STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

October 23, 2017

Mr. Jim McAdoo, Permit Section
TN Department of Environment and Conservation
Division of Water Pollution Control
11th Floor William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue
Nashville, Tennessee 37243

RE: NOI and SWPPP Submittals for TDOT Construction Activities

Dear Mr. McAdoo:

We request coverage under the General NPDES Permit for Discharges of Storm Water Associated with Construction Activities for the subject project. Attached is the signed Notice of Intent (NOI) for Construction Activity – Storm Water Discharges and Quad Map. The Storm Water Pollution Prevention Plan and the full submittal package will be available on the TDOT FTP site.

Project #: 90023-1223-94
PIN: 114038.01
Project Description: SR-353 Culvert over Branch, L.M. 3.23
County: Washington

By copy of this letter, we are sending three hard copies of the SWPPP and documentation binder and one CD of this SWPPP to the Region Construction Office (one copy for the contractor).

Please forward our office the Notice of Coverage (NOC) for this project as soon as it becomes available. Please contact me at (865) 594-2663 if I can be of any assistance.

Sincerely,

Ashley Goddard

Ashley Goddard
Environmental Permits Section

Enclosures
JLH: MH: ALG

Enclosures for:
cc: Ms. Mary Howard, Region 1 Construction (CD)
NPDES File (Filenet)

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Water Resources
William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243
1-888-891-8332 (TDEC)

Notice of Intent (NOI) for General NPDES Permit for Stormwater Discharges from Construction Activities (TNR100000)

Site or Project Name: PROJECT NO. 90023-1223-94; PIN 114038.01; SR-353			**NPDES Tracking Number: TNR**
Street Address or Location: SR-353 CULVERT OVER BRANCH, L.M. 3.23			Construction Start Date: January 2018
			Estimated End Date: January 2023
Site Description: Bridge and culvert replacement			Latitude (dd.dddd): 36.1907
			Longitude (-dd.dddd): -82.5935
County(ies): Washington	MS4 Jurisdiction (if applicable): TDOT		Acres Disturbed: 2.19
			Total Acres: 2.40

Check the appropriate box(s) if there are streams and/or wetlands on or adjacent to the construction site: Streams ☑ Wetlands ☑
If wetlands are located on-site and may be impacted, attach wetlands delineation report.
If an Aquatic Resource Alteration Permit (ARAP) has been obtained for this site, what is the permit number? NRS16.326

Receiving waters: Misc. Tributaries to the Nolichucky River

Attach the SWPPP with the NOI: ☑ SWPPP Attached | Attach a site location map: ☑ Map Attached

Site Owner/Developer Entity (Primary Permittee): (person, company, or legal entity that has operational or design control over construction plans and specifications): Tennessee Department of Transportation

For corporate entities only, provide the Tennessee Secretary of State (SOS) Control Number:

Site Owner or Developer Contact Name: (individual responsible for site) John Barrett		Title or Position: (the party who signs the certification below): CE Manager 2	
Mailing Address: Environmental Technical Office, 7345 Region Lane		City: Knoxville	State: TN Zip: 37914
Phone: (865) 594-2484	Fax: ( ) N/A	E-mail: john.barrett@tn.gov	

Optional Contact: Maysoon Haddad		Title or Position: Transportation Manager 2	
Mailing Address: Environmental Tech. Office, 7345 Region Lane		City: Knoxville	State: TN Zip: 37914
Phone: (865) 594-2431	Fax: ( )	E-mail: maysoon.haddad@tn.gov	

Owner or Developer Certification: (must be signed by president, vice-president or equivalent, or ranking elected official) (Primary Permittee)

I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury..

Owner or Developer Name: (print or type) John Barrett	Signature:	Date: 10-24-17

Contractor(s) Certification: (must be signed by president, vice-president or equivalent, or ranking elected official) (Secondary Permittee)

I certify under penalty of law that I have reviewed this document, any attachments, and the SWPPP referenced above. Based on my inquiry of the construction site owner/developer identified above and/or my inquiry of the person directly responsible for assembling this NOI and SWPPP, I believe the information submitted is accurate. I am aware that this NOI, if approved, makes the above-described construction activity subject to NPDES permit number TNR100000, and that certain of my activities on-site are thereby regulated. I am aware that there are significant penalties, including the possibility of fine and imprisonment for knowing violations, and for failure to comply with these permit requirements. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Contractor name, address, and SOS control number (if applicable):	Signature:	Date:
Contractor name, address, and SOS control number (if applicable):	Signature:	Date:

OFFICIAL STATE USE ONLY

Received Date:	Reviewer:	Field Office:	Permit Number: **TNR**	Exceptional TN Water:
Fee(s):	T & E Aquatic Flora/Fauna:	SOS Corporate Status:	Waters with Unavailable Parameters:	Notice of Coverage Date:

CONSTRUCTION GENERAL PERMIT - NOTICE OF INTENT (NOI) - INSTRUCTIONS

A completed NOI must be submitted to obtain coverage under the CGP. **Requesting coverage under this permit means that an applicant has obtained and examined a copy of this permit, and thereby acknowledges applicant's claim of ability to be in compliance with permit terms and conditions.** CGP coverage is required for stormwater (SW) discharge(s) from construction activities including clearing, grading, filling and excavating (including borrow pits) of one or more acres of land. This form should be submitted at least 30 days prior to the commencement of land disturbing activities, or no later than 48 hours prior to when a new operator assumes operational control over site specifications or commences work at the site.

The application fee must accompany the NOI and is based on total acreage to be disturbed by an entire project, including any associated construction support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow or waste sites, etc.). A separate annual maintenance fee is also required for activities that exceed 1 year under CGP coverage. See TN Rules, Chapter 0400-40-11-.02(b)(12)).

Acres Disturbed	= or > 150 acres	= or > 50 < 150 acres	= or > 20 < 50 acres	= or > 5 < 20 acres	= or > 1 < 5 acres	Subsequent coverage
Fee	$10,000	$6,000	$3,000	$1,000	$250	$100

Who must submit the NOI form? All site operators must submit an NOI form. "Operator" for the purpose of this permit and in the context of SW associated with construction activity means any person associated with a construction project who meets either or both of the following two criteria: (1) The person has operational or design control over construction plans and specifications, including the ability to make modifications to those plans and specifications. This person is typically the owner or developer of the project or a portion of the project (e.g., subsequent builder), or the person that is the current land owner of the construction site, and is considered the primary permittee; or (2) The person has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a SWPPP for the site or other permit conditions. This person is typically a contractor or a commercial builder who is hired by the primary permittee, and is considered a secondary permittee.

Owners, developers and all contractors that meet the definition of the operator in subsection 2.2 of the permit shall apply for permit coverage on the same NOI, insofar as possible. After permit coverage has been granted to the primary permittee, any subsequent NOI submittals must include the site's previously assigned permit tracking number and the project name. The comprehensive site-specific SWPPP shall be prepared in accordance with the requirements of part 3 of the permit and must be submitted with the NOI unless the NOI being submitted is to only add a contractor (secondary permittee) to an existing coverage. Artificial entities (e.g., corporations or partnerships) must submit the Tennessee Secretary of State, Division of Business Services, control number. The division reserves the right to deny coverage to artificial entities that are not properly registered and in good standing with the Tennessee Secretary of State.

Notice of Coverage: The division will review the NOI for completeness and accuracy and prepare a notice of coverage (NOC). SW discharge from the construction site is authorized as of the effective date of the NOC.

Complete the form: Type or print clearly. Answer each item or enter "NA," for not applicable. If you need additional space, attach a separate piece of paper to the NOI form. **The NOI will be considered incomplete without a permit fee, a map, and the SWPPP.**

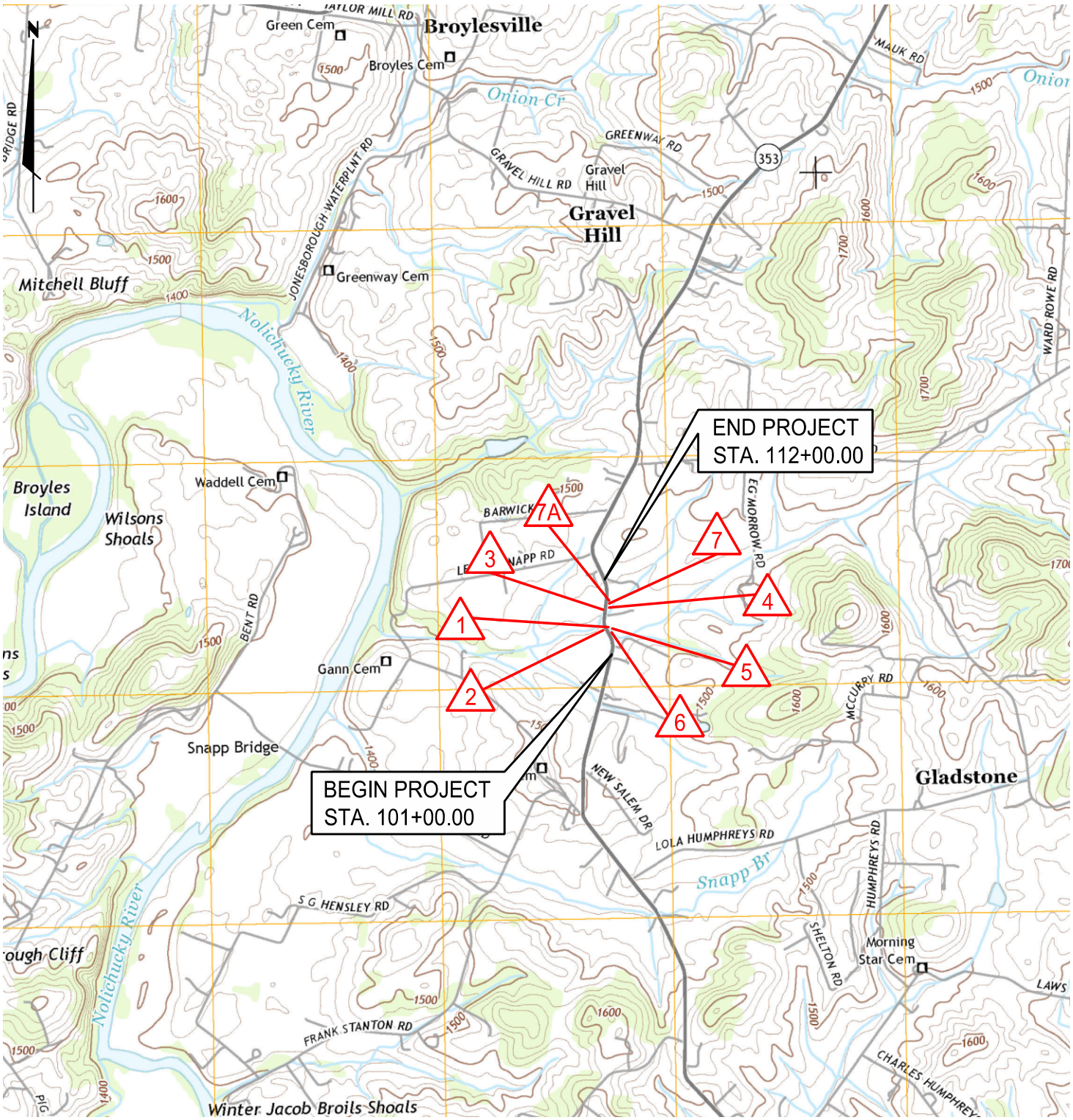
Describe and locate the project: Use the legal or official name of the construction site. If a construction site lacks street name or route number, give the most accurate information available to describe the location (reference to adjacent highways, roads and structures; e.g., intersection of state highways 70 and 100). Latitude and longitude (in decimal degrees) can be found at numerous other web sites. Attach a copy of a map, showing location of site, with boundaries at least one mile outside the site boundaries. Provide estimated starting date of clearing activities and completion date of the project, and an estimate of the number of acres of the site on which soil will be disturbed, including borrow areas, fill areas, stockpiles and the total acres. For linear projects, give location at each end of the construction area.

Name of the receiving waters: Trace the route of SW runoff from the site and determine the name of the water course(s) into which the stormwater runoff drains. Note that the receiving water course may or may not be located on the construction site. If the first water body receiving construction site runoff is unnamed ("unnamed tributary"), determine the name of the water body that the unnamed tributary enters.

An ARAP may be required: **If your work will disturb or cause alterations of a stream or wetland, you must obtain an appropriate Aquatic Resource Alteration Permit (ARAP).** If you have a question about the ARAP program, contact your local Field Office (EFO).

Submitting the form and obtaining more information: Note that this form must be signed by the company President, Vice-President, or a ranking elected official in the case of a municipality, for details see subpart 2.5. For more information, contact your local EFO at the toll-free number 1-888-891-8332 (TDEC). Submit the completed NOI form (keep a copy for your records) to the appropriate EFO for the county(ies) where the construction activity is located, addressed to **Attention: Stormwater NOI Processing**.

Tennessee Department of Environment and Conservation
Division of Water Pollution Control, Permit Section
Attn: Storm Water NOI Processing
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, TN 37243



1 – APPROXIMATE OUTFALL LOCATION

TOPOGRAPHIC MAP: TELFORD, TN
(2013) U.S.G.S. QUADRANGLE MAP

0 2000' 4000'

SCALE IN FEET

TN TDOT Department of Transportation

REGION 1, DISTRICT 17
JOHNSON CITY, TN

STORM WATER POLLUTION PREVENTION PLAN

TOPOGRAPHIC (USGS) MAP

S.R. 353 CULVERT OVER BRANCH,
L.M. 3.23

WASHINGTON COUNTY, TENNESSEE

DRAWN BY:	CHECKED BY:
WCJ	EMW
PIN	114038.01
PROJECT NO.	90023-0223-94
FIGURE 1	DATE: 4/21/2017

TENNESSEE D.O.T. | DESIGN DIVISION | FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
P.E.	2017	90023-1223-94	
CONST.	2017	HRRR/HISP-353(10)	S-1

SWPPP INDEX OF SHEETS

NOTE: CITATIONS IN PARENTHESIS INDICATE SECTIONS OF THE CURRENT CGP.

1. SWPPP REQUIREMENTS (3.0)

1.1. HAS THE SWPPP TEMPLATE BEEN PREPARED BY AN INDIVIDUAL THAT HAS THE FOLLOWING LICENSING AND/OR CERTIFICATIONS (3.1.1)?

☒ YES (CHECK ALL THAT APPLY BELOW) OR ☐ NO

- ☒ CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC)
- ☒ A TN LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT
- ☒ HAS SUCCESSFULLY COMPLETED TDEC LEVEL II COURSE

1.2. DO THE EPSC PLANS INVOLVE STRUCTURAL DESIGN, HYDRAULIC, HYDROLOGIC OR OTHER ENGINEERING CALCULATIONS FOR EPSC STRUCTURAL MEASURES (E.G. SEDIMENT BASINS) (3.1.1)? YES ☐ NO ☒

IF YES, HAVE THE EPSC PLANS BEEN PREPARED, STAMPED AND CERTIFIED BY A TN LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT? ☐ YES ☐ NO

1.3. DO THE PROJECT STORMWATER OUTFALLS DIRECTLY DISCHARGE INTO THE FOLLOWING (5.4.1)? ☒ YES (CHECK ALL THAT APPLY BELOW) ☐ NO

- ☒ WATERS WITH UNAVAILABLE PARAMETERS (303d FOR SILTATION OR HABITAT ALTERATION)
- ☐ EXCEPTIONAL TENNESSEE WATERS

IF YES TO SECTION 1.3, HAS THE SWPPP TEMPLATE BEEN PREPARED BY AN INDIVIDUAL THAT HAS THE FOLLOWING LICENSING AND/OR CERTIFICATIONS (5.4.1.b)?

☒ YES (CHECK ALL THAT APPLY BELOW) ☐ NO

- ☒ CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC)
- ☒ A TN LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT
- ☒ HAS SUCCESSFULLY COMPLETED TDEC LEVEL II COURSE

2. SITE DESCRIPTION (3.5.1)

2.1. PROJECT LIMITS (3.5.1.h): REFER TO TITLE SHEET

2.2. PROJECT DESCRIPTION (3.5.1.a):

TITLE: SR-353 CULVERT OVER BRANCH, L.M. 3.23
COUNTY: WASHINGTON
PIN: 114038.01

2.3. SITE MAP(S) (2.6.2.): REFER TO TITLE SHEET

2.4. DESCRIPTION OF EXISTING SITE TOPOGRAPHY (3.5.1.d): REFER TO EXISTING CONTOURS SHEET(S) 9, USGS QUAD MAP, AND THE OUTFALL TABLE IN SECTION 4.3.

2.5. MAJOR SOIL DISTURBING ACTIVITIES (3.5.1.b) (CHECK ALL THAT APPLY):

- ☒ CLEARING AND GRUBBING
- ☒ EXCAVATION
- ☒ CUTTING AND FILLING
- ☒ FINAL GRADING AND SHAPING
- ☒ UTILITIES
- ☐ OTHER (DESCRIBE): _____

2.6. TOTAL PROJECT AREA (3.5.1.c): 2.40 ACRES

2.7. TOTAL AREA TO BE DISTURBED (3.5.1.c): 2.19 ACRES

2.8. NO MORE THAN 50 ACRES OF ACTIVE SOIL DISTURBANCE IS ALLOWED AT ANY TIME DURING THE CONSTRUCTION OF THE PROJECT.

2.9. ARE THERE ANY SEASONAL LIMITATIONS ON WORK? ☐ YES ☒ NO

IF YES, LIST THE CORRESPONDING PLAN SHEET: _____

2.10. WAS ROW FINALIZED PRIOR TO FEBRUARY 1, 2010 (4.1.2.2)?

☐ YES _____ (DATE) ☒ NO

IF ROW WAS FINALIZED PRIOR TO FEBRUARY 1, 2010, THIS PROJECT IS CONSIDERED A PRE-APPROVED SITE (4.1.2.2)

2.11. SOIL PROPERTIES (3.5.1.f) (4.1.1).

SOIL PROPERTIES FOR THE PRIMARY SOILS ARE LISTED IN THE TABLE BELOW.

SOIL PROPERTIES

PRIMARY SOIL NAME	HSG	% OF SITE	ERODIBILITY (k value)
WEAVER SILT LOAM	C	59.9	0.32
BELLAMY LOAM	C	20.9	0.37
WAYNESBORO LOAM	B	19.2	0.28

2.12. IS ACID PRODUCING ROCK (APR) (i.e. PYRITE) LOCATED WITHIN THE PROJECT LIMITS? ☐ YES ☒ NO

2.12.1. IF YES TO SECTION 2.13, HAVE APR LOCATIONS BEEN IDENTIFIED WITHIN THE CONSTRUCTION PLANS AND/OR THE GEOTECHNICAL REPORT? ☐ YES ☐ NO; AND

2.12.2. IF YES TO SECTION 2.12.1, HAS A SPECIAL HANDLING PLAN AND/OR ADAPTIVE MANAGEMENT PLAN (AMP) BEEN PREPARED FOR THE PROJECT? ☐YES ☐ NO ☐ N/A (TDOT SP107L WILL BE APPLIED.)

2.13. PROJECT RUNOFF COEFFICIENTS AND AREA PERCENTAGES (3.5.1.g).

RUNOFF COEFFICIENTS FOR EXISTING CONDITIONS

AREA TYPE	AREA(AC)	PERCENTAGE OF TOTAL AREA (%)	RUNOFF CN	C FACTOR
IMPERVIOUS	0.54	22.50		0.95
PERVIOUS GRAVEL/RIP-RAP	0.00	0.00		0.85
PERVIOUS GRASS	1.86	77.50		0.35
WEIGHTED CURVE NUMBER OR C-FACTOR =				0.49

RUNOFF COEFFICIENTS FOR POST-CONSTRUCTION CONDITIONS

AREA TYPE	AREA(AC)	PERCENTAGE OF TOTAL AREA (%)	RUNOFF CN	C FACTOR
IMPERVIOUS	0.97	40.42		0.95
PERVIOUS GRAVEL/RIP-RAP	0.20	8.33		0.85
PERVIOUS GRASS	1.23	51.25		0.35
WEIGHTED CURVE NUMBER OR C-FACTOR =				0.63

3. ORDER OF CONSTRUCTION ACTIVITIES (3.5.1.b, 3.5.2.a)

CONSTRUCTION SHALL BE SEQUENCED AND STAGED TO: MINIMIZE THE EXPOSURE TIME OF GRADED OR DENUDED SOIL AREAS, PRESERVE TOPSOIL, AND MINIMIZE SOIL COMPACTION. NO WORK SHALL BE STARTED UNTIL THE CONTRACTOR'S PLAN FOR THE STAGING OF THEIR OPERATIONS, INCLUDING THE PLAN FOR STAGING OF TEMPORARY AND PERMANENT EPSC MEASURES, HAS BEEN ACCEPTED BY THE ENGINEER. THE CONTRACTOR'S EPSC PLAN SHALL INCORPORATE AND SUPPLEMENT, AS ACCEPTABLE, THE ORDER OF CONSTRUCTION ACTIVITIES AND THE BASIC EPSC DEVICES DEPICTED ON THE EPSC PLAN CONTAINED WITHIN THE APPROVED SWPPP.

3.1. SPECIAL SEQUENCING REQUIREMENTS (SEE SHEET 9)

3.2. INSTALL STABILIZED CONSTRUCTION EXITS.

3.3. INSTALL PERIMETER PROTECTION WHERE RUNOFF SHEET FLOWS FROM THE SITE.

3.4. INSTALL INITIAL EPSC MEASURES BEFORE CLEARING, GRUBBING, EXCAVATION, GRADING, CULVERT OR BRIDGE CONSTRUCTION, CUTTING, FILLING, OR ANY OTHER EARTHWORK OCCURS, EXCEPT AS SUCH WORK MAY BE NECESSARY TO INSTALL EPSC MEASURES.

3.5. PERFORM CLEARING AND GRUBBING (NOT MORE THAN 14 DAYS PRIOR TO GRADING OR EARTH-MOVING. REFER TO THE STABILIZATION PRACTICES BELOW.).

3.6. REMOVE AND STORE TOPSOIL.

3.7. STABILIZE DISTURBED AREAS WITHIN 14 DAYS OF COMPLETING ANY STAGE AND/OR PHASE OF ACTIVITY.

3.8. INSTALL UTILITIES, STORM SEWERS, CULVERTS AND BRIDGE STRUCTURES.

3.9. INSTALL INLET AND CULVERT PROTECTION ONCE STRUCTURES ARE IN PLACE AND CAPABLE OF INTERCEPTING FLOW.

3.10. PERFORM FINAL GRADING AND INSTALL BASE STONE.

3.11. COMPLETE FINAL PAVING AND SEALING OF CONCRETE.

3.12. INSTALL TRAFFIC CONTROL AND PROTECTION DEVICES.

3.13. COMPLETE FINAL STABILIZATION (TOPSOIL, SEEDING, MULCH, EROSION CONTROL BLANKET, SOD, ETC.)

3.14. REMOVE TEMPORARY EROSION CONTROLS AND ACCUMULATED SEDIMENT FROM AREAS THAT HAVE ESTABLISHED AT LEAST 70 PERCENT UNIFORM PERMANENT VEGETATIVE COVER.

3.15. RE-STABILIZE AREAS DISTURBED BY REMOVAL ACTIVITIES.

4. STREAM, OUTFALL, WETLAND, TMDL AND ECOLOGY INFORMATION

4.1. STREAM INFORMATION (3.5.1.j, 3.5.1.k)

4.1.1. WILL CONSTRUCTION AND/OR EROSION PREVENTION AND SEDIMENT CONTROLS IMPACT ANY STREAMS WITHIN THE PROJECT LIMITS? ☒ YES ☐ NO

IF YES, THE IMPACT(S) HAVE BEEN INCLUDED IN THE TOTAL PROJECT IMPACTS AND HAVE BEEN INCLUDED IN THE WATER QUALITY PERMITS.

4.1.2. HAVE ANY OF THE RECEIVING STATE WATERS LESS THAN OR EQUAL TO 1 FLOW MILE DOWN GRADIENT OF THE PROJECT LIMITS BEEN CLASSIFIED BY TDEC AS FOLLOWS (CHECK ALL THAT APPLY):

- ☒ 303d WITH UNAVAILABLE PARAMETERS FOR SILTATION
- ☐ 303d WITH UNAVAILABLE PARAMETERS FOR HABITAT ALTERATION
- ☐ EXCEPTIONAL TENNESSEE WATERS (ETW)

4.1.3. RECEIVING WATERS OF THE STATE (3.5.1.k).

RECEIVING WATERS OF THE STATE INFORMATION

TDOT STATE WATER LABEL FROM EBR	NAME OF RECEIVING STATE WATER	303d WITH UNAVAILABLE PARAMETERS FOR SILTATION OR HABITAT ALTERATION (YES OR NO)	ETW (YES OR NO)	LOCATED WITHIN PROJECT LIMITS (YES OR NO)	LOCATED WITHIN ≤ 1 FLOW MILE DOWN GRADIENT OF PROJECT LIMITS (YES OR NO)
SPG-1/STR-1	UNNAMED TRIB TO NOLICHUCKY RIVER	NO	NO	YES	NO
SPG-2/STR-2	UNNAMED TRIBTO NOLICHUCKY RIVER	NO	NO	YES	NO

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STORMWATER POLLUTION PREVENTION PLAN

TENNESSEE D.O.T. | DESIGN DIVISION | FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
P.E.	2017	90023-1223-94	
CONST.	2017	HRRR/HISP-353(10)	S-2

RECEIVING WATERS OF THE STATE INFORMATION					
TDOT STATE WATER LABEL FROM EBR	NAME OF RECEIVING STATE WATER	303d WITH UNAVAILABLE PARAMETERS FOR SILTATION OR HABITAT ALTERATION (YES OR NO)	ETW (YES OR NO)	LOCATED WITHIN PROJECT LIMITS (YES OR NO)	LOCATED WITHIN ≤ 1 FLOW MILE DOWN GRADIENT OF PROJECT LIMITS (YES OR NO)
SPG-3/STR-3	UNNAMED TRIB TO NOLICHUCKY RIVER	NO	NO	YES	NO
SPG-4	UNNAMED TRIB TO STR-3	NO	NO	NO	NO
N/A	NOLICHUCKY RIVER	YES	NO	NO	YES

4.1.4. ARE THERE ANY WATER QUALITY RIPARIAN BUFFER ZONES REQUIRED FOR WATERS OF THE STATE? (4.1.2, 5.4.2)

☐ YES ☒ NO

BUFFER ZONE REQUIREMENTS ARE NOT REQUIRED FOR PRE-APPROVED SITES (4.1.2.2.)

IF YES, THEY HAVE BEEN INCLUDED ON PLAN SHEET(S) _____.

IF YES, CHECK THE APPROPRIATE BOX BELOW FOR SIZE OF BUFFER.

☐ 60-FEET FOR WATERS WITH UNAVAILABLE PARAMETERS AND EXCEPTIONAL TENNESSEE WATERS (AVERAGE WIDTH PER SIDE WITH A MINIMUM OF 30-FEET).

A 60 FOOT NATURAL WATER QUALITY RIPARIAN BUFFER ZONE ADJACENT TO AND ON BOTH SIDES OF THE RECEIVING STATE STREAM WITH THIS DESIGNATION SHALL BE PRESERVED TO THE MAXIMUM EXTENT PRACTICABLE DURING CONSTRUCTION ACTIVITIES AT THE SITE. THE 60 FOOT CRITERION FOR THE WIDTH OF THE BUFFER ZONE CAN BE ESTABLISHED ON AN AVERAGE WIDTH BASIS AT A PROJECT, AS LONG AS THE MINIMUM WIDTH OF THE BUFFER ZONE IS MORE THAN 30 FEET AT ANY MEASURED LOCATION. IF THE CONSTRUCTION SITE ENCOMPASSES BOTH SIDES OF A STREAM, BUFFER AVERAGING CAN BE APPLIED TO BOTH SIDES, BUT MUST BE APPLIED INDEPENDENTLY.

☐ 30-FEET FOR ALL OTHER STREAMS (AVERAGE WIDTH PER SIDE WITH A MINIMUM OF 15-FEET).

A 30 FOOT NATURAL WATER QUALITY RIPARIAN BUFFER ZONE ADJACENT TO AND ON BOTH SIDES OF THE RECEIVING STATE STREAM SHALL BE PRESERVED TO THE MAXIMUM EXTENT PRACTICABLE DURING CONSTRUCTION ACTIVITIES AT THE SITE. THE 30 FOOT CRITERION FOR THE WIDTH OF THE BUFFER ZONE CAN BE ESTABLISHED ON AN AVERAGE WIDTH BASIS AT A PROJECT, AS LONG AS THE MINIMUM WIDTH OF THE BUFFER ZONE IS MORE THAN 15 FEET AT ANY MEASURED LOCATION. IF THE CONSTRUCTION SITE ENCOMPASSES BOTH SIDES OF A STREAM, BUFFER AVERAGING CAN BE APPLIED TO BOTH SIDES, BUT MUST BE APPLIED INDEPENDENTLY.

4.1.5. ARE THERE ANY WATER QUALITY RIPARIAN BUFFER ZONES NOT REQUIRED FOR STATE WATERS DUE TO A TDEC ARAP? (9.0)

☒ YES ☐ NO

4.1.6. ARE THERE WATER QUALITY RIPARIAN BUFFER ZONE EXEMPTIONS? (4.1.2.1) ☐ YES ☒ NO

IF YES, EXISTING CONDITIONS DESCRIPTION:_____

4.1.7. EVERY ATTEMPT SHOULD BE MADE FOR CONSTRUCTION ACTIVITIES TO NOT TAKE PLACE WITHIN THE WATER QUALITY RIPARIAN BUFFER ZONE AND FOR EXISTING FORESTED AREAS TO BE PRESERVED. (5.4.2.)

4.1.8. BECAUSE OF HEAVY SEDIMENT LOAD ASSOCIATED WITH CONSTRUCTION SITE RUNOFF, WATER QUALITY RIPARIAN BUFFER ZONES ARE NOT SEDIMENT CONTROL MEASURES AND SHOULD NOT BE RELIED UPON AS PRIMARY SEDIMENT CONTROL MEASURES. THE WATER QUALITY RIPARIAN BUFFER ZONE SHALL BE ESTABLISHED BETWEEN THE TOP OF THE STREAM BANK AND THE DISTURBED CONSTRUCTION AREA.

4.1.9. WHERE IT IS NOT PRACTICABLE TO MAINTAIN A FULL WATER QUALITY RIPARIAN BUFFER, BEST MANAGEMENT PRACTICES (BMPS) PROVIDING EQUIVALENT PROTECTION AS THE NATURAL RIPARIAN ZONE MUST BE USED. A JUSTIFICATION FOR USE AND DESIGN EQUIVALENCY SHALL BE DOCUMENTED WITHIN THE SWPPP. THE ENVIRONMENTAL AND ROADWAY DESIGN DIVISIONS SHALL REVIEW AND APPROVE THIS REVISION OF THE SWPPP BEFORE DISTURBANCE OF THE SITE PROCEEDS, UNLESS PREVIOUSLY EXEMPT IN THE NPDES CGP. WHERE ISSUED, ARAP/401 REQUIREMENTS WILL PREVAIL IF IN CONFLICT WITH THESE BUFFER ZONE REQUIREMENTS.

4.2. RECEIVING WATERS OF THE UNITED STATES (WOTUS) (EPHEMERAL)

WILL CONSTRUCTION AND/OR EROSION AND SEDIMENT CONTROLS IMPACT ANY WOTUS (EPHEMERAL)? ☐ YES ☒ NO

RECEIVING WOTUS (EPHEMERAL) INFORMATION		
TDOT WOTUS LABEL	LOCATED WITHIN PROJECT LIMITS (YES OR NO)	LOCATED WITHIN 15-FT OF THE PROJECT LIMITS (YES OR NO)

4.2.1. ARE WATER QUALITY RIPARIAN BUFFER ZONES REQUIRED FOR WOTUS (4.1.2)? ☐ YES ☒ NO

IF YES, A 15 FOOT NATURAL WATER QUALITY RIPARIAN BUFFER ZONE ADJACENT TO AND ON BOTH SIDES OF THE RECEIVING EPHEMERAL STREAM IDENTIFIED AS A WOTUS (EPHEMERAL) BY THE U.S. ARMY CORPS OF ENGINEERS (USACE) OR THE ENVIRONMENTAL PROTECTION AGENCY SHALL BE PRESERVED TO THE MAXIMUM EXTENT PRACTICABLE DURING CONSTRUCTION ACTIVITIES AT THE SITE.

IF YES, THEY HAVE BEEN INCLUDED ON PLAN SHEET(S) _____

4.2.2. ARE THERE ANY WATER QUALITY RIPARIAN BUFFER ZONES NOT REQUIRED FOR WOTUS (EPHEMERAL) DUE TO A USACE PERMIT?

☐ YES ☒ NO

4.3. OUTFALL INFORMATION

4.3.1. OUTFALL TABLE (3.5.1.e). SEE SWPPP SHEET S-8 FOR OUTFALL INFORMATION.

4.3.2. HAVE ALL OUTFALLS BEEN LABELED ON THE EPSC PLAN SHEETS (3.5.1.h)? ☒ YES ☐ NO

4.3.3. HAVE ALL OUTFALLS BEEN LABELED ON A USGS TOPOGRAPHIC MAP INCLUDED IN THE "DOCUMENTATION AND PERMITS" BINDER (2.6.2)? ☒YES ☐ NO

4.3.4. WHERE POSSIBLE, HAS NON-PROJECT RUN-ON BEEN DIVERTED AROUND OR THROUGH THE PROJECT TO ELIMINATE CONTACT WITH DISTURBED AREAS OF THE PROJECT AND SEPARATE IT FROM PROJECT RUN-OFF THEREBY REDUCING THE DRAINAGE AREA OF TO THE OUTFALLS IN THIS AREA?

☒ YES ☐ NO ☐ N/A

4.3.5. ARE EQUIVALENT MEASURES BEING SUBSTITUTED FOR A SEDIMENT BASIN(S)? ☐ YES ☐ NO ☒ N/A

4.3.6. A SEDIMENT BASIN OR EQUIVALENT MEASURE(S) WILL BE PROVIDED FOR ANY OUTFALL IN A DRAINAGE AREA:

OF TEN ACRES OR MORE FOR AN OUTFALL(S) THAT DOES NOT DISCHARGE TO A STATE STREAM WITH UNAVAILABLE PARAMETERS OR EXCEPTIONAL TENNESSEE WATERS. A TEMPORARY (OR PERMANENT) SEDIMENT BASIN OR EQUIVALENT CONTROL MEASURES THAT PROVIDES STORAGE FOR A CALCULATED VOLUME OF RUNOFF FROM A MINIMUM 2-YEAR/ 24-HOUR STORM EVENT, SHALL BE PROVIDED UNTIL FINAL STABILIZATION OF THE SITE. (3.5.3.3)

OR

OF FIVE ACRES OR MORE FOR AN OUTFALL(S) THAT DISCHARGES TO A STATE STREAM WITH UNAVAILABLE PARAMETERS OR EXCEPTIONAL TENNESSEE WATERS. A TEMPORARY (OR PERMANENT) SEDIMENT BASIN THAT PROVIDES STORAGE FOR A CALCULATED VOLUME OF RUNOFF FROM A 5-YEAR/ 24-HOUR STORM EVENT AND RUNOFF FROM EACH ACRE DRAINED, OR EQUIVALENT CONTROL MEASURES, SHALL BE PROVIDED UNTIL FINAL STABILIZATION OF THE SITE. (5.4.1.g).

IN BOTH INSTANCES, THE ENVIRONMENTAL AND ROADWAY DESIGN DIVISIONS MAY BE CONTACTED TO REVIEW AND CONCUR WITH ANY REVISION OF THE SWPPP BEFORE DISTURBANCE OF THE OUTFALL PROCEEDS.

4.4. WETLAND INFORMATION

WILL CONSTRUCTION AND/OR EROSION AND SEDIMENT CONTROLS IMPACT ANY WETLANDS? ☒ YES ☐ NO

IF YES, THE STRUCTURAL EPSC MEASURES HAVE BEEN INCLUDED IN THE TOTAL PROJECT IMPACTS AND IN THE WATER QUALITY PERMITS.

WETLAND INFORMATION				
TDOT WETLAND LABEL	FROM STATION LT OR RT	TO STATION LT OR RT	TEMPORARY IMPACTS (AC)	PERMANENT IMPACTS (AC)
WTL-1	107+50, RT	107+90, RT	0.01	0.02

4.5. TOTAL MAXIMUM DAILY LOADS (TMDL) INFORMATION (3.5.10)

4.5.1. IS THIS PROJECT LOCATED IN A HUC-8 WATERSHED THAT MAINTAINS AN EPA APPROVED TMDL FOR SILTATION AND HABITAT ALTERATION?

☐YES ☒ NO

4.5.2. IF YES, IS THIS PROJECT LOCATED WITHIN A HUC-12 SUBWATERSHED WITH A WASTE LOAD ALLOCATION (WLA)?

☐ YES ☐ NO

4.5.3. IF YES, DOES THE PROJECT HAVE A DIRECT DISCHARGE TO A 303(d) LISTED STREAM FOR SILTATION OR HABITAT ALTERATION?

☐ YES ☐ NO

4.5.4. IF YES, HAS A SUMMARY OF THE CONSULTATION LETTER BEEN SUBMITTED/RECEIVED?

☐ YES ☐ NO

4.6. ECOLOGY INFORMATION (3.5.5.e)

DOES THE TDOT ENVIRONMENTAL BOUNDARIES REPORT SPECIFY SPECIAL NOTES TO BE ADDED TO THE PLAN SHEETS?

☐ YES ☒ NO

IF YES, THEY HAVE BEEN INCLUDED ON PLAN SHEET(S) _____.

4.7. ENVIRONMENTAL COMMITMENTS

ARE THERE ANY NOTES ON THE ENVIRONMENTAL COMMITMENT SHEET?

☐ YES ☒ NO

IF YES, THEY HAVE BEEN INCLUDED ON PLAN SHEET(S) _____.

5. EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) MEASURES (3.5.3)

5.1. EPSC MEASURES MUST BE DESIGNED, INSTALLED AND MAINTAINED TO CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE EROSION (4.1.1).

5.2. EPSC MEASURES MUST CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOWS AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS, STREAM CHANNELS, AND STREAM BANKS. (4.1.1)

5.3. HAVE THE CONTROL MEASURES BEEN DESIGNED PER THE SIZE AND SLOPE OF THE DISTURBED DRAINAGE AREA (3.5.3.3)?

☒YES ☐ NO

5.4. THE CONTROL MEASURES HAVE, AT A MINIMUM, BEEN DESIGNED FOR THE 5-YEAR, 24 HOUR STORM EVENT (3.5.3.3, 5.4.1.a).

5.5. ARE THE LIMITS OF DISTURBANCE CLEARLY MARKED ON THE EPSC PLANS (3.5.1.h)? ☒ YES ☐ NO

5.6. AREAS TO BE UNDISTURBED SHALL BE CLEARLY MARKED IN THE FIELD BEFORE CONSTRUCTION ACTIVITIES BEGIN.

5.7. UNLESS OTHERWISE NOTED IN THE PLANS, THE CONTRACTOR SHALL NOT CLEAR/DISTURB ANY AREA BEYOND 15 FEET FROM SLOPE LINES OR ROW/ EASEMENT LINE, WHICHEVER IS LESSER.

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5.8. CLEARING, GRUBBING, AND OTHER DISTURBANCE TO RIPARIAN VEGETATION SHALL BE LIMITED TO THE MINIMUM NECESSARY FOR SLOPE CONSTRUCTION AND EQUIPMENT OPERATIONS. EXISTING VEGETATION, INCLUDING STREAM AND WETLAND BUFFERS (UNLESS PERMITTED), SHOULD BE PRESERVED TO THE MAXIMUM EXTENT POSSIBLE. UNNECESSARY VEGETATION REMOVAL IS PROHIBITED.

5.9. HAVE STAGED EPSC PLANS BEEN PREPARED FOR THE PROJECT (3.5.2)?

YES ☒ NO ☐ (IF YES, CHECK ONE BELOW)

5.9.1. ☒ PROJECT DISTURBED AREA IS THAN LESS THAN 5 ACRES (MINIMUM OF TWO STAGES OF EPSC PLANS)

5.9.2. ☐ PROJECT DISTURBED AREA IS GREATER THAN 5 ACRES (MINIMUM OF THREE STAGES OF EPSC PLANS)

5.10. STEEP SLOPES ARE DEFINED AS A NATURAL OR CREATED SLOPE OF 35% GRADE OR GREATER REGARDLESS OF HEIGHT. HAVE STEEP SLOPES BEEN MINIMALLY DISTURBED AND/OR PROTECTED BY CONVEYING RUNOFF NON-EROSIVELY AROUND OR OVER THE SLOPE (3.5.3.2) (10. "STEEP SLOPE")? ☒ YES ☐ NO ☐ N/A

5.11. THE STRUCTURAL EPSC MEASURES HAVE BEEN INCLUDED IN THE TOTAL PROJECT IMPACTS AND HAVE BEEN INCLUDED IN THE AQUATIC RESOURCE ALTERATION (ARAP) PERMIT OR SECTION 401 CERTIFICATION (3.5.1.j). REFER TO THE LIST OF APPLICABLE ENVIRONMENTAL PERMITS LOCATED ON SWPPP SHEET S-7. ALL PERMITS WILL BE MAINTAINED ON SITE WITHIN THE "DOCUMENTATION AND PERMITS" BINDER.

5.12. THE EPSC CONTROL MEASURES LISTED IN THE QUANTITIES TABLE ON SHEET 2A HAVE BEEN SELECTED IN ACCORDANCE WITH TDOT STANDARD DRAWINGS AND GOOD ENGINEERING PRACTICES (3.5.3.1.b).

5.13. EPSC MEASURES SHALL BE INSTALLED PER TDOT STANDARDS (i.e. STANDARD DRAWINGS) AND SHALL BE FUNCTIONAL PRIOR TO ANY EARTH MOVING OPERATIONS.

5.14. EPSC MEASURES WILL NOT BE INSTALLED WITHIN A STREAM WITHOUT FIRST OBTAINING APPROVAL FROM THE PERMITS SECTION.

5.15. TEMPORARY EPSC MEASURES MAY BE REMOVED AT THE BEGINNING OF THE WORKDAY, BUT MUST BE REINSTALLED AT THE END OF THE WORKDAY OR BEFORE A PRECIPITATION EVENT.

5.16. EPSC MEASURES LOCATED IN WOTUS (EPHEMERAL STREAMS) MUST BE CONSIDERED TEMPORARY AND SHALL BE REMOVED AT THE END OF CONSTRUCTION.

5.17. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN A PROACTIVE METHOD TO PREVENT THE OFF-SITE MIGRATION OR DEPOSIT OF SEDIMENT OFF THE PROJECT LIMITS (E.G. R.O.W., EASEMENTS, ETC.), INTO WATERS OF THE STATE/U.S., OR ONTO ROADWAYS USED BY THE PUBLIC. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT THAT HAVE NOT REACHED A STREAM MUST BE REMOVED TO A LEVEL SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS (E.G., FUGITIVE SEDIMENT THAT HAS ESCAPED THE CONSTRUCTION SITE AND HAS COLLECTED IN A STREET MUST BE REMOVED SO THAT IT IS NOT SUBSEQUENTLY WASHED INTO STORM SEWERS AND STREAMS BY THE NEXT RAIN AND/OR SO THAT IT DOES NOT POSE A SAFETY HAZARD TO USERS OF PUBLIC STREETS). ARRANGEMENTS CONCERNING REMOVAL OF SEDIMENT ON ADJOINING PROPERTY MUST BE SETTLED WITH THE ADJOINING PROPERTY OWNER BEFORE REMOVAL OF SEDIMENT. SEDIMENT THAT MIGRATES INTO WATERS OF THE STATE/US SHALL NOT BE REMOVED WITHOUT GUIDANCE FROM TDOT ENVIRONMENTAL PERSONNEL.

5.18. OFFSITE VEHICLE TRACKING OF SEDIMENTS AND THE GENERATION OF DUST SHALL BE MINIMIZED. A STABILIZED CONSTRUCTION EXIT (A POINT OF ENTRANCE/EXIT TO THE CONSTRUCTION PROJECT) SHALL BE PROVIDED TO REDUCE THE TRACKING OF MUD AND DIRT ONTO PUBLIC ROADS BY CONSTRUCTION VEHICLES.

5.19. THE QUANTITIES REQUIRED FOR STABILIZED CONSTRUCTION EXITS PER TDOT STANDARDS HAVE BEEN SPECIFIED ON SHEET 2A (3.5.3.1.n).

5.20. DISCHARGES FROM DEWATERING ACTIVITIES ARE PROHIBITED UNLESS MANAGED BY APPROPRIATE CONTROLS THAT PROVIDE THE LEVEL OF TREATMENT (FILTRATION) NECESSARY TO COMPLY WITH PERMIT REQUIREMENTS. (4.1.4).

5.21. SETTLING BASINS AND SEDIMENT TRAPS SHALL BE PROPERLY DESIGNED PER THE SIZE OF THE DRAINAGE AREAS OR VOLUME OF WATER TO BE TREATED. TREATED WATER MUST BE DISCHARGED THROUGH A PIPE OR WELL VEGETATED OR LINED CHANNEL, SO THAT THE DISCHARGE DOES NOT CAUSE EROSION OR SEDIMENT TRANSPORT.

5.22. DISCHARGES FROM SEDIMENT BASINS AND IMPOUNDMENTS SHALL UTILIZE OUTLET STRUCTURES THAT ONLY WITHDRAW WATER FROM NEAR THE SURFACE OF THE BASIN OR IMPOUNDMENT. TREATED WATER MUST BE DISCHARGED THROUGH A PIPE, WELL- VEGETATED AND/OR LINED CHANNEL, SO THAT THE DISCHARGE DOES NOT CAUSE EROSION OR SEDIMENT TRANSPORT. (4.1.7).

5.23. THE DEWATERING OF WORK AREAS, TRENCHES, FOUNDATIONS, EXCAVATIONS, ETC. THAT HAVE COLLECTED STORMWATER, WATER FROM VEHICLE WASH AREAS, OR GROUNDWATER SHALL BE EITHER HELD IN SETTLING BASINS OR TREATED BY FILTRATION AND/OR CHEMICAL TREATMENT PRIOR TO ITS DISCHARGE. ALL CHEMICAL TREATMENTS MUST BE APPLIED PER SECTION 6 FLOCCULANTS.

5.24. WATER DISCHARGED FROM DEWATERING ACTIVITIES SHALL NOT CAUSE AN OBJECTIONABLE COLOR CONTRAST WITHIN THE RECEIVING NATURAL RESOURCE. WATER MUST BE HELD WITHIN SETTLING BASINS UNTIL IT IS AT LEAST AS CLEAR AS THE RECEIVING WATERS.

5.25. DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, SEDIMENT BASINS AND TRAPS SHALL NOT BE LOCATED CLOSER THAN 30 FEET (60 FEET DESIRABLE VEGETATIVE BUFFER) FOR WATERS WITH UNAVAILABLE PARAMETERS AND EXCEPTIONAL TENNESSEE WATERS AND 15 FEET (30 FEET DESIRABLE VEGETATIVE BUFFER) FOR ALL OTHER FEATURES FROM THE TOP BANK OF A STREAM, WOTUS (EPHEMERAL), WETLAND OR OTHER NATURAL RESOURCE AND SHALL BE PROPERLY DESIGNED PER THE SIZE OF THE DRAINAGE AREAS OR VOLUME OF WATER TO BE TREATED.

5.26. STABILIZATION PRACTICES: PRE-CONSTRUCTION VEGETATIVE COVER WILL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN 14 DAYS PRIOR TO GRADING OR EARTH MOVING UNLESS THE AREA WILL BE SEEDED AND/OR MULCHED OR OTHER TEMPORARY COVER IS INSTALLED (3.5.3.1.h).

5.27. STABILIZATION MEASURES WILL BE INITIATED AS SOON AS POSSIBLE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY OR PERMANENT STABILIZATION WILL BE COMPLETED WITHIN 14 DAYS AFTER ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED IN THAT AREA. PERMANENT STABILIZATION WILL REPLACE TEMPORARY MEASURES AS SOON AS PRACTICABLE (3.5.3.2).

5.28. PRIORITY SHALL BE GIVEN TO FINISHING OPERATIONS AND PERMANENT EPSC MEASURES OVER TEMPORARY EPSC MEASURES ON ALL PROJECTS. UNPACKED GRAVEL CONTAINING FINES (SILT AND CLAY SIZED PARTICLES) OR CRUSHER-RUN WILL NOT BE CONSIDERED A NON-ERODIBLE SURFACE

5.29. DELAYING THE PLANTING OF COVER VEGETATION UNTIL WINTER MONTHS OR DRY MONTHS SHOULD BE AVOIDED, IF POSSIBLE.

5.30. A SOIL ANALYSIS SHALL BE PERFORMED PRIOR TO THE APPLICATION OF FERTILIZERS TO ANY PORTION OF THE STE. SOILS SHOULD BE ANALYZED FOR pH, BUFFER VALUE, PHOSPHOROUS, POTASSIUM, CALCIUM AND MAGNESIUM. SOIL SAMPLES SHOULD BE REPRESENTATIVE OF THE AREA FOR WHICH FERTILIZER WILL BE APPLIED. SAMPLE TYPE SHOULD BE COLLECTED AND ANALYZED IN ACCORDANCE WITH THE UT EXTENSION "SOIL TESTING" BROCHURE PB1061. (4.1.5.)

5.31. FERTILIZERS SHALL BE APPLIED ONLY IN THE AMOUNTS SPECIFIED FROM THE ANALYSES. ONCE APPLIED, FERTILIZERS SHALL BE WORKED INTO THE SOIL TO LIMIT THE EXPOSURE TO STORMWATER.

5.32. STEEP SLOPES SHALL BE TEMPORARILY STABILIZED NOT LATER THAN 7 DAYS AFTER CONSTRUCTION ACTIVITY ON THE SLOPE HAS TEMPORARILY OR PERMANENTLY CEASED. (3.5.3.2).

6. FLOCCULANTS (3.5.3.1.b)

IS ADDITIONAL PHYSICAL OR CHEMICAL TREATMENT OF STORMWATER RUNOFF NECESSARY (5.4.1.a)? ☐ YES ☒ NO

IF YES, THE FOLLOWING NOTES APPLY:

6.1. POLYACRYLAMIDES (PAM) SHALL BE OF THE ANIONIC OR NEUTRALLY CHARGED TYPE ONLY. PAM REQUIREMENTS ARE AS FOLLOWS:

6.1.1. CATIONIC PAM IS NOT ALLOWED BECAUSE OF ITS TOXICITY TO FISH AND AQUATIC LIFE.

6.1.2. ANIONIC AND NEUTRALLY CHARGED PAM SHALL MEET THE EPA AND FDA ACRYLAMIDE MONOMER LIMITS OF EQUAL TO OR LESS THAN 0.05% BY WEIGHT ACRYLAMIDE MONOMER.

6.1.3. ANIONIC AND NEUTRALLY CHARGED PAM SHALL HAVE A DENSITY OF 10% TO 55% BY WEIGHT AND A MOLECULAR WEIGHT OF 16 TO 24 MG/MOLES.

6.1.4. PAM MIXTURES SHALL BE NON-COMBUSTIBLE.

6.1.5. PAM SHALL CONTAIN ONLY MANUFACTURER-RECOMMENDED ADDITIVES.

6.2. ALL PHYSICAL AND/OR CHEMICAL TREATMENT WILL BE RESEARCHED, APPLIED IN ACCORDANCE WITH MANUFACTURE'S GUIDELINES AND FULLY DESCRIBED ON THE EPSC PLANS (3.5.3.1.b).

6.3. FLOCCULANTS SHALL BE HANDLED IN ACCORDANCE WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE SPECIFIED USE CONFORMING TO ALL FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS.

6.4. ALL VENDORS AND SUPPLIERS OF FLOCCULANTS SHALL PRESENT OR SUPPLY A WRITTEN TOXICITY REPORT FOR BOTH ACUTE AND CHRONIC TOXICITY TESTS WHICH VERIFIES THAT THE FLOCCULANT EXHIBITS ACCEPTABLE TOXICITY PARAMETERS WHICH MEET OR EXCEED THE EPA REQUIREMENTS FOR THE STATE AND FEDERAL WATER QUALITY STANDARDS. WHOLE EFFLUENT TESTING DOES NOT MEET THIS REQUIREMENT AS PRIMARY REACTIONS HAVE OCCURRED AND TOXIC POTENTIALS HAVE BEEN REDUCED.

6.5. DO NOT APPLY FLOCCULANTS DIRECTLY TO, OR WITHIN 60 FEET, OF ANY STREAMS, WETLANDS, OR OTHER NATURAL WATER RESOURCE LOCATED ON OR ADJACENT TO THE CONSTRUCTION SITE. DO NOT APPLY FLOCCULANTS DIRECTLY INTO WATERS CONTAINED WITHIN SEDIMENT PONDS OR TO SLOPES THAT PRODUCE RUNOFF DIRECTLY INTO A STREAM, WETLAND, OR OTHER NATURAL WATER RESOURCE. DO NOT APPLY FLOCCULANTS IMMEDIATELY AT A STORMWATER OUTFALL WHERE RUNOFF LEAVES THE PROJECT LIMITS.

6.6. BEFORE FLOCCULANTS CAN BE USED ON A CONSTRUCTION PROJECT, SITE-SPECIFIC SOIL SAMPLES MUST BE OBTAINED AND TESTED BY THE MANUFACTURER OR THEIR REPRESENTATIVE, TO IDENTIFY THE OPTIMUM FLOCCULANT TYPE AND APPLICATION RATE. SINCE FLOCCULANT EFFICACY IS HIGHLY DEPENDENT ON SOIL TYPE, SOIL SAMPLES WILL NEED TO BE OBTAINED FROM EACH SOIL HORIZON THAT WILL BE ACCESSED DURING EXCAVATION. FLOCCULANTS SHOULD BE APPLIED ON A CONSTRUCTION SITE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED APPLICATION OR DOSAGE RATE. APPLICATION METHOD SHALL ENSURE UNIFORM COVERAGE TO THE TARGET AREA. DO NOT APPLY EMULSION FORMS OF FLOCCULANTS DIRECTLY TO STORMWATER RUNOFF OR TO STREAMS, WETLANDS, OR OTHER WATER RESOURCES DUE TO SURFACTANT TOXICITY.

6.7. FLOCCULANT POWDER MAY BE APPLIED BY A HAND SPREADER OR A MECHANICAL SPREADER. IF APPROVED BY THE MANUFACTURER, FLOCCULANT MAY BE MIXED WITH DRY SILICA SAND, FERTILIZER, SEED, OR OTHER SOIL AMENDMENTS TO AID IN SPREADING. FLOCCULANTS MAY ALSO BE APPLIED WITH A WATER TRUCK OR AS PART OF HYDRO-SEEDING. APPLICATION METHOD SHALL ENSURE UNIFORM COVERAGE TO THE TARGET AREA.

6.8. MANUFACTURER'S GUIDANCE SHOULD BE FOLLOWED FOR BLOCK, LOG AND SOCK SPACING CONFIGURATIONS. BEFORE FLOCCULANTS CAN BE USED ON A CONSTRUCTION PROJECT, SITE-SPECIFIC SOIL SAMPLES MUST BE OBTAINED AND TESTED BY THE MANUFACTURER OR THEIR REPRESENTATIVE, TO IDENTIFY THE OPTIMUM FLOCCULANT TYPE AND APPLICATION RATE. SINCE FLOCCULANT EFFICACY IS HIGHLY DEPENDENT ON SOIL TYPE, SOIL SAMPLES WILL NEED TO BE OBTAINED FROM EACH SOIL HORIZON THAT WILL BE ACCESSED DURING EXCAVATION. FLOCCULANTS SHOULD BE APPLIED ON A CONSTRUCTION SITE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED APPLICATION OR DOSAGE RATE.

7. UTILITY RELOCATION

ARE UTILITIES INCLUDED IN THE CONTRACT? ☐ YES ☒ NO

IF YES, THE FOLLOWING APPLY:

7.1. STORMWATER WHICH COLLECTS IN THE UTILITY TRENCH SHALL BE PUMPED INTO A DEWATERING STRUCTURE OR SEDIMENT FILTER BAG AND TREATED PRIOR TO DISCHARGE.

7.2. SILT FENCE SHALL BE INSTALLED ON THE DOWNGRADIENT SIDE OF STOCKPILED SOIL. ANY TRENCHING ACROSS WET WEATHER CONVEYANCES SHALL BE DONE DURING DRY CONDITIONS, REMOVED AND STABILIZED BY THE END OF THE WORK DAY.

7.3. UTILITY CROSSINGS IN ENVIRONMENTAL FEATURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH TDOT STANDARDS AND NO WORK SHALL BE CONDUCTED IN FLOWING WATERS. ENVIRONMENTAL PERMITS

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APPLY TO UTILITIES IN THIS PROJECT. THE STATE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE PERMITS.

7.4. IT IS THE RESPONSIBILITY OF THE STATE UTILITY CONTRACTOR TO PROTECT EXPOSED EARTH FROM EROSION AND TO PROVIDE FOR CONTAINMENT OF SEDIMENT THAT MAY RESULT FROM THEIR WORK. PRIOR TO BEGINNING WORK, ADEQUATE EPSC MEASURES MUST BE IN PLACE TO TRAP ANY SEDIMENT THAT MAY TRAVEL OFF-SITE IN THE EVENT OF RAIN. DURING THE PROGRESSION OF THEIR WORK, EXPOSED EARTH AREAS SHALL BE STABILIZED AS SOON AS POSSIBLE TO PREVENT EROSION. AT NO TIME, SHALL EXPOSED EARTH RESULTING FROM THEIR OPERATIONS HAVE UNPROTECTED ACCESS TO FLOWING OFF-SITE AND ENTERING WATERS OF THE STATE/U.S.

7.5. FOR THE INSTALLATION OF BURIED UTILITIES (PIPES AND CABLES), TRENCHES SHALL BE BACKFILLED DAILY AS CONSTRUCTION PROCEEDS. BACKFILLED TRENCHES SHALL BE SEEDED AND MULCHED OR SODDED DAILY IF POSSIBLE, BUT NO LATER THAN FOURTEEN DAYS AFTER BEING BACKFILLED. ANY TEMPORARY SPOILS OF EXCAVATED EARTH SHALL BE LOCATED WITHIN TDOT EPSC MEASURES OR RECEIVE SEPARATE EPSC MEASURES. IF TRENCHES ARE NOT BACKFILLED OVERNIGHT, APPROPRIATE EPSC MEASURES WILL BE INSTALLED BY THE STATE UTILITY CONTRACTOR UNTIL THE TRENCH IS BACKFILLED.

7.6. IN REGARDS TO EPSC, TDEC REGULATIONS APPLY TO THE STATE UTILITY CONTRACTORS ON THIS PROJECT. THE STATE CONTRACTOR IS RESPONSIBLE FOR EPSC MEASURES RELATED TO UTILITY CONSTRUCTION INCLUDED IN THE STATE CONTRACT.

7.7. TRENCHES FORMED FOR THE INSTALLATION OF BURIED UTILITIES MAY CAUSE STORMWATER RUNOFF TO CONCENTRATE AT THE TRENCH LINE. ADDITIONAL EPSC MEASURES MAY BE REQUIRED TO BE INSTALLED AS APPROVED BY THE TDOT PROJECT ENGINEER.

7.8. FOR THE INSTALLATION OF UNDERGROUND UTILITIES OUTSIDE OF THE TDOT RIGHT-OF-WAY, EPSC MEASURES SHALL BE INSTALLED PRIOR TO CLEARING (TRENCHING AND ASSOCIATED BLASTING) IN THOSE AREAS NECESSARY TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION AREA. THESE EPSC MEASURES SHALL REMAIN UNTIL THE BACKFILLED TRENCH IS STABILIZED WITH FINAL VEGETATIVE COVER.

7.9. THE UTILITY CONTRACTOR SHALL RESTORE ALL AFFECTED WET WEATHER CONVEYANCES TO THE EXISTING TOPOGRAPHIC CONDITIONS AS APPROVED BY THE TDOT RESPONSIBLE PARTY.

7.10. THE UTILITY CONTRACTOR WILL PROVIDE APPROPRIATE EPSC MEASURES TO REPLACE ONSITE EPSC MEASURES REMOVED TO FACILITATE THE INSTALLATION OF UTILITIES. REPLACEMENT OF EPSC MEASURES WILL BE COORDINATED WITH THE TDOT ENGINEER BEFORE COMMENCING WORK.

7.11. FOR UTILITY CROSSINGS THAT UTILIZE HORIZONTAL DIRECTIONAL DRILLING THE FOLLOWING SHALL APPLY:

7.11.1. THE ENTRY AND EXIT POINTS SHALL BE AT LEAST 50 FEET FROM THE STREAM BANK OR WETLAND BOUNDARY.

7.11.2. THE DEPTH OF BORE BELOW THE STREAMBED IS SUFFICIENT TO PREVENT RELEASE OF DRILLING FLUID, BASED ON THE PARENT MATERIAL.

7.11.3. A SITE-SPECIFIC CONTINGENCY AND CONTAINMENT PLAN FOR INADVERTENT RELEASE OF DRILLING FLUID SHALL BE ESTABLISHED PRIOR TO COMMENCEMENT OF WORK. THIS PLAN SHALL BE SUBMITTED TO THE TDOT PROJECT ENGINEER AND THE TDOT ENVIRONMENTAL DIVISION PERMITS AND/OR COMPLIANCE AND FIELD SERVICES OFFICE FOR REVIEW AND APPROVAL.

8. MAINTENANCE AND INSPECTION

8.1. INSPECTION PRACTICES (3.5.8)

8.1.1. PROJECT EPSC INSPECTORS AND ENGINEERS (INCLUDING TDOT STAFF, CONSULTANTS AND CONTRACTOR STAFF) RESPONSIBLE FOR THE INSPECTION, IMPLEMENTATION, MAINTENANCE. AND/OR REPAIR OF EPSC MEASURES SHALL MEET ONE OF THE FOLLOWING REQUIREMENTS (3.5.8.1.):

8.1.1.1. SUCCESSFULLY COMPLETED THE TDOT EPSC INSPECTIONS TRAINING AND ANY RECERTIFICATION COURSE AS REQUIRED.

8.1.1.2. SUCCESSFULLY COMPLETED THE TDEC “LEVEL I - FUNDAMENTALS OF EROSION PREVENTION AND SEDIMENT CONTROL” COURSE AND ANY RECERTIFICATION COURSES AS REQUIRED.

8.1.1.3. BE A CURRENT TN LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT.

8.1.1.4. BE A CURRENT CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC).

8.1.1.5. SUCCESSFULLY COMPLETED TDEC “LEVEL II – DESIGN PRINCIPLES FOR EROSION PREVENTION AND SEDIMENT CONTROL FOR CONSTRUCTION SITES” COURSE AND ANY RECERTIFICATION COURSE AS REQUIRED.

8.1.2. THE TDOT CONSTRUCTION ENGINEER (OR THEIR DULY AUTHORIZED REPRESENTATIVE) AND THE CONTRACTOR’S SITE SUPERINTENDENT ARE RESPONSIBLE FOR INSPECTIONS. MAINTENANCE AND REPAIR ACTIVITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE TDOT CONSTRUCTION ENGINEER OR THEIR DULY AUTHORIZED REPRESENTATIVE SHALL COMPLETE THE EPSC INSPECTION REPORTS AND DISTRIBUTE COPIES PER THE CONTRACT.

8.1.3. THE INSPECTOR SHALL CONDUCT PRE-CONSTRUCTION INSPECTIONS TO VERIFY AREAS THAT ARE NOT TO BE DISTURBED HAVE BEEN MARKED IN THE SWPPP AND IN THE FIELD BEFORE LAND DISTURBANCE ACTIVITIES BEGIN AND INITIAL MEASURES HAVE BEEN INSTALLED (10 “INSPECTOR”) (3.5.1.o).

8.1.4. EPSC CONTROLS SHALL BE INSPECTED TO VERIFY MEASURES HAVE BEEN INSTALLED AND MAINTAINED IN ACCORDANCE WITH TDOT STANDARD DRAWINGS, SPECIFICATIONS, AND GOOD ENGINEERING PRACTICES. EPSC INSPECTIONS SHALL BE DOCUMENTED ON THE TDOT EPSC INSPECTION REPORT FORM AND THE TDEC CONSTRUCTION STORMWATER INSPECTION CERTIFICATION (TWICE-WEEKLY INSPECTIONS) FORM.

8.1.5. OUTFALL POINTS SHALL BE INSPECTED TO ASCERTAIN WHETHER EPSC MEASURES ARE EFFECTIVE IN PREVENTING EROSION AND CONTROLLING SEDIMENT INCLUDING SIGNIFICANT IMPACTS TO SURROUNDING STATE WATERS, WOTUS (EPHEMERAL), WETLANDS, OTHER NATURAL RESOURCES AND ADJACENT PROPERTY OWNERS. WHERE DISCHARGE LOCATIONS ARE INACCESSIBLE, NEARBY DOWN GRADIENT LOCATIONS SHALL BE INSPECTED. LOCATIONS WHERE VEHICLES ENTER AND EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFF-SITE ROADWAY SEDIMENT TRACKING.

8.1.6. INSPECTIONS WILL BE CONDUCTED AT LEAST TWICE EVERY CALENDAR WEEK AND AT LEAST 72 HOURS APART (3.5.8.2.a). A CALENDAR WEEK IS DEFINED AS SUNDAY THROUGH SATURDAY. QUALITY ASSURANCE INSPECTIONS OF TDOT EPSC, NPDES AND WATER QUALITY PERMIT REQUIREMENTS SHALL BE PERFORMED PER THE TDOT ENVIRONMENTAL DIVISION COMPLIANCE AND FIELD SERVICES OFFICE.

8.1.7. THE FREQUENCY OF EPSC INSPECTIONS MAY BE REDUCED TO ONCE A MONTH WHERE SITES OR PORTIONS OF SITES HAVE BEEN TEMPORARILY STABILIZED UNTIL CONSTRUCTION ACTIVITIES RESUME WITH WRITTEN NOTIFICATION BY THE TDOT REGIONAL ENGINEER TO TDEC NASHVILLE CENTRAL OFFICE AND SUBSEQUENT TDEC APPROVAL. WRITTEN NOTIFICATION MUST INCLUDE THE INTENT TO CHANGE FREQUENCY AND JUSTIFICATION (3.5.8.2.a).

8.1.8. ALL DISTURBED AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED, AREAS USED FOR MATERIAL STORAGE THAT ARE EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE, AND EACH OUTFALL WILL BE INSPECTED (3.5.8.2.b).

8.1.9. THE INSPECTOR WILL OVERSEE THE REQUIREMENTS OF OTHER CONSTRUCTION-RELATED WATER QUALITY PERMITS (I.E. TDEC ARAP, USACE SECTION 404, AND TVA SECTION 26a PERMITS) FOR CONSTRUCTION ACTIVITIES AROUND WATERS OF THE STATE (10 “INSPECTOR”).

8.1.10. THE SWPPP WILL BE REVISED AS NECESSARY BASED ON THE RESULTS OF THE INSPECTION. REVISION(S) WILL BE RECORDED WITHIN 7 DAYS OF THE INSPECTION. REVISION(S) WILL BE IMPLEMENTED WITHIN 14 DAYS OF THE INSPECTION (3.5.8.2.e AND 3.5.8.2.f).

8.1.11. DOCUMENTATION OF INSPECTIONS WILL BE MAINTAINED ON SITE IN THE “DOCUMENTATION AND PERMITS” BINDER. REPORTS WILL BE SUBMITTED TO THE TDOT PROJECT ENGINEER PER THE CONTRACT.

8.1.12. THESE INSPECTION REQUIREMENTS DO NOT APPLY TO DEFINABLE AREAS OF THE SITE THAT HAVE MET FINAL STABILIZATION REQUIREMENTS AND HAVE BEEN NOTED IN THE SWPPP.

8.1.13. TRAINED CERTIFIED INSPECTORS SHALL COMPLETE INSPECTION TO THE BEST OF THEIR ABILITY. FALSIFYING INSPECTION RECORDS OR OTHER DOCUMENTATION OR FAILURE TO COMPLETE INSPECTION DOCUMENTATION SHALL RESULT IN A VIOLATION OF THIS PERMIT AND ANY OTHER APPLICABLE ACTS OR RULES (3.5.8.2.h).

8.2. DULY AUTHORIZED REPRESENTATIVE (7.7.3)

THE PROJECT ENGINEER MAY DELEGATE AN INDIVIDUAL AND/OR CONSULTANT TO SIGN EPSC INSPECTIONS REPORTS. FOR SATISFYING SIGNATORY REQUIREMENTS FOR EPSC INSPECTION REPORTS, THE PROJECT ENGINEER AND NEWLY AUTHORIZED INDIVIDUAL ACCEPTING RESPONSIBILITY MUST COMPLETE AND SIGN THE TDOT CONSTRUCTION DIVISION EPSC DELEGATION OF AUTHORITY.

8.3. MAINTENANCE PRACTICES (3.5.3.1 AND 3.5.7)

8.3.1. ALL CONTROLS WILL BE MAINTAINED IN GOOD AND EFFECTIVE OPERATING ORDER AND IN ACCORDANCE WITH TDOT STANDARD DRAWINGS AND GOOD ENGINEERING PRACTICES. (3.5.3.1.b)

8.3.2. MAINTENANCE AND REPAIR ACTIVITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR.

8.3.3. UPON CONCLUSION OF THE INSPECTIONS, EPSC MEASURES FOUND TO BE INEFFECTIVE SHALL BE REPAIRED, REPLACED, OR MODIFIED BEFORE THE NEXT RAIN EVENT, IF POSSIBLE, BUT IN NO CASE, MORE THAN 24 HOURS AFTER THE INSPECTION OR WHEN THE CONDITION IS IDENTIFIED. IF THE REPAIR, REPLACEMENT OR MODIFICATION IS NOT PRACTICAL WITHIN THE 24-HOUR TIMEFRAME, WRITTEN DOCUMENTATION PROVIDED BY THE CONTRACTOR SHALL BE PLACED IN THE FIELD DIARY AND EPSC INSPECTION REPORT. AN ESTIMATED REPAIR, REPLACEMENT OR MODIFICATION SCHEDULE SHALL BE DOCUMENTED WITHIN 24 HOURS AFTER IDENTIFICATION. (3.5.8.2.e).

8.3.4. SEDIMENT SHALL BE REMOVED FROM SEDIMENT CONTROL STRUCTURES (SEDIMENT TRAPS, SILT FENCE, SEDIMENT BASINS, OTHER CONTROLS, ETC.) WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT (50%). (3.5.3.1.e).

8.3.5. DURING SEDIMENT REMOVAL, THE CONTRACTOR SHALL TAKE STEPS TO ENSURE THAT STRUCTURAL COMPONENTS OF EPSC MEASURES ARE NOT DAMAGED AND THUS MADE INEFFECTIVE. IF DAMAGE DOES OCCUR, THE CONTRACTOR SHALL REPAIR THE EPSC MEASURES AT THE CONTRACTOR'S OWN EXPENSE.

8.3.6. CHECK DAMS WILL BE INSPECTED FOR STABILITY. SEDIMENT WILL BE REMOVED WHEN DEPTH REACHES ONE-HALF (½) THE HEIGHT OF THE DAM.

8.3.7. SEDIMENT REMOVED FROM SEDIMENT CONTROL STRUCTURES SHALL BE PLACED AND TREATED IN A MANNER SO THAT THE SEDIMENT IS CONTAINED WITHIN THE PROJECT LIMITS, DOES NOT MIGRATE INTO FEATURES REMOVED FROM, AND DOES NOT MIGRATE ONTO ADJACENT PROPERTIES AND/OR INTO WATERS OF THE STATE/U.S.

8.3.8. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER WILL BE PICKED UP AND REMOVED FROM STORMWATER EXPOSURE PRIOR TO ANTICIPATED STORM EVENTS OR BEFORE BEING CARRIED OFF THE SITE BY WIND, OR OTHERWISE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES. AFTER USE, MATERIALS USED FOR EROSION CONTROL WILL BE REMOVED (3.5.3.1.f).

8.3.9. ALL SEEDED AREAS WILL BE CHECKED FOR BARE SPOTS, EROSION WASHOUTS, AND VIGOROUS GROWTH FREE OF SIGNIFICANT WEED INFESTATIONS.

9. SITE ASSESSMENTS (3.1.2)

QUALITY ASSURANCE SITE ASSESSMENTS OF EROSION PREVENTION AND SEDIMENT CONTROLS SHALL BE PERFORMED PER THE TDOT ENVIRONMENTAL DIVISION COMPLIANCE AND FIELD SERVICES OFFICE GUIDELINES.

10. STORMWATER MANAGEMENT (3.5.4)

10.1. STORMWATER MANAGEMENT WILL BE HANDLED BY TEMPORARY CONTROLS OUTLINED IN THIS SWPPP AND ANY PERMANENT CONTROLS NEEDED TO MEET PERMANENT STORMWATER MANAGEMENT NEEDS IN THE POST CONSTRUCTION PERIOD. PERMANENT CONTROLS WILL BE DEPICTED ON THE PLANS AND NOTED AS PERMANENT.

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10.2. DESCRIBE ANY SPECIFIC POST-CONSTRUCTION MEASURES THAT WILL CONTROL VELOCITY, POLLUTANTS, AND/OR EROSION (3.5.4): RIP RAP DITCHES AND OUTLET PROTECTION

10.3. OTHER ITEMS NEEDING CONTROL (3.5.5)

CONSTRUCTION MATERIALS: THE FOLLOWING MATERIALS OR SUBSTANCES ARE EXPECTED TO BE PRESENT ON THE SITE DURING THE CONSTRUCTION PERIOD. (CHECK ALL THAT APPLY).

☒ LUMBER, GUARDRAIL, TRAFFIC CONTROL DEVICES
☒ CONCRETE WASHOUT
☒ PIPE CULVERTS (I.E. CONCRETE, CORRUGATED METAL, HDPE, ETC.)
☒ MINERAL AGGREGATES, ASPHALT
☒ EARTH
☒ LIQUID TRAFFIC STRIPING MATERIALS, PAINT
☒ ROCK
☒ CURING COMPOUND
☐ EXPLOSIVES
☐ OTHER _____

THESE MATERIALS WILL BE HANDLED AS NOTED IN THIS SWPPP.

10.4. WASTE MATERIALS (3.5.5.b)

WASTE MATERIAL (EARTH, ROCK, ASPHALT, CONCRETE, ETC.) NOT REQUIRED FOR THE CONSTRUCTION OF THE PROJECT WILL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH THE TDOT CONSTRUCTION CONTRACT AND FEDERAL AND STATE REGULATIONS. IMPACTS TO WATERS OF THE STATE/U.S. SHALL BE AVOIDED IF POSSIBLE. IF UNAVOIDABLE, THE CONTRACTOR WILL OBTAIN ALL NECESSARY PERMITS INCLUDING, BUT NOT LIMITED TO NPDES, AQUATIC RESOURCES ALTERATION PERMIT(S) CORPS OF ENGINEERS SECTION 404 PERMITS, AND TVA SECTION 26A PERMITS TO DISPOSE OF WASTE MATERIALS.

10.5. HAZARDOUS WASTE (3.5.5.c) (7.9)

ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN A MANNER WHICH IS COMPLIANT WITH LOCAL OR STATE REGULATIONS. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES, AND THE INDIVIDUAL DESIGNATED AS THE CONTRACTOR'S ON-SITE REPRESENTATIVE WILL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED. THE CONTRACTOR WILL OBTAIN ALL NECESSARY PERMITS TO DISPOSE OF HAZARDOUS MATERIAL.

10.6. SANITARY WASTE (3.5.5.b)

PORTABLE SANITARY FACILITIES WILL BE PROVIDED ON ALL CONSTRUCTION SITES. SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS IN A TIMELY MANNER BY A LICENSED WASTE MANAGEMENT CONTRACTOR OR AS REQUIRED BY ANY LOCAL REGULATIONS. THE CONTRACTOR WILL OBTAIN ALL NECESSARY PERMITS TO DISPOSE OF SANITARY WASTE.

10.7. OTHER MATERIALS

THE FOLLOWING MATERIALS OR SUBSTANCES ARE EXPECTED TO BE PRESENT ON THE SITE DURING THE CONSTRUCTION PERIOD. (CHECK ALL THAT APPLY).

☒ FERTILIZERS AND LIME
☐ PESTICIDES AND/OR HERBICIDES
☒ DIESEL AND GASOLINE
☒ MACHINERY LUBRICANTS (OIL AND GREASE)

THESE MATERIALS WILL BE HANDLED AS NOTED IN THIS SWPPP.

11. NON-STORMWATER DISCHARGES (3.5.9)

11.1. THE FOLLOWING NON-STORMWATER DISCHARGES ARE ANTICIPATED DURING THE CONSTRUCTION OF THIS PROJECT (CHECK ALL THAT APPLY):

☒ DEWATERING OF WORK AREAS OF COLLECTED STORMWATER AND GROUND WATER.
☐ WATERS USED TO WASH VEHICLES (OF DUST AND SOIL) WHERE DETERGENTS ARE NOT USED AND DETENTION AND/OR FILTERING IS PROVIDED BEFORE THE WATER LEAVES THE SITE.
☐ WATER USED TO CONTROL DUST. (3.5.3.1.n)
☐ POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHING FROM WHICH CHLORINE HAS BEEN REMOVED TO THE MAXIMUM EXTENT PRACTICABLE.
☒ UNCONTAMINATED GROUNDWATER OR SPRING WATER.
☒ FOUNDATION OR FOOTING DRAINS WHERE FLOWS ARE NOT CONTAMINATED WITH POLLUTANTS.
☐ OTHER: _____

11.2. ALL ALLOWABLE NON-STORMWATER DISCHARGES WILL BE DIRECTED TO STABLE DISCHARGE STRUCTURES PRIOR TO LEAVING THE SITE. FILTERING OR CHEMICAL TREATMENT MAY BE NECESSARY PRIOR TO DISCHARGE. ALL CHEMICAL TREATMENTS MUST BE APPLIED PER SECTION 6 FLOCCULANTS.

11.3. THE DESIGN OF ALL IMPACTED EPSC MEASURES RECEIVING FLOW FROM ALLOWABLE NON-STORMWATER DISCHARGES MUST BE DESIGNED TO HANDLE THE VOLUME OF THE NON-STORMWATER COMPONENT.

11.4. WASH DOWN OR WASTE DISCHARGE OF CONCRETE TRUCKS WILL NOT BE PERMITTED ON-SITE UNLESS PROPER SETTLEMENT AREAS HAVE BEEN PROVIDED IN ACCORDANCE WITH BOTH STATE AND FEDERAL REGULATIONS.

11.5. ARE ANY DISCHARGES ASSOCIATED WITH INDUSTRIAL (NON-CONSTRUCTION STORMWATER) ACTIVITY EXPECTED (3.5.1.i)?

☐ YES ☒ NO

IF YES, SPECIFY THE LOCATION OF THE ACTIVITY AND ITS PERMIT NUMBER: _____

12. SPILL PREVENTION, MANAGEMENT AND NOTIFICATION (3.5.5.c, 5.1)

12.1. SPILL PREVENTION (3.5.5.c)

12.1.1. CONTRACTOR'S BULK FUEL AND PETROLEUM PRODUCTS STORED ON-SITE OR ADJACENT TO THE R.O.W. IN ABOVE GROUND STORAGE TANKS WITH AGGREGATE STORAGE CAPACITY IN EXCESS OF 1,320 GALLONS SHALL HAVE SECONDARY CONTAINMENT.

12.1.2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARING A SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN AS REQUIRED BY TDOT SPECIAL PROVISION 107FP (REGARDING WATER QUALITY AND STORM WATER PERMITS) AND THE LAW.

12.1.3. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING ANY NECESSARY LOCAL, STATE, AND FEDERAL PERMITS. THE SPCC PLAN AND/OR PERMITS SHALL BE KEPT ON-SITE AND A COPY PROVIDED TO THE TDOT CONSTRUCTION ENGINEER.

12.2. MATERIAL MANAGEMENT

12.2.1. HOUSEKEEPING

ONLY NEEDED PRODUCTS WILL BE STORED ON-SITE BY THE CONTRACTOR. EXCEPT FOR BULK MATERIALS THE CONTRACTOR WILL STORE ALL MATERIALS UNDER COVER AND IN APPROPRIATE CONTAINERS. PRODUCTS MUST BE STORED IN ORIGINAL CONTAINERS AND LABELED. MATERIAL MIXING WILL BE CONDUCTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHEN POSSIBLE, ALL PRODUCTS WILL BE USED COMPLETELY BEFORE PROPERLY DISPOSING OF THE CONTAINER OFF SITE. THE MANUFACTURER'S DIRECTIONS FOR DISPOSAL OF MATERIALS AND CONTAINERS WILL BE FOLLOWED. THE CONTRACTOR'S SITE SUPERINTENDENT WILL INSPECT MATERIALS STORAGE AREAS REGULARLY TO ENSURE PROPER USE AND DISPOSAL. DUST GENERATED WILL BE CONTROLLED IN AN ENVIRONMENTALLY SAFE MANNER. VEGETATION AREAS NOT ESSENTIAL TO THE CONSTRUCTION PROJECT WILL BE PRESERVED AND MAINTAINED AS NOTED ON THE PLANS.

12.2.2. HAZARDOUS MATERIALS

PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS UNLESS THE CONTAINER IS NOT RE-SEALABLE. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHEETS WILL BE RETAINED IN A SAFE PLACE TO RELAY IMPORTANT PRODUCT INFORMATION. IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURER'S LABEL DIRECTIONS FOR DISPOSAL WILL BE FOLLOWED. MAINTENANCE AND REPAIR OF ALL EQUIPMENT AND VEHICLES INVOLVING OIL CHANGES, HYDRAULIC SYSTEM DRAIN DOWN, DE-GREASING OPERATIONS, FUEL TANK DRAIN DOWN AND REMOVAL, AND OTHER ACTIVITIES WHICH MAY RESULT IN THE ACCIDENTAL RELEASE OF CONTAMINANTS WILL BE CONDUCTED ON AN IMPERVIOUS SURFACE AND UNDER COVER DURING WET WEATHER TO PREVENT THE RELEASE OF CONTAMINANTS ONTO THE GROUND. WHEEL WASH WATER WILL BE COLLECTED AND ALLOWED TO SETTLE OUT SUSPENDED SOLIDS PRIOR TO DISCHARGE. WHEEL WASH WATER WILL NOT BE DISCHARGED DIRECTLY INTO ANY STORMWATER SYSTEM OR STORMWATER TREATMENT SYSTEM. POTENTIAL pH-MODIFYING MATERIALS SUCH AS: BULK CEMENT, CEMENT KILN DUST, FLY ASH, NEW CONCRETE WASHINGS AND CURING WATERS, CONCRETE PUMPING, AND MIXER WASHOUT WATERS WILL BE COLLECTED ON SITE AND MANAGED TO PREVENT CONTAMINATION OF STORMWATER RUNOFF.

12.3. PRODUCT SPECIFIC PRACTICES

12.3.1. PETROLEUM PRODUCTS: ALL ON-SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED.

12.3.2. FERTILIZERS: FERTILIZERS WILL BE APPLIED ONLY IN THE AMOUNTS SPECIFIED BY THE SOIL ANALYSIS OR TDOT. ONCE APPLIED, FERTILIZERS WILL BE WORKED INTO THE SOIL TO LIMIT THE EXPOSURE TO STORMWATER. FERTILIZERS WILL BE STORED IN AN ENCLOSED AREA UNDER COVER. THE CONTENTS OF PARTIALLY USED FERTILIZER BAGS WILL BE TRANSFERRED TO SEALABLE CONTAINERS TO AVOID SPILLS.

12.3.3. PAINTS: ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. THE EXCESS WILL BE DISPOSED OF PER THE MANUFACTURER'S INSTRUCTIONS AND APPLICABLE STATE AND LOCAL REGULATIONS.

12.3.4. CONCRETE TRUCKS: CONTRACTORS WILL PROVIDE DESIGNATED TRUCK WASHOUT AREAS ON THE SITE. THESE AREAS MUST BE SELF CONTAINED AND NOT CONNECTED TO ANY STORMWATER OUTLET OF THE SITE. UPON COMPLETION OF CONSTRUCTION WASHOUT AREAS WILL BE PROPERLY STABILIZED.

12.4. SPILL MANAGEMENT

IN ADDITION TO THE PREVIOUS HOUSEKEEPING AND MANAGEMENT PRACTICES, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP IF NECESSARY:

12.4.1. FOR ALL HAZARDOUS MATERIALS STORED ON SITE, THE MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEAN UP WILL BE CLEARLY POSTED. SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATIONS OF THE INFORMATION AND CLEANUP SUPPLIES.

12.4.2. APPROPRIATE CLEANUP MATERIALS AND EQUIPMENT WILL BE MAINTAINED BY THE CONTRACTOR IN THE MATERIALS STORAGE AREA ON-SITE AND UNDER COVER. AS APPROPRIATE, EQUIPMENT AND MATERIALS MAY INCLUDE ITEMS SUCH AS BOOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR CLEAN UP PURPOSES.

12.4.3. ALL SPILLS WILL BE CLEANED IMMEDIATELY AFTER DISCOVERY AND THE MATERIALS DISPOSED OF PROPERLY. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.

12.4.4. THE CONTRACTOR'S RESPONSIBLE PARTY WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SITE SUPERINTENDENT HAS HAD APPROPRIATE TRAINING FOR HAZARDOUS MATERIALS HANDLING, SPILL MANAGEMENT, AND CLEANUP.

12.4.5. IF SPILLS REPRESENT AN IMMINENT THREAT OF ESCAPING THE SITE AND ENTERING RECEIVING WATERS, PERSONNEL WILL RESPOND IMMEDIATELY TO CONTAIN THE RELEASE AND NOTIFY THE SUPERINTENDENT AFTER THE SITUATION HAS BEEN STABILIZED.

12.4.6. IF AN OIL SHEEN IS OBSERVED ON SURFACE WATER (E.G. SETTLING PONDS, DETENTION PONDS, SWALES), ACTION WILL BE TAKEN IMMEDIATELY TO REMOVE THE MATERIAL CAUSING THE SHEEN. THE CONTRACTOR WILL USE APPROPRIATE MATERIALS TO CONTAIN AND ABSORB THE SPILL. THE SOURCE OF THE OIL SHEEN WILL ALSO BE IDENTIFIED AND REMOVED OR REPAIRED AS NECESSARY TO PREVENT FURTHER RELEASES.

12.4.7. IF A SPILL OCCURS THE CONTRACTOR'S SITE SUPERINTENDENT SHALL BE RESPONSIBLE FOR COMPLETING THE SPILL REPORTING FORM AND FOR REPORTING THE SPILL TO THE TDOT CONSTRUCTION ENGINEER AND/OR PROJECT ENGINEER. ALL SPILLS MUST BE REPORTED TO THE APPROPRIATE AGENCY, AND

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MEASURES SHALL BE TAKEN IMMEDIATELY TO PREVENT THE POLLUTION OF WATERS OF THE STATE/U.S., INCLUDING GROUNDWATER, SHOULD A SPILL OCCUR.

12.4.8. APPROPRIATE CLEANUP MATERIALS AND EQUIPMENT SHALL BE MAINTAINED BY THE CONTRACTOR IN THE MATERIALS STORAGE AREA ON-SITE AND UNDER COVER. SPILL RESPONSE EQUIPMENT SHALL BE INSPECTED AND MAINTAINED BY THE CONTRACTOR AS NECESSARY TO REPLACE ANY MATERIALS USED IN SPILL RESPONSE ACTIVITIES.

12.5. SPILL NOTIFICATION (5.1)

WHERE A RELEASE CONTAINING A HAZARDOUS SUBSTANCE IN AN AMOUNT EQUAL TO, OR MORE THAN A REPORTABLE QUANTITY ESTABLISHED UNDER EITHER 40 CFR 117 OR 40 CFR 302 OCCURS DURING A 24 HOUR PERIOD:

12.5.1. THE TDOT PROJECT ENGINEER IS RESPONSIBLE FOR NOTIFYING THE REGIONAL PROJECT DEVELOPMENT OFFICE (E.G. TRANSPORTATION ENVIRONMENTAL STUDIES SPECIALIST) AS SOON AS HE OR SHE HAS KNOWLEDGE OF THE DISCHARGE.

12.5.2. THE TDOT REGIONAL PROJECT DEVELOPMENT OFFICE WILL NOTIFY THE LOCAL TDEC ENVIRONMENTAL FIELD OFFICE AND ANY OTHER APPLICABLE REGULATORY AGENCIES WITHIN 24 HOURS OF THE SPILL.

12.5.3. IN ADDITION TO ANY FOLLOW UP NOTIFICATIONS REQUIRED BY FEDERAL LAW, A WRITTEN DESCRIPTION OF THE RELEASE, DATE OF RELEASE AND CIRCUMSTANCES LEADING TO THE RELEASE, WHAT ACTIONS WERE TAKEN TO MITIGATE EFFECTS OF THE RELEASE, AND STEPS TAKEN TO MINIMIZE THE CHANCE OF FUTURE OCCURRENCES WILL BE SUBMITTED TO THE APPROPRIATE TDEC ENVIRONMENTAL FIELD OFFICE WITHIN 14 DAYS OF KNOWLEDGE OF THE RELEASE.

12.5.4. THE SWPPP MUST BE MODIFIED WITHIN 14 DAYS OF KNOWLEDGE OF THE RELEASE PROVIDING A DESCRIPTION OF THE RELEASE, CIRCUMSTANCES LEADING TO THE RELEASE, AND THE DATE OF RELEASE. THE SWPPP WILL BE REVIEWED AND MODIFIED AS NECESSARY TO IDENTIFY MEASURES TO PREVENT THE REOCCURRENCE OF SUCH RELEASES AND TO RESPOND TO SUCH RELEASES.

13. RECORD-KEEPING

13.1. REQUIRED RECORDS

TDOT OR THEIR DULY AUTHORIZED REPRESENTATIVE WILL MAINTAIN AT THE SITE THE FOLLOWING RECORDS OF CONSTRUCTION ACTIVITIES (3.5.3.1.m) (4.1.5.) (6.2.1):

13.1.1. THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR.

13.1.2. THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE.

13.1.3. THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.

13.1.4. RECORDS EPSC INSPECTION REPORTS AND CORRECTIVE MEASURES.

13.1.5. RECORDS OF QUALITY ASSURANCE SITE ASSESSMENTS.

13.1.6. COPY OF SITE EPSC INSPECTOR'S CERTIFICATION AND/OR LICENSING

13.1.7. COPY OF REQUIRED SOIL ANALYSIS

13.1.8. A COPY OF ANY REGULATORY CORRESPONDENCE REGARDING THE EFFECTIVENESS OF THE *SWPPP* OR EPSC CONTROLS.

13.2. RAINFALL MONITORING PLAN (3.5.3.1.o):

13.2.1. EQUIPMENT

AT A MINIMUM, THE CONTRACTOR WILL INSTALL A FENCE POST TYPE RAIN GAUGE TO MEASURE RAINFALL. THE STANDARD FENCE POST RAIN GAUGE WILL BE A WEDGE-SHAPED GAUGE THAT MEASURES UP TO 6 INCHES OF RAINFALL. AN ENGLISH SCALE WILL BE PROVIDED ON ONE FACE, WITH A METRIC SCALE ON THE OTHER FACE. GRADUATION WILL BE PERMANENTLY MOLDED IN DURABLE WEATHER-RESISTANT PLASTIC. THE MINIMUM GRADUATION WILL BE 0.01 INCH (OR 0.1MM). AN ALUMINUM BRACKET WITH SCREWS MAY BE USED TO MOUNT THE GAUGE ON A WOODEN SUPPORT.

13.2.2. LOCATION

THE RAIN GAUGE WILL BE LOCATED AT OR ALONG THE PROJECT SITE, AS DEFINED IN THE NOI OF THE NPDES PERMIT, IN AN OPEN AREA SUCH THAT THE MEASUREMENT WILL NOT BE INFLUENCED BY OUTSIDE FACTORS (I.E. OVERHANGS, GUTTER, TREES, ETC.). AT LEAST ONE RAIN GAUGE PER LINEAR MILE IS REQUIRED ALONG (AS MEASURED ALONG THE CENTERLINE OF THE PRIMARY ALIGNMENT) THE PROJECT WHERE CLEARING, GRUBBING, EXCAVATION, GRADING, CUTTING OR FILLING IS ACTIVELY PERFORMED, OR EXPOSED SOIL HAS NOT YET BEEN PERMANENTLY STABILIZED.

13.2.3. METHODS

RAINFALL MONITORING WILL BE INITIATED PRIOR TO CLEARING, GRUBBING, EXCAVATION, GRADING, CUTTING, OR FILLING, EXCEPT AS SUCH MINIMAL CLEARING MAY BE NECESSARY TO INSTALL A RAIN GAUGE IN AN OPEN AREA. THE RAIN GAUGE WILL BE CHECKED FOR OPERATIONAL SOUNDNESS DAILY (DURING NORMAL BUSINESS HOURS) IN WET TIMES AND WEEKLY IN DRY TIMES. GAUGES WILL BE REPAIRED OR REPLACED ON THE SAME DAY IF FOUND TO BE NON-OPERATIONAL OR MISSING.

13.2.4. EACH RAIN GAUGE WILL BE READ (FOR DETAILED RECORDS OF RAINFALL) AND EMPTIED AFTER EVERY RAINFALL EVENT OCCURRING ON THE PROJECT SITE AT APPROXIMATELY THE SAME TIME OF THE DAY (DURING NORMAL BUSINESS HOURS). DURING PERIODS OF DRY CONDITIONS, IT WILL NOT BE NECESSARY TO READ THE RAIN GAUGE EVERY DAY. IN LIEU OF THIS REQUIREMENT ON WEEKENDS AND ON STATE HOLIDAYS, THE RAIN GAUGES CAN BE EMPTIED THE NEXT BUSINESS DAY AND A REFERENCE SITE USED FOR A RECORD OF DAILY AMOUNT OF PRECIPITATION FOR THOSE DAYS. A REFERENCE SITE IS THE DOCUMENTATION FROM THE CLOSEST GAUGE WITHIN PROXIMITY OF THE PROJECT FROM A RECOGNIZED SOURCE SUCH AS THE NOAA NATIONAL WEATHER SERVICE.

13.2.5. DETAILED RECORDS WILL BE RECORDED OF RAINFALL EVENTS INCLUDE DATES, AMOUNTS OF RAINFALL, AND THE APPROXIMATE DURATION (OR THE STARTING AND ENDING TIMES). THE RAINFALL RECORDS SHALL BE RECORDED ON THE TDOT RAINFALL RECORD SHEET AND SHALL BE MAINTAINED IN THE "DOCUMENTATION AND PERMITS" BINDER.

13.2.6. IF THE RAINFALL EVENT IS STILL IN PROGRESS AT THE DAILY RECORDING TIME, THE GAUGE WILL BE EMPTIED AND THE RECORD WILL INDICATE THAT THE STORM EVENT WAS STILL IN PROGRESS.

13.2.7. RAIN GAUGE INFORMATION (DETAILED RECORDS), INCLUDING THE LOCATION OF THE NEAREST OUTFALL, WILL BE RECORDED ON THE EPSC INSPECTION REPORT FORMS AT THE TIME OF MEASUREMENT.

13.3. KEEPING PLANS CURRENT (3.4)

13.3.1. THE EPSC PLAN IS TO SERVE AS AN INITIAL GUIDE FOR SITE PERSONNEL AS THE CONSTRUCTION PROCESS DEVELOPS. IT MUST BE AMENDED, MODIFIED, AND UPDATED WHENEVER EPSC INSPECTIONS INDICATE, OR WHERE STATE OR FEDERAL REGULATORY OFFICIALS DETERMINE EPSC MEASURES ARE PROVING INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANT SOURCES OR ARE OTHERWISE NOT ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORMWATER DISCHARGES ASSOCIATED WITH THE CONSTRUCTION ACTIVITY.

13.3.2. THE STAGES DEPICTED WITHIN THE EPSC PLANS MAY NOT COINCIDE WITH THE ACTUAL STAGES OF CONSTRUCTION ESTABLISHED BY THE CONTRACTOR DURING CONSTRUCTION, THUS MODIFICATIONS WILL BE REQUIRED TO ENSURE THE EPSC PLAN IS MAINTAINED TO DEPICT CURRENT SITE CONDITIONS. IT SHOULD BE MAINTAINED SUCH THAT IT WILL ALWAYS REFLECT THE MEASURES THAT ARE INSTALLED DURING THE VARIOUS STAGES OF CONSTRUCTION. IT IS IMPRACTICAL TO DETERMINE ALL THE INTERMEDIATE STAGES OF CONSTRUCTION THAT WILL OCCUR, THUS THESE DOCUMENTS MUST BE UPDATED THROUGHOUT THE LIFE OF THE CONSTRUCTION PROJECT.

13.3.3. THE TDOT EPSC INSPECTOR OR THEIR DULY AUTHORIZED REPRESENTATIVE WILL MODIFY AND UPDATE THE SWPPP WHEN ANY OF THE FOLLOWING CONDITIONS APPLY:

13.3.3.1. WHENEVER THERE IS A CHANGE IN THE SCOPE OF THE PROJECT THAT WOULD BE EXPECTED TO HAVE A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS TO THE WATERS OF THE STATE AND WHICH HAS NOT OTHERWISE BEEN ADDRESSED IN THE SWPPP;

13.3.3.2. WHENEVER INSPECTIONS OR INVESTIGATIONS BY SITE OPERATORS, LOCAL, STATE, OR FEDERAL OFFICIALS INDICATE THE SWPPP IS PROVING INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANTS FROM CONSTRUCTION ACTIVITY SOURCES, OR IS OTHERWISE NOT ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY; WHERE LOCAL, STATE, OR FEDERAL OFFICIALS DETERMINE THAT THE SWPPP IS INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING POLLUTANT SOURCES, A COPY OF ANY CORRESPONDENCE TO THAT EFFECT MUST BE RETAINED IN THE SWPPP;

13.3.3.3. WHEN ANY NEW OPERATOR AND/OR SUB-OPERATOR IS ASSIGNED OR RELIEVED OF THEIR RESPONSIBILITY TO IMPLEMENT A PORTION OF THE SWPPP;

13.3.3.4. TO PREVENT A NEGATIVE IMPACT TO LEGALLY PROTECTED STATE OR FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED AQUATIC FAUNA;

13.3.3.5. WHEN THERE IS A CHANGE IN CHEMICAL TREATMENT METHODS INCLUDING: USE OF DIFFERENT TREATMENT CHEMICALS, DIFFERENT DOSAGE OR APPLICATION RATES OR A DIFFERENT AREA OF APPLICATION NOT SPECIFIED ON THE EPSC PLANS.

