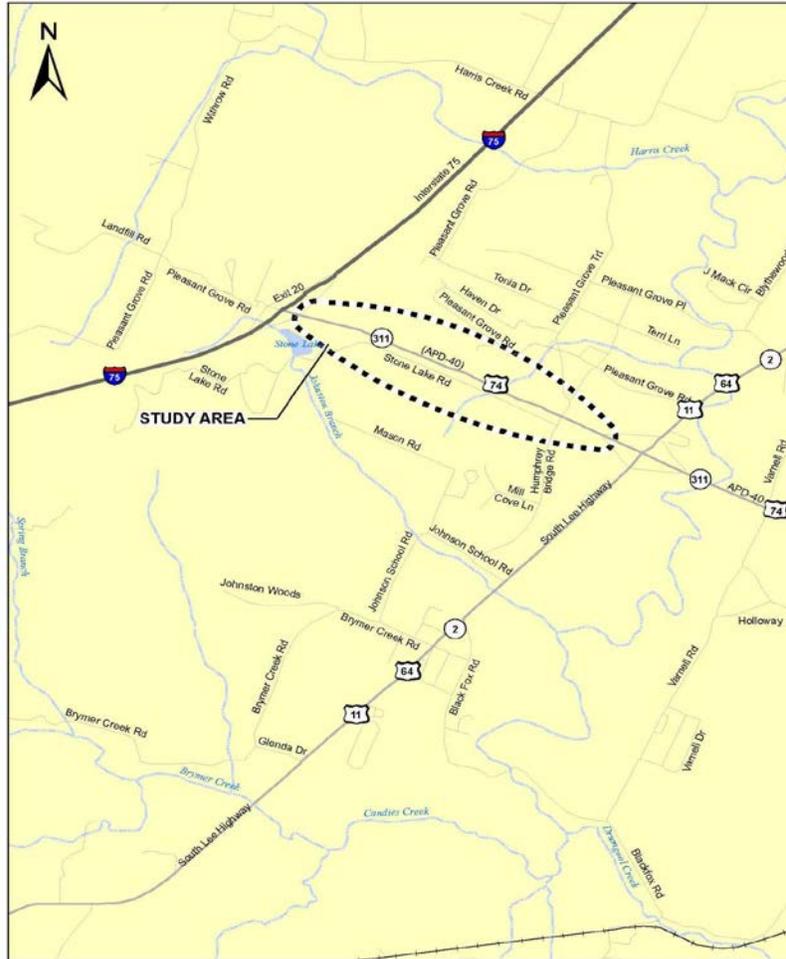


**SR-311 (APD-40) PROPOSED INTERCHANGE**

Environmental Assessment

**Exhibit A - Vicinity Map.** Proposed interchange located on SR-311 (ADP-40) approximately 0.6 miles east of I-75 (Exit 20) and 0.9 miles west of South Lee Highway (SR-2)(US-11/64), in the Town of Cleveland, Bradley County, Tennessee. South Cleveland, TN quad. Lat 35.15028, Long -84.94139.



**Exhibit B - Location Map.** Proposed interchange located on SR-311 (ADP-40) approximately 0.6 miles east of I-75 (Exit 20) and 0.9 miles west of South Lee Highway (SR-2)(US-11/64), in the Town of Cleveland, Bradley County, Tennessee. South Cleveland, TN quad. Lat 35.15028, Long -84.94139.

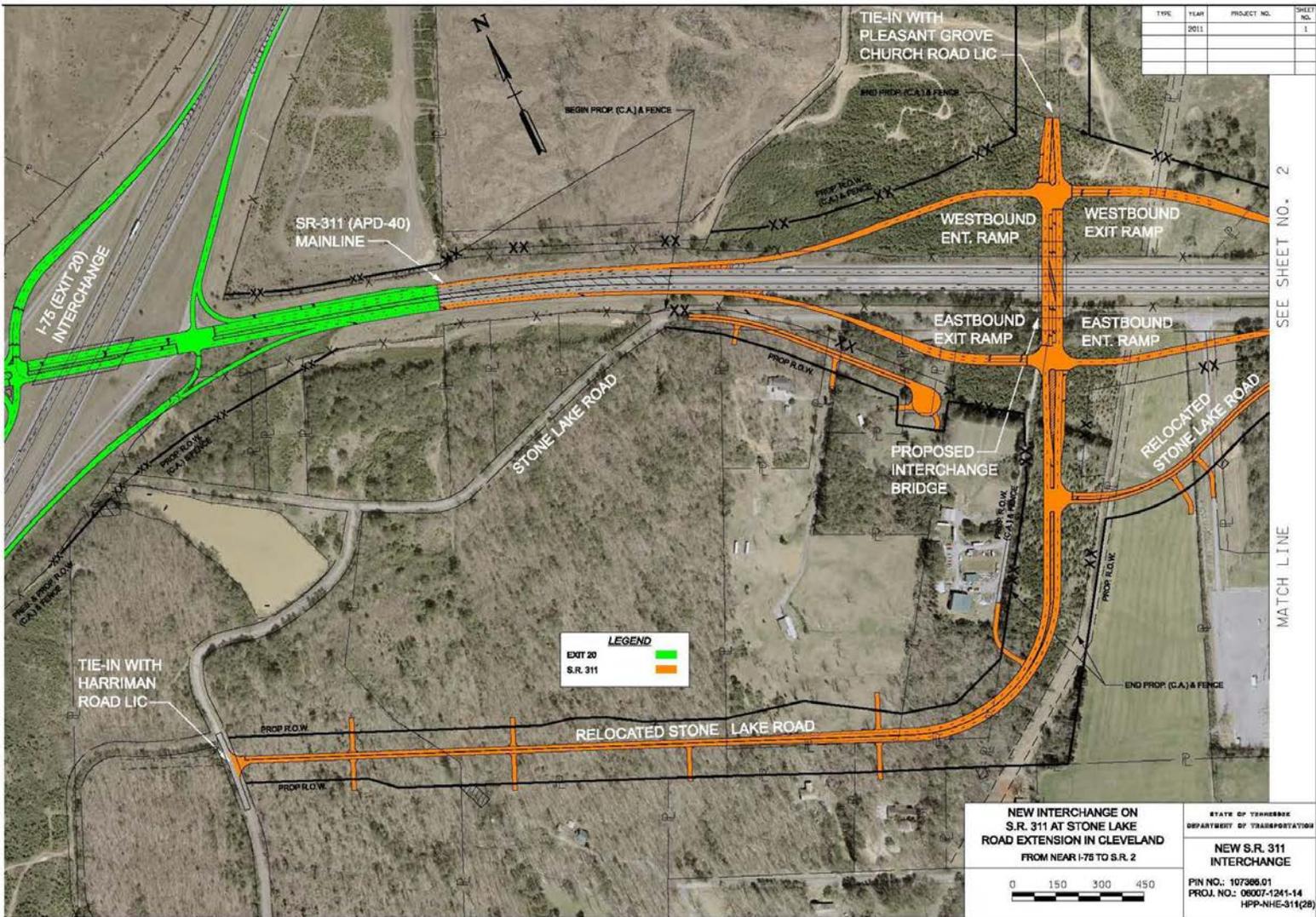


Exhibit C - Proposed Interchange Alignment – Northwestern View

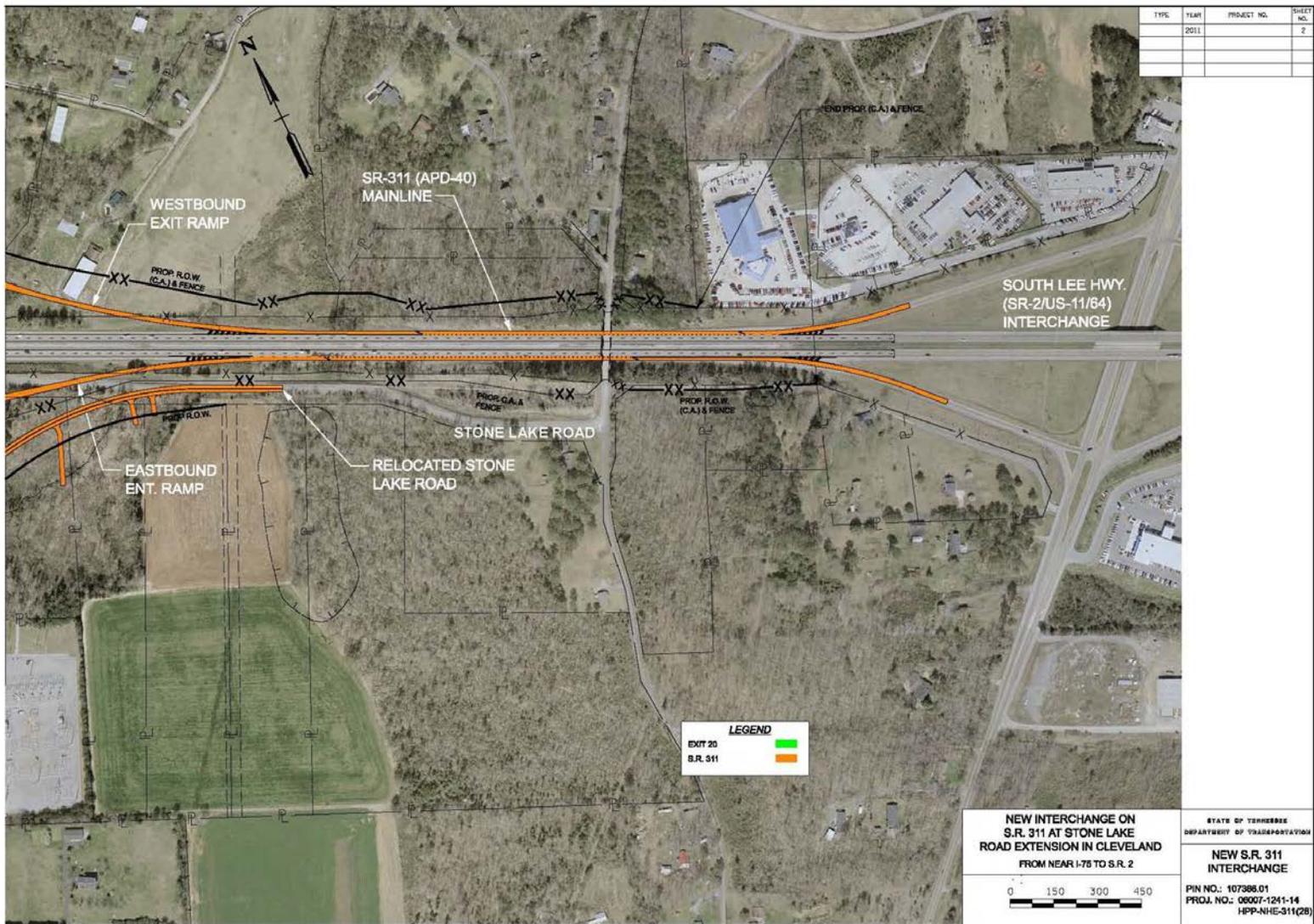
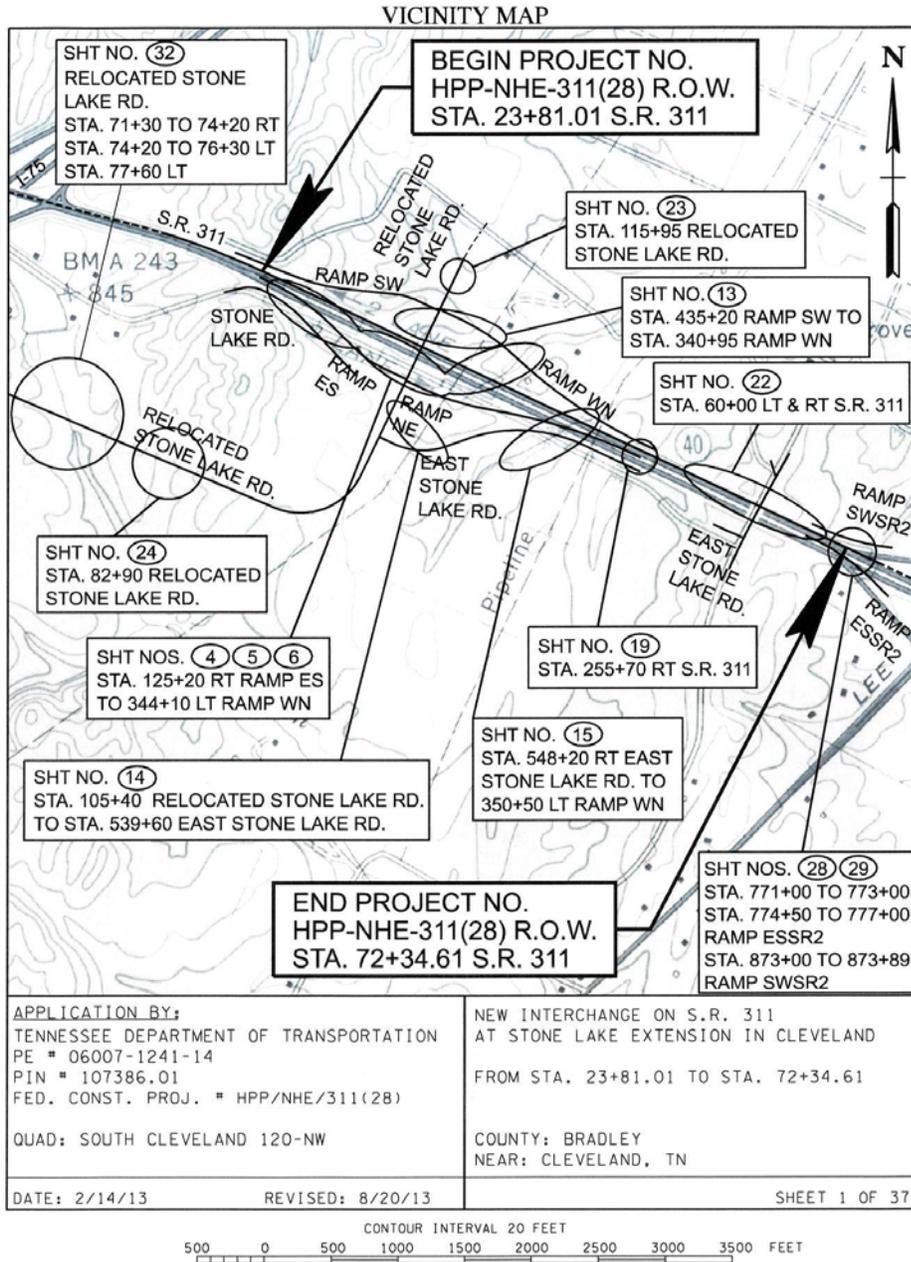
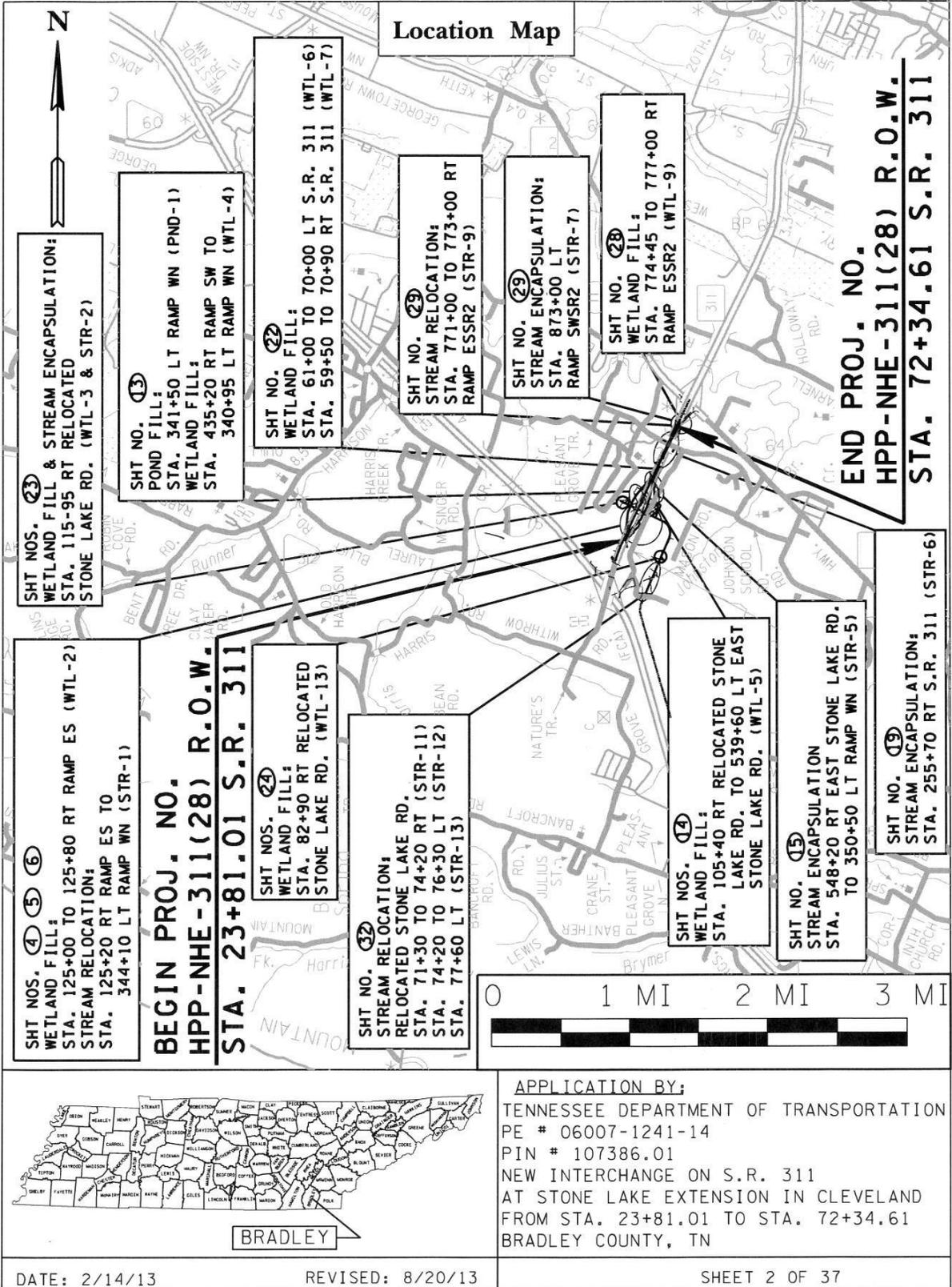


