ROCK (S) SHALL BE PLACED AT PROPOSED STREAMBED INVERT.
5. BACKFILL BETWEEN VANES AND BANKS WITH SUBSTRATE MATERIAL USED IN CHANNEL.
6. STRUCTURE SHALL BE UNDERLAIN WITH WOVEN OR NON-WOVEN POLYPROPYLENE GEOTEXTILE, SUCH AS MIRAFI 700x, MIRAFI 70/20, FILTERWEAVE 500, N060, OR APPROVED EQUAL. THE FABRIC SHALL HAVE PUNCTURE RESISTANCE GREATER THAN 100 LBS, APPARENT OPENING SIZE GREATER THAN U.S. 70 SIEVE, AND 30 LBS. OF TENSILE STRENGTH AT 20% (MAXIMUM).
7. ALL FOOTER ROCKS SHALL TIE IN A MINIMUM OF **12" BELOW** EXISTING OR PROPOSED STREAM INVERT, WHICHEVER IS LOWER. SMALLER ROCKS MAY BE USED, AS APPROVED BY THE FIELD ENGINEER, BUT THIS MAY REQUIRE MORE THAN 2 ROWS OF ROCKS.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

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CONSULTANT PROJECT ID: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

GRADING NOTES

DRAWING GN – 01

SCALE N/A

SHEET 34 OF 84

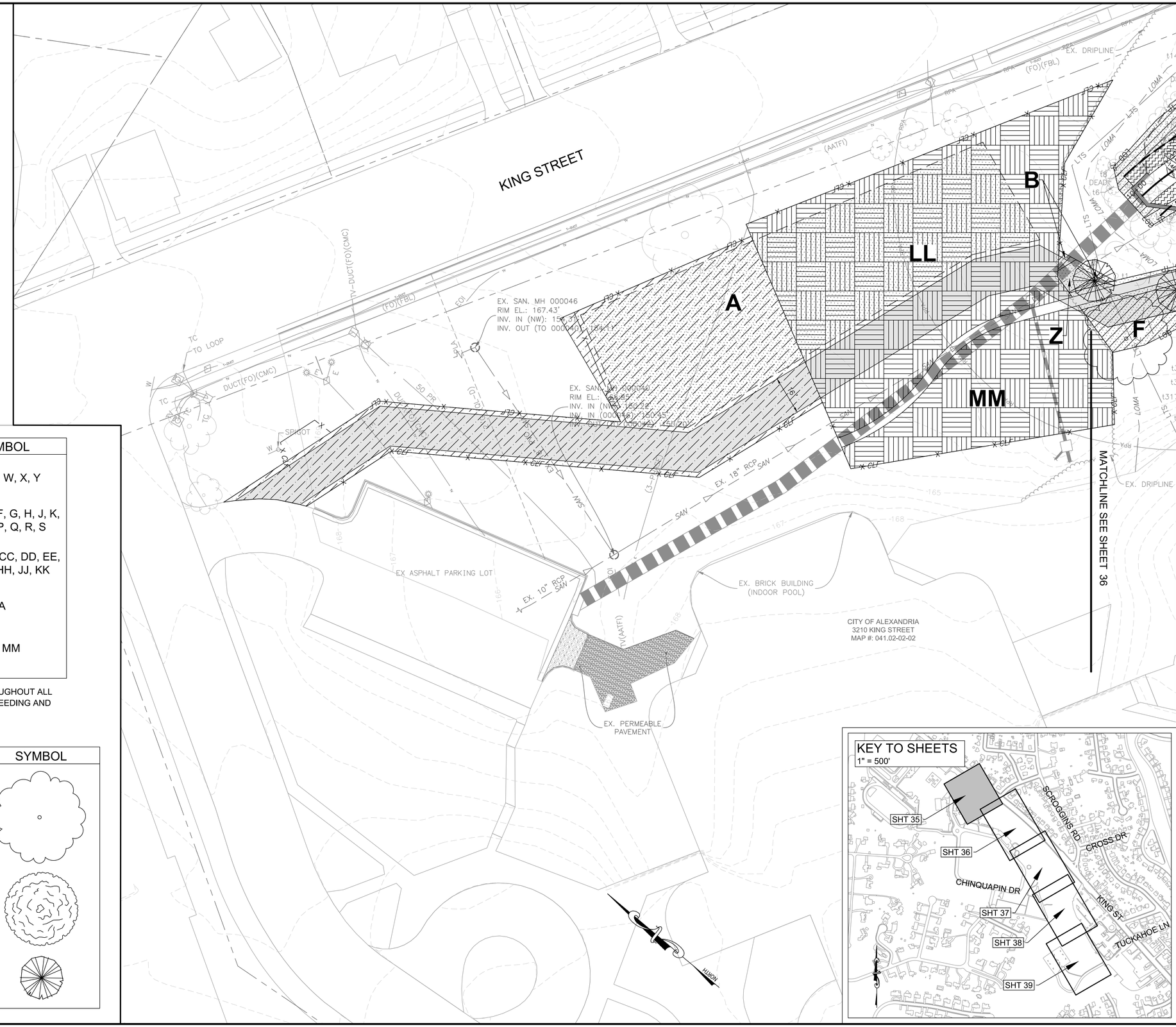
SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

PLANTING AREAS	SYMBOL
STREAMSIDE* 25,913 SF = 0.58 AC 3,998 LF	T, U, V, W, X, Y
RIPARIAN FOREST* 82,980 SF = 1.90 AC	B, C, D, E, F, G, H, J, K, L, M, N, P, Q, R, S
RIPARIAN SEED MIX* 15,137 SF = 0.36 AC	Z, AA, BB, CC, DD, EE, FF, GG, HH, JJ, KK
TURF GRASS* 9,534 SF = 0.22 AC	A
MEADOW* 14,383 SF = 0.33 AC	LL, MM

*APPROPRIATE SEED MIXES SHALL BE DISTRIBUTED EVENLY THROUGHOUT ALL DISTURBED AREAS IN THE AMOUNT AND TYPE SPECIFIED ON THE SEEDING AND VEGETATION SCHEDULE SHEETS.

1.5"-2" CALIPER 6'-10' TREES	QUANTITY	SYMBOL
NORTHERN RED OAK NYSSA SYLVATICA 60% FULL GROWTH CANOPY DIA = 36'	9	
RED MAPLE ACER RUBRUM 60% FULL GROWTH CANOPY DIA = 30'	13	
BLACK GUM QUERCUS RUBRA 60% FULL GROWTH CANOPY DIA. = 18'	33	



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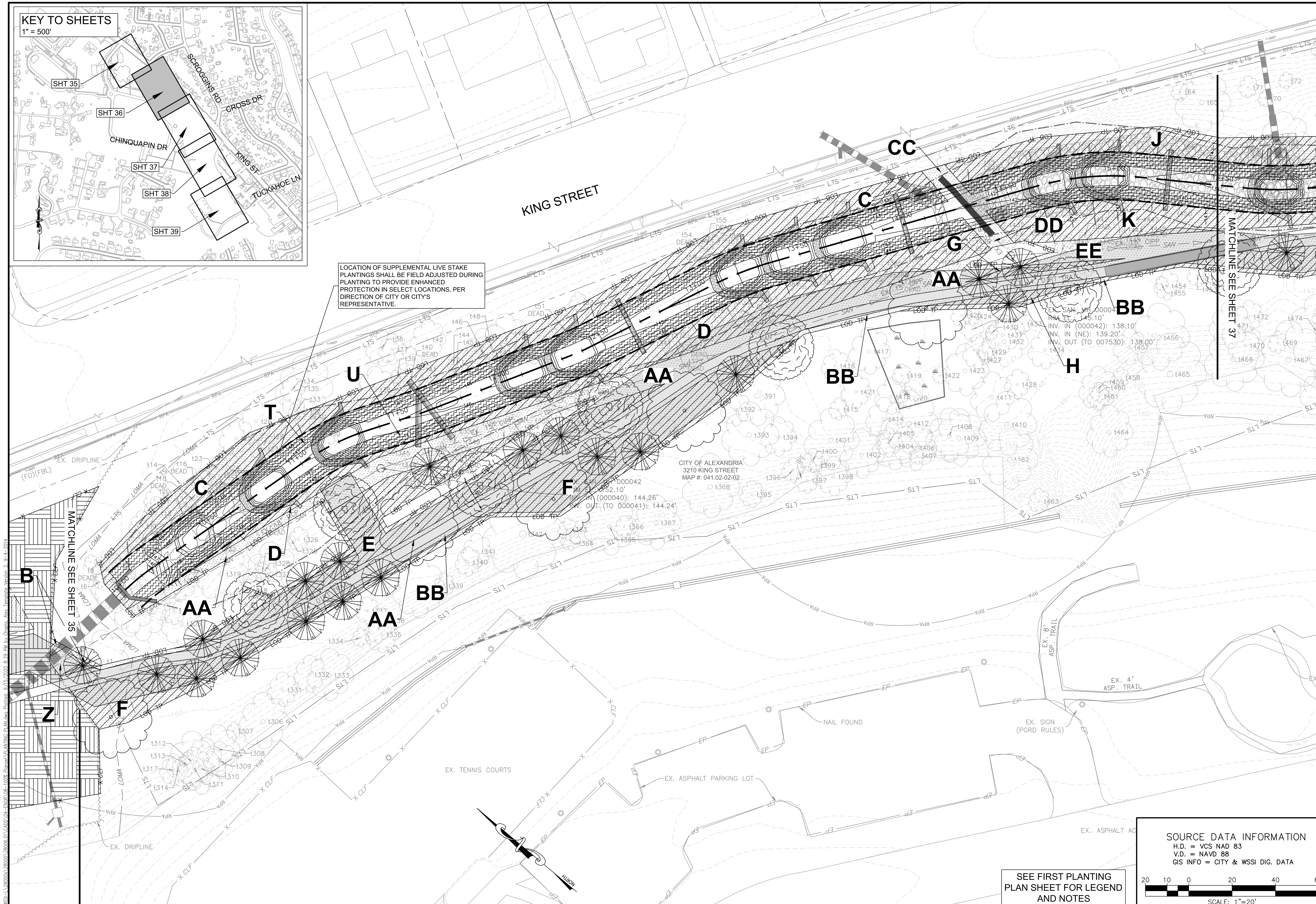
TAYLOR RUN STREAM RESTORATION

PLANTING PLAN

Wetland Resource & Environmental Consultants
A DAMES & MOORE Company
3300 WILLIAMSBURG LANE, SUITE 100
KENSINGTON, MD 20895
(703) 978-3900

URS
14020 THUNDERBOLT PLACE, SUITE 100
CHANTILLY, VA 20151
(301) 820-3000

DRAWING
PP – 01
SCALE 1" = 20'
SHEET 35 OF 84



SEE FIRST PLANTING PLAN SHEET FOR LEGEND AND NOTES

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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Wetland Studies and Solutions, Inc. — a DAVEY company

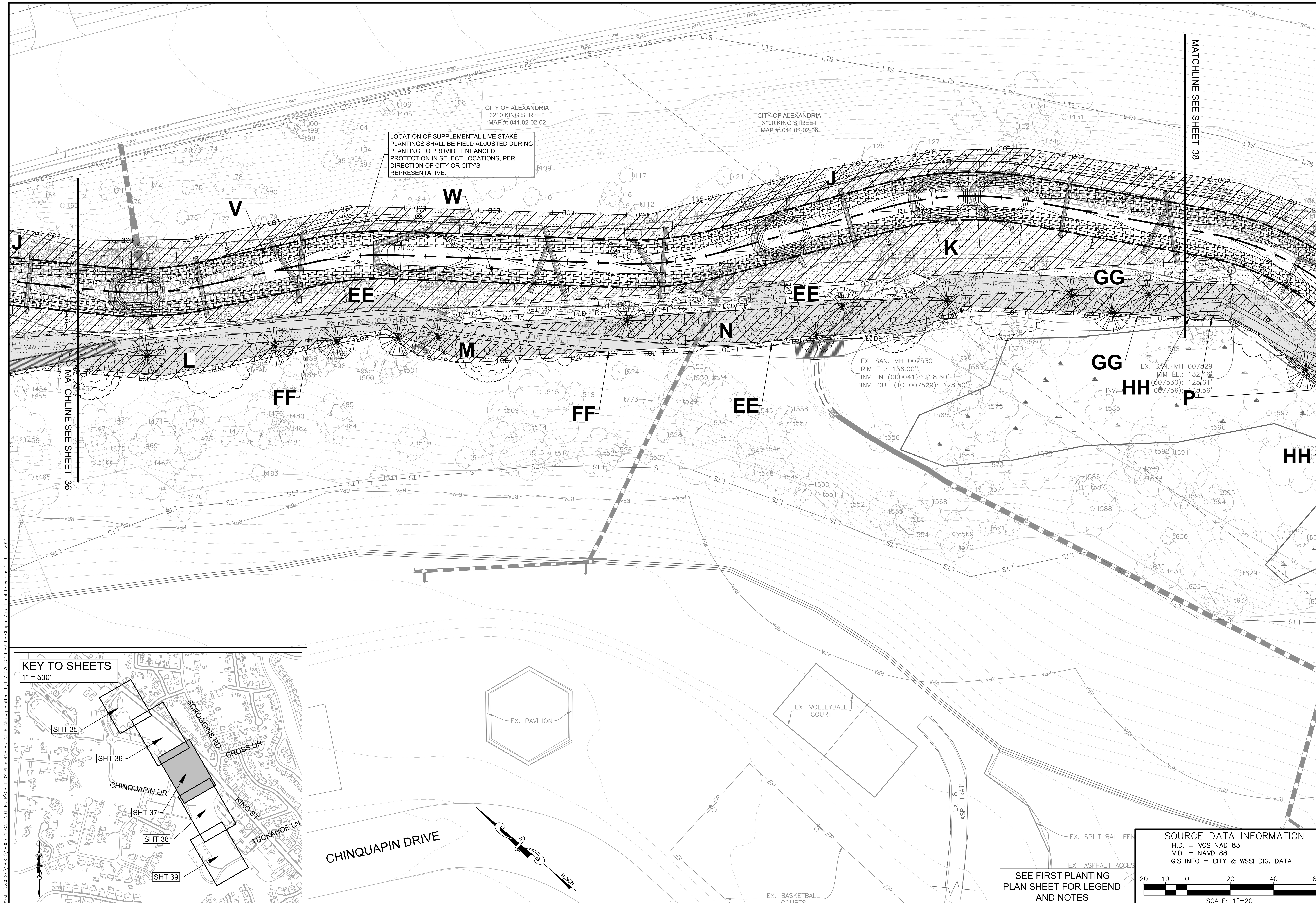
URS

TAYLOR RUN STREAM RESTORATION

PLANTING PLAN (CONT'D)

DRAWING PP – 02

SCALE 1" = 20'



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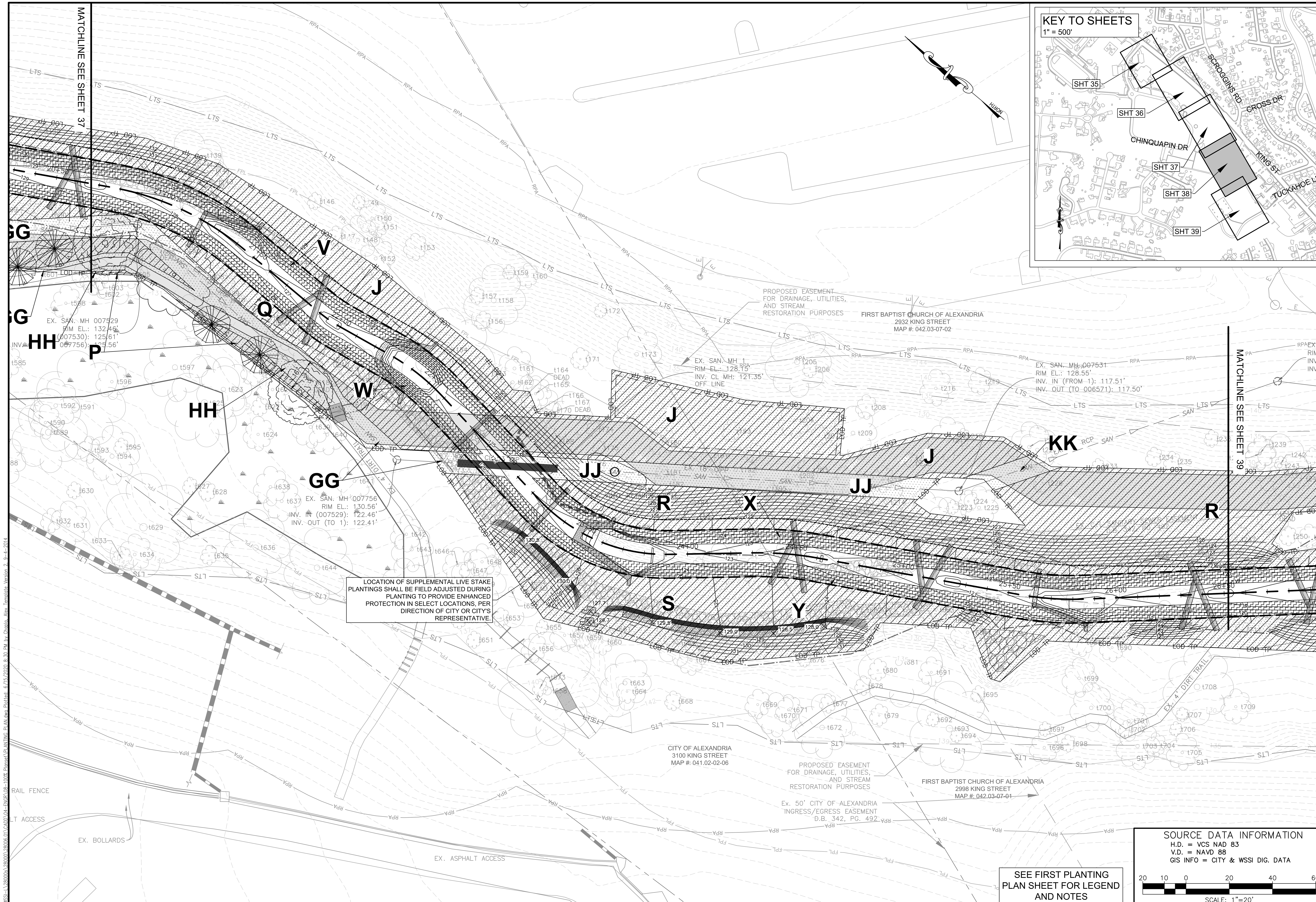
TAYLOR RUN STREAM RESTORATION

PLANTING PLAN (CONT'D)

DRAWING PP - 03

SCALE 1" = 20'

SHEET 37 of 84



KEY TO SHEETS
1" = 500'
SHT 35
SHT 36
SHT 37
SHT 38
SHT 39
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN
MATCHLINE SEE SHEET 37
MATCHLINE SEE SHEET 39
EX. SAN. MH 007529
RIM EL.: 132.46'
(007530): 125.61'
(007756): 125.56'
PROPOSED EASEMENT
FOR DRAINAGE, UTILITIES,
AND STREAM
RESTORATION PURPOSES
FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02
EX. SAN. MH 1
RIM EL.: 128.15'
INV. CL MH: 121.35'
OFF LINE
EX. SAN. MH 007531
RIM EL.: 128.55'
INV. IN (FROM 1): 117.51'
INV. OUT (TO 006571): 117.50'
EX. SAN. MH 007756
RIM EL.: 130.56'
INV. IN (007529): 122.46'
INV. OUT (TO 1): 122.41'
LOCATION OF SUPPLEMENTAL LIVE STAKE
PLANTINGS SHALL BE FIELD ADJUSTED DURING
PLANTING TO PROVIDE ENHANCED
PROTECTION IN SELECT LOCATIONS, PER
DIRECTION OF CITY OR CITY'S
REPRESENTATIVE.
CITY OF ALEXANDRIA
3100 KING STREET
MAP #: 041.02-02-06
PROPOSED EASEMENT
FOR DRAINAGE, UTILITIES,
AND STREAM
RESTORATION PURPOSES
FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01
Ex. 50' CITY OF ALEXANDRIA
INGRESS/EGRESS EASEMENT
D.B. 342, PG. 492
RAIL FENCE
EX. BOLLARDS
EX. ASPHALT ACCESS
EX. 4' DIRT TRAIL
GG
HH
P
V
J
Q
W
JJ
R
X
KK
S
Y

SEE FIRST PLANTING PLAN SHEET FOR LEGEND AND NOTES

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS		
DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA, NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

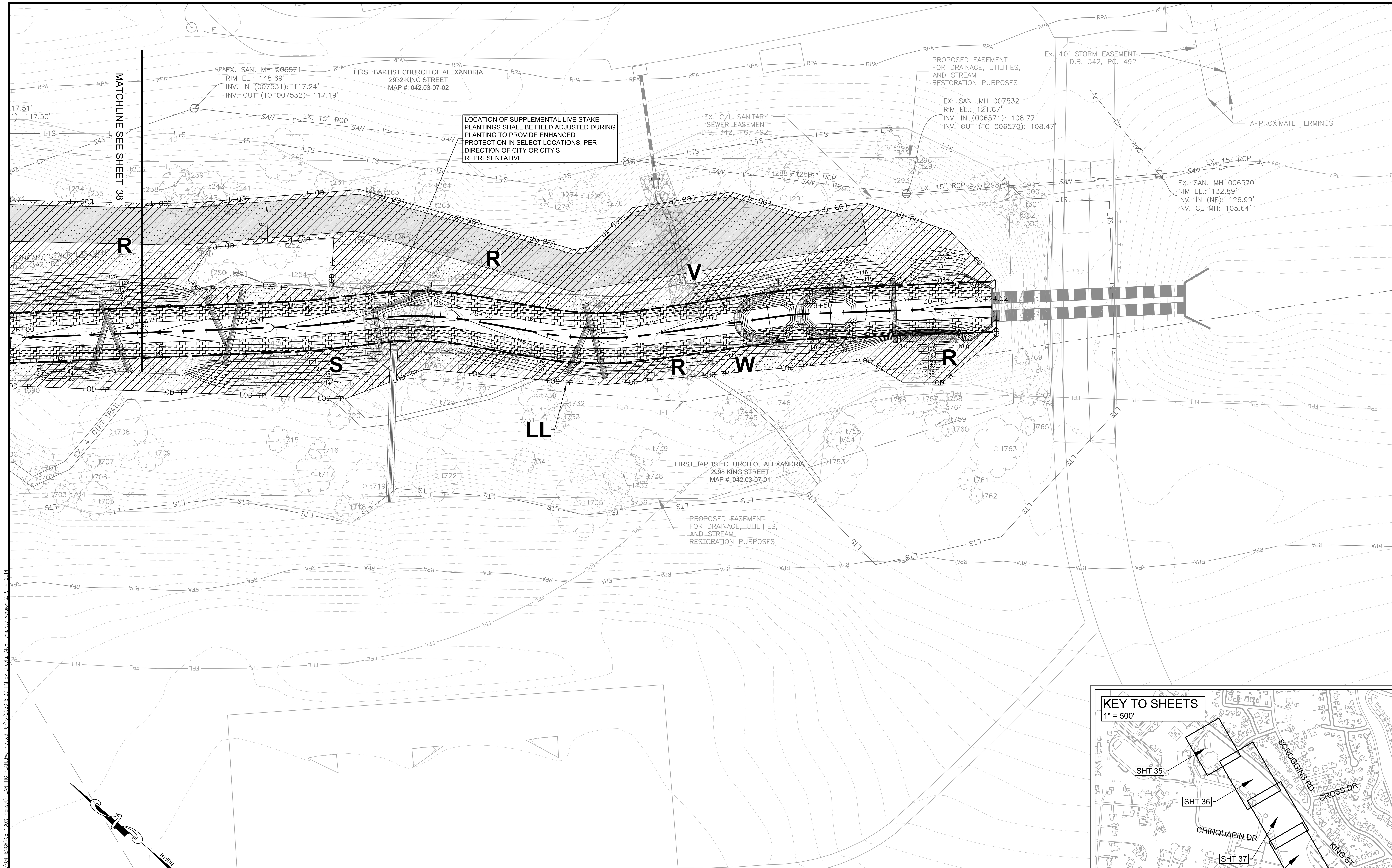
TAYLOR RUN STREAM RESTORATION

PLANTING PLAN (CONT'D)

DRAWING PP - 04

SCALE 1" = 20'

SHEET 38 of 84



SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

SEE FIRST PLANTING PLAN SHEET FOR LEGEND AND NOTES

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
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SEAL: COMMONWEALTH OF VIRGINIA, NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

PLANTING PLAN (CONT'D)

URS

Wetland Studies and Solutions, Inc.

DRAWING
PP - 05
SCALE 1" = 20'
SHEET 39 of 84

RIPARIAN FOREST VEGETATION SCHEDULE FOR SHADY & VARIABLE HYDROLOGY CONDITIONS

CONTAINER ZONE	PLANTING	SPECIES GROUP[1,2]	SPECIES[2]	PLANT SPACING[3]	CONTAINER SIZE, RATE, AND QUANTITY[4]: PLANTS PER ACRE	CONTAINER SIZE, RATE, AND QUANTITY[4]: # OF PLANTS
RIPARIAN FOREST	RIPARIAN FOREST OVERSTORY LAYER	1	QUERCUS FALCATA (SOUTHERN RED OAK) QUERCUS ALBA (WHITE OAK) QUERCUS PALUSTRIS (PIN OAK) QUERCUS PHELLOS (WILLOW OAK) QUERCUS RUBRA (NORTHERN RED OAK)	15' O.C.[3]	250 ONE GAL -- or -- 750 TUBELINGS -- or -- MIX AT 1:2 RATIO[4]	477 (BASED ON ONE-GALLON)
RIPARIAN FOREST	RIPARIAN FOREST OVERSTORY LAYER	2	ACER NEGUNDO (BOX ELDER) CARYA CORDIFORMIS (BITTERNUT HICKORY) DIOSPYROS VIRGINIANA (COMMON PERSIMMON) LIQUIDAMBAR STYRACIFLUA (SWEET GUM) NYSSA SYLVATICA (BLACK GUM) PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	21' O.C.[3]	150 ONE-GALLON -- or -- 300 TUBELINGS -- or -- MIX AT 1:2 RATIO[4]	287 (BASED ON ONE-GALLON)
RIPARIAN FOREST	RIPARIAN FOREST UNDERSTORY LAYER	3	ACER RUBRUM (RED MAPLE) AMELANCHIER CANADENSIS (CANADIAN SERVICEBERRY) ASIMINA TRILOBA (PAWPAW) CERCIS CANADENSIS (EASTERN REDBUD) CHIONANTHUS VIRGINICUS (WHITE FRINGE TREE) CORNUS FLORIDA (FLOWERING DOGWOOD)	8' O.C.3	800 ONE-GALLON -- or -- 1600 TUBELINGS -- or -- MIX AT 1:2 RATIO[4]	1,516 (BASED ON ONE-GALLON)
RIPARIAN FOREST	RIPARIAN FOREST SHRUB LAYER	4	CORYLUS AMERICANA (AMERICAN HAZELNUT) LINDERA BENZOIN (NORTHERN SPICEBUSH) VIBURNUM DENTATUM (SOUTHERN ARROWWOOD) VIBURNUM PRUNIFOLIUM (BLACK-HAW)	8' O.C.[3]	600 ONE-GALLON -- or -- 1200 TUBELINGS[4]	1,136 (BASED ON ONE-GALLON)
RIPARIAN FOREST QUANTITY SUBTOTALS					**1,800**	**3,416**
STREAM BANK	STREAM BANK SHRUB LAYER	5	ALNUS SERRULATA (BROOKSIDE ALDER) ARONIA ARBUTIFOLIA (RED CHOKEBERRY) CEPHALANTHUS OCCIDENTALIS (BUTTONBUSH) ILEX VERTICILLATA (COMMON WINTERBERRY) VIBURNUM DENTATUM (SOUTHERN ARROWWOOD)	4' O.C.[6]	3600 ONE-GALLON -- or -- 9600 TUBELINGS -- or -- MIX AT 1:2 RATIO[4]	2,102 (BASED ON ONE-GALLON)
STREAM BANK QUANTITY SUBTOTALS					---	**2,102**
STREAM EDGE	STREAM EDGE SHRUB LAYER	6	CEPHALANTHUS OCCIDENTALIS (BUTTONBUSH) CORNUS AMOMUM (SILKY DOGWOOD) SAMBUCUS NIGRA spp. CANADENSIS (ELDERBERRY/BLACK ELDER) SALIX NIGRA (BLACK WILLOW)	1 PER L.F.[5,6]	N/A	3,998 (LIVESTAKES OR TUBELINGS)
STREAM EDGE QUANTITY SUBTOTALS					---	**3,998**
LIVE STAKE	SUPPLEMENTAL LIVE STAKES	7	SALIX NIGRA (BLACK WILLOW)	1 PER L.F. STAGGERED	N/A	600 LIVE STAKES
LIVE STAKE QUANTITY SUBTOTALS					---	**600**

PLANTING QUANTITIES (BASED ON ONE-GALLON SIZE)[4]

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
AREA (SF):	9,534	75	4,369	3,182	3,216	3,726	170	355	17,385	7,588	1,254	743	3,618	343	1,900	24,604	10,453
AREA (AC):	0.219	0.002	0.10	0.07	0.07	0.09	0.004	0.01	0.40	0.17	0.029	0.02	0.08	0.01	0.04	0.56	0.24
LENGTH (LF):	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Group 1		1	25	18	18	23	1	3	100	43	7	5	20	3	10	140	60
Group 2		0	15	11	11	14	1	2	60	26	4	3	12	2	6	84	36
Group 3		2	80	56	56	72	3	8	320	136	23	16	64	8	32	448	192
Group 4		1	60	42	42	54	2	6	240	102	17	12	48	6	24	336	144
RIPARIAN FOREST QUANTITY SUBTOTALS	-	**4**	**180**	**127**	**127**	**163**	**7**	**19**	**720**	**307**	**51**	**36**	**144**	**19**	**72**	**1,008**	**432**
Group 5																	
STREAM BANK QUANTITY SUBTOTALS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Group 6																	
STREAM EDGE QUANTITY SUBTOTALS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Group 7																	
LIVE STAKE QUANTITY SUBTOTALS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM
AREA (SF):	2,752	2,731	5,721	5,439	4,539	4,731	126	3,704	1,091	114	121	3,798	830	2,828	435	1,792	298	10,395	3,987
AREA (AC):	0.06	0.06	0.13	0.12	0.104	0.11	0.003	0.09	0.03	0.003	0.003	0.09	0.02	0.06	0.01	0.04	0.01	0.24	0.09
LENGTH (LF):	425	425	860	860	714	714	-	-	-	-	-	-	-	-	-	-	-	-	-
Group 1																			
Group 2																			
Group 3																			
Group 4																			
RIPARIAN FOREST QUANTITY SUBTOTALS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Group 5	216	216	468	432	374	396													
STREAM BANK QUANTITY SUBTOTALS	**216**	**216**	**468**	**432**	**374**	**396**	-	-	-	-	-	-	-	-	-	-	-	-	-
Group 6	425	425	860	860	714	714													
STREAM EDGE QUANTITY SUBTOTALS	**425**	**425**	**860**	**860**	**714**	**714**	-	-	-	-	-	-	-	-	-	-	-	-	-
Group 7																			
LIVE STAKE QUANTITY SUBTOTALS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

PLANTING AND SEEDING NOTES:

1. It is expected and preferred that all species in each of the Species Groups are planted. The tolerances listed in this note are intended to incorporate flexibility according to species availability. At a minimum, Contractor to provide at least:
   a) 4 of the 5 species in Group 1,
   b) 5 of the 6 species in Group 2,
   c) 5 of the 6 species in Group 3,
   d) 3 of the 4 species in Group 4,
   e) 4 of the 5 species in Group 5,
   f) 3 of the 4 species in Group 6,
   g) all of the species in Group 7,
   h) 3 of the 4 species in Group 8,
2. Substitutions for selected species based upon availability shall be requested in writing to engineer, documenting the lack of availability, If the flexibility inherent in the above schedule is still not sufficient, Engineer is under no obligation to approve substitutions.
3. The planted trees and shrubs shall be randomly spaced and species mixed throughout the planting areas.
4. Container rates and quantities shown for one gallon size. For purposes of substitution, two tubelings are the equivalent of one 1-gallon container plant in this schedule. Contractor may provide a mix of container and tubeling sizes for each species requirement, provided the ratio of tubelings to containers is not less than 2:1. Exception -- Group 6 (Stream Edge) shall be planted in accordance with Note #5.
5. Group 6 (Stream Edge) zone shall be planted with tubelings, or as livestakes. No one gallons are required to be used for any of this Group's species.
6. Stream Bank (Group 5) and Stream Edge (Group 6) zones shall be planted such that the combined mix of species is spaced approx. 3' O.C. and 1 plant per L.F. respectively.
7. All seeding rates are expressed in pounds of pure live seed (PLS).
8. The Turf Grass Seed Mix is according to the Minimum Care Lawn specifications included in Table 3.32-D of the Virginia Erosion and Sediment Control Handbook, Third Edition.
9. Group 16 (Mix # ERNMX-105) is a proprietary mis supplied by Ernst Conservation Seeds. The mix does not include an annual cover crop, therefore Group 9 seed shall be evenly mixed in with ERNMX-105 prior to seeding.

PRELIMINARY - NOT FOR CONSTRUCTION

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

VEGETATION SCHEDULE

URS — Wetland Studies and Solutions, Inc.

DRAWING VS - 01

SCALE N/A

SEEDING SCHEDULE

SEEDING QUANTITIES

	SPECIES GROUP[1,2]	SPECIES[2]	SEEDING RATE[7] (LBS/AC)	AREA PER PLANT (AC)	QUANTITY (LBS)		A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	JJ	KK	LL	MM
						AREA (SF):	9,534	75	4,369	3,182	3,216	3,726	170	355	17,385	7,588	1,254	743	3,618	343	1,900	24,604	10,453	2,752	2,731	5,721	5,439	4,539	4,731	126	3,704	1,091	114	121	3,798	830	2,828	435	1,792	298	10,395	3,987
						AREA (AC):	0.22	0.002	0.10	0.07	0.07	0.09	0.004	0.01	0.40	0.17	0.03	0.02	0.08	0.01	0.04	0.56	0.24	0.06	0.06	0.13	0.12	0.10	0.11	0.003	0.09	0.03	0.003	0.003	0.09	0.02	0.06	0.01	0.04	0.01	0.24	0.09
RIPARIAN FOREST SEED MIX	8	LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)	45.00	2.84	127.73			0.09	4.50	3.15	3.15	4.05	0.18	0.45	18.00	7.65	1.31	0.90	3.60	0.45	1.80	25.20	10.80	2.70	2.70	5.85	5.40	4.68	4.95	0.14	4.05	1.35	0.14	0.14	4.05	0.90	2.70	0.45	1.80	0.45		
		SETARIA ITALICA (FOXTAIL MILLET/ITALIAN BRISTLE GRASS)	45.00	2.84	127.73			0.09	4.50	3.15	3.15	4.05	0.18	0.45	18.00	7.65	1.31	0.90	3.60	0.45	1.80	25.20	10.80	2.70	2.70	5.85	5.40	4.68	4.95	0.14	4.05	1.35	0.14	0.14	4.05	0.90	2.70	0.45	1.80	0.45		
	9	ELYMUS RIPARIUS (RIVERBANK WILD RYE)	10.00	2.84	28.38			0.02	1.00	0.70	0.70	0.90	0.04	0.10	4.00	1.70	0.29	0.20	0.80	0.10	0.40	5.60	2.40	0.60	0.60	1.30	1.20	1.04	1.10	0.03	0.90	0.30	0.03	0.03	0.90	0.20	0.60	0.10	0.40	0.10		
		ELYMUS VIRGINICUS (VIRGINIA WILD RYE)	10.00	2.84	28.38			0.02	1.00	0.70	0.70	0.90	0.04	0.10	4.00	1.70	0.29	0.20	0.80	0.10	0.40	5.60	2.40	0.60	0.60	1.30	1.20	1.04	1.10	0.03	0.90	0.30	0.03	0.03	0.90	0.20	0.60	0.10	0.40	0.10		
		DICHANTHELIUM CLANDESTINUM (DEER TONGUE GRASS)	10.00	2.84	28.38			0.02	1.00	0.70	0.70	0.90	0.04	0.10	4.00	1.70	0.29	0.20	0.80	0.10	0.40	5.60	2.40	0.60	0.60	1.30	1.20	1.04	1.10	0.03	0.90	0.30	0.03	0.03	0.90	0.20	0.60	0.10	0.40	0.10		
		SENNA HEBECARPA (WILD SENNA)	10.00	2.84	28.38			0.02	1.00	0.70	0.70	0.90	0.04	0.10	4.00	1.70	0.29	0.20	0.80	0.10	0.40	5.60	2.40	0.60	0.60	1.30	1.20	1.04	1.10	0.03	0.90	0.30	0.03	0.03	0.90	0.20	0.60	0.10	0.40	0.10		
	10	AGRIMONIA PARVIFLORA (HARVESTLICE)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		CAREX SQUARROSA (SQUARROSE SEDGE)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		PARTHENOCISSUS QUINQUEFOLIA (VIRGINIA CREEPER)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		JUNCUS TENUIS (PATH RUSH)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
	11	ANEMONE VIRGINIANA (THIMBLEWEED)	0.10	2.84	0.28			0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.02	0.00	0.00	0.01	0.00	0.00	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00		
		EUPATORIUM PERFOLIATUM (COMMON BONESET)	0.10	2.84	0.28			0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.02	0.00	0.00	0.01	0.00	0.00	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00		
		SYMPHYOTRICHUM PILOSUM (WHITE OLDFIELD AMERICAN-ASTER)	0.10	2.84	0.28			0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.02	0.00	0.00	0.01	0.00	0.00	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00		
		RHUS GLABRA (SMOOTH SUMAC)	0.10	2.84	0.28			0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.02	0.00	0.00	0.01	0.00	0.00	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00		
		SOLIDAGO SPECIOSA (SHOWY GOLDENROD)	0.10	2.84	0.28			0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.02	0.00	0.00	0.01	0.00	0.00	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00		
		VERNONIA NOVEBORACENSIS (NEW YORK IRONWEED)	0.10	2.84	0.28			0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.02	0.00	0.00	0.01	0.00	0.00	0.06	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00		
	12	BIDENS FRONDOSA (BEGGAR TICKS)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		GEUM CANADENSE (WHITE AVENS)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		CHAMAECRISTA NICITANS (SENSITIVE PARTRIDGE PEA)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		DESMODIUM GLABELLUM (DILLENIUS TICK-TREFOIL)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		PENSTEMON DIGITALIS (PENSTEMON)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		CLEMATIS VIRGINIANA (VIRGIN'S BOWER)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		VERBESINA ALTERNIFOLIA (WINGSTEM)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
	13	HAMAMELIS VIRGINIANA (WITCH HAZEL)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		ILEX VERTICILLATA (WINTERBERRY)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		LINDERA BENZOIN (NORTHERN SPICEBUSH)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		VIBURNUM DENTATUM (SOUTHERN ARROW WOOD)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
		VIBURNUM PRUNIFOLIUM (BLACK-HAW)	0.20	2.84	0.55			0.00	0.02	0.01	0.01	0.02	0.00	0.00	0.08	0.03	0.01	0.00	0.02	0.00	0.01	0.11	0.05	0.01	0.01	0.03	0.02	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00		
	14	ACER RUBRUM (RED MAPLE)	0.50	2.84	1.47			0.00	0.05	0.04	0.04	0.05	0.00	0.01	0.20	0.09	0.01	0.01	0.04	0.01	0.02	0.28	0.12	0.03	0.03	0.07	0.06	0.05	0.06	0.00	0.05	0.02	0.00	0.00	0.05	0.01	0.03	0.01	0.02	0.01		
		CARPINUS CAROLINIANA (AMERICAN HORNBEAM)	0.50	2.84	1.47			0.00	0.05	0.04	0.04	0.05	0.00	0.01	0.20	0.09	0.01	0.01	0.04	0.01	0.02	0.28	0.12	0.03	0.03	0.07	0.06	0.05	0.06	0.00	0.05	0.02	0.00	0.00	0.05	0.01	0.03	0.01	0.02	0.01		
		CERCIS CANADENSIS (EASTERN REDBUD)	0.50	2.84	1.47			0.00	0.05	0.04	0.04	0.05	0.00	0.01	0.20	0.09	0.01	0.01	0.04	0.01	0.02	0.28	0.12	0.03	0.03	0.07	0.06	0.05	0.06	0.00	0.05	0.02	0.00	0.00	0.05	0.01	0.03	0.01	0.02	0.01		
		CORNUS FLORIDA (FLOWERING DOGWOOD)	0.50	2.84	1.47			0.00	0.05	0.04	0.04	0.05	0.00	0.01	0.20	0.09	0.01	0.01	0.04	0.01	0.02	0.28	0.12	0.03	0.03	0.07	0.06	0.05	0.06	0.00	0.05	0.02	0.00	0.00	0.05	0.01	0.03	0.01	0.02	0.01		
		NYSSA SYLVATICA (BLACK GUM)	0.50	2.84	1.47			0.00	0.05	0.04	0.04	0.05	0.00	0.01	0.20	0.09	0.01	0.01	0.04	0.01	0.02	0.28	0.12	0.03	0.03	0.07	0.06	0.05	0.06	0.00	0.05	0.02	0.00	0.00	0.05	0.01	0.03	0.01	0.02	0.01		
		PLATANUS OCCIDENTALIS (AMERICAN SYCAMORE)	0.50	2.84	1.47			0.00	0.05	0.04	0.04	0.05	0.00	0.01	0.20	0.09	0.01	0.01	0.04	0.01	0.02	0.28	0.12	0.03	0.03	0.07	0.06	0.05	0.06	0.00	0.05	0.02	0.00	0.00	0.05	0.01	0.03	0.01	0.02	0.01		
RIPARIAN SEEDING TOTALS			**136.80**		**388.28**		**-**	**0.26**	**13.68**	**9.56**	**9.56**	**12.38**	**0.52**	**1.36**	**54.72**	**23.24**	**4.00**	**2.66**	**11.02**	**1.36**	**5.48**	**76.60**	**32.84**	**8.20**	**8.20**	**17.86**	**16.34**	**14.20**	**15.04**	**0.40**	**12.38**	**4.18**	**0.40**	**0.40**	**12.38**	**2.66**	**8.20**	**1.36**	**5.48**	**1.36**	**-**	**-**
TURF GRASS SEED MIX[8]	15	KENTUCKY 31 OR TURF TYPE TALL FESCUE	180.00	0.22	39.40		39.40																																			
		IMPROVED PERENNIAL RYEGRASS	10.00	0.22	2.19		2.19																																			
		KENTUCKY BLUEGRASS	10.00	0.22	2.19		2.19																																			
TURF GRASS SEEDING TOTALS			**200.00**		**43.78**		**43.78**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POLLINATOR MEADOW MIX[9]	16	ERNST CONSERVATION SEEDS (MIX # ERNMX-105)	30.00	0.33	9.90																																				7.20	2.70
MEADOW SEEDING TOTALS			**30.00**		**9.90**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**7.20**	**2.70**

PLANTING AND SEEDING NOTES:

1. It is expected and preferred that all species in each of the Species Groups are planted. The tolerances listed in this note are intended to incorporate flexibility according to species availability. At a minimum, Contractor to provide at least:
   - a) 4 of the 5 species in Group 1,
   - b) 5 of the 6 species in Group 2,
   - c) 5 of the 6 species in Group 3,
   - d) 3 of the 4 species in Group 4,
   - e) 4 of the 5 species in Group 5,
   - f) 3 of the 4 species in Group 6,
   - g) all of the species in Group 7,
   - h) 3 of the 4 species in Group 8,
2. Substitutions for selected species based upon availability shall be requested in writing to engineer, documenting the lack of availability, If the flexibility inherent in the above schedule is still not sufficient, Engineer is under no obligation to approve substitutions.
3. The planted trees and shrubs shall be randomly spaced and species mixed throughout the planting areas.
4. Container rates and quantities shown for one gallon size. For purposes of substitution, two tubelings are the equivalent of one 1-gallon container plant in this schedule. Contractor may provide a mix of container and tubeling sizes for each species requirement, provided the ratio of tubelings to containers is not less than 2:1. Exception – Group 6 (Stream Edge) shall be planted in accordance with Note #5.
5. Group 6 (Stream Edge) zone shall be planted with tubelings, or as livestakes. No one gallons are required to be used for any of this Group's species.
6. Stream Bank (Group 5) and Stream Edge (Group 6) zones shall be planted such that the combined mix of species is spaced approx. 3' O.C. and 1 plant per L.F. respectively.
7. All seeding rates are expressed in pounds of pure live seed (PLS).
8. The Turf Grass Seed Mix is according to the Minimum Care Lawn specifications included in Table 3.32-D of the Virginia Erosion and Sediment Control Handbook, Third Edition.
9. Group 16 (Mix # ERNMX-105) is a proprietary mis supplied by Ernst Conservation Seeds. The mix does not include an annual cover crop, therefore Group 9 seed shall be evenly mixed in with ERNMX-105 prior to seeding.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

VEGETATION SCHEDULE (CONT'D)

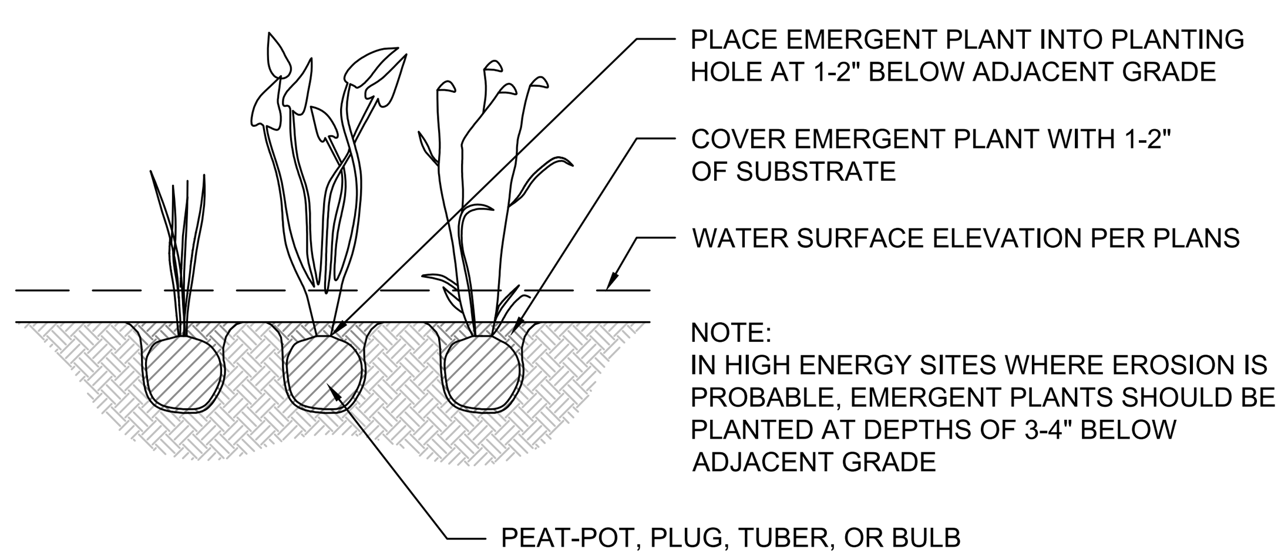
URS — Wetland Studies and Solutions, Inc.

DRAWING VS – 02

SCALE N/A

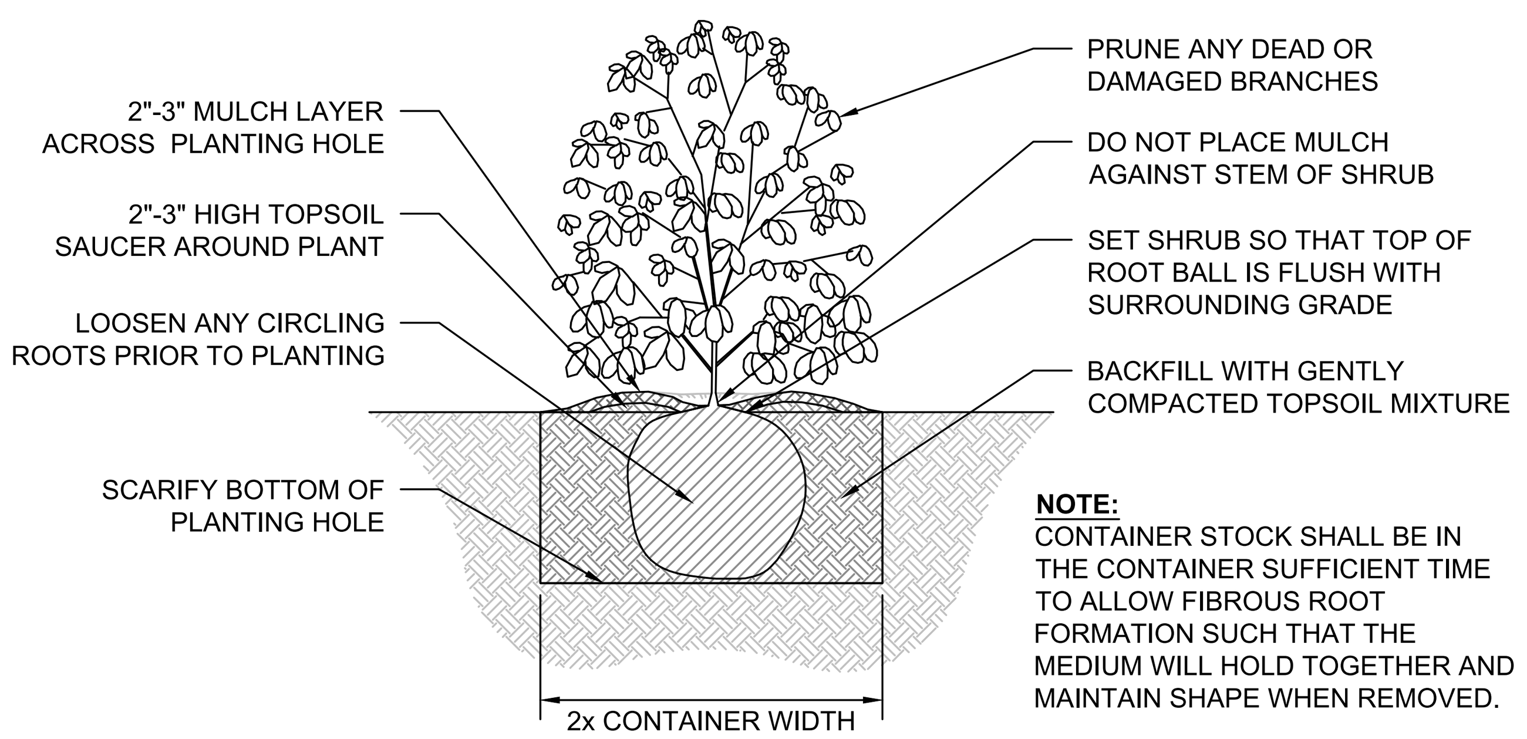
EMERGENT PLANTING DETAIL

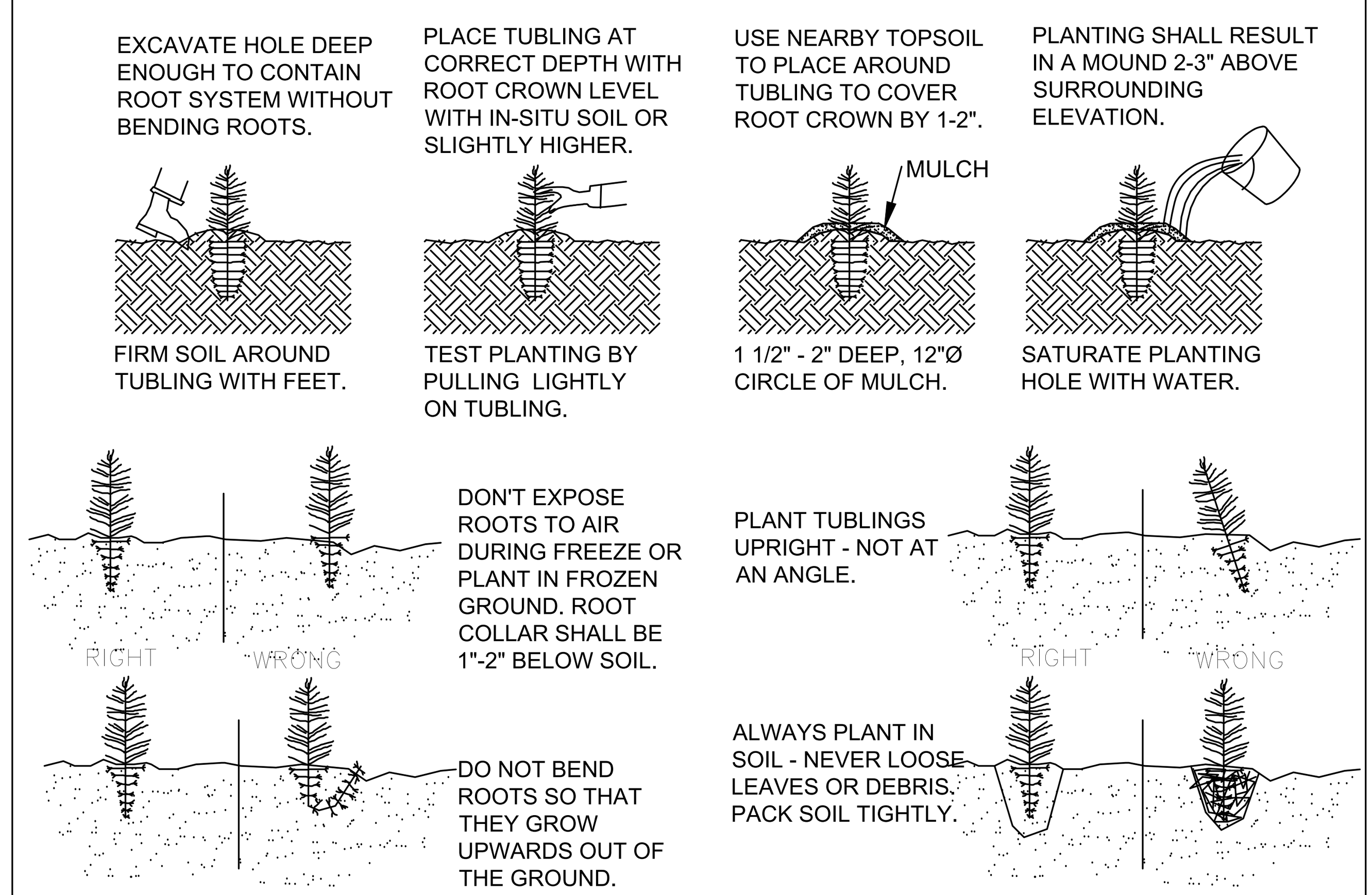
NOT TO SCALE



CONTAINER TREE/SHRUB PLANTING DETAIL

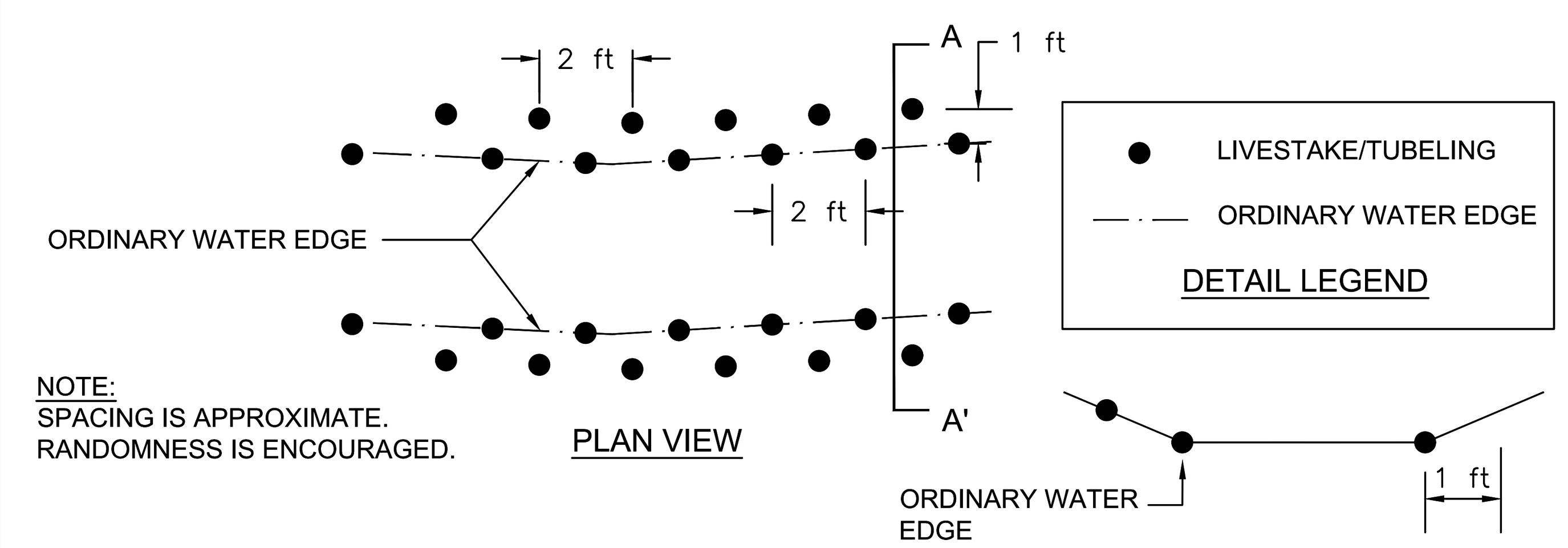
NOT TO SCALE





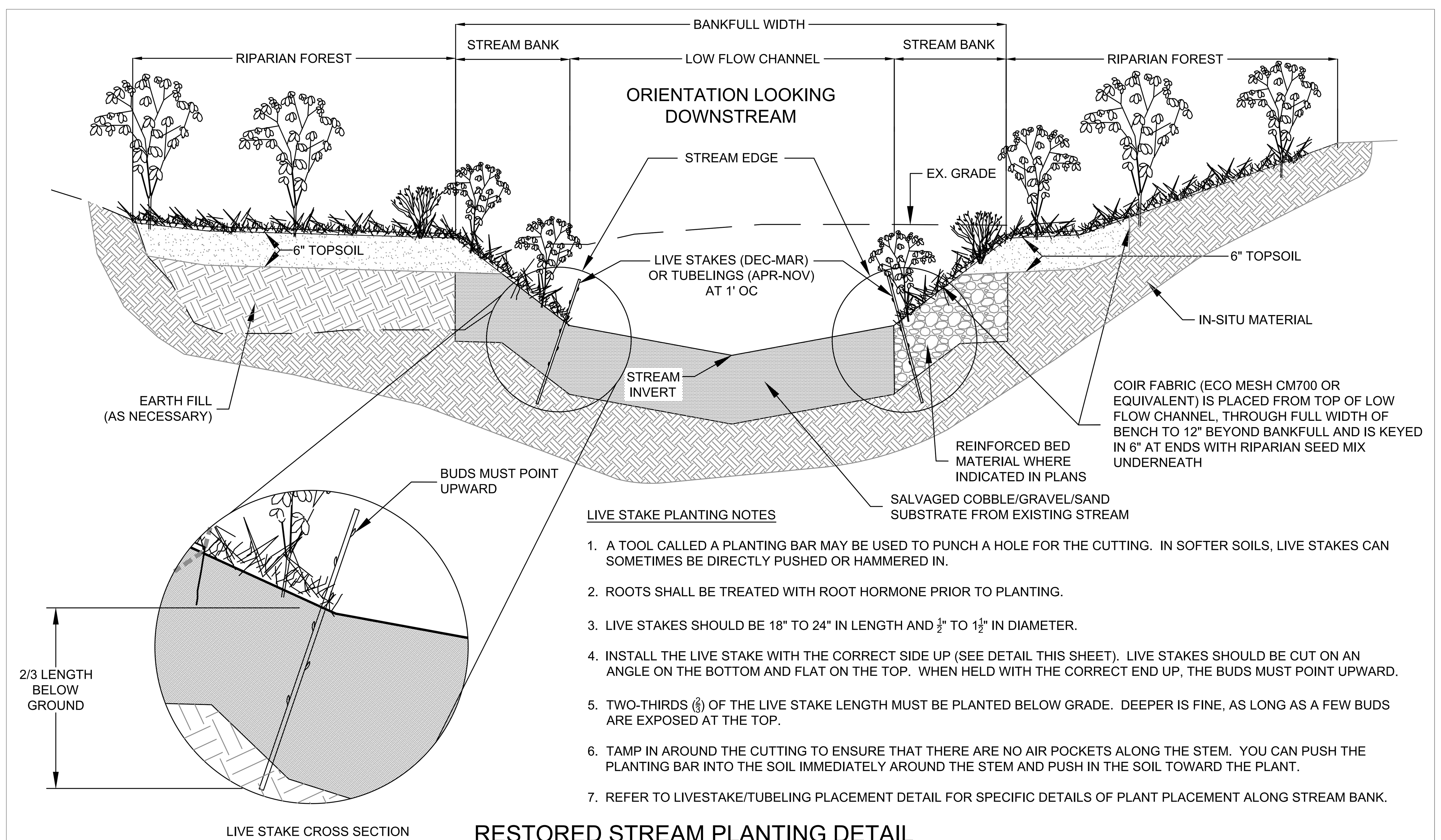
PLANTING TUBLINGS

NOT TO SCALE



STREAM EDGE PLACEMENT DETAIL

NOT TO SCALE



LIVE STAKE PLANTING NOTES

1. A TOOL CALLED A PLANTING BAR MAY BE USED TO PUNCH A HOLE FOR THE CUTTING. IN SOFTER SOILS, LIVE STAKES CAN SOMETIMES BE DIRECTLY PUSHED OR HAMMERED IN.
2. ROOTS SHALL BE TREATED WITH ROOT HORMONE PRIOR TO PLANTING.
3. LIVE STAKES SHOULD BE 18" TO 24" IN LENGTH AND $\frac{1}{2}$" TO $1\frac{1}{2}$" IN DIAMETER.
4. INSTALL THE LIVE STAKE WITH THE CORRECT SIDE UP (SEE DETAIL THIS SHEET). LIVE STAKES SHOULD BE CUT ON AN ANGLE ON THE BOTTOM AND FLAT ON THE TOP. WHEN HELD WITH THE CORRECT END UP, THE BUDS MUST POINT UPWARD.
5. TWO-THIRDS ($\frac{2}{3}$) OF THE LIVE STAKE LENGTH MUST BE PLANTED BELOW GRADE. DEEPER IS FINE, AS LONG AS A FEW BUDS ARE EXPOSED AT THE TOP.
6. TAMP IN AROUND THE CUTTING TO ENSURE THAT THERE ARE NO AIR POCKETS ALONG THE STEM. YOU CAN PUSH THE PLANTING BAR INTO THE SOIL IMMEDIATELY AROUND THE STEM AND PUSH IN THE SOIL TOWARD THE PLANT.
7. REFER TO LIVESTAKE/TUBELING PLACEMENT DETAIL FOR SPECIFIC DETAILS OF PLANT PLACEMENT ALONG STREAM BANK.

