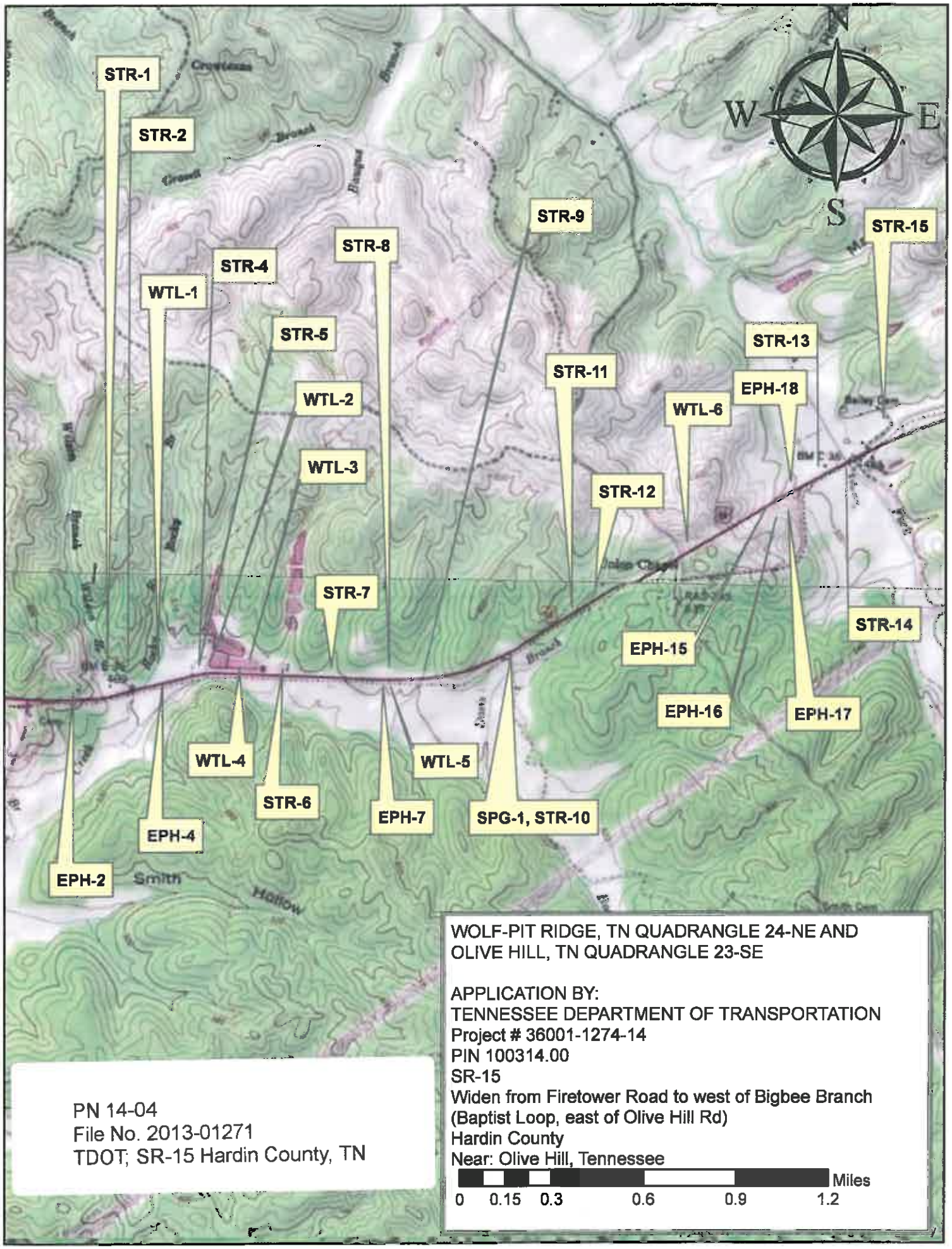
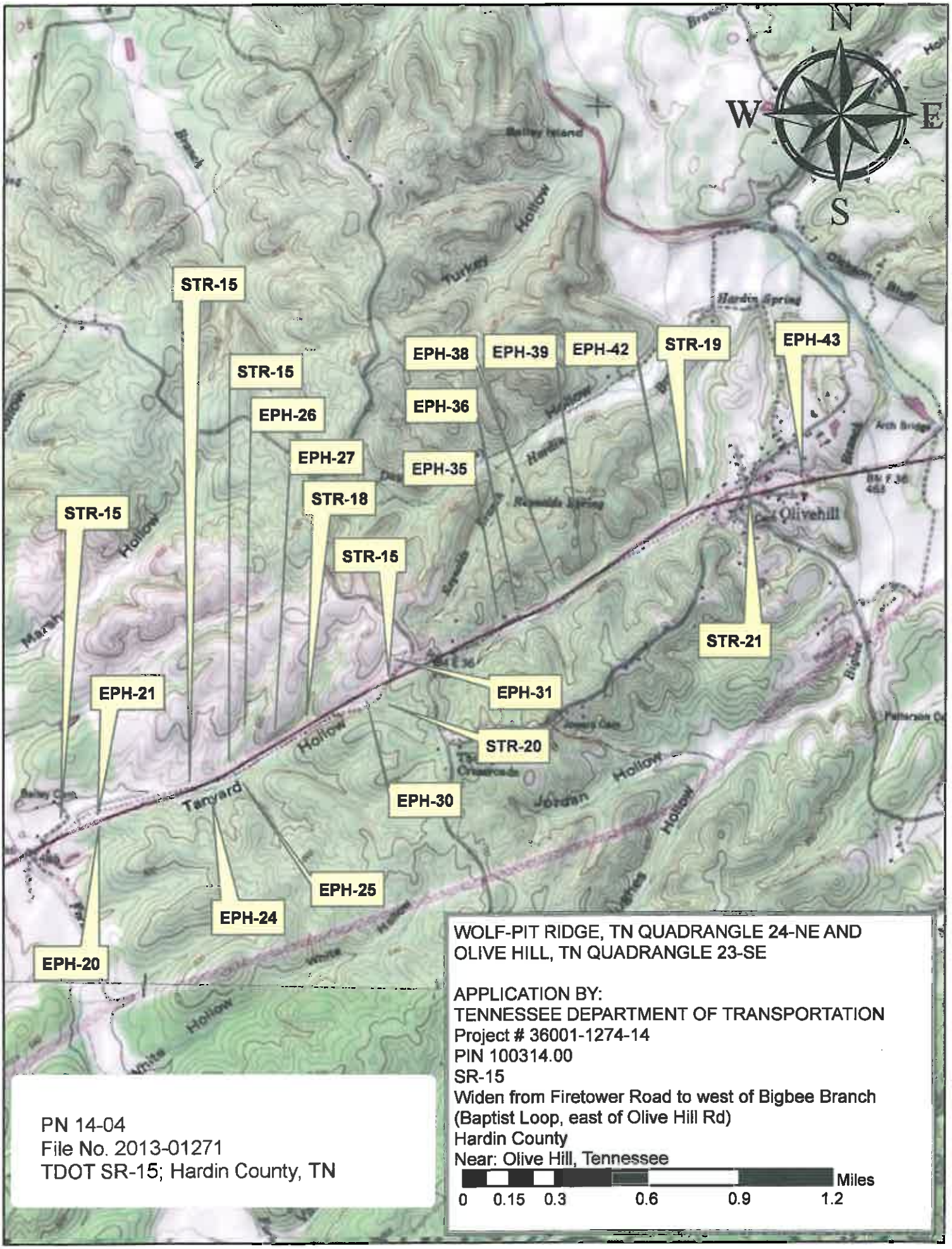