Exhibit D - Proposed Interchange Alignment – Northeastern View

**Exhibit E – Proposed Construction Drawings – Impacts to Waters of the United States**





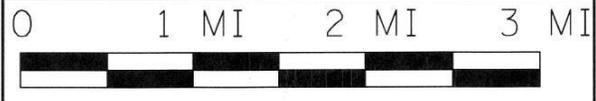


SHT NOS. ④ ⑤ ⑥  
 WETLAND FILL;  
 STA. 125+00 TO 125+80 RT RAMP ES (WTL-2)  
 STREAM RELOCATION;  
 STA. 125+20 RT RAMP ES TO  
 344+10 LT RAMP WN (STR-1)

**BEGIN PROJ. NO.  
 HPP-NHE-311(28) R.O.W.  
 STA. 23+81.01 S.R. 311**

SHT NOS. ②④  
 WETLAND FILL;  
 STA. 82+90 RT RELOCATED  
 STONE LAKE RD. (WTL-13)

SHT NO. ③②  
 STREAM RELOCATION;  
 RELOCATED STONE LAKE RD.  
 STA. 71+30 TO 74+20 RT (STR-11)  
 STA. 74+20 TO 76+30 LT (STR-12)  
 STA. 77+60 LT (STR-13)



APPLICATION BY;  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
 PE # 06007-1241-14  
 PIN # 107386.01  
 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

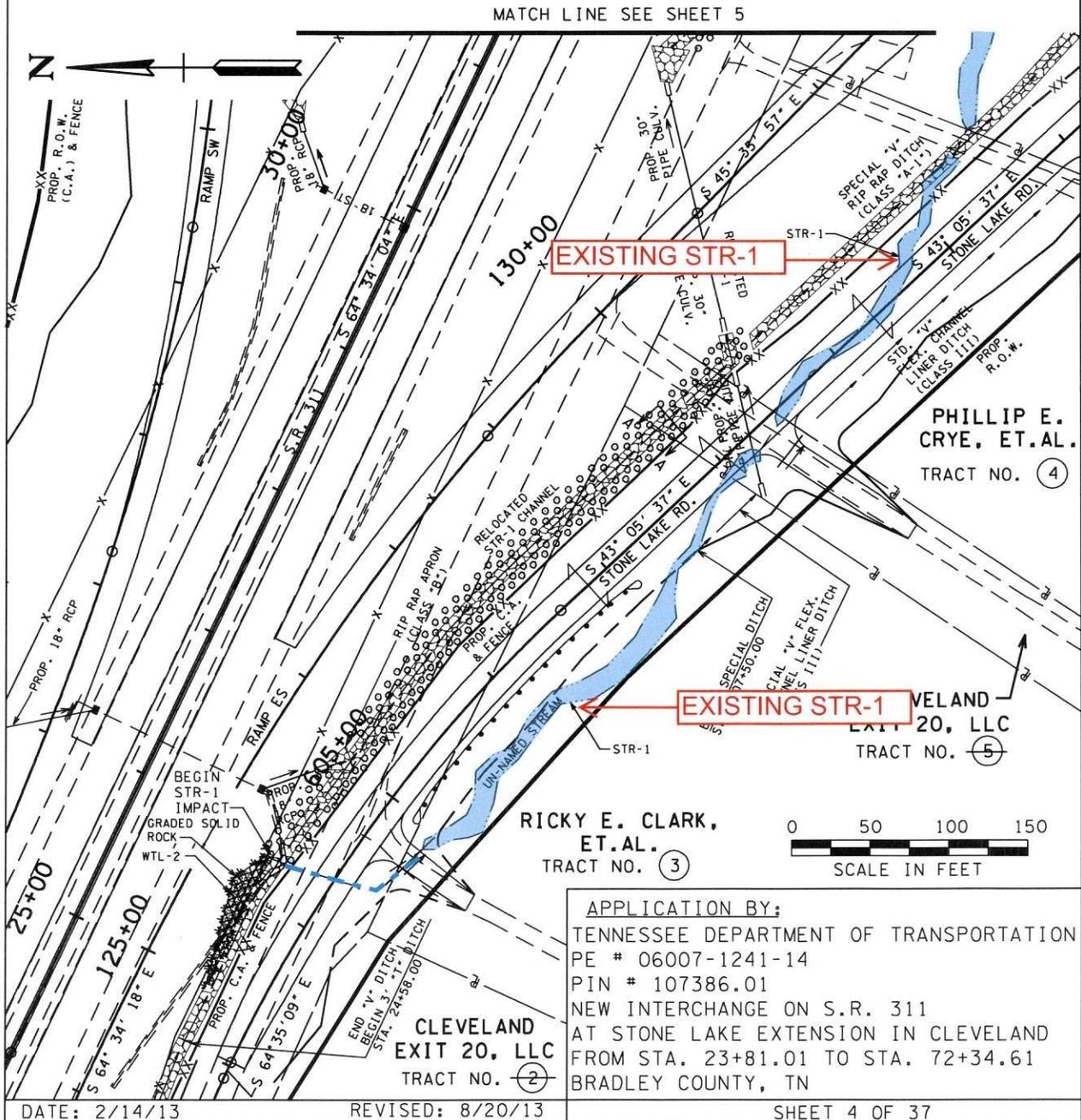
# STREAM RELOCATION & WETLAND FILL (STR-1 & WTL-2) Permit Sketch

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

| LEGEND   | WETLAND IMPACTS (WTL-2)   |
|--|---|
|  | AREA OF PERMANENT IMPACT = 0.02 AC.<br>VOLUME OF PERMANENT IMPACT = 32 C.Y. |

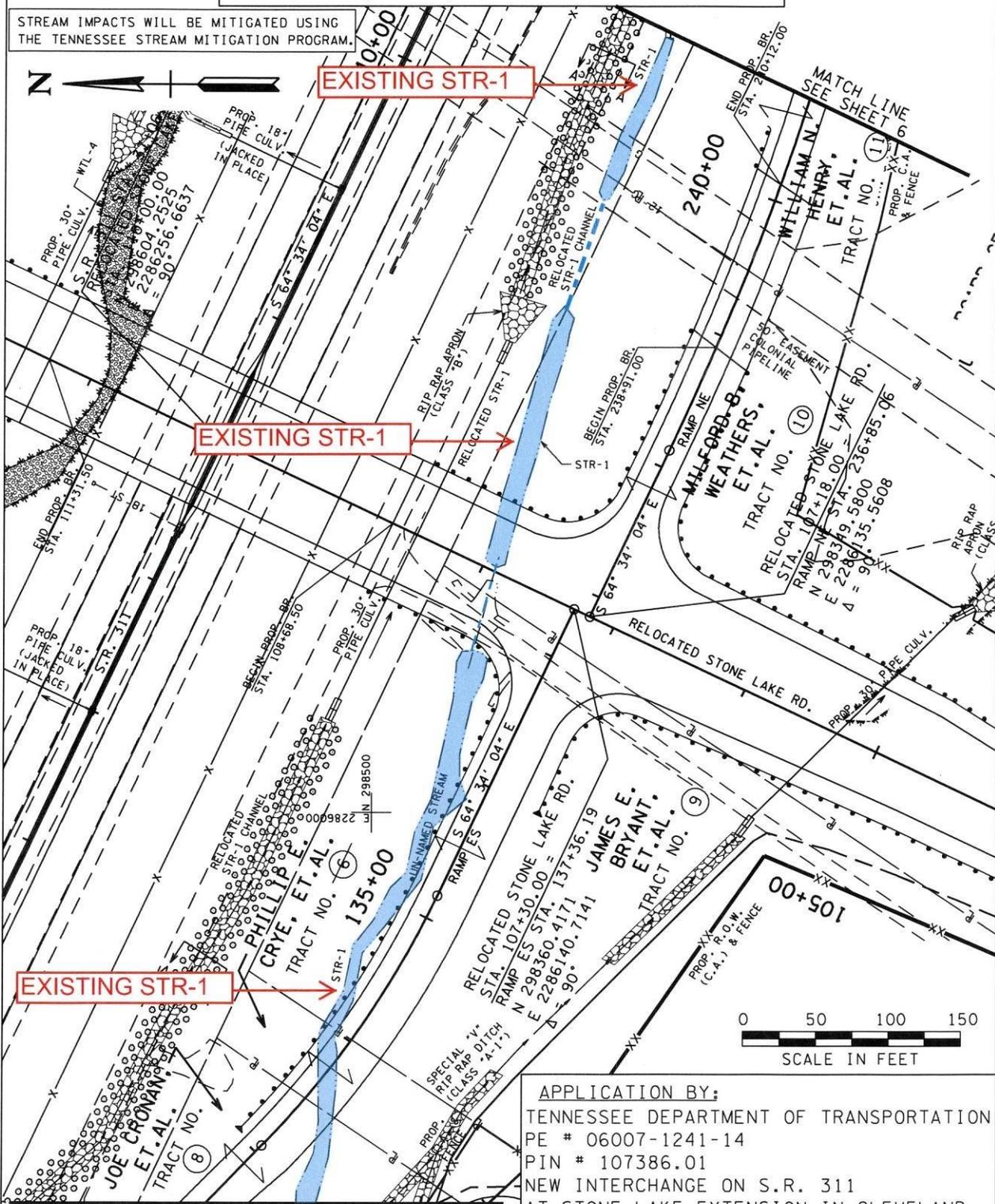
STREAM IMPACTS WILL BE MITIGATED USING THE TENNESSEE STREAM MITIGATION PROGRAM.

WETLAND IMPACTS WILL BE MITIGATED USING THE COFFEE COUNTY WETLAND MITIGATION BANK.



# STREAM RELOCATION (STR-1) Permit Sketch

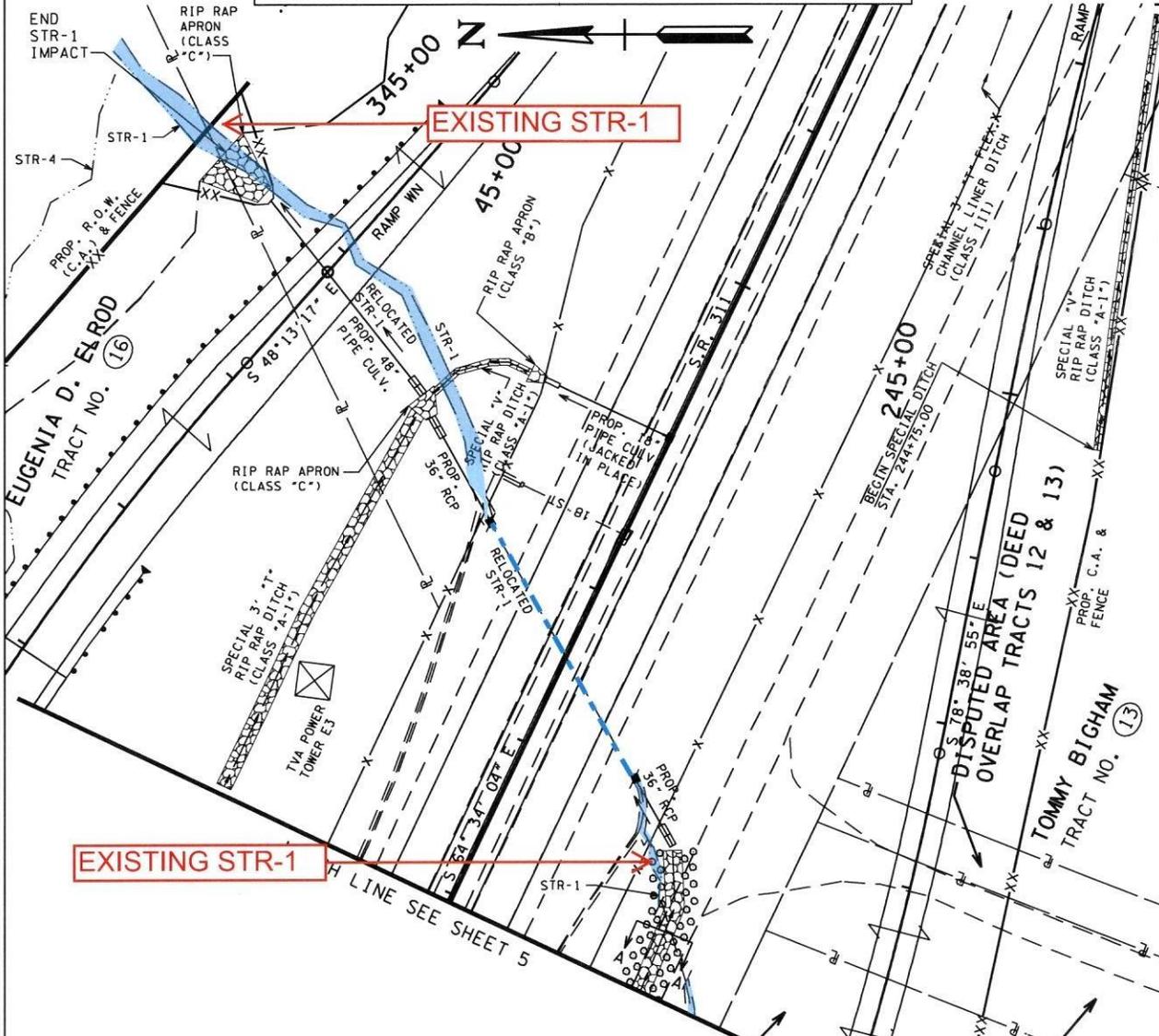
STREAM IMPACTS WILL BE MITIGATED USING THE TENNESSEE STREAM MITIGATION PROGRAM.



MATCH LINE SEE SHEET 4

APPLICATION BY:  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
 PE # 06007-1241-14  
 PIN # 107386.01  
 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

# STREAM RELOCATION (STR-1) Permit Sketch



WILLIAM N. HENRY,  
ET.AL.  
TRACT NO. 11

BOARD OF  
PUBLIC  
UTILITIES OF  
THE CITY OF  
CLEVELAND  
TRACT NO. 12

STREAM IMPACTS WILL BE MITIGATED USING  
THE TENNESSEE STREAM MITIGATION PROGRAM.



APPLICATION BY:  
TENNESSEE DEPARTMENT OF TRANSPORTATION  
PE # 06007-1241-14  
PIN # 107386.01  
NEW INTERCHANGE ON S.R. 311  
AT STONE LAKE EXTENSION IN CLEVELAND  
FROM STA. 23+81.01 TO STA. 72+34.61  
BRADLEY COUNTY, TN

## STREAM RELOCATION (STR-1) Permit Sketch

### STANDARD STREAM RELOCATION:

1. THE NEW CHANNEL SHALL BE EXCAVATED AND STABILIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON PLANS), SEEDING, AND SOD SHOULD BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABILIZED, AND ONLY DURING A LOW-WATER PERIOD. STABILIZED MEANS THAT SPECIFIED ROCK AND EROSION CONTROL BLANKET OR FLEXIBLE CHANNEL LINER IS IN PLACE, AND SEEDING AND SOD ARE IN PLACE AND ESTABLISHED.

### 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 OR FLEXIBLE CHANNEL LINER, SEED, AND SOD 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.

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 HEADQUARTERS CONSTRUCTION OFFICE.

4. REQUESTS BY ANY AGENCY THAT WOULD REQUIRE THE MODIFICATION OF CHANNELS, DITCHES, ELEVATIONS, RIP-RAP OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFERRED TO THE TDOT ENVIRONMENTAL DIVISION VIA THE HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS.