13.3.3.6. ALL SWPPP REVISION(S) SHALL BE RECORDED WITHIN 7 DAYS BY THE PROJECT EPSC INSPECTOR.

13.3.3.7. WHEN A TMDL IS DEVELOPED FOR THE RECEIVING WATERS FOR A POLLUTANT OF CONCERN (SILTATION AND/OR HABITAT ALTERATION), CONSTRUCTION SHALL NOTIFY THE PERMITS SECTION FOR PROPER COORDINATION.

13.4. MAKING PLANS ACCESSIBLE

13.4.1. TDOT WILL RETAIN A COPY OF THIS SWPPP (INCLUDING A COPY OF THE "DOCUMENTATION AND PERMITS" BINDER AT THE CONSTRUCTION SITE (OR OTHER LOCATION ACCESSIBLE TO TDEC AND THE PUBLIC) FROM THE DATE CONSTRUCTION COMMENCES TO THE DATE OF FINAL STABILIZATION. TDOT WILL HAVE A COPY OF THE SWPPP AVAILABLE AT THE LOCATION WHERE WORK IS OCCURRING ON-SITE FOR THE USE OF OPERATORS AND THOSE IDENTIFIED AS HAVING RESPONSIBILITIES UNDER THE SWPPP WHENEVER THEY ARE ON THE CONSTRUCTION SITE (6.2).

13.4.2. PRIOR TO THE INITIATION OF LAND DISTURBING ACTIVITIES AND UNTIL THE SITE HAS MET THE FINAL STABILIZATION CRITERIA, TDOT OR THEIR DULY AUTHORIZED REPRESENTATIVE WILL POST A NOTICE NEAR THE MAIN ENTRANCE OF THE CONSTRUCTION SITE WITH THE FOLLOWING INFORMATION (3.3.3) (6.2.1):

13.4.2.1. A COPY OF THE NOTICE OF COVERAGE (NOC) WITH THE NPDES PERMIT NUMBER FOR THE PROJECT;

13.4.2.2. THE INDIVIDUAL NAME, COMPANY NAME, E-MAIL ADDRESS (IF APPLICABLE) AND TELEPHONE NUMBER OF THE LOCAL PROJECT SITE OWNER AND OPERATOR CONTACT;

13.4.2.3. A BRIEF DESCRIPTION OF THE PROJECT; AND

13.4.2.4. THE LOCATION OF THE SWPPP.

13.4.3. ALL INFORMATION DESCRIBED IN SECTION 13.4.2 MUST BE MAINTAINED IN LEGIBLE CONDITION. IF POSTING THIS INFORMATION NEAR A MAIN ENTRANCE IS INFEASIBLE DUE TO SAFETY CONCERNS, THE NOTICE SHALL BE POSTED IN A LOCAL BUILDING. THE NOTICE MUST BE PLACED IN A PUBLICLY ACCESSIBLE LOCATION WHERE CONSTRUCTION IS ACTIVELY UNDERWAY AND MOVED AS NECESSARY.

13.5. NOTICE OF TERMINATION (8.0)

13.5.1. WHEN ALL STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES THAT ARE AUTHORIZED BY THE PERMIT ARE ELIMINATED BY FINAL STABILIZATION, THE TDOT REGIONAL ENGINEER WILL SUBMIT A NOTICE OF TERMINATION (NOT) THAT IS SIGNED IN ACCORDANCE WITH THE PERMIT TO THE TDEC CENTRAL OFFICE IN NASHVILLE, TN.

13.5.2. FOR THE PURPOSES OF THE CERTIFICATION REQUIRED BY THE NOT, THE ELIMINATION OF STORMWATER DISCHARGES ASSOCIATED WITH THE CONSTRUCTION ACTIVITY MEANS THE

13.5.2.1. ALL EARTH-DISTURBING ACTIVITIES ON THE SITE ARE COMPLETED AND ALL DISTURBED SOILS AT THE PORTION

STATE OF TENNESSEE
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STORMWATER POLLUTION PREVENTION PLAN

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OF THE CONSTRUCTION SITE WHERE THE OPERATOR HAD CONTROL HAVE BEEN FINALLY STABILIZED; AND

13.5.2.2. ALL CONSTRUCTION MATERIALS, WASTE AND WASTE HANDLING DEVICES, AND ALL EQUIPMENT, AND VEHICLES THAT WERE USED DURING CONSTRUCTION HAVE BEEN REMOVED AND PROPERLY DISPOSED; AND

13.5.2.3. ALL STORMWATER CONTROLS THAT WERE INSTALLED AND MAINTAINED DURING CONSTRUCTION, EXCEPT THOSE THAT ARE INTENDED FOR LONG-TERM USE FOLLOWING TERMINATION OF PERMIT COVERAGE, HAVE BEEN REMOVED; AND

13.5.2.4. ALL POTENTIAL POLLUTANTS AND POLLUTANT GENERATING ACTIVITIES ASSOCIATED WITH CONSTRUCTION HAVE BEEN REMOVED; AND

13.5.2.5. THE PERMITTEE HAS IDENTIFIED WHO IS RESPONSIBLE FOR ONGOING MAINTENANCE OF ANY STORMWATER CONTROLS LEFT ON THE SITE FOR LONG-TERM USE FOLLOWING TERMINATION OF PERMIT COVERAGE; AND

13.5.2.6. TEMPORARY EPSC MEASURES HAVE BEEN OR WILL BE REMOVED AT AN APPROPRIATE TIME TO ENSURE FINAL STABILIZATION IS MAINTAINED; AND

13.5.2.7. ALL STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES FROM THE IDENTIFIED SITE THAT ARE AUTHORIZED BY A NPDES GENERAL PERMIT HAVE OTHERWISE BEEN ELIMINATED FROM THE PORTION OF THE CONSTRUCTION SITE WHERE THE OPERATOR HAD CONTROL.

13.6. RETENTION OF RECORDS (6.2)

TDOT WILL RETAIN COPIES OF THE SWPPP, ALL REPORTS REQUIRED BY THE PERMIT, AND RECORDS OF ALL DATA USED TO COMPLETE THE NOTICE OF INTENT FOR THE PROJECT FOR A PERIOD OF AT LEAST THREE (3) YEARS FROM THE DATE THE NOT WAS FILED.

14. SITE WIDE/PRIMARY PERMITTEE CERTIFICATION (7.7.5)

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED BY ME, OR UNDER MY DIRECTION OR SUPERVISION. THE SUBMITTED INFORMATION IS TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. AS SPECIFIED IN TENNESSEE CODE ANNOTATED SECTION 39-16-702(a)(4), THIS DECLARATION IS MADE UNDER PENALTY OF PERJURY.

AUTHORIZED TDOT PERSONNEL SIGNATURE (3.3.1)

JOHN K. BARRETT

PRINTED NAME

C.E MANAGER 2

TITLE

OCTOBER 24, 2017

DATE

15. SECONDARY PERMITTEE (OPERATOR) CERTIFICATION (7.7.6)

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE REVIEWED THIS DOCUMENT, ANY ATTACHMENTS, AND THE SWPPP REFERENCED ABOVE. BASED ON MY INQUIRY OF THE CONSTRUCTION SITE OWNER/DEVELOPER IDENTIFIED ABOVE AND/OR MY INQUIRY OF THE PERSON DIRECTLY RESPONSIBLE FOR ASSEMBLING THIS NOI AND SWPPP, I BELIEVE THE INFORMATION SUBMITTED IS ACCURATE. I AM AWARE THAT THIS NOI, IF APPROVED, MAKES THE ABOVE-DESCRIBED CONSTRUCTION ACTIVITY SUBJECT TO NPDES PERMIT NUMBER TNR100000, AND THAT CERTAIN OF MY ACTIVITIES ONSITE ARE THEREBY REGULATED. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS, AND FOR FAILURE TO COMPLY WITH THESE PERMIT REQUIREMENTS. AS SPECIFIED IN TENNESSEE CODE ANNOTATED SECTION 39-16-702(a)(4), THIS DECLARATION IS MADE UNDER PENALTY OF PERJURY.

AUTHORIZED OPERATOR (CONTRACTOR) SIGNATURE (3.3.1)

PRINTED NAME

TITLE

DATE

16. ENVIRONMENTAL PERMITS (9.0)

LIST ALL ENVIRONMENTAL PERMITS AND EXPIRATION DATES FOR PROJECT **(TO BE COMPLETED AT THE ENVIRONMENTAL PRECONSTRUCTION MEETING BY TDOT CONSTRUCTION OR THEIR DULY AUTHORIZED REPRESENTATIVE)**:

ENVIRONMENTAL PERMITS			
PERMIT	**YES OR NO**	**PERMIT OR TRACKING NO.**	**EXPIRATION DATE***
TDEC ARAP			
CORPS OF ENGINEERS (USACE)			
TVA 26A			
TDEC CGP			
OTHER:			

*THE TDOT ENVIRONMENTAL DIVISION MUST BE NOTIFIED SIX MONTHS PRIOR TO PERMIT EXPIRATION DATE.

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17. OUTFALL TABLE (3.5.1.d, 5.4.1.g)

EPSC STAGE	OUTFALL LABEL	SUB OUT-FALL	STATION CL, LT OR RT	SLOPE WITHIN ROW (%)	STAGE 1 (S1) DRAINAGE AREA (AC)	STAGE 2 (S2) DRAINAGE AREA (AC)	STAGE 3 (S3) DRAINAGE AREA (AC)	SEDIMENT BASIN OR EQUIVALENT MEASURE(S) (YES, NO OR N/A)	RECEIVING RESOURCE (TDOT EBR LABEL) OR OTHER	COMMENTS
1,2	OUT-1	N/A	105+80 LT (S1) 105+50 RT (S2)	2.0 (S1) 0.6 (S2)	0.4	0.4		N/A	SPG-3/STR-3 (S1) STR-2 (S2)	
1,2	OUT-2	N/A	105+95 LT (S1) 105+50 LT (S2)	1.0	0.5	0.5		N/A	STR-3 (S1) SPG-3/STR-3 (S2)	
1,2	OUT-3	N/A	107+40 LT	2.0 (S1) 0.2 (S2)	0.4	0.4		N/A	STR-1	
1,2	OUT-4	N/A	107+70 RT	0.5	0.5	0.5		N/A	STR-1	
1	OUT-5	N/A	105+55 RT	0.5	0.1			N/A	STR-2	
1,2	OUT-6	N/A	105+00 RT	4.0 (S1) 1.0 (S2)	0.1	0.1		N/A	STR-3	
1	OUT-7	N/A	108+40 RT	2.1	0.3			N/A	STR-1	
2	OUT-7A	N/A	109+10 RT	2.1		0.2		N/A	SPG-1/STR-1	

ALL UNUSED FIELDS WITHIN THE OUTFALL TABLE ARE TO BE SHADED, HATCHED, OR REMOVED TO INDICATE THEIR NON-USAGE.

STATE OF TENNESSEE
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STORMWATER POLLUTION PREVENTION PLAN

Index Of Sheets
SEE SHEET NO. 1A

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING

WASHINGTON COUNTY

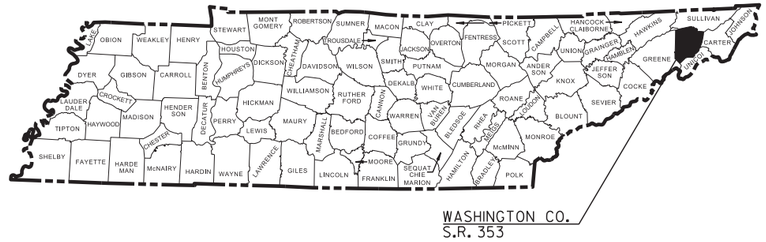
S.R. 353: CULVERT OVER BRANCH, L.M. 3.23

CONSTRUCTION
GRADE, DRAIN, BASE, PAVE, AND BRIDGE

STATE HIGHWAY NO. 353 F.A.H.S. NO. N/A

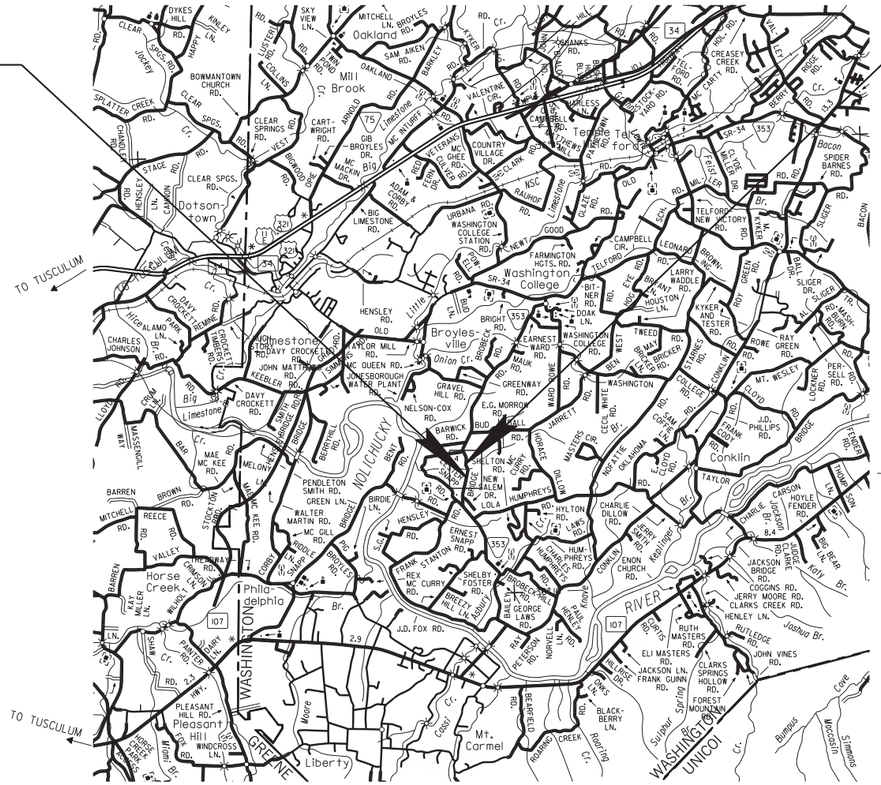
TENN.	YEAR	SHEET NO.
	2017	1
FED. AID PROJ. NO.	HRRR/HSIP-353(10)	
STATE PROJ. NO.	90023-3223-94	

REVISED 04-12-17 MODIFIED END PROJECT STATION.



90023-3223-94
BEGIN PROJECT NO. HRRR/HSIP-353(10) CONSTRUCTION
STA. 101+00.00
N 693191.5330 E 2973898.7632

90023-3223-94
END PROJECT NO. HRRR/HSIP-353(10) CONSTRUCTION
STA. 112+00.00
N 694273.0320 E 2973776.1750



N

0 1 2 3 MILES

SCALE: 1"= 1 MILE

NO EXCLUSIONS
NO EQUATIONS

UNOFFICIAL SET
NOT FOR BIDDING

SEALED BY

APPROVED: Paul D. Degges
PAUL D. DEGGES, CHIEF ENGINEER

DATE:

APPROVED:
JOHN SCHROER, COMMISSIONER

SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED JANUARY 1, 2015 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT C.E. MANAGER 1 : ERIC WILSON
DESIGNER : AUBIN CANNING CHECKED BY: JAY MORGAN
P.E. NO. 90023-1223-94 (DESIGN)
PIN NO. 114038.01

ROADWAY LENGTH	0.196 MILES
BRIDGE LENGTH	0.000 MILES
BOX BRIDGE LENGTH	0.012 MILES
PROJECT LENGTH	0.208 MILES

S.R. 353

SURVEY NOV. - 2014	TRAFFIC DATA	
	ADT (2017)	721
	ADT (2037)	861
	DHV (2037)	95
	D	65 - 35
	T (ADT)	6 %
	T (DHV)	4 %
	V	40 MPH

STATE PLANE COORDINATES ARE BASED ON GPS MEASUREMENTS OBTAINED 4-11-17 USING GEOID 2009 MODEL AND DATUM ADJUSTMENT FACTOR OF 1.000096

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

27-SEP-2017 19:13
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TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	1A

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)

ROADWAY INDEX

NOTE: THE ALPHABETICAL LETTERS "I", "O" & "Q" ARE NOT USED IN NUMBERING OF SHEETS.

NO PROJECT COMMITMENTS SHEET INCLUDED IN THIS SET OF PLANS

STANDARD ROADWAY DRAWINGS

DWG.	REV.	DESCRIPTION
ROADWAY DESIGN STANDARDS		
RD-A-1	12-18-99	STANDARD ABBREVIATIONS
RD-L-1	10-26-94	STANDARD LEGEND
RD-L-2	09-05-01	STANDARD LEGEND FOR UTILITY INSTALLATIONS
RD-L-3	03-16-17	STANDARD LEGEND FOR SIGNALIZATION AND LIGHTING
RD-L-4	03-16-17	STANDARD LEGEND FOR SIGNALIZATION AND LIGHTING
RD-L-5	05-01-08	STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-6	03-30-10	STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-7	05-24-12	STANDARD LEGEND FOR EROSION PREVENTION AND SEDIMENT CONTROL
RD-L-8		STANDARD LEGEND FOR NATURAL STREAM DESIGN
RD01-TS-2	03-16-17	DESIGN STANDARDS FOR COLLECTOR ROADS AND STREETS
RD01-SE-3	10-15-02	RURAL SUPERELEVATION DETAILS
RD01-S-11	04-04-03	DESIGN AND CONSTRUCTION DETAILS FOR ROADSIDE SLOPE DEVELOPMENT
RD01-S-11A	10-15-02	ROADSIDE DITCH DETAILS FOR DESIGN AND CONSTRUCTION
RD01-SD-1		INTERSECTION SIGHT DISTANCE DESIGN AND GENERAL NOTES
RD01-SD-2		INTERSECTION SIGHT DISTANCE LANDSCAPE AND OBSTRUCTION
RD01-SD-3		INTERSECTION SIGHT DISTANCE 2-LANE ROADWAYS
PIPE CULVERTS AND ENDWALLS		
D-FLU-1		FLUME DETAILS
D-PB-1	03-16-17	STANDARD DETAILS FOR CONCRETE PIPE INSTALLATION
D-PB-2	01-29-14	STANDARD DETAILS FOR FLEXIBLE PIPE INSTALLATION
D-PB-3		INDUCED TRENCH SOIL EMBANKMENT FOR PIPE CULVERT INSTALLATION
D-PE-4	10-10-16	STRAIGHT CONCRETE ENDWALL
D-PG-3	04-15-97	FERROUS AND ALUMINUM CORRUGATED METAL PIPE
CATCH BASINS AND MANHOLES		
D-CB-99	05-20-14	MISCELLANEOUS DETAILS FOR RECTANGULAR STRUCTURES
D-SDS-1	08-01-12	STANDARD 32" X 32" SQUARE CONCRETE NO. 1 SPRING DRAIN BOX
SAFETY DESIGN AND FENCES		
S-CZ-1		CLEAR ZONE CRITERIA
S-PL-1		SAFETY PLAN AT ROADSIDE HAZARDS
S-PL-2	10-10-16	SAFETY PLAN AT SIDEROADS OR PRIVATE DRIVES
S-PL-6	10-10-16	SAFETY PLAN SAFETY HARDWARE PLACEMENT ON OUTSIDE EDGE
S-CC-1	03-28-17	CRASH CUSHION
S-GRC-1	10-10-16	GUARDRAIL CONNECTION TO BRIDGE ENDS OR BARRIER WALL
S-GRC-2	10-10-16	GUARDRAIL CONNECTION TO BRIDGE ENDS FOR LOCAL ROADS (ADT< 2000)
S-GR31-1	03-28-17	W-BEAM GUARDRAIL
S-GR31-1A		W-BEAM BARRIER FASTENING HARDWARE
S-GRS-1	03-28-17	SPECIAL CASE LONG SPAN GUARDRAIL ONE POST OMITTED
S-GRS-2	05-25-16	SPECIAL CASE: GUARDRAIL ATTACHMENT TO CONCRETE DECKS
S-GRT-2	03-28-17	TYPE 38 GUARDRAIL TERMINAL
S-GRT-2P	10-10-16	EARTH PAD FOR TYPE 38 AND TYPE 21 TERMINAL
S-GRA-4	03-28-17	IN-LINE GUARDRAIL ANCHOR
S-F-1	05-24-12	HIGH VISIBILITY FENCE
S-RP-2	02-08-16	STANDARD CONCRETE RIGHT-OF-WAY MARKERS
DESIGN - TRAFFIC CONTROL		
T-M-1	07-24-14	DETAILS OF PAVEMENT MARKINGS FOR CONVENTIONAL ROADS AND MARKING ABBREVIATIONS
T-M-2	10-10-16	DETAILS OF PAVEMENT MARKINGS FOR CONVENTIONAL ROADS
T-M-16	01-30-15	ASPHALT SHOULDER RUMBLE STRIPE INSTALLATION DETAILS FOR NON-ACCESS CONTROLLED ROUTES
T-PBR-1	03-16-17	INTERCONNECTED PORTABLE BARRIER RAIL
T-PBR-2	03-16-17	DETAIL FOR VERTICAL PANELS AND FLEXIBLE DELINEATORS
T-WZ-30	09-01-05	TRAFFIC CONTROL 2-LANE, 2-WAY DIVERSION (40 MPH OR LESS)
T-WZ-32	03-05-17	TRAFFIC CONTROL PLAN SIGNAL LAYOUT FOR TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE
T-WZ-34	09-01-05	TRAFFIC CONTROL PLAN GENERAL NOTES FOR TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE
T-WZ-35	04-02-12	TRAFFIC CONTROL PLAN PAY ITEM AND SIGN DETAILS FOR TRAFFIC SIGNAL AT TWO LANE BRIDGE RECONSTRUCTION SITE
T-WZ-36	03-05-17	LANE CLOSURE ON LOW-VOLUME 2-LANE HIGHWAY
EROSION PREVENTION AND SEDIMENT CONTROL		
EC-STR-2	08-01-12	SEDIMENT FILTER BAG
EC-STR-3C	08-01-12	SILT FENCE WITH WIRE BACKING
EC-STR-3E	04-01-08	SILT FENCE FABRIC JOINING DETAILS
EC-STR-6	05-06-16	ROCK CHECK DAM
EC-STR-6A	05-06-16	ENHANCED ROCK CHECK DAM
EC-STR-11	03-16-17	CULVERT PROTECTION TYPE 1
EC-STR-25	08-01-12	TEMPORARY CULVERT CROSSING, CONSTRUCTION EXIT, CONSTRUCTION FORD
EC-STR-30		INSTREAM DIVERSION (WITHOUT TRAFFIC)
EC-STR-30A		INSTREAM DIVERSION (WITH TRAFFIC)
EC-STR-31	08-01-12	TEMPORARY DIVERSION CHANNEL
EC-STR-31A	04-01-08	TEMPORARY DIVERSION CHANNEL DESIGN
EC-STR-32	08-01-12	TEMPORARY DIVERSION CULVERTS
EC-STR-33	08-01-12	SUSPENDED PIPE DIVERSION (DOWNSTREAM)
EC-STR-33A	08-01-12	SUSPENDED PIPE DIVERSION (UPSTREAM)
EC-STR-37	06-10-14	SEDIMENT TUBE

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ROADWAY INDEX AND STANDARD ROADWAY DRAWINGS

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TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	2A

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)

ESTIMATED ROADWAY QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	QUANTITY
	105-01	CONSTRUCTION STAKES, LINES AND GRADES	LS	1
	201-01	CLEARING AND GRUBBING	LS	1
①	202-04.01	REMOVAL OF STRUCTURES (SPRING HOUSE, 108+92.81)	LS	1
①	202-04.51	REMOVAL OF STRUCTURES (31'-5'X4' CONC. BOX CULV.,107+44.12)	LS	1
②	203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	24
	203-07	FURNISHING & SPREADING TOPSOIL	C.Y.	396
	203-30.01	ROADWAY APPROACHES	LS	1
	204-08	FOUNDATION FILL MATERIAL	C.Y.	14
	209-05	SEDIMENT REMOVAL	C.Y.	82
	209-08.02	TEMPORARY SILT FENCE (WITH BACKING)	L.F.	2912
③④	209-08.07	ROCK CHECK DAM PER	EACH	36
③④	209-08.08	ENHANCED ROCK CHECK DAM	EACH	13
	209-09.01	SANDBAGS	BAG	600
	209-09.04	SEDIMENT FILTER BAG(15' X 10')	EACH	6
	209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM)	S.Y.	22
	209-65.03	TEMPORARY DIVERSION CHANNEL	L.F.	150
	209-65.04	TEMPORARY IN STREAM DIVERSION	L.F.	110
	303-01	MINERAL AGGREGATE, TYPE A BASE, GRADING D	TON	2494
	303-01.01	GRANULAR BACKFILL (ROADWAY)	TON	1486
⑤	303-10.01	MINERAL AGGREGATE (SIZE 57)	TON	60
	307-01.01	ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING A	TON	464
	307-01.08	ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING B-M2	TON	304
	402-01	BITUMINOUS MATERIAL FOR PRIME COAT (PC)	TON	6
	403-01	BITUMINOUS MATERIAL FOR TACK COAT (TC)	TON	2
	411-01.10	ACS MIX(PG64-22) GRADING D	TON	296
	411-12.03	SCORING FOR RUMBLE STRIPE (NON-CONTINUOUS) (8IN WIDTH)	L.M.	1
	604-01.01	CLASS A CONCRETE (ROADWAY)	C.Y.	57
	604-01.02	STEEL BAR REINFORCEMENT (ROADWAY)	LB.	11345
	607-03.02	18" CONCRETE PIPE CULVERT (CLASS III)	L.F.	47
	607-39.02	18" PIPE CULVERT (SIDE DRAIN)	L.F.	122
	611-02.01	SPRING DRAIN BOX, TYPE 1	EACH	1
	611-07.01	CLASS A CONCRETE (PIPE ENDWALLS)	C.Y.	1
	611-07.02	STEEL BAR REINFORCEMENT (PIPE ENDWALLS)	LB.	45
⑥	621-03.06	42" TEMPORARY DRAINAGE PIPE	L.F.	70
⑦	621-03.08	54" TEMPORARY DRAINAGE PIPE	L.F.	40
	705-01.04	METAL BEAM GUARD FENCE	L.F.	90
	705-06.01	W BEAM GR (TYPE 2) MASH TL3	L.F.	304
	705-06.11	GR TERMINAL (IN-LINE) MASH TL3	EACH	1
	705-06.20	TANGENT ENERGY ABSORBING TERM MASH TL-3	EACH	5
⑧	705-20.25	TEMPORARY CRASH CUSHION (MASH TL-3)	EACH	10
	707-08.11	HIGH-VISIBILITY CONSTRUCTION FENCE	L.F.	722
	708-02.01	MARKERS (CONCRETE R.O.W. POSTS)	EACH	21
③④⑨	709-05.05	MACHINED RIP-RAP (CLASS A-3)	TON	150
⑩	709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	947
	709-05.08	MACHINED RIP-RAP (CLASS B)	TON	81
	709-05.09	MACHINED RIP-RAP (CLASS C)	TON	177
	712-01	TRAFFIC CONTROL	LS	1
	712-02.02	INTERCONNECTED PORTABLE BARRIER RAIL	L.F.	2000
	712-04.01	FLEXIBLE DRUMS (CHANNELIZING)	EACH	228
④	712-05.01	WARNING LIGHTS (TYPE A)	EACH	100
⑪	712-06	SIGNS (CONSTRUCTION)	S.F.	424
	713-02.15	FLEXIBLE DELINEATORS (YELLOW)	EACH	50
	716-01.21	SNWPLWBLE PVMT MRKRS (BI-DIR)(1 COLOR)	EACH	14
⑫	716-05.01	PAINTED PAVEMENT MARKING (4" LINE)	L.M.	1
	716-13.01	SPRAY THERMO PVMT MRKNG (60 mil) (4IN LINE)	L.M.	1
	717-01	MOBILIZATION	LS	1
⑬	730-40	TEMPORARY TRAFFIC SIGNAL SYSTEM	EACH	1
③⑭	740-10.03	GEOTEXTILE (TYPE III)(EROSION CONTROL)	S.Y.	1911
⑮	740-10.04	GEOTEXTILE (TYPE IV)(STABILIZATION)	S.Y.	2050
	740-11.03	TEMPORARY SEDIMENT TUBE 18IN	L.F.	1140
	801-01.07	TEMPORARY SEEDING (WITH MULCH)	UNIT	60
	802-02.30	CUTTINGS: SALIX NIGRA (18IN-24IN LENGTH)	EACH	16
	802-02.32	CUTTINGS: CORNUS AMOMUM (18IN-24IN)	EACH	14
	802-02.33	CUTTINGS: SAMBUCUS CANADENSIS (18IN-24IN)	EACH	14
	802-13.01	ALNUS SERRULATA (HAZEL ALDER 2-5FT CNTNR GRWN)	EACH	4
	802-13.02	CALYCANTHUS FLORIDUS (SWEETSHRUB 2-5FT CNTNR GRWN)	EACH	4
	802-13.04	CORNUS AMOMUM (SILKY DOGWOOD 2-5FT CNTNR GRWN)	EACH	4
	802-13.09	LINDERA BENZOIN (SPICEBUSH 2-5FT CNTNR GRWN)	EACH	4
	802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY 2-5FT CNTNR GRWN)	EACH	3

ESTIMATED BRIDGE QUANTITIES

	ITEM NO.	DESCRIPTION	UNIT	QUANTITY
①	202-04.50	REMOVAL OF STRUCTURES (30'-16'X6' CONC. BOX CULV., 105+93.55)	LS	1
	204-08	FOUNDATION FILL MATERIAL	C.Y.	26
	604-02.01	CLASS A CONCRETE (BOX BRIDGES)	C.Y.	136
	604-02.02	STEEL BAR REINFORCEMENT (BOX BRIDGES)	LB.	26859

FOOTNOTES

① TO BECOME PROPERTY OF THE CONTRACTOR.
② TO BE USED FOR TEMP. CONST. EXIT.
③ SEE SUBSECTION 209.07 OF THE STANDARD SPECIFICATIONS FOR MAINTENANCE REPLACEMENT.
④ TO BE INCREASED OR DECREASED AS DIRECTED BY THE T.D.O.T. OPERATIONS DISTRICT SUPERVISOR.
⑤ INCLUDES 17 TONS FOR CULVERT PROTECTION TYPE 1, AND 43 TONS FOR SEDIMENT FILTER BAGS.
⑥ TEMPORARY PIPE SHALL BE RCP. A MINIMUM OF ONE PIPE END SECTION SHALL BE REMOVED FROM EACH END AT END OF USE. EACH END OF THE REMAINING PIPE SHALL BE CAPPED OFF AND SEALED WITH CONCRETE. ALL COSTS FOR REMOVAL AND CAPPING OF THE PIPE SHALL BE INCLUDED IN THE COST OF THE PAY ITEM.
⑦ PIPE FOR SUSPENDED PIPE DIVERSION DURING EXISTING BRIDGE REMOVAL. PAY ITEM INCLUDES ANY EQUIPMENT, LABOR, AND COSTS FOR BYPASS PUMPING, IF USED.
⑧ THIS ITEM SHALL BE A PORTABLE ENERGY ABSORBING TERMINAL MEETING THE REQUIREMENTS OF NCHRP 350 FOR TEST LEVEL 3. EXAMPLES WOULD BE A QUAD-GUARD, A REACT 350 OR A TRACC. THE PAY ITEM WILL INCLUDE FURNISHING AND INSTALLING ALL COMPONENTS AS SHOWN ON THE MANUFACTURER'S DRAWING.
⑨ TO BE USED FOR TEMPORARY CONSTRUCTION EXIT.
⑩ INCLUDES 91 TONS FOR CULVERT PROTECTION TYPE 1, 439 TONS FOR "V" RIP RAP DITCHES AND 417 TONS FOR CONSTRUCTION OF THE TEMPORARY DIVERSION CHANNEL.
⑪ SEE SHEET 13 FOR CONSTRUCTION SIGN LOCATIONS.
⑫ TO BE USED FOR TEMPORARY PAVEMENT MARKING ON INTERMEDIATE LAYERS.
⑬ TO BE USED WHILE CONSTRUCTING CULVERT AT STATION 107+44±. THE PAY ITEM INCLUDES THE PLACEMENT OF A TRAFFIC SIGNAL IN EACH DIRECTION.
⑭ INCLUDES 258 S.Y. FOR TEMP. CONST. EXIT., 216 S.Y. FOR CULVERT PROTECTION TYPE 1, 480 S.Y. FOR CONSTRUCTION OF THE TEMPORARY DIVERSION CHANNEL, 456 S.Y. FOR SEDIMENT FILTER BAGS, AND 501 S.Y. FOR RIP-RAP DITCHES.
⑮ TO OVERLAY GRADED SOLID ROCK AREAS.

UNOFFICIAL SET
NOT FOR BIDDING

SEALED BY

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STATE OF TENNESSEE
DEPARTMENT OF
TRANSPORTATION

ESTIMATED ROADWAY QUANTITIES AND ESTIMATED BRIDGE QUANTITIES

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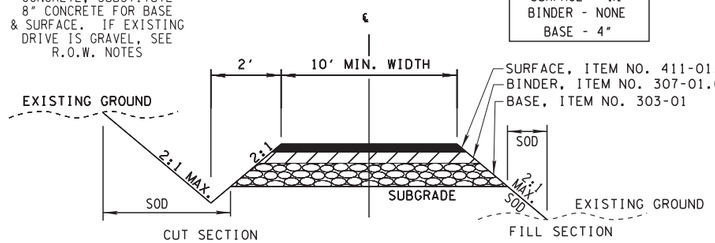
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2016	HRRR/HSIP-353(10)	2
CONST.	2017	HRRR/HSIP-353(10)	2B

S.R.353 WASHINGTON CO.
90023-2223-94 (R.O.W.)
90023-3223-94 (CONST.)

IF EXISTING DRIVE IS CONCRETE, SUBSTITUTE 8" CONCRETE FOR BASE & SURFACE. IF EXISTING DRIVE IS GRAVEL, SEE R.O.W. NOTES



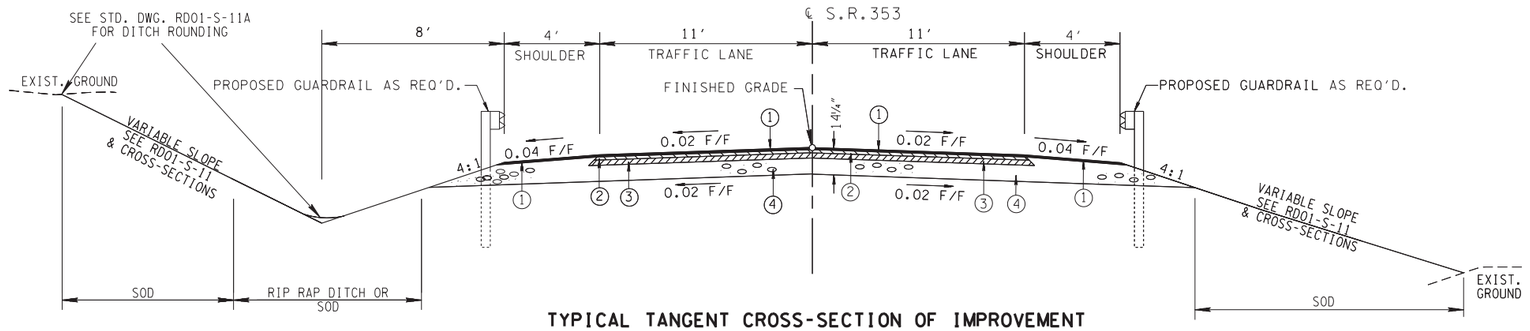
FIELD OR RESIDENTIAL
SURFACE - 1½"
BINDER - NONE
BASE - 4"

SURFACE, ITEM NO. 411-01.10
BINDER, ITEM NO. 307-01.08
BASE, ITEM NO. 303-01

TYPICAL SECTION

PRIVATE DRIVE TO BUSINESS, FIELD, OR RESIDENTIAL PROPERTY

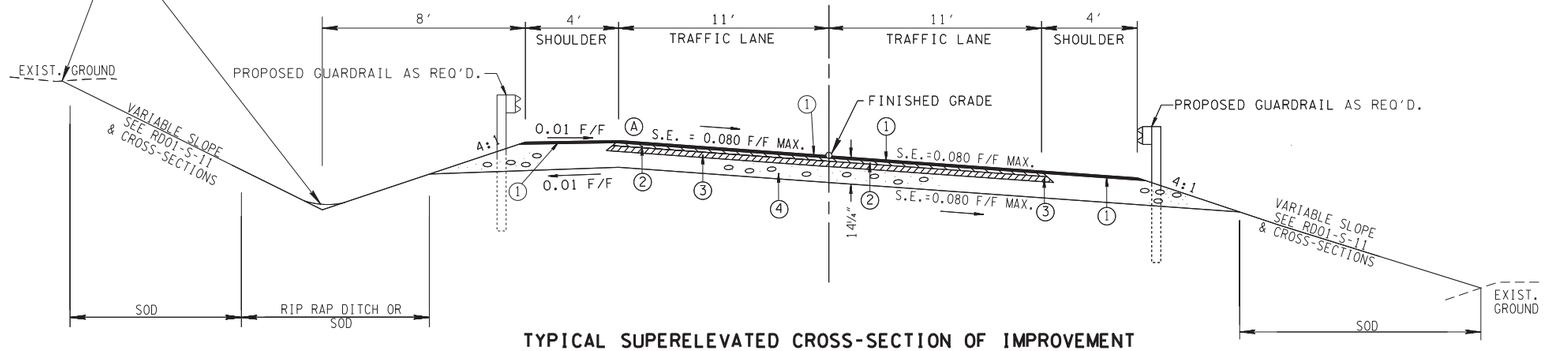
NOTE:
DITCH TO BE CONSTRUCTED WHERE DIRECTED BY THE T.D.O.T. OPERATIONS DISTRICT ENGINEER



TYPICAL TANGENT CROSS-SECTION OF IMPROVEMENT

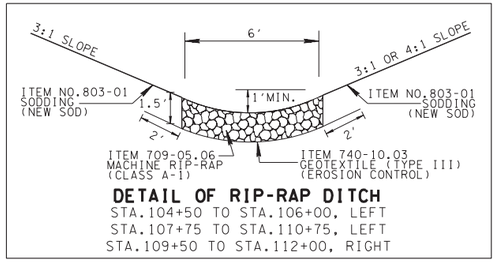
(BASED ON STD. DWG. RD01-TS-2)
STA.104+25.32 TO STA.105+72.07

Ⓐ THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



TYPICAL SUPERELEVATED CROSS-SECTION OF IMPROVEMENT

(BASED ON STD. DWG. RD01-TS-2)
STA.101+00.00 TO STA.104+25.32
STA.105+72.07 TO STA.112+00.00



DETAIL OF RIP-RAP DITCH

STA.104+50 TO STA.106+00, LEFT
STA.107+75 TO STA.110+75, LEFT
STA.109+50 TO STA.112+00, RIGHT

PROPOSED PAVEMENT SCHEDULE

(1) ASPHALTIC CONCRETE SURFACE (HOT MIX) @ 1¼" THICK (APPROX. 132.5 LBS/SQ. YD.) 411-01.10 ACS MIX (PG64-22) GRADING "D" 403-01 BITUMINOUS MATERIAL FOR TACK COAT (TC) (RATE 0.07-0.10 GAL / SQ. YD.) 402-01 BITUMINOUS MATERIAL FOR PRIME COAT (PC) (RATE 0.35 GAL / SQ. YD.)	(3) BITUMINOUS PLANT MIX BASE (HOT MIX) @ 3" THICK (APPROX. 345 LBS/SQ. YD.) 307-01.01 ASPHALT CONCRETE MIX (PG64-22) (BPMB-22) GRADING A 402-01 BITUMINOUS MATERIAL FOR PRIME COAT (PC) (RATE 0.35 GAL / SQ. YD.)
(2) BITUMINOUS PLANT MIX BASE (HOT MIX) @ 2" THICK (APPROX. 226 LBS/SQ. YD.) 307-01.08 ASPHALT CONCRETE MIX (PG64-22) (BPMB) GRADING BM-2 403-01 BITUMINOUS MATERIAL FOR TACK COAT (TC) (RATE 0.07 GAL / SQ. YD.)	(4) MINERAL AGGREGATE BASE @ 8" (ROADWAY) & FULL DEPTH (SHOULDERS) 303-01 MINERAL AGGREGATE, TYPE "A" BASE, GRADING "D"

UNOFFICIAL SET
NOT FOR BIDDING

SEALED BY

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS AND PAVEMENT SCHEDULE

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TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	2C

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)

GENERAL NOTES

GRADING

(1) ANY AREA THAT IS DISTURBED OUTSIDE LIMITS OF CONSTRUCTION DURING THE LIFE OF THIS PROJECT SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.

(2) CERTIFICATION FOR ALL BORROW PITS MUST BE OBTAINED IN ACCORDANCE WITH SUBSECTION 107.06 OF THE STANDARD SPECIFICATIONS.

(3) THE CONTRACTOR SHALL NOT DISPOSE OF ANY MATERIAL EITHER ON OR OFF STATE-OWNED R.O.W. IN A REGULATORY FLOOD WAY AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY WITHOUT APPROVAL BY SAME. ALL MATERIAL SHALL BE DISPOSED OF IN UPLAND (NON-WETLAND) AREAS AND ABOVE ORDINARY HIGH WATER OF ANY ADJACENT WATERCOURSE. THIS DOES NOT ELIMINATE THE NEED TO OBTAIN ANY OTHER LICENSES OR PERMITS THAT MAY BE REQUIRED BY ANY OTHER FEDERAL, STATE OR LOCAL AGENCY.

SEEDING AND SODDING

(1) SOD SHALL BE PLACED AT LOCATIONS SHOWN ON THE PLANS TO PREVENT DAMAGE TO ADJACENT FACILITIES AND PROPERTY DUE TO EROSION ON ALL NEWLY GRADED CUT AND FILL SLOPES AS WORK PROGRESSES.

GUARDRAIL

(1) IF ANY APPROACH END OF A SECTION OF GUARDRAIL OR BRIDGE RAIL MUST TEMPORARILY BE LEFT INCOMPLETE AND EXPOSED TO TRAFFIC, THE CONTRACTOR SHALL USE TWO (2) TEMPORARY BARRICADES OR DRUMS WITH TYPE A LIGHTS AND ROUNDED END ELEMENTS AS MINIMUM MEASURES TO PROTECT TRAFFIC FROM THE HAZARD OF AN EXPOSED END. ALL COST OF FURNISHING AND INSTALLING A TEMPORARY ROUNDED END ELEMENT SHALL BE INCLUDED IN THE COST OF THE PROPOSED GUARDRAIL.

DRAINAGE

(1) THE CONTRACTOR SHALL SHAPE DITCHES TO THE SPECIFIED DESIGN. THIS WORK WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT THE COST WILL BE INCLUDED IN THE COST OF OTHER ITEMS.

(2) EXCAVATION FOR PIPES WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT WILL BE INCLUDED IN THE PRICE BID PER LINEAR FOOT OF PIPE (PIPE CULVERTS, STORM SEWERS, CONDUITS, ALL OTHER CULVERTS AND MINOR STRUCTURES).

(3) CULVERT EXCAVATION FOR CONCRETE BOX OR SLAB TYPE CULVERTS OR BRIDGES WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT THE COST WILL BE INCLUDED IN THE COST OF OTHER ITEMS.

(4) THE CUTTING OF INLET AND OUTLET DITCHES WHERE SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER WILL BE MEASURED AND PAID FOR AS ITEM NO. 203-01 ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED).

(5) WHERE A CULVERT (PIPE, SLAB OR BOX) IS MOVED TO A NEW LOCATION OTHER THAN THAT SHOWN ON THE PLANS, INCREASING OR DECREASING THE AMOUNT OF CULVERT EXCAVATION, NO INCREASE OR DECREASE IN THE AMOUNT OF PAYMENT WILL BE MADE DUE TO SUCH CHANGE.

(6) DURING CONSTRUCTION OF DRAINAGE STRUCTURES ALL COST ASSOCIATED WITH MAINTAINING THE FLOW OF WATER AND TRAFFIC, AT THESE STRUCTURES, DURING THE PHASED CONSTRUCTION OF THIS PROJECT ARE TO BE INCLUDED IN THE UNIT PRICE OF THE DRAINAGE STRUCTURES AND TRAFFIC CONTROL ITEMS.

FENCING

(1) THE CONTRACTOR SHALL GIVE THE AFFECTED PROPERTY OWNERS TWO WEEKS NOTICE PRIOR TO CUTTING FENCES.

MISCELLANEOUS

(1) ALL DETOUR, ACCESS, SERVICE AND FRONTAGE ROADS SHALL BE CONSTRUCTED WITH A MINIMUM OF ONE (1) COURSE OF BASE MATERIAL BEFORE TRAFFIC IS INTERRUPTED ON EXISTING ROADS.

(2) THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND RESET MAILBOXES WHERE AND AS DIRECTED BY THE ENGINEER.

(3) NOTHING IN THE GENERAL NOTES OR SPECIAL PROVISIONS SHALL RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITIES TOWARD THE SAFETY AND CONVENIENCE OF THE GENERAL PUBLIC AND THE RESIDENTS ALONG THE PROPOSED CONSTRUCTION AREA.

PAVEMENT MARKINGS

TEMPORARY PAVEMENT MARKINGS ON INTERMEDIATE LAYERS

(1) TEMPORARY PAVEMENT LINE MARKINGS ON INTERMEDIATE LAYERS OF PAVEMENT SHALL BE REFLECTIVE TAPE OR REFLECTORIZED PAINT INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAYS WORK. SHORT, UNMARKED SECTIONS SHALL NOT BE ALLOWED. THESE MARKINGS WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 716-05.01, PAINTED PAVEMENT MARKING (4" LINE), L.M.

FINAL PAVEMENT MARKING

(2) PERMANENT PAVEMENT LINE MARKINGS SHALL BE 6" SPRAY THERMOPLASTIC (60 mil) INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAY'S WORK. SHORT UNMARKED SECTIONS SHALL NOT BE ALLOWED. PAVEMENT MARKINGS WILL BE MEASURED AND PAID FOR UNDER ITEM NO. 716-13.02, SPRAY THERMO PVMT MRKNG (60 mil) (6IN LINE), L.M. THE CONTRACTOR SHALL HAVE THE OPTION OF USING REFLECTORIZED PAINT INSTALLED TO PERMANENT STANDARDS AT THE END OF EACH DAY'S WORK AND THEN INSTALLING THE PERMANENT MARKINGS AFTER THE PAVING OPERATION IS COMPLETED. THE TEMPORARY MARKINGS FOR THE FINAL SURFACE WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT THE COSTS ARE TO BE INCLUDED IN THE PRICE BID FOR THE PERMANENT MARKINGS.

PAVEMENT

PAVING

(1) THE CONTRACTOR SHALL BE REQUIRED TO PAVE IN THE DIRECTION OF TRAFFIC.

(2) THE CONTRACTOR SHALL BE REQUIRED TO COLD PLANE AND PAVE IN THE DIRECTION OF TRAFFIC.

(3) THE CONTRACTOR SHALL ATTACH A DEVICE TO THE SCREED OF THE PAVER SUCH THAT MATERIAL IS CONFINED AT THE END GATE AND EXTRUDES THE ASPHALT MATERIAL IN SUCH A WAY THAT RESULTS IN A CONSOLIDATED WEDGE-SHAPE PAVEMENT EDGE OF APPROXIMATELY 25 TO 30 DEGREES AS IT LEAVES THE PAVER (MEASURED FROM A LINE PARALLEL TO THE PAVEMENT SURFACE.) THE DEVICE SHALL MEET THE REQUIREMENTS THAT ARE CURRENTLY SET FORTH IN SPECIAL PROVISION 407SE.

GRADED SOLID ROCK

(1) THE ROCK FILL (GRADED SOLID ROCK) MATERIAL SHALL CONSIST OF SOUND, NON-DEGRADABLE LIMESTONE OR SANDSTONE WITH A MAXIMUM SIZE OF 3'-0". AT LEAST 50% (BY WEIGHT) OF THE ROCK SHALL BE UNIFORMLY DISTRIBUTED BETWEEN 1'-0" AND 3'-0" IN DIAMETER, AND NO GREATER THAN 10% (BY WEIGHT) SHALL BE LESS THAN 2" IN DIAMETER. THE MATERIAL SHALL BE ROUGHLY EQUIDIMENSIONAL; THIN, SLABBY MATERIALS WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL BE REQUIRED TO PROCESS THE MATERIAL WITH AN ACCEPTABLE MECHANICAL MEANS (A SCREENING PROCESS CAPABLE OF PRODUCING THE REQUIRED GRADATION). THE ROCK SHALL BE APPROVED BY A REPRESENTATIVE OF THE DIVISION OF MATERIALS AND TESTS BEFORE USE.

(2) THIS GRADED SOLID ROCK MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING FIVE FEET IN DEPTH.

CONSTRUCTION WORK ZONE & TRAFFIC CONTROL

(1) ADVANCED WARNING SIGNS SHALL NOT BE DISPLAYED MORE THAN FORTY-EIGHT (48) HOURS BEFORE PHYSICAL CONSTRUCTION BEGINS. SIGNS MAY BE ERECTED UP TO ONE WEEK BEFORE NEEDED, IF THE SIGN FACE IS FULLY COVERED.

(2) IF THE CONTRACTOR MOVES OFF THE PROJECT, HE SHALL COVER OR REMOVE ALL UNNEEDED SIGNS AS DIRECTED BY THE ENGINEER. COSTS OF REMOVAL, COVERING, AND REINSTALLING SIGNS SHALL NOT BE MEASURED AND PAID FOR SEPARATELY, BUT ALL COSTS SHALL BE INCLUDED IN THE ORIGINAL UNIT PRICE BID FOR ITEM NO 712-06, SIGNS (CONSTRUCTION) PER SQUARE FOOT.

(3) A LONG TERM BUT SPORADIC USE WARNING SIGN, SUCH AS A FLAGGER SIGN, MAY REMAIN IN PLACE WHEN NOT REQUIRED PROVIDED THE SIGN FACE IS FULLY COVERED.

(4) TRAFFIC CONTROL DEVICES SHALL NOT BE DISPLAYED OR ERECTED UNLESS RELATED CONDITIONS ARE PRESENT NECESSITATING WARNING.

(5) USE OF BARRICADES, PORTABLE BARRIER RAILS, VERTICAL PANELS, AND DRUMS SHALL BE LIMITED TO THE IMMEDIATE AREAS OF CONSTRUCTION WHERE A HAZARD IS PRESENT. THESE DEVICES SHALL NOT BE STORED ALONG THE ROADWAY WITHIN THIRTY (30) FEET OF THE EDGE OF THE TRAVELED WAY BEFORE OR AFTER USE UNLESS PROTECTED BY GUARDRAIL, BRIDGE RAIL, AND/OR BARRIERS INSTALLED FOR OTHER PURPOSES FOR ROADWAYS WITH CURRENT ADT'S LESS THAN 1500 AND DESIGN SPEED OF LESS THAN 60 MPH. THIS DISTANCE SHALL INCREASE TO FORTY-FIVE (45) FEET FOR ROADWAYS WITH CURRENT ADT'S OF 1500 OR GREATER AND DESIGN SPEED OF 60 MPH OR GREATER OR ON THE OUTSIDE OF A HORIZONTAL CURVE. THESE DEVICES SHALL BE REMOVED FROM THE CONSTRUCTION WORK ZONE WHEN THE ENGINEER DETERMINES THEY ARE NO LONGER NEEDED. WHERE THERE IS INSUFFICIENT RIGHT-OF-WAY TO PROVIDE FOR THIS REQUIRED SETBACK, THE CONTRACTOR SHALL DETERMINE THE ALTERNATE LOCATIONS AND REQUEST THE ENGINEER'S APPROVAL TO USE THEM.

(6) THE CONTRACTOR SHALL NOT BE PERMITTED TO PARK ANY VEHICLES OR CONSTRUCTION EQUIPMENT DURING PERIODS OF INACTIVITY, WITHIN THIRTY (30) FEET OF THE EDGE OF PAVEMENT WHEN THE LANE IS OPEN TO TRAFFIC UNLESS PROTECTED BY GUARDRAIL, BRIDGE RAIL, AND/OR BARRIERS INSTALLED FOR OTHER PURPOSES FOR ROADWAYS WITH CURRENT ADT'S LESS THAN 1500 AND DESIGN SPEED OF LESS THAN 60 MPH. THIS DISTANCE SHALL BE INCREASED TO FORTY-FIVE (45) FEET FOR ROADWAYS WITH CURRENT ADT'S OF 1500 OR GREATER AND DESIGN SPEED OF 60 MPH OR GREATER OR ON THE OUTSIDE OF A HORIZONTAL CURVE. PRIVATELY OWNED VEHICLES SHALL NOT BE ALLOWED TO PARK WITHIN THIRTY (30) FEET OF A OPEN TRAFFIC LANE AT ANY TIME UNLESS PROTECTED AS DESCRIBED ABOVE FOR ROADWAYS WITH CURRENT ADT'S LESS THAN 1500 AND DESIGN SPEED OF LESS THAN 60 MPH. THIS DISTANCE SHALL BE INCREASED TO FORTY-FIVE (45) FEET FOR ROADWAYS WITH CURRENT ADT'S OF 1500 OR GREATER AND DESIGN SPEED OF 60 MPH OR GREATER OR ON THE OUTSIDE OF A HORIZONTAL CURVE.. WHERE THERE IS INSUFFICIENT RIGHT-OF-WAY TO PROVIDE FOR THIS REQUIRED SETBACK, THE CONTRACTOR SHALL DETERMINE THE ALTERNATE LOCATIONS AND REQUEST THE ENGINEER'S APPROVAL TO USE THEM.

(7) ALL DETOUR AND CONSTRUCTION SIGNING SHALL BE IN STRICT ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

(8) ALL DETOURS SHALL BE PAVED, STRIPED, SIGNED AND THE VERTICAL PANELS ARE TO BE IN PLACE BEFORE IT IS OPENED TO TRAFFIC.

EROSION PREVENTION AND SEDIMENT CONTROL

NATURAL RESOURCES

(1) SOIL MATERIALS MUST BE PREVENTED FROM ENTERING WATERS OF THE STATE/U.S. EPSC MEASURES TO PROTECT NATURAL RESOURCES AND WATER QUALITY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. APPROPRIATE EPSC MEASURES MUST BE INSTALLED ALONG THE BASE OF ALL FILLS AND CUTS, ON THE DOWNHILL SIDE OF STOCKPILED SOIL, AND ALONG NATURAL RESOURCES IN CLEARED AREAS TO PREVENT SEDIMENT MIGRATION INTO STREAMS, WETLANDS OR OTHER NATURAL FEATURES IN ACCORDANCE WITH TDOT STANDARDS. EPSC MEASURES SHALL BE INSTALLED ON THE CONTOUR, ENTRENCHED AND STAKED, AND EXTEND THE WIDTH OF THE AREA TO BE CLEARED.

(2) NEW CHANNEL CONSTRUCTION SHALL BE COMPLETED IN THE DRY AND STABILIZED FOR AT LEAST 72 HOURS PRIOR TO DIVERTING WATER FROM THE EXISTING AND/OR TEMPORARY CHANNEL.

(3) INSTREAM EPSC DEVICES REQUIRE THE TDOT ENVIRONMENTAL DIVISION, PERMITS SECTION REVIEW AND MUST BE PROCESSED BY THE PERMITS SECTION TO OBTAIN WATER QUALITY PERMITS.

(4) THE OPERATION OF EQUIPMENT IN WATERS OF THE STATE/U.S., INCLUDING WETLANDS AND EPHEMERAL, INTERMITTENT, AND PERENNIAL STREAMS, IS NOT ALLOWED.

(5) THE WIDTH OF THE FILL ASSOCIATED WITH TEMPORARY CROSSINGS SHALL BE LIMITED TO THE MINIMUM NECESSARY FOR THE ACTUAL CROSSING, NOT TO EXCEED THE WIDTH SPECIFIED IN THE STANDARD DRAWING.

UNOFFICIAL SET
NOT FOR BIDDING

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STATE OF TENNESSEE
DEPARTMENT OF
TRANSPORTATION

GENERAL NOTES

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TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	2C1

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)

GENERAL NOTES (CONT.)

NATURAL RESOURCES (CONT.)

(6) STREAM BEDS SHALL NOT BE USED AS TRANSPORTATION ROUTES FOR CONSTRUCTION EQUIPMENT. TEMPORARY CULVERT CROSSINGS SHALL BE LIMITED TO ONE POINT PER STREAM AND EPSC MEASURES SHALL BE USED WHERE THE STREAM BANKS ARE DISTURBED. WHERE THE STREAMBED IS NOT COMPOSED OF BEDROCK, A PAD OF CLEAN ROCK SHALL BE USED AT THE CROSSING POINT AND CULVERTED TO PREVENT THE IMPOUNDMENT OF WATER FLOW. CLEAN ROCK IS ROCK OF VARIOUS TYPE AND SIZE, DEPENDING UPON APPLICATION, WHICH CONTAINS NO FINES, SOILS, OR OTHER WASTES OR CONTAMINANTS. OTHER MATERIALS USED FOR ALL TEMPORARY FILLS SHALL BE COMPLETELY REMOVED IN THEIR ENTIRETY AFTER THE WORK IS COMPLETED AND THE AFFECTED AREAS RETURNED TO PREEXISTING ELEVATIONS. ALL TEMPORARY CROSSINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. DWG. EC-STR-25 UNLESS SPECIFICALLY ADDRESSED IN THE EPSC PLANS. ALTERNATIVELY, PLACING A TEMPORARY BRIDGE (E.G. BAILEY BRIDGE OR EQUIVALENT, TIMBERS, ETC.) FROM TOP OF BANK TO TOP OF BANK OR THE APPROPRIATE USE OF BARGES AT THE CROSSING TO AVOID DISTURBANCE OF THE STREAMBED IS AN ACCEPTABLE OPTION.

(7) HEAVY EQUIPMENT WORKING IN WETLANDS WITH PERMITTED TEMPORARY IMPACTS SHALL BE PLACED ON MATS, OR OTHER MEASURES MUST BE TAKEN TO MINIMIZE SOIL DISTURBANCE AND COMPACTION UNLESS SPECIFICALLY ADDRESSED IN THE CONSTRUCTION PLANS. ANY MATS AND OTHER MEASURES USED FOR HEAVY EQUIPMENT SHALL BE REMOVED IN THEIR ENTIRETY AFTER THE WORK IS COMPLETED. ALL AFFECTED AREAS SHOULD BE RETURNED TO PRE-EXISTING CONDITIONS.

(8) WETLANDS SHALL NOT BE USED AS EQUIPMENT STORAGE, STAGING, OR TRANSPORTATION AREAS, UNLESS SPECIFICALLY PROVIDED FOR IN THE CONSTRUCTION PLANS AND PERMITS.

(9) THE CONTRACTOR SHALL TAKE APPROPRIATE STEPS PRIOR TO ANY CONSTRUCTION AND MAINTENANCE ACTIVITIES TO ENSURE THAT ENVIRONMENTAL FEATURES (E.G., STREAMS, WETLANDS, SPRINGS, ETC.) ARE NOT IMPACTED BEYOND PERMITTED LOCATIONS. IF THE CONTRACTOR OR TDOT INSPECTOR IS UNSURE OF THE IDENTITY OF AN ENVIRONMENTAL FEATURE, THE INSPECTOR SHALL CONTACT THE TDOT REGION ENVIRONMENTAL TECH GROUP IMMEDIATELY.

SPECIES

(10) NO ACTIVITY MAY SUBSTANTIALLY DISRUPT THE MOVEMENT OF THOSE SPECIES OF AQUATIC LIFE INDIGENOUS TO THE WATER BODY, INCLUDING THOSE SPECIES THAT NORMALLY MIGRATE THROUGH THE AREA.

INSPECTION, MAINTENANCE & REPAIR

(11) REFER TO THE STORM WATER POLLUTION AND PREVENTION PLAN SHEETS (S-1) FOR SWPPP, PERMITS, AND RECORDS NOTES.

PERMITS, PLANS & RECORDS

(12) THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR AND OBTAIN ANY NECESSARY ENVIRONMENTAL PERMITS OR APPROVALS, INCLUDING BUT NOT LIMITED TO ARCHAEOLOGY, ECOLOGY, HISTORICAL, HAZARDOUS MATERIALS, AIR AND NOISE, TDEC ARAP/401, USACE SECTION 404, TVA SECTION 26A, AND TDEC NPDES PERMITS, FROM FEDERAL, STATE AND/OR LOCAL AGENCIES REGARDING ANY MATERIAL AND STAGING AREAS AND THE OPERATION OF ANY PROJECT-DEDICATED ASPHALT AND/OR CONCRETE PLANTS TO BE USED. ANY SUCH PERMITS SHALL BE SUPPLIED TO THE TDOT PROJECT RESPONSIBLE PARTY PRIOR TO THE USE OF THE PERMITTED AREA(S).

(13) ANY DISAGREEMENT BETWEEN THE CONSTRUCTION PLANS, THE PROJECT AS CONSTRUCTED, AND THE PERMIT(S) ISSUED FOR THE PROJECT, SHALL BE BROUGHT TO THE ATTENTION OF THE TDOT PROJECT RESPONSIBLE PARTY. THE ENVIRONMENTAL DIVISION, DESIGN DIVISION, AND HEADQUARTERS CONSTRUCTION OFFICE SHALL BE CONTACTED IN THESE INSTANCES AND DECIDE WHICH HAS PRECEDENCE AND WHETHER PERMIT OR PLANS REVISIONS ARE NEEDED. IN GENERAL, PERMIT CONDITIONS WILL PREVAIL.

(14) IF A CHANGE IN PROJECT SCOPE OCCURS DURING CONSTRUCTION, INCLUDING VALUE ENGINEERING, THE TDOT PERMIT SECTION SHALL BE CONTACTED TO DETERMINE WHETHER PERMIT REVISIONS ARE NEEDED. THE ROADWAY DESIGN DIVISION SHALL BE CONTACTED TO DETERMINE IF ANY PLAN REVISIONS ARE NEEDED.

(15) THE CONTRACTOR SHALL REVIEW ALL EXISTING PERMITS TO ENSURE THAT WORK AT PERMITTED SITES DOES NOT EXCEED EXPIRATION DATE. IF WORK IS GOING TO BE CONTINUED AFTER EXPIRATION DATES, THE CONTRACTOR SHALL CONTACT THE TDOT PROJECT RESPONSIBLE PARTY TO COMMENCE PERMIT RENEWAL PROCESS.

(16) ALL WATER QUALITY PERMITS SHALL BE POSTED NEAR THE MAIN ENTRANCE OF THE CONSTRUCTION SITE ACCESSIBLE TO THE PUBLIC. THE NAME, COMPANY NAME, EMAIL ADDRESS, TELEPHONE NUMBER AND ADDRESS OF THE PROJECT SITE OWNER, OPERATOR, OR A LOCAL CONTACT PERSON WITH A BRIEF DESCRIPTION OF THE PROJECT SHALL ALSO BE POSTED. IF POSTING THIS INFORMATION NEAR A MAIN ENTRANCE IS INFEASIBLE, THE INFORMATION SHALL BE PLACED IN A PUBLICLY ACCESSIBLE LOCATION NEAR WHERE THE CONSTRUCTION IS ACTIVELY UNDERWAY AND MOVED AS NECESSARY. THIS LOCATION SHALL BE POSTED AT THE CONSTRUCTION SITE. ALL POSTINGS SHALL BE MAINTAINED IN LEGIBLE CONDITION.

GOOD HOUSEKEEPING MEASURES & WASTE DISPOSAL

(17) THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN A PROACTIVE METHOD TO PREVENT LITTER AND CONSTRUCTION WASTES FROM ENTERING WATERS OF THE STATE/U.S. THESE MATERIALS SHALL BE REMOVED FROM STORMWATER EXPOSURE PRIOR TO ANTICIPATED STORM EVENTS OR BEFORE BEING CARRIED OFFSITE BY WIND, OR OTHERWISE PREVENTED FROM BECOMING A POLLUTANT SOURCE FOR STORMWATER DISCHARGES. AFTER USE, MATERIALS USED FOR EPSC SHALL BE REMOVED FROM THE SITE.

(18) THE CONTRACTOR SHALL TAKE APPROPRIATE STEPS TO ENSURE THAT PETROLEUM PRODUCTS OR OTHER CHEMICAL POLLUTANTS ARE PREVENTED FROM ENTERING WATERS OF THE STATE/U.S. ALL EQUIPMENT REFUELING, SERVICING, AND STAGING AREAS SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL LAWS, RULES, REGULATIONS, AND ORDINANCES, INCLUDING THOSE OF THE NATIONAL FIRE PROTECTION ASSOCIATION. APPROPRIATE CONTAINMENT MEASURES FOR THESE AREAS SHALL BE USED.

(19) CONTRACTORS SHALL PROVIDE DESIGNATED TRUCK WASHOUT AREAS ON THE SITE. THESE AREAS MUST BE SELF CONTAINED, NOT CONNECTED TO ANY STORMWATER OUTLET OF THE SITE, AND PROPERLY SIGNED. WASH DOWN OR WASTE DISCHARGE OF CONCRETE TRUCKS SHALL NOT BE PERMITTED ONSITE UNLESS PROPER SETTLEMENT AREAS HAVE BEEN PROVIDED IN ACCORDANCE WITH BOTH STATE AND FEDERAL REGULATIONS.

(20) WHEEL WASH WATER SHALL BE COLLECTED AND ALLOWED TO SETTLE OUT SUSPENDED SOLIDS PRIOR TO DISCHARGE. WHEEL WASH WATER SHALL NOT BE DISCHARGED DIRECTLY INTO ANY STORMWATER SYSTEM OR STORMWATER TREATMENT SYSTEM.

(21) IF PORTABLE SANITARY FACILITIES ARE PROVIDED ON CONSTRUCTION SITES, SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS IN A TIMELY MANNER BY A LICENSED WASTE MANAGEMENT CONTRACTOR OR AS REQUIRED BY ANY REGULATIONS. THE CONTRACTOR SHALL OBTAIN ANY AND ALL NECESSARY PERMITS TO DISPOSE OF SANITARY WASTE.

(22) ONLY CONSTRUCTION PRODUCTS NEEDED SHALL BE STORED ONSITE BY THE CONTRACTOR. THE CONTRACTOR SHALL STORE ALL MATERIALS UNDER COVER AND IN APPROPRIATE CONTAINERS. PRODUCTS MUST BE STORED IN ORIGINAL CONTAINERS AND LABELED. MATERIAL MIXING SHALL BE CONDUCTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR'S RESPONSIBLE PARTY SHALL INSPECT MATERIALS STORAGE AREAS REGULARLY TO ENSURE PROPER USE AND DISPOSAL.

(23) WHEN POSSIBLE, ALL PRODUCTS SHALL BE USED COMPLETELY BEFORE PROPERLY DISPOSING OF THE CONTAINER OFFSITE. THE MANUFACTURER'S DIRECTIONS FOR DISPOSAL OF MATERIALS AND CONTAINERS SHALL BE FOLLOWED.

(24) ALL PAINT CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT SHALL BE DISPOSED OF ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AND APPLICABLE STATE AND LOCAL REGULATIONS.

(25) ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN A MANNER WHICH IS COMPLIANT WITH LOCAL OR STATE REGULATIONS. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES, AND THE INDIVIDUAL DESIGNATED AS THE CONTRACTOR'S RESPONSIBLE PARTY SHALL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED. THE CONTRACTOR SHALL OBTAIN ANY AND ALL NECESSARY PERMITS TO DISPOSE OF HAZARDOUS MATERIAL.

(26) OPEN BURNING IS PROHIBITED UNLESS IT IS SPECIFICALLY ALLOWED BY LAW. IF ALLOWED, NATURAL VEGETATION, TREES, AND UNTREATED LUMBER SHALL BE THE ONLY MATERIALS THAT CAN BE OPEN BURNED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE STATE AND LOCAL PERMITS PRIOR TO ANY BURNING.

(27) DISPOSAL OF ONSITE VEGETATION AND TREES BY CHIPPING THEM INTO MULCH IS PREFERABLE TO OPEN BURNING. THIS MULCH MAY BE USED AS AN ONSITE SOIL STABILIZATION MEASURE WHERE APPROPRIATE.

(28) WASTE MATERIAL (EARTH, ROCK, ASPHALT, CONCRETE, ETC.) NOT REQUIRED FOR THE CONSTRUCTION OF THE PROJECT WILL BE DISPOSED OF BY THE CONTRACTOR. IMPACTS TO WATERS OF THE STATE/U.S. SHALL BE AVOIDED IF POSSIBLE. IF UNAVOIDABLE, THE CONTRACTOR WILL OBTAIN ANY AND ALL NECESSARY PERMITS INCLUDING, BUT NOT LIMITED TO NPDES, AQUATIC RESOURCES ALTERATION PERMIT(S), CORPS OF ENGINEERS SECTION 404 PERMITS, AND TVA SECTION 26A PERMITS TO DISPOSE OF WASTE MATERIALS.

SUPPORT ACTIVITIES

(29) MATERIALS AND STAGING AREAS SHALL NOT AFFECT ANY WATERS OF THE STATE/U.S. UNLESS THESE AREAS ARE SPECIFICALLY COVERED BY ENVIRONMENTAL PERMITS, OBTAINED SOLELY BY THE CONTRACTOR. THE CONTRACTOR SHALL REVIEW ALL EXISTING PERMITS TO ENSURE THAT WORK AT PERMITTED SITES DOES NOT EXCEED EXPIRATION DATES. IF WORK IS GOING TO BE CONTINUED AFTER EXPIRATION DATES, THE CONTRACTOR SHALL CONTACT THE TDOT PROJECT RESPONSIBLE PARTY TO COMMENCE PERMIT RENEWAL PROCESS.

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GENERAL NOTES

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TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	2D

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)

SPECIAL NOTES

GRADING

(1) THE GRADING TABULATIONS AND RESULTING EARTHWORK ASSOCIATED BID QUANTITIES WERE PREPARED UTILIZING AVAILABLE GEOTECHNICAL INFORMATION AND/OR REPORTS PREPARED FOR THIS PROJECT. THIS INFORMATION IS PROVIDED FOR GENERAL INFORMATION AND ESTIMATION GUIDANCE ONLY.

(2) BORING DEPICTIONS SHOWN ON THE FOUNDATION DATA SHEETS, SOILS SHEETS, PLANS, AND CROSS-SECTIONS INDICATE SOIL AND ROCK CONDITIONS AT THE SPECIFIC BORING LOCATIONS. ANY SOIL PROFILE AND/OR ROCK LINE IS INTERPRETIVE BASED ON THE JUDGMENT OF THE GEOTECHNICAL ENGINEER/GEOLOGIST. THE TRANSITION BETWEEN BORINGS AND LAYERS MAY VARY SIGNIFICANTLY DEPENDING ON THE GEOLOGIC FORMATIONS ENCOUNTERED.

(3) TO ASSIST IN BID PREPARATION FOR EARTHWORK AND FOUNDATION CONSTRUCTION, DETAIL ROCK AND SOIL DESCRIPTION AND ON SOME PROJECTS, ROCK CORE SAMPLES ARE AVAILABLE FOR INSPECTION AT THE MATERIALS AND TESTS HEADQUARTERS AT 6601 CENTENNIAL BOULEVARD, NASHVILLE, TN OR AT THE TDOT REGION 1 BUILDING IN KNOXVILLE, TN.

(4) THE CONTRACTOR SHALL UTILIZE ALL INFORMATION PROVIDED IN THE PLANS, CROSS-SECTIONS AND CONTRACT DOCUMENTS INCLUDING ANY SPECIAL PROVISIONS AS WELL AS UTILIZING HIS PAST EXPERIENCE WITH PROJECTS OF SIMILAR NATURE, SCOPE AND LOCATION IN PREPARATION OF HIS BID FOR EARTHWORK ITEMS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND PROVIDE EQUIPMENT AND MEANS NECESSARY TO CONDUCT THE EXCAVATION ACTIVITIES IN ACCORDANCE WITH PLANS AND SPECIFICATIONS.

(5) EARTHWORK IS PAID FOR UNDER ITEM 203-30.01 ROADWAY APPROACHES. NO ADDITIONAL PAYMENT WILL BE MADE FOR EARTHWORK QUANTITIES BASED SOLELY ON A CLAIM THAT THE QUANTITIES SHOWN IN THE GRADING TABULATION OR ELSEWHERE IN THE PLANS ARE INACCURATE WITH RESPECT TO THE TYPE OF MATERIALS ENCOUNTERED DURING CONSTRUCTION EXCEPT AS PROVIDED FOR BY SECTION 104.02 IN THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OR AS AMENDED IN SUPPLEMENTAL SPECIFICATIONS.

DEMOLITION

DEMOLITION, REPAIR, OR REHABILITATION OF BRIDGES

(6) THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A NOTICE TO THE TDEC, DIVISION OF AIR POLLUTION CONTROL TEN (10) DAYS IN ADVANCE OF ANY ACM ABATEMENT, DEMOLITION, OR MAJOR REPAIR INVOLVING THE REMOVAL/REPLACEMENT OF A STRUCTURAL COMPONENT.

EROSION PREVENTION AND SEDIMENT CONTROL

ENVIRONMENTAL

(1) STAFF FROM THE TDOT ENVIRONMENTAL DIVISION COMPLIANCE AND FIELD SERVICES OFFICE SHALL BE INVITED TO ALL PRE-CONSTRUCTION MEETINGS.

ECOLOGY

(2) STAFF FROM THE TDOT ENVIRONMENTAL DIVISION OR A DESIGNEE SHALL ADVISE THE CONTRACTOR DURING THE PRE-CONSTRUCTION MEETING WHEN ENVIRONMENTAL DIVISION PERSONNEL OR A DESIGNATED CONSULTANT WILL NEED TO BE ONSITE FOR WORK BEING DONE WHICH COULD AFFECT WATERS OF THE STATE/U.S. OR SPECIES.

SCOPE OF WORK

(1) THE PROJECT INCLUDES THE GRADING, DRAINAGE, BASE AND PAVEMENT OF THE REALIGNMENT OF S.R. 353 FROM LINES AND GRADES AS INDICATED ON THE PLANS OR AS DIRECTED BY THE TDOT OPERATIONS DISTRICT SUPERVISOR.

(2) THIS PROJECT INCLUDES THE INSTALLATION OF GUARDRAIL, RIP RAP, A BOX CULVERT, A BOX BRIDGE CULVERT, AND DRAINAGE STRUCTURES AS INDICATED ON THE PLANS OR AS DIRECTED BY THE TDOT OPERATIONS DISTRICT SUPERVISOR.

(3) THIS PROJECT INCLUDES THE APPLICATION OF PAVEMENT MARKERS, SOD, TRAFFIC CONTROL DEVICES, EPSC DEVICES AND OTHER DESIGN FEATURES AS INDICATED ON THE PLANS OR AS DIRECTED BY THE TDOT OPERATIONS DISTRICT SUPERVISOR.

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SPECIAL NOTES AND SCOPE OF WORK

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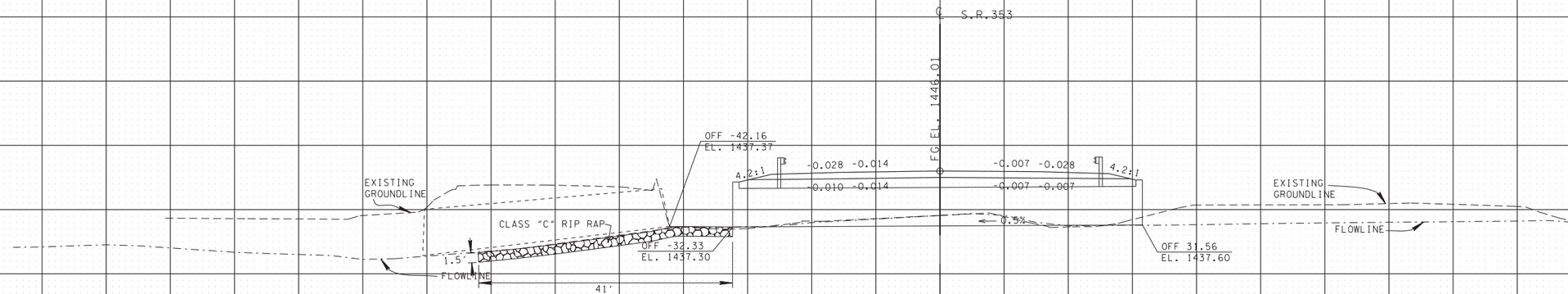
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	HRRR/HSIP-353(10)	6
CONST.	2017	HRRR/HSIP-353(10)	6

S.R.353 WASHINGTON CO.
90023-2223-94(R.O.W.)
90023-3223-94(CONST.)



STATION	105+55.00
STRUCTURE	64'-2@ 8'X6' CONCRETE BOX BRIDGE
SKEW	45° LT.
DRAINAGE AREA	667 ACRES
DESIGN DISCHARGE (Q50)	423 CFS
DESIGN DISCHARGE (Q100)	498 CFS
OVERTOPPING ELEV.	1444.67
Q50 HEADWATER ELEV.	1443.05
Q100 HEADWATER ELEV.	1443.15
VELOCITY (Q50)	11.9 FPS
VELOCITY (Q100)	12.4 FPS
INLET ELEVATION	1437.60
OUTLET ELEVATION	1437.30
STD. DWG. NOS.	STD-17-1 THRU STD-17-7, STD-17-9, STD-17-10, STD-17-14, STD-17-15, STD-17-18, STD-17-23, STD-17-24, STD-17-73
CLASS "A" CONCRETE	136 C.Y.
STEEL BAR REINFORCING	26,859 LB.
FOUNDATION FILL	26 C.Y.
GRANULAR BACKFILL(ROADWAY)	917 TONS

S.R. 353
105+55.00

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BOX BRIDGE SECTION

SCALE: 1"=10' HORIZ.
1"=10' VERT.

-100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90

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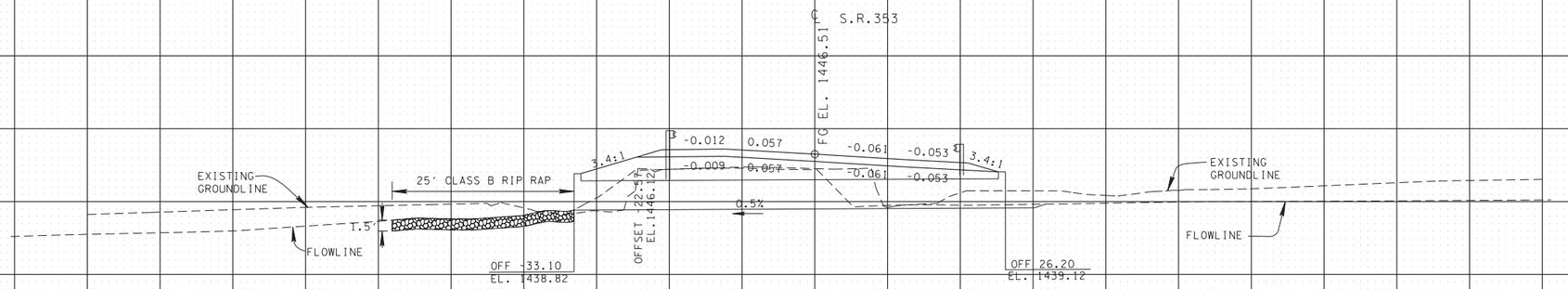
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	HRRR/HSIP-353(10)	7
CONST.	2017	HRRR/HSIP-353(10)	7

S.R.353 WASHINGTON CO.
90023-2223-94(R.O.W.)
90023-3223-94(CONST.)



STATION	107+44.11
STRUCTURE	67'-6"X4' CONC.BOX CULV.REQ'D.
SKEW	65° RT.
DRAINAGE AREA	94.6 AC.
DESIGN DISCHARGE (Q50)	119.3 CFS
DESIGN DISCHARGE (Q100)	128.7 CFS
OVERTOPPING ELEV.	1444.27
Q50 HEADWATER ELEV.	1442.40
Q100 HEADWATER ELEV.	1442.80
VELOCITY (Q50)	9.4 FT/S
VELOCITY (Q100)	9.6 FT/S
INLET ELEVATION	1439.12
OUTLET ELEVATION	1438.82
STANDARD DRAWING NUMBERS	STD-17-1 THRU STD-17-7, STD-17-9, STD-17-10, STD-17-15, STD-17-18, STD-17-23,STD-17-24, STD-17-29, STD-17-51
CLASS "A" CONCRETE	57 C.Y.
STEEL BAR REINFORCING	11,345 LB.
FOUNDATION FILL	14 C.Y.
GRANULAR BACKFILL(ROADWAY)	569 TONS

S.R. 353
107+44.11

UNOFFICIAL SET
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SEALED BY

JAMES B. MORGAN
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
No. 111656
STATE OF TENNESSEE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CULVERT SECTION

SCALE: 1"=10' HORIZ.
1"=10' VERT.

-100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90

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TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2016	HRRR/HSIP-353(10)	8
CONST.	2017	HRRR/HSIP-353(10)	8

S.R. 353 WASHINGTON CO.
90023-2223-94 (R.O.W.)
90023-3223-94 (CONST.)

EPSC NOTES

STREAMS, WETLANDS & BUFFER ZONES

(1) ANY WORK WITHIN THE STREAM CHANNEL AREA (E.G., PIER FOOTING, RIP-RAP PLACEMENT, CULVERT/BRIDGE CONSTRUCTION, ETC.) SHALL BE SEPARATED FROM FLOWING WATER OR EXPECTED FLOW PATH AND PERFORMED DURING LOW FLOW CONDITIONS. ALL ITEMS USED WITHIN THE STREAM CHANNEL AREA FOR DIVERSION OF FLOW (OR EXPECTED FLOW), UNLESS SPECIFIED IN THE PLANS, SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE COST OF OTHER ITEMS. THIS NOTE EXCLUDES ANY ITEMS SPECIFIED IN THE PLANS FOR THE TEMPORARY DIVERSION CHANNELS (EC-STR-31) AND TEMPORARY DIVERSION CULVERTS (EC STR-32) FOR SINGLE BARREL CULVERT CONSTRUCTION.

(2) ONCE WATER IS DIVERTED INTO A NEWLY CONSTRUCTED AND STABILIZED RELOCATED STREAM / CHANNEL, THE ECOLOGY SECTION SHALL BE NOTIFIED. THE STREAM NAME, STREAM NUMBER, AND DATE THE WATER WAS DIVERTED INTO THE NEWLY CONSTRUCTED STREAM / CHANNEL SHALL BE SUPPLIED WITH THE NOTIFICATION.

EROSION PREVENTION AND SEDIMENT CONTROL QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED)	C.Y.	24
209-05	SEDIMENT REMOVAL	C.Y.	82
209-08.02	TEMPORARY SILT FENCE (WITH BACKING)	L.F.	2849
209-08.07	ROCK CHECK DAM	EACH	36
209-08.08	ENHANCED ROCK CHECK DAM	EACH	13
209-09.01	SANDBAGS	BAG	600
209-09.04	SEDIMENT FILTER BAG(15' X 10')	EACH	6
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM)	S.Y.	22
209-65.03	TEMPORARY DIVERSION CHANNEL	L.F.	120
209-65.04	TEMPORARY IN STREAM DIVERSION	L.F.	110
303-10.01	MINERAL AGGREGATE (SIZE 57)	TON	60
621-03.07	48" TEMPORARY DRAINAGE PIPE	L.F.	70
621-03.08	54" TEMPORARY DRAINAGE PIPE	L.F.	40
707-08.11	HIGH-VISIBILITY CONSTRUCTION FENCE	L.F.	722
709-05.05	MACHINED RIP-RAP (CLASS A-3)	TON	150
709-05.06	MACHINED RIP-RAP (CLASS A-1)	TON	3402
740-10.03	GEOTEXTILE (TYPE III)(EROSION CONTROL)	S.Y.	1410
740-11.03	TEMPORARY SEDIMENT TUBE 18IN	L.F.	1140

EROSION PREVENTION AND SEDIMENT CONTROL LEGEND

SYMBOL	ITEM	STD. DWG.
* HVF * HVF	HIGH VISIBILITY FENCE	S-F-1
* SFB * SFB * SFB * SFB *	SEDIMENT FILTER BAG	EC-STR-2
* SFB * SFB * SFB *	SILT FENCE WITH WIRE BACKING	EC-STR-3C
	ROCK CHECK DAM (V-DITCH)	EC-STR-6
	ENHANCED ROCK CHECK DAM (V-DITCH)	EC-STR-6A
	CULVERT PROTECTION (TYPE 1)	EC-STR-11
TCE	TEMPORARY CONSTRUCTION EXIT	EC-STR-25
IN DIV	INSTREAM DIVERSION	EC-STR-30 EC-STR-30A
	TEMPORARY DIVERSION CHANNEL (DESCRIBE-SIZE AND TYPE OF LINING)	EC-STR-31
	TEMPORARY DIVERSION CULVERT (DESCRIBE NUMBER AND SIZE OF PIPES)	EC-STR-32
** TUBE ** TUBE **	SEDIMENT TUBE	EC-STR-37
	SUSPENDED PIPE DIVERSION	EC-STR-33 EC-STR-33A

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SEALED BY

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STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION

EROSION PREVENTION & SEDIMENT CONTROL (EPSC) NOTES, LEGEND & TABULATION

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TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2016	HRRR/HSIP-353(10)	9
CONST.	2017	HRRR/HSIP-353(10)	9

S.R.353 WASHINGTON CO.
90023-2223-94 (R.O.W.)
90023-3223-94 (CONST.)

REVISED 04-12-17 MODIFIED SURVEY, PROPOSED R.O.W., SLOPE LINES, AND EPSC MEASURES ON TRACT 5. ADDED R.O.W. MARKERS.

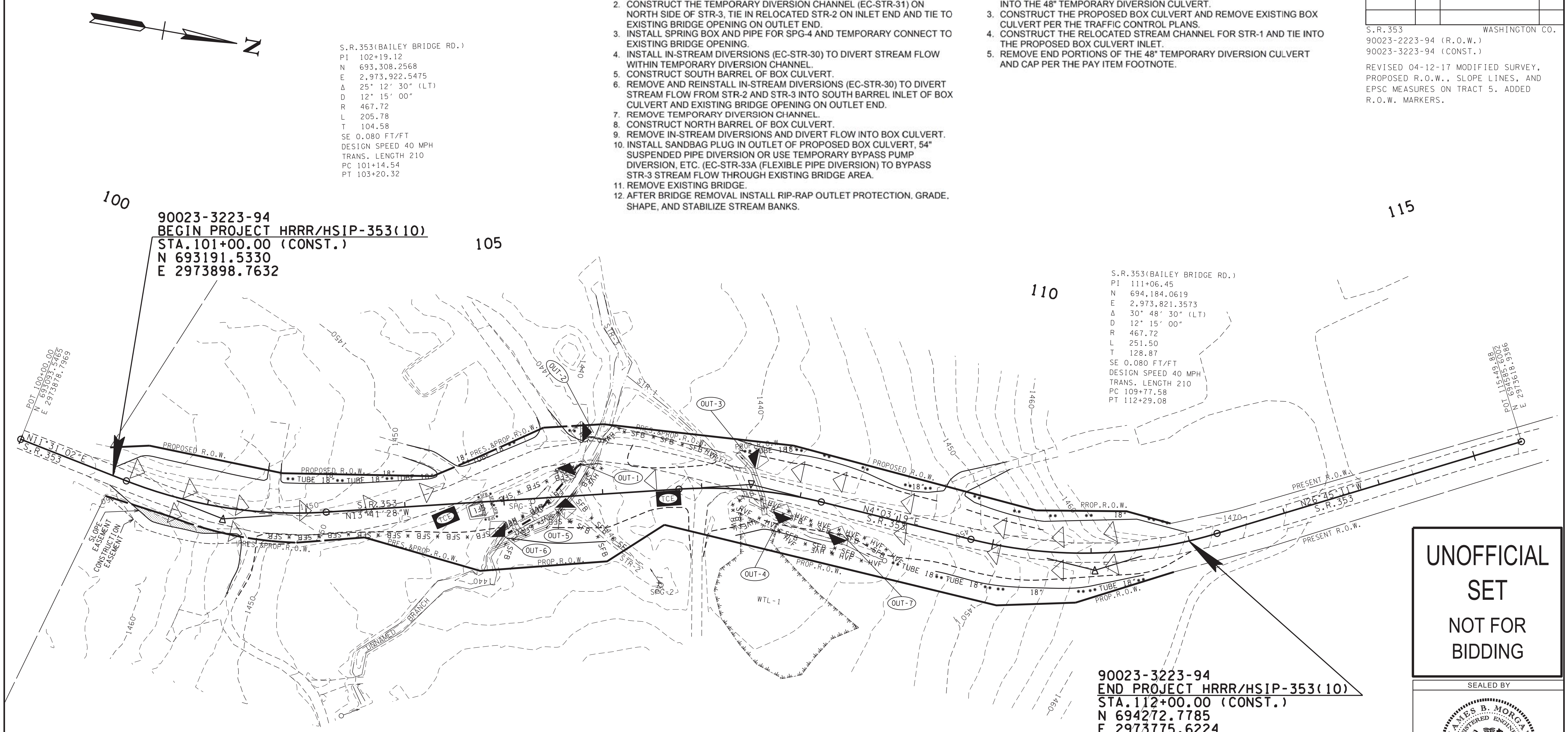
BOX CULVERT STA. 105+55 SEQUENCE OF CONSTRUCITON:

1. CONSTRUCT AND STABILIZE THE RELOCATED STREAM CHANNEL FOR STR-2 PRIOR TO BEGINNING BOX CULVERT CONSTRUCTION.
2. CONSTRUCT THE TEMPORARY DIVERSION CHANNEL (EC-STR-31) ON NORTH SIDE OF STR-3, TIE IN RELOCATED STR-2 ON INLET END AND TIE TO EXISTING BRIDGE OPENING ON OUTLET END.
3. INSTALL SPRING BOX AND PIPE FOR SPG-4 AND TEMPORARY CONNECT TO EXISTING BRIDGE OPENING.
4. INSTALL IN-STREAM DIVERSIONS (EC-STR-30) TO DIVERT STREAM FLOW WITHIN TEMPORARY DIVERSION CHANNEL.
5. CONSTRUCT SOUTH BARREL OF BOX CULVERT.
6. REMOVE AND REINSTALL IN-STREAM DIVERSIONS (EC-STR-30) TO DIVERT STREAM FLOW FROM STR-2 AND STR-3 INTO SOUTH BARREL INLET OF BOX CULVERT AND EXISTING BRIDGE OPENING ON OUTLET END.
7. REMOVE TEMPORARY DIVERSION CHANNEL.
8. CONSTRUCT NORTH BARREL OF BOX CULVERT.
9. REMOVE IN-STREAM DIVERSIONS AND DIVERT FLOW INTO BOX CULVERT.
10. INSTALL SANDBAG PLUG IN OUTLET OF PROPOSED BOX CULVERT, 54" SUSPENDED PIPE DIVERSION OR USE TEMPORARY BYPASS PUMP DIVERSION, ETC. (EC-STR-33A (FLEXIBLE PIPE DIVERSION) TO BYPASS STR-3 STREAM FLOW THROUGH EXISTING BRIDGE AREA.
11. REMOVE EXISTING BRIDGE.
12. AFTER BRIDGE REMOVAL INSTALL RIP-RAP OUTLET PROTECTION. GRADE, SHAPE, AND STABILIZE STREAM BANKS.

BOX CULVERT STA. 107+44.11 SEQUENCE OF CONSTRUCITON:

1. INSTALL 48" TEMPORARY DIVERSION CULVERT.
2. USING IN-STREAM DIVERSIONS, DIVERT FLOW FROM STR-1 AND WTL-1 INTO THE 48" TEMPORARY DIVERSION CULVERT.
3. CONSTRUCT THE PROPOSED BOX CULVERT AND REMOVE EXISTING BOX CULVERT PER THE TRAFFIC CONTROL PLANS.
4. CONSTRUCT THE RELOCATED STREAM CHANNEL FOR STR-1 AND TIE INTO THE PROPOSED BOX CULVERT INLET.
5. REMOVE END PORTIONS OF THE 48" TEMPORARY DIVERSION CULVERT AND CAP PER THE PAY ITEM FOOTNOTE.

S.R.353(BAILEY BRIDGE RD.)
PI 102+19.12
N 693,308.2568
E 2,973,922.5475
Δ 25° 12′ 30″ (LT)
D 12° 15′ 00″
R 467.72
L 205.78
T 104.58
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 101+14.54
PT 103+20.32



S.R.353(BAILEY BRIDGE RD.)
PI 111+06.45
N 694,184.0619
E 2,973,821.3573
Δ 30° 48′ 30″ (LT)
D 12° 15′ 00″
R 467.72
L 251.50
T 128.87
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 109+77.58
PT 112+29.08

OUTFALLS		
Outfall No.	Drainage Area	Average Slope
1	.40 (AC)	2.00 (%)
2	.50 (AC)	1.00 (%)
3	.40 (AC)	2.00 (%)
4	.50 (AC)	.50 (%)
5	.10 (AC)	.50 (%)
6	.10 (AC)	4.00 (%)
7	.30 (AC)	2.10 (%)

NOTE: TEMPORARY DIVERSION CULVERT CONCRETE PIPE SHALL HAVE A MINIMUM OF ONE PIPE END SECTION REMOVED FROM EACH END OF CONCRETE PIPE. REMAINING PIPE ENDS SHALL BE CAPPED OFF AND SEALED WITH CONCRETE.

S.R.353(BAILEY BRIDGE RD.)
PI 107+50.09
N 693,827.4262
E 2,973,796.0722
Δ 17° 44′ 48″ (RT)
D 12° 15′ 00″
R 467.72
L 144.87
T 73.02
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 106+77.07
PT 108+21.94

UNOFFICIAL SET
NOT FOR BIDDING

SEALED BY

JAMES B. MORGAN REGISTERED ENGINEER AGRICULTURE COMMERCE No. 111658 STATE OF TENNESSEE

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000096 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION

EROSION PREVENTION & SEDIMENT CONTROL (EPSC) PLANS

STAGE I

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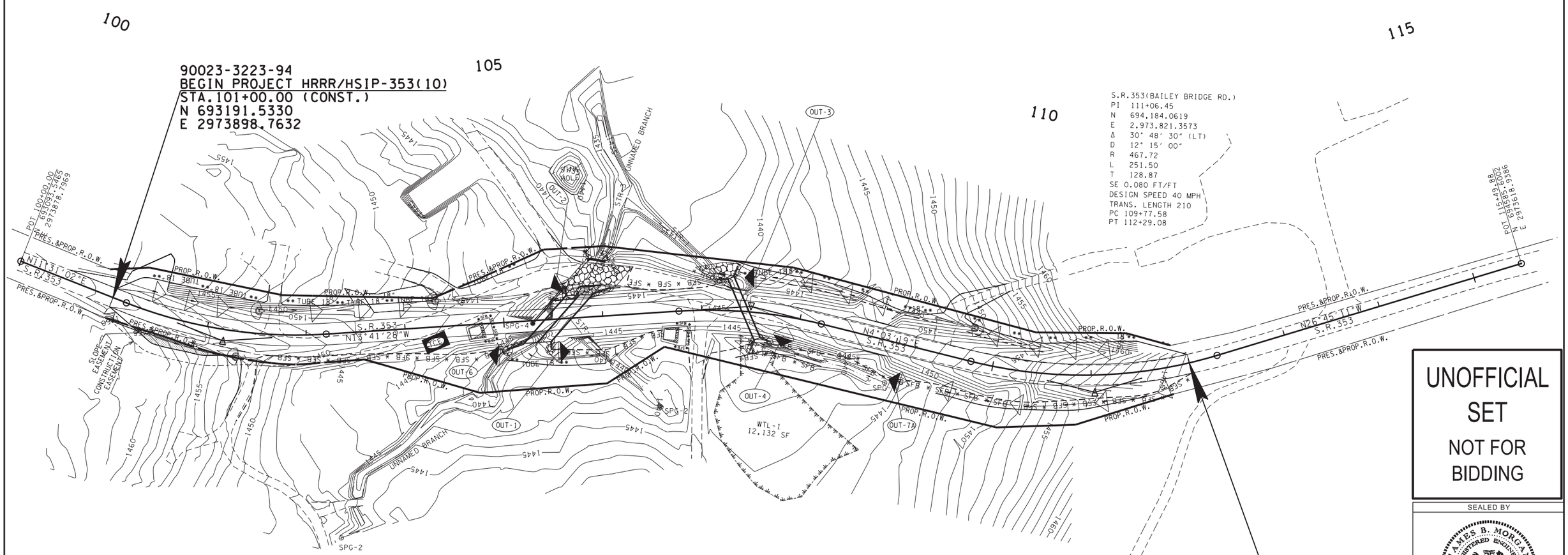
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2016	HRRR/HSIP-353(10)	10
CONST.	2017	HRRR/HSIP-353(10)	10

S.R.353 WASHINGTON CO.
90023-2223-94 (R.O.W.)
90023-3223-94 (CONST.)

REVISED 04-12-17 MODIFIED SURVEY, PROPOSED R.O.W., SLOPE LINES, AND EPSC MEASURES ON TRACT 5. ADDED R.O.W. MARKERS.