STR-1
STR-2
STR-4
WTL-1
STR-5
WTL-2
WTL-3
STR-8
STR-9
STR-11
STR-12
STR-13
EPH-18
WTL-6
STR-15
STR-14
STR-7
EPH-15
EPH-16
EPH-17
WTL-4
WTL-5
STR-6
EPH-7
SPG-1, STR-10
EPH-4
EPH-2
Smith
Hollow
N
W
E
S
WOLF-PIT RIDGE, TN QUADRANGLE 24-NE AND
OLIVE HILL, TN QUADRANGLE 23-SE
APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
Project # 36001-1274-14
PIN 100314.00
SR-15
Widen from Firetower Road to west of Bigbee Branch
(Baptist Loop, east of Olive Hill Rd)
Hardin County
Near: Olive Hill, Tennessee
Miles
0 0.15 0.3 0.6 0.9 1.2
PN 14-04
File No. 2013-01271
TDOT; SR-15 Hardin County, TN



WOLF-PIT RIDGE, TN QUADRANGLE 24-NE AND OLIVE HILL, TN QUADRANGLE 23-SE

APPLICATION BY:
TENNESSEE DEPARTMENT OF TRANSPORTATION
Project # 36001-1274-14
PIN 100314.00
SR-15
Widen from Firetower Road to west of Bigbee Branch
(Baptist Loop, east of Olive Hill Rd)
Hardin County
Near: Olive Hill, Tennessee

PN 14-04
File No. 2013-01271
TDOT SR-15; Hardin County, TN

STREAM IMPACT AND MITIGATION TABLE

Label	Station	Existing Structure	Prop Structure	Total Structure	Net Structure (loss)	Structure Mitigation Ratio	ILF Credits for Structure/Encapsulation	Existing Stream Length	Prop Stream Length	Net Stream (loss)	Loss Mitigation Ratio	ILF Credits for Stream Loss	Prop Riprap	Riprap Mitigation Ratio	Total ILF Credits Needed per Site
EPH-20	600+00 - 603+50	0	0	0	0	0.25	0	372	0	372	0.25	93	0	0.25	93
EPH-21	600+50	135	203	203	68	0.25	17	516	250	266	0.25	66.5	36	0.25	83.5
STR-15	617+34	175	328	328	153	1	153	425	428	-3	1	-3	110	0.75	150
EPH-24	621+00	0	0	0	0	0.25	0	168	168	0	0.25	0	0	0.25	0
EPH-25	623+00	0	0	0	0	0.25	0	101	101	0	0.25	0	0	0.25	0
EPH-26	627+50 - 631+04	77	326	326	249	0.25	62.25	545	459	86	0.25	21.5	47	0.25	83.75
STR-15	628+67	0	17	17	17	1	17	17	0	17	1	17	0	0.75	34
EPH-27	634+50 - 636+00	0	0	0	0	0.25	0	363	148	215	0.25	53.75	0	0.25	53.75
STR-18	644+15 - 646+30	155	0	0	-155	1	-155	445	0	445	1	445	0	0.75	290
STR-15	645+63	0	0	0	0	1	0	0	0	0	1	0	25	0.75	0
EPH-30	655+00 - 668+00	0	0	0	0	0.25	0	0	0	0	0.25	0		0.25	0
STR-15	657+50	0	0	0	0	1	0	0	0	0	1	0	30	0.75	0
EPH-31	658+00 - 660+00	228	240	240	12	0.25	3	403	476	-73	0.25	-18.25	30	0.25	-15.25
EPH-35	682+50	0	296	296	296	0.25	74	449	619	-170	0.25	-42.5	33	0.25	31.5
EPH-36	685+56	0	346	346	346	0.25	86.5	457	457	0	0.25	0	27	0.25	86.5
EPH-38	693+43	58	309	309	251	0.25	62.75	395	395	0	0.25	0	48	0.25	62.75
EPH-39	694+50 - 695+00	0	0	0	0	0.25	0	146	0	146	0.25	36.5	0	0.25	36.5
STR-21	719+65	140	251.5	251.5	111.5	1	111.5	399	402	-3	1	-3	0	0.75	108.5
STR-19	719+95	191	386	386	195	1	195	516	508	8	1	8	200	0.75	203
EPH-42	715+72	0	248	248	248	0.25	62	406	406	0	0.25	0	0	0.25	62
EPH-43	738+50 -743+00	0	257	257	257	0.25	64.25	657	388	269	0.25	67.25	46	0.25	131.5
Totals:		2120	6001.5	6001.5	3881.5		2267.5	15784	11366	4418		2494.25	1368		4761.75