### TREES:

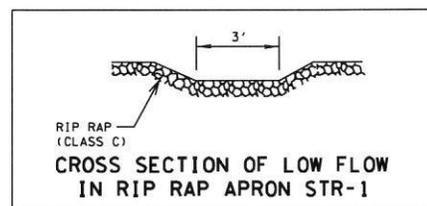
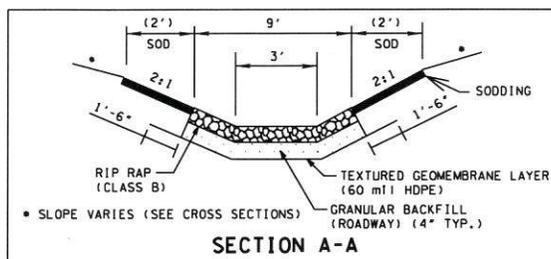
1. NO SUBSTITUTIONS OF PLANT SPECIES SHALL BE ALLOWED WITHOUT THE WRITTEN APPROVAL OF TDOT ENVIRONMENTAL DIVISION. TREES SHALL BE OF THE VARIETY REQUESTED AND FIRST QUALITY. NO CLONES OR CULTIVARS WILL BE ACCEPTED. ANY FOUND TO BE INCORRECT SPECIES, OR IMPROPERLY PLANTED, AT ANY TIME PRIOR TO TERMINATION 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 THE ENGINEER.

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

3. ALL PLANTS SHALL BE PLANTED AS PER SECTION 802.07 OF TDOT STANDARD SPECIFICATIONS FOR THE ROAD AND BRIDGE CONSTRUCTION.

4. PLANTS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.

5. IF THERE ARE OVERHEAD UTILITY LINES, ONLY SMALL TREES (MAXIMUM HEIGHT OF 20 - 25 FT) OR SHRUBS CAN BE PLANTED UNDER THE UTILITY LINES. THEY MUST ALSO BE PLANTED AT LEAST 15 FT AWAY FROM THE LINES, MEASURED HORIZONTALLY.



**NOTE:**  
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:

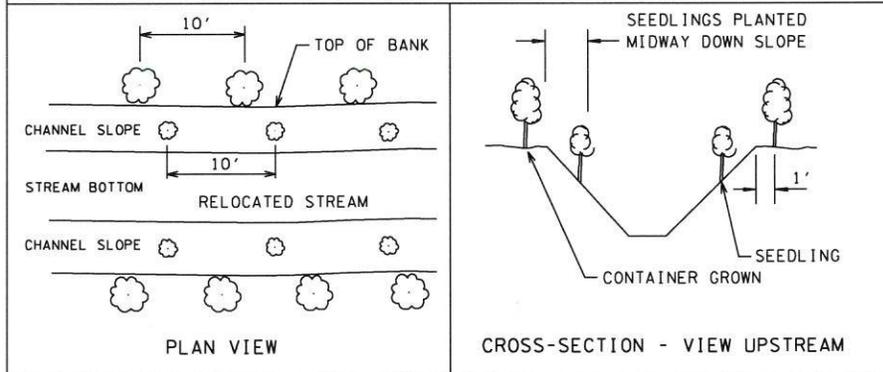
TENNESSEE DEPARTMENT OF TRANSPORTATION  
PE # 06007-1241-14  
PIN # 107386.01  
NEW INTERCHANGE ON S.R. 311  
AT STONE LAKE EXTENSION IN CLEVELAND  
FROM STA. 23+81.01 TO STA. 72+34.61  
BRADLEY COUNTY, TN

## STREAM RELOCATION (STR-1) Permit Sketch

| STREAM IMPACT TABLE (STR-1)                 |  |           |
|---|--|-----------|
| EXISTING                                    |  |           |
| OPEN STREAM                                 |  | 1808 FT.  |
| STRUCTURE 36" RCP (TO REMAIN)               |  | 174.5 FT. |
| INCLUDES: EXIST. HEADWALLS (TO BE REMOVED)  |  |           |
| TOTAL EXISTING STRUCTURE (TO BE REMOVED)    |  | 234.5 FT. |
| INCLUDES: EXIST. HEADWALLS (TO BE REMOVED)  |  |           |
| TOTAL EXISTING STRUCTURE                    |  | 409 FT.   |
| TOTAL EXISTING LENGTH                       |  | 2217 FT.  |
| PROPOSED                                    |  |           |
| OPEN STREAM                                 |  | 1266 FT.  |
| INCLUDES: INCLUDES RIP RAP DITCHES & APRONS |  |           |
| STRUCTURE 30" PIPE CULVERT                  |  | 410 FT.   |
| INCLUDES: 4 - U TYPE ENDWALLS 41.7 FT.      |  |           |
| STRUCTURE 36" RCP                           |  | 92 FT.    |
| INCLUDES: 2 - U TYPE ENDWALLS 47.3 FT.      |  |           |
| 2 - NO. 2 JBS 10.7 FT.                      |  |           |
| STRUCTURE EXIST. 36" RCP (TO REMAIN)        |  | 174.5 FT. |
| INCLUDES: EXIST. HEADWALLS (TO BE REMOVED)  |  |           |
| STRUCTURE 48" PIPE CULVERT                  |  | 132 FT.   |
| INCLUDES: 1 - U TYPE ENDWALL 15.4 FT.       |  |           |
| TOTAL PROPOSED STRUCTURE                    |  | 924 FT.   |
| TOTAL PROPOSED LENGTH                       |  | 2190 FT.  |

STR-1 surface area:  
Permanent impact= 0.33 acre  
Temporary impact =0.0 acre

### SPACING FOR PLANTING ALONG RELOCATED STREAMS



### ESTIMATED TREE QUANTITIES FOR STR-1

| ITEM NO.  | DESCRIPTION  | UNIT | QUANTITY |
|-----------|--|------|----------|
| 802-02.30 | CUTTINGS: SALIX NIGRA (BLACK WILLOW, 18IN-24IN LENGTH)   | EACH | 56       |
| 802-02.33 | CUTTINGS: SAMBUCUS CANADENSIS (ELDERBERRY, 18IN-24IN)    | EACH | 56       |
| 802-12.12 | CORNUS FLORIDA (FLOWERING DOGWOOD SEEDLING B.R.)         | EACH | 55       |
| 802-13.06 | HYDRANGEA QUERCIFOLIA (OAKLF HYDRANGEA 2-5FT CNTNR GRWN) | EACH | 111      |
| 802-13.08 | ITEA VIRGINICA (VIRGINIA SWEETSPIRE 2-5FT CNTNR GRWN)    | EACH | 111      |
| 802-13.23 | RHODODENDRON CANESCENS (WILD AZALEA SDLING BR)           | EACH | 55       |
| TOTAL     |  |      | 444      |

#### APPLICATION BY:

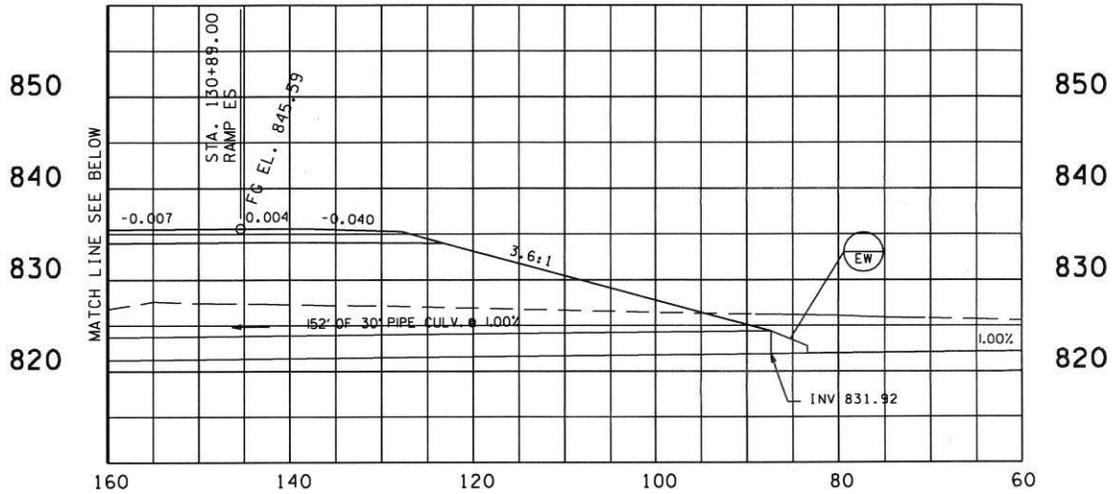
TENNESSEE DEPARTMENT OF TRANSPORTATION  
PE # 06007-1241-14  
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NEW INTERCHANGE ON S.R. 311  
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FROM STA. 23+81.01 TO STA. 72+34.61  
BRADLEY COUNTY, TN

DATE: 8/20/13

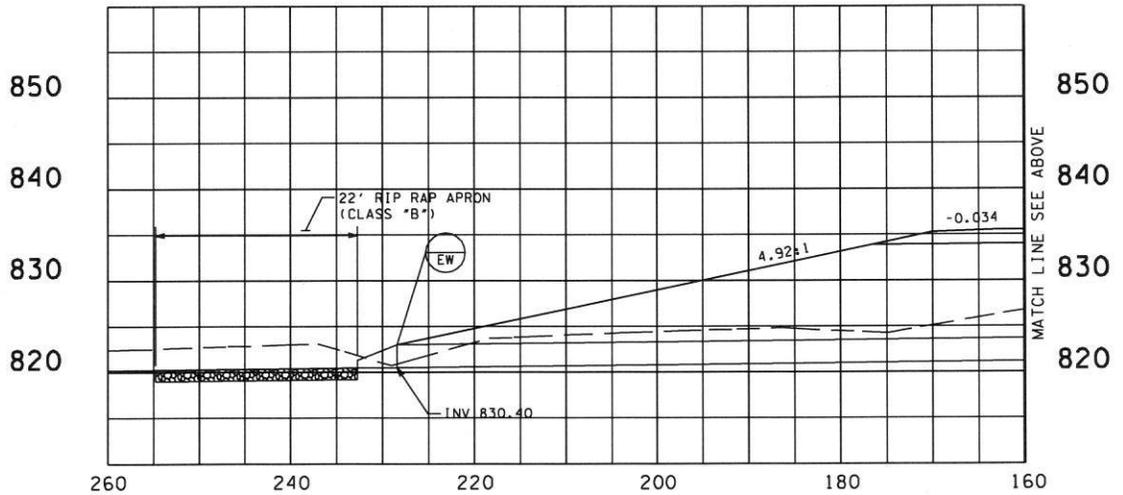
REVISED: / /

SHEET 8 OF 37

## STREAM RELOCATION (STR-1) Permit Sketch

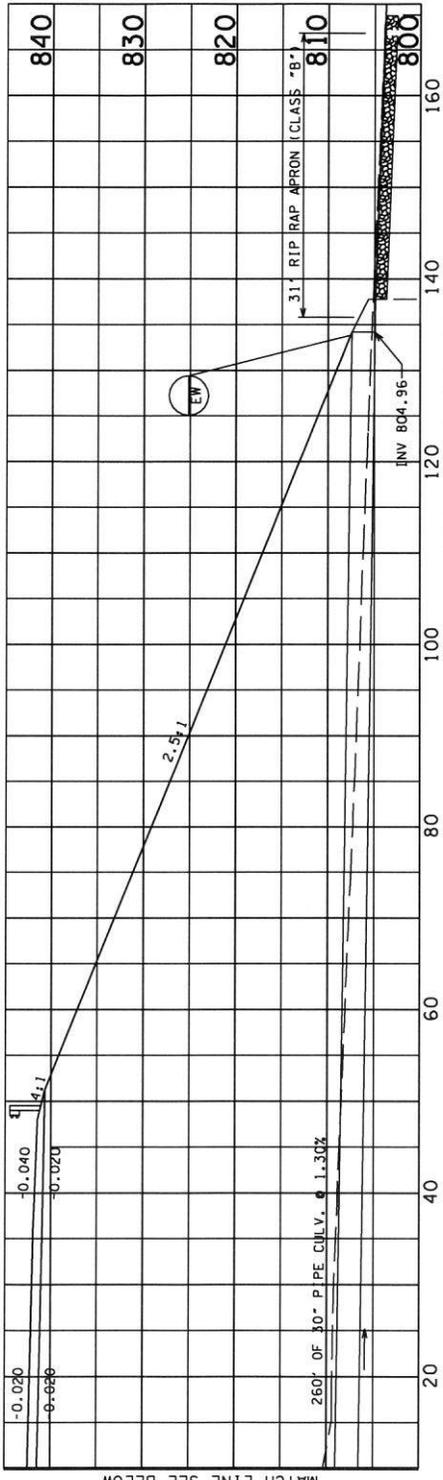


STA. 130+89.00  
 (RAMP ES)  
 152' OF 30" PIPE CULVERT  
 SKEW 60°00'00" LT  
 ENDWALLS REOD. : 2-TYPE "U"  
 STD. DWG. NOS. D-PE-4B(1), D-PE-4B(2)  
 D.A. = 5.0 AC.  
 050 = 21.4 CFS  
 0100 = 23.6 CFS  
 W.S. ELEV. (50) = 834.35  
 W.S. ELEV. (100) = 834.53



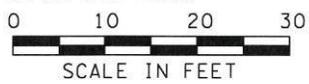
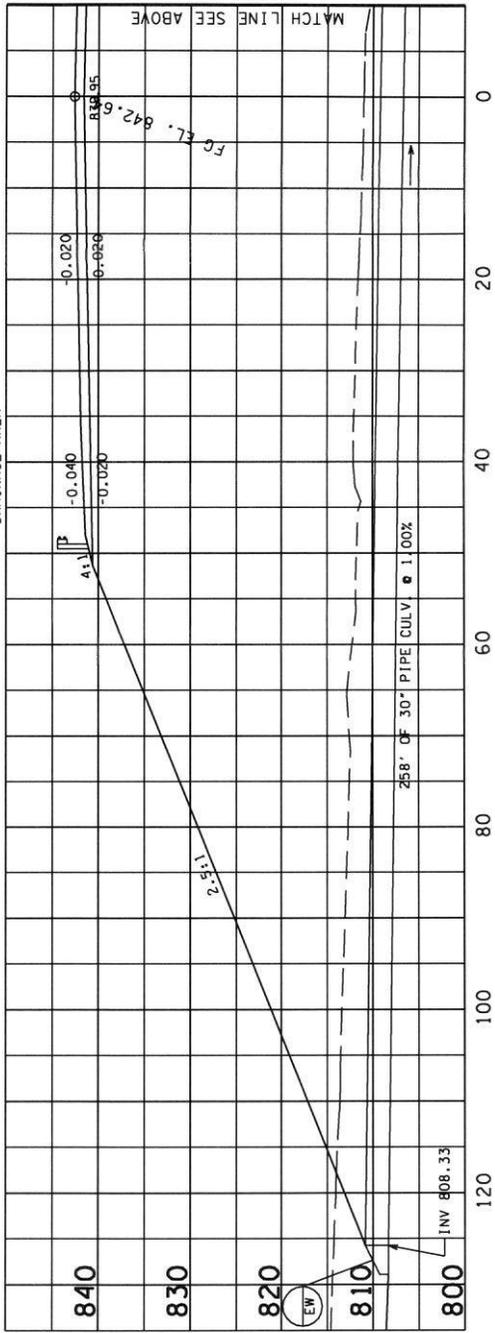
APPLICATION BY:  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
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 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