RESTORED STREAM PLANTING DETAIL

NOT TO SCALE

k:\Cadd Files\Stream Restoration\Details\-D-LiveStake.dwg

PLANTING SPECIFICATIONS

1. PLAN DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.
2. THE SUPPLIER OF ALL SEEDS AND/OR VEGETATION SHALL CERTIFY THAT THE ORIGIN OF THE SEEDS FROM WHICH THE PLANTS OR SEEDS WERE PRODUCED IS FROM HARDINESS ZONES 6 AND 7, FROM THE EASTERN OR CENTRAL PORTIONS OF THE U.S., PRIOR TO PLANTING.
3. ANY NURSERY SUPPLYING THE STOCK SHALL PROVIDE A CURRENT NURSERY INSPECTION CERTIFICATE FROM THE STATE DEPARTMENT OF AGRICULTURE, OR PROVIDE AT LEAST THIRTY DAYS ADVANCE NOTICE FOR THE CITY TO INSPECT THE PLANT SOURCE AREAS AT THE CITY'S DISCRETION. ANY SUCH INSPECTION IS NOT DEEMED APPROVAL OF THE PLANT MATERIALS.
4. ALL PLANTS SHALL BE SET STRAIGHT, OR PLUMB.
5. PLANTING SHALL ONLY BE PERMITTED BETWEEN SEPTEMBER 30 AND MARCH 30. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN. SEEDING SHALL BE COMPLETED DURING MARCH THROUGH MAY OR SEPTEMBER THROUGH NOVEMBER. MATTED STREAM BANK AREAS SHALL BE SEEDED IMMEDIATELY UPON REACHING FINAL GRADE. THESE TIME LIMITS MAY NOT BE MODIFIED UNLESS APPROVED BY THE CITY IN ADVANCE WITH THE RISK OF SURVIVAL BORNE SOLELY BY THE CONTRACTOR.
6. PLANTING HOLES FOR BARE ROOT TREES SHALL BE 1-2" DEEPER THAN THE ROOT COLLAR (I.E. 1-2" DEEPER THAN THEY WERE GROWING IN THE NURSERY). BARE ROOT SEEDLINGS (IF REQUIRED) SHALL BE INSTALLED WITH THE USE OF A "SHARPSHOOTER SHOVEL", AS DEPICTED WITHIN THESE PLANS. THE PLANTING HOLE SHALL BE LARGE ENOUGH TO AVOID THE NEED FOR ROOT TRIMMING WHERE EVER POSSIBLE. NO J-ROOTS (SEE PLANTING DETAILS) SHALL BE ALLOWED; IT IS EXTREMELY CRITICAL THIS BE ADHERED TO FOR EVERGREENS. BARE ROOT STOCK SHALL BE PLANTED WITH THEIR ROOT-COLLAR 1 TO 2 INCHES DEEPER THAN THE ADJACENT SOIL ELEVATION, USING ADJACENT SOIL TO CREATE A HUMMOCK OR MOUND THAT THE SEEDLING IS SET WITHIN.
7. PLANTING HOLES FOR CONTAINER GROWN PLANTS SHALL BE ONE FOOT (1') DEEP PLUS THE CONTAINER DEPTH IN WHICH THE PLANT HAS BEEN GROWN AND TWO FEET (2') WIDER THAN CONTAINER.
8. BACKFILL THE PLANTING HOLES WITH THE IN-SITU SOIL MATERIALS REMOVED FOR PLANTING AFTER REMOVING ALL STONES, ROOTS, AND OTHER DEBRIS GREATER THAN 1-1/2" IN DIAMETER.
9. FOLLOWING THE BACKFILLING, WATER TO THE POINT OF SOIL SATURATION (IF NOT PLANTED IN THE "WET") AND TAMP TO COMPACT THE BACKFILL MIXTURE. ADD EXISTING SOIL TO BRING THE FINAL GRADE IN THE PLANTING HOLE TO THE SURROUNDING SOIL SURFACE. RAKE THE UNUSED EXISTING SOIL OUTSIDE THE PLANTING HOLES, TAKING CARE NOT TO MOUND THE SOIL OR TO SIGNIFICANTLY ALTER THE EXISTING GRADES AND THEN PLACE MULCH (MIN. 2" THICK) ATOP ENTIRE PLANTING HOLE (EXCEPT THAT NO MULCH IS REQUIRED FOR EMERGENT PLANTINGS). THE PLANTING HOLE AREAS MUST NOT BE DEPRESSED BELOW THE SURROUNDING SOIL SURFACE ELEVATIONS. SAID AREAS SHALL BE SLIGHTLY RAISED (2-3"), RELATIVE TO THE SOIL SURFACE.
10. AS INDICATED IN THE PLANT LIST, THE SHRUBS THAT ARE SPECIFIED AS CONTAINER GROWN SPECIMENS SHALL BE BETWEEN 15" AND 18" IN HEIGHT. THEY SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE PLANTING CONTAINER IN WHICH THEY ARE GROWING. A CONTAINER SHRUB SHALL BE IN THAT CONTAINER A SUFFICIENT TIME SUCH THAT FIBROUS ROOTS ARE FORMED SO THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER (REFER TO AMERICAN STANDARD FOR NURSERY STOCK).
11. DO NOT REMOVE PLANTS FROM CONTAINERS UNTIL IMMEDIATELY BEFORE PLANTING. EXAMINE THE ROOTS TO SEE IF THEY ARE POT BOUND. CAREFULLY SEPARATE ANY POT BOUND OR CRAMPED ROOTS AND SPREAD THEM OUT WHEN PLACING THE PLANT SO THAT THE ROOTS CAN GROW WITHOUT FURTHER CONSTRUCTION OF THE ROOT BALL.
12. AS RECOMMENDED BY THE CONTRACTOR AND APPROVED BY ENGINEER, THE CONTRACTOR SHALL WATER THE PLANTS AS NEEDED DURING THE CARE AND REPLACEMENT PERIOD OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST.
13. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING NON- SURVIVING TREES AND SHRUBS DURING THE CARE AND REPLACEMENT PERIOD (12 MONTHS, UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS) OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST, AS REQUIRED BY THE TERMS OF THE SURVIVAL WARRANTY SPECIFIED HEREIN AND/OR IN CONTRACT DOCUMENTS. THE SPECIFICATIONS FOR THE REPLACED PLANTS SHALL BE THOSE PROVIDED IN THE PLANT LIST.
14. REFER TO APPLICABLE SKETCHES WITHIN THIS PLAN SET FOR ADDITIONAL GUIDANCE ON PLANTING REQUIREMENTS.
15. INVASIVE AND NOXIOUS WEEDS SHALL BE REMOVED BY HAND WITH LOCALIZED APPLICATIONS OF RODEO OR (APPROVED EQUAL SUITABLE FOR USE AROUND AQUATIC ENVIRONMENTS) WHERE NECESSARY.
16. ALL BARE ROOT SEEDLINGS SHALL BE TREATED WITH ROOT DIP ABSORBENT POLYMERS AND MYCORRHIZAL ROOT DIP INOCULATES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. SAID ROOT DIP SHALL BE MYCORTREE™ ROOT DIP OR APPROVED EQUAL

SEEDING SPECIFICATIONS

1. SEED SHALL HAVE BEEN COLLECTED THE SAME YEAR OF SEEDING. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
2. THE SPECIFIED SEED SHALL BE BROADCAST IN AREAS SPECIFIED ON THE PLANTING PLAN. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8TH OF AN INCH BY THE USE OF A HAND RAKE.
3. THE LANDSCAPE CONTRACTOR SHALL INSPECT THE AREAS AND CONDITIONS UNDER WHICH THE SEEDING WORK IS TO BE PERFORMED PRIOR TO COMMENCING WORK. IF CONDITIONS ARE DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK, HE/SHE SHALL NOTIFY THE OWNER'S REPRESENTATIVE VERBALLY AND IN WRITING AND POSTPONE COMMENCING WORK UNTIL THE UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
4. PRIOR TO SEEDING, THE TOP SOIL SHALL BE RAKED SMOOTH AND CLEARED OF ALL STONES LARGER THAN 5" AND TRASH, DEBRIS, BRANCHES AND OTHER MATTER DETRIMENTAL TO THE SUCCESS OF SEEDING.
5. MULCH SHALL BE STRAW CAN BE SUBSTITUTED IF APPLIED AT A RATE SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.
6. CARE SHOULD BE EXERCISED TO INSURE UNIFORM SEED COVERAGE IS OBTAINED. SEED SHALL BE APPLIED AT THE RATE SPECIFIED ON THE PLANTING SCHEDULE.
7. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8 OF AN INCH BY THE USE OF A CULTIPACTOR, YORK RAKE, OR HAND RAKE.

PLANTING AND SEEDING SURVIVAL WARRANTY

1. LANDSCAPE CONTRACTOR SHALL GUARANTEE A MINIMUM SURVIVAL RATE OF EACH VEGETATION SPECIES AFTER TWELVE (12) MONTHS OF 85% FOR B&B, CONTAINER GROWN, AND TUBLINGS, AND 60% FOR BARE ROOT AND TUBER STOCK.
2. IF SURVIVAL RATES ARE LESS THAN THE ABOVE WARRANTY RATES, THEN LANDSCAPE CONTRACTOR SHALL REPLACE THE QUANTITY OF DEAD PLANTS WITHIN THE NEXT PLANTING WINDOW (SEPTEMBER 30 THROUGH MARCH 30, EXCLUDING FROZEN GROUND PERIODS) FOLLOWING THE END OF THE APPLICABLE WARRANTY PERIOD.

PRODUCT HANDLING, STORAGE, AND DELIVERY

1. HANDLE PLANTS AT ALL TIMES SO THAT ROOTS OR BALLS ARE ADEQUATELY PROTECTED FROM BREAKAGE OF BALLS, FROM SUN AND DRYING WINDS. PLANTS WITH DRIED OUT TOPS OR ROOTS SHALL BE REJECTED.
2. ALL PLANT MATERIALS SHALL BE STORED AND DELIVERED IN SUCH A FASHION AND FOR TIME INTERVALS CONSISTENT WITH SOUND SILVICULTURAL PRACTICES.
3. PLANT MATERIAL WILL BE TRANSPORTED FROM THE NURSERY TO THE PLANTING AREAS BY SUCH MEANS AS TO AVOID WIND DAMAGE, OVER-CROWDING, OR OTHER MECHANISMS BY WHICH PHYSICAL DAMAGE MAY RESULT TO THE PLANTS.
4. PLANT MATERIAL MAY BE RANDOMLY INSPECTED BY THE CITY/DESIGN TEAM UPON ARRIVAL AT EACH PLANTING AREA AND DURING PLANTING ACTIVITIES. MATERIAL FOUND TO BE UNACCEPTABLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO SUPPLY REPLACEMENT MATERIAL WITHIN 1-WEEK). UNACCEPTABLE MATERIAL IS TO BE DEFINED AS THE FOLLOWING:
   - (A) PLANTS WITH BENT TRUNKS OR MULTIPLE LEADERS, UNLESS CHARACTERISTICS FOR THE SPECIES;
   - (B) PLANTS WITH DISEASED TRUNKS, STEMS, OR LEAVES;
   - (C) PLANTS WITH PEST-INFESTED TRUNKS, STEMS, OR LEAVES;
   - (D) PLANTS OF INSUFFICIENT SIZE (LESS THAN A SPECIFIED HEIGHT);
   - (E) PLANTS OF THE WRONG SPECIES/SUB-SPECIES;
   - (F) PLANTS HAVING ROOT GIRDLING IN THE CONTAINER.

   UNLESS OTHERWISE APPROVED BY THE CITY/DESIGN TEAM. JUSTIFICATION FOR USE OF TENTATIVELY REJECTED MATERIAL MAY BE PRESENTED TO THE CITY/DESIGN TEAM.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

Wetland Studies and Solutions, Inc.

URS

TAYLOR RUN STREAM RESTORATION

PLANTING NOTES AND DETAILS

DRAWING PN – 01

SCALE N/A

EROSION/SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL	UNITS	QUANTITY
MGWC 1.2	PUMP AROUND DIVERSION*	P	(P)	EA	2
MGWC 1.2	SANDBAG DIKE	SB	(SB)	EA	4
3.38	ORANGE MESH FENCING	TP	—TP—	LF	5535
3.01	SAFETY CHAIN LINK FENCE	SAF	—X CLF—	LF	990
3.02	WASH RACK	WR		EA	1
3.02	TEMP. STONE CONSTRUCTION ENTRANCE	CE		EA	1
3.05	SILT FENCE WITH WIRE SUPPORT (SUPER SILT FENCE)	SSF	—SSF—	LF	645
3.05	SILT FENCE	SF	—SF—	LF	AS NEEDED
3.24	STREAM CROSSING (TIMBER BRIDGE)	SC	(SC)	EA	4
N/A	FILTER BAG	FB	(FB)	EA	1
N/A	TEMPORARY DECK MATS	DM	(DM)	SY	3600
3.08	CULVERT INLET PROTECTION	IP	(IP)	EA	AS NEEDED EST: 2 SY
3.18	CULVERT OUTLET PROTECTION	OP	(OP)	EA	AS NEEDED EST: 6 SY
N/A	PEDESTRIAN GATE	G	(G)	EA	1

*PUMP AROUND SHALL MOVE AS CONTRACTOR STARTS NEW AREAS. ASSUMING 2 AREAS WORKING SIMULTANEOUSLY.

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SEE THE EROSION AND SEDIMENT CONTROL NARRATIVE (ESC-13) AND EROSION AND SEDIMENT CONTROL DETAILS SHEETS (ESC 11 - ESC 12) FOR MORE INFORMATION.

CONTRACTOR SHALL FOLLOW VIRGINIA WORK ZONE PROTECTION MANUAL GUIDELINES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUBMIT MAINTENANCE OF TRAFFIC PLANS ALONG WITH THE PERMIT APPLICATION.

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GIS INFO = CITY & WSSI DIG. DATA

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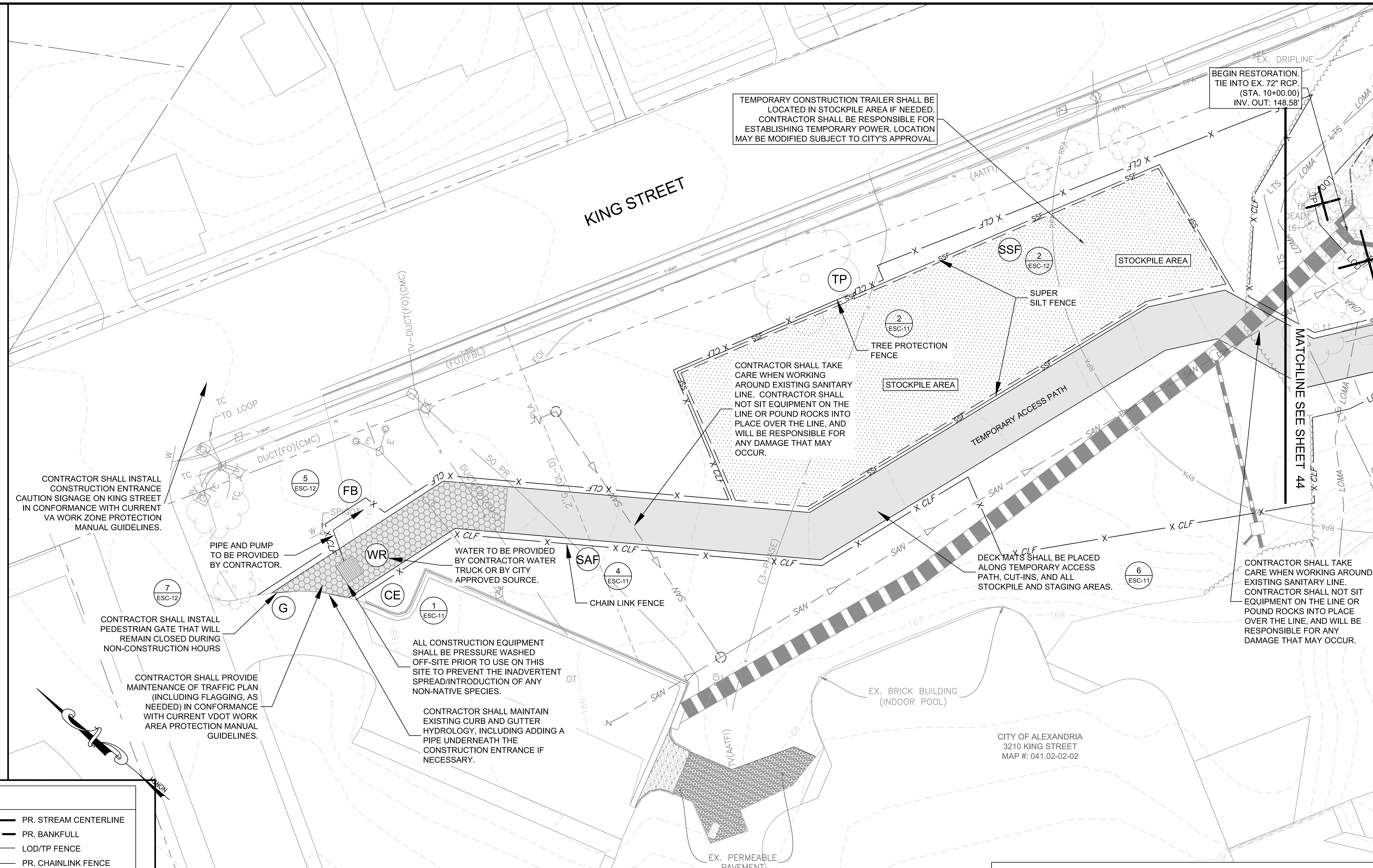
SCALE: 1"=20'



GRADING LEGEND

- PARCEL BOUNDARIES
- EX. INFRASTRUCTURE
- EX. CONTOURS (1')
- EX. SANITARY SEWER
- 2011 FEMA FLOODPLAIN
- 2015 ALEXANDRIA MAPPED FLOODPLAIN
- 2020 FIELD VERIFIED RPA
- LIMITS OF TREE SURVEY
- PERENNIAL STREAM (EST. FROM FIELD RUN TOPO)
- EPHEMERAL STREAM
- INTERMITTENT STREAM
- JURISDICTIONAL WETLANDS
- SURVEYED TREES (≥6" DIAMETER AT BREAST HEIGHT (DBH))
- EX. STORM DRAIN
- EX. SANITARY MANHOLE
- EX. RIPRAP
- ACCESS PATH
- STOCKPILE AREA
- PR. STREAM CENTERLINE
- PR. BANKFULL
- LOD/TP FENCE
- PR. CHAINLINK FENCE
- MODIFIED CROSS VANE
- IN-STREAM WOODY DEBRIS
- LOG VANE
- BOULDER POOL
- IN-STREAM HABITAT LOG
- PR. CLASS II RIPRAP
- PR. CLASS III RIPRAP

CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER, OR IN BENCH AREAS NOT WITHIN THE LIMITS OF REINFORCED BED MATERIAL, SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT).

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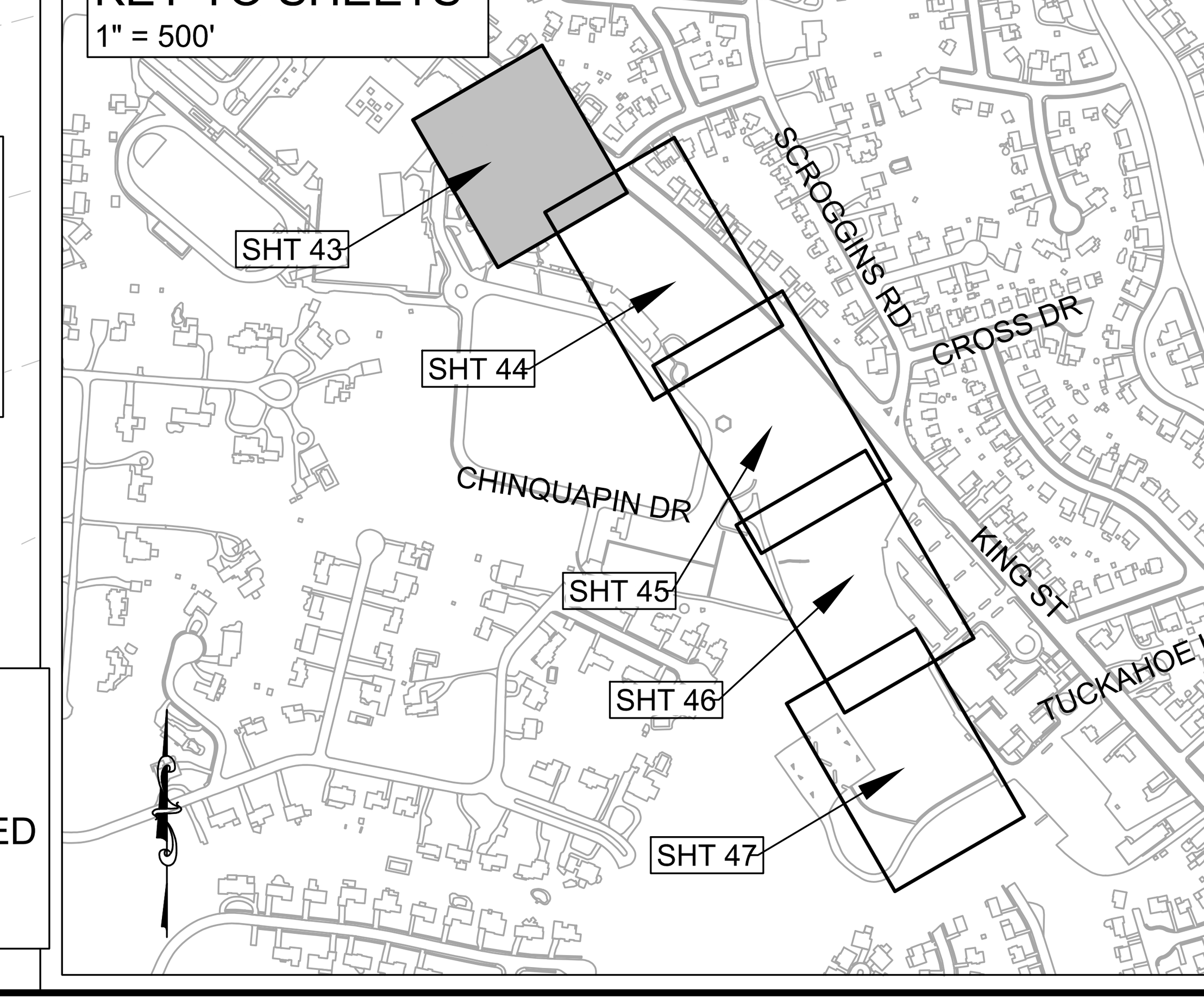
KEY TO SHEETS
1" = 500'



PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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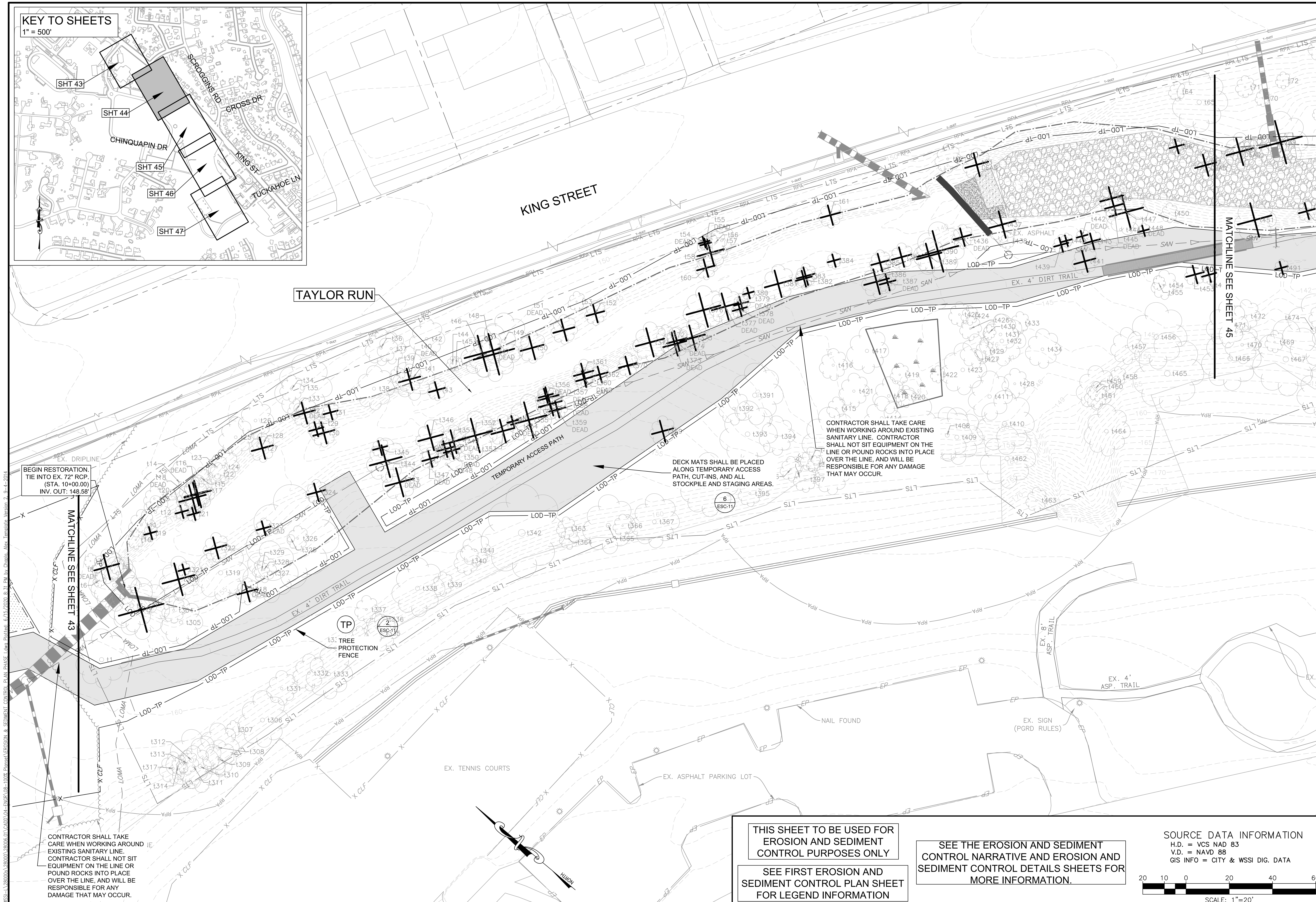
SEAL: COMMONWEALTH OF VIRGINIA, NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN – PHASE I

URS | Wetland Studies and Solutions

DRAWING
ESC – 01
SCALE 1" = 20'



KEY TO SHEETS
1" = 500'
SHT 43
SHT 44
SHT 45
SHT 46
SHT 47
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN
KING STREET
TAYLOR RUN
MATCHLINE SEE SHEET 43
MATCHLINE SEE SHEET 45
BEGIN RESTORATION.
TIE INTO EX. 72" RCP.
(STA. 10+00.00)
INV. OUT: 148.58'
EX. DRIPLINE
TEMPORARY ACCESS PATH
EX. 4' DIRT TRAIL
DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATH, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS.
CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITARY LINE. CONTRACTOR SHALL NOT SIT EQUIPMENT ON THE LINE OR POUND ROCKS INTO PLACE OVER THE LINE, AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR.
TP
TREE PROTECTION FENCE
EX. ASPHALT
EX. TENNIS COURTS
EX. ASPHALT PARKING LOT
NAIL FOUND
EX. SIGN (PGRD RULES)
EX. 8' ASP. TRAIL
EX. 4' ASP. TRAIL
CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITARY LINE. CONTRACTOR SHALL NOT SIT EQUIPMENT ON THE LINE OR POUND ROCKS INTO PLACE OVER THE LINE, AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR.
NORTH

THIS SHEET TO BE USED FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY

SEE FIRST EROSION AND SEDIMENT CONTROL PLAN SHEET FOR LEGEND INFORMATION

SEE THE EROSION AND SEDIMENT CONTROL NARRATIVE AND EROSION AND SEDIMENT CONTROL DETAILS SHEETS FOR MORE INFORMATION.

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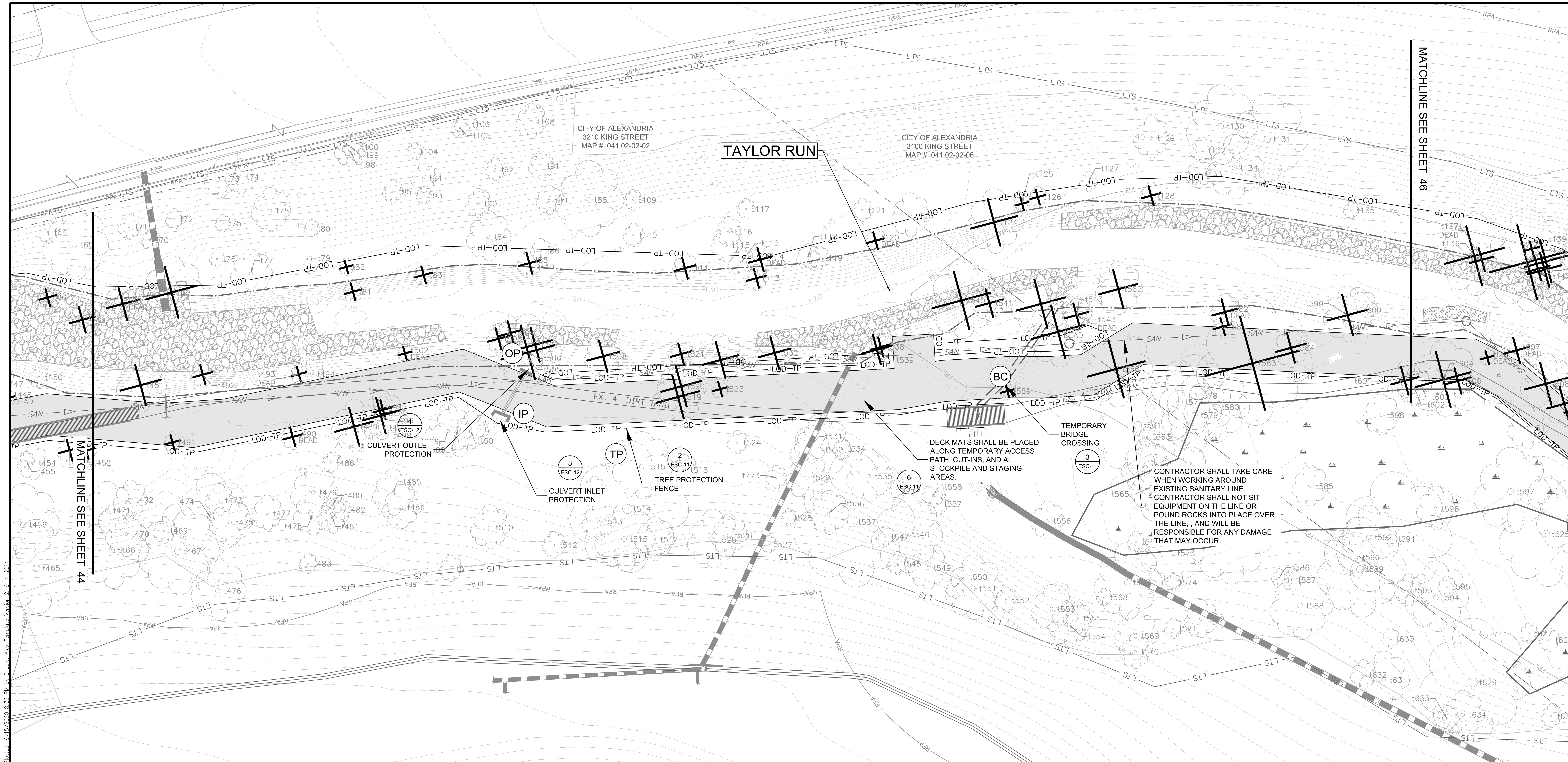
TAYLOR RUN STREAM RESTORATION

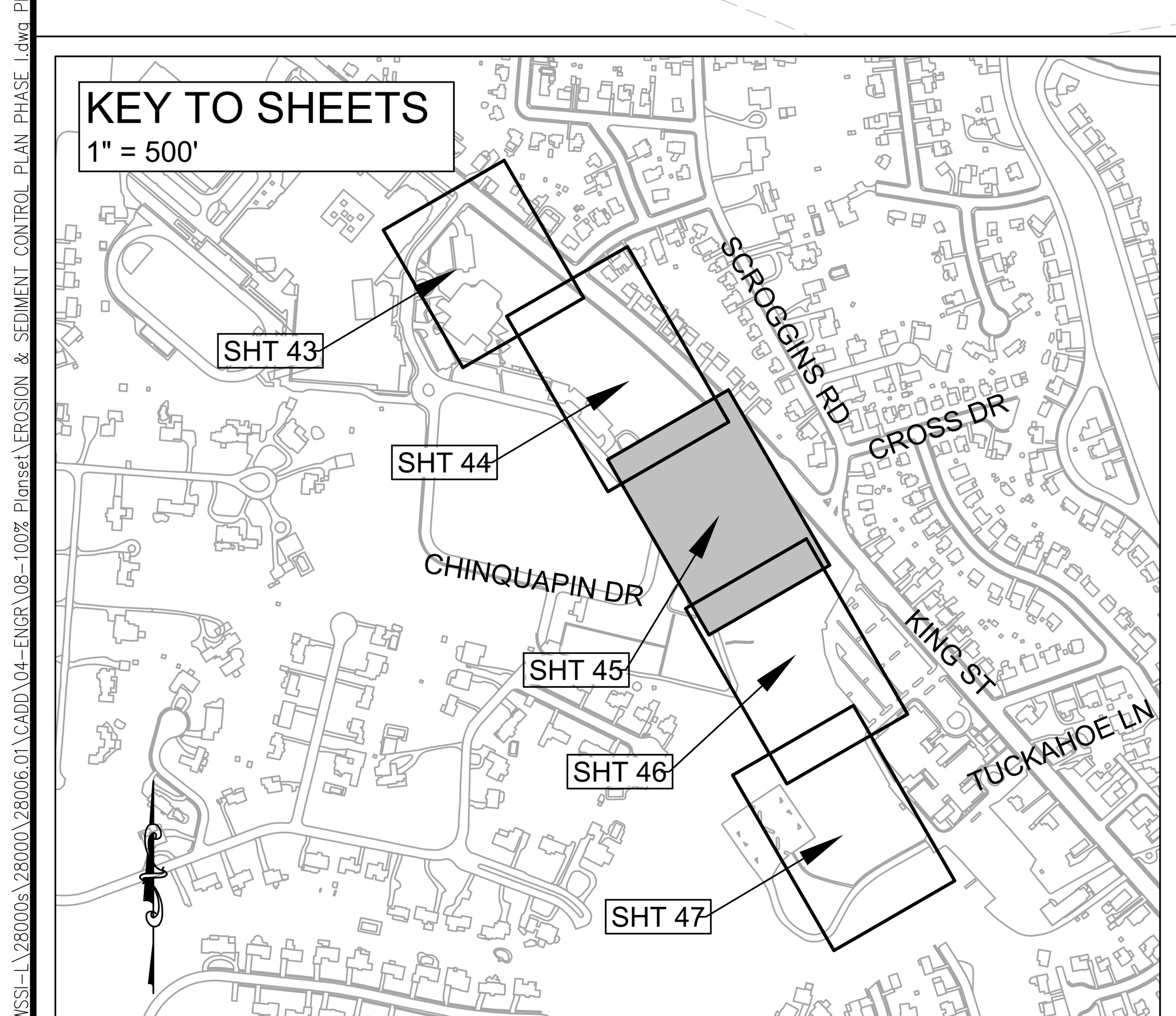
EROSION AND SEDIMENT CONTROL PLAN - PHASE I (CONT'D)

Wetland Studies and Solutions, Inc.

URS

DRAWING
ESC - 02
SCALE 1" = 20'
SHEET 44 of 84





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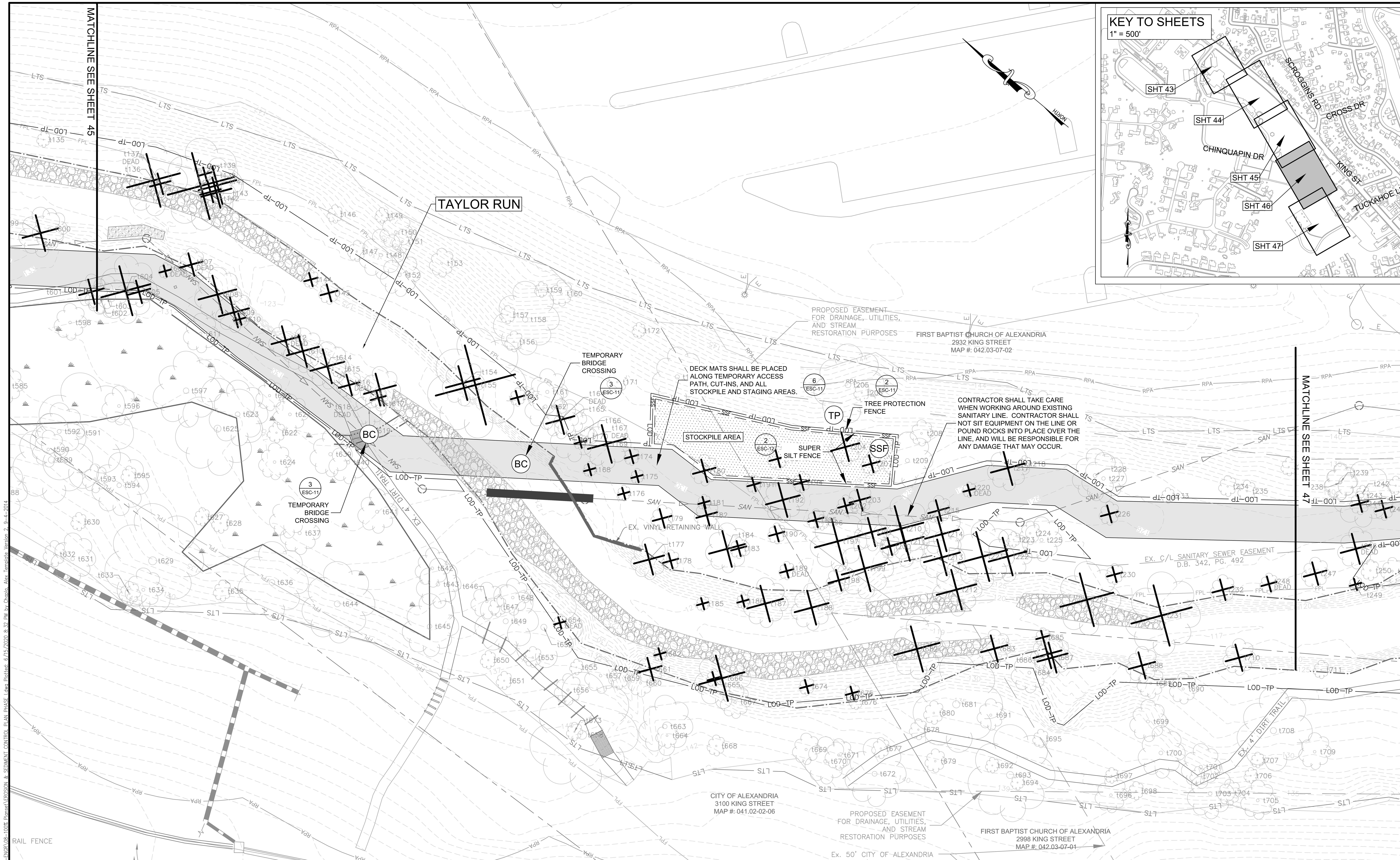
TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN - PHASE I (CONT'D)

URS | Wetland Studies and Solutions

DRAWING
ESC - 03
SCALE 1" = 20'
SHEET 45 OF 84



KEY TO SHEETS
1" = 500'
SHT 43
SHT 44
SHT 45
SHT 46
SHT 47
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN
MATCHLINE SEE SHEET 45
MATCHLINE SEE SHEET 47
TAYLOR RUN
TEMPORARY BRIDGE CROSSING
DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATH, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS.
STOCKPILE AREA
SUPER SILT FENCE
TREE PROTECTION FENCE
CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITARY LINE. CONTRACTOR SHALL NOT SIT EQUIPMENT ON THE LINE OR POUND ROCKS INTO PLACE OVER THE LINE, AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR.
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02
EX. VINYL RETAINING WALL
EX. C/L SANITARY SEWER EASEMENT
D.B. 342, PG. 492
EX. 4' DIRT TRAIL
CITY OF ALEXANDRIA
3100 KING STREET
MAP #: 041.02-02-06
FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01
Ex. 50' CITY OF ALEXANDRIA INGRESS/EGRESS EASEMENT
RAIL FENCE
EX. BOLLARDS
EX. ASPHALT ACCESS

THIS SHEET TO BE USED FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY

SEE FIRST EROSION AND SEDIMENT CONTROL PLAN SHEET FOR LEGEND INFORMATION

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TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN – PHASE I (CONT'D)

Wetland Studies and Solutions, Inc.

URS

DRAWING ESC – 04
SCALE 1" = 20'
SHEET 46 of 84

MATCHLINE SEE SHEET 46

TAYLOR RUN

FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02

3 ESC-11 TEMPORARY BRIDGE CROSSING

6 ESC-11 DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATH, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS.

2 ESC-11 TP TREE PROTECTION FENCE

BC

CONTRACTOR SHALL FLATTEN MOUND IN ACCESS PATH PRIOR TO PLACING DECK MATTING.

EX. C/L SANITARY SEWER EASEMENT D.B. 342, PG. 492

SANITARY SEWER EASEMENT D.B. 342, PG. 492

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

Ex. 10' STORM EASEMENT D.B. 342, PG. 492

APPROXIMATE TERMINUS

EX. 2' DIRT TRAIL

EX. 4' DIRT TRAIL

END RESTORATION.
TIE INTO EX. 2x60" RCP.
(STA. 30+24.52)
LEFT INV. ELEV: 110.89'
RIGHT INV. ELEV: 111.13'

FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

NORTH

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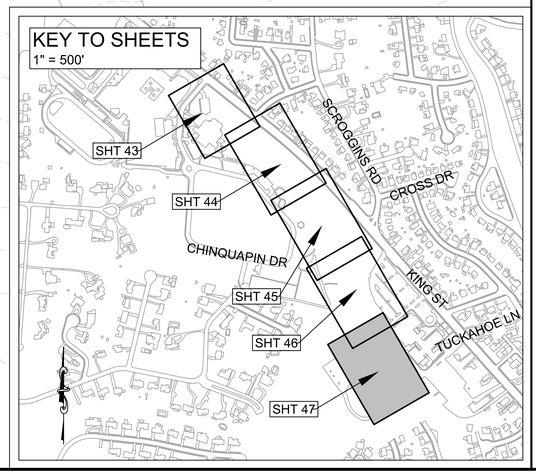

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TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN – PHASE I (CONT'D)

Wetland Studies and Solutions, Inc. (a URS company)
URS
1300 WILSON BOULEVARD, SUITE 500
ARLINGTON, VA 22209
(703) 276-3000
12420 MILLENNIUM DRIVE, SUITE 100
LOS ANGELES, CA 90094
(310) 820-3000

DRAWING
ESC – 05
SCALE 1" = 20'
SHEET 47 OF 84

C:\WSS-1\28000s\28000\28006.01\CAD\04-ENGR\08-10ft Phase\EROSION & SEDIMENT CONTROL PLAN PHASE I.dwg, PlotText: 6/15/2020 8:10 PM, by Chanda, Alex, Template Version 2 9-4-2014

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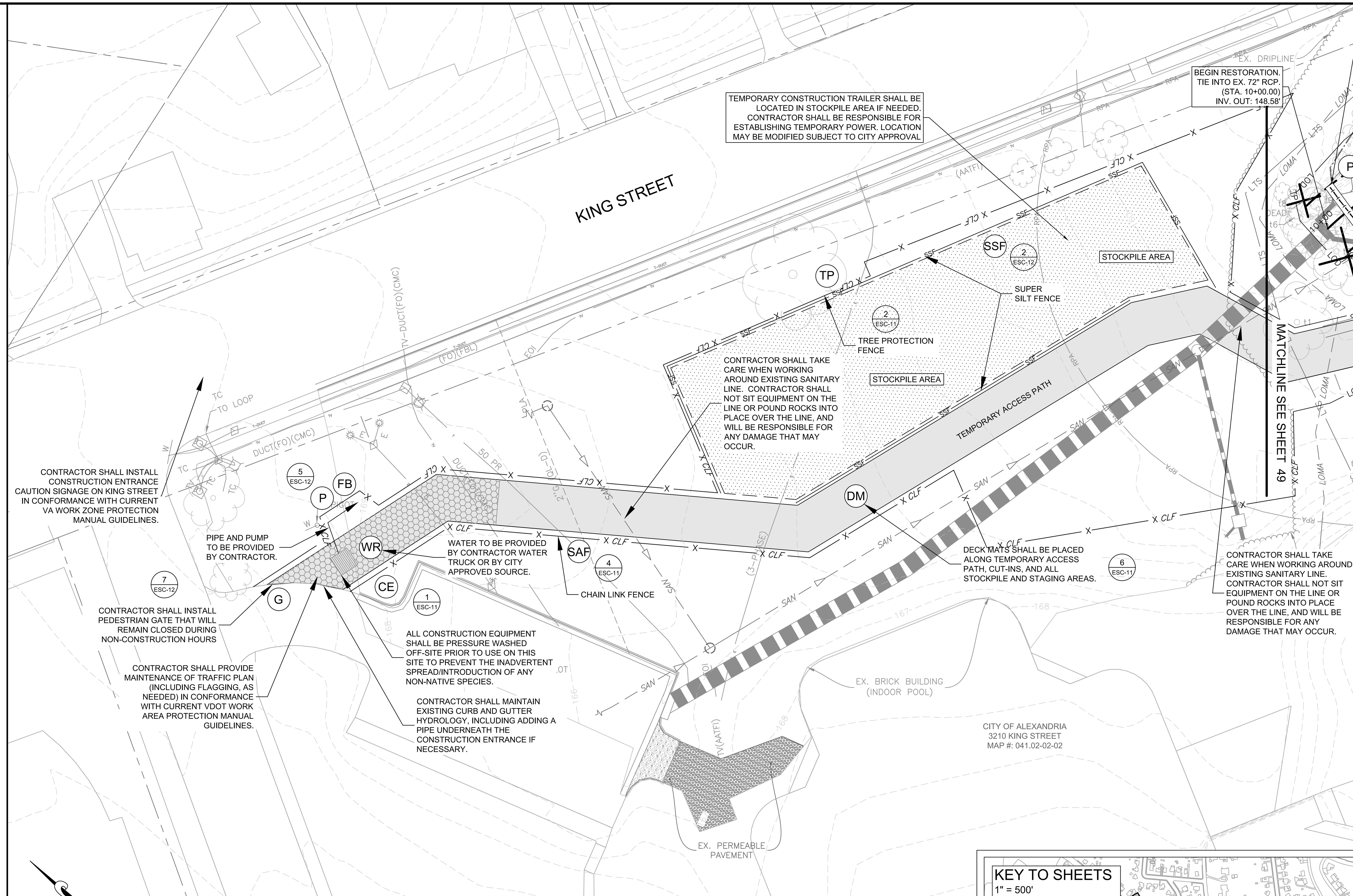

KING STREET
TEMPORARY CONSTRUCTION TRAILER SHALL BE LOCATED IN STOCKPILE AREA IF NEEDED. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING TEMPORARY POWER. LOCATION MAY BE MODIFIED SUBJECT TO CITY APPROVAL
BEGIN RESTORATION. TIE INTO EX. 72" RCP. (STA. 10+00.00) INV. OUT: 148.58'
STOCKPILE AREA
SUPER SILT FENCE
TREE PROTECTION FENCE
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TEMPORARY ACCESS PATH
MATCHLINE SEE SHEET 49
CONTRACTOR SHALL INSTALL CONSTRUCTION ENTRANCE CAUTION SIGNAGE ON KING STREET IN CONFORMANCE WITH CURRENT VA WORK ZONE PROTECTION MANUAL GUIDELINES.
PIPE AND PUMP TO BE PROVIDED BY CONTRACTOR.
WATER TO BE PROVIDED BY CONTRACTOR WATER TRUCK OR BY CITY APPROVED SOURCE.
CHAIN LINK FENCE
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CONTRACTOR SHALL INSTALL PEDESTRIAN GATE THAT WILL REMAIN CLOSED DURING NON-CONSTRUCTION HOURS
ALL CONSTRUCTION EQUIPMENT SHALL BE PRESSURE WASHED OFF-SITE PRIOR TO USE ON THIS SITE TO PREVENT THE INADVERTENT SPREAD/INTRODUCTION OF ANY NON-NATIVE SPECIES.
CONTRACTOR SHALL PROVIDE MAINTENANCE OF TRAFFIC PLAN (INCLUDING FLAGGING, AS NEEDED) IN CONFORMANCE WITH CURRENT VDOT WORK AREA PROTECTION MANUAL GUIDELINES.
CONTRACTOR SHALL MAINTAIN EXISTING CURB AND GUTTER HYDROLOGY, INCLUDING ADDING A PIPE UNDERNEATH THE CONSTRUCTION ENTRANCE IF NECESSARY.
EX. BRICK BUILDING (INDOOR POOL)
CITY OF ALEXANDRIA
3210 KING STREET
MAP #: 041.02-02-02
EX. PERMEABLE PAVEMENT
NORTH

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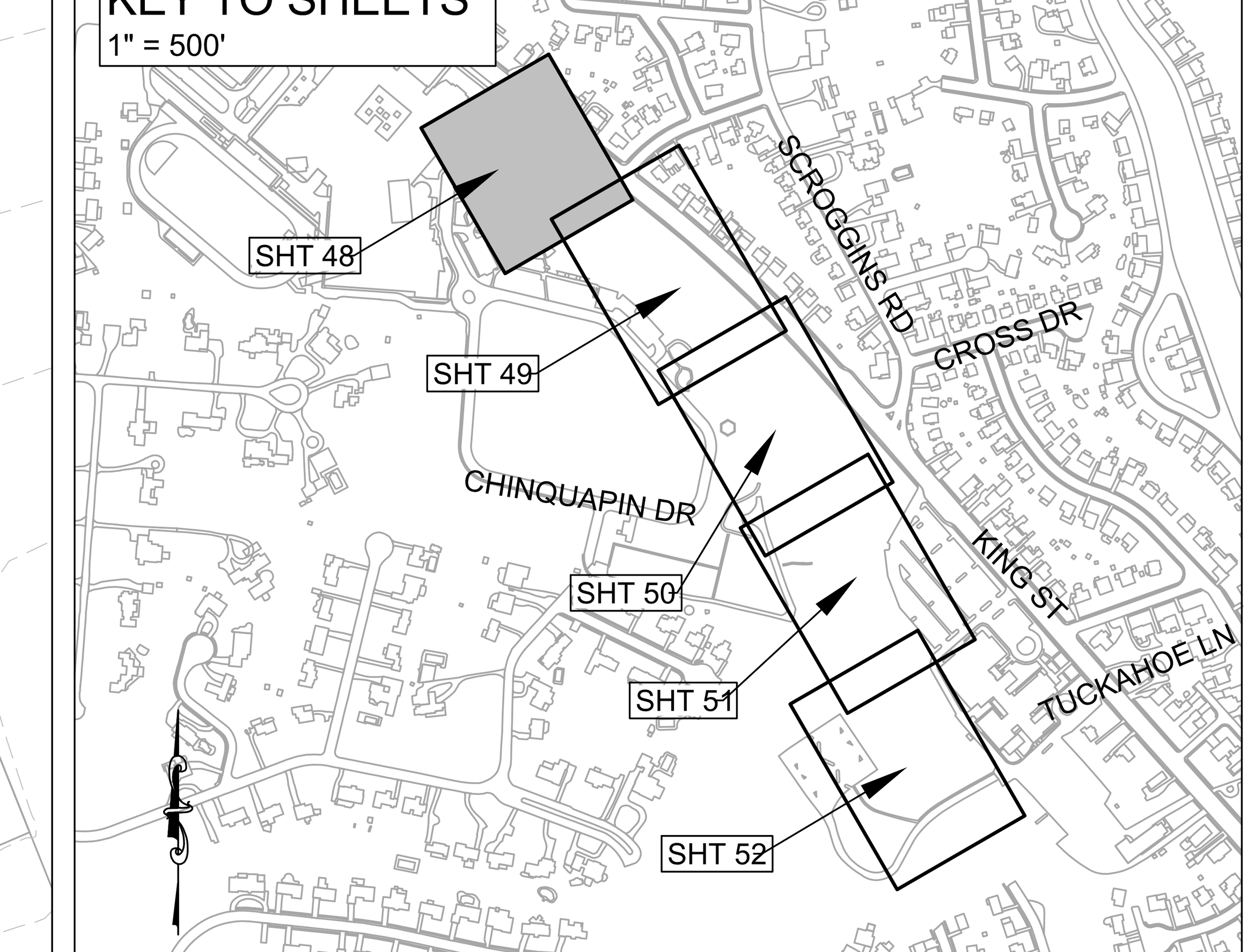

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DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

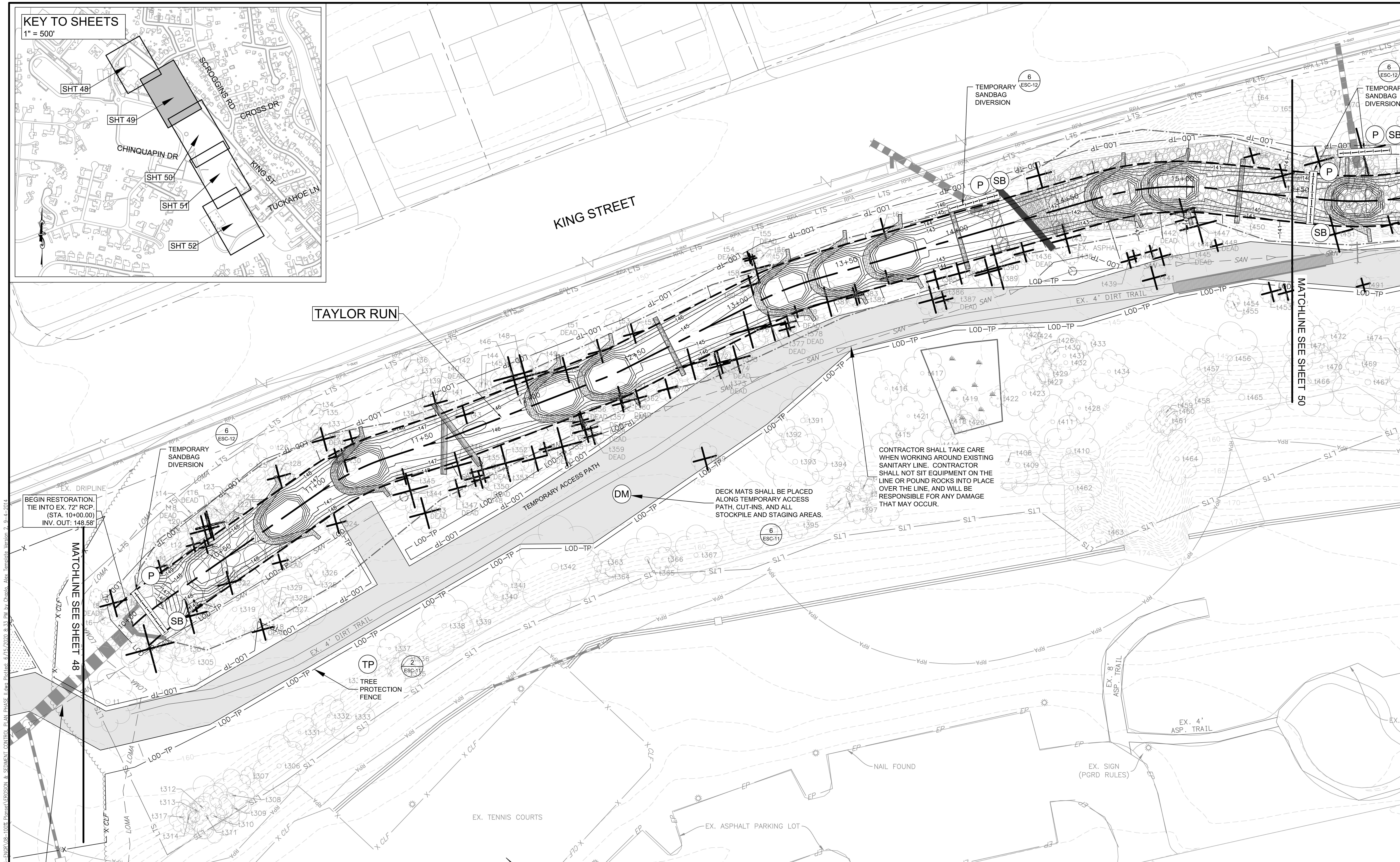
SEAL: COMMONWEALTH OF VIRGINIA, NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN – PHASE II

URS

DRAWING
ESC – 06
SCALE 1" = 20'
SHEET 48 OF 84



THIS SHEET TO BE USED FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY

SEE FIRST EROSION AND SEDIMENT CONTROL PLAN SHEET FOR LEGEND INFORMATION

SEE THE EROSION AND SEDIMENT CONTROL NARRATIVE AND EROSION AND SEDIMENT CONTROL DETAILS SHEETS FOR MORE INFORMATION.

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

DATE	REVISIONS BY	DESCRIPTION

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN – PHASE II (CONT'D)

URS — 12420 MILESTONE CENTER DR., SUITE 150, GERMANTOWN, MD 20876 (301) 820-3000

Wetland Studies and Solutions, Inc. — a DAVEY company — 5300 WELLINGTON BRANCH DR., SUITE 100, GAINESVILLE, VA 20155 (703) 679-5600

DRAWING
ESC – 07
SCALE 1" = 20'
SHEET 49 OF 84

TAYLOR RUN

CITY OF ALEXANDRIA
3210 KING STREET
MAP #: 041.02-02-02

CITY OF ALEXANDRIA
3100 KING STREET
MAP #: 041.02-02-06

MATCHLINE SEE SHEET 48

MATCHLINE SEE SHEET 51

TEMPORARY SANDBAG DIVERSION

TEMPORARY SANDBAG DIVERSION

TEMPORARY SANDBAG DIVERSION

CULVERT OUTLET PROTECTION

CULVERT INLET PROTECTION

TREE PROTECTION FENCE

DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATH, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS.