NOTE: SEE SHEET 11 FOR ENVIRONMENTAL MITIGATION PLANS

S.R.353(BAILEY BRIDGE RD.)
PI 102+19.12
N 693,308.2568
E 2,973,922.5475
Δ 25° 12' 30" (LT)
D 12° 15' 00"
R 467.72
L 205.78
T 104.58
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 101+14.54
PT 103+20.32



S.R.353(BAILEY BRIDGE RD.)
PI 111+06.45
N 694,184.0619
E 2,973,821.3573
Δ 30° 48' 30" (LT)
D 12° 15' 00"
R 467.72
L 251.50
T 128.87
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 109+77.58
PT 112+29.08

OUTFALLS

Outfall No.	Drainage Area	Average Slope
1	.40 (AC)	.60 (%)
2	.50 (AC)	1.00 (%)
3	.40 (AC)	.20 (%)
4	.50 (AC)	.50 (%)
6	.10 (AC)	1.00 (%)
7A	.20 (AC)	2.10 (%)

S.R.353(BAILEY BRIDGE RD.)
PI 107+50.09
N 693,827.4262
E 2,973,796.0722
Δ 17° 44' 48" (RT)
D 12° 15' 00"
R 467.72
L 144.87
T 73.02
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 106+77.07
PT 108+21.94

90023-3223-94
END PROJECT HRRR/HSIP-353(10)
STA.112+00.00 (CONST.)
N 694272.7785
E 2973775.6224

UNOFFICIAL SET
NOT FOR BIDDING

SEALED BY

JAMES B. MORGAN
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
No. 111668
STATE OF TENNESSEE

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000096 AND TIED TO THE TCRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION

STAGE II

EROSION PREVENTION & SEDIMENT CONTROL (EPSC) PLANS

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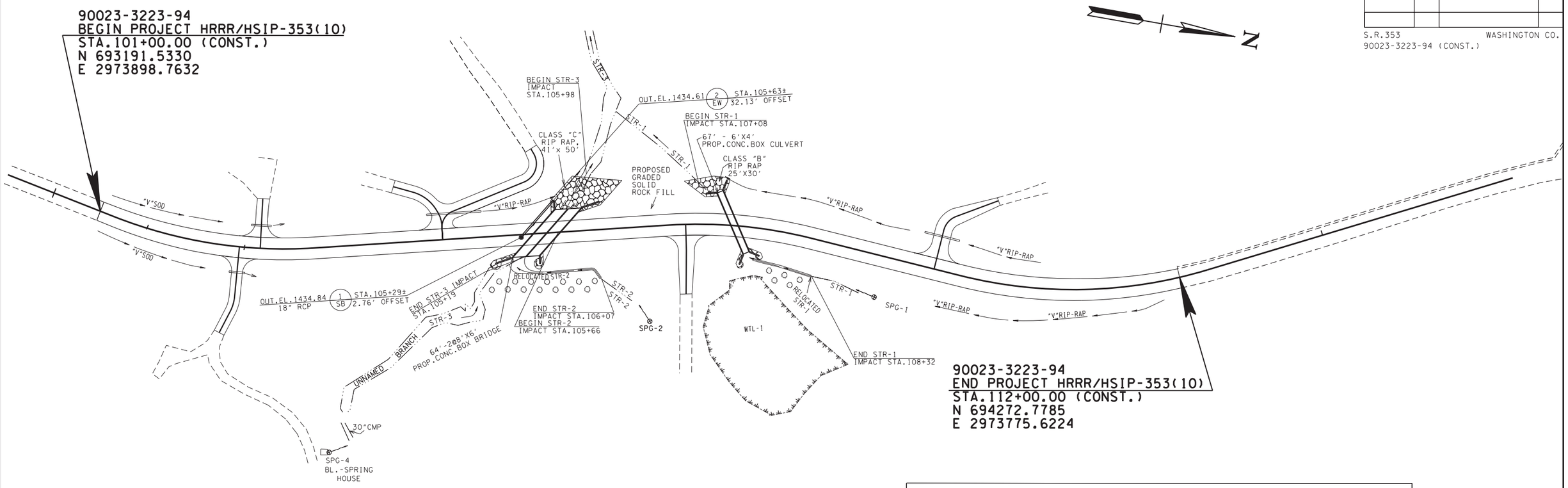
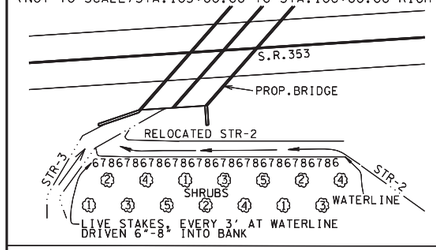
TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	11

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)



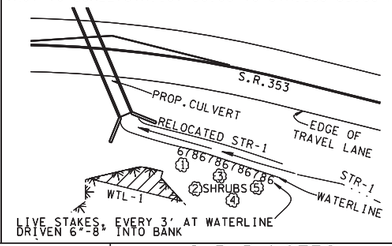
STR-2 SHRUB & LIVE STAKE PLACEMENT DETAIL

(NOT TO SCALE)STA.105+00.00 TO STA.106+00.00 RIGHT



STR-1 SHRUB & LIVE STAKE PLACEMENT DETAIL

(NOT TO SCALE)STA.107+50.00 TO STA.108+35.00 RIGHT



KEY

SHRUB SPECIES FOR STREAM RELOCATIONS;
EACH SHRUB SHOULD BE 2'-5' IN HEIGHT AND CONTAINERIZED

#	ITEM NUMBER	DESCRIPTION
1	802-13.01	ALNUS SERRULATA (HAZEL ALDER)
2	802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)
3	802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)
4	802-13.09	LINDERA BENZOIN (SPICEBUSH)
5	802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)

LIVE STAKE SPECIES FOR STREAM BANKS;
EACH STAKE SHOULD BE 18"-24" IN LENGTH

#	ITEM NUMBER	DESCRIPTION
6	802-02.30	SALIX NIGRA (BLACK WILLOW)
7	802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)
8	802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)

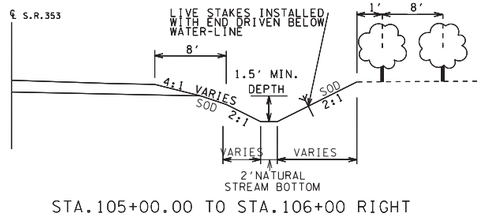
SHRUB NOTES

(1) NO SUBSTITUTIONS OF SHRUB SPECIES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL OF T.D.O.T. ENVIRONMENTAL DIVISION. SHRUBS SHALL BE OF THE VARIETY REQUESTED, BETWEEN 2 AND 5 FEET IN HEIGHT, CONTAINERIZED AND OF THE FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED. ANY FOUND TO BE INCORRECT SPECIES, OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION OF THE CONTRACT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. STAKES AND WIRES SHALL BE REMOVED IMMEDIATELY PRIOR TO CONTRACT TERMINATION, UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL DIVISION.

(2) THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT SHRUB SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.

(3) SHRUBS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

STR-1 & STR-2 REALIGNMENT DETAIL



STA.105+00.00 TO STA.106+00 RIGHT
(TO BE UNLINED; NATURAL STREAM BOTTOM)
STA.107+50.00 TO STA.108+35.00 RIGHT
(TO BE UNLINED; NATURAL STREAM BOTTOM)

LOW FLOW CHANNEL NOTE

A LOW FLOW CHANNEL IS REQUIRED FOR THE PROPOSED BOX BRIDGE. REFER TO STD-17-20 FOR DETAILS.

RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN THE RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM THE CULVERT EXCAVATION AREA.

SPG-1, SPG-2, WTL-1, STR-1, STR-2 AND STR-3 NOTE

THE CONTRACTOR SHALL USE ANY MEASURE NECESSARY TO ENSURE THAT CONSTRUCTION EQUIPMENT OR DEBRIS WILL NOT IMPACT SPRINGS SPG-1 AND SPG-2 AND LIMIT IMPACTS TO WETLAND WTL-1 AND STREAMS STR-1, STR-2 AND STR-3 TO AREAS IDENTIFIED ON THE PLANS.

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(IGNORE REFERENCES TO ITEMS NOT SPECIFIED)

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

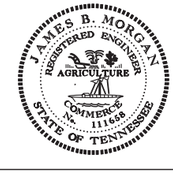
(2) CHANNEL RELOCATION SEQUENCE:
A. FLAG EDGE OF THE NEW CHANNEL TOP BANK PRIOR TO CLEARING. DO NOT CLEAR LARGE TREES IN POSITION TO SHADE THE NEW CHANNEL. LEAVE AS MANY TREES AND SHRUBS AS POSSIBLE BETWEEN TOE OF THE NEW HIGHWAY SLOPE AND THE STREAM.
B. EXCAVATE THE NEW CHANNEL "IN THE DRY" BY LEAVING AREAS OF UNDISTURBED EARTH (DIVERSION BERMS) IN PLACE AT BOTH ENDS.
C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
E. REMOVE DIVERSION BERMS, BEGINNING WITH THE MOST DOWNSTREAM; BANKS AND BOTTOM ELEVATION OF THE OLD CHANNEL SHOULD TRANSITION SMOOTHLY INTO THE NEW CHANNEL. THE ELEVATIONS OF THE NEW CHANNEL BOTTOM AT EACH END OF THE RELOCATION SEQUENCE SHOULD MATCH THE ELEVATIONS OF THE EXISTING CHANNEL, AND A STEADY PERCENT SLOPE SHOULD BE MAINTAINED THROUGHOUT THE RELOCATED CHANNEL CENTERLINE OR AS SPECIFIED.
F. INSTALL SHRUBS ACCORDING TO STANDARD SPECIFICATIONS SECTION 802.

(3) ONLY RIP-RAP SHOWN ON PLANS SHOULD BE USED IN THE RELOCATED CHANNEL REACH. ANY OTHER PROPOSED RIP-RAP SHOULD BE COORDINATED WITH THE ENVIRONMENTAL DIVISION THROUGH THE TDOT CONSTRUCTION OFFICE.

(4) REQUESTS BY ANY AGENCY THAT WOULD REQUIRE MODIFCATION OF CHANNELS, ELEVATIONS, RIP-RAP, OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFFERED TO TDOT ENVIRONMENTAL DIVISION VIA HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS. TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION MAY MAKE RECOMMENDATIONS CONCERNING EROSION CONTROL VIA THE ENGINEER WITHOUT SUCH REFERRAL.

UNOFFICIAL SET
NOT FOR BIDDING

SEALED BY



COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000096 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION

ENVIRONMENTAL MITIGATION PLAN

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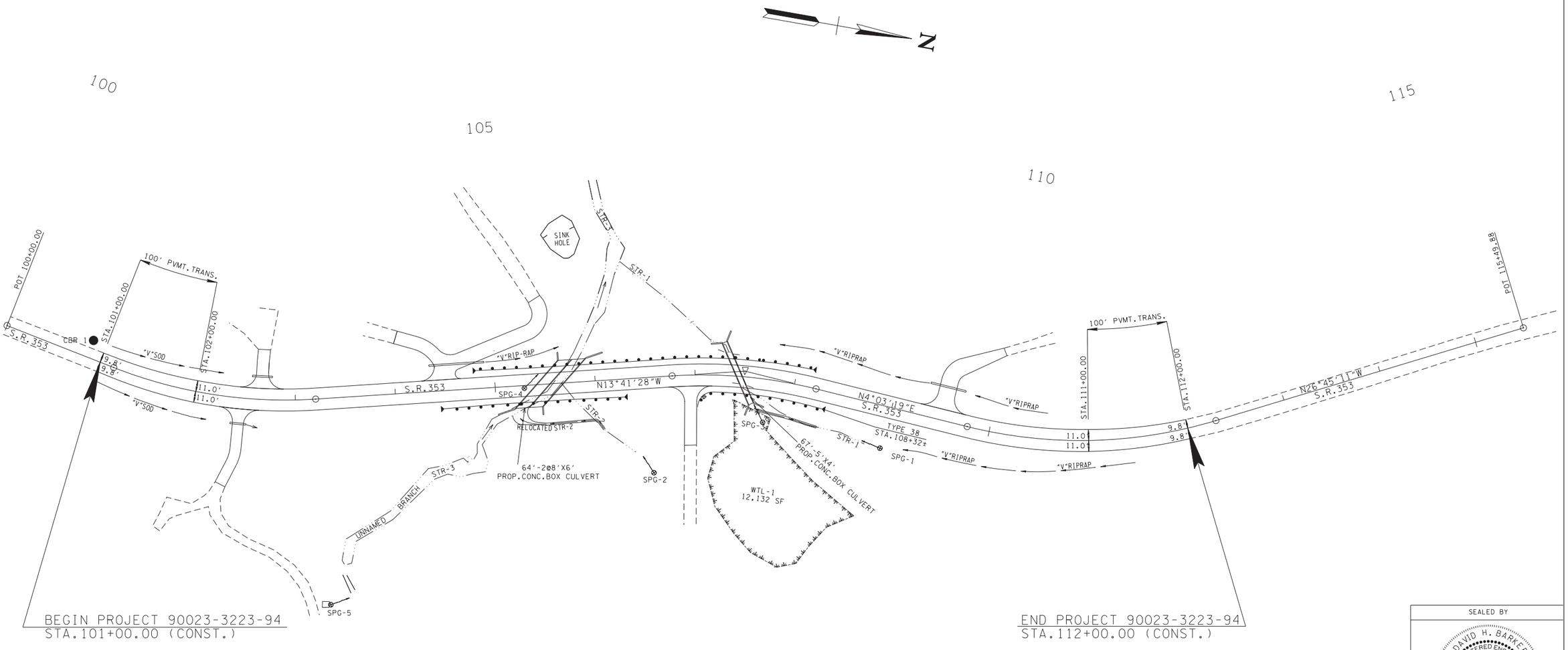
TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	14

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)



CBR DATA

SAMPLE NO.	DESCRIPTION	DENSITY	OPTIMUM MOISTURE	MOISTURE RANGE	IN-SITU MOISTURE	LL	PL	AASHTO CLASS	USCS CLASS	CBR
1	CLAY - red and yellow , firm, damp	84.6	32.0	23.2-45.5	37.0	69	39	A-7-5	CH	4

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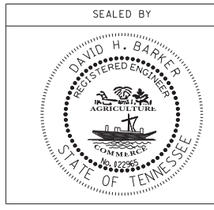

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SOILS

STATE ROUTE 353

STA.101+00 TO STA.112+00

WASHINGTON COUNTY

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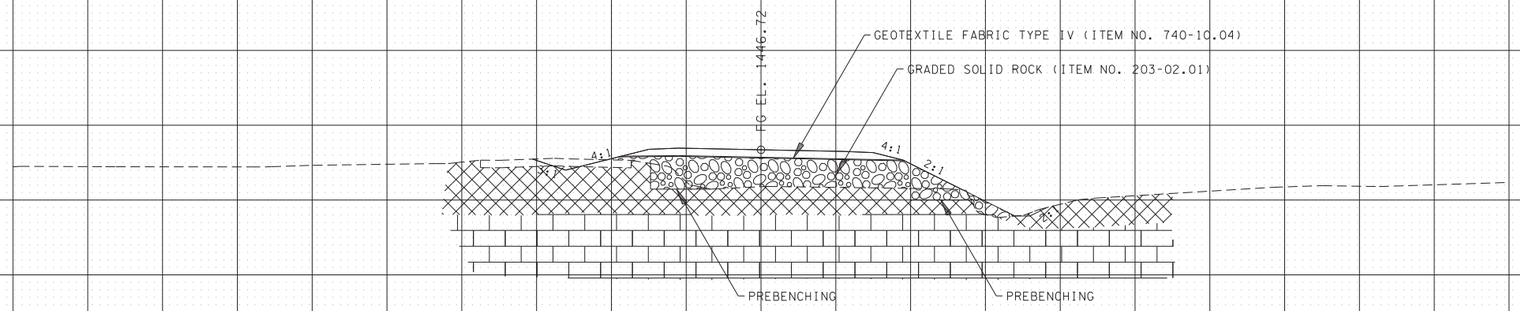
TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	14A

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

PREPRESENTATIVE STATION 104+25 TO STATION 106+00.00

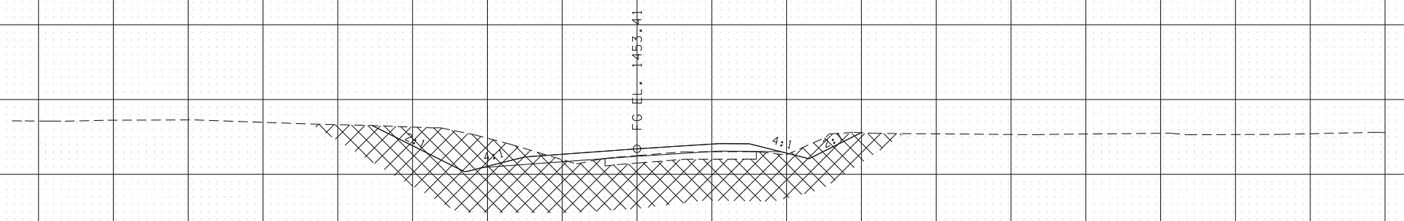


ITEM NO. 203-02.01 GRADED SOLID ROCK

BORROW EXCAVATION (GRADED SOLID ROCK) SHALL CONSIST OF THE REMOVAL AND SATISFACTORY PLACEMENT OF SOUND, NON-DEGRADABLE ROCK WITH A MAXIMUM SIZE OF 3 FT. (1 M) . AT LEAST 50 PERCENT OF THE ROCK SHALL BE UNIFORMLY DISTRIBUTED BETWEEN 1 FT.(30 CM) AND 3 FT. (1 M) IN DIAMETER AND NO GREATER THAN 10 PERCENT SHALL BE LESS THAN 2 IN. (50 MM) IN DIAMETER. THE MATERIAL SHALL BE ROUGHLY EQUI-DIMENSIONAL IN SHAPE. THIN, SLABBY MATERIAL WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL BE REQUIRED TO PROCESS THE MATERIAL WITH AN ACCEPTABLE MECHANICAL SCREENING PROCESS THAT PRODUCES THE REQUIRED GRADATION. WHEN THE MATERIAL IS SUBJECTED TO FIVE ALTERATIONS OF THE SODIUM SULFATE SOUNDNESS TEST (AASHTO T 104), THE WEIGHTED PERCENTAGE OF LOSS SHALL BE NOT MORE THAN 12. THE MATERIAL SHALL BE APPROVED BY THE ENGINEER BEFORE USE.

NOTE:
EXISTING EMBANKMENT TO BE PREBENCHED ACCORDING TO TDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SUB SECTION 205.03 PARAGRAPH 6 (MARCH 1, 2006).

PREPRESENTATIVE STATION 101+00 TO STATION 104+25



CLAY - A. SOIL MATERIAL (SEE DEFINITION OF TERMS USED FOR EARTHWORK GRADING CALCULATIONS)

LIMESTONE - B. SOLID ROCK MATERIAL (SEE DEFINITION OF TERMS USED FOR EARTHWORK GRADING CALCULATIONS)

SEALED BY

SOILS
STATE ROUTE 353
WASHINGTON COUNTY

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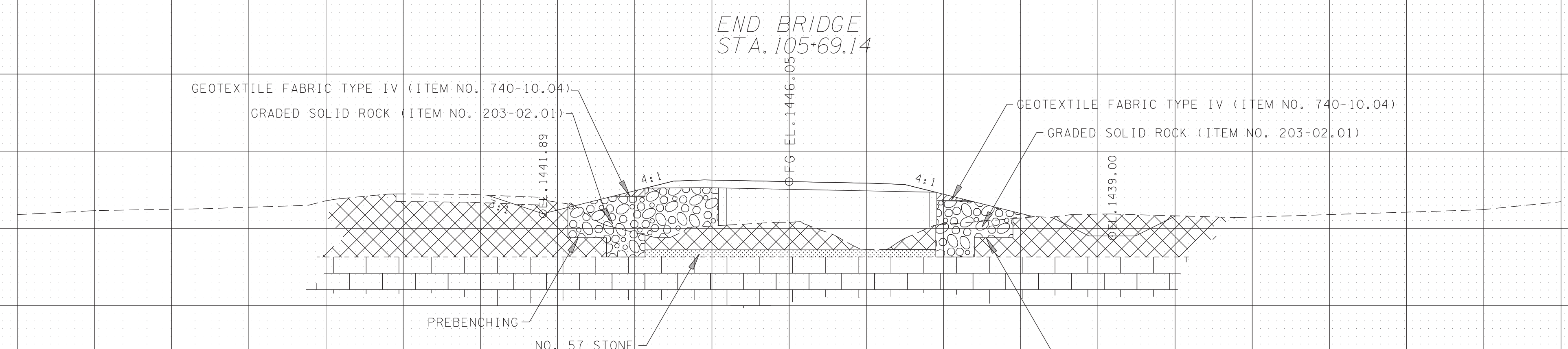
TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	14B

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)

TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

PREPRESENTATIVE STATION 105+40.86 TO STATION 105+69.14



NOTE:
EXISTING EMBANKMENT TO BE PREBENCHED ACCORDING TO TDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SUB SECTION 205.03 PARAGRAPH 6 (MARCH 1, 2006).

CLAY - A. SOIL MATERIAL (SEE DEFINITION OF TERMS USED FOR EARTHWORK GRADING CALCULATIONS)

LIMESTONE - B. SOLID ROCK MATERIAL (SEE DEFINITION OF TERMS USED FOR EARTHWORK GRADING CALCULATIONS)

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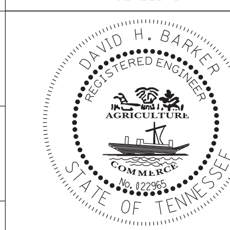

ITEM NO. 203-02.01 GRADED SOLID ROCK

BORROW EXCAVATION (GRADED SOLID ROCK) SHALL CONSIST OF THE REMOVAL AND SATISFACTORY PLACEMENT OF SOUND, NON-DEGRADABLE ROCK WITH A MAXIMUM SIZE OF 3 FT. (1 M) . AT LEAST 50 PERCENT OF THE ROCK SHALL BE UNIFORMLY DISTRIBUTED BETWEEN 1 FT.(30 CM) AND 3 FT. (1 M) IN DIAMETER AND NO GREATER THAN 10 PERCENT SHALL BE LESS THAN 2 IN. (50 MM) IN DIAMETER. THE MATERIAL SHALL BE ROUGHLY EQUI-DIMENSIONAL IN SHAPE. THIN, SLABBY MATERIAL WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL BE REQUIRED TO PROCESS THE MATERIAL WITH AN ACCEPTABLE MECHANICAL SCREENING PROCESS THAT PRODUCES THE REQUIRED GRADATION. WHEN THE MATERIAL IS SUBJECTED TO FIVE ALTERATIONS OF THE SODIUM SULFATE SOUNDNESS TEST (AASHTO T 104), THE WEIGHTED PERCENTAGE OF LOSS SHALL BE NOT MORE THAN 12. THE MATERIAL SHALL BE APPROVED BY THE ENGINEER BEFORE USE.

SOILS
STATE ROUTE 353
WASHINGTON COUNTY

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TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	14C

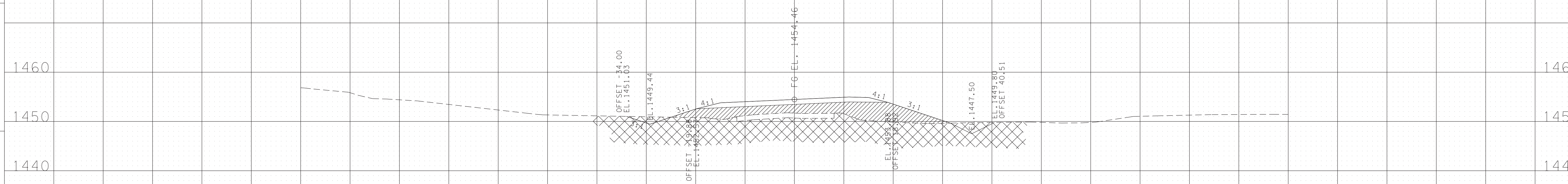
S.R.353
90023-3223-94 (CONST.)

WASHINGTON CO.

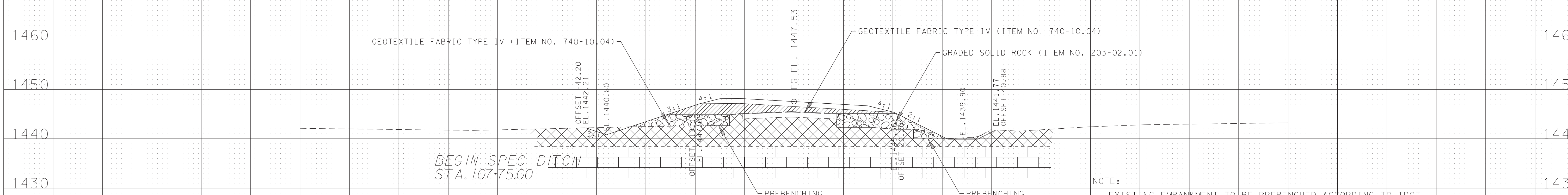
TENNESSEE D.O.T.
DESIGN DIVISION

FILE NO.

PREPRESENTATIVE STATION 109+50 TO STATION 112+00



PREPRESENTATIVE STATION 106+50 TO STATION 109+50



NOTE:
EXISTING EMBANKMENT TO BE PREBENCHED ACCORDING TO TDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SUB SECTION 205.03 PARAGRAPH 6 (MARCH 1, 2006).

ITEM NO. 203-02.01 GRADED SOLID ROCK

BORROW EXCAVATION (GRADED SOLID ROCK) SHALL CONSIST OF THE REMOVAL AND SATISFACTORY PLACEMENT OF SOUND, NON-DEGRADABLE ROCK WITH A MAXIMUM SIZE OF 3 FT. (1 M) . AT LEAST 50 PERCENT OF THE ROCK SHALL BE UNIFORMLY DISTRIBUTED BETWEEN 1 FT.(30 CM) AND 3 FT. (1 M) IN DIAMETER AND NO GREATER THAN 10 PERCENT SHALL BE LESS THAN 2 IN. (50 MM) IN DIAMETER. THE MATERIAL SHALL BE ROUGHLY EQUI-DIMENSIONAL IN SHAPE. THIN, SLABBY MATERIAL WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL BE REQUIRED TO PROCESS THE MATERIAL WITH AN ACCEPTABLE MECHANICAL SCREENING PROCESS THAT PRODUCES THE REQUIRED GRADATION. WHEN THE MATERIAL IS SUBJECTED TO FIVE ALTERATIONS OF THE SODIUM SULFATE SOUNDNESS TEST (AASHTO T 104), THE WEIGHTED PERCENTAGE OF LOSS SHALL BE NOT MORE THAN 12. THE MATERIAL SHALL BE APPROVED BY THE ENGINEER BEFORE USE.

COMMON ROADWAY FILL

CLAY - A. SOIL MATERIAL (SEE DEFINITION OF TERMS USED FOR EARTHWORK GRADING CALCULATIONS)

LIMESTONE - B. SOLID ROCK MATERIAL (SEE DEFINITION OF TERMS USED FOR EARTHWORK GRADING CALCULATIONS)

SEALED BY

DAVID H. BARKER
REGISTERED ENGINEER
STATE OF TENNESSEE

SOILS
STATE ROUTE 353
WASHINGTON COUNTY

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TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO. ____

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2017	HRRR/HSIP-353(10)	14D

S.R.353 WASHINGTON CO.
90023-3223-94 (CONST.)

4-203.02

A. SOIL MATERIAL

SOIL MATERIAL IS MATERIAL THAT IS PREDOMINANTLY MADE UP OF NATURALLY OCCURRING MINERAL PARTICLES WHICH ARE FAIRLY READILY SEPARATED INTO RELATIVELY SMALL PIECES, AND IN WHICH THE MASS MAY CONTAIN AIR, OR ORGANIC MATERIALS. THIS MATERIAL MAY CONTAIN ROCK PIECES IN THE FORM OF DISCONNECTED SLABS, LENSES, OR BOULDERS OF LESS THAN APPROXIMATELY 0.5 CUBIC YARDS. THE MAIN SOIL GROUPS CONSIST OF CLAY, SILT, SAND, GRAVEL, COBBLES, BOULDERS (LESS THAN 0.5 CUBIC YARD VOLUME) OR A COMBINATION OF ANY OF THE CONSTITUENTS. FOR CONSTRUCTION PURPOSES, THIS MATERIAL WOULD TYPICALLY BE CONSIDERED TO BE EXCAVATABLE BY CONVENTIONAL EXCAVATION MACHINERY SUCH AS PANS, TRACK HOES, OR FRONT END EXCAVATORS/LOADERS. THIS MATERIAL WOULD HAVE A SHRINK FACTOR AS GIVEN IN THE SHRINK FACTORS SHOWN IN SECTION 2-145.10 OF THE DESIGN GUIDELINES OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEERING SECTION OF THE MATERIALS AND TESTS DIVISION.

4-203.02

B. SOLID ROCK MATERIAL

SOLID ROCK MATERIAL IS THAT NATURALLY OCCURRING MATERIAL COMPOSED OF MINERAL PARTICLES SO FIRMLY BONDED TOGETHER THAT RELATIVELY GREAT EFFORT IS REQUIRED TO SEPARATE THE PARTICLES (I.E., BLASTING OR HEAVY CRUSHING FORCES). FOR CONSTRUCTION PURPOSES, THIS MATERIAL WOULD TYPICALLY HAVE TO BE BLASTED TO SEPARATE INTO PIECES SMALL ENOUGH TO LOAD AND TRANSPORT ON EARTH MOVING TRUCKS AND WHICH WHEN SUBJECTED TO PROPER PRE-SPLIT AND PRODUCTION BLASTING WOULD RESULT IN A UNIFORM STABLE ROCKCUT FACE. NOTE THAT THIS MATERIAL WOULD NOT BY DEFINITION NECESSARILY BE A PROVEN SOURCE OF ANY ROCK TYPE AGGREGATE SUCH AS SOLID ROCK, GRADED SOLID ROCK, RIP RAP, OR OTHER ROCK AGGREGATE CONSTUCTION PRODUCTS. THIS MATERIAL WOULD HAVE A SIGNIFICANT SWELL FACTOR AS GIVEN IN SWELL FACTORS SHOWN IN SECTION 2-145.10 OF THE DESIGN GUIDELINES OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEERING SECTION OF THE MATERIALS AND TESTS DIVISION.

4-203.02

C. SOFT ROCK OR DEGRADABLE ROCK

THIS MATERIAL IS THAT NATURALLY OCCURRING MATERIAL COMPOSED OF MINERAL PARTICLES THAT ARE SO FIRMLY BONDED SUCH THAT THEY ARE NOT FAIRLY READILY SEPARATED INTO SMALL PIECES YET HAS SUCH RELATIVELY LOW BONDING STRENGTH THAT WOULD ALLOW FOR SEPARATING INTO SMALL PIECES THROUGH MODERATE TO HEAVY CRUSHING FORCES. FOR CONSTRUCTION PURPOSES THIS MATERIAL WOULD HAVE TO BE SUBJECTED TO RIPPING TYPE EQUIPMENT, HOE RAMS, OR RUGGED USE OF A LARGE BULLDOZER IN ORDER TO SEPARATE THE MATERIAL SUCH THAT IT CAN BE READILY LOADED INTO EARTH MOVING TRUCKS. THESE MATERIALS WOULD TYPICALLY BE SHALES, CLAYSTONES, SILTSTONES, WEATHERED SANDSTONES, WEATHERED SCHIST AND WEATHERED GNEISS. THIS MATERIAL WOULD HAVE A RELATIVELY SMALL SHRINK OR SWELL FACTOR DEPENDING ON THE TYPE MATERIAL AND THE DEGREE OF WEATHERING, DISINTEGRATION, OR DEGRADATION.

4-203.02

D. TRANSITIONAL MATERIALS

THIS MATERIAL IS THAT MATERIAL COMPRISED OF A COMBINATION OF SOIL AND ROCK (MATERIAL A,B, AND C AS DEFINED IN SECTION 4-230.02 OF THE TDOT ROADWAY DESIGN GUIDELINES) OCCURRING IN EITHER NON- UNIFORM INTERBEDDED LAYERS OF THE ABOVE MATERIALS (I.E., SHALE MATERIAL WITH RELATIVELY THIN LAYERS OF SOLID ROCK SUCH AS HARD LIMESTONE) OR ERRATIC LOCALIZED CHANGES OF MATERIAL TYPES BOTH LATERALLY AND WITH DEPTH (SUCH AS A GEOLOGIC FORMATION RESULTING IN PINNACLED ROCK COLUMNS, FLOATING BOULDERS OR LENSES INTERCALATED WITH CLAY SOIL, A COMMON OCCURRENCE IN CERTAIN REGIONS OF TENNESSEE). FOR CONSTRUCTION PURPOSES, THIS MATERIAL MAY HAVE TO BE EXCAVATED USING A COMBINATION OF EXCAVATION METHODS SUCH AS BLASTING OF ROCK PINNACLES, LAYERS OF BOULDERS ALONG WITH RIPPING OF WEATHERED ROCK AND EXCAVATING OF SOIL WITH TRACK HOES OR LOADERS ALL WITHIN A LOCALIZED AREA. THIS MATERIAL WOULD NOT BE SUITABLE FOR THE USE OF EXCAVATING PAN TYPE EQUIPMENT.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SOILS
DEFINITION OF TERMS
USED FOR EARTHWORK
GRADING CALCULATIONS

WASHINGTON COUNTY

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Documentation and Permits Binder

SR-353, Culvert Over Branch, L.M. 3.23

Washington County, TN

Project No.: 90023-1223-94

PIN: 114038.01

Prepared by:

Arcadis U.S., Inc.

Consultant Reference No.: CTT33005.0001

CONTENT CHECKLIST

TN TDOT Department of Transportation

TN TDOT Department of Transportation

DOCUMENTATION AND PERMITS BINDER

CHECKLIST

PROJECT NAME: SR-353, Culvert over Branch, L.M. 3.23
PIN: 114038.01
PROJECT NO. 90023-1223-94
COUNTY: WASHINGTON

1. EPSC INSPECTION REPORTS
   - 1.1. ☒ TDOT FORM
   - 1.2. ☒ TDEC FORM
2. ☒ EPSC INSPECTION DELEGATION OF AUTHORITY
3. ☒ PRECIPITATION RECORDS
   - 3.1. ☒ MONTHLY RAINFALL LOG
   - 3.2. ☒ PRECIPITATION FREQUENCY ESTIMATES
4. ☒ PROJECT EPSC POSTING INFORMATION
5. ☒ PROJECT RELATED TDOT EPSC STANDARD DRAWINGS
6. ☒ NOI AND TOPO MAP
7. ☒ BLANK NOT
8. ENVIRONMENTAL PERMITS
   - 8.1. ☒ PERMIT APPLICATION LETTER
   - 8.2. ☒ PERMITS
     - 8.2.1. ☒ TDEC ARAP
     - 8.2.2. ☒ CORPS OF ENGINEERS (COE)
     - 8.2.3. ☐ TVA 26A
     - 8.2.4. ☐ OTHER
9. ☒ ENVIRONMENTAL BOUNDARIES REPORT
10. ☒ TDOT AND TDEC WEB LINKS
11. EPSC INSPECTION TRAINING CERTIFICATIONS
12. SOIL TEST RESULTS

1. EPSC INSPECTION REPORTS

TN TDOT Department of Transportation

EPSC Inspection Report

State/US Route or Road Name: _____ Inspection Date: _____

Contract #: _____ PIN: _____ County: _____ TNR#

Did the contractor accompany the EPSC inspector on the inspection as required by SP107FP? Yes ☐ No ☐

Does the contractor agree with the findings noted below and on the attached TDEC form CN-1173 dated _____ ?

Yes ☐ No ☐ If no, it is the responsibly of the contractor to provide written comments that detail their disagreement with the noted findings.

Contractor's Signature: _____ Date: _____

Number of Corrective Actions	
Number of Recurring Corr. Acts.	
Number of Sediment Releases	

Outfall # / STR or WTL #	Entry Type	App. Station # From/To	Date Last Disturbed	Stabilization Date / Type T = Temporary P= Permanent		Action Code	Action Required / Clarification	Object. Color Contrast (Y)	Sed. Release (Y)

Entry Type Codes

CA	Corrective Action
RCA	Recurring Corrective Action
FM	Future Maintenance

Action Codes

CE	Install construction entrance/exit	DIV	Install diversion	R	Repair/Replace measure	U	Upgrade measure
CL	Clean out measure	HV	Install high visibility fence	REM	Remove measure	W	Too wet to work
CO	Outfall is closed	I	Install measure	SR	Clean up sediment release*		
CW	Install concrete washout	LIT	Pick up litter/debris	TRAC	Clean off tracking from road		
DC	Implement dust control	PS	Permanently stabilize area	TS	Temporarily stabilize area		

*Approval from TDEC is needed prior to removal of sediment from a stream or wetland.

TN TDOT Department of Transportation

Contract #: _____ SR/US Road Name: _____ County: _____ Inspection Date: _____

TNR# _____

Outfall # / STR or WTL #	Entry Type	App. Station # From/To	Date Last Disturbed	Stabilization Date / Type T = Temporary P= Permanent		Action Code	Action Required / Clarification	Object. Color Contrast (Y)	Sed. Release (Y)

Please refer to the first sheet for Entry and Action Codes

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC)

Division of Water Resources
William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243
1-888-891-8332 (TDEC)

General NPDES Permit for Stormwater Discharges from Construction Activities (CGP)

Construction Stormwater Inspection Certification (Twice-Weekly Inspections)

Site or Project Name:		**NPDES Tracking Number: TNR**
Primary Permittee Name:		Date of Inspection:
Current approximate disturbed acreage:	Has rainfall been checked/documented daily? ☐ Yes ☐ No	Name of Inspector:
Current weather conditions:		Inspector's Training Certification Number:

Please check the box if the following items are on-site:

☐ Notice of Coverage (NOC) ☐ Stormwater Pollution Prevention Plan (SWPPP) ☐ Twice-weekly inspection documentation

☐ Site contact information ☐ Rain Gage ☐ Off-site Reference Rain Gage Location: _____

Best Management Practices (BMPs):

Are the Erosion Prevention and Sediment Controls (EPSCs) functioning correctly: If "No," describe below in Comment Section			
1.	Are all applicable EPSCs installed and maintained per the SWPPP?	☐ Yes	☐ No
2.	Are EPSCs functioning correctly at all disturbed areas/material storage areas per section 4.1.5?	☐ Yes	☐ No
3.	Are EPSCs functioning correctly at outfall/discharge points such that there is no objectionable color contrast in the receiving stream, and no other water quality impacts per section 5.3.2?	☐ Yes	☐ No
4.	Are EPSCs functioning correctly at ingress/egress points such that there is no evidence of track out?	☐ Yes	☐ No
5.	If applicable, have discharges from dewatering activities been managed by appropriate controls per section 4.1.4? If "No," describe below the measures to be implemented to address deficiencies.	☐ Yes	☐ No
6.	If construction activity at any location has temporarily/permanently ceased, was the area stabilized within 14 days per section 3.5.3.2? If "No," describe below each location and measures taken to stabilize the area(s)	☐ Yes	☐ No
7.	Have pollution prevention measures been installed, implemented, and maintained to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters per section 4.1.5? If "No," describe below the measures to be implemented to address deficiencies.	☐ Yes	☐ No
8.	If a concrete washout facility is located on site, is it clearly identified on the project and maintained? If "No," describe below the measures to be implemented to address deficiencies. ☐ N/A	☐ Yes	☐ No
9.	Have all previous deficiencies been addressed? If "No," describe remaining deficiencies in Comment section. ☐ Check if deficiencies/corrective measures have been reported on a previous form.	☐ Yes	☐ No

Comment Section. If the answer is "No" for any of the above, please describe the problem and corrective actions to be taken. Otherwise, describe any pertinent observations:

Certification and Signature (must be signed by the certified inspector and the permittee per Sections 3.5.8.2 (g) and 7.7.2 of the CGP)

I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Inspector Name and Title:	Signature:	Date:
Primary Permittee Name and Title:	Signature:	Date:

Construction Stormwater Inspection Certification Form (Twice-Weekly Inspections)

Purpose of this form/ Instructions

An inspection, as described in section 3.5.8.2. of the General Permit for Stormwater Discharges from Construction Activities ("Permit"), shall be performed at least twice every calendar week and documented on this form. Inspections shall be performed at least 72 hours apart. Where sites or portion(s) of construction sites have been temporarily stabilized, or runoff is unlikely due to winter conditions (e.g., site covered with snow or ice), such inspection only has to be conducted once per month until thawing results in runoff or construction activity resumes.

As described in section 3.5.8.1 of the Permit, inspectors performing the required twice weekly inspections must have an active certification by completing the "Fundamentals of Erosion Prevention and Sediment Control Level I" course (http://www.tnepsc.org/). Twice weekly inspections can also be performed by: a licensed professional engineer or landscape architect; a Certified Professional in Erosion and Sediment Control (CPESC) or a person who has successfully completed the "Level II Design Principles for Erosion Prevention and Sediment Control for Construction Sites" course. A copy of the certification or training record for inspector certification should be kept on site.

Qualified personnel, (provided by the permittee or cooperatively by multiple permittees) shall inspect disturbed areas of the construction site that have not been finally stabilized, areas used for storage of materials that are exposed to precipitation, structural control measures, locations where vehicles enter or exit the site, and each outfall.

Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the site's drainage system. Erosion prevention and sediment control measures shall be observed to ensure that they are operating correctly.

Outfall points (where discharges leave the site and/or enter waters of the state) shall be inspected to determine whether erosion prevention and sediment control measures are effective in preventing significant impacts to receiving waters. Where discharge locations are inaccessible, nearby downstream locations shall be inspected. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking.

Based on the results of the inspection, any inadequate control measures or control measures in disrepair shall be replaced or modified, or repaired as necessary, before the next rain event if possible, but in no case more than 7 days after the need is identified.

Based on the results of the inspection, the site description identified in the SWPPP in accordance with section 3.5.1 of the Permit and pollution prevention measures identified in the SWPPP in accordance with section 3.5.2 of the Permit, shall be revised as appropriate, but in no case later than 7 days following the inspection. Such modifications shall provide for timely implementation of any changes to the SWPPP, but in no case later than 14 days following the inspection.

All inspections shall be documented on this Construction Stormwater Inspection Certification form. Alternative inspection forms may be used as long as the form contents and the inspection certification language are, at a minimum, equivalent to the division's form and the permittee has obtained a written approval from the division to use the alternative form. Inspection documentation will be maintained on site and made available to the division upon request. Inspection reports must be submitted to the division within 10 days of the request.

Trained certified inspectors shall complete inspection documentation to the best of their ability. Falsifying inspection records or other documentation or failure to complete inspection documentation shall result in a violation of this permit and any other applicable acts or rules.

2. EPSC INSPECTION DELEGATION OF AUTHORITY

TN TDOT Department of Transportation

CONSTRUCTION DIVISION
EPSC DELEGATION OF AUTHORITY

In accordance with Section 7.7.3 (Duly Authorized Representative) of the *Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities*, I _____ (print name of TDOT project supervisor), delegate the reporting responsibility of coordination with the erosion prevention and sediment control (EPSC) inspection services consultant for TDOT contract # _____ to:

Name: _____ (print name of TDOT delegate)

Title: _____

Address: _____

_____

_____

Phone No.: _____

Email Address: _____

I am providing delegation of authority as stated above and confirm that the TDOT delegate stated above has direct knowledge of the subject project and the ability to discuss the reports and recommendations from the EPSC inspection services consultant on the subject project directly to the contractor.

_____ (signature of TDOT Project Supervisor)

_____ (signature of TDOT delegate)

_____ (date)

The EPSC Delegation of Authority shall be submitted to the local TDEC WPC Environmental Field Office (EFO) address (see table below) for record keeping. A copy shall be placed within the on-site SWPPP Documentation and Permits Binder.

EFO	Street Address	Zip Code	EFO	Street Address	Zip Code
Memphis	8383 Wolf Lake Drive, Bartlett	38133	Cookeville	1221 South Willow Ave.	38506
Jackson	1625 Hollywood Drive	38305	Chattanooga	540 McCallie Avenue STE 550	37402
Nashville	711 R S Gass Boulevard	37243	Knoxville	3711 Middlebrook Pike	37921
Columbia	1421 Hampshire Pike	38401	Johnson City	2305 Silverdale Road	37601

3. PRECIPITATION RECORDS

State Route (SR) / US Route or Road Name:_____TDOT Construction No.:_____ TDOT Contract No.: _____

TDOT EPSC Inspection Monthly Rainfall Data Log

Month _____ **Year**_____

Date	Day of Week[1]	Predicted Precipitation (%)[2]	Rainfall Gage 1 (in)	Rainfall Gage 2 (in)	Rainfall Gage 3 (in)	Rainfall Gage 4 (in)	Rainfall Gage 5 (in)	Duration (hr)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
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15								
16								
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30								
31								

[1] Day of Week= Su,M,Tu,W,Th,F,Sa

[2] Predicted Precipitation Source: _____

NOAA Atlas 14, Volume 2, Version 3
Location name: Limestone, Tennessee, USA*
Latitude: 36.1905°, Longitude: -82.5935°
Elevation: 1458.3 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.322 (0.292-0.357)	0.381 (0.346-0.423)	0.449 (0.407-0.499)	0.504 (0.456-0.558)	0.576 (0.518-0.638)	0.632 (0.563-0.698)	0.689 (0.610-0.761)	0.746 (0.655-0.826)	0.821 (0.712-0.912)	0.882 (0.756-0.983)
10-min	0.514 (0.466-0.571)	0.609 (0.554-0.677)	0.720 (0.651-0.799)	0.806 (0.729-0.892)	0.918 (0.825-1.02)	1.01 (0.897-1.11)	1.09 (0.969-1.21)	1.18 (1.04-1.31)	1.30 (1.13-1.44)	1.39 (1.19-1.55)
15-min	0.643 (0.583-0.714)	0.766 (0.696-0.850)	0.910 (0.824-1.01)	1.02 (0.922-1.13)	1.16 (1.05-1.29)	1.27 (1.14-1.41)	1.38 (1.22-1.53)	1.49 (1.31-1.65)	1.64 (1.42-1.82)	1.74 (1.49-1.94)
30-min	0.881 (0.799-0.978)	1.06 (0.962-1.18)	1.29 (1.17-1.44)	1.48 (1.34-1.64)	1.72 (1.55-1.91)	1.92 (1.71-2.12)	2.12 (1.88-2.34)	2.32 (2.04-2.57)	2.60 (2.26-2.89)	2.82 (2.42-3.15)
60-min	1.10 (0.996-1.22)	1.33 (1.21-1.47)	1.66 (1.50-1.84)	1.92 (1.74-2.13)	2.30 (2.06-2.54)	2.60 (2.32-2.87)	2.92 (2.58-3.23)	3.26 (2.86-3.61)	3.73 (3.24-4.15)	4.12 (3.53-4.59)
2-hr	1.23 (1.12-1.35)	1.48 (1.34-1.63)	1.85 (1.68-2.04)	2.15 (1.95-2.37)	2.59 (2.32-2.84)	2.94 (2.62-3.23)	3.32 (2.94-3.65)	3.72 (3.27-4.09)	4.30 (3.71-4.74)	4.76 (4.07-5.27)
3-hr	1.29 (1.18-1.43)	1.55 (1.41-1.71)	1.93 (1.76-2.12)	2.24 (2.04-2.46)	2.69 (2.43-2.95)	3.07 (2.74-3.36)	3.47 (3.08-3.80)	3.90 (3.42-4.28)	4.51 (3.90-4.97)	5.01 (4.28-5.54)
6-hr	1.57 (1.45-1.71)	1.86 (1.71-2.03)	2.27 (2.09-2.48)	2.62 (2.40-2.85)	3.13 (2.85-3.40)	3.55 (3.21-3.86)	4.00 (3.58-4.34)	4.48 (3.98-4.88)	5.17 (4.51-5.64)	5.72 (4.93-6.26)
12-hr	1.94 (1.79-2.11)	2.30 (2.13-2.50)	2.79 (2.58-3.03)	3.19 (2.94-3.47)	3.75 (3.44-4.07)	4.21 (3.83-4.56)	4.67 (4.23-5.07)	5.16 (4.64-5.61)	5.82 (5.18-6.35)	6.33 (5.59-6.93)
24-hr	2.28 (2.12-2.47)	2.71 (2.52-2.93)	3.24 (3.01-3.50)	3.65 (3.38-3.94)	4.19 (3.87-4.53)	4.61 (4.25-5.00)	5.04 (4.62-5.46)	5.45 (4.98-5.93)	6.01 (5.45-6.55)	6.42 (5.80-7.02)
2-day	2.69 (2.52-2.88)	3.19 (2.99-3.42)	3.82 (3.58-4.08)	4.31 (4.02-4.61)	4.96 (4.63-5.32)	5.48 (5.09-5.87)	5.99 (5.54-6.43)	6.50 (5.99-7.00)	7.19 (6.57-7.77)	7.71 (7.00-8.35)
3-day	2.89 (2.72-3.08)	3.43 (3.23-3.65)	4.08 (3.84-4.34)	4.59 (4.30-4.88)	5.27 (4.93-5.62)	5.80 (5.41-6.19)	6.33 (5.88-6.77)	6.86 (6.34-7.35)	7.56 (6.93-8.13)	8.08 (7.36-8.73)
4-day	3.10 (2.93-3.29)	3.67 (3.46-3.89)	4.34 (4.10-4.61)	4.87 (4.59-5.16)	5.58 (5.24-5.92)	6.13 (5.73-6.51)	6.68 (6.22-7.10)	7.22 (6.69-7.71)	7.93 (7.29-8.50)	8.46 (7.73-9.11)
7-day	3.74 (3.53-3.98)	4.43 (4.18-4.70)	5.24 (4.94-5.57)	5.89 (5.53-6.24)	6.75 (6.32-7.16)	7.42 (6.93-7.88)	8.09 (7.52-8.60)	8.76 (8.09-9.34)	9.64 (8.84-10.3)	10.3 (9.38-11.1)
10-day	4.35 (4.10-4.62)	5.12 (4.83-5.44)	6.01 (5.67-6.39)	6.72 (6.33-7.14)	7.68 (7.20-8.17)	8.44 (7.88-8.98)	9.19 (8.54-9.80)	9.95 (9.20-10.6)	11.0 (10.0-11.8)	11.7 (10.7-12.7)
20-day	6.07 (5.76-6.39)	7.10 (6.74-7.49)	8.16 (7.75-8.61)	8.99 (8.52-9.48)	10.1 (9.53-10.6)	10.9 (10.3-11.5)	11.7 (11.0-12.3)	12.4 (11.6-13.2)	13.4 (12.5-14.3)	14.1 (13.1-15.1)
30-day	7.54 (7.21-7.88)	8.78 (8.40-9.19)	9.91 (9.47-10.4)	10.8 (10.3-11.3)	11.9 (11.3-12.4)	12.7 (12.1-13.3)	13.5 (12.8-14.1)	14.2 (13.4-14.9)	15.1 (14.2-15.9)	15.7 (14.8-16.7)
45-day	9.58 (9.19-9.99)	11.1 (10.7-11.6)	12.4 (11.9-12.9)	13.3 (12.8-13.9)	14.5 (13.9-15.2)	15.4 (14.7-16.1)	16.2 (15.4-16.9)	16.9 (16.1-17.7)	17.7 (16.8-18.7)	18.3 (17.4-19.3)
60-day	11.5 (11.1-12.0)	13.4 (12.8-13.9)	14.8 (14.2-15.4)	15.9 (15.2-16.5)	17.2 (16.5-17.9)	18.1 (17.3-18.9)	19.0 (18.1-19.8)	19.7 (18.8-20.6)	20.6 (19.6-21.7)	21.2 (20.1-22.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

4. PROJECT EPSC POSTING INFORMATION

EROSION PREVENTION / SEDIMENT CONTROL INFO.

Contact Information:

TDOT Contact		Contractor Contact	
Name:		Company:	
Telephone #:		Name:	
Address:		Telephone #:	
		Address:	

SWPPP Location:

The SWPPP is located: on site ☐

off site ☐

Off site location: _____

Contact: _____

Telephone #: _____

EPSC Inspection Reports:

EPSC Inspection Reports are located: on site w/SWPPP ☐

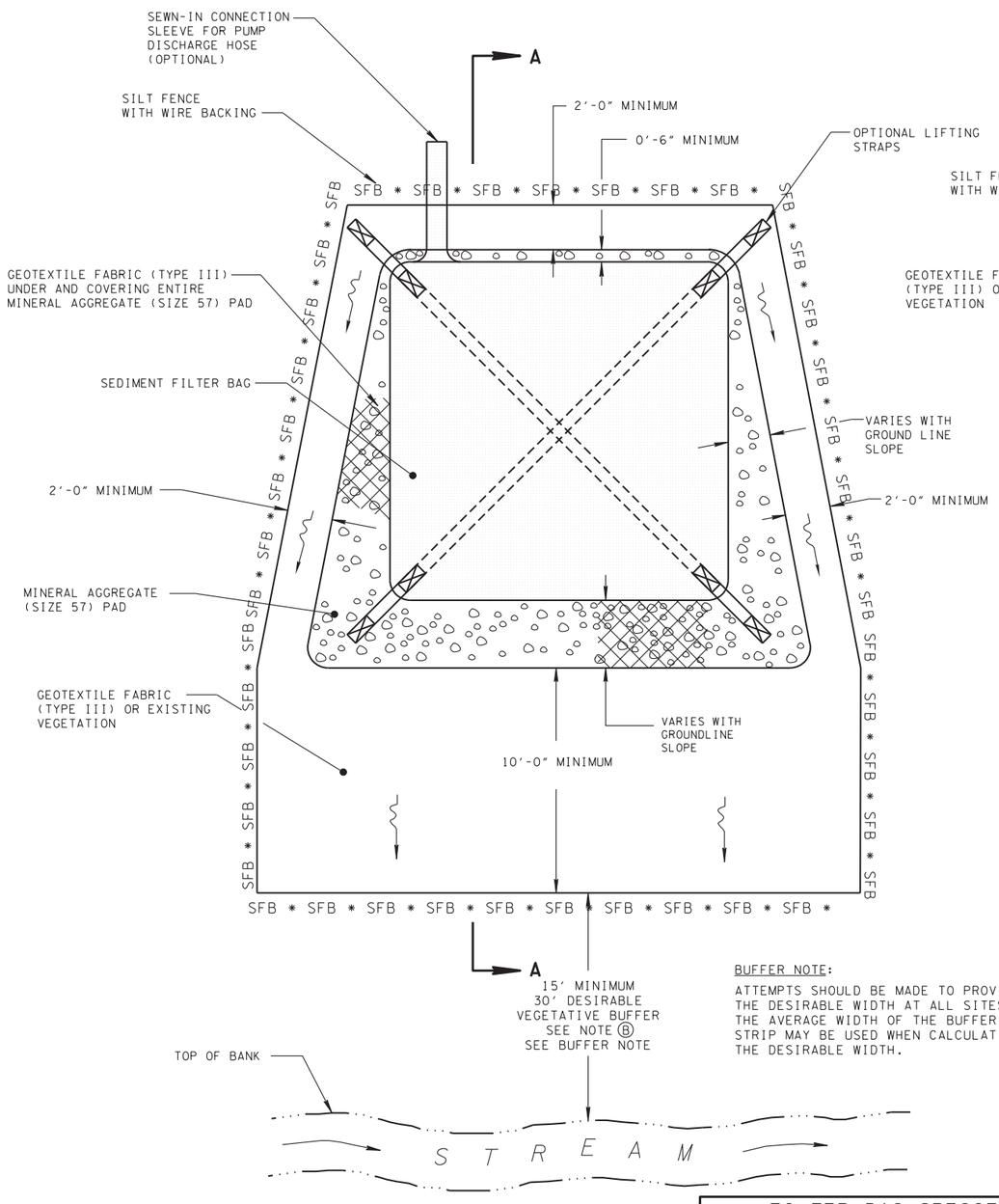
off site ☐

Off site location: _____

Contact: _____

Telephone #: _____

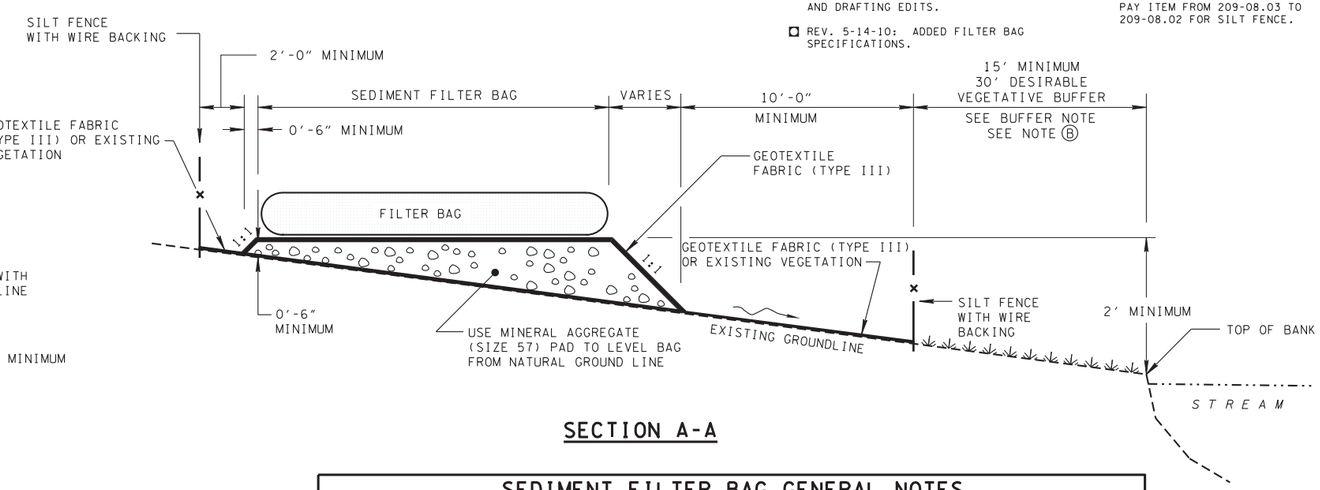
5. PROJECT RELATED TDOT EPSC STANDARD DRAWINGS



PLAN VIEW

BUFFER NOTE:

ATTEMPTS SHOULD BE MADE TO PROVIDE THE DESIRABLE WIDTH AT ALL SITES. THE AVERAGE WIDTH OF THE BUFFER STRIP MAY BE USED WHEN CALCULATING THE DESIRABLE WIDTH.



SECTION A-A

FILTER BAG SPECIFICATIONS		
PROPERTIES		TEST METHOD
WEIGHT	10.0 oz/yd.	ASTM D3776
TENSILE STRENGTH	250 lbs.	ASTM D4632
TENSILE ELONGATION AT BREAK	50%	ASTM D4632
PUNCTURE STRENGTH	115 lbs.	ASTM D4833
TRAPEZOIDAL TEAR	100 lbs.	ASTM D4533
MULLEN BURST	350 lbs.	ASTM D3786
WATER, FLOW RATE	80 gpm/ft.2	ASTM D4491
PERMITTIVITY	1.2 sec.-1	ASTM D4491
UV RESISTANCE	70% str. Ret.	ASTM D4355

STANDARD BAG MINIMUM DIMENSIONS	MAXIMUM FLOW RATE
15 X 10 ft.	up to 1500 gpm
15 X 15 ft.	up to 2000 gpm

NOTE:
THE MATERIAL SHALL BE A NON-WOVEN GEOTEXTILE FABRIC BAG RESISTANT TO ROT, MILDEW, PUNCTURE AND TEARING, WITH A MINIMUM SEAM BREAKING STRENGTH OF 200 LBS (90 Kgs) THE SEAMS SHALL DEMONSTRATE LESS ELONGATION AND DEFORMATION OF THE GEOTEXTILE FABRIC.

EROSION CONTROL PLAN LEGEND: SEDIMENT FILTER BAG

SEDIMENT FILTER BAG GENERAL NOTES

(A) SPECIAL PROVISION 209B IS TO BE USED FOR SEDIMENT FILTER BAGS. ALL REFERENCES IN SPECIAL PROVISION 209B TO PUMPING FROM SEDIMENT TRAPS ALSO APPLIES TO PUMPING FROM COFFERDAMS.

(B) SEDIMENT FILTER BAG INSTALLATION, INCLUDING DOWNSLOPE GEOTEXTILE AND SILT FENCE WITH WIRE BACKING SHOULD NOT BE PLACED WITHIN A JURISDICTIONAL WETLAND OR WITHIN 15 FEET (30 FEET DESIRABLE) OF A STABILIZED OUTLET, STREAM, OR OTHER NATURAL WATER RESOURCE. WHEN DISCHARGING TO SEDIMENT-IMPAIRED STREAMS OR EXCEPTIONAL TENNESSEE WATERS, THE BUFFER SHALL BE A MINIMUM OF 30 FEET WITH A DESIRABLE WIDTH OF 60 FEET. BUFFER REQUIREMENT DOES NOT APPLY TO ANY LOCATION ON SITE WITH A VALID ARAP OR EQUIVALENT PERMIT BY FEDERAL AGENCIES.

(C) CONTRACTOR SHALL EXERCISE CAUTION NOT TO BURST OR DAMAGE THE SEDIMENT FILTER BAG WHEN PUMPING.

(D) THE LENGTH AND WIDTH OF THE SEDIMENT BAG SHOWN ON THIS DRAWING MAY VARY PER VENDOR SPECIFICATIONS. THE MINIMUM "FOOTPRINT" OF THE BAG SHALL BE 150 SQUARE FEET.

(E) SEDIMENT FILTER BAGS MAY BE EQUIPPED WITH A SEWN-IN SLEEVE OF SUFFICIENT SIZE TO ACCEPT A MINIMUM FOUR-INCH DIAMETER PUMP DISCHARGE HOSE. A HOSE CONNECTION THROUGH A SLIT IN THE BAG IS ALSO ACCEPTABLE. THE DISCHARGE HOSE SHOULD BE EXTENDED INTO THIS SLEEVE A MINIMUM OF SIX INCHES AND BE TIGHTLY SECURED WITH A HOSE CLAMP OR OTHER SUITABLE MEANS TO PREVENT LEAKAGE.

(F) THE PUMP DISCHARGE HOSE CONNECTION SLEEVE, OR SLIT, SHALL BE SECURELY TIED OFF DURING DISPOSAL OF THE SEDIMENT FILTER BAG IN ORDER TO PREVENT LEAKAGE OF COLLECTED SEDIMENTS.

(G) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(H) SURROUND SEDIMENT FILTER BAG ASSEMBLY WITH SILT FENCE WITH WIRE BACKING. SEE STANDARD DRAWING EC-STR-3C AND EC-STR-3E FOR INSTALLATION DETAILS.

(I) EXISTING VEGETATIVE BUFFER TO REMAIN BETWEEN SILT FENCE WITH WIRE BACKING AND STABILIZED OUTLET, STREAM OR OTHER NATURAL WATER RESOURCE. BUFFER ZONE EXEMPTIONS ARE DEFINED BASED ON EXISTING LAND USES.

(J) SEDIMENT TUBES OR FILTER SOCKS MAY BE USED AS AN ALTERNATIVE TO SILT FENCE WITH WIRE BACKING. SEE STANDARD DRAWINGS EC-STR-37 AND EC-STR-8 FOR INSTALLATION DETAILS. FILTER SOCKS MAY NOT REQUIRE STAKING WHEN APPROVED BY THE ENGINEER.

(K) SEDIMENT FILTER BAGS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-09.03	SEDIMENT FILTER BAG (15' X 15') PER EACH
209-09.04	SEDIMENT FILTER BAG (15' X 10') PER EACH
303-10.01	MINERAL AGGREGATE (SIZE 57) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

SILT FENCE WITH BACKING, SEDIMENT TUBES, AND FILTER SOCKS SHALL BE PAID FOR ACCORDING TO ITS RESPECTIVE STANDARD DRAWING.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SEDIMENT FILTER BAGS.

(L) WHEN SEDIMENT FILTER BAGS ARE REPLACED ONLY THE REPLACEMENT BAG SHALL BE PAID FOR. MAINTENANCE ON ALL OTHER PARTS OF THE SEDIMENT FILTER BAG ASSEMBLY SHALL BE INCLUDED IN THE INITIAL PAYMENT.

(M) ONLY SEDIMENT FILTER BAGS LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED.

(N) SEDIMENT FILTER BAGS SHALL BE REPLACED WHEN SEDIMENT HAS ACCUMULATED TO ONE-HALF OF THE BAGS CAPACITY OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

- ☐ REV. 8-1-12: MODIFIED BUFFER DIMENSION, ADDED BUFFER NOTE, MINOR EDITS TO GENERAL NOTES.
- ☐ REV. 10-26-03: ADDED EROSION CONTROL SYMBOL.
- ☐ REV. 5-27-04: CORRECTED DIMENSION IN SECTION A-A.
- ☐ REV. 4-15-06: ADDED CONNECTION SLEEVE AND OPTIONAL LIFTING STRAPS. REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- ☐ REV. 4-1-08: REMOVED TEMPORARY REFERENCE, REVISED GENERAL NOTES, AND DRAFTING EDITS.
- ☐ REV. 5-14-10: ADDED FILTER BAG SPECIFICATIONS.
- ☐ REV. 2-28-01: CORRECTED PAY ITEM NUMBER IN PLAN VIEW.
- ☐ REV. 5-27-01: CHANGED ITEM NOS. 209-08 TO 209-08.03, 209-08.10 TO 209-09.02 AND 303-15.01 TO 303-10.01. CHANGED DESCRIPTION IN ITEM NO. 209-20.03.
- ☐ REV. 12-18-02: CHANGED SILT FENCE (WITHOUT BACKING) TO SILT FENCE (WITH BACKING) IN PLAN AND SECTIONAL VIEW. CHANGED PAY ITEM FROM 209-08.03 TO 209-08.02 FOR SILT FENCE.

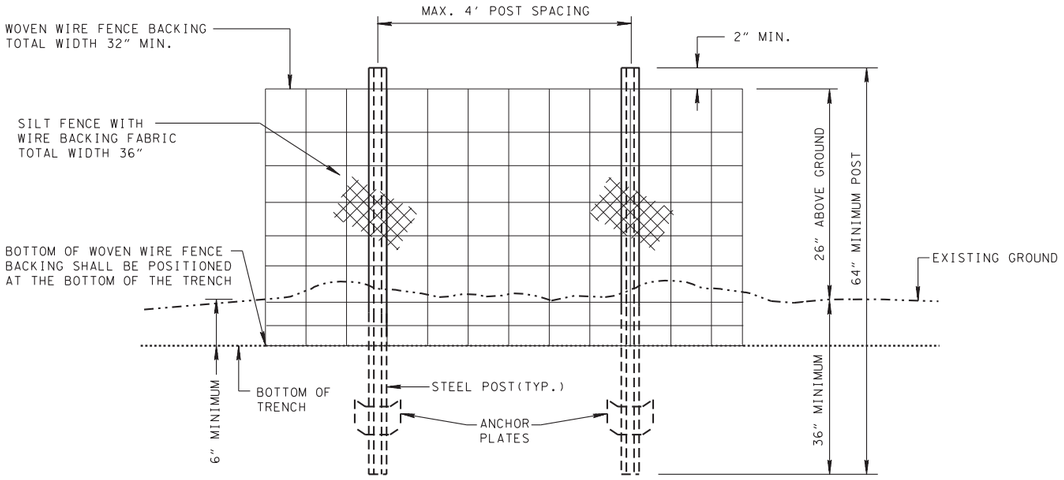
☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

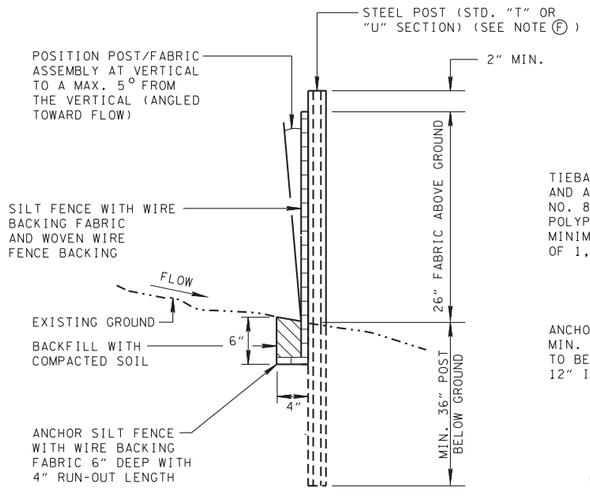
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SEDIMENT FILTER BAG

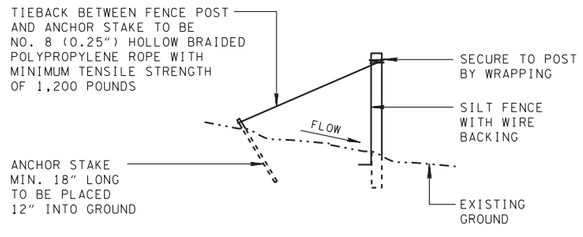
10-26-00 EC-STR-2



ELEVATION VIEW



SECTIONAL VIEW



SILT FENCE TIEBACK

(WHEN REQUIRED BY THE ENGINEER OR NOTED IN THE PLANS. COST TO BE INCLUDED IN THE ITEMS FOR SILT FENCE WITH WIRE BACKING)

EROSION CONTROL PLAN LEGEND: * SFB * SFB * SFB * SILT FENCE WITH WIRE BACKING

SILT FENCE WITH WIRE BACKING FABRIC SPECIFICATIONS

FABRIC PROPERTY AND TEST METHODS	REQUIRED PHYSICAL PROPERTIES (MARV VALUES OF TEST DATA)
GEOTEXTILE FABRIC TYPE	WOVEN MONOFILAMENT
APPARENT OPENING SIZE (ASTM D4751)	# 70 TO # 100 STANDARD SIEVE
WATER FLUX (ASTM D4491)	≥ 18 GPM/FT^2
TENSILE STRENGTH (ASTM D4632)	≥ 310 LB. (WARP DIRECTION) X 200 LB. (FILL DIRECTION)
ULTRAVIOLET STABILITY (AFTER 500 HRS PER ASTM D4355)	≥ 90%
BURST STRENGTH (ASTM D3786)	≥ 400 PSI
PUNCTURE STRENGTH (ASTM D4833)	≥ 105 LB.
TRAPEZOIDAL TEAR (ASTM D4533)	≥ 100 LB. (WARP DIRECTION) X 60 LB. (FILL DIRECTION)

SILT FENCE WITH WIRE BACKING GENERAL NOTES

(A) SILT FENCE WITH WIRE BACKING IS USED TO INTERCEPT SMALL AMOUNTS OF SEDIMENT AND REDUCE VELOCITY FROM SHEET FLOW ONLY. USE SILT FENCE WITH WIRE BACKING UP-GRADIENT TO, AND ALONG THE PERIMETER OF STREAMS, WETLANDS, PONDS, SPRINGS, OR OTHER NATURAL WATER RESOURCES LOCATED WITHIN OR ADJACENT TO THE PROJECT RIGHT-OF-WAY AND AT LARGE FILL SLOPES.

(B) THE MAXIMUM DRAINAGE AREA SIZE FOR CONTINUOUS SILT FENCE WITH BACKING SHALL BE 1 ACRE PER 150 LINEAR FEET OF FENCE LENGTH. MAXIMUM SLOPE LENGTH BEHIND FENCE ON UPSLOPE SIDE SHALL BE 290 FEET (AS MEASURED ALONG THE GROUND SURFACE).

(C) WHEN INSTALLED AT THE TOE OF A SLOPE SILT FENCE WITH WIRE BACKING SHOULD BE PLACED 5 FEET TO 10 FEET AWAY FROM THE TOE TO ALLOW SPACE FOR PONDING OF WATER, COLLECTION OF SEDIMENT, AND EASE OF MAINTENANCE AND REMOVAL.

(D) WHEN TWO SECTIONS OF SILT FENCE WITH WIRE BACKING FABRIC ADJOIN EACH OTHER, THEY SHALL BE JOINED ACCORDING TO THE DETAILS ON STANDARD DRAWING EC-STR-3E.

(E) MAINTENANCE SHALL BE PERFORMED AS NEEDED; CAPTURED SOIL MATERIAL SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE AND/OR WHEN EVIDENCE OF FILTER CLOGGING IS OBSERVED.

(F) STEEL POSTS SHALL BE ROLLED FROM HIGH CARBON STEEL AND SHALL HAVE A MINIMUM WEIGHT OF 1.25 LB/FT. POSTS SHALL BE HOT-DIPPED GALVANIZED OR PAINTED WITH HIGH GRADE WEATHER RESISTANT STEEL PAINT. STEEL POSTS SHALL BE EQUIPPED WITH AN ANCHOR PLATE HAVING A MINIMUM AREA OF 14 SQUARE INCHES. POSTS SHALL BE STUDDED, EMBOSSED, OR PUNCHED TO AID IN THE ATTACHMENT OF THE WIRE BACKING. POSTS AND ANCHOR PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A702.

(G) STEEL POSTS SHALL HAVE A PROJECTION FOR FASTENING WIRE TO THEM. WOVEN WIRE FENCE BACKING TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. THE WIRE FASTENERS SHOULD BE EVENLY SPACED WITH AT LEAST SIX PER POST.

(H) FABRIC SHALL BE FASTENED SECURELY TO WOVEN WIRE FENCE BACKING WITH THE TIES SPACED EVERY 24 INCHES ALONG TOP AND MIDSECTION.

(I) WOVEN WIRE FENCE BACKING SHALL MEET THE REQUIREMENTS FOR ASTM A-116 FOR NO. 11 FARM, DESIGN NO. 832-6-11, CLASS 3 COATING.

(J) SILT FENCE WITH BACKING SHOULD BE PLACED ALONG OR NEAR THE GROUND CONTOUR. THE BOTTOM OF FENCE AT GROUNDLINE SHOULD BE ON A ZERO PERCENT (0%) GRADE, PLUS OR MINUS FIVE TENTHS OF ONE PERCENT (±0.5%). THE END OF A ROW OF SILT FENCE WITH WIRE BACKING SHOULD BE TURNED UP SLOPE FORMING A J-HOOK TO FILTER ANY CONCENTRATED FLOW BEHIND FENCE.

(K) FOR TRENCH-BASED INSTALLATIONS, SILT FENCING WITH WIRE BACKING SHALL BE INSTALLED PER THE FOLLOWING STEPS AND IN THE FOLLOWING ORDER:

- EXCAVATE TRENCH A MAXIMUM OF 4 INCHES WIDE AND 6 INCHES DEEP. THE TRENCH SHALL BE HAND-CLEANED FOLLOWING EXCAVATION TO REMOVE BULKY DEBRIS SUCH AS ROCKS, STICKS, AND SOIL CLODS FROM THE TRENCH.
- DRIVE AND SET SUPPORT POSTS PER SPACING REQUIREMENTS GIVEN ON THE APPLICABLE FENCE DETAIL.
- ATTACH WOVEN WIRE FENCE BACKING TO POSTS AND FABRIC TO THE WIRE BACKING USING WIRE TIES. SPACING AND DENSITY OF TIES SHALL BE INSTALLED ACCORDING TO NOTES G AND H
- INSTALL FABRIC IN TRENCH.
- BACKFILL TRENCH (OVER-FILL) WITH SOIL PLACED AROUND FABRIC.
- COMPACT SOIL BACKFILL WITH MECHANICAL EQUIPMENT. DO NOT DAMAGE THE FABRIC DURING COMPACTION (DAMAGED FABRIC SHALL BE REPLACED).

(L) ONLY SILT FENCE WITH WIRE BACKING FABRIC LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED. ANY PRODUCTS LISTED ON THE QUALIFIED PRODUCTS LIST AS AN APPROVED ALTERNATE MAY ALSO BE USED.

(M) SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-08.02 TEMPORARY SILT FENCE (WITH BACKING) PER LINEAR FOOT

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF THE SILT FENCE WITH WIRE BACKING.

(N) SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE WITH WIRE BACKING WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

REV. 12-18-03: MODIFIED TABLE (2) AND GENERAL NOTE (E).

- REV. 7-29-04: CHANGED VALUES IN TABLE 2 FROM MEAN TO MARV VALUES.
- REV. 4-15-06: MODIFIED FABRIC HEIGHT. ADDED NOTES (J) AND (K). REVISED TABLE TITLE. REORDERED GENERAL NOTES. REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, REVISED NOTES, AND MISC. EDITS TO DRAWING.
- REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

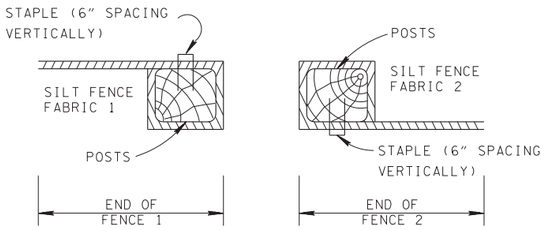
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SILT FENCE WITH WIRE BACKING

12-18-02 EC-STR-3C

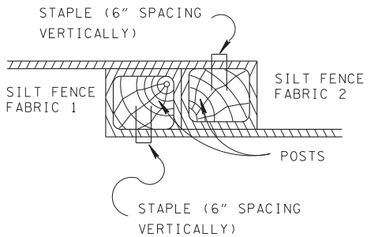
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: MISC. EDITS TO DRAWING, CHANGED DRAWING NAME, REFORMATTED SHEET.

STEP 1

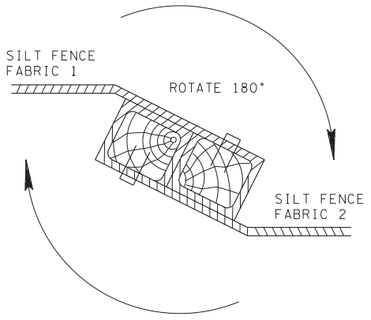


1. WRAP FABRIC AROUND END SUPPORTS AS SHOWN AND ANCHOR FABRIC TO POSTS.
2. POSITION POSTS/FABRIC AS SHOWN ABOVE.

STEP 2



STEP 3

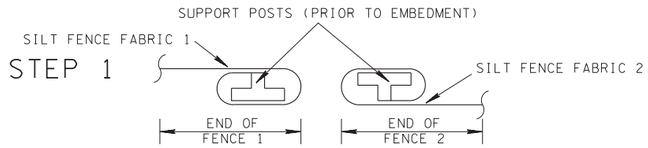


1. ROTATE BOTH POSTS WITH FABRIC CLOCKWISE AT LEAST 180°.
2. EMBED BOTH POSTS INTO GROUND PER SILT FENCE STANDARD DRAWING EC-STR-3B.

PLAN VIEW

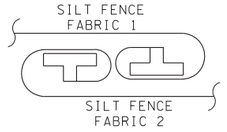
JOINING SILT FENCE FABRIC SECTIONS (WOOD POSTS)

STEP 1



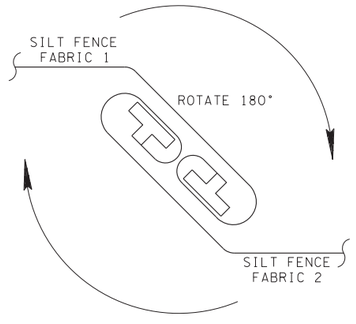
1. WRAP FABRIC AROUND END SUPPORTS AS SHOWN AND ANCHOR FABRIC TO POSTS.
2. POSITION POSTS/FABRIC AS SHOWN ABOVE.

STEP 2



1. POSITION THE SILT FENCE FABRIC 2 POST INSIDE OF THE SILT FENCE FABRIC 1 POST AS SHOWN ABOVE.

STEP 3



1. ROTATE BOTH POSTS WITH FABRIC CLOCKWISE AT LEAST 180°.
2. EMBED BOTH POSTS INTO GROUND PER APPLICABLE SILT FENCE STANDARD DRAWING. (EC-STR-3B, EC-STR-3C, OR EC-STR-3D)

PLAN VIEW

JOINING SILT FENCE FABRIC SECTIONS (STEEL POSTS)

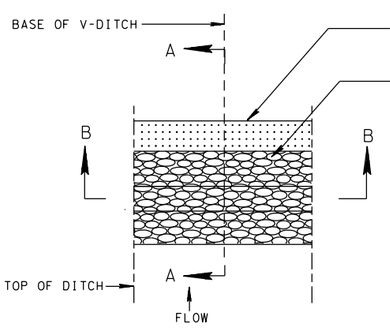
- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

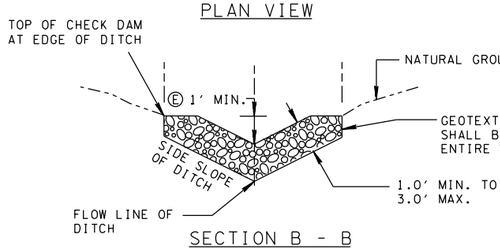
SILT FENCE FABRIC JOINING DETAILS

12-18-02 | EC-STR-3E

DETAIL FOR V-DITCH

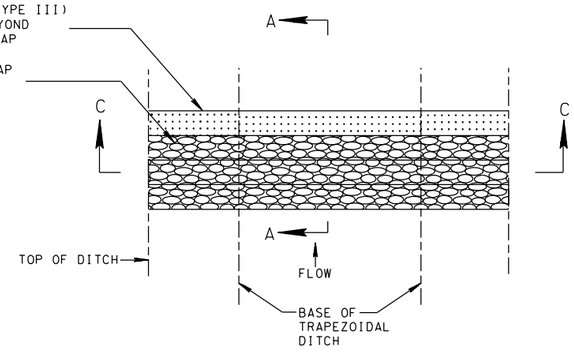


PLAN VIEW

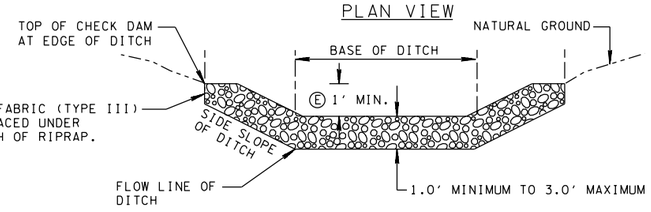


SECTION B - B

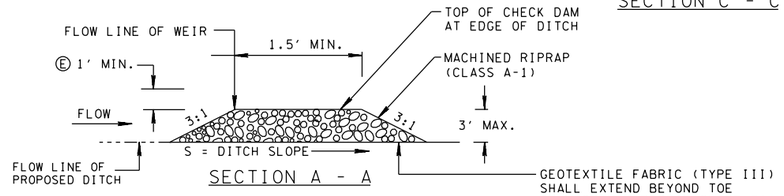
DETAIL FOR TRAPEZOIDAL DITCH



PLAN VIEW

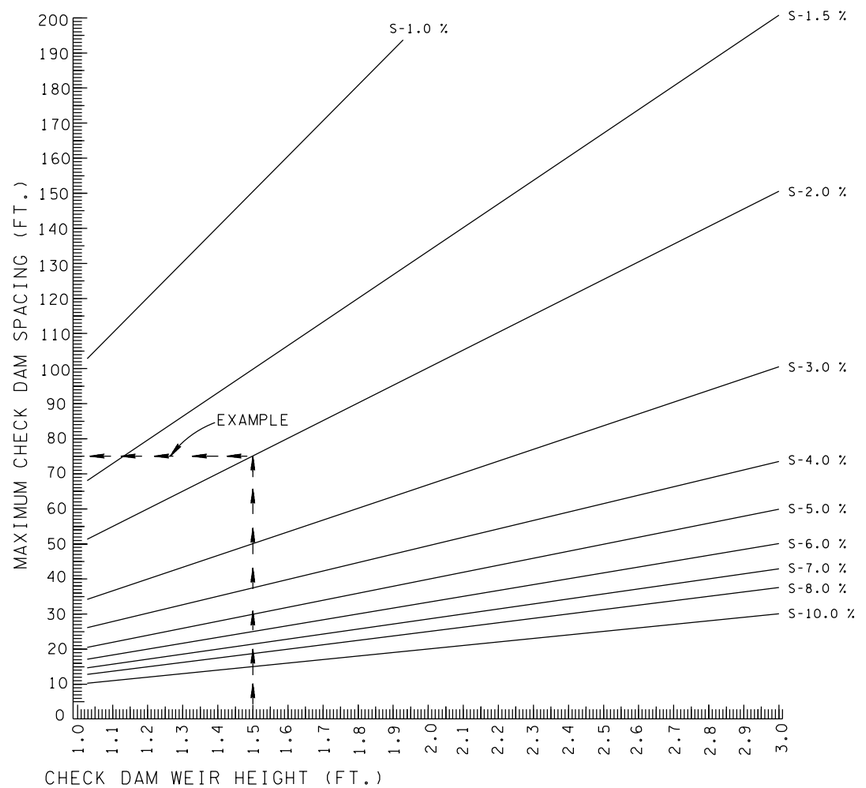


SECTION C - C



SECTION A - A

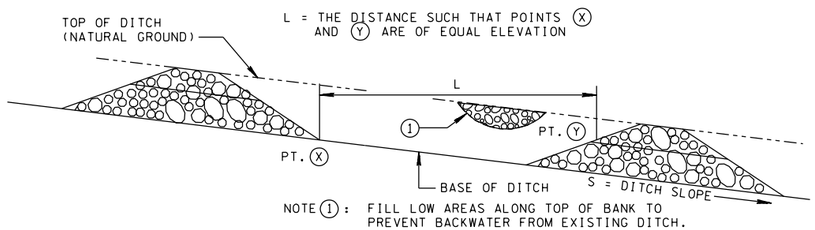
ROCK CHECK DAM SPACING



EXAMPLE: HEIGHT OF WEIR 1.5'; SLOPE 2%
EXTEND PERPENDICULAR FROM 1.5' HEIGHT TO INTERSECT S = 2.0% SLOPE
EXTEND 90° TO THE LEFT TO DETERMINE SPACING (75'+)

- REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-6 TO EC-STR-6.
- REV. 7-29-96: MADE MINOR CORRECTIONS TO GENERAL NOTES.
- REV. 4-15-98: CHANGED PAY ITEMS FOR CHECK DAMS.
- REV. 5-27-01: CHANGED DESCRIPTION FOR GEOTEXTILE FABRIC (TYPE III, CLASS A) TO GEOTEXTILE FABRIC (TYPE III).
- REV. 12-18-02: CHANGED GENERAL NOTE Ⓖ.
- REV. 1-22-03: CORRECTED NOTE IN SECTION A-A.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED TEMPORARY REFERENCE, REVISED NOTES, MISC. EDITS TO DRAWING, MODIFIED SPACING CHART.
- REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.
- REV. 5-6-16: REVISED QUANTITIES TABLE, REVISED GENERAL NOTE Ⓘ. REVISED DITCH DETAIL.

DETAIL FOR SPACING BETWEEN CHECK DAMS



NOTE Ⓘ: FILL LOW AREAS ALONG TOP OF BANK TO PREVENT BACKWATER FROM EXISTING DITCH.

ROCK CHECK DAM ESTIMATED QUANTITIES

	2:1 DITCH SLOPE			3:1 DITCH SLOPE			4:1 DITCH SLOPE		
V-DITCH[1]	HEIGHT FT	RIP RAP TON	GEOTEXTILE SF	HEIGHT FT	RIP RAP TON	GEOTEXTILE SF	HEIGHT FT	RIP RAP TON	GEOTEXTILE SF
	1.5	6.5	16.8	1.5	9.2	23.7	1.5	12.0	30.9
	2.0	13.0	24.6	2.0	18.4	34.8	2.0	24.1	45.4
	2.5	22.8	33.9	2.5	32.3	48.0	2.5	42.1	62.5
	3.0	36.5	44.7	3.0	51.7	63.2	3.0	67.3	82.5
TRAPEZOIDAL DITCH[2]	HEIGHT FT	RIP RAP TON	GEOTEXTILE SF	HEIGHT FT	RIP RAP TON	GEOTEXTILE SF	HEIGHT FT	RIP RAP TON	GEOTEXTILE SF
	1.5	8.9	22.8	1.5	11.6	29.7	1.5	14.4	36.9
	2.0	16.9	31.9	2.0	22.3	42.1	2.0	27.9	52.7
	2.5	28.7	42.6	2.5	38.1	56.6	2.5	47.9	71.2
	3.0	44.7	54.7	3.0	59.8	73.2	3.0	75.5	92.4

1. ESTIMATED QUANTITIES BASED ON 4:1 SIDE SLOPES. QUANTITIES WILL VARY BASED ON ACTUAL DITCH CONFIGURATION.
2. ESTIMATED QUANTITIES BASED ON 4FT BOTTOM WIDTH, AND 4:1 SIDE SLOPES. QUANTITIES WILL VARY BASED ON ACTUAL DITCH CONFIGURATION.

EROSION CONTROL PLAN LEGEND : ROCK CHECK DAM (V-DITCH)

EROSION CONTROL PLAN LEGEND : ROCK CHECK DAM (TRAPEZOIDAL DITCH)

ROCK CHECK DAM GENERAL NOTES

Ⓐ ROCK CHECK DAMS ARE TO BE USED FOR VELOCITY REDUCTION AND EROSION PREVENTION IN AREAS WHERE CONCENTRATED FLOW EXISTS. ROCK CHECK DAMS SHALL NOT BE USED IN STREAMS OR OTHER NATURAL WATER RESOURCES. ROCK CHECK DAMS ARE NOT TO BE USED FOR SEDIMENT CONTROL AND SHOULD NOT BE CONSIDERED A SEDIMENT TRAPPING DEVICE.

Ⓑ THE DRAINAGE AREA FOR THE ROCK CHECK DAMS SHALL BE 10 ACRES OR LESS.

Ⓒ ROCK CHECK DAMS MAY REMAIN IN PLACE AS PERMANENT CHECK DAMS, IF SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

Ⓓ THE CENTER OF THE ROCK CHECK DAM MUST BE AT LEAST ONE (1) FOOT LOWER THAN THE OUTER EDGES.

Ⓔ THE DEPTH OF FLOW ON THE CENTER OF THE STRUCTURE SHALL BE COMPUTED FOR THE PEAK FLOW RATE GENERATED BY THE 2-YEAR, 24-HOUR STORM IN ORDER TO ENSURE THAT THE TOP OF THE STRUCTURE WILL NOT BE OVERTOPPED. FOR SITES WHICH DRAIN TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPARIED STREAMS, THE DEPTH SHOULD BE DETERMINED FOR THE 5-YEAR, 24-HOUR PEAK FLOW RATE. THIS WILL ELIMINATE THE ROCK-SOIL FAILURE POINT WHERE THE ROCK CHECK DAM AND NATURAL GROUND MERGE.

Ⓕ FOR SITES WHICH DRAIN TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE MINIMUM HEIGHT OF THE STRUCTURE ABOVE THE DITCH BOTTOM SHALL BE INCREASED TO 2 FEET.

Ⓖ THE MAXIMUM SPACING BETWEEN ROCK CHECK DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE FLOW LINE OF THE WEIR OF THE DOWNSTREAM DAM (SEE ROCK CHECK SPACING GRAPH THIS SHEET).

Ⓗ ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

Ⓘ PRODUCTS LISTED ON THE QUALIFIED PRODUCTS LIST FOR FILTER SOCK DITCH APPLICATION MAY BE USED AND SHALL BE PAID UNDER FOLLOWING ITEM NUMBER:

209-08.09 FILTER SOCK CHECK DAM PER EACH

Ⓙ ROCK CHECK DAMS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-08.07 ROCK CHECK DAM PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ROCK CHECK DAMS.

Ⓚ SEDIMENT SHALL BE REMOVED FROM BEHIND THE ROCK CHECK DAMS WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE DAM AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

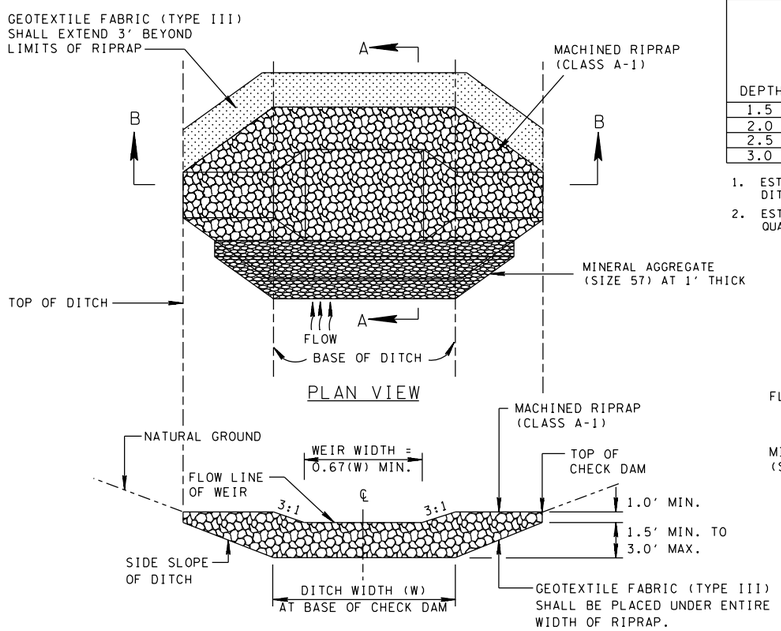
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

ROCK CHECK DAM

10-26-92 EC-STR-6

- REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.
- REV. 5-6-16: REVISED GENERAL NOTE (H).

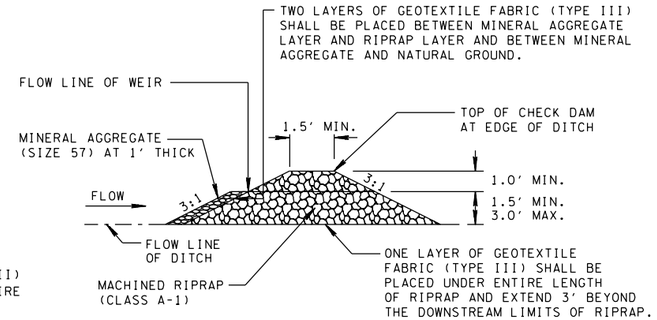
DETAIL FOR TRAPEZOIDAL DITCH



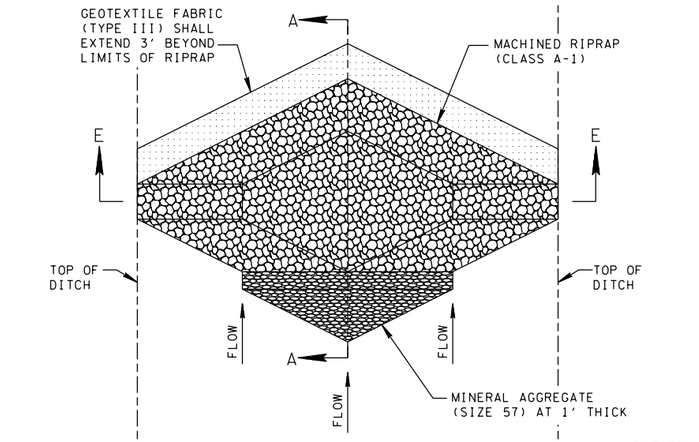
ENHANCED ROCK CHECK DAM ESTIMATED QUANTITIES

DEPTH	V-DITCH[1] MINERAL AGGREGATE (SIZE 57) (TON)	V-DITCH[1] MACHINED RIPRAP (CLASS A-1) (TON)	V-DITCH[1] GEOTEXTILE FABRIC (TYPE III) (S.Y.)	TRAPEZOIDAL DITCH[2] MINERAL AGGREGATE (SIZE 57) (TON)	TRAPEZOIDAL DITCH[2] MACHINED RIPRAP (CLASS A-1) (TON)	TRAPEZOIDAL DITCH[2] GEOTEXTILE FABRIC (TYPE III) (S.Y.)
1.5	0.21	12.2	31.7	0.29	17.2	40.3
2.0	0.33	20.2	44.0	0.44	27.6	54.7
2.5	0.48	31.1	58.3	0.62	41.2	71.0
3.0	0.66	45.1	74.7	0.83	58.3	89.3

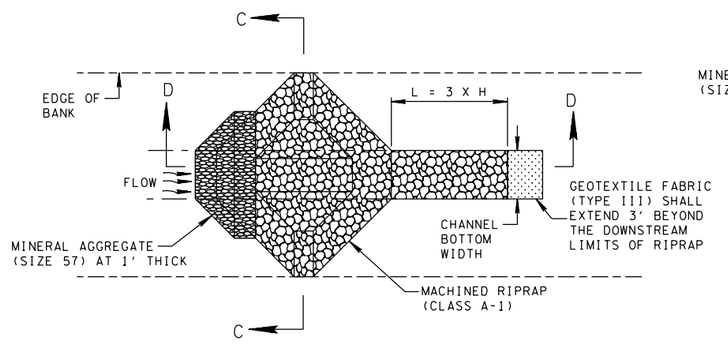
1. ESTIMATED QUANTITIES BASED ON 4:1 SIDE SLOPES. QUANTITIES WILL VARY BASED ON ACTUAL DITCH CONFIGURATION.
2. ESTIMATED QUANTITIES BASED ON 4FT BOTTOM WIDTH, 4 FT DEPTH, AND 4:1 SIDE SLOPES. QUANTITIES WILL VARY BASED ON ACTUAL DITCH CONFIGURATION.

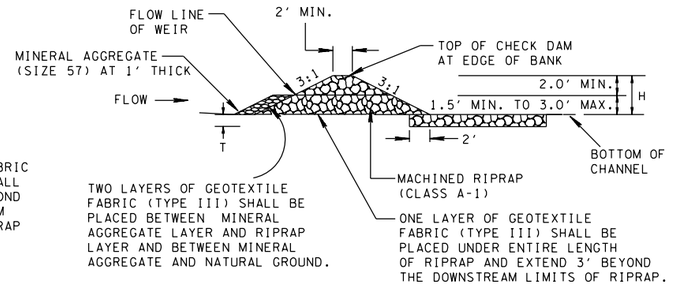


DETAIL FOR V-DITCH



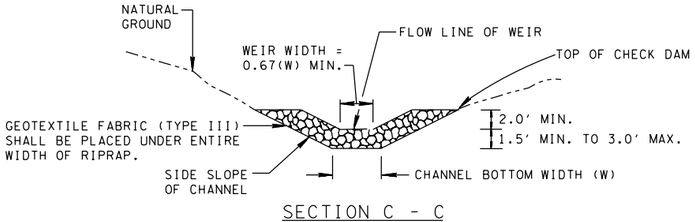
DETAIL FOR CHANNELS





SECTION D - D

T = 1.0' MINIMUM TO 1.5' MAXIMUM
H = HEIGHT OF CHECK DAM
L = LENGTH OF RIPRAP PAD
W = WIDTH OF DITCH (CHANNEL) BOTTOM



SECTION C - C

EROSION CONTROL PLAN LEGEND:

ENHANCED ROCK CHECK DAM (TRAPEZOIDAL DITCH)

ENHANCED ROCK CHECK DAM (V-DITCH)

ENHANCED ROCK CHECK DAM (CHANNEL)

ENHANCED ROCK CHECK DAM GENERAL NOTES

(A) ENHANCED ROCK CHECK DAMS MAY BE USED TO REDUCE FLOW VELOCITIES TO ALLOW SEDIMENTS TO DROP OUT. THEY MAY BE EMPLOYED WHERE THE DRAINAGE AREA EXCEEDS THE MAXIMUM FOR ROCK CHECK DAMS OR WHERE A FILTRATION FUNCTION FOR VERY LOW FLOWS IS DESIRED. ENHANCED ROCK CHECK DAMS SHALL NOT BE USED IN STREAMS OR WETLANDS UNLESS PROVIDED FOR IN THE PERMITS.