# STREAM RELOCATION (STR-1) Permit Sketch



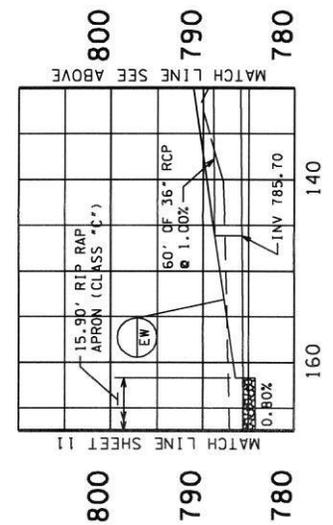
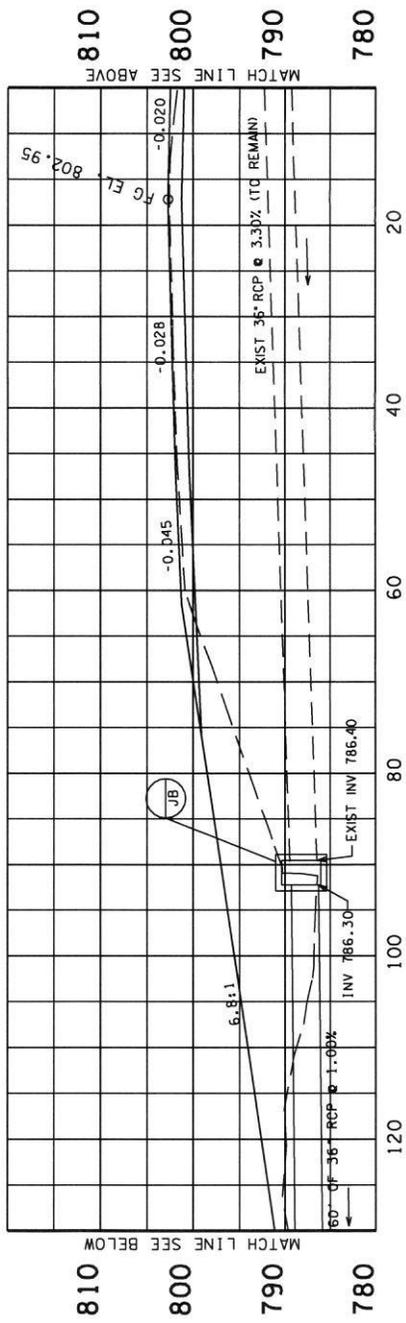
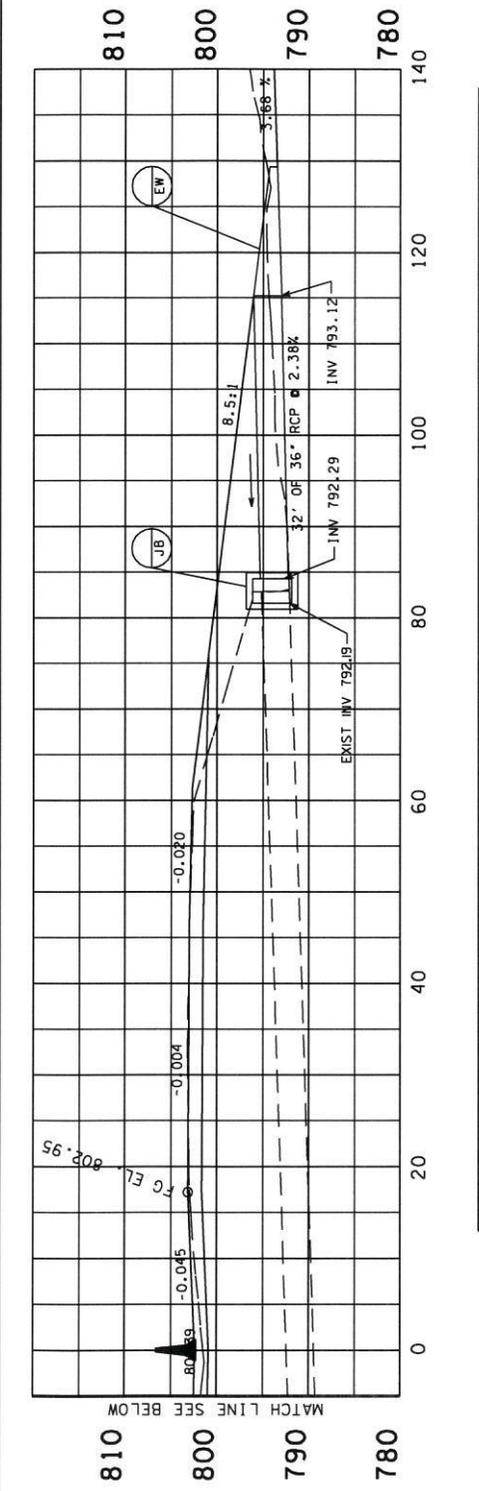
STA. 108+50.00  
(RELOCATED STONE LAKE ROAD)

- 260' OF 30" PIPE CULVERT
- SKEW 90°00'00" LT
- ENDWALLS REOD. : 2-TYPE "U"
- STD. DWG. NO. D-PE-4
- D.A. = 4.2 AC.
- \*050 = 45.5 CFS
- \*0100 = 50.9 CFS
- W.S. ELEV. (50) = 813.39
- W.S. ELEV. (100) = 814.23
- \* 050 & 0100 ARE BASED ON CUMULATIVE DRAINAGE AREA



APPLICATION BY:  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
 PE # 06007-1241-14  
 PIN # 107386.01  
 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

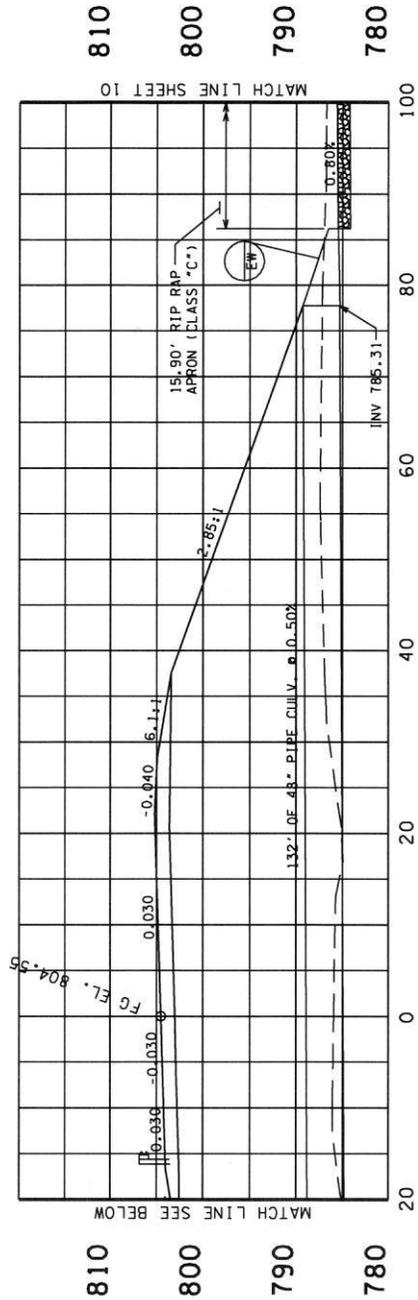
# STREAM RELOCATION (STR-1) Permit Sketch



STA. 42+56.44  
 (S.R. 311)  
 60' LT OF 36" RCP, 32' RT OF 36" RCP  
 SKEW 54°32'30" LT  
 ENDWALLS RECD. : 2-TYPE "U"  
 STD. DNG. NOS. D-JBS-2, D-PE-6B(1), D-PE-6B(2)  
 D.A. = 2.7 AC.  
 •050 = 57.8 CFS  
 •0100 = 64.6 CFS  
 W.S. ELEV. (50) = 797.75  
 W.S. ELEV. (100) = 798.40  
 • 050 & 0100 ARE BASED ON CUMULATIVE DRAINAGE AREA

APPLICATION BY:  
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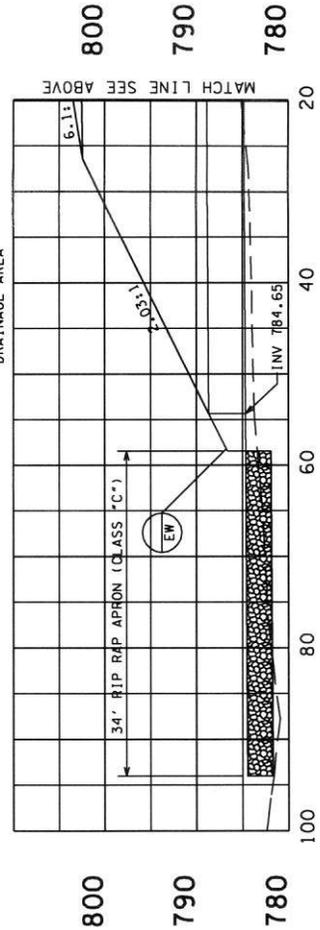
# STREAM RELOCATION (STR-1) Permit Sketch



**STA. 343+84.00  
(RAMP WN)**

- 132' OF 48" PIPE CULVERT
- SKEW 80°00'00" LT
- ENDWALLS REOD. : 1-TYPE "U", 1-TYPE "A"
- STD. DWG. NOS. D-PE-38(1), D-PE-38(2), D-PE-1
- D.A. = 5.4 AC.
- \*050 = 108.6 CFS
- \*0100 = 121.1 CFS
- W.S. ELEV. (50) = 790.96
- W.S. ELEV. (100) = 791.66

\* 050 & 0100 ARE BASED ON CUMULATIVE DRAINAGE AREA



**APPLICATION BY:**

TENNESSEE DEPARTMENT OF TRANSPORTATION  
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 BRADLEY COUNTY, TN

# WETLAND FILL & POND FILL (WTL-4 & PND-1/STR-3) Permit Sketch

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

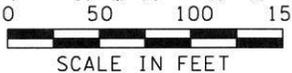
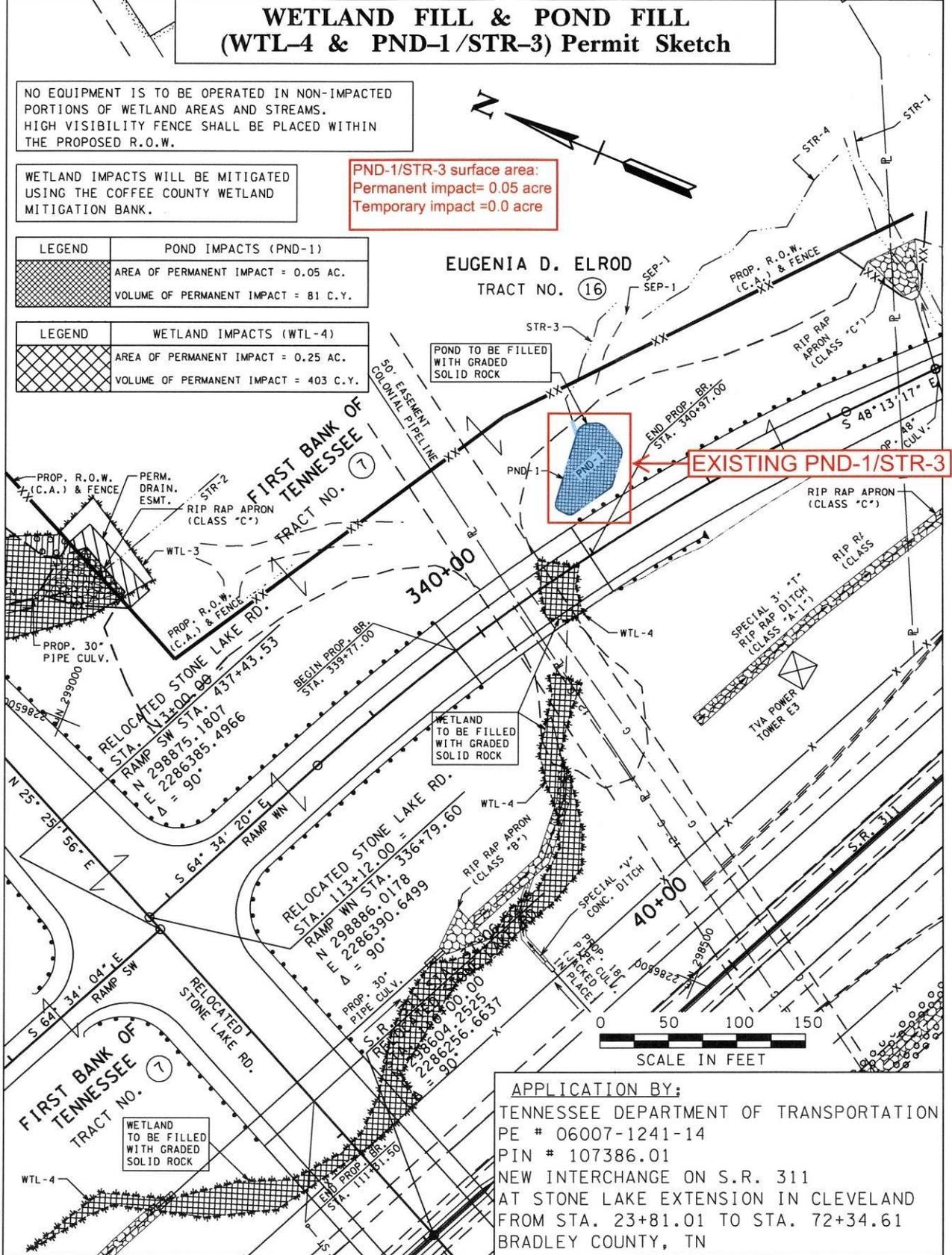
WETLAND IMPACTS WILL BE MITIGATED USING THE COFFEE COUNTY WETLAND MITIGATION BANK.

PND-1/STR-3 surface area:  
Permanent impact= 0.05 acre  
Temporary impact=0.0 acre



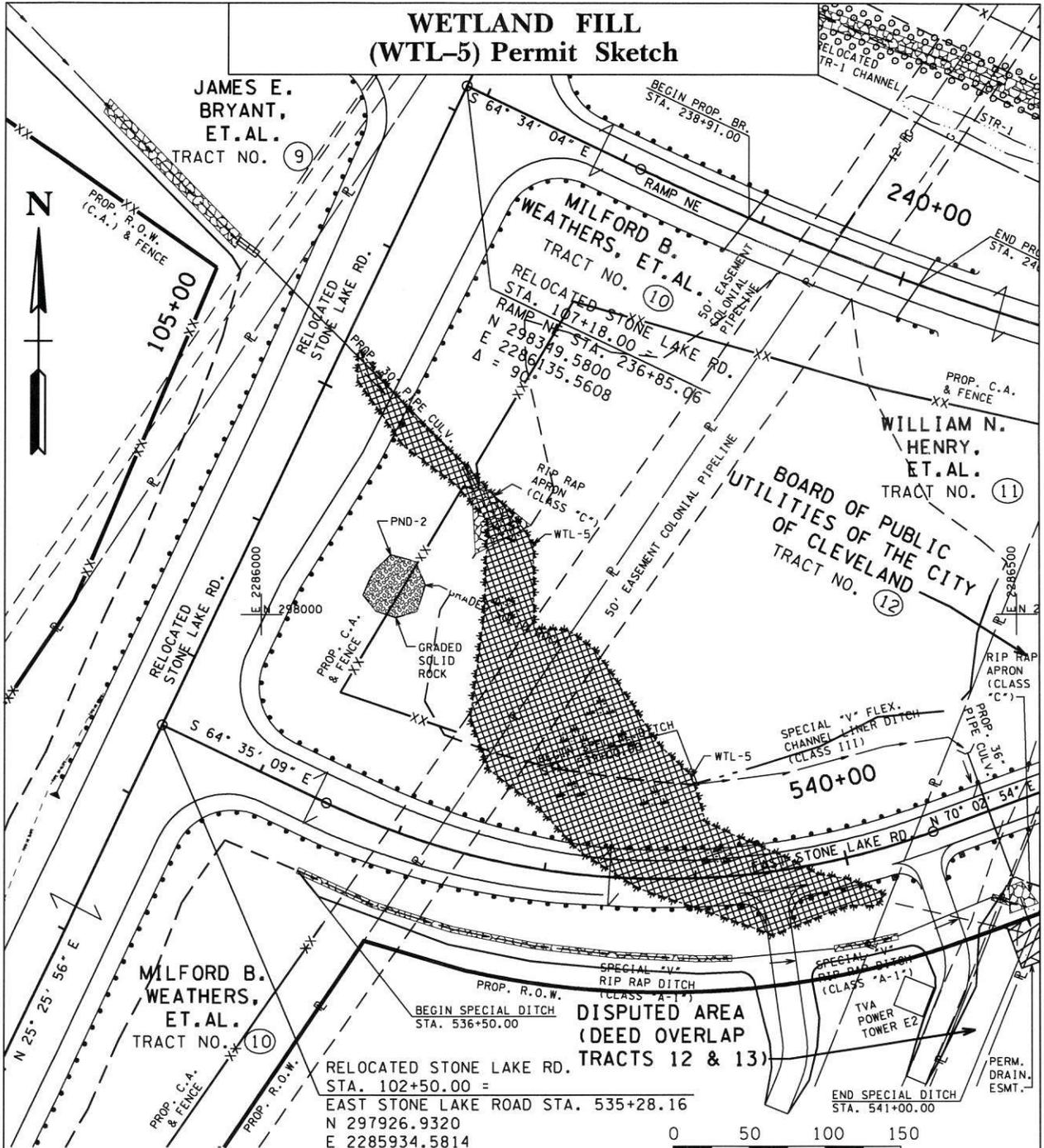
| LEGEND |  | POND IMPACTS (PND-1)                 |  |
|--------|--|--------------------------------------|--|
|        |  |                                      |  |
|        |  | AREA OF PERMANENT IMPACT = 0.05 AC.  |  |
|        |  | VOLUME OF PERMANENT IMPACT = 81 C.Y. |  |

| LEGEND |  | WETLAND IMPACTS (WTL-4)               |  |
|--------|--|---------------------------------------|--|
|        |  |                                       |  |
|        |  | AREA OF PERMANENT IMPACT = 0.25 AC.   |  |
|        |  | VOLUME OF PERMANENT IMPACT = 403 C.Y. |  |



APPLICATION BY:  
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 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

# WETLAND FILL (WTL-5) Permit Sketch



WETLAND IMPACTS WILL BE MITIGATED USING THE COFFEE COUNTY WETLAND MITIGATION BANK.