TEMPORARY BRIDGE CROSSING

CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITARY LINE. CONTRACTOR SHALL NOT SIT EQUIPMENT ON THE LINE OR POUND ROCKS INTO PLACE OVER THE LINE, , AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR.

EX. 4' DIRT TRAIL

EX. PAVILION

EX. VOLLEYBALL COURT

EX. 8' ASP. TRAIL

CHINQUAPIN DRIVE

KEY TO SHEETS
1" = 500'

SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN
SHT 48
SHT 49
SHT 50
SHT 51
SHT 52

THIS SHEET TO BE USED FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY

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SEE THE EROSION AND SEDIMENT CONTROL NARRATIVE AND EROSION AND SEDIMENT CONTROL DETAILS SHEETS FOR MORE INFORMATION.

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V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

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301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
BY DATE DESCRIPTION

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SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

URS
1300 WILSON BOULEVARD, SUITE 500
ARLINGTON, VA 22209
(703) 979-3000

Wetland Studies and Solutions, Inc. (a URS company)
1243 BEDFORD CENTER DR., SUITE 100
BEDFORD, VA 24523
(703) 925-3000

TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN – PHASE II (CONT'D)

DRAWING
ESC – 09

SCALE 1" = 20'

SHEET 50 OF 84

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MATCHLINE SEE SHEET 50

MATCHLINE SEE SHEET 52

TAYLOR RUN

TEMPORARY SANDBAG DIVERSION — 6 ESC-12

TEMPORARY BRIDGE CROSSING — 3 ESC-11

DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATH, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS.

STOCKPILE AREA — 2 ESC-12

TREE PROTECTION FENCE

SUPER SILT FENCE

CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITARY LINE. CONTRACTOR SHALL NOT SIT EQUIPMENT ON THE LINE OR POUND ROCKS INTO PLACE OVER THE LINE, AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY occur.

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02

CITY OF ALEXANDRIA
3100 KING STREET
MAP #: 041.02-02-06

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01

Ex. 50' CITY OF ALEXANDRIA INGRESS/EGRESS EASEMENT

EX. C/L SANITARY SEWER EASEMENT D.B. 342, PG. 492

EX. 4' DIRT TRAIL

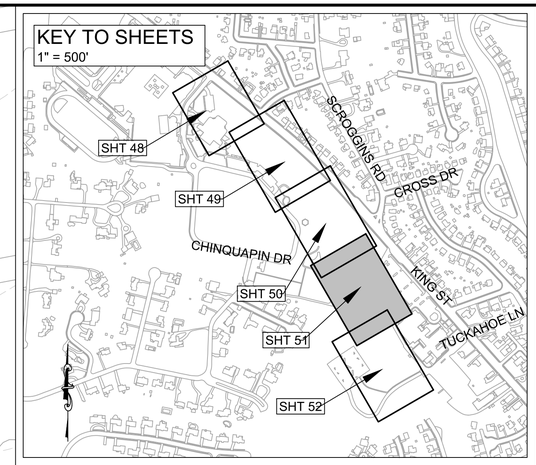
EX. ASPHALT ACCESS

EX. BOLLARDS

RAIL FENCE

LT ACCESS

KEY TO SHEETS
1" = 500'



THIS SHEET TO BE USED FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY

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SEE THE EROSION AND SEDIMENT CONTROL NARRATIVE AND EROSION AND SEDIMENT CONTROL DETAILS SHEETS FOR MORE INFORMATION.

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V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
NO. | DESCRIPTION | BY | DATE

CITY PROJECT NO.: CP-2020-00003
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DRAWN BY: AMC DATE: 6/16/20
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APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

Wetland Studies & Solutions, Inc. — A Stantec company
3300 WOODBURN ROAD, SUITE 100
ANNANDALE, VA 22003
(703) 876-3000

URS
14428 GALLATIN CENTER DR., SUITE 100
LAKE RIDGE, VA 22192
(703) 920-3220

TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN – PHASE II (CONT'D)

DRAWING
ESC – 09

SCALE 1" = 20'

SHEET 51 OF 84

C:\WSS-L\28000s\28000\28006.01\CAD\104-ENGR\28-105E Plans\EROSION & SEDIMENT CONTROL PLAN PHASE II.dwg Plotted: 6/15/2020, 8:34 PM by Chenlin Alex Template Version 2 9-4-2014

MATCHLINE SEE SHEET 51

TAYLOR RUN

FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02

SANITARY SEWER EASEMENT
D.B. 342, PG. 492

EX. C/L SANITARY SEWER EASEMENT
D.B. 342, PG. 492

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

Ex. 10' STORM EASEMENT
D.B. 342, PG. 492

APPROXIMATE TERMINUS

3 ESC-11 TEMPORARY BRIDGE CROSSING

6 ESC-11 DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATH, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS.

6 ESC-12 TEMPORARY SANDBAG DIVERSION

2 ESC-11 TREE PROTECTION FENCE

TEMPORARY SANDBAG DIVERSION (AS NEEDED)

END RESTORATION.
TIE INTO EX. 2x60" RCP.
(STA. 30+24.52)
LEFT INV. ELEV: 110.89'
RIGHT INV. ELEV: 111.13'

FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

EX. 4' DIRT TRAIL

EX. DIRT TRAIL

NORTH

SOURCE DATA INFORMATION
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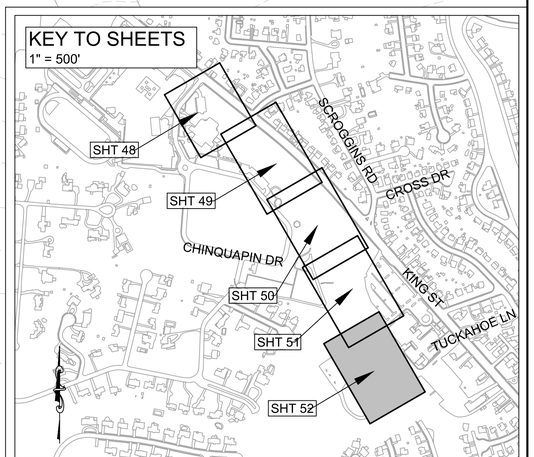
KEY TO SHEETS
1" = 500'



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SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STILLEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

Wetland Studies and Solutions, Inc. (a URS company)
URS
13450 SUNRISE VALLEY DR., SUITE 100
HERNDON, VA 20171
(703) 478-3600
1243 HORSLEY CENTER DR., SUITE 100
VIENNA, VA 22182
(571) 653-3000

TAYLOR RUN STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN – PHASE II (CONT'D)

DRAWING
ESC – 10
SCALE 1" = 20'
SHEET 52 OF 84

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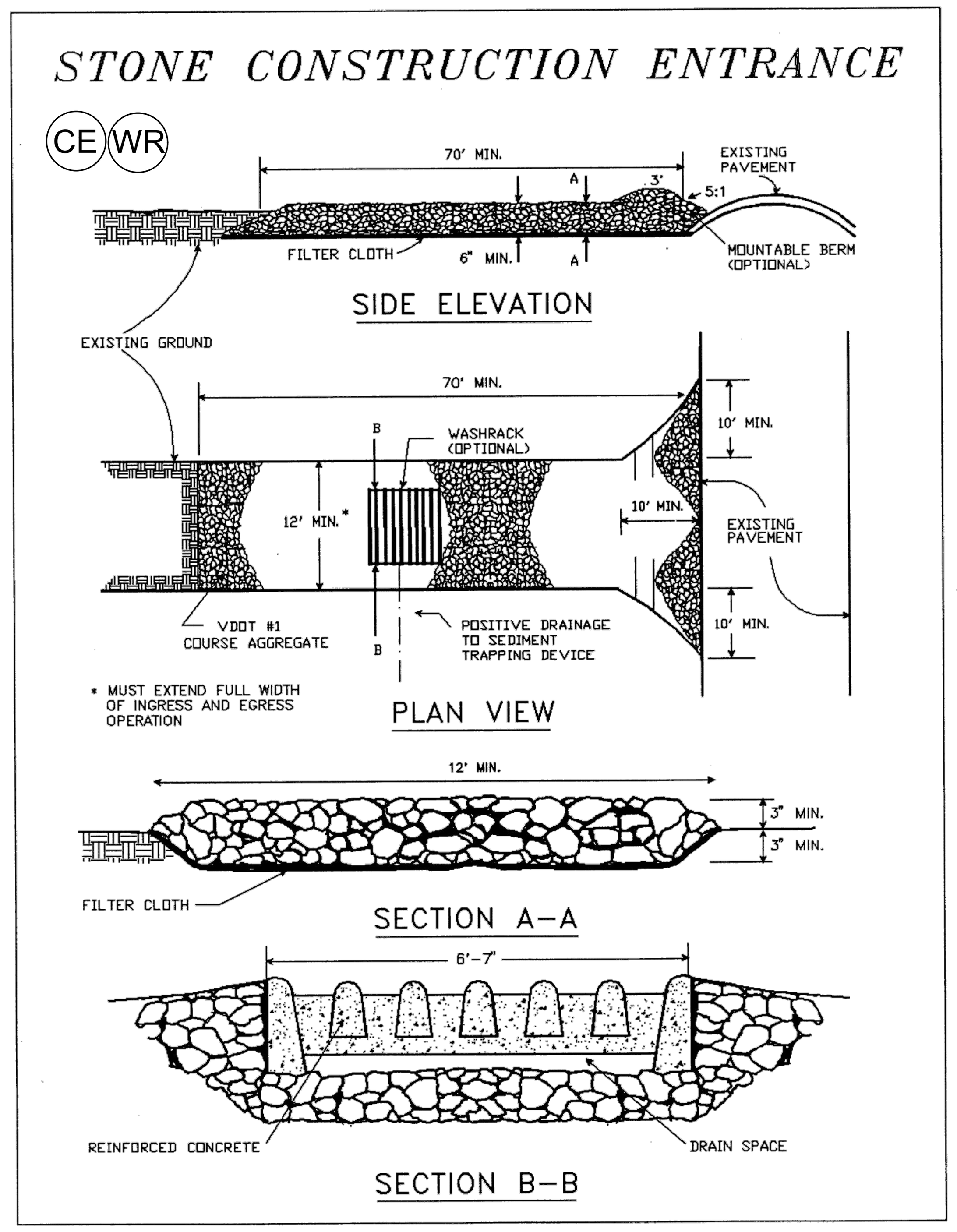
1992 3.02

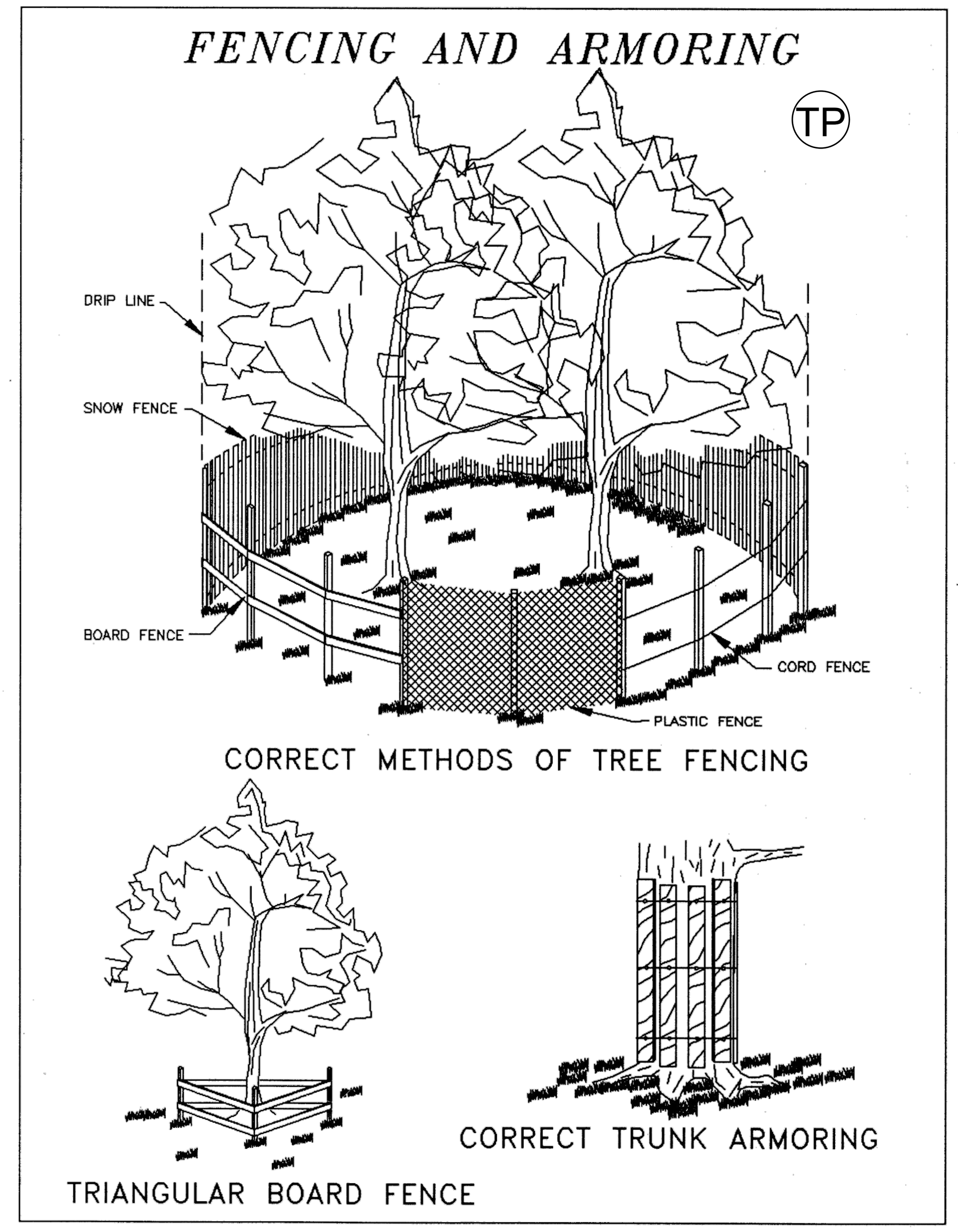


Source: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and Va. DSWC — Plate 3.02-1

III - 9

1 ESC-11 CONSTRUCTION ENTRANCE
N.T.S.

1992 3.38

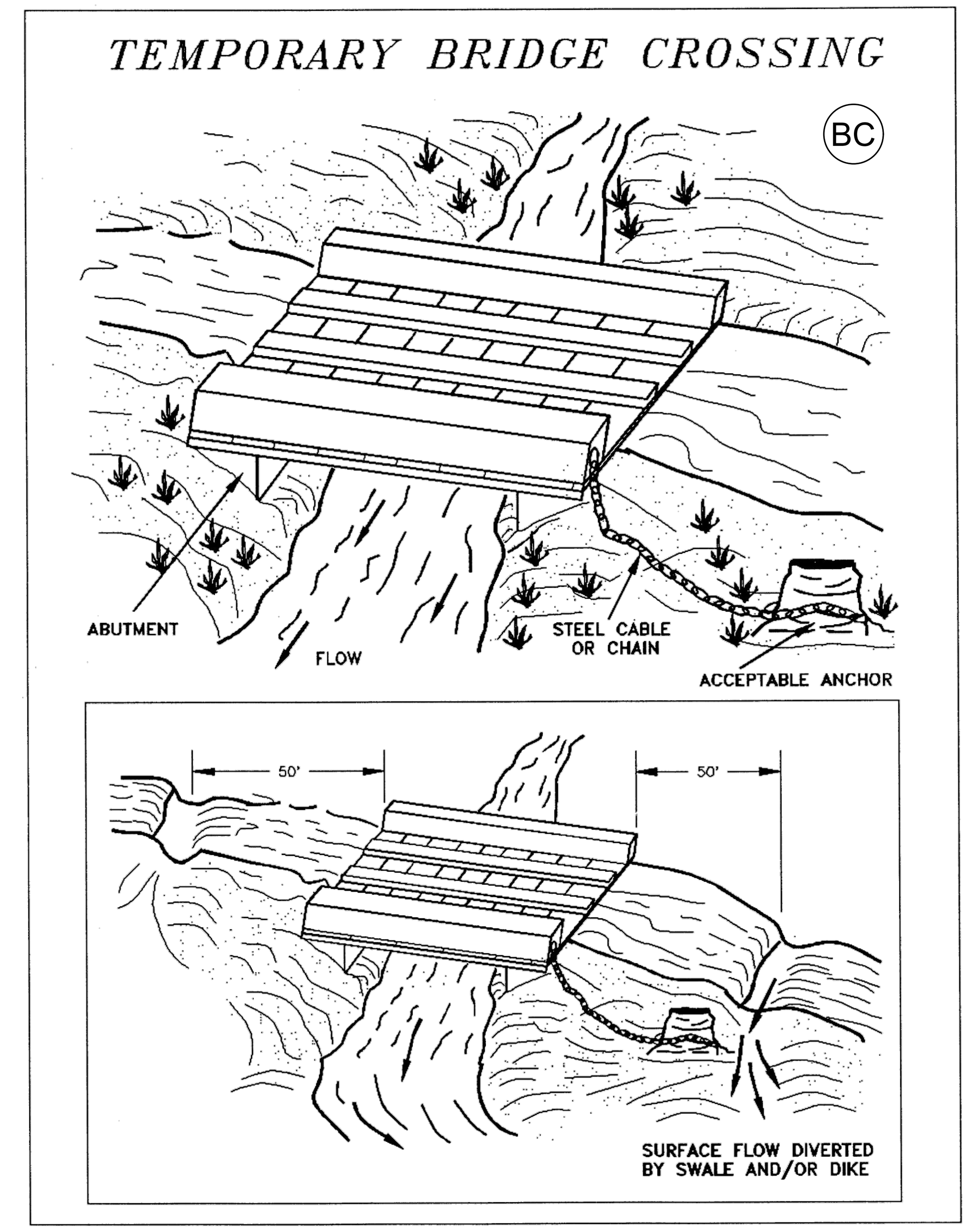


Source: Va. DSWC — Plate 3.38-2

III - 401

2 ESC-11 TREE PROTECTION FENCING
N.T.S.

1992 3.24

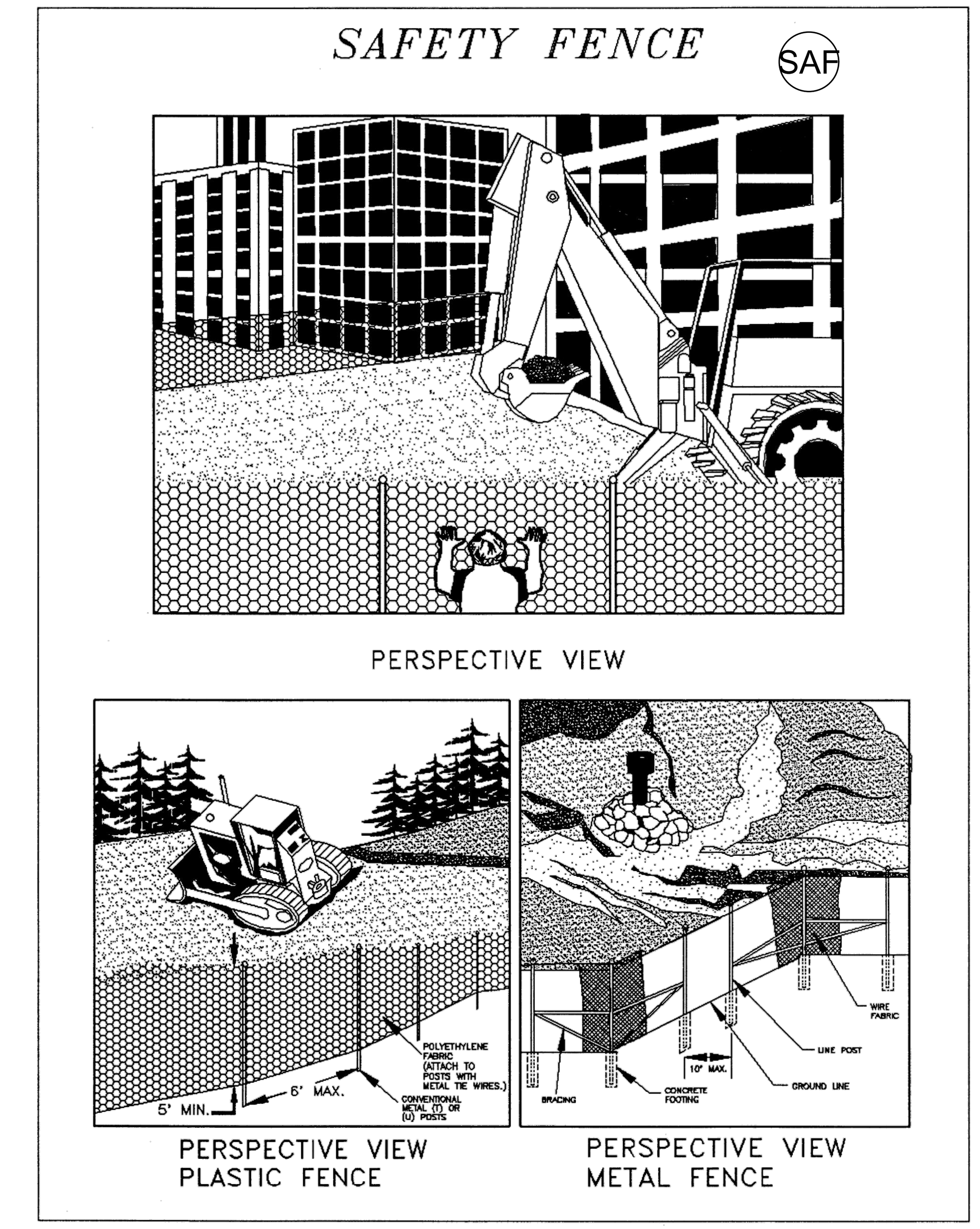


Source: 1983 Maryland Standards and Specifications for Soil Erosion and Sediment Control — Plate 3.24-1

III - 220

3 ESC-11 TEMPORARY BRIDGE CROSSING
N.T.S.

1992 3.01

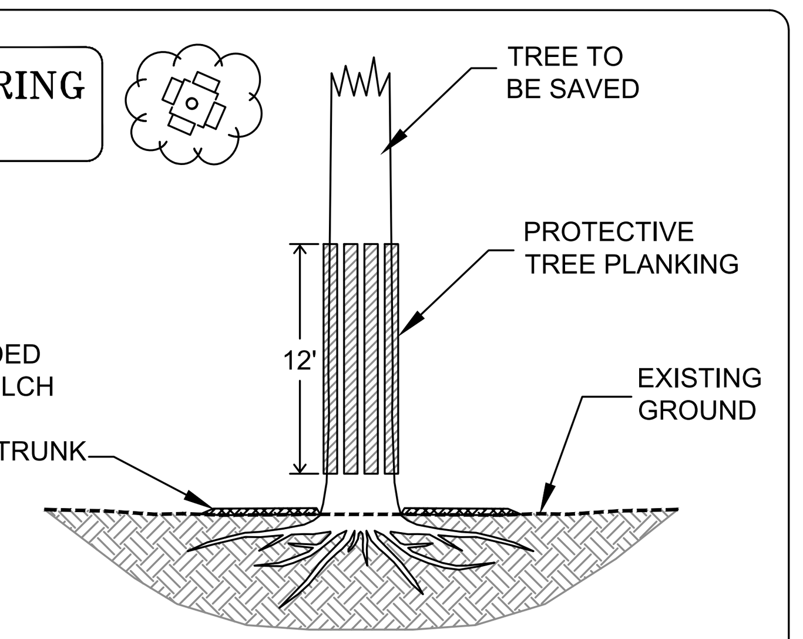


Source: Adapted from Conwed Plastics and VDOT Road and Bridge Standards — Plate 3.01-1

III - 5

4 ESC-11 CHAIN LINK FENCING
N.T.S.

TRUNK ARMORING DETAIL



TRUNK ARMORING/TREE PLANKING NOTES:

1. A MINIMUM OF 3 LAYERS OF BURLAP WRAP SHALL BE USED UNDERNEATH PROTECTIVE TREE PLANKS.
2. PROTECTIVE TREE PLANKS SHALL BE COMPOSED OF STANDARD 2"x4" OR 2"x6" LUMBER AND SHALL BE SECURED TO THE TREE USING WIRE.
3. PROTECTIVE TREE PLANKS SHALL EXTEND FROM THE ROOT CROWN FLARE TOA MINIMUM OF 12 FEET OR UP TO THE LOWEST LIMB (WHICHEVER IS LESS).
4. NO HOLES ARE TO BE DRILLED IN THE TREE TO SECURE PLANKS.
5. NO LIVE TREE LIMBS ARE TO BE REMOVED IN ORDER TO PLACE PLANKING. PLANK POSITIONING SHALL BE ADJUSTED TO ACCOMMODATE TREE LIMBS.
6. PROTECTIVE TREE PLANKS AND BURLAP WRAP SHALL BE REMOVED PROMPTLY AFTER CONSTRUCTION ENDS.

5 ESC-11 TRUNK ARMORING
N.T.S.

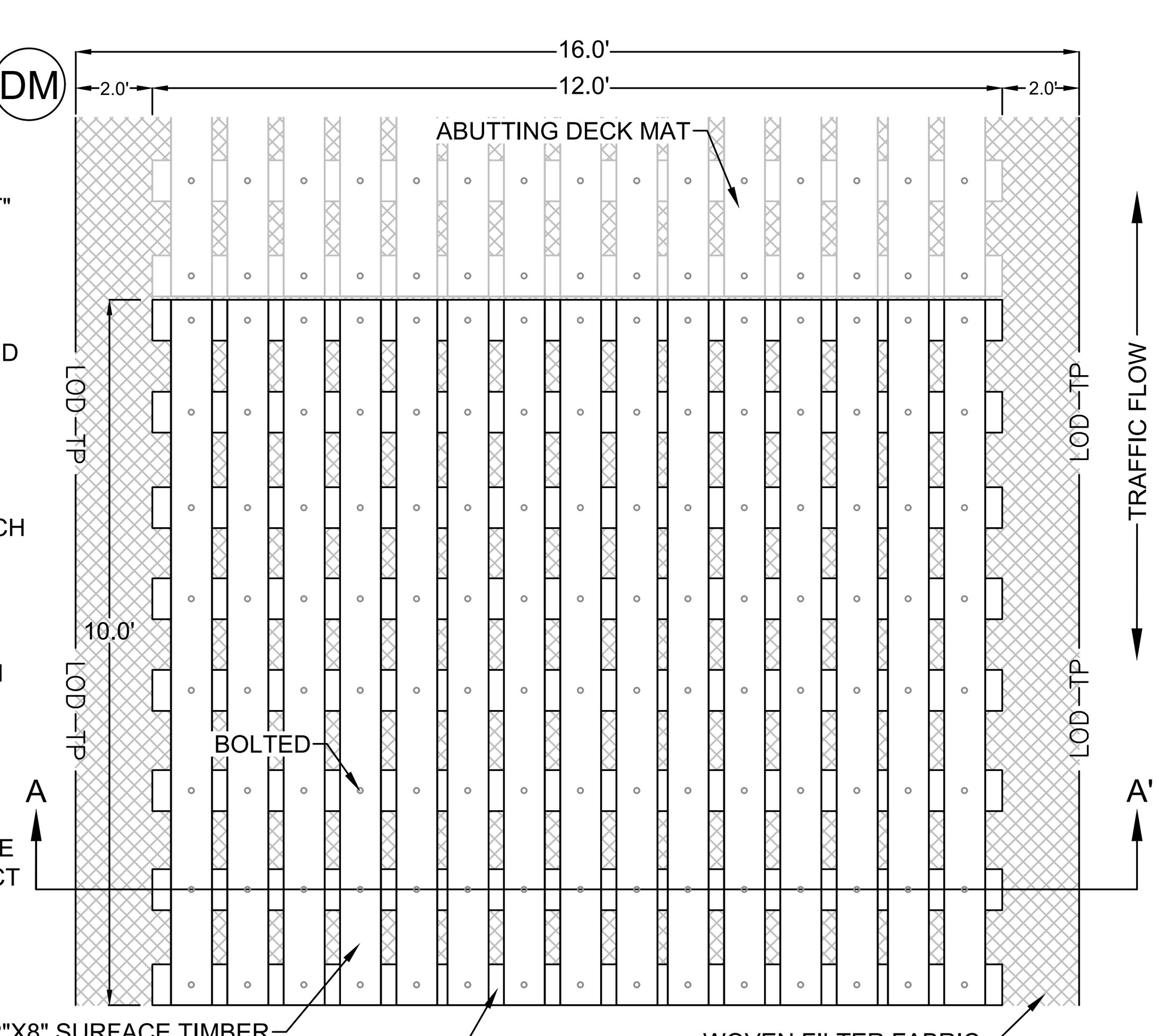
ACCESS ROAD DECK MAT (DM)

NOTES:
1. MAT SHALL BE "DECK MAT" BY CAROLINA MAT INCORPORATED OR APPROVED EQUIVALENT.

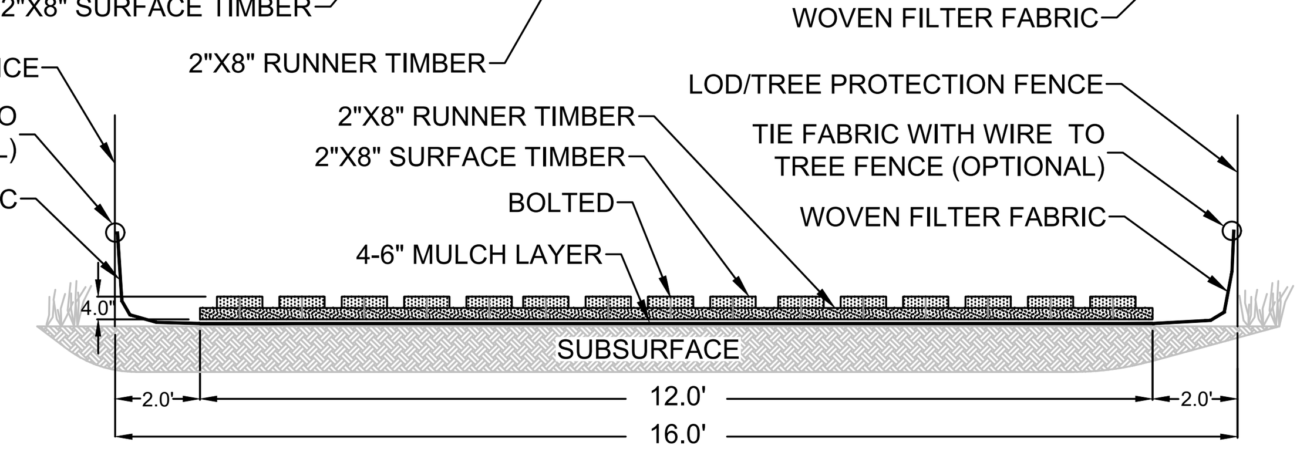
2. MATS SHALL BE INSTALLED SUCH THAT THE SURFACE TIMBER RUNS PARALLEL WITH THE VEHICLE TREAD. SUBSEQUENT MATS SHALL BE INSTALLED SUCH THAT THEY BUTT UP AGAINST EACH OTHER.

3. TO PROTECT CRITICAL ROOT ZONES, 4-6" MULCH SHALL BE PLACED BENEATH MATS FOR ACCESS PATHS.

4. DECK MATTING SHALL BE USED IN STOCKPILE AREAS ADJACENT TO TREES TO BE SAVED SHOWN ON THE TREE REMOVAL PLAN, TO PROTECT CRITICAL ROOTS.



PLAN VIEW
NOT TO SCALE



SECTION A-A'
NOT TO SCALE

6 ESC-11 ACCESS ROAD DECK MAT
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

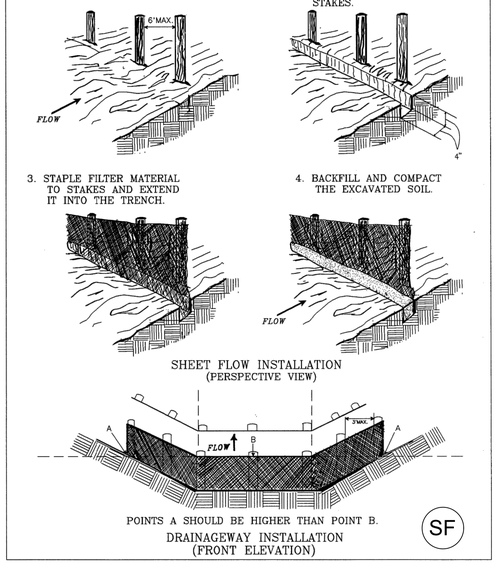
TAYLOR RUN STREAM RESTORATION

EROSION & SEDIMENT CONTROL DETAILS

Wetland Studies and Solutions, Inc. — URS

DRAWING ESC – 11
SCALE N/A
SHEET 53 OF 84

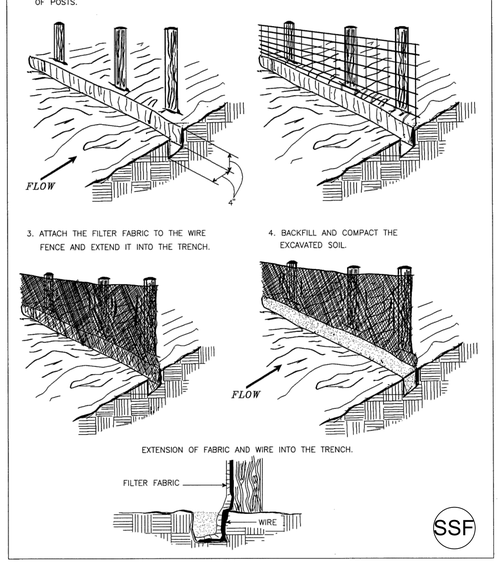
CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)



Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

Plate 3.05-2

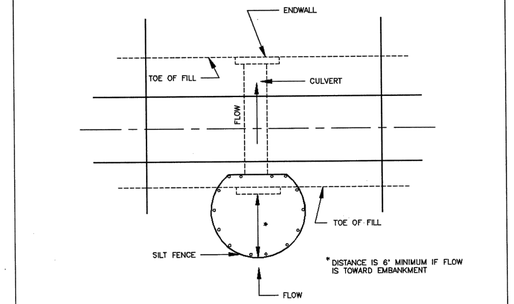
CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)



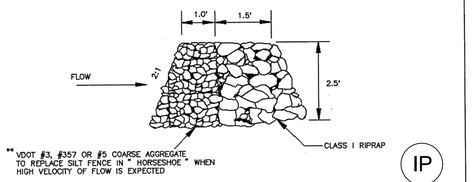
Source: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood and Wyant

Plate 3.05-1

SILT FENCE CULVERT INLET PROTECTION



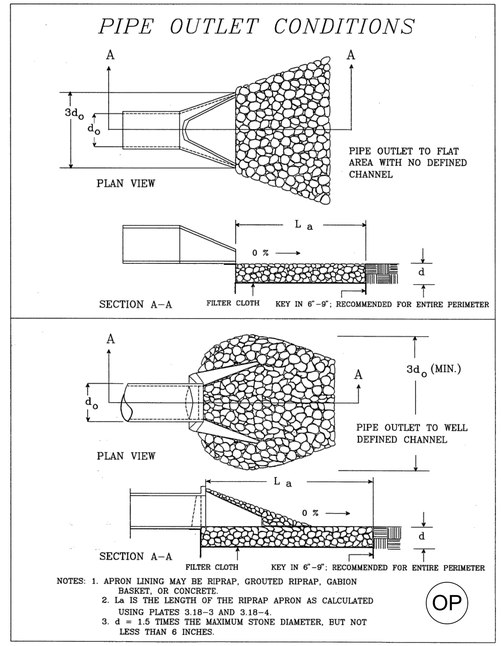
OPTIONAL STONE COMBINATION**



Source: Adapted from VDOT Standard Sheets and Va. DSWC

Plate 3.08-1

PIPE OUTLET CONDITIONS



Source: Va. DSWC

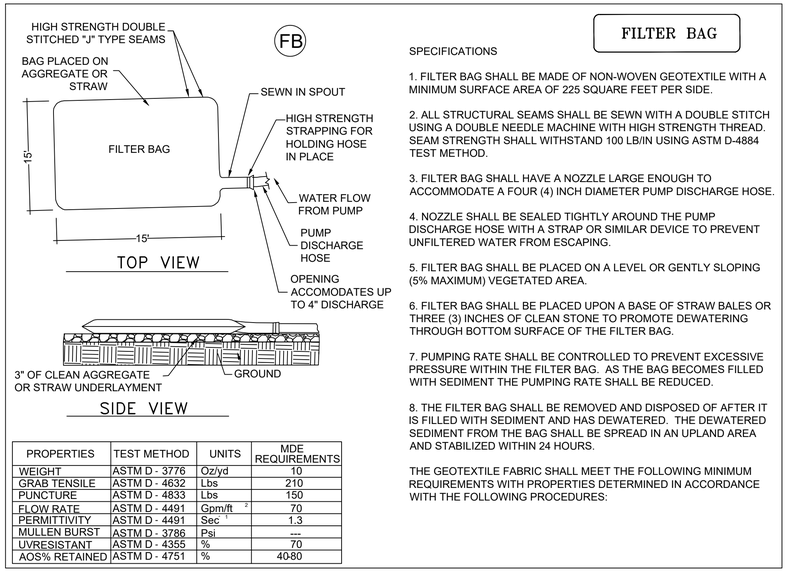
Plate 3.18-1

1 ESC-12 SILT FENCE
N.T.S.

2 ESC-12 SUPER SILT FENCE
N.T.S.

3 ESC-12 CULVERT INLET PROTECTION
N.T.S.

4 ESC-12 CULVERT OUTLET PROTECTION
N.T.S.



FILTER BAG

SPECIFICATIONS

1. FILTER BAG SHALL BE MADE OF NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 SQUARE FEET PER SIDE.

2. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD. SEAM STRENGTH SHALL WITHSTAND 100 LB/IN USING ASTM D-4884 TEST METHOD.

3. FILTER BAG SHALL HAVE A NOZZLE LARGE ENOUGH TO ACCOMMODATE A FOUR (4) INCH DIAMETER PUMP DISCHARGE HOSE.

4. NOZZLE SHALL BE SEALED TIGHTLY AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE TO PREVENT UNFILTERED WATER FROM ESCAPING.

5. FILTER BAG SHALL BE PLACED ON A LEVEL OR GENTLY SLOPING (5% MAXIMUM) VEGETATED AREA.

6. FILTER BAG SHALL BE PLACED UPON A BASE OF STRAW BALES OR THREE (3) INCHES OF CLEAN STONE TO PROMOTE DEWATERING THROUGH BOTTOM SURFACE OF THE FILTER BAG.

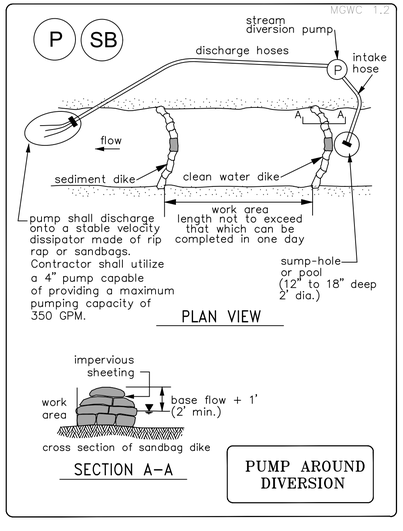
7. PUMPING RATE SHALL BE CONTROLLED TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG. AS THE BAG BECOMES FILLED WITH SEDIMENT THE PUMPING RATE SHALL BE REDUCED.

8. THE FILTER BAG SHALL BE REMOVED AND DISPOSED OF AFTER IT IS FILLED WITH SEDIMENT AND HAS DEWATERED. THE DEWATERED SEDIMENT FROM THE BAG SHALL BE SPREAD IN AN UPLAND AREA AND STABILIZED WITHIN 24 HOURS.

THE GEOTEXTILE FABRIC SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS WITH PROPERTIES DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:

PROPERTIES	TEST METHOD	UNITS	MDE REQUIREMENTS
WEIGHT	ASTM D - 3776	Oz/yd	10
GRAB TENSILE	ASTM D - 4632	Lbs	210
PUNCTURE	ASTM D - 4833	Lbs	150
FLOW RATE	ASTM D - 4491	Gpm/ft [2]	70
PERMITTIVITY	ASTM D - 4491	Sec [1]	1.3
MULLEN BURST	ASTM D - 3786	Psi	---
UVRESISTANT	ASTM D - 4355	%	70
AOS% RETAINED	ASTM D - 4751	%	40-80

5 ESC-12 FILTER BAG
N.T.S.



6 ESC-12 TEMPORARY SANDBAG DIVERSION
N.T.S.

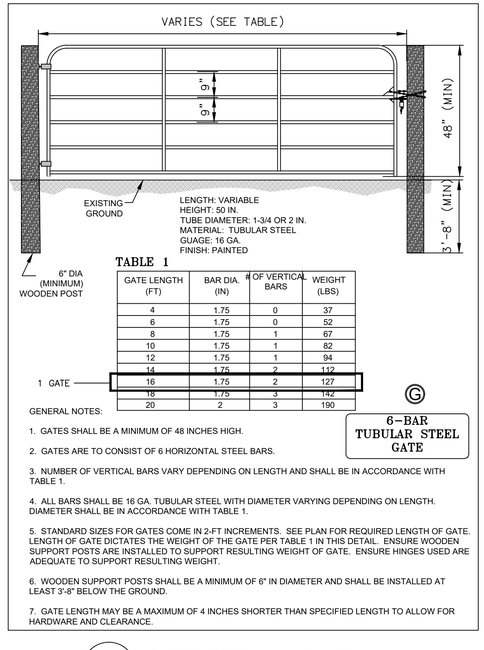


TABLE 1

GATE LENGTH (FT)	BAR DIA. (IN)	# OF VERTICAL BARS	WEIGHT (LBS)
4	1.75	0	37
6	1.75	0	52
8	1.75	1	67
10	1.75	1	82
12	1.75	1	94
14	1.75	2	112
16	1.75	2	127
18	1.75	3	142
20	2	3	190

GENERAL NOTES:

1. GATES SHALL BE A MINIMUM OF 48 INCHES HIGH.
2. GATES ARE TO CONSIST OF 6 HORIZONTAL STEEL BARS.
3. NUMBER OF VERTICAL BARS VARY DEPENDING ON LENGTH AND SHALL BE IN ACCORDANCE WITH TABLE 1.
4. ALL BARS SHALL BE 16 GA. TUBULAR STEEL WITH DIAMETER VARYING DEPENDING ON LENGTH. DIAMETER SHALL BE IN ACCORDANCE WITH TABLE 1.
5. STANDARD SIZES FOR GATES COME IN 2-FT INCREMENTS. SEE PLAN FOR REQUIRED LENGTH OF GATE. LENGTH OF GATE DICTATES THE WEIGHT OF THE GATE PER TABLE 1 IN THIS DETAIL. ENSURE WOODEN SUPPORT POSTS ARE INSTALLED TO SUPPORT RESULTING WEIGHT OF GATE. ENSURE HINGES USED ARE ADEQUATE TO SUPPORT RESULTING WEIGHT.
6. WOODEN SUPPORT POSTS SHALL BE A MINIMUM OF 6" IN DIAMETER AND SHALL BE INSTALLED AT LEAST 3'-8" BELOW THE GROUND.
7. GATE LENGTH MAY BE A MAXIMUM OF 4 INCHES SHORTER THAN SPECIFIED LENGTH TO ALLOW FOR HARDWARE AND CLEARANCE.

G
6-BAR TUBULAR STEEL GATE

7 ESC-12 PEDESTRIAN GATE
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE | DESCRIPTION | BY

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

EROSION & SEDIMENT CONTROL DETAILS (CONT'D)

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DRAWING
ESC – 12
SCALE N/A
SHEET 54 OF 84

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SEQUENCE OF CONSTRUCTION

THE FOLLOWING SEQUENCE OF EVENTS AND EROSION CONTROL MEASURES SHALL BE INCORPORATED INTO THE CONSTRUCTION SCHEDULE FOR THIS PROJECT AND SHALL APPLY TO ALL CONSTRUCTION ACTIVITIES WITHIN THE PROJECT LIMITS:

PHASE I STREAM AREA WORK

1. THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE (1) WEEK PRIOR TO PRE-CONSTRUCTION MEETING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF LAND DISTURBING ACTIVITY AND ONE (1) WEEK PRIOR TO FINAL INSPECTION.
2. PRIOR TO THE START OF ANY EARTH DISTURBANCE AN ON-SITE PRE-CONSTRUCTION MEETING SHALL BE HELD TO ENSURE THAT ALL AFFECTED PARTIES (DESIGN ENGINEER, CONTRACTOR, CITY OF ALEXANDRIA STAFF, OWNER, AND PROJECT MANAGER) FULLY UNDERSTAND THE CONSTRUCTION SEQUENCING. THE LIMITS OF DISTURBANCE AND GRADING (LOD) SHALL BE MARKED WITH FLAGGING PRIOR TO THIS MEETING TO ALLOW REVIEW PRIOR TO ESTABLISHING PERIMETER CONTROLS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING MISS UTILITY AT 1-800-552-7001 FOR THE LOCATION OF ALL PUBLIC AND PRIVATE UTILITY LINES, PIPES, CABLES, AND ASSOCIATED FEATURES PRIOR TO ANY CONSTRUCTION WORK; ALL UTILITIES SHALL BE CLEARLY IDENTIFIED PRIOR TO CONSTRUCTION.
4. DURING THE PRE-CONSTRUCTION MEETING THE LOD SHALL REVIEWED ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER, OWNER OR OWNER'S REPRESENTATIVE(S), AND A CITY ARBORIST. A DETERMINATION SHALL BE MADE AT THAT TIME REGARDING WHICH TREES WILL BE REMOVED BASED ON THE APPROVED GRADING AND STREAM RESTORATION ACTIVITIES. ADJUSTMENTS MAY BE MADE TO FLAGGING MARKING THE LOD AND TREE PLANKING CALLED FOR TO ADEQUATELY PROTECT TREES TO BE PRESERVED AND FACILITATE THE SAFE REMOVAL OF TREES TO BE REMOVED. THE LOCATION FOR INSTALLATION OF TREE PROTECTION FENCING SHALL BE ADJUSTED IN CONJUNCTION WITH ANY CHANGES TO THE LOD PRIOR TO THE ESTABLISHMENT OF PERIMETER CONTROLS AND COMMENCEMENT OF ANY OTHER CONSTRUCTION ACTIVITIES.
5. PRIOR TO START OF WORK, THE CONTRACTOR SHALL ARRIVE ON SITE AND SET PERIMETER EROSION AND SEDIMENT CONTROLS AS DIRECTED IN PHASE I EROSION & SEDIMENT CONTROL PLANS. MEASURES INCLUDED IN OTHER PHASE I MEASURES ARE TEMPORARY STONE CONSTRUCTION ENTRANCE, ACCESS ROAD DECK MATS, CULVERT OUTLET PROTECTION, TREE PROTECTION/TREE PLANKING, CULVERT INLET PROTECTION, SAFETY FENCE, SUPER SILT FENCE, TEMPORARY STREAM CROSSINGS, PUMP AROUNDS, AND FILTER BAGS.
6. OBTAIN APPROVAL FROM THE CITY FOR EROSION AND SEDIMENT CONTROL MEASURES INSTALLED.
7. CONTRACTOR SHALL PROVIDE SEED TAGS AND GAIN APPROVAL FOR SAID TAGS FROM CITY STAFF, PRIOR TO COMMENCING ANY WORK. SEED MUST BE ON-SITE PRIOR TO GRADING ACTIVITIES TO ALLOW PROGRESSIVE STABILIZATION.
8. TREES TO BE REMOVED THAT ARE LOCATED ON THE LOD OR IMMEDIATELY ADJACENT TO THE LOD WITHIN THE PROTECTED AREA SHALL BE REMOVED USING CHAIN SAWS TO MINIMIZE ROOT ZONE DISTURBANCE OR TREES TO BE PRESERVED. TREES SHALL BE CUT FLUSH WITH THE GROUND AND ONLY REMOVED IF NECESSARY TO ACCOMPLISH PROPOSED GRADING.
9. TREE PLANKING SHALL BE INSTALLED AS NEEDED ON ANY TREE TO BE PRESERVED (OUTSIDE THE LOD), BUT WHERE RISK OF DAMAGE FROM CONSTRUCTION TRAFFIC IS FORESEEABLE.

PHASE II STREAM AREA WORK

10. STAKE OUT THE NEW STREAM ALIGNMENT AS SHOWN ON THE GEOMETRY PLAN SHEETS. PC AND PT POINTS SHALL BE STAKED ALONG THE CENTERLINE AND AT 25-FOOT DOUBLE OFFSETS, IDENTIFIED BY CORRESPONDING CENTERLINE STATION, ON EACH SIDE OF THE PROPOSED CHANNEL. THE CENTER OF EACH CURVE SHALL BE STAKED AND MARKED WITH THE CORRESPONDING RADIUS OF CURVATURE. VERTICAL CONTROL SHALL BE CLEARLY MARKED AT SEVERAL LOCATIONS ALONG THE PROPOSED CHANNEL.
11. CONSTRUCTION SHALL PROCEED FROM UPSTREAM TO DOWNSTREAM, UNLESS AN ALTERNATIVE SEQUENCE IS APPROVED BY THE CITY. ALL IN-STREAM WORK SHALL BE PROTECTED BY PUMP AROUND DIVERSION (PHASE II).
12. NO WORK SHALL BE STARTED THAT CANNOT BE COMPLETED AND STABILIZED IN ONE DAY (INCLUDING CLEARING). TREES CAN BE FLUSH CUT IN ONE MOBILIZATION, HOWEVER STUMPS TO BE REMOVED SHALL REMAIN UNTIL AREA IS BEING ACTIVELY WORKED.
13. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
14. PLACE REINFORCED BED MATERIAL IN THE CHANNEL BOTTOM (SEE SHEET 11 FOR REINFORCED BED MIXTURE SPECIFICATIONS). PRIOR TO PLACING THE REINFORCED BED MATERIAL IN THE CHANNEL THE CONTRACTOR SHALL ENSURE A WELL GRADED BED MATERIAL IS PLACED THROUGHOUT THE CHANNEL. ADDITIONAL ON-SITE MIXING MAY BE NECESSARY. SALVAGED STREAM BED MATERIAL SHALL BE PLACED ON TOP OF REINFORCED BED MATERIAL AS SHOWN ON THE TYPICAL CROSS SECTION PRESENTED ON THE FIRST CONSTRUCTION DETAILS SHEET.
15. GRADE THE REMAINING PORTION OF THE CHANNEL AS SHOWN ON THE PLAN. TIE OUT SLOPES SHALL NOT EXCEED 2.5:1.

MAINTENANCE

ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED AFTER EACH RAINFALL OR WEEKLY, WHICHEVER IS MOST FREQUENT, AND SHOULD BE CLEANED AND REPAIRED ACCORDING TO THE FOLLOWING SCHEDULE:

1. EROSION AND SEDIMENT CONTROL WILL BE CHECKED REGULARLY (MINIMUM WEEKLY) FOR UNDERMINING OR DETERIORATION AND BUILDUP OR CLOGGING WITH SEDIMENT. CORRECTIVE ACTION WILL BE TAKEN IMMEDIATELY.
2. ALL SEEDED AREAS WILL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE RESEEDED AS NEEDED.
3. ALL TEMPORARY EROSION AND SEDIMENT MEASURES SHALL BE DISPOSED OF WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED AND VEGETATION IS ESTABLISHED.

TEMPORARY SEEDING

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

MAINTENANCE

A. IRRIGATION - IF SOIL MOISTURE IS DEFICIENT. SUPPLY NEW SEEDINGS AND PLANTINGS WITH ADEQUATE WATER FOR PLANT GROWTH UNTIL THEY ARE FIRMLY ESTABLISHED.
B. REPAIR - INSPECT ALL AREAS FOR PLANTING FAILURES AND MAKE NECESSARY REPAIRS.

PERMANENT SEEDING

ALL PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE APPROVED SEEDING SCHEDULE (VS-02)

GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

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

ES-3: A "CERTIFIED LAND DISTURBER" (CLD) SHALL BE NAMED IN A LETTER TO THE DIVISION CHIEF OF CONSTRUCTION AND INSPECTION (C&I), DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES PRIOR TO ANY LAND DISTURBING ACTIVITY. IF THE CLD CHANGES DURING THE PROJECT, THAT CHANGE MUST BE NOTED IN A LETTER TO THE DIVISION CHIEF. A NOTE TO THIS EFFECT SHALL BE PLACED ON THE PHASE I E&S PLAN SHEETS OF THE SITE PLAN.

ES-4: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-5: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-6: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-7: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-8: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-9: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-10: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVISES SHALL BE MADE IMMEDIATELY.

ES-11: ANY DENUDED SLOPES, EITHER DISTURBED OR CREATED BY THIS PLAN THAT EXCEED 2500 SQUARE FEET (SUCH AS THOSE ADJACENT TO THE CONSTRUCTION ENTRANCE) SHALL BE SEEDED (PER SEEDING SCHEDULE) AND MATTED IMMEDIATELY FOLLOWING ESTABLISHMENT.

ES-12: ALL VEHICLES SHALL BE CLEANED BEFORE ENTERING ONTO PUBLIC RIGHT-OF-WAY.

ES-13 THE WASH WATER FROM THE CONSTRUCTION ENTRANCE SHALL BE FILTERED THROUGH THE PROVIDED SILT FENCE TO ENSURE THAT NO SEDIMENT LADEN RUNOFF IS ALLOWED TO RUNOFF ON TO THE ADJACENT PROPERTY OR THE PUBLIC RIGHT-OF-WAY.

4VAC50-30-40. MINIMUM STANDARDS

NOTE: ALL CONSTRUCTION ON SITE SHALL BE IN CONFORMANCE WITH THE FOLLOWING 19 MINIMUM STANDARDS AS ESTABLISHED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS.

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
5. STABILIZATION MEASURES SHALL BE APPLIED TO CHANNELS AND EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.
   - 6.1. 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.
   - 6.2. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 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.
7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
14. ALL APPLICABLE FEDERAL, STATE AND LOCAL CHAPTERS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
   - 16.2. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
   - 16.2. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
   - 16.3. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
   - 16.4. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
   - 16.5. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER.
   - 16.6. APPLICABLE SAFETY CHAPTERS SHALL BE COMPLIED WITH.
17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA:
   - 19.1. 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.
   - 19.2. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
     - 19.2.1. THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
       - 19.2.1.1. 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.
       - 19.2.1.2. ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
       - 19.2.1.3. PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
   - 19.3. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
     - 19.3.1. IMPROVE THE CHANNELS TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO CHANNEL THE BED OR BANKS; OR
     - 19.3.2. IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
     - 19.3.3. DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MANMADE CHANNEL; OR
     - 19.3.4. PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE PLAN APPROVING AUTHORITY TO PREVENT DOWNSTREAM EROSION.
   - 19.4. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
   - 19.5. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
   - 19.6. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE LOCALITY 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.

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

THIS STREAM RESTORATION PROJECT INVOLVES THE RESTORATION OF APPROXIMATELY 2025 LINEAR FEET OF TAYLOR RUN, A TRIBUTARY OF HOLMES RUN. THE TOTAL DISTURBED AREA WILL BE ROUGHLY 170,886 SQUARE FEET (3.92 ACRES). THE RESTORATION WILL TAKE PLACE ON PROPERTIES OWNED BY THE CITY OF ALEXANDRIA AND BY THE FIRST BAPTIST CHURCH OF ALEXANDRIA. RESTORATION OF THE CHANNEL BEGINS AT THE DOWNSTREAM END OF A 72" CULVERT OUTFALL TO THE NORTHEAST OF CHINQUAPIN RECREATION CENTER ADJACENT TO KING STREET IN THE CITY OF ALEXANDRIA, VIRGINIA. THE STREAM FLOWS SOUTHEAST FOR APPROXIMATELY 2025 LINEAR FEET BEFORE REACHING AN EXISTING ROAD CROSSING (DRIVEWAY TO THE OVERFLOW PARKING LOT FOR THE FIRST BAPTIST CHURCH OF ALEXANDRIA). THE STREAM TIES INTO A TWIN 60" RCP CULVERT AT THIS CROSSING. NATURAL CHANNEL DESIGN (NCD) TECHNIQUES WERE UTILIZED TO DEVELOP A STABLE CHANNEL CROSS SECTION, LONGITUDINAL PROFILE, AND PLANFORM GEOMETRY FOR THE DEGRADED STREAM CHANNEL. NCD RESTORES A DEGRADED STREAM BY MIMICKING, TO THE MAXIMUM EXTENT PRACTICABLE, THE CHARACTERISTICS OF A STABLE, "NATURAL" STREAM. THROUGH THE USE OF GEOMORPHIC PRINCIPLES, NCD SEEKS TO ACHIEVE LONG-TERM STABILITY GIVEN CURRENT (AS WELL AS FUTURE) FLOW RATES.

THE PURPOSE OF THIS PROJECT IS TO IMPROVE WATER QUALITY AND AESTHETICS IN THE SUBJECT RIPARIAN CORRIDOR.

EXISTING SITE CONDITIONS

THE RESTORATION REACH IS BOUNDED AT THE UPSTREAM LIMITS OF THE CHANNEL BY AN EXISTING CULVERT OUTFALL DRAINING FROM THE DIRECTION OF THE CHINQAPIN RECREATION CENTER GROUNDS. THE PROJECT IS LOCATED ON CITY OF ALEXANDRIA AND FIRST BAPTIST CHURCH OF ALEXANDRIA PROPERTIES. THE DRAINAGE AREA FOR THE RESTORATION REACH IS APPROXIMATELY 333 ACRES WITH 38% IMPERVIOUSNESS, MEASURED TO THE DOWNSTREAM EXTENT OF THE PROJECT. THE STREAM CORRIDOR IS HIGHLY DISTURBED, WITH SEVERE EROSION IN VARIOUS LOCATIONS, INCLUDING A 10 TO 20-FT HIGH VERTICAL BANK WHICH CURRENTLY THREATENS THE EXISTING WALKING PATH ALONG THE RIGHT BANK OF THE STREAM. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH TWO DESTABILIZED AND EXPOSED CROSSINGS WITHIN THE RESTORATION AREA.

ADJACENT PROPERTY

THE PROJECT IS LOCATED ON CITY OF ALEXANDRIA AND FIRST BAPTIST CHURCH OF ALEXANDRIA PROPERTIES. THESE PROPERTIES ARE BOUNDED BY MULTIPLE PRIVATE PARCELS, HOWEVER CONSTRUCTION ACTIVITIES WILL NOT AFFECT ANY OF THE ADJACENT PROPERTIES.

OFF-SITE AREAS

THE DRIVEWAY TO THE PARKING LOT FOR CHINQUAPIN RECREATION CENTER WILL BE THE LOCATION OF THE CONSTRUCTION ENTRANCE TO THE PROJECT AND MAY CAUSE DISRUPTION TO TRAFFIC FLOW IN THIS AREA. DESIGN FOR THE ACCESS ROAD SHALL BE IN ACCORDANCE WITH APPROVED PLANS. TRAFFIC AND FACILITY SIGNS WILL ALSO BE LOCATED IN OFF-SITE AREAS IN ACCORDANCE WITH LOCAL REGULATIONS. ALL EXCAVATED MATERIAL WILL BE TRUCKED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

CRITICAL AREAS

THIS PROJECT IS LOCATED ENTIRELY WITHIN A STREAM CHANNEL, EXCEPT FOR ONE SECTION WHERE THE PROPOSED ALIGNMENT LEAVES THE EXISTING CHANNEL; HOWEVER, THE DESIGN PRESENTED HEREIN PROPOSES TO RESTORE THIS DEGRADED STREAM CHANNEL THUS IMPROVING THE WATER QUALITY OF THE DOWNSTREAM RECEIVING WATERS. ADDITIONALLY THE PROJECT IS LOCATED ENTIRELY WITHIN THE RPA. STREAM RESTORATION PROJECTS ARE WATER DEPENDENT AND AN ALLOWABLE USE IN THE RPA.

SOIL

THE DOMINANT SOIL LOCATED WITHIN THE PROJECT AREA IS SASSAFRAS NEABSCO COMPLEX. THIS SOIL HAS MARGINAL DRAINAGE AND MEDIUM EROSION POTENTIAL.

EROSION AND SEDIMENT CONTROL MEASURES

ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).