(B) AT MOST SITES, THE MAXIMUM ALLOWABLE DRAINAGE AREA SHALL BE 30 ACRES. AT SITES WHICH DRAIN TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE MAXIMUM ALLOWABLE DRAINAGE AREA SHALL BE 20 ACRES.

(C) ENHANCED CHECK DAM MAY REMAIN IN PLACE AS PERMANENT CHECK DAM. IF SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

(D) THE CENTER OF THE ENHANCED ROCK CHECK DAM USED IN DITCHES MUST BE AT LEAST ONE (1) FOOT LOWER THAN THE OUTER EDGES. THE CENTER OF ENHANCED ROCK CHECK DAMS USED IN CHANNELS MUST BE AT LEAST TWO (2) FEET LOWER THAN THE OUTER EDGES.

(E) THE DEPTH OF FLOW ON THE CENTER OF THE STRUCTURE SHALL BE COMPUTED FOR THE PEAK FLOW RATE GENERATED BY THE 2-YEAR, 24-HOUR STORM IN ORDER TO ENSURE THAT THE TOP OF THE STRUCTURE WILL NOT BE OVERTOPPED. FOR SITES WHICH DRAIN TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT IMPAIRED STREAMS, THE DEPTH SHOULD BE DETERMINED FOR THE 5-YEAR, 24-HOUR PEAK FLOW RATE. THIS WILL ELIMINATE THE ROCK - SOIL FAILURE POINT WHERE THE ENHANCED ROCK CHECK DAM AND NATURAL GROUND MERGE.

(F) THE MAXIMUM SPACE BETWEEN ENHANCED ROCK CHECK DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM IS AT THE SAME ELEVATION AS THE FLOW LINE OF THE WEIR OF THE DOWNSTREAM DAM. (SEE ROCK CHECK DAM SPACING GRAPH ON EC-STR-6)

(G) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(H) PRODUCTS LISTED ON THE QUALIFIED PRODUCTS LIST FOR FILTER SOCK DITCH APPLICATION MAY BE USED AND SHALL BE PAID UNDER FOLLOWING ITEM NUMBER:

209-08.09 FILTER SOCK CHECK DAM PER EACH

(I) ENHANCED ROCK CHECK DAMS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBER:

209-08.08 ENHANCED ROCK CHECK DAM PER EACH

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF ENHANCED ROCK CHECK DAMS.

(J) SEDIMENT SHALL BE REMOVED FROM BEHIND THE ENHANCED ROCK CHECK DAM WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDMENT REMOVAL PER CUBIC YARD.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

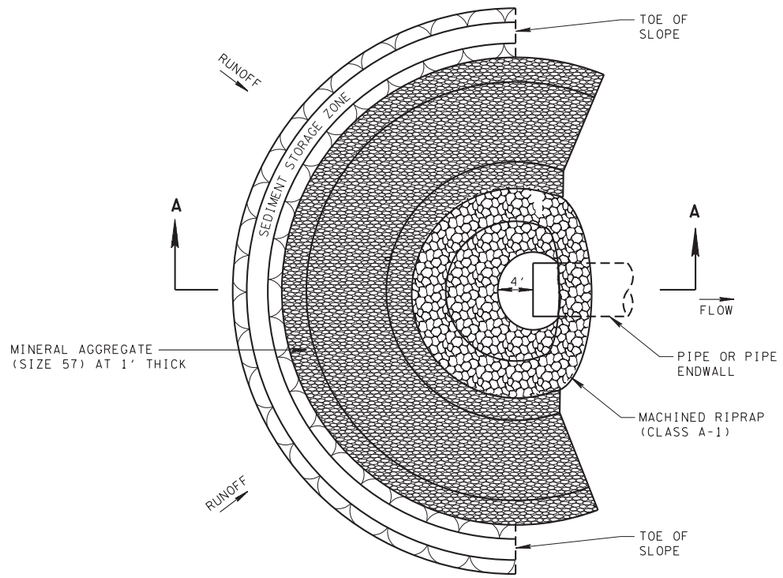
ENHANCED ROCK CHECK DAM

4-1-08 | EC-STR-6A

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-11 TO EC-STR-11.

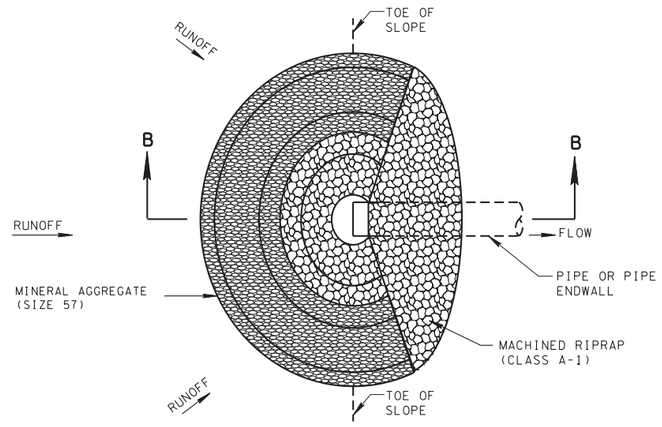
- REV.5-27-01: CHANGED ITEM NOS. 303-15.01 TO 303-10.01 AND 740-03.01 TO 740-10.03. CHANGED DESCRIPTION FOR ITEM NOS. 709-05.05, 709-05.06, AND 709-05.07.
- REV. 12-18-02: CHANGED GENERAL NOTE (D).
- REV. 1-22-03: ADDED ADDITIONAL GEOTEXTILE FABRIC TO ALL SECTIONAL VIEW.
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REMOVED DITCH AND CHANNEL APPLICATION, RENAMED DRAWING, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.

DETAIL FOR UP TO 36" PIPE SIZE

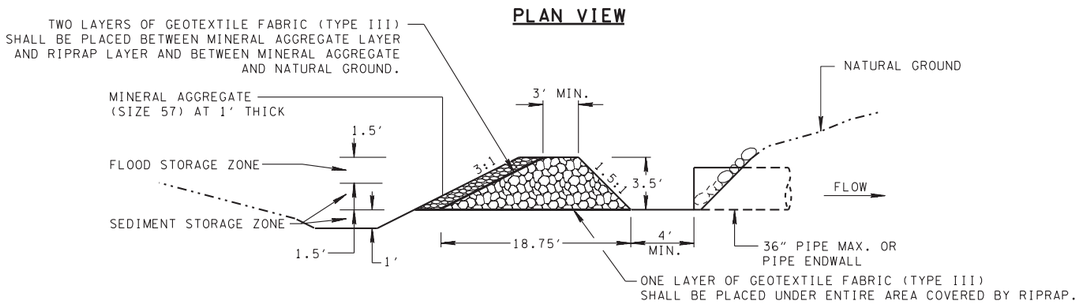


PLAN VIEW

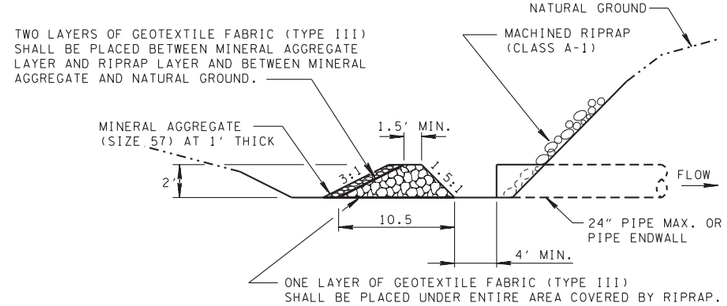
DETAIL FOR 18" TO 24" PIPE SIZE



PLAN VIEW



SECTION A - A



SECTION B - B

CULVERT PROTECTION TYPE 1 GENERAL NOTES

(A) CULVERT PROTECTION (TYPE 1) MAY BE USED AROUND A CULVERT INLET TO REDUCE FLOW VELOCITIES TO ALLOW SEDIMENTS TO DROP OUT. IT IS NORMALLY USED WHERE ALL OF THE INFLOW TO THE CULVERT IS ON-SITE RUNOFF. IT MAY ALSO BE USED WHERE A FILTRATION FUNCTION FOR VERY LOW FLOWS IS DESIRED.

(B) CULVERT PROTECTION (TYPE I) SHALL NOT BE USED IN STREAMS OR OTHER NATURAL WATER RESOURCES, UNLESS PROVIDED FOR IN THE PERMITS.

(C) CULVERT PROTECTION (TYPE I) SHOULD NOT BE USED IN DITCHES, SWALES, OR OTHER DEPRESSIONS WITH A DEPTH GREATER THAN 1 FOOT.

(D) CULVERT PROTECTION (TYPE1) SHOULD NOT BE USED AT THE CULVERT OUTLET.

(E) WHERE CONDITIONS OF HIGH SEDIMENT FLOW EXIST, MACHINED RIPRAP (CLASS A-3) MAY BE USED IN LIEU OF MACHINED RIPRAP (CLASS A-1) FOR PIPES UP TO 24 INCHES IN DIAMETER WITH A DRAINAGE AREA LESS THAN 3 ACRES. IT MAY ALSO BE USED FOR PIPE FROM 24 INCHES IN DIAMETER WITH A DRAINAGE AREA LESS THAN 6 ACRES.

(F) AT MOST SITES, THE MAXIMUM ALLOWABLE DRAINAGE AREA SHALL BE 30 ACRES. AT SITES WHICH DRAIN TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE MAXIMUM ALLOWABLE DRAINAGE AREA SHALL BE 20 ACRES.

(G) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(H) CULVERT PROTECTION (TYPE 1) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD & DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
303-10.01	MINERAL AGGREGATE (SIZE 57) PER TON
709-05.05	MACHINED RIPRAP (CLASS A-3) PER TON
709-05.06	MACHINED RIPRAP (CLASS A-1) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF CULVERT PROTECTION (TYPE 1).

(I) SEDIMENT SHALL BE REMOVED FROM BEHIND THE CULVERT PROTECTION (TYPE 1) WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDMENT REMOVAL PER CUBIC YARD.

EROSION CONTROL PLAN LEGEND: CULVERT PROTECTION (TYPE 1)

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

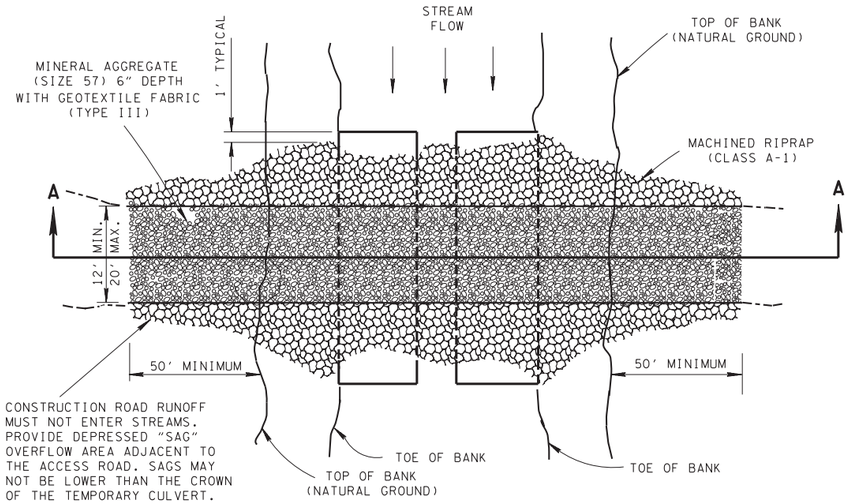
NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

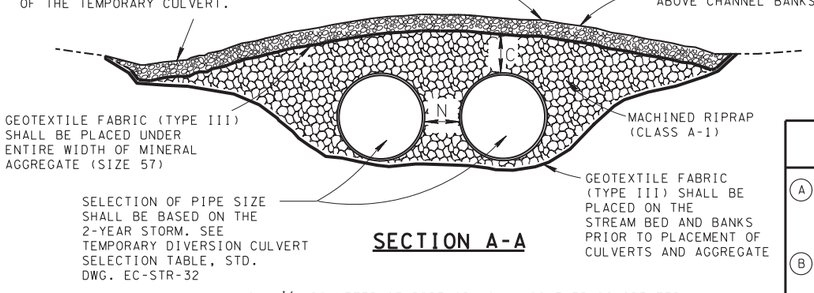
CULVERT PROTECTION TYPE 1

10-26-92 EC-STR-11

TEMPORARY CULVERT CROSSING



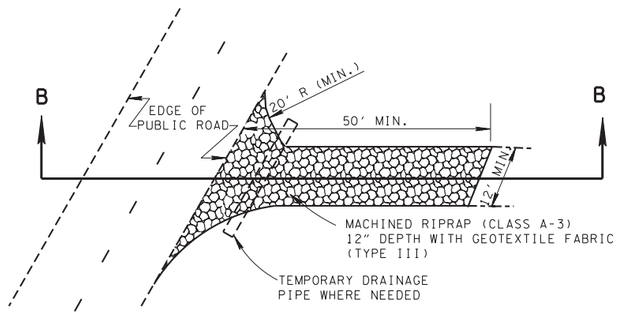
PLAN VIEW OF TEMPORARY CULVERT CROSSING



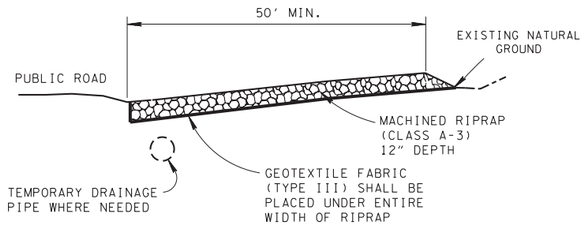
SECTION A-A

C = ½ DIAMETER OF PIPE OR 18" WHICHEVER IS GREATER
N = ½ DIAMETER OF PIPE OR 12" WHICHEVER IS GREATER

TEMPORARY CONSTRUCTION EXIT



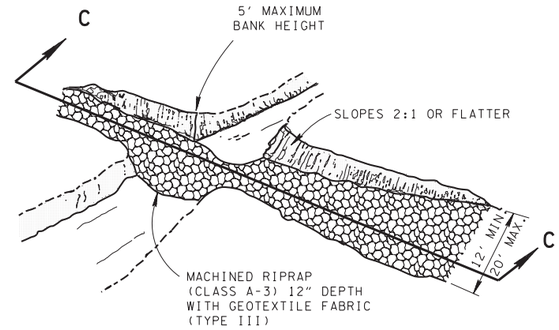
PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD



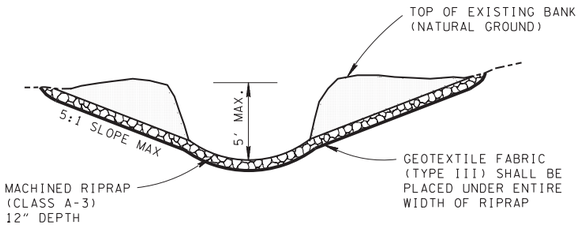
SECTION B-B

TEMPORARY CONSTRUCTION FORD

(NOT TO BE PLACED IN STREAMS)



PLAN VIEW OF TEMPORARY CONSTRUCTION FORD



SECTION C-C

- REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-25 TO EC-STR-25.

  REV. 5-27-01: CHANGED ITEM NO. 303-15.01 TO 303-10.01. CHANGED DESCRIPTIONS IN ITEM NOS. 621-03.02 TO 621-03.10, AND 709-05.05 TO 709-05.07.
- REV. 12-18-02: CHANGED GENERAL NOTE (B).
- REV. 1-22-03: CORRECTED GENERAL NOTE (C).
- REV.7-29-03: ADDED GEOTEXTILE FABRIC TO TEMPORARY CULVERT CROSSING AND TEMPORARY CONSTRUCTION ROAD ENTRANCE DETAILS. CHANGED MINERAL AGGREGATE TO CLASS A-3 RIPRAP IN TEMPORARY CONSTRUCTION ROAD ENTRANCE DETAIL. CHANGED GENERAL NOTES (D) AND (F).
- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED VARIOUS GENERAL NOTES, MISC. EDITS TO DRAWING, AND REMOVED CLASS A-2 RIPRAP.
- REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.

EROSION CONTROL PLAN LEGEND:

TCC — TEMPORARY CULVERT CROSSING (DESCRIBE NUMBER AND SIZE OF PIPES)

TCE — TEMPORARY CONSTRUCTION EXIT

TCF — TEMPORARY CONSTRUCTION FORD

GENERAL NOTES

(A) TEMPORARY CULVERT CROSSINGS SHALL CONSIST OF ONE OR MORE TEMPORARY DRAINAGE PIPES INSTALLED ACROSS A FLOWING WATER COURSE FOR USE BY CONSTRUCTION EQUIPMENT. THE TEMPORARY DRAINAGE PIPES WILL VARY IN SIZE FROM EIGHTEEN TO SEVENTY-TWO INCHES IN DIAMETER.

(B) MINIMIZE CLEARING OF VEGETATION FROM STREAM BANKS WHEN USING TEMPORARY CULVERT CROSSINGS.

(C) TEMPORARY CULVERT CROSSINGS SHALL BE SEPARATED FROM FLOWING WATER DURING THEIR CONSTRUCTION AND REMOVAL.

(D) PROVISION SHOULD BE MADE TO PREVENT CONSTRUCTION ROAD RUNOFF FROM ENTERING THE STREAM.

(E) TEMPORARY CULVERT CROSSINGS SHOULD BE REMOVED, INCLUDING THE AGGREGATE AND GEOTEXTILE, AS SOON AS POSSIBLE AFTER THE CROSSING IS NO LONGER REQUIRED. ANY EXPOSED AREAS SHOULD BE IMMEDIATELY STABILIZED.

(F) FOR SITES WHICH DRAIN TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT -IMPAIRED STREAMS, A 9-INCH LAYER OF MACHINED RIPRAP (CLASS A-3) SHALL BE SUBSTITUTED FOR THE MINERAL AGGREGATE (SIZE 57) USED TO TOP-DRESS A TEMPORARY CULVERT CROSSING.

(G) ALL TEMPORARY CULVERT CROSSINGS AND TEMPORARY CONSTRUCTION FORDS SHALL BE PLACED PERPENDICULAR TO THE STREAM WHERE POSSIBLE. CROSSINGS MAY DEVIATE AS MUCH AS 15 DEGREES FROM PERPENDICULAR, IF NECESSARY.

(H) TEMPORARY CONSTRUCTION EXITS SHALL BE BUILT TO REDUCE SEDIMENT LEAVING THE CONSTRUCTION SITE VIA CONSTRUCTION VEHICLES AND TO REDUCE SEDIMENT TRACKING ON TO PUBLIC ROADS AND OTHER PAVED AREAS.

(I) ADDITIONAL STONE MAY BE REQUIRED TO TOP-DRESS THE STONE PAD IF IT BECOMES CLOGGED WITH SEDIMENT TO ENSURE THE TEMPORARY CONSTRUCTION EXIT REMAINS EFFECTIVE.

(J) ON SITES WHERE THE GRADE TOWARD THE PUBLIC ROAD IS GREATER THAN 2% A MOUNTABLE BERM AT LEAST 6 INCHES HIGH WITH 3:1 SIDE SLOPES SHOULD BE PROVIDED AT THE END OF THE PAD TO PREVENT RUNOFF FROM LEAVING THE SITE.

(K) TEMPORARY CONSTRUCTION EXITS SHOULD BE REMOVED WHEN NO LONGER REQUIRED. ANY EXPOSED AREAS SHOULD BE IMMEDIATELY STABILIZED.

(L) TEMPORARY CONSTRUCTION FORDS ARE EFFECTIVE FOR INFREQUENT CROSSINGS OF DITCHES OR SWALES. THEY SHALL NOT BE USED IN STREAMS, WETLANDS OR OTHER NATURAL WATER RESOURCES.

(M) TEMPORARY CONSTRUCTION FORDS SHOULD BE CONSTRUCTED TO MINIMIZE THE BLOCKAGE OF FLOW AND TO ALLOW FREE FLOW OVER THE FORD. THE MAXIMUM AMOUNT OF BLOCKAGE ALLOWED IS THE LESSER OF TWELVE INCHES OR ONE-HALF THE HEIGHT OF THE EXISTING BANKS.

(N) A MOUNTABLE BERM AT LEAST 6 INCHES HIGH WITH 3:1 SIDE SLOPES SHOULD BE PROVIDED ON EITHER SIDE OF THE CHANNEL TO PREVENT RUNOFF FROM ENTERING THE CHANNEL.

(O) TEMPORARY CONSTRUCTION FORDS SHOULD BE REMOVED WHEN NO LONGER REQUIRED. THE CHANNEL BANKS SHOULD BE RESTORED TO THEIR ORIGINAL DIMENSIONS. ANY EXPOSED AREAS SHOULD BE IMMEDIATELY STABILIZED.

(P) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(Q) TEMPORARY CULVERT CROSSINGS, TEMPORARY CONSTRUCTION EXITS, AND TEMPORARY CONSTRUCTION FORDS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
303-10.01	MINERAL AGGREGATE (SIZE 57) PER TON
621-03.02 THRU 621-03.11	_ _" TEMPORARY DRAINAGE PIPE PER LINEAR FOOT
709-05.05	MACHINED RIPRAP (CLASS A-3) PER TON
709-05.06	MACHINED RIPRAP (CLASS A-1) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY CULVERT CROSSINGS, TEMPORARY CONSTRUCTION EXITS, AND TEMPORARY CONSTRUCTION FORDS.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

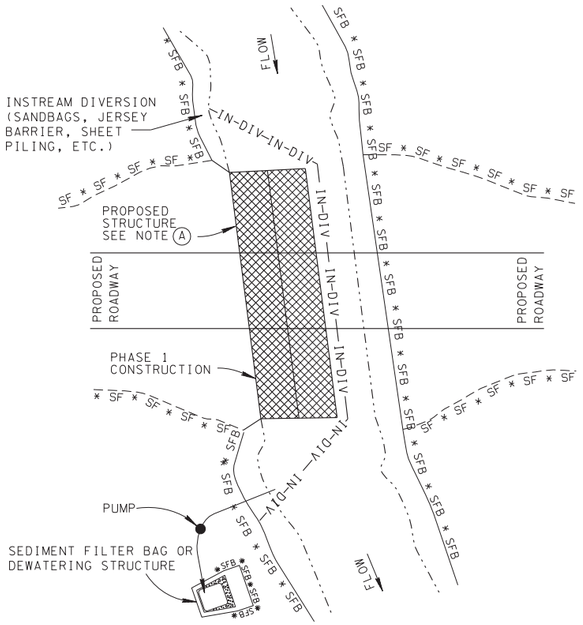
NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

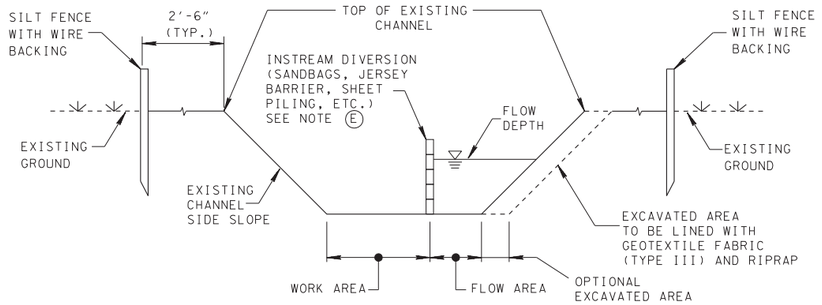
TEMPORARY CULVERT CROSSING, CONSTRUCTION EXIT, CONSTRUCTION FORD

10-26-92 EC-STR-25

PHASE 1

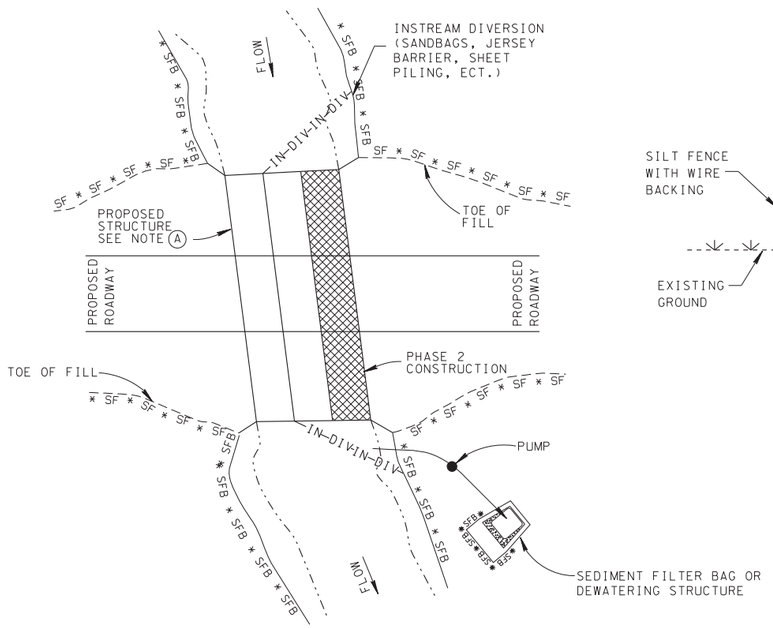


PLAN VIEW

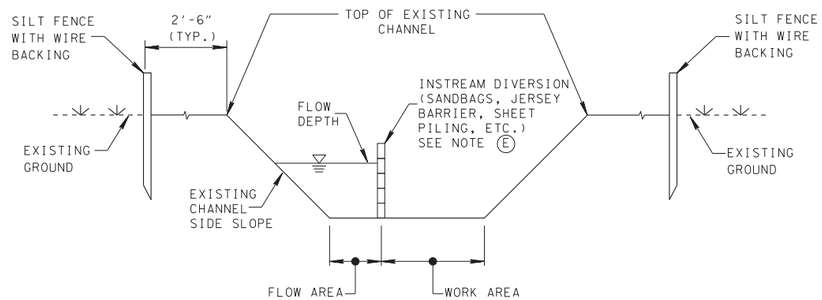


TYPICAL CHANNEL CROSS-SECTION

PHASE 2



PLAN VIEW



TYPICAL CHANNEL CROSS-SECTION

EROSION CONTROL PLAN LEGEND: —IN—DIV— INSTREAM DIVERSION

INSTREAM DIVERSION GENERAL NOTES

(A) INSTREAM DIVERSIONS ARE GENERALLY USED WHERE IT IS NECESSARY TO MAINTAIN THE STREAM FLOW WITHIN THE EXISTING CHANNEL DURING THE CONSTRUCTION OF A MULTI-BARREL CULVERT, BOX BRIDGE, OR SLAB BRIDGE. THIS ALLOWS INSTREAM WORK TO BE COMPLETED IN THE DRY, SEPARATED FROM FLOWING WATER.

(B) EXAMPLE SHOWN IS FOR NEW CONSTRUCTION OR REPLACEMENT OF A STRUCTURE WHEN THE ROADWAY IS CLOSED TO TRAFFIC OR WHEN A RUNAROUND IS USED. FOR AN EXAMPLE WHEN TRAFFIC IS MAINTAINED DURING CONSTRUCTION SEE EC-STR-30A. TRAFFIC CONTROL SHOULD BE BASED ON THE SPECIFIC PROJECT, NOT ON THE EXAMPLE SHOWN.

(C) EXAMPLE SHOWN IS FOR NEW CONSTRUCTION OF A MULTI-BARREL STRUCTURE. ADJUSTMENTS SHOULD BE MADE TO THE INSTREAM DIVERSION FOR A STRUCTURE REPLACEMENT OR WHEN A BRIDGE IS REPLACED WITH A MULTI-BARREL STRUCTURE.

(D) THE CONSTRUCTION PHASING SHOWN IS AN EXAMPLE. THE CONSTRUCTION PHASING USED SHOULD BE BASED UPON FIELD CONDITIONS OF THE SPECIFIC PROJECT AT THE TIME OF CONSTRUCTION. THE INSTREAM DIVERSION SHOULD BE ADJUSTED ACCORDINGLY.

(E) THE HEIGHT OF THE INSTREAM DIVERSION SHOULD BE A MINIMUM OF 1 FOOT HIGHER THAN THE ORDINARY FLOW IN THE REDUCED CHANNEL WIDTH.

(F) WHERE IT IS NECESARRY TO EXCAVATE THE CHANNEL TO PROVIDE SUFFICENT FLOW AREA FOR THE ORDINARY FLOW THE EXCAVATED AREA SHOULD BE LINED WITH GEOTEXTILE FABRIC AND RIPRAP. THE EXCAVATED AREA SHOULD BE LIMITED TO CONSTRUCITON LIMITS OF THE STRUCTURE.

(G) DURING CONSTRUCTION OF THE INSTREAM DIVERSION, DAMAGE TO THE EXISTING STREAM AND CANOPY SHALL BE MINIMIZED. ALL EXISTING VEGETATION OUTSIDE THE CUT AND FILL LINES BUT INSIDE THE RIGHT-OF-WAY SHALL NOT BE DISTURBED UNLESS IT INTERFERES WITH CONSTRUCTION OR SAFETY STANDARDS.

(H) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. USE INSTREAM DIVERSION TO DIVERT FLOW TO ONE SIDE OF THE EXISTING CHANNEL AND/OR INTO BARREL(S) OF THE EXISTING CULVERT.
2. REMOVE PORTION OF EXISTING STRUCTURE, IF APPLICABLE, AND CONSTRUCT ONE OR MORE BARRELS OF THE PROPOSED CULVERT AND PLACE INLET AND OUTLET PROTECTION.
3. USE INSTREAM DIVERSION TO DIVERT FLOW TO OTHER SIDE OF THE EXISTING CHANNEL AND INTO BARREL(S) OF THE NEWLY CONSTRUCTED PROPOSED STRUCTURE.
4. REMOVE REMAINING PORTION OF EXISTING STRUCTURE, IF APPLICABLE, AND CONSTRUCT REMAINING BARRELS OF THE PROPOSED STRUCTURE AND PLACE INLET AND OUTLET PROTECTION.
5. REMOVE INSTREAM DIVERSION.

(I) INSTREAM DIVERSION SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY.

(J) INSTREAM DIVERSION MAY BE CONSTRUCTED OF SANDBAGS, JERSEY BARRIER, RIPRAP, SHEET PILING, OR OTHER MATERIALS USED TO SEPERATE THE FLOWING WATER FROM THE WORK AREA.

(K) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(L) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), SILT FENCE (EC-STR-3B) AND SILT FENCE WITH WIRE BACKING (EC-STR-3C), SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(M) INSTREAM DIVERSIONS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-65.04 TEMPORARY IN STREAM DIVERSION PER LINEAR FOOT

OPTIONAL EXCAVATION, GEOTEXTILE, AND RIPRAP SHALL BE INCLUDED IN THE COST OF INSTREAM DIVERSION.

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, SILT FENCE, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWINGS.

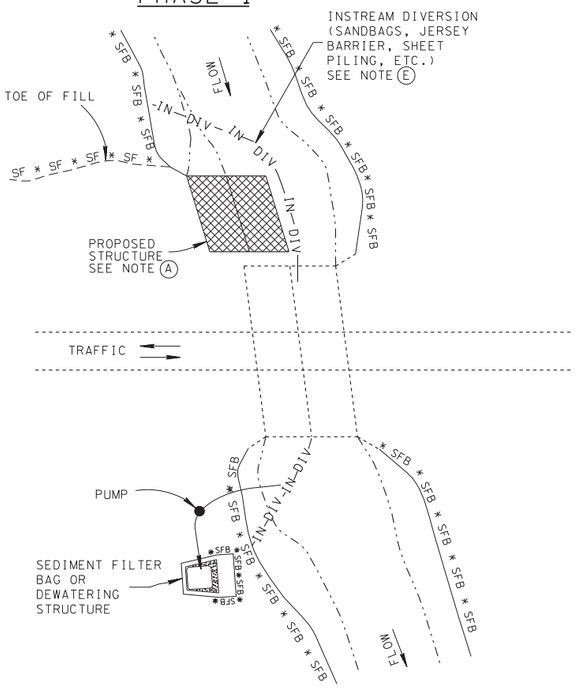
PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF INSTREAM DIVERSION.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

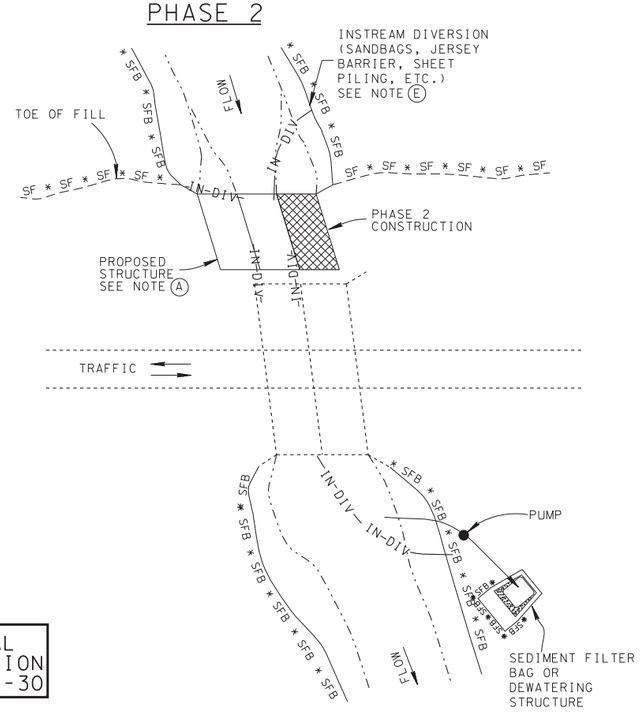
INSTREAM DIVERSION (WITHOUT TRAFFIC)

1-1-10 | EC-STR-30

PHASE 1



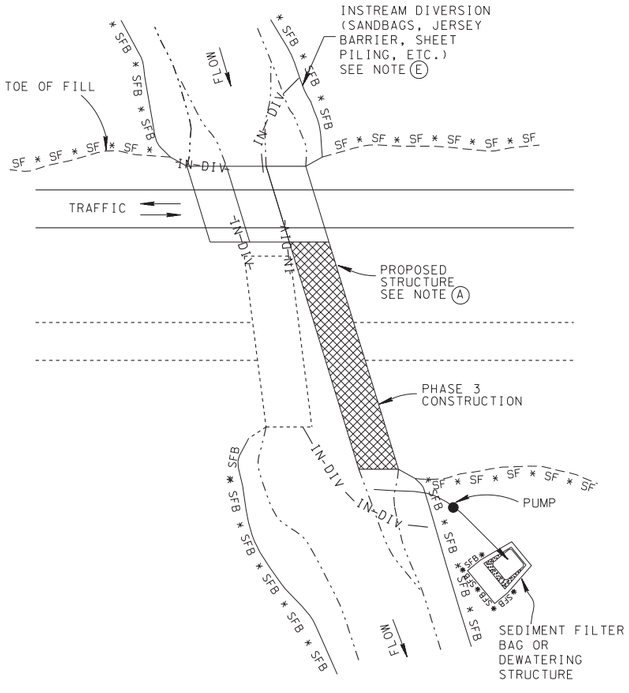
PHASE 2



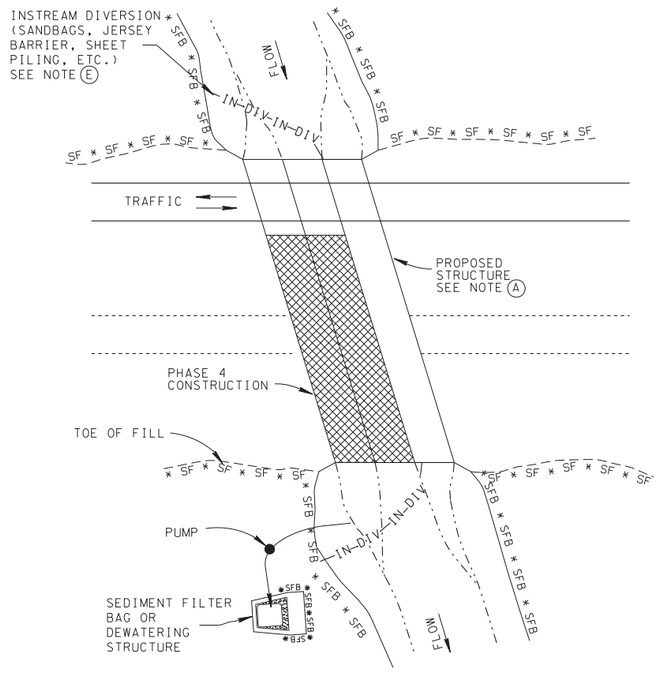
PLAN VIEW

NOTE: FOR TYPICAL CROSS-SECTION SEE EC-STR-30

PHASE 3



PHASE 4



EROSION CONTROL PLAN LEGEND: —IN—DIV— INSTREAM DIVERSION

INSTREAM DIVERSION GENERAL NOTES

(A) INSTREAM DIVERSIONS ARE GENERALLY USED WHERE IT IS NECESSARY TO MAINTAIN THE STREAM FLOW WITHIN THE EXISTING CHANNEL DURING THE CONSTRUCTION OF A MULTI-BARREL CULVERT, BOX BRIDGE, OR SLAB BRIDGE. THIS ALLOWS INSTREAM WORK TO BE COMPLETED IN THE DRY, SEPARATED FROM FLOWING WATER.

(B) EXAMPLE SHOWN IS FOR THE REPLACEMENT OF A STRUCTURE WHEN TRAFFIC IS MAINTAINED ON THE ROADWAY. FOR AN EXAMPLE WHEN THE ROADWAY IS CLOSED TO TRAFFIC, OR A RUNAROUND IS USED, DURING CONSTRUCTION SEE EC-STR-30. TRAFFIC CONTROL SHOULD BE BASED ON THE SPECIFIC PROJECT, NOT ON THE EXAMPLE SHOWN.

(C) EXAMPLE SHOWN IS FOR REPLACEMENT OF A MULTI-BARREL STRUCTURE. ADJUSTMENTS SHOULD BE MADE TO THE INSTREAM DIVERSION FOR WHEN A BRIDGE IS REPLACED WITH A MULTI-BARREL STRUCTURE.

(D) THE CONSTRUCTION PHASING SHOWN IS AN EXAMPLE. THE CONSTRUCTION PHASING USED SHOULD BE BASED UPON FIELD CONDITIONS OF THE SPECIFIC PROJECT AT THE TIME OF CONSTRUCTION. THE INSTREAM DIVERSION SHOULD BE ADJUSTED ACCORDINGLY.

(E) THE HEIGHT OF THE INSTREAM DIVERSION SHOULD BE A MINIMUM OF 1 FOOT HIGHER THAN THE ORDINARY FLOW IN THE REDUCED CHANNEL WIDTH.

(F) DURING CONSTRUCTION OF THE INSTREAM DIVERSION, DAMAGE TO THE EXISTING STREAM AND CANOPY SHALL BE MINIMIZED. ALL EXISTING VEGETATION OUTSIDE THE CUT AND FILL LINES BUT INSIDE THE RIGHT-OF-WAY SHALL NOT BE DISTURBED UNLESS IT INTERFERES WITH SAFETY STANDARDS.

(G) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. USE INSTREAM DIVERSION TO DIVERT FLOW TO ONE SIDE OF THE EXISTING CHANNEL AND INTO BARREL(S) OF THE EXISTING CULVERT OR ONE SPAN OF EXISTING BRIDGE.
2. REMOVE PORTION OF EXISTING STRUCTURE, IF APPLICABLE, AND CONSTRUCT ONE OR MORE BARRELS OF THE PROPOSED CULVERT TO A LENGTH SUFFICIENT FOR TEMPORARY TRAFFIC LANES. PLACE INLET/OUTLET PROTECTION.
3. USE INSTREAM DIVERSION TO DIVERT FLOW TO OTHER SIDE OF THE EXISTING CHANNEL AND INTO BARREL(S) OF THE NEWLY CONSTRUCTED PROPOSED STRUCTURE AND BARREL(S) OR SPAN (S) OF THE EXISTING STRUCTURE.
4. REMOVE PORTION OF EXISTING STRUCTURE, IF APPLICABLE, AND CONSTRUCT REMAINING BARRELS OF THE PROPOSED STRUCTURE TO A LENGTH SUFFICENT FOR TEMPORARY TRAFFIC LANES. PLACE INLET/OUTLET PROTECTION.
5. MOVE TRAFFIC, REMOVE PORTION OF EXISTING STRUCTURE, AND CONSTRUCT REMAINING LENGTH OF ONE OR MORE BARRELS OF THE PROPOSED STRUCTURE. PLACE INLET/OUTLET PROTECTION.
6. USE INSTREAM DIVERSION TO DIVERT FLOW TO OTHER SIDE OF THE EXISTING CHANNEL AND INTO BARREL(S) OF THE NEWLY CONSTRUCTED PROPOSED STRUCTURE.
7. REMOVE REMAINING PORTION OF EXISTING STRUCTURE AND CONSTRUCT REMAINING BARREL(S) OF THE PROPOSED STRUCTURE. PLACE INLET/OUTLET PROTECTION.
8. REMOVE INSTREAM DIVERSION.

(H) INSTREAM DIVERSION SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY.

(I) INSTREAM DIVERSION MAY BE CONSTRUCTED OF SANDBAGS, JERSEY BARRIER, RIPRAP, SHEET PILING, OR OTHER MATERIALS USED TO SEPERATE THE FLOWING WATER FROM THE WORK AREA.

(J) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(K) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), SILT FENCE (EC-STR-3B) AND SILT FENCE WITH WIRE BACKING (EC-STR-3C), SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(L) INSTREAM DIVERSIONS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-65.04 TEMPORARY IN STREAM DIVERSION PER LINEAR FOOT

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, SILT FENCE, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWINGS.

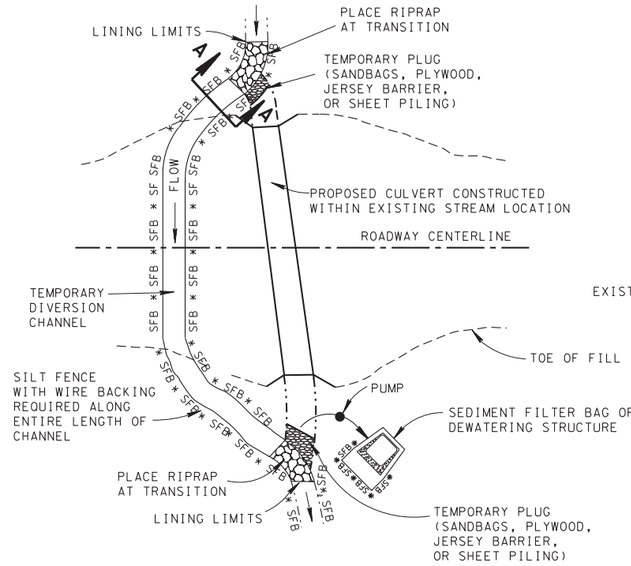
PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF INSTREAM DIVERSION.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

INSTREAM DIVERSION (WITH TRAFFIC)

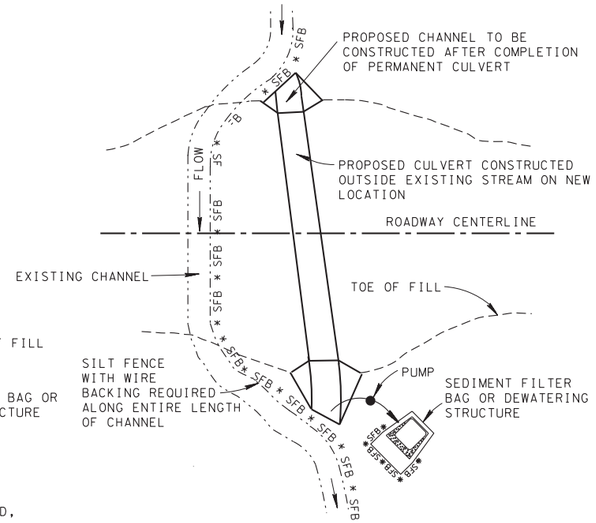
1-1-10 EC-STR-30A

CULVERT CONSTRUCTED WITHIN EXISTING STREAM

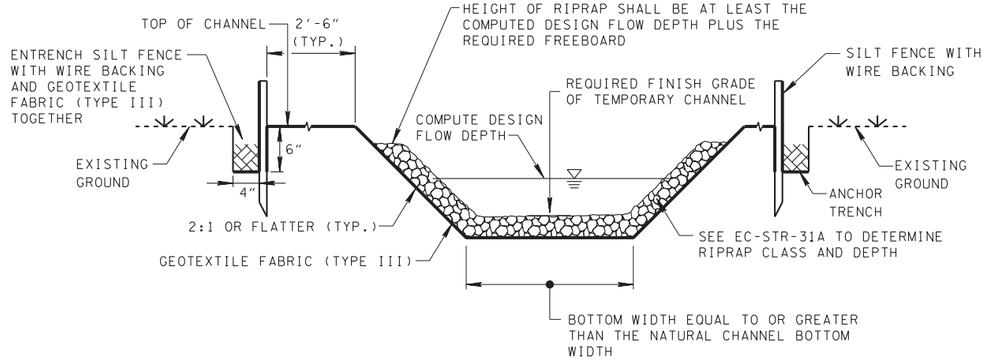


PLAN VIEW

CULVERT CONSTRUCTED OUTSIDE EXISTING STREAM

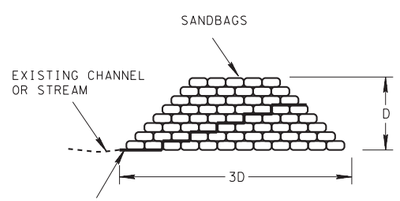


PLAN VIEW



SECTION A-A

ELEVATION VIEW



CROSS SECTION VIEW

PLUG DETAIL

EROSION CONTROL PLAN LEGEND: TEMPORARY DIVERSION CHANNEL (DESCRIBE - SIZE AND TYPE OF LINING)

TEMPORARY DIVERSION CHANNELS GENERAL NOTES

(A) DIVERSION CHANNELS SHALL BE USED TO DIVERT NORMAL STREAM FLOW FROM AN ERODIBLE AREA IN ORDER TO PREVENT POLLUTION OF THE STREAM DUE TO EROSION.

(B) EXAMPLE SHOWN IS FOR NEW CULVERT CONSTRUCTION. OTHER PROJECTS WOULD BE CONSTRUCTED IN A SIMILAR MANNER.

(C) TEMPORARY DIVERSION CHANNELS SHALL BE DESIGNED USING A 2-YEAR, 24-HOUR STORM FREQUENCY FLOW RATE. STANDARD DRAWING EC-STR-31A, MAY BE USED AS A GUIDELINE FOR DETERMINING THE CHANNEL SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION. AT SITES WHICH INVOLVE EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE STABILITY OF THE RIPRAP CHANNEL LINING SHOULD BE DESIGNED FOR THE 5-YEAR, 24-HOUR PEAK FLOW.

(D) ALL TEMPORARY DIVERSION CHANNELS SHALL HAVE A TRAPEZOIDAL SHAPE AND THE BOTTOM WIDTH SHALL BE EQUAL TO OR GREATER THAN THE NATURAL CHANNEL BOTTOM WIDTH.

(E) TO DETERMINE RIPRAP CLASS AND DEPTH USE STANDARD DRAWING EC-STR-31A.

(F) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(G) GEOTEXTILE (TYPE III) (EROSION CONTROL) SHALL BE USED EITHER WITH OR WITHOUT RIPRAP, AS RECOMMENDED IN NOTE B6 ON STANDARD DRAWING EC-STR-31A.

(H) GEOTEXTILE FABRIC (TYPE III) SHALL BE USED ALONE ONLY IN CHANNELS WITH INTERMITTENT FLOW. USE A RIPRAP LINED CHANNEL OR CULVERT WHERE THE STREAM FLOWS YEAR-ROUND.

(I) WHERE EXCAVATION FOR A DIVERSION CHANNEL EXPOSES BEDROCK, GEOTEXTILE FABRIC AND RIPRAP SHALL BE REQUIRED ONLY ON THE SIDES OF THE CHANNEL.

(J) RIPRAP TRANSITIONS AT THE ENTRANCE AND EXIT OF THE DIVERSION CHANNEL SHALL BE DESIGNED IN ACCORDANCE WITH APPROVED TDOT METHODS.

(K) DURING CONSTRUCTION OF THE DIVERSION CHANNEL, DAMAGE TO THE EXISTING STREAM AND DAMAGE TO THE CANOPY SHALL BE MINIMIZED. ALL EXISTING VEGETATION OUTSIDE THE CUT AND FILL LINES BUT INSIDE THE RIGHT-OF-WAY SHALL NOT BE DISTURBED UNLESS IT INTERFERES WITH SAFETY STANDARDS.

(L) THE PROJECT SHALL BE PLANNED IN ORDER TO MINIMIZE THE LENGTH OF TIME THE DIVERSION WILL BE REQUIRED.

(M) DIVERSION CHANNEL CONSTRUCTION SHALL BE COMPLETED IN THE DRY BEFORE DIVERTING WATER FROM THE EXISTING CHANNEL. WHERE THIS IS NOT FEASIBLE, TEMPORARY FLOW DIVERSION STRUCTURES CAN BE USED UNTIL WORK IS COMPLETE. THESE STRUCTURES CAN BE ANY NON-ERODIBLE MATERIAL.

(N) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. CONSTRUCT A MEANDERING TEMPORARY CHANNEL ADJACENT TO THE PROPOSED PROJECT. ISOLATE THE TEMPORARY CHANNEL FROM THE EXISTING CHANNEL WITH TEMPORARY PLUGS. TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 209 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
2. THE DIVERSION CHANNEL SHALL BE STABILIZED AND INSPECTED BY THE PROJECT ENGINEER BEFORE FLOW IS DIVERTED. DIVERT FLOW BY MOVING THE TEMPORARY PLUGS FROM THE TEMPORARY CHANNEL TO THE EXISTING CHANNEL. A COFFER DAM MAY BE USED UPSTREAM TO PREVENT STREAM FLOW DURING THIS OPERATION.
3. CONSTRUCT THE PROJECT IN THE EXISTING STREAM AND PLACE PERMANENT EROSION CONTROL ON THE EXISTING STREAM BANKS.
4. WHERE A TEMPORARY PLUG IS REQUIRED AT THE DOWNSTREAM END OF THE DIVERSION, IT SHOULD BE REMOVED FIRST. THEN REMOVE THE UPPER PLUG IN ORDER TO RELEASE FLOW INTO THE RECONSTRUCTED CHANNEL.
5. REMOVE LINING MATERIALS FROM THE DIVERSION CHANNEL, RESTORE THE AREA TO GRADE, AND STABILIZE EXPOSED SOILS.

(O) ALTERNATIVE DIVERSION METHOD MAY INCLUDE PARALLEL JERSEY BARRIERS LINED WITH POLYETHYLENE SHEETING (6 MIL MINIMUM).

(P) DIVERSION CHANNEL SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY.

(Q) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), AND SILT FENCE WITH WIRE BACKING (EC-STR-3C) SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(R) TEMPORARY DIVERSION CHANNELS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-65.03	TEMPORARY DIVERSION CHANNEL PER LINEAR FOOT
709-05.06	MACHINED RIPIAP (CLASS A-1) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWINGS.

TEMPORARY PLUGS SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT SHALL INCLUDE ALL MATERIALS (EXCAVATION, GEOTEXTILE FABRIC, RIPRAP, ETC.) AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY DIVERSION CHANNELS.

REV. 12-18-95: CHANGED DRAWING NO. FROM ESC-STR-31 TO EC-STR-31.

- REV. 5-27-01: CHANGED ITEM NO. 740-03.01 TO 740-10.03. CHANGED REFERENCE OF TEMPORARY EROSION CONTROL PIPE TO TEMPORARY PIPE.
- REV. 12-18-02: CHANGED ALL SILT FENCE IN DETAILS TO ENHANCED SILT FENCE. CHANGED GENERAL NOTE (E).
- REV. 4-15-06: MODIFIED ALL GENERAL NOTES. REMOVED "TEMPORARY CULVERT USED DURING CONSTRUCTION". REMOVED TABLE FOR "PIPE DIA. FOR STREAM CROSSINGS OR TEMP. DIVERSION CHANNELS (INCHES)" REMOVED DETAIL FOR "TEMP. DIVERSION CHANNEL W/GEOTEXTILE FABRIC LINING."REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED GENERAL NOTES, ADDED NOTE R, AND MISC. EDITS TO DRAWING.
- REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY DIVERSION CHANNEL

10-26-92 | EC-STR-31

- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: DRAWING EDITS UPDATE TABLE AND REVISIONS TO GENERAL NOTES.

"K" VALUES FOR TEMPORARY DIVERSION CHANNEL DEPTH HYDROLOGIC AREA 1

DRAINAGE AREA (ACRES)	FLOW RATE (cfs)	INCREASING CHANNEL SLOPE → 0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
SEE NOTE BELOW	4.0	56.6	40.0	32.7	28.3	25.3	23.1
	10.0	141.4	100.0	81.6	70.7	63.2	57.7
	25.0	353.6	250.0	204.1	176.8	158.1	144.3
128.0	35.3	499.2	353.0	288.2	249.6	223.3	203.8
150.0	39.8	562.9	398.0	325.0	281.4	251.7	229.8
200.0	49.4	698.6	494.0	403.3	349.3	312.4	285.2
250.0	58.5	826.9	584.7	477.4	413.4	369.8	337.6
300.0	67.2	950.4	672.0	548.7	475.2	425.0	388.0
400.0	83.5	1180.9	835.0	681.8	590.4	528.1	482.1
500.0	98.8	1397.2	988.0	806.7	698.6	624.9	570.4
600.0	113.3	1602.8	1133.3	925.4	801.4	716.8	654.3
700.0	127.3	1800.9	1273.4	1039.7	900.4	805.4	735.2
800.0	140.8	1991.2	1408.0	1149.6	995.6	890.5	812.9
900.0	153.9	2176.5	1539.0	1256.6	1088.2	973.3	888.5
1000.0	166.7	2357.5	1667.0	1361.1	1178.7	1054.3	962.4
1100.0	179.1	2532.9	1791.0	1462.3	1266.4	1132.7	1034.0
1200.0	191.3	2705.4	1913.0	1562.0	1352.7	1209.9	1104.5
1300.0	203.2	2873.7	2032.0	1659.1	1436.8	1285.1	1173.2

THE DESIGN FLOW RATE MAY BE DETERMINED FROM THIS TABLE FOR DRAINAGE AREAS > OR = 128 ACRES. FOR SMALLER DRAINAGE AREAS, USE TR-55 TO DETERMINE THE DESIGN FLOW RATE. ONCE THE DESIGN FLOW RATE HAS BEEN DETERMINED, USE THIS TABLE TO FIND THE REQUIRED "K" VALUE.

"K" VALUES FOR TEMPORARY DIVERSION CHANNEL DEPTH HYDROLOGIC AREA 2

DRAINAGE AREA (ACRES)	FLOW RATE (cfs)	INCREASING CHANNEL SLOPE → 0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
SEE NOTE BELOW	6.0	84.9	60.0	49.0	42.4	37.9	34.6
	15.0	212.1	150.0	122.5	106.1	94.9	86.6
	30.0	424.3	300.0	244.9	212.1	189.7	173.2
	50.0	707.1	500.0	408.2	353.6	316.2	288.7
	70.0	989.9	700.0	571.5	495.0	442.7	404.1
	90.0	1272.8	900.0	734.8	636.4	569.2	519.6
	100.0	1414.2	1000.0	816.5	707.1	632.5	577.4
300.0	117.6	1663.1	1176.0	960.2	831.6	743.8	679.0
400.0	145.0	2050.6	1450.0	1183.9	1025.3	917.1	837.2
500.0	170.5	2411.2	1705.0	1392.1	1205.6	1078.3	984.4
600.0	194.6	2752.1	1946.0	1588.9	1376.0	1230.8	1123.5
700.0	217.7	3078.7	2177.0	1777.5	1539.4	1376.9	1256.9
800.0	239.9	3392.7	2399.0	1958.8	1696.3	1517.3	1385.1
900.0	261.4	3696.8	2614.0	2134.3	1848.4	1653.2	1509.2
1000.0	282.2	3990.9	2822.0	2304.2	1995.5	1784.8	1629.3
1100.0	302.4	4276.6	3024.0	2469.1	2138.3	1912.5	1745.9
1200.0	322.2	4556.6	3222.0	2630.8	2278.3	2037.8	1860.2
1300.0	341.5	4829.5	3415.0	2788.3	2414.8	2159.8	1971.7

THE DESIGN FLOW RATE MAY BE DETERMINED FROM THIS TABLE FOR DRAINAGE AREAS > OR = 300 ACRES. FOR SMALLER DRAINAGE AREAS, USE TR-55 TO DETERMINE THE DESIGN FLOW RATE. ONCE THE DESIGN FLOW RATE HAS BEEN DETERMINED, USE THIS TABLE TO FIND THE REQUIRED "K" VALUE.

"K" VALUES FOR TEMPORARY DIVERSION CHANNEL DEPTH HYDROLOGIC AREA 3

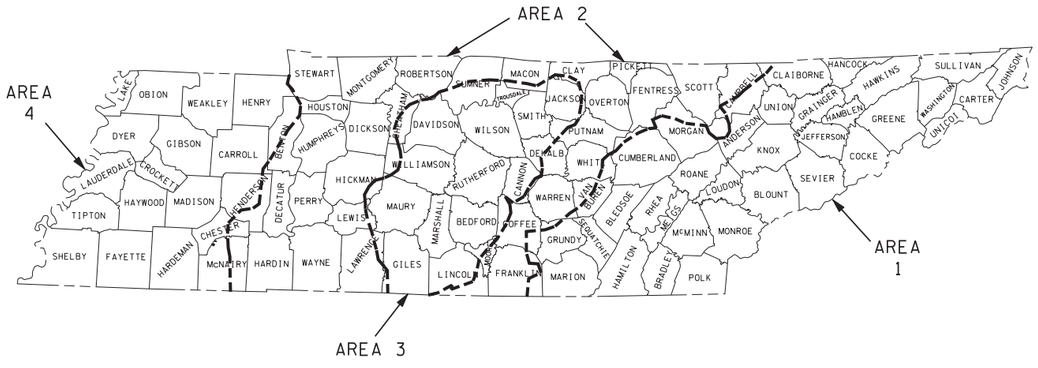
DRAINAGE AREA (ACRES)	FLOW RATE (cfs)	INCREASING CHANNEL SLOPE → 0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
SEE NOTE BELOW	10.0	141.4	100.0	81.6	70.7	63.2	57.7
	25.0	353.6	250.0	204.1	176.8	158.1	144.3
	50.0	707.1	500.0	408.2	353.6	316.2	288.7
109.0	69.3	980.0	693.0	565.8	490.0	438.3	400.1
150.0	89.1	1260.1	891.0	727.5	630.0	563.5	514.4
200.0	111.8	1581.1	1118.0	912.8	790.5	707.1	645.5
250.0	133.4	1886.6	1334.0	1089.2	943.3	843.7	770.2
300.0	154.0	2177.9	1540.0	1257.4	1088.9	974.0	889.1
400.0	193.2	2732.3	1932.0	1577.5	1366.1	1221.9	1115.4
500.0	230.4	3258.3	2304.0	1881.2	1629.2	1457.2	1330.2
600.0	266.1	3763.2	2661.0	2172.7	1881.6	1683.0	1536.3
700.0	300.5	4249.7	3005.0	2453.6	2124.9	1900.5	1734.9
800.0	333.9	4722.1	3339.0	2726.3	2361.0	2111.8	1927.8
900.0	366.4	5181.7	3664.0	2991.6	2590.8	2317.3	2115.4
1000.0	398.2	5631.4	3982.0	3251.3	2815.7	2518.4	2299.0
1100.0	429.3	6071.2	4293.0	3505.2	3035.6	2715.1	2478.6
1200.0	459.8	6502.6	4598.0	3754.3	3251.3	2908.0	2654.7
1300.0	489.8	6926.8	4898.0	3999.2	3463.4	3097.8	2827.9

THE DESIGN FLOW RATE MAY BE DETERMINED FROM THIS TABLE FOR DRAINAGE AREAS > OR = 109 ACRES. FOR SMALLER DRAINAGE AREAS, USE TR-55 TO DETERMINE THE DESIGN FLOW RATE. ONCE THE DESIGN FLOW RATE HAS BEEN DETERMINED, USE THIS TABLE TO FIND THE REQUIRED "K" VALUE.

"K" VALUES FOR TEMPORARY DIVERSION CHANNEL DEPTH HYDROLOGIC AREA 4

DRAINAGE AREA (ACRES)	FLOW RATE (cfs)	INCREASING CHANNEL SLOPE → 0.5%	1.0%	1.5%	2.0%	2.5%	3.0%
SEE NOTE BELOW	15.0	212.1	150.0	122.5	106.1	94.9	86.6
	30.0	424.0	299.8	244.8	212.0	189.6	173.1
	60.0	848.1	599.7	489.6	424.0	379.3	346.2
	100.0	1414.2	1000.0	816.5	707.1	632.5	577.4
	150.0	2121.3	1500.0	1224.7	1060.7	948.7	866.0
	200.0	2828.4	2000.0	1633.0	1414.2	1264.9	1154.7
	250.0	3535.5	2500.0	2041.2	1767.8	1581.1	1443.4
	300.0	4242.6	3000.0	2449.5	2121.3	1897.4	1732.1
	350.0	4949.7	3500.0	2857.7	2474.9	2213.6	2020.7
486.0	377.1	5333.0	3771.0	3079.0	2666.5	2385.0	2177.2
600.0	421.4	5959.5	4214.0	3440.7	2979.7	2665.2	2433.0
700.0	457.1	6464.4	4571.0	3732.2	3232.2	2891.0	2639.1
800.0	490.4	6935.3	4904.0	4004.1	3467.7	3101.6	2831.3
900.0	521.8	7379.4	5218.0	4260.5	3689.7	3300.2	3012.6
1000.0	551.6	7800.8	5516.0	4503.8	3900.4	3488.6	3184.7
1100.0	580.0	8202.4	5800.0	4735.7	4101.2	3668.2	3348.6
1200.0	607.2	8587.1	6072.0	4957.8	4293.6	3840.3	3505.7
1300.0	633.4	8957.6	6334.0	5171.7	4478.8	4006.0	3656.9

THE DESIGN FLOW RATE MAY BE DETERMINED FROM THIS TABLE FOR DRAINAGE AREAS > OR = 486 ACRES. FOR SMALLER DRAINAGE AREAS, USE TR-55 TO DETERMINE THE DESIGN FLOW RATE. ONCE THE DESIGN FLOW RATE HAS BEEN DETERMINED, USE THIS TABLE TO FIND THE REQUIRED "K" VALUE.



SOURCE: "FLOOD FREQUENCY PREDICTION METHODS FOR UNREGULATED STREAMS OF TENNESSEE" WATER RESOURCES INVESTIGATIONS REPORT 03-4176. USGS 2000.

DIVERSION CHANNEL DEPTH TABLES GENERAL NOTES

(A1) THE TABLES ON THIS DRAWING MAY BE USED TO DESIGN TEMPORARY DIVERSION CHANNELS AS SHOWN ON STANDARD DRAWING EC-STR-31.

(A2) THE "K" VALUES PROVIDED IN THE TABLES REPRESENT "CONVEYANCE" WHICH MEASURES THE CAPACITY OF A CHANNEL TO PASS THE FLOW OF WATER. CONVEYANCE IS A TERM IN MANNING'S EQUATION AND IS CONSIDERED TO BE DIMENSIONLESS.

(A3) FOR EACH COMBINATION OF FLOW RATE AND CHANNEL SLOPE IN THE TABLES, THE CORRESPONDING "K" VALUE IS THE CONVEYANCE REQUIRED TO PASS THAT FLOW.

(A4) WHERE APPLICABLE, THE FLOW RATES SHOWN IN THE TABLES ARE BASED ON THE 2-YEAR EVENT AND ARE DETERMINED FROM THE USGS REGRESSION EQUATIONS FOR RURAL AREAS (2000 EDITION). THE REMAINING FLOW RATES ARE PROVIDED AS A REFERENCE FOR FINDING THE REQUIRED CONVEYANCE.

(A5) AS DESCRIBED IN THE PROCEDURE BELOW, THESE TABLES MAY BE USED TO DETERMINE THE 2-YEAR FLOW DEPTH IN A DIVERSION CHANNEL FOR THE FLOW RATES SHOWN. THE FLOW DEPTHS DETERMINED BY THIS PROCEDURE ACCOUNT FOR DIFFERENCES IN HYDRAULIC ROUGHNESS DUE TO THE DIFFERENT CLASSES OF RIPRAP REQUIRED. THE PROCEDURE IS A SIMPLE ALTERNATIVE TO ITERATIVE ANALYSIS USING THE MANNING EQUATION.

(A6) ALL TEMPORARY DIVERSION CHANNELS SHALL HAVE A TRAPEZOIDAL SHAPE AND THE BOTTOM WIDTH SHALL BE EQUAL TO OR GREATER THAN THE NATURAL CHANNEL BOTTOM WIDTH.

PROCEDURE FOR TEMPORARY DIVERSION CHANNEL DESIGN

(B1) USING THE FIGURE PROVIDED ON THIS DRAWING DETERMINE THE HYDROLOGIC AREA IN WHICH THE PROJECT SITE IS LOCATED.

(B2) INTERPOLATE THE REQUIRED "K" VALUE USING THE APPROPRIATE "K" VALUE TABLE, BASED ON THE DESIGN FLOW RATE AND AVERAGE STREAM SLOPE AT THE SITE. WHERE A PROJECT FALLS ON THE BOUNDARY BETWEEN TWO HYDROLOGIC AREAS, USE THE GREATER "K" VALUE. BASED ON THIS "K" VALUE, INTERPOLATE "A" AND "B" VALUES FROM THE TABLE "PARAMETERS FOR DEPTH OF FLOW EQUATION".

(B3) DETERMINE THE BOTTOM WIDTH OF THE EXISTING NATURAL CHANNEL. USE THIS AS THE BOTTOM WIDTH IN THE DEPTH OF FLOW EQUATION PRESENTED ON THIS DRAWING IN ORDER TO COMPUTE THE 2-YEAR FLOW DEPTH IN DIVERSION CHANNEL.

(B4) THE HEIGHT OF THE RIPRAP IN THE CHANNEL WILL BE EQUAL TO THE 2-YEAR FLOW DEPTH PLUS THE REQUIRED FREEBOARD. THE REQUIRED FREEBOARD WILL EITHER BE EQUAL TO THE FLOW DEPTH OR ONE FOOT, WHICHEVER IS LESS. THE TOP OF THE CHANNEL MUST BE EQUAL TO OR GREATER THAN THE HEIGHT OF THE RIPRAP. SEE THE FIGURE PROVIDED ON STANDARD DRAWING EC-STR-31.

(B5) COMPUTE FLOW AREA AS (DEPTH X BOTTOM WIDTH) + (Z X DEPTH^2), WHERE Z IS Z:1 FOR THE SIDE SLOPE.

(B6) COMPUTE VELOCITY AS (FLOW RATE / FLOW AREA). USE COMPUTED VELOCITY TO SELECT RIPRAP CLASS BASED ON APPROVED TDOT METHODS. IF THE COMPUTED VELOCITY IS LESS THAN 2.5 FEET PER SECOND, RIPRAP WILL NOT BE REQUIRED.

PARAMETERS FOR DEPTH OF FLOW EQUATION

K VALUE	A	B
20	-0.213	0.856
30	-0.238	0.998
60	-0.291	1.311
100	-0.323	1.545
175	-0.360	1.846
275	-0.373	2.064
350	-0.378	2.183
400	-0.384	2.260
500	-0.380	2.356
650	-0.401	2.535
750	-0.464	2.796
850	-0.494	2.944
1000	-0.540	3.162
2000	-0.812	4.406
3000	-1.000	5.321
4000	-1.100	5.960
5000	-1.176	6.567
6000	-1.241	7.072
7000	-1.300	7.515
8000	-1.323	7.895

DEPTH OF FLOW EQUATION

FLOW DEPTH = A X *ln* (BOTTOM WIDTH) + B

ln IS THE NATURAL LOG FUNCTION OF THE BOTTOM WIDTH OF THE CHANNEL.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

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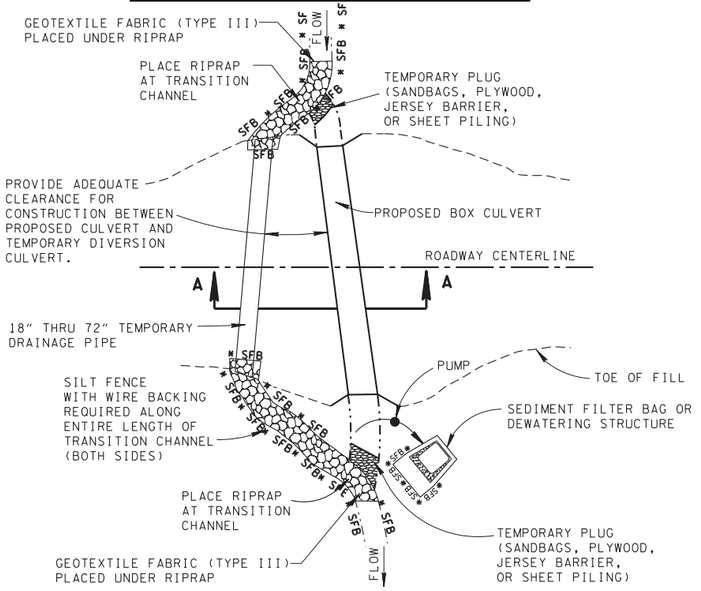
TEMPORARY DIVERSION CHANNEL DESIGN

1-20-06 | EC-STR-31A

- ☐ REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- ☐ REV. 4-1-08: REVISED GENERAL NOTES, ADDED NOTE N, MISC. EDITS TO DRAWING, AND CHANGED STANDARD SYMBOL.
- ☐ REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.

TEMPORARY DIVERSION CULVERT WITH CHANNEL TRANSITIONS



PLAN VIEW

TEMPORARY DIVERSION CULVERT SELECTION

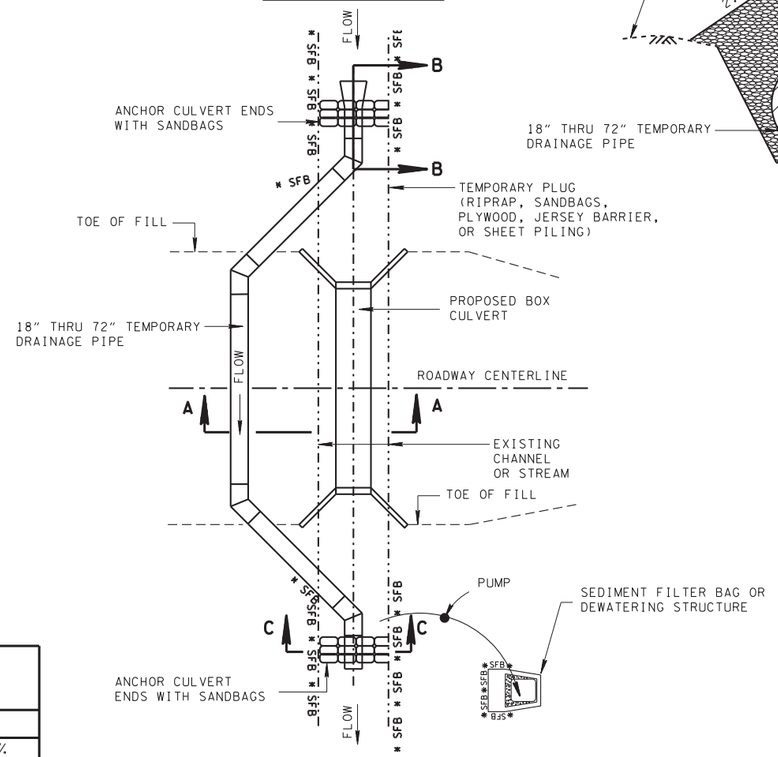
FLOW CAPACITY IN CFS OF A GIVEN PIPE AT A GIVEN CHANNEL SLOPE

PIPE DIAMETER (INCHES)	AVERAGE CHANNEL SLOPE					
	0.5%	1%	1.5%	2.0%	2.5%	3.0%
18	8.5	9.1	9.8	10.4	11.0	11.3
24	17.4	18.8	20.0	21.4	21.5	21.7
30	30.1	32.3	33.9	34.1	33.5	33.0
36	46.8	50.4	49.5	47.8	46.6	45.8
42	67.7	69.0	65.5	62.8	61.0	59.6
48	92.6	88.1	76.8	78.6	75.8	73.7
54	127.2	107.0	91.9	94.9	91.1	88.1
60	146.5	121.1	118.4	111.1	106.1	101.9
72	194.9	142.2	153.6	141.3	133.3	127.9
RIPRAP	B	B	B	B	B/C	B/C

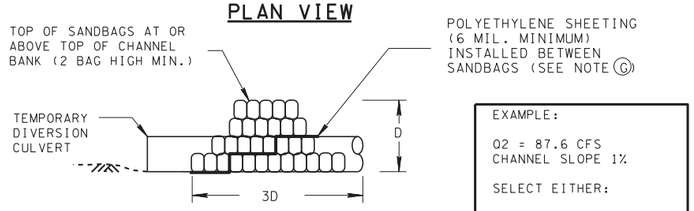
NOTES: FLOW RATES BASED ON 2.5-FOOT INCREASE IN WATER SURFACE ELEVATION ABOVE NORMAL LEVEL FOR THE 2-YEAR, 24 HOUR STORM EVENT

ASSUMES CORRUGATED PIPE (n = 0.024)

TEMPORARY DIVERSION CULVERT WITH ELBOWS



PLAN VIEW



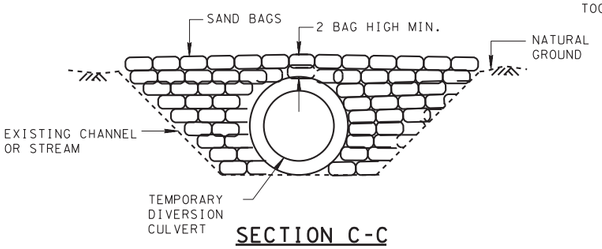
SECTION B-B

EXAMPLE:

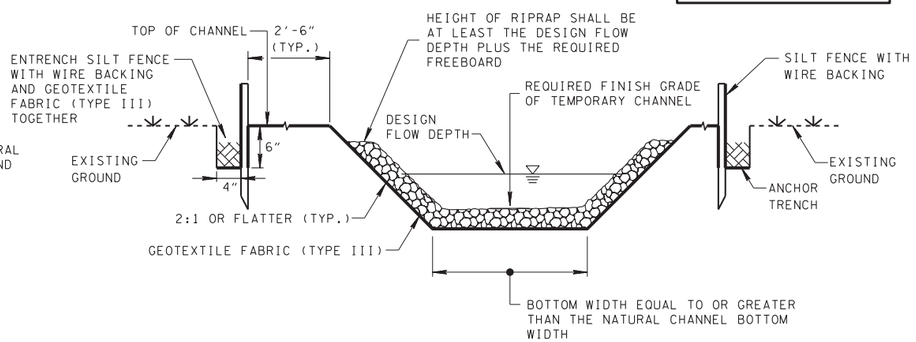
Q2 = 87.6 CFS
CHANNEL SLOPE 1%

SELECT EITHER:

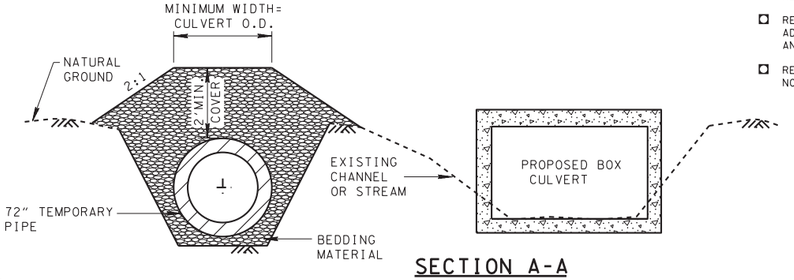
SINGLE 48-INCH PIPE OR TWIN 36-INCH PIPES



SECTION C-C



TRANSITION CHANNEL CROSS-SECTION



SECTION A-A

TEMPORARY DIVERSION CULVERTS GENERAL NOTES

(A) TEMPORARY DIVERSION CULVERTS ARE GENERALLY CONSTRUCTED UNDER AN EXISTING ROADWAY, WHERE IT IS NECESSARY TO MAINTAIN TRAFFIC, TO CONVEY STREAM FLOW AROUND IN-STREAM CONSTRUCTION. THIS ALLOWS IN-STREAM WORK TO BE COMPLETED IN THE DRY, SEPARATED FROM FLOWING WATER.

(B) EXAMPLE SHOWN IS FOR CULVERT REPLACEMENT OR NEW CONSTRUCTION. OTHER PROJECTS WOULD BE CONSTRUCTED IN A SIMILAR MANNER.

(C) TEMPORARY DIVERSION CULVERTS SHALL BE DESIGNED USING A 2-YEAR FREQUENCY STORM FLOW RATE. AT SITES WHICH INVOLVE EXCEPTIONAL TENNSESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE PIPE SHALL BE ADEQUATE TO CONVEY THE 5-YEAR, PEAK FLOW. THE TABLE "TEMPORARY DIVERSION CULVERT SELECTION" MAY BE USED AS A GUIDELINE FOR DETERMINING THE PIPE SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION.

(D) THE DESIGNER SHALL PROVIDE CULVERT SECTIONS FOR TEMPORARY CULVERT CROSSINGS. MINIMUM COVER FOR CONSTRUCTION LOADS IS 2 FEET.

(E) THE RIPRAP TRANSITION AT THE INLET AND THE DIVERSION CULVERT SHALL BE DESIGNED IN ACCORDANCE WITH APPROVED TDOT METHODS.

(F) WHERE EXCAVATION FOR A DIVERSION TRANSITION EXPOSES BEDROCK, GEOTEXTILE FABRIC AND RIPRAP SHALL BE USED ONLY ON THE SIDES OF THE CHANNEL.

(G) IN ORDER TO PROVIDE THE BEST POSSIBLE SEAL, THE POLYETHYLENE SHEETING USED IN AN UPSTREAM PIPE ANCHOR SHOULD BE FITTED AROUND THE PIPE. SANDBAGS ON THE DOWNSTREAM SIDE OF THE SHEETING SHOULD BE PLACED FIRST, AND THE SHEETING PLACED ON THESE BAGS. THE REMAINING SANDBAGS WOULD THEN BE PLACED ON THE SHEETING. WHERE MULTIPLE SHEETS ARE USED, THEY SHOULD OVERLAP A MINIMUM OF 18 INCHES.

(H) DURING CONSTRUCTION OF THE TEMPORARY DIVERSION CULVERT, DAMAGE TO THE EXISTING STREAM AND CANOPY SHALL BE MINIMIZED. ALL EXISTING VEGETATION OUTSIDE THE CUT AND FILL LINES BUT INSIDE THE RIGHT-OF-WAY SHALL NOT BE DISTURBED UNLESS IT INTERFERES WITH SAFETY STANDARDS. THE TEMPORARY CULVERT SHOULD BE LOCATED SO AS TO MINIMIZE THE LENGTH OF ANY TRANSITIONS REQUIRED.

(I) DIVERSION CULVERT CONSTRUCTION SHALL BE COMPLETED IN THE DRY BEFORE DIVERTING WATER FROM THE EXISTING CHANNEL. WHERE THIS IS NOT FEASIBLE, TEMPORARY FLOW DIVERSION STRUCTURES CAN BE USED UNTIL WORK IS COMPLETE. THESE STRUCTURES CAN BE ANY NON-ERODIBLE MATERIAL.

(J) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. CONSTRUCT THE TEMPORARY CULVERT ADJACENT TO THE PROPOSED PROJECT. ISOLATE THE TEMPORARY CHANNEL FROM THE EXISTING CHANNEL WITH TEMPORARY PLUGS.
2. DIVERT FLOW BY MOVING THE TEMPORARY PLUGS FROM THE TEMPORARY CHANNEL TO THE EXISTING CHANNEL. A COFFER DAM MAY BE USED UPSTREAM TO PREVENT STREAM FLOW DURING THIS OPERATION.
3. CONSTRUCT THE PROJECT IN THE EXISTING STREAM AND PLACE PERMANENT EROSION CONTROL ON THE EXISTING STREAM BANKS.
4. WHERE A TEMPORARY PLUG IS REQUIRED AT THE DOWNSTREAM END OF THE DIVERSION, IT SHOULD BE REMOVED FIRST. THEN REMOVE THE UPPER PLUG IN ORDER TO RELEASE FLOW INTO THE RECONSTRUCTED CHANNEL.
5. REMOVE LINING MATERIALS FROM THE DIVERSION TRANSITIONS, RESTORE THE AREA TO GRADE AND STABILIZE EXPOSED SOILS.

(K) DIVERSION CULVERT, SANDBAG ANCHORS AND TRANSITIONS SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY.

(L) ONLY GEOTEXTILE FABRIC (TYPE III) LISTED ON THE QUALIFIED PRODUCTS LIST SHALL BE USED.

(M) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), AND SILT FENCE WITH WIRE BACKING (EC-STR-3C), SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(N) TEMPORARY DIVERSION CULVERTS SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

203-01	ROAD AND DRAINAGE EXCAVATION (UNCLASSIFIED) PER CUBIC YARD
209-09.01	SAND BAGS PER BAG
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM) PER SQUARE YARD
621-03.02 THRU 621-03.11	-- "TEMPORARY DRAINAGE PIPE PER LINEAR FOOT
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON
709-05.08	MACHINED RIP-RAP (CLASS B) PER TON
709-05.09	MACHINED RIP-RAP (CLASS C) PER TON
740-10.03	GEOTEXTILE (TYPE III) (EROSION CONTROL) PER SQUARE YARD

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWINGS.

TEMPORARY PLUGS SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY DIVERSION CULVERTS.

EROSION CONTROL PLAN LEGEND: TEMPORARY DIVERSION CULVERT (DESCRIBE NUMBER AND SIZE OF PIPES)

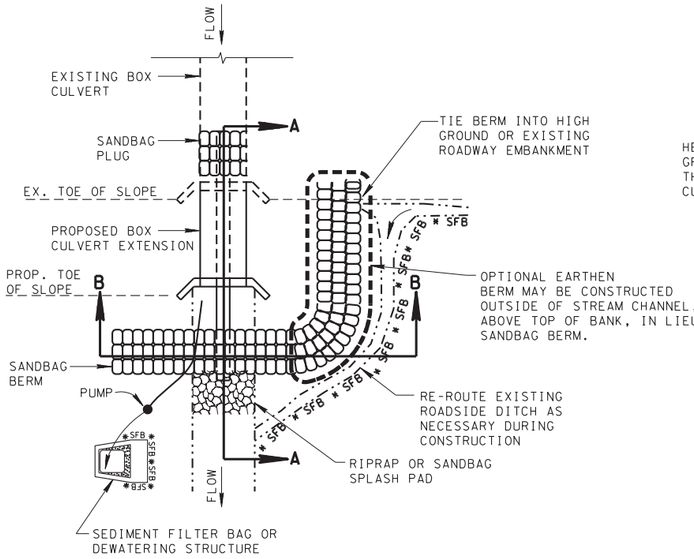
☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

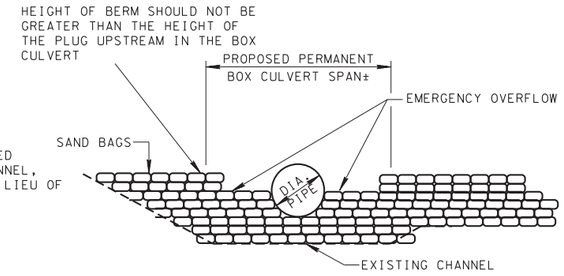
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY DIVERSION CULVERTS

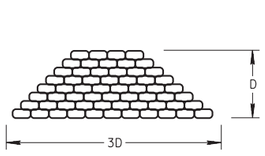
1-20-06 | EC-STR-32



PLAN VIEW

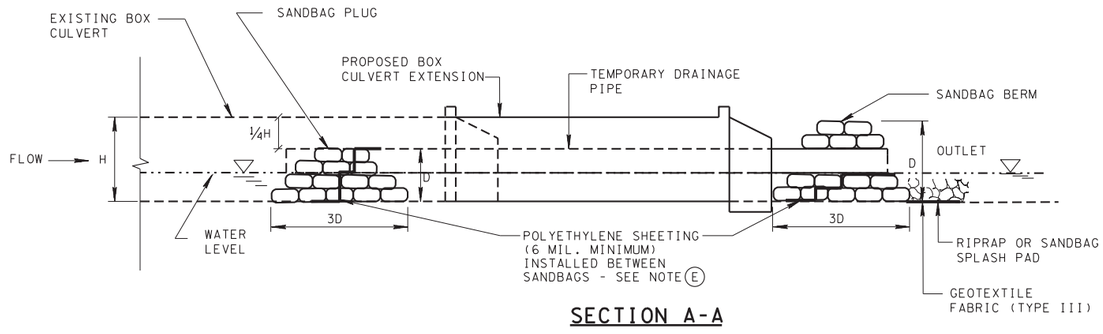


SECTION B-B



SAND BAG PLUG & BERM CROSS SECTION

SEE NOTE (E)



SECTION A-A

EROSION CONTROL PLAN LEGEND: SUSPENDED PIPE DIVERSION

MAXIMUM SPAN FOR PIPE SUPPORTS, FEET

DIAMETER OF PIPE (IN.)	STEEL THICKNESS (IN.)				
	0.064	0.079	0.109	0.138	0.168
	2" X ½" CORRUGATION				
24	13	15	20		
36	12	15	20	25	
48	11	14	19	25	30
60		14	19	24	29
72			18	24	29
	5" X 1" OR 3" X 1" CORRUGATION				
36	9	11			
48	9	11	15		
60	8	10	14	18	
72	8	10	14	18	22

FOR PIPE SIZES NOT SHOWN REFER TO NEXT LARGER SIZE

SOURCE: HANDBOOK OF STEEL DRAINAGE AND HIGHWAY CONSTRUCTION PRODUCTS, 1994, P. 278

SUSPENDED PIPE DIVERSION (DOWNSTREAM) GENERAL NOTES

(A) SUSPENDED PIPE DIVERSIONS MAY BE USED TO ALLOW BOX CULVERT EXTENSIONS TO BE CONSTRUCTED, WHILE SEPARATED FROM FLOWING WATER, THUS REDUCING SEDIMENTATION. OPTIONAL FLEXIBLE PIPE DIVERSION MAY BE UTILIZED ON STREAMS WITH INTERMITTENT FLOW WHERE THE DURATION OF CONSTRUCTION IS EXPECTED TO BE BRIEF.

(B) SUSPENDED PIPE DIVERSIONS SHALL BE DESIGNED USING A 2-YEAR STORM FREQUENCY FLOW RATE. AT SITES WHICH INVOLVE EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE PIPE SHALL BE ADEQUATE TO CONVEY THE 5-YEAR, PEAK FLOW. THE TABLE "TEMPORARY DIVERSION CULVERT SELECTION" ON STANDARD DRAWING EC-STR-32 MAY BE USED AS A GUIDELINE FOR DETERMINING THE PIPE SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION.

(C) SUSPENDED PIPE DIVERSIONS MAY BE USED WHERE ADVERSE IMPACTS WILL NOT BE CAUSED BY WATER PONDED UPSTREAM OF THE PIPE.

(D) THE SANDBAG PLUG AT THE UPSTREAM END OF THE SUSPENDED PIPE DIVERSION SHOULD BE CONSTRUCTED TO A HEIGHT EQUAL TO THREE QUARTERS OF THE RISE OF THE BOX CULVERT.

(E) POLYETHYLENE SHEETING (6 MIL. MINIMUM) SHALL BE PLACED INSIDE THE SANDBAG PLUG IN THE BOX CULVERT AND IN THE SAND BAG BERM WITHIN THE CHANNEL IN ORDER TO PROVIDE THE BEST POSSIBLE SEAL. SANDBAGS ON THE DOWNSTREAM SIDE OF THE SHEETING SHOULD BE PLACED FIRST, AND THEN SHEETING PLACED ON THESE BAGS. AS MUCH AS POSSIBLE, THE SHEETING SHOULD BE FITTED AROUND THE PIPE. THE REMAINING SANDBAGS WOULD THEN BE PLACED ON THE SHEETING. WHERE MULTIPLE SHEETS ARE USED, THEY SHOULD OVERLAP A MINIMUM OF 18 INCHES.

(F) THE PROPOSED CULVERT CONSTRUCTION SHALL BE SEALED FROM THE EXISTING STREAM BY MEANS OF A SANDBAG BERM WHICH SHOULD BE AT THE SAME HEIGHT AS THE PLUG INSIDE THE BOX CULVERT. THIS BERM SHALL BE TIED INTO EITHER HIGH GROUND ADJACENT TO THE CHANNEL OR THE EXISTING ROADWAY EMBANKMENT. IT SHALL BE PROVIDED WITH A SPILLWAY EQUAL IN WIDTH TO THE BOX CULVERT AND AT A HEIGHT LOWER THAN THE REST OF THE BERM.

(G) THE TEMPORARY DRAINAGE PIPE SHALL BE SUPPORTED AT ALL JOINTS AND AT INTERVALS NOT TO EXCEED MAXIMUM VALUES SPECIFIED IN THE TABLE "MINIMUM SPAN FOR SUPPORTS." SUPPORTS MAY CONSIST OF SANDBAGS, CONCRETE BLOCKS, WOODEN FRAMES, OR ANY OTHER MATERIAL SUFFICIENT TO SUPPORT THE WEIGHT OF THE PIPE WHEN IT IS FLOWING FULL. SUPPORTS AT JOINTS SHALL BE A MINIMUM OF 18 INCHES IN LENGTH, ALONG THE TEMPORARY DRAINAGE PIPE AND CENTERED ON THE JOINT. SUPPORTS SHOULD "CRADLE" THE TEMPORARY DRAINAGE PIPE TO ENSURE THAT IT WILL NOT ROLL DURING CONSTRUCTION OF THE BOX CULVERT.

(H) ALL PIPE JOINTS SHALL BE PROPERLY BANDED OR OTHERWISE PROVIDED WITH A REASONABLE SEAL AGAINST LEAKAGE.

(I) THE OPTIONAL FLEXIBLE PIPE DIVERSION USING PUMPS AND SHOWN ON STD. DWG. EC-STR-33A CAN BE USED AS AN ALTERNATE FOR SUSPENDED PIPE DIVERSIONS (UPSTREAM AND DOWNSTREAM).

(J) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. INSTALL TEMPORARY DRAINAGE PIPE ON ITS SUPPORTS INSIDE THE CULVERT TO BE EXTENDED.
2. CONSTRUCT THE SANDBAG PLUG AT THE UPSTREAM END OF THE SUSPENDED PIPE DIVERSION.
3. CONSTRUCT THE SANDBAG BERM AT THE DOWNSTREAM END OF THE SUSPENDED PIPE DIVERSION.
4. ONCE THE BOX CULVERT EXTENSION HAS BEEN COMPLETED, REMOVE THE DOWNSTREAM SANDBAG STRUCTURE, EXCEPT FOR THOSE BAGS NEEDED TO SUPPORT THE END OF THE PIPE. THE UPSTREAM SANDBAG STRUCTURE SHOULD THEN BE REMOVED GRADUALLY, IN ORDER TO ALLOW THE UPSTREAM WATER LEVEL TO DRAW DOWN AT A SAFE RATE.
5. REMOVE THE TEMPORARY DRAINAGE PIPE, SUPPORTS AND ANY REMAINING SANDBAGS.

(K) TEMPORARY DRAINAGE PIPE, SANDBAG PLUGS, BERMS, AND SUPPORTS SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY. ANY DEBRIS WHICH HAS ACCUMULATED AT THE INLET OF THE SUSPENDED PIPE DIVERSION SHALL BE IMMEDIATELY REMOVED.

(L) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), AND SILT FENCE WITH WIRE BACKING (EC-STR-3C), SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(M) SUSPENDED PIPE DIVERSIONS (DOWNSTREAM) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-09.01	SANDBAGS PER BAG
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM) PER SQUARE YARD
621-03.02 THRU 621-03.11	__ "TEMPORARY DRAINAGE PIPE PER LINEAR FOOT
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON
709-05.08	MACHINED RIP-RAP (CLASS B) PER TON
709-05.09	MACHINED RIP-RAP (CLASS C) PER TON

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWINGS.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SUSPENDED PIPE DIVERSION (DOWNSTREAM).

- ☐ REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- ☐ REV. 4-1-08: REVISED, ADDED, AND RENUMBERED NOTES, MINOR EDITS TO DRAWING.
- ☐ REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

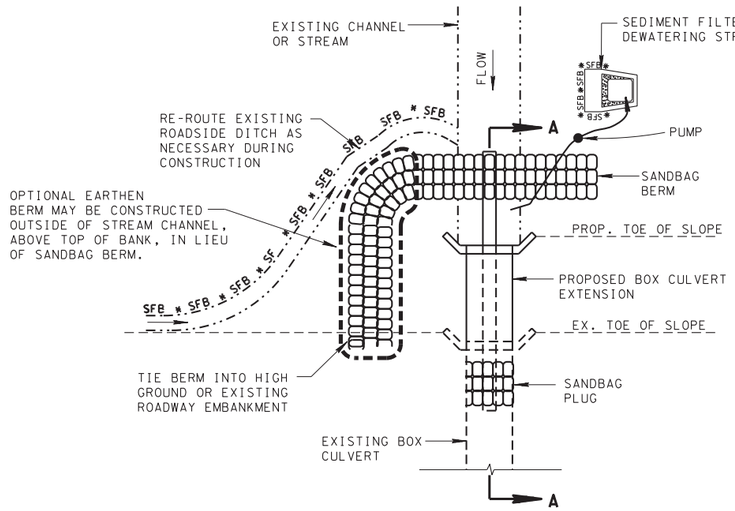
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SUSPENDED PIPE DIVERSION (DOWNSTREAM)

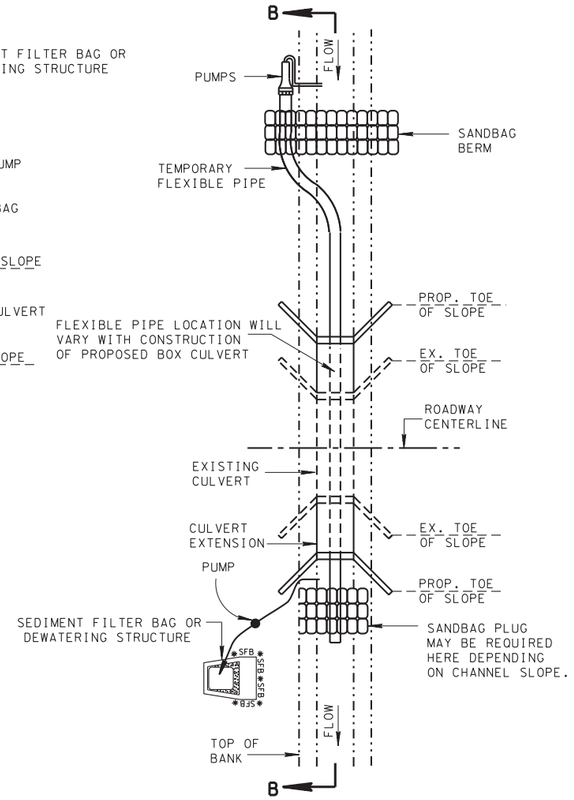
1-20-06 | EC-STR-33

- REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- REV. 4-1-08: REVISED, ADDED, AND RENUMBERED NOTES, MINOR EDITS TO DRAWING.
- REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.

FLEXIBLE PIPE DIVERSION (OPTIONAL)

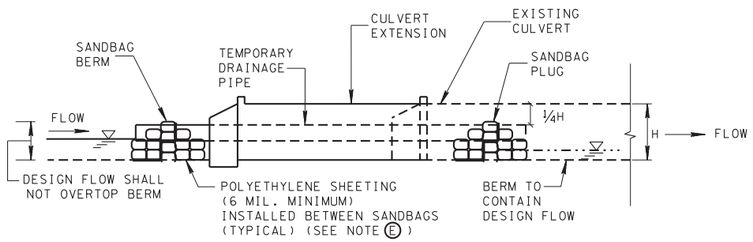


PLAN VIEW

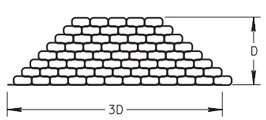


PLAN VIEW

(SHOWN WITH UPSTREAM & DOWNSTREAM EXTENTIONS)

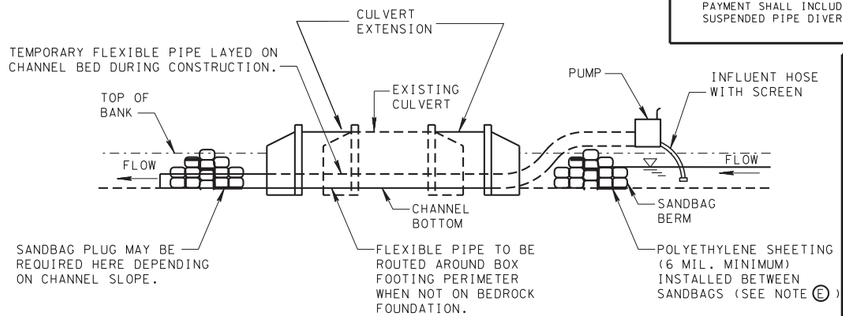


SECTION A-A



SAND BAG PLUG & BERM CROSS SECTION

(SEE NOTE E)



SECTION B-B

SUSPENDED PIPE DIVERSION (UPSTREAM) GENERAL NOTES

(A) SUSPENDED PIPE DIVERSIONS MAY BE USED TO ALLOW BOX CULVERT EXTENSIONS TO BE CONSTRUCTED, WHILE SEPARATED FROM FLOWING WATER, IN THE DRY, THUS REDUCING SEDIMENTATION. FLEXIBLE PIPE DIVERSION MAY BE UTILIZED ON STREAMS WITH INTERMITTENT FLOW WHERE THE DURATION OF CONSTRUCTION IS EXPECTED TO BE BRIEF.

(B) SUSPENDED PIPE DIVERSIONS SHALL BE DESIGNED USING A 2-YEAR STORM FREQUENCY FLOW RATE. AT SITES WHICH INVOLVE EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE PIPE SHALL BE ADEQUATE TO CONVEY THE 5-YEAR, PEAK FLOW. THE TABLE "TEMPORARY DIVERSION CULVERT SELECTION" ON STANDARD DRAWING EC-STR-32 MAY BE USED AS A GUIDELINE FOR DETERMINING THE PIPE SIZE. FOR ANY SITE WHERE Q_{50} EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURES DIVISION.