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

| LEGEND | WETLAND IMPACTS (WTL-5)               |
|--------|---------------------------------------|
|        | AREA OF PERMANENT IMPACT = 0.59 AC.   |
|        | VOLUME OF PERMANENT IMPACT = 952 C.Y. |

**APPLICATION BY:**  
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 BRADLEY COUNTY, TN

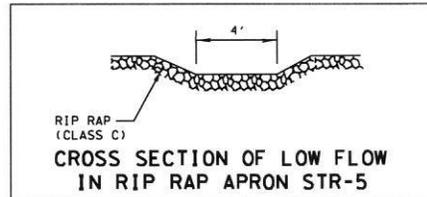


## STREAM ENCAPSULATION (STR-5) Permit Sketch

| STREAM IMPACT TABLE (STR-5) |   |          |         |
|-----------------------------|---|----------|---------|
| EXISTING                    |   |          |         |
| OPEN STREAM                 |   |          | 209 FT. |
| STRUCTURE                   | 48" RCP (TO REMAIN)                       |          | 196 FT. |
|                             | INCLUDES: EXIST. ENDWALL (TO BE REMOVED)  |          |         |
| STRUCTURE                   | 48" RCP (TO BE REMOVED)                   |          | 110 FT. |
|                             | INCLUDES: EXIST. ENDWALLS (TO BE REMOVED) |          |         |
| TOTAL EXISTING STRUCTURE    |   |          | 306 FT. |
| TOTAL EXISTING LENGTH       |   |          | 515 FT. |
| PROPOSED                    |   |          |         |
| OPEN STREAM                 |   |          | 9 FT.   |
|                             | INCLUDES: CLASS "C" RIP RAP APRON         | 29 FT.   |         |
| STRUCTURE                   | 48" RCP                                   |          | 252 FT. |
|                             | INCLUDES: 1 - U TYPE ENDWALL              | 15.4 FT. |         |
|                             | 2 - NO. 3 JBS                             | 13.7 FT. |         |
| TOTAL PROPOSED STRUCTURE    |   |          | 281 FT. |
| TOTAL PROPOSED LENGTH       |   |          | 319 FT. |

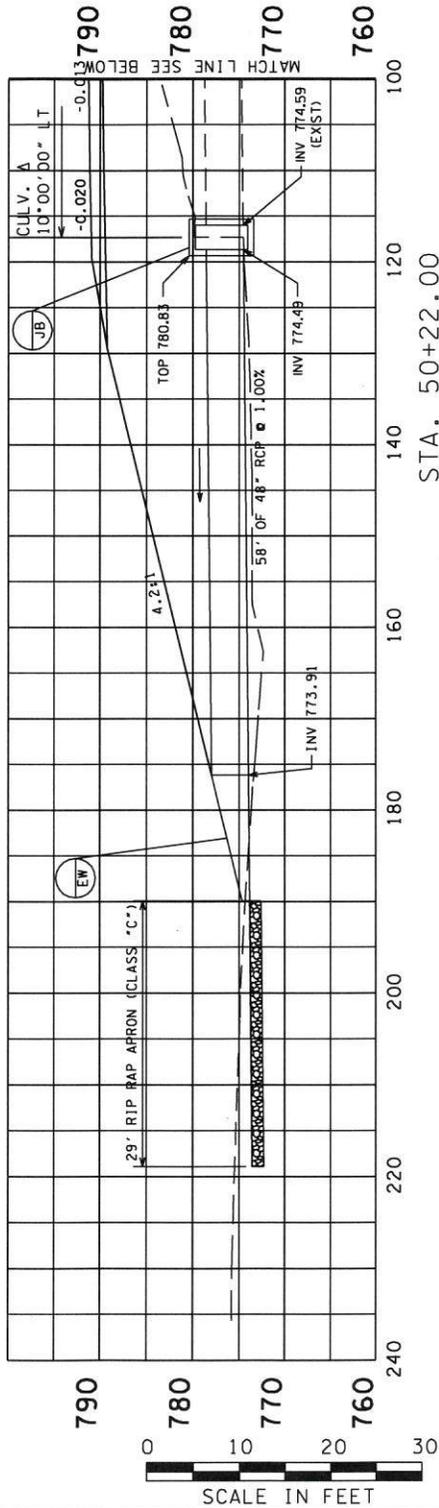
STR-5 surface area:  
 Permanent impact= 0.03 acre  
 Temporary impact =0.0 acre

NOTE:  
 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.



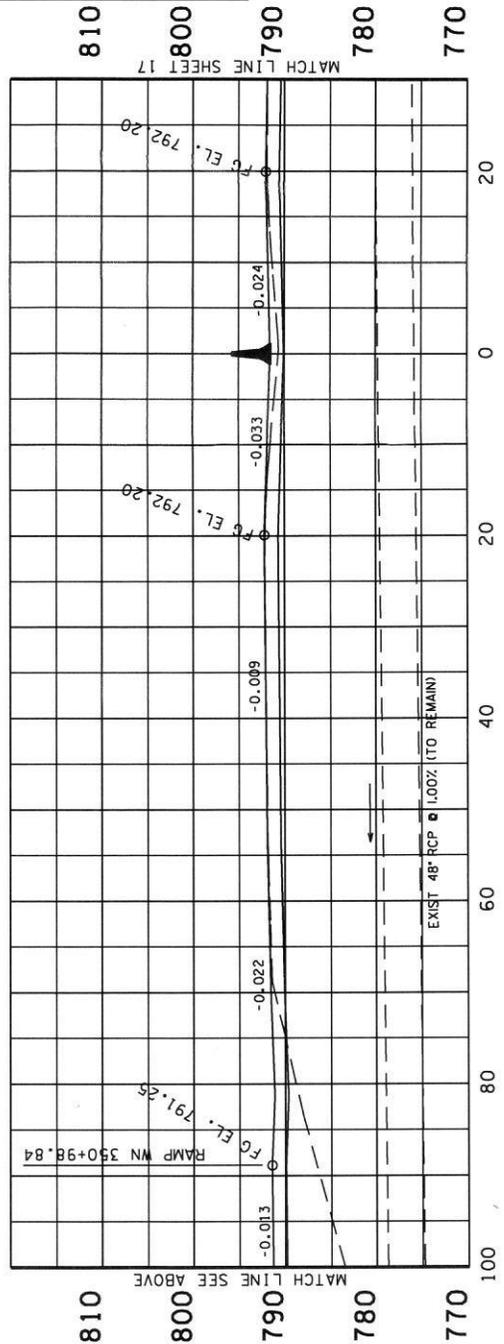
APPLICATION BY:  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
 PE # 06007-1241-14  
 PIN # 107386.01  
 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

# STREAM ENCAPSULATION (STR-5) Permit Sketch



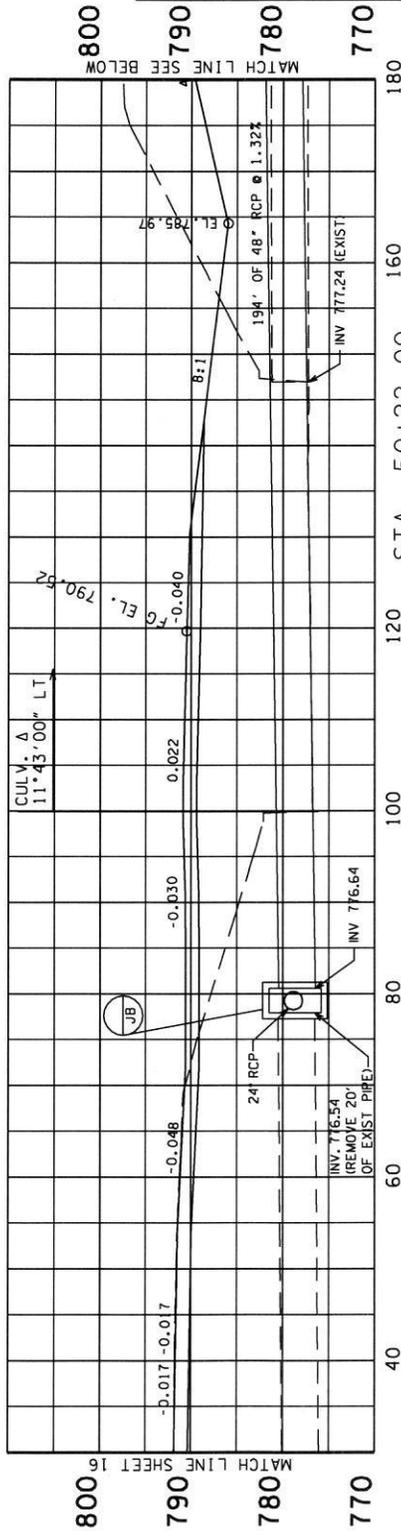
**STA. 50+22.00**  
**(S.R. 311)**

58' LT, 194' RT OF 48" RCP  
 SKEW 45°00'00"  
 ENDWALLS REOD. : 1-TYPE "U", 1-TYPE "A"  
 STD. DWG. NOS. D-PE-1, D-PE-3B(1), D-PE-3B(2), D-JBS-3  
 D.A. = 83.3 AC.  
 050 = 82.9 CFS  
 Q100 = 96.7 CFS  
 W.S. ELEV. (50) = 783.66  
 W.S. ELEV. (100) = 784.27



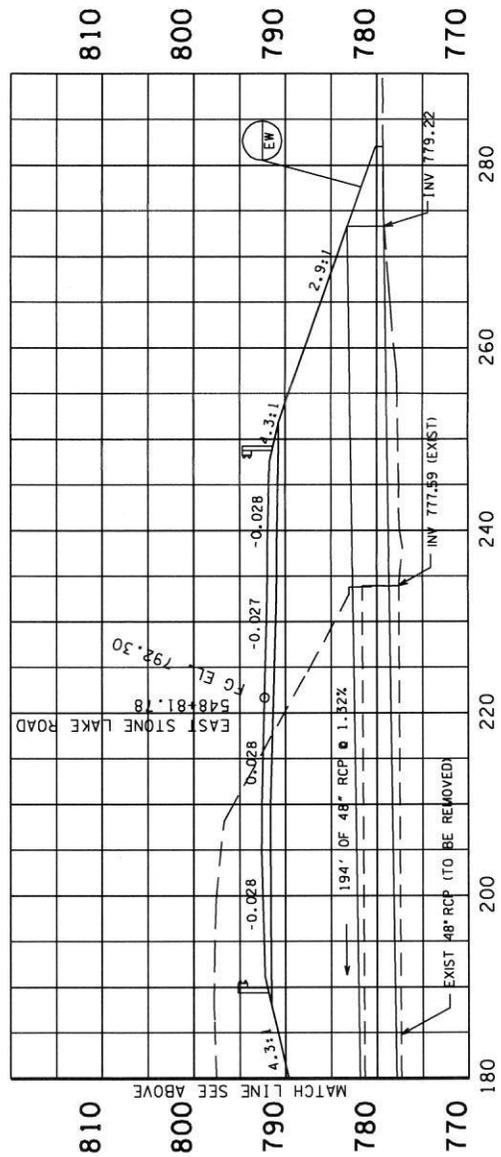
**APPLICATION BY:**  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
 PE # 06007-1241-14  
 PIN # 107386.01  
 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

# STREAM ENCAPSULATION (STR-5) Permit Sketch



STA. 50+22.00  
(S.R. 311)

58' LT, 194' RT OF 48" RCP  
SKEW 45°00'00"  
ENDWALLS REOD. : 1-TYPE "U", 1-TYPE "A"  
STD. DWG. NOS. D-PE-1, D-PE-3B(1), D-PE-3B(2), D-JBS-3  
D.A. = 83.3 AC.  
O&O = 82.9 CFS  
O100 = 96.7 CFS  
W.S. ELEV. (50) = 783.66  
W.S. ELEV. (100) = 784.27



APPLICATION BY:  
TENNESSEE DEPARTMENT OF TRANSPORTATION  
PE # 06007-1241-14  
PIN # 107386.01  
NEW INTERCHANGE ON S.R. 311  
AT STONE LAKE EXTENSION IN CLEVELAND  
FROM STA. 23+81.01 TO STA. 72+34.61  
BRADLEY COUNTY, TN

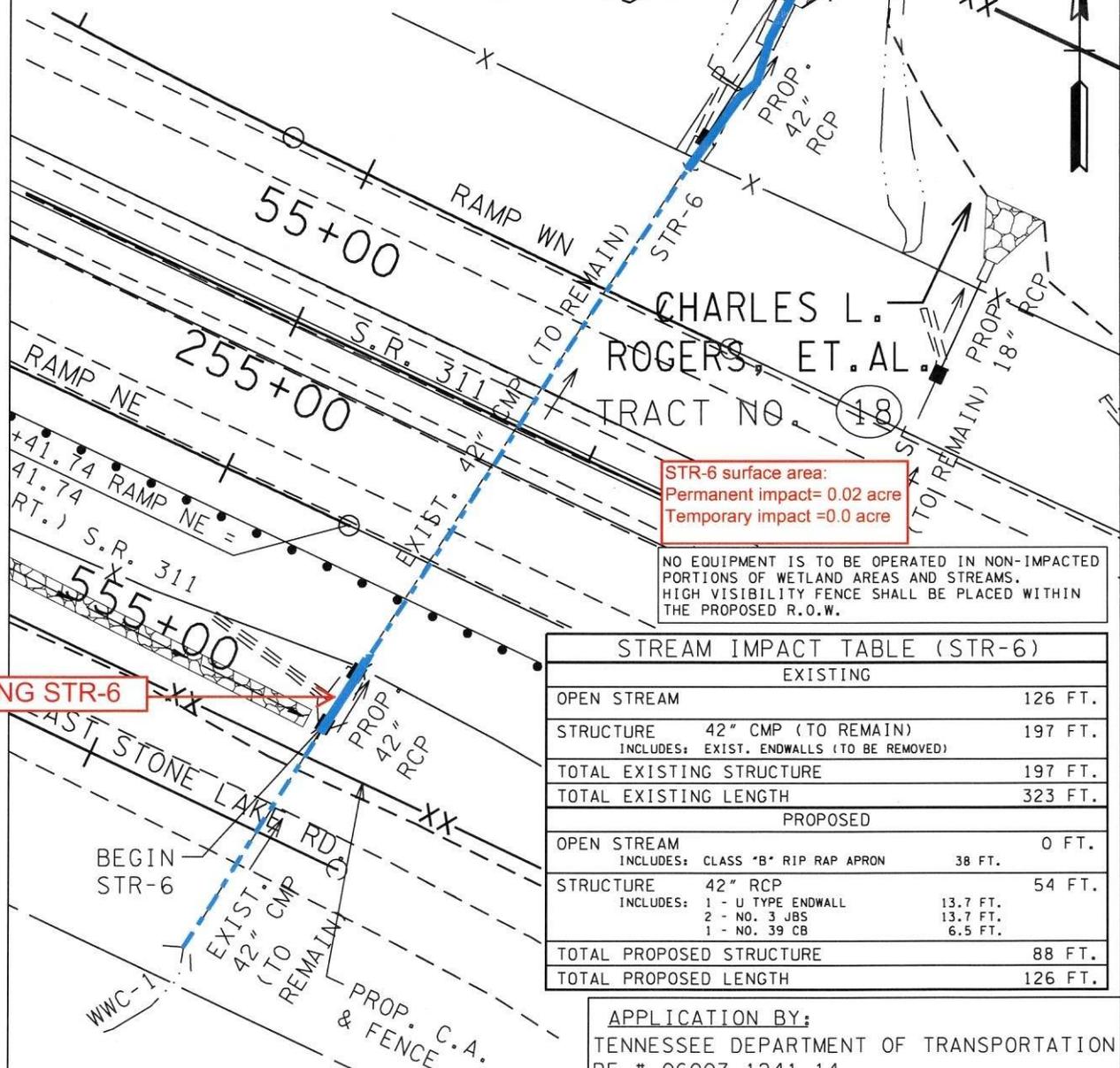
**STREAM ENCAPSULATION  
(STR-6) Permit Sketch**

OWEN M. CARTER,  
ET. AL.  
TRACT NO. (17)

RIP RAP APRON  
(CLASS "B")

**EXISTING STR-6**

PERM.  
DRAIN.  
ESMT.