STRUCTURAL PRACTICES
3.01 - SAFETY CHAIN LINK FENCING
3.02 - TEMPORARY STONE CONSTRUCTION ENTRANCE
3.05 - SILT FENCE WITH WIRE SUPPORT
3.23 - STRUCTURAL STREAMBANK STABILIZATION
(VANE STRUCTURES, ROCK STEP, ROCK SILLS, STEP POOLS)
3.24 - STREAM CROSSING
3.26 - DEWATERING STRUCTURE (PUMP AROUND)
3.26 - FILTER BAG
3.38 - TREE PROTECTION FENCING
N/A - DECK MATTING
3.08 - CULVERT INLET PROTECTION
3.18 - CULVERT OUTLET PROTECTION

VEGETATIVE PRACTICES
3.30 - TOPSOIL (STOCKPILE)
3.31 - TEMPORARY SEEDING
3.32 - PERMANENT SEEDING
3.35 - MULCHING
3.36 - SOIL STABILIZATION BLANKET

STORMWATER MANAGEMENT

THIS PROJECT WILL IMPROVE WATER QUALITY AS WELL AS PROVIDE CHANNEL PROTECTION. THERE IS NO PROPOSED INCREASE IN IMPERVIOUS SURFACE WITH THIS PROJECT AND DISCHARGES LEAVING THE SITE WILL WILL REMAIN THE SAME.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

DATE	REVISIONS BY	DESCRIPTION

CITY PROJECT NO.: CP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

EROSION & SEDIMENT CONTROL NARRATIVE

URS — Wetland Studies and Solutions, Inc.

DRAWING ESC – 13

SCALE N/A

SHEET 55 OF 84

Substrate Sizing Calculations for the Reinforced Bed

The contributing watershed to Taylor Run is a fully developed urban watershed and there is not a sufficient sediment supply of adequate size to allow the existing stream systems to maintain equilibrium. To address the lack of sediment input and to prevent the proposed stream restoration design from downcutting and widening following construction, the proposed stream channel presented in this plan set is intended to function at a threshold condition (i.e. the "armor" portion of the bed material is not entrained and transported). To achieve the desired threshold condition, the size (D_{50}) of the large rock ("armor") portion of the reinforced bed mix is determined by first calculating the "mean depth" boundary shear stress (i.e. Shield's Equation) for the proposed channel using the hydraulic radius (approximately the mean depth, Equation 1). The "mean depth" boundary shear stress value is then inserted into a regression equation to determine the particle size D_{50} needed to achieve a stable stream bed (Equation 2)(Rosgen 2006, Leopold et. al. 1964).

A Factor of Safety greater than or equal to 1.5 is desired and is based on the ratio of the computed rock size versus provided rock size (Equation 3). As a check, the above process is repeated using the "maximum" boundary shear stress (Equation 4). The term "maximum" boundary shear stress is used because typically, boundary shear stress calculations are performed using the hydraulic radius (approximately the mean riffle depth, refer to Equations 1 and 2). Using the "maximum" boundary shear stress as a check of the initial calculation provides a conservative estimate of the required D_{50} for the "armor" rock. For this conservative estimate, a Factor of Safety greater than 1.0 is desired and is based on the ratio of the computed rock size versus the provided rock size (Equation 6). This step-by-step procedure is presented below:

STEP 1: "ARMOR" SIZE DETERMINATION

Based on the calculations below, the D_{50} particle size needed to achieve a stable stream bed would range from 3.4 to 5.3 inches (depending on channel slope) (Equation 3). However, to meet the required Factor of Safety, the D_{50} particle size used for the channel will be either 6.7 or 13.2 inches, depending on local slope. The armor rock used exceeds the target Factor of Safety for all proposed cross sections and reaches and is therefore of sufficient size[1] to be used as the stable armor component in the reinforced bed mix. The reinforced bed mix shall be prepared as specified in the Reinforced Bed Mixture Specifications provided on the Grading Notes sheet.

EQUATION 1 ("MEAN DEPTH" BOUNDARY SHEAR STRESS)

$t_0 = \gamma_f * R * S$

WHERE:			Taylor Run 10+00 to 30+25
γ_f	= SPECIFIC WEIGHT OF WATER	(LB/FT^3) =	62.4
R	= HYDRAULIC RADIUS (A_{BKF}/WP)	(FT) =	1.3
A_{BKF}	= BANKFULL AREA	(FT^2) =	30.15
WP	= WETTED PERIMETER	(FT) =	22.5
D_{BKF}	= BANKFULL MEAN DEPTH (A_{BKF}/W_{BKF})	(FT) =	1.4
W_{BKF}	= BANKFULL WIDTH	(FT) =	22.0
S	= MAXIMUM RIFFLE SLOPE	(FT/FT) =	0.021
THEREFORE:			
t_0	= BOUNDARY SHEAR STRESS	(LB/FT^2) =	1.7

EQUATION 2 ("ARMOR" PORTION PARTICLE SIZE)

$D_{50} = 3.07 * T_0^{1.042}$

WHERE:			Taylor Run 10+00 to 30+25
t_0	= MEAN DEPTH BOUNDARY SHEAR STRESS (FROM EQ. 1)	(LB/FT^2) =	1.7
THEREFORE:			
D_{50}	= STABLE MEAN DIAMETER OF THE "ARMOR" ROCK	(IN) =	5.3

EQUATION 3 (FACTOR OF SAFETY)

$FS = D_{50\text{-Actual}}/D_{50}$

WHERE:			Taylor Run 10+00 to 30+25
$D_{50\text{-Actual}}$	= ACTUAL MEAN DIAMETER OF THE "ARMOR" ROCK (FROM QUARRY)	(IN) =	13.2
D_{50}	= STABLE MEAN DIAMETER OF THE "ARMOR" ROCK (FROM EQ. 2)	(IN) =	5.3
THEREFORE:			
FS	= FACTOR OF SAFETY	=	2.5

STEP 2: CONSERVATIVE ESTIMATE OF STABLE "ARMOR" ROCK (CALCULATE THE BOUNDARY SHEAR STRESS USING THE MAXIMUM RIFFLE DEPTH).

EQUATION 4 (MAXIMUM DEPTH BOUNDARY SHEAR STRESS)

$t_{0\text{-MAX}} = \gamma_f * D_{MAX} * S$

WHERE:			Taylor Run 10+00 to 30+25
γ_f	= SPECIFIC WEIGHT OF WATER	(LB/FT^3) =	62.4
D_{MAX}	= MAXIMUM RIFFLE DEPTH	(FT) =	2.1
S	= MAXIMUM RIFFLE SLOPE	(FT/FT) =	0.021
THEREFORE:			
$t_{0\text{-MAX}}$	= MAXIMUM DEPTH BOUNDARY SHEAR STRESS	(LB/FT^2) =	2.8

EQUATION 5 (DETERMINE "ARMOR" PORTION PARTICLE SIZE)

$D_{50} = 3.07 * T_{0\text{-MAX}}^{1.042}$

WHERE:			Taylor Run 10+00 to 30+25
$t_{0\text{-MAX}}$	= MAXIMUM DEPTH BOUNDARY SHEAR STRESS (FROM EQ. 4)	(LB/FT^2) =	2.8
THEREFORE:			
$D_{50\text{-MAX}}$	= STABLE MEAN DIAMETER OF THE "ARMOR" ROCK	(IN) =	9.0

EQUATION 6 (FACTOR OF SAFETY)

$FS = D_{50\text{-Actual}}/D_{50}$

WHERE:			Taylor Run 10+00 to 30+25
$D_{50\text{-Actual}}$	= ACTUAL MEAN DIAMETER OF THE "ARMOR" ROCK (FROM QUARRY)	(IN) =	13.2
$D_{50\text{-MAX}}$	= STABLE MEAN DIAMETER OF THE "ARMOR" ROCK (FROM EQ. 5)	(IN) =	9.0
THEREFORE:			
FS	= FACTOR OF SAFETY	=	1.5

Utilization of Fine Particles

The shear stress computations presented above represent the force required to initiate movement of non-imbricated particles. The reinforced bed mix used in this project shall have fine grain particles (i.e. gravel, sand, and topsoil) mixed with the "armor" material to fill the void spaces in the rocks (see the Reinforced Bed Mixture Specifications on this sheet for mixture ratios). The mixing of the fine grain substrate material with the armor rock will promote imbrication, further enhancing the reinforced bed material stability. In addition to providing enhanced stability, this smaller substrate material will force water to flow primarily along the surface of the stream bed as opposed to through voids between the large rock. Further, the variety of substrate particle sizes will increase species diversity by providing aquatic macroinvertebrates, fish, and amphibians with a larger number of niches to colonize. Finally, the smaller bed material fractions will improve the aesthetic properties of the restored stream by allowing "sorting" to occur during the significant flow events following construction. Smaller particles may move out of the riffles and deposit on or form point bars (and other depositional features) and/or deposit in pools. The result is a variety of stream facets and natural gradation of particle sizes created by varying energy environments of the stream system. This creates a more natural appearance than could be practicably graded during construction. For these reasons, and since a significant upstream sediment source is not otherwise present in this fully developed urban watershed, the inclusion of the fine particles are a recommended component of the reinforced bed material.

Literature Cited

Leopold, Luna B., Wolman, Gordon M., and Miller, John P. Fluvial Processes In Geomorphology. Dover Publications, New York, 169 - 172, 1964.

Rosgen, Dave. Watershed Assessment of River Stability and Sediment Supply (WARSSS). Wildland Hydrology, Fort Collins, 5-129 - 5-136, 2006.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

BY	DATE	DESCRIPTION

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SEAL: COMMONWEALTH OF VIRGINIA — KATHLEEN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

SEDIMENT SIZING

Wetland Studies and Solutions, Inc.
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

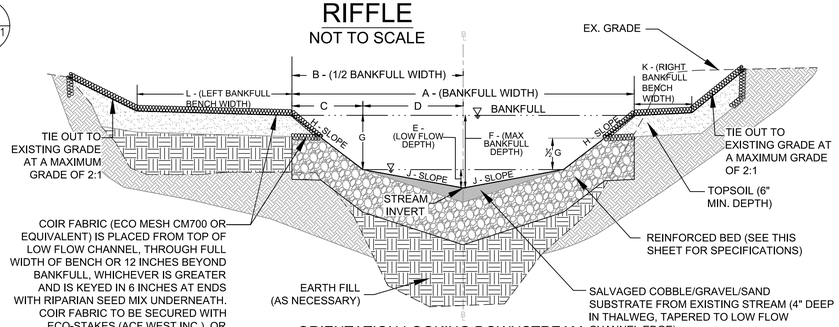
URS
12420 MILLENNIUM DRIVE, SUITE 150
RESTON, VA 20191
(301) 820-3000

DRAWING
SS – 01
SCALE N/A
SHEET 56 OF 84

1
DET–01

RIFFLE

NOT TO SCALE



ORIENTATION LOOKING DOWNSTREAM

STRUCTURE NOTES

1. HEADER AND FOOTER ROCKS SHALL HAVE AN INTERMEDIATE DIMENSION OF AT LEAST **30 INCHES** (MAIN CHANNEL) AND **24 INCHES** (TRIBUTARIES).
2. IF THE STREAM IS NARROW, THE VANE HEADER ROCKS MAY BE CONFIGURED TO TAKE THE PLACE OF THE CENTER HEADER ROCK AS LONG AS ALL DIMENSIONS OF THE STRUCTURE ARE MAINTAINED.
3. THE SILL ROCKS SHALL HAVE AN INTERMEDIATE DIMENSION OF AT LEAST **12 INCHES**. REFER TO TYPICAL CROSS-SECTION DETAILS FOR PLACEMENT OF COIR FABRIC ALONG THE STREAM.
4. TOP OF FRONT HEADER ROCK (S) SHALL BE PLACED AT PROPOSED STREAMBED INVERT.
5. BACKFILL BETWEEN VANES AND BANKS WITH SUBSTRATE MATERIAL USED IN CHANNEL.
6. STRUCTURE SHALL BE UNDERLAIN WITH WOVEN OR NON-WOVEN POLYPROPYLENE GEOTEXTILE, SUCH AS MIRAFI 700x, MIRAFI 70/20, FILTERWEAVE 500, N060, OR APPROVED EQUAL. THE FABRIC SHALL HAVE PUNCTURE RESISTANCE GREATER THAN 100 LBS, APPARENT OPENING SIZE GREATER THAN U.S. 70 SIEVE, AND 30 LBS. OF TENSILE STRENGTH AT 20% (MAXIMUM).
7. ALL FOOTER ROCKS SHALL BE A MINIMUM OF **18 INCHES** BELOW STREAM INVERT. SMALLER ROCKS MAY BE USED, AS APPROVED BY THE FIELD ENGINEER, BUT THIS MAY REQUIRE MORE THAN 2 ROWS OF ROCKS.

SECTION LOCATION			RIFFLE CROSS–SECTION DIMENSIONS[2]											
REACH ID	PER BASELINE STATION[1]		CROSS SECTION PARAMETER (FT)											
	FROM	TO	A	B	C	D	E	F[1]	G	H[3]	J[3]	K[4]	L[4]	NOTES
TAYLOR RUN	10+00.00	10+68.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	10+95.75	11+08.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	11+35.75	11+98.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	12+50.75	13+08.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	13+85.75	14+58.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	15+10.75	15+63.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	15+90.75	16+89.08	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	17+33.08	18+63.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	18+92.75	19+38.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	19+96.75	21+20.00	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	21+59.00	22+23.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	22+58.75	23+50.00	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	23+96.00	25+62.16	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	26+01.16	27+54.00	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	27+92.00	29+13.50	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN
	29+69.75	30+24.52	22.0	11.0	4.5	6.5	0.6	2.1	1.5	3.0:1	10.8:1	*	*	*VARIES – SEE GRADING PLAN

RIFFLE NOTES:

[1] REFER TO THE GRADING PLAN AND LONGITUDINAL PROFILE SHEETS FOR PLACEMENT OF ROCK STRUCTURES WITHIN THE RIFFLE SECTIONS SPECIFIED ABOVE.

[2] THE "STREAM CROSS SECTION SUMMARY" IS PROVIDED ON THE GRADING AND LONGITUDINAL PROFILE SHEETS. THIS SUMMARY SPECIFIES THE TYPE OF CROSS-SECTIONS AND STRUCTURES THAT SHALL BE CONSTRUCTED ALONG THE PROFILE.

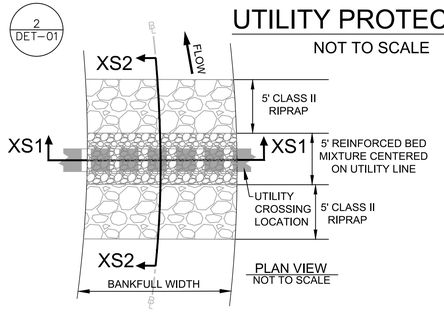
[3] J IS THE SLOPE OF THE SALVAGED SUBSTRATE. VARIABLES "H" & "J" ARE SLOPES EXPRESSED AS HORIZONTAL:VERTICAL (H:V).

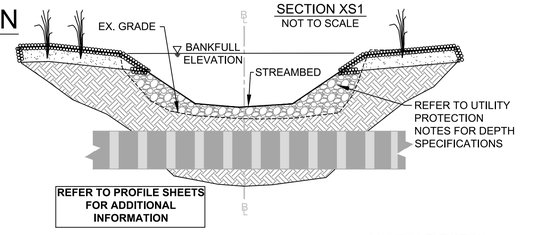
[4] TYPICAL VALUES GIVEN IN TABLE ABOVE. VARIABLES MAY BE ADJUSTED TO MINIMIZE DISTURBANCE TO TREES, **BUT** THE SPECIFIED SUM OF K AND L MUST BE MET OR EXCEEDED. IF BENCH WIDTHS ARE NOT SPECIFIED OVERBANK AREAS SHOULD BE GRADED WITH A 2% CROSS SLOPE EXTENDING AS FAR AS POSSIBLE WHILE STILL ALLOWING 3:1 (MAX.) TIE OUT SLOPES.

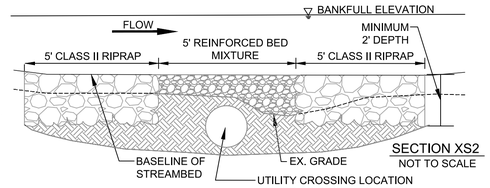
2
DET–01

UTILITY PROTECTION

NOT TO SCALE

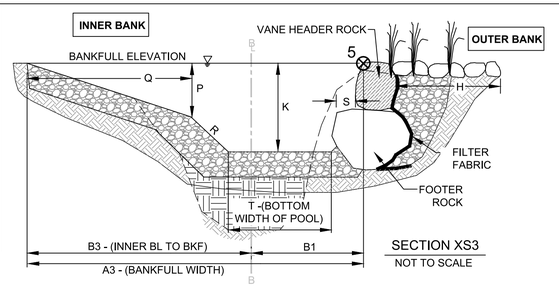


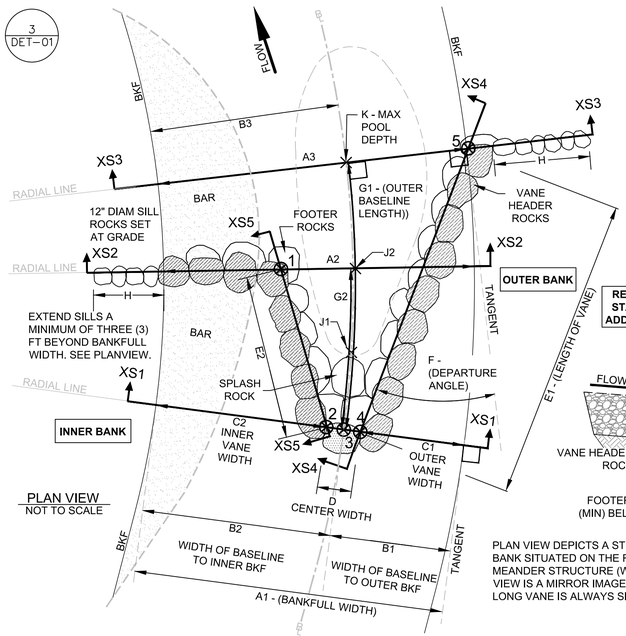


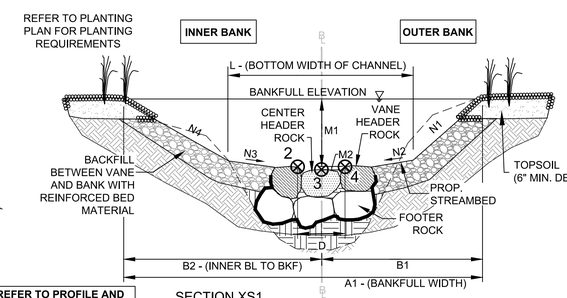


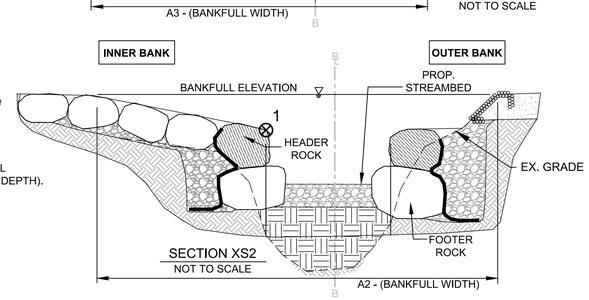
UTILITY PROTECTION NOTES:

1. REFER TO "STRUCTURE NOTES" FOR ADDITIONAL INFORMATION CONCERNING ALL STRUCTURES.
2. CONTRACTOR SHALL CALL "VA811" (811 OR 1-800-552-7001) PRIOR TO COMMENCING ANY WORK.
3. CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING AROUND UTILITY LINES. ANY DAMAGE TO THE LINE AND ANY ASSOCIATED REPAIRS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. CONTRACTOR SHALL DIG, BY HAND, AROUND UTILITY LINES.
5. REFER TO RIFFLE DETAIL FOR ADDITIONAL CHANNEL DIMENSIONS.
6. REFER TO "REINFORCED BED" MIXTURE SPECIFICATIONS FOR MATERIAL SPECIFICATIONS.
7. REINFORCED BED MIXTURE SHALL BE USED AS FILL MATERIAL TO RAISE THE EXISTING GRADE TO THE ELEVATION OF THE STREAMBED AS SPECIFIED IN PROFILE SHEETS.
8. CLASS II RIPRAP SHALL BE PLACED TO A MINIMUM DEPTH OF TWO (2) FEET FIVE (5) FEET UPSTREAM AND DOWNSTREAM OF THE UTILITY LINE WITH REINFORCED BED MIXTURE PLACED OVER THE LINE (5 FEET WIDE) AS DEPICTED IN SECTION XS2.

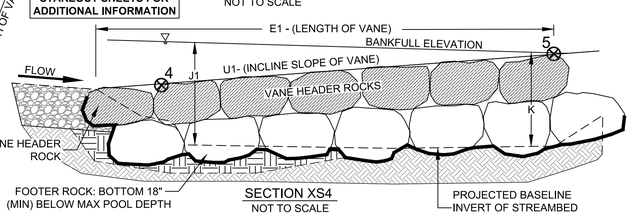


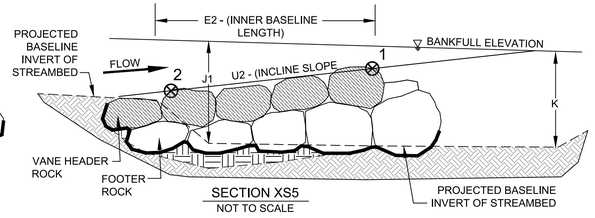






REFER TO PROFILE AND STAKEOUT SHEETS FOR ADDITIONAL INFORMATION





PLAN VIEW DEPICTS A STRUCTURE IN A LEFT MEANDER (WITH THE OUTER BANK SITUATED ON THE RIGHT LOOKING DOWNSTREAM). FOR A RIGHT MEANDER STRUCTURE (WITH THE OUTER BANK ON THE LEFT), THE PLAN VIEW IS A MIRROR IMAGE OF WHAT SHOULD BE CONSTRUCTED. **THE LONG VANE IS ALWAYS SITUATED ON THE OUTER BANK.

MODIFIED CROSS VANE

NOT TO SCALE

STRUCTURE LOCATION			MODIFIED CROSS VANE																													
REACH ID	BASELINE STATION AT HEADER ROCK	MEANDER DIRECTION	MODIFIED CROSS VANE DIMENSIONS PARAMETER (FT)																													
			A1[1]	A2[1]	A3[1]	B1	B2	B3	C1	C2	D	E1	E2	F[2]	G1	G2	H[4]	J1[3]	J2[3]	K[3]	L	M1[3]	M2[3]	N1[5]	N2[5]	N3[5]	N4[5]	P	Q	R[5]	S	T	U1[2]	U2[2]
TAYLOR RUN	16+89.08	RIGHT	22.1	22.0	22.0	11.0	11.1	11.0	7.0	7.1	8.0	25.2	11.3	16.5	24.0	11.0	---	3.5	3.5	3.5	13.0	2.1	0.3	40.0:1	50.0:1	50.0:1	39.2:1	1.0	3.7	1.0:1	1.5	13.3	0.057	0.058
	23+50.00	LEFT	24.0	24.3	23.2	11.0	13.0	12.2	8.5	10.5	5.0	29.3	12.3	25.9	26.0	12.0	---	3.5	3.5	3.5	13.2	2.1	0.3	40.0:1	50.0:1	50.0:1	27.5:1	1.0	4.6	1.0:1	1.5	13.6	0.048	0.056

MODIFIED CROSS VANE NOTES:

[1] VARIABLE "A1" IS THE BANKFULL WIDTH AT SECTION XS1, VARIABLE "A2" IS THE BANKFULL WIDTH AT SECTION XS2, AND "A3" IS BANKFULL WIDTH AT XS3. THE BANKFULL WIDTH CHANGES CONTINUOUSLY THROUGHOUT THE STRUCTURE BASED ON GRADING OF THE BAR.

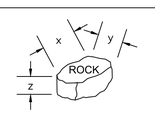
[2] VARIABLE "F" IS IN UNITS OF DEGREES AND VARIABLES "U1" AND "U2" ARE SLOPES EXPRESSED AS VERTICAL:HORIZONTAL (V:H) AND IN UNITS OF FT/FT.

[3] VARIABLES "J1", "J2", "K", "M1", & "M2" ARE DEPTHS RELATIVE TO BANKFULL.

[4] SEE PLAN VIEW FOR VARIABLE "H" (SILL LENGTH AND PLACEMENT).

[5] VARIABLES "N" AND "R" ARE SLOPES EXPRESSED AS HORIZONTAL:VERTICAL (H:V).

MODIFIED CROSS VANE RENDERING: LOOKING UPSTREAM



3 PRIMARY DIMENSIONS OF ROCK:
x = LONGEST DIMENSION
y = INTERMEDIATE DIMENSION
z = SHORTEST DIMENSION

REFER TO THE SPECIFICATIONS DOCUMENT FOR ADDITIONAL ROCK SIZING INFORMATION.

STRUCTURE DETAIL LEGEND

- REINFORCED BED
- IN-SITU MATERIAL
- FILL MATERIAL
- TOPSOIL
- EXISTING BEDROCK
- FILTER FABRIC
- COIR MATTING

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS		
DATE	BY	DESCRIPTION

CITY PROJECT NO.:	CIP–2020–00003		
DATE OF PLAN ISSUANCE:	6/16/20		
CONSULTANT PROJECT ID.:	28006.02		
DESIGNED BY:	AMC	DATE:	6/16/20
DRAWN BY:	NAS	DATE:	6/16/20
CHECKED BY:	AMC	DATE:	6/16/20
APPROVED BY:	NAS	DATE:	6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

Wetland Studies and Solutions, Inc. — 5300 WESTBARD AVENUE, SUITE 100, BETHESDA, MD 20816, (301) 916-2600

URS — 11420 NORTH KENDALL DR., SUITE 100, MIAMI, FL 33176, (305) 670-3000

TAYLOR RUN STREAM RESTORATION

CONSTRUCTION DETAILS

DRAWING
DET – 01

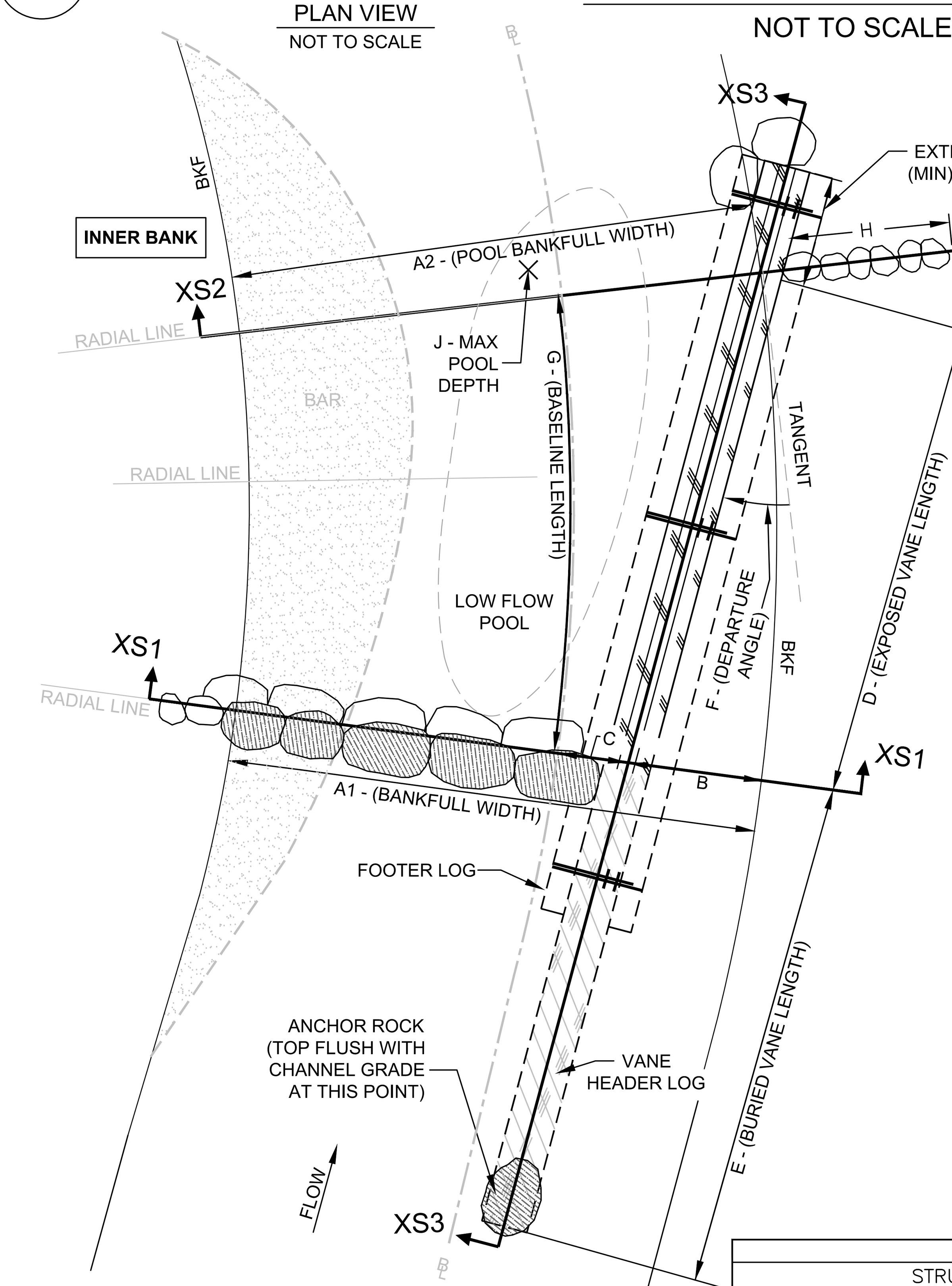
SCALE N/A

SHEET 57 OF 84

C:\MCS–L\28000s\28000\28006.01\CAD\104–ENGR\08–100%_Plansets\CONSTRUCTION_DETAILS.dwg, Plotted: 6/16/2020, 8:35 PM, by Chandra, Alex, Template Version 2, 9–4–2014

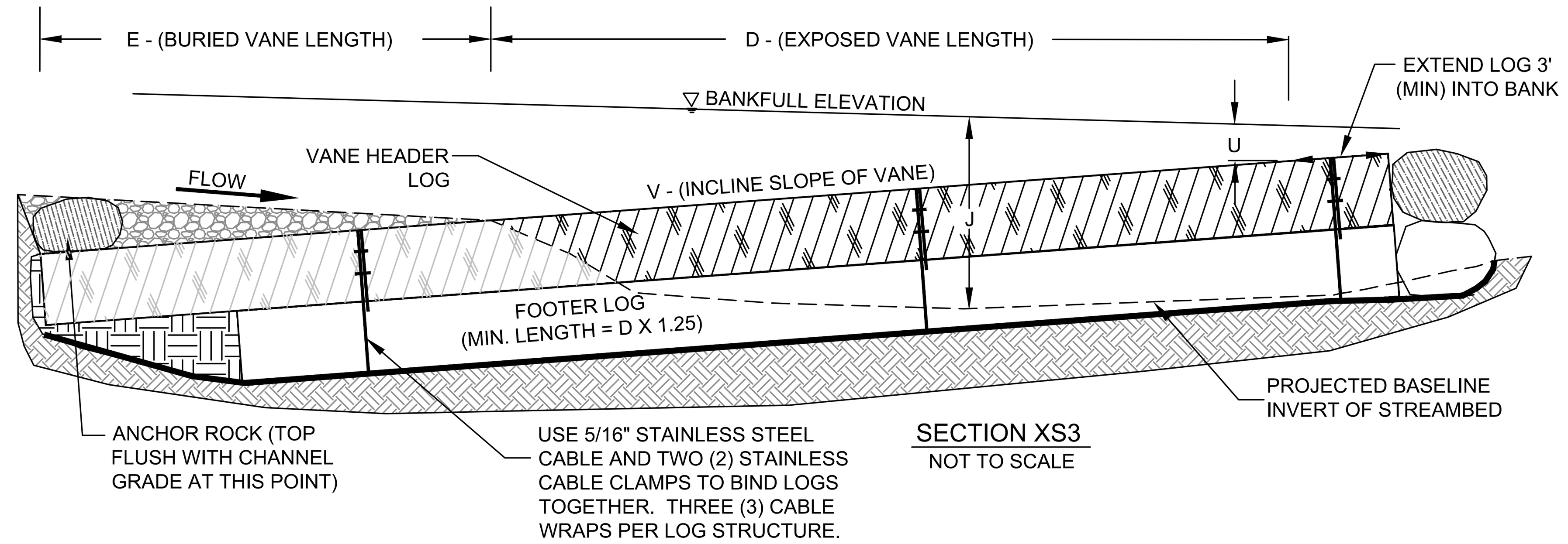
1 DET-02 — LOG VANE W/ROCK SILL
NOT TO SCALE

REFER TO PROFILE AND STAKEOUT SHEETS FOR ADDITIONAL INFORMATION

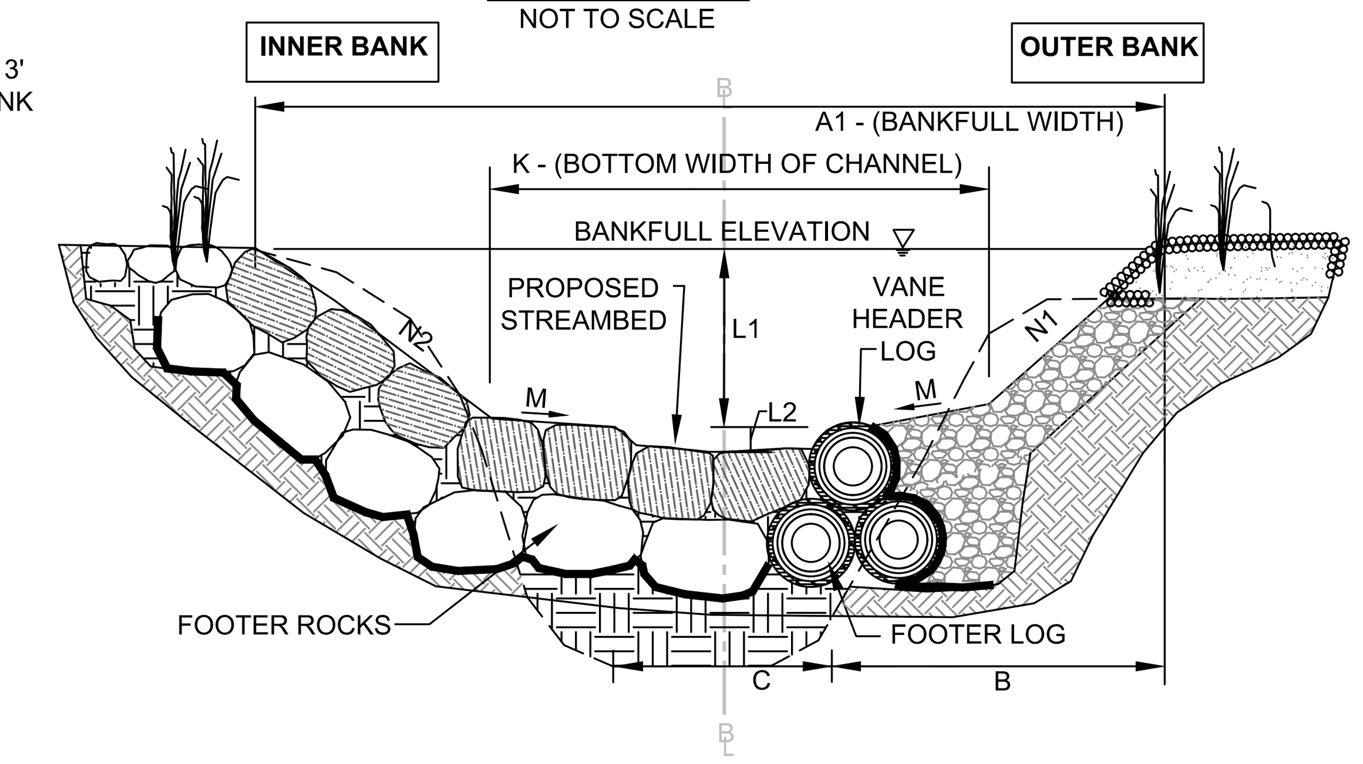


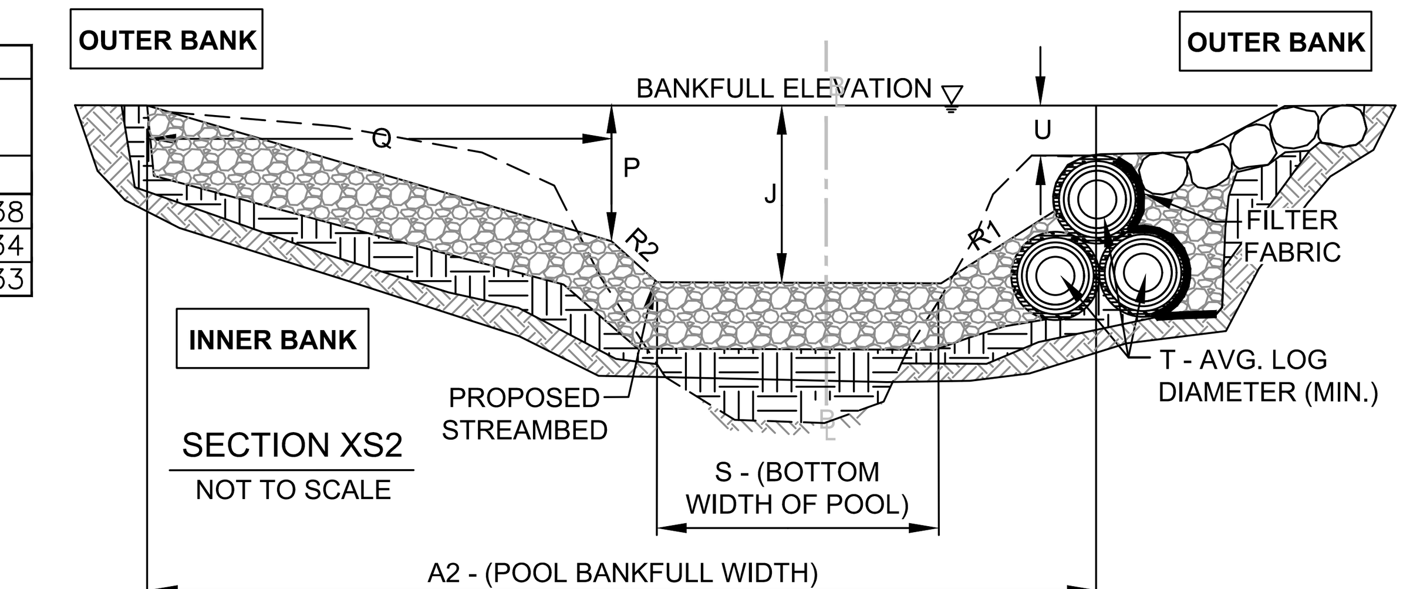
PLAN VIEW DEPICTS A STRUCTURE IN A LEFT MEANDER (WITH THE OUTER BANK SITUATED ON THE RIGHT LOOKING DOWNSTREAM). FOR A RIGHT MEANDER STRUCTURE (WITH THE OUTER BANK ON THE LEFT), THE PLAN VIEW IS A MIRROR IMAGE OF WHAT SHOULD BE CONSTRUCTED. **THE LONG VANE IS ALWAYS SITUATED ON THE OUTER BANK.

LOG J-HOOK RENDERING: LOOKING UPSTREAM



SECTION XS3
NOT TO SCALE



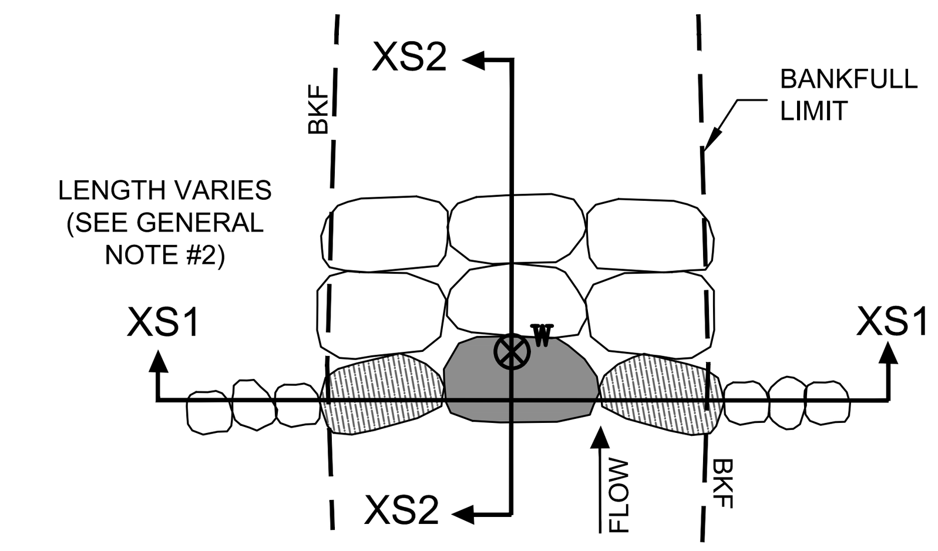


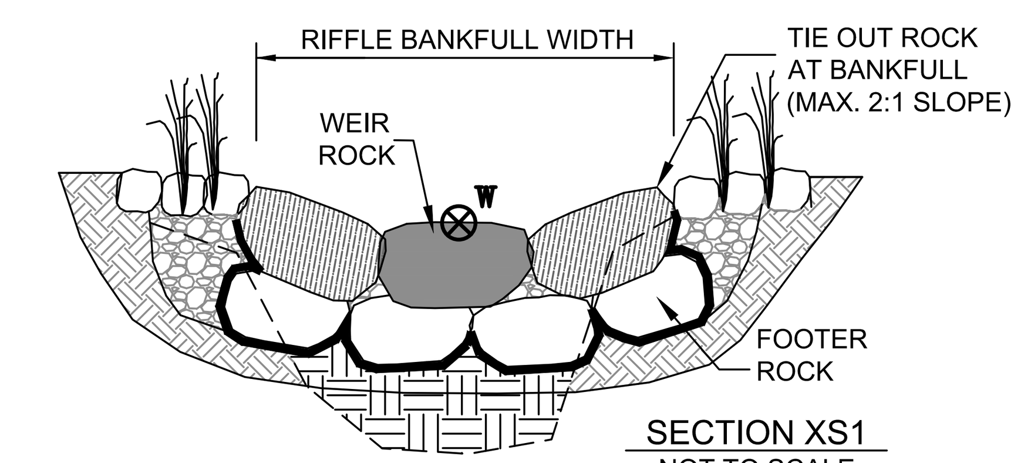
LOG VANE WITH ROCK SILL																								
STRUCTURE LOCATION			LOG VANE WITH ROCK SILL DIMENSIONS PARAMETER (FT)																					
REACH ID	BASELINE STATION AT HEADER ROCK	MEANDER DIRECTION	A1[1]	A2[1]	B	C	D	E[2]	F[3]	G	H[4]	J[5]	K	L1[5]	L2	M[6]	N1[6]	N2[6]	P	Q	R1[6]	R2[6]	S	T	U	V[3]
TAYLOR RUN	21+20.00	RIGHT	22.8	22.4	8.5	5.0	26.6	---	23.8	24.0	---	3.0	15.4	2.1	0.3	10.8:1	53.1:1	43.0:1	0.8	2.7	2.0:1	3.9:1	6.5	2.0	0.5	0.038
	25+62.16	LEFT	22.0	22.0	8.5	5.0	26.5	---	23.3	24.0	---	3.0	15.4	2.1	0.3	10.8:1	53.1:1	52.9:1	0.8	2.3	2.0:1	3.9:1	6.5	2.0	0.5	0.034
	27+54.00	RIGHT	22.2	22.0	8.5	5.0	26.4	---	23.3	24.0	---	3.0	15.4	2.1	0.3	10.8:1	53.1:1	49.9:1	0.8	2.3	2.0:1	3.9:1	6.5	2.0	0.5	0.033

LOG VANE WITH ROCK SILL NOTES:

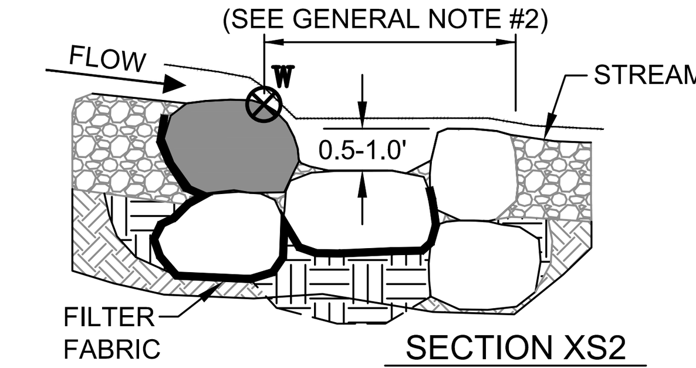
[1] VARIABLE "A1" IS THE BANKFULL WIDTH AT SECTION XS1, AND VARIABLE "A2" IS THE BANKFULL WIDTH AT SECTION XS2. THE BANKFULL WIDTH CHANGES CONTINUOUSLY THROUGHOUT THE STRUCTURE BASED ON GRADING OF THE BAR.
[2] VARIABLE "E" SHALL BE A MINIMUM OF 50% OF THE EXPOSED LENGTH (VARIABLE "D").
[3] VARIABLE "F" IS IN UNITS OF DEGREES. VARIABLE "V" IS A SLOPE EXPRESSED AS HORIZONTAL:VERTICAL (H:V) AND IN UNITS OF FT/FT.
[4] SEE PLANVIEW FOR VARIABLE "H" SILL LENGTH AND PLACEMENT.
[5] VARIABLES "L1" AND "J" ARE DEPTHS RELATIVE TO BANKFULL.
[6] VARIABLES "M", "N1", "N2", "R1", & "R2" ARE SLOPES EXPRESSED AS HORIZONTAL:VERTICAL (H:V).

2 DET-02 — ROCK STEP
NOT TO SCALE





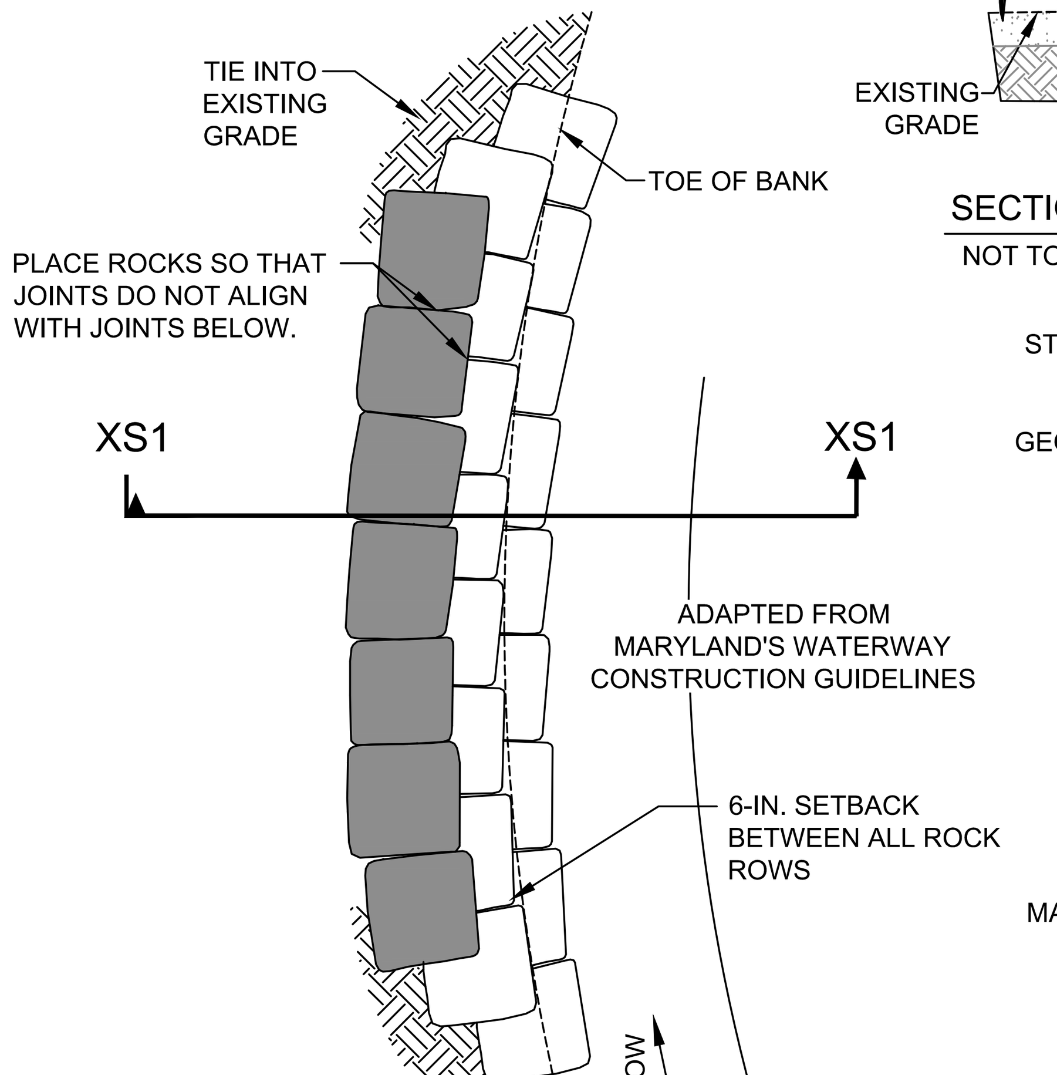
SECTION XS1
NOT TO SCALE



SECTION XS2
NOT TO SCALE

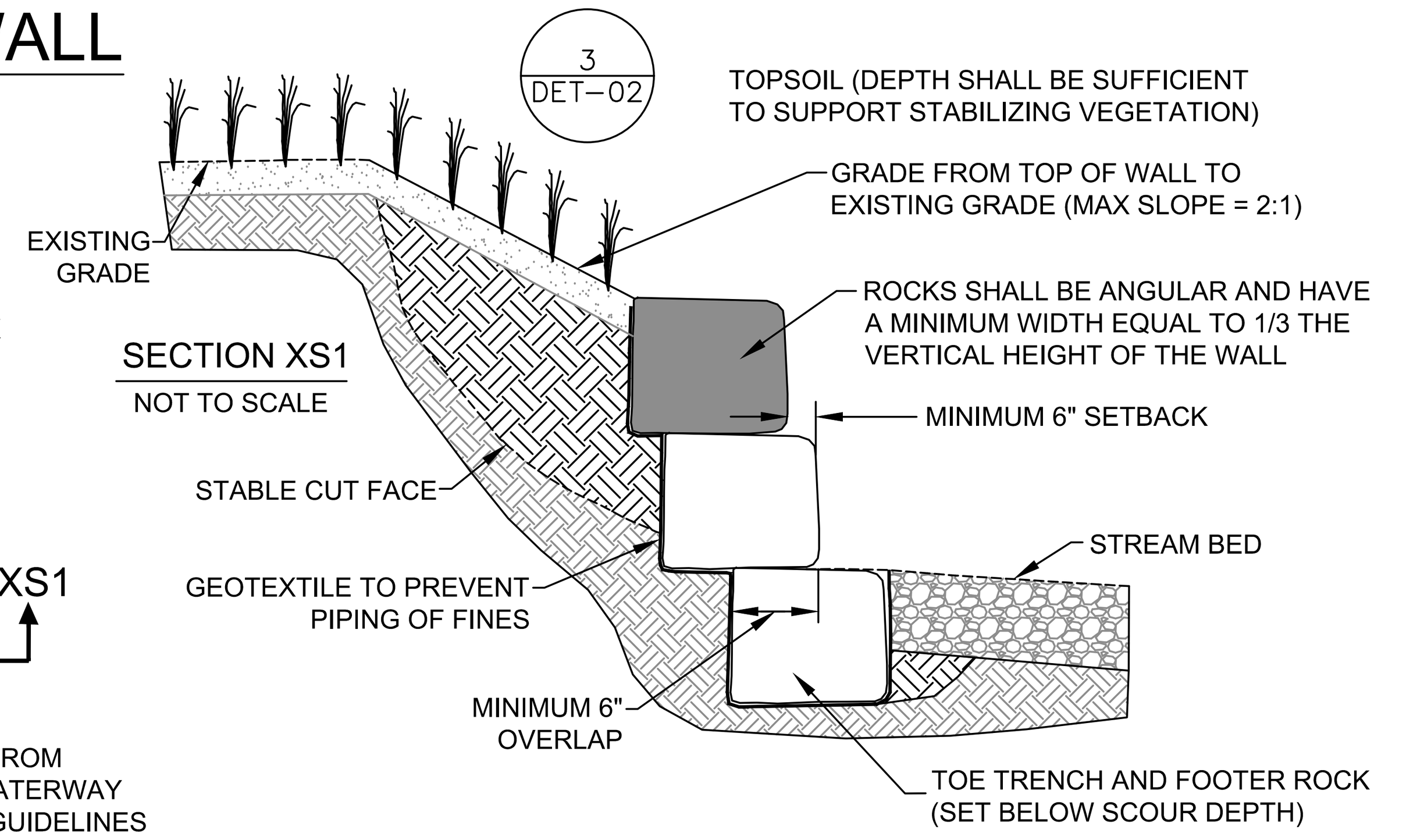
ROCK STEP NOTES:
1. REFER TO "STRUCTURE NOTES" FOR ADDITIONAL INFORMATION CONCERNING ALL STRUCTURES.
2. SEE GRADING PLAN AND/OR PROFILE FOR WEIR POINT LOCATIONS AND ELEVATIONS.
3. ALL WEIR POINTS ARE LOCATED ON THE DOWNSTREAM EDGE OF THE WEIR ROCK.

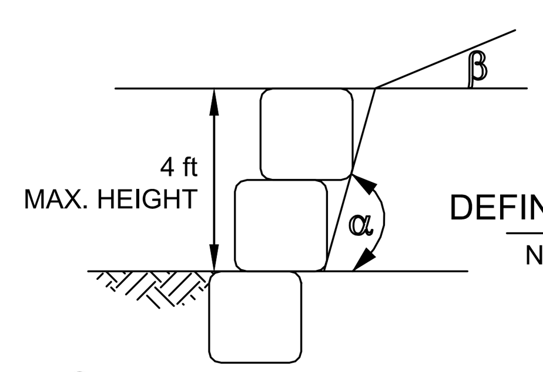
IMBRICATED ROCK WALL
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

3 DET-02



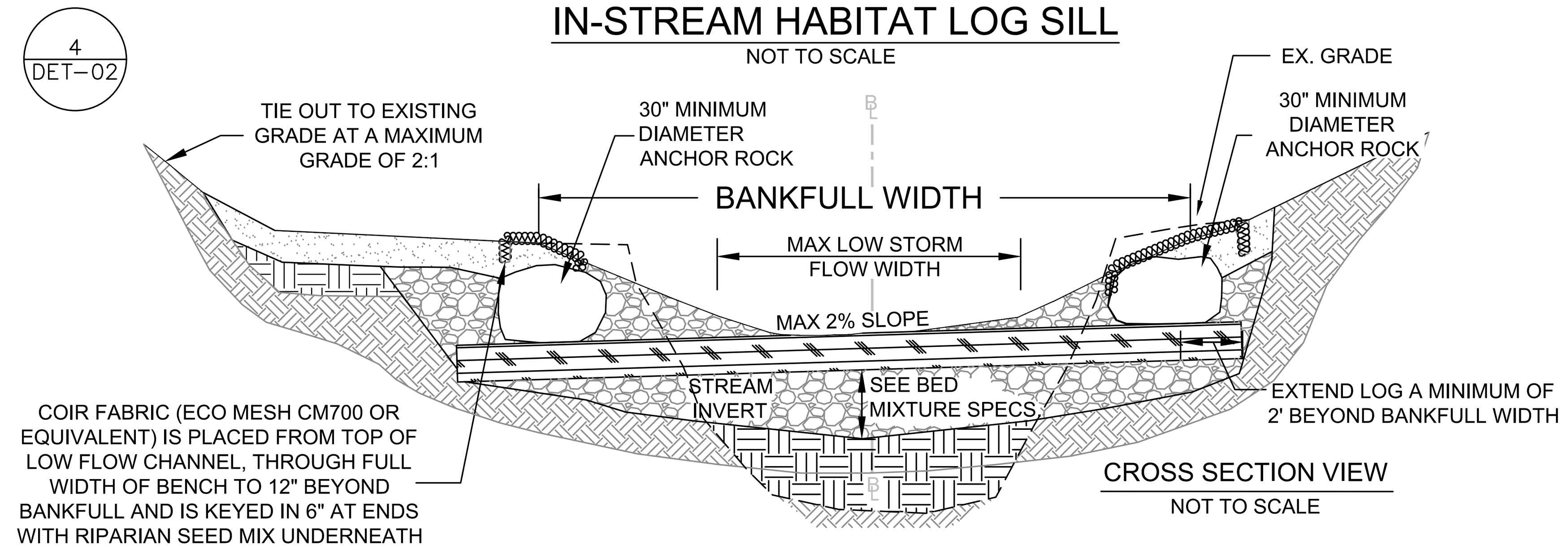


DEFINITION SKETCH
NOT TO SCALE

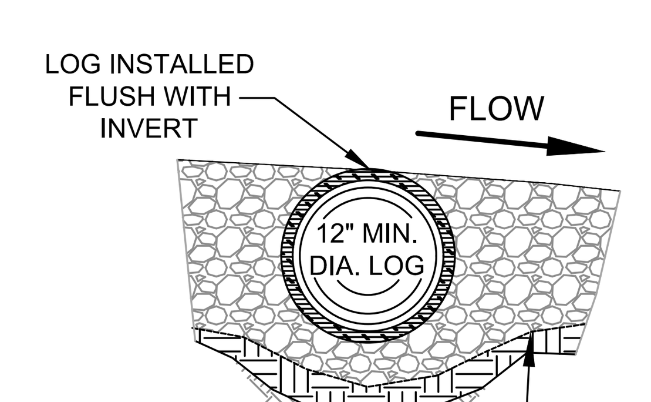
β =BACKFILL SLOPE ANGLE (2H:1V OR FLATTER BUT GREATER THAN 5.0%)
α =INCLINATION OF WALL FROM HORIZONTAL (1H:6V TO 1H:4V)

GENERAL ROCK WALL NOTES:
1. REFER TO "STRUCTURE NOTES" FOR ADDITIONAL INFORMATION CONCERNING ALL STRUCTURES.
2. SEE GRADING PLAN AND/OR PROFILE FOR WEIR POINT LOCATIONS AND ELEVATIONS.
3. STONE BLOCKS SHALL BE ROTATED INTO THE BANK DURING PLACEMENT SUCH THAT THE UPSTREAM BLOCKS OVERLAP THE DOWNSTREAM BLOCKS BY A MINIMUM OF 6 INCHES.

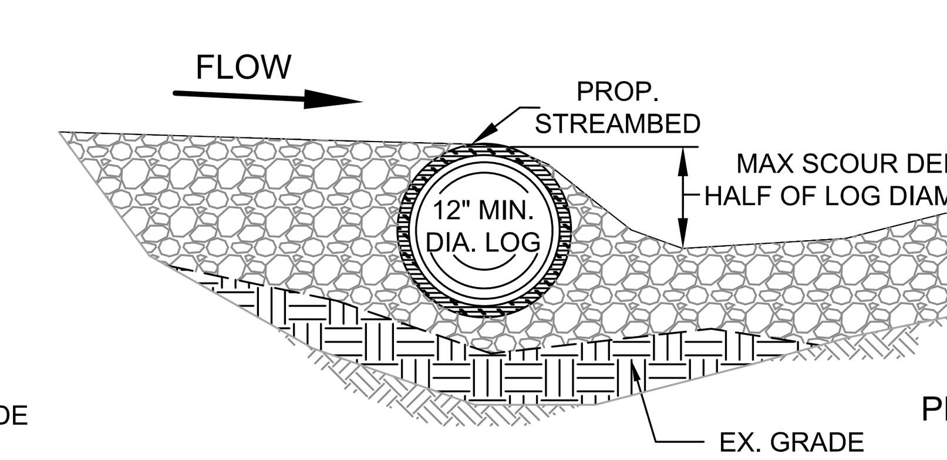
4 DET-02 — IN-STREAM HABITAT LOG SILL
NOT TO SCALE



CROSS SECTION VIEW
NOT TO SCALE

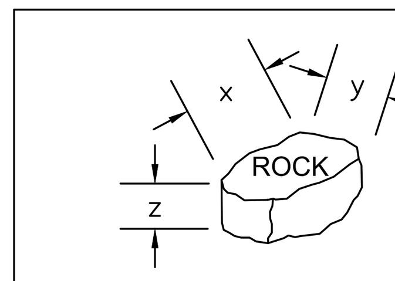


PROFILE VIEW
NOT TO SCALE



PROFILE VIEW - WITH LOW FLOW POOL
NOT TO SCALE

STRUCTURE DETAIL LEGEND
- REINFORCED BED
- IN-SITU MATERIAL
- FILL MATERIAL
- TOPSOIL
- FILTER FABRIC
- COIR MATTING



3 PRIMARY DIMENSIONS OF ROCK:
x = LONGEST DIMENSION
y = INTERMEDIATE DIMENSION
z = SHORTEST DIMENSION

IN-STREAM HABITAT LOG SILL NOTES:
1. THIS FEATURE IS TO BE PLACED WITHIN A TYPICAL RIFFLE SECTION. CHANNEL SHAPE DEVIATES FROM THE RIFFLE ONLY WITHIN THE LOW STORM FLOW WIDTH, WHERE THE LOG IS SLOPED ALONG THE BED (MAX SLOPE OF 2%) AND THE STREAM INVERT MAY BE SHIFTED FROM BASELINE. REFER TO THE TYPICAL RIFFLE CROSS SECTION DETAIL FOR RIFFLE DIMENSIONS.
2. THE IN-STREAM HABITAT LOG SILL MAY INCLUDE AN OPTIONAL LOW FLOW POOL TO BE CONSTRUCTED IMMEDIATELY DOWNSTREAM OF THE LOG. REFER TO GRADING PLAN AND PROFILE SHEETS AND LOW FLOW POOL DETAIL FOR POOL SPECIFICATIONS.
3. SEE "STRUCTURE NOTES" FOR ADDITIONAL INFORMATION CONCERNING ALL STRUCTURES.
4. SEE GRADING PLAN AND LONGITUDINAL PROFILE FOR STATION AND INVERT ELEVATION.
5. CONTRACTOR SHALL SKEW LOG (5-20°) FROM FLOW DIRECTION. SEE GRADING PLAN FOR STRUCTURE ORIENTATION.
6. LOG SHALL BE INSTALLED WITH A MAXIMUM SLOPE OF 2%. DIRECTION OF SLOPE SHALL CORRESPOND WITH PLACEMENT OF LOW FLOW POOL (OPTIONAL).