(C) SUSPENDED PIPE DIVERSIONS MAY BE USED WHERE ADVERSE IMPACTS WILL NOT BE CAUSED BY WATER PONDED UPSTREAM OF THE PIPE.

(D) THE SANDBAG PLUG AT THE DOWNSTREAM END OF THE SUSPENDED PIPE DIVERSIONS SHOULD BE CONSTRUCTED TO A HEIGHT EQUAL TO THREE QUARTERS OF THE RISE OF THE BOX CULVERT.

(E) POLYETHYLENE SHEETING (6 MIL. MINIMUM) SHALL BE PLACED INSIDE THE SANDBAG BERM IN THE CHANNEL AND THE SAND BAG PLUG IN THE BOX CULVERT, IN ORDER TO PROVIDE THE BEST POSSIBLE SEAL. SANDBAGS ON THE DOWNSTREAM SIDE OF THE SHEETING SHOULD BE PLACED FIRST, AND THEN SHEETING PLACED ON THESE BAGS. AS MUCH AS POSSIBLE, THE SHEETING SHOULD BE FITTED AROUND THE PIPE. THE REMAINING SANDBAGS WOULD THEN BE PLACED ON THE SHEETING. WHERE MULTIPLE SHEETS ARE USED, THEY SHOULD OVERLAP A MINIMUM OF 18 INCHES.

(F) THE PROPOSED CULVERT CONSTRUCTION SHALL BE SEALED FROM THE EXISTING STREAM BY MEANS OF A SANDBAG BERM WHICH WILL BE TIED IN TO EITHER HIGH GROUND BESIDE THE CHANNEL OR THE EXISTING ROADWAY EMBANKMENT, UP TO THE 2-YEAR OR 5-YEAR FLOOD LEVEL.

(G) THE TEMPORARY DRAINAGE PIPE WILL BE SUPPORTED AT ALL JOINTS AND AT INTERVALS NOT TO EXCEED MAXIMUM VALUES SPECIFIED IN THE TABLE "MINIMUM SPAN FOR SUPPORTS." SUPPORTS MAY CONSIST OF SANDBAGS, CONCRETE BLOCKS, WOODEN FRAMES, OR ANY OTHER MATERIAL SUFFICIENT TO SUPPORT THE WEIGHT OF THE PIPE WHEN IT IS FLOWING FULL. SUPPORTS AT JOINTS SHALL BE A MINIMUM OF 18 INCHES IN LENGTH, ALONG THE TEMPORARY DRAINAGE PIPE AND CENTERED ON THE JOINT. SUPPORTS SHOULD "CRADLE" THE TEMPORARY DRAINAGE PIPE TO ENSURE THAT IT WILL NOT ROLL DURING CONSTRUCTION OF THE BOX CULVERT.

(H) ALL PIPE JOINTS SHALL BE PROPERLY BANDED OR OTHERWISE PROVIDED WITH A REASONABLE SEAL AGAINST LEAKAGE.

(I) THE OPTIONAL FLEXIBLE PIPE DIVERSION CAN BE USED AS AN ALTERNATE FOR SUSPENDED PIPE DIVERSIONS (UPSTREAM OR DOWNSTREAM).

(J) CONSTRUCTION SHALL PROCEED AS FOLLOWS:

1. INSTALL TEMPORARY DRAINAGE PIPE ON ITS SUPPORTS INSIDE THE CULVERT TO BE EXTENDED.
2. CONSTRUCT THE SANDBAG BERM AT THE UPSTREAM END OF THE SUSPENDED PIPE DIVERSIONS.
3. CONSTRUCT THE SANDBAG PLUG AT THE DOWNSTREAM END OF THE SUSPENDED PIPE DIVERSIONS.
4. ONCE THE BOX CULVERT EXTENSION HAS BEEN COMPLETED, REMOVE THE DOWNSTREAM SANDBAG STRUCTURE, EXCEPT FOR THOSE BAGS NEEDED TO SUPPORT THE END OF THE PIPE. THE UPSTREAM SANDBAG STRUCTURE SHOULD THEN BE REMOVED GRADUALLY, IN ORDER TO ALLOW THE UPSTREAM WATER LEVEL TO DRAW DOWN AT A SAFE RATE.
5. REMOVE THE TEMPORARY DRAINAGE PIPE, SUPPORTS AND ANY REMAINING SANDBAGS.

(K) TEMPORARY DRAINAGE PIPE, SANDBAG PLUGS, BERMS, AND SUPPORTS SHALL BE INSPECTED WEEKLY OR AFTER EVERY RAIN EVENT. ANY NEEDED REPAIRS SHALL BE DONE IMMEDIATELY. ANY DEBRIS WHICH HAS ACCUMULATED AT THE INLET OF THE SUSPENDED PIPE DIVERSIONS SHALL BE IMMEDIATELY REMOVED.

(L) FOR INSTALLATION DETAILS AND ITEM NUMBERS FOR DEWATERING STRUCTURES (EC-STR-1), SEDIMENT FILTER BAGS (EC-STR-2), AND SILT FENCE WITH WIRE BACKING (EC-STR-3C), SEE THEIR RESPECTIVE STANDARD DRAWINGS.

(M) SUSPENDED PIPE DIVERSIONS (UPSTREAM) SHALL BE PAID FOR UNDER THE FOLLOWING ITEM NUMBERS:

209-09.01	SANDBAGS PER BAG
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM) PER SQUARE YARD
621-03.02 THRU 621-03.11	__" TEMPORARY DRAINAGE PIPE PER LINEAR FOOT

DEWATERING STRUCTURES, SEDIMENT FILTER BAGS, AND SILT FENCE WITH WIRE BACKING SHALL BE PAID FOR ACCORDING TO THEIR RESPECTIVE STANDARD DRAWING.

PUMPS AND FLEXIBLE PIPES SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEM NUMBERS.

PAYMENT SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SUSPENDED PIPE DIVERSIONS (UPSTREAM).

MAXIMUM SPAN FOR PIPE SUPPORTS, FEET

DIAMETER OF PIPE (IN.)	STEEL THICKNESS (IN.)				
	0.064	0.079	0.109	0.138	0.168
	2" X ½" CORRUGATION				
24	13	15	20		
36	12	15	20	25	
48	11	14	19	25	30
60		14	19	24	29
72			18	24	29
	5" X 1" OR 3" X 1" CORRUGATION				
36	9	11			
48	9	11	15		
60	8	10	14	18	
72	8	10	14	18	22

FOR PIPE SIZES NOT SHOWN REFER TO NEXT LARGER SIZE

SOURCE: HANDBOOK OF STEEL DRAINAGE AND HIGHWAY CONSTRUCTION PRODUCTS, 1994, P. 278

EROSION CONTROL PLAN LEGEND: SUSPENDED PIPE DIVERSION

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

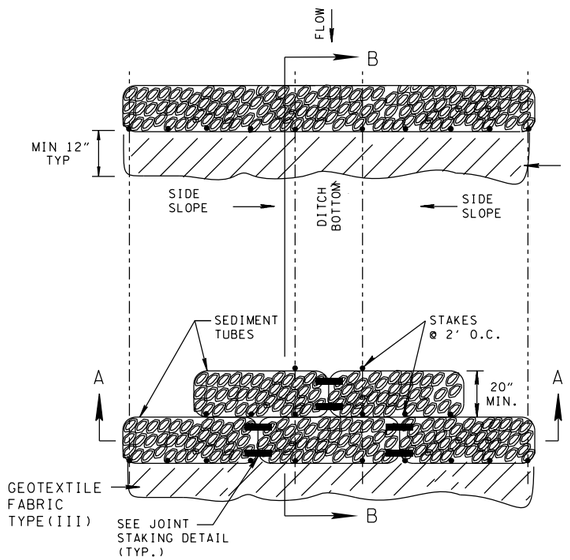
NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SUSPENDED PIPE DIVERSION (UPSTREAM)

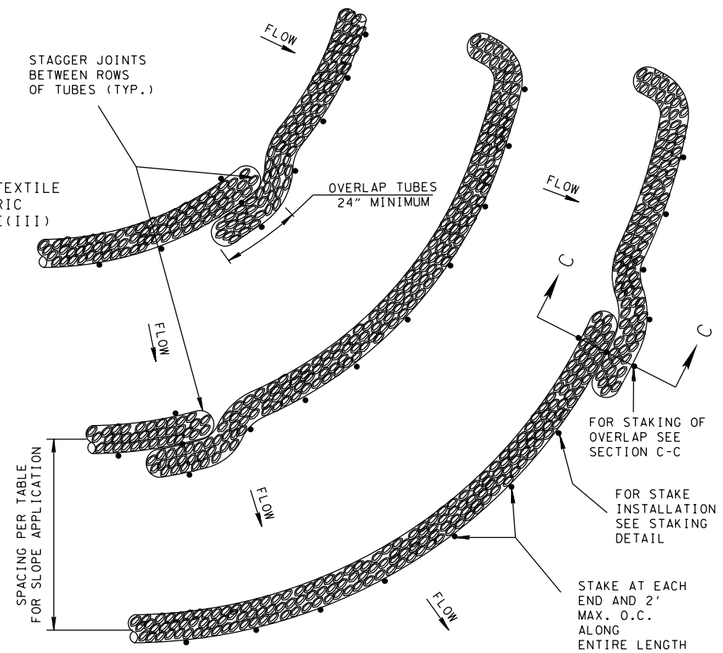
1-20-06 EC-STR-33A

- ☐ REV. 4-15-06: REFORMATTED SHEET, REVISED NOTES, MISC. EDITS TO DRAWING.
- ☐ REV. 4-1-08: REMOVED TEMPORARY REFERENCE, ADDED OVERLAP DETAIL, OTHER MINOR MISC. EDITS, REVISED GENERAL NOTES.
- ☐ REV. 8-1-12: MINOR EDITS TO GENERAL NOTES.
- ☐ REV. 6-10-14: MODIFIED SPACING TABLES. ADDED GEOTEXTILES ADDED NOTE (P).



PLAN VIEW FOR DITCH APPLICATION

SEE NOTE (G)



PLAN VIEW FOR SLOPE APPLICATION

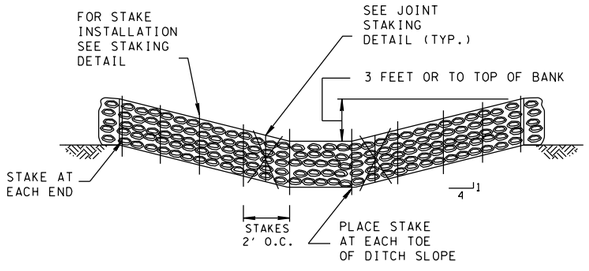
SEDIMENT TUBE SPACING FOR SLOPE APPLICATION					
SLOPE	8"	12"	18"	20"	24"
2%	70'	80'	N/A	N/A	N/A
5%	30'	60'	80'	N/A	N/A
10%	20'	30'	70'	80'	80'
6:1	N/A	20'	40'	50'	55'
4:1	N/A	20'	30'	30'	30'
3:1	N/A	N/A	20'	20'	25'
2:1	N/A	N/A	20'	20'	20'

(P)

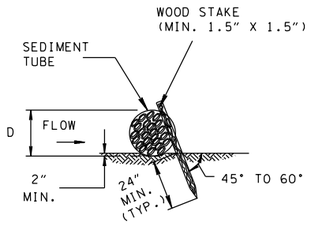
N/A = NOT RECOMMENDED
SPACING NOT TO EXCEED 80'

SEDIMENT TUBE SPACING TABLE FOR DITCH APPLICATION	
SLOPE	MAXIMUM SEDIMENT TUBE SPACING
LESS THAN 2%	80'
2%	80'
3%	50'
4%	40'
5%	30'
6%	20'
GREATER THAN 6%	20'

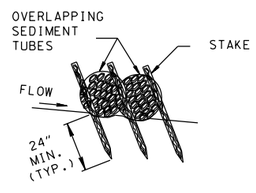
BASED ON A 20" SEDIMENT TUBE
SEE TABLE ON EC-STR-6 FOR OTHER HEIGHTS.



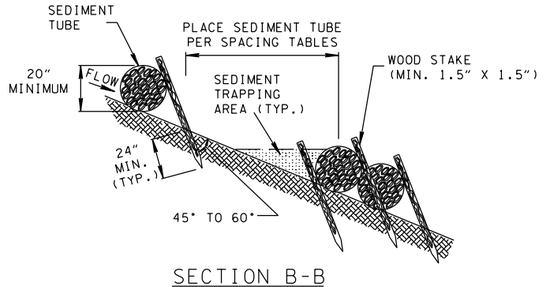
SECTION A-A



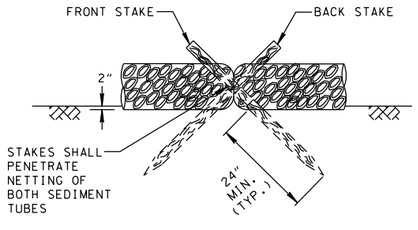
STAKING DETAIL



SECTION C-C



SECTION B-B



JOINT STAKING DETAIL

(DITCH APPLICATION ONLY)

EROSION CONTROL PLAN LEGEND: TUBE••TUBE••TUBE SEDIMENT TUBE

SEDIMENT TUBE GENERAL NOTES

(A) SEDIMENT TUBES CAN BE PLACED AT THE TOP, ON THE FACE, OR AT THE TOE OF SLOPES TO INTERCEPT RUNOFF, REDUCE FLOW VELOCITY, RELEASE THE RUNOFF AS SHEET FLOW AND PROVIDE REMOVAL OF SEDIMENT FROM THE RUNOFF.

(B) SEDIMENT TUBES SHALL BE INSTALLED ALONG OR ON THE GROUND CONTOUR, AT THE TOE OF SLOPES, OR IN A DITCH TO HELP REDUCE THE EFFECTS OF SOIL EROSION AND RETAIN SEDIMENT. SEDIMENT TUBES SHOULD NOT BE USED IN DITCHES OR STREAMS.

(C) FOR DITCH APPLICATIONS, THE MAXIMUM DRAINAGE AREA SHALL BE 15 ACRES. AT SITES WHICH DRAIN TO EXCEPTIONAL TENNESSEE WATERS OR SEDIMENT-IMPAIRED STREAMS, THE MAXIMUM DRAINAGE AREA SHALL BE 10 ACRES. FOR SLOPE APPLICATIONS, THE MAXIMUM DRAINAGE AREAS SHALL BE ¼ ACRE PER 100 LF OF TUBE.

(D) SEDIMENT TUBES SHALL NOT BE USED ON PAVEMENT, ROCKY SOILS, OR AT ANY OTHER LOCATIONS WHERE THE STAKES CANNOT BE DRIVEN TO THE REQUIRED DEPTH.

(E) SEDIMENT TUBES SHALL BE MANUFACTURED FROM WOOD EXCELSIOR, RICE OR WHEAT STRAW, COCONUT FIBERS, OR HARDWOOD MULCH THAT IS ENCLOSED BY A TUBULAR FLEXIBLE NETTING MATERIAL. ALL MATERIALS INCLUDING THE NETTING SHALL BE BIODEGRADABLE.

(F) PINE NEEDLE AND LEAF MULCH FILLED SEDIMENT TUBES AND STRAW BALES ARE NOT ACCEPTABLE MATERIALS.

(G) THE DIAMETER OF A SEDIMENT TUBE SHALL BE A MINIMUM OF 8 INCHES AND A MAXIMUM OF 24 INCHES. DIAMETER TOLERANCE IS 2 INCHES. FOR DITCH APPLICATIONS, SEDIMENT TUBES SHALL BE A MINIMUM OF 20 INCHES.

(H) SEDIMENT TUBES SHALL BE INSTALLED WITH WOODEN STAKES (MIN. 1.5" x 1.5" ACTUAL). THE STAKE SHALL BE EMBEDDED A MINIMUM OF 2 FEET.

(I) SEDIMENT TUBES SHALL BE TRENCHED IN A MINIMUM OF 2 INCHES.

(J) IF MORE THAN ONE SEDIMENT TUBE IS PLACED IN A ROW IN SLOPE APPLICATION, THE TUBES SHALL BE OVERLAPPED A MINIMUM OF 24 INCHES TO PREVENT FLOW AND SEDIMENT FROM PASSING THROUGH THE FIELD JOINT. WHEN USED IN DITCHES, TWO ROWS OF TUBE SHALL BE PLACED ON THE CHANNEL BOTTOM WITH STAGGERED JOINTS AS SHOWN.

(K) FOR DITCH APPLICATIONS, SEDIMENT TUBES SHALL BE A MINIMUM OF 20 INCH DIAMETER AND SHALL BE PLACED PERPENDICULAR TO THE FLOW OF WATER. SEDIMENT TUBES SHALL CONTINUE UP THE SIDE SLOPES A MINIMUM OF 3 FEET PLUS THE DIAMETER OF THE TUBE, OR TO THE TOP OF THE DITCH, WHICHEVER IS LESS.

(L) SEDIMENT TUBES USED IN SLOPE APPLICATIONS MAY REMAIN IN PLACE TO BIODEGRADE. FOR DITCH APPLICATIONS SEDIMENT TUBES SHALL BE COMPLETELY REMOVED AFTER FULLY ESTABLISHED VEGETATION HAS COMPLETELY DEVELOPED.

(M) SEDIMENT TUBES SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS NUMBERS:

740-11.01 TEMPORARY SEDIMENT TUBE (8 INCH) PER LINEAR FOOT
740-11.02 TEMPORARY SEDIMENT TUBE (12 INCH) PER LINEAR FOOT
740-11.03 TEMPORARY SEDIMENT TUBE (18 INCH) PER LINEAR FOOT
740-11.04 TEMPORARY SEDIMENT TUBE (20 INCH) PER LINEAR FOOT
740-11.05 TEMPORARY SEDIMENT TUBE (24 INCH) PER LINEAR FOOT

PAYMENT SHALL INCLUDE ALL MATERIALS (INCLUDING GEOTEXTILE FABRIC IF USED) AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF SEDIMENT TUBE.

(N) ONLY SEDIMENT TUBES LISTED ON THE QUALIFIED PRODUCTS LIST MAY BE USED.

(O) SEDIMENT SHALL BE REMOVED FROM BEHIND THE SEDIMENT TUBE WHEN IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE STRUCTURE AND PAID FOR UNDER ITEM NUMBER 209-05, SEDIMENT REMOVAL PER CUBIC YARD.

(P) GEOTEXTILE FABRIC REQUIRED FOR SLOPE APPLICATION STEEPER THAN 6:1.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

NOT TO SCALE

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

SEDIMENT TUBE

1-20-06 EC-STR-37

6. NOI AND TOPO MAP

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Water Resources
William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243
1-888-891-8332 (TDEC)

Notice of Intent (NOI) for General NPDES Permit for Stormwater Discharges from Construction Activities (TNR100000)

Site or Project Name: PROJECT NO. 90023-1223-94; PIN 114038.01; SR-353			**NPDES Tracking Number: TNR**
Street Address or Location: SR-353 CULVERT OVER BRANCH, L.M. 3.23			Construction Start Date: January 2018
			Estimated End Date: January 2023
Site Description: Bridge and culvert replacement			Latitude (dd.dddd): 36.1907
			Longitude (-dd.dddd): -82.5935
County(ies): Washington	MS4 Jurisdiction (if applicable): TDOT		Acres Disturbed: 2.19
			Total Acres: 2.40

Check the appropriate box(s) if there are streams and/or wetlands on or adjacent to the construction site: Streams ☑ Wetlands ☑
If wetlands are located on-site and may be impacted, attach wetlands delineation report.
If an Aquatic Resource Alteration Permit (ARAP) has been obtained for this site, what is the permit number? NRS16.326

Receiving waters: Misc. Tributaries to the Nolichucky River

Attach the SWPPP with the NOI: ☑ SWPPP Attached | Attach a site location map: ☑ Map Attached

Site Owner/Developer Entity (Primary Permittee): (person, company, or legal entity that has operational or design control over construction plans and specifications): Tennessee Department of Transportation

For corporate entities only, provide the Tennessee Secretary of State (SOS) Control Number:

Site Owner or Developer Contact Name: (individual responsible for site) John Barrett		Title or Position: (the party who signs the certification below): CE Manager 2	
Mailing Address: Environmental Technical Office, 7345 Region Lane		City: Knoxville	State: TN Zip: 37914
Phone: (865) 594-2484	Fax: ( ) N/A	E-mail: john.barrett@tn.gov	

Optional Contact: Maysoon Haddad		Title or Position: Transportation Manager 2	
Mailing Address: Environmental Tech. Office, 7345 Region Lane		City: Knoxville	State: TN Zip: 37914
Phone: (865) 594-2431	Fax: ( )	E-mail: maysoon.haddad@tn.gov	

Owner or Developer Certification: (must be signed by president, vice-president or equivalent, or ranking elected official) (Primary Permittee)

I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury..

Owner or Developer Name: (print or type) John Barrett	Signature:	Date: 10-24-17

Contractor(s) Certification: (must be signed by president, vice-president or equivalent, or ranking elected official) (Secondary Permittee)

I certify under penalty of law that I have reviewed this document, any attachments, and the SWPPP referenced above. Based on my inquiry of the construction site owner/developer identified above and/or my inquiry of the person directly responsible for assembling this NOI and SWPPP, I believe the information submitted is accurate. I am aware that this NOI, if approved, makes the above-described construction activity subject to NPDES permit number TNR100000, and that certain of my activities on-site are thereby regulated. I am aware that there are significant penalties, including the possibility of fine and imprisonment for knowing violations, and for failure to comply with these permit requirements. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Contractor name, address, and SOS control number (if applicable):	Signature:	Date:
Contractor name, address, and SOS control number (if applicable):	Signature:	Date:

OFFICIAL STATE USE ONLY

Received Date:	Reviewer:	Field Office:	Permit Number: **TNR**	Exceptional TN Water:
Fee(s):	T & E Aquatic Flora/Fauna:	SOS Corporate Status:	Waters with Unavailable Parameters:	Notice of Coverage Date:

CONSTRUCTION GENERAL PERMIT - NOTICE OF INTENT (NOI) - INSTRUCTIONS

A completed NOI must be submitted to obtain coverage under the CGP. **Requesting coverage under this permit means that an applicant has obtained and examined a copy of this permit, and thereby acknowledges applicant's claim of ability to be in compliance with permit terms and conditions.** CGP coverage is required for stormwater (SW) discharge(s) from construction activities including clearing, grading, filling and excavating (including borrow pits) of one or more acres of land. This form should be submitted at least 30 days prior to the commencement of land disturbing activities, or no later than 48 hours prior to when a new operator assumes operational control over site specifications or commences work at the site.

The application fee must accompany the NOI and is based on total acreage to be disturbed by an entire project, including any associated construction support activities (e.g., equipment staging yards, material storage areas, excavated material disposal areas, borrow or waste sites, etc.). A separate annual maintenance fee is also required for activities that exceed 1 year under CGP coverage. See TN Rules, Chapter 0400-40-11-.02(b)(12)).

Acres Disturbed	= or > 150 acres	= or > 50 < 150 acres	= or > 20 < 50 acres	= or > 5 < 20 acres	= or > 1 < 5 acres	Subsequent coverage
Fee	$10,000	$6,000	$3,000	$1,000	$250	$100

Who must submit the NOI form? All site operators must submit an NOI form. "Operator" for the purpose of this permit and in the context of SW associated with construction activity means any person associated with a construction project who meets either or both of the following two criteria: (1) The person has operational or design control over construction plans and specifications, including the ability to make modifications to those plans and specifications. This person is typically the owner or developer of the project or a portion of the project (e.g., subsequent builder), or the person that is the current land owner of the construction site, and is considered the primary permittee; or (2) The person has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a SWPPP for the site or other permit conditions. This person is typically a contractor or a commercial builder who is hired by the primary permittee, and is considered a secondary permittee.

Owners, developers and all contractors that meet the definition of the operator in subsection 2.2 of the permit shall apply for permit coverage on the same NOI, insofar as possible. After permit coverage has been granted to the primary permittee, any subsequent NOI submittals must include the site's previously assigned permit tracking number and the project name. The comprehensive site-specific SWPPP shall be prepared in accordance with the requirements of part 3 of the permit and must be submitted with the NOI unless the NOI being submitted is to only add a contractor (secondary permittee) to an existing coverage. Artificial entities (e.g., corporations or partnerships) must submit the Tennessee Secretary of State, Division of Business Services, control number. The division reserves the right to deny coverage to artificial entities that are not properly registered and in good standing with the Tennessee Secretary of State.

Notice of Coverage: The division will review the NOI for completeness and accuracy and prepare a notice of coverage (NOC). SW discharge from the construction site is authorized as of the effective date of the NOC.

Complete the form: Type or print clearly. Answer each item or enter "NA," for not applicable. If you need additional space, attach a separate piece of paper to the NOI form. **The NOI will be considered incomplete without a permit fee, a map, and the SWPPP.**

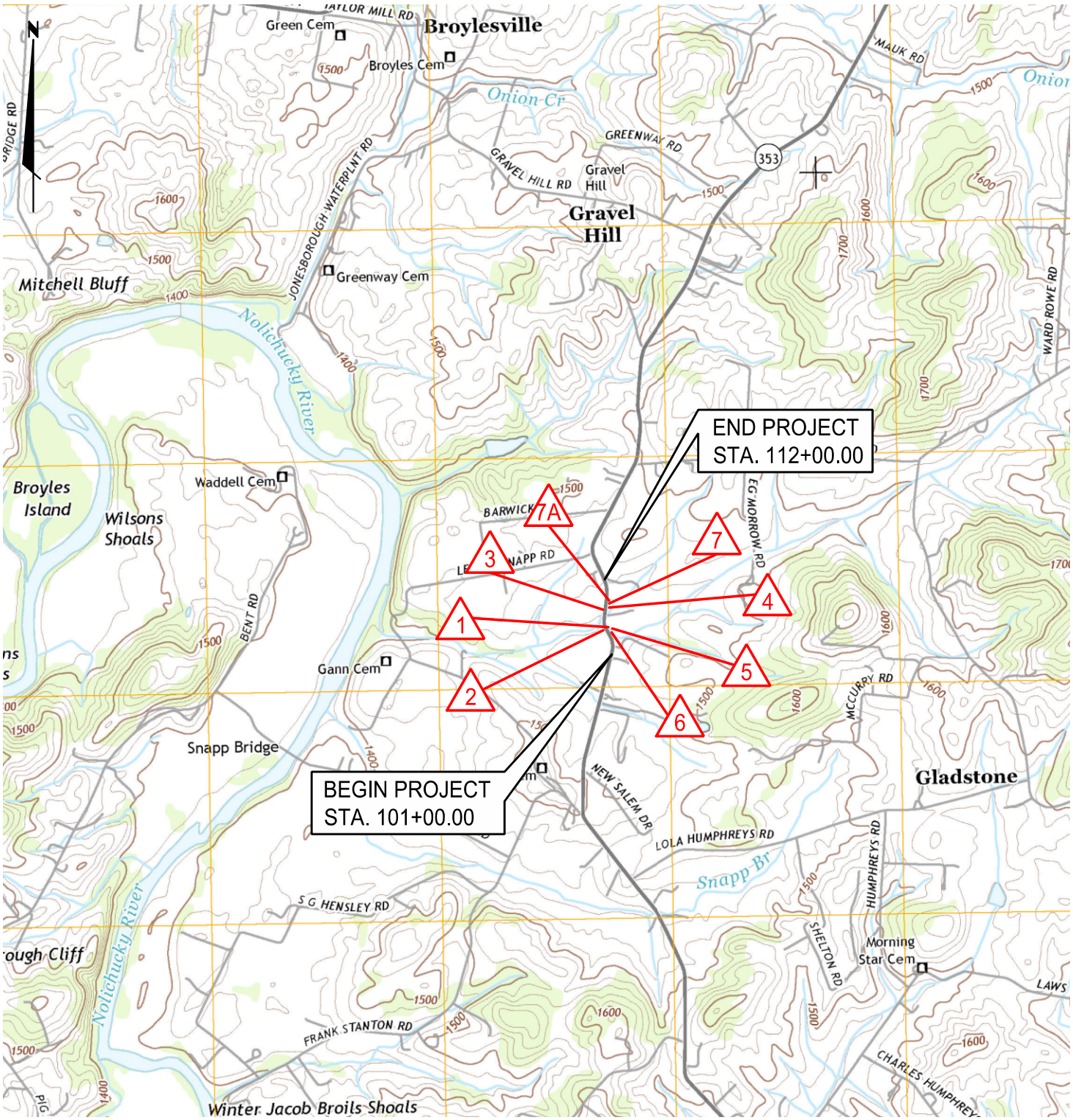
Describe and locate the project: Use the legal or official name of the construction site. If a construction site lacks street name or route number, give the most accurate information available to describe the location (reference to adjacent highways, roads and structures; e.g., intersection of state highways 70 and 100). Latitude and longitude (in decimal degrees) can be found at numerous other web sites. Attach a copy of a map, showing location of site, with boundaries at least one mile outside the site boundaries. Provide estimated starting date of clearing activities and completion date of the project, and an estimate of the number of acres of the site on which soil will be disturbed, including borrow areas, fill areas, stockpiles and the total acres. For linear projects, give location at each end of the construction area.

Name of the receiving waters: Trace the route of SW runoff from the site and determine the name of the water course(s) into which the stormwater runoff drains. Note that the receiving water course may or may not be located on the construction site. If the first water body receiving construction site runoff is unnamed ("unnamed tributary"), determine the name of the water body that the unnamed tributary enters.

An ARAP may be required: **If your work will disturb or cause alterations of a stream or wetland, you must obtain an appropriate Aquatic Resource Alteration Permit (ARAP).** If you have a question about the ARAP program, contact your local Field Office (EFO).

Submitting the form and obtaining more information: Note that this form must be signed by the company President, Vice-President, or a ranking elected official in the case of a municipality, for details see subpart 2.5. For more information, contact your local EFO at the toll-free number 1-888-891-8332 (TDEC). Submit the completed NOI form (keep a copy for your records) to the appropriate EFO for the county(ies) where the construction activity is located, addressed to **Attention: Stormwater NOI Processing**.

Tennessee Department of Environment and Conservation
Division of Water Pollution Control, Permit Section
Attn: Storm Water NOI Processing
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, TN 37243



1 – APPROXIMATE OUTFALL LOCATION

TOPOGRAPHIC MAP: TELFORD, TN
(2013) U.S.G.S. QUADRANGLE MAP

0 2000' 4000'

SCALE IN FEET

TN TDOT Department of Transportation

REGION 1, DISTRICT 17
JOHNSON CITY, TN

STORM WATER POLLUTION PREVENTION PLAN

TOPOGRAPHIC (USGS) MAP

S.R. 353 CULVERT OVER BRANCH,
L.M. 3.23

WASHINGTON COUNTY, TENNESSEE

DRAWN BY:	CHECKED BY:
WCJ	EMW
PIN	114038.01
PROJECT NO.	90023-0223-94
FIGURE 1	DATE: 4/21/2017

7. BLANK NOT

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION (TDEC)
Division of Water Resources
William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243
1-888-891-TDEC (8332)

Notice of Termination (NOT) for General NPDES Permit for Stormwater Discharges from Construction Activities (CGP)

This form is required to be submitted when requesting termination of coverage from the CGP. The purpose of this form is to notify the TDEC that either all stormwater discharges associated with construction activity from the portion of the identified facility where you, as an operator, have ceased or have been eliminated; or you are no longer an operator at the construction site. Submission of this form shall in no way relieve the permittee of permit obligations required prior to submission of this form. Please submit this form to the local DWR Environmental Field Office (EFO) address (see table below). For more information, contact your local EFO at the toll-free number 1-888-891-8332 (TDEC).

Type or print clearly, using ink.

Site or Project Name:	**NPDES Tracking Number: TNR**
Street Address or Location:	County(ies):

Name of Permittee Requesting Termination of Coverage: Tennessee Department of Transportation			
Permittee Contact Name:	Title or Position:		
Mailing Address:	City:	State:	Zip:
Phone:	E-mail:		

Check the reason(s) for termination of permit coverage:

☐	Stormwater discharge associated with construction activity is no longer occurring and the permitted area has a uniform 70% permanent vegetative cover OR has equivalent measures such as rip rap or geotextiles, in areas not covered with impervious surfaces.
☐	You are no longer the operator at the construction site (i.e., termination of site-wide, primary or secondary permittee coverage).

Certification and Signature: (must be signed by president, vice-president or equivalent ranking elected official)

I certify under penalty of law that either: (a) all stormwater discharges associated with construction activity from the portion of the identified facility where I was an operator have ceased or have been eliminated or (b) I am no longer an operator at the construction site. I understand that by submitting this notice of termination, I am no longer authorized to discharge stormwater associated with construction activity under this general permit, and that discharging pollutants in stormwater associated with construction activity to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that the submittal of this notice of termination does not release an operator from liability for any violations of this permit or the Clean Water Act.

For the purposes of this certification, elimination of stormwater discharges associated with construction activity means that all stormwater discharges associated with construction activities from the identified site that are authorized by a NPDES general permit have been eliminated from the portion of the construction site where the operator had control. Specifically, this means that all disturbed soils at the portion of the construction site where the operator had control have been finally stabilized, the temporary erosion and sediment control measures have been removed, and/or subsequent operators have obtained permit coverage for the site or portions of the site where the operator had control.

I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

Permittee name (print or type):	Signature:	Date:

Tennessee Department of Environment and Conservation
Division of Water Pollution Control, Permit Section
Attn: Storm Water NOT Processing
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, TN 37243

8. ENVIRONMENTAL PERMITS

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

December 1, 2016

Mr. Jimmy Smith
Natural Resource Section
Tennessee Department of Environment and Conservation
11th Floor William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue
Nashville, Tennessee 37243

Subject: Project # 90023-1223-94
PIN 114038.01
Federal Funding # HRRR/HSIP-353(10)
State Route 353 over Branch at LM 3.23
Washington County
Permits Needed by: 03/01/2017

Dear Mr. Smith:

PROJECT DESCRIPTION

The Tennessee Department of Transportation is proposing to provide geometric and drainage improvements to State Route 353 at Log Mile 3.23 in Washington County. The proposed improvements include:

- Reduce curves along the horizontal and vertical geometric alignments
- Widen travel lanes from 9.8 feet to 11 feet
- Add guardrail as required
- Replace culverts

The typical section for the proposed roadway will consist of 11 foot travel lanes with 4 foot shoulders. Also included within the project scope are the crossing/impact of three (3) streams, one (1) spring, and one (1) wetland. The project scope also includes all associated drainage improvements. The total proposed length of roadway construction and improvements equals 0.211 miles. In accordance with T.C.A. 69-3-108(b), this office is submitting form CN-1091 identifying where permits may be needed.

The primary purpose of the proposed project is provide geometric improvements to increase sight distance and reduce curve radius on State Route 353 at L.M. 3.23 and install guardrails that meet current TDOT standards.

ADDITIONAL PERMITS REQUIRED

In accordance with the notification requirements of the U.S. Army Corps of Engineers, we are submitting this pre-construction notification and requesting concurrence that location numbers 1, 2, and 3 as described within the enclosed feature impact tables, meet the criteria of the nationwide permit identified.

By copy of this letter, we are also applying for a Section 26a permit or a letter of no objection from the Tennessee Valley Authority. Appropriate information is enclosed. This project will not cause any loss of flood storage or power storage volumes.

No Coast Guard permit is required for this project.

The subject project is not located on / within the following: Federal lands or easements, a wild and scenic river system, or national park service lands.

PROJECT IMPACTS

Please refer to the enclosed feature impact and summary tables for detailed information regarding environmental feature locations, proposed environmental feature impacts, required environmental permits, FEMA floodplain designations, etc.

This project includes a total permanent wetland impact of 0.02 acres and a total temporary wetland impact of 0.01 acres. For the temporary wetland impact, the contractor shall remove approximately 1 foot of topsoil and stockpile. After construction, the temporary wetland impact area shall be restored to pre-construction elevation as soon as possible by using the stockpiled topsoil.

As mitigation for the stream impacts of STR-1 and STR-2, we propose 70 ft. and 109 ft., respectively, of on-site, in-kind replacement. As part of said replacement, we propose to plant two rows of shrubs and one row of live stakes at the waterline on one side of the new channel. Proposed plantings can only be installed on one side of the stream due to clear zone requirements adjacent to the roadway. The proposed stream channel has been designed to mimic existing channel characteristics (size, shape, etc.) as closely as possible. For more details, see the proposed roadway plans and permit sketches.

As mitigation for the stream loss of STR-3 of 10 ft., we propose the excess on-site, in-kind replacement of STR-1 and STR-2 of 59 ft. be counted as sufficient to account for the loss.

Efforts were made during the planning and design phases of this project to avoid impacts to waters of the U.S. and waters of the State to the extent practicable, and to minimize impacts that were not avoidable.

FISH AND WILDLIFE

A letter was sent from TDOT to the USFWS on April 24, 2014, requesting information on species that may be present in the vicinity of the proposed project. In a response letter dated

May 7, 2014 (enclosed), the USFWS concluded that no significant adverse impacts to wetlands or federally listed endangered or threatened species are anticipated from this proposal.

A search of the TDEC Division of Natural Areas, endangered species database, was conducted on April 25, 2014. This database search, paired with the findings from a site visit conducted on August 21, 2013 and March 13, 2014, identified four species within four miles of the proposed site, but not likely present in the R.O.W. because present habitat is unsuitable.

An updated species database search was conducted on November 2, 2016. This updated search identified no additional species that was not included in the original database search results.

An email was sent from TDOT to the TWRA on April 24, 2014, requesting information on species that may be present in the vicinity of the proposed project. In a response email dated May 12, 2014, the TWRA stated that the proposed BMP's would be sufficient to minimize impacts to rare species for this project.

HISTORICAL IMPACTS

In a letter dated 9/16/2014, the TN-SHPO stated that the area of potential effect for the subject project contains no architectural resources eligible for listing in the National Register of Historic Places.

In a letter dated 7/22/2014, the TN-SHPO stated that the area of potential effect for the subject project contains no archaeological resources eligible for listing in the National Register of Historic Places.

CLOSING INFORMATION

In addition to the impacts enclosed, we are requesting that the Tennessee Department of Environment and Conservation, the Corps of Engineers and/or TVA include approval for all proposed outfall structures (ditches, pipes, etc.) associated with the proposed project in the appropriate permits.

It is the opinion of this office that all other aspects of the project not specifically mentioned in this letter meet the criteria for the General Permit for Wet Weather Conveyances. Please refer to the Environmental Boundary Report for more information.

By copy of this letter, we are also requesting that the TDEC, Corps of Engineers, and the TVA please include approval of a potential temporary stream crossings in your permits. Temporary crossings will be located within right-of-way or easements. Copies of TDOT Standard Drawings EC-STR-25 (Temporary Road Stabilization and Temporary Culvert Crossing), EC-STR-31 (Temporary Diversion Channels), EC-STR-31A (Temporary Diversion Channel Design), and EC-STR-32 (Temporary Diversion Culverts) are enclosed for your information and use.

The method of removal of the existing structure shall be in compliance with TDOT Standard Specifications for Road and Bridge Construction section 202.04.

This project is currently scheduled for the March 1, 2017 turn-in. We would greatly appreciate your initial review and request for additional information needed, or issuance of the public notice, within 15 days of receipt of our application; and issuance of the permits as soon as possible.

If you have any questions or we can be of further assistance please contact me at (615) 253-1558 or Cody Mitchell at (615) 532-4578.

Sincerely,

Mary Showers

Mary Showers
Senior Transportation Project Specialist, Environmental Permits Section

Enclosures

JLH: MCS: jcm

cc: Ms. Tammy Turley, USACE, Nashville District

ec:

Region 1
Water Permits, TDEC
Ms. Kelly Baxter, TVA
Mr. Jay Norris, HQ Construction Office
Ms. Mary Howard, Region 1 Construction Office
Mr. Daniel Oliver, Region 1 Project Development
Mr. Mark Doty, Region 1 Project Development
Ms. Christie Brown, Region 1 Project Development
Mr. John Barrett, Region 1 Project Development
Ms. Maysoon Haddad, Region 1 Project Development
Mr. Keven Brown, Region 1 Ecology Section
Mr. Ben Brown, HQ Ecology Section
Mr. Ronnie Porter, Program Operations Office
Mr. Baxter Wilson, TDOT Compliance
Mr. Hugh (Chip) Hannah, TDOT Environmental Supervisor
Mr. John Hewitt, Natural Resources Office
Ms. DJ Wiseman, Natural Resources Office
Ms. Kristen Taylor, TDOT HQ (Region 1) Permits Office
Mr. Jeff Hoilman, ARCADIS (SWPPP Consultant)
Permit File

FEATURE SUMMARY TABLE:

Location Information							Impact Description					Mitigation Description						Comments
Location #	Stationing	Feature Name	Jurisdictional Determination	Waterbody ID	Latitude	Longitude	Brief Impact Description	Impact Acreage to Waters of the US (ac.)	Corps Notification (Y/N)	Total Existing Impact Stream Length (ft.)	Total Proposed Impact Stream Length (ft.)	In-Kind Stream Replace. Length (ft.)	Encapsul. Length @ 1.0 Ratio (ft.)	Stream Length Losses @ 1.0 Ratio (ft.)	Rip-rap Length @ 0.75 Ratio (ft.)	Canopy Length Losses @ 0.50 Ratio (ft.)	Total In-Lieu Fee Credits Needed	Location-Specific Miscellaneous Comments
1a	108+32±R - 107+08±L	STR-1	-	Misc Tributary to Nolichucky River	36.2105°	82.6066°	Stream relocation and encapsulation	0.017	Y	147	162	70	0	0	0	0	0	NW404 required, connected to WTL-1
2a	106+07±R - 105+66±R	STR-2	-	Misc Tributary to Nolichucky River	36.1908°	82.5933°	Stream relocation	0.007	Y	65	109	109	0	0	0	0	0	NW404 required, connected to WTL-1
2b	105+19±R to 105+98±L	STR-3	-	Misc Tributary to Nolichucky River	36.1907°	82.5934°	Stream encapsulation	0.039	Y	115	105	0	0	0	0	0	0	NW404 required, connected to WTL-1
							Project Totals:	**0.063**	**-**	**327**	**376**	**179**	**0**	**0**	**0**	**0**	**0**	**-**

WETLAND SUMMARY TABLE:								
Location Information							**Mitigation Description**	**Comments**
Location #	Feature Name	Latitude	Longitude	Impact Acreage to Waters of the US (ac.)	Temporary Wetland Impact Area (ac.)	Permanent Wetland Impact Area (ac.)	Wetland Debit (ac.) **(@ ?:1 ratio)**	Location-Specific Miscellaneous Comments
1b	WTL-1	36.1912°	82.5931°	0.022	0.006	0.016	0.00	-
Project Totals:				**0.022**	**0.006**	**0.016**	**0.00**	**-**

(SummaryTable WTLs ONLY)

FEATURE IMPACT TABLE:	Location #1a / STR-1
Location Information	
Location #	Location #1a
Feature Name:	STR-1
Latitude:	36.2105°
Longitude:	82.6066°
Stationing:	108+32±R - 107+08±L
FEMA Floodplain Designation	Zone X
Permits Required	
TDEC:	**INDIVIDUAL AQUATIC RESOURCE ALTERATION PERMIT**
Corps:	Pre-Construction Notification- Nationwide #14: Stream channel is connected to WTL-1 which has permanent impacts; therefore, Pre-Construction Notification is required.
TVA:	Section 26A
Narrative description of impact	Stream relocation and encapsulation; replacing existing culvert
Existing feature characteristics	Existing structure: 31 ft of 5' x 4' box culvert Existing open stream: 116 ft Total Existing Length: 147 ft Please refer to the enclosed Environmental Boundaries Report for more information
Proposed feature characteristics	Proposed structure: 67 ft of 6' x 4' box culvert Proposed riprap: 25 ft Proposed open stream: 95 ft - includes 25 ft. of Class "B" riprap at outlet of proposed structure Total proposed length: 162 ft
Impact acreage to waters of the US (acres):	0.02
Alternatives, and Impact minimization	Eliminating the roadway curve for a simplified geometry would have caused greater impact to the existing wetland and springs. No individual impact alternatives were considered.
Stream Mitigation	For the above stream impacts, we propose 70 ft. of on-site, in-kind replacement. As part said replacement, we propose to plant two rows of shrubs and one row of live stakes at the waterline on one side of the new channel. The proposed stream channel has been designed to mimic existing channel characteristics (size, shape, etc.) as closely as possible. For more details, see the proposed roadway plans.
Wetland Mitigation	N/A
Water Resources Degradation (select one)	
My activity, as proposed, will not cause measurable degradation to water quality	
My activity, as proposed, will only cause de minimis degradation to water quality	**X**
My activity, as proposed, will cause more than de minimis degradation to water quality.	

FEATURE IMPACT TABLE:	Location #1b / WTL-1
Location Information	
Location #	Location #1b
Feature Name:	WTL-1
Latitude:	36.1912°
Longitude:	82.5931°
Stationing:	107+30±R - 107+80±R
FEMA Floodplain Designation	Zone X
Permits Required	
TDEC:	**INDIVIDUAL AQUATIC RESOURCE ALTERATION PERMIT**
Corps:	Pre-Construction Notification- Nationwide #14: This site impacts wetlands; therefore, Pre-Construction Notification is required.
TVA:	Section 26A
Narrative description of impact	Roadway fill and stream relocation cause permanent and temporary impacts to wetland
Existing feature characteristics	Swale wetland locating along the right side of the roadway. Approximate size: 0.3 ac Please refer to the enclosed Environmental Boundaries Report for more information
Proposed feature characteristics	Permanent impact: 0.02 ac Approximate size: 0.28 ac
Impact acreage to waters of the US (acres):	0.02
Alternatives, and Impact minimization	Eliminating the roadway curve for a simplified geometry would have caused greater impact to the existing wetland and springs. No individual impact alternatives were considered.
Stream Mitigation	N/A
Wetland Mitigation	For the temporary wetland impact, the contractor shall remove approximately 1 foot of topsoil and stockpile. After construction, the temporary wetland impact area shall be restored to pre-construction elevation and as soon as possible by using the stockpiled topsoil, ensuring that the elevation will not allow drainage of the remaining wetland.
Water Resources Degradation (select one)	
My activity, as proposed, will not cause measurable degradation to water quality	
My activity, as proposed, will only cause de minimis degradation to water quality	**X**
My activity, as proposed, will cause more than de minimis degradation to water quality.	

FEATURE IMPACT TABLE:	Location #2a / STR-2
Location Information	
Location #	Location #2a
Feature Name:	STR-2
Latitude:	36.1912°
Longitude:	82.5934°
Stationing:	106+07±R - 105+66±R
FEMA Floodplain Designation	Zone X
Permits Required	
TDEC:	**INDIVIDUAL AQUATIC RESOURCE ALTERATION PERMIT**
Corps:	Pre-Construction Notification- Nationwide #14: Stream channel is connected to WTL-1 which has permanent impacts; therefore, Pre-Construction Notification is required.
TVA:	Section 26A
Narrative description of impact	Stream relocation due to fill slope
Existing feature characteristics	Existing open stream: 65 ft Total Existing Length: 65 ft Please refer to the enclosed Environmental Boundaries Report for more information
Proposed feature characteristics	Proposed open stream: 109 ft Total proposed length: 109 ft
Impact acreage to waters of the US (acres):	0.01
Alternatives, and Impact minimization	Eliminating the roadway curve for a simplified geometry would have caused greater impact to the existing wetland and springs. No individual impact alternatives were considered.
Stream Mitigation	For the above stream impacts, we propose 109 ft. of on-site, in-kind replacement. As part said replacement, we propose to plant two rows of shrubs and one row of live stakes at the waterline on one side of the new channel. The proposed stream channel has been designed to mimic existing channel characteristics (size, shape, etc.) as closely as possible. For more details, see the proposed roadway plans.
Wetland Mitigation	N/A
Water Resources Degradation (select one)	
My activity, as proposed, will not cause measurable degradation to water quality	
My activity, as proposed, will only cause de minimis degradation to water quality	**X**
My activity, as proposed, will cause more than de minimis degradation to water quality.	

FEATURE IMPACT TABLE:	Location #2b / STR-3
Location Information	
Location #	Location #2b
Feature Name:	STR-3
Latitude:	36.1908°
Longitude:	82.5935°
Stationing:	105+19±R to 105+98±L
FEMA Floodplain Designation	Zone X
Permits Required	
TDEC:	**INDIVIDUAL AQUATIC RESOURCE ALTERATION PERMIT**
Corps:	Pre-Construction Notification- Nationwide #14: Stream channel is connected to WTL-1 which has permanent impacts; therefore, Pre-Construction Notification is required.
TVA:	Section 26A
Narrative description of impact	Stream encapsulation; replacing existing culvert
Existing feature characteristics	Existing structure: 30 ft of 16’ x 6’ box culvert Existing open stream: 85 ft Total Existing Length: 115 ft Please refer to the enclosed Environmental Boundaries Report for more information
Proposed feature characteristics	Proposed structure: 64 ft of 2 @ 8’ x 6' box culvert Proposed riprap: 41 ft Proposed open stream: 41 ft - includes 41 ft. of Class "C" riprap at outlet of proposed structure Total proposed length: 105 ft
Impact acreage to waters of the US (acres):	0.03
Alternatives, and Impact minimization	Eliminating the roadway curve for a simplified geometry would have caused greater impact to the existing wetland and springs. No individual impact alternatives were considered.
Stream Mitigation	For the above stream losses, we propose the excess on-site, in-kind replacement of STR-1 and STR-2 be counted as sufficient to account for the loss.
Wetland Mitigation	N/A
Water Resources Degradation (select one)	
My activity, as proposed, will not cause measurable degradation to water quality	
My activity, as proposed, will only cause de minimis degradation to water quality	**X**
My activity, as proposed, will cause more than de minimis degradation to water quality.	

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Water Resources
William R. Snodgrass Tennessee Tower, 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243
1-888-891-8332 (TDEC)

Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Permit

OFFICIAL STATE USE ONLY	Site #:		Permit #:	

Section 1. Applicant Information *(individual responsible for site, signs certification below)*

Applicant Name: Mary Showers			
Company: Tennessee Department of Transportation		Signatory's Title or Position: Sr. Transportation Project Specialist	
Mailing Address: 505 Deaderick Street Suite 900 J.K. Polk Bldg.		City: Nashville	State: TN Zip: 37243
Phone: (615) 253-1558	Fax: N/A	E-mail: Mary.Showers@tn.gov	

Section 2. Alternate Contact/Consultant Information (*a consultant is not required*)

Alternate Contact Name: DJ Wiseman			
Company: Tennessee Department of Transportation		Title or Position: Civil Engineering Manager 1	
Mailing Address: 505 Deaderick Street Suite 900 J.K. Polk Bldg.		City: Nashville	State: TN Zip: 37243
Phone: (615) 532-4554	Fax: N/A	E-mail: DJ.wiseman@tn.gov	

Section 3. Fee *(check appropriate box and submit requisite fee with application)*

☒ No Fee Submitted ☐ Fee Submitted with Application Amount Submitted: $ _____

Current fee schedules for Aquatic Resource Alteration Permit processing may be found at the Division of Water Resources webpage at http://www.tn.gov/environment/permits/arap.shtml or by calling (615) 532-0625. Make checks payable to "Treasurer, State of Tennessee".

Section 4. Project Details *(fill in information and check appropriate boxes)*

Site or Project Name: PIN 114038.01, Proj No. 90023-1223-94	Nearest City, Town or Major Landmark: Limestone, TN	
Street Address or Location: State Route 353, Culvert over Branch, LM 3.23		
County(ies): Washington	MS4 Jurisdiction: TDOT	Latitude (dd.dddd): 36.1906
		Longitude (dd.dddd): -82.5935

Resource Proposed for Alteration: ✓ Stream ✓ Wetland Reservoir

Name of Water Resource: Unnamed Tributary to Nolichucky River

Brief Project Description (a more detailed description is required under Section 8):

Realign SR353 to flatten curves and upgrade existing drainage, including replacing two culverts and relocating two streams.

Does the proposed activity require approval from the U.S. Army Corps of Engineers, the Tennessee Valley Authority, or any other federal, state, or local government agency? ☒ Yes ☐ No

If Yes, provide the permit reference numbers: Pending

Is the proposed activity associated with a larger common plan of development? ☐ Yes ☒ No

If Yes, submit site plans and identify the location and overall scope of the common plan of development. Plans attached? ☐ Yes ☒ No

If applicable, indicate any other federal, state, or local permit authorizations that the overall project site (common plan of development) has obtained in the past (i.e. construction general permit coverage and/or other ARAPs):

N/A

Section 5. Project Schedule *(fill in information and check appropriate boxes)*

Start date: 06-12-2017	Estimated end date: 06-12-2022

Is any portion of the activity complete now? ☐ Yes ☒ No If yes, describe the extent of the completed portion:

N/A

Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Permit

The required information in Sections 6-11 must be submitted on a separate sheet(s) and submitted in the same numbered format as presented below. If any question in not applicable, state the reason why it is not applicable.

Section 6. Project Description	Please refer to the enclosed feature impact and summary tables.	**Attached** Yes	No
6.1	A narrative description of the scope of the project	☒	☐
6.2	USGS topographic map indicating the exact location of the project (*can be a photographic copy*)	☒	☐
6.3	Photographs of the resource(s) proposed for alteration with location description (*photo locations should be noted on map*)	☒	☐
6.4	A narrative description of the **existing** stream and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate and riparian vegetation	☒	☐
6.5	A narrative description of the **proposed** stream and/or wetland characteristics including, but not limited to, dimensions (e.g., depth, length, average width), substrate and riparian vegetation	☒	☐
6.6	In the case of wetlands, include a wetland delineation with delineation forms and site map denoting location of data points	☒	☐
6.7	A copy of all hydrologic or jurisdictional determination documents issued for water resources on the project site	☒	☐

Section 7. Project Rationale	**Attached** Yes	No
Describe the need for the proposed activity, including, but not limited to, the purpose, alternatives considered, and what will be done to avoid or minimize impacts to streams or wetlands.	☒	☐

Section 8. Technical Information		**Attached** Yes	No
8.1	Detailed plans, specifications, blueprints, or legible sketches of present site conditions and the proposed activity. Plans must be 8.5.x 11 inches. Additional larger plans may also be submitted to aid in application review. The detailed plans should be superimposed on existing and new conditions *(e.g., stream cross sections where road crossings are proposed)*	☒	☐
8.2	For both the proposed activity and compensatory mitigation, provide a discussion regarding the sequencing of events and construction methods	☒	☐
8.3	Depiction and narrative on the location and type of erosion prevention and sediment control (EPSC) measures for the proposed alterations	☒	☐

Section 9. Water Resources Degradation (degree of proposed impact) *Note that in most cases, activities that exceed the scope of the General Permit limitations are considered greater than de minimis degradation to water quality.*

My activity, as proposed:

Please refer to the enclosed feature impact and summary tables.

a. ☐ Will not cause measurable degradation to water quality
b. ☒ Will only cause de minimis degradation to water quality
c. ☐ Will cause more than de minimis degradation to water quality (*Complete additional sections 9-11)*
d. ☐ Unsure/need more information

For information and guidance on the definition of de minimis and degradation, refer to the Antidegradation Statement in Chapter 0400-40-03-.06 of the Tennessee Water Quality Criteria Rule: https://www.tn.gov/sos/rules/0400/0400-40/0400-40-03.20131216.pdf. For more information on specifics on what General Permits can cover, refer to the Natural Resources Unit webpage at http://www.tn.gov/environment/permits/arap.shtml

If you checked "c." above in Section 9, complete the following 2 sections, 10-11. Please refer to the enclosed feature impact and summary tables.

Section 10. Detailed Alternative Analysis		**Attached** Yes	No
10.1	Analyze all reasonable alternatives and describe the level of degradation caused by each of the feasible alternatives	☐	☒
10.2	Discuss the social and economic consequences of each alternative	☐	☒
10.3	Demonstrate that the degradation associated with the preferred alternative will not violate water quality criteria for uses designated in the receiving waters, and is necessary to accommodate important economic and social development in the area	☐	☒

Application for Aquatic Resource Alteration Permit (ARAP) & State §401 Water Quality Permit

Section 11. Compensatory Mitigation		Attached Yes	Attached No
11.1	A detailed discussion of the proposed compensatory mitigation	☐	☒
11.2	Describe how the compensatory mitigation would result in no net loss of resource value	☐	☒
11.3	Provide a detailed monitoring plan for the compensatory mitigation site	☐	☒
11.4	Describe the long-term protection measures for the compensatory mitigation site *(e.g., deed restrictions, conservation easement)*	☐	☒

Certification and Signature

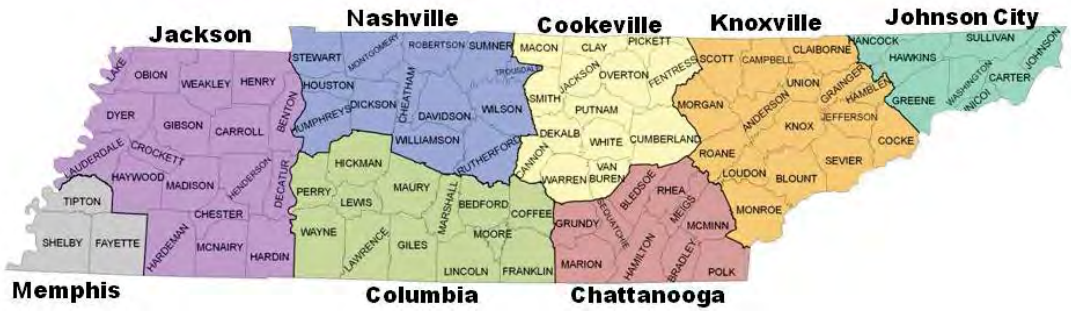
An application submitted by a corporation must be signed by a principal executive officer; from a partnership or proprietorship, by the partner or proprietor respectively; from a municipal, state, federal or other public agency or facility, the application must be signed by either a principal executive officer, ranking elected official, or other duly authorized employee.

"I certify under penalty of law that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury".

Mary Showers	Sr. Transportation Project Specialist	Mary Showers	12-01-2016
Printed Name	Official Title	Signature	Date

Submitting the form and obtaining more information Note that this form must be signed by the principal executive officer, partner or proprietor, or a ranking elected official in the case of a municipality; for details see **Certification and Signature** statement above. For more information, contact your local EFO at the toll-free number 1-888-891-8332 (TDEC). Submit the completed ARAP Application form (keep a copy for your records) to the appropriate EFO for the county(ies) where the ARAP activity is located, addressed to **Attention: ARAP Processing**. You may also electronically submit the complete application and all associated attachments (e.g., maps, wetland delineations and narrative portions) to water.permits@tn.gov.

EFO	Street Address	Zip Code	EFO	Street Address	Zip Code
Memphis	8383 Wolf Lake Drive, Bartlett	38133-4119	Cookeville	1221 South Willow Ave.	38506
Jackson	1625 Hollywood Drive	38305-4316	Chattanooga	540 McCallie Avenue STE 550	37402-2013
Nashville	711 R S Gass Boulevard	37243	Knoxville	3711 Middlebrook Pike	37921
Columbia	1421 Hampshire Pike	38401	Johnson City	2305 Silverdale Road	37601



OFFICIAL STATE USE ONLY

Received Date:	Permit Number:	Reviewer:	Field Office:
Fee amount paid:	T & E Aquatic Flora and Fauna:	Impaired Receiving Stream:	Application Review:
Date:			☐ Deficient Date:
Check #:	Exceptional TN Water:		☐ Complete Date:

JOINT APPLICATION FORM
Department of the Army/TVA

OMB No. 3316-0060
Exp. Date 08/31/2016

The Department of the Army (DA) permit program is authorized by **Section 10 of the Rivers and Harbors Act of 1899** and **Section 404 of the Clean Water Act (P.L. 95-217).** These laws require permits authorizing structures and work in or affecting navigable waters of the United States and the discharge of dredged or fill material into waters of the United States. **Section 26a of the Tennessee Valley Authority Act,** as amended, prohibits the construction, operation, or maintenance of any structure affecting navigation, flood control, or public lands or reservations across, along, or in the Tennessee River or any of its tributaries until plans for such construction, operation, and maintenance have been submitted to and approved by the Tennessee Valley Authority (TVA).

Name and Mailing Address of Applicant:	Name, Mailing Address, and Title of Authorized Agent:
Tennessee Department of Transportation 505 Deaderick Street, Suite 900 J.K. Polk Bldg Nashville, TN 37243	
Email Address: Mary.Showers@tn.gov	Email Address:
Telephone Number: Home	Telephone Number: Home
Office (615) 253-1558	Office
Mobile	Mobile

Facility/Activity Location (include all known information):

Address: SR- 353, over Branch at L.M. 3.23

Subdivision, Lot No., and/or Tax Parcel No.: See Roadway Plans

Stream Name and Mile: See Cover Letter Longitude/Latitude: See Cover Letter

Application submitted to ☑ DA ☑ TVA

Date activity is proposed to commence: 6/12/2017 Date activity is proposed to be completed: 6/12/2022

Describe in detail the proposed activity, its purpose and intended use *(private, public, commercial, or other)*. Describe structures to be erected including those placed on fills, piles, or floating platforms. Also describe the type, composition, and quantity of materials to be discharged or placed in the water; the means of conveyance; and the source of discharge or fill material. Please attach additional sheets if needed.

TDOT proposes to provide geometric and drainage improvements along SR-353 at L.M. 3.23. by flattening horizontal curves and installing larger drainage culverts. Construction includes full depth roadway construction, guardrail at structure ends, 31' - 6'x4' box culvert, and a 64' - 2 @ 8'x6' box culvert.

Construction requires impacting three streams, one spring, and one wetland.

Application is hereby made for approval of the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities. I understand that TVA and the U.S. Army Corps of Engineers may contact an Authorized Agent listed above and such Agent may act on my behalf on all aspects of this application. **I agree that, if this application is approved by TVA, I will comply with the terms and conditions and any special conditions that may be imposed by TVA. Please note the U.S. Army Corps of Engineers may impose additional conditions or restrictions.**

12/01/2016	Mary Showers	Mary Showers
Date	*Name of Applicant (Printed)*	*Signature of Applicant*

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of The United States knowingly and willfully falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both. The appropriate DA fee will be assessed when a permit is issued.

Names, addresses, and telephone numbers of adjoining property owners, lessees, etc., whose properties also join the waterway:

N/A

List of previous DA/TVA permits/approvals ☐ DA _____ (Permit Number) ☐ TVA _____ (Date)

Previous Property Owner (if known) _____

Is any portion of the activity for which authorization is sought now complete? ☐ Yes ☑ No *(If "Yes" attach explanation)*
Month and year the activity was completed: _____ . Indicate the existing work on the drawings.

List all approvals or certifications required by other federal, interstate, state, or local agencies for any structures, construction, discharges, deposits, or other activities described in this application.

Issuing Agency	Type Approval	Identification No.	Date of Application	Date of Approval
TDEC	I-ARAP		12/01/2016	Pending
TDEC	CGP			

Has any agency denied approval for the activity described herein or for any activity directly related to the activity described herein?
☐ Yes ☑ No *(If "Yes" attach explanation)*

Project plans or drawings, on paper suitable for reproduction no larger than 11 x 17 inches or in electronic format (dxf, docx, or pdf), must accompany the application. Submit the application to the appropriate TVA and U.S. Army Corps of Engineers offices. An application that is not complete will be returned for additional information.

U.S.A.C.E. Offices

U.S. Army Corps of Engineers
Eastern Regulatory Field Office
501 Adesa Parkway., Suite 250
Lenoir City, Tennessee 37771
(865) 986-7296

U.S. Army Corps of Engineers
Regulatory Branch
3701 Bell Road
Nashville, Tennessee 37214
(615) 369-7500

U.S. Army Corps of Engineers
Norfolk District
P.O. Box 338
Abingdon, Virginia 24212
(276) 623-5259

U.S. Army Corps of Engineers
Savannah District
The Plaza, Suite 130
1590 Adamson Parkway
Morrow, Georgia 30260-1763
(678) 422-2729

U.S. Army Corps of Engineers
Western Regulatory Field Office
2042 Beltline Road, SW, Bldg C, Suite 415
Decatur, Alabama 35602
(256) 350-5620

U.S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, North Carolina 28801-5006
(828) 271-4856

TVA Offices

Tennessee Valley Authority
Chattanooga Regional Office
1101 Market Street, PSC 1E-C
Chattanooga, Tennessee 37402-2801
1-800-882-5263

Tennessee Valley Authority
Gray Regional Office
106 Tri-Cities Business Park Drive
Gray, Tennessee 37615
1-800-882-5263

Tennessee Valley Authority
Guntersville Regional Office
3696 Alabama Highway 69, CAB 1A-GVA
Guntersville, Alabama 35976-7196
1-800-882-5263

Tennessee Valley Authority
Lenoir City Regional Office
260 Interchange Park Drive, LCB 1A-LCT
Lenoir City, Tennessee 37772-5664
1-800-882-5263

Tennessee Valley Authority
Morristown Regional Office
3726 E. Morris Boulevard
Morristown, Tennessee 37813-1270
1-800-882-5263

Tennessee Valley Authority
Murphy Regional Office
4800 US Highway 64 West, Suite 102
Murphy, North Carolina 28906
1-800-882-5263

Tennessee Valley Authority
Muscle Shoals Regional Office
Post Office Box 1010, MPB 1H
Muscle Shoals, Alabama 35662-1010
1-800-882-5263

Tennessee Valley Authority
Paris Regional Office
2835-A East Wood Street
Paris, Tennessee 38242-5948
1-800-882-5263

Privacy Act Statement

This information is being requested in accordance with Section 26a of the TVA Act as cited on the front page of this form. Disclosure of the information requested is voluntary; however, failure to provide any required information or documents may result in a delay in processing your application or in your being denied a Section 26a permit. An application that is not complete will be returned for additional information. TVA uses this information to assess the impact of the proposed project on TVA programs and the environment and to determine if the project can be approved. Information in the application is made a matter of public record through issuance of a public notice if warranted. Routine uses of this information include providing to federal, state, or local agencies, and to consultants, contractors, etc., for use in program evaluations, studies, or other matters involving support services to the program; to respond to a congressional inquiry concerning the application or Section 26a program; and for oversight or similar purposes, corrective action, litigation or law enforcement.

Burden Estimate Statement

Public reporting burden for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Agency Clearance Officer, Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402; and to the Office of Management and Budget, Paperwork Reduction Project (3316-0060), Washington, D.C. 20503.

OMB No. 3316-0060
Exp. Date 08/31/2016

Section 26a Permit and Land Use Application
Applicant Disclosure Form

By signing the Joint Application Form (Department of Army/TVA) or TVA's Land Use Application and again below, you agree to disclose any business, political, or financial interest that may present an actual or potential conflict of interest with TVA. If a new significant business, political, or financial interest is obtained during the period of the time that the application is under review, you agree to file an additional disclosure.

Project #90023-1223-94
PIN 114038.01
State Route 353 over Branch at L.M. 3.23
Washington County

Disclose if any of the following apply to you (check all that apply ☑). I am:

- ☐ An elected government official
- ☐ A policy making level employee of an entity that regulates TVA or its activities
- ☐ A management level employee of a power customer of TVA
- ☐ A TVA Director
- ☐ A TVA employee
- ☐ An immediate family member of one of the above
- ☐ A representative of a corporation or entity submitting an application and one of the above applies to me. Print entity or corporation name, and identify which of the above applies to you.

_____

_____

- ☐ A representative of a corporation or entity submitting an application and the corporation or entity has partners, investors, or senior management that are one of the above. Print entity or corporation name, and identify the partner(s), investor(s), or senior manager(s) and which of the above applies.

_____

_____

_____

- ☑ None of the above

Do you have any other business or personal relationships not covered in your answers above that could appear to be a conflict of interest? (check one) **Yes** ☐ **No** ☑ If yes, provide more detail here.

_____

_____

_____

By signing this form, you consent to this Applicant Disclosure Form being made available to the public in response to an appropriate request, including, without limitation, a request made under the Freedom of Information Act.

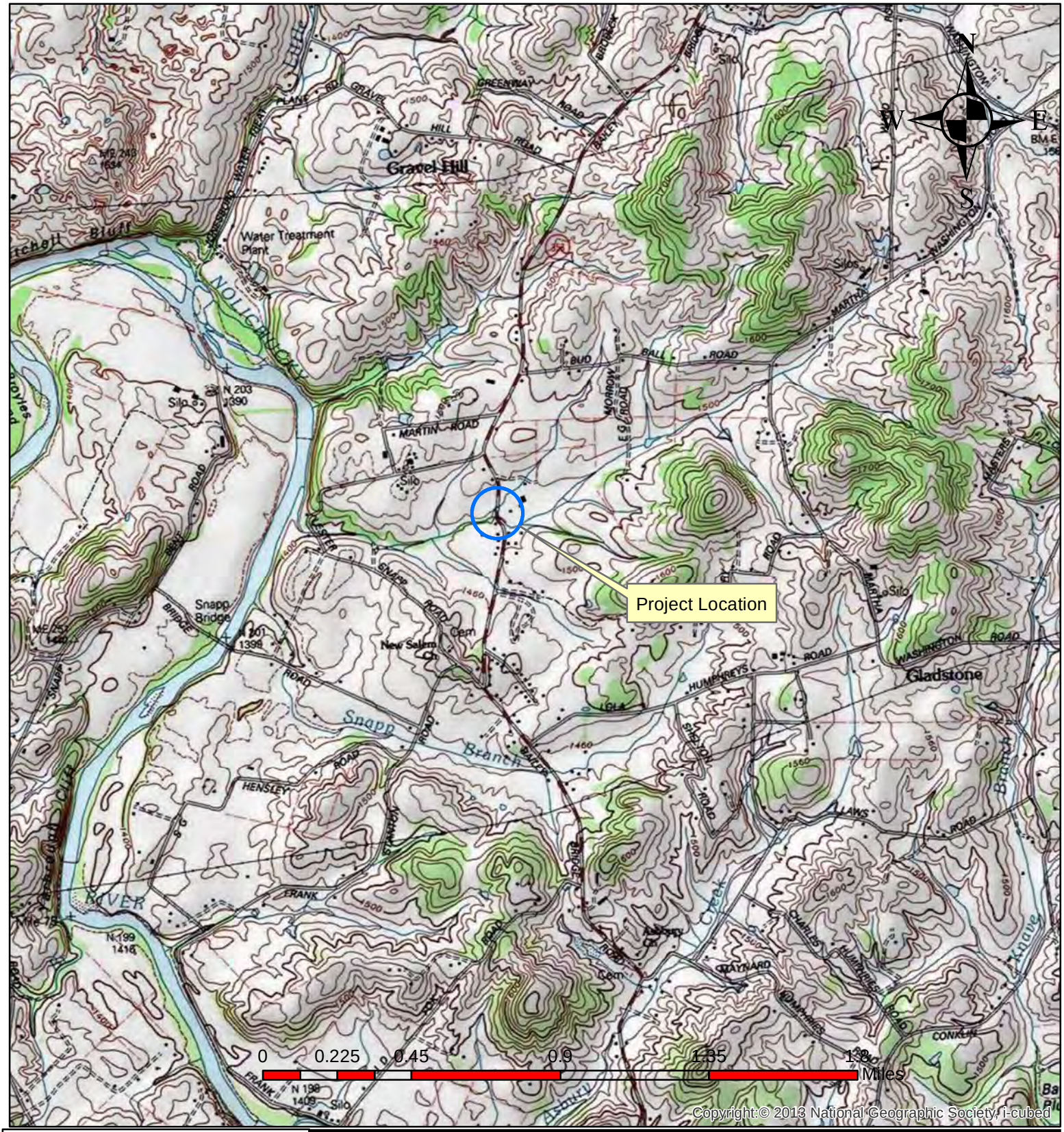
Please sign and return this form with your application package. Your application cannot be processed without receipt of this signed form.

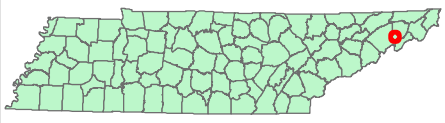
Mary Showers	Mary Showers	12/01/2016
Name of applicant (Printed)	Signature of Applicant	Date

All applications and communications that occur as part of the application process may be made public to the extent permitted by applicable law, including the Freedom of Information Act and the Privacy Act, and could be reviewed formally by the Office of Inspector General (OIG). All written correspondence regarding your request may be forwarded to the TVA Chief Ethics and Compliance Officer (CECO) and the OIG, and all oral communication between TVA and the applicant regarding this request may be documented and maintained by TVA. Inquiries concerning your application from any person who falls into one of the categories described above will be disclosed to the CECO and OIG.

Privacy Act Statement

This information is being requested in accordance with Sections 4(k), 15d, 26a, and/or 31 of the TVA Act; 40 U.S.C. § 1314; 30 U.S.C. § 185; 16 U.S.C. § 667b; and/or 40 U.S.C. § 483. Disclosure of the information requested is voluntary; however, failure to provide any required information or documents may result in a delay in processing your application or in your application being denied. An application that is not complete will be returned for additional information. TVA uses this information to assess the impact of the proposed project on TVA programs and the environment and to determine if the project can be approved. Information in the application is made a matter of public record through issuance of a public notice if warranted. Routine uses of this information include providing to federal, state, or local agencies, and to consultants, contractors, etc., for use in program evaluations, studies, or other matters involving support services to the program; to respond to a congressional inquiry concerning the application or the applicable program; and for oversight or similar purposes, corrective action, litigation, or law enforcement.



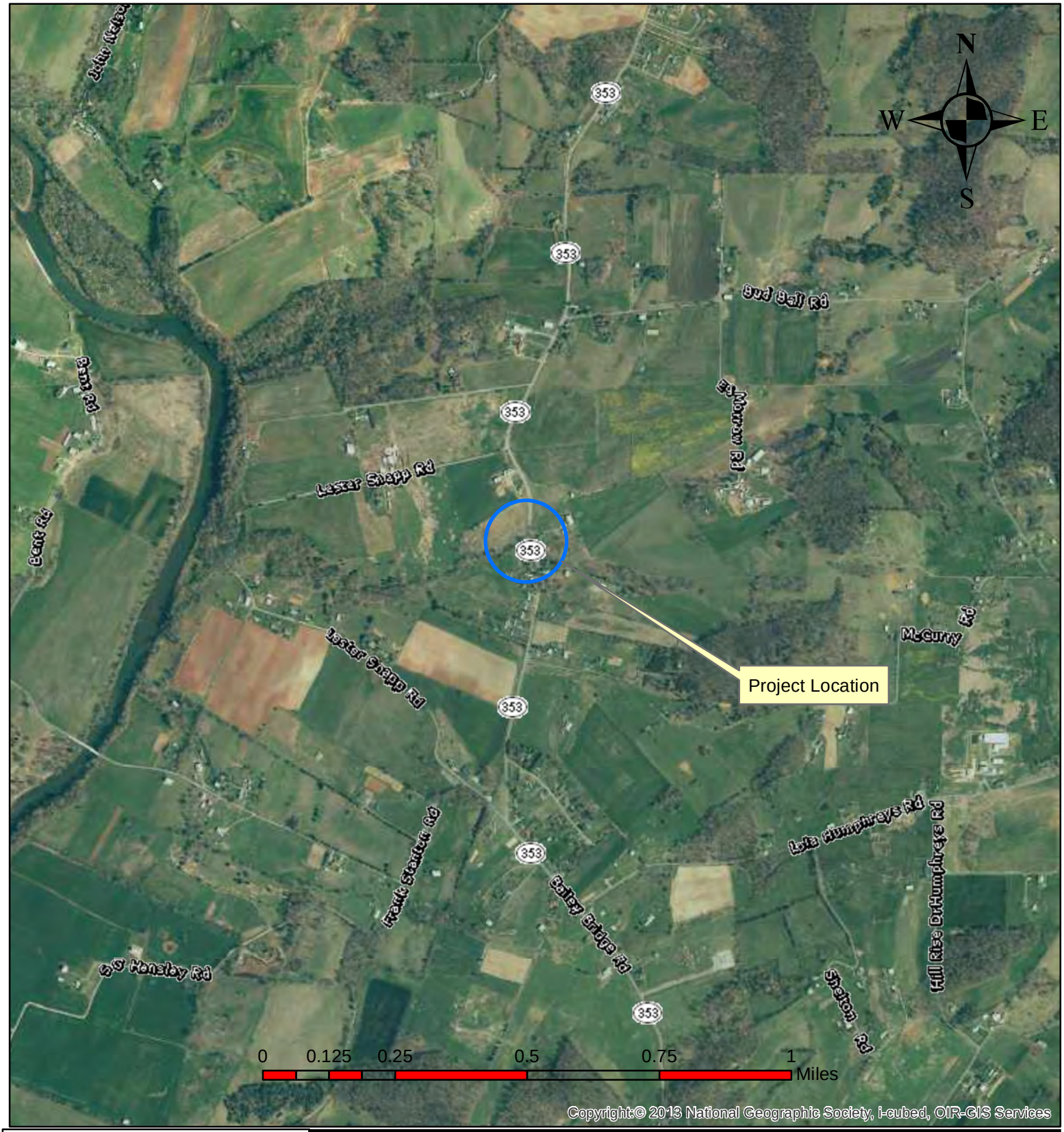


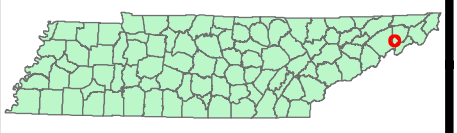
Location Map - topo
SR-353 over branch, LM 3.23
Washington County, TN

Telford 190-NE and Chucky 190-NW

4-25-14

PIN 114038.01 **P.E. #90023-0223-94**





Location Map - aerial
SR-353 over branch, LM 3.23
Washington County, TN

Telford 190-NE and Chucky 190-NW

4-25-14

PIN 114038.01 **P.E. #90023-0223-94**

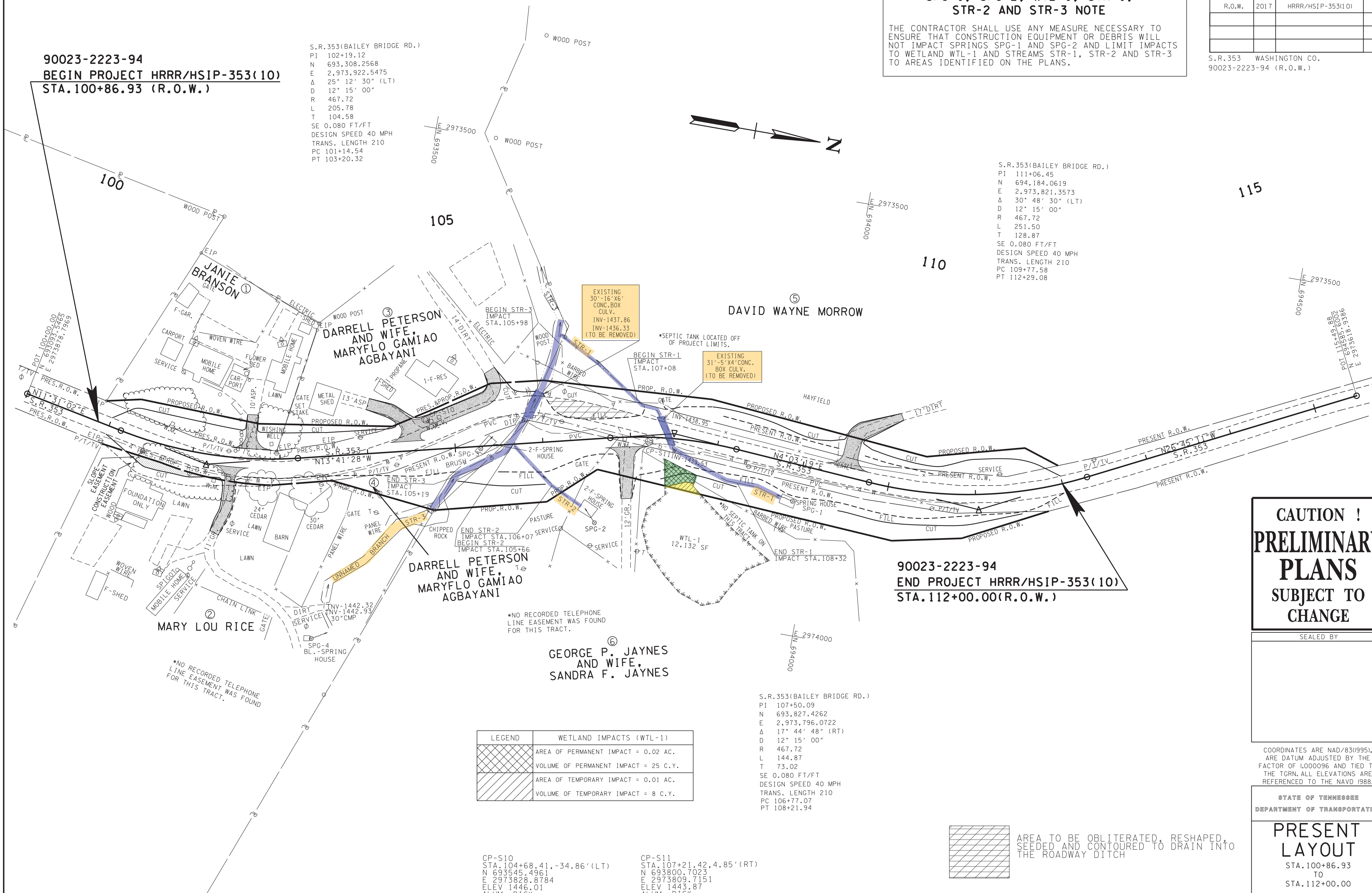
TDOT

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	HRRR/HSIP-353(10)	4

S.R.353 WASHINGTON CO.
90023-2223-94 (R.O.W.)

SPG-1, SPG-2, WTL-1, STR-1, STR-2 AND STR-3 NOTE

THE CONTRACTOR SHALL USE ANY MEASURE NECESSARY TO ENSURE THAT CONSTRUCTION EQUIPMENT OR DEBRIS WILL NOT IMPACT SPRINGS SPG-1 AND SPG-2 AND LIMIT IMPACTS TO WETLAND WTL-1 AND STREAMS STR-1, STR-2 AND STR-3 TO AREAS IDENTIFIED ON THE PLANS.



90023-2223-94
BEGIN PROJECT HRRR/HSIP-353(10)
STA.100+86.93 (R.O.W.)
S.R.353(BAILEY BRIDGE RD.)
PI 102+19.12
N 693,308.2568
E 2,973,922.5475
Δ 25° 12' 30" (LT)
D 12° 15' 00"
R 467.72
L 205.78
T 104.58
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 101+14.54
PT 103+20.32
S.R.353(BAILEY BRIDGE RD.)
PI 111+06.45
N 694,184.0619
E 2,973,821.3573
Δ 30° 48' 30" (LT)
D 12° 15' 00"
R 467.72
L 251.50
T 128.87
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 109+77.58
PT 112+29.08
JANIE BRANSON ①
DARRELL PETERSON AND WIFE, MARYFLO GAMIAO AGBAYANI ③
DAVID WAYNE MORROW ⑤
EXISTING 30'-16'X6' CONC.BOX CULV. INV-1437.86 INV-1436.33 (TO BE REMOVED)
EXISTING 31'-5'X4'CONC. BOX CULV. (TO BE REMOVED)
*SEPTIC TANK LOCATED OFF OF PROJECT LIMITS.
BEGIN STR-3 IMPACT STA.105+98
BEGIN STR-1 IMPACT STA.107+08
END STR-3 IMPACT STA.105+19
END STR-2 IMPACT STA.106+07
BEGIN STR-2 IMPACT STA.105+66
END STR-1 IMPACT STA.108+32
WTL-1 12.132 SF
DARRELL PETERSON AND WIFE, MARYFLO GAMIAO AGBAYANI ④
MARY LOU RICE ②
*NO RECORDED TELEPHONE LINE EASEMENT WAS FOUND FOR THIS TRACT.
GEORGE P. JAYNES AND WIFE, SANDRA F. JAYNES ⑥
90023-2223-94
END PROJECT HRRR/HSIP-353(10)
STA.112+00.00(R.O.W.)
S.R.353(BAILEY BRIDGE RD.)
PI 107+50.09
N 693,827.4262
E 2,973,796.0722
Δ 17° 44' 48" (RT)
D 12° 15' 00"
R 467.72
L 144.87
T 73.02
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 106+77.07
PT 108+21.94

LEGEND	WETLAND IMPACTS (WTL-1)
(cross-hatch)	AREA OF PERMANENT IMPACT = 0.02 AC.
	VOLUME OF PERMANENT IMPACT = 25 C.Y.
(single hatch)	AREA OF TEMPORARY IMPACT = 0.01 AC.
	VOLUME OF TEMPORARY IMPACT = 8 C.Y.

AREA TO BE OBLITERATED, RESHAPED, SEEDED AND CONTOURED TO DRAIN INTO THE ROADWAY DITCH

CP-S10
STA.104+68.41,-34.86'(LT)
N 693545.4961
E 2973828.8784
ELEV 1446.01
ALUM. DISK

CP-S11
STA.107+21.42,4.85'(RT)
N 693800.7023
E 2973809.7151
ELEV 1443.87
ALUM. DISK

CAUTION !
PRELIMINARY PLANS
SUBJECT TO CHANGE

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000096 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

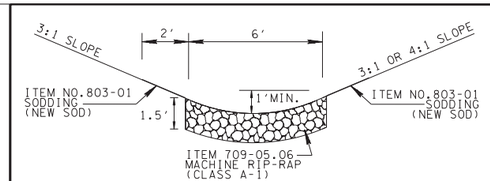
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PRESENT LAYOUT

STA.100+86.93 TO STA.112+00.00

SCALE: 1"= 50'

29-NOV-2016 11:12
\\JJOWFOL.tdot.state.tn.us\OIShared\SURVDES\DESIGN\PROJECTS\WSSR353\004.SHT



DETAIL OF RIP-RAP DITCH
STA.104+50 TO STA.106+00, LEFT
STA.107+75 TO STA.110+75, LEFT
STA.109+50 TO STA.112+00, RIGHT

S.R.353 S.E. RATES					
101+00	0.030	0.030	107+00	0.053	0.053
101+50	0.051	0.017	107+50	0.077	0.077
102+00	0.064	0.064	108+00	0.058	0.058
102+50	0.064	0.064	108+50	0.032	0.032
103+00	0.041	0.041	109+00	0.006	0.006
103+50	0.017	0.017	109+50	0.019	0.019
104+00	0.007	0.007	110+00	0.045	0.045
104+50	0.020	0.020	110+50	0.071	0.071
105+00	0.020	0.020	111+00	0.080	0.080
105+50	0.020	0.020	111+50	0.066	0.066
106+00	0.020	0.020	112+00	0.038	0.038
106+50	0.029	0.029			

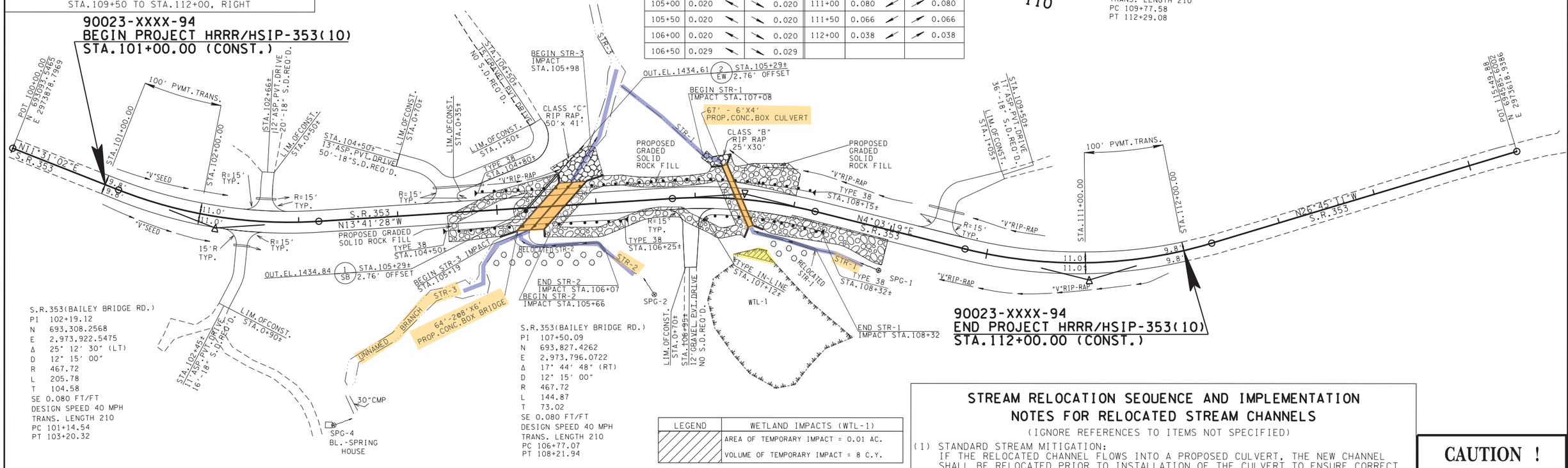
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	HRRR/HSIP-353(10)	4B

S.R.353 WASHINGTON CO.
90023-2223-94 (R.O.W.)

105

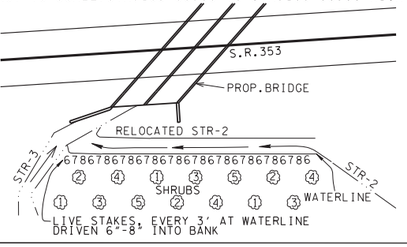
110

S.R.353(BAILEY BRIDGE RD.)
PI 111+06.45
N 694,184.0619
E 2,973,821.3573
Δ 30° 48' 30" (LT)
D 12° 15' 00"
R 467.72
L 251.50
T 128.87
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 109+77.58
PT 112+29.08

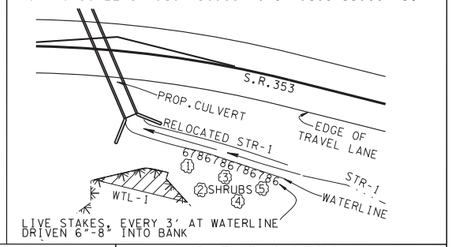


LEGEND	WETLAND IMPACTS (WTL-1)
	AREA OF TEMPORARY IMPACT = 0.01 AC.
	VOLUME OF TEMPORARY IMPACT = 8 C.Y.

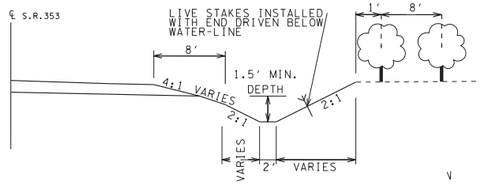
STR-2 SHRUB & LIVE STAKE PLACEMENT DETAIL
(NOT TO SCALE)STA.105+00.00 TO STA.106+00.00 RIGHT



STR-1 SHRUB & LIVE STAKE PLACEMENT DETAIL
(NOT TO SCALE)STA.107+50.00 TO STA.108+35.00 RIGHT



STR-1 & STR-2 REALIGNMENT DETAIL



STA.105+00.00 TO STA.106+00 RIGHT
(TO BE UNLINED; NATURAL STREAM BOTTOM)
STA.107+50.00 TO STA.108+35.00 RIGHT
(TO BE UNLINED;NATURAL STREAM BOTTOM)

KEY

SHRUB SPECIES FOR STREAM RELOCATIONS;
EACH SHRUB SHOULD BE 2'-5' IN HEIGHT AND CONTAINERIZED

#	ITEM NUMBER	DESCRIPTION
1	802-13.01	ALNUS SERRULATA (HAZEL ALDER)
2	802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)
3	802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)
4	802-13.09	LINDERA BENZOIN (SPICEBUSH)
5	802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)

LIVE STAKE SPECIES FOR STREAM BANKS;
EACH STAKE SHOULD BE 18"-24" IN LENGTH

#	ITEM NUMBER	DESCRIPTION
6	802-02.30	SALIX NIGRA (BLACK WILLOW)
7	802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)
6	802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)

SHRUB NOTES

(1) NO SUBSTITUTIONS OF SHRUB SPECIES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL OF T.D.O.T. ENVIRONMENTAL DIVISION. SHRUBS SHALL BE OF THE VARIETY REQUESTED, BETWEEN 2 AND 5 FEET IN HEIGHT, CONTAINERIZED AND OF THE FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED.ANY FOUND TO BE INCORRECT SPECIES,OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION OF THE CONTRACT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.STAKES AND WIRES SHALL BE REMOVED IMMEDIATELY PRIOR TO CONTRACT TERMINATION, UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL DIVISION.

(2) THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT SHRUB SPECIES. AS SOME MAY REQUIRE SOME TIME TO LOCATE.

(3) SHRUBS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

LOW FLOW CHANNEL NOTE

A LOW FLOW CHANNEL IS REQUIRED FOR THE PROPOSED BOX BRIDGE.REFER TO STD-15-16A FOR DETAILS.

RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING STREAM CHANNEL.THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL.VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN THE RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM THE CULVERT EXCAVATION AREA.

SPG-1, SPG-2, WTL-1, STR-1, STR-2 AND STR-3 NOTE

THE CONTRACTOR SHALL USE ANY MEASURE NECESSARY TO ENSURE THAT CONSTRUCTION EQUIPMENT OR DEBRIS WILL NOT IMPACT SPRINGS SPG-1 AND SPG-2 AND LIMIT IMPACTS TO WETLAND WTL-1 AND STREAMS STR-1, STR-2 AND STR-3 TO AREAS IDENTIFIED ON THE PLANS.

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(IGNORE REFERENCES TO ITEMS NOT SPECIFIED)

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

(2) CHANNEL RELOCATION SEQUENCE:
- A. FLAG EDGE OF THE NEW CHANNEL TOP BANK PRIOR TO CLEARING. DO NOT CLEAR LARGE TREES IN POSITION TO SHADE THE NEW CHANNEL. LEAVE AS MANY TREES AND SHRUBS AS POSSIBLE BETWEEN TOE OF THE NEW HIGHWAY SLOPE AND THE STREAM.
- B. EXCAVATE THE NEW CHANNEL "IN THE DRY" BY LEAVING AREAS OF UNDISTURBED EARTH (DIVERSION BERMS) IN PLACE AT BOTH ENDS.
- C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
- D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
- E. REMOVE DIVERSION BERMS, BEGINNING WITH THE MOST DOWNSTREAM; BANKS AND BOTTOM ELEVATION OF THE OLD CHANNEL SHOULD TRANSITION SMOOTHLY INTO THE NEW CHANNEL. THE ELEVATIONS OF THE NEW CHANNEL BOTTOM AT EACH END OF THE RELOCATION SEQUENCE SHOULD MATCH THE ELEVATIONS OF THE EXISTING CHANNEL, AND A STEADY PERCENT SLOPE SHOULD BE MAINTAINED THROUGHOUT THE RELOCATED CHANNEL CENTERLINE OR AS SPECIFIED.
- F. INSTALL SHRUBS ACCORDING TO STANDARD SPECIFICATIONS SECTION 802.

(3) ONLY RIP-RAP SHOWN ON PLANS SHOULD BE USED IN THE RELOCATED CHANNEL REACH. ANY OTHER PROPOSED RIP-RAP SHOULD BE COORDINATED WITH THE ENVIRONMENTAL DIVISION THROUGH THE TDOT CONSTRUCTION OFFICE.

(4) REQUESTS BY ANY AGENCY THAT WOULD REQUIRE MODIFCATION OF CHANNELS, ELEVATIONS, RIP-RAP, OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFFERED TO TDOT ENVIRONMENTAL DIVISION VIA HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS. TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION MAY MAKE RECOMMENDATIONS CONCERNING EROSION CONTROL VIA THE ENGINEER WITHOUT SUCH REFERRAL.

CAUTION !
PRELIMINARY PLANS
SUBJECT TO CHANGE

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000096 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PROPOSED LAYOUT

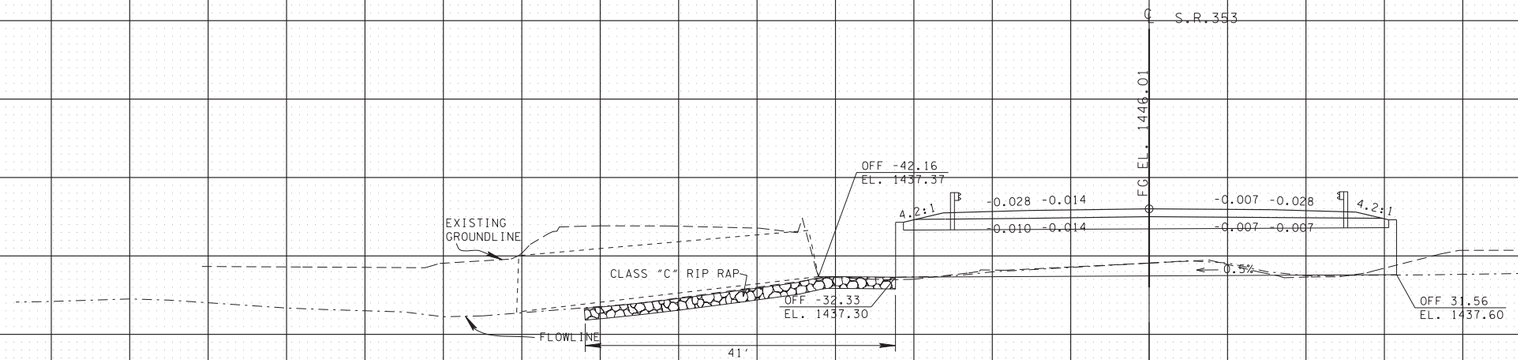
STA.101+00 TO STA.112+00

SCALE: 1"= 50'

29-NOV-2016 lhl2
\\JJOIWF01.tdot.state.tn.us\Shared\SURVDES\DESIGN\PROJECTS\WSSR353\004B.SHT

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	HRRR/HSIP-353(10)	6

S.R.353 WASHINGTON CO.
90023-2223-94(R.O.W.)



STATION	105+55.00
STRUCTURE	64'-2@ 8'X6' CONCRETE BOX BRIDGE
SKEW	45° LT.
DRAINAGE AREA	667 ACRES
DESIGN DISCHARGE (Q50)	423 CFS
DESIGN DISCHARGE (Q100)	498 CFS
OVERTOPPING ELEV.	1444.67
Q50 HEADWATER ELEV.	1443.05
Q100 HEADWATER ELEV.	1443.15
VELOCITY (Q50)	11.9 FPS
VELOCITY (Q100)	12.4 FPS
INLET ELEVATION	1437.60
OUTLET ELEVATION	1437.30
STD. DWG. NOS.	STD-17-1, STD-17-2, STD-17-73
CLASS "A" CONCRETE	191 C.Y.
STEEL BAR REINFORCING	31,412 LB.