STREAM IMPACT AND MITIGATION TABLE

PE #36001-1274-14
PIN 100314.00
rdin County
7/15/2014

Label	Station	Existing Structure	Prop Structure	Total Structure	Net Structure (loss)	Structure Mitigation Ratio	ILF Credits for Structure/Encapsulation	Existing Stream Length	Prop Stream Length	Net Stream (loss)	Loss Mitigation Ratio	ILF Credits for Stream Loss	Prop Riprap	Riprap Mitigation Ratio	Total ILF Credits Needed per Site
EPH-2	446+00 - 455+20	0	0	0	0	0.25	0	925	0	925	0.25	231.25	0	0.25	231.25
STR-1	454+38 -457+90	54	238	238	184	1	184	746	711	35	1	35	100	0.75	219
STR-2	457+75 - 461+60	0	0	0	0	1	0	482	390	92	1	92	0	0.75	92
EPH-4	465+41	62	225	225	163	0.25	40.75	275	383	-108	0.25	-27	48	0.25	13.75
STR-4	471+03.36	52	215	215	163	1	163	315	315	0	1	0	100	0.75	163
STR-5	471+02 - 479+20	0	0	0	0	1	0	840	0	840	1	840	0	0.75	840
STR-6	482+00 - 483+45	55	158	158	103	1	103	483	483	0	1	0	75	0.75	103
STR-7	491+10	60	168	168	108	1	108	228	120	108	1	108	100	0.75	216
EPH-7	501+00 - 501+50	0	0	0	0	0.25	0	108	0	108	0.25	27	0	0.25	27
STR-8	502+31	75	239	239	164	1	164	331	283	48	1	48	25	0.75	212
STR-9	507+25	90	190	190	100	1	100	272	265	7	1	7	75	0.75	107
STR-10	522+80 - 523+14	0	70	70	70	1	70	0	0	0	1	0	0	0.75	70
STR-11	535+05 - 542+45	90	398	398	308	1	308	632	630	2	1	2	100	0.75	310
STR-12	542+58 - 553+60	36	24	24	-12	1	-12	1390	1127	263	1	263	74	0.75	251
EPH-15	577+50 - 580+50	0	0	0	0	0.25	0	288	0	288	0.25	72	0	0.25	72
EPH-16	577+50 - 580+50	0	0	0	0	0.25	0	297	0	297	0.25	74.25	0	0.25	74.25
EPH-17	578+00 - 580+50	163	425	425	262	0.25	65.5	613	669	-56	0.25	-14	39	0.25	51.5
EPH-18	582+00 - 586+25	0	0	0	0	0.25	0	434	434	0	0.25	0	0	0.25	0
STR-13	586+25 - 588+20	90	94	94	4	1	4	195	201	-6	1	-6	0	0.75	-2
STR-14	591+50	114	300	300	186	1	186	100	100	0	1	0	0	0.75	186
STR-15	595+40	20	50	50	30	1	30	50	50	0	1	0	0	0.75	30

STREAM IMPACT AND MITIGATION TABLE

Label	Station	Existing Structure	Prop Structure	Total Structure	Net Structure (loss)	Structure Mitigation Ratio	ILF Credits for Structure/Encapsulation	Existing Stream Length	Prop Stream Length	Net Stream (loss)	Loss Mitigation Ratio	ILF Credits for Stream Loss	Prop Riprap	Riprap Mitigation Ratio	Total ILF Credits Needed per Site
	Perennial & Intermittent Totals:				1729.5		1729.5			1853		1853			3582.5
	Ephemeral Totals:				2152		538			2565		641.25			1179.25