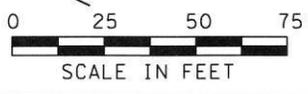
**STR-6 surface area:**  
Permanent impact= 0.02 acre  
Temporary impact =0.0 acre

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

| STREAM IMPACT TABLE (STR-6)               |                     |         |
|---|---------------------|---------|
| EXISTING                                  |                     |         |
| OPEN STREAM                               |                     | 126 FT. |
| STRUCTURE                                 | 42" CMP (TO REMAIN) | 197 FT. |
| INCLUDES: EXIST. ENDWALLS (TO BE REMOVED) |                     |         |
| TOTAL EXISTING STRUCTURE                  |                     | 197 FT. |
| TOTAL EXISTING LENGTH                     |                     | 323 FT. |
| PROPOSED                                  |                     |         |
| OPEN STREAM                               |                     | 0 FT.   |
| INCLUDES: CLASS "B" RIP RAP APRON 38 FT.  |                     |         |
| STRUCTURE                                 | 42" RCP             | 54 FT.  |
| INCLUDES: 1 - U TYPE ENDWALL 13.7 FT.     |                     |         |
| 2 - NO. 3 JBS 13.7 FT.                    |                     |         |
| 1 - NO. 39 CB 6.5 FT.                     |                     |         |
| TOTAL PROPOSED STRUCTURE                  |                     | 88 FT.  |
| TOTAL PROPOSED LENGTH                     |                     | 126 FT. |

**EXISTING STR-6**

DONALD N.  
ERVIN



STREAM IMPACTS WILL BE MITIGATED USING THE TENNESSEE STREAM MITIGATION PROGRAM.

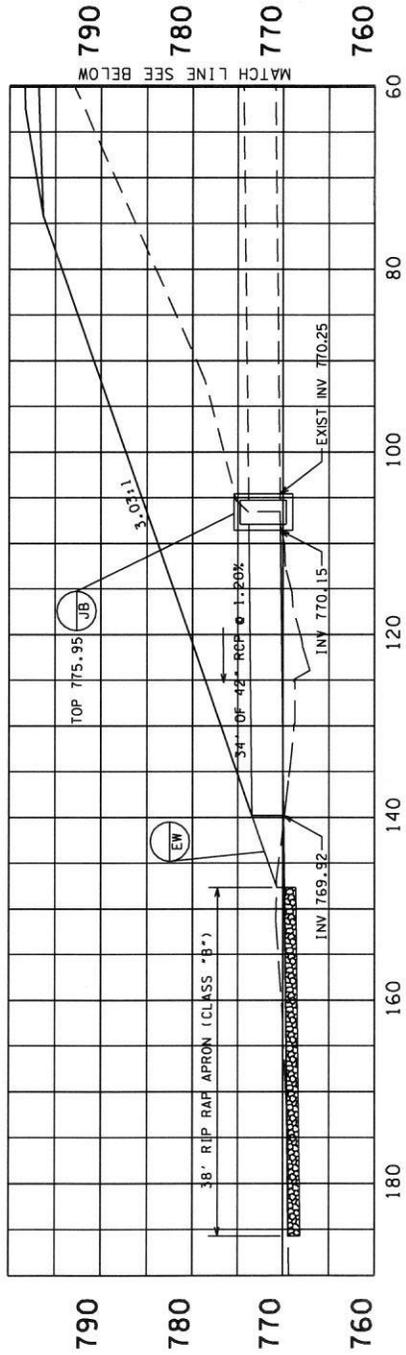
APPLICATION BY:  
TENNESSEE DEPARTMENT OF TRANSPORTATION  
PE # 06007-1241-14  
PIN # 107386.01  
NEW INTERCHANGE ON S.R. 311  
AT STONE LAKE EXTENSION IN CLEVELAND  
FROM STA. 23+81.01 TO STA. 72+34.61  
BRADLEY COUNTY, TN

DATE: 2/14/13

REVISED: 8/20/13

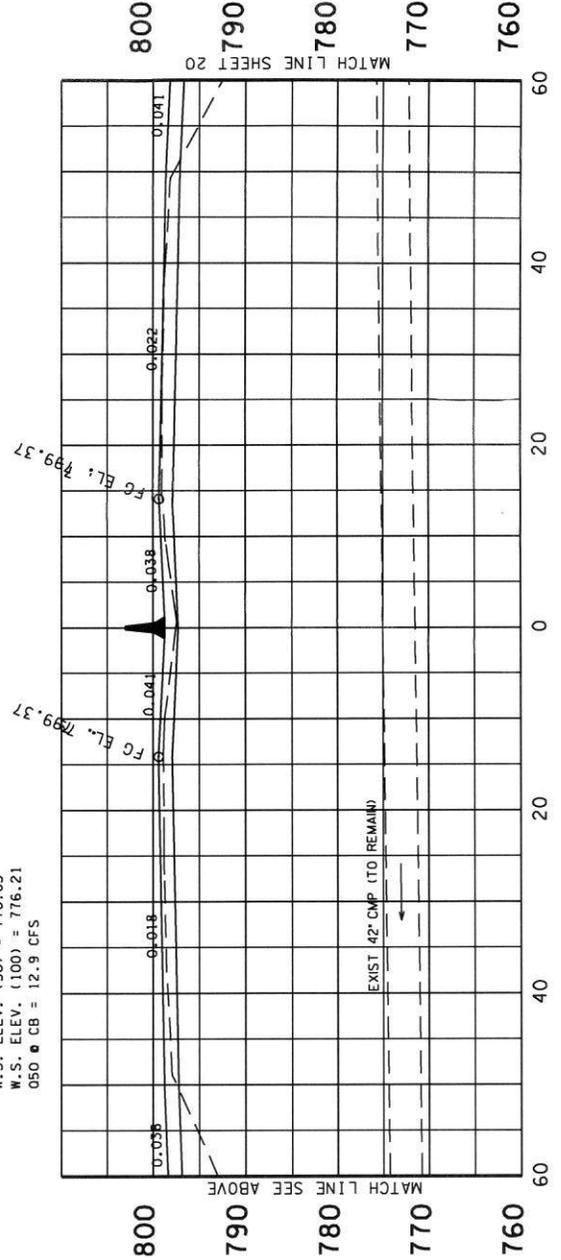
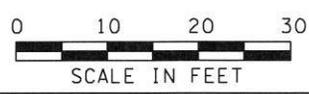
SHEET 19 OF 37

# STREAM ENCAPSULATION (STR-6) Permit Sketch



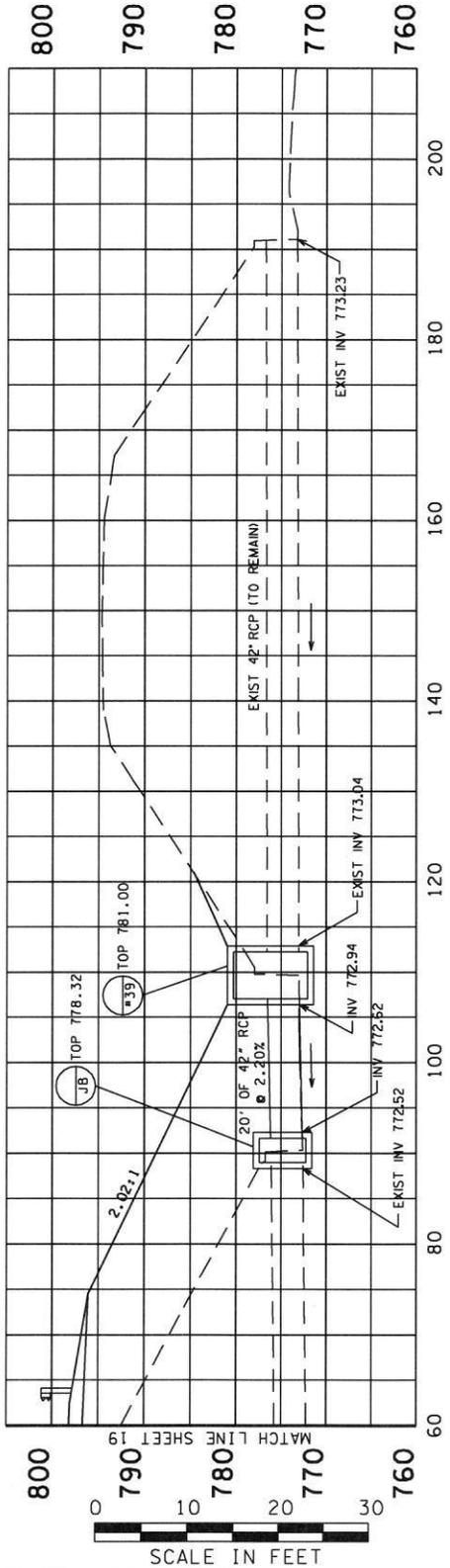
STA. 55+76.10 (S.R. 311)

34' LT, 20' RT OF 42" RCP  
 SKEW 82°26'00" LT  
 ENDWALLS REOD. : 1-TYPE "U"  
 STD. DWG. NOS. D-CB-395C, D-PE-3B(1), D-PE-3B(2), D-JBS-3  
 D.A. = 46.1 AC.  
 Q50 = 36.6 CFS  
 Q100 = 40.3 CFS  
 W.S. ELEV. (50) = 776.03  
 W.S. ELEV. (100) = 776.21  
 050 @ CB = 12.9 CFS



APPLICATION BY:  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
 PE # 06007-1241-14  
 PIN # 107386.01  
 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

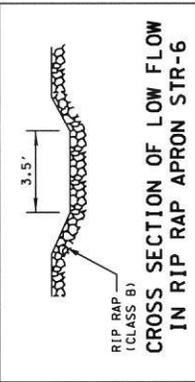
# STREAM ENCAPSULATION (STR-6) Permit Sketch



STA. 55+76.10 (S.R. 311)

34' LT, 20' RT OF 42" RCP  
 SKEW 82°26'00" LT  
 ENDWALLS R.O.D. : 1-TYPE "U"  
 STD. D.M.G. NOS. D-CB-395C, D-PE-38(1), D-PE-38(2), D-JBS-3  
 D.A. = 46.1 AC.  
 O50 = 36.6 CFS  
 O100 = 40.3 CFS  
 W.S. ELEV. (50) = 776.03  
 W.S. ELEV. (100) = 776.21  
 O50 @ CB = 12.9 CFS

NOTE:  
 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.

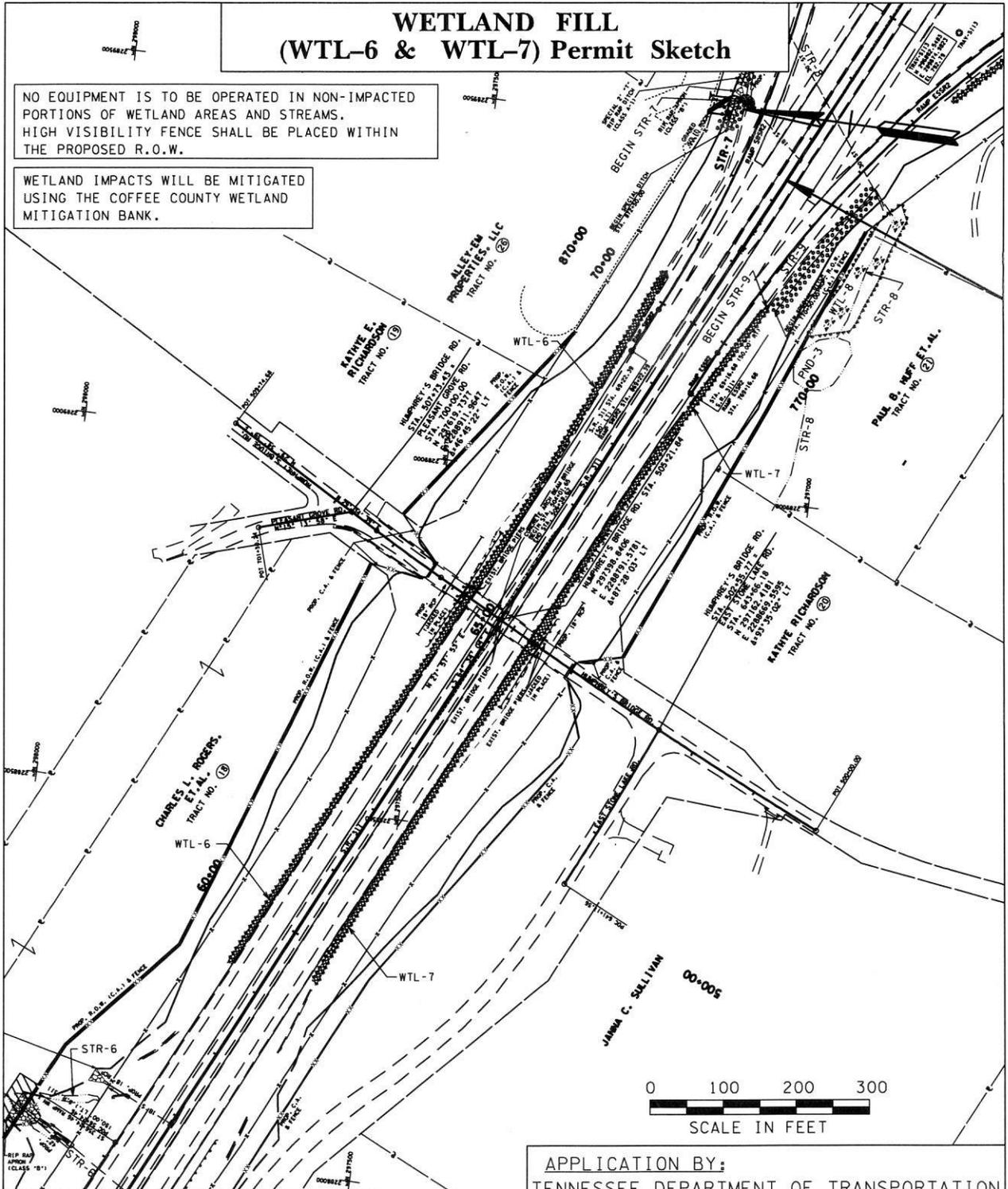


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 BRADLEY COUNTY, TN

# WETLAND FILL (WTL-6 & WTL-7) Permit Sketch

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

WETLAND IMPACTS WILL BE MITIGATED USING THE COFFEE COUNTY WETLAND MITIGATION BANK.

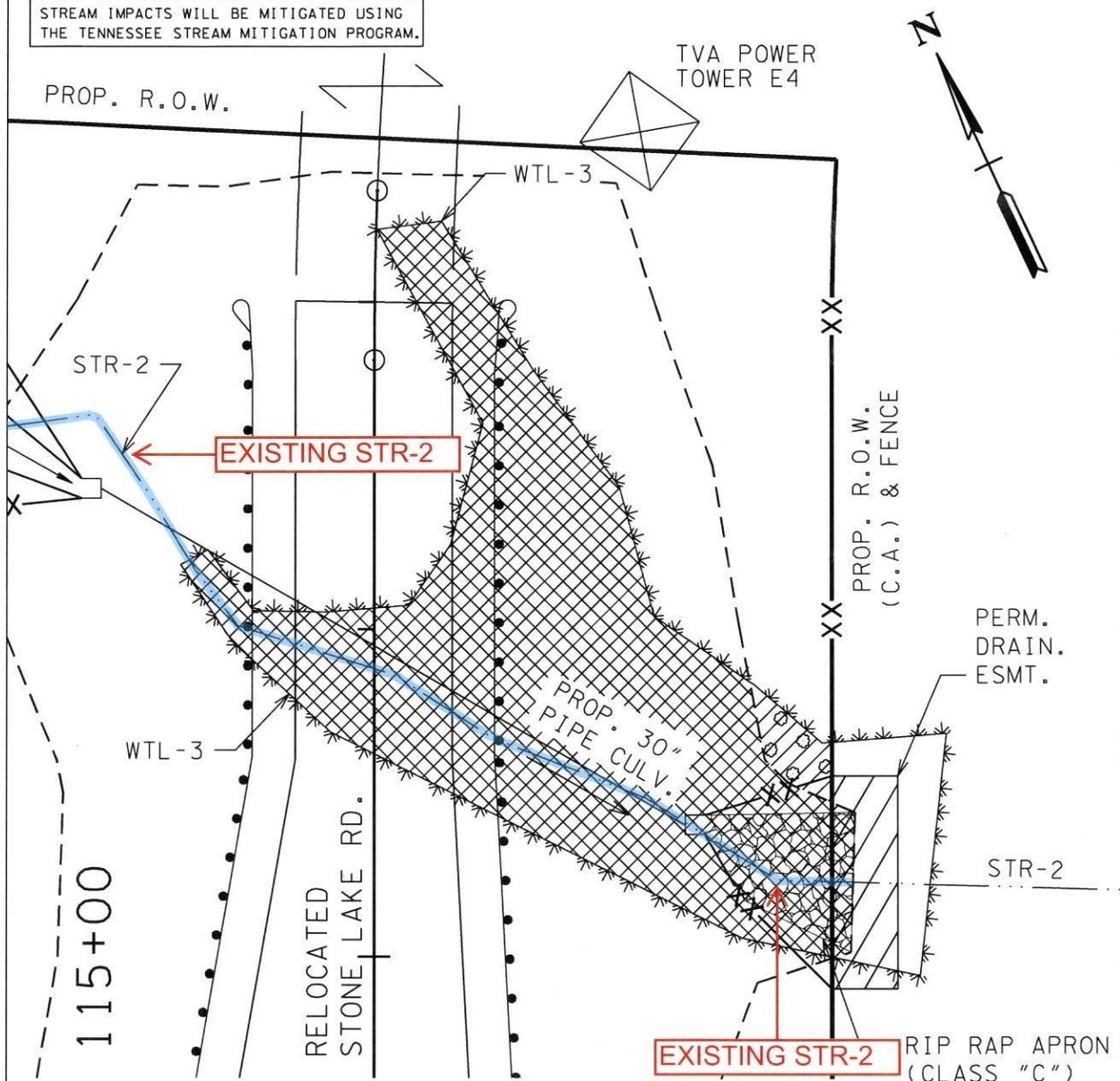


|        |                                       |
|--------|---------------------------------------|
| LEGEND | WETLAND IMPACTS (WTL-6)               |
|        | AREA OF PERMANENT IMPACT = 0.15 AC.   |
|        | VOLUME OF PERMANENT IMPACT = 242 C.Y. |
| LEGEND | WETLAND IMPACTS (WTL-7)               |
|        | AREA OF PERMANENT IMPACT = 0.15 AC.   |
|        | VOLUME OF PERMANENT IMPACT = 242 C.Y. |

APPLICATION BY:  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
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 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

# WETLAND FILL & STREAM ENCAPSULATION (WTL-3 & STR-2) Permit Sketch

STREAM IMPACTS WILL BE MITIGATED USING THE TENNESSEE STREAM MITIGATION PROGRAM.



NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.



WETLAND IMPACTS WILL BE MITIGATED USING THE COFFEE COUNTY WETLAND MITIGATION BANK.

| LEGEND | WETLAND IMPACTS (WTL-3)  |
|--------|--|
|        | AREA OF PERMANENT IMPACT = 0.36 AC.<br>VOLUME OF PERMANENT IMPACT = 581 C.Y. |
|        | AREA OF TEMPORARY IMPACT = 0.01 AC.<br>VOLUME OF TEMPORARY IMPACT = 16 C.Y.  |

**APPLICATION BY:**  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
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 PIN # 107386.01  
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 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

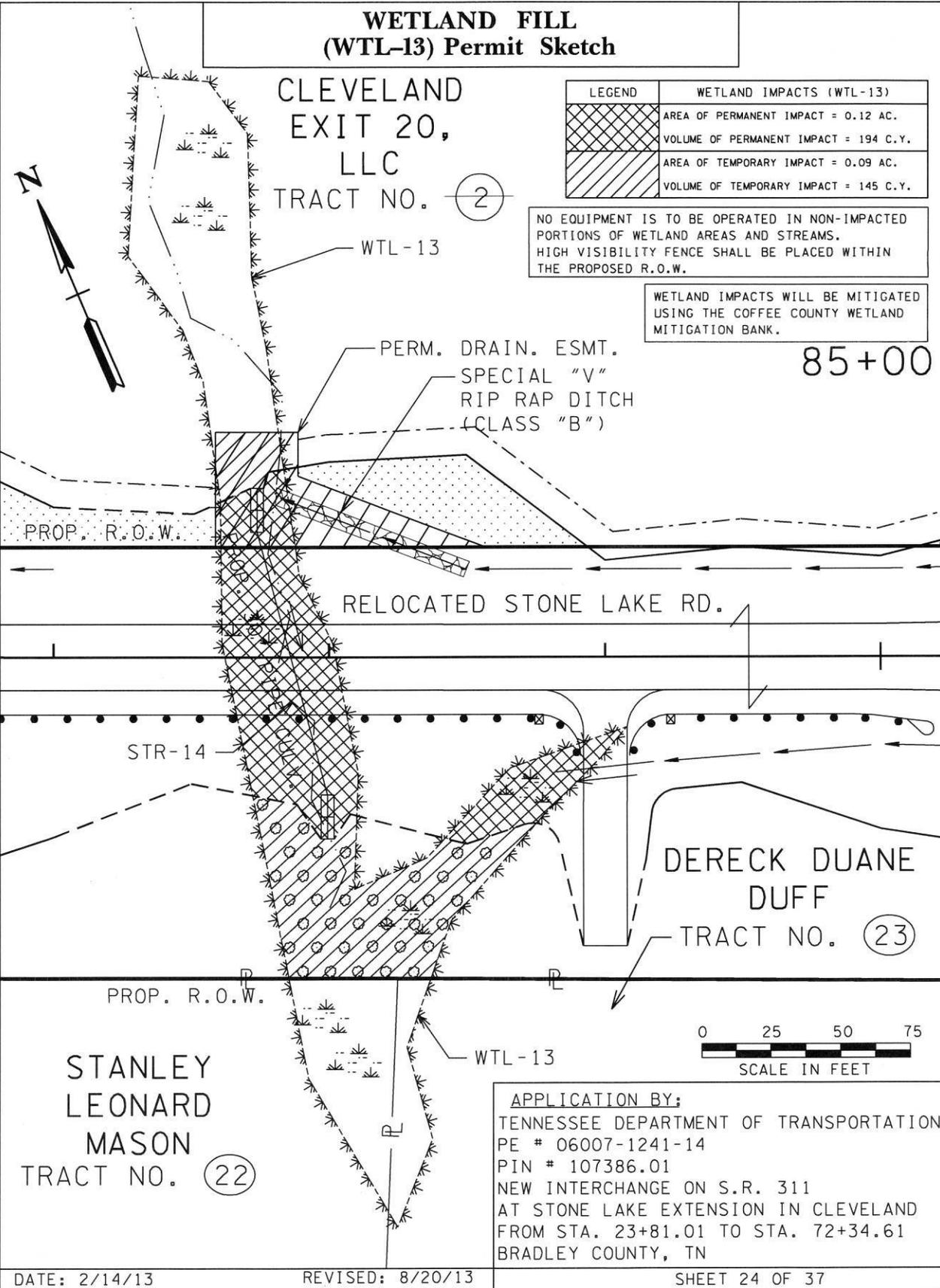
**WETLAND FILL  
(WTL-13) Permit Sketch**

CLEVELAND  
EXIT 20,  
LLC  
TRACT NO. (2)

| LEGEND   | WETLAND IMPACTS (WTL-13)   |
|--|--|
|  | AREA OF PERMANENT IMPACT = 0.12 AC.<br>VOLUME OF PERMANENT IMPACT = 194 C.Y. |
|  | AREA OF TEMPORARY IMPACT = 0.09 AC.<br>VOLUME OF TEMPORARY IMPACT = 145 C.Y. |

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

WETLAND IMPACTS WILL BE MITIGATED USING THE COFFEE COUNTY WETLAND MITIGATION BANK.



85+00



STANLEY  
LEONARD  
MASON  
TRACT NO. (22)

APPLICATION BY:  
TENNESSEE DEPARTMENT OF TRANSPORTATION  
PE # 06007-1241-14  
PIN # 107386.01  
NEW INTERCHANGE ON S.R. 311  
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BRADLEY COUNTY, TN

## TEMPORARY IMPACT MITIGATION INFORMATION (WTL-3 AND WTL-13) Permit Sketch

**MITIGATION NOTES:**

1. REMOVE THE TOP 6 TO 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 THEN BE SEEDED, COVERED WITH STRAW AND PLANTED WITH TREE SEEDLINGS TO STABILIZE THE SITE.
4. WETLAND AREAS LOCATED BEYOND THE LIMITS OF THE FILL SLOPES AND OUTSIDE OF PROPOSED RIGHT-OF-WAY, CONSTRUCTION EASEMENTS AND DRAINAGE EASEMENTS ARE TO BE CLEARLY MARKED AND NOT TO BE DISTURBED.

**TREES:**

1. NO SUBSTITUTIONS OF PLANT SPECIES SHALL BE ALLOWED WITHOUT THE WRITTEN APPROVAL OF TDOT ENVIRONMENTAL DIVISION. TREES SHALL BE OF THE VARIETY REQUESTED, WELL BRANCHED, BARE ROOT (ROOTS MUST BE KEPT MOIST AT ALL TIMES), 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 THE ENGINEER.
2. THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT TREE SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.
3. ALL PLANTS SHALL BE PLANTED AS PER SECTION 802.07 OF TDOT STANDARD SPECIFICATIONS FOR THE ROAD AND BRIDGE CONSTRUCTION.
4. PLANTS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.
5. IF THERE ARE OVERHEAD UTILITY LINES, ONLY SMALL TREES (MAXIMUM HEIGHT OF 20 - 25 FT) OR SHRUBS CAN BE PLANTED UNDER THE UTILITY LINES. THEY MUST ALSO BE PLANTED AT LEAST 15 FT AWAY FROM THE LINES, MEASURED HORIZONTALLY.

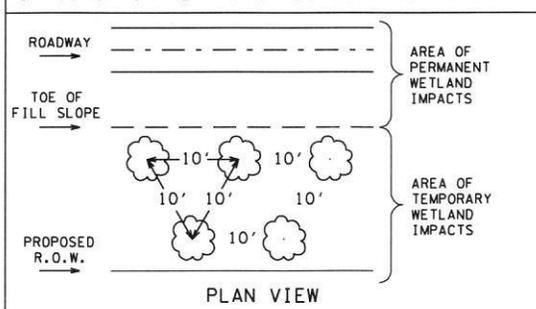
### ESTIMATED TREE QUANTITIES FOR WTL-3

| ITEM NO.  | DESCRIPTION   | UNIT | QUANTITY |
|-----------|---|------|----------|
| 802-12.02 | ACER RUBRUM (RED MAPLE SEEDLNG B.R.)                | EACH | 1        |
| 802-12.14 | DIOSPYROS VIRGINIANA (PERSIMMON SEEDLNG B.R.)       | EACH | 1        |
| 802-12.16 | FRAXINUS PENNSYLVANICA (GREEN ASH SEEDLNG B.R.)     | EACH | 1        |
| 802-12.18 | LIQUIDAMBER STYRACIFLUA (SWEETGUM SEEDLNG B.R.)     | EACH | 1        |
| 802-12.19 | LIRIODENDRON TULIPIFERA (TULIP POPLAR SEEDLNG B.R.) | EACH | 1        |
| 802-12.21 | NYSSA SYLVATICA (BLCKGUM SEEDLNG B.R.)              | EACH | 1        |
| TOTAL     |   |      | 6        |

### ESTIMATED TREE QUANTITIES FOR WTL-13

| ITEM NO.  | DESCRIPTION   | UNIT | QUANTITY |
|-----------|---|------|----------|
| 802-12.02 | ACER RUBRUM (RED MAPLE SEEDLNG B.R.)                | EACH | 7        |
| 802-12.14 | DIOSPYROS VIRGINIANA (PERSIMMON SEEDLNG B.R.)       | EACH | 7        |
| 802-12.16 | FRAXINUS PENNSYLVANICA (GREEN ASH SEEDLNG B.R.)     | EACH | 6        |
| 802-12.18 | LIQUIDAMBER STYRACIFLUA (SWEETGUM SEEDLNG B.R.)     | EACH | 6        |
| 802-12.19 | LIRIODENDRON TULIPIFERA (TULIP POPLAR SEEDLNG B.R.) | EACH | 6        |
| 802-12.21 | NYSSA SYLVATICA (BLCKGUM SEEDLNG B.R.)              | EACH | 6        |
| TOTAL     |   |      | 38       |

#### SPACING FOR PLANTING ADJACENT TO WETLANDS



**APPLICATION BY:**

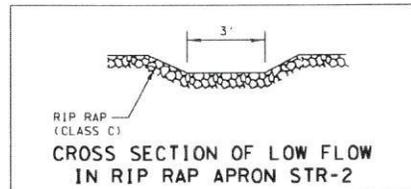
TENNESSEE DEPARTMENT OF TRANSPORTATION  
 PE # 06007-1241-14  
 PIN # 107386.01  
 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

## STREAM ENCAPSULATION (STR-2) Permit Sketch

| STREAM IMPACT TABLE (STR-2)       |         |
|-----------------------------------|---------|
| EXISTING                          |         |
| OPEN STREAM                       | 310 FT. |
| TOTAL EXISTING LENGTH             | 310 FT. |
| PROPOSED                          |         |
| OPEN STREAM                       | 30 FT.  |
| INCLUDES: CLASS "C" RIP RAP APRON | 40 FT.  |
| STRUCTURE                         | 206 FT. |
| INCLUDES: 30" RCP                 | 12.0 FT |
| INCLUDES: 2 - U TYPE ENDWALL      | 12.0 FT |
| TOTAL PROPOSED STRUCTURE          | 218 FT. |
| TOTAL PROPOSED LENGTH             | 288 FT. |

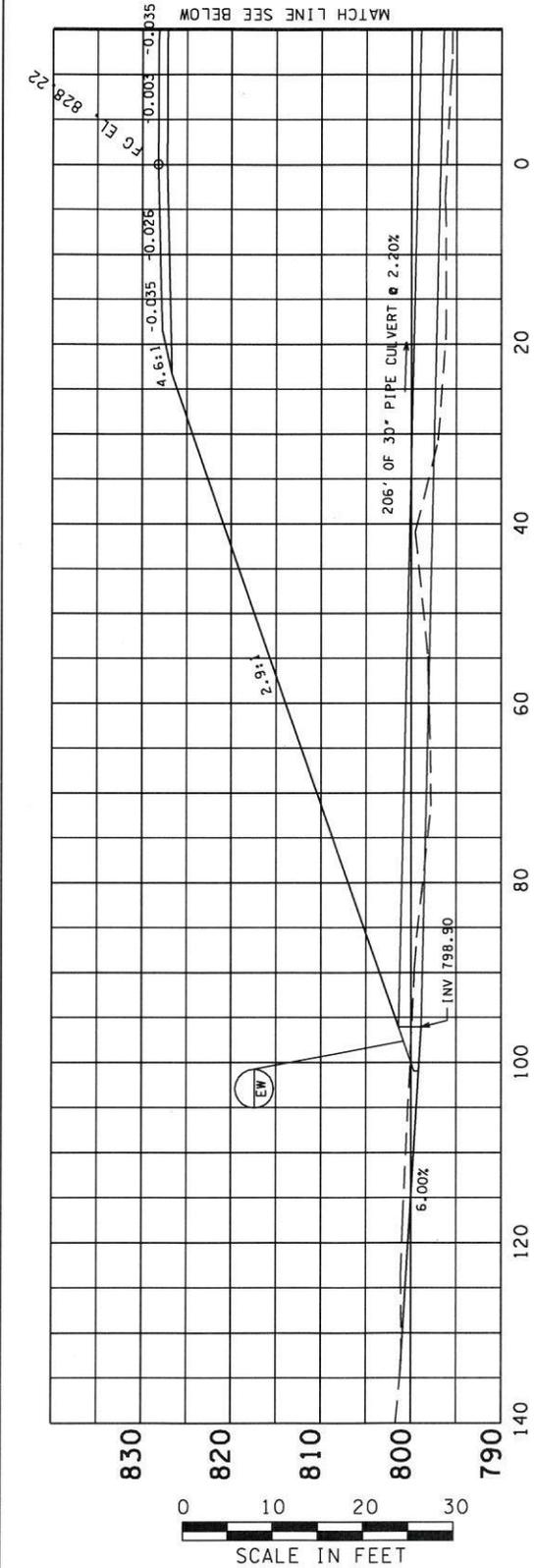
**STR-2 surface area:**  
 Permanent impact= 0.03 acre  
 Temporary impact =0.0 acre

NOTE:  
 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.