S.R. 353
105+55.00

CAUTION !
PRELIMINARY PLANS
SUBJECT TO CHANGE

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

BOX BRIDGE SECTION & DETAILS

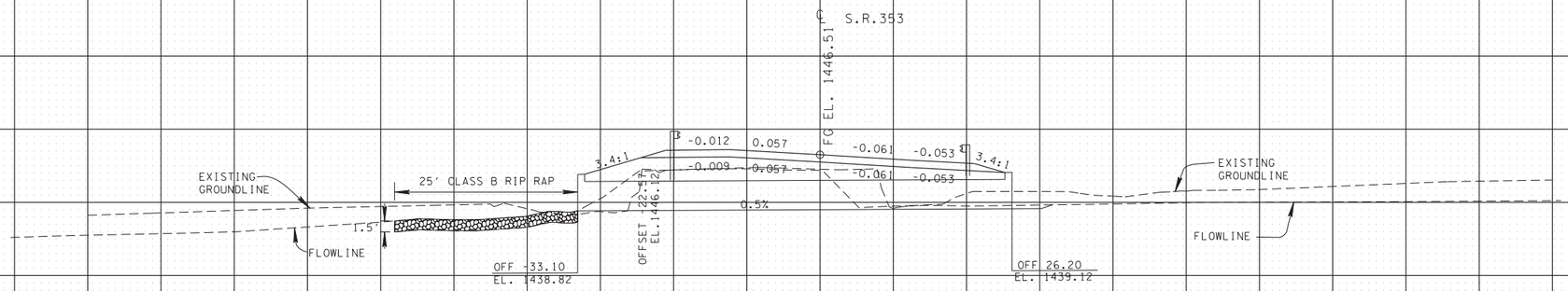
SCALE: 1"=10 ' HORIZ.
1"=10' VERT.

-100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90

29-NOV-2016 lal2
\\JOINFOL1.tdot.state.tn.us\OIShared\SURVDES\DESIGN\PROJECTS\WSSR353\006.sht

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2017	HRRR/HSIP-353(10)	7

S.R.353
90023-2223-94(R.O.W.)
WASHINGTON CO.



STATION	107+44.11
STRUCTURE	67'-6'X4' CONC.BOX CULV.REQ'D.
SKEW	65° RT.
DRAINAGE AREA	94.6 AC.
DESIGN DISCHARGE (Q50)	119.3 CFS
DESIGN DISCHARGE (Q100)	128.7 CFS
OVERTOPPING ELEV.	1444.27
Q50 HEADWATER ELEV.	1442.40
Q100 HEADWATER ELEV.	1442.80
VELOCITY (Q50)	9.4 FT/S
VELOCITY (Q100)	9.6 FT/S
INLET ELEVATION	1439.12
OUTLET ELEVATION	1438.82
STANDARD DRAWING NUMBERS	STD-17-1, STD-17-2, STD-17-51
CLASS "A" CONCRETE	77 C.Y.
STEEL BAR REINFORCING	13,425 LB.

S.R. 353
107+44.11

CAUTION !
PRELIMINARY PLANS
SUBJECT TO CHANGE

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

BOX CULVERT SECTION & DETAILS

SCALE: 1"=10 ' HORIZ.
1"=10' VERT.

-100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90

29-NOV-2016 lal2
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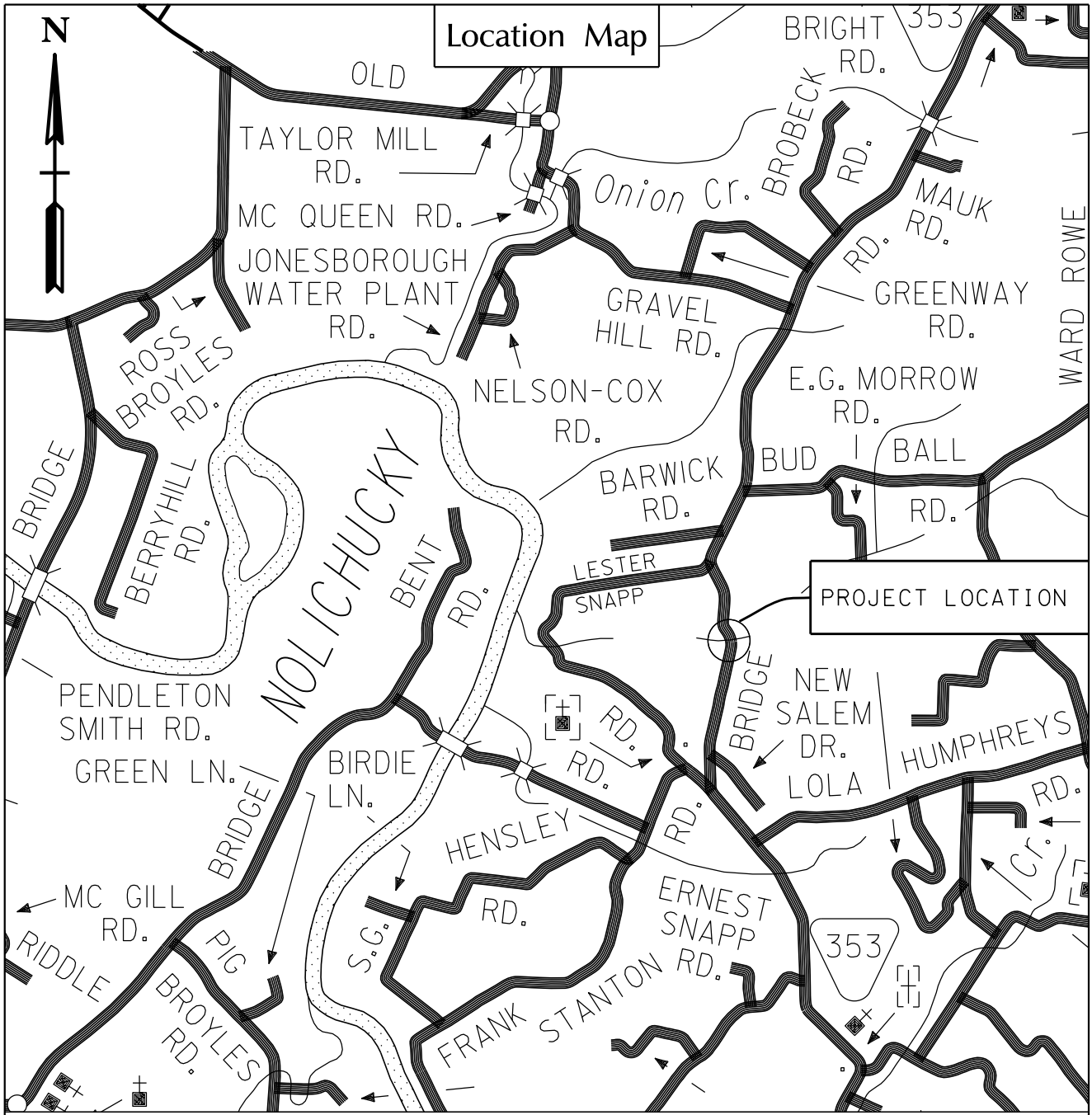
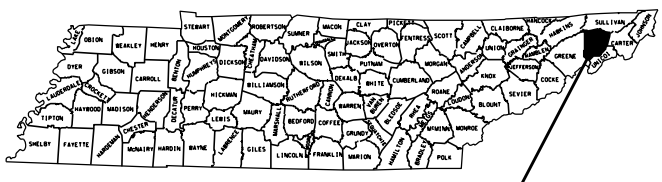
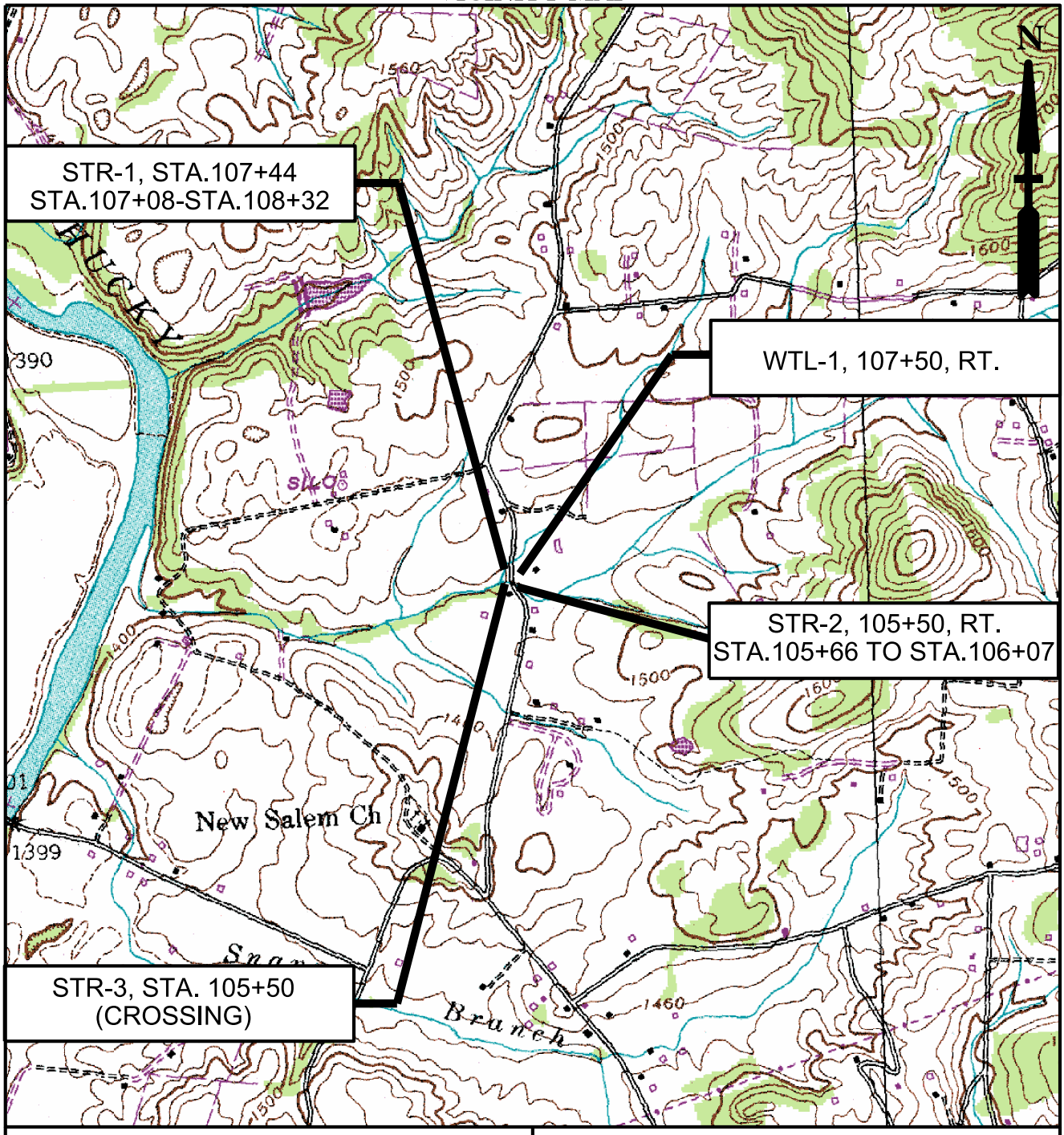




APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10);90023-1223-94
PIN # 114038.01
S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

VICINITY MAP



APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # 90023-1223-94
PIN 114038.01
FED. CONST. PROJ. # HRRR/HSIP-353(10)

COUNTY: WASHINGTON
NEAR: WASHINGTON COLLEGE

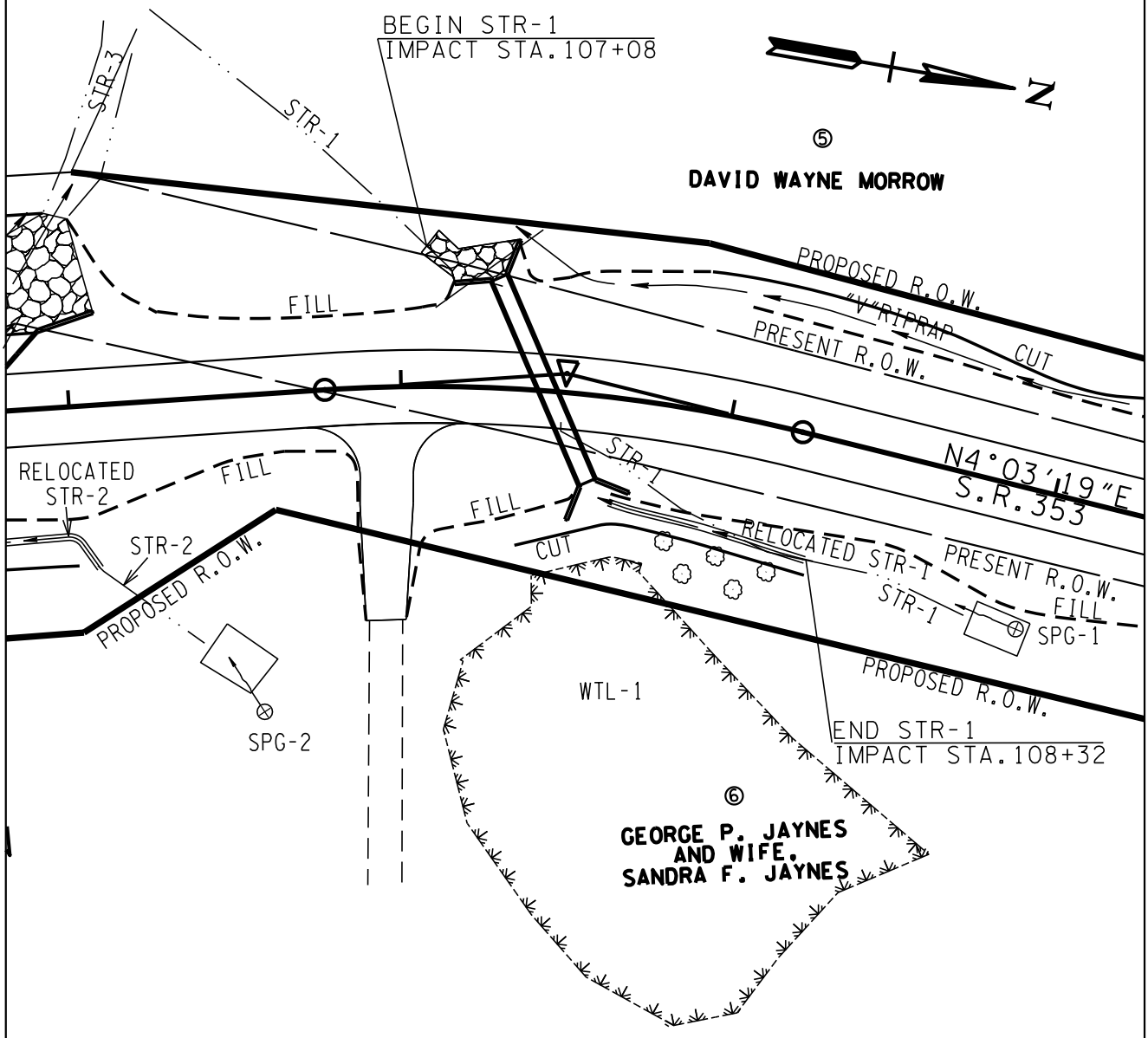
DATE: 11/29/16 REVISED: / /

SHEET 2 OF 12

SCALE = 1:1320'
CONTOUR INTERVAL 20 FEET

1320 0 1320 1980 2640 3300 3960 4620 5280FT

Stream Relocation with Structure (STR–1) Permit Sketch



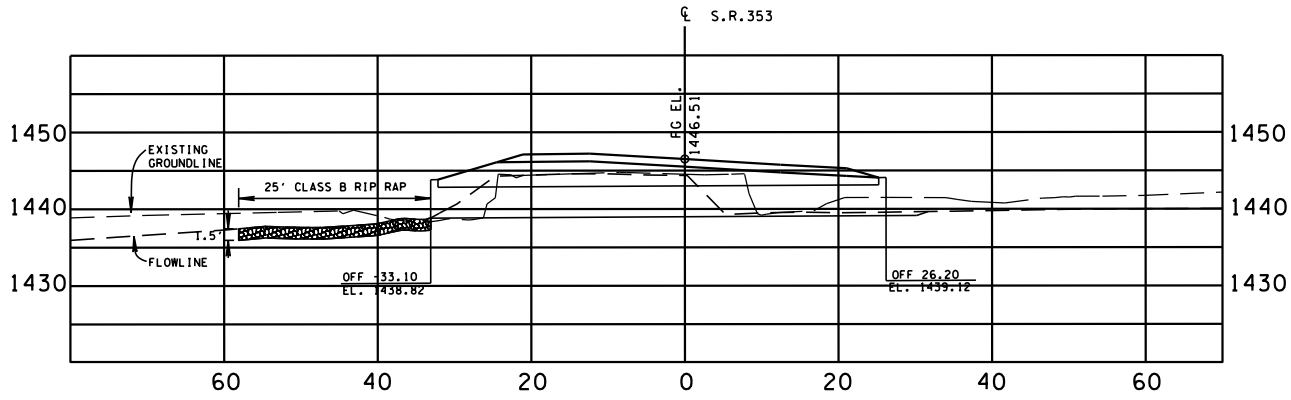
STREAM IMPACT TABLE (STR-1)		
EXISTING		
OPEN STREAM		116 FT.
STRUCTURE	5'X4' CONCRETE BOX CULVERT (TO BE REMOVED)	31 FT.
TOTAL EXISTING STRUCTURE		31 FT.
TOTAL EXISTING LENGTH		147 FT.
PROPOSED		
OPEN STREAM		95 FT.
	PROPOSED CLASS "B" RIP RAP	25 FT.
STRUCTURE	6'X4' CONCRETE BOX CULVERT	67 FT.
TOTAL PROPOSED STRUCTURE		67 FT.
TOTAL PROPOSED LENGTH		162 FT.

0 50 100 150
SCALE IN FEET

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Relocation with Structure (STR–1) Permit Sketch



STATION	107+44.11
STRUCTURE	67'-6'X4' CONC.BOX CULV.REQ'D.
SKEW	65° RT.
DRAINAGE AREA	94.6 AC.
DESIGN DISCHARGE (Q50)	119.3 CFS
DESIGN DISCHARGE (Q100)	128.7 CFS
OVERTOPPING ELEV.	1444.27
Q50 HEADWATER ELEV.	1442.40
Q100 HEADWATER ELEV.	1442.80
VELOCITY (Q50)	9.4 FT/S
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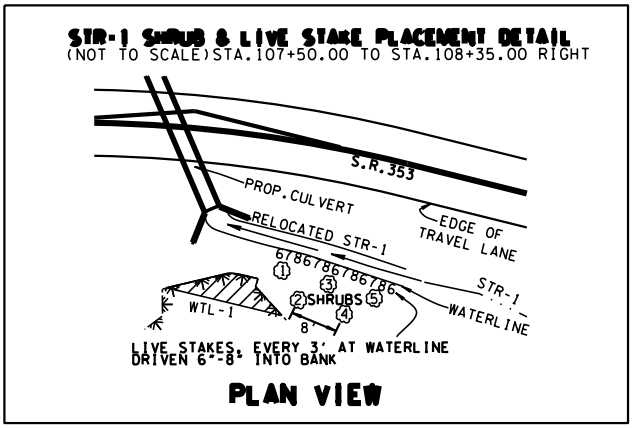
INLET ELEVATION	1439.12
OUTLET ELEVATION	1438.82
STANDARD DRAWING NUMBERS	STD-17-1, STD-17-2, STD-17-51
CLASS "A" CONCRETE	77 C.Y.
STEEL BAR REINFORCING	13,425 LB.

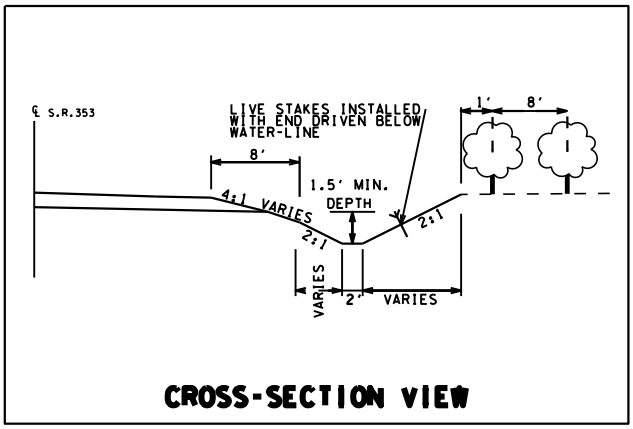
RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM CULVERT EXCAVATION AREA.

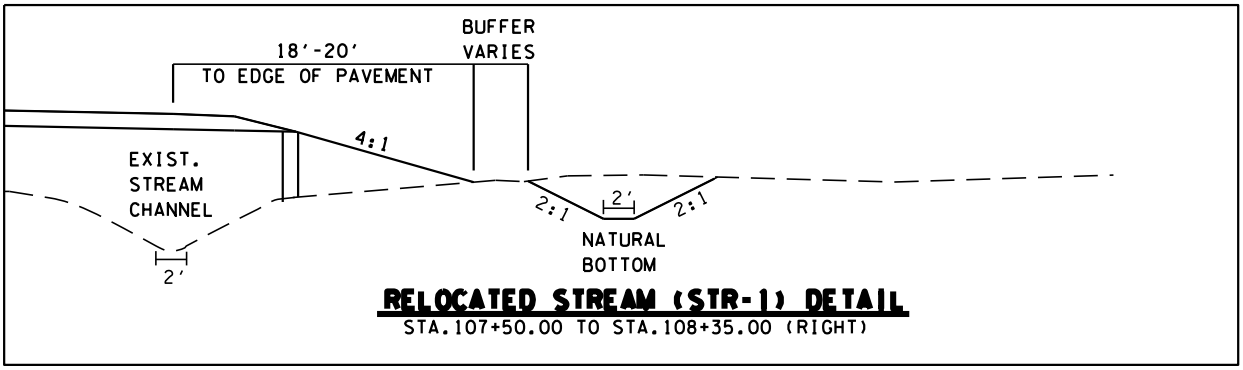
APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

Stream Relocation with Structure (STR–1) Permit Sketch

TREE PLANTING SCHEME FOR STR-1







ESTIMATED TREE QUANTITIES

ITEM #	DESCRIPTION	QUANTITY	UNIT
802-13.01	ALNUS SERRULATA (HAZEL ALDER)	1	EACH
802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)	1	EACH
802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)	1	EACH
802-13.09	LINDERA BENZOIN (SPICEBUSH)	1	EACH
802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)	1	EACH
802-02.30	SALIX NIGRA (BLACK WILLOW)	10	EACH
802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)	10	EACH
802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)	10	EACH

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

Stream Relocation with Structure (STR–1) Permit Sketch

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

(2) CHANNEL RELOCATION SEQUENCE:
A. FLAG EDGE OF THE NEW CHANNEL TOP BANK PRIOR TO CLEARING. DO NOT CLEAR LARGE TREES IN POSITION TO SHADE THE NEW CHANNEL. LEAVE AS MANY TREES AND SHRUBS AS POSSIBLE BETWEEN TOE OF THE NEW HIGHWAY SLOPE AND THE STREAM.
B. EXCAVATE THE NEW CHANNEL "IN THE DRY" BY LEAVING AREAS OF UNDISTURBED EARTH (DIVERSION BERMS) IN PLACE AT BOTH ENDS.
C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
E. REMOVE DIVERSION BERMS, BEGINNING WITH THE MOST DOWNSTREAM; BANKS AND BOTTOM ELEVATION OF THE OLD CHANNEL SHOULD TRANSITION SMOOTHLY INTO THE NEW CHANNEL. THE ELEVATIONS OF THE NEW CHANNEL BOTTOM AT EACH END OF THE RELOCATION SEQUENCE SHOULD MATCH THE ELEVATIONS OF THE EXISTING CHANNEL, AND A STEADY PERCENT SLOPE SHOULD BE MAINTAINED THROUGHOUT THE RELOCATED CHANNEL CENTERLINE OR AS SPECIFIED.
F. INSTALL SHRUBS ACCORDING TO STANDARD SPECIFICATIONS SECTION 802.

(3) ONLY RIP-RAP SHOWN ON PLANS SHOULD BE USED IN THE RELOCATED CHANNEL REACH. ANY OTHER PROPOSED RIP-RAP SHOULD BE COORDINATED WITH THE ENVIRONMENTAL DIVISION THROUGH THE TDOT CONSTRUCTION OFFICE.

(4) REQUESTS BY ANY AGENCY THAT WOULD REQUIRE MODIFCATION OF CHANNELS, ELEVATIONS, RIP-RAP, OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFFERED TO TDOT ENVIRONMENTAL DIVISION VIA HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS. TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION MAY MAKE RECOMMENDATIONS CONCERNING EROSION CONTROL VIA THE ENGINEER WITHOUT SUCH REFERRAL.

SHRUB NOTES

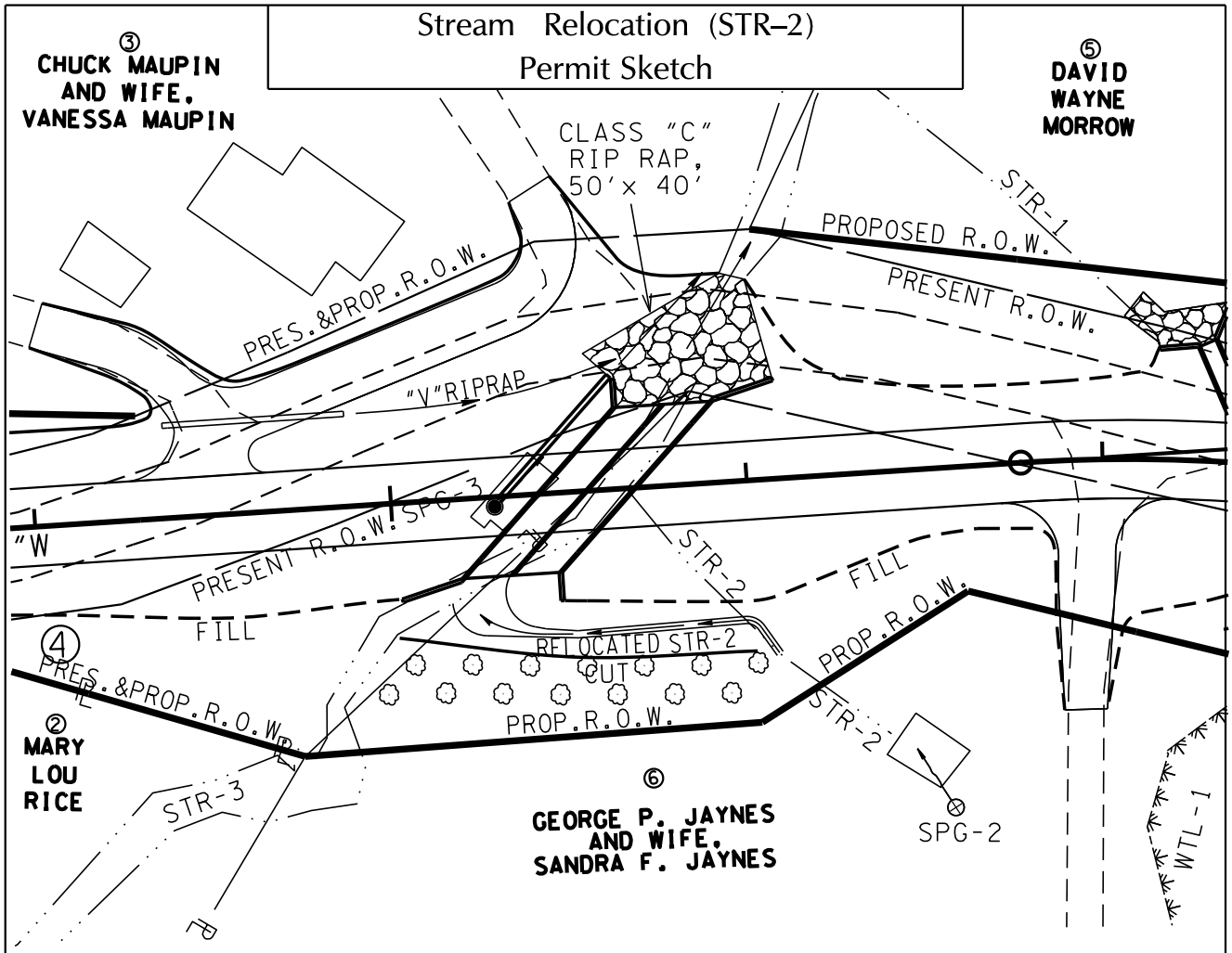
(1) NO SUBSTITUTIONS OF SHRUB SPECIES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL OF T.D.O.T. ENVIRONMENTAL DIVISION. SHRUBS SHALL BE OF THE VARIETY REQUESTED, BETWEEN 2 AND 5 FEET IN HEIGHT, CONTAINERIZED AND OF THE FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED.ANY FOUND TO BE INCORRECT SPECIES,OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION OF THE CONTRACT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.STAKES AND WIRES SHALL BE REMOVED IMMEDIATELY PRIOR TO CONTRACT TERMINATION, UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL DIVISION.

(2) THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT SHRUB SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.

(3) SHRUBS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

Stream Relocation (STR–2)
Permit Sketch



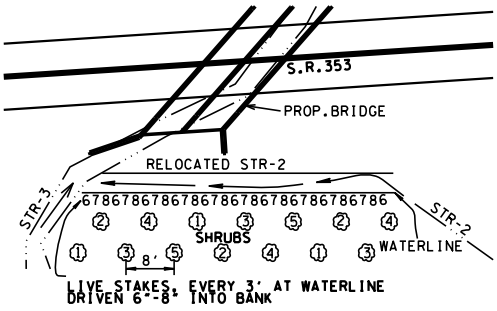
STREAM IMPACT TABLE	
EXISTING	
OPEN STREAM	65 FT.
PROPOSED	
OPEN STREAM	109 FT.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

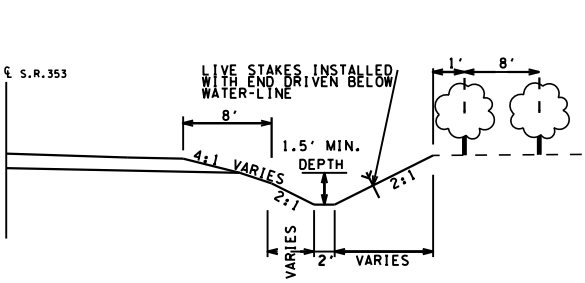
DATE: 11/29/16 REVISED: / / SHEET 7 OF 12

Stream Relocation (STR–2)
Permit Sketch

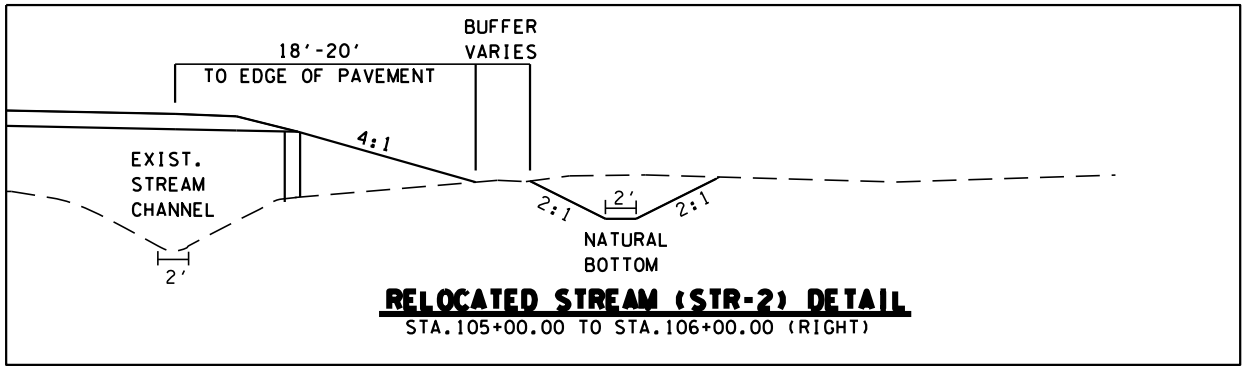
TREE PLANTING SCHEME FOR STR-2



PLAN VIEW



CROSS-SECTION VIEW



RELOCATED STREAM (STR-2) DETAIL
STA.105+00.00 TO STA.106+00.00 (RIGHT)

ESTIMATED TREE QUANTITIES

ITEM #	DESCRIPTION	QUANTITY	UNIT
802-13.01	ALNUS SERRULATA (HAZEL ALDER)	3	EACH
802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)	3	EACH
802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)	3	EACH
802-13.09	LINDERA BENZOIN (SPICEBUSH)	3	EACH
802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)	3	EACH
802-02.30	SALIX NIGRA (BLACK WILLOW)	10	EACH
802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)	10	EACH
802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)	10	EACH

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

Stream Relocation (STR–2)
Permit Sketch

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(IGNORE REFERENCES TO ITEMS NOT SPECIFIED)

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

(2) CHANNEL RELOCATION SEQUENCE:
A. FLAG EDGE OF THE NEW CHANNEL TOP BANK PRIOR TO CLEARING. DO NOT CLEAR LARGE TREES IN POSITION TO SHADE THE NEW CHANNEL. LEAVE AS MANY TREES AND SHRUBS AS POSSIBLE BETWEEN TOE OF THE NEW HIGHWAY SLOPE AND THE STREAM.
B. EXCAVATE THE NEW CHANNEL "IN THE DRY" BY LEAVING AREAS OF UNDISTURBED EARTH (DIVERSION BERMS) IN PLACE AT BOTH ENDS.
C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
E. REMOVE DIVERSION BERMS, BEGINNING WITH THE MOST DOWNSTREAM; BANKS AND BOTTOM ELEVATION OF THE OLD CHANNEL SHOULD TRANSITION SMOOTHLY INTO THE NEW CHANNEL. THE ELEVATIONS OF THE NEW CHANNEL BOTTOM AT EACH END OF THE RELOCATION SEQUENCE SHOULD MATCH THE ELEVATIONS OF THE EXISTING CHANNEL, AND A STEADY PERCENT SLOPE SHOULD BE MAINTAINED THROUGHOUT THE RELOCATED CHANNEL CENTERLINE OR AS SPECIFIED.
F. INSTALL SHRUBS ACCORDING TO STANDARD SPECIFICATIONS SECTION 802.

(3) ONLY RIP-RAP SHOWN ON PLANS SHOULD BE USED IN THE RELOCATED CHANNEL REACH. ANY OTHER PROPOSED RIP-RAP SHOULD BE COORDINATED WITH THE ENVIRONMENTAL DIVISION THROUGH THE TDOT CONSTRUCTION OFFICE.

(4) REQUESTS BY ANY AGENCY THAT WOULD REQUIRE MODIFCATION OF CHANNELS, ELEVATIONS, RIP-RAP, OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFFERED TO TDOT ENVIRONMENTAL DIVISION VIA HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS. TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION MAY MAKE RECOMMENDATIONS CONCERNING EROSION CONTROL VIA THE ENGINEER WITHOUT SUCH REFERRAL.

SHRUB NOTES

(1) NO SUBSTITUTIONS OF SHRUB SPECIES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL OF T.D.O.T. ENVIRONMENTAL DIVISION. SHRUBS SHALL BE OF THE VARIETY REQUESTED, BETWEEN 2 AND 5 FEET IN HEIGHT, CONTAINERIZED AND OF THE FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED.ANY FOUND TO BE INCORRECT SPECIES,OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION OF THE CONTRACT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.STAKES AND WIRES SHALL BE REMOVED IMMEDIATELY PRIOR TO CONTRACT TERMINATION, UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL DIVISION.

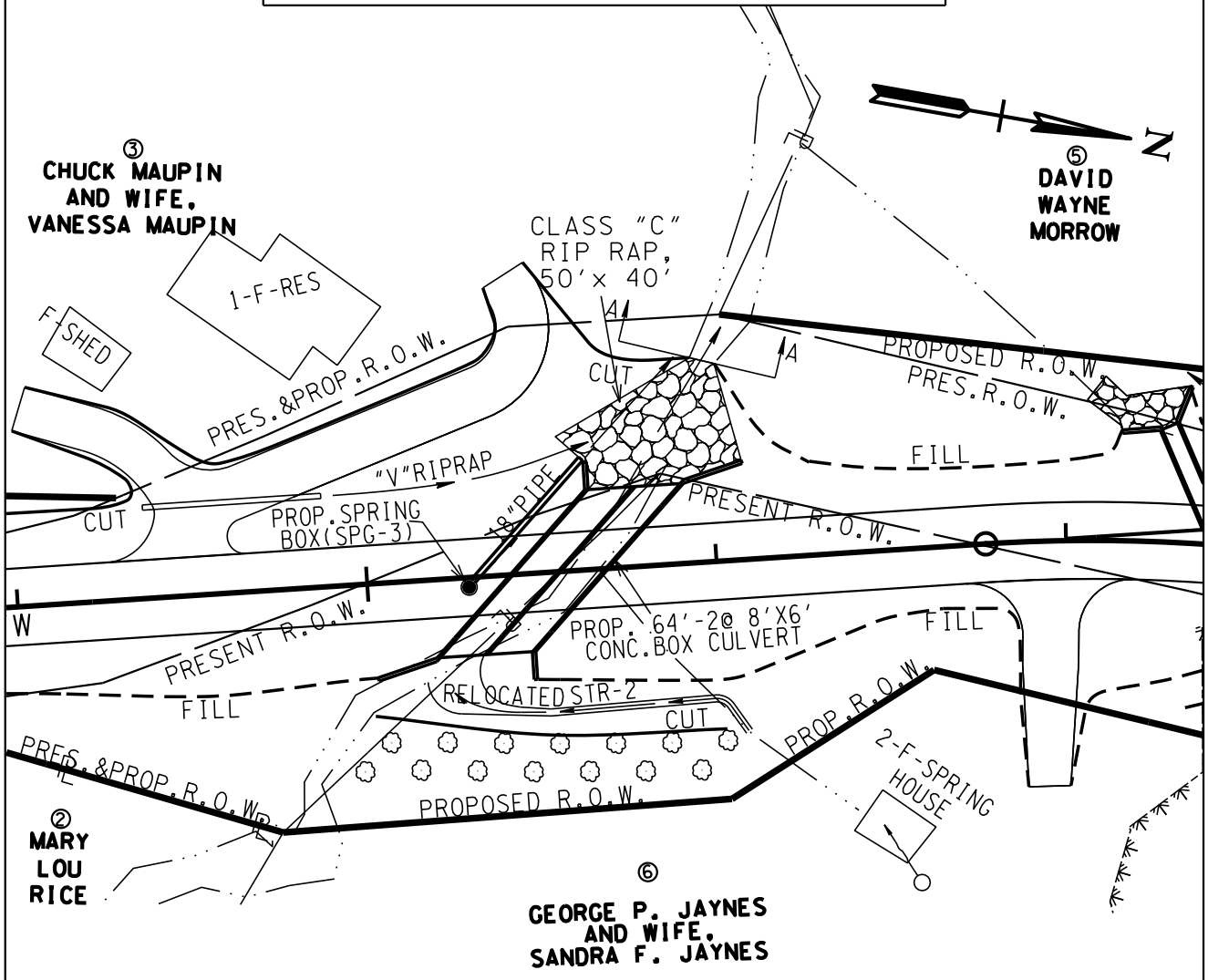
(2) THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT SHRUB SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.

(3) SHRUBS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Encapsulation/Extension (STR–3) Permit Sketch



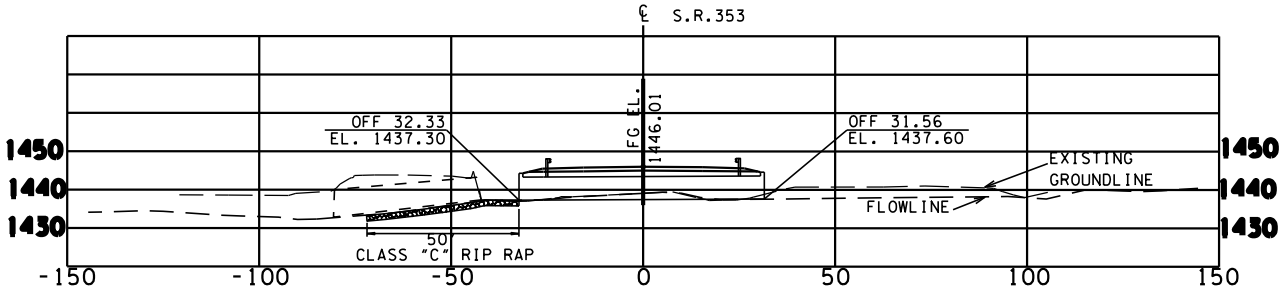
STREAM IMPACT TABLE		
EXISTING		
OPEN STREAM		85 FT.
STRUCTURE	16'X6' CONC. BOX CULVERT	30 FT.
TOTAL EXISTING STRUCTURE		30 FT.
TOTAL EXISTING LENGTH		115 FT.
PROPOSED		
OPEN STREAM		41 FT.
INCLUDES:	CLASS "C" RIP-RAP AT OUTLET	41 FT.
STRUCTURE	2@ 8'X6' CONC.BOX CULVERT	64 FT.
TOTAL PROPOSED STRUCTURE		64 FT.
TOTAL PROPOSED LENGTH		105 FT.

0 50 100 150
SCALE IN FEET

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Encapsulation/Extension (STR–3)
Permit Sketch



STATION	105+55.00
STRUCTURE	64'-2@ 8'X6' CONCRETE BOX CULVERT
SKEW	45° LT.
DRAINAGE AREA	667 ACRES
DESIGN DISCHARGE (Q50)	423 CFS
DESIGN DISCHARGE (Q100)	498 CFS
OVERTOPPING ELEV.	1444.67
Q50 HEADWATER ELEV.	1443.05
Q100 HEADWATER ELEV.	1443.15
VELOCITY(Q50)	11.9 FPS
VELOCITY(Q100)	12.4 FPS
INLET ELEVATION	1437.60
OUTLET ELEVATION	1437.30
STD. DWG. NOS.	STD-17-1,STD-17-2, STD-15-57
CLASS "A" CONCRETE	81 C.Y.
STEEL BAR REINFORCING	20,640 LB.

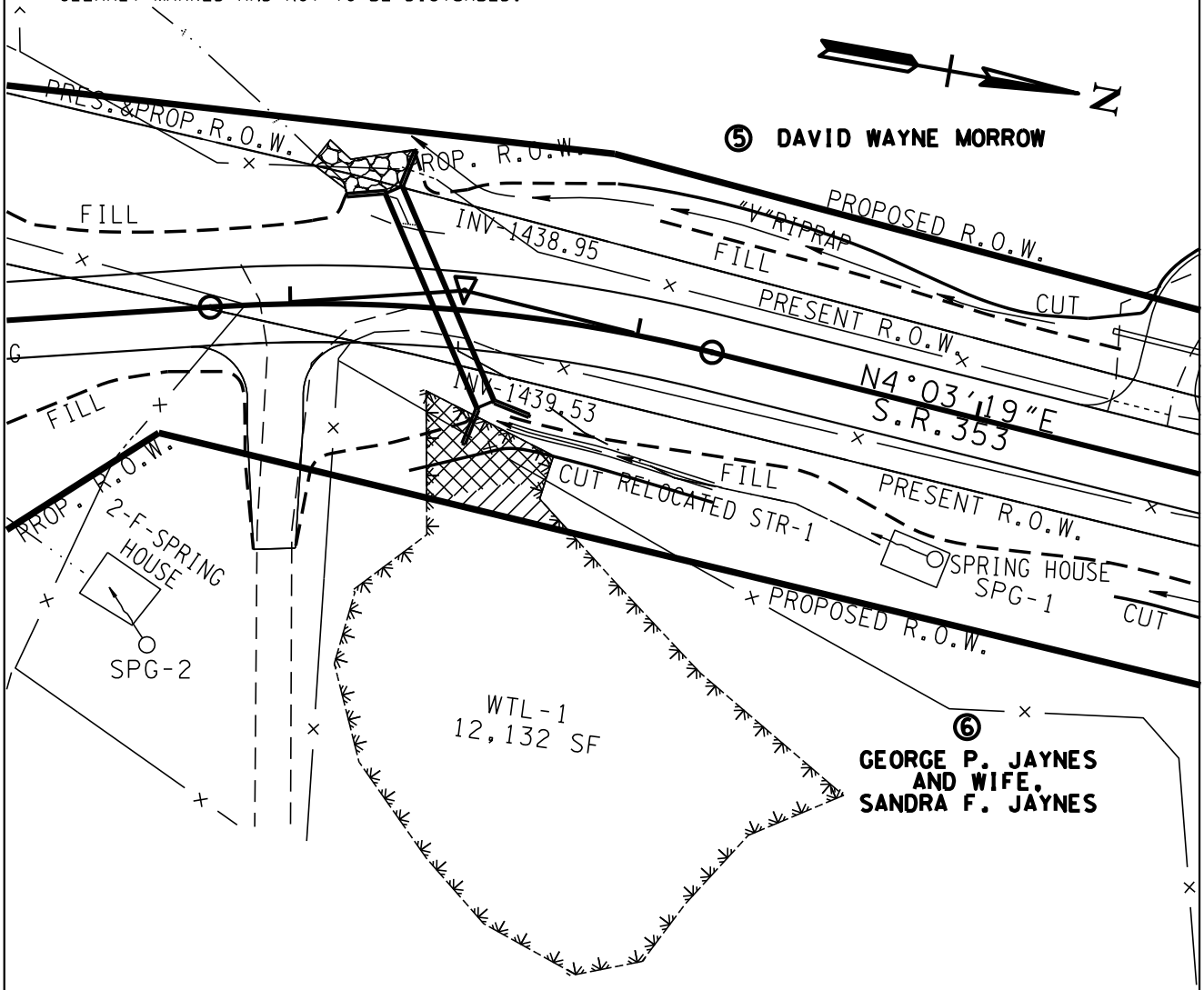
RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM CULVERT EXCAVATION AREA.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

Wetland Impacts (WTL–1)
Permit Sketch

MITIGATION NOTES

1. REMOVE THE TOP 12 INCHES OF TOPSOIL AND STOCKPILE IT UNTIL CONSTRUCTION IS COMPLETE.
2. ONCE CONSTRUCTION ACTIVITIES ARE COMPLETED, RESTORE ALL TEMPORARY WETLAND IMPACT AREAS TO PRE-CONSTRUCTION CONDITIONS. THIS INCLUDES REMOVING HAUL ROADS (IF APPLICABLE), RESTORING THE SITE TO THE ORIGINAL (PRE-CONSTRUCTION) ELEVATION AND SPREADING STOCKPILED TOPSOIL BACK OVER THE WETLAND SITE.
3. THE AREA OF TEMPORARY IMPACTS WILL BE STABALIZED ACCORDING TO STANDARD PRACTICES. PLANTING WILL BE BASED ON NOTES PROVIDED BY ECOLOGY.
4. WETLAND AREAS LOCATED OUTSIDE OF PROPOSED RIGHT-OF-WAY AND CONSTRUCTION EASEMENTS ARE TO BE CLEARLY MARKED AND NOT TO BE DISTURBED.



LEGEND	WETLAND IMPACTS (WTL-1)
	AREA OF PERMANENT IMPACT = 0.02 AC.
	VOLUME OF PERMANENT IMPACT = 25 C.Y.
	AREA OF TEMPORARY IMPACT = 0.01 AC.
	VOLUME OF TEMPORARY IMPACT = 8 C.Y.

0 50 100 150

SCALE IN FEET

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

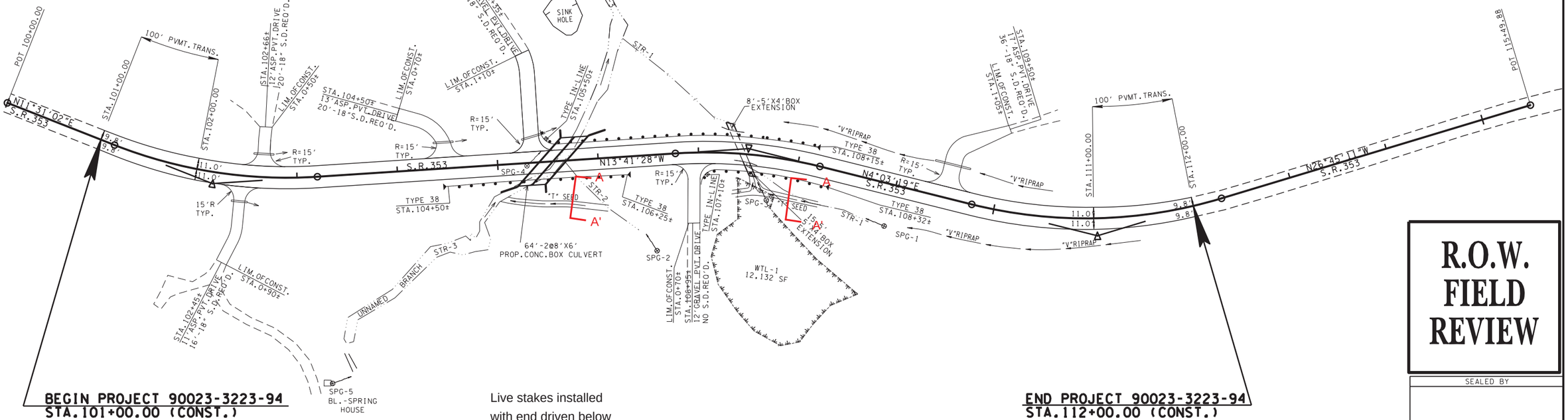
DATE: 11/29/16 REVISED: / /

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2014	HRRR/HSIP-353(10)	4B

S.R.353 WASHINGTON CO.
90023-2223-94 (R.O.W.)

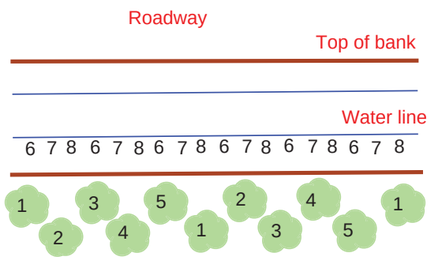
S.R.353(BAILEY BRIDGE RD.)
PI 102+19.12
N 693,308.2568
E 2,973,922.5475
Δ 25° 12' 30" (LT)
D 12° 15' 00"
R 467.72
L 205.78
T 104.58
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 101+14.54
PT 103+20.32

S.R.353(BAILEY BRIDGE RD.)
PI 111+06.45
N 694,184.0619
E 2,973,821.3573
Δ 30° 48' 30" (LT)
D 12° 15' 00"
R 467.72
L 251.50
T 128.87
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 109+77.58
PT 112+29.08

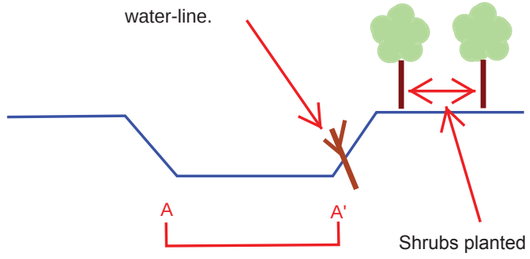


BEGIN PROJECT 90023-3223-94
STA. 101+00.00 (CONST.)

END PROJECT 90023-3223-94
STA. 112+00.00 (CONST.)



Live stakes installed with end driven below water-line.



Shrubs planted on 6'-8' centers as space allows with first row planted approximately1' from edge of top of bank.

S.R.353(BAILEY BRIDGE
PI 107+50.09
N 693,827.4262
E 2,973,796.0722
Δ 17° 44' 48" (RT)
D 12° 15' 00"
R 467.72
L 144.87
T 73.02
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 106+77.07
PT 108+21.94

Shrub species for stream:

Item #	
802-13.01	1. *Alnus serrulata* (Hazel alder) 2-5' in height, containerized
802-13.02	2. *Calycanthus floridanus* (Sweetshrub) 2-5' in height, containerized
802-13.04	3. *Cornus amomum* (Silky dogwood) 2-5' in height, containerized
802-13.09	4. *Lindera benzoin* (Spicebush) 2-5' in height, containerized
802-13.10	5. *Sambucus canadensis* (Elderberry) 2-5' in height, containerized
-	
-	

Live stake species for stream banks:

Item #	
802-02.30	6. *Salix nigra* (black willow) 18-24" in length
802-02.32	7. *Cornus amomum* (silky dogwood) 18-24" in length
802-02.33	8. *Sambucus canadensis* (elderberry) 18-24" in length

R.O.W. FIELD REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000096 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PROPOSED LAYOUT

STA. 101+00 TO STA. 112+00

SCALE: 1"= 50'

09-APR-2014 08:35
\\JOWF01.tdot.state.tn.us\Shared\SURVDES\DESIGN\PROJECTS\WSSR353\004B.SHT

From:	Mike Meulemans
To:	Jay Norris; Mary Howard; Michael Horlacher; Shawn Allen; Jay Morgan
Cc:	John Hewitt; DJ Wiseman; Mary Showers; Kristen K. Taylor; Dennis Crumby; Keven Brown; Ben Brown; Hugh Hannah; Baxter Wilson; TDOT.HQ Construction; Daniel Oliver; John Barrett; Mark Doty; Maysoon Haddad
Subject:	Water Quality Permit Distribution, PIN 114038.01
Date:	Wednesday, July 05, 2017 9:43:00 AM
Attachments:	PIN 114038.01 Permits.pdf image002.png

Water Quality Permit Distribution

PE #90023-1223-94
PIN 114038.01
SR-353: Miscellaneous safety improvements
Washington County

The Department received the following permit(s):

- Individual Aquatic Resource Alteration Permit NRS #16.326
- Nationwide Section 404 Permit File LRN-2016-01237

A package with a copy of each permit is attached for your information and use. Nationwide #14 permit conditions are in effect and construction shall follow all general permit requirements. Construction forces should be made aware that these permits are applicable to the contract.

It is our understanding that the TDOT contractors will not be relocating utilities. Therefore, these permits do not include utility relocation impacts. If utilities are expected to be relocated by TDOT contractors, please contact the TDOT Region 1 Environmental Tech Group immediately.

All permits required for this project have been received.

If you have any questions or if we can provide further assistance, please contact me or Mary Showers at (615) 253-1558.

Michael Meulemans, P.E. | Consultant
Environmental Division
Natural Resources Office, Permits Section
James K. Polk Building, 9th Floor
505 Deaderick Street
Nashville, TN 37243
615-253-2466
Mike.Meulemans@tn.gov
tn.gov/tdot

Robbie Stephens

From: Jeanene Woodruff
Sent: Tuesday, April 25, 2017 3:20 PM
To: DJ Wiseman
Cc: Caitlin Elam; Mary Showers; Tom Isaacs; USACE Nashville; Robbie Stephens; Cody Mitchell; Kristen K. Taylor
Subject: ARAP Permit #NRS16.326 PIN #114038.01
Attachments: NRS16.326PermitIssued.pdf

Importance: High

Attached the ARAP Permit #NRS16.326 PIN #114038.01 issued on 04/18/2017. If you have any questions please contact Caitlin Elam at 615-532-0359 or by email at Caitlin.Elam@tn.gov

Note: This email was sent on behalf of Caitlin Elam. If you require a paper copy of the document, please print the attached PDF. Paper copies are available upon request.

TN Department of Environment & Conservation

Jeanene Woodruff
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243
Office: 615-532-0645
Email: Jeanene.Woodruff@tn.gov
TDEC Dataviewer: http://environment-online.tn.gov:8080/pls/enf_reports/f?p=9034:34001:0:::::

Please tell us how you think we're doing by completing this survey: TDEC Customer Satisfaction Survey

STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

DIVISION OF WATER RESOURCES

William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

April 18, 2017

Ms. DJ Wiseman
Civil Engineering Manager 1
Tennessee Department of Transportation
505 Deadrick St. #900
Nashville, TN 37243

Subject: **Individual ARAP Permit/§401 Water Quality Certification**
NRS16.326 - Project #90023-1223-94 PIN #114038.01 SR 353 at LM 3.23 Realign Roadway to Flatten Curves and Upgrade Drainage, Installation of 2 Culverts and Relocating 2 Streams at Unnamed Tributary to Nolichucky River
Latitude: 36.1908, Longitude: -82.5933

Dear Ms. Wiseman:

We have reviewed your proposal to encapsulate 131 linear feet of stream including rip rap, eliminate 10 linear feet of stream and relocate 179 linear feet of stream as stream replacement for road realignment and culvert replacement of SR 353. Mitigation for stream impacts will occur at a 1:1 ratio through on-site stream replacement mitigation in the Nolichucky Watershed.

This activity is governed by the enclosed permit. The work must be accomplished in conformance with accepted plans and information submitted in support of the permit for NRS16.326 and the limitations and conditions set forth in the permit (enclosed). It is the responsibility of the permittee to ensure that all contractors involved with this project have read and understand the permit conditions before the project begins.

Coverage Termination

Authorization under this permit cannot be extended beyond the expiration date. If all work is not completed on or before the expiration date of this permit, it is the applicant's responsibility to apply for

additional coverage. Thank you for your time and consideration. If you have any questions, please contact me by e-mail at *Caitlin.Elam@tn.gov* or by phone at (615) 532-0359.

Sincerely,

Caitlin E. Elam
Environmental Scientist, Natural Resources Unit

Encl: copy of permit

Cc: DWR, Johnson City Environmental Field Office
U.S. Army Corps of Engineers, Nashville Regulatory Branch
Mr. Robbie Stephens, TDOT; Robbie.Stephens@tn.gov
Mr.Cody Mitchell, TDOT; Cody.Mitchell@tn.gov
Ms. Mary Showers, TDOT; Mary.Showers@tn.gov
Ms. Kristen Taylor, TDOT; Kristen.Taylor@tn.gov

File Copy

STATE OF TENNESSEE

§401 WATER QUALITY CERTIFICATION

ARAP – NRS16.326

Pursuant to §401 of *The Federal Clean Water Act* (33 U.S.C. 1341), any applicant for a Federal license or permit to conduct any activity which may result in any discharge into the waters of the U.S., shall provide the federal licensing or permitting agency a certification from the State in which the discharge originates or will originate. Accordingly, the Division of Water Resorces requires reasonable assurance that the activity will not violate provisions of *The Tennessee Water Quality Control Act of 1977* (T.C.A. §69-3-101 et seq.) or provisions of §§301, 302, 303, 306 or 307 of *The Clean Water Act*.

Subject to conformance with accepted plans, specifications and other information submitted in support of the application, pursuant to 33 U.S.C. 1341 the State of Tennessee hereby certifies the activity described below. This shall serve as authorization under T.C.A. §69-3-101 et seq.

PERMITTEE Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243

AUTHORIZED WORK: Encapsulate 131 linear feet of stream including rip rap and 10 linear feet of stream loss and relocate 179 linear feet of stream for a road realignment and culvert replacement of SR 353. Mitigation for stream impacts will occur at a 1:1 ratio through on-site mitigation by stream replacement and planting.

LOCATION: State Route 353 over Branch at LM 3.23; Washington County, TN

Latitude: 36.1908, Longitude: -82.5933

EFFECTIVE DATE: April 18, 2017

EXPIRATION DATE: April 17, 2022

for

Tisha Calabrese Benton
Director, Division of Water Resources

Contents

NRS16.326
§401 Water Quality Certification

PART I

Authorized Work

Impact Location	Resource	Impact	Latitude	Longitude
Permanent Wetland Fill	Emergent Wet Meadow	0.02 acres of emergent wetland	36.1912	-82.5934
Temporary Wetland Fill	Emergent Wet Meadow	0.01 acres of emergent wetland	36.1912	-82.5933
Str-1	Perennial Stream, Unnamed Tributary to Nolichucky River	67 linear feet encapsulation with 25 linear feet riprap and 70 linear feet relocation (15 linear feet added to offset Str-3 loss)	36.2105	-82.6066
Str-2	Perennial Stream, Unnamed Tributary to Nolichucky River	109 linear feet relocation (44 linear feet added to offset Str-3 loss)	36.1908	-82.5933
Str-3	Perennial Stream, Unnamed Trib. To Nolichucky River	64 linear feet encapsulation, 41 linear feet outfall riprap and 10 Linear Feet Stream Loss	36.1907	-82.5934
Total Permanent Wetland Impacts: 0.02 Acres ***Total Temporary Wetland Impacts: 0.01 Acres*** ***Total Permanent Stream Impacts: 131 Linear Feet*** ***Total Stream Relocation: 179 linear feet***				

Permit Conditions

Special Conditions

a. Prior to changing stream course into the replacement channel the Johnson City Environmental Field Office shall be notified and given the opportunity to inspect the replacement channel.

b. If any State or Federally Listed aquatic species are discovered during construction TDEC and TWRA shall be notified and TDOT shall await and follow instructions on how to proceed.

c. All culverts with more than one barrel shall be constructed in a manner which will concentrate flow into one barrel and not result in channel over widening.

d. The bottom of culverts shall be constructed below the stream bed elevation in a manner that allows natural substrate to reestablish.

e. Culverts shall not be constructed in a manner that would permanently disrupt the movement of fish and aquatic life.

f. All riprap areas shall be placed as to mimic the existing/proposed contours of the stream channel. Riprap shall be countersunk and placed at the grade with the existing stream substrate. Riprap shall not be placed in a manner that would permanently disrupt the movement of fish and aquatic life.

g. Voids within the riprap shall be filled with suitable substrate to prevent loss of stream within the riprap areas. Do not over-excavate for placement of riprap.

h. Construction and removal of bridges and culverts shall be in the dry to the maximum extent practicable, by diverting flow utilizing cofferdams, berms, and/or temporary channels or pipes. Temporary diversion channels shall be protected by non-erodible material to the expected high water level. Cofferdams and/or berms shall be constructed of sandbags, clean rock (containing no fines or soils), steel sheeting, or other non-erodible, non-toxic material. All such diversion materials shall be removed upon completion of the work.

i. The use of monofilament-type erosion control netting or blanket is prohibited.

j. The permitte shall notify this office of project completion within thirty (30) days of completion.

k. Permittee is responsible for any permanent reduction or loss of instream flow resulting from authorized activities.

l. Best Management Practices (BMPs) shall be stringently implemented throughout the construction period to prevent sediments, oils, or other project-related pollutants from being discharged into the streams. All spills must be reported to the appropriate emergency management agency, and measures shall be taken immediately to prevent the pollution of waters of the state, including groundwater, should a spill occur.

m. Checkdams or other in-stream treatment are not authorized to be placed in the stream.

n. Streambeds shall not be used as transportation routes for construction equipment. Temporary stream crossings shall be limited to one point in the construction area and EPSC measures shall be utilized where stream banks are disturbed. The crossing shall be constructed so that stream or wetland flow is not

obstructed. Following construction, all materials used for the temporary crossing shall be removed and disturbed stream banks shall be restored and stabilized if needed.

o. Backfill activities must be accomplished in a manner that stabilizes the streambed and banks to prevent erosion. All contours must be returned to pre-project conditions to the extent practicable and the completed activities may not disrupt or impound stream flow.

p. Clearing, grubbing, and other disturbance to riparian vegetation shall be kept at the minimum necessary for slope construction and equipment operations. Unnecessary riparian vegetation removal, including trees, is prohibited. Native riparian vegetation must be reestablished after work is completed. Non-native, non-invasive annuals may be used as cover crops until native species are established. Coverage under this permit does not serve to waive any local riparian buffer protection requirement, and permittees are responsible for obtaining any necessary local approval.

q. Activities that directly impair surface water flow into or out of any wetland areas not specified in this permit or the application materials are not covered.

r. The authorized wetland alterations shall not cause measureable degradation to resource values and classified uses of hydrologically connected wetlands or other waters of the state, including disruption of sustaining surface or groundwater hydrology. Adjacent wetlands or streams determined likely to be measurably degraded by such hydrologic alteration, or by partial fill, must be included in the cumulative impact calculation, even if not filled or otherwise directly altered physically.

s. Temporary impacts to wetlands shall be mitigated by the removal and stockpiling of the first 12 inches of topsoil, prior to construction. Upon completion of construction activities, all temporary wetland impact areas are to be restored to pre-construction contours, and the stockpiled topsoil spread to restore these areas to pre-construction elevation. Other side-cast material shall not be placed within the temporary impact locations. Permanent vegetative stabilization using native species of all disturbed areas in or near the wetland must be initiated within 14 days of project completion (see also Landscaping with Natives at tneppc.org). Non-native, non-invasive annuals may be used as cover crops until native species can be established

General Conditions

a. It is the responsibility of the applicant to convey all terms and conditions of this permit to all contractors. A copy of this permit, approved plans and any other documentation pertinent to the activities authorized by this permit shall be maintained on site at all times during periods of construction activity.

b. Work shall not commence until the applicant has received the federal §404 permit from the U. S. Army Corps of Engineers, a §26a permit from the Tennessee Valley Authority or authorization under a Tennessee NPDES Storm Water Construction Permit as well as other State, Federal, or local laws where necessary. The applicant is responsible for obtaining these permits.

c. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in Rule 0400-40-03-.03 of the Rules of the Tennessee Department of Environment and Conservation. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of waters of the state for any of the uses designated by Rule 0400-40-04. These uses include fish and aquatic life (including trout streams and naturally reproducing trout streams), livestock watering and wildlife, recreation, irrigation, industrial water supply, domestic water supply, and navigation.

d. Impacts to waters of the state other than those specifically addressed in the plans and this permit are prohibited. All streams, springs and wetlands shall be fully protected prior, during and after construction until the area is stabilized. Any questions, problems or concerns that arise regarding any stream, spring or wetland either before or during construction, shall be addressed to the Division of Water Resource's Johnson City Environmental Field Office (423-854-5400), or the permit coordinator in the division's Natural Resources Unit (615-532-0359).

e. This permit does not authorize adverse impacts to cultural, historical or archeological features or sites.

f. All activities must be accomplished in conformance with the approved plans, specifications, data and other information submitted in support of the ARAP application (form CN-1091) and the limitations, requirements and conditions set forth herein. Failure to comply with the terms and conditions of this permit is a violation of the Tennessee Water Quality Control Act of 1977 (the Act), and is subject to penalty in accordance with T.C.A. §69-3-115.

g. Activities occurring in known or likely habitat of State or Federally listed threatened, endangered, deemed in need of management, or species of special concern may not be authorized without prior coordination with the Tennessee Wildlife Resources Agency (TWRA) and TDEC Division of Natural Areas (DNA) to determine if any special conditions are required to avoid and/or minimize harm to the listed species or their habitat. Adverse effects to federally listed threatened and endangered species are not permitted without prior authorization from the United States Fish and Wildlife Service (USFWS) as required by Section 7 or Section 10 under the Endangered Species Act.

h. This permit does not authorize access to private property. Arrangements concerning the use of private property shall be made with the landowner.

i. Erosion prevention and sediment control measures must be in place and functional before any earth moving operations begin, and shall be designed according to the department's Erosion and Sediment Control Handbook (www.tn.gov/environment/wpc/sed_ero_controlhandbook/). Permanent vegetative stabilization using native species of all disturbed areas in or near the stream channel must be initiated within 15 days of project completion (see also Landscaping with Natives at tneppc.org). Non-native, non-invasive annuals may be used as cover crops until native species can be established.

j. The permittee is responsible for obtaining coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities where clearing, grading or excavation results in an area of disturbance of one or more acres, or activities that result in the disturbance of less than one acre if it is part of a larger common plan of development or sale.

PART II

Mitigation Requirements and Monitoring Procedures

Required Mitigation Activities

1. Mitigation for 10 linear feet of stream loss will be accomplished through 59 linear feet of additional stream length at the stream replacement locations and buffer shrub planting in accordance with submitted application materials prior to or at the same time as impacts. Mitigation for 179 linear feet of stream loss will be accomplished through 179 linear feet of stream replacement and buffer shrub planting in accordance with submitted application materials prior to or at the same time as impacts. If the mitigation ownership is transferred outside of State ownership a land use deed restriction or other protective covenant will be transferred with the property.
2. Loss of stream resource value at the time of monitoring will require additional mitigation offsite and/or in the relocated channel.
3. No mitigation is required for the encapsulation, because these impacts are cumutively below de minimis.

Compensatory mitigation activities shall be carried out utilizing best professional efforts to comply with approved plans and the conditions of this permit. Mitigation activities shall be deemed complete when the Division determines that the permitted impact on aquatic resources has been adequately addressed through successful achievement of the compensatory mitigation activities, and a no further action letter has been provided to the permittee.

The goal of this permit and its mitigation success criteria is to ensure there is no net loss of resource value due to the impacts of the permitted activity. ln accordance with adaptive management, the Division incorporates safety factors into compensatory mitigation requirements. Therefore, once successful mitigation has been achieved the Division reserves the right to revise performance standards and mitigation criteria to account for any changes documented in the compensatory mitigation project. While final mitigation activities may not result in a net loss of resource value, they may be revised to reflect approved changes from the original mitigation proposal and the success criteria in the permit. Upon acceptance of closure of the project, the Division shall record any such revisions of the mitigation plan or success criteria through formal modification of the permit conditions with public notice.

Permittee Responsible Mitigation

The permittee is authorized to create 238 linear feet of an unnamed tributary to the Nolichucky River. The replacement channel shall be constructed to have a bank height ratio of 1-1.2 for channel stability. The replacement channel may not be riprap lined except for 25 and 41 linear feet as indicated on the plans. The channel will be revegetated with rows of shrubs on the right and left bank for the entire stretch of relocated channel as indicated on plans.

Monitoring Procedures

1. Mitigation shall be complete no less than one year from the date of impacts authorized in this permit.
2. A post-construction monitoring report for the relocated stream shall be due by October 31st after the project is complete to ensure permit compliance.
3. Departure from a performance standard does not automatically require corrective action. Visual observations and a review ofthe entire stream system will be conducted to determine if and what corrective actions are warranted.
4. The permittee shall submit, annually by October 31st, a report containing all monitoring information, as outlined below for a term of three years (3 years) after mitigation is complete:

   Hydrology - The State's Hydrologic Determination procedure shall be part of the monitoring requirements for years 1 and 3. The hydrologic assessments can be conducted anytime during year 1 and 3 from Feburary 1-April 15th. The relocated stream, an unnamed tributary to the Nolichucky River, must maintain its status as a jurisidictional water feature throughout the monitoring period. Failure for this water feature to rank as a jurisdictional stream will require corrective action and/or mitigation on the part of the permittee.

   Vegetation - A 75% survival rate, comprised of both planted and desirable seedlings from natural regeneration shall remain growing at the end of the monitoring period. No more than 25% of any one species shall dominate the native riparian plant community.Vegetation counted towards survival rates, including both planted and volunteer, should be of desirable native species. Bare soil should comprise no greater than 5% of the stream replacement planted riparian buffer.

Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The dates and times the analyses were performed;
2. The person(s) who performed the analyses;
3. The analytical techniques or methods used ;
4. The results of all required analyses;

5. Narrative descriptions and georeferenced photo-documentation to support required survey data.

6. In the event any portion or aspect of the monitoring project does not meet the specified success criteria based on reporting and/or additional visual observations in a monitoring year, the nature and cause(s) of the resulting condition shall be investigated and documented. If it is determined that corrective actions are not warranted at the time, the rationale for the decision shall be stated. Continued monitoring of the condition or area using more detailed methodology may be appropriate and must be documented. In instances where corrective actions are necessary, a plan shall be prepared that includes proposed actions, a time schedule for activities, and revised monitoring plan.

Submission of Monitoring Results

1. The permittee shall submit, annually by October 31st, a report containing all monitoring information, as outlined above for a term of three years (3 years) after stream replacement mitigation is complete to the Division 's Natural Resources Unit, located on the 11th Floor of the William R. Snodgrass- Tennessee Tower, 312 Rosa L. Parks Avenue, Nashville, Tennessee 37243-1102. Copies shall also be provided to the Knoxville Environmental Field Office.

2. The permittee should notify the agencies in writing when the monitoring period is complete. Following receipt of the final report, the agencies will contact the permittee (or agent) as soon as possible to schedule a site visit to confirm the success of the site.

Additional Responsibilities of Permittee

The permittee shall provide documentation if the property is transefered out of State ownership, within 90 days of property transfer, of a land-use deed restriction and/or any other binding negotiated documentation regarding all mitigation sites in association with this project. This documentation should be sent to the division 's Natural Resources Section located at the address referenced above.

Duty to Reapply

If any portion of the permitted activities, including the authorized impacts to water resources, compensatory mitigation requirements, or post project monitoring is not completed before the expiration date of this permit the applicant must apply for permit re-issuance. The permittee shall submit such information and forms as are required to the director of the Division of Water Resources at least ninety (90) days prior to its expiration date. Such applications must be properly signed and certified.

Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

Other Information

If the permittee becomes aware that he/she failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, then he/she shall promptly submit such facts or information.

Changes Affecting the Permit

Transfer/Change of Ownership

a. This permit may be transferred to another party, provided there are no activity or project modifications, no pending enforcement actions, or any other changes which might affect the permit conditions contained in the permit, by the permittee if:

b. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;

c. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and contractual liability between them; and

d. The Director does not notify the current permittee and the new permittee, within 30 days, of their intent to modify, revoke, reissue, or terminate the permit, or require that a new application be filed rather than agreeing to the transfer of the permit.

e. The permittee must provide the following information to the division in their formal notice of intent to transfer ownership:

    1. the permit number of the subject permit;
    2. the effective date of the proposed transfer;
    3. the name and address of the transferor;
    4. the name and address of the transferee;
    5. the names of the responsible parties for both the transferor and transferee;
    6. a statement that the transferee assumes responsibility for the subject permit;
    7. a statement that the transferor relinquishes responsibility for the subject permit;
    8. the signatures of the responsible parties for both the transferor and transferee, and;
    9. a statement regarding any proposed modifications to the permitted activities or project, its operations, or any other changes which might affect the permit conditions contained in the permit.

Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

Noncompliance

Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable State and Federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

Reporting of Noncompliance

24-Hour Reporting

a. In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate Environmental Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The Environmental Field Office should be contacted for names and phone numbers of environmental response personnel).

b. A written submission must be provided within five (5) days of the time the permittee becomes aware of the circumstances unless this requirement is waived by the Director on a case-by-case basis. The permittee shall provide the Director with the following information:

    1. A description of the discharge and cause of noncompliance;
    2. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
    3. The steps being taken to reduce, eliminate, and prevent recurrence of the non-complying discharge.

Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph a. above, the permittee shall report the noncompliance by contacting the permit coordinator, and provide all information concerning the steps taken or planned to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including but not limited to, accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

Liabilities

Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of pollutants to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its discharge activities in a manner such that public or private nuisances or health hazards will not be created.

Liability under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or the Federal Water Pollution Control Act, as amended.

This permit does not preclude requirements of other Federal, State or local laws. This permit also serves as a State of Tennessee Aquatic Resource Alteration Permit (ARAP) pursuant to the Tennessee Water Quality Control Act of 1977 (T.C.A. §69-3-101 et seq.).

This permit may be revoked, suspended, or modified for cause, including:

1. Violation of any of the terms or conditions of this permit or of T.C.A § 69-3-101 et. seq.;
2. Obtaining the permit by misrepresentation or failing to disclose fully all relevant facts;
3. A change in any condition that requires either a temporary or permanent change in the conditions of this permit.

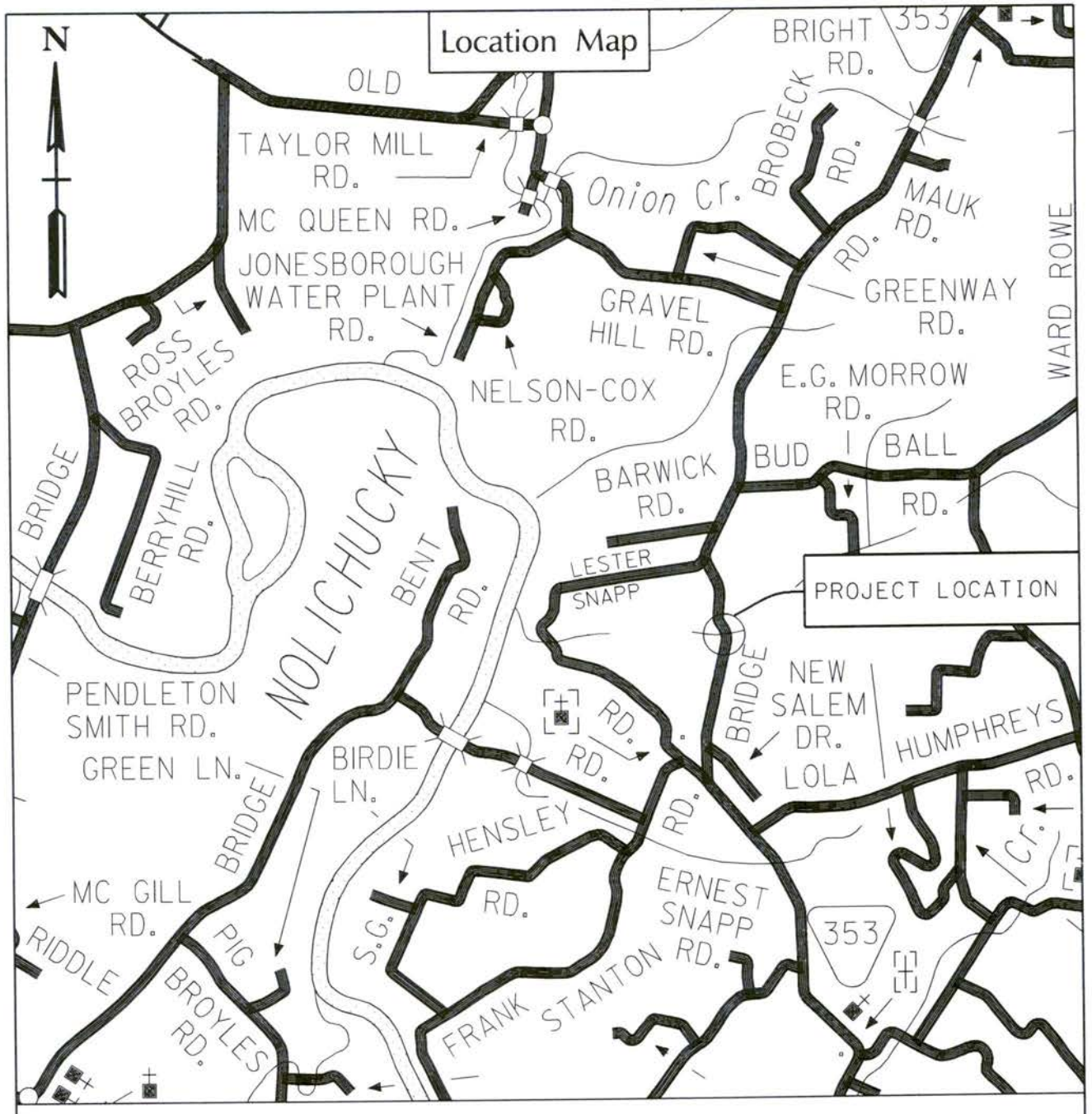
An appeal of this action may be made as provided in T.C.A. §69-3-105(i) and Rule 0400-40-05-.12 by submitting a petition for appeal. This petition must be filed within THIRTY (30) DAYS after public notice of the issuance of the permit. The petition must specify what provisions are being appealed and the basis for the appeal. It should be addressed to the technical secretary of the Tennessee Board of Water Quality, Oil and Gas at the following address: Ms. Tisha Calabrese Benton, Director, Division of Water Resources,

William R. Snodgrass - Tennessee Tower, 312 Rosa L. Parks Avenue, Nashville, Tennessee 37243-1102.

Any hearing would be in accordance with T.C.A. §69-3-110 and 4-5-301 et seq.

APPENDIX I

Location and Impacts

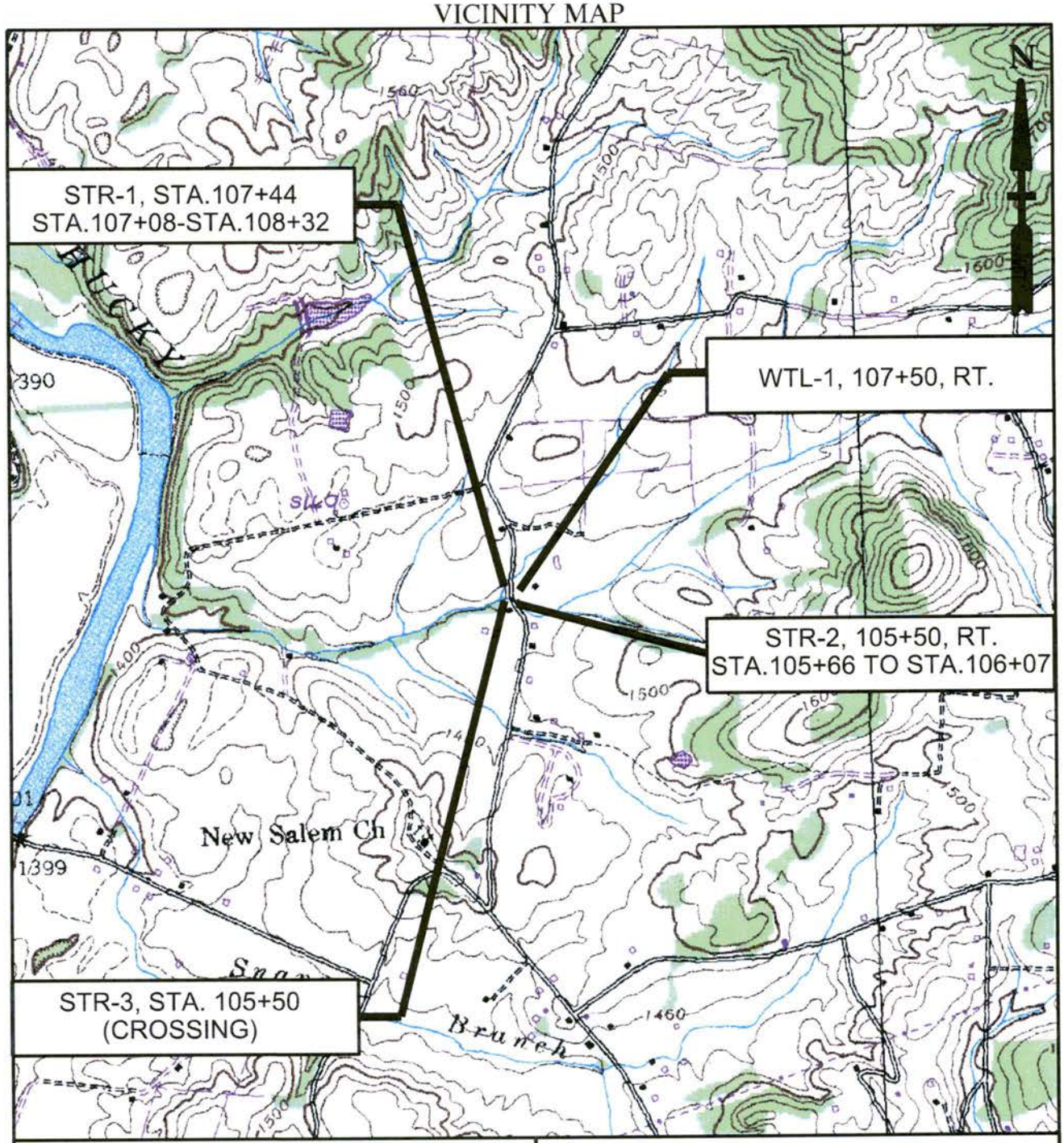


APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10);90023-1223-94
PIN # 114038.01
S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

SHEET 1 OF 12

VICINITY MAP



APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # 90023-1223-94
PIN 114038.01
FED. CONST. PROJ. # HRRR/HSIP-353(10)

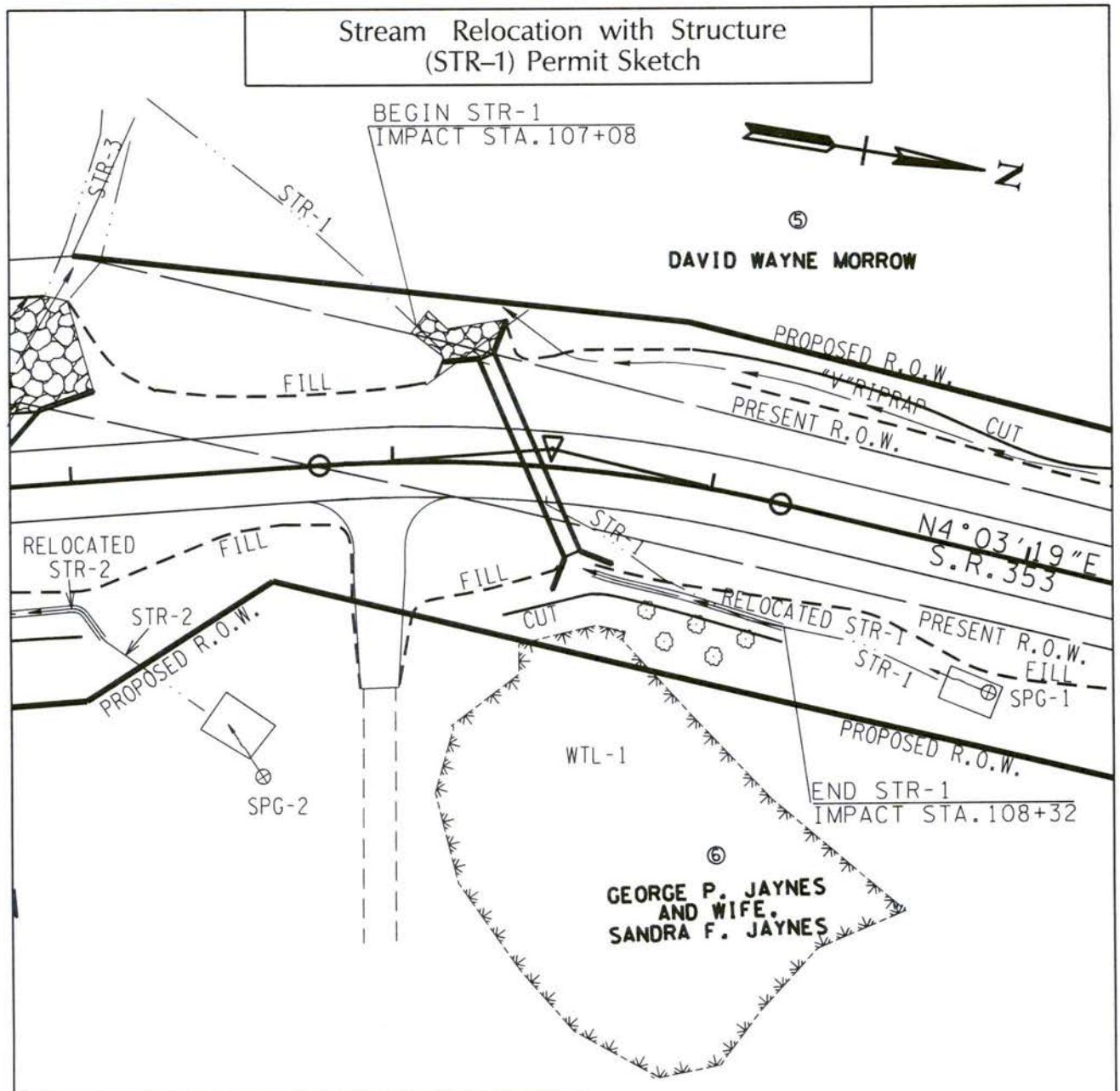
COUNTY: WASHINGTON
NEAR: WASHINGTON COLLEGE

DATE: 11/29/16 REVISED: / /

SCALE = 1:1320'
CONTOUR INTERVAL 20 FEET

1320 0 1320 1980 2640 3300 3960 4620 5280FT

Stream Relocation with Structure (STR–1) Permit Sketch



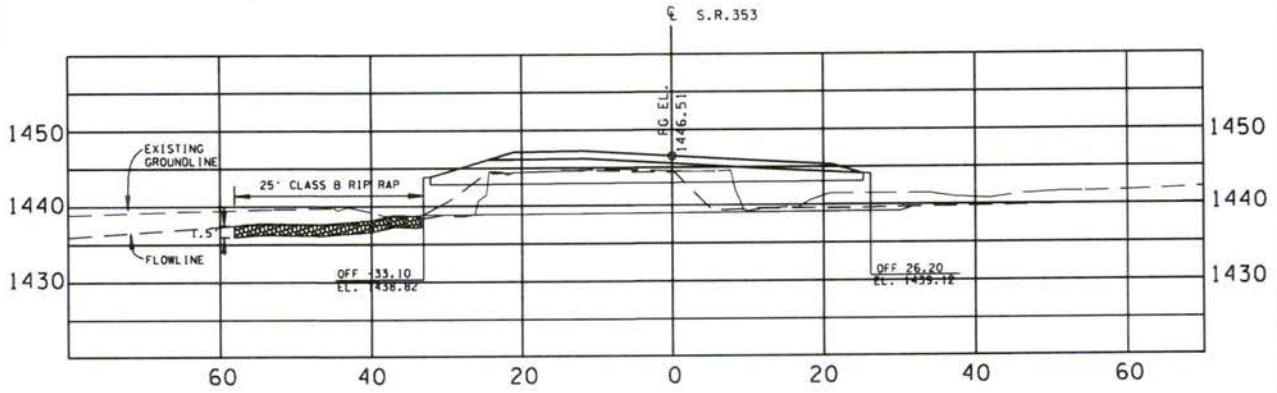
STREAM IMPACT TABLE (STR-1)		
EXISTING		
OPEN STREAM		116 FT.
STRUCTURE	5'X4' CONCRETE BOX CULVERT (TO BE REMOVED)	31 FT.
TOTAL EXISTING STRUCTURE		31 FT.
TOTAL EXISTING LENGTH		147 FT.
PROPOSED		
OPEN STREAM		95 FT.
	PROPOSED CLASS "B" RIP RAP	25 FT.
STRUCTURE	6'X4' CONCRETE BOX CULVERT	67 FT.
TOTAL PROPOSED STRUCTURE		67 FT.
TOTAL PROPOSED LENGTH		162 FT.

0 50 100 150
SCALE IN FEET

APPLICATION BY;
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Relocation with Structure (STR–1) Permit Sketch



STATION	107+44.11
STRUCTURE	67'-6'X4' CONC.BOX CULV.REQ'D.
SKEW	65° RT.
DRAINAGE AREA	94.6 AC.
DESIGN DISCHARGE (Q50)	119.3 CFS
DESIGN DISCHARGE (Q100)	128.7 CFS
OVERTOPPING ELEV.	1444.27
Q50 HEADWATER ELEV.	1442.40
Q100 HEADWATER ELEV.	1442.80
VELOCITY (Q50)	9.4 FT/S
VELOCITY (Q100)	9.6 FT/S
INLET ELEVATION	1439.12
OUTLET ELEVATION	1438.82
STANDARD DRAWING NUMBERS	STD-17-1, STD-17-2, STD-17-51
CLASS "A" CONCRETE	77 C.Y.
STEEL BAR REINFORCING	13,425 LB.

RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM CULVERT EXCAVATION AREA.

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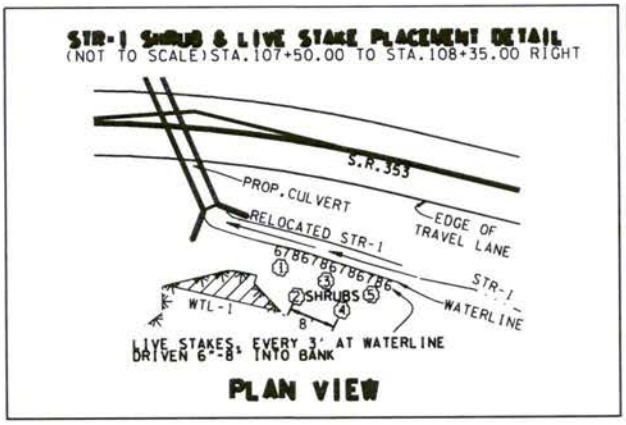
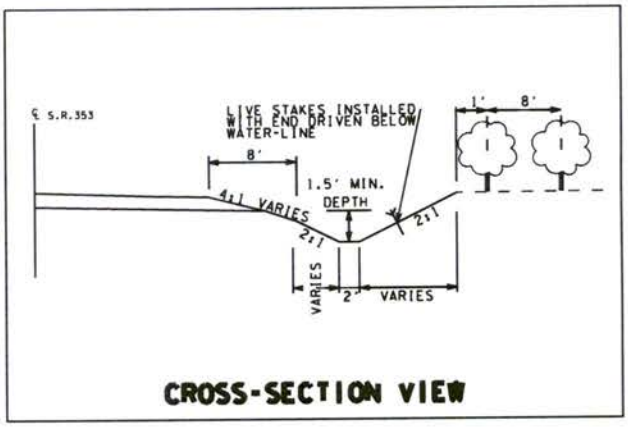
WASHINGTON COUNTY

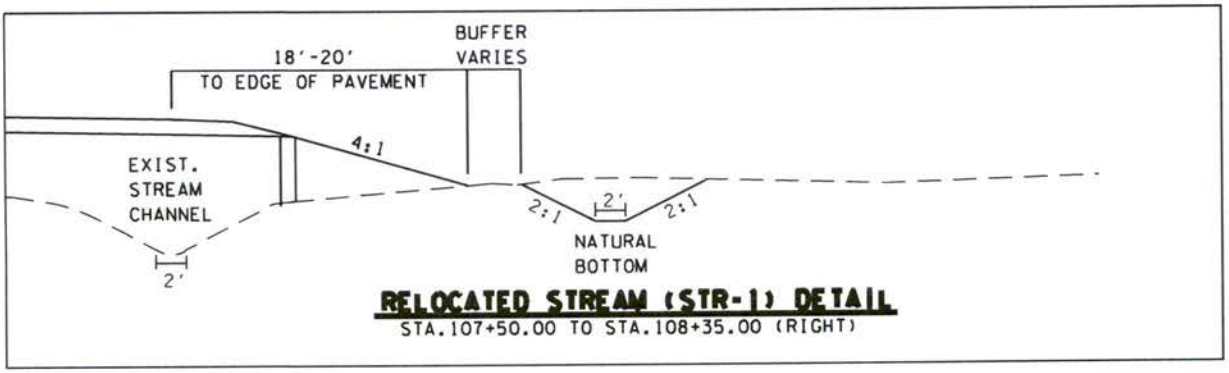
DATE: 11/29/16 REVISED: / /

Stream Relocation with Structure (STR–1) Permit Sketch

TREE PLANTING SCHEME FOR STR-1







ESTIMATED TREE QUANTITIES

ITEM #	DESCRIPTION	QUANTITY	UNIT
802-13.01	ALNUS SERRULATA (HAZEL ALDER)	1	EACH
802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)	1	EACH
802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)	1	EACH
802-13.09	LINDERA BENZOIN (SPICEBUSH)	1	EACH
802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)	1	EACH
802-02.30	SALIX NIGRA (BLACK WILLOW)	10	EACH
802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)	10	EACH
802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)	10	EACH

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WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Relocation with Structure
(STR–1) Permit Sketch

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

(2) CHANNEL RELOCATION SEQUENCE:
A. FLAG EDGE OF THE NEW CHANNEL TOP BANK PRIOR TO CLEARING. DO NOT CLEAR LARGE TREES IN POSITION TO SHADE THE NEW CHANNEL. LEAVE AS MANY TREES AND SHRUBS AS POSSIBLE BETWEEN TOE OF THE NEW HIGHWAY SLOPE AND THE STREAM.
B. EXCAVATE THE NEW CHANNEL "IN THE DRY" BY LEAVING AREAS OF UNDISTURBED EARTH (DIVERSION BERMS) IN PLACE AT BOTH ENDS.
C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
E. REMOVE DIVERSION BERMS, BEGINNING WITH THE MOST DOWNSTREAM; BANKS AND BOTTOM ELEVATION OF THE OLD CHANNEL SHOULD TRANSITION SMOOTHLY INTO THE NEW CHANNEL. THE ELEVATIONS OF THE NEW CHANNEL BOTTOM AT EACH END OF THE RELOCATION SEQUENCE SHOULD MATCH THE ELEVATIONS OF THE EXISTING CHANNEL, AND A STEADY PERCENT SLOPE SHOULD BE MAINTAINED THROUGHOUT THE RELOCATED CHANNEL CENTERLINE OR AS SPECIFIED.
F. INSTALL SHRUBS ACCORDING TO STANDARD SPECIFICATIONS SECTION 802.

(3) ONLY RIP-RAP SHOWN ON PLANS SHOULD BE USED IN THE RELOCATED CHANNEL REACH. ANY OTHER PROPOSED RIP-RAP SHOULD BE COORDINATED WITH THE ENVIRONMENTAL DIVISION THROUGH THE TDOT CONSTRUCTION OFFICE.

(4) REQUESTS BY ANY AGENCY THAT WOULD REQUIRE MODIFCATION OF CHANNELS, ELEVATIONS, RIP-RAP, OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFFERED TO TDOT ENVIRONMENTAL DIVISION VIA HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS. TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION MAY MAKE RECOMMENDATIONS CONCERNING EROSION CONTROL VIA THE ENGINEER WITHOUT SUCH REFERRAL.

SHRUB NOTES

(1) NO SUBSTITUTIONS OF SHRUB SPECIES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL OF T.D.O.T. ENVIRONMENTAL DIVISION. SHRUBS SHALL BE OF THE VARIETY REQUESTED, BETWEEN 2 AND 5 FEET IN HEIGHT, CONTAINERIZED AND OF THE FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED. ANY FOUND TO BE INCORRECT SPECIES, OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION OF THE CONTRACT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. STAKES AND WIRES SHALL BE REMOVED IMMEDIATELY PRIOR TO CONTRACT TERMINATION, UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL DIVISION.

(2) THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT SHRUB SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.