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE	BY	DESCRIPTION

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DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

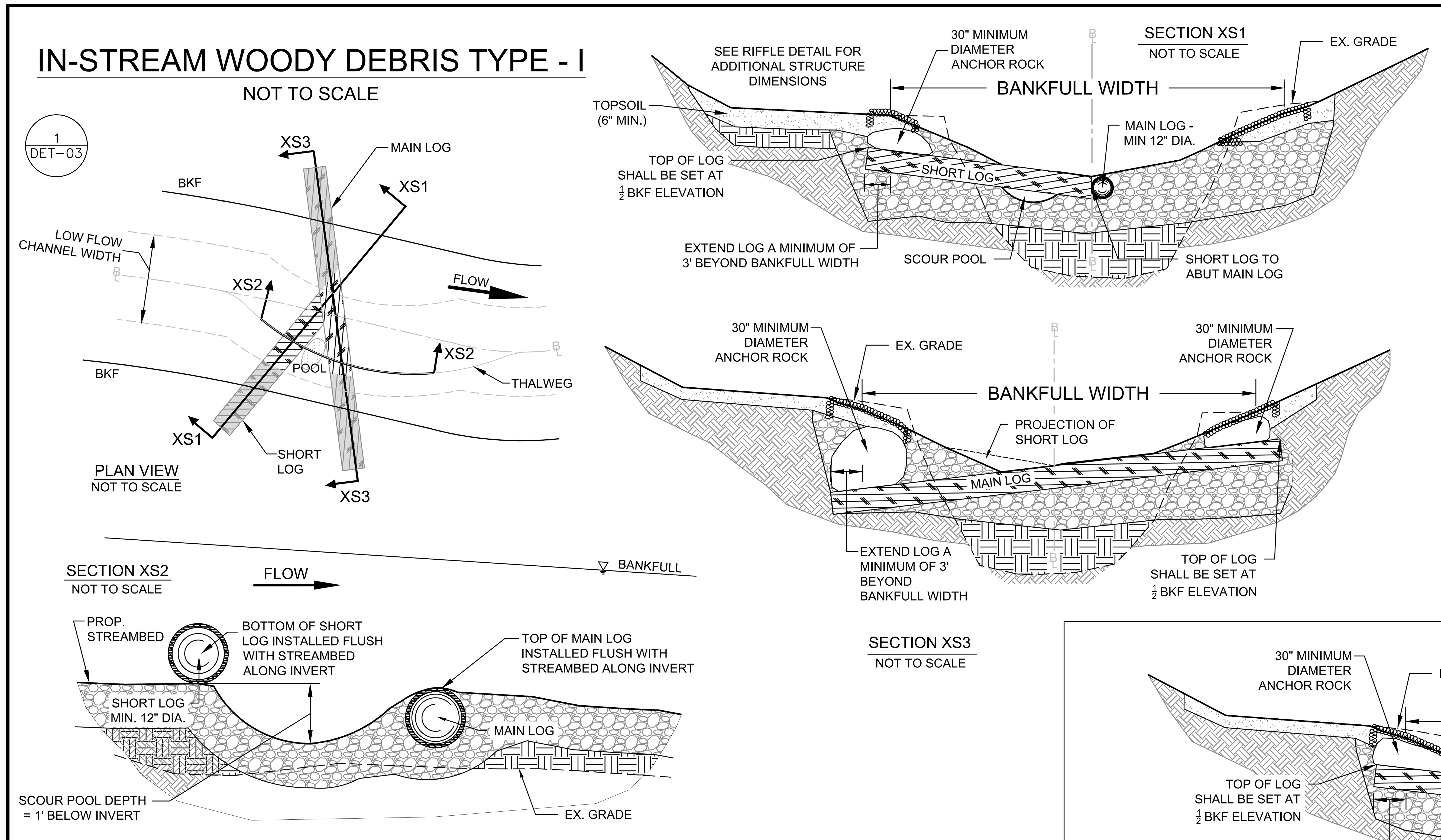
TAYLOR RUN STREAM RESTORATION
CONSTRUCTION DETAILS (CONT'D)

URS — Wetland Studies and Solutions, Inc.

DRAWING DET - 02
SCALE N/A
SHEET 58 OF 84

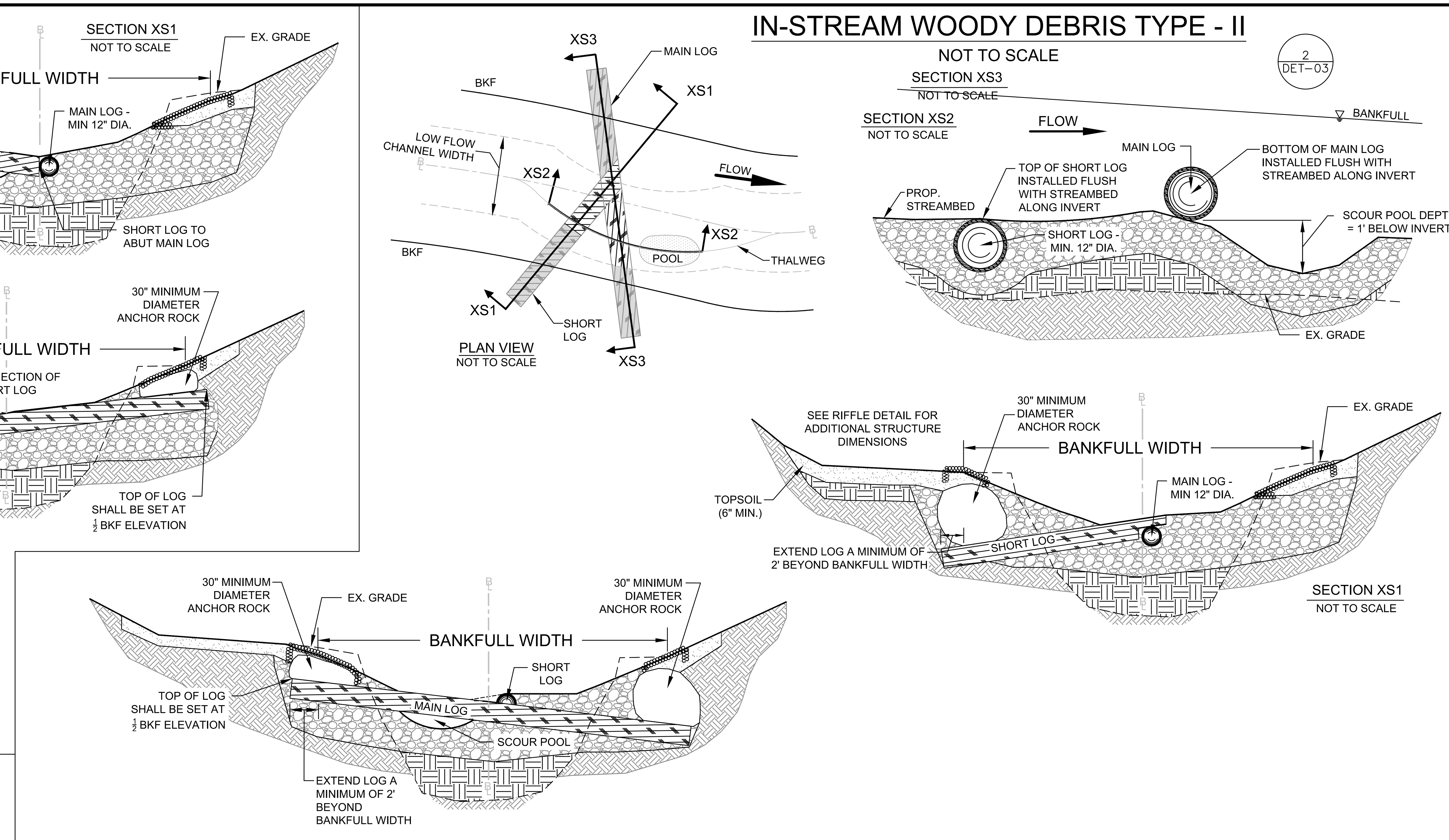
IN-STREAM WOODY DEBRIS TYPE - I

NOT TO SCALE



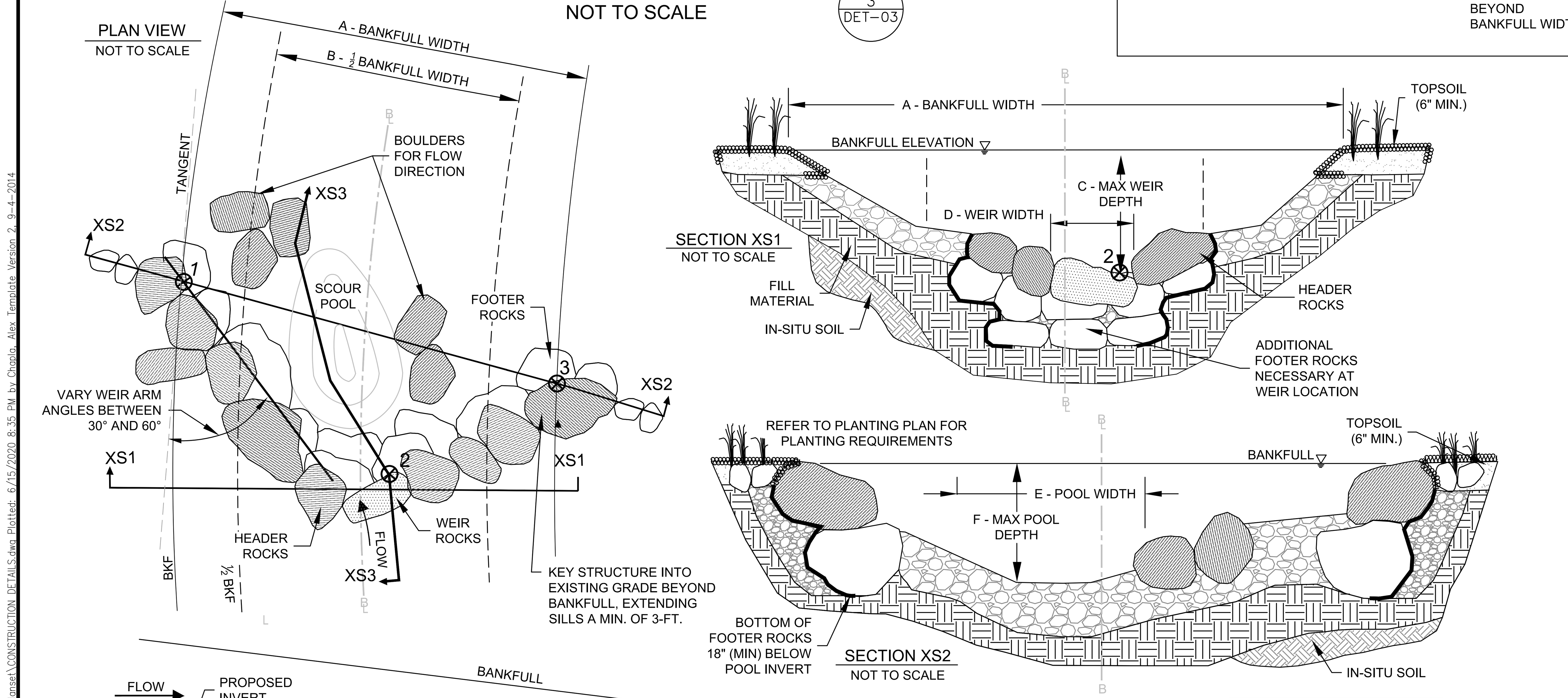
IN-STREAM WOODY DEBRIS TYPE - II

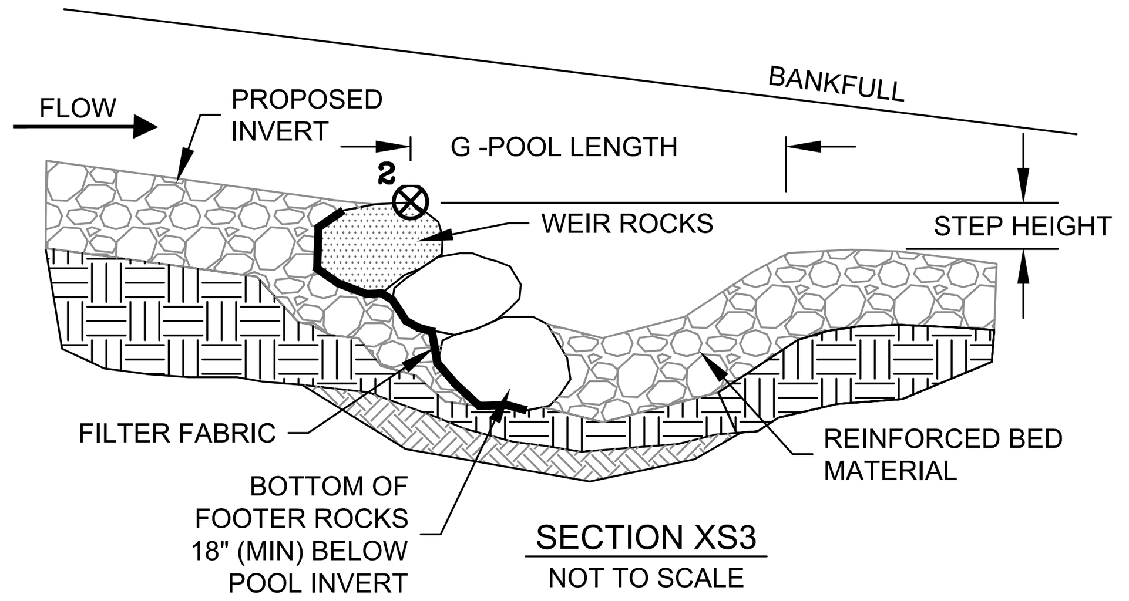
NOT TO SCALE



BOULDER POOL

NOT TO SCALE





FEATURE LOCATION			DIMENSIONS							NUMBER OF POOLS
REACH ID	STATION INFORMATION FROM	STATION INFORMATION TO	A	B	C	D	E	F	G	
TAYLOR RUN	10+70.00	10+95.00	22	11	2.1	8	11	4.0	22	1
	11+10.00	11+35.00	22	11	2.1	8	11	4.0	22	1
	12+00.00	12+50.00	22	11	2.1	8	11	3.5	22	2
	13+10.00	13+85.00	22	11	2.1	8	11	3.5	22	3
	14+60.00	15+10.00	22	11	2.1	8	11	4.0	22	2
	15+65.00	15+90.00	22	11	2.1	8	11	4.0	22	1
	18+65.00	18+92.00	22	11	2.1	8	11	4.0	24	1
	19+40.00	19+96.00	22	11	2.1	8	11	4.0	25	2
	22+25.00	22+58.00	22	11	2.1	8	11	4.0	30	1
	29+15.00	29+69.00	22	11	2.1	8	11	4.0	24	2

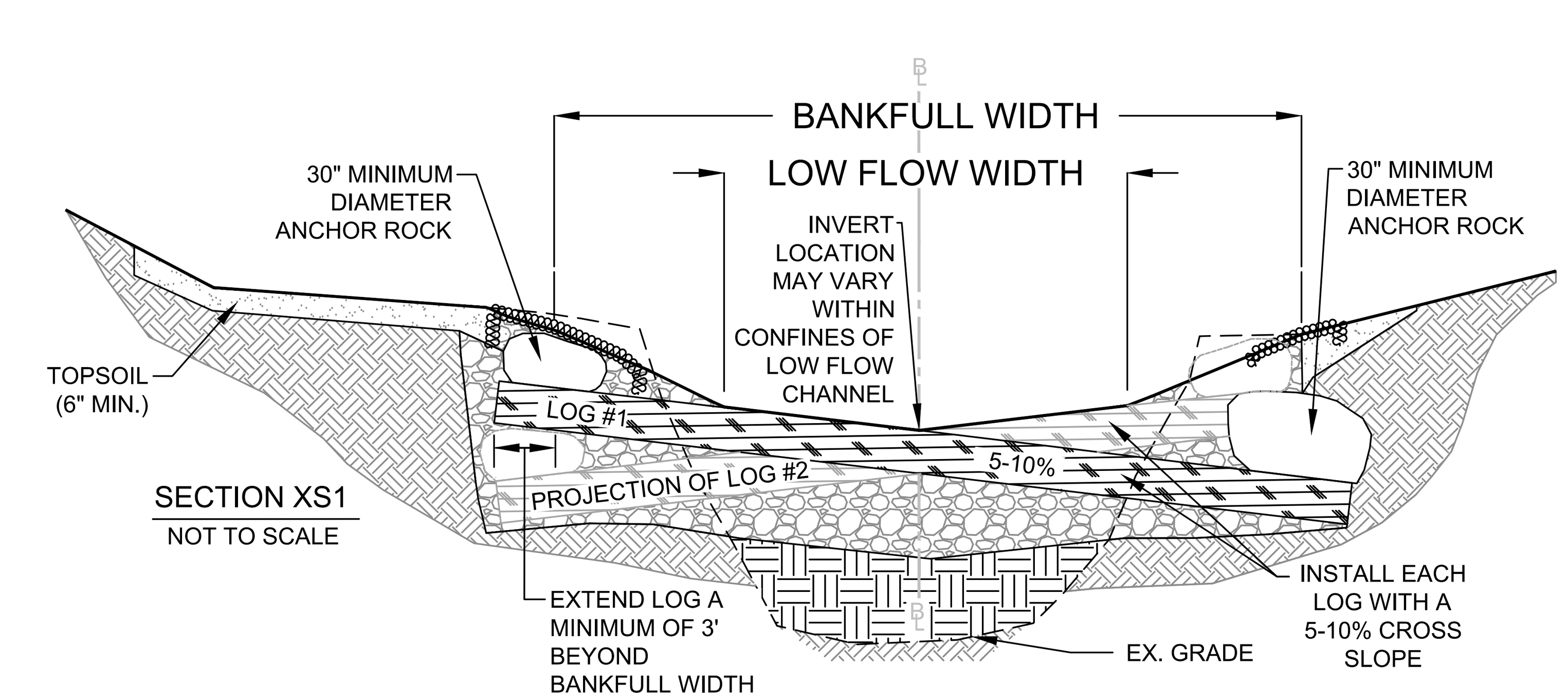
REFER TO PROFILE SHEETS FOR ADDITIONAL INFORMATION

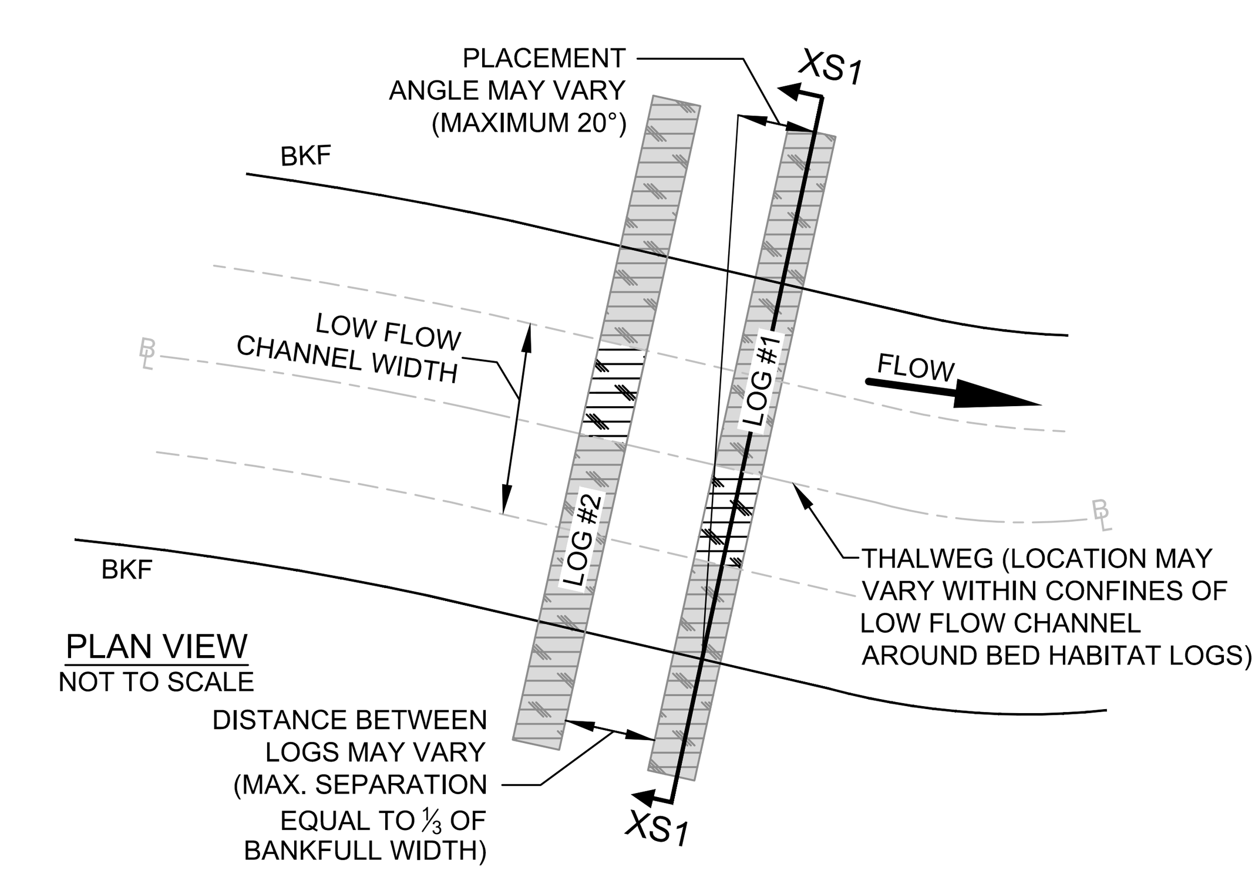
BOULDER POOL NOTES:

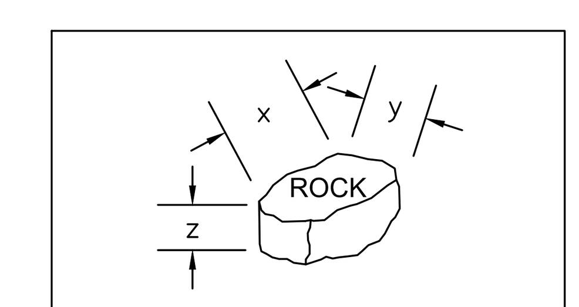
1. REFER TO "STRUCTURE ROCK NOTES" "STRUCTURE NOTES" FOR ADDITIONAL INFORMATION CONCERNING ALL STRUCTURES.
2. SEE LONGITUDINAL PROFILE FOR WEIR POINT LOCATIONS AND ELEVATIONS.
3. ALL WEIR POINTS ARE LOCATED ON THE DOWNSTREAM EDGE OF THE WEIR ROCK.
4. THE WEIR HEADER ROCK MAY BE CENTERED ON THE BASELINE OR SHIFTED TO EITHER SIDE BY NO MORE THAN HALF OF THE WEIR WIDTH SPECIFIED IN THIS DETAIL. CENTER WEIR ROCKS SHOULD BE SHIFTED TO FORM AN IRREGULAR FLOW PATTERN FROM POOL TO POOL.

IN-STREAM WOODY DEBRIS TYPE - III

NOT TO SCALE







3 PRIMARY DIMENSIONS OF ROCK:
x = LONGEST DIMENSION
y = INTERMEDIATE DIMENSION
z = SHORTEST DIMENSION

REFER TO THE SPECIFICATIONS DOCUMENT FOR ADDITIONAL ROCK SIZING INFORMATION.

STRUCTURE DETAIL LEGEND

- REINFORCED BED
- IN-SITU MATERIAL
- FILL MATERIAL
- TOPSOIL
- EXISTING BEDROCK
- FILTER FABRIC
- COIR MATTING

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE | BY | DESCRIPTION

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APPROVED BY: NAS DATE: 6/16/20

SEAL:

TAYLOR RUN STREAM RESTORATION

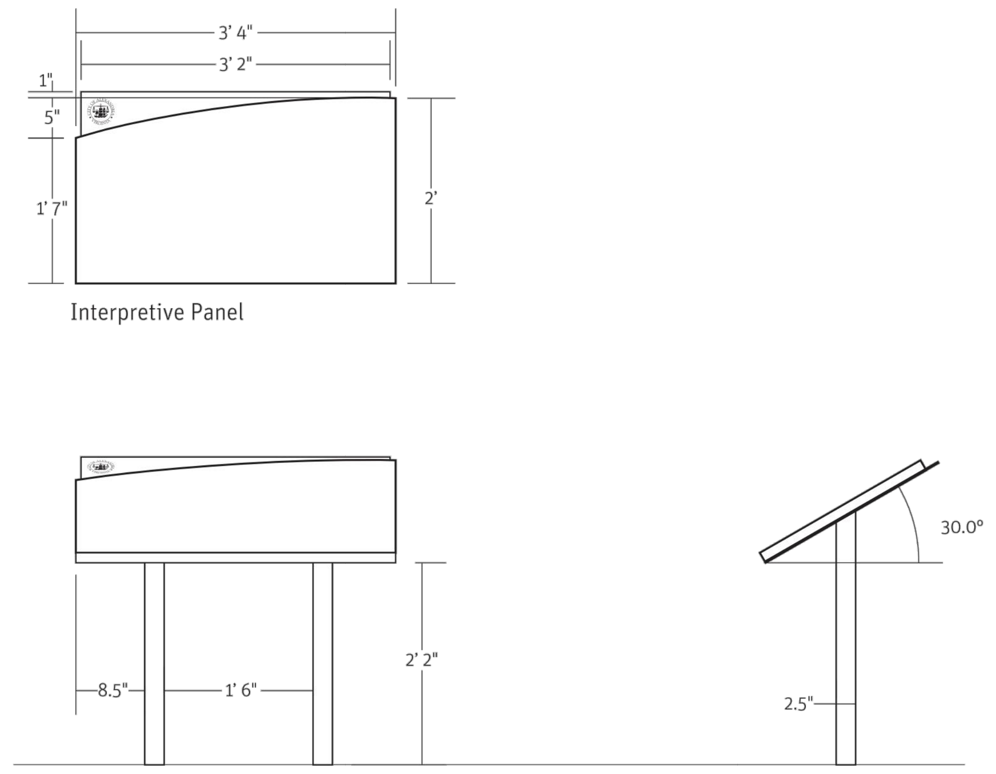
CONSTRUCTION DETAILS (CONT'D)

URS

Wetland Studies and Solutions, Inc.

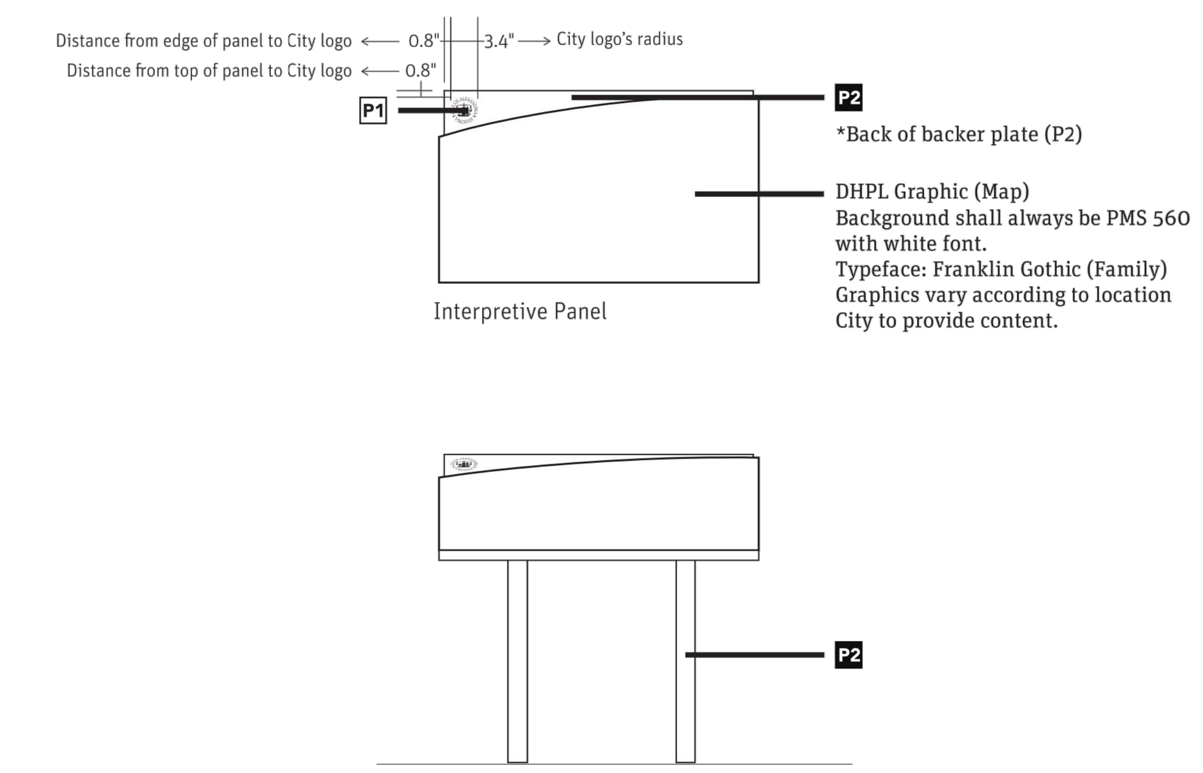
DRAWING
DET - 03
SCALE N/A
SHEET 59 OF 84

H1 Sign type H - Interpretive Signs - Dimensions
Scale: 1/2" = 1'



Sign Details	Original Issue Date: 11-NOV-2016 Scale: 1/2" = 1' Note: Drawing scale shown on plans is accurate for full size plans only. Applied is not responsible for scale discrepancies caused by reduced or enlarged site plans.	Revision:	Description:	These drawings express visual design intent only. Final engineering, materials, and fabrication shall remain the responsibility of the fabricator. The content of this document is subject to the design intent requirements outlined in the Specifications.	Contact: applied 300 North Park Avenue Suite 201 Winter Park, FL 327 407 - 701- 6448 Drawn by: AEO
applied_					4.21

H3 Sign type H - Interpretive Signs - Colors/Graphics
Scale: 1/2" = 1'



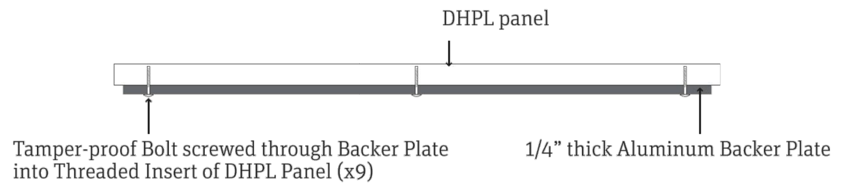
Colors

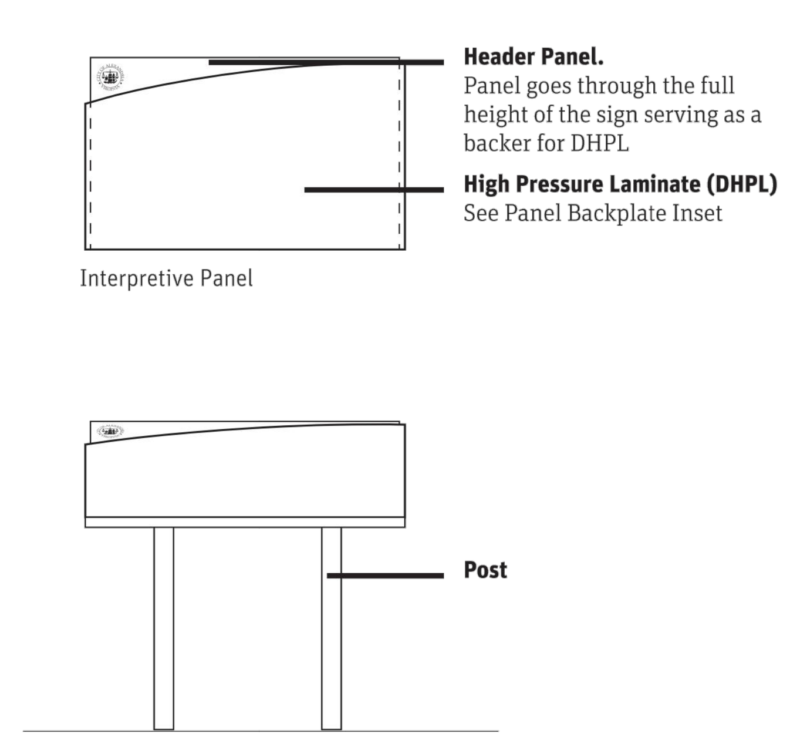
- **P1** MP# 31645 (Designer White)
- **P2** MP# 41306 (Signal Jet Black)
- **P3** MP# 10455 (Forest Green)
- **P4** MP# 13539 (Dominican Green)

Sign Details	Original Issue Date: 11-NOV-2016 Scale: 1/2" = 1' Note: Drawing scale shown on plans is accurate for full size plans only. Applied is not responsible for scale discrepancies caused by reduced or enlarged site plans.	Revision:	Description:	These drawings express visual design intent only. Final engineering, materials, and fabrication shall remain the responsibility of the fabricator. The content of this document is subject to the design intent requirements outlined in the Specifications.	Contact: applied 300 North Park Avenue Suite 201 Winter Park, FL 327 407 - 701- 6448 Drawn by: AEO
applied_					4.23

H2 Sign type H - Interpretive Signs - Materials
Scale: 1/2" = 1'

Panel Backerplate Inset





Header Panel: 1/2" thick aluminum backer plate painted with Matthews Paint and coated with Matthews High Performance Clear Coat with painted graphics (City Logo).

DHPL: 1/4" Digitally printed high pressure laminate and routed to costume shape

Post: 2 1/2" square aluminum post painted with Matthews Paint and coated with Matthews High Performance Clear Coat

Foundation: Fabrication to determine foundation per code.

Sign Details	Original Issue Date: 11-NOV-2016 Scale: 1/2" = 1' Note: Drawing scale shown on plans is accurate for full size plans only. Applied is not responsible for scale discrepancies caused by reduced or enlarged site plans.	Revision:	Description:	These drawings express visual design intent only. Final engineering, materials, and fabrication shall remain the responsibility of the fabricator. The content of this document is subject to the design intent requirements outlined in the Specifications.	Contact: applied 300 North Park Avenue Suite 201 Winter Park, FL 327 407 - 701- 6448 Drawn by: AEO
applied_					4.22

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
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SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

SIGN DETAILS

URS 12420 MILESTONE CENTER DR., SUITE 150 GERMANTOWN, MD 20876 (301) 820-3000

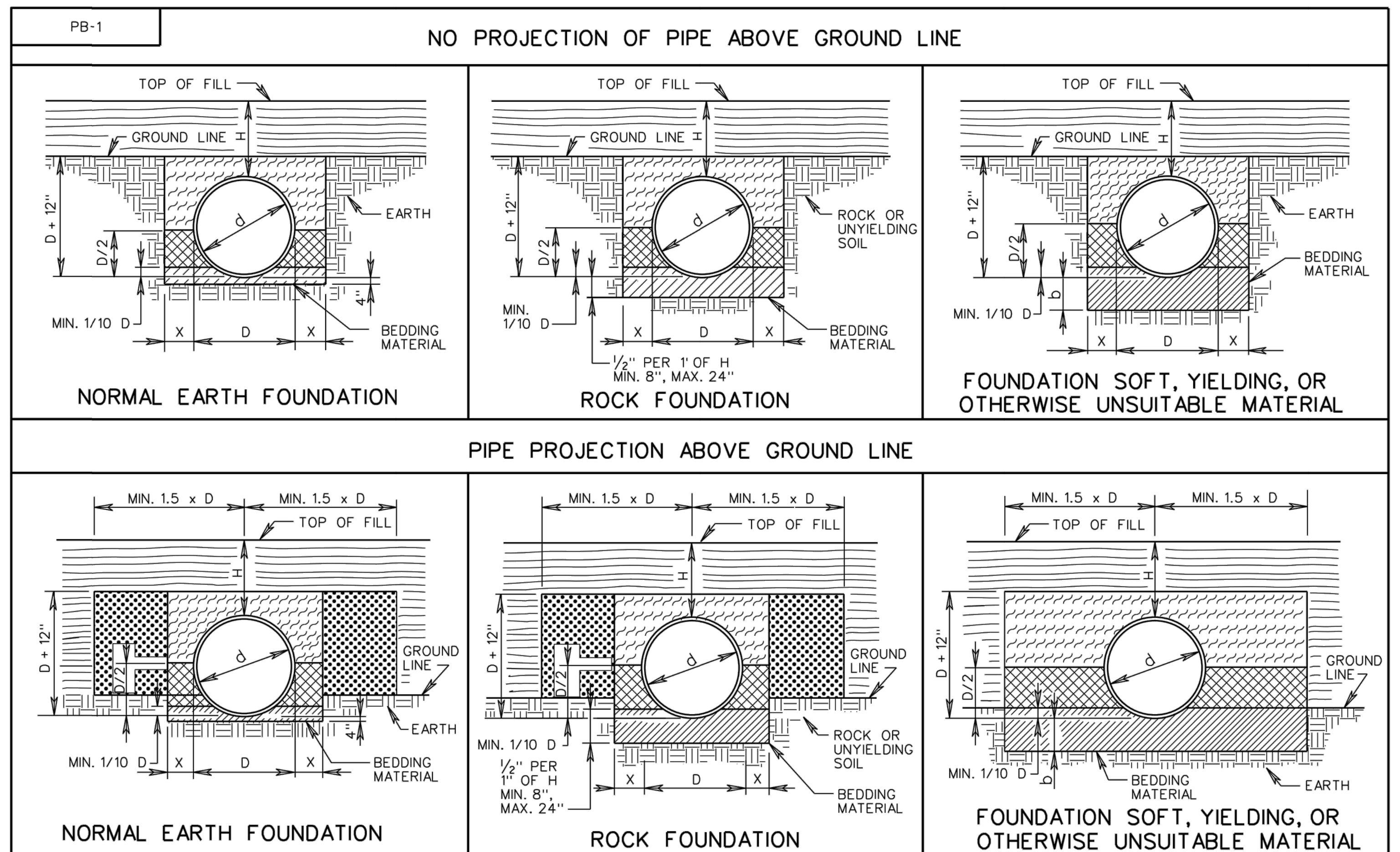
Wetland Studies and Solutions, Inc. a DAVEY company 5300 WELLINGTON BRANCH DR., SUITE 100 GAINESVILLE, VA 20155 (703) 679-5600

DRAWING DET – 04

SCALE N/A

2016 ROAD & BRIDGE STANDARDS

PB-1



BEDDING MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

FOR PLASTIC PIPE CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

FOR ALL OTHER PIPE REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

EMBANKMENT

REGULAR BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

NOTES:

FOR GENERAL NOTES ON PIPE BEDDING, SEE INSTALLATION OF PIPE CULVERTS AND STORM SEWERS GENERAL NOTES ON SHEET 107.00.

CRUSHED GLASS CONFORMING TO THE SIZE REQUIREMENTS FOR CRUSHER RUN AGGREGATE SIZE 25 AND 26 MAY BE USED IN PLACE OF CLASS I BACKFILL.

VDOT ROAD AND BRIDGE STANDARDS | SHEET 1 OF 4 | 107.01 | REVISION DATE 07/12

INSTALL. OF PIPE CULVERTS AND STORM SEWERS*
CIRC. PIPE BEDDING AND BACKFILL - METHOD "A"

VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE: 302, 303

2016 ROAD & BRIDGE STANDARDS

GENERAL

1. METHOD "A" PIPE BEDDING SHALL BE USED FOR ALL TYPES OF PIPE CULVERTS WITHIN THE APPLICABLE HEIGHT OF COVER RANGE NOTED IN THE STANDARD PC-1 TABLES UNLESS OTHERWISE NOTED ON THE PLANS.
2. H = HEIGHT OF COVER MEASURED FROM TOP OF CULVERT TO FINISHED GRADE.
3. b = EXCAVATION DEPTH AS SHOWN ON PLANS OR TO FIRM BEARING SOIL.

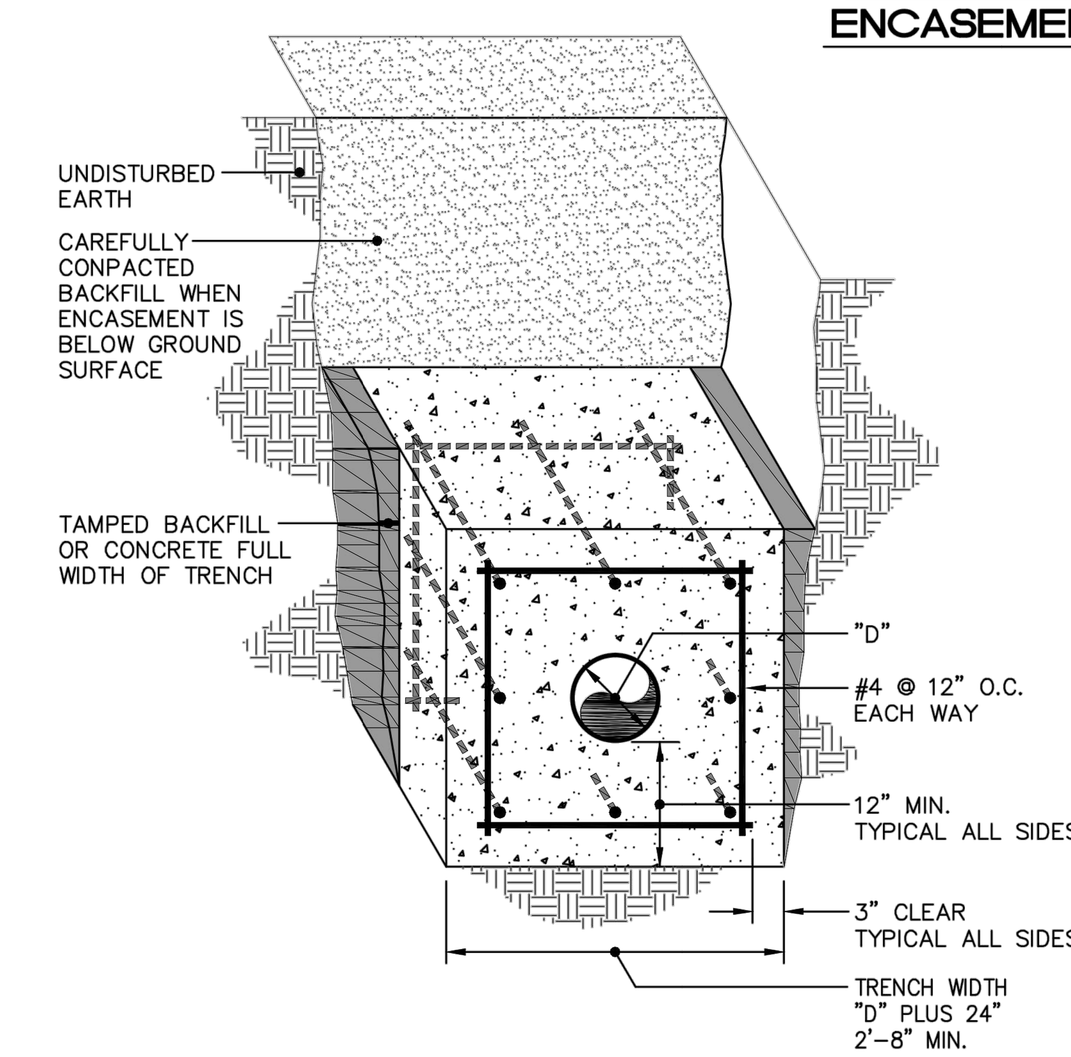
CIRCULAR PIPE

1. D = OUTSIDE DIAMETER OF PIPE.
2. d = INSIDE DIAMETER OF PIPE.
3. X = WIDTH OF CLASS I BACKFILL MATERIAL BEYOND THE EXTREMITY OF THE PIPE.
   X = 12" WHERE d IS LESS THAN 36".
   X = 18" WHERE d IS 36" AND GREATER.
4. WHERE DIRECTED BY THE ENGINEER, BEDDING MATERIAL MAY BE ELIMINATED FOR NORMAL EARTH FOUNDATIONS UNDER ROUTINE ENTRANCE PIPE (EXCEPT PLASTIC PIPE) 30" AND LESS IN DIAMETER WITH HEIGHT OF COVER 15' OR LESS.
5. REGULAR BACKFILL MATERIAL MAY BE USED IN LIEU OF CLASS I BACKFILL MATERIAL FOR ALL FOUNDATION TYPES FOR ROUTINE ENTRANCE PIPE (EXCEPT PLASTIC PIPE) 30" AND LESS IN DIAMETER WITH HEIGHT OF COVER 15' OR LESS.
6. BEDDING MATERIAL AND CLASS I BACKFILL MATERIAL MAY BE ELIMINATED FOR SHOULDER SLOT INLET (DI-13) OUTLET PIPES INSTALLATIONS.

1 / MHD-01 — SEWER PIPE BEDDING [1]
N.T.S.

* TO BE USED FOR CIRCULAR GRAVITY SANITARY SEWERS

CONCRETE ENCASEMENT



NOTES:

1. If in stream, rip-rap downstream (permissible rock disposal upstream).
2. Buoyancy calculations required for pipes larger than 12" or if encasement is to be longer than 60'.
3. Begin & end concrete encasement at pipe joint. Backfill materials and placement shall comply with standard specifications.

(ADAPTED FROM CITY OF FAIRFAX DPW DETAIL #4.01)

2 / MHD-01 — PIPE ENCASEMENT CLASS C
N.T.S.

[1] DETAIL OBTAINED/ADAPTED FROM VDOT 2016 ROAD & BRIDGE STANDARDS

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS DATE	BY	DESCRIPTION

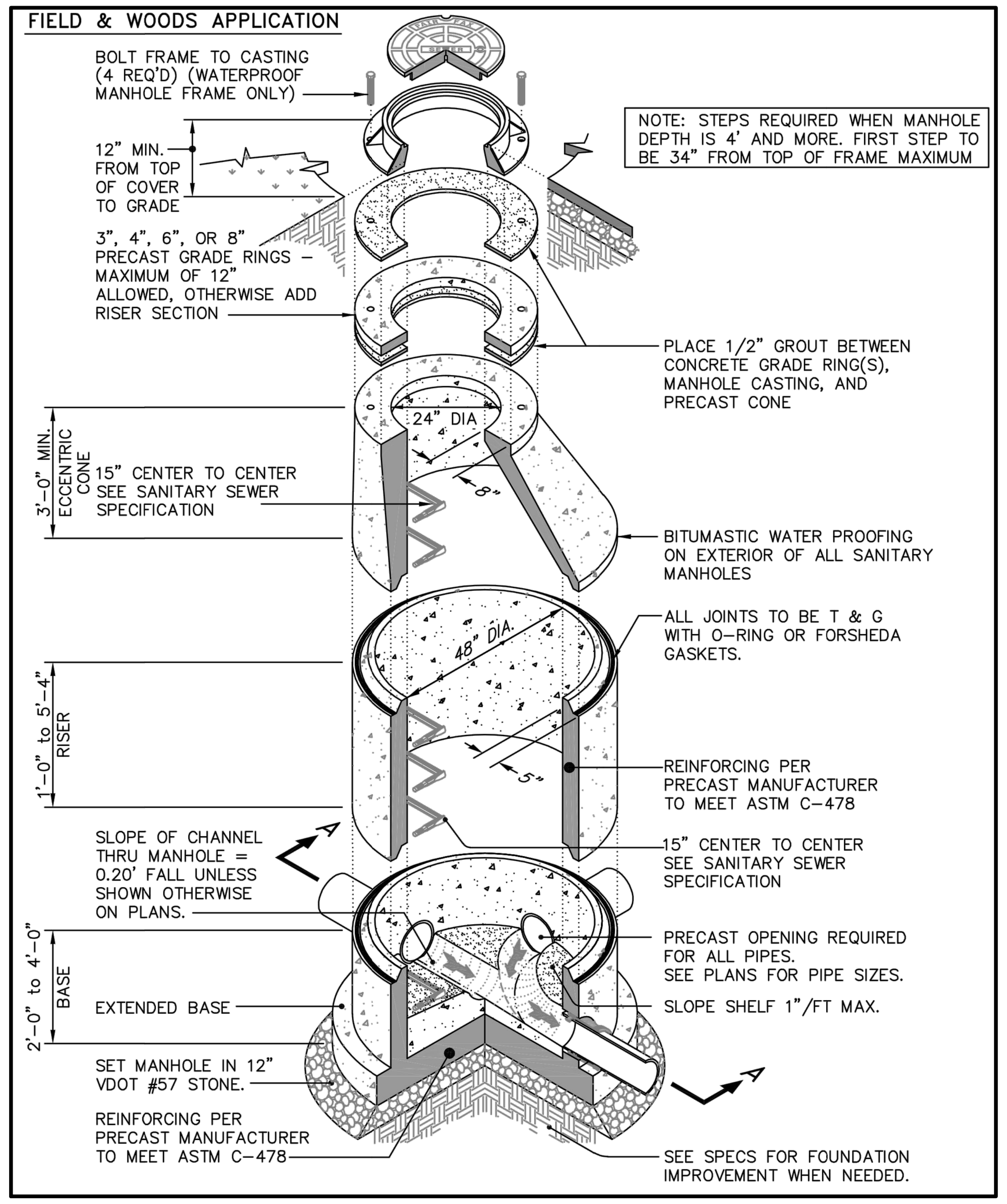
CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — SARAH J. NAPIER — Lic. No. 47791 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

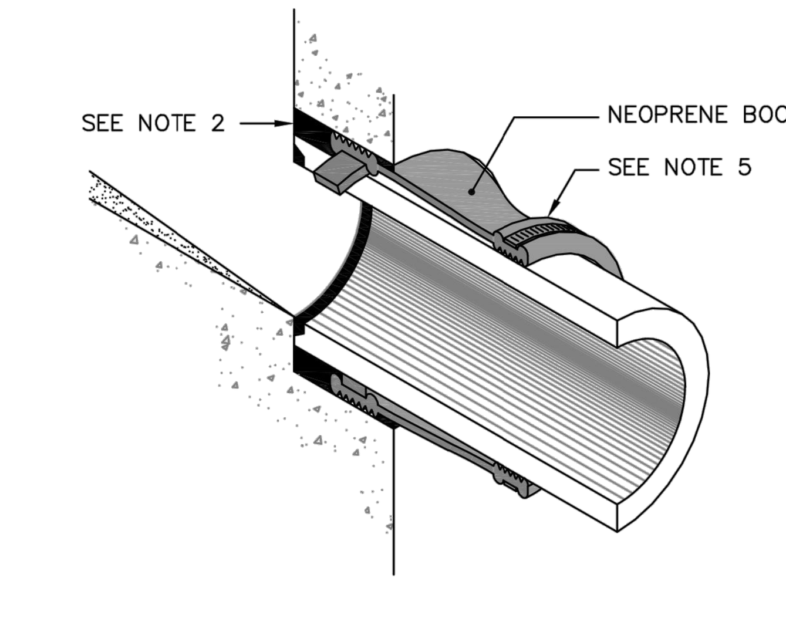
MANHOLE RELOCATION DETAILS

DRAWING MHD – 01
SCALE N/A
SHEET 61 OF 84



(ADAPTED FROM CITY OF FAIRFAX DPW DETAIL #4.02)

1 / MHD-02 PRECAST 4' DIAMETER MANHOLE CONE TOP
N.T.S.



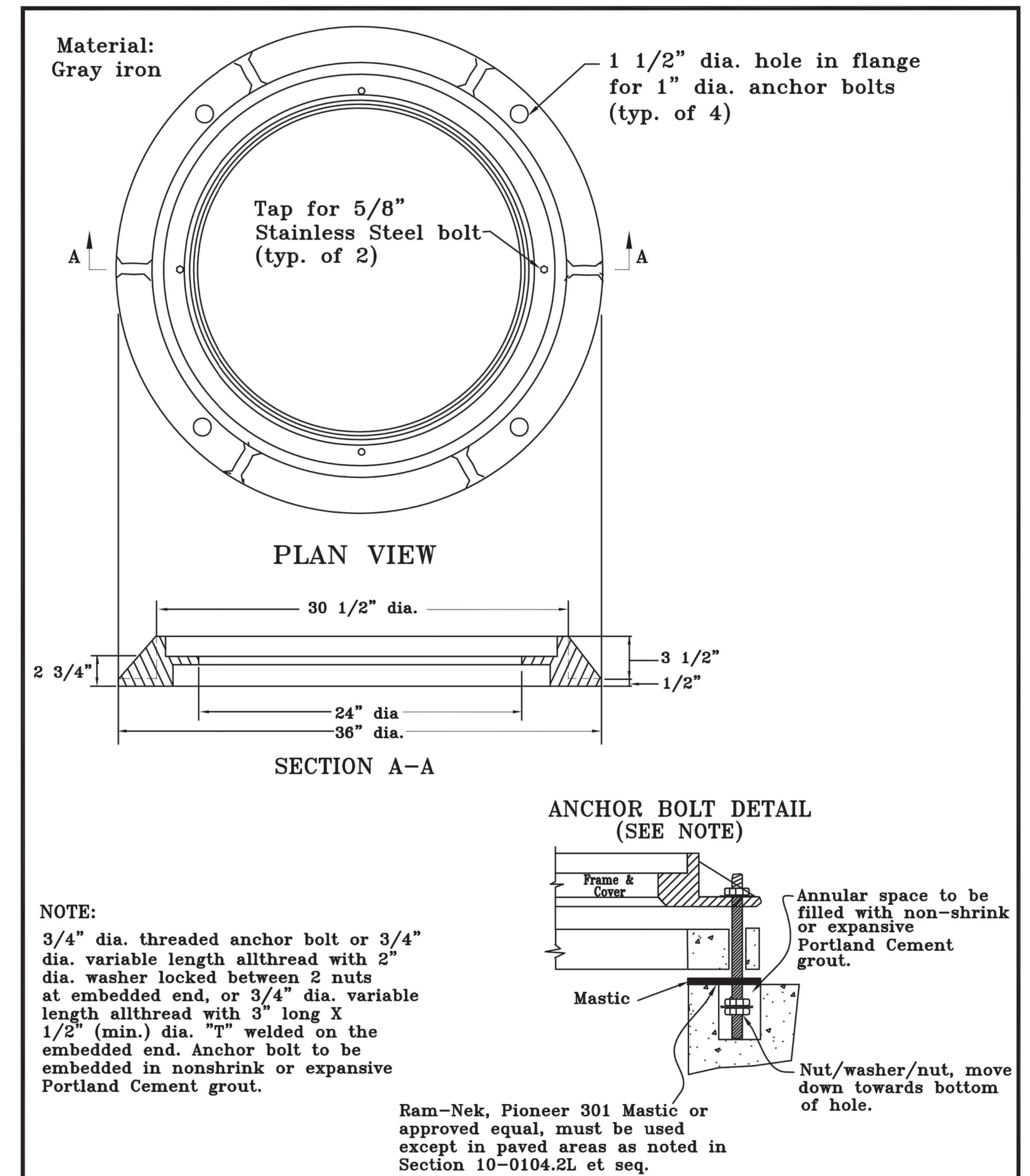
NOTES:

1. Concrete strength to be 4,000 PSI minimum.
2. Pipes will be grouted inside and out.
3. Flexible sleeve boots cast in place or installed with stainless steel expander rings. Boots to meet ASTM C-923 standards.
4. See detail 1/MHD-02 for invert shaping.
5. All service laterals into manhole to be core drilled and booted.
6. Maximum depth 4' diameter manhole = 20' (see sewer design section for other requirements / limitations).
7. When directed by the engineer, place manhole insert such as "no-flow/inflow" insert or "rainstopper" designed by approval manufacturers.
8. For watertight applications, place butyl rubber between frame and cone. Bolt frame to cone.

(ADAPTED FROM CITY OF FAIRFAX DPW DETAIL #4.04)

2 / MHD-02 MANHOLE CONNECTION
N.T.S.

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL

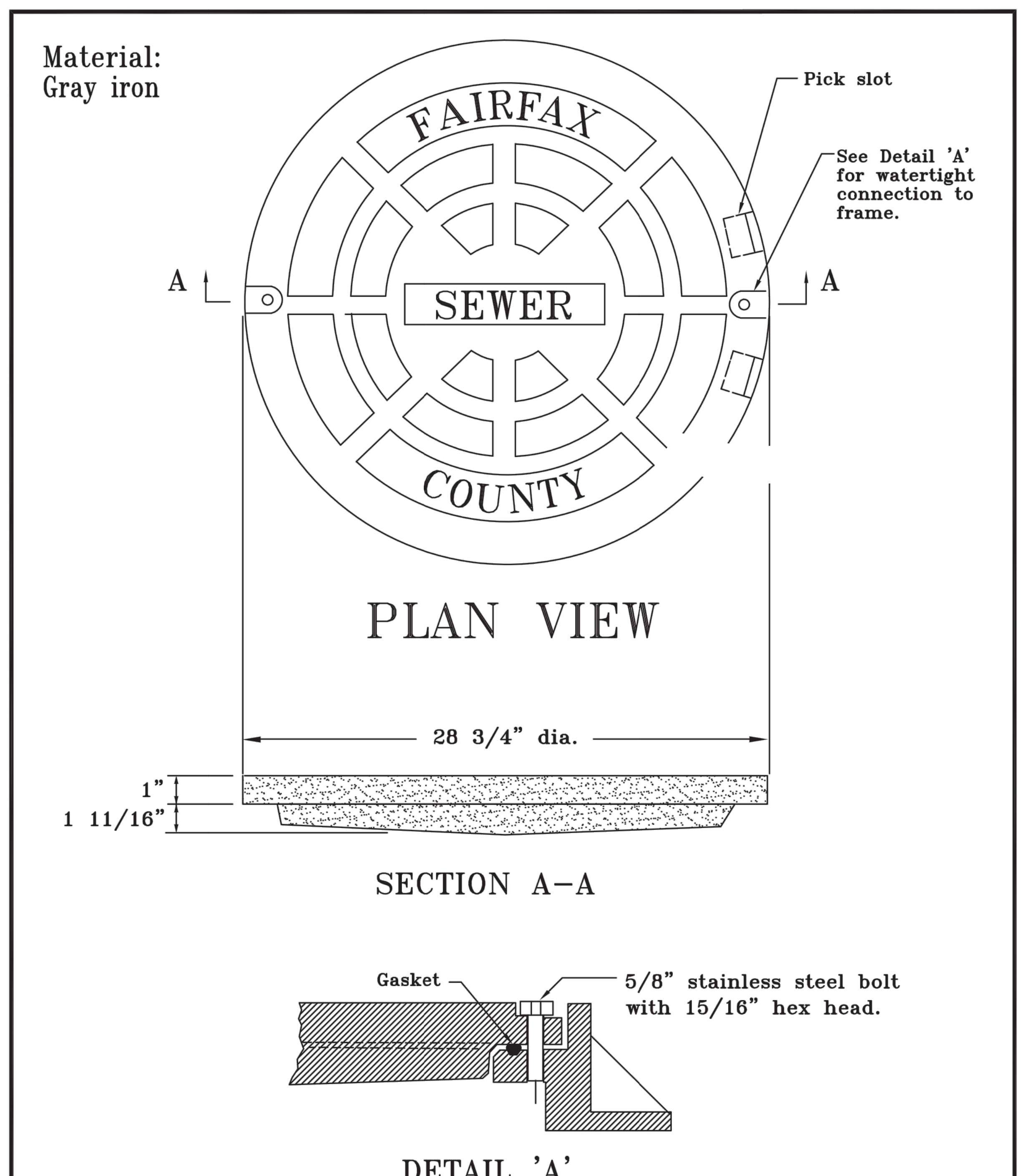


NOTE:
3/4" dia. threaded anchor bolt or 3/4" dia. variable length allthread with 2" dia. washer locked between 2 nuts at embedded end, or 3/4" dia. variable length allthread with 3" long X 1/2" (min.) dia. "T" welded on the end. Anchor bolt to be embedded in nonshrink or expansive Portland Cement grout.