File No. 2013-01271
PN 14-04

File No. 2013-01271

PN 14-04

TENNESSEE DEPARTMENT OF TRANSPORTATION

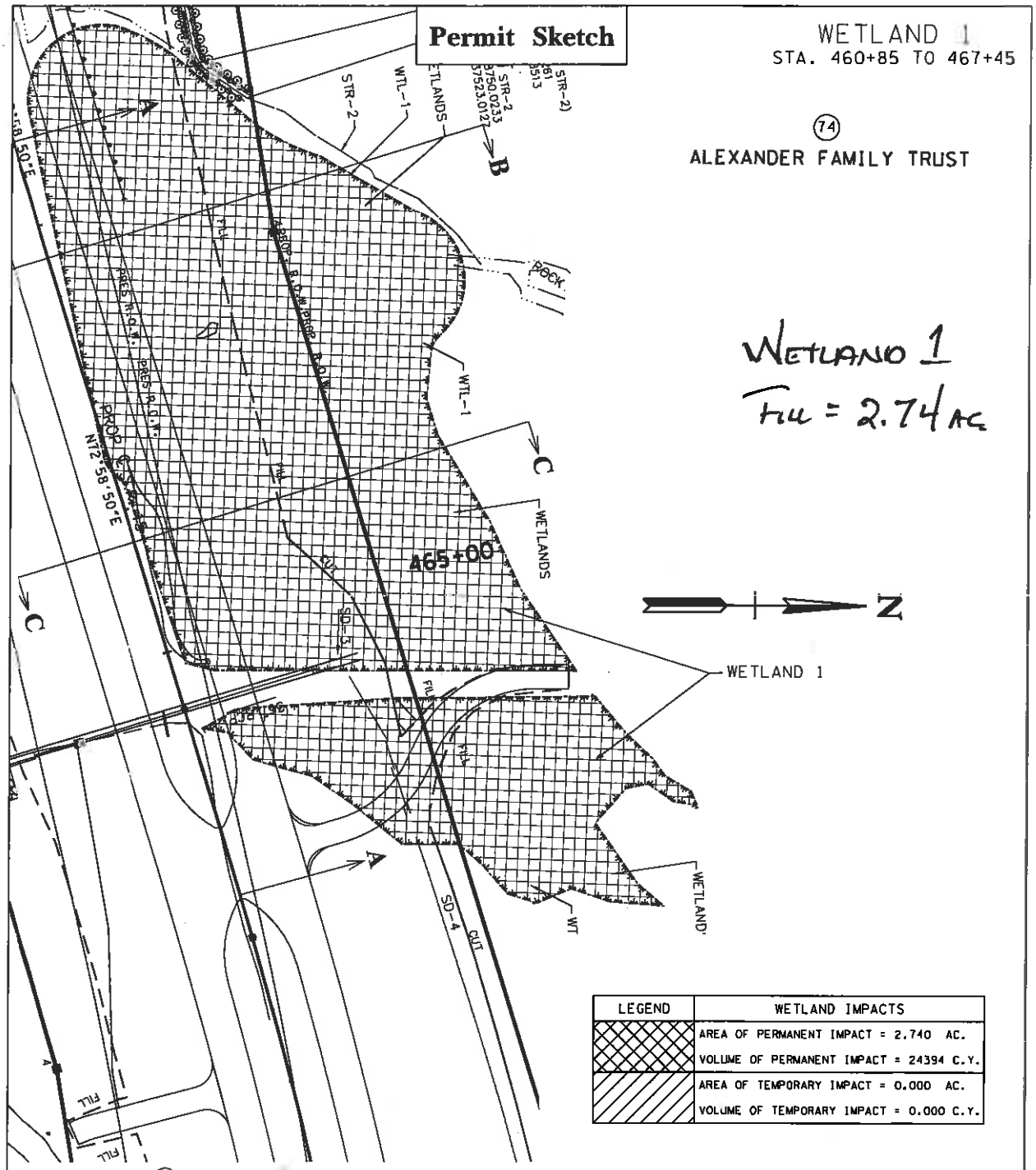
SR-15, Widening Project from Firetower Road to Olive Hill Road, Hardin County, TN (PIN 100314.00)

WETLAND Impact and Mitigation:

Label	Type	Permanent Impacts (Acres)	Temporary Impacts (Acres)	Debit (2:1 ratio) (Bank Credits/Acres)	Mitigation Payment	Mitigation / Wetland Bank*
WTL-1	Forested	2.74	0	5.48	$191,800.00	TMF
WTL-2	Emergent	0.288	0	0.576	$20,160.00	TMF
WTL-3	Emergent	0.431	0	0.862	$30,170.00	TMF
WTL-4	Emergent	0.187	0	0.374	$13,090.00	TMF
WTL-5	Emergent	0.034	0	0	$0.00	
WTL-6	Emergent	0.159	0	0.318	$11,130.00	TMF
	Total	3.839	0	7.61	$266,350.00	
		Rounded up to 0.5 acre:		8 units	$280,000.00	

*Note: Wetland Mitigation for impacts would involve payment to the Tennessee Mitigation Fund (TMF) debiting at a 2:1 ratio, 7.61 acres (3.805 acres x 2); or 8 credits in the Lower Tennessee watershed at a cost of $280,000