(3) SHRUBS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
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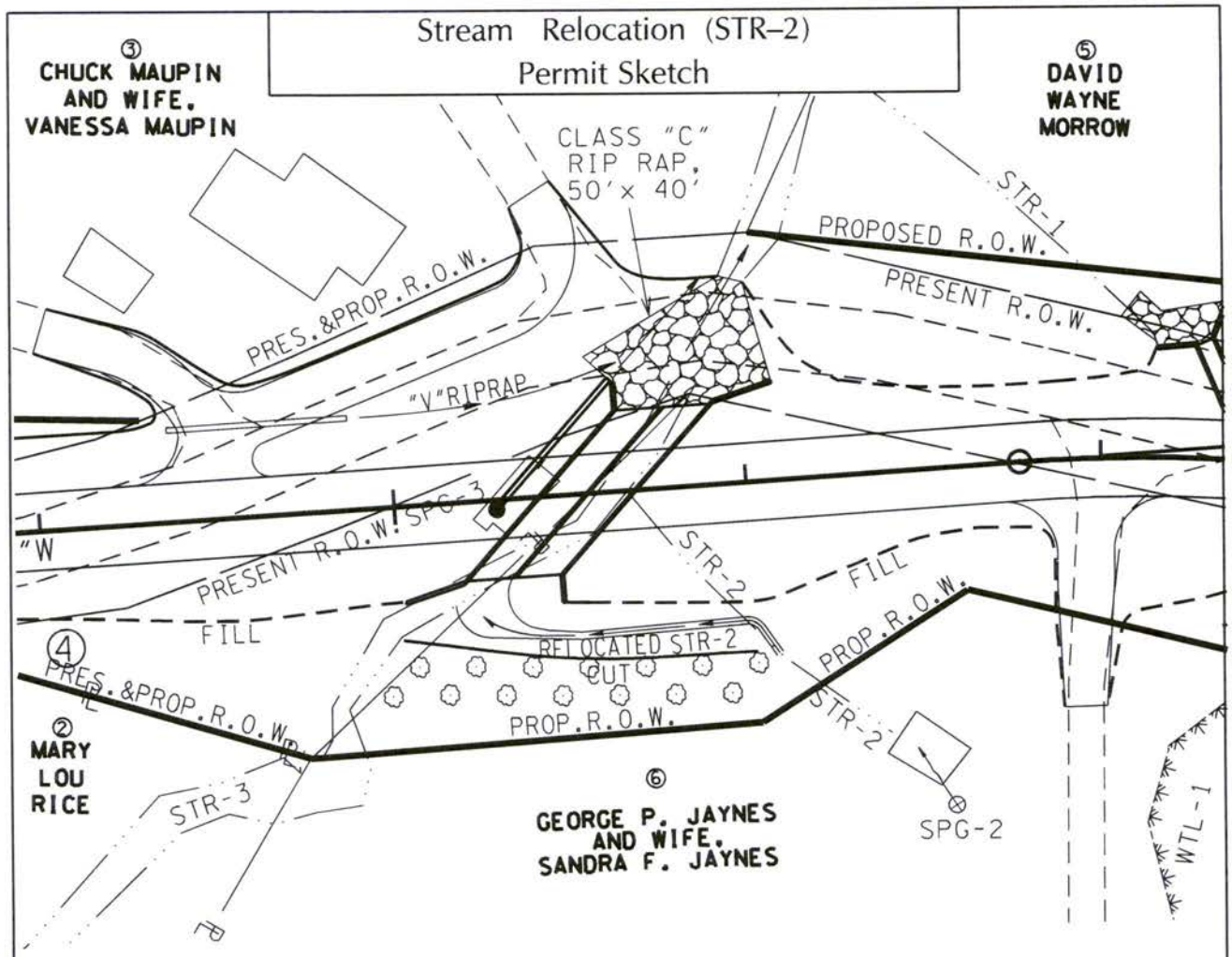
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Relocation (STR–2)
Permit Sketch



0 50 100 150

SCALE IN FEET

STREAM IMPACT TABLE	
EXISTING	
OPEN STREAM	65 FT.
PROPOSED	
OPEN STREAM	109 FT.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
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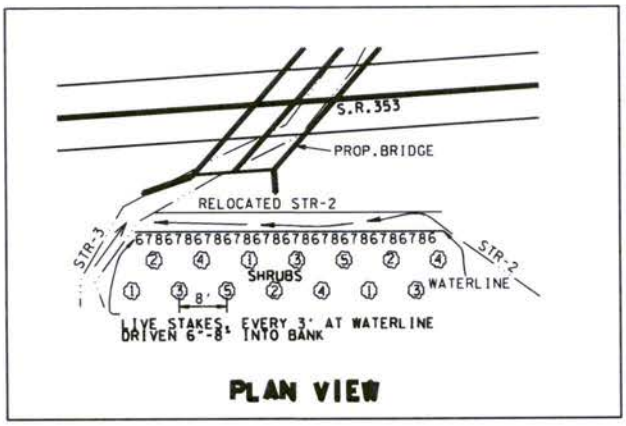
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

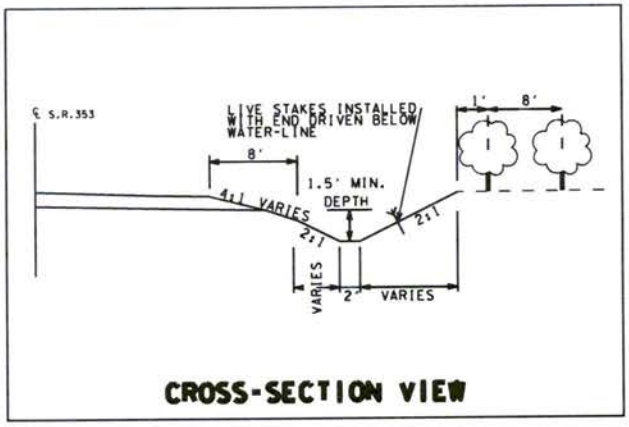
DATE: 11/29/16 REVISED: / / SHEET 7 OF 12

Stream Relocation (STR–2)
Permit Sketch

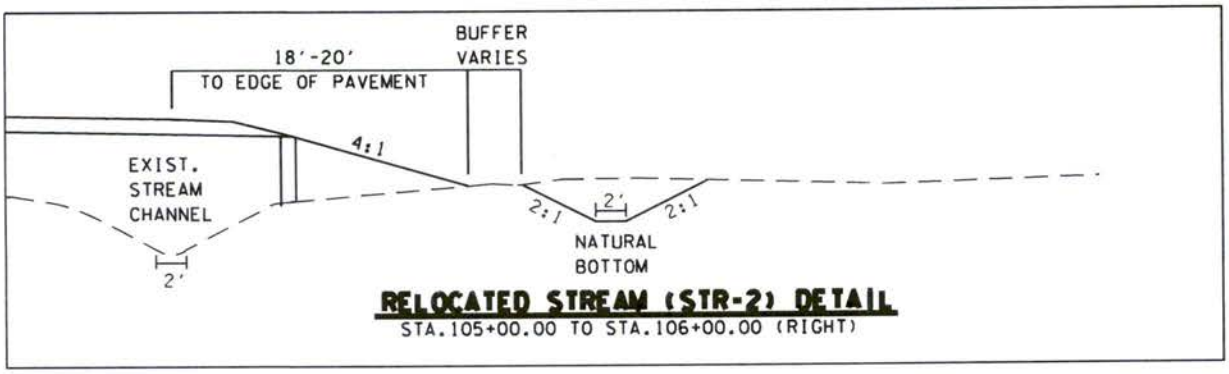
TREE PLANTING SCHEME FOR STR-2



PLAN VIEW



CROSS-SECTION VIEW



RELOCATED STREAM (STR-2) DETAIL
STA.105+00.00 TO STA.106+00.00 (RIGHT)

ESTIMATED TREE QUANTITIES

ITEM #	DESCRIPTION	QUANTITY	UNIT
802-13.01	ALNUS SERRULATA (HAZEL ALDER)	3	EACH
802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)	3	EACH
802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)	3	EACH
802-13.09	LINDERA BENZOIN (SPICEBUSH)	3	EACH
802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)	3	EACH
802-02.30	SALIX NIGRA (BLACK WILLOW)	10	EACH
802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)	10	EACH
802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)	10	EACH

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Relocation (STR–2)
Permit Sketch

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(IGNORE REFERENCES TO ITEMS NOT SPECIFIED)

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

(2) CHANNEL RELOCATION SEQUENCE:
A. FLAG EDGE OF THE NEW CHANNEL TOP BANK PRIOR TO CLEARING. DO NOT CLEAR LARGE TREES IN POSITION TO SHADE THE NEW CHANNEL. LEAVE AS MANY TREES AND SHRUBS AS POSSIBLE BETWEEN TOE OF THE NEW HIGHWAY SLOPE AND THE STREAM.
B. EXCAVATE THE NEW CHANNEL "IN THE DRY" BY LEAVING AREAS OF UNDISTURBED EARTH (DIVERSION BERMS) IN PLACE AT BOTH ENDS.
C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
E. REMOVE DIVERSION BERMS, BEGINNING WITH THE MOST DOWNSTREAM; BANKS AND BOTTOM ELEVATION OF THE OLD CHANNEL SHOULD TRANSITION SMOOTHLY INTO THE NEW CHANNEL. THE ELEVATIONS OF THE NEW CHANNEL BOTTOM AT EACH END OF THE RELOCATION SEQUENCE SHOULD MATCH THE ELEVATIONS OF THE EXISTING CHANNEL, AND A STEADY PERCENT SLOPE SHOULD BE MAINTAINED THROUGHOUT THE RELOCATED CHANNEL CENTERLINE OR AS SPECIFIED.
F. INSTALL SHRUBS ACCORDING TO STANDARD SPECIFICATIONS SECTION 802.

(3) ONLY RIP-RAP SHOWN ON PLANS SHOULD BE USED IN THE RELOCATED CHANNEL REACH. ANY OTHER PROPOSED RIP-RAP SHOULD BE COORDINATED WITH THE ENVIRONMENTAL DIVISION THROUGH THE TDOT CONSTRUCTION OFFICE.

(4) REQUESTS BY ANY AGENCY THAT WOULD REQUIRE MODIFCATION OF CHANNELS, ELEVATIONS, RIP-RAP, OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFFERED TO TDOT ENVIRONMENTAL DIVISION VIA HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS. TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION MAY MAKE RECOMMENDATIONS CONCERNING EROSION CONTROL VIA THE ENGINEER WITHOUT SUCH REFERRAL.

SHRUB NOTES

(1) NO SUBSTITUTIONS OF SHRUB SPECIES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL OF T.D.O.T. ENVIRONMENTAL DIVISION. SHRUBS SHALL BE OF THE VARIETY REQUESTED, BETWEEN 2 AND 5 FEET IN HEIGHT, CONTAINERIZED AND OF THE FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED. ANY FOUND TO BE INCORRECT SPECIES, OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION OF THE CONTRACT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. STAKES AND WIRES SHALL BE REMOVED IMMEDIATELY PRIOR TO CONTRACT TERMINATION, UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL DIVISION.

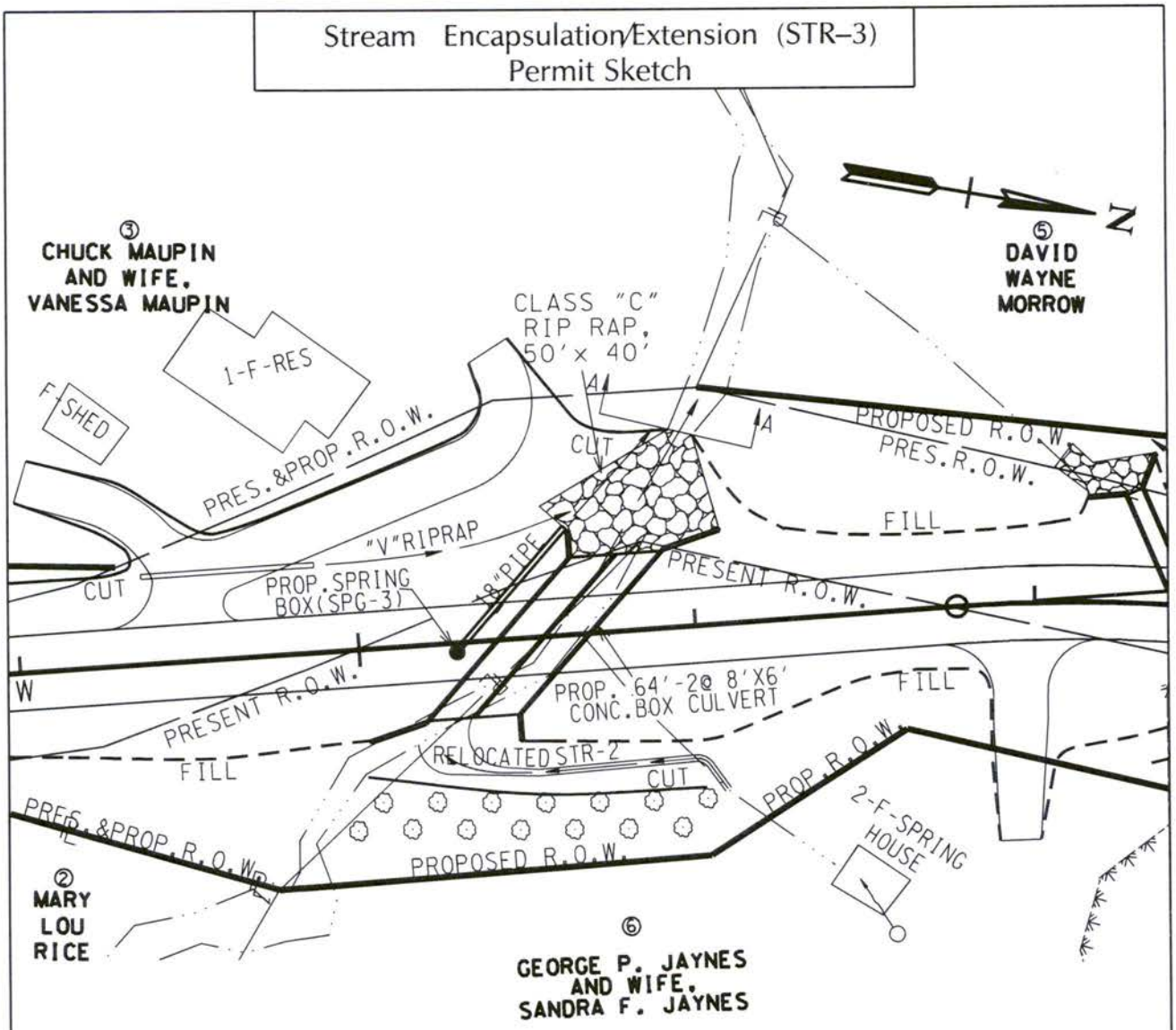
(2) THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT SHRUB SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.

(3) SHRUBS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Encapsulation/Extension (STR–3) Permit Sketch



STREAM IMPACT TABLE		
EXISTING		
OPEN STREAM		85 FT.
STRUCTURE	16'X6' CONC. BOX CULVERT	30 FT.
TOTAL EXISTING STRUCTURE		30 FT.
TOTAL EXISTING LENGTH		115 FT.
PROPOSED		
OPEN STREAM		41 FT.
INCLUDES:	CLASS "C" RIP-RAP AT OUTLET	41 FT.
STRUCTURE	2@ 8'X6' CONC.BOX CULVERT	64 FT.
TOTAL PROPOSED STRUCTURE		64 FT.
TOTAL PROPOSED LENGTH		105 FT.

0 50 100 150
SCALE IN FEET

APPLICATION BY:
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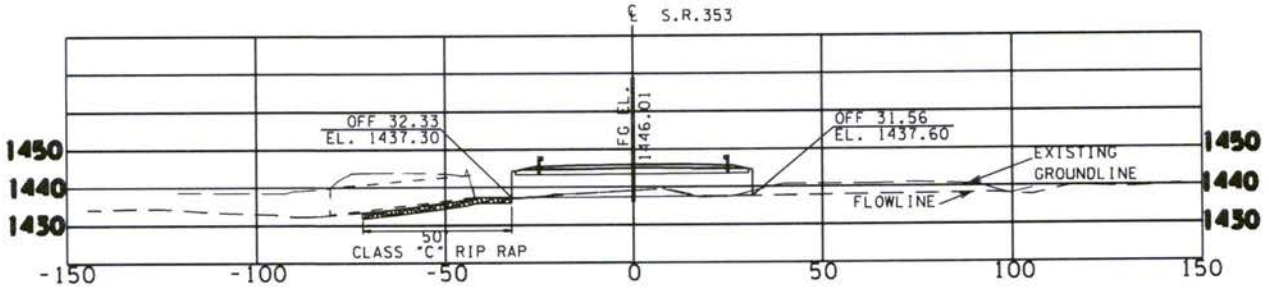
S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Encapsulation/Extension (STR–3)
Permit Sketch



STATION	105+55.00
STRUCTURE	64'-2@ 8'X6' CONCRETE BOX CULVERT
SKEW	45° LT.
DRAINAGE AREA	667 ACRES
DESIGN DISCHARGE (Q50)	423 CFS
DESIGN DISCHARGE (Q100)	498 CFS
OVERTOPPING ELEV.	1444.67
Q50 HEADWATER ELEV.	1443.05
Q100 HEADWATER ELEV.	1443.15
VELOCITY(Q50)	11.9 FPS
VELOCITY(Q100)	12.4 FPS
INLET ELEVATION	1437.60
OUTLET ELEVATION	1437.30
STD. DWG. NOS.	STD-17-1,STD-17-2, STD-15-57
CLASS "A" CONCRETE	81 C.Y.
STEEL BAR REINFORCING	20,640 LB.

RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM CULVERT EXCAVATION AREA.

APPLICATION BY:
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S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

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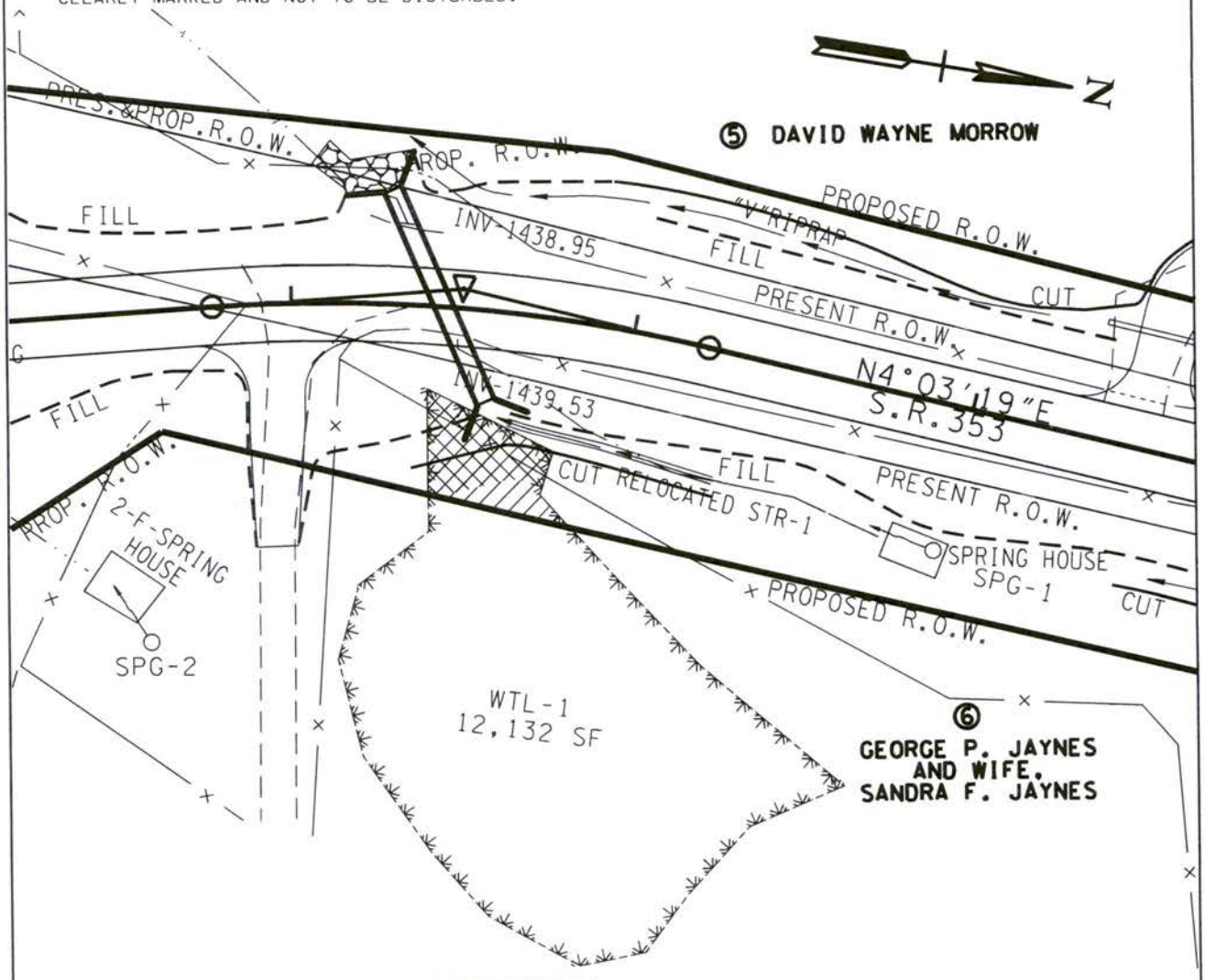
Wetland Impacts (WTL–1)
Permit Sketch

MITIGATION NOTES

1. REMOVE THE TOP 12 INCHES OF TOPSOIL AND STOCKPILE IT UNTIL CONSTRUCTION IS COMPLETE.
2. ONCE CONSTRUCTION ACTIVITIES ARE COMPLETED, RESTORE ALL TEMPORARY WETLAND IMPACT AREAS TO PRE-CONSTRUCTION CONDITIONS. THIS INCLUDES REMOVING HAUL ROADS (IF APPLICABLE), RESTORING THE SITE TO THE ORIGINAL (PRE-CONSTRUCTION) ELEVATION AND SPREADING STOCKPILED TOPSOIL BACK OVER THE WETLAND SITE.
3. THE AREA OF TEMPORARY IMPACTS WILL BE STABALIZED ACCORDING TO STANDARD PRACTICES. PLANTING WILL BE BASED ON NOTES PROVIDED BY ECOLOGY.
4. WETLAND AREAS LOCATED OUTSIDE OF PROPOSED RIGHT-OF-WAY AND CONSTRUCTION EASEMENTS ARE TO BE CLEARLY MARKED AND NOT TO BE DISTURBED.



LEGEND	WETLAND IMPACTS (WTL-1)
	AREA OF PERMANENT IMPACT = 0.02 AC.
	VOLUME OF PERMANENT IMPACT = 25 C.Y.
	AREA OF TEMPORARY IMPACT = 0.01 AC.
	VOLUME OF TEMPORARY IMPACT = 8 C.Y.

0 50 100 150
SCALE IN FEET

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / / SHEET 12 OF 12

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
REGULATORY DIVISION
3701 BELL ROAD
NASHVILLE, TENNESSEE 37214
June 23, 2017

SUBJECT: File No.LRN-2016-01237, Tennessee Department of Transportation, Proposed S.R. 353 Improvement Project (PIN 114038.01), Unnamed tributary to Nolichucky River Mile 73.7L, Washington County, Tennessee

Tennessee Department of Transportation
C/o Ms. Mary Showers
505 Deadrick Street, Suite 900
J.K. Polk Bldg
Nashville, Tennessee 37243

Dear Ms. Showers:

This correspondence is in regard to your pre-construction notification (PCN) to discharge fill in 0.03 acre of wetlands, and discharge fill in 376 linear feet of perennial streams for the proposed State Route 353 improvement project in an Unnamed tributary to Nolichucky River Mile 73.7L, Washington County, Tennessee (Latitude 36.19078°, Longitude -82.59356°). This project has been assigned number (LRN-2016-01237). Please refer to this number in all communication concerning this matter.

The individual linear transportation crossings proposed in the PCN are listed below:

Table 1: Crossing Locations and Proposed Impacts

	Latitude	Longitude	Aquatic Resource	Proposed Impacts	NWP	Authority
STR-1 Culvert	36.2105	-82.6066	Stream 1	• 70' Relocation • 67' encapsulation • 25' Ripap	14	404
STR-2 Culvert	36.1908	-82.5933	Stream 2	• 109' Relocation	14	404
STR-3 Culvert	36.1907	-82.5394	Stream 3	• 64' encapsulation • 41' riprap	14	404
WLT-1 Culvert/Fill	36.1912	-82.5931	Wetland 1	• Permanent Fill 0.02 ac • Temporary Fill 0.01 ac	14	404

The U.S. Army Corps of Engineers (USACE) has regulatory responsibilities pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). Under Section 10, the USACE regulates any work in, or affecting, navigable waters of the U.S. It appears the project area does not include navigable waters of the U.S. and would not be subject to the provisions of Section 10. Under Section 404, the USACE

regulates the discharge of dredged and/or fill material into waters of the U.S., including wetlands.

Based on a review of the PCN, 3 reaches of perennial stream totaling 1,685 linear feet and 0.3 acres of wetlands were documented within the survey area. We have prepared and enclosed a *Preliminary Jurisdictional Determination* (PJD), which is a written indication that wetlands and waterways within your project area **may** be waters of the U.S. in accordance with 33 C.F.R. 331.2. Such waters will be treated as jurisdictional waters of the U.S. for purposes of computation of impact area and compensatory mitigation requirements associated with your permit application. The PJD is non-binding, cannot be appealed and only provides a written indication that waters of the U.S, including wetlands, may be present on-site. For purposes of computation of impacts, compensatory mitigation requirements and other resource protection measures, a permit decision made on the basis of a PJD will treat all waters that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. This PJD is only valid for the survey area shown on the attached map entitled *"LRN-2016-01237; Figures 1 & 2"*.

Enclosed with this letter are two copies of the PJD. If you agree with the findings of this PJD and understand your options regarding the same, please sign and date one copy of the form and return it to this office within 30 days of receipt of this letter. You should submit the signed copy to the following address:

U.S. Army Corps of Engineers
Nashville District
3701 Bell Rd.
Nashville, TN 37214
Attn: Ken M Jones

Based on the information you provided, Nationwide Permit (NWP) 14, Linear Transportation Projects, which became effective March 19, 2017 [82 FR 1860], authorizes your proposal as depicted on the enclosed plans. In order for this authorization to be valid, you must ensure the work is performed in accordance with the enclosed *NWP 14, Terms and Conditions*, and the *2017 Nationwide Permit General Conditions*. The work must also comply with the special conditions listed in the enclosed "SPECIAL CONDITIONS FOR PERMIT LRN-2016-01237 Tennessee Department of Transportation."

This verification is valid until March 18, 2022, unless the NWP authorization is modified, suspended, or revoked prior to that date. Furthermore, if you commence or are under contract to commence this activity before the date of NWP expiration, modification, or revocation, you will have 12 months from the date of expiration, modification or revocation to complete the activity under the present terms and conditions of the NWP. This will apply to all NWPs 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).

This NWP 14 verification does not obviate your responsibility to obtain and abide by all other federal, state and local permits or approvals required. This NWP verification should not be considered as an approval of the design features of any activity authorized or an implication that such construction is considered adequate for the purpose intended. In addition, it does not grant any property rights or exclusive privileges and does not authorize any injury to the property or rights of others. Failure to comply with all terms and conditions of this NWP verification invalidates this authorization and could result in a violation of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act.

Upon completing the authorized work, you must fill out and return the enclosed *Certificate of Compliance with Department of the Army Permit* form. Thank you for your cooperation during the permitting process. If you have any questions, please contact Mr. Ken M. Jones at (865) 986-7296 or via e-mail ken.m.jones@usace.army.mil.

Sincerely,

Casey H. Ehorn
Chief, East Branch
Regulatory Division

Enclosures

Enclosure 1 – Special Conditions
Enclosure 2 – Drawings
Enclosure 3 – NWP 14, Terms and Conditions
Enclosure 4 – 2017 Nationwide Permit General Conditions
Enclosure 5 – Compliance Certification
Enclosure 6 – Water Quality Certification
Enclosure 7 – Preliminary JD and *Notification of Administrative Appeal Options and Process and Request for Appeal* worksheet
cc: TDEC (e-copy)

US Army Corps
of Engineers ®
Nashville District

SPECIAL CONDITIONS FOR

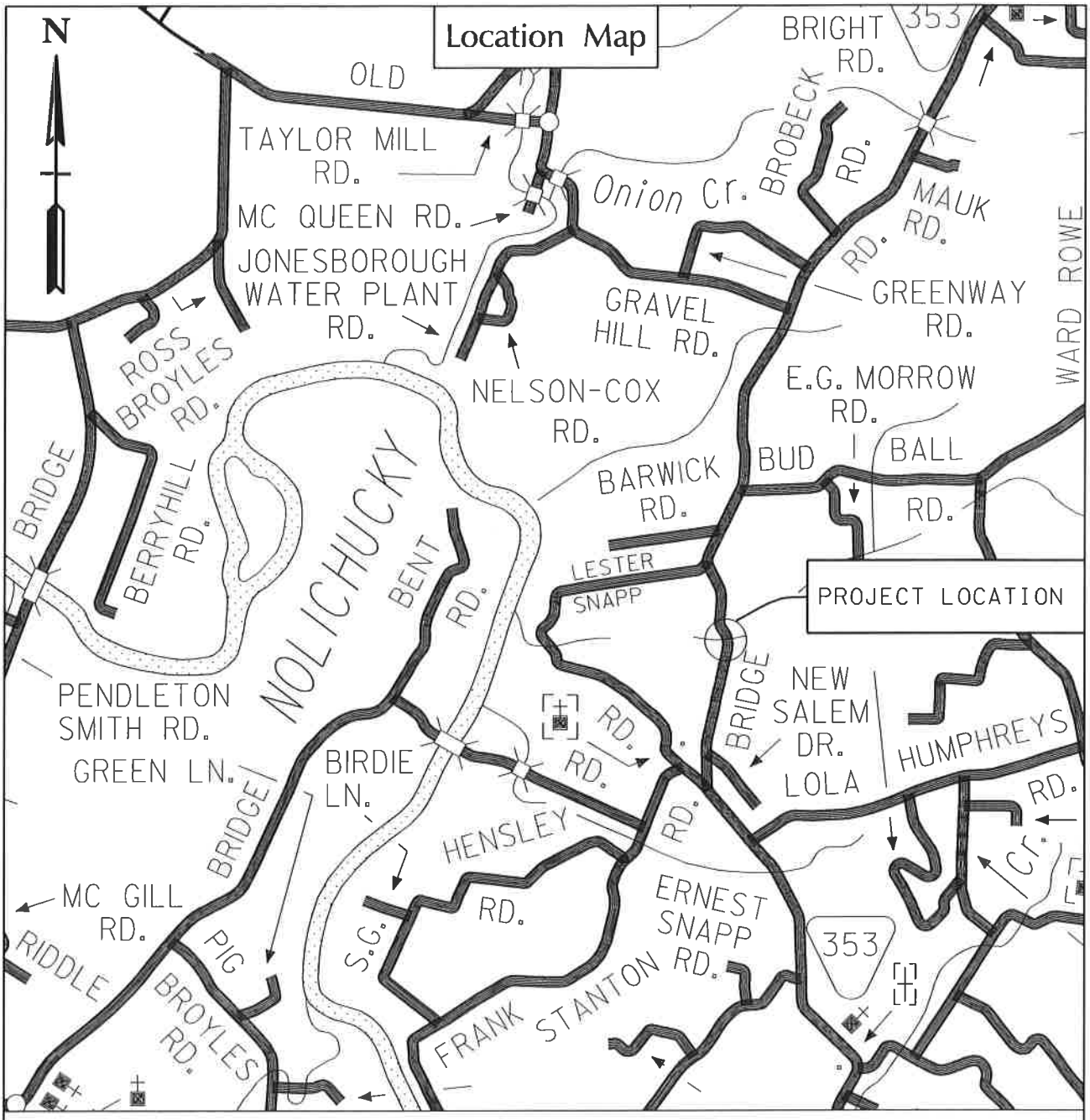
PERMIT LRN-2016-01237, Tennessee Department of Transportation

1. Permit Drawings: The Permittee must construct the authorized activity in accordance with the attached permit drawings (Enclosure 2, Sheets 1 - 12). Work in waters of the U.S. that deviates from the approved plans shall NOT occur without first obtaining approval from the U.S. Army Corps of Engineers, Nashville District Regulatory Division.

2. Water Quality Certification: The Permittee shall comply with the enclosed Tennessee Department of Environment and Conservation, Division of Water Resources Individual ARAP Permit/§401 Water Quality Certification (NRS16.326) effective 18 April 2017.

3. Wetland and Stream Avoidance/Minimization Areas: The Permittee must avoid the remaining onsite wetlands and unnamed tributaries to the Nolichucky River). These natural wetland/stream areas were avoided as part of the permit application review process and therefore will not be disturbed by any dredging, filling, mechanized land clearing, or other construction work whatsoever.

4. Relocated Aquatic Resources – The Permittee must ensure the relocated reaches of aquatic resources STR-1 (70 linear feet) and STR-2 (109 linear) are designed to duplicate pattern, profile, and dimensions of the existing channels to the extent possible. The relocated reaches must be designed and constructed to transport water flows and sediment of their watersheds such that the streams maintain their dimension, pattern, and profile without either aggrading or degrading.

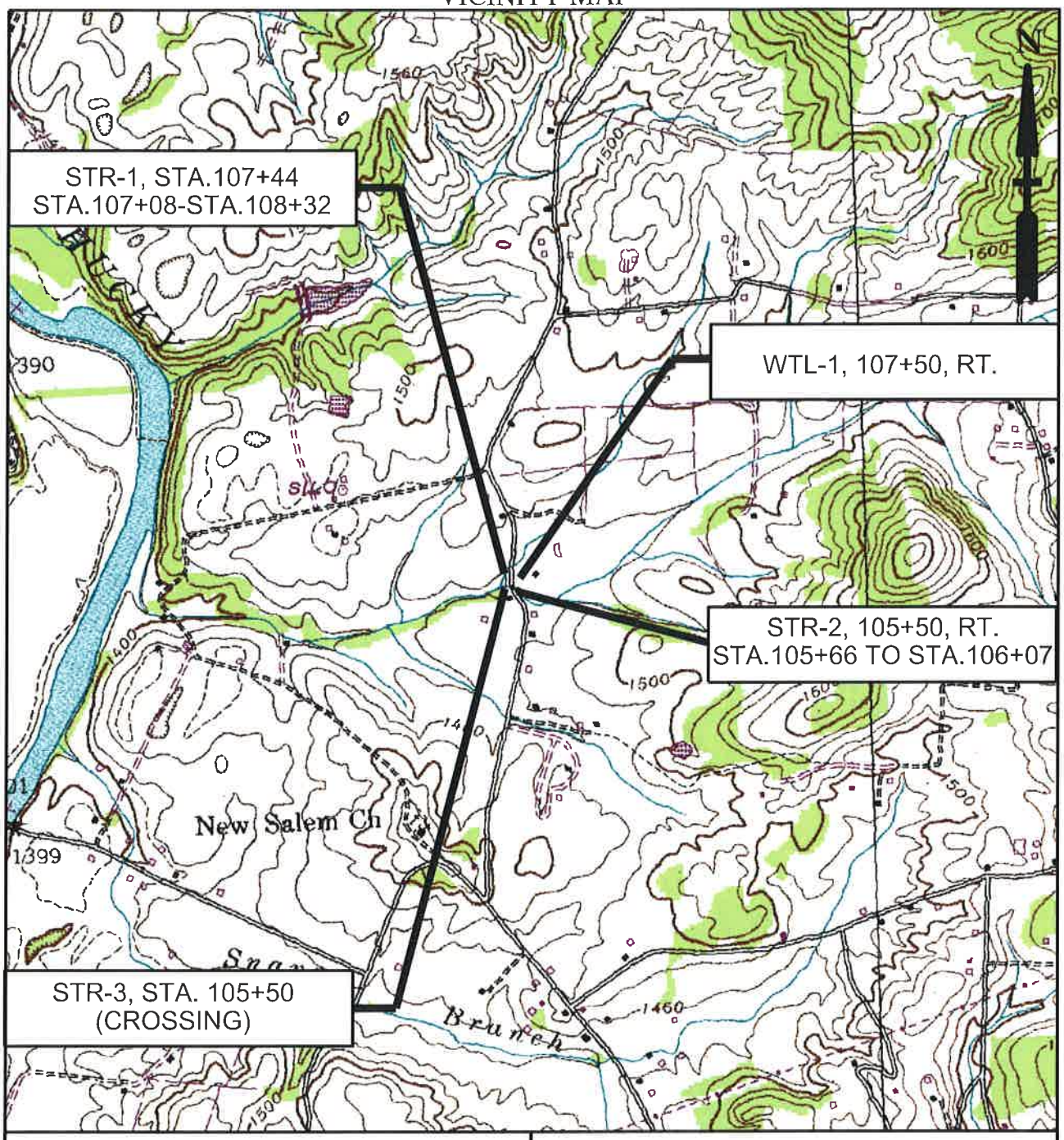


APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10);90023-1223-94
PIN # 114038.01
S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

SHEET 1 OF 12

VICINITY MAP



APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # 90023-1223-94
PIN 114038.01
FED. CONST. PROJ. # HRRR/HSIP-353(10)

COUNTY: WASHINGTON
NEAR: WASHINGTON COLLEGE

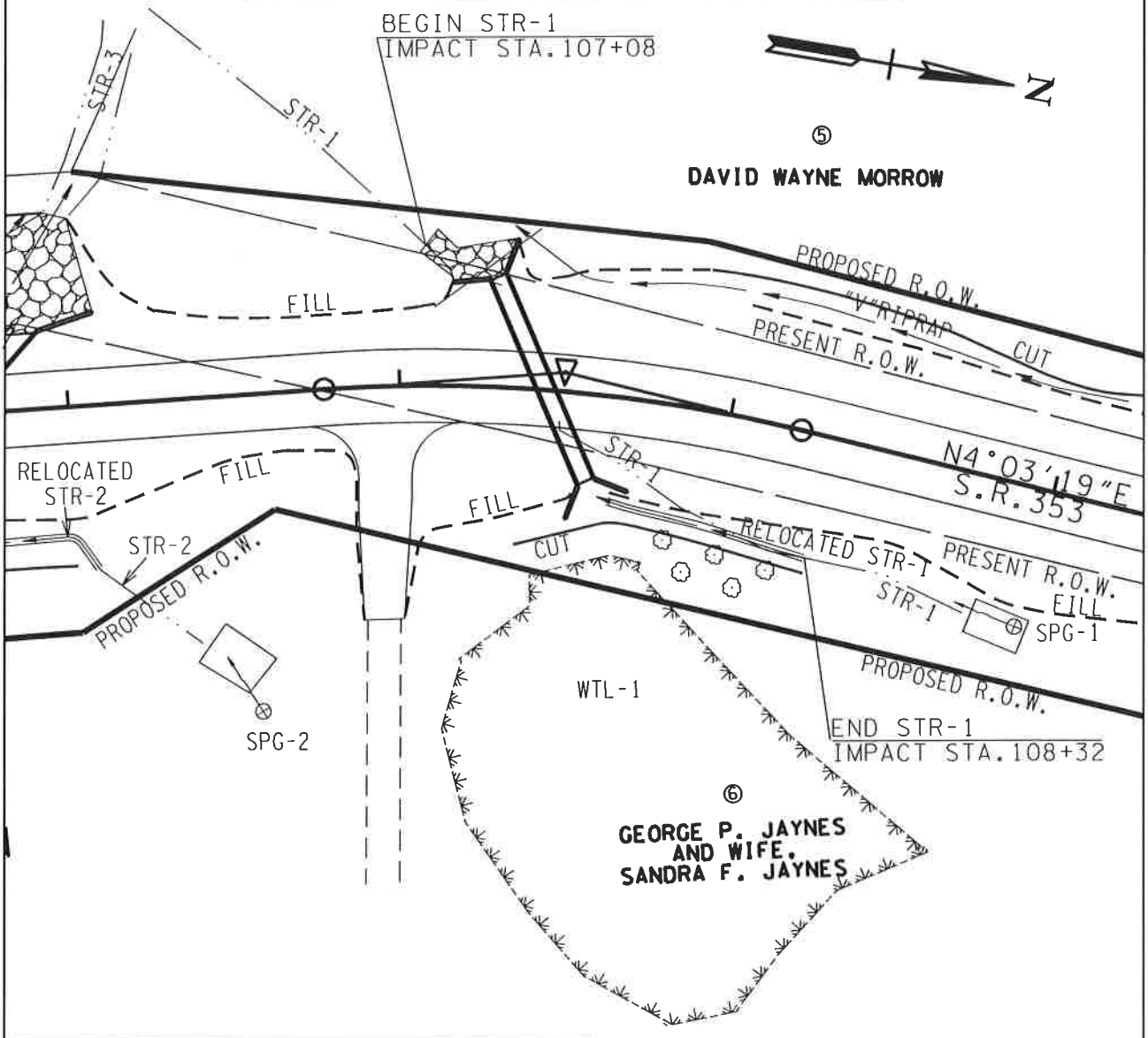
DATE: 11/29/16 REVISED: / /

SHEET 2 OF 12

SCALE = 1:1320'
CONTOUR INTERVAL 20 FEET

1320 0 1320 1980 2640 3300 3960 4620 5280FT

Stream Relocation with Structure (STR–1) Permit Sketch



STREAM IMPACT TABLE (STR-1)		
EXISTING		
OPEN STREAM		116 FT.
STRUCTURE	5'X4' CONCRETE BOX CULVERT (TO BE REMOVED)	31 FT.
TOTAL EXISTING STRUCTURE		31 FT.
TOTAL EXISTING LENGTH		147 FT.
PROPOSED		
OPEN STREAM		95 FT.
	PROPOSED CLASS "B" RIP RAP	25 FT.
STRUCTURE	6'X4' CONCRETE BOX CULVERT	67 FT.
TOTAL PROPOSED STRUCTURE		67 FT.
TOTAL PROPOSED LENGTH		162 FT.

0 50 100 150
SCALE IN FEET

APPLICATION BY:
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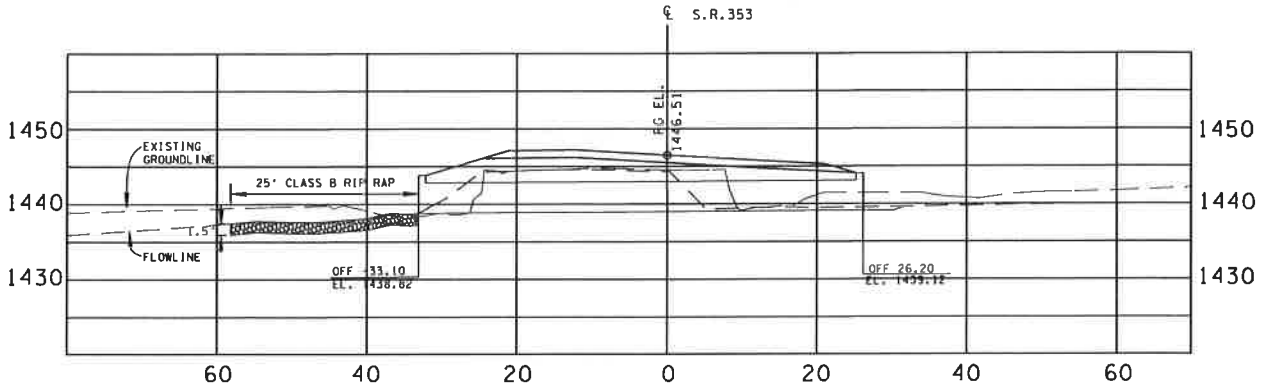
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

SHEET 3 OF 12

Stream Relocation with Structure (STR–1) Permit Sketch



STATION	107+44.11
STRUCTURE	67'-6'X4' CONC.BOX CULV.REQ'D.
SKEW	65° RT.
DRAINAGE AREA	94.6 AC.
DESIGN DISCHARGE (Q50)	119.3 CFS
DESIGN DISCHARGE (Q100)	128.7 CFS
OVERTOPPING ELEV.	1444.27
Q50 HEADWATER ELEV.	1442.40
Q100 HEADWATER ELEV.	1442.80
VELOCITY (Q50)	9.4 FT/S
VELOCITY (Q100)	9.6 FT/S
INLET ELEVATION	1439.12
OUTLET ELEVATION	1438.82
STANDARD DRAWING NUMBERS	STD-17-1, STD-17-2, STD-17-51
CLASS "A" CONCRETE	77 C.Y.
STEEL BAR REINFORCING	13,425 LB.

RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM CULVERT EXCAVATION AREA.

APPLICATION BY;
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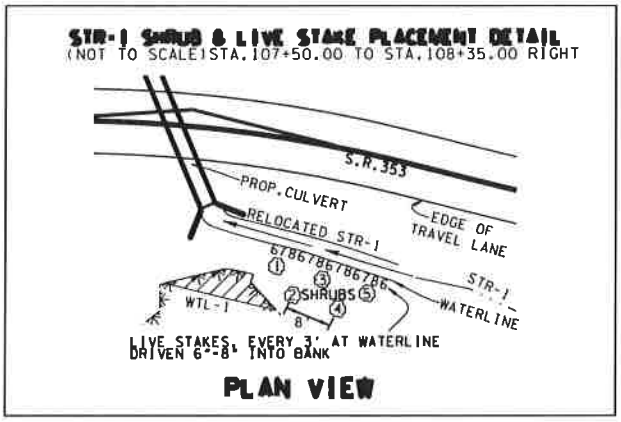
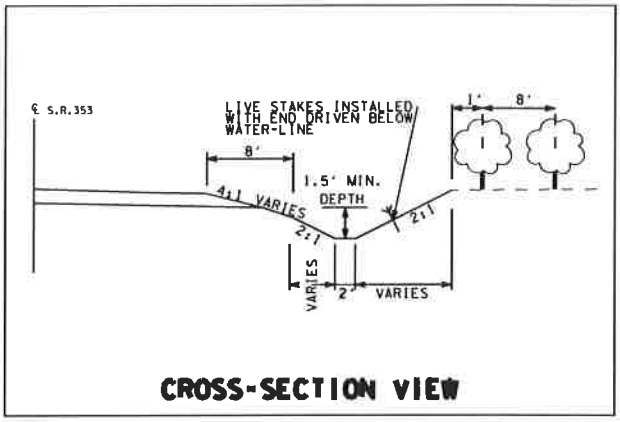
WASHINGTON COUNTY

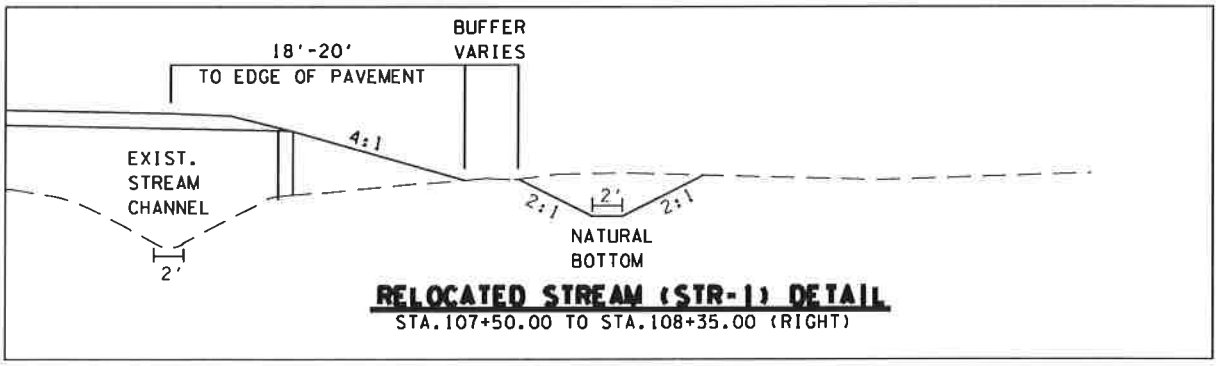
DATE: 11/29/16 REVISED: / / SHEET 4 OF 12

Stream Relocation with Structure (STR–1) Permit Sketch

TREE PLANTING SCHEME FOR STR-1







ESTIMATED TREE QUANTITIES

ITEM #	DESCRIPTION	QUANTITY	UNIT
802-13.01	ALNUS SERRULATA (HAZEL ALDER)	1	EACH
802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)	1	EACH
802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)	1	EACH
802-13.09	LINDERA BENZOIN (SPICEBUSH)	1	EACH
802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)	1	EACH
802-02.30	SALIX NIGRA (BLACK WILLOW)	10	EACH
802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)	10	EACH
802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)	10	EACH

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
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WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / / SHEET 5 OF 12

Stream Relocation with Structure (STR–1) Permit Sketch

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

(2) CHANNEL RELOCATION SEQUENCE:
A. FLAG EDGE OF THE NEW CHANNEL TOP BANK PRIOR TO CLEARING. DO NOT CLEAR LARGE TREES IN POSITION TO SHADE THE NEW CHANNEL. LEAVE AS MANY TREES AND SHRUBS AS POSSIBLE BETWEEN TOE OF THE NEW HIGHWAY SLOPE AND THE STREAM.
B. EXCAVATE THE NEW CHANNEL "IN THE DRY" BY LEAVING AREAS OF UNDISTURBED EARTH (DIVERSION BERMS) IN PLACE AT BOTH ENDS.
C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
E. REMOVE DIVERSION BERMS, BEGINNING WITH THE MOST DOWNSTREAM; BANKS AND BOTTOM ELEVATION OF THE OLD CHANNEL SHOULD TRANSITION SMOOTHLY INTO THE NEW CHANNEL. THE ELEVATIONS OF THE NEW CHANNEL BOTTOM AT EACH END OF THE RELOCATION SEQUENCE SHOULD MATCH THE ELEVATIONS OF THE EXISTING CHANNEL, AND A STEADY PERCENT SLOPE SHOULD BE MAINTAINED THROUGHOUT THE RELOCATED CHANNEL CENTERLINE OR AS SPECIFIED.
F. INSTALL SHRUBS ACCORDING TO STANDARD SPECIFICATIONS SECTION 802.

(3) ONLY RIP-RAP SHOWN ON PLANS SHOULD BE USED IN THE RELOCATED CHANNEL REACH. ANY OTHER PROPOSED RIP-RAP SHOULD BE COORDINATED WITH THE ENVIRONMENTAL DIVISION THROUGH THE TDOT CONSTRUCTION OFFICE.

(4) REQUESTS BY ANY AGENCY THAT WOULD REQUIRE MODIFCATION OF CHANNELS, ELEVATIONS, RIP-RAP, OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFFERED TO TDOT ENVIRONMENTAL DIVISION VIA HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS. TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION MAY MAKE RECOMMENDATIONS CONCERNING EROSION CONTROL VIA THE ENGINEER WITHOUT SUCH REFERRAL.

SHRUB NOTES

(1) NO SUBSTITUTIONS OF SHRUB SPECIES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL OF T.D.O.T. ENVIRONMENTAL DIVISION. SHRUBS SHALL BE OF THE VARIETY REQUESTED, BETWEEN 2 AND 5 FEET IN HEIGHT, CONTAINERIZED AND OF THE FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED. ANY FOUND TO BE INCORRECT SPECIES, OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION OF THE CONTRACT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. STAKES AND WIRES SHALL BE REMOVED IMMEDIATELY PRIOR TO CONTRACT TERMINATION, UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL DIVISION.

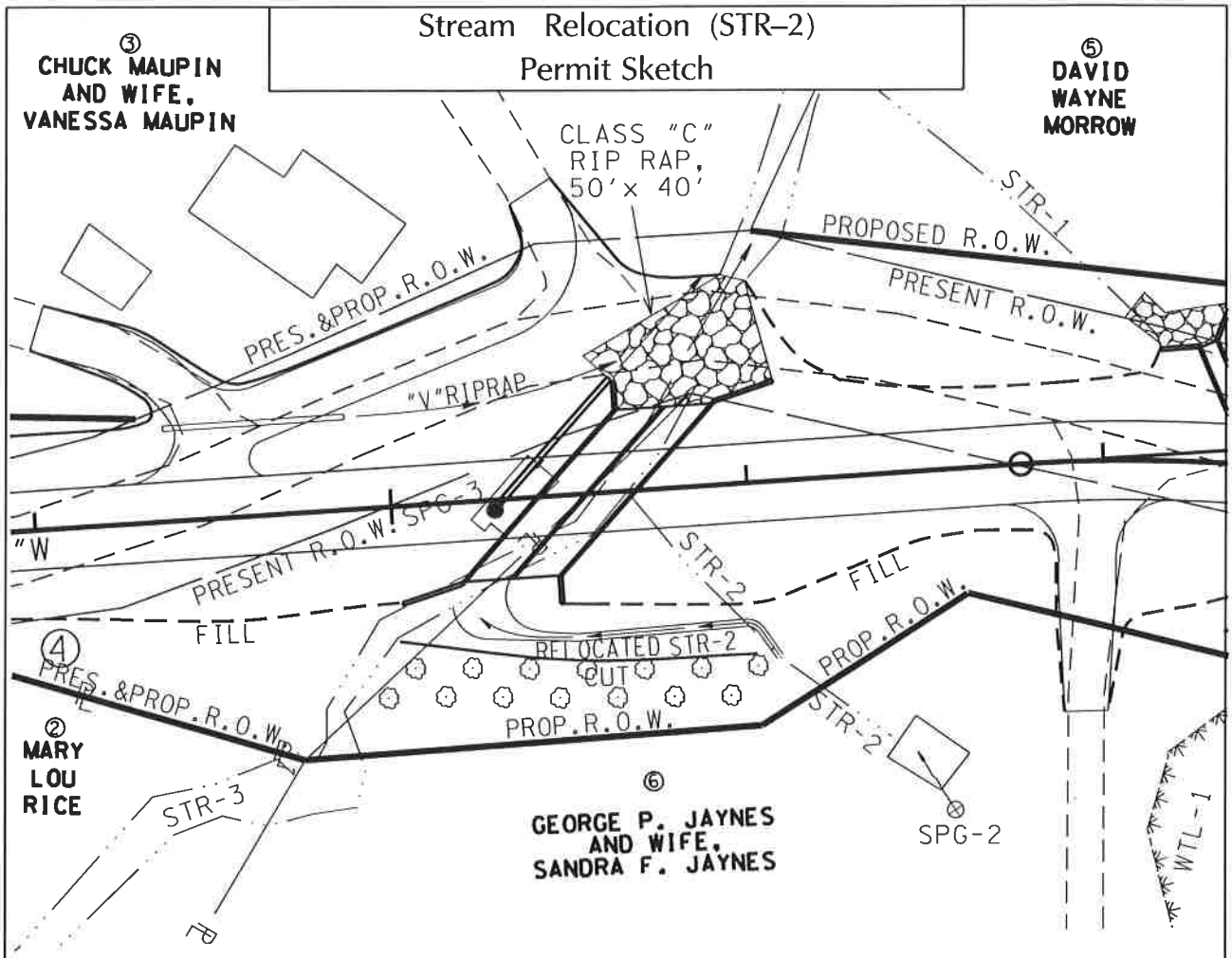
(2) THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT SHRUB SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.

(3) SHRUBS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / / SHEET 6 OF 12

Stream Relocation (STR–2) Permit Sketch



STREAM IMPACT TABLE	
EXISTING	
OPEN STREAM	65 FT.
PROPOSED	
OPEN STREAM	109 FT.

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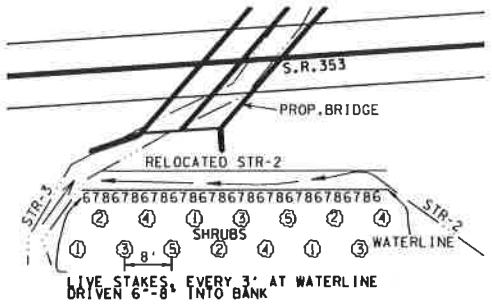
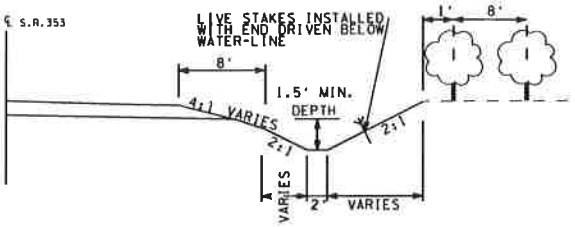
Stream Relocation (STR–2) Permit Sketch

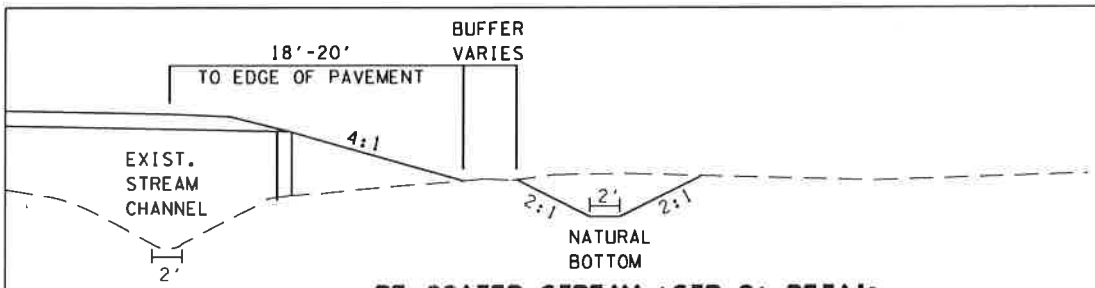
TREE PLANTING SCHEME FOR STR-2



PLAN VIEW



CROSS-SECTION VIEW



RELOCATED STREAM (STR-2) DETAIL
STA.105+00.00 TO STA.106+00.00 (RIGHT)

ESTIMATED TREE QUANTITIES

ITEM #	DESCRIPTION	QUANTITY	UNIT
802-13.01	ALNUS SERRULATA (HAZEL ALDER)	3	EACH
802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)	3	EACH
802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)	3	EACH
802-13.09	LINDERA BENZOIN (SPICEBUSH)	3	EACH
802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)	3	EACH
802-02.30	SALIX NIGRA (BLACK WILLOW)	10	EACH
802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)	10	EACH
802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)	10	EACH

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Stream Relocation (STR–2)
Permit Sketch

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(IGNORE REFERENCES TO ITEMS NOT SPECIFIED)

(1) STANDARD STREAM MITIGATION:
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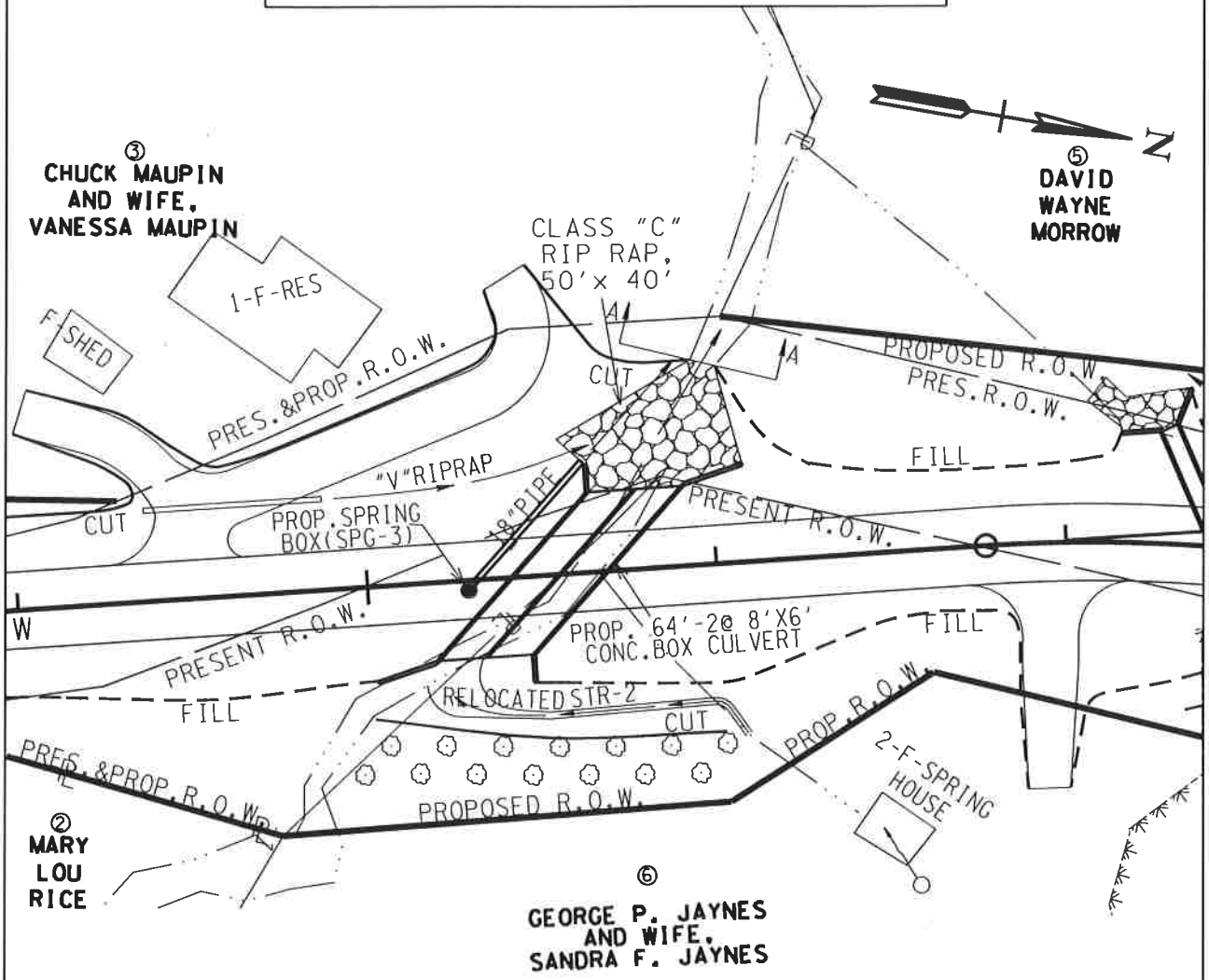
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / / SHEET 9 OF 12

Stream Encapsulation/Extension (STR-3) Permit Sketch



STREAM IMPACT TABLE		
EXISTING		
OPEN STREAM		85 FT.
STRUCTURE	16'X6' CONC. BOX CULVERT	30 FT.
TOTAL EXISTING STRUCTURE		30 FT.
TOTAL EXISTING LENGTH		115 FT.
PROPOSED		
OPEN STREAM		41 FT.
INCLUDES:	CLASS "C" RIP-RAP AT OUTLET	41 FT.
STRUCTURE	2@ 8'X6' CONC.BOX CULVERT	64 FT.
TOTAL PROPOSED STRUCTURE		64 FT.
TOTAL PROPOSED LENGTH		105 FT.

0 50 100 150
SCALE IN FEET

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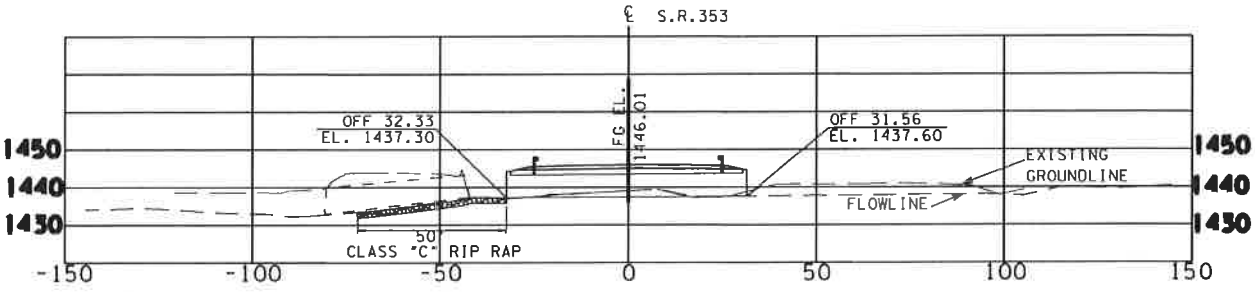
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

SHEET 10 OF 12

Stream Encapsulation/Extension (STR–3)
Permit Sketch



STATION	105+55.00
STRUCTURE	64'-2@ 8'X6' CONCRETE BOX CULVERT
SKEW	45° LT.
DRAINAGE AREA	667 ACRES
DESIGN DISCHARGE (Q50)	423 CFS
DESIGN DISCHARGE (Q100)	498 CFS
OVERTOPPING ELEV.	1444.67
Q50 HEADWATER ELEV.	1443.05
Q100 HEADWATER ELEV.	1443.15
VELOCITY(Q50)	11.9 FPS
VELOCITY(Q100)	12.4 FPS
INLET ELEVATION	1437.60
OUTLET ELEVATION	1437.30
STD. DWG. NOS.	STD-17-1,STD-17-2, STD-15-57
CLASS "A" CONCRETE	81 C.Y.
STEEL BAR REINFORCING	20,640 LB.

RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM CULVERT EXCAVATION AREA.

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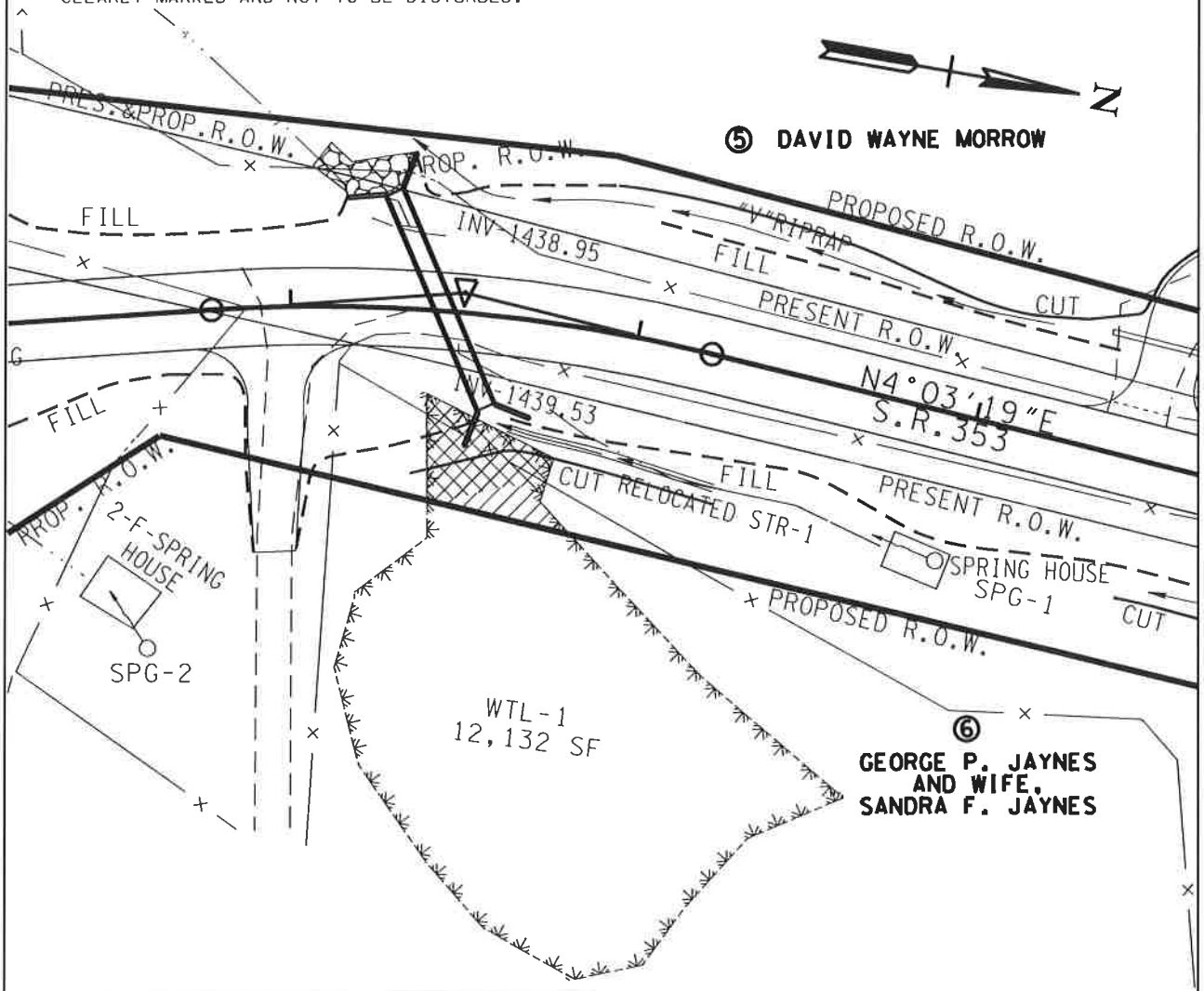
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / / SHEET 11 OF 12

Wetland Impacts (WTL–1)
Permit Sketch

MITIGATION NOTES
1. REMOVE THE TOP 12 INCHES OF TOPSOIL AND STOCKPILE IT UNTIL CONSTRUCTION IS COMPLETE.
2. ONCE CONSTRUCTION ACTIVITIES ARE COMPLETED, RESTORE ALL TEMPORARY WETLAND IMPACT AREAS TO PRE-CONSTRUCTION CONDITIONS. THIS INCLUDES REMOVING HAUL ROADS (IF APPLICABLE), RESTORING THE SITE TO THE ORIGINAL (PRE-CONSTRUCTION) ELEVATION AND SPREADING STOCKPILED TOPSOIL BACK OVER THE WETLAND SITE.
3. THE AREA OF TEMPORARY IMPACTS WILL BE STABALIZED ACCORDING TO STANDARD PRACTICES. PLANTING WILL BE BASED ON NOTES PROVIDED BY ECOLOGY.
4. WETLAND AREAS LOCATED OUTSIDE OF PROPOSED RIGHT-OF-WAY AND CONSTRUCTION EASEMENTS ARE TO BE CLEARLY MARKED AND NOT TO BE DISTURBED.



LEGEND	WETLAND IMPACTS (WTL-1)
	AREA OF PERMANENT IMPACT = 0.02 AC.
	VOLUME OF PERMANENT IMPACT = 25 C.Y.
	AREA OF TEMPORARY IMPACT = 0.01 AC.
	VOLUME OF TEMPORARY IMPACT = 8 C.Y.

0 50 100 150
SCALE IN FEET

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WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / / SHEET 12 OF 12

US Army Corps of Engineers ®
Nashville District

2017 Nationwide Permit

82 FR 1860

14. Linear Transportation Projects.

Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (*e.g.,* roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 32.)

(**Authorities:** Sections 10 and 404)

Note 1: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

Note 2: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note 3: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

US Army Corps of Engineers ®
Nashville District

2017 Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by NWP to be valid:

State of Tennessee Regional General Conditions (Applicable to ALL Nationwide Permits):

1. A PCN is required for all proposed activities in *Exceptional Tennessee Waters* and/or *Outstanding National Resource Waters*. A list of known Exceptional Tennessee Waters and Outstanding National Resource Waters can be obtained from the Tennessee Department of Environment and Conservation's website: https://tn.gov/environment/article/wr-water-resources-data-viewer . A map of known Exceptional Tennessee Waters and Outstanding National Resource Waters can be obtained from the Tennessee Department of Environment and Conservation's website: http://tdeconline.tn.gov/dwr/ .

2. All impacts to wetlands/open waters shall be calculated and reported in acres. Stream impacts shall be calculated separately and reported in both linear feet and acres.

Additional Information

Endangered Species Act: Nationwide Permit General Condition 32, *Pre-Construction Notification*, requires a PCN to be submitted to the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat. To determine if any listed species, critical habitat, migratory birds or other natural resources may be impacted by your proposed project, please consult the U.S. Fish and Wildlife Services' IPAC website: http://ecos.fws.gov/ipac .

Historic Properties: Nationwide Permit General Condition 32, *Pre-Construction Notification*, requires a PCN to be submitted to the District Engineer if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places. The PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. Information regarding cultural resources and the National Historic Preservation Act, can be reviewed at the National Park Service's website: http://www.nps.gov/nr/ . A map of non-restricted listed properties on the National Register of Historic Places at can be viewed at: https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466

National General Conditions:

1. Navigation.

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers.

(a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/ .

17. Tribal Rights. No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. Endangered Species.

(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate

documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide Web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties.

(a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic

Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-

by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate

that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification.
(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as

early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to

streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2-acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) That the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

US Army Corps
of Engineers ®
Nashville District

COMPLIANCE CERTIFICATION

YOU ARE REQUIRED TO SUBMIT THIS SIGNED CERTIFICATION REGARDING THE COMPLETED ACTIVITY AND ANY REQUIRED MITIGATION

I hereby certify that the work authorized by **Permit No. LRN-2016-01237**, and any required mitigation was done in accordance with the Corps authorization, including any general, regional, or special conditions.

_____
Permittee Signature

_____
Date

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative.

Submit this signed certification to the address below:

☐ U.S Army Corps of Engineers
Regulatory Division
3701 Bell Road
Nashville, TN 37214-2660

☒ East Regulatory Field Office
501 Adesa Parkway
Suite 250
Lenoir City, TN 37771

☐ West Regulatory Field Office
2042 Beltline Road, Southwest
Building C, Suite 415
Decatur, Al 35601

Enclosure 5

STATE OF TENNESSEE

DEPARTMENT OF ENVIRONMENT AND CONSERVATION

DIVISION OF WATER RESOURCES

William R. Snodgrass - Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243-1102

April 18, 2017

Ms. DJ Wiseman
Civil Engineering Manager 1
Tennessee Department of Transportation
505 Deadrick St. #900
Nashville, TN 37243

Subject: **Individual ARAP Permit/§401 Water Quality Certification**
NRS16.326 - Project #90023-1223-94 PIN #114038.01 SR 353 at LM 3.23 Realign Roadway to Flatten Curves and Upgrade Drainage, Installation of 2 Culverts and Relocating 2 Streams at Unnamed Tributary to Nolichucky River
Latitude: 36.1908, Longitude: -82.5933

Dear Ms. Wiseman:

We have reviewed your proposal to encapsulate 131 linear feet of stream including rip rap, eliminate 10 linear feet of stream and relocate 179 linear feet of stream as stream replacement for road realignment and culvert replacement of SR 353. Mitigation for stream impacts will occur at a 1:1 ratio through on-site stream replacement mitigation in the Nolichucky Watershed.

This activity is governed by the enclosed permit. The work must be accomplished in conformance with accepted plans and information submitted in support of the permit for NRS16.326 and the limitations and conditions set forth in the permit (enclosed). It is the responsibility of the permittee to ensure that all contractors involved with this project have read and understand the permit conditions before the project begins.

Coverage Termination

Authorization under this permit cannot be extended beyond the expiration date. If all work is not completed on or before the expiration date of this permit, it is the applicant's responsibility to apply for

additional coverage. Thank you for your time and consideration. If you have any questions, please contact me by e-mail at *Caitlin.Elam@tn.gov* or by phone at (615) 532-0359.

Sincerely,

Caitlin E. Elam
Environmental Scientist, Natural Resources Unit

Encl: copy of permit

Cc: DWR, Johnson City Environmental Field Office
U.S. Army Corps of Engineers, Nashville Regulatory Branch
Mr. Robbie Stephens, TDOT; Robbie.Stephens@tn.gov
Mr.Cody Mitchell, TDOT; Cody.Mitchell@tn.gov
Ms. Mary Showers, TDOT; Mary.Showers@tn.gov
Ms. Kristen Taylor, TDOT; Kristen.Taylor@tn.gov

File Copy

ARAP – NRS16.326

Pursuant to §401 of *The Federal Clean Water Act* (33 U.S.C. 1341), any applicant for a Federal license or permit to conduct any activity which may result in any discharge into the waters of the U.S., shall provide the federal licensing or permitting agency a certification from the State in which the discharge originates or will originate. Accordingly, the Division of Water Resorces requires reasonable assurance that the activity will not violate provisions of *The Tennessee Water Quality Control Act of 1977* (T.C.A. §69-3-101 et seq.) or provisions of §§301, 302, 303, 306 or 307 of *The Clean Water Act*.

Subject to conformance with accepted plans, specifications and other information submitted in support of the application, pursuant to 33 U.S.C. 1341 the State of Tennessee hereby certifies the activity described below. This shall serve as authorization under T.C.A. §69-3-101 et seq.

PERMITTEE Tennessee Department of Transportation
Suite 900, James K. Polk Building
505 Deaderick Street
Nashville, TN 37243

AUTHORIZED WORK: Encapsulate 131 linear feet of stream including rip rap and 10 linear feet of stream loss and relocate 179 linear feet of stream for a road realignment and culvert replacement of SR 353. Mitigation for stream impacts will occur at a 1:1 ratio through on-site mitigation by stream replacement and planting.

LOCATION: State Route 353 over Branch at LM 3.23; Washington County, TN

Latitude: 36.1908, Longitude: -82.5933

EFFECTIVE DATE: April 18, 2017

EXPIRATION DATE: April 17, 2022

for

Tisha Calabrese Benton
Director, Division of Water Resources

NRS16.326
§401 Water Quality Certification

Contents

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PART I

Authorized Work

Impact Location	Resource	Impact	Latitude	Longitude
Permanent Wetland Fill	Emergent Wet Meadow	0.02 acres of emergent wetland	36.1912	-82.5934
Temporary Wetland Fill	Emergent Wet Meadow	0.01 acres of emergent wetland	36.1912	-82.5933
Str-1	Perennial Stream, Unnamed Tributary to Nolichucky River	67 linear feet encapsulation with 25 linear feet riprap and 70 linear feet relocation (15 linear feet added to offset Str-3 loss)	36.2105	-82.6066
Str-2	Perennial Stream, Unnamed Tributary to Nolichucky River	109 linear feet relocation (44 linear feet added to offset Str-3 loss)	36.1908	-82.5933
Str-3	Perennial Stream, Unnamed Trib To Nolichucky River	64 linear feet encapsulation. 41 linear feet outfall riprap and 10 Linear Feet Stream Loss	36.1907	-82.5934
Total Permanent Wetland Impacts: 0.02 Acres ***Total Temporary Wetland Impacts: 0.01 Acres*** ***Total Permanent Stream Impacts: 131 Linear Feet*** ***Total Stream Relocation: 179 linear feet***				

Permit Conditions

Special Conditions

a. Prior to changing stream course into the replacement channel the Johnson City Environmental Field Office shall be notified and given the opportunity to inspect the replacement channel.

b. If any State or Federally Listed aquatic species are discovered during construction TDEC and TWRA shall be notified and TDOT shall await and follow instructions on how to proceed.

c. All culverts with more than one barrel shall be constructed in a manner which will concentrate flow into one barrel and not result in channel over widening.

d. The bottom of culverts shall be constructed below the stream bed elevation in a manner that allows natural substrate to reestablish.

e. Culverts shall not be constructed in a manner that would permanently disrupt the movement of fish and aquatic life.

f. All riprap areas shall be placed as to mimic the existing/proposed contours of the stream channel. Riprap shall be countersunk and placed at the grade with the existing stream substrate. Riprap shall not be placed in a manner that would permanently disrupt the movement of fish and aquatic life.

g. Voids within the riprap shall be filled with suitable substrate to prevent loss of stream within the riprap areas. Do not over-excavate for placement of riprap.

h. Construction and removal of bridges and culverts shall be in the dry to the maximum extent practicable, by diverting flow utilizing cofferdams, berms, and/or temporary channels or pipes. Temporary diversion channels shall be protected by non-erodible material to the expected high water level. Cofferdams and/or berms shall be constructed of sandbags, clean rock (containing no fines or soils), steel sheeting, or other non-erodible, non-toxic material. All such diversion materials shall be removed upon completion of the work.

i. The use of monofilament-type erosion control netting or blanket is prohibited.

j. The permitte shall notify this office of project completion within thirty (30) days of completion.

k. Permittee is responsible for any permanent reduction or loss of instream flow resulting from authorized activities.

l. Best Management Practices (BMPs) shall be stringently implemented throughout the construction period to prevent sediments, oils, or other project-related pollutants from being discharged into the streams. All spills must be reported to the appropriate emergency management agency, and measures shall be taken immediately to prevent the pollution of waters of the state, including groundwater, should a spill occur.

m. Checkdams or other in-stream treatment are not authorized to be placed in the stream.

n. Streambeds shall not be used as transportation routes for construction equipment. Temporary stream crossings shall be limited to one point in the construction area and EPSC measures shall be utilized where stream banks are disturbed. The crossing shall be constructed so that stream or wetland flow is not

obstructed. Following construction, all materials used for the temporary crossing shall be removed and disturbed stream banks shall be restored and stabilized if needed.

o. Backfill activities must be accomplished in a manner that stabilizes the streambed and banks to prevent erosion. All contours must be returned to pre-project conditions to the extent practicable and the completed activities may not disrupt or impound stream flow.

p. Clearing, grubbing, and other disturbance to riparian vegetation shall be kept at the minimum necessary for slope construction and equipment operations. Unnecessary riparian vegetation removal, including trees, is prohibited. Native riparian vegetation must be reestablished after work is completed. Non-native, non-invasive annuals may be used as cover crops until native species are established. Coverage under this permit does not serve to waive any local riparian buffer protection requirement, and permittees are responsible for obtaining any necessary local approval.

q. Activities that directly impair surface water flow into or out of any wetland areas not specified in this permit or the application materials are not covered.

r. The authorized wetland alterations shall not cause measureable degradation to resource values and classified uses of hydrologically connected wetlands or other waters of the state, including disruption of sustaining surface or groundwater hydrology. Adjacent wetlands or streams determined likely to be measurably degraded by such hydrologic alteration, or by partial fill, must be included in the cumulative impact calculation, even if not filled or otherwise directly altered physically.

s. Temporary impacts to wetlands shall be mitigated by the removal and stockpiling of the first 12 inches of topsoil, prior to construction. Upon completion of construction activities, all temporary wetland impact areas are to be restored to pre-construction contours, and the stockpiled topsoil spread to restore these areas to pre-construction elevation. Other side-cast material shall not be placed within the temporary impact locations. Permanent vegetative stabilization using native species of all disturbed areas in or near the wetland must be initiated within 14 days of project completion (see also Landscaping with Natives at tneppc.org). Non-native, non-invasive annuals may be used as cover crops until native species can be established

General Conditions

a. It is the responsibility of the applicant to convey all terms and conditions of this permit to all contractors. A copy of this permit, approved plans and any other documentation pertinent to the activities authorized by this permit shall be maintained on site at all times during periods of construction activity.

b. Work shall not commence until the applicant has received the federal §404 permit from the U. S. Army Corps of Engineers, a §26a permit from the Tennessee Valley Authority or authorization under a Tennessee NPDES Storm Water Construction Permit as well as other State, Federal, or local laws where necessary. The applicant is responsible for obtaining these permits.

c. All work shall be carried out in such a manner as will prevent violations of water quality criteria as stated in Rule 0400-40-03-.03 of the Rules of the Tennessee Department of Environment and Conservation. This includes, but is not limited to, the prevention of any discharge that causes a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of waters of the state for any of the uses designated by Rule 0400-40-04. These uses include fish and aquatic life (including trout streams and naturally reproducing trout streams), livestock watering and wildlife, recreation, irrigation, industrial water supply, domestic water supply, and navigation.

d. Impacts to waters of the state other than those specifically addressed in the plans and this permit are prohibited. All streams, springs and wetlands shall be fully protected prior, during and after construction until the area is stabilized. Any questions, problems or concerns that arise regarding any stream, spring or wetland either before or during construction, shall be addressed to the Division of Water Resource's Johnson City Environmental Field Office (423-854-5400), or the permit coordinator in the division's Natural Resources Unit (615-532-0359).

e. This permit does not authorize adverse impacts to cultural, historical or archeological features or sites.

f. All activities must be accomplished in conformance with the approved plans, specifications, data and other information submitted in support of the ARAP application (form CN-1091) and the limitations, requirements and conditions set forth herein. Failure to comply with the terms and conditions of this permit is a violation of the Tennessee Water Quality Control Act of 1977 (the Act), and is subject to penalty in accordance with T.C.A. §69-3-115.

g. Activities occurring in known or likely habitat of State or Federally listed threatened, endangered, deemed in need of management, or species of special concern may not be authorized without prior coordination with the Tennessee Wildlife Resources Agency (TWRA) and TDEC Division of Natural Areas (DNA) to determine if any special conditions are required to avoid and/or minimize harm to the listed species or their habitat. Adverse effects to federally listed threatened and endangered species are not permitted without prior authorization from the United States Fish and Wildlife Service (USFWS) as required by Section 7 or Section 10 under the Endangered Species Act.

h. This permit does not authorize access to private property. Arrangements concerning the use of private property shall be made with the landowner.

i. Erosion prevention and sediment control measures must be in place and functional before any earth moving operations begin, and shall be designed according to the department's Erosion and Sediment Control Handbook (www.tn.gov/environment/wpc/sed_ero_controlhandbook/). Permanent vegetative stabilization using native species of all disturbed areas in or near the stream channel must be initiated within 15 days of project completion (see also Landscaping with Natives at tneppc.org). Non-native, non-invasive annuals may be used as cover crops until native species can be established.

j. The permittee is responsible for obtaining coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities where clearing, grading or excavation results in an area of disturbance of one or more acres, or activities that result in the disturbance of less than one acre if it is part of a larger common plan of development or sale.

PART II

Mitigation Requirements and Monitoring Procedures

Required Mitigation Activities

1. Mitigation for 10 linear feet of stream loss will be accomplished through 59 linear feet of additional stream length at the stream replacement locations and buffer shrub planting in accordance with submitted application materials prior to or at the same time as impacts. Mitigation for 179 linear feet of stream loss will be accomplished through 179 linear feet of stream replacement and buffer shrub planting in accordance with submitted application materials prior to or at the same time as impacts. If the mitigation ownership is transferred outside of State ownership a land use deed restriction or other protective covenant will be transferred with the property.
2. Loss of stream resource value at the time of monitoring will require additional mitigation offsite and/or in the relocated channel.
3. No mitigation is required for the encapsulation, because these impacts are cumutively below de minimis.

Compensatory mitigation activities shall be carried out utilizing best professional efforts to comply with approved plans and the conditions of this permit. Mitigation activities shall be deemed complete when the Division determines that the permitted impact on aquatic resources has been adequately addressed through successful achievement of the compensatory mitigation activities, and a no further action letter has been provided to the permittee.

The goal of this permit and its mitigation success criteria is to ensure there is no net loss of resource value due to the impacts of the permitted activity. In accordance with adaptive management, the Division incorporates safety factors into compensatory mitigation requirements. Therefore, once successful mitigation has been achieved the Division reserves the right to revise performance standards and mitigation criteria to account for any changes documented in the compensatory mitigation project. While final mitigation activities may not result in a net loss of resource value, they may be revised to reflect approved changes from the original mitigation proposal and the success criteria in the permit. Upon acceptance of closure of the project, the Division shall record any such revisions of the mitigation plan or success criteria through formal modification of the permit conditions with public notice.

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Permittee Responsible Mitigation

The permittee is authorized to create 238 linear feet of an unnamed tributary to the Nolichucky River. The replacement channel shall be constructed to have a bank height ratio of 1-1.2 for channel stability. The replacement channel may not be riprap lined except for 25 and 41 linear feet as indicated on the plans. The channel will be revegetated with rows of shrubs on the right and left bank for the entire stretch of relocated channel as indicated on plans.

Monitoring Procedures

1. Mitigation shall be complete no less than one year from the date of impacts authorized in this permit.
2. A post-construction monitoring report for the relocated stream shall be due by October 31st after the project is complete to ensure permit compliance.
3. Departure from a performance standard does not automatically require corrective action. Visual observations and a review ofthe entire stream system will be conducted to determine if and what corrective actions are warranted.
4. The permittee shall submit, annually by October 31st, a report containing all monitoring information, as outlined below for a term of three years (3 years) after mitigation is complete:

   Hydrology - The State's Hydrologic Determination procedure shall be part of the monitoring requirements for years 1 and 3. The hydrologic assessments can be conducted anytime during year 1 and 3 from Feburary 1-April 15th. The relocated stream, an unnamed tributary to the Nolichucky River, must maintain its status as a jurisidictional water feature throughout the monitoring period. Failure for this water feature to rank as a jurisdictional stream will require corrective action and/or mitigation on the part of the permittee.

   Vegetation - A 75% survival rate, comprised of both planted and desirable seedlings from natural regeneration shall remain growing at the end of the monitoring period. No more than 25% of any one species shall dominate the native riparian plant community.Vegetation counted towards survival rates, including both planted and volunteer, should be of desirable native species. Bare soil should comprise no greater than 5% of the stream replacement planted riparian buffer.

Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The dates and times the analyses were performed:
2. The person(s) who performed the analyses:
3. The analytical techniques or methods used :
4. The results of all required analyses:

5. Narrative descriptions and georeferenced photo-documentation to support required survey data.

6. In the event any portion or aspect of the monitoring project does not meet the specified success criteria based on reporting and/or additional visual observations in a monitoring year, the nature and cause(s) of the resulting condition shall be investigated and documented. If it is determined that corrective actions are not warranted at the time, the rationale for the decision shall be stated. Continued monitoring of the condition or area using more detailed methodology may be appropriate and must be documented. In instances where corrective actions are necessary, a plan shall be prepared that includes proposed actions, a time schedule for activities, and revised monitoring plan.

Submission of Monitoring Results

1. The permittee shall submit, annually by October 31st, a report containing all monitoring information, as outlined above for a term of three years (3 years) after stream replacement mitigation is complete to the Division 's Natural Resources Unit, located on the 11th Floor of the William R. Snodgrass- Tennessee Tower, 312 Rosa L. Parks Avenue, Nashville, Tennessee 37243-1102. Copies shall also be provided to the Knoxville Environmental Field Office.

2. The permittee should notify the agencies in writing when the monitoring period is complete. Following receipt of the final report, the agencies will contact the permittee (or agent) as soon as possible to schedule a site visit to confirm the success of the site.

Additional Responsibilities of Permittee

The permittee shall provide documentation if the property is transefered out of State ownership, within 90 days of property transfer, of a land-use deed restriction and/or any other binding negotiated documentation regarding all mitigation sites in association with this project. This documentation should be sent to the division 's Natural Resources Section located at the address referenced above.

Duty to Reapply

If any portion of the permitted activities, including the authorized impacts to water resources, compensatory mitigation requirements, or post project monitoring is not completed before the expiration date of this permit the applicant must apply for permit re-issuance. The permittee shall submit such information and forms as are required to the director of the Division of Water Resources at least ninety (90) days prior to its expiration date. Such applications must be properly signed and certified.

Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations.

Other Information

If the permittee becomes aware that he/she failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, then he/she shall promptly submit such facts or information.

Changes Affecting the Permit

Transfer/Change of Ownership

a. This permit may be transferred to another party, provided there are no activity or project modifications, no pending enforcement actions, or any other changes which might affect the permit conditions contained in the permit, by the permittee if:

b. The permittee notifies the Director of the proposed transfer at least 30 days in advance of the proposed transfer date;

c. The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage, and contractual liability between them; and

d. The Director does not notify the current permittee and the new permittee, within 30 days, of their intent to modify, revoke, reissue, or terminate the permit, or require that a new application be filed rather than agreeing to the transfer of the permit.

e. The permittee must provide the following information to the division in their formal notice of intent to transfer ownership:

    1. the permit number of the subject permit;
    2. the effective date of the proposed transfer;
    3. the name and address of the transferor;
    4. the name and address of the transferee;
    5. the names of the responsible parties for both the transferor and transferee;
    6. a statement that the transferee assumes responsibility for the subject permit;
    7. a statement that the transferor relinquishes responsibility for the subject permit;
    8. the signatures of the responsible parties for both the transferor and transferee, and;
    9. a statement regarding any proposed modifications to the permitted activities or project, its operations, or any other changes which might affect the permit conditions contained in the permit.

Change of Mailing Address

The permittee shall promptly provide to the Director written notice of any change of mailing address. In the absence of such notice the original address of the permittee will be assumed to be correct.

Noncompliance

Effect of Noncompliance

All discharges shall be consistent with the terms and conditions of this permit. Any permit noncompliance constitutes a violation of applicable State and Federal laws and is grounds for enforcement action, permit termination, permit modification, or denial of permit reissuance.

Reporting of Noncompliance

24-Hour Reporting

a. In the case of any noncompliance which could cause a threat to public drinking supplies, or any other discharge which could constitute a threat to human health or the environment, the required notice of non-compliance shall be provided to the Division of Water Resources in the appropriate Environmental Field Office within 24-hours from the time the permittee becomes aware of the circumstances. (The Environmental Field Office should be contacted for names and phone numbers of environmental response personnel).

b. A written submission must be provided within five (5) days of the time the permittee becomes aware of the circumstances unless this requirement is waived by the Director on a case-by-case basis. The permittee shall provide the Director with the following information:

    1. A description of the discharge and cause of noncompliance;
    2. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
    3. The steps being taken to reduce, eliminate, and prevent recurrence of the non-complying discharge.

Scheduled Reporting

For instances of noncompliance which are not reported under subparagraph a. above, the permittee shall report the noncompliance by contacting the permit coordinator, and provide all information concerning the steps taken or planned to reduce, eliminate, and prevent recurrence of the violation and the anticipated time the violation is expected to continue.

Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to the waters of Tennessee resulting from noncompliance with this permit, including but not limited to, accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

Liabilities

Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. Notwithstanding this permit, the permittee shall remain liable for any damages sustained by the State of Tennessee, including but not limited to fish kills and losses of aquatic life and/or wildlife, as a result of the discharge of pollutants to any surface or subsurface waters. Additionally, notwithstanding this Permit, it shall be the responsibility of the permittee to conduct its discharge activities in a manner such that public or private nuisances or health hazards will not be created.

Liability under State Law

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or the Federal Water Pollution Control Act, as amended.

This permit does not preclude requirements of other Federal, State or local laws. This permit also serves as a State of Tennessee Aquatic Resource Alteration Permit (ARAP) pursuant to the Tennessee Water Quality Control Act of 1977 (T.C.A. §69-3-101 et seq.).

This permit may be revoked, suspended, or modified for cause, including:

1. Violation of any of the terms or conditions of this permit or of T.C.A § 69-3-101 et. seq.;
2. Obtaining the permit by misrepresentation or failing to disclose fully all relevant facts;
3. A change in any condition that requires either a temporary or permanent change in the conditions of this permit.

An appeal of this action may be made as provided in T.C.A. §69-3-105(i) and Rule 0400-40-05-.12 by submitting a petition for appeal. This petition must be filed within THIRTY (30) DAYS after public notice of the issuance of the permit. The petition must specify what provisions are being appealed and the basis for the appeal. It should be addressed to the technical secretary of the Tennessee Board of Water Quality, Oil and Gas at the following address: Ms. Tisha Calabrese Benton, Director, Division of Water Resources,

William R. Snodgrass - Tennessee Tower, 312 Rosa L. Parks Avenue, Nashville, Tennessee 37243-1102.

Any hearing would be in accordance with T.C.A. §69-3-110 and 4-5-301 et seq.