Ref. Sec. 10-0102.5D(7), Plates 3-10, 4-10, 6-10, 7-10 Rev. 1-00, 2011 Reprint, 2018 Reprint	WATERTIGHT/LOCKING MANHOLE FRAME	PLATE NO. 10-10	STD. NO. DPW-22

3 / MHD-02 WATERTIGHT MANHOLE FRAME*
N.T.S.

FAIRFAX COUNTY PUBLIC FACILITIES MANUAL



Ref. Sec. 10-0102.5D(7), Plate 4-10 Rev. 1-00, 2011 Reprint	WATERTIGHT MANHOLE COVER	PLATE NO. 11-10	STD. NO. DPW-23

4 / MHD-02 WATERTIGHT MANHOLE COVER*
N.T.S.

NOTES:
1. MACHINE FRAMES AND COVERS TO PREVENT RATTLING.
2. CASTINGS SHALL BE GRAY IRON MEETING REQUIREMENTS OF ASTM A48, CLASS 35B.

SPECIFICATIONS	OR APPROVED EQUAL	
	EAST JORDAN IRON WORKS, INC. 1935	CAPITOL FOUNDRY MH-213-CR
COVER WEIGHT	TOTAL	165 LBS.
FRAME WEIGHT	364 LBS.	285 LBS.
LOAD RATING	HEAVY DUTY	
MATERIAL	ASTM A 48 CLASS 35B	
FINISH	UNCOATED	

*DETAILS OBTAINED/ADAPTED FROM FAIRFAX COUNTY PUBLIC FACILITIES MANUAL

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

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APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA, SARAH J. NAPIER, Lic. No. 47791, 6/16/2020, PROFESSIONAL ENGINEER

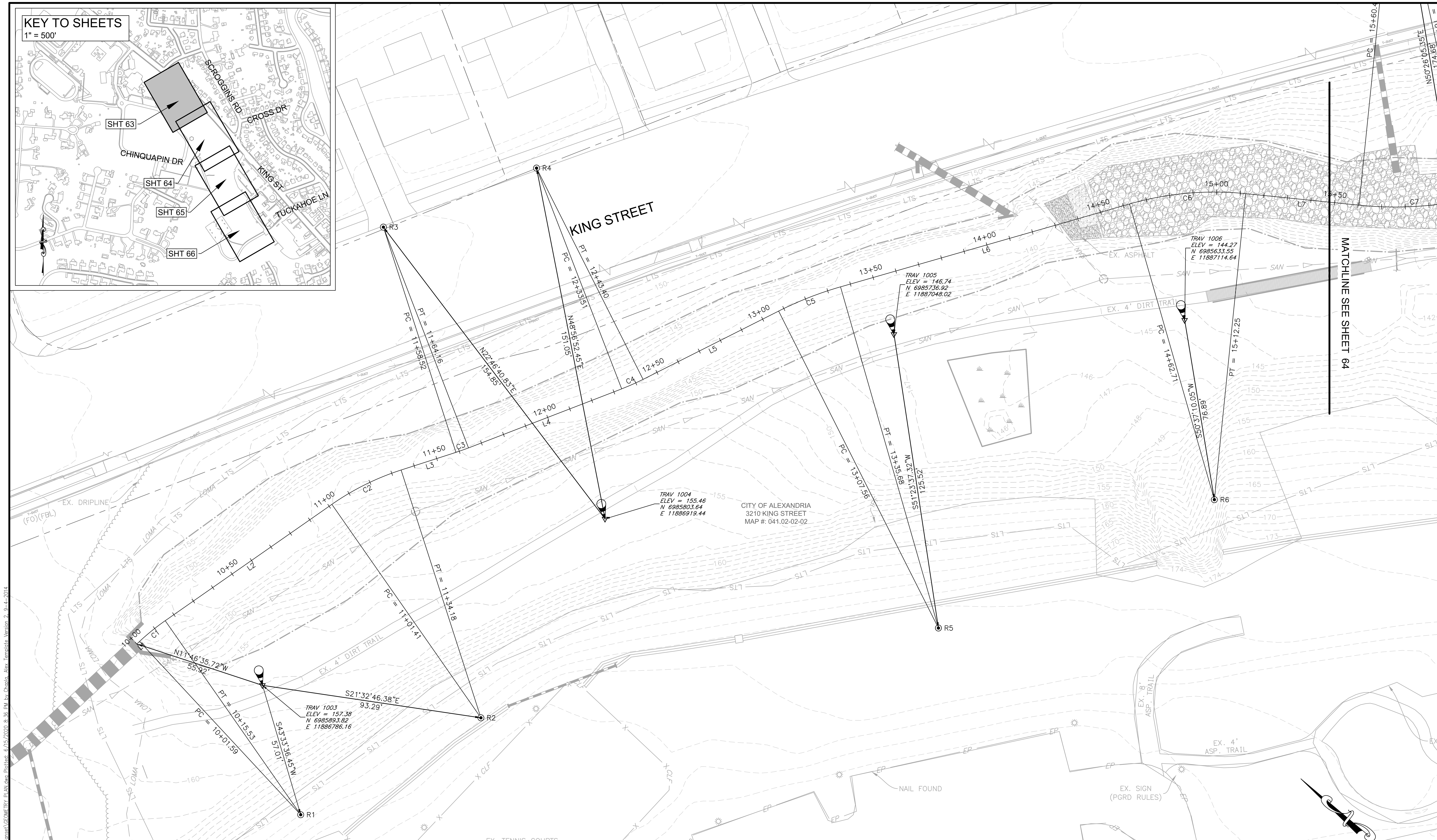
TAYLOR RUN STREAM RESTORATION

MANHOLE RELOCATION DETAILS (CONT'D)

Wetland Studies and Solutions, Inc.

URS

DRAWING MHD - 02
SCALE N/A
SHEET 62 of 84



GEOMETRY TABLE						
NO.	LENGTH	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L1	1.59'	--	S 72°54'21" E	--	--	--
C1	13.94'	100.00'	07°59'04"	6.98'	N 68°54'49" W	13.92'
L2	85.88'	--	S 64°55'17" E	--	--	--
C2	32.77'	110.00'	17°04'14"	16.51'	N 56°23'10" W	32.65'
L3	24.34'	--	S 47°51'03" E	--	--	--
C3	5.64'	100.00'	03°14'01"	2.82'	S 49°28'03" E	5.64'
L4	69.35'	--	S 51°05'04" E	--	--	--
C4	9.89'	100.00'	05°39'53"	4.95'	S 53°55'00" E	9.88'
L5	64.16'	--	S 56°44'57" E	--	--	--
C5	28.12'	150.00'	10°44'30"	14.10'	N 51°22'42" W	28.08'
L6	127.03'	--	S 46°00'27" E	--	--	--
C6	49.54'	130.00'	21°50'03"	25.07'	N 35°05'25" W	49.24'
L7	48.16'	--	S 24°10'24" E	--	--	--

RADIUS POINT LOCATION TABLE		
NO.	NORTHING	EASTING
R1	6985852.5085	11886746.8791
R2	6985807.0497	11886820.4253
R3	6985946.4125	11886979.3916
R4	6985902.8467	11887033.3530
R5	6985658.5997	11886949.9295
R6	6985584.7603	11887055.2071

TRAVERSE/BENCHMARK LOCATION TABLE			
POINT	NORTHING	EASTING	ELEVATION
1003	6985893.82	11886786.16	157.38'
1004	6985803.64	11886919.44	155.46'
1005	6985736.92	11887048.02	146.74'
1006	6985633.55	11887114.64	144.27'

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

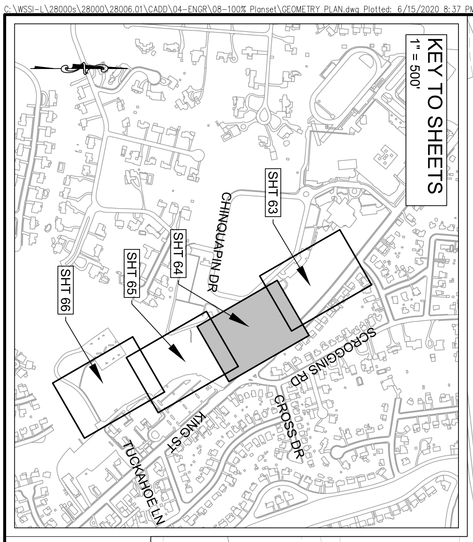
TAYLOR RUN STREAM RESTORATION

GEOMETRY PLAN

URS
12420 MILESTONE CENTER DR., SUITE 150
GERMANTOWN, MD 20876
(301) 820-3000

Wetland Studies and Solutions, Inc.
a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

DRAWING
GEO - 01
SCALE 1" = 20'
SHEET 63 OF 84



MATCHLINE SEE SHEET 63

MATCHLINE SEE SHEET 65

GEOMETRY TABLE									
C7	47.12'	150.00'	17°59'52"	23.75'	S 33°10'20" E	46.92'			
L8	50.74'	---	S 42°10'16" E	---	---	---			
C8	37.48'	150.00'	14°18'54"	18.84'	N 35°00'49" W	37.38'			
L9	105.46'	---	S 27°51'22" E	---	---	---			
C9	45.27'	150.00'	17°17'34"	22.81'	S 36°30'09" E	45.10'			
L10	80.20'	---	S 45°08'56" E	---	---	---			
C10	66.32'	150.00'	25°19'52"	33.71'	N 32°29'00" W	65.78'			
L11	83.20'	---	S 19°49'04" E	---	---	---			

RADIUS POINT LOCATION TABLE		
R7	6985655.4828	1188733.3757
R8	6985416.4728	1188714.6987
R9	6985194.1625	1188730.1.8904
R10	6985194.1625	1188730.1.8904

TRAVERSE/BENCHMARK (℄) LOCATION TABLE			
POINT	NORTHING	EASTING	ELEVATION
1007	6985544.22	1188795.72	141.76'
1008	6985445.23	1188725.11	140.41'
1009	6985328.33	1188730.83	138.37'
1010	6985235.42	1188739.70	134.69'

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

NORTH

TAYLOR RUN STREAM RESTORATION

PRELIMINARY - NOT FOR CONSTRUCTION

DRAWING GEO - 02

SHEET 64 OF 84

SCALE 1" = 20'

GEOMETRY PLAN (CONT'D)

URS
12420 MILLENNIUM CENTER DR., SUITE 150
GERMANTOWN, MD 20876
(301) 820-3000

Wetland Studies and Solutions, Inc. a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

SEAL:
COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

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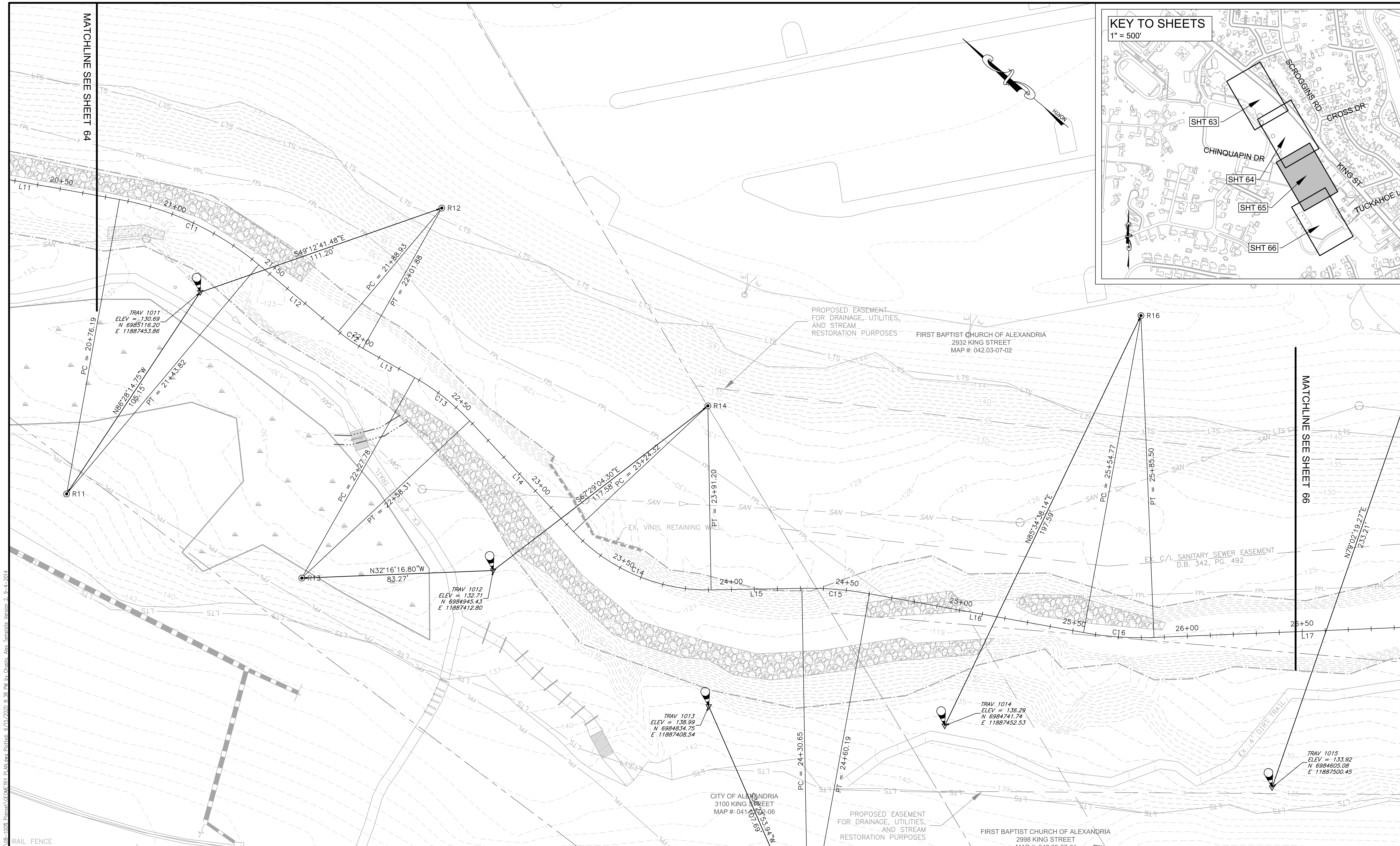
CHECKED BY:	NAS DATE: 6/16/20
APPROVED BY:	NAS DATE: 6/16/20

REVISIONS

DATE	BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314


KEY TO SHEETS
1" = 500'
SHT 63
SHT 64
SHT 65
SHT 66
SCROGGINS RD
CROSS DR
CHINQUAPIN DR
KING ST
TUCKAHOE LN
MATCHLINE SEE SHEET 64
MATCHLINE SEE SHEET 66
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02
TRAV 1011
ELEV = 130.69
N 6985116.20
E 11887453.86
TRAV 1012
ELEV = 132.71
N 6984945.43
E 11887412.80
TRAV 1013
ELEV = 138.99
N 6984834.75
E 11887408.54
TRAV 1014
ELEV = 136.29
N 6984741.74
E 11887452.53
TRAV 1015
ELEV = 133.92
N 6984605.08
E 11887500.45
EX. VINYL RETAINING WALL
EX. C/L SANITARY SEWER EASEMENT
D.B. 342, PG. 492
CITY OF ALEXANDRIA
3100 KING STREET
PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES
FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01
Ex. 50' CITY OF ALEXANDRIA INGRESS/EGRESS EASEMENT
D.B. 342, PG. 492
EX. 4' DIRT TRAIL
RAIL FENCE
S49°12'41.48"E
111.20'
N86°26'14.75"W
105.15'
N32°16'16.80"W
83.27'
S67°29'04.30"E
117.58'
N85°34'38.14"E
197.59'
N79°02'19.27"E
233.21'
PC = 20+76.19
PT = 21+43.82
PC = 21+88.93
PT = 22+01.88
PC = 22+27.78
PT = 22+58.31
PC = 23+24.32
PT = 23+91.20
PC = 24+30.65
PT = 24+60.19
PC = 25+54.77
PT = 25+85.50
R11
R12
R13
R14
R15
R16

GEOMETRY TABLE						
C11	67.63'	130.00'	29°48'20"	34.60'	N 04°54'54" W	66.87'
L12	45.12'	--	S 09°59'16" W	--	--	--
C12	12.95'	70.00'	10°35'54"	6.49'	S 04°41'19" W	12.93'
L13	25.90'	--	S 00°36'38" E	--	--	--
C13	30.53'	100.00'	17°29'26"	15.38'	N 08°08'05" E	30.41'
L14	66.01'	--	S 16°52'48" W	--	--	--
C14	66.87'	80.00'	47°53'44"	35.53'	S 07°04'04" E	64.94'
L15	39.46'	--	S 31°00'56" E	--	--	--
C15	29.53'	150.00'	11°16'48"	14.81'	N 25°22'32" W	29.48'
L16	94.58'	--	S 19°44'08" E	--	--	--
C16	30.73'	140.00'	12°34'34"	15.43'	S 26°01'25" E	30.67'

RADIUS POINT LOCATION TABLE		
R11	6985122.6722	11887348.9125
R12	6985043.5530	11887538.0567
R13	6985015.8393	11887368.3423
R14	6984900.4066	11887521.4198
R15	6984748.0774	11887344.6353
R16	6984756.9770	11887649.5399

TRAVERSE/BENCHMARK LOCATION TABLE

POINT	NORTHING	EASTING	ELEVATION
1011	6985116.20	11887453.86	130.69'
1012	6984945.43	11887412.80	132.71'
1013	6984834.75	11887408.54	138.99'
1014	6984741.74	11887452.53	136.29'

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE | BY | DESCRIPTION

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SEAL: COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

GEOMETRY PLAN (CONT'D)

DRAWING
GEO - 03
SCALE 1" = 20'
SHEET 65 of 84

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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SEALED BY COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
LIC. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

Wetland Studies and Solutions, Inc. — A URS Company
5300 WESTONE CENTER DR., SUITE 100
CHANTILLY, VA 20151
(703) 679-5600

URS
12420 MILLENNIUM CENTER DR., SUITE 100
RESTON, VA 20190
(703) 925-3300

TAYLOR RUN STREAM RESTORATION

GEOMETRY PLAN (CONT'D)

DRAWING
GEO – 04

SCALE 1" = 20'

SHEET 66 OF 84

FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02

FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01

MATCHLINE SEE SHEET 65

SANITARY SEWER EASEMENT
D.B. 342, PG. 492

EX. C/L SANITARY SEWER EASEMENT
D.B. 342, PG. 492

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

Ex. 10' STORM EASEMENT
D.B. 342, PG. 492

APPROXIMATE TERMINUS

EX. 4' DIRT TRAIL

EX. 2' DIRT TRAIL

R17

R18

R19

R20

N79°02'19.27"E
223.21'

PC = 27+19.09

PT = 27+30.59

PC = 28+26.73

PT = 28+74.07

N13°50'48.88"W
203.81'

S27°28'00.00"W
83.48'

PC = 27+53.75

PT = 27+97.63

S64°07'26.98"W
102.25'

PC = 29+32.62

PT = 29+42.79

S58°18'30.81"W
19.70'

TRAV 1015
ELEV = 133.92
N 6984605.08
E 11887500.45

TRAV 1016
ELEV = 125.56
N 6984496.17
E 11887594.72

TRAV 1017
ELEV = 137.40
N 6984336.74
E 11887650.54

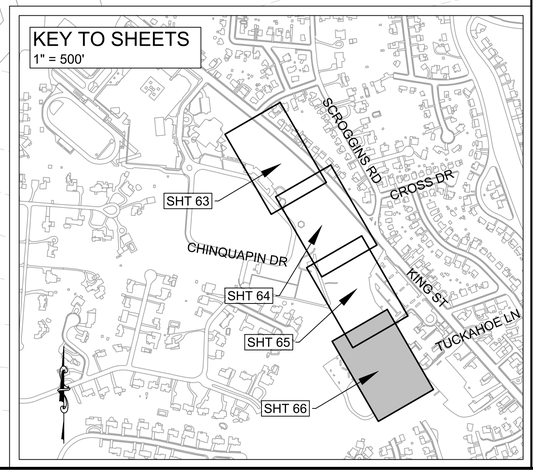
TRAV 1018
ELEV = 139.93
N 6984199.49
E 11887695.99

TRAV 1019
ELEV = 141.69
N 6984328.63
E 11887843.44

26+00 26+50 27+00 27+50 28+00 28+50 29+00 29+50 30+00 30+24.52

L17 C17 L18 C18 L19 C19 L20 C20 L21

KEY TO SHEETS
1" = 500'



NORTH

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

GEOMETRY TABLE

L17	133.59'	--	--	S 32°18'42" E	--	--	--
C17	11.50'	150.00'		04°23'33"	5.75'	S 34°30'29" E	11.50'
L18	23.16'	--	--	S 36°42'15" E	--	--	--
C18	43.88'	150.00'		16°45'44"	22.10'	N 28°19'23" W	43.73'
L19	29.10'	--	--	S 19°56'31" E	--	--	--
C19	47.34'	150.00'		18°04'51"	23.87'	S 28°58'56" E	47.14'
L20	58.55'	--	--	S 38°01'22" E	--	--	--
C20	10.17'	100.00'		05°49'47"	5.09'	N 35°06'28" W	10.17'
L21	81.72'	--	--	S 32°11'35" E	--	--	--

RADIUS POINT LOCATION TABLE

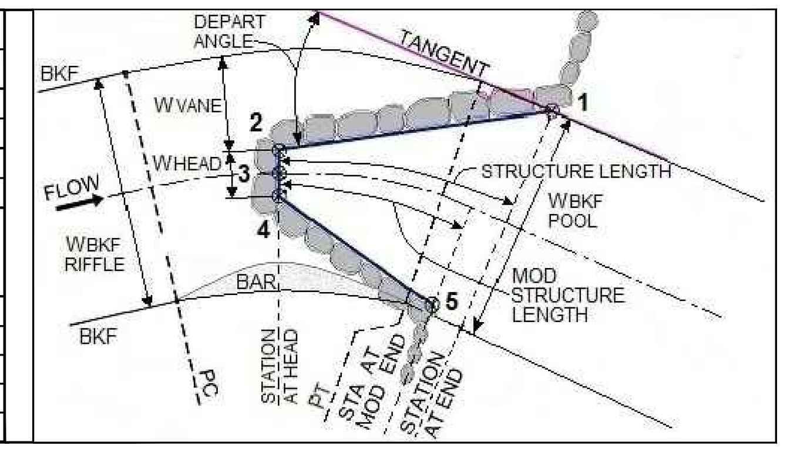
R17	6984649.4194	11887729.3982
R18	6984451.5454	11887502.7215
R19	6984526.5106	11887794.6582
R20	6984326.3914	11887633.7834

TRAVERSE/BENCHMARK (⌖) LOCATION TABLE

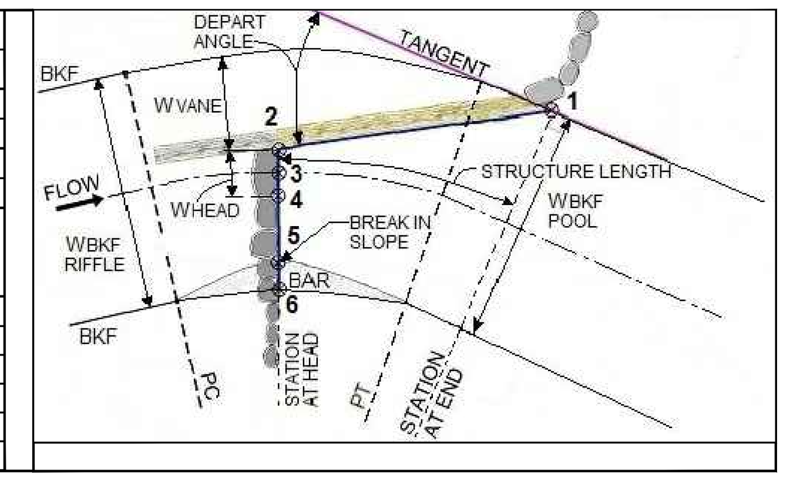
POINT	NORTHING	EASTING	ELEVATION
1015	6984605.08	11887500.45	133.92'
1016	6984496.17	11887594.72	125.56'
1017	6984336.74	11887650.54	137.40'
1018	6984199.49	11887695.99	139.93'
1019	6984328.63	11887843.44	141.69'

C:\WSS-L\28000s\28000\28006.01\CAD\04-ENGR\08-110E Planset\GEOMETRY PLAN.dwg Plotted: 6/15/2020 8:19 PM by Chandia, Alex Template Version 2 9-4-2014

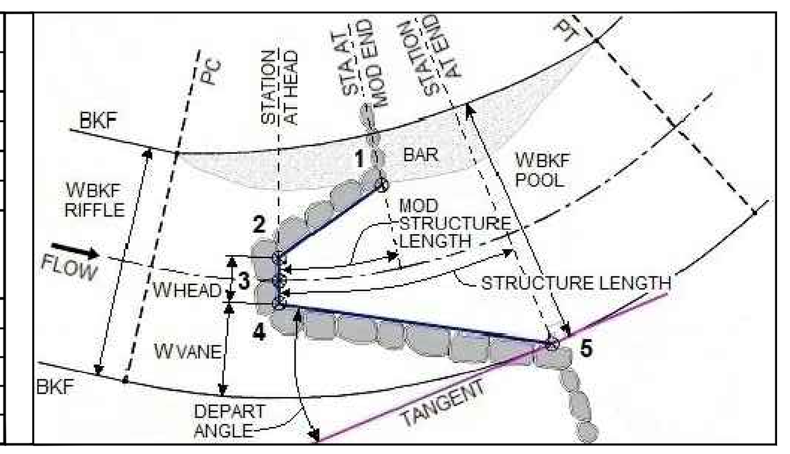
	MODIFIED CROSS VANE – RIGHT MEANDER				PC	PT	RC
16+89.08	WBKF–POOL	22	DBKF	2.1	16+58.26	16+95.74	150
WHEAD	WVANE	WBANK	STRUC LENGTH	MOD LENGTH	SLOPE BKF	STEP	LPOOL
8.0	7.0	5.5	24.0	11.0	0.017	0.75	44.0
Δ Y–HEAD	DEPART ANGLE	WRAMP	LVANE–OUT	LVANES–MOD	SLOPE VANE		MOD % WIDTH
0.25	16.5	1.5	25.2	11.3	0.057		100
POINT #	STATION	BL DIST TO PREVIOUS POINT	OFFSET FROM BL TO POINT	ELEVATION AT POINT	DISTANCE TO PREVIOUS POINT	BANKFULL ELEVATION	SLOPE TO PREVIOUS POINT
1	17+13.08	0.0	11.0	137.21	0.0	137.21	---
2	16+89.08	24.0	4.0	135.77	25.2	137.62	0.057
3	16+89.08	0.0	---	135.52	4.0	137.62	0.063
4	16+89.08	0.0	4.0	135.77	4.0	137.62	0.063
5	17+00.08	11.0	7.3	136.42	11.3	137.43	0.058



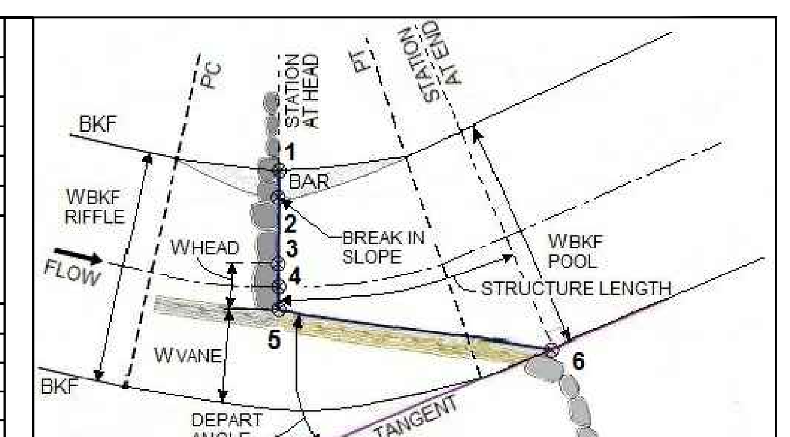
	LOG VANE W/ ROCK SILL HEAD – RIGHT MEANDER				PC	PT	RC
21+20.00	WBKF–POOL	22	DBKF	2.1	20+76.19	21+43.82	130
WHEAD	WVANE	WBANK	STRUC LENGTH	%BKF HEIGHT	SLOPE BKF	STEP	LPOOL
5.0	8.5	5.4	24.0	75%	0.013	0.5	39.0
Δ Y–HEAD	DEPART ANGLE	WRAMP	LVANE–OUT		SLOPE VANE		
0.25	23.8	3.1	26.6		0.038		
POINT #	STATION	BL DIST TO PREVIOUS POINT	OFFSET FROM BL TO POINT	ELEVATION AT POINT	DISTANCE TO PREVIOUS POINT	BANKFULL ELEVATION	SLOPE TO PREVIOUS POINT
1	21+44.00	0.0	11.0	128.75	0.0	129.27	---
2	21+20.00	24.0	2.5	127.73	26.6	129.58	0.038
3	21+20.00	0.0	---	127.48	2.5	129.58	0.100
4	21+20.00	0.0	2.5	127.73	2.5	129.58	0.100
5	21+20.00	0.0	7.7	127.83	5.2	129.58	0.020
6	21+20.00	0.0	11.8	129.58	4.1	129.58	0.430



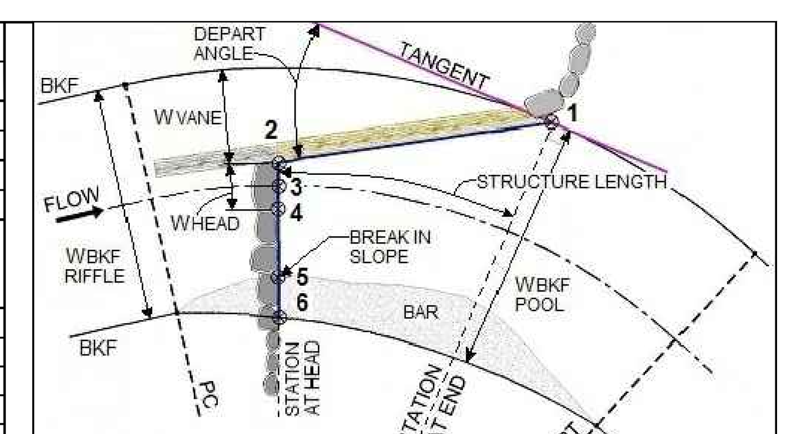
	MODIFIED CROSS VANE – LEFT MEANDER				PC	PT	RC
23+50.00	WBKF–POOL	22	DBKF	2.1	23+24.32	23+91.20	80
WHEAD	WVANE	WBANK	STRUC LENGTH	MOD LENGTH	SLOPE BKF	STEP	LPOOL
5.0	8.5	5.4	26.0	12.0	0.017	0.8	46.0
Δ Y–HEAD	DEPART ANGLE	WRAMP	LVANE–OUT	LVANES–MOD	SLOPE VANE		MOD % WIDTH
0.25	25.9	3.1	29.3	12.3	0.048		100
POINT #	STATION	BL DIST TO PREVIOUS POINT	OFFSET FROM BL TO POINT	ELEVATION AT POINT	DISTANCE TO PREVIOUS POINT	BANKFULL ELEVATION	SLOPE TO PREVIOUS POINT
1	23+62.00	0.0	7.6	124.92	0.0	125.87	---
2	23+50.00	12.0	2.5	124.23	12.3	126.08	0.056
3	23+50.00	0.0	---	123.98	2.5	126.08	0.100
4	23+50.00	0.0	2.5	124.23	2.5	126.08	0.100
5	23+76.00	26.0	11.0	125.63	29.3	125.63	0.048



	LOG VANE W/ ROCK SILL HEAD – LEFT MEANDER				PC	PT	RC
25+62.16	WBKF–POOL	22	DBKF	2.1	25+54.77	25+85.50	140
WHEAD	WVANE	WBANK	STRUC LENGTH	%BKF HEIGHT	SLOPE BKF	STEP	LPOOL
5.0	8.5	5.4	24.0	75%	0.018	0.7	39.0
Δ Y–HEAD	DEPART ANGLE	WRAMP	LVANE–OUT		SLOPE VANE		
0.25	23.3	3.1	26.5		0.034		
POINT #	STATION	BL DIST TO PREVIOUS POINT	OFFSET FROM BL TO POINT	ELEVATION AT POINT	DISTANCE TO PREVIOUS POINT	BANKFULL ELEVATION	SLOPE TO PREVIOUS POINT
1	25+62.16	0.0	11.0	122.29	0	122.29	---
2	25+62.16	0.0	7.7	120.54	3.3	122.29	0.529
3	25+62.16	0.0	2.5	120.44	5.2	122.29	0.02
4	25+62.16	0.0	---	120.19	2.5	122.29	0.100
5	25+62.16	0.0	2.5	120.44	2.5	122.29	0.100
6	25+86.16	24.0	11.0	121.33	26.5	121.86	0.034



	LOG VANE W/ ROCK SILL HEAD – RIGHT MEANDER				PC	PT	RC
27+54.00	WBKF–POOL	22	DBKF	2.1	27+53.75	27+97.63	150
WHEAD	WVANE	WBANK	STRUC LENGTH	%BKF HEIGHT	SLOPE BKF	STEP	LPOOL
5.0	8.5	5.4	24.0	75%	0.018	0.7	38.0
Δ Y–HEAD	DEPART ANGLE	WRAMP	LVANE–OUT		SLOPE VANE		
0.25	23.3	3.1	26.4		0.033		
POINT #	STATION	BL DIST TO PREVIOUS POINT	OFFSET FROM BL TO POINT	ELEVATION AT POINT	DISTANCE TO PREVIOUS POINT	BANKFULL ELEVATION	SLOPE TO PREVIOUS POINT
1	27+78.00	0.0	11.0	117.87	0.0	118.40	---
2	27+54.00	24.0	2.5	116.99	26.4	118.84	0.033
3	27+54.00	0.0	---	116.74	2.5	118.84	0.100
4	27+54.00	0.0	2.5	116.99	2.5	118.84	0.100
5	27+54.00	0.0	7.7	117.09	5.2	118.84	0.020
6	27+54.00	0.0	11.2	118.84	3.5	118.84	0.499



SUMMARY OF STREAM RESTORATION FEATURES ALONG BASELINE		
FEATURE LOCATION PER BASELINE STATION		REFER TO CONSTRUCTION DETAILS FOR DIMENSIONS AND TYPICAL SECTIONS FOR EACH FEATURE TO BE CONSTRUCTED WITHIN THE REACH
FROM	TO	STREAM RESTORATION FEATURE
10+00.00	10+68.50	CONSTRUCT RIFFLE
10+68.50	10+95.75	TYPICAL DETAIL BOULDER POOL
10+95.75	11+08.50	CONSTRUCT RIFFLE
11+08.50	11+35.75	TYPICAL DETAIL BOULDER POOL
11+35.75	11+98.50	CONSTRUCT RIFFLE
11+98.50	12+50.75	TYPICAL DETAIL BOULDER POOL
12+50.75	13+08.50	CONSTRUCT RIFFLE
13+08.50	13+85.75	TYPICAL DETAIL BOULDER POOL
13+85.75	14+58.50	CONSTRUCT RIFFLE
14+58.50	15+10.75	TYPICAL DETAIL BOULDER POOL
15+10.75	15+63.50	CONSTRUCT RIFFLE
15+63.50	15+90.75	TYPICAL DETAIL BOULDER POOL
15+90.75	16+89.08	CONSTRUCT RIFFLE
16+89.08	17+33.08	CONSTRUCT MODIFIED CROSS VANE
17+33.08	18+63.50	CONSTRUCT RIFFLE
18+63.50	18+92.75	TYPICAL DETAIL BOULDER POOL
18+92.75	19+38.50	CONSTRUCT RIFFLE
19+38.50	19+96.75	TYPICAL DETAIL BOULDER POOL
19+96.75	21+20.00	CONSTRUCT RIFFLE
21+20.00	21+59.00	LOG VANE WITH ROCK SILL HEAD
21+59.00	22+23.50	CONSTRUCT RIFFLE
22+23.50	22+58.75	TYPICAL DETAIL BOULDER POOL
22+58.75	23+50.00	CONSTRUCT RIFFLE
23+50.00	23+96.00	CONSTRUCT MODIFIED CROSS VANE
23+96.00	25+62.16	CONSTRUCT RIFFLE
25+62.16	26+01.16	LOG VANE WITH ROCK SILL HEAD
26+01.16	27+54.00	CONSTRUCT RIFFLE
27+54.00	27+92.00	LOG VANE WITH ROCK SILL HEAD
27+92.00	29+13.50	CONSTRUCT RIFFLE
29+13.50	29+69.75	TYPICAL DETAIL BOULDER POOL
29+69.75	30+24.52	CONSTRUCT RIFFLE

TAYLOR RUN 00_i01				
STRUCTURE TYPE	POINT #	NORTHING	EASTING	ELEV
BOULDER POOLS STA: 10+70.00	1	6985920.0	11886838.6	146.76
	2	6985909.4	11886861.2	146.56
BOULDER POOLS STA: 11+10.00	1	6985902.7	11886874.7	146.38
	2	6985888.1	11886894.8	146.18
BOULDER POOLS STA: 12+00.00	1	6985846.1	11886944.5	145.42
	2	6985830.4	11886963.9	145.17
	3	6985815.6	11886984.0	144.92
BOULDER POOLS STA: 13+10.00	1	6985782.7	11887034.2	144.17
	2	6985767.0	11887053.6	143.52
	3	6985749.6	11887071.6	142.92
	4	6985732.3	11887089.6	142.37
BOULDER POOLS STA: 14+60.00	1	6985680.2	11887143.6	141.57
	2	6985661.5	11887160.1	140.57
	3	6985640.0	11887172.9	139.57
BOULDER POOLS STA: 15+65.00	1	6985589.9	11887195.5	138.50
	2	6985568.4	11887208.2	137.50
MODIFIED CROSS VANE STA: 16+89.08	1	6985476.4	11887292.5	137.21
	2	6985494.4	11887274.9	135.77
	3	6985492.4	11887271.5	135.52
	4	6985490.4	11887268.0	135.77
	5	6985479.3	11887270.3	136.42
BOULDER POOLS STA: 18+65.00	1	6985344.0	11887364.0	132.16
	2	6985325.0	11887383.1	131.51
BOULDER POOLS STA: 19+40.00	1	6985290.7	11887416.7	130.58
	2	6985267.7	11887432.6	129.93
	3	6985242.2	11887444.0	129.33
LOG VANE WITH ROCK SILL HEAD STA: 21+20.00	1	6985098.0	11887487.7	128.75
	2	6985123.8	11887481.4	127.73
	3	6985123.8	11887478.9	127.48
	4	6985123.8	11887476.4	127.73
	5	6985123.8	11887471.2	127.83
	6	6985123.7	11887467.1	129.58
BOULDER POOLS STA: 22+25.00	1	6985019.7	11887468.3	126.01
	2	6984987.1	11887464.1	125.31
MODIFIED CROSS VANE STA: 23+50.00	1	6984887.7	11887450.2	124.92
	2	6984898.4	11887443.9	124.23
	3	6984898.3	11887441.4	123.98
	4	6984898.2	11887438.9	124.23
	5	6984869.1	11887436.0	125.63
LOG VANE WITH ROCK SILL HEAD STA: 25+62.16	1	6984707.1	11887530.6	122.29
	2	6984705.8	11887527.6	120.54
	3	6984703.8	11887522.7	120.44
	4	6984702.8	11887520.4	120.19
	5	6984701.8	11887518.1	120.44
	6	6984675.7	11887522.3	121.33
LOG VANE WITH ROCK SILL HEAD STA: 27+54.00	1	6984525.7	11887645.6	117.87
	2	6984542.5	11887625.1	116.99
	3	6984541.0	11887623.1	116.74
	4	6984539.5	11887621.1	116.99
	5	6984536.4	11887616.9	117.09
	6	6984534.3	11887614.1	118.84
BOULDER POOLS STA: 29+15.00	1	6984401.9	11887701.7	113.85
	2	6984380.3	11887718.0	112.85
	3	6984357.5	11887732.4	111.85

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

STRUCTURE STAKEOUT

URS — 12420 MILESTONE CENTER DR., SUITE 150, GERMANTOWN, MD 20876, (301) 820-3000

Wetland Studies and Solutions, Inc.® a DAVEY company — 5300 WELLINGTON BRANCH DR., SUITE 100, GAINESVILLE, VA 20155, (703) 679-5600

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STR – 01
SCALE N/A
SHEET 2 OF 84

FIGURE 1: 1937 AERIAL

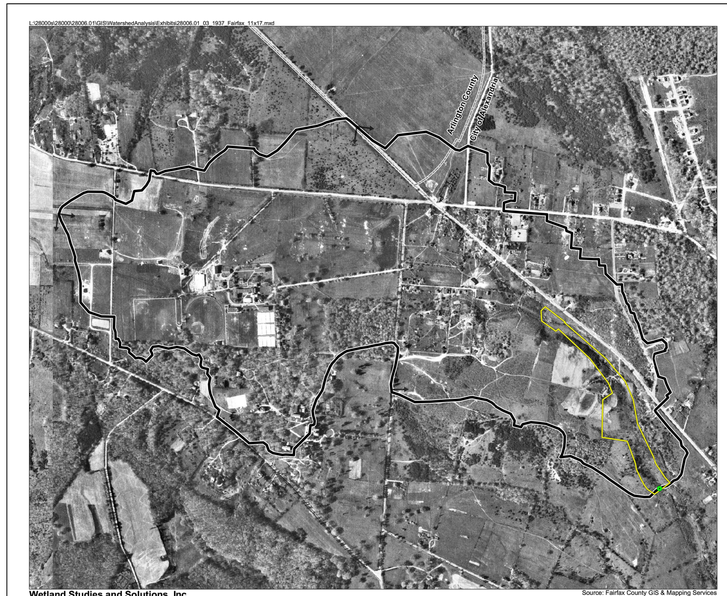


FIGURE 2: 1954 AERIAL

FIGURE 3: 1994 AERIAL

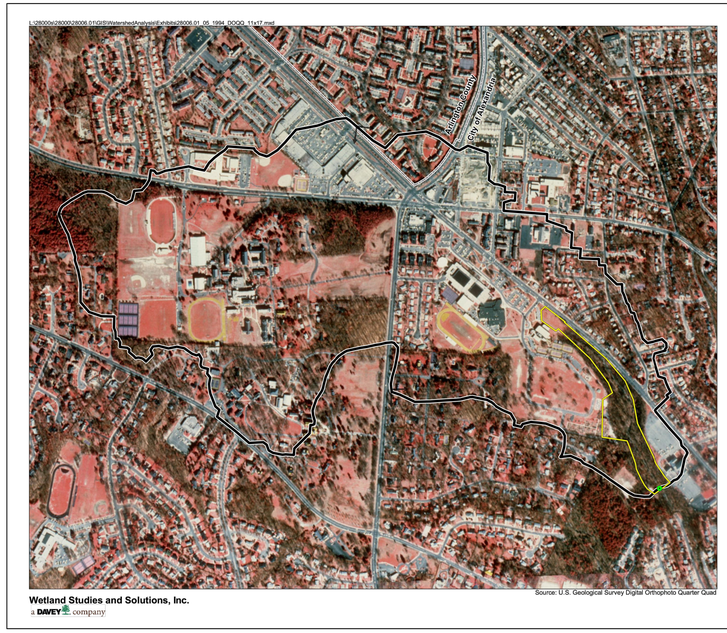
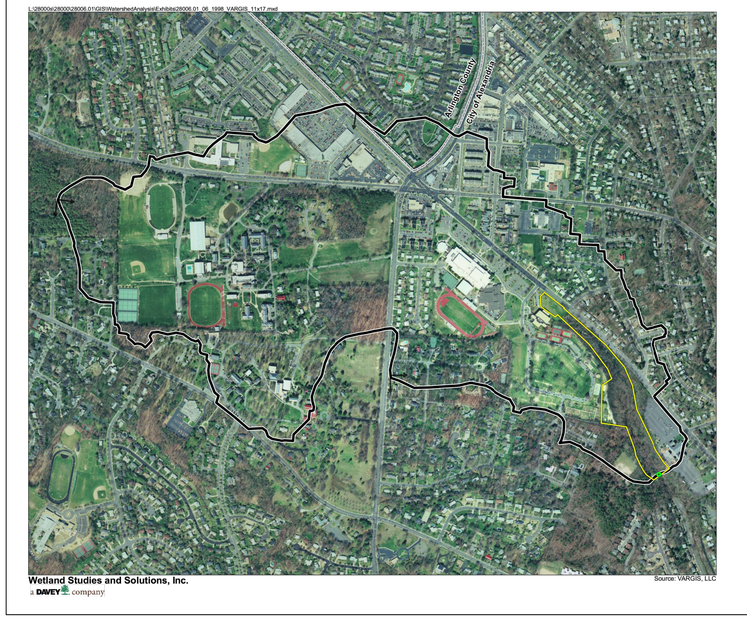


FIGURE 4: 1998 AERIAL



HISTORIC IMAGERY ASSESSMENT

HISTORICAL INFORMATION, INCLUDING USGS QUAD SHEETS AND AERIAL IMAGERY (1937, 1954, 1994, 1998, 2002, 2009, 2015, AND 2017), WAS REVIEWED TO ASSESS CHANGES TO THE TAYLOR RUN WATERSHED. THE IMAGES PICTURED ON THIS SHEET WERE SELECTED TO DEPICT THE PROGRESSION OF LAND USE CHANGES.

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TAYLOR RUN STREAM RESTORATION

HISTORIC MAPS & AERIALS

Wetland Studies and Solutions, Inc.
a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

URS
12420 MILLENNIUM DRIVE, SUITE 100
LOS ANGELES, CA 90094
(310) 820-3000

DRAWING
H – 01

SCALE AS NOTED

SHEET 68 OF 84

FIGURE 5: 2002 AERIAL

Exhibit 7

FIGURE 6: 2009 AERIAL

Exhibit 8

FIGURE 7: 2015 AERIAL

Exhibit 9

FIGURE 8: 2017 AERIAL

Exhibit 10

HISTORIC IMAGERY ASSESSMENT

HISTORICAL INFORMATION, INCLUDING USGS QUAD SHEETS AND AERIAL IMAGERY (1937, 1954, 1994, 1998, 2002, 2009, 2015, AND 2017), WAS REVIEWED TO ASSESS CHANGES TO THE TAYLOR RUN WATERSHED. THE IMAGES PICTURED ON THIS SHEET WERE SELECTED TO DEPICT THE PROGRESSION OF LAND USE CHANGES.

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ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 PROFESSIONAL ENGINEER 6/16/2020

TAYLOR RUN STREAM RESTORATION

HISTORIC MAPS & AERIALS (CONT'D)

URS
12420 MILLENNIUM DRIVE, SUITE 100
RESTON, VA 20190
(703) 925-3600

Wetland Studies and Solutions, Inc.
a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

DRAWING
H – 02

SCALE AS NOTED

SHEET 69 OF 84

FIGURE 9: ZONING MAP

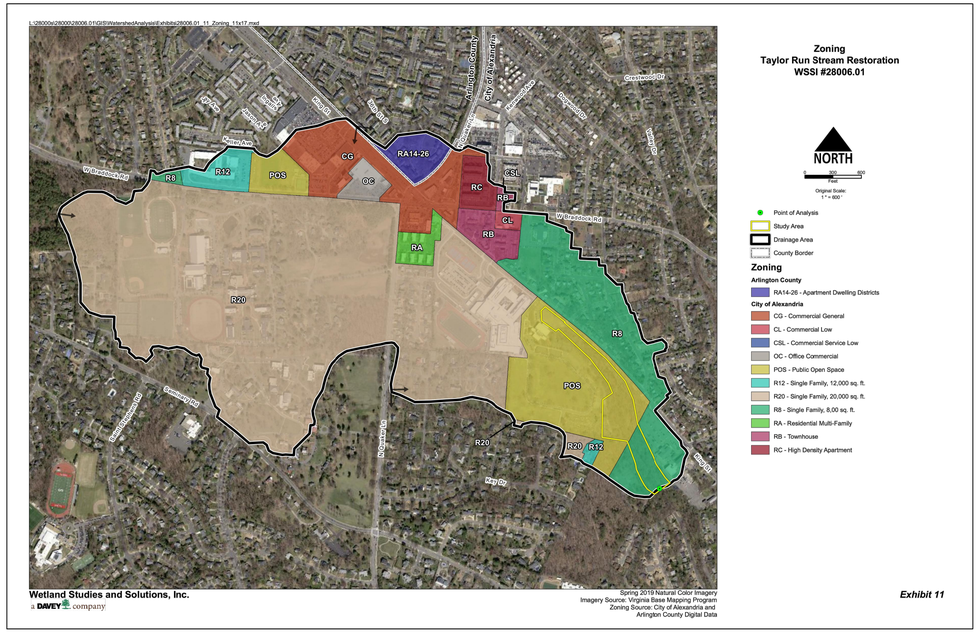


FIGURE 10: IMPERVIOUS AREA MAP

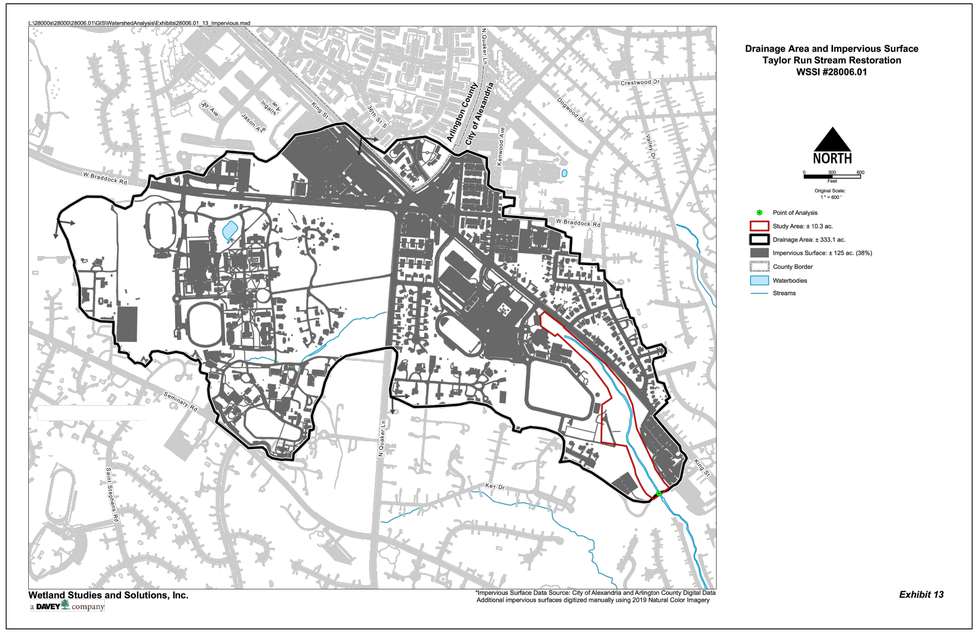


FIGURE 11: SOILS MAP

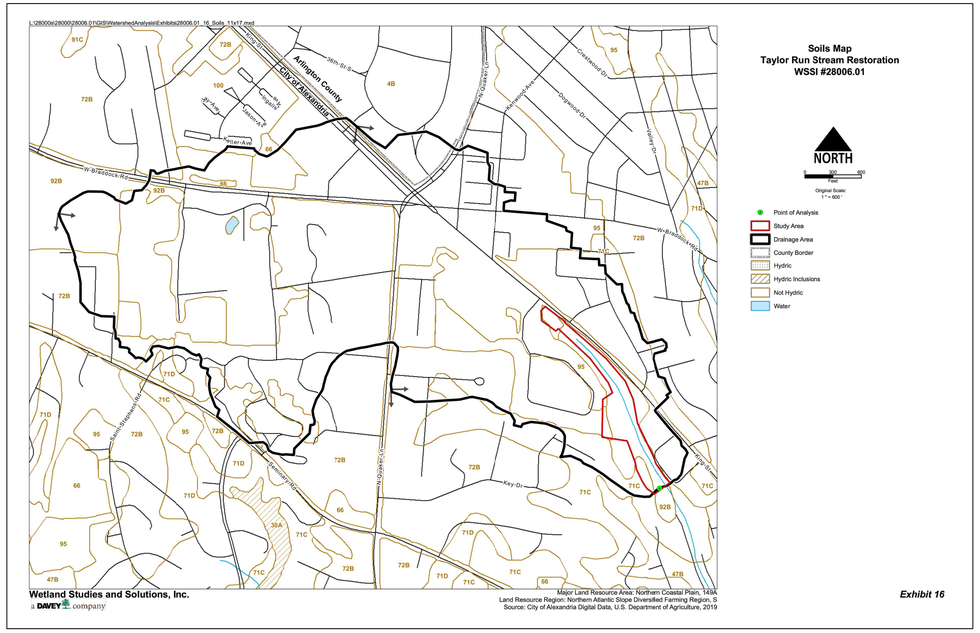
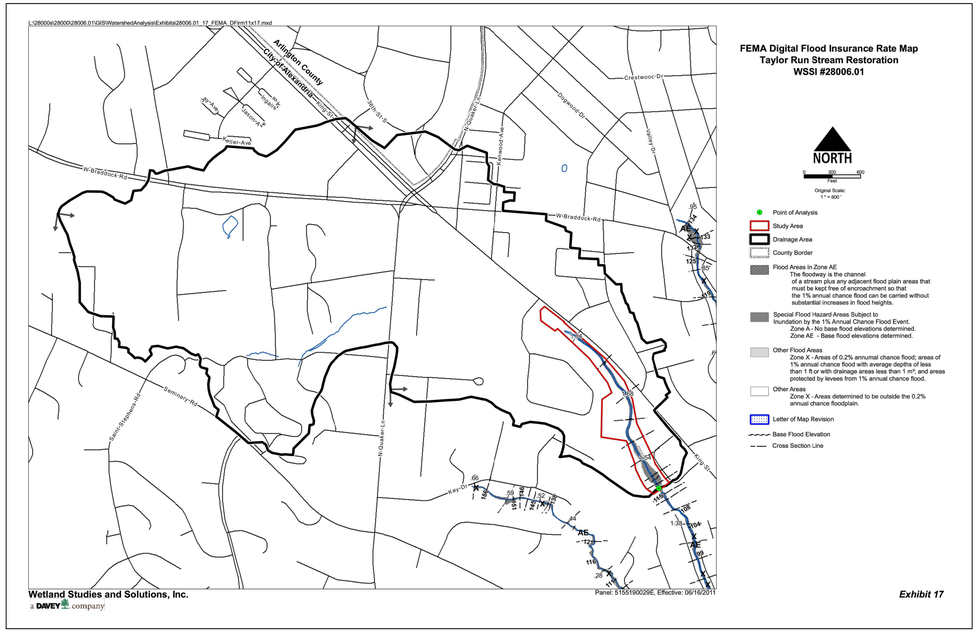


FIGURE 12: FEMA DIGITAL FLOOD INSURANCE RATE MAP



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DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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DATE | BY | DESCRIPTION

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DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

WATERSHED DATA

Wetland Studies and Solutions, Inc. (a DAVEY company)
5300 WISCONSIN AVE, STE. 100
WASHINGTON, DC 20015
(703) 679-5600

URS
12420 MILLENNIUM DRIVE, SUITE 100
RESTON, VA 20190
(301) 820-3000

DRAWING
WD – 01
SCALE AS NOTED
SHEET 70 OF 84

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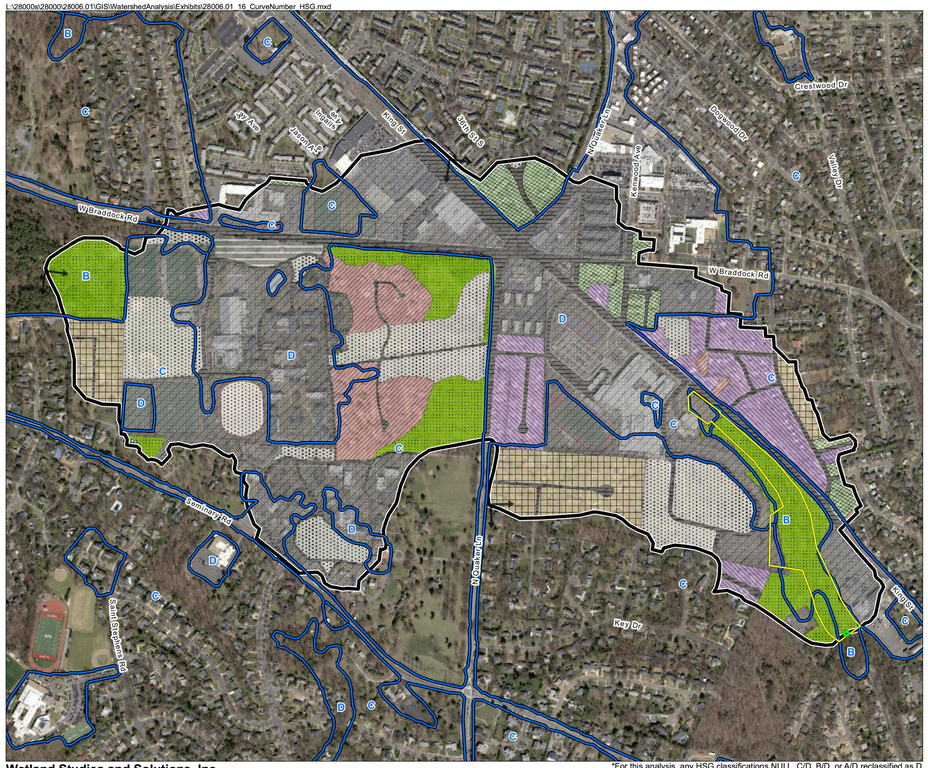
FIGURE 13: TR-55 COVER TYPE & HYDROLOGIC SOIL GROUPS



TR-55 Cover Type and Hydrologic Soils Groups
Taylor Run Stream Restoration
WSSI #28006.01

NORTH
0 300 600
Feet
Original Scale: 1 " = 600 '

- Point of Analysis
- Study Area
- Drainage Area
- SSURGO Soils HSG
- County Border

Land Use
- Impervious Areas-Streets and Road-Paved; curbs and storm sewers
- Open Space
- Residential Districts - 1 acre
- Residential Districts - 1/2 acre
- Residential Districts - 1/3 acre
- Residential Districts - 1/4 acre
- Residential Districts - 1/8 acre
- Residential Districts - 2 acre
- Urban Districts - Commercial & Business
- Water
- Woods

Wetland Studies and Solutions, Inc.
a DAVEY company

*For this analysis, any HSG classifications NULL, C/D, B/D, or A/D reclassified as D
Imagery Source: Virginia Base Mapping Program, Spring 2019 Natural Color

Exhibit 15

TABLE 1: LAND USE DATA

Taylor Run Stream Restoration

COVERTYPE	HSG	CN	AREA (ACRES)	COMPOSITE
Impervious Areas - Paved parking lots, roofs, driveways	B	98	0.3	25
	C	98	0.8	77
Impervious Areas - Streets and Roads - Paved; curbs and storm sewers	B	98	0.2	19
	C	98	8.3	813
	D	98	26.3	2,573
Open space	B	61	0.8	51
	C	74	38.9	2,876
	D	80	1.5	124
Residential Districts - 1 acre	B	68	0.1	10
	C	79	20.9	1,653
Residential Districts - 1/2 acre	C	80	0.1	10
Residential Districts - 1/3 acre	C	81	16.1	1,304
	D	86	1.7	148
Residential Districts - 1/4 acre	C	83	16.4	1,358
	D	87	9.0	787
Residential Districts - 1/8 acre (town houses)	C	90	1.9	170
	D	92	10.3	949
Residential Districts - 2 acre	D	82	3.1	251
Urban Districts - Commercial & Business	B	92	1.1	99
	C	94	45.3	4,258
	D	95	91.8	8,722
Open Water	W	98	0.4	44
Woods	B	55	19.3	1,060
	C	70	17.3	1,213
	D	77	1.1	88
WATERSHED TOTALS		**86.1**	**333.1**	**28,682**

TABLE 2: HYDROLOGIC MODEL SUMMARY TABLE

Reach	Subshed	Area (ac)	Area (sq. mi.)	CN	Tc (min)	Peak Flow (cfs) - Computed with WinTR-55						
						1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
Taylor Run	1	333.1	0.520	86	98	166.22	224.90	328.26	420.17	563.82	690.19	835.64

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE | DESCRIPTION | BY

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
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CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — LIC. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

HYDROLOGIC MODEL DATA

URS — Wetland Studies and Solutions, Inc. — a DAVEY company
1400 WILLOWTREE CENTER DR., SUITE 100, LEESBURG, VA 20176 (703) 478-3000
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DRAWING
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SCALE AS NOTED
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Design Narrative

I. Background

The restoration philosophy of Natural Channel Design (NCD) was utilized in the development of the Taylor Run Stream Restoration (herein referred to as Taylor Run). As the name implies, the goal of NCD is to restore a degraded stream by mimicking, as much as possible, the characteristics of a stable, "natural" system. Through the use of fluvial geomorphic principles, NCD seeks to achieve long-term stability given current as well as future flow rates.