File No. 2013-01271
PAL 14-04

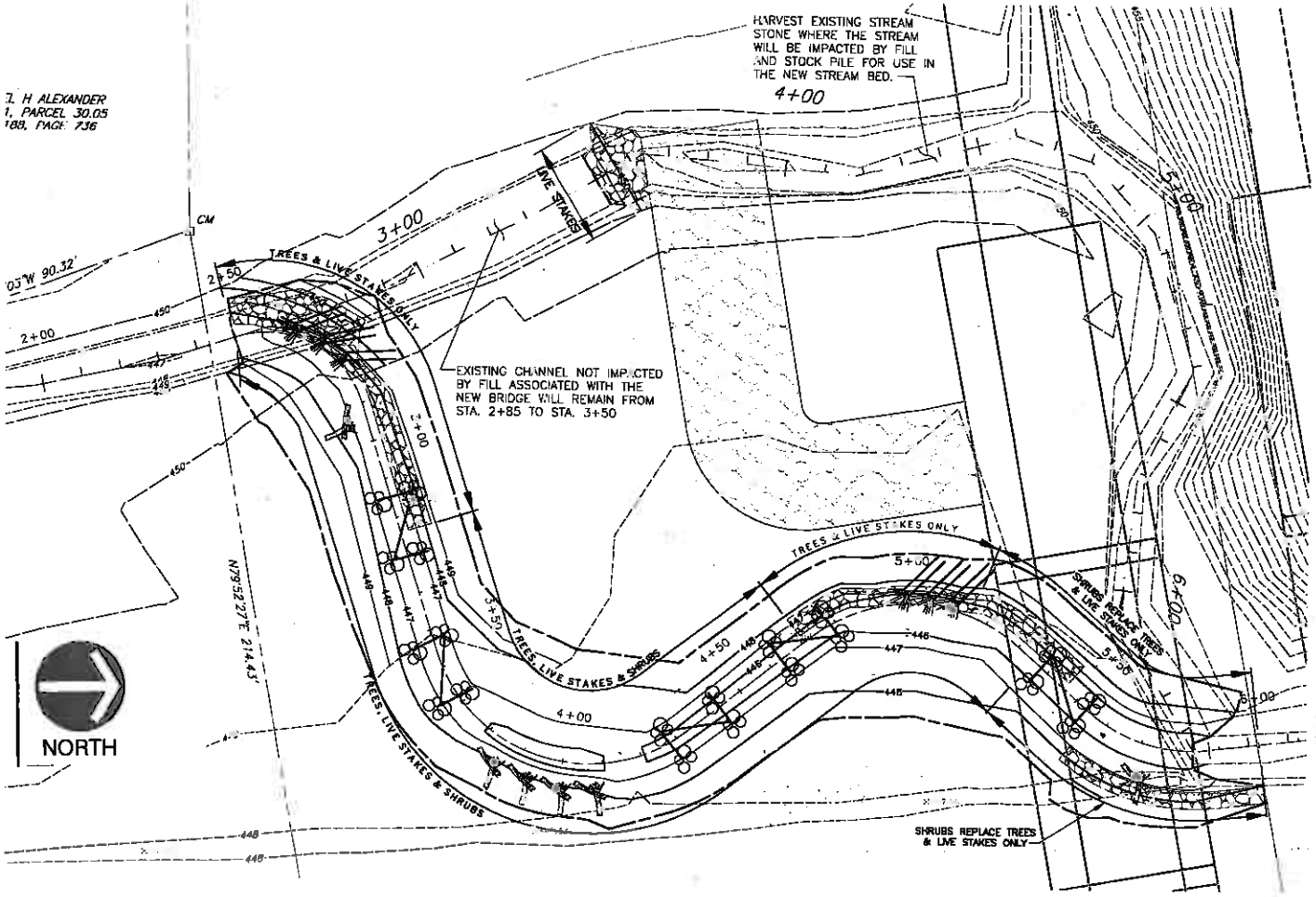


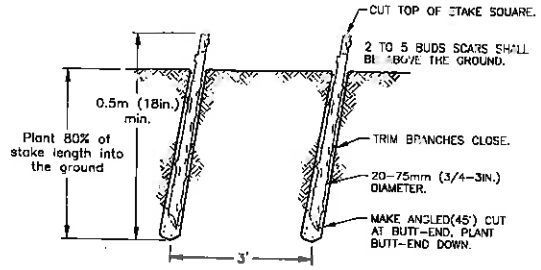
LEGEND	WETLAND IMPACTS
	AREA OF PERMANENT IMPACT = 2.740 AC.
	VOLUME OF PERMANENT IMPACT = 24394 C.Y.
	AREA OF TEMPORARY IMPACT = 0.000 AC.
	VOLUME OF TEMPORARY IMPACT = 0.000 C.Y.

APPLICATION BY;
TENNESSEE DEPARTMENT OF TRANSPORTATION
PROJECT NO. NHE-15(108)/36001-2278-14
PE # 36001-1274-14
PIN # 100314.00
SR 15 (US 64) FROM FIRETOWER ROAD TO
WEST OF BIGBEE BRANCH (HARDIN COUNTY)
NEAR SAVANNAH, TENNESSEE

DATE: 12/20/11 REVISED: 4/30/12 SHEET 1 OF 3

TYPE	YEAR	PROJECT NO.
PRELIM	2014	36001-3290-14

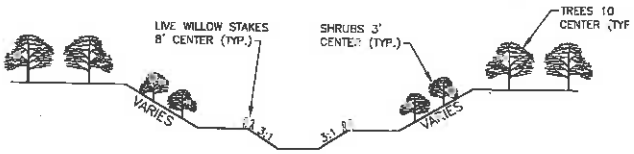




DETAIL:
LIVE STOUT STAKES SHOULD BE LONG ENOUGH TO REACH BELOW THE GROUNDWATER TABLE. (GENERALLY, A LENGTH OF 2 TO 3 FEET) ADDITIONALLY, THE STAKES SHOULD HAVE A DIAMETER IN THE RANGE OF 0.75 TO 3.0 INCHES.

NOTES:
1. HARVEST AND PLANT STAKES DURING THE DORMANT SEASON.
2. USE HEALTHY, STRAIGHT AND LIVE WOOD AT LEAST 1 YEAR OLD.
3. MAKE CLEAN CUTS AND DO NOT DAMAGE STAKES OR SPLIT ENDS DURING INSTALLATION. USE AN IRON BAR AND PILOT HOLE IN FIRM SOILS.
4. SOAK CUTTINGS FOR AT LEAST 24 HOURS PRIOR TO INSTALLATION. SOAK FOR 5–7 DAYS FOR BEST RESULTS.
5. TAMP THE SOIL AROUND THE STAKE.

LIVE STAKES
N.T.S.



TYPICAL SECTION
N.T.S.

Proposed Channel Geomorphology	
Parameter	Proposed Geomorphology
Meander Wavelength	~ 173 ft
Belt width	~ 80.3 ft
Radius of Curvature	~ 40 ft
Sinuosity	~ 1.24
Pool Average Dbkf	1.2–1.5 ft
Pool Average Wbkf	14–16 ft
Pool Average Abkf	19–21 ft²
Riffle Average Dbkf	0.9–1.2 ft
Riffle Average Wbkf	11–13 ft
Riffle Average Abkf	12–14 ft²

RELOCATED STREAM LENGTH = 336.8'
EXISTING STREAM IMPACTED BY BRIDGE CONSTRUCTION = 399.4'
EXISTING STREAM TO BE LEFT AS ISOLATED WATER POOL = 65.0'

PROTECTED AREA
NO TREE CLEARING OR CUTTING OR MOWING ALLOWED
(SUBJECT TO [illegible])

NOTES:
1. THE PROTECTED AREA SIGN SHALL BE WHITE WITH BLACK LETTERING.
2. LINES 1, 2, 3 & 4 SHALL BE 2 INCHES IN HEIGHT. LINES 5 & 6 SHALL BE 1 INCH IN HEIGHT.
3. PROTECTED AREA SIGN SHALL BE PAID FOR UNDER ITEM NO. 713-16.20. PROTECTED AREA SIGN, PER EACH, AS SHOWN IN DETAIL ON THIS SHEET. PAYMENT SHOULD INCLUDE ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO CONSTRUCT AS SHOWN IN DETAIL.
4. LOCATION AND NUMBER OF SIGNS TO BE DETERMINED IN THE FIELD OR AS DIRECTED BY THE ENGINEER.