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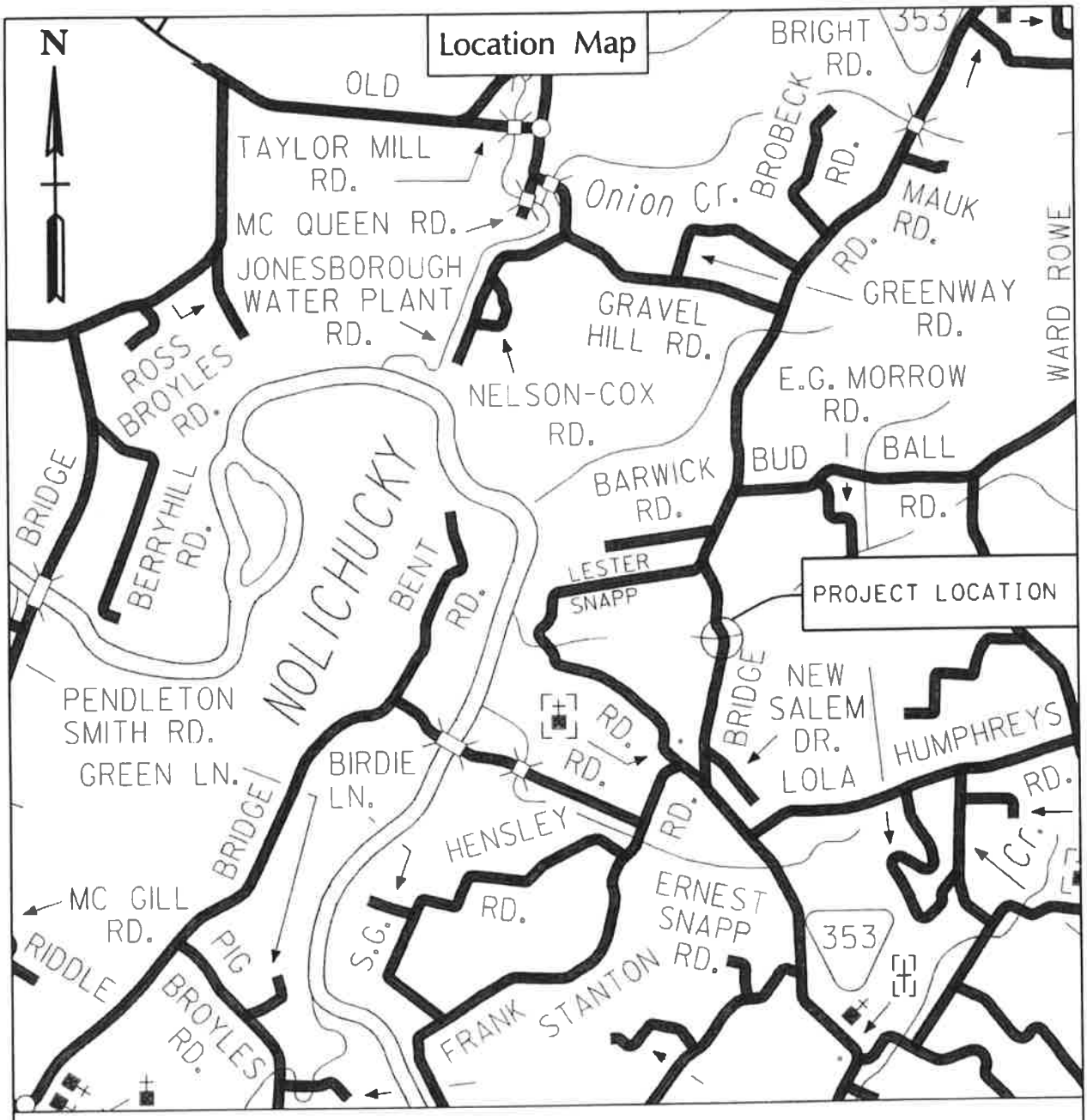
APPENDIX I

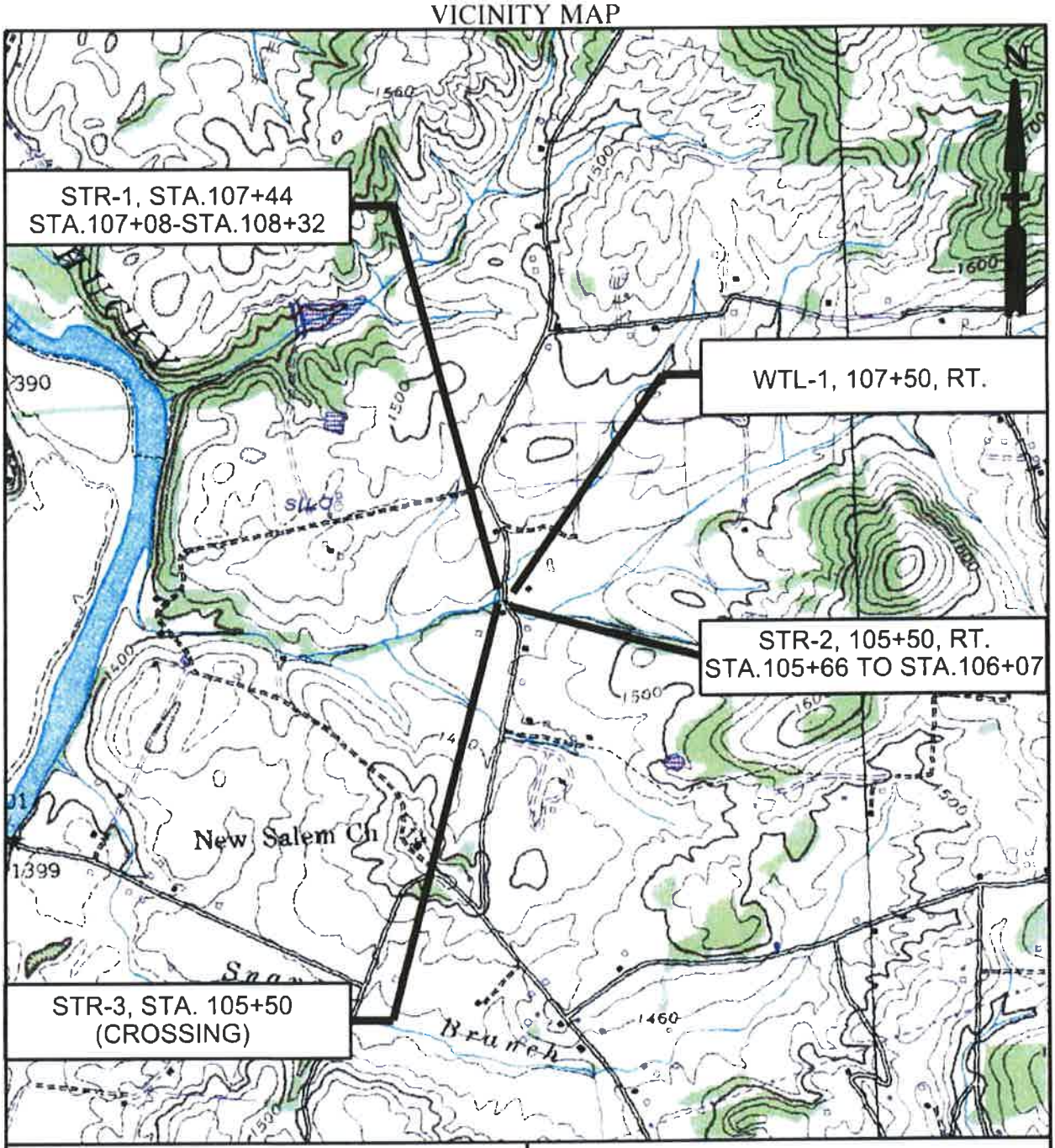
Location and Impacts



APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10);90023-1223-94
PIN # 114038.01
S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

VICINITY MAP



APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE * 90023-1223-94
PIN 114038.01
FED. CONST. PROJ. * HRRR/HSIP-353(10)

COUNTY: WASHINGTON
NEAR: WASHINGTON COLLEGE

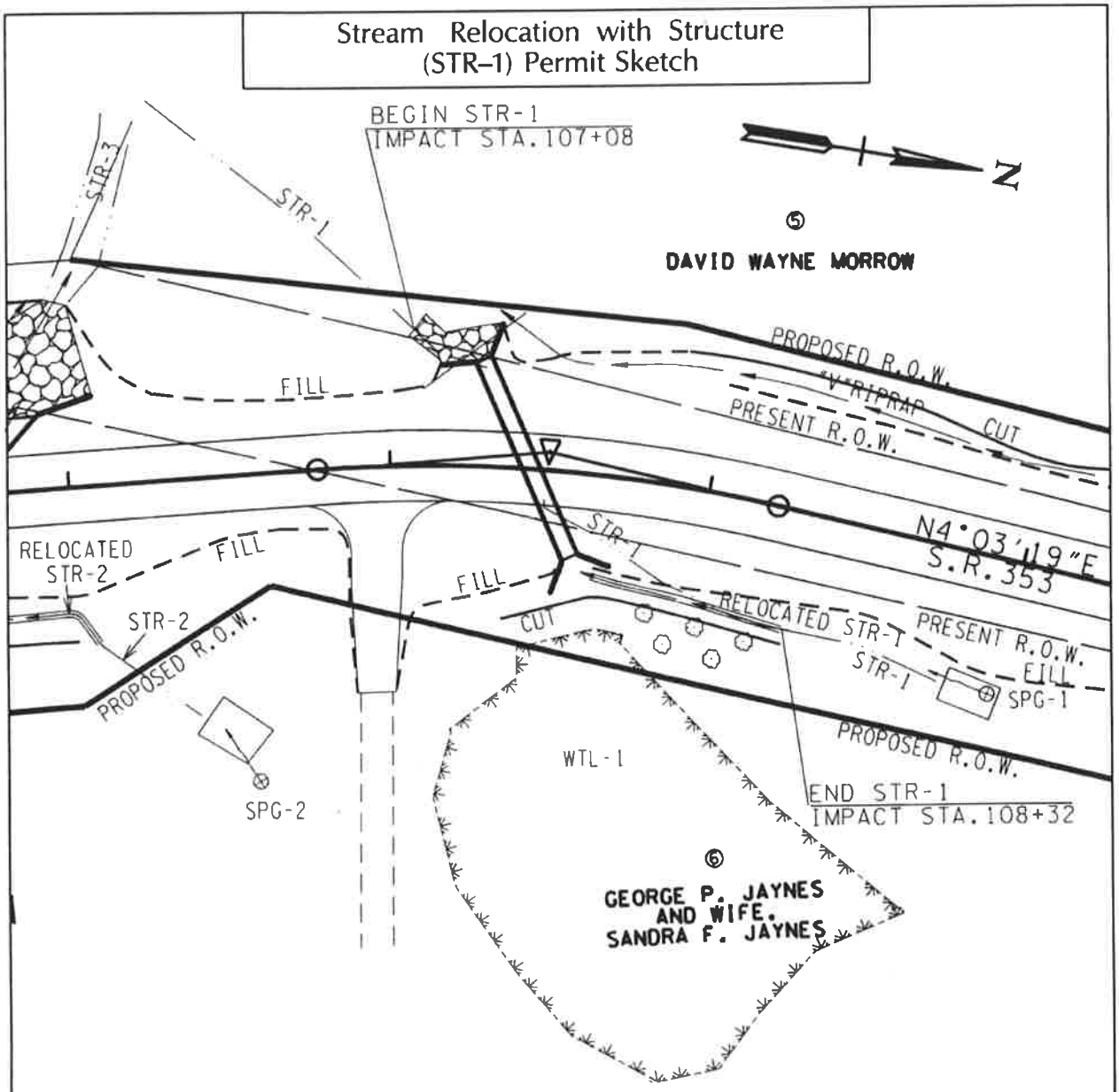
DATE: 11/29/16 REVISED: / /

SHEET 2 OF 12

SCALE = 1:1320'
CONTOUR INTERVAL 20 FEET

1320 0 1320 1980 2640 3300 3960 4620 5280FT

Stream Relocation with Structure (STR–1) Permit Sketch



STREAM IMPACT TABLE (STR-1)		
EXISTING		
OPEN STREAM		116 FT.
STRUCTURE	5'X4' CONCRETE BOX CULVERT (TO BE REMOVED)	31 FT.
TOTAL EXISTING STRUCTURE		31 FT.
TOTAL EXISTING LENGTH		147 FT.
PROPOSED		
OPEN STREAM		95 FT.
	PROPOSED CLASS "B" RIP RAP	25 FT.
STRUCTURE	6'X4' CONCRETE BOX CULVERT	67 FT.
TOTAL PROPOSED STRUCTURE		67 FT.
TOTAL PROPOSED LENGTH		162 FT.

0 50 100 150
SCALE IN FEET

APPLICATION BY:
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PE # HRRR/HSIP-353(10); 90023-1223-94
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S.R.353: BRIDGE OVER BRANCH L.M.3.23
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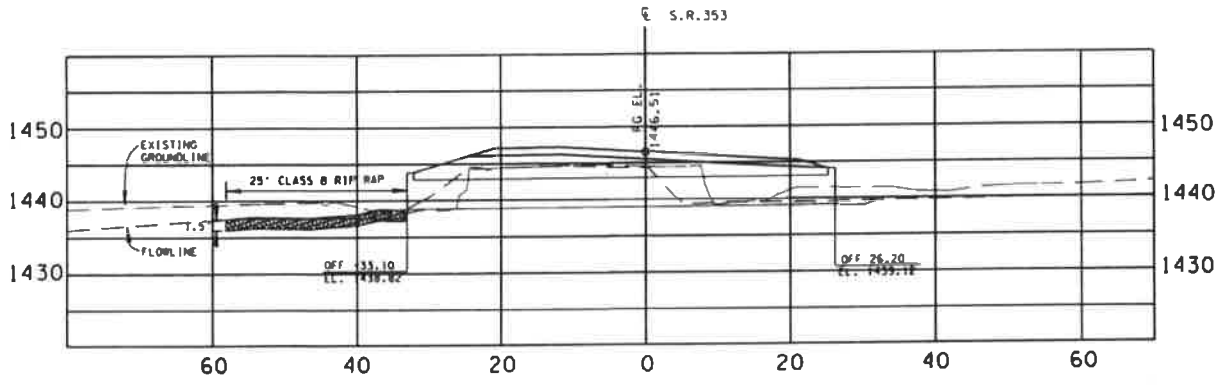
Stream Relocation with Structure (STR–1) Permit Sketch



STATION	107+44.11
STRUCTURE	67'-6'X4' CONC.BOX CULV.REQ'D.
SKEW	65° RT.
DRAINAGE AREA	94.6 AC.
DESIGN DISCHARGE (Q50)	119.3 CFS
DESIGN DISCHARGE (Q100)	128.7 CFS
OVERTOPPING ELEV.	1444.27
Q50 HEADWATER ELEV.	1442.40
Q100 HEADWATER ELEV.	1442.80
VELOCITY (Q50)	9.4 FT/S
VELOCITY (Q100)	9.6 FT/S
INLET ELEVATION	1439.12
OUTLET ELEVATION	1438.82
STANDARD DRAWING NUMBERS	STD-17-1, STD-17-2, STD-17-51
CLASS "A" CONCRETE	77 C.Y.
STEEL BAR REINFORCING	13,425 LB.

RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM CULVERT EXCAVATION AREA.

APPLICATION BY:
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WASHINGTON COUNTY

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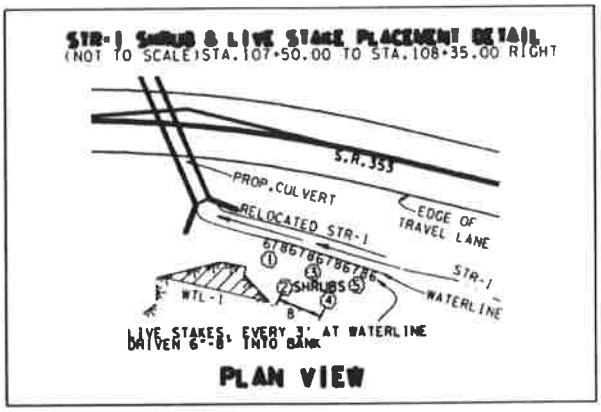
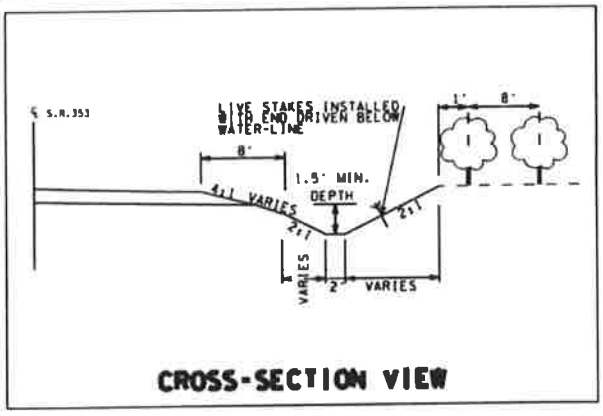
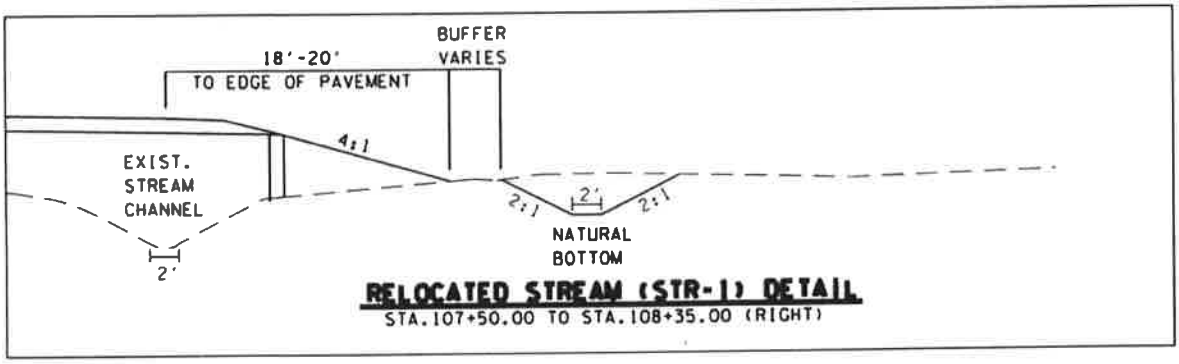
Stream Relocation with Structure (STR–1) Permit Sketch

TREE PLANTING SCHEME FOR STR-1







ESTIMATED TREE QUANTITIES

ITEM #	DESCRIPTION	QUANTITY	UNIT
802-13.01	ALNUS SERRULATA (HAZEL ALDER)	1	EACH
802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)	1	EACH
802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)	1	EACH
802-13.09	LINDERA BENZOIN (SPICEBUSH)	1	EACH
802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)	1	EACH
802-02.30	SALIX NIGRA (BLACK WILLOW)	10	EACH
802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)	10	EACH
802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)	10	EACH

APPLICATION BY:
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Stream Relocation with Structure
(STR–1) Permit Sketch

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

(2) CHANNEL RELOCATION SEQUENCE:
A. FLAG EDGE OF THE NEW CHANNEL TOP BANK PRIOR TO CLEARING. DO NOT CLEAR LARGE TREES IN POSITION TO SHADE THE NEW CHANNEL. LEAVE AS MANY TREES AND SHRUBS AS POSSIBLE BETWEEN TOE OF THE NEW HIGHWAY SLOPE AND THE STREAM.
B. EXCAVATE THE NEW CHANNEL "IN THE DRY" BY LEAVING AREAS OF UNDISTURBED EARTH (DIVERSION BERMS) IN PLACE AT BOTH ENDS.
C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
E. REMOVE DIVERSION BERMS, BEGINNING WITH THE MOST DOWNSTREAM; BANKS AND BOTTOM ELEVATION OF THE OLD CHANNEL SHOULD TRANSITION SMOOTHLY INTO THE NEW CHANNEL. THE ELEVATIONS OF THE NEW CHANNEL BOTTOM AT EACH END OF THE RELOCATION SEQUENCE SHOULD MATCH THE ELEVATIONS OF THE EXISTING CHANNEL, AND A STEADY PERCENT SLOPE SHOULD BE MAINTAINED THROUGHOUT THE RELOCATED CHANNEL CENTERLINE OR AS SPECIFIED.
F. INSTALL SHRUBS ACCORDING TO STANDARD SPECIFICATIONS SECTION 802.

(3) ONLY RIP-RAP SHOWN ON PLANS SHOULD BE USED IN THE RELOCATED CHANNEL REACH. ANY OTHER PROPOSED RIP-RAP SHOULD BE COORDINATED WITH THE ENVIRONMENTAL DIVISION THROUGH THE TDOT CONSTRUCTION OFFICE.

(4) REQUESTS BY ANY AGENCY THAT WOULD REQUIRE MODIFCATION OF CHANNELS, ELEVATIONS, RIP-RAP, OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFFERED TO TDOT ENVIRONMENTAL DIVISION VIA HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS. TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION MAY MAKE RECOMMENDATIONS CONCERNING EROSION CONTROL VIA THE ENGINEER WITHOUT SUCH REFERRAL.

SHRUB NOTES

(1) NO SUBSTITUTIONS OF SHRUB SPECIES SHALL BE ALLOWED WITHOUT WRITTEN APPROVAL OF T.D.O.T. ENVIRONMENTAL DIVISION. SHRUBS SHALL BE OF THE VARIETY REQUESTED, BETWEEN 2 AND 5 FEET IN HEIGHT, CONTAINERIZED AND OF THE FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED. ANY FOUND TO BE INCORRECT SPECIES, OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION OF THE CONTRACT SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. STAKES AND WIRES SHALL BE REMOVED IMMEDIATELY PRIOR TO CONTRACT TERMINATION, UNLESS OTHERWISE DIRECTED BY THE ENVIRONMENTAL DIVISION.

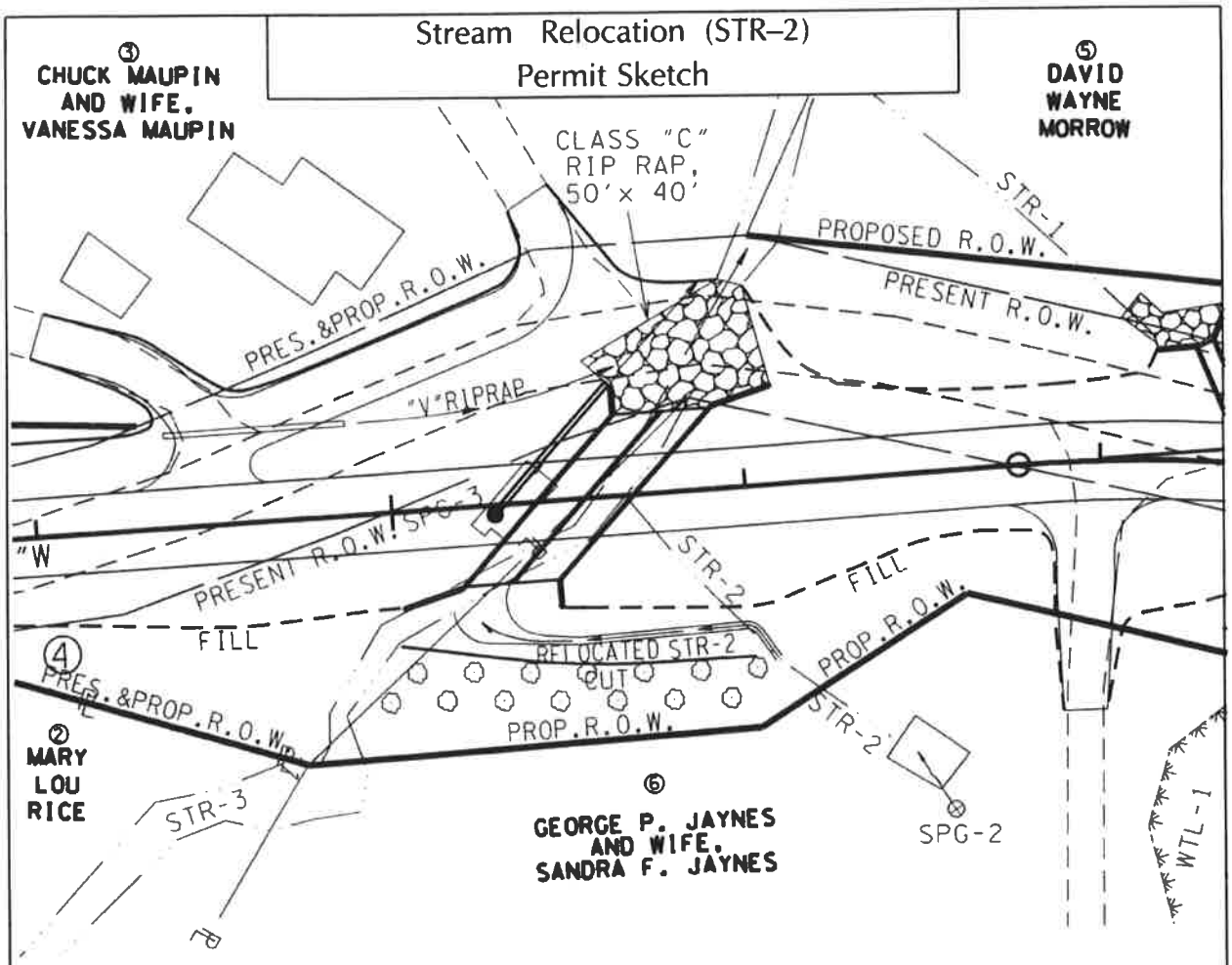
(2) THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT SHRUB SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.

(3) SHRUBS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE = HRRR/HSIP-353(10); 90023-1223-94
PIN = 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Relocation (STR–2)
Permit Sketch



0 50 100 150

SCALE IN FEET

STREAM IMPACT TABLE	
EXISTING	
OPEN STREAM	65 FT.
PROPOSED	
OPEN STREAM	109 FT.

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
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PIN # 114038.01
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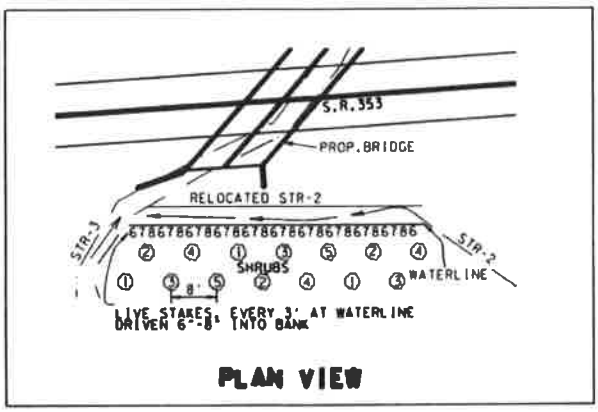
WASHINGTON COUNTY

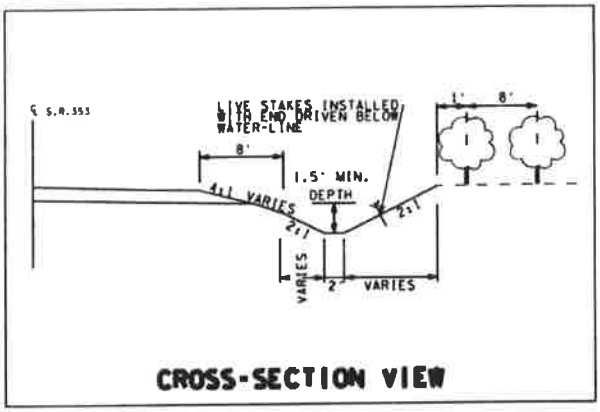
DATE: 11/29/16 REVISED: / /

Stream Relocation (STR–2)
Permit Sketch

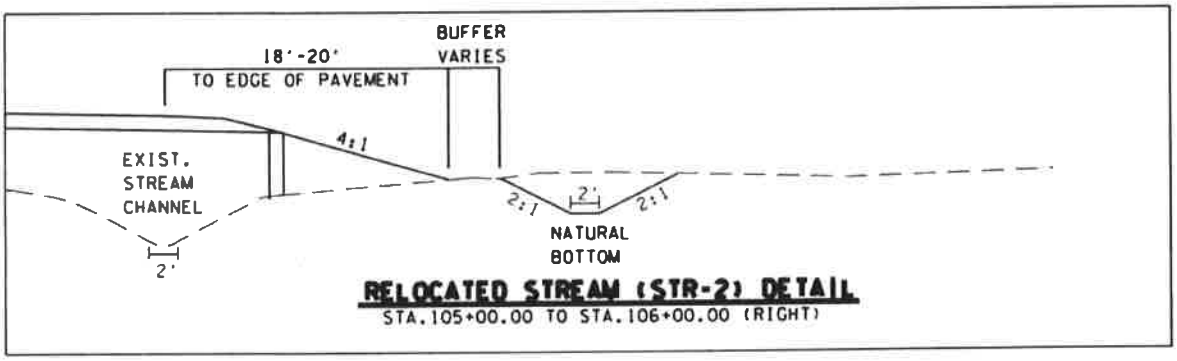
TREE PLANTING SCHEME FOR STR-2



PLAN VIEW



CROSS-SECTION VIEW



RELOCATED STREAM (STR-2) DETAIL
STA.105+00.00 TO STA.106+00.00 (RIGHT)

ESTIMATED TREE QUANTITIES

ITEM #	DESCRIPTION	QUANTITY	UNIT
802-13.01	ALNUS SERRULATA (HAZEL ALDER)	3	EACH
802-13.02	CALYCANTHUS FLORDANUS (SWEETSHRUB)	3	EACH
802-13.04	CORNUS AMOMUM (SILKY DOGWOOD)	3	EACH
802-13.09	LINDERA BENZOIN (SPICEBUSH)	3	EACH
802-13.10	SAMBUCUS CANADENSIS (ELDERBERRY)	3	EACH
802-02.30	SALIX NIGRA (BLACK WILLOW)	10	EACH
802-02.32	CORNUS AMOMUM (SILKY DOGWOOD)	10	EACH
802-02.33	SAMBUCUS CANADENSIS (ELDERBERRY)	10	EACH

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WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Relocation (STR–2)
Permit Sketch

STREAM RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS

(IGNORE REFERENCES TO ITEMS NOT SPECIFIED)

(1) STANDARD STREAM MITIGATION:
IF THE RELOCATED CHANNEL FLOWS INTO A PROPOSED CULVERT, THE NEW CHANNEL SHALL BE RELOCATED PRIOR TO INSTALLATION OF THE CULVERT TO ENSURE CORRECT ELEVATION LEVELS ARE SET FOR THE INLET. THE NEW CHANNEL SHALL BE EXCAVATED AND STABALIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON THE PLANS), SEEDING, AND/OR SOD SHALL BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WHEN NECESSARY, WATER MUST BE DIVERTED INTO THE LOW-FLOW BARREL OF A CULVERT ACCORDING TO STANDARD DRAWING 15-16A. SHRUBS SHALL BE INSTALLED IN THE FIRST PLANTING SEASON FOLLOWING CHANNEL EXCAVATION. PLANTING SEASON IS CONSIDERED TO BE BETWEEN NOVEMBER 1 AND MARCH 31. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABALIZED, AND ONLY DURING A LOW-WATER PERIOD. STABALIZED MEANS THAT ALL SPECIFIED ROCK, EROSION CONTROL BLANKETS, SEEDING, SOD, OR MATERIALS ARE IN PLACE AND ESTABLISHED. NOTIFY THE REGIONAL BIOLOGIST WHEN WATER IS DIVERTED INTO EACH NEW CHANNEL.

(2) CHANNEL RELOCATION SEQUENCE:
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C. SHAPE CHANNEL TO SPECIFICATIONS SHOWN. REMOVE LOOSE SOILS AND DEBRIS.
D. PLACE TOPSOIL, EROSION CONTROL BLANKET, SEED, SOD, OR OTHER MATERIAL AS SPECIFIED.
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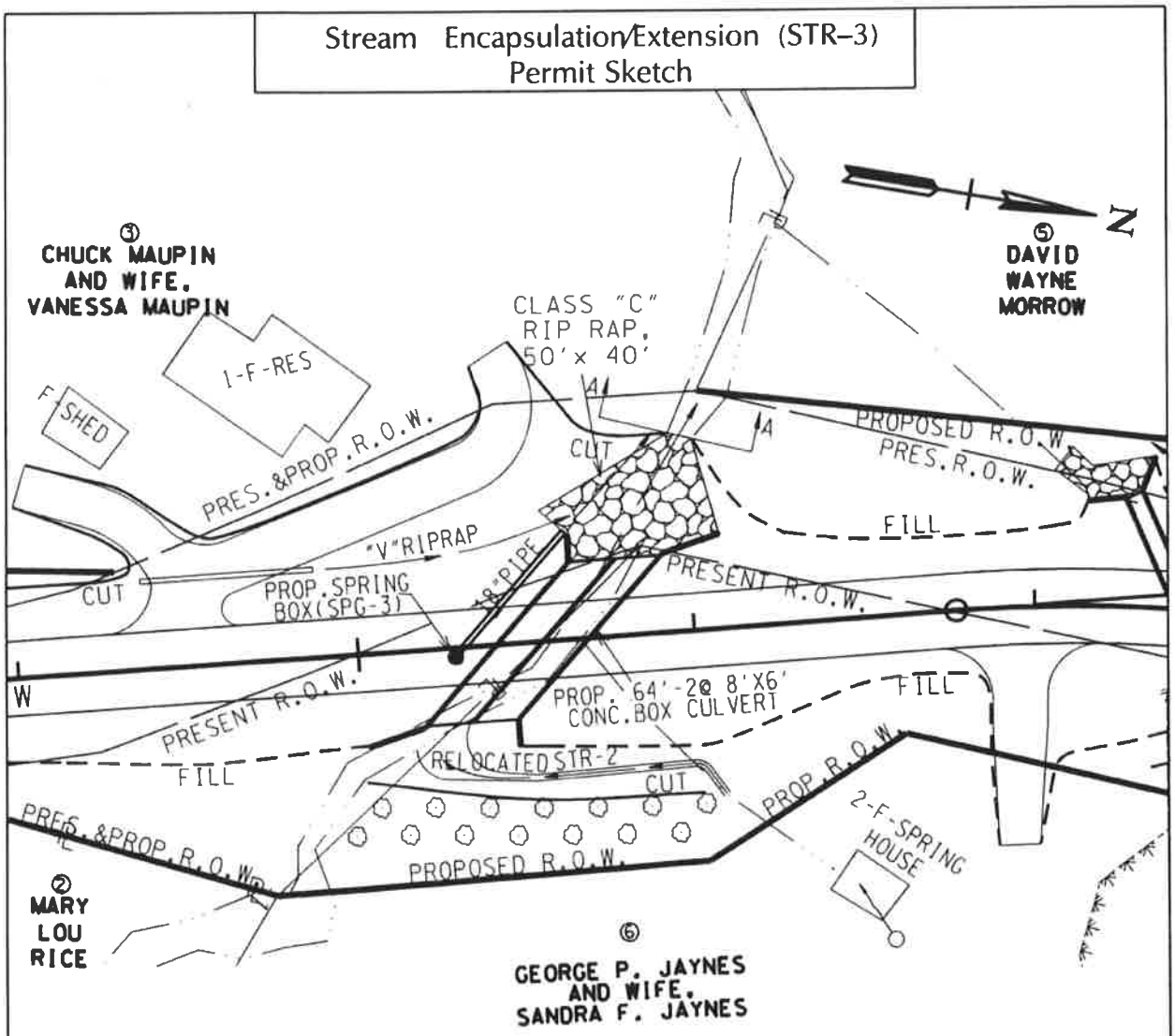
PIN # 114038.01
S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Stream Encapsulation/Extension (STR-3) Permit Sketch



STREAM IMPACT TABLE		
EXISTING		
OPEN STREAM		85 FT.
STRUCTURE	16'X6' CONC. BOX CULVERT	30 FT.
TOTAL EXISTING STRUCTURE		30 FT.
TOTAL EXISTING LENGTH		115 FT.
PROPOSED		
OPEN STREAM		41 FT.
INCLUDES:	CLASS "C" RIP-RAP AT OUTLET	41 FT.
STRUCTURE	2@ 8'X6' CONC.BOX CULVERT	64 FT.
TOTAL PROPOSED STRUCTURE		64 FT.
TOTAL PROPOSED LENGTH		105 FT.

0 50 100 150
SCALE IN FEET

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
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BRIDGE OVER BRANCH, L.M. 3.23
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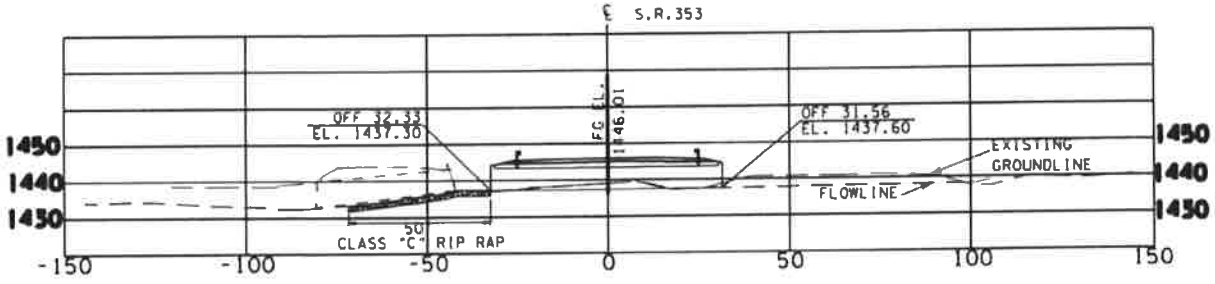
Stream Encapsulation/Extension (STR-3) Permit Sketch



STATION	105+55.00
STRUCTURE	64'-2@ 8'X6' CONCRETE BOX CULVERT
SKEW	45° LT.
DRAINAGE AREA	667 ACRES
DESIGN DISCHARGE (Q50)	423 CFS
DESIGN DISCHARGE (Q100)	498 CFS
OVERTOPPING ELEV.	1444.67
Q50 HEADWATER ELEV.	1443.05
Q100 HEADWATER ELEV.	1443.15
VELOCITY(Q50)	11.9 FPS
VELOCITY(Q100)	12.4 FPS
INLET ELEVATION	1437.60
OUTLET ELEVATION	1437.30
STD. DWG. NOS.	STD-17-1,STD-17-2, STD-15-57
CLASS "A" CONCRETE	81 C.Y.
STEEL BAR REINFORCING	20,640 LB.

RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK GRAVEL CAN BE REMOVED FROM CULVERT EXCAVATION AREA.

APPLICATION BY:
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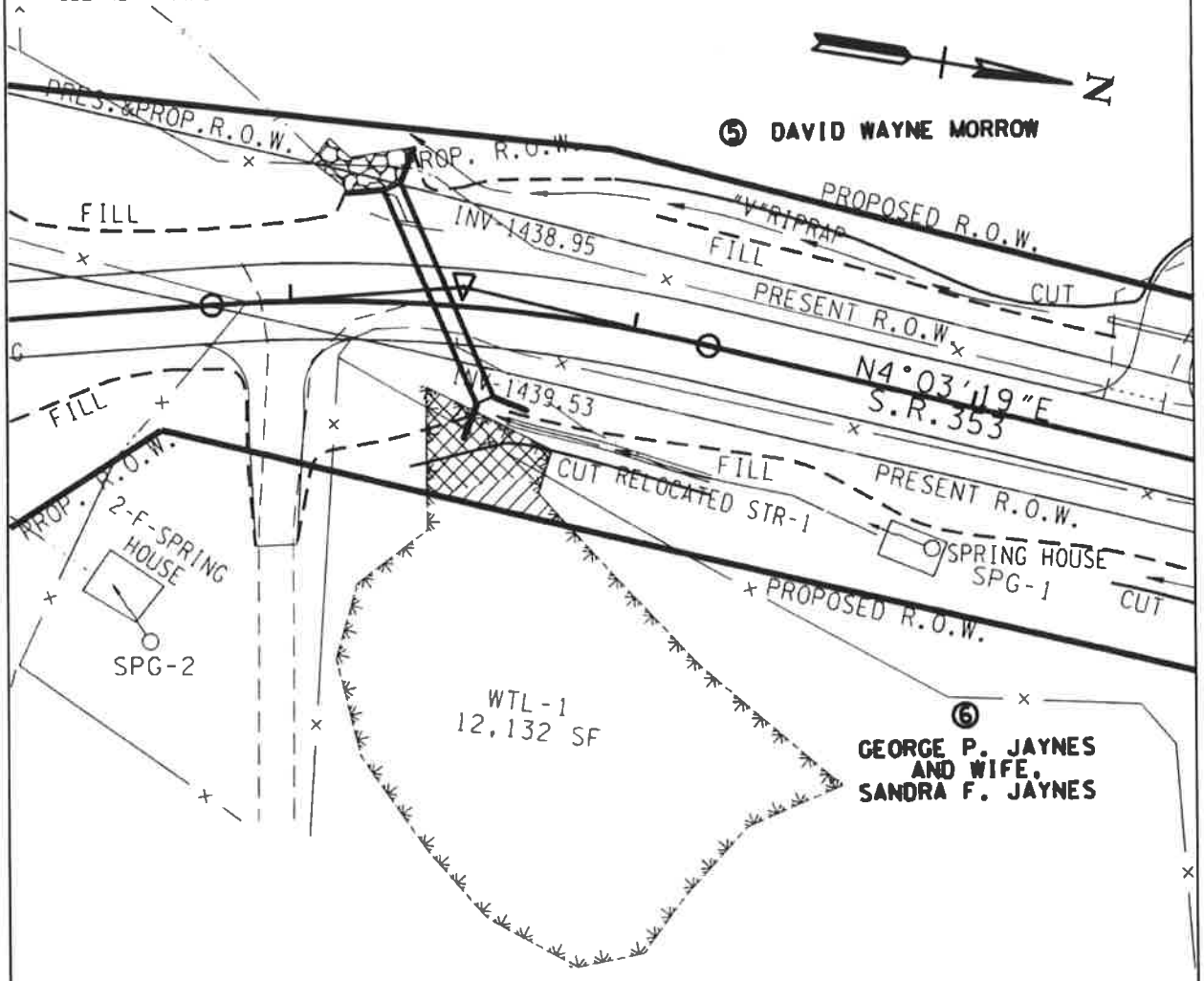
PIN * 114038.01
S.R.353
BRIDGE OVER BRANCH, L.M. 3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

Wetland Impacts (WTL–1)
Permit Sketch

MITIGATION NOTES

1. REMOVE THE TOP 12 INCHES OF TOPSOIL AND STOCKPILE IT UNTIL CONSTRUCTION IS COMPLETE.
2. ONCE CONSTRUCTION ACTIVITIES ARE COMPLETED, RESTORE ALL TEMPORARY WETLAND IMPACT AREAS TO PRE-CONSTRUCTION CONDITIONS. THIS INCLUDES REMOVING HAUL ROADS (IF APPLICABLE), RESTORING THE SITE TO THE ORIGINAL (PRE-CONSTRUCTION) ELEVATION AND SPREADING STOCKPILED TOPSOIL BACK OVER THE WETLAND SITE.
3. THE AREA OF TEMPORARY IMPACTS WILL BE STABALIZED ACCORDING TO STANDARD PRACTICES. PLANTING WILL BE BASED ON NOTES PROVIDED BY ECOLOGY.
4. WETLAND AREAS LOCATED OUTSIDE OF PROPOSED RIGHT-OF-WAY AND CONSTRUCTION EASEMENTS ARE TO BE CLEARLY MARKED AND NOT TO BE DISTURBED.



LEGEND	WETLAND IMPACTS (WTL-1)
	AREA OF PERMANENT IMPACT = 0.02 AC.
	VOLUME OF PERMANENT IMPACT = 25 C.Y.
	AREA OF TEMPORARY IMPACT = 0.01 AC.
	VOLUME OF TEMPORARY IMPACT = 8 C.Y.

0 50 100 150
SCALE IN FEET

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
PE # HRRR/HSIP-353(10); 90023-1223-94
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S.R.353: BRIDGE OVER BRANCH L.M.3.23
WASHINGTON COUNTY

DATE: 11/29/16 REVISED: / /

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR (PJD): 6/23/2017

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Tennessee Department of Transportation
C/o Ms. Mary Showers
505 Deadrick Street, Suite 900
J.K. Polk Bldg
Nashville, Tennessee 37243

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

Nashville District
Proposed S.R. 353 Improvement Project (PIN 114038.01)
LRN-2016-01237

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: Unnamed tributary to Nolichucky River Mile 73.7L, Washington County, Tennessee

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)

State: Tennessee Washington County City:
Center coordinates of site (lat/long in degree decimal format):
Latitude 36.19078°, Longitude -82.59356°.

Universal Transverse Mercator:

Name of nearest waterbody: Nolichucky River

Identify (estimate) amount of waters in the review area:

Non-wetland waters:
0 linear feet of Intermittent Stream
0 linear feet of Ephemeral Stream
1,685 linear feet of Perennial Stream

Wetlands: 0.3 acres

Open Waters 0 acres

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: See Attached Figures 1-2

☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps:

☐ Corps navigable waters' study:

☒ U.S. Geological Survey Hydrologic Atlas:
- ☒ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name: TN-TELFORD Quad, 1":24,000'

☐ USDA Natural Resources Conservation Service Soil Survey. Citation:

☐ National wetlands inventory map(s). Cite name:

☐ State/Local wetland inventory map(s):

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date):Google Earth 10/14/2015. or ☒ Other (Name & Date):Supplied by applicant .

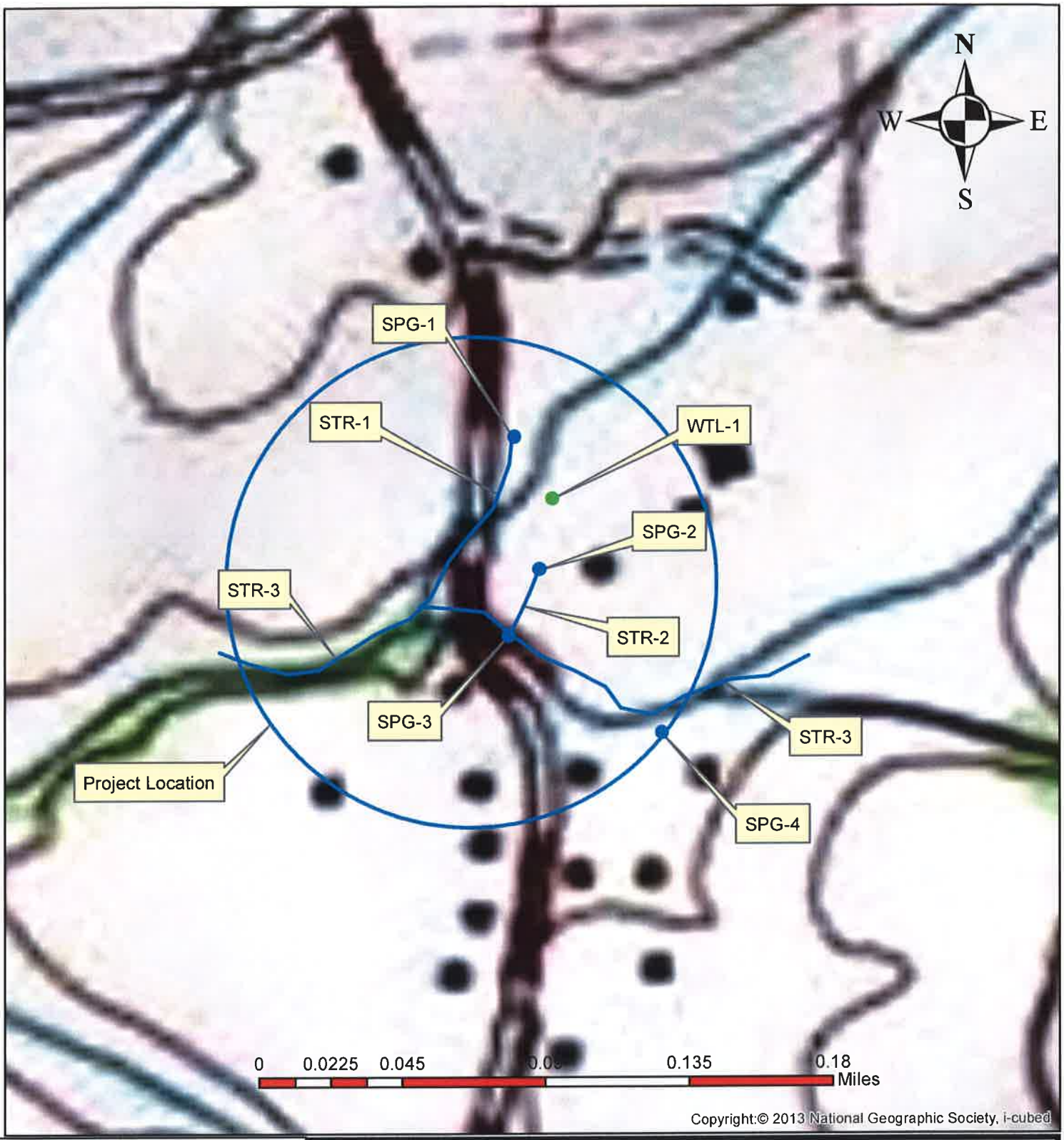
☐ Previous determination(s). File no. and date of response letter:

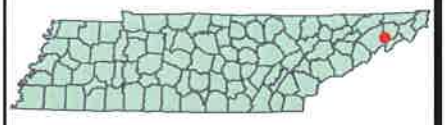
☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of Project Manager (REQUIRED)

Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)





Water Resources Map - topo
SR-353 over branch, LM 3.23
Washington County, TN

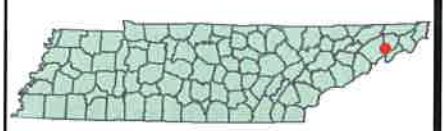
Telford 190-NE and Chucky 190-NW

4-25-14

PIN 114038.01 **P.E. #90023-0223-94**

LRN-2016-01237
PJD Figure 1

TDOT



Water Resources Map - aerial
SR-353 over branch, LM 3.23
Washington County, TN

Telford 190-NE and Chucky 190-NW

4-25-14

PIN 114038.01 **P.E. #90023-0223-94**

LRN-2016-01237
PJD Figure 2

TDOT

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: TDOT - Proposed S.R. 353 Improvement Project (PIN 114038.01)	File Number: LRN-2016-01237	Date: 23-Jun-17

Attached is:		See Section below
☐	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐	PERMIT DENIAL	C
☐	APPROVED JURISDICTIONAL DETERMINATION	D
☒	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT		
REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)		
ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.		
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:		
If you have questions regarding this decision and/or the appeal process you may contact: Ken M. Jones Corps of Engineers, Regulatory Branch 501 Adesa Blvd, Suite 250 Lenoir City, Tennessee 37771	If you only have questions regarding the appeal process you may also contact: U.S. Army Corps of Engineers Great Lakes and Ohio River Division 550 Main Street, Room 10032 Cincinnati, OH 45202	
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.		
_____ Signature of appellant or agent.	Date:	Telephone number:

9. ENVIRONMENTAL BOUNDARIES REPORT

TN TDOT Department of Transportation

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL DIVISION
SUITE 900, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TENNESSEE 37243-1402
(615) 741-3655

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

MEMORANDUM

TO: Paul Beebe
Region 1 Design

FROM: Keven Brown
Region 1 Ecology

DATE: June 5, 2014

SUBJECT: SR-353 over branch, LM 3.23
Washington County, TN
PIN: 114038.01 P.E. #90023-0223-94

An ecological evaluation of the subject project has been conducted with the following results:

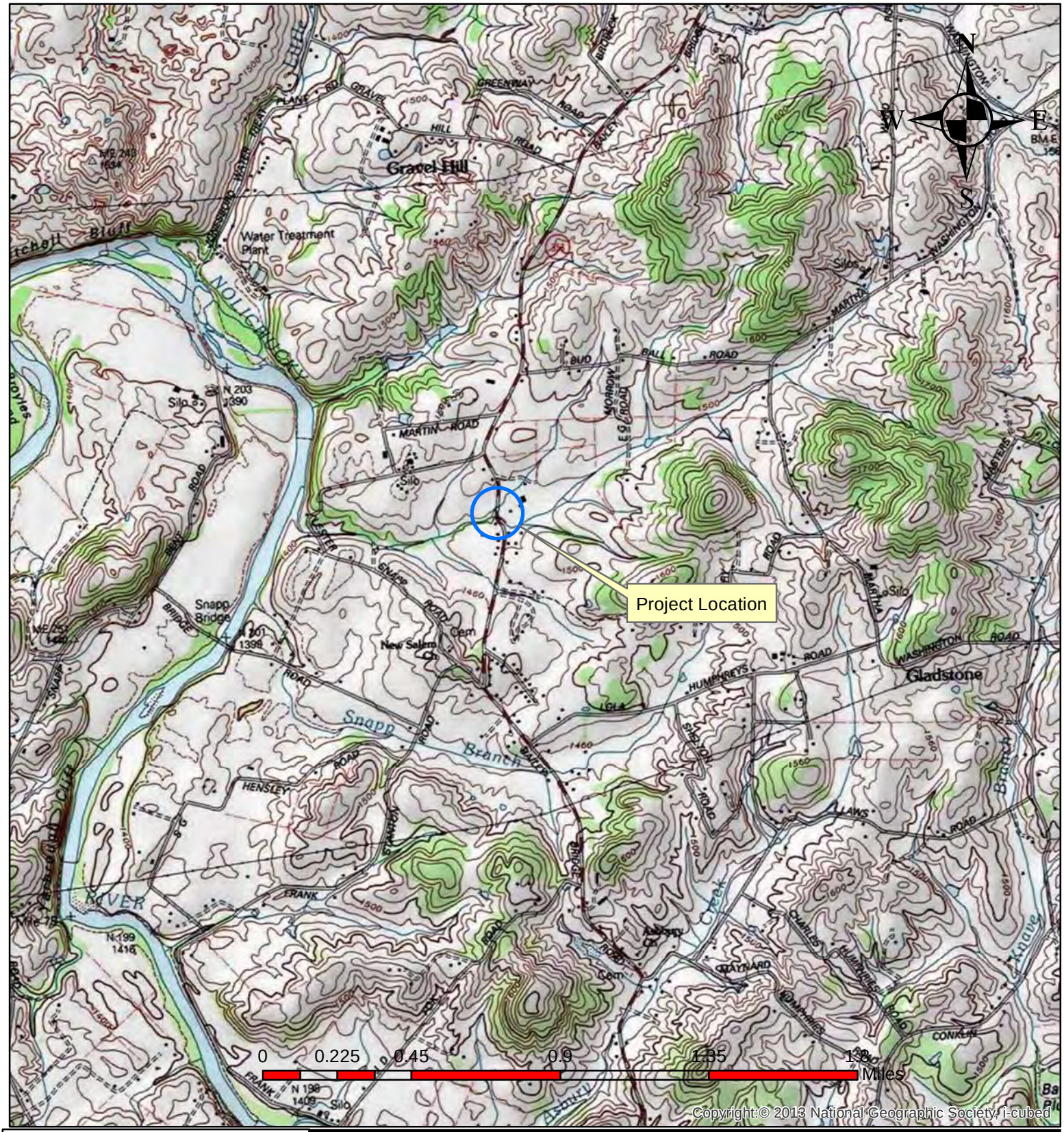
__X__ Wetlands identified in project impact area: **WTL-1, Sta. 107-50R**

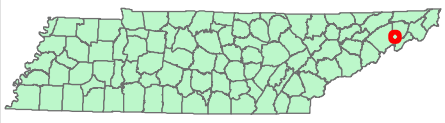
__X__ Streams present: **Three streams and four springs were identified. See attached data sheets.**

__X__ Protected species not present within project impact area:

Please incorporate this information into the project plans as needed. Thank you for your assistance with this project. If you have any questions or comments please contact me at Keven.Brown@tn.gov or 865-594-2437.

Copy: Ataur Rahman – Design, w/attachment
John Hewitt: - Permits/Ecology, w/attachments
Jon Zirkle – Structures, w/attachments
Kent Fox – Survey, w/attachments
Ann Andrews – Planning, w/attachments
Project File: - w/attachments



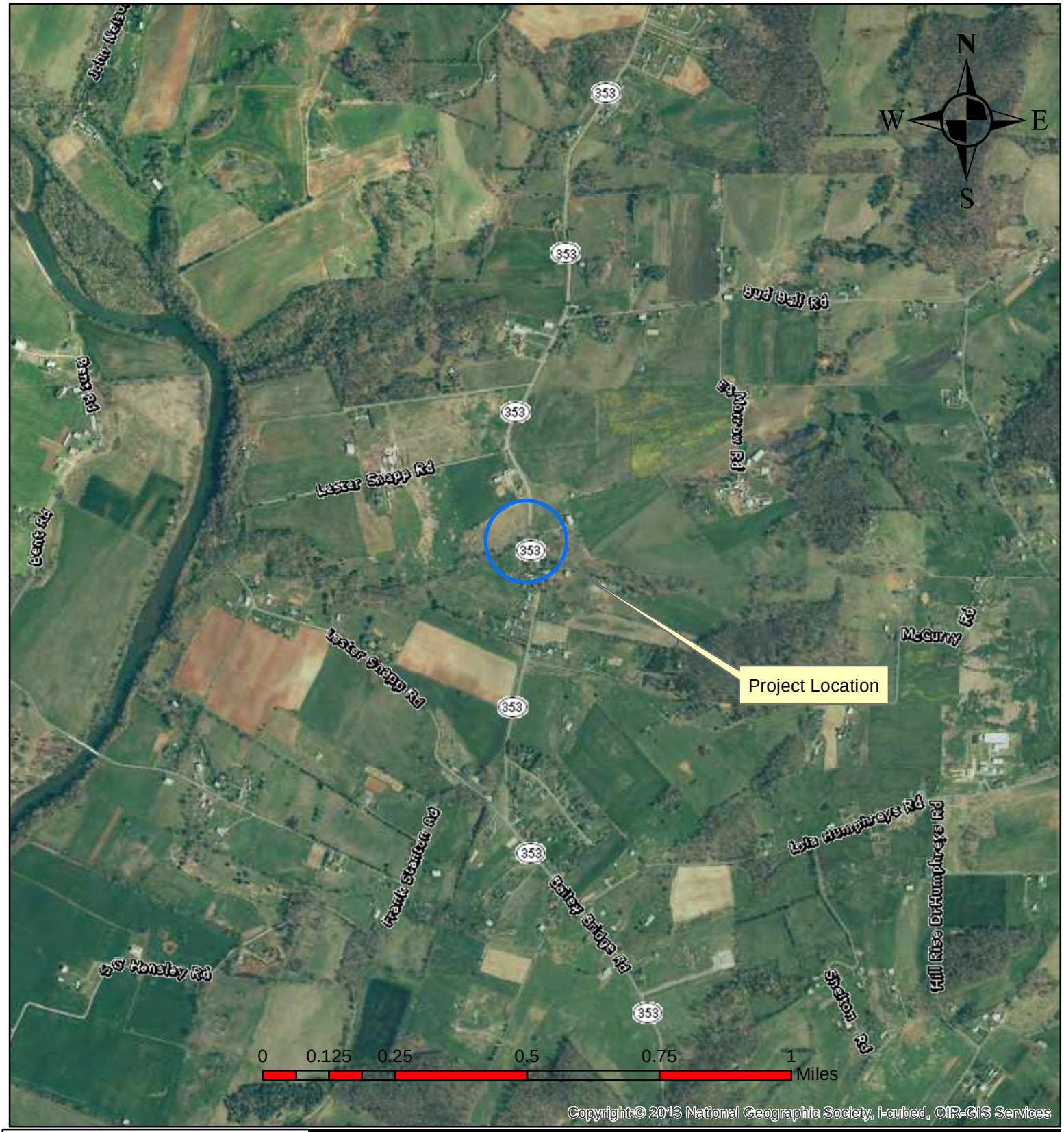


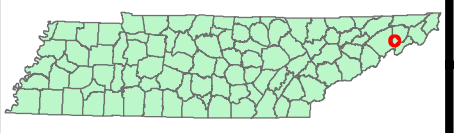
Location Map - topo
SR-353 over branch, LM 3.23
Washington County, TN

Telford 190-NE and Chucky 190-NW

4-25-14

PIN 114038.01 **P.E. #90023-0223-94**





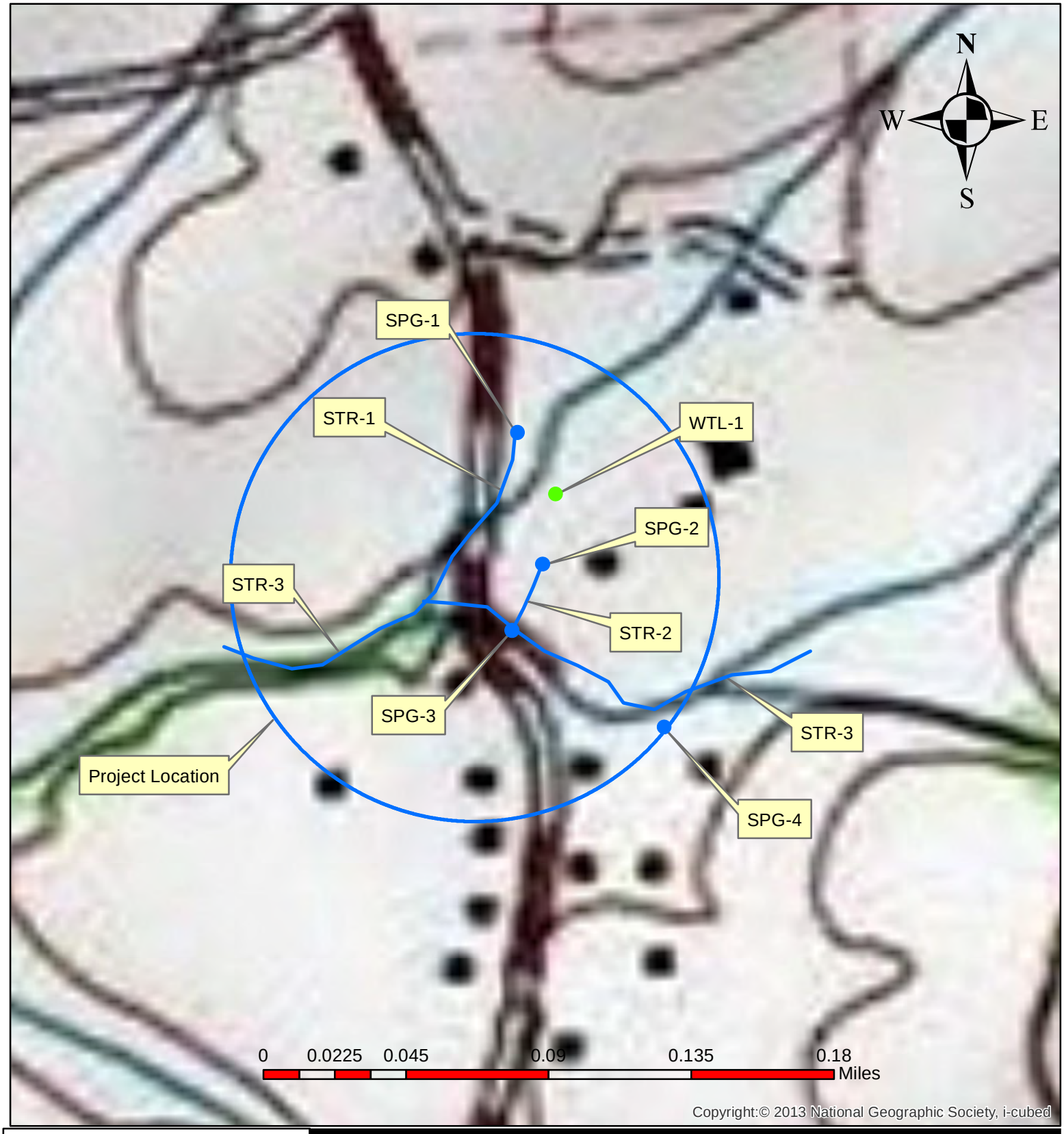
Location Map - aerial
SR-353 over branch, LM 3.23
Washington County, TN

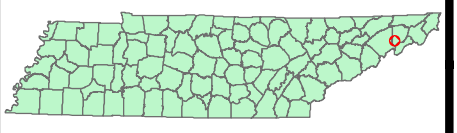
Telford 190-NE and Chucky 190-NW

4-25-14

PIN 114038.01 **P.E. #90023-0223-94**

TDOT





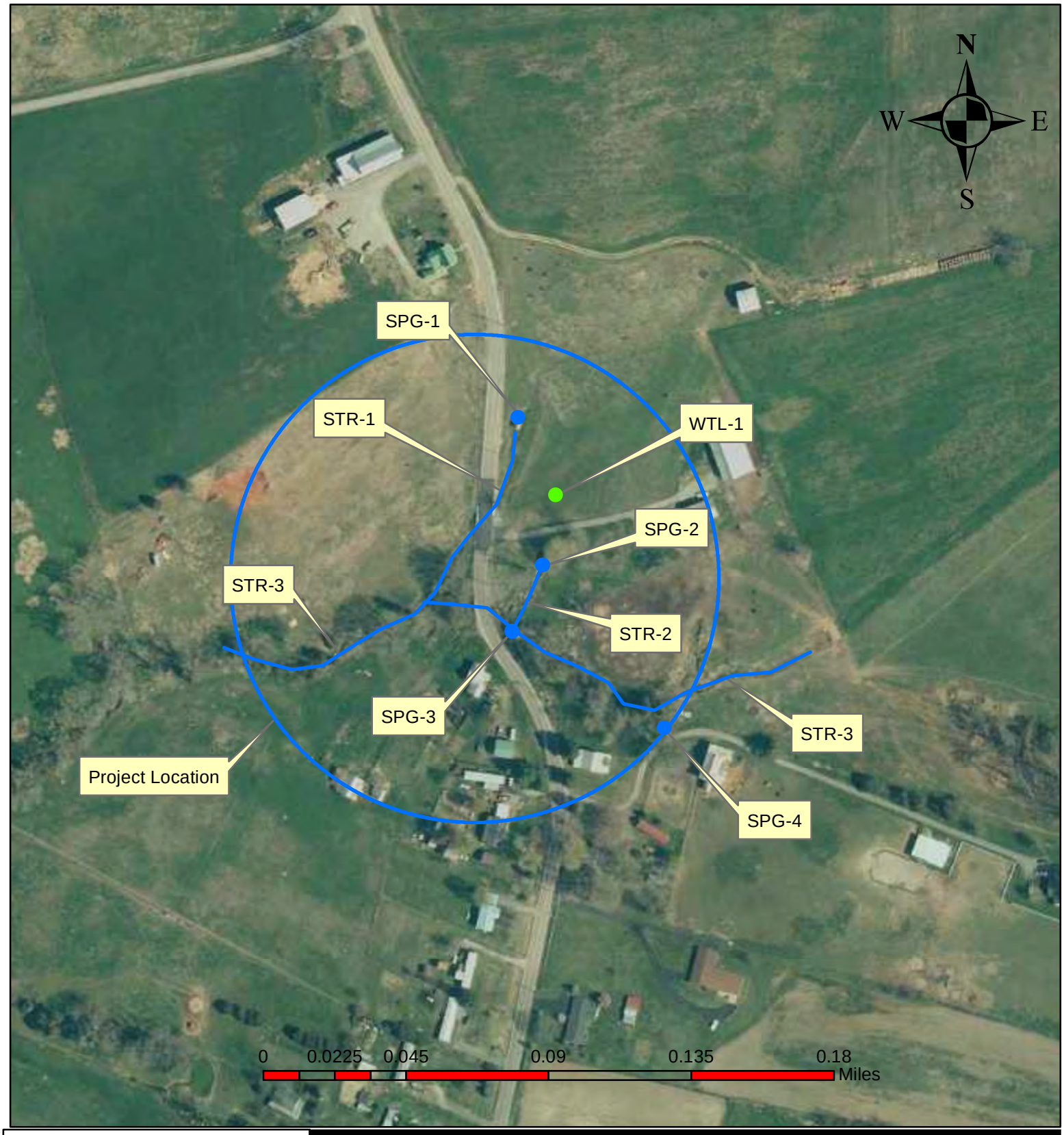
Water Resources Map - topo
SR-353 over branch, LM 3.23
Washington County, TN

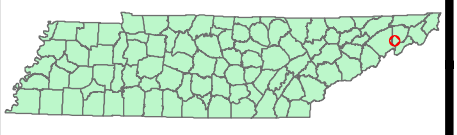
Telford 190-NE and Chucky 190-NW

4-25-14

PIN 114038.01 **P.E. #90023-0223-94**

TDOT





Water Resources Map - aerial
SR-353 over branch, LM 3.23
Washington County, TN

Telford 190-NE and Chucky 190-NW

4-25-14

PIN 114038.01 **P.E. #90023-0223-94**

TDOT

Ecology Field Data Sheet: **Water Resources**

Project: SR-353 over branch, LM 3.23, Washington Co., TN **PIN 114038.01** **PE# 90023-0223-94**

Date of survey: 8-21-13 and 3-13-14 **Biologist: Keven Brown** **Affiliation: TDOT**

1-Station: from plans	109+00R to 106+50L	106+50R to 105+50R
2-Map label and name	SPG-1/STR-1	SPG-2/STR-2
3-Latitude/Longitude	36.201483 -82.606648	36.190764 -82.593255
4-Potential impact	Runoff, relocation	Runoff, relocation
5-Feature description:		
what is it	Perennial spring and stream	Perennial spring and stream
blue-line on topo? (y/n)	Yes	No
defined channel (y/n)	Yes	Yes
straight or meandering	Straight	Straight.
channel bottom width	2’	2’-3’
top of bank width	4’-5’	3’-5’
bank height and slope ratio	1’-2’	1’-2’
avg. gradient of stream (%)	<5%	<5%
substratum	Silt 70, gravel 20, cobble 10	Bedrock 50, gravel 30, cobble 10, sand 10
riffle/run/pool	30/0/70	90/0/10
width of buffer zone	5’+	5’
water flow	Yes	Yes
water depth	1”-3”	1”-3”
water width	1’-3’	1’-2’
general water quality	Good	Good
OHWM indicators	Wrack lines	Wrack lines
groundwater connection	Yes	Yes
bank stability: LB, RB	Stable	Stable (bedrock lined)
dominant species: LB, RB	Fescue, ironweed, boneset u.s. of SR-353. Hackberry, boxelder, Johnson grass d.s.	Watercress, fescue, wingstem, ironweed
overhead canopy (%)	0% upstream of SR-353. 70% downstream.	None. Located in pasture field.
benthos	Snails	Snails, crayfish
fish	None obs.	None obs.
algae or other aquatic life	Salamanders, algae, duckweed.	Algae, salamanders
habitat assessment score	92	147
photo number (s)	3, 4, 5	6, 7
rainfall information	0.04” on 3/6; 0.19” on 3/7; 0.13” on 3/12 Embreeville, TN (TVA gage #0222)	0.04” on 3/6; 0.19” on 3/7; 0.13” on 3/12 Embreeville, TN (TVA gage #0222)
6- HUC code & name (12-digit)	North Indian Creek-Cassi Creek, 06010108-0610	North Indian Creek-Cassi Creek, 06010108-0610
7-Confirmed by:	Not needed, obvious.	Not needed, obvious.
8-Mitigation	No_____ Yes__X__: (include on Form J)	No_____ Yes__X__: (include on Form J)
9-ETW	No__X___ Yes_____	No__X___ Yes_____
10-303 (d) List	No__X___ Yes_____: Habitat_____ Siltation_____ Other_____	No__X___ Yes_____: Habitat_____ Siltation_____ Other_____
11-Assessed	No__X___ Yes_____	No__X___ Yes_____
12-Notes Estimate size (acres) of lake or pond if applicable; provide any pertinent information needed to better describe feature; indicate if hydrologic determination form was completed.	STR-1 flows out of springhouse located approx. 150’ upstream of SR-353, then flows under roadway. WTL-1 connects to STR-1 just upstream of box culvert.	Originates in springhouse and flows approx. 100’ through pasture to confluence with STR-3.

Ecology Field Data Sheet: **Water Resources**

Project: SR-353 over branch, LM 3.23, Washington Co., TN **PIN 114038.01** **PE# 90023-0223-94**
Date of survey: 8-21-13 and 3-13-14 **Biologist: Keven Brown** **Affiliation: TDOT**

1-Station: from plans	105+50	107+75R
2-Map label and name	STR-3	NO FEATURE.
3-Latitude/Longitude	36.190717 -82.593539	36.191221 -82.593384
4-Potential impact	Crossing/encapsulation	
5-Feature description:		
what is it	Perennial stream	No feature
blue-line on topo? (y/n)	Yes	
defined channel (y/n)	Yes	
straight or meandering	Meandering	
channel bottom width	5'-8'	
top of bank width	10'-15'	
bank height and slope ratio	1'-3', 2:1	
avg. gradient of stream (%)	5%	
substratum	Bedrock 30, gravel 30, cobble 20, sand 10, silt 10	
riffle/run/pool	40/10/50	
width of buffer zone	5'+	
water flow	Yes	None observed.
water depth	6"-12"	
water width	4'-6'	
general water quality	Good	
OHWM indicators	Wrack lines	
groundwater connection	Yes	
bank stability: LB, RB	Unstable due to livestock access.	
dominant species: LB, RB	Sycamore, green ash, black walnut	
overhead canopy (%)	60	
benthos	Snails, caddisflies	
fish	None obs.	
algae or other aquatic life	Algae, watercress	
habitat assessment score	113	
photo number (s)	10, 11	15
rainfall information	0.04" on 3/6; 0.19" on 3/7; 0.13" on 3/12 Embreeville, TN (TVA gage #0222)	0.04" on 3/6; 0.19" on 3/7; 0.13" on 3/12 Embreeville, TN (TVA gage #0222)
6- HUC code & name (12-digit)	North Indian Creek-Cassi Creek, 06010108-0610	North Indian Creek-Cassi Creek, 06010108-0610
7-Confirmed by:	Not needed, obvious	
8-Mitigation	No__X__ Yes_____ : (include on Form J)	No_____ Yes____: (include on Form J)
9-ETW	No__X___ Yes_____	No_____ Yes_____
10-303 (d) List	No__X___ Yes_____: Habitat_____ Siltation_____ Other_____	No_____ Yes_____: Habitat_____ Siltation_____ Other_____
11-Assessed	No__X___ Yes_____	No_____ Yes_____
12-Notes Estimate size (acres) of lake or pond if applicable; provide any pertinent information needed to better describe feature; indicate if hydrologic determination form was completed.	This stream is heavily impacted by livestock access upstream and downstream of the project.	Shown on plans as a spring but it appears to be only surface outflow from WTL-1 during wetter seasons. No flow on 8-21-13, slight flow on 3-13-14.

Ecology Field Data Sheet: **Water Resources**

Project: SR-353 over branch, LM 3.23, Washington Co., TN **PIN 114038.01** **PE# 90023-0223-94**
Date of survey: 8-21-13 and 3-13-14 **Biologist: Keven Brown** **Affiliation: TDOT**

1-Station: from plans	105+25	103+25R
2-Map label and name	SPG-3	SPG-4
3-Latitude/Longitude	36.190598 -82.593373	36.190130 -82.592528
4-Potential impact	Fill/encapsulation	None. Outside project limits.
5-Feature description:		
what is it	Spring	Spring
blue-line on topo? (y/n)	No	N/A
defined channel (y/n)	N/A	N/A
straight or meandering	N/A	N/A
channel bottom width	N/A	N/A
top of bank width	N/A	N/A
bank height and slope ratio	N/A	N/A
avg. gradient of stream (%)	N/A	N/A
substratum	Concrete	N/A
riffle/run/pool	0/0/100	N/A
width of buffer zone	10’	N/A
water flow	None obs. On 8-21-13. Inflow but no outflow on 3-13-14.	N/A
water depth	2”-6”	N/A
water width	3’	N/A
general water quality	Good. Water source at one time.	N/A
OHWM indicators	Stain on concrete	N/A
groundwater connection	Yes	N/A
bank stability: LB, RB	Stable	N/A
dominant species: LB, RB	N/A	N/A
overhead canopy (%)	N/A	N/A
benthos	None obs.	N/A
fish	None obs.	N/A
algae or other aquatic life	Algae	N/A
habitat assessment score	N/A	N/A
photo number (s)	8, 9	16
rainfall information	0.04” on 3/6; 0.19” on 3/7; 0.13” on 3/12 Embreeville, TN (TVA gage #0222)	0.04” on 3/6; 0.19” on 3/7; 0.13” on 3/12 Embreeville, TN (TVA gage #0222)
6- HUC code & name (12-digit)	North Indian Creek-Cassi Creek, 06010108-0610	North Indian Creek-Cassi Creek, 06010108-0610
7-Confirmed by:	Not needed, obvious	Not needed, obvious
8-Mitigation	No__X__ Yes_____ : (include on Form J)	No__**X**__ Yes_____ : (include on Form J)
9-ETW	No__X___ Yes_____	No_____ Yes_____
10-303 (d) List	No__X___ Yes_____: Habitat_____ Siltation_____ Other_____	No__X___ Yes_____: Habitat_____ Siltation_____ Other_____
11-Assessed	No__X___ Yes_____	No__X___ Yes_____
12-Notes Estimate size (acres) of lake or pond if applicable; provide any pertinent information needed to better describe feature; indicate if hydrologic determination form was completed.	In springhouse at inlet of existing box culvert under SR-353. Appears to have been water source at one time. Inflow observed but no outflow was observed during field visits. Inflow may be from STR-3 vs. actual spring flow.	Located in springhouse well outside project limits.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: SR-353 over branch, LM 3.23, Washington County, TN Map Label: WTL-1

P.E. and PIN: PE #90023-0223-94 PIN 114038.01 Date: 8-21-13 Station: 107+50R

Investigator(s): Keven Brown, TDOT HUC 12 (code and name): North Indian Creek-Cassi Creek, 06010108-0610

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): _____ Slope (%): <5%

Subregion (LRR or MLRA): _____ Lat: 36.191220 Long: -82.593088 Datum: _____

Soil Map Unit Name: Bellamy loam NWI classification: Emergent

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ✓ No _____ Hydric Soil Present? Yes ✓ No _____ Wetland Hydrology Present? Yes ✓ No _____	**Is the Sampled Area within a Wetland?** **Yes ✓ No _____**
Remarks: Photos: 12, 13, 14 Buffer (ft.): 5' Approximate Size (ac.): 0.3 ac. Portion Affected (permanent) (ac.): est. 0.03 ac. Portion Affected (temporary) (ac.): _____	Confirmation (by, date): _____ Mitigation (to be included in design): _____ Notes: Site located in open pasture field and appears to be maintained on regular basis by mowing during drier seasons.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water present during site visit on 3-13-14.

VEGETATION (Four Strata) – Use scientific names of plants.

Map Label: WTL-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Sweetflag - Acorus americanus			OBLW
2. sedge - Carex sp. 1			FACW
3. sedge - Carex sp. 2			FACW
4. Soft rush - Juncus effusus			FACW
5. Monkey flower - Mimulus sp.			OBLW
6. Creeping Jenny - Lysimachia nummularia			FACW
7. Knotweed - Polygonum sp.			FACW
8. Tall ironweed - Vernonia gigantea			FAC
9. Swamp milkweed - Asclepias incarnata			OBLW
10.			
11.			
12.			
	= Total Cover		
Woody Vine Stratum (Plot size:)			
1. NONE			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ✓ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

Site located in open pasture field and appears to be maintained on regular basis by mowing during drier seasons.

SOIL

Map Label: WTL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
8"	10YR 4/2	80						
8"	10YR 3/2							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

	**Photo 1:** North view of SR-353 over branch, LM 3.23, from approximately Sta. 105+50L.
	**Photo 2.** South view of SR-353 over branch, LM 3.23, from approximately Sta. 106+50L.

	**Photo 3:** Downstream (south) view of SPG-1 and STR-1 at Sta. 109+00R.
	**Photo 4:** Upstream (north) view of STR-1 and SPG-1 from inlet of box culvert at Sta. 107+50. WTL-1 is located in the field to the right in the photo.

	**Photo 5:** Downstream (south) view of STR-1 from outlet of box culvert at Sta. 107+50.
	**Photo 6:** SPG-2 at point where it emerges from ground and enters springhouse at Sta. 106+50R.

	**Photo 7:** Upstream (north) view of STR-2 from confluence with STR-3 at Sta. 105+50R.
	**Photo 8.** SPG-3 in springhouse at Sta. 105+25R. Water was flowing in, but no outflow from springhouse was observed.

	**Photo 9:** Springhouse containing SPG-3 at Sta. 105+25R.
	**Photo 10:** Upstream (southeast) view of STR-3 from existing SR-353 bridge. STR-2 is flowing in from left of photo.

	**Photo 11:** Downstream (west) view of STR-3 from existing SR-353 bridge.
	**Photo 12:** West view of WTL-1 from Sta. 107+00R along driveway to barn on 3-13-14.

	**Photo 13:** Northeast view of WTL-1 from Sta. 107+00R at beginning of driveway on 3-13-14.
	**Photo 14:** Northeast view of WTL-1 from Sta. 107+00R at beginning of driveway on 8-21-13.

Photo 15: Outflow from WTL-1 at Sta. 107+75R shown as spring on survey.

Photo 16: SPG-4 outside project limits at Sta. 103+25R.

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

STREAM NAME STR-1	LOCATION SR-353, LM 3.23, Washington Co. PIN 114038.01	
SITE ID # _ REACH ID _____	STREAM CLASS	
UTM N 36.201483 UTM E _ -82.606648	RIVER BASIN Nolichucky River	
STORET #	AGENCY	
INVESTIGATORS Keven Brown, TDOT		
FORM COMPLETED BY Keven Brown	DATE 8-21-13 TIME - AM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 11	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
SCORE 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 4 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 4 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 4 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 4 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 2 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 2 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 92

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

STREAM NAME STR-2	LOCATION SR-353, LM 3.23, Washington Co. PIN 114038.01	
SITE ID # _ REACH ID _____	STREAM CLASS	
UTM N 36.190788 UTM E _ -82.593246	RIVER BASIN Nolichucky River	
STORET #	AGENCY	
INVESTIGATORS Keven Brown, TDOT		
FORM COMPLETED BY Keven Brown	DATE 8-21-13 TIME - AM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
SCORE 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 9 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 9 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 7 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 7 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 2 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 2 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score _ 147

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

STREAM NAME STR-3	LOCATION SR-353, LM 3.23, Washington Co. PIN 114038.01	
SITE ID # _ REACH ID _____	STREAM CLASS	
UTM N 36.190695 UTM E _ -82.593481	RIVER BASIN Nolichucky River	
STORET #	AGENCY	
INVESTIGATORS Keven Brown, TDOT		
FORM COMPLETED BY Keven Brown	DATE 8-21-13 TIME - AM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
SCORE 12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 11	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 12	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 11	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 6 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 6 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 7 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 7 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 2 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 2 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score _ 113

TENNESSEE D.O.T.
DESIGN DIVISION
FILE NO.

Index Of Sheets

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING

WASHINGTON COUNTY

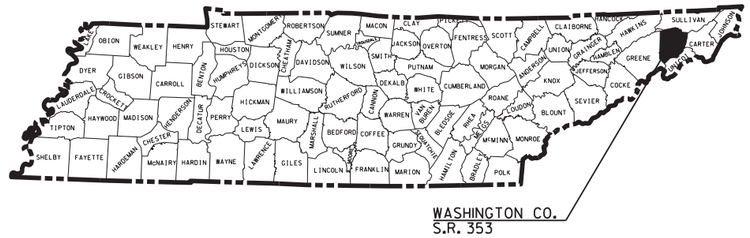
S.R. 353 BRIDGE OVER BRANCH, L.M. 3.23

R.O.W.

STATE HIGHWAY NO. 353 F.A.H.S. NO. 353

TENN.	YEAR	SHEET NO.
	2014	1
FED. AID PROJ. NO.	HRRR/HSIP-353(10)	
STATE PROJ. NO.	90023-2223-94	

S.R.353 WASHINGTON CO.



N

0 1MI 2MI 3MI

SCALE: 1" = 1 MILE

NO EXCLUSIONS
NO EQUATIONS

90023-2223-94
BEGIN PROJECT
STA.100+86.93(R.O.W.)

90023-2223-94
END PROJECT
STA.112+00.00(R.O.W.)

R.O.W. FIELD REVIEW

SEALED BY

APPROVED: Paul D. Degges
PAUL D. DEGGES, CHIEF ENGINEER

DATE:

APPROVED:
JOHN SCHROER, COMMISSIONER

SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED MARCH 1, 2006 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT TRANS. PROJ. SP. SV. 2 MAYSOON HADDAD

DESIGNER JEN POLLARD

P.E. NO. 90023-0223-94 (NEPA)

PIN 114038.01

TRAFFIC DATA	
ADT (2014)	700
ADT (2034)	840
DHV (2034)	92
D	65 - 35
T (ADT)	6 %
T (DHV)	4 %
V	40 MPH

R.O.W. PROJECT LENGTH 0.192 MILE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

09-APR-2014 08:34
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TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2014	HRRR/HSIP-353(10)	4

S.R.353 WASHINGTON CO.
90023-2223-94 (R.O.W.)

BEGIN PROJECT 90023-2223-94
STA.100+86.93 (R.O.W.)

S.R.353(BAILEY BRIDGE RD.)
PI 102+19.12
N 693,308.2568
E 2,973,922.5475
Δ 25° 12' 30" (LT)
D 12° 15' 00"
R 467.72
L 205.78
T 104.58
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 101+14.54
PT 103+20.32

S.R.353(BAILEY BRIDGE RD.)
PI 111+06.45
N 694,184.0619
E 2,973,821.3573
Δ 30° 48' 30" (LT)
D 12° 15' 00"
R 467.72
L 251.50
T 128.87
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 109+77.58
PT 112+29.08

S.R.353(BAILEY BRIDGE RD.)
PI 107+50.09
N 693,827.4262
E 2,973,796.0722
Δ 17° 44' 48" (RT)
D 12° 15' 00"
R 467.72
L 144.87
T 73.02
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 106+77.07
PT 108+21.94

CP-S10
STA.104+68.41,-34.86'(LT)
N 693545.4961
E 2973828.8784
ELEV 1446.01
ALUM. DISK

CP-S11
STA.107+21.42,4.85'(RT)
N 693800.7023
E 2973809.7151
ELEV 1443.87
ALUM. DISK

END PROJECT 90023-2223-94
STA.112+00.00(R.O.W.)

There is no spring here. This appears to be an outflow from WTL-1 during wet seasons.

*NO RECORDED TELEPHONE LINE EASEMENT WAS FOUND FOR THIS TRACT.

*SEPTIC TANK LOCATED OFF OF PROJECT LIMITS.

*NO SEPTIC TANK ON THIS TRACT.

R.O.W. FIELD REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000096 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PRESENT LAYOUT

STA.100+86.93
TO
STA.112+00.00

SCALE: 1"= 50'

09-APR-2014 08:35
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TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2014	HRRR/HSIP-353(10)	4B

S.R.353 WASHINGTON CO.
90023-2223-94 (R.O.W.)

S.R.353(BAILEY BRIDGE RD.)
PI 102+19.12
N 693,308.2568
E 2,973,922.5475
Δ 25° 12′ 30″ (LT)
D 12° 15′ 00″
R 467.72
L 205.78
T 104.58
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 101+14.54
PT 103+20.32

S.R.353(BAILEY BRIDGE RD.)
PI 111+06.45
N 694,184.0619
E 2,973,821.3573
Δ 30° 48′ 30″ (LT)
D 12° 15′ 00″
R 467.72
L 251.50
T 128.87
SE 0.080 FT/FT
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 109+77.58
PT 112+29.08

S.R.353(BAILEY BRIDGE RD.)
PI 107+50.09
N 693,827.4262
E 2,973,796.0722
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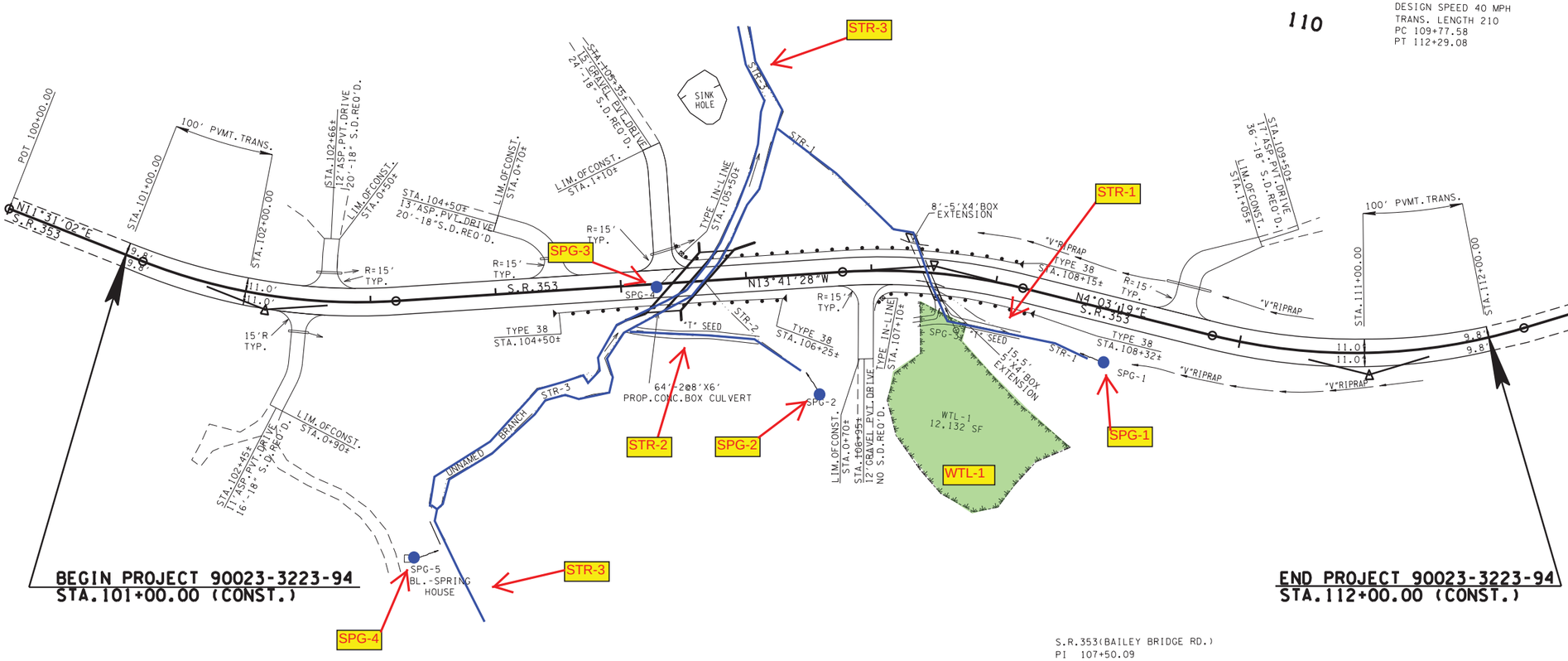
DESIGN SPEED 40 MPH
TRANS. LENGTH 210
PC 106+77.07
PT 108+21.94



R.O.W. FIELD REVIEW

SEALED BY

COORDINATES ARE NAD/83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000096 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

PROPOSED LAYOUT

STA.101+00 TO STA.112+00

SCALE: 1"= 50'

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Natural Resources Mitigation Sketches/Information

Project: Washington County: SR-353 over branch, Log Mile 3.23 PE No. 90023-0223-94 PIN 114038.01

Date of survey: 8-21-13 and 3-13-14 Biologist: Keven Brown Affiliation: TDOT

Station (from – to)	Map label	Attachments: Marked-up plans sheet (A); notes (B); mitigation plan (C) attached	Calculate permanent & temporary wetland impacts & provide to Keven Brown and John Hewitt ("X")	Apply "standard" stream relocation configuration & instructions ("X")	General notes and/or specific changes requested
107+50R to 108+25R	STR-1	A, C		X	
105+00R to 106+25R	STR-2	A, C		X	
107+50R	WTL-1	A	X		

Standard Stream Mitigation

Apply these measures to all applicable streams listed in the Mitigation Table. Duplicate pattern, profile, and dimensions of the existing channel to the extent possible. Lines and grades of the new channel should transition smoothly from the existing channel and should transition smoothly from its beginning elevation to its tie-in elevation in the receiving stream, without profile drops or jumps. Hydraulic jumps >6 inches in the profile should be avoided. Locate the new channels in as flat an area as possible to avoid unusually high side slopes; this may require some additional right-of-way. Channel length placed in spring-boxes or culverts counts as part of the new channel length (but may require compensatory mitigation that would not be required for an open channel). Channel side slopes should mimic existing channel side slopes, unless otherwise indicated, and be stabilized using appropriate BMPs such as 700 gram coir fiber erosion control blankets; the use of rip-rap should be avoided if possible. If rip-rap is required on the banks or in the channel, the rip-rap must be embedded into the soil such that (1) the top of the rip-rap is flush with the bottom and sides of the channel, (2) the voids are filled with material similar to the original material on the sides or channel bottom, and (3) water in the channel will flow on top of the embedded riprap and soil material, to enable the water to be visible. Rip-rap placed on the side slopes should be planted with live stakes on 3-foot centers using the live stake species shown in the table below.

Plant shrubs across the planting zone (floodplain and upland) on 8-foot centers using alternating individuals of each species. Specimens are to be two to five-foot (2-5 ft.) container grown species and/or bare root seedlings. See drawing below. The planting zone width will vary with each stream, but an average buffer zone of 30 feet on each side should be maintained for all streams except impaired and exceptional waters, which should be an average of 60 feet on each side. Live stakes should be installed on the channel banks from the edge of low water to bankfull in the new channel. The live stakes will be fresh material cut in 18" – 24" lengths and selected by species so that no one species will be comprised of more than 20% of the total composition of live stakes. See table below for list of species for all live stake plantings. The stakes will be installed on approximately three-foot centers from the edge of water to bankfull in the new channel. The stakes are to be driven in such that approximately six to 8 inches (6 – 8") of the stake are left above ground. The bare root seedlings will be the same species as the trees, unless otherwise indicated. See tables below for species and item numbers.

Rip-rap, if required, should be limited to ends of culverts. All relocated channels and their accompanying mitigation features, including trees, are to be placed in right-of-way rather than easements; this may require acquisition of additional right-of-way. Use the following specifications for planted species.

Shrub species for STR-1 and STR-2:

Item #	Description	Unit
802-13.01	*Alnus serrulata* (Hazel alder) 2-5' in height, containerized	Each
802-13.02	*Calycanthus floridanus* (Sweetshrub) 2-5' in height, containerized	Each
802-13.04	*Cornus amomum* (Silky dogwood) 2-5' in height, containerized	Each
802-13.09	*Lindera benzoin* (Spicebush) 2-5' in height, containerized	Each
802-13.10	*Sambucus canadensis* (Elderberry) 2-5' in height, containerized	Each

Live stake species for stream banks on STR-1 and STR-2:

Item #	Description	Unit
802-02.30	*Salix nigra* (black willow) 18-24" in length	Each
802-02.32	*Cornus amomum* (silky dogwood) 18-24" in length	Each
802-02.33	*Sambucus canadensis* (elderberry) 18-24" in length	Each

Standard On-site Mitigation for Temporary Wetland Impact Areas (if required)

Apply these measures to all applicable temporary wetland impact areas listed in the Mitigation Table. For temporary wetland impact areas, remove the top 12" of topsoil and stockpile it until construction is complete. Once construction activities are completed, restore all temporary wetland impact areas to pre-construction conditions. This includes removing haul roads (if applicable), restoring the site to the original (pre-construction) elevation and spreading stockpiled topsoil back over the wetland site. The area of temporary impacts will be stabilized according to standard practices. Planting will be based on notes provided by Ecology. Shrubs are **not** planted in emergent wetlands. Wetland areas located outside of proposed right-of-way and construction easements are to be clearly marked and not disturbed.

Please place the following notes in the Special Notes section of the plans:

Topsoil is to be removed from all areas of temporary wetland impacts and stockpiled prior to construction.

Upon completion of construction activities, temporary haul roads are to be removed. Excavated material from the haul roads is to be disposed of as directed by the engineer.

Plans Notes

Please add the following information verbatim to the Final Plans:

CHANNEL RELOCATION SEQUENCE AND IMPLEMENTATION NOTES FOR RELOCATED STREAM CHANNELS (IGNORE REFERENCES TO ITEMS NOT SPECIFIED)

1. If the relocated channel flows into a proposed culvert, the new channel shall be relocated prior to installation of the culvert to ensure correct elevation levels are set for the inlet. The new channel shall be excavated and stabilized during a low-water period. Rip-rap (only as shown on plans), seeding, and/or sod shall be installed immediately following channel completion. When necessary, water must be diverted into the low-flow barrel of a culvert according to Standard Drawing 15-16A. Shrubs shall be installed in the first planting season following channel excavation. Planting season is considered to be between November 1 and March 31. Water shall be diverted into the new channel only after it is completely stabilized, and only during a low-water period. Stabilized means that all specified rock, erosion control blankets, seeding, sod, or materials are in place and established. **Notify the regional biologist when water is diverted into each new channel.**

2. CHANNEL RELOCATION SEQUENCE
   a. Flag edge of the new channel top bank prior to clearing. Do not clear large trees in position to shade the new channel. Leave as many trees and/or shrubs as possible between toe of the new highway slope and the stream.
   b. Excavate the new channel "in the dry" by leaving areas of undisturbed earth (diversion berms) in place at both ends.
   c. Shape channel to specifications shown. Remove loose soils and debris.
   d. Place topsoil, erosion control blanket, seed, sod, or other material as specified.
   e. Remove diversion berms, beginning with the most downstream; banks and bottom elevation of the old channel should transition smoothly into the new channel. The elevations of the new channel bottom at each end of the relocation sequence should match the elevations of the existing channel, and a steady percent slope should be maintained throughout the relocated channel centerline or as specified.
   f. Install shrubs according to standard specifications section 802.

3. Only rip-rap shown on plans should be used in the relocated channel reach. Any other proposed rip-rap should be coordinated with the Environmental Division through the TDOT Construction Office.
4. Requests by any agency that would require modification of channels, elevations, rip-rap or any other stream mitigation items associated with the channel relocations shall be referred to TDOT Environmental Division via Headquarters Construction Office for coordination with all involved agencies and TDOT divisions. Tennessee Department of Environment and Conservation may make recommendations concerning erosion control via the engineer without such referral.

SHRUBS

No substitutions of shrub species or sizes shall be allowed without the written approval of TDOT Environmental Division. Shrubs shall be of the variety requested, between 2 and 5 feet in height, containerized, and first quality. No clones or cultivars will be accepted. Any found to be incorrect species, or improperly planted, at any time prior to termination of the contract shall be removed and replaced at the contractor's expense. Stakes and wires shall be removed immediately prior to contract termination, unless otherwise directed by Environmental Division.

The contractor should arrange several months ahead of time to obtain the correct shrub species, as some may require some time to locate.

Shrubs shall be watered as required through the period of establishment to ensure survival.

10. TDOT AND TDEC WEB LINKS

TN TDOT Department of Transportation

TDOT WEB LINKS:

EPSC Inspection Manual
https://www.tn.gov/assets/entities/tdot/attachments/Const_EPSC_Manual.pdf

EPSC Inspection Form
https://www.tn.gov/assets/entities/tdot/attachments/8-27_TDOT_EPSC_Inspection_Form.docx

Erosion Prevention and Sediment Control Standard Drawings
http://www.tn.gov/tdot/article/transportation-chief-engineer-engineerlibrary-erosion-prevention-sediment-c

Qualified Products List
https://www.tn.gov/tdot/article/qualified-products-list

TDEC WEB LINKS:

Construction General Permit
http://tnepsc.org/2016_CGPpdfs/Permit.pdf

Construction Stormwater Inspection Certification (Twice-Weekly Inspections)
http://tdec.tn.gov/etdec/DownloadFile.aspx?row_id=CN-1173

Division of Water Resources Permits Dataviewer (Databases)
https://tn.gov/environment/article/tdec-dataviewers

https://tn.gov/environment/article/wr-water-resources-data-viewer

Division of Water Resources Map Dataviewer (GIS)
http://tdeconline.tn.gov/dwr/

11. EPSC INSPECTION TRAINING CERTIFICATIONS

12. SOIL TEST RESULTS

From:	Ashley Goddard
To:	Water Permits
Cc:	Kristen K. Taylor; Mary Showers; Maysoon Haddad; Mary Howard; John Hewitt; DJ Wiseman
Subject:	Storm Water Permit Application, PIN 114038.01
Date:	Tuesday, October 24, 2017 1:06:00 PM
Attachments:	01 PIN 114038.01_Cover Letter.pdf 02 PIN 114038.01_NOI.pdf 03 PIN 114038.01_Quad Map.pdf

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Storm Water Permit Application

PE # 90023-1223-94
PIN 114038.01
State Route 353
Culvert over Branch, L.M. 3.23
Washington County

The Permits Section submits the attached cover letter and NOI for the storm water application on the above referenced project.

All of the SWPPP files have been placed on TDOT's FTP site for retrieval. To retrieve them, please follow these steps within seven days (files are deleted after this time):

1. Go to https://webftp.tdot.state.tn.us/
2. Select Business Partner
3. Select Receive Files
4. Right click the link named "PIN 114038.01, Full Stormwater Application.zip" to Save Target As
5. Save to appropriate folder in your file system

If you have any questions or we can provide further assistance, please contact me or Ethan Saturday at (865) 594-2667.

Ashley Goddard, E.I. | Graduate Transportation Associate
Region 1 Project Development | Environmental Technical Office
Admin Building, 2nd Floor
7345 Region Lane, Knoxville, TN 37914
p. 865-594-2663
ashley.goddard@tn.gov

From:	Ashley Goddard
To:	EPLANS TURNINS; TDOT PrintShopLettingInfo
Cc:	TDOT.HQ Construction; TDOT EstimatingOffice; Jay Morgan; Mary Showers; Kristen K. Taylor
Subject:	PIN 114038.01, SWPPP SHEET SUBMITTAL (region 1)
Date:	Tuesday, October 24, 2017 1:15:00 PM
Attachments:	04 PIN 114038.01_SWPPP sheets.pdf

LETTING PLANS REVISION

PIN 114038.01
Project # 90023-1223-94
State Route 353
Culvert Over Branch, L.M. 3.23
Washington County

Description of Revision: SWPPP Sheets

Number of Sheets Added: 8

This email serves as notification that the subject project is being electronically submitted for the 12/8/2017 Letting Process. Please find the SWPPP Sheets attached.

ATTENTION PRINT SHOP: 1 sets of 11" X17" prints of the revised sheets only is requested for the HQ Construction Office. Please contact their office when the prints are ready to be picked up.

Ashley Goddard, E.I. | Graduate Transportation Associate
Region 1 Project Development | Environmental Technical Office
Admin Building, 2nd Floor
7345 Region Lane, Knoxville, TN 37914
p. 865-594-2663
ashley.goddard@tn.gov