Prior to developing restoration design protocols applicable to the urban streams found in Northern Virginia, development of a hydrologic/geomorphic basis for these designs was necessary. Given the lack of available hydrologic data for small urban systems, there was considerable uncertainty as to the applicability of published regional curve data to these streams. Similar uncertainty exists about the extent to which flow rates generated from the modeling of standard precipitation events (NRCS, type II, 24-hr) could be relied on to provide reasonable (in terms of their relationship to NCD concepts) design flows. Given these uncertainties, selection of a design methodology without further analysis could lead to significant errors in the design of the restoration reaches.

To ensure that the restoration design protocol will result in an environmentally sound, aesthetically pleasing stream restoration with long-term stability, WSSI undertook a wide-ranging analysis that included a review of prior studies, development of a hydrologic model, and collection of reference reach data. Information from each of these sources was then considered in developing a design protocol that incorporates certain, practicable elements of the NCD philosophy, while also taking into account the significant constraints imposed by the urban nature of the Taylor Run watershed. These constraints include limitations on the location and size of the restored channels which, in turn, determines the type and size of the channel substrate materials that must be used. Details of the development of the specialized design protocol are discussed below, along with a discussion of how restorations employing elements of NCD are in compliance with state law.

II. Regulatory Compliance

NCD is the preferred design methodology for the Virginia Department of Environmental Quality (DEQ) and the U.S. Army Corps of Engineers (COE). The 2005 state legislature revised state law to stipulate that any stream restoration project that is designed in accordance with NCD principles is exempt from the requirements of MS 19 (Code of Virginia, § 62.1-44.15:54 and 62.1-44.15:65) as well as any related local requirements. Additionally, on March 16, 2007, DEQ published its proposed Section 401 Water Quality Certification Conditions for Nationwide Permit (NWP) #27 (Stream and Wetland Restoration Activities) requiring that natural stream design be used for stream restoration. Therefore, the flow rates used for this project were developed using NCD methodologies, not traditional modeling techniques.

III. Published Data

In the process of determining a design protocol, a review of work performed by others was conducted. This included review and consideration of published regional curves as well as reports on urbanization and how it can result in downstream channel enlargement. Specific information reviewed as part of this analysis included the following:

Virginia Piedmont Regional Curve Data

The U.S. Geological Survey published regional curves for non-urban streams in the Piedmont physiographic province of Virginia. These regional curves were developed from streams primarily located in the southern portion of Virginia with watersheds that contain, on average, 3.9% urban area. Urban area is not explicitly defined and a correlation between urban area and impervious area is not given. For the purposes of this analysis, urban areas will be assumed to contain 50% impervious area, or less than 2.0% of the total study area. A plot of the VA regional curve is included in Figure 14.

North Carolina Piedmont Regional Curve Data

This data includes bankfull hydraulic geometry relationships for both "urban" and "rural" streams. The streams defined as "urban" averaged 41% impervious area and those classified as "rural" contained less than 10%. Land use in the Taylor Run watershed consists of an average impervious cover of 38%. A plot of the NC regional curves is included in Figure 14.

Eastern United States Regional Curve Data

Regional curve information developed from streams in the eastern portion of the United States (Figure 14) is presented in reference documents published by Dave Rosgen of Wildland Hydrology Consultants. The origin of the study or detailed information on the streams, including the imperviousness of their contributing watersheds, is not provided.

Maryland Piedmont Regional Curve Data

The U.S. Fish and Wildlife Service published a report on Maryland piedmont streams that presents regional curve information (Figure 14). Given that Taylor Run is located near the same physiographic province (Piedmont), the MD data is considered to be applicable. Note the average impervious area of the contributing watersheds in this study is approximately 8% (and thus is classified as "rural").

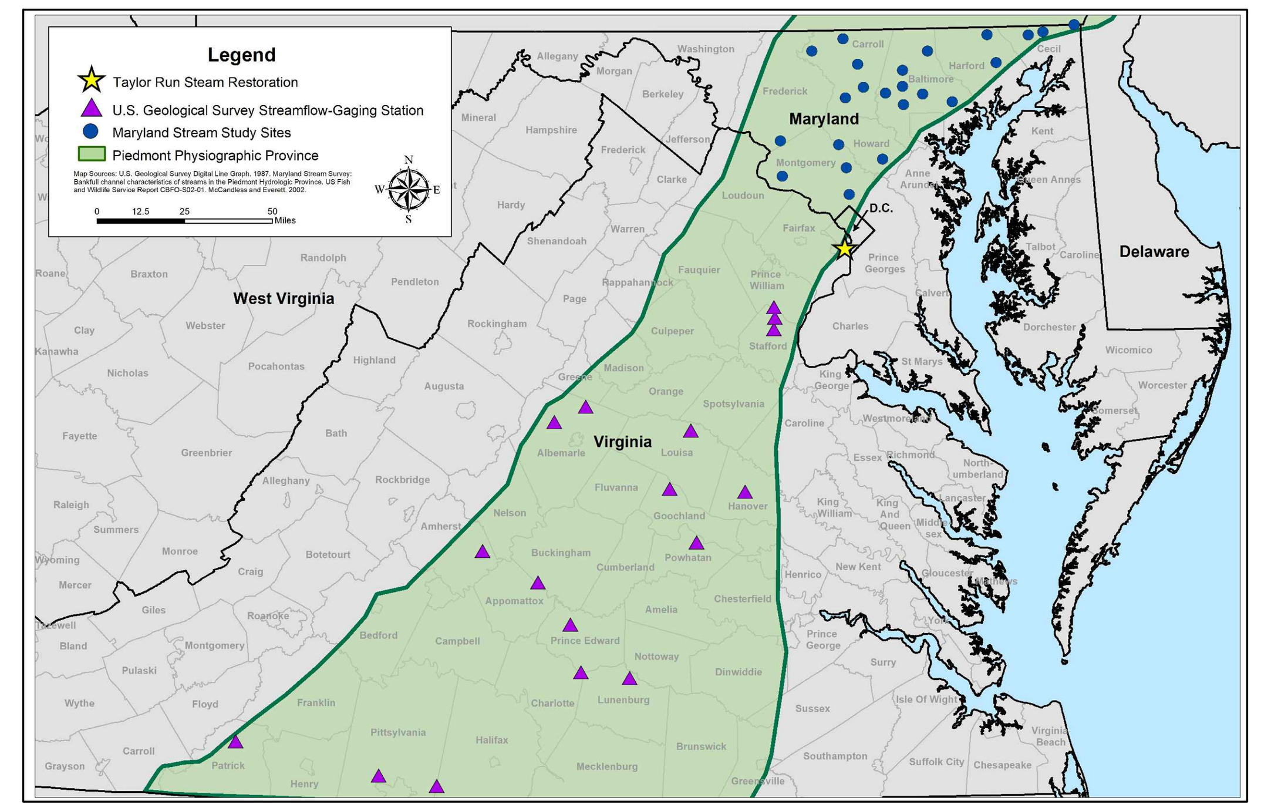
Proximity is an important factor in the selection of regional curves. Although the Taylor Run stream is located within Virginia, the MD data is considered to be more appropriate because of the proximity of the MD data study sites to the project area. The following figure (this sheet) shows the location of Taylor Run in relation to both the MD and VA study sites, all of which are located within the Piedmont physiographic province.

Dynamics of Urban Stream Channel Enlargement

The Center for Watershed Protection published a report on the impact of watershed development on channel enlargement. From this study, it is estimated that ultimate channel enlargement can take 50-75 yrs from the time the watershed is fully developed. A plot depicting the ultimate channel size vs. watershed impervious area of 38% for the Taylor Run watershed, the resulting enlargement factor is 3.61 (see Figure 15 and Table 3).

IV. Hydrologic/Hydraulic Modeling

A hydrologic model of the Taylor Run watershed was developed utilizing WinTR-55 (Version 1.00.10) to assess the applicability of flow rates generated by modeling standard NOAA design storms as well as to assess the potential impact of the restoration on the existing floodplain. The watershed boundary and relevant modeling information is depicted in Figures 10 & 13 on the previous sheets. A summary of the modeling parameters are presented in Table 1 on the Hydrologic Model Data sheet (Sheet 71) with a summary of results provided in Table 2. The watershed was analyzed using land use data (i.e. buildings, roads, open space and forest) and curve numbers were assigned to the land use areas based on soil type and cover condition. Travel times were determined by analysis of topography, land use, and stormwater drainage maps.



Proximity of restoration area to the Virginia and Maryland regional curve study sites.

V. 100-yr Floodplain Analysis

A floodplain is considered to be a minor floodplain if it has more than 70 but less than 360 acres of contributing drainage area. A floodplain is considered to be a major floodplain if it has at least 360 acres of contributing drainage area. The floodplain associated with Taylor Run Stream Restoration is a minor floodplain, having a contributing drainage area of approximately 333 acres.

There is an existing FEMA floodplain in Taylor Run; additionally, existing and proposed condition HEC-RAS models will be developed to assess the impact of the channel restoration on the existing 100-yr water surface elevation and inundation area as the stream design is developed. In addition, overbank flooding and its potential to erode the floodplain floor will also be investigated. Velocities for the modeled 100-year event (the worst case scenario) will examined by use of the flow tube option in the HEC-RAS model which allows for the review of velocities in distinct cells of the channel cross-section (thus allowing isolation of the overbank area). Velocities determined though this analysis will be compared to the specified allowable velocity, 3.0 fps, contained in the Virginia Erosion and Sediment Control Handbook for "silt loam (noncolloidal)". This allowable velocity should not be exceeded by the modeled 100-year flow event. Though the benefit provided by the floodplain vegetation is not considered, the floodplain will be considered stable if the overbank velocities remain less than 3.0 fps.

VI. Reference Reach Data

An important component of the NCD process is the collection and use of reference reach data to aid in the design of the restoration channel. WSSI personnel investigated numerous streams in the Northern Virginia area and successfully located 7 suitable streams (totaling 12 separate reaches) from which reference data was collected. On Sheet 74, a location map of the streams are presented in Figure 19 along with Table 4 depicting the statistics (average, min, and max) for the applicable parameters considered in the design process. Also included is a plot of the rural MD regional curve (cross-sectional area vs. drainage area) along with the individual data points from the WSSI reference streams (Figure 20). The data demonstrates that the WSSI reference streams are representative of the piedmont streams used to develop the MD curve and thus are considered applicable and consistent with the design reaches of this project.

VII. Methodology Discussion

From the analysis described above, it is clear that there are several methodologies available to size the restoration channels. Considered in relation to one another along with good engineering judgment, a reasonable design methodology has been developed for use in the Taylor Run design. A discussion on each contributing component is provided below, along with the resulting design protocol employed for the Taylor Run design reaches.

Regional Curves and an Enlargement Factor

It is evident that use of the regional curves (Figure 13) developed for rural VA and MD streams would result in channels that are somewhat undersized. Due to the design reach's urban nature (I.A. = 38% from Figure 10), it experiences significantly higher flow rates than the streams in comparably sized, primarily rural, watersheds represented by the curves. With regards to the effects of urbanization, the published regional curves depicted in Figure 14 tell a consistent story. Streams with more urbanized watersheds result in higher channel forming flows and require larger bankfull cross-sectional areas to convey such flows.

Studies by the Center for Watershed Protection have shown, and experience confirms, that channels enlarge in response to increased runoff volumes, peak flow rates, and increased flooding frequencies resulting from development of the watershed. The curve depicted in Figure 15 provides a measure of the potential enlargement factor based on impervious area. The validity of the enlargement factor is shown in Figure 16, in which the enlargement factor was applied to the MD rural curve in order to replicate the NC urban curve. The NC urban curve was developed from watersheds with 41% impervious area, which results in an enlargement factor of 4.0 from Figure 17. This factor of 4.0 was applied to the MD rural curve, which compares very well with the NC urban curve and supports the validity of using the enlargement factor to account for differences in impervious area between the MD rural curve and the Taylor Run watershed.

A comparison of the streams used in the MD study to Northern VA piedmont reference reach data collected by WSSI showed that the streams were of similar type, and the MD streams are in closer proximity to the restoration area than the streams used in the other studies. The published MD regional curve data, adjusted for the effects of urbanization (i.e. increased flow rates), were therefore found to be the most appropriate for use in the determination of the restoration design flows.

Modeling

Modeled flow rates are useful in cross checking design discharge results from other methodologies. Channel forming flows are generally accepted to be between the 1-yr and 2-yr peak flow rates. Although stream gage data collected over an adequate period on the design reach is the most accurate method for developing peak flow rates for varying frequencies, without the availability of such data, a hydrologic model provides a computational method for approximating such rates. However, it should be used merely as a guide for assessing the validity of other methods, as this methodology relies on input data regarding the watershed that is approximated based on the best available data. A summary of the NRCS TR-55 hydrologic analysis is provided in Table 2 on the Hydrologic Model Data sheet.

Bankfull Indicators

Another method to assist in developing an appropriate design discharge is to visually assess the design reach, or adjacent segments of stream, for bankfull indicators. Such bankfull indicators can then be used in conjunction with surveyed cross sections to determine a suitable bankfull cross-sectional area, thus allowing a design discharge to be computed. Due to the lack of clear bankfull indicators in urban watershed streams, this methodology is not reliable for most urban streams.

Conclusion

Depending on the watershed, NRCS modeling results can vary when compared to the flow rates generated using the enlargement factor and MD regional curve data. Until such time as it can be determined when model results can be considered reliable predictors of bankfull design discharges, strict application is not recommended. Also, due to the incised nature of these stream channels, strong bankfull indicators were not identifiable in the field. Therefore, the methodology developed using the enlargement factor applied to the MD regional curve data has resulted in successful restoration designs with reasonable bankfull return intervals. For this reason, the enlargement curve methodology will be employed for the Taylor Run stream design.

VIII. Taylor Run Stream Restoration Design Protocol

Ultimate Channel Size

As discussed, the ultimate size of restored channels of the Taylor Run project is determined by applying an enlargement factor correction to the rural MD regional curve The specified enlargement factor for the reach is then multiplied by the associated cross-sectional area from the rural MD curve, resulting in the target cross-sectional area. The design cross-sectional area is then converted to a target flow rate via use of the rural MD relationship between flow rate and cross-sectional area. The resulting design data is presented graphically in Figures 17 and 18 and summarized in Table 3. It is this target flow rate that is used to begin the iterative channel design process - a process that must consider all relevant constraints (tree impacts, overbank flooding, sewer laterals, culvert crossings, depth to bedrock, trails and bridges, reference data criteria, access and property rights, etc.) to arrive at the optimum channel design.

The use of the MD rural curve is supported by the close comparison to the NC urban curve when the enlargement factor is applied. The use of the VA Rural curve would lead to restored channels with less cross-sectional area and further reduce the recurrence interval for overbank flooding (in other words, the stream would overtop its banks more often than it should); thus we are utilizing the MD rural curve with the applied enlargement factor.

Channel sizing is done by iteratively solving Manning's open channel flow equation for width and depth using a bankfull design flow rate, a riffle slope, and an n-value appropriate for the given location of the Taylor Run project reach.

The existing channel's width and depth varies due to the sediment deposition occurring along the reach, but there is generally a prevalence of channel incision and undercut banks at meander bends. The existing channel size for Taylor Run generally ranges from 25-35 feet in width and 3 to 10 feet in depth. For Taylor Run, the proposed bankfull channel size was determined to be 22 feet wide and 2.1 feet deep. This information is also summarized in Table 3. These dimensions correspond to a W/D ratio of 16.1. Reference reach data collected throughout the Piedmont physiographic province in Northern Virginia for C-streams shows W/D ratios ranging from 11 to 33, with the average ratio being 18.1 (see Reference Reach sheet included as Sheet 74 in this plan set).

Channel Substrate and Sediment Transport

A stream restoration design must consider sediment (both its source and the channel's competency). If sediment is ignored, or not properly evaluated, the restored channel may be out of balance and could aggrade or degrade resulting in channel instability. For the Taylor Run project, the sediment in the system is supplied from channel bed and bank erosion. Although this is an urban watershed, the design reach will continue to receive a small amount of sediment from upstream reaches. Sizing of the channel must be adequate to transport this material while maintaining its design geometry.

Since preventing mobilization of the substrate material is the most critical component of achieving a stable design, minimizing critical shear stress is essential. Critical shear stress is directly proportional to channel slope and channel depth. To minimize the size of the substrate necessary to resist such movement, the profile slope must be minimized. Based on the existing terrain, proposed slopes along Taylor Run will range between 1.3% and 2.1%. With a proposed channel depth of 2.1 feet, the channel will be capable of moving rocks with a D50 ranging from 3 inches to about 5 inches. The design will therefore incorporate large rock, constructed rock structures and an adequately designed reinforced substrate mix comprised of a gradation of rock that will help lock the streambed in place. Existing substrate material can be utilized and incorporated into either the substrate mix or, at a minimum, as a component of the fill material that will be required. In channel velocities and the potential for scour will be further investigated as part of concept plan development.

Reference Data

Layout of the channel pattern is governed by several factors, including the pattern of the existing stream channel, site constraints (trees, slope, etc.), and reference reach information. Wherever site constraints do not pose a limitation, reference reach parameters will be utilized. Other ratios (such as sinuosity, entrenchment, and riffle/pool spacing), which have been developed through analysis of the reference reach data are also considered in the channel design.

Impervious Area and Future Watershed Conditions

Studies show that streams exhibit signs of instability and habitat degradation once the contributing watershed exceeds ten percent imperviousness. Channel instability is a result of the stream's response to increased runoff from a developing watershed; resulting in more frequent and severe runoff events.

The contributing watershed of Taylor Run has been developed in and is currently at approximately 38% impervious area overall. The stream is unstable - eroding throughout the entire reach, mainly as the existing eroded material along the streambed is transported, then deposited at the end of the reach. The majority of the streambanks are devoid of vegetation and vertical (or undercut), an indication that the stream has not reached equilibrium with flows from its watershed, and is still actively eroding.

In the event a development within the watershed is pursued that proposes to increase the amount of impervious area, state and county regulations are in-place to require that stormwater management be provided to offset any increases in stormwater runoff. In addition, adequate outfall regulations require that the downstream receiving water be able to withstand any increase in runoff rate or volume. Thus, any development project will be required to abide by these regulations and not adversely impact the proposed restoration - unlike early development of the Taylor Run watershed prior to adoption of such regulations.

Planform Geometry

The project is located mostly within City of Alexandria property, however due to the lateral constraints caused by the proximity to the existing park trail, the proposed alignment mostly matches the existing stream. In one location where a large steep bank has formed on an outside bend, it has been proposed that the alignment be shifted away from the area of erosion. Ultimately, the proposed channel will maintain B and C-type channel characteristics, with mild to moderate slopes and moderate sinuosity.

IX. Conclusion

Project Design Protocol

The Taylor Run Stream Restoration project reaches will be restored using NCD. NCD theories, techniques, and practices are employed as described in this plan set, and are modified as necessary to ensure long term stability will be achieved in these urbanized hydrologic conditions. Through careful review and study of previous analyses, collection of reference and hydrologic data, and modeling of the watershed, a design protocol has been developed that considers all sources without undue reliance on any one. The design protocol employed in the Taylor Run project will provide an environmentally sound, aesthetically pleasing, and structurally stable stream restoration project.

Outfall Adequacy

This project does not alter hydrologic conditions and therefore has no effect on downstream conditions. As this project utilizes natural channel design techniques, we acknowledge that it automatically complies with the adequate outfall requirements of MS19 and the City of Alexandria.

Monitoring and Maintenance Recommendations

Monitoring for success shall be conducted for 2 years in accordance with the "As-Built Monitoring Protocol" outlined in the Nationwide Permit (NWP) #27. A post construction as-built survey of the restored stream will be conducted to ensure conformance with the approved design. In addition, City staff should conduct annual inspections of the project for a minimum of three years post construction. Monitoring should include a visual inspection and photo documentation of the stream dimension and pattern, inspection of the stability of stream structures and stream bed material, vegetation and observed wildlife and macro invertebrates. This monitoring should help determine the success of the project and if any maintenance actions are required to satisfy plan goals during the monitoring period.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS

DATE	BY	DESCRIPTION

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APPROVED BY: NAS DATE: 6/16/20

SEAL:
COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

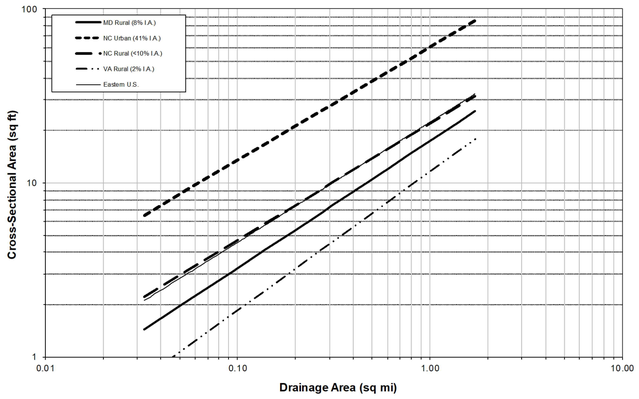
TAYLOR RUN STREAM RESTORATION

DESIGN NARRATIVE

DRAWING
DN – 01

SCALE AS NOTED

FIGURE 14: PUBLISHED REGIONAL CURVES



1. U.S. Fish and Wildlife Service. *Maryland Stream Survey: Bankfull Discharge and Channel Characteristics of Streams in the Piedmont Hydrologic Region*. CBFO-S02-01. March 2002.
2. Doll, Barbara A. et al. June 2002. *Analysis of Hydraulic Geometry Relationships for Urban Streams throughout the Piedmont of North Carolina*, Journal of the American Water Resources Association, Vol 38, No. 3.
3. Harman, W.H. et al. 1999. *Bankfull Hydraulic Geometry Relationships for North Carolina Streams*. AWRA Wildland Hydrology Symposium Proceedings. Edited by D.D. Olsen and J.P. Potyondy. AWRA Summer Symposium. Bozeman, MT.U.S. Fish and Wildlife Service.
4. Lotspeich, R.R. 2009. *Regional curves of bankfull channel geometry for non-urban streams in the piedmont physiographic province, Virginia*. US Geological Survey Scientific Investigations Report 2009-5206.
5. Eastern U.S. Regional Curve, as presented in the Wildland Hydrology *Reference Reach Field Book*, 2005.

FIGURE 15: "ULTIMATE" CHANNEL ENLARGEMENT AS A FUNCTION OF IMPERVIOUS COVER IN ALLUVIAL STREAMS IN MARYLAND, VERMONT, AND TEXAS

(MAXRAE AND DEANDREA, 1999; BROWN AND CLAYTOR, 2000)

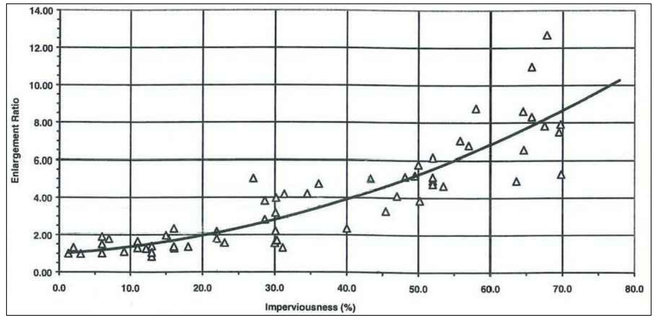


FIGURE 16: WATERSHED DESIGN COMPARISON OF ENLARGEMENT FACTOR

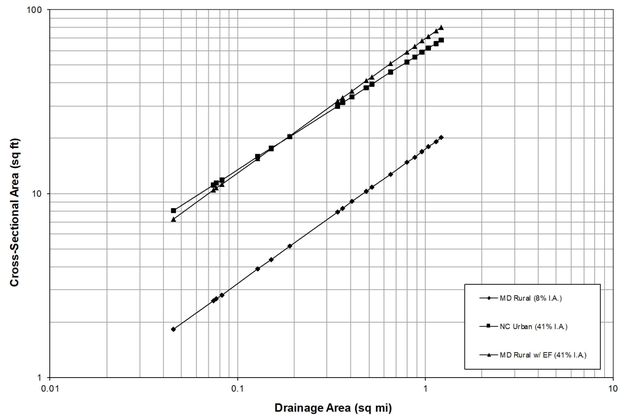
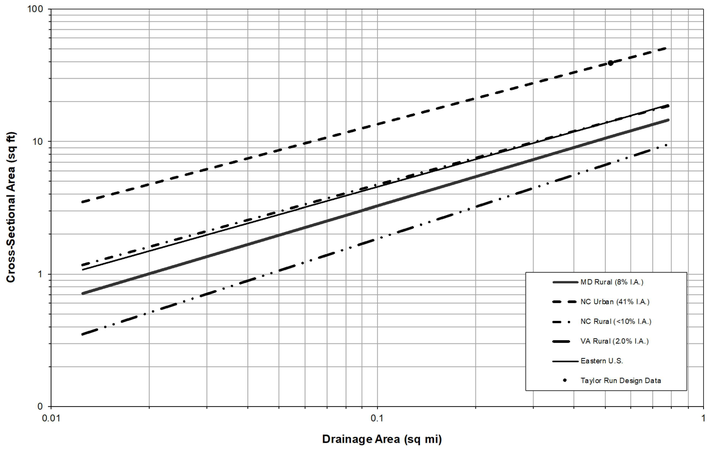


FIGURE 17: WATERSHED COMPARISON WITH PUBLISHED DATA



Cross-Sectional Areas of the Project Curve are converted to flow rates by use of the MD bankfull relationship:

$$Q = \left(\frac{Area}{0.28}\right)^{1.064}$$

SOURCE: U.S. FISH AND WILDLIFE SERVICE

FIGURE 18: WATERSHED DESIGN COMPARISON WITH HYDROLOGIC MODEL DATA

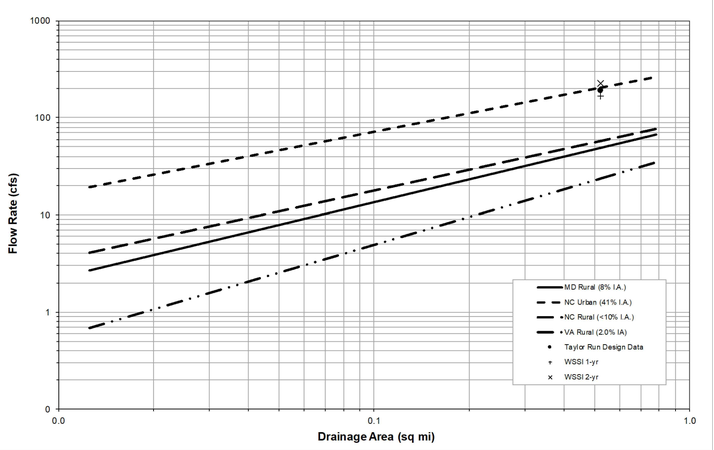


TABLE 3: DESIGN FLOW RATES AND BANKFULL DIMENSIONS

Reach	Subshed	Area (ac)	Area (sq. mi.)	Impervious (%)	Enlargement Factor	Based on Maryland Piedmont Data			Base Flow (cfs)	Proposed Bankfull Dimensions		
						Rural X-Sec (ft^2)	Urban X-Sec (ft^2)	Design Flow (cfs)		X-Sec Area (ft^2)	Width (ft)	Max Depth (ft)
Taylor Run	1	333.1	0.520	37.67%	3.61	10.81	39.04	191.11	0.52	30.15	22.00	2.10

Natural Channel Design Certification

I hereby certify that, pursuant to Virginia State Code Section 62.1-44.15:54 and 62.1-44.15:65 the stream restoration design presented in this plan set has been prepared utilizing engineering analysis of fluvial geomorphic processes to create, rehabilitate, restore, or stabilize an open conveyance system for the purpose of creating or recreating a stream that conveys its bankfull storm event within its banks and allows larger flows to access its bankfull bench and its floodplain. The design methodology is consistent with the Design Guidelines presented in the LDS Technical Guidance for Stream Restoration Projects.

PRELIMINARY - NOT FOR CONSTRUCTION

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APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY — Lic. No. 047145 — PROFESSIONAL ENGINEER — 6/16/2020

DESIGN CURVES

Wetland Studies and Solutions, Inc. — a GAI company — 5300 WESTBARD AVENUE, SUITE 100, BETHESDA, MD 20816, (703) 679-5600

URS — 12420 MILLENNIUM DRIVE, SUITE 100, LOS ANGELES, CA 90094, (310) 820-3000

TAYLOR RUN STREAM RESTORATION

DRAWING
DC – 01

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FIGURE 19: REFERENCE REACH LOCATION MAP

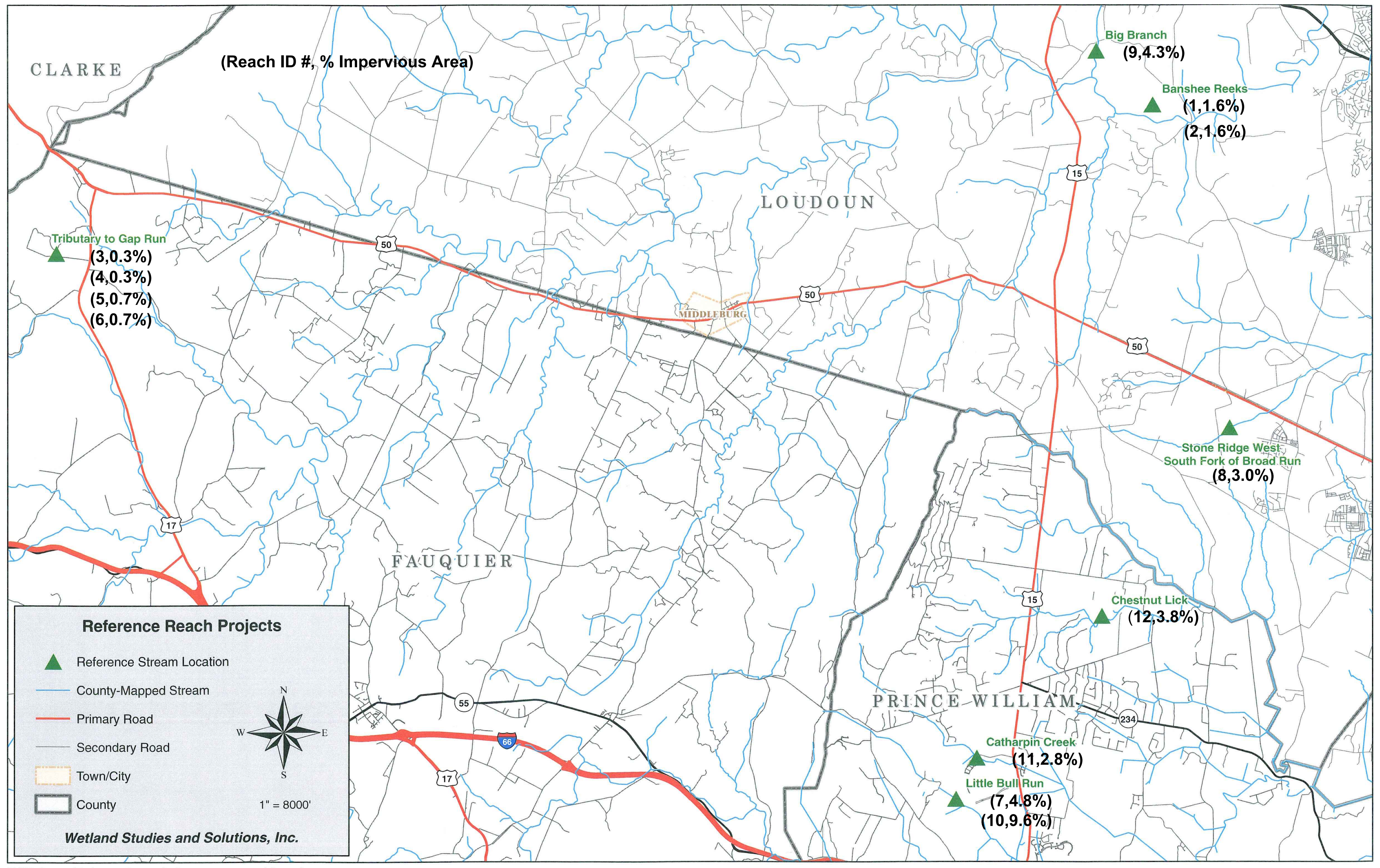
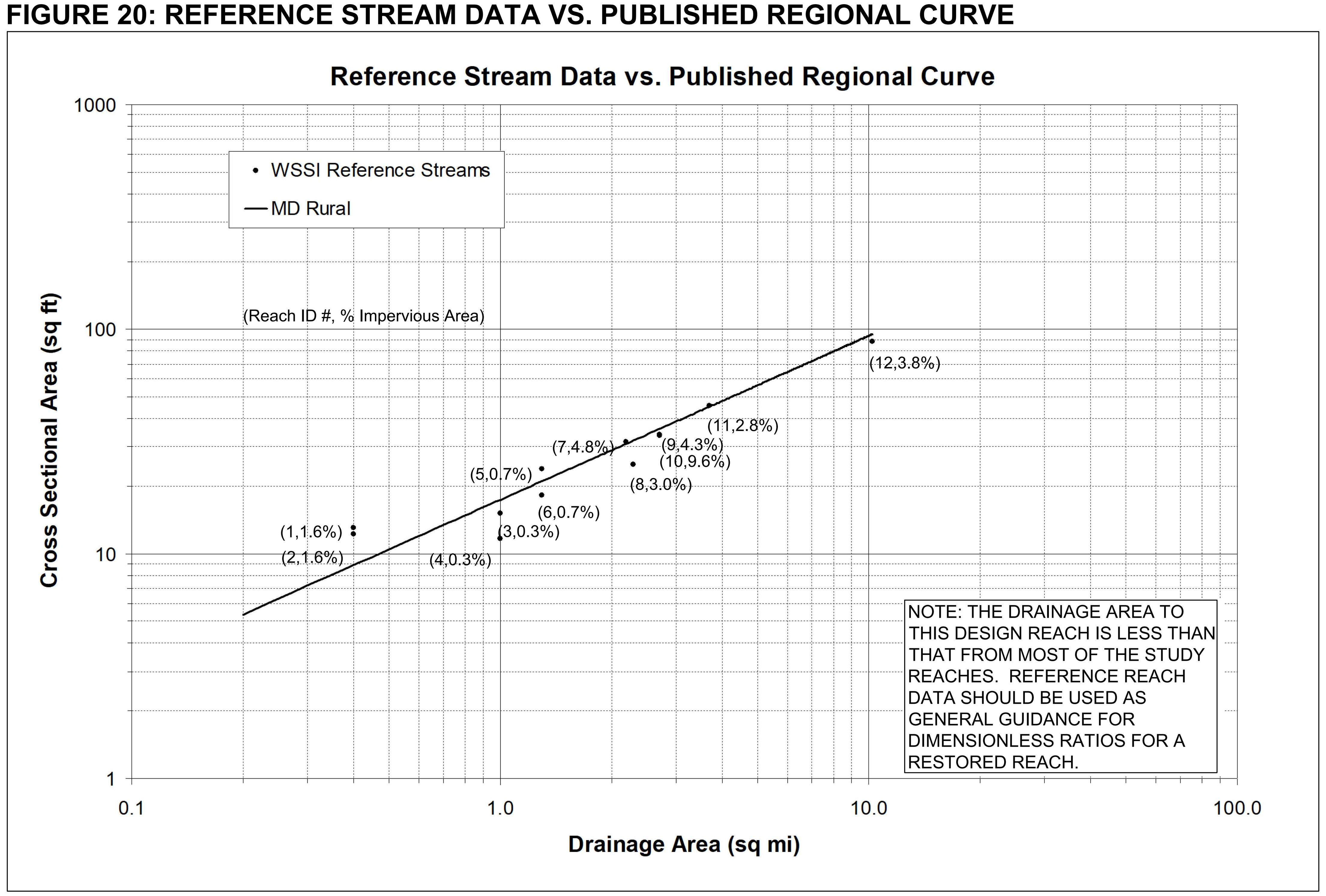


FIGURE 20: REFERENCE STREAM DATA VS. PUBLISHED REGIONAL CURVE



ID #	Reach Name	D.A. (mi^2)	I.A. (%)
1	Banshee Reeks - R1	0.4	1.6
2	Banshee Reeks - R2	0.4	1.6
3	Trib to Gap Run - R2	1.0	0.3
4	Trib to Gap Run - R1	1.0	0.3
5	Trib to Gap Run - R3	1.3	0.7
6	Trib to Gap Run - R4	1.3	0.7
7	Little Bull Run - R2	2.2	4.8
8	Stone Ridge West (6B)	2.3	3.0
9	Big Branch	2.7	4.3
10	Little Bull Run - R1	2.7	9.6
11	Catharpin	3.7	2.8
12	Chestnut Lick	10.2	3.8

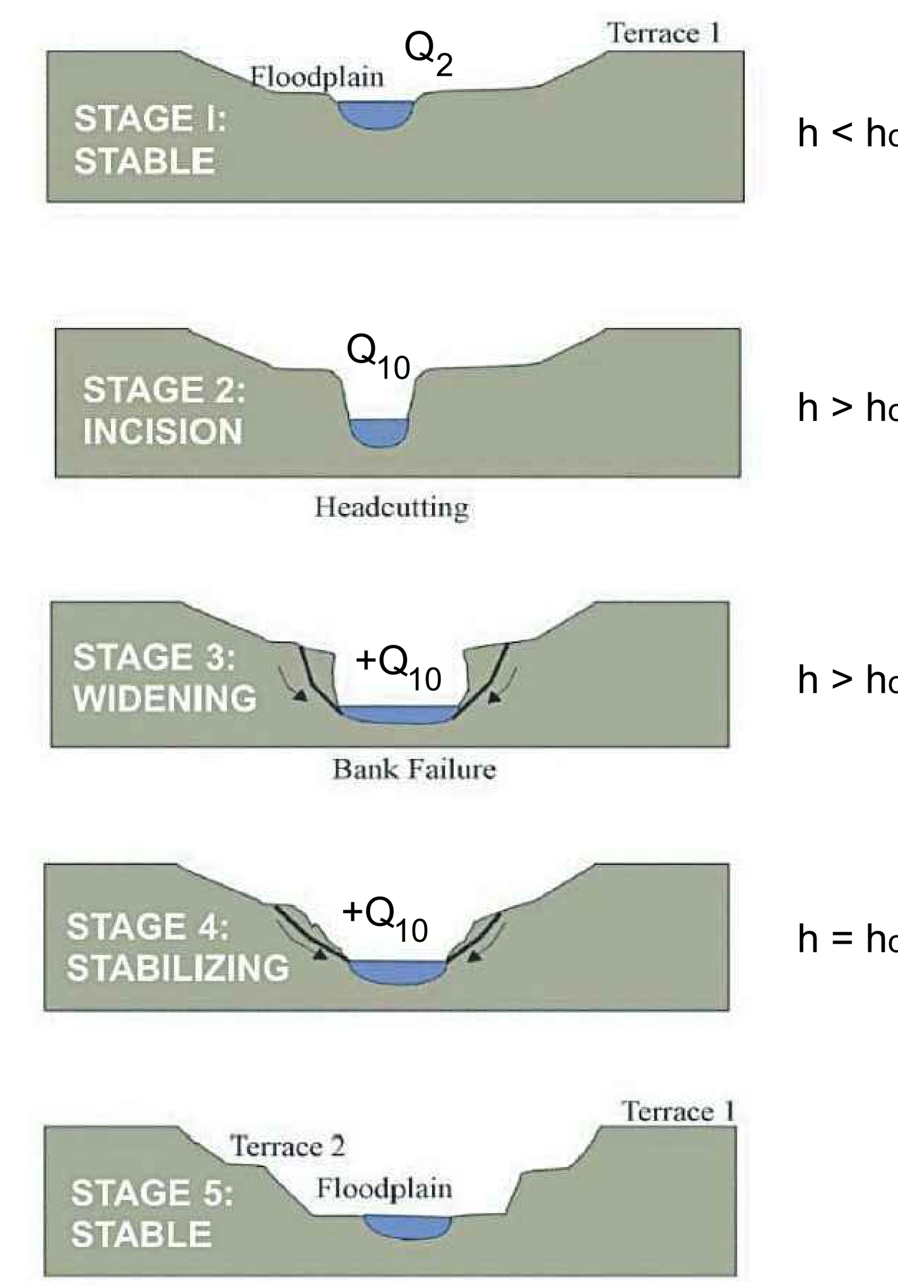
TABLE 4: REFERENCE REACH DATA AND SUMMARY

				Dimensionless Riffle Ratios		Dimensionless Pool Ratios						Dimensionless Pattern Ratios		
		Entrenchment Ratio (ER) (W_{fpa}/W_{Rbkf})	Sinuosity (K) (SL / VL)	Width/Depth (W_{Rbkf} / D_{Rbkf})	Max Depth (D_{Rmax} / D_{Rbkf})	Area (A_p / A_{Rbkf})	Width (W_p / W_{Rbkf})	Mean Depth (D_{Pbkf} / D_{Rbkf})	Max Depth (D_{Pmax} / D_{Rbkf})	Pool Length (L_p / W_{Rbkf})	Pool Spacing (PPS / W_{Rbkf})	Meander Length (MLR) (L_m / W_{Rbkf})	Radius of Curvature (Rc) (Rc / W_{Rbkf})	Meander Width (MWR) (W_{blt} / W_{Rbkf})
Reference	*Average*	*3.2*	*1.1*	*16*	*1.3*	*1.1*	*1.3*	*0.8*	*2.0*	*0.6*	*2.6*	*11*	*3.4*	*14.6*
	Min	*3.2*	*1.1*	*16*	*1.3*	*1.1*	*1.3*	*0.8*	*1.4*	*0.4*	*1.3*	*7*	*1.0*	*14.6*
	Max	*3.2*	*1.1*	*16*	*1.3*	*1.1*	*1.3*	*0.8*	*4.1*	*1.3*	*4.8*	*14*	*8.1*	*14.6*
Taylor Run	*Average*	*1.4*	*1.04*	*16*	*1.5*	*1.7*	*1.0*	*1.7*	*1.6*	*1.1*	*1.2*	*N/A*	*N/A*	*N/A*
	Min	*1.4*	*1.04*	*16*	*1.5*	*1.1*	*1.0*	*1.1*	*1.2*	*0.7*	*0.1*	*N/A*	*N/A*	*N/A*
	Max	*1.4*	*1.04*	*16*	*1.5*	*2.1*	*1.1*	*2.1*	*1.9*	*2.1*	*3.8*	*N/A*	*N/A*	*N/A*

Channel Evolution Model

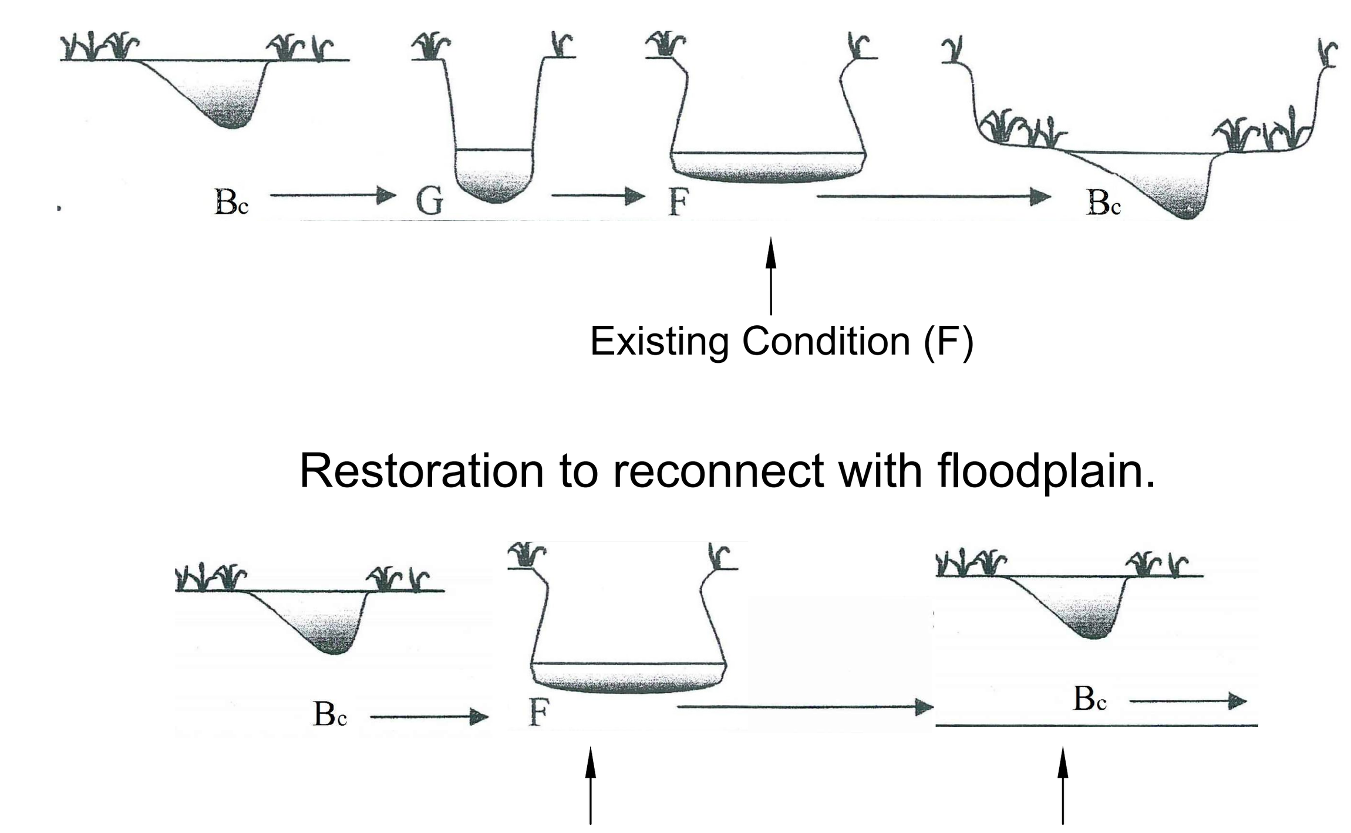
Adapted from Schumm, Harvey, and Watson, 1984

h = bank ht.
hc=critical bank ht.



Succession Scenarios

Adapted from Dave Rosgen

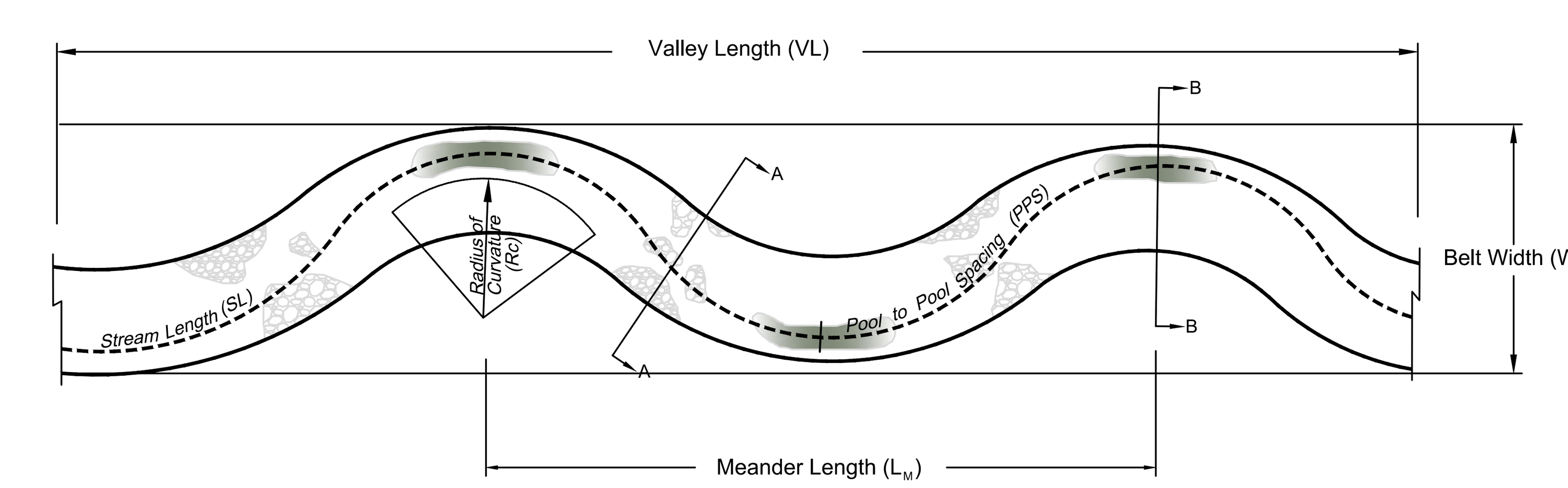


<u>Reference Data Comparison</u>

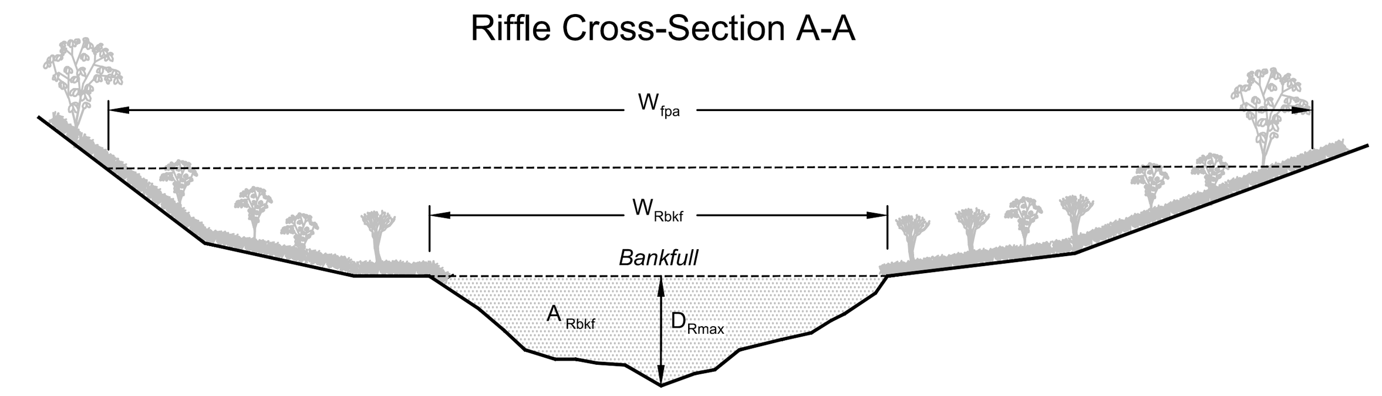
Review of reference data collected by WSSI personnel was considered in the design of Taylor Run. The design values in the above table will be included in design development and will seek to mimic those values exhibited by the reference reach data set to the maximum extent practicable. It should be noted that specific areas may utilize existing channel dimensions and geometry, thus resulting in R.C.'s and W/D ratios lower than those from the set of reference reaches summarized above.

<u>Stream Assessment</u>

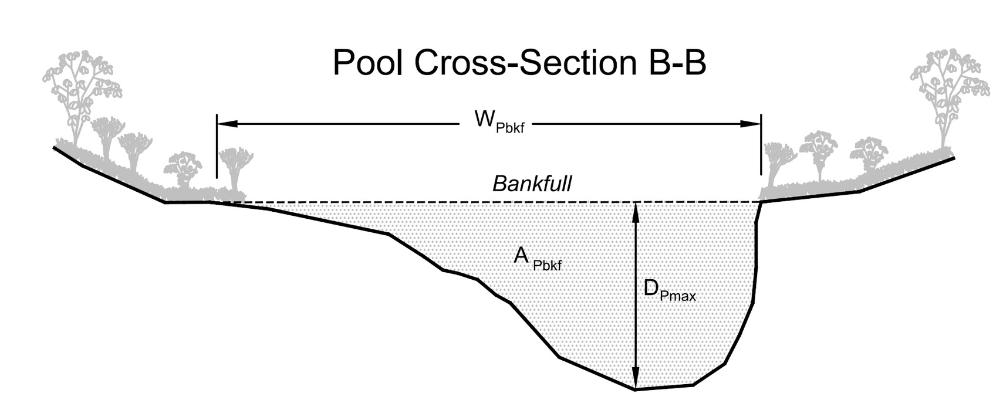
The current condition of Taylor Run was assessed in the field by the design team. In the context of the Channel Evolution Model (shown to the above) the current condition is Stage G. Under the Rosgen Classification System, Taylor Run was originally a Bc stream that is actively downcutting and widening. Based on the succession scenarios depicted to the left, many years of additional degradation can be expected before the channel returns to a stable form at a lower elevation. This process will result in many tons of sediment being washed downstream in addition to significant tree loss. The planned restoration to a Bc channel type (with larger channel substrate and cross-section to account for the watershed's urbanization) will prevent further degradation and will also reconnect the channel with the former floodplain, providing significant ecological benefits.



Riffle Cross-Section A-A



Pool Cross-Section B-B



A_{Pbkf} = Area of the Pool at Bankfull
A_{Rbkf} = Area of the Riffle at Bankfull
D_{Rbkf} = Mean Riffle Depth (A_{Rbkf} / W_{Rbkf})
D_{Pbkf} = Mean Pool Depth (A_{Pbkf} / W_{Pbkf})
D_{Pmax} = Maximum Depth of the Pool at Bankfull
D_{Rmax} = Maximum Depth of the Riffle at Bankfull
W_{fpa} = Width of the Floodprone Area (2 x D_{Rmax})
W_{Pbkf} = Width of the Pool at Bankfull
W_{Rbkf} = Width of the Riffle at Bankfull

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS: DATE | BY | DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

DESIGN NARRATIVE

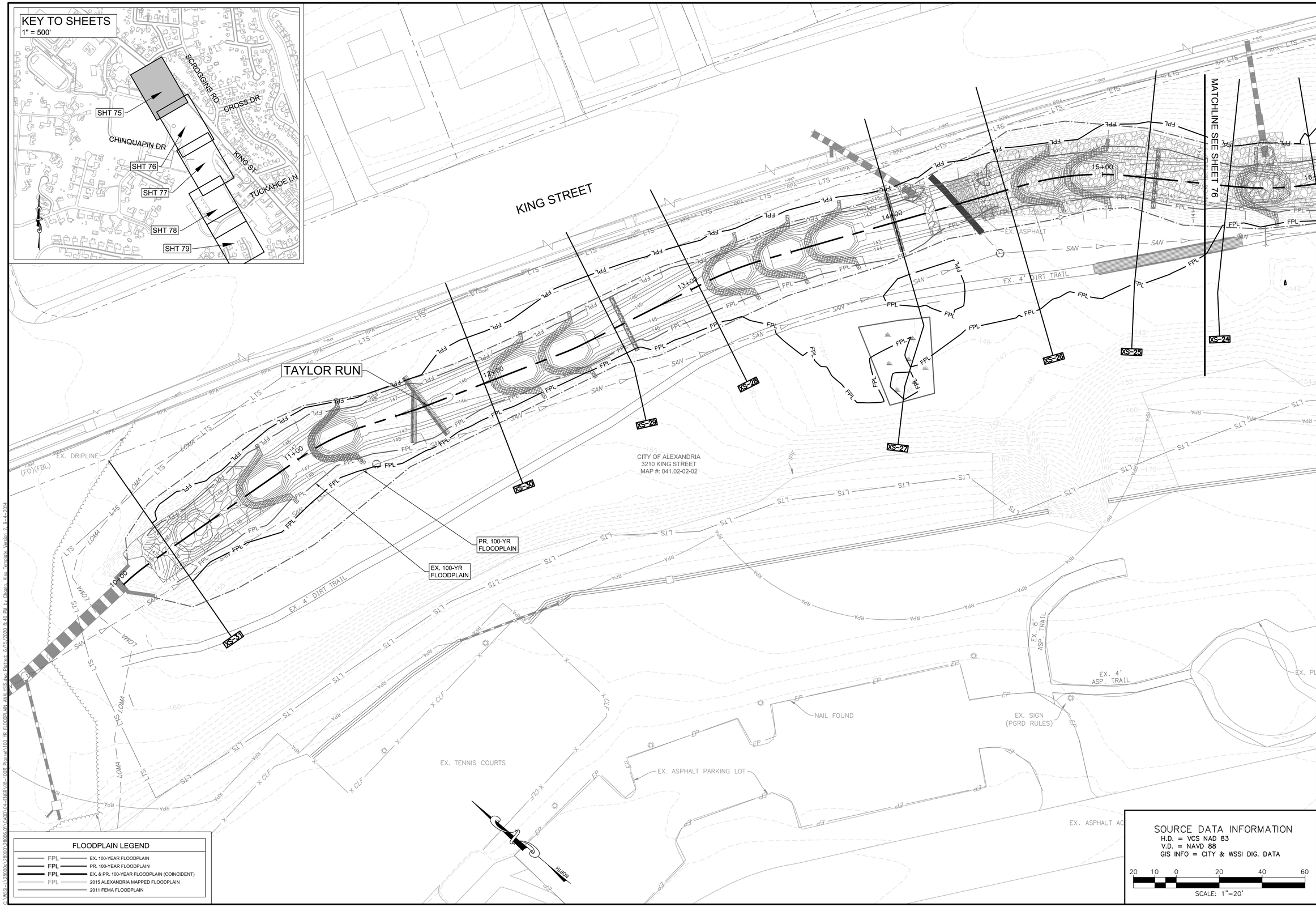
Wetland Studies and Solutions, Inc.