PROTECTED AREA SIGN
N.T.S.

STR-21 ; BIGBY BRANCH
PROPOSED STREAM RELOCATION
FILE NO. 2013-01271
PN 14-04

LEGEND

445	EXISTING CONTOURS
X445.4	EXISTING SPOT ELEVATION
	EXISTING STREAM
CM(F)	CONCRETE MONUMENT (FOUND)
	EXISTING R.O.W.
448	PROPOSED CONTOURS
	LOG RIFFLE
	ROOT WAD (D-NSD-10)
	VEGETATED RIPRAP (D-NSD-11)
	LOG VANE AND ROOT WAD

INSTREAM STRUCTURE LEGEND:
1. LOG RIFFLE
2. ROOT WAD (D-NSD-10)
3. LOG VANE & ROOT WAD

SCALE IN FEET
0 20' 40'

PERMIT SKETCH

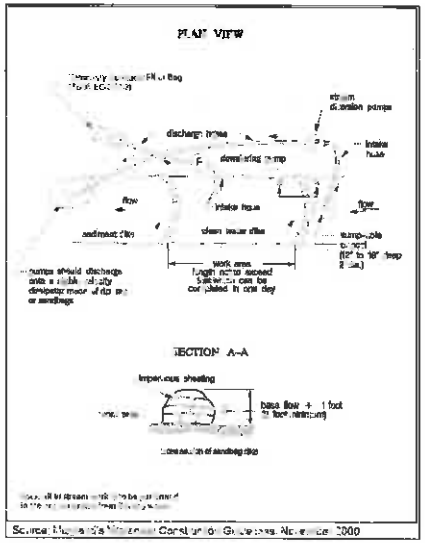
COORDINATES ARE NAD/83 (1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000060 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

S.R. 15
(U.S. HWY 64)
BIGBEE BRANCH STREAM RELOCATION
WIDENING FROM FIRETOWER ROAD TO WEST OF BIGBEE BRANCH
SCALE: 1"=20'

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

TYPE	YEAR	PROJECT NO.	SHEET NO.
CONST.	2012	35001-3298-14	15-8



Source: Minnesota Minimum Construction Guidelines, November 2000

PUMP AROUND TYPICAL
N.T.S.

PUMP-AROUND DIVERSION

Temporary measure for diverting in-channel construction sites

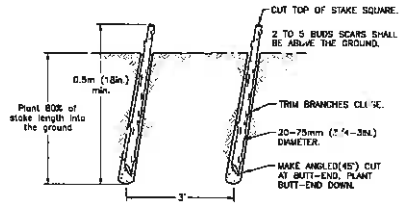
DESCRIPTION

The work should consist of installing a temporary pump and supporting measures to divert flow around in-stream construction area.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the city's, county's or utility company's satisfaction.
2. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the Engineer or their Designated Representative.
3. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
4. Upon installation of all sediment control measures and approval by the sediment control inspector, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream, if appropriate. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
5. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.
6. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
7. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or modified.
8. All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or sod and matting as specified on the plans.
9. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment block, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike upstream the old one, the old sediment dike should be removed.
10. A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outlet and pumping the stream flow around the work area. The water should discharge onto the same velocity dissipater used for the main stem pump around.
11. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
12. After construction, all disturbed areas should be regraded and revegetated as per the project specifications.



DETAIL:
LIVE STOUT STAKES SHOULD BE LONG ENOUGH TO REACH BELOW THE GROUNDWATER TABLE. (GENERALLY, A LENGTH OF 2 TO 3 FEET) ADDITIONALLY, THE STAKES SHOULD HAVE A DIAMETER IN THE RANGE OF 0.75 TO 3.0 INCHES.

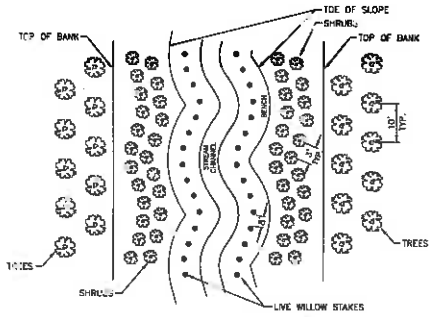
NOTES:
1. HARVEST AND PLANT STAKES DURING THE DORMANT SEASON.
2. USE HEALTHY, STRAIGHT AND LIVE WOOD AT LEAST 1 YEAR OLD.
3. MAKE CLEAN CUTS AND DO NOT DAMAGE STAKES OR SPLIT ENDS DURING INSTALLATION; USE AN IRON BAR AND PILOT HOLE IN FIRM SOILS.
4. SOAK CUTTINGS FOR AT LEAST 24 HOURS PRIOR TO INSTALLATION. SOAK FOR 5-7 DAYS FOR BEST RESULTS.
5. TAMP THE SOIL AROUND THE STAKE.

LIVE STAKES
N.T.S.

PROTECTED AREA
NO TREE CLEARING OR CUTTING OR MOWING ALLOWED
CONTACT THE ENVIRONMENT OFFICE (615) 741-3655

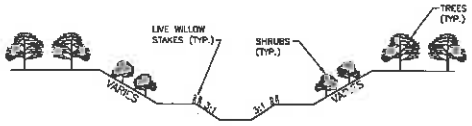
NOTES:
1. THE PROTECTED AREA SIGN SHALL BE WHITE WITH BLACK LETTERING.
2. LINES 1, 2, 3 & 4 SHALL BE 2 INCHES IN HEIGHT. LINES 5 & 6 SHALL BE 1 INCH IN HEIGHT.
3. PROTECTED AREA SIGN SHALL BE PAID FOR UNDER ITEM NO. 713-18.20, PROTECTED AREA SIGN, PER EACH, AS SHOWN IN DETAIL ON THIS SHEET. PAYMENT SHOULD INCLUDE ALL MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO CONSTRUCT AS SHOWN IN DETAIL.
4. LOCATION AND NUMBER OF SIGNS TO BE DETERMINED IN THE FIELD OR AS DIRECTED BY THE ENGINEER.

PROTECTED AREA SIGN
N.T.S.



NOTE:
REFER TO ESTIMATED QUANTITIES TABLE ON SHEET NS-1 FOR SPECIFIC INFORMATION.

STREAM RELOCATION PLANTING DETAIL
N.T.S.



TYPICAL SECTION
N.T.S.

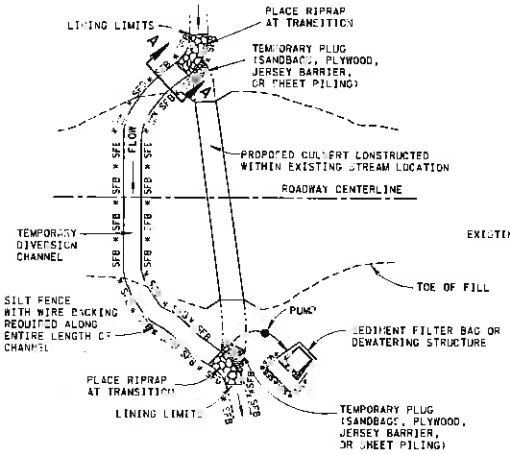
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

S.R. 15
(U.S. HWY 64)

BIGBEE BRANCH
STREAM RELOCATION
DETAILS

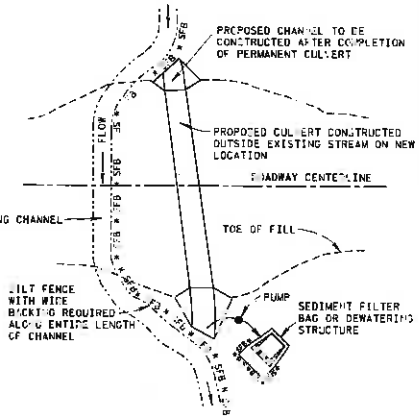
FILE NO. 2013-01271
P/N 14-04

CULVERT CONSTRUCTED WITHIN EXISTING STREAM

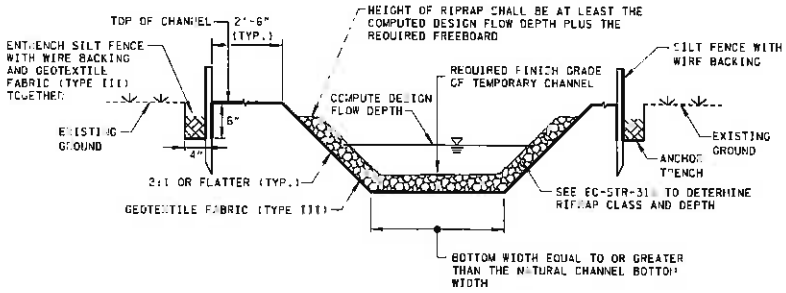


PLAN VIEW

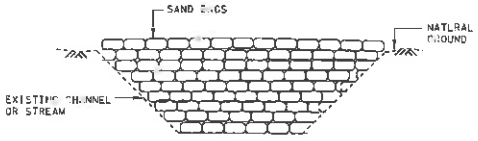
CULVERT CONSTRUCTED OUTSIDE EXISTING STREAM



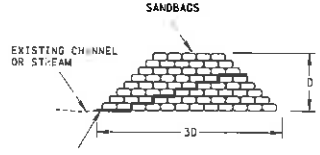
PLAN VIEW



SECTION A-A



ELEVATION VIEW



POLYETHYLENE SHEETING (6 MIL. MINIMUM) INSTALLED BETWEEN SANDBAGS

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 Q50 EXCEEDS 500 CFS, THE DESIGN OF THIS MEASURE SHOULD BE COMPLETED BY THE HYDRAULICS SECTION OF THE STRUCTURE DIVISION. AT SITES WHICH INCLUDE HIGH-QUALITY 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-30) 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 RIPRAP (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 EC-STR-30 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 DETAIL TO ENHANCED SILT FENCE. CHANGED GENERAL NOTE (L).

REV. 4-15-05: MODIFIED ALL GENERAL NOTES. REMOVED "TEMPORARY CULVERT USED DURING CONSTRUCTION". REMOVED TABLE FOR "PIPE DIA. FOR STREAM CROSSINGS OF 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.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY DIVERSION CHANNEL

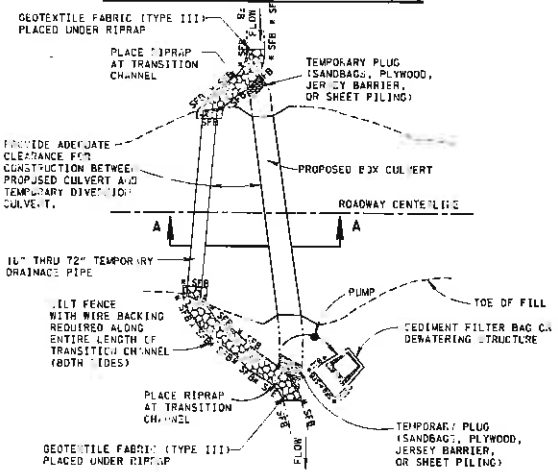
10-26-92 | EC-STR-31

FILE No. 2013-01271
PIN 14-04

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

REV. 4-1-05: REVISED GENERAL NOTES, ADDED NOTE M, MISC. EDITS TO DRAWING, AND CHANGED STANDARD SYMBOL.