URS

DRAWING RR – 01

SCALE AS NOTED

SHEET 74 OF 84



FLOODPLAIN LEGEND

- FPL — EX. 100-YEAR FLOODPLAIN
- FPL — PR. 100-YEAR FLOODPLAIN
- FPL — EX. & PR. 100-YEAR FLOODPLAIN (COINCIDENT)
- FPL — 2015 ALEXANDRIA MAPPED FLOODPLAIN
- 2011 FEMA FLOODPLAIN

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STILEY — Lic. No. 047145 — 6/16/2020 — PROFESSIONAL ENGINEER

Wetland Studies and Solutions, Inc. (a GAI company)
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

URS
12420 MILLENNIUM DRIVE, SUITE 150
RESTON, VIRGINIA 20190
(703) 925-5000

TAYLOR RUN STREAM RESTORATION

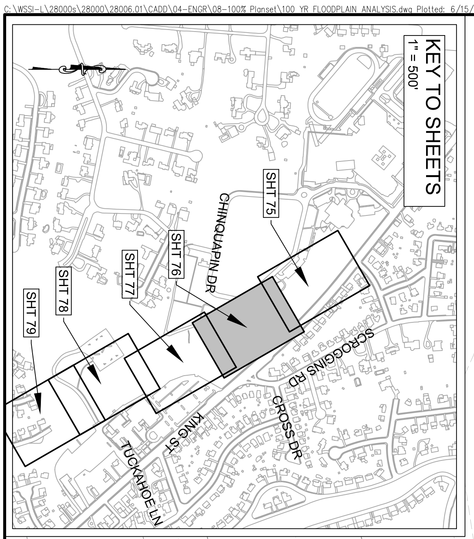
100 YR FLOODPLAIN ANALYSIS

DRAWING
FPL – 01

SCALE 1" = 20'

SHEET 75 OF 84

C:\WSS-1\28000s\28000\28006.01\CAD\03-04-FNGR\08-100YR FLOODPLAIN ANALYSIS.dwg PlotYelf: 6/15/2020 8:40 PM by Chanda Alex Template Version 2 9-4-2014



CHINQUAPIN DRIVE

NORTH

EX. PAVILION

EX. BASKETBALL COURTS

EX. VOLLEYBALL COURT

EX. 8' ASP. TRAIL

EX. SPLIT RAIL FENCE

EX. ASPHALT ACCESS

SEE FIRST FLOODPLAIN SHEET FOR LEGEND

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

SCALE: 1"=20'
20 10 0 20 40 60

MATCHLINE SEE SHEET 75

MATCHLINE SEE SHEET 77

EX. 100-YR FLOODPLAIN

PR. 100-YR FLOODPLAIN

EX. 4' DIRT TRAIL

TAYLOR RUN

CITY OF ALEXANDRIA
3210 KING STREET
MAP # 041.02-02-02

CITY OF ALEXANDRIA
3100 KING STREET
MAP # 041.02-02-06

16+00
17+00
18+00
19+00
20+00
21+00

TAYLOR RUN STREAM RESTORATION

PRELIMINARY - NOT FOR CONSTRUCTION

DRAWING FPL – 02
SCALE 1" = 20'
SHEET 76 OF 84

100 YR FLOODPLAIN ANALYSIS (CONT'D)

URS
12420 MILESTONE CENTER DR., SUITE 150
GERMANTOWN, MD 20876
(301) 820-3000

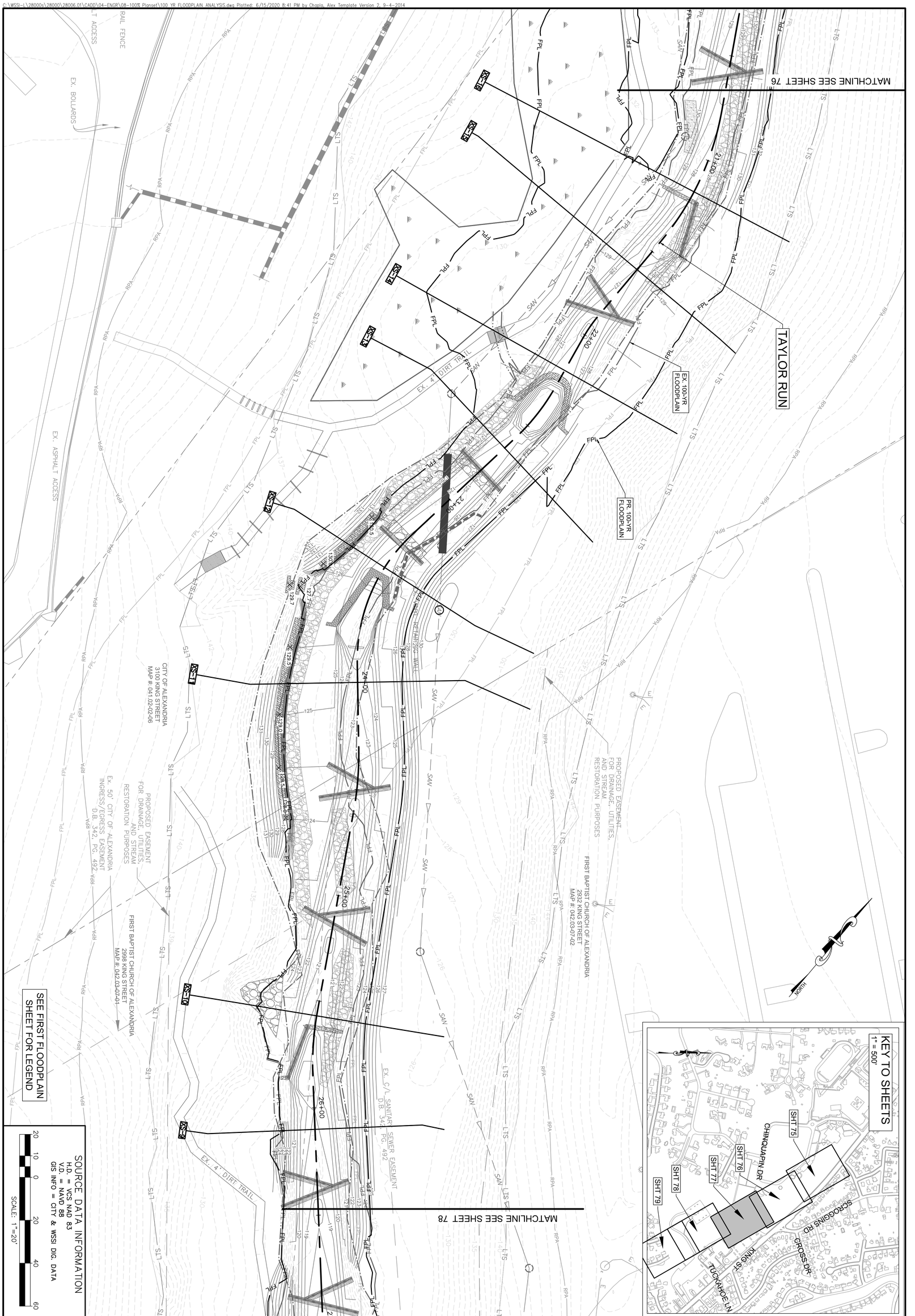
Wetland Studies and Solutions, Inc. a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

SEAL:
COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

REVISIONS
DATE BY DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314



TAYLOR RUN STREAM RESTORATION

PRELIMINARY - NOT FOR CONSTRUCTION

DRAWING FPL – 03

SCALE 1" = 20'

SHEET 77 OF 84

100 YR FLOODPLAIN ANALYSIS (CONT'D)

URS
12420 MILESTONE CENTER DR., SUITE 150
GERMANTOWN, MD 20876
(301) 820-3000

Wetland Studies and Solutions, Inc. a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

SEAL:
COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

CITY PROJECT NO.:	CIP-2020-00003
DATE OF PLAN ISSUANCE:	6/16/20
CONSULTANT PROJECT ID.:	28006.02
DESIGNED BY: AMC	DATE: 6/16/20
DRAWN BY: AMC	DATE: 6/16/20
CHECKED BY: NAS	DATE: 6/16/20
APPROVED BY: NAS	DATE: 6/16/20

REVISIONS

DATE	BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

MATCHLINE SEE SHEET 77

MATCHLINE SEE SHEET 77

FIRST BAPTIST CHURCH OF ALEXANDRIA
2932 KING STREET
MAP #: 042.03-07-02

PR. 100-YR FLOODPLAIN

EX. 100-YR FLOODPLAIN

TAYLOR RUN

EX. C/L SANITARY SEWER EASEMENT D.B. 342, PG. 492

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

Ex. 10' STORM EASEMENT D.B. 342, PG. 492

APPROXIMATE TERMINUS

SANITARY SEWER EASEMENT D.B. 342, PG. 492

EX. 4' DIRT TRAIL

EX. 4' DIRT TRAIL

IPF

26+00 27+00 28+00 29+00 30+00 30+24.52 31+00 32+00

XS-1 XS-2 XS-3 XS-4 XS-5 XS-6 XS-7 XS-8 XS-9

118.0 118.0

FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01

PROPOSED EASEMENT FOR DRAINAGE, UTILITIES, AND STREAM RESTORATION PURPOSES

FIRST BAPTIST CHURCH OF ALEXANDRIA
2998 KING STREET
MAP #: 042.03-07-01

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

SEE FIRST FLOODPLAIN SHEET FOR LEGEND

HUNTON

KEY TO SHEETS
1" = 500'

SCROGGINS RD
CROSS DR
SHT 75
CHINQUAPIN DR
KING ST
SHT 76
SHT 77
TUCKAHOE LN
SHT 78
SHT 79

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
BY DESCRIPTION DATE

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APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STILLEY Lic. No. 047145 PROFESSIONAL ENGINEER 6/16/2020

TAYLOR RUN STREAM RESTORATION

100 YR FLOODPLAIN ANALYSIS (CONT'D)

Wetland Studies and Solutions, Inc. a SAIC company
5300 WESTBARD AVENUE, SUITE 100
BETHESDA, MD 20816
(703) 474-3600

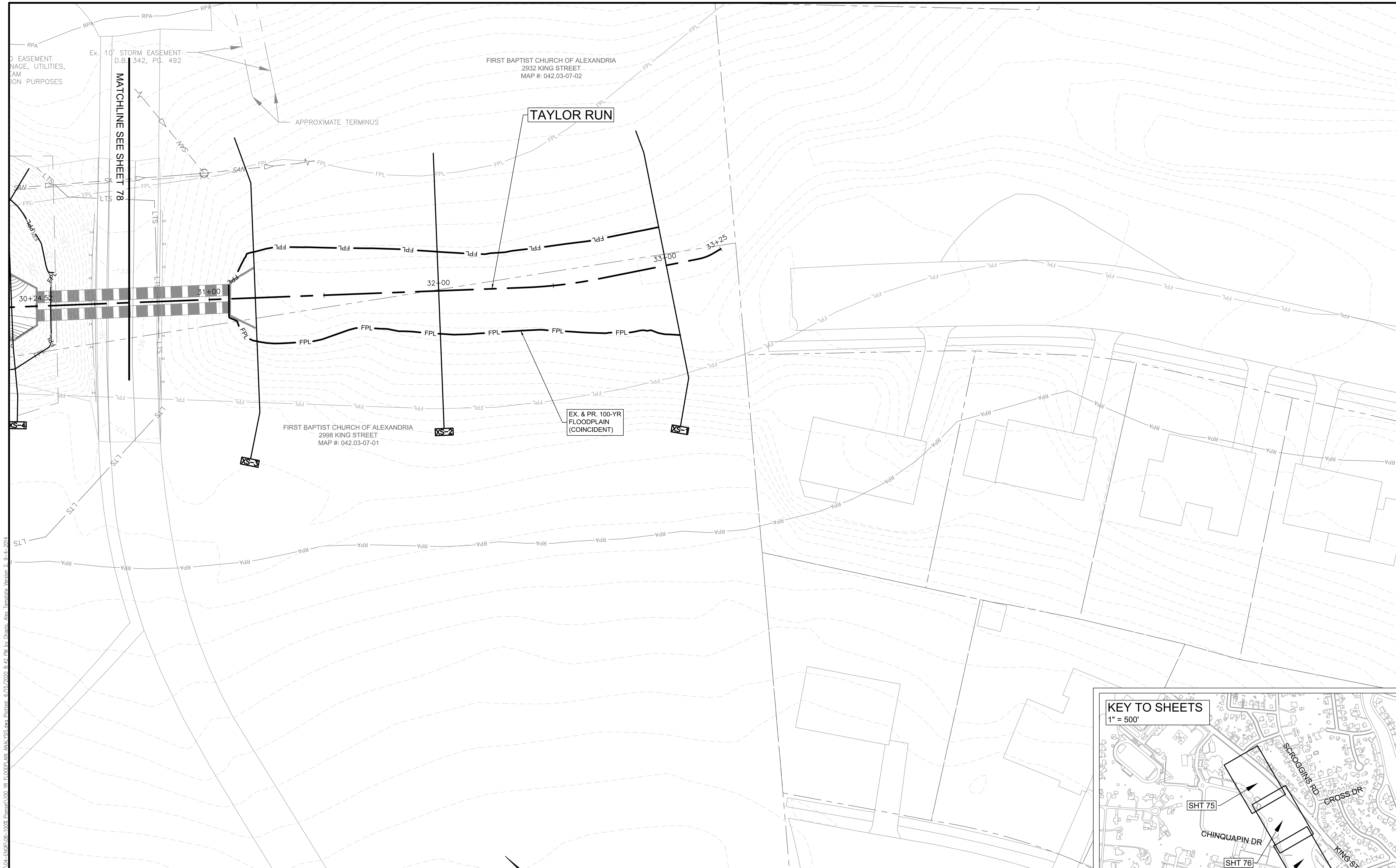
URS
12420 MILLENNIUM CENTER DR., SUITE 100
RESTON, VA 20190
(703) 925-5000

DRAWING
FPL – 04

SCALE 1" = 20'

SHEET 78 OF 84

C:\WSS-1\28000\28006\01\CAD\04-ENGR\08-100YR Phase\1\100_YR_FLOODPLAIN_ANALYSIS.dwg, PrintRef: 6/15/2020 8:41 PM, by Chonlo, Alex, Template Version 2, 9-4-2014



SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD 88
GIS INFO = CITY & WSSI DIG. DATA

20 10 0 20 40 60
SCALE: 1"=20'

SEE FIRST FLOODPLAIN SHEET FOR LEGEND

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
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ALEXANDRIA, VA 22314

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SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STALEY Lic. No. 047145 6/16/2020 PROFESSIONAL ENGINEER

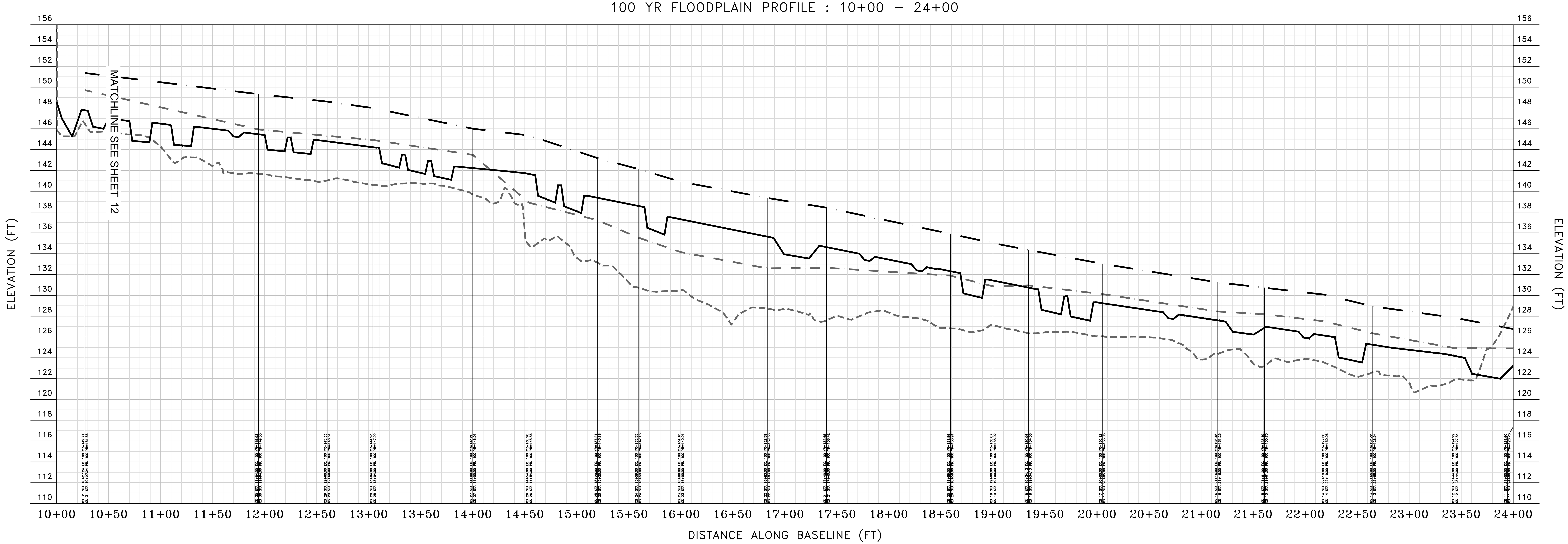
TAYLOR RUN STREAM RESTORATION

100 YR FLOODPLAIN ANALYSIS (CONT'D)

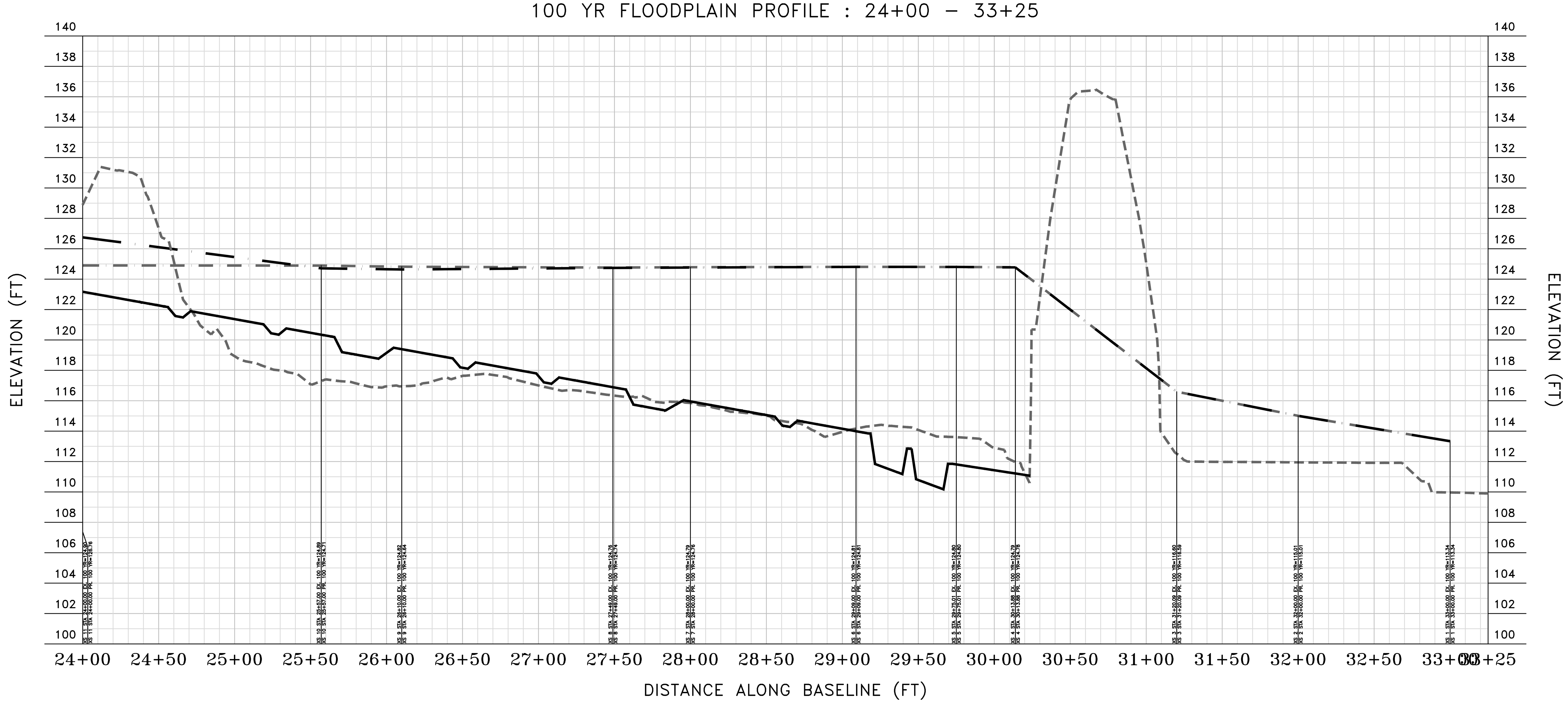
Wetland Studies and Solutions, Inc.
URS

DRAWING
FPL – 05
SCALE 1" = 20'

100 YR FLOODPLAIN PROFILE : 10+00 – 24+00



100 YR FLOODPLAIN PROFILE : 24+00 – 33+25



CROSS SECTION SCALE: H: 1"= 50' V: 1"= 5'

PROFILE LEGEND	
PROPOSED GRADE	EXISTING GROUND
PROPOSED 100-YR WSE	EXISTING 100-YR WSE

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS		
DATE	BY	DESCRIPTION

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SEAL: COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

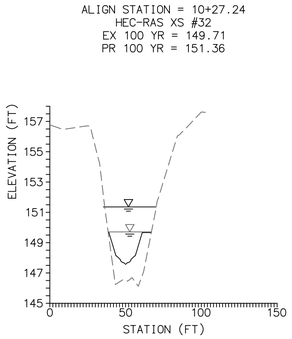
TAYLOR RUN STREAM RESTORATION

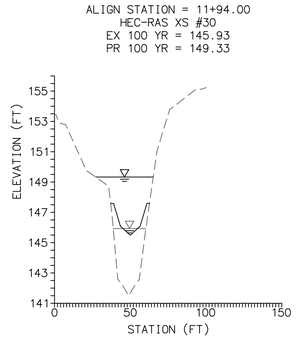
100 YR FLOODPLAIN PROFILE

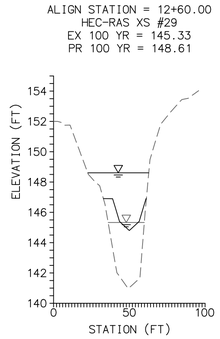
DRAWING FPL – 06

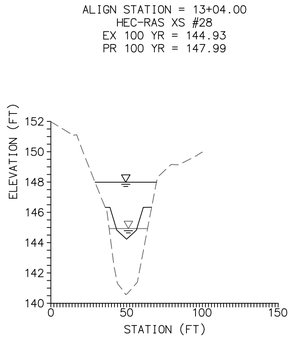
SCALE AS NOTED

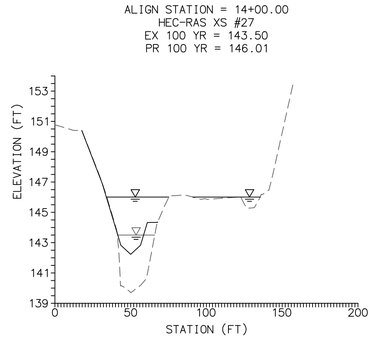
SHEET 80 OF 84

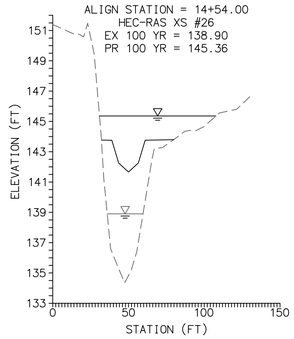


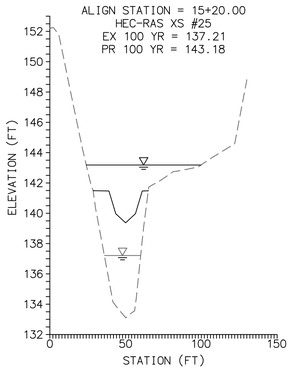


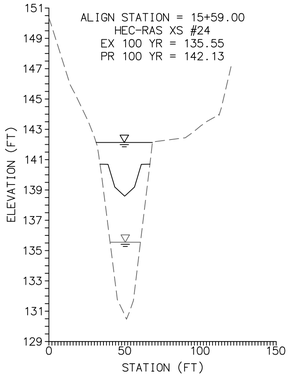


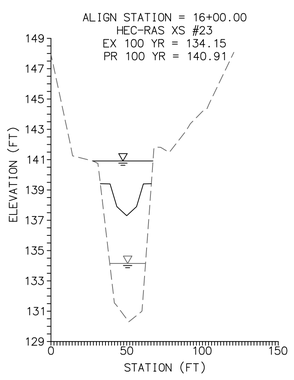


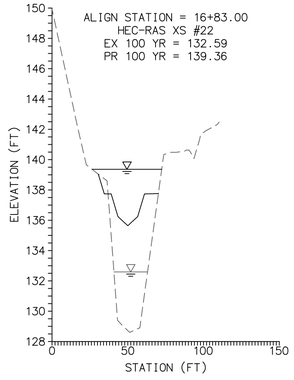


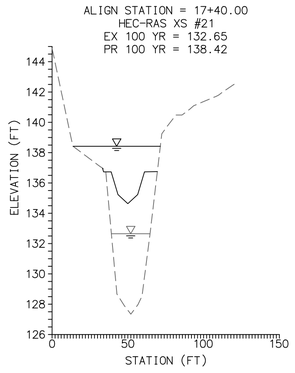


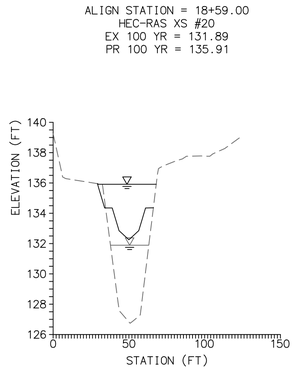


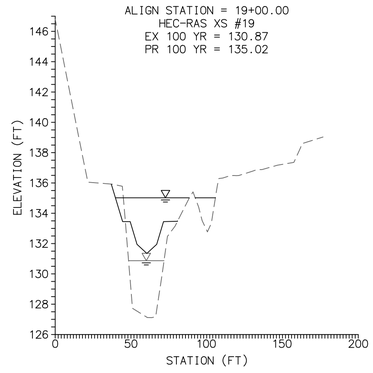


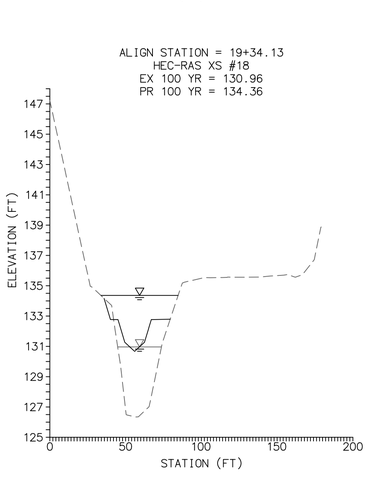


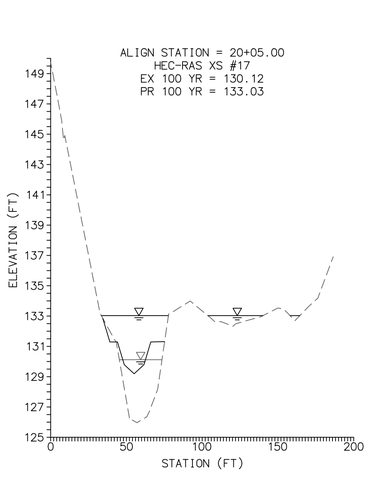


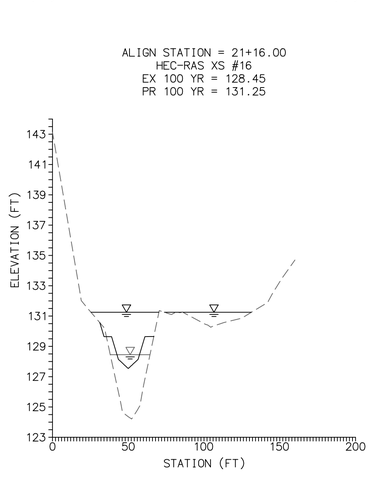


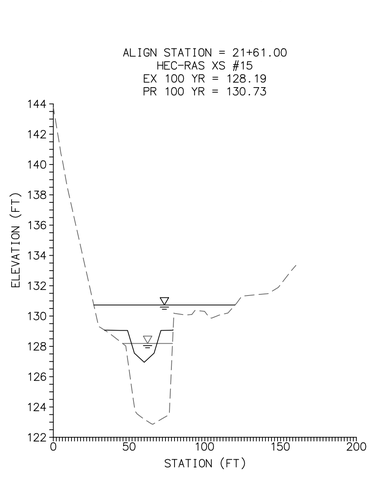


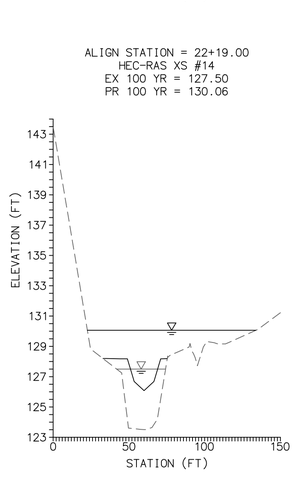


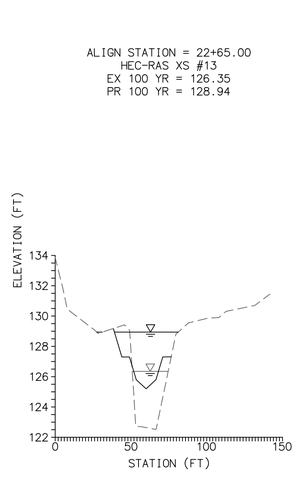












CROSS SECTION SCALE: H: 1"= 50'
V: 1"= 5'

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

DATE	REVISIONS BY	DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA NATHAN A. STILLEY Lic. No. 047145 PROFESSIONAL ENGINEER 6/16/2020

Wetland Studies and Solutions, Inc. (a URS company)
1300 WILSON BOULEVARD, SUITE 500
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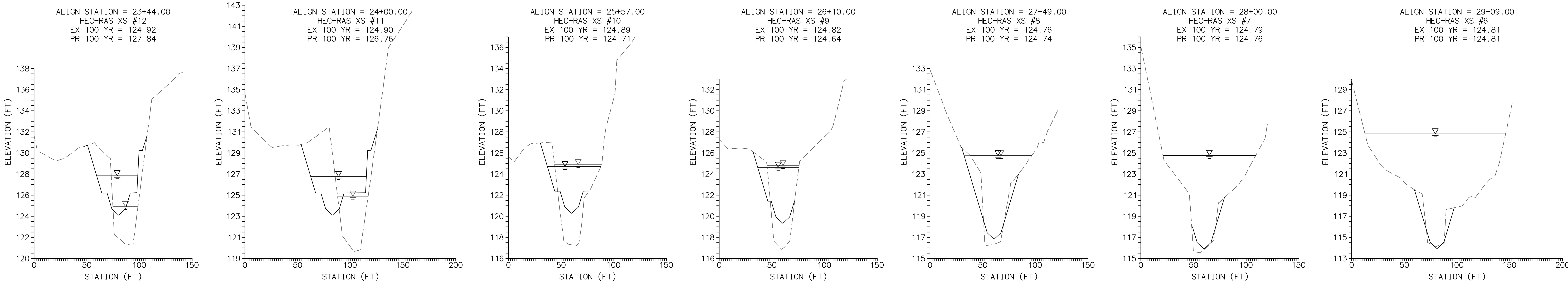
TAYLOR RUN STREAM RESTORATION

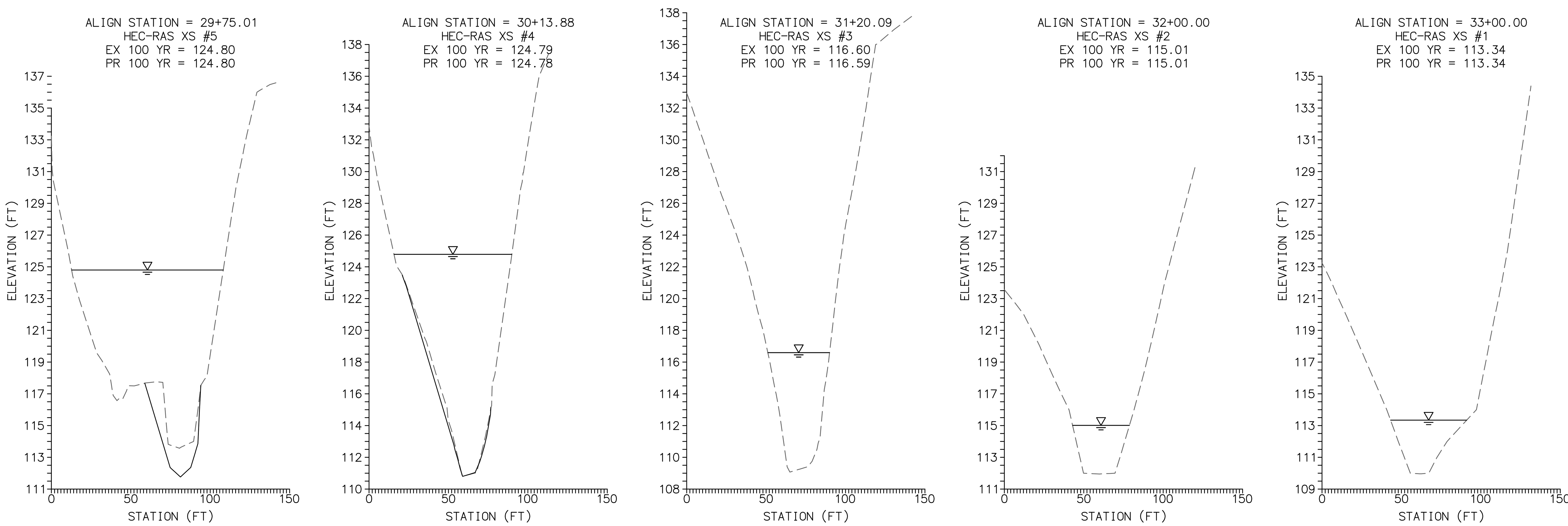
100 YR FLOODPLAIN CROSS SECTIONS

DRAWING
FPL – 07

SCALE AS NOTED

SHEET 81 OF 84





CROSS SECTION SCALE: H: 1"= 50' V: 1"= 5'

OVERBANK CHANNEL VELOCITIES ON FOOTPATH

Section	Reach Station	EX 10 YR Velocity	PR 10 YR Velocity	EX 25 YR Velocity	PR 25 YR Velocity	EX 50 YR Velocity	PR 50 YR Velocity	EX 100 YR Velocity	PR 100 YR Velocity
7	14+54	-	0.61	-	1.07	-	1.36	-	1.32
8	15+20	-	-	-	-	-	0.64	-	0.57
16	20+05	-	-	-	0.17	-	0.81	-	0.75
17	21+16	-	-	-	-	-	0.53	-	0.08
18	21+61	-	-	-	0.6	-	0.98	-	0.92
19	22+19	-	1.34	-	1.49	-	1.58	-	1.58
26	28+00	-	-	-	-	0.42	0.45	0.41	0.44
27	29+09	-	-	0.59	0.52	0.5	0.46	0.52	0.47

The overbank velocities and frequency of flooding on the footpath trail were analyzed using the U.S. Army Corps of Engineers (COE) Hydrologic Engineering Center's River Analysis System, Version 5.0.7 (HEC-RAS) software. The 100-year peak flowrate was obtained from a previously produced USGS floodplain study, and the 1, 2, 5, 10, 25, and 50-year peak flowrates were calculated using the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) WinTR-55 software. The drop in velocities from 50 to 100-year can be explained by the difference in sources that they came from. The results of the analysis are shown in the table above. There was not flow across the trail in any of the floodplain model sections at the 1, 2, and 5-year flowrates. The 10-year flowrate pushed water across the trail in 2 sections under proposed conditions, the 25-year in 5 sections, and the 50 and 100-year in 8 sections. All overbank velocities on the trail are below 1.6 ft/s.

TAYLOR RUN - COMPARISON OF EXISTING AND PROPOSED

XS	STA	Q TOTAL (CFS)	EX WSE (FT)	PR WSE (FT)	Δ WSE (PR - EX) (FT)
31	10+27.24	672	149.71	151.36	1.65
30	11+94.00	672	145.93	149.33	3.4
29	12+60.00	672	145.33	148.61	3.28
28	13+04.00	672	144.93	147.99	3.06
27	14+00.00	672	143.5	146.01	2.51
26	14+54.00	672	138.9	145.36	6.46
25	15+20.00	672	137.21	143.18	5.97
24	15+59.00	672	135.55	142.13	6.58
23	16+00.00	672	134.15	140.91	6.76
22	16+83.00	672	132.59	139.36	6.77
21	17+40.00	672	132.65	138.42	5.77
20	18+59.00	672	131.89	135.91	4.02
19	19+00.00	672	130.87	135.02	4.15
18	19+34.13	672	130.96	134.36	3.4
17	20+05.00	672	130.12	133.03	2.91
16	21+16.00	672	128.45	131.25	2.8
15	21+61.00	672	128.19	130.73	2.54
14	22+19.00	672	127.5	130.06	2.56
13	22+65.00	672	126.35	128.94	2.59
12	23+44.00	672	124.92	127.84	2.92
11	24+00.00	672	124.9	126.76	1.86
10	25+57.00	672	124.89	124.71	-0.18
9	26+10.00	672	124.82	124.64	-0.18
8	27+49.00	672	124.76	124.74	-0.02
7	28+00.00	672	124.79	124.76	-0.03
6	29+09.00	672	124.81	124.81	0
5	29+75.01	672	124.8	124.8	0
4	30+13.88	672	124.79	124.78	-0.01
3.5		Culvert			
3	31+20.09	672	116.6	116.59	-0.01
2	32+00.00	672	115.01	115.01	0
1	33+00.00	672	113.34	113.34	0

TAYLOR RUN - 100 YEAR SUMMARY - PROPOSED CONDITIONS

XS	STA	Q TOTAL (CFS)	MIN CH EL (FT)	W.S. ELEV (FT)	E.G. ELEV (FT)	E.G. SLOPE (FT)	VEL CHNL (FT/S)	FLOW AREA (SQ FT)	TOP WIDTH (FT)	FROUDE # CHNL
32	10+21.00	672	147.57	151.36	152.81	0.012282	9.76	74.47	33.09	0.98
30	11+94.00	672	145.49	149.33	150.72	0.011566	9.57	81.04	37.98	0.96
29	12+60.00	672	144.8	148.61	149.94	0.011418	9.46	86.98	40.28	0.95
28	13+04.00	672	144.23	147.99	149.3	0.0117	9.47	89.25	40.52	0.96
27	14+00.00	672	142.23	146.01	147.28	0.011353	9.36	97.6	83.55	0.94
26	14+54.00	672	141.66	145.36	146.33	0.009995	8.63	130.87	76.95	0.88
25	15+20.00	672	139.37	143.18	144.25	0.009855	8.78	119.01	75.66	0.88
24	15+59.00	672	138.59	142.13	143.68	0.015164	10.25	80.44	37.12	1.08
23	16+00.00	672	137.3	140.91	142.39	0.014061	10.03	83.3	39.65	1.04
22	16+83.00	672	135.64	139.36	140.64	0.011845	9.44	94.09	45.88	0.96
21	17+40.00	672	134.63	138.42	139.56	0.010488	9.02	106.84	57.61	0.91
20	18+59.00	672	132.25	135.91	137.32	0.013139	9.8	85.45	38.71	1.01
19	19+00.00	672	131.35	135.02	136.14	0.011215	9.07	113.49	62.08	0.93
18	19+34.13	672	130.67	134.36	135.58	0.011689	9.31	100.79	50.9	0.95
17	20+05.00	672	129.19	133.03	134.13	0.009838	8.83	114.08	87.35	0.88
16	21+16.00	672	127.54	131.25	132.44	0.011409	9.23	114.9	99.87	0.94
15	21+61.00	672	126.95	130.73	131.67	0.00929	8.46	136.94	93.17	0.85
14	22+19.00	672	126.08	130.06	130.7	0.006296	7.27	181.26	111.24	0.71
13	22+65.00	672	125.2	128.94	130.25	0.011868	9.49	90.57	45.79	0.96
12	23+44.00	672	124.1	127.84	129.15	0.011854	9.48	89.35	39.04	0.96
11	24+00.00	672	123.11	126.76	127.9	0.011427	9.13	107.68	52.79	0.94
10	25+57.00	672	120.28	124.71	125.48	0.005526	7.42	127.43	50.77	0.68
9	26+10.00	672	119.33	124.64	125.21	0.002922	6.23	137.49	41.35	0.51
8	27+49.00	672	116.83	124.74	124.94	0.000597	3.8	265.91	64.09	0.25
7	28+00.00	672	115.9	124.76	124.9	0.000361	3.21	359.02	87.97	0.2
6	29+09.00	672	113.93	124.81	124.85	0.000107	2.03	738.54	133.39	0.11
5	29+75.01	672	111.76	124.8	124.85	0.000074	1.91	674.39	95.48	0.1
4	30+13.88	672	110.8	124.78	124.84	0.000082	2.09	409.95	74.15	0.1
3.5		Culvert								
3	31+20.09	672	109.17	116.59	116.87	0.000795	4.21	159.77	38.87	0.28
2	32+00.00	672	111.95	115.01	116.38	0.011917	9.63	84.42	35.79	0.98
1	33+00.00	672	109.96	113.34	114.61	0.011303	9.38	94.64	47.92	0.95

PROPOSED AND EXISTING WSSI-MODELED 100-YR FLOODPLAIN

This stream restoration project is located along a section of Taylor Run and involves the restoration of approximately 2025 linear feet of stream length. The contributing drainage area at the downstream limits of the restoration is approximately 333 acres, and therefore is not designated a major floodplain (>360 acres).

For Taylor RUn, the existing and proposed 100-year water surface elevations were developed using a 100-year peak flow rate based on current watershed conditions. The peak flow rate was obtained from a previously produced USGS floodplain study. Floodplain cross sections were placed in order to represent the riffles between all of the structures in the design. The 100-year peak flow rate was modeled for the existing and proposed channel conditions using the U.S. Army Corps of Engineers (COE) Hydrologic Engineering Center's River Analysis System, Version 5.0.3 (HEC-RAS) software.

Certified field survey topography with a contour interval of 1' was obtained for the entire study area and was supplemented with field survey thalweg shots. Cross sections were spaced approximately every 75 to 100 feet and Manning's roughness coefficients (n-values) of 0.035 for the channel and 0.1 for the overbank were used. Analysis was done from the start of the restoration at the outlet of the upstream culvert to 300 feet below the downstream project limit. The reach was analyzed for a steady state one-dimension subcritical regime flow condition. The downstream boundary condition for both the existing and proposed models was set as a normal depth based on the downstream channel slope of 2%. Resulting existing and proposed floodplain boundaries were plotted on the site topography as shown on the plan sheets and the water surface elevations (WSE) were plotted on the profile and cross sections.

Due to the proposed design raising the channel in much of the restoration length, the proposed 100-year WSE exceeds the existing WSE throughout most of the reach. However, both the proposed and existing 100-year WSE extents are within either City of Alexandria or First Baptist Church of Alexandria properties.

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS: DATE / BY / DESCRIPTION

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DESIGNED BY: AMC DATE: 6/16/20
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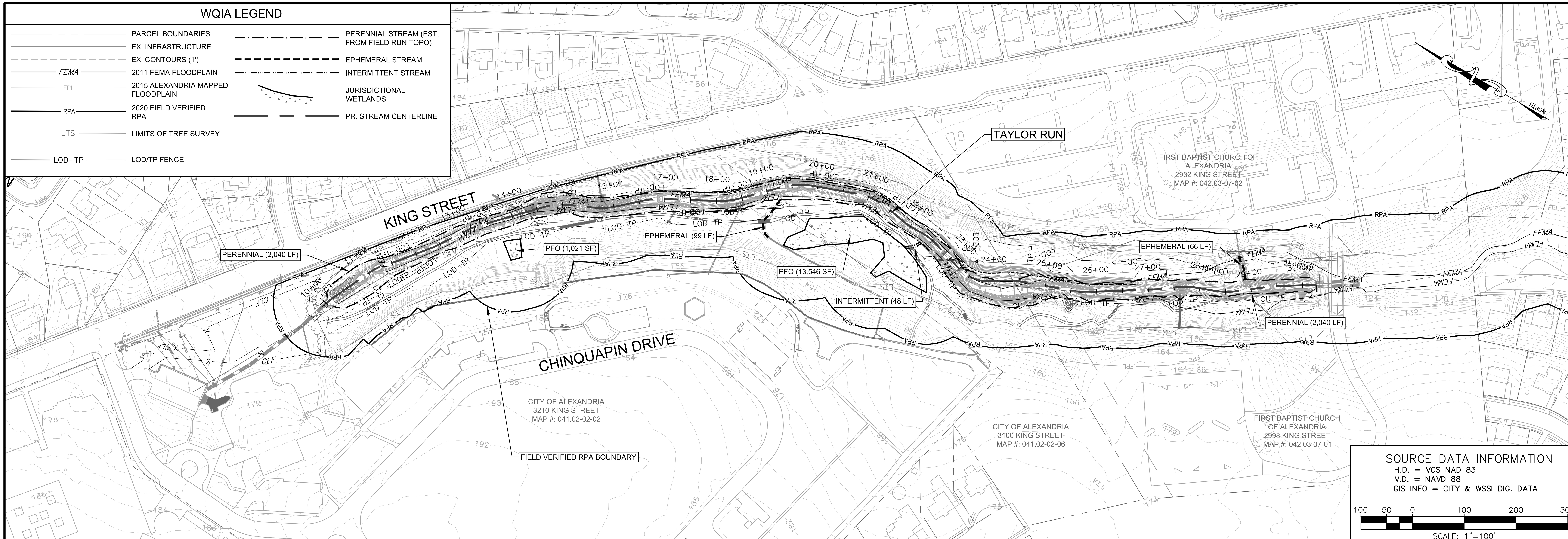
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA — NATHAN A. STALEY, Lic. No. 047145, 6/16/2020, PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION
100 YR FLOODPLAIN CROSS SECTIONS (CONT'D)

Wetland Studies and Solutions, Inc. — URS

DRAWING FPL – 08
SCALE AS NOTED
SHEET 82 OF 84



Taylor Run

Water Quality Impact Assessment

This project involves the restoration of approximately 2025 linear feet of Taylor Run. The total disturbed area will be roughly 170,886 square feet (3.92 acres), 154,224 square feet (3.54 acres) of which is within the RPA. The portion of the disturbed area outside of the RPA is only for construction access and stockpile area and is currently grassed area that will be reestablished as grass with a significant area near the trailhead being converted to a higher ecological value pollinator meadow. The restoration will take place on properties owned by the City of Alexandria and by the First Baptist Church of Alexandria. Restoration of the main channel begins at the downstream end of a 72" culvert outfall to the northeast of Chinquapin Recreation Center adjacent to King Street in the City of Alexandria, Virginia. The stream flows southeast for approximately 2025 linear feet before reaching an existing road crossing (driveway to the overflow parking lot for the First Baptist Church of Alexandria). The stream ties into a twin 60" RCP culvert at this crossing. Natural Channel Design (NCD) techniques were utilized to develop a stable channel cross section, longitudinal profile, and planform geometry for the degraded stream channel. NCD restores a degraded stream by mimicking, to the maximum extent practicable, the characteristics of a stable, "natural" stream. Through the use of geomorphic principles, NCD seeks to achieve long-term stability given current (as well as future) flow rates.

Pursuant to the Amendments to City of Alexandria Article XIII Environmental Management Ordinance, Section 13-114(D), a Water Quality Major Impact Assessment is required for development or redevelopment within RPAs that disturbs more than 5,000 square feet. The LOD for this project encompasses 154,224 square feet (3.54 acres) within the RPA, however we believe that the project (Natural Channel Design restoration of Taylor Run) meets the intent of the section. The submission requirements and the applicable performance criteria narrative for the Water Quality Major Impact Assessment are included as part of these construction drawings (as outlined below).

1. LOCATION AND DESCRIPTION OF EXISTING CHARACTERISTICS AND RPA COMPONENTS;

Existing site features are depicted on EX-01 through EX-05 and in the plan view above. The RPA surrounds Taylor Run in the vicinity of the project.

2. LOCATION AND NATURE OF PROPOSED ENCROACHMENT;

The proposed RPA encroachment is as depicted in the plan view on this sheet. The RPA area within the LOD is 154,224 square feet (3.54 acres), with 108,893 square feet (2.50 acres) of plantable area (excluding the stream channel, existing sanitary easements, existing trails, and the open grass field at the upper end of the project). Total planting and seeding area is 147,947 square feet (3.40 acres) (excluding stream channel and trails). The areas within the sanitary easements, bounding the existing trial, and the open field will be re-seeded, but not planted. A portion of the field will be seeded as a pollinator meadow, providing increased habitat over the existing low cut grass. No new impervious area will result from this plan; the project proposes to provide Natural Channel Design stream restoration along approximately 2025 LF of Taylor Run. Clearing within the RPA will be limited to just that necessary to perform the restoration as well as access to the site.

3. TYPE AND LOCATION OF ENHANCED VEGETATION AND/OR PROPOSED BMPS;

See PP-01 through PP-05 for the proposed revegetation plan for this project, VS-01 and VS-02 for the proposed vegetation schedule, and PN-01 for planting notes and details. Since this project consists solely of stream restoration and will not result in any increase in impervious area, SWM BMPs are neither required nor warranted.

4. EXISTING VEGETATION WITHIN THE RPA BUFFER;

As depicted on EX-01 through EX-05, the existing vegetation within the RPA consists of small to large trees in a primary successional forest setting. The 6" caliper and larger trees surrounding the existing stream have been survey located and labeled by size/species. The proposed design minimizes disturbance to mature trees to the maximum extent practicable, however 269 trees are slated for removal as part of this plan, all of which are within the RPA. See TL-01 through TL-04 for detailed tree information.

5. REVEGETATION PLAN;

See PP-01 through PP-05 for the proposed revegetation plan for this project, VS-01 and VS-02 for the proposed vegetation schedule, and PN-01 for planting notes and details. The plan will use a diverse mix of native species, relying predominantly on smaller stock to avoid damages during flood events while promoting the most rapid root development for soil stabilization. The lost trees will be replaced by a mixture of one-gallon containerized trees, 2" caliper trees, shrubs, live stakes, and over 350 lbs of native riparian seed. The planting plan calls for smaller stock to minimize damage damage by overbank flow events and the need for supplemental watering, but also includes a larger stock to be planted in upland areas less prone to damaging flooding within the LOD. The size and species recommended are based on experience with similar projects throughout the region. In order to meet the City density requirements, plantings will include 819 overstory trees, 1,516 understory trees, 3,838 shrubs, and 4,598 livestakes along vulnerable stream bank areas (including a mix of trees and shrubs). This meets the City density requirement of 300 overstory, 600 understory, and 900 shrub per plantable acre (2.50 acres).

	REQUIRED PLANT DENSITY (PER ACRE)	REQUIRED PLANTINGS	PROPOSED PLANTINGS
OVERSTORY TREE DENSITY	300	750	819
UNDERSTORY TREE DENSITY	600	1500	1516
SHRUB DENSITY	900	2250	3838

6. DESCRIBE THE EXISTING TOPOGRAPHY, SOILS, HYDROLOGY, AND GEOLOGY OF THE SITE;

Existing topography was obtained from field run survey data by Wetland Studies and Solutions. The project is located within a riparian corridor, and the site is defined by steep and eroded banks that will be laid back and stabilized during construction. In certain places, 3 to 10-ft high vertical bank currently threaten the existing walking path path along the southern bank of the stream. The project area is traversed by an existing sanitary sewer main, with multiple destabilized and exposed crossings within the restoration area. The dominant soil located within the project area is Sassafras Neabsco Complex. This soil has marginal drainage and medium erosion potential. The drainage area for the restoration reach is approximately 333 acres with 38% imperviousness, measured to the downstream extent of the project.

7. DESCRIBE THE IMPACTS OF THE PROPOSED DEVELOPMENT OR REDEVELOPMENT ON TOPOGRAPHY, SOILS, HYDROLOGY, AND GEOLOGY ON THE SITE;

This project involves the stream restoration of Taylor Run. The project will impact topography along the stream channel by rebuilding eroded bed areas with reinforced bed material specifically sized to resist erosion while maximizing ecological function/habitat creation. Channel bank areas along the restoration reach will be graded to eliminate vertical eroding bank features and create floodplain benches to enhance corridor stability and allow the reestablishment of native vegetation. The proposed project does not significantly effect site geology, as no major cut or fill areas are required. The restoration is intended to restore water quality in the Chesapeake Bay and it features maximum pollutant removal toward meeting Chesapeake Bay Total Maximum Daily Load (TMDL) requirements.

8. DISTURBANCE OR REDUCTION OF WETLANDS AND JUSTIFICATION FOR SUCH ACTION;

There are no proposed impacts to jurisdictional wetlands.

9. DISRUPTIONS OR REDUCTIONS IN THE SUPPLY OF WATER TO WETLANDS, STREAMS, LAKES, RIVERS, OR OTHER BODIES;

No disturbance or reduction in the supply of water will occur as a result of this project.

10. DISRUPTIONS TO EXISTING HYDROLOGY, INCLUDING WETLAND AND STREAM PATTERNS;

The existing stream pattern of Taylor Run will remain more or less the same as existing due to physical constraints of the stream valley, however changes were made where possible based on planform constraints of Natural Channel Design. The maximum and minimum radii of curvature of the stream alignment were determined based on the design flow and bankfull width. This range of alignment radii is used to maintain a stable design after construction is completed.

11. SOURCE LOCATION AND DESCRIPTION OF PROPOSED FILL MATERIAL;

For grading of the stream restoration, in-situ soil will be used as fill where possible. Borrow material will be used for additional fill as needed. Borrow material specifications will be outlined in the specification book. Within the proposed stream channel itself, reinforced bed mix will be placed per restoration plan details and specifications. This material is necessary to create a stable, erosion resistant stream bed at the proposed elevation.

12. LOCATIONS OF AND IMPACTS ON ADJACENT SHELLFISH BEDS, SUBMERGED AQUATIC VEGETATION, AND FISH SPAWNING AREAS;

None of these are located within the disturbed area of the project.

13. THE ESTIMATED PRE- AND POST-DEVELOPMENT POLLUTANT LOADS IN RUNOFF AS DELINEATED IN THE STORMWATER MANAGEMENT PLAN;

This project is designed to reduce pollutant loadings in the Taylor Run watershed. Application of the Virginia Runoff Reduction Method Spreadsheet for Re-Development confirms that this project is in compliance with state stormwater regulations and no TP removal is required. The following table was taken from the *Phase III Stream Assessment Stream Restoration and Outfall Stabilization Feasibility Study* prepared by Wood, and more thoroughly quantifies project objectives/pollutant removal achieved through implementation of stream restoration measures. The values presented in the table below do not take into effect the 50% Stream Restoration Practice Efficiency.

	TPC	TP Load Reduction	TNC	TN Load Reduction	TSS Load Reduction
	(lbs TP/ton sed)	(lbs TP/yr)	(lbs TN/ton sed)	(lbs TN/yr)	(lbs TSS/yr)
Protocol 1	1.05	295	2.28	641	1,124,700
Protocol 2	-	-	-	354	-

14. ESTIMATION OF PERCENT INCREASE IN IMPERVIOUS SURFACE ON THE SITE;

There is no increase in impervious area proposed in this project.

15. PERCENT OF SITE TO BE CLEARED FOR PROJECT;

Approximately 86% of this site area within the limits of disturbance but outside of the stream itself, will be cleared. This percentage is very high due to the LOD being limited to only those areas necessary for stream restoration.

16. ANTICIPATED DURATION AND PHASING SCHEDULE OF THE CONSTRUCTION;

Project construction is anticipated to take up 12 months. Phasing is primarily at the contractor's discretion with the exception of erosion and sediment control measures as noted in the sequence of construction provided on the plans.

17. LISTING OF ALL REQUISITE PERMITS FROM ALL APPLICABLE AGENCIES NECESSARY TO DEVELOP THE PROJECT;

Project requires authorization by U.S. Army Corps (COE) Nationwide Permits (#27 - Stream Restoration, #43 - Facility Maintenance). Implementation will also require a City of Alexandria Site Plan/Grading permit. VSMP requirements will be met through procurement of a Construction General Permit and maintenance of a SWPPP on site during construction.

18. PROPOSED EROSION AND SEDIMENT CONTROL MEASURE, WHICH MAY INCLUDE MINIMIZING THE EXTENT OF THE CLEARED AREA, PERIMETER CONTROLS, REDUCTION OF RUNOFF VELOCITIES, MEASURES TO STABILIZE DISTURBED AREAS, SCHEDULE, AND PERSONNEL FOR SITE INSPECTION;

The erosion and sediment control will include a stabilized stone construction entrance with wash rack, pump around diversions with sandbag dikes, LOD fencing, silt fence with wire support, timber bridge stream crossings, filter bags, and temporary deck matting haul road. This project will require a two phase erosion and sediment control plan. Phase I of the stream restoration will include the installation of tree protection fencing, stream crossings, access road deck matting, and the construction entrance. Phase II will include the use of pump around diversions during construction. Site disturbance shall be limited to the section of stream channel that is being restored that day, as well as the area immediately adjacent. All tree clearing is to occur at once. Stumps will be left to minimize disturbance until grading in the area commences. No section of stream will be left unstabilized overnight. Any work area will be isolated from the active stream channel through the use of a pump around diversion. In addition, this diversion will not be removed until the stream channel is stabilized and the adjacent area is covered with straw.

19. PROPOSED STORMWATER MANAGEMENT SYSTEM;

Stream areas will be constructed in the dry, protected by a pump around diversion. Sediment laden runoff that enters the temporarily dry work areas will be pumped to a filter bag and released downstream in a non-erosive manner.

20. CREATION OF WETLANDS TO REPLACE THOSE LOST;

There are no proposed impacts to jurisdictional wetlands.

21. MINIMIZING CUT AND FILL;

Cut material will be used on site to the greatest extent practical, filling existing channel areas where a shift in channel geometry is proposed. The project has an overall net fill, and clean fill will need to be imported onto the site.

22. A SUPPLEMENTAL LANDSCAPING PLAN;

The Taylor Run Stream Restoration plan includes a planting plan (PP-01 through PP-05) with corresponding vegetation schedules (VS-01 and VS-01) and planting notes and details (PN-01). These sheets identify the diverse native vegetation to be planted ithin the RPA.

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301 KING ST., RM 3200
ALEXANDRIA, VA 22314

REVISIONS
DATE | BY | DESCRIPTION

CITY PROJECT NO.: CIP-2020-00003
DATE OF PLAN ISSUANCE: 6/16/20
CONSULTANT PROJECT ID.: 28006.02
DESIGNED BY: AMC DATE: 6/16/20
DRAWN BY: AMC DATE: 6/16/20
CHECKED BY: NAS DATE: 6/16/20
APPROVED BY: NAS DATE: 6/16/20

SEAL: COMMONWEALTH OF VIRGINIA
NATHAN A. STALEY
Lic. No. 047145
6/16/2020
PROFESSIONAL ENGINEER

TAYLOR RUN STREAM RESTORATION

WATER QUALITY IMPACT ASSESSMENT

URS
12420 MILESTONE CENTER DR, SUITE 150
GERMANTOWN, MD 20876
(301) 820-3000

Wetland Studies and Solutions, Inc.
a DAVEY company
5300 WELLINGTON BRANCH DR., SUITE 100
GAINESVILLE, VA 20155
(703) 679-5600

DRAWING
WQIA – 01
SCALE 1" = 100'

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

June 9, 2020

Northern Virginia Regulatory Section
NAO-2020-00370 (Taylor Run)

Syed Imran
City of Alexandria
301 King Street, Suite 3200
Alexandria, Virginia 22314

Dear Syed Imran:

This is in regard to your Department of the Army permit application number NAO-2020-00370 (VMRC #20-V0519) to restore approximately 2,025 linear feet of Taylor Run through natural channel design. All work will be performed in Taylor Run within the Chinquapin Park in the City of Alexandria, Virginia. These impacts are detailed on the enclosed drawings entitled “Taylor Run Stream Restoration”, prepared by and submitted on behalf of the applicant by Wetland Studies and Solutions, Inc. and dated March 2020 (attached).

Your proposed work as outlined above satisfies the criteria contained in the Corps Nationwide Permit (27), attached. The Corps Nationwide Permits were published in the January 6, 2017 Federal Register notice (82 FR 1860) and the regulations governing their use can be found in 33 CFR 330 published in Volume 56, Number 226 of the Federal Register dated November 22, 1991.

This nationwide permit verification is contingent upon the following project specific condition:

1. Monitoring for performance shall be conducted according to the “Monitoring Protocol” outlined in your report and plans.

Provided the project specific condition (above) and the Nationwide Permit General Conditions (enclosed) are met, an individual Department of the Army Permit will not be required. In addition, the Virginia Department of Environmental Quality has provided a **conditional** §401 Water Quality Certification for Nationwide Permit Number 27. A permit may be required from the Virginia Marine Resources Commission and/or your local wetlands board, and this verification is not valid until you obtain their approval, if necessary. This authorization does not relieve your responsibility to comply with local requirements pursuant to the Chesapeake Bay Preservation Act (CBPA), nor does it supersede local government authority and responsibilities pursuant to the Act. You should contact your local government before you begin work to find out how the CBPA applies to your project.

Enclosed is a *Certificate of Compliance* form which must be signed and returned within 30 days of completion of the project, including any required mitigation. Your signature on this form certifies that you have completed the work in accordance with the Nationwide Permit terms and conditions, as well as any project specific conditions that have been included in this permit.

This verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2022. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 330.4(e) and 33 CFR 330.5 (c) or (d). Project specific conditions listed in this letter continue to remain in effect after the NWP verification expires, unless the district engineer removes those conditions. Activities completed under the authorization of an NWP which was in effect at the time the activity was completed continue to be authorized by that NWP.

In granting an authorization pursuant to this permit, the Norfolk District has relied on the information and data provided by the permittee. If, subsequent to notification by the Corps that a project qualifies for this permit, such information and data prove to be materially false or materially incomplete, the authorization may be suspended or revoked, in whole or in part, and/or the Government may institute appropriate legal proceedings.

If you have any questions and/or concerns about this permit authorization, please contact Ms. Theresita Crockett-Augustine via telephone at (757) 201-7194 or via email at theresita.m.crockett-augustine@usace.army.mil.

Sincerely,

Theresita Crockett-Augustine
Digitally signed by Theresita Crockett-Augustine
Date: 2020.06.09 15:35:29 -04'00'

Theresita Crockett-Augustine
Environmental Scientist
Northern Virginia Regulatory Section

Enclosures:
Drawings
Nationwide Permit
Certificate of Compliance

PRELIMINARY - NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING ST., RM 3200
ALEXANDRIA, VA 22314

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TAYLOR RUN STREAM RESTORATION

GENERAL CORRESPONDENCE

URS — Wetland Studies and Solutions, Inc.

DRAWING GEN – 01
SCALE N/A
SHEET 84 of 84