TEMPORARY DIVERSION CULVERT WITH CHANNEL TRANSITIONS



PLAN VIEW

TEMPORARY DIVERSION CULVERT SELECTION

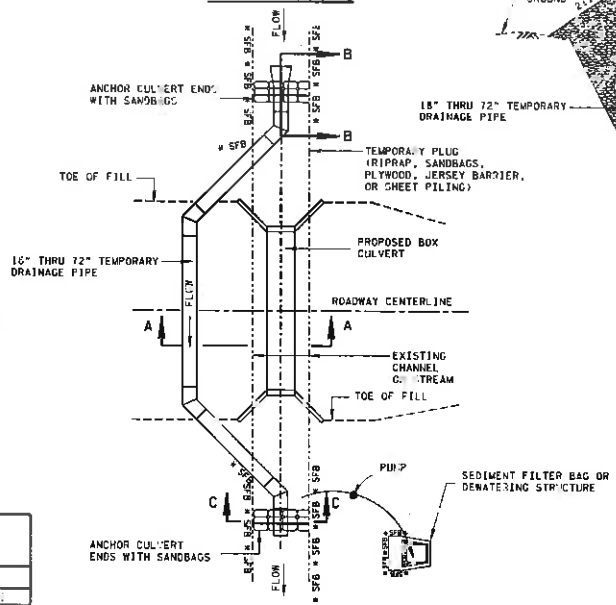
FLOW CAPACITY IN CFS OF A GIVEN PIPE AT A GIVEN CHANNEL SLOPE

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	18.5	20.4	21.4	21.5	21.7
30	30.1	32.3	32.9	34.1	33.5	33.0
36	46.8	50.4	49.5	47.8	46.6	45.8
42	57.7	69.0	65.5	62.8	61.0	59.6
48	52.6	98.1	76.8	78.6	75.5	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	154.4	142.2	153.6	141.3	133.3	127.9
RIPRAP	B	B	B	B	B/C	B/C

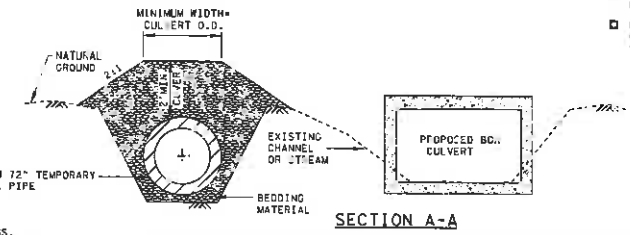
NOTES: FLOW RATES BASED ON 2.5-FOOT INCREASE IN WATER SURFACE ELEVATION ABOVE NORMAL LEVEL FOR THE 2-YEAR, 24 HOUR STORM EVENT.

ASSUMES CORRUGATED PIPE (n = 0.024)

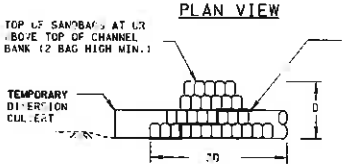
TEMPORARY DIVERSION CULVERT WITH ELBOWS



PLAN VIEW



SECTION A-A



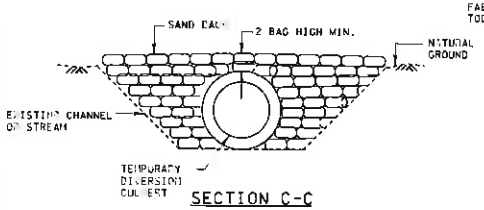
SECTION B-B

EXAMPLE:

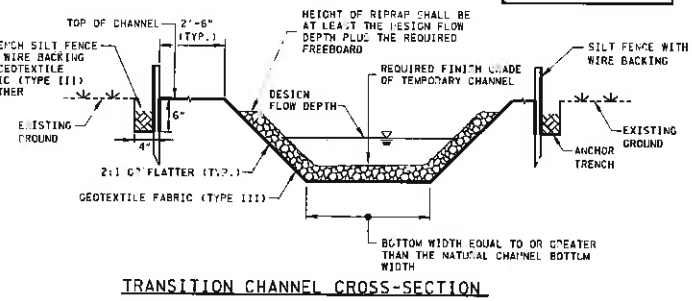
Q = 87.6 CFS
CHANNEL SLOPE 1%

SELECT EITHER:

SINGLE 48-INCH PIPE OR TWIN 36-INCH PIPES



SECTION C-C



TRANSITION CHANNEL CROSS-SECTION

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 HIGH-QUALITY OR SEDIMENT-IMPAIRED STREAM, 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_{25} 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 CUT 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-11), SEDIMENT FILTER BAGS (EC-STR-21), AND SILT FENCE WITH WIRE BACKING (EC-STR-30), 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
621-03.01 THRU 621-03.11	__" TEMPORARY DRAINAGE PIPE PER LINEAR FOOT.
709-05.06	MACHINED RIP-RAP (CLASS A-1) PER TON
709-05.07	MACHINED RIP-RAP (CLASS B) PER TON
709-05.08	MACHINED RIP-RAP (CLASS C) PER TON
741-10.03	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.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TEMPORARY DIVERSION CULVERTS

1-20-05 | EC-STR-32

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

File No. 2014-01271
PN 14-04