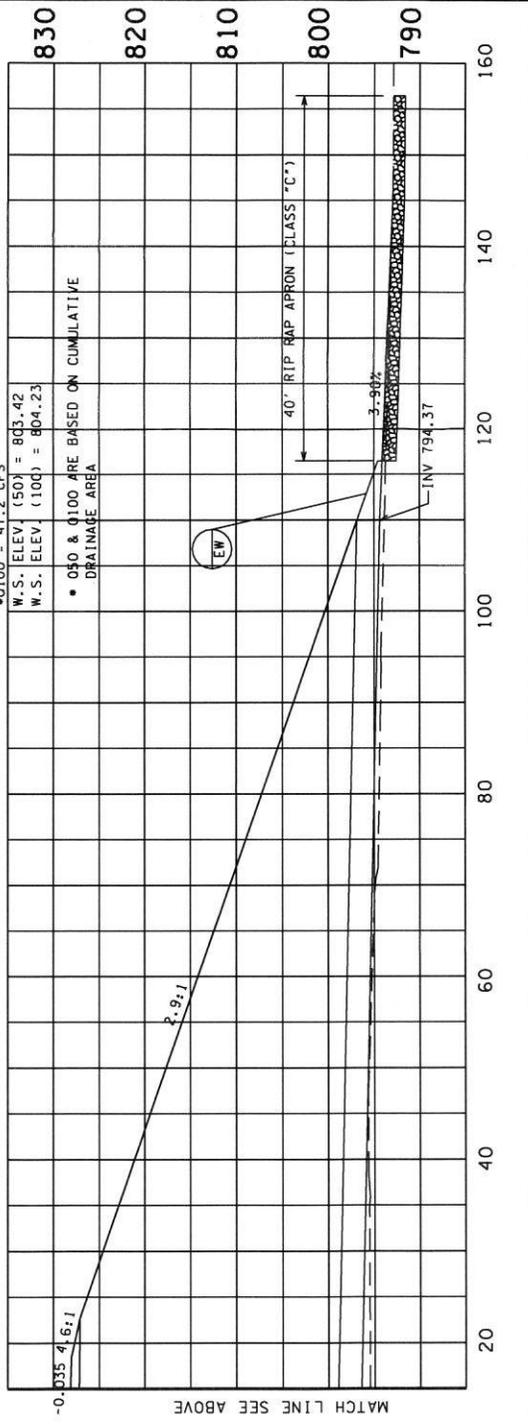


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 BRADLEY COUNTY, TN

# STREAM ENCAPSULATION (STR-2) Permit Sketch



STA. 115+95.00 (RELOCATED STONE LAKE ROAD)  
 206' OF 30" PIPE CULVERT  
 SKEW 60°00'00" LT  
 ENDWALLS RECD. : "U" ENDWALLS (2)  
 STD. DWG. NOS. D-PE-4  
 D.A. = 33.3 AC.  
 \*050 = 41.7 CFS  
 \*0100 = 47.2 CFS



APPLICATION BY:  
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 BRADLEY COUNTY, TN

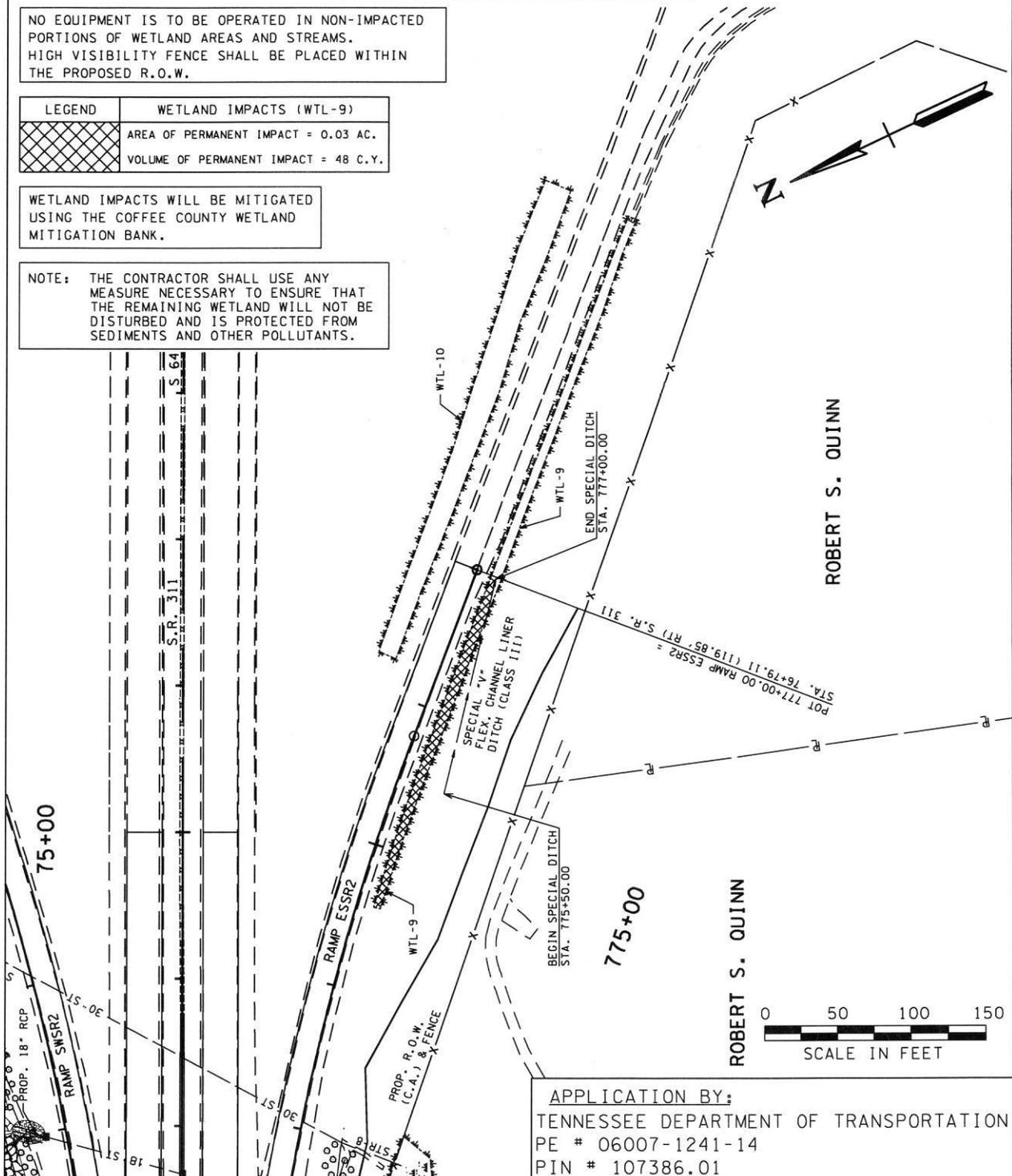
## WETLAND FILL (WTL-9) Permit Sketch

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

| LEGEND  | WETLAND IMPACTS (WTL-9)   |
|---|---|
|  | AREA OF PERMANENT IMPACT = 0.03 AC.<br>VOLUME OF PERMANENT IMPACT = 48 C.Y. |

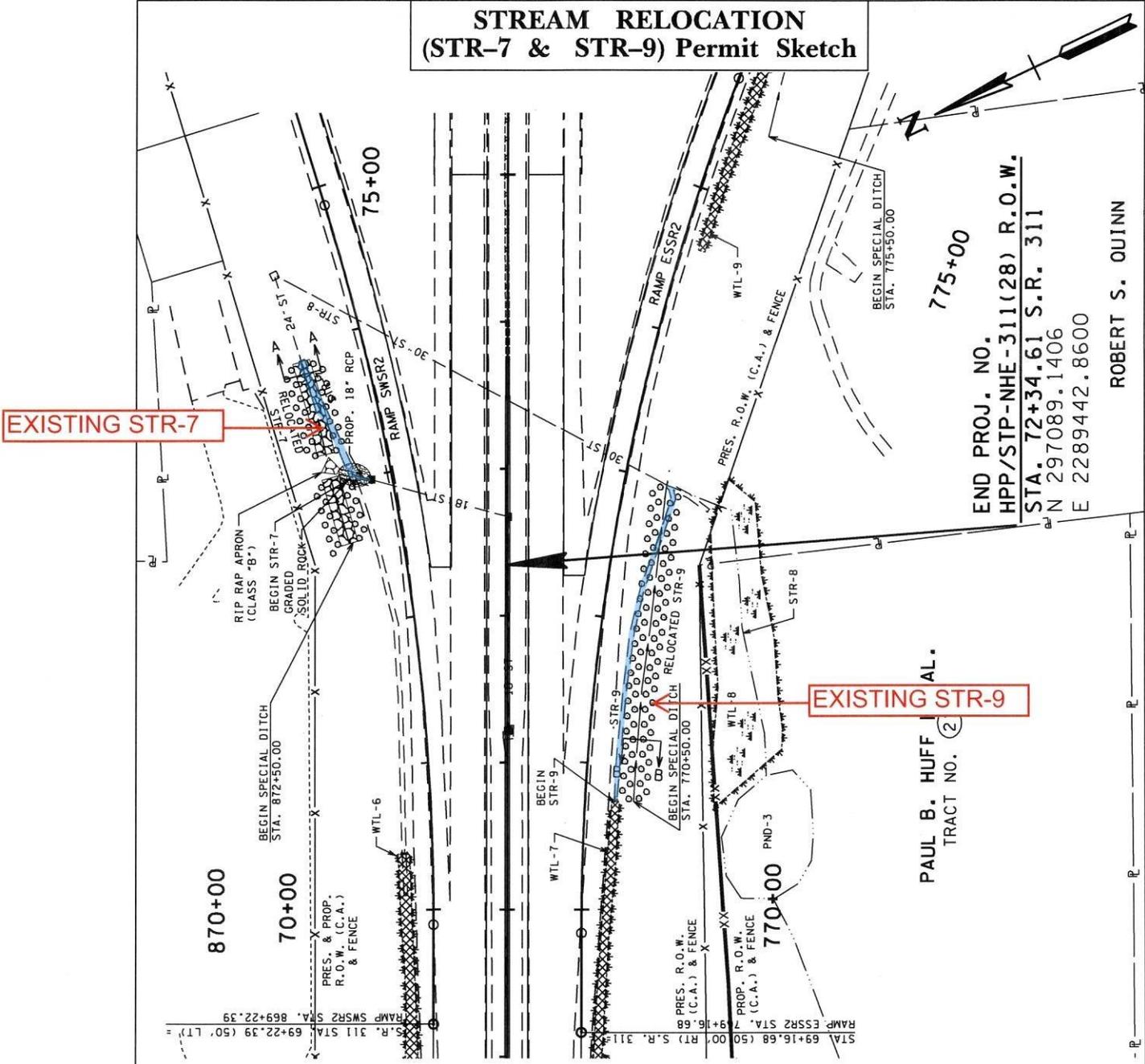
WETLAND IMPACTS WILL BE MITIGATED USING THE COFFEE COUNTY WETLAND MITIGATION BANK.

NOTE: THE CONTRACTOR SHALL USE ANY MEASURE NECESSARY TO ENSURE THAT THE REMAINING WETLAND WILL NOT BE DISTURBED AND IS PROTECTED FROM SEDIMENTS AND OTHER POLLUTANTS.



APPLICATION BY:  
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 BRADLEY COUNTY, TN

# STREAM RELOCATION (STR-7 & STR-9) Permit Sketch



END PROJ. NO.  
 HPP/STP-NHE-311(28) R.O.W.  
 STA. 72+34.61 S.R. 311  
 N 297089.1406  
 E 2289442.8600  
 ROBERT S. QUINN

PAUL B. HUFF  
 TRACT NO. 2

STREAM IMPACTS WILL BE MITIGATED USING THE TENNESSEE STREAM MITIGATION PROGRAM.

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS.  
 HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

APPLICATION BY:  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
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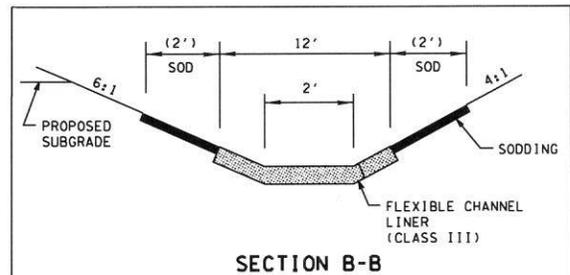
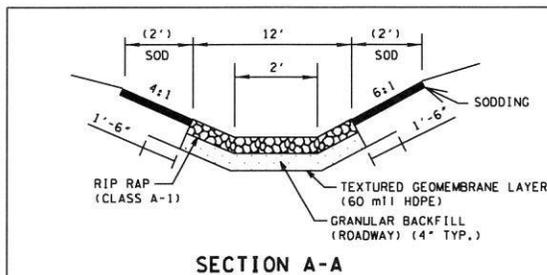
## STREAM RELOCATION (STR-7 & STR-9) Permit Sketch

### STANDARD STREAM RELOCATION:

1. THE NEW CHANNEL SHALL BE EXCAVATED AND STABILIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON PLANS), SEEDING, AND SOD SHOULD BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABILIZED, AND ONLY DURING A LOW-WATER PERIOD. STABILIZED MEANS THAT SPECIFIED ROCK AND EROSION CONTROL BLANKET OR FLEXIBLE CHANNEL LINER IS IN PLACE, AND SEEDING AND SOD ARE IN PLACE AND ESTABLISHED.
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 OR FLEXIBLE CHANNEL LINER, SEED, AND SOD 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.
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 HEADQUARTERS CONSTRUCTION OFFICE.
4. REQUESTS BY ANY AGENCY THAT WOULD REQUIRE THE MODIFICATION OF CHANNELS, DITCHES, ELEVATIONS, RIP-RAP OR ANY OTHER STREAM MITIGATION ITEMS ASSOCIATED WITH THE CHANNEL RELOCATIONS SHALL BE REFERRED TO THE TDOT ENVIRONMENTAL DIVISION VIA THE HEADQUARTERS CONSTRUCTION OFFICE FOR COORDINATION WITH ALL INVOLVED AGENCIES AND TDOT DIVISIONS.

### TREES:

1. NO SUBSTITUTIONS OF PLANT SPECIES SHALL BE ALLOWED WITHOUT THE WRITTEN APPROVAL OF TDOT ENVIRONMENTAL DIVISION. TREES SHALL BE OF THE VARIETY REQUESTED 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 THE ENGINEER.
2. THE CONTRACTOR SHOULD ARRANGE SEVERAL MONTHS AHEAD OF TIME TO OBTAIN THE CORRECT TREE SPECIES, AS SOME MAY REQUIRE SOME TIME TO LOCATE.
3. ALL PLANTS SHALL BE PLANTED AS PER SECTION 802.07 OF TDOT STANDARD SPECIFICATIONS FOR THE ROAD AND BRIDGE CONSTRUCTION.
4. PLANTS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.
5. IF THERE ARE OVERHEAD UTILITY LINES, ONLY SMALL TREES (MAXIMUM HEIGHT OF 20 - 25 FT) OR SHRUBS CAN BE PLANTED UNDER THE UTILITY LINES. THEY MUST ALSO BE PLANTED AT LEAST 15 FT AWAY FROM THE LINES, MEASURED HORIZONTALLY.



**NOTE:** 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 # 06007-1241-14  
 PIN # 107386.01  
 NEW INTERCHANGE ON S.R. 311  
 AT STONE LAKE EXTENSION IN CLEVELAND  
 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

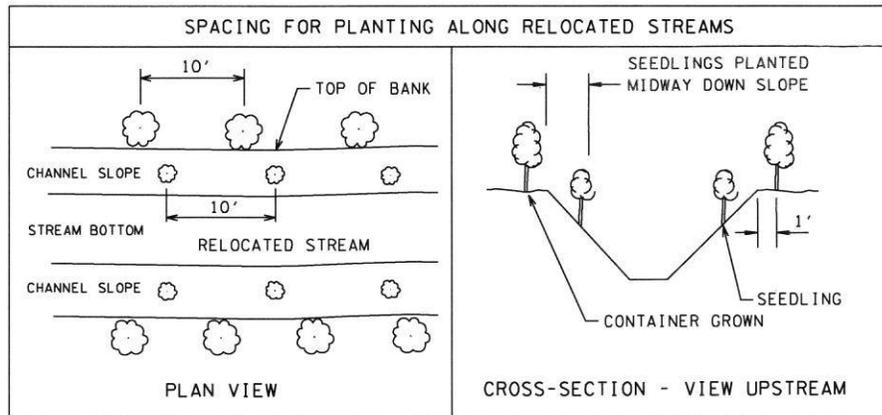
## STREAM RELOCATION (STR-7 & STR-9) Permit Sketch

STR-7 surface area:  
Permanent impact= 0.004 acre  
Temporary impact =0.0 acre

STR-9 surface area:  
Permanent impact= 0.01 acre  
Temporary impact =0.0 acre

| STREAM IMPACT TABLE (STR-7)                |        |
|--|--------|
| EXISTING                                   |        |
| OPEN STREAM                                | 87 FT. |
| PROPOSED                                   |        |
| OPEN STREAM                                | 0 FT.  |
| INCLUDES: CLASS "A-1" RIP RAP DITCH 82 FT. |        |
| TOTAL STREAM                               | 82 FT. |

| STREAM IMPACT TABLE (STR-9)            |         |
|--|---------|
| EXISTING                               |         |
| OPEN STREAM                            | 218 FT. |
| PROPOSED                               |         |
| OPEN STREAM                            | 215 FT. |
| INCLUDES: FLEXIBLE CHANNEL LINER DITCH |         |



| ESTIMATED TREE QUANTITIES FOR STR-7 |  |      |          |
|-------------------------------------|--|------|----------|
| ITEM NO.                            | DESCRIPTION  | UNIT | QUANTITY |
| 802-02.30                           | CUTTINGS: SALIX NIGRA (BLACK WILLOW, 18IN-24IN LENGTH)   | EACH | 5        |
| 802-02.33                           | CUTTINGS: SAMBUCUS CANADENSIS (ELDERBERRY, 18IN-24IN)    | EACH | 6        |
| 802-12.12                           | CORNUS FLORIDA (FLOWERING DOGWOOD SEEDLNG B.R.)          | EACH | 6        |
| 802-13.06                           | HYDRANGEA QUERCIFOLIA (OAKLF HYDRANGEA 2-5FT CNTNR GRWN) | EACH | 12       |
| 802-13.08                           | ITEA VIRGINICA (VIRGINIA SWEETSPIRE 2-5FT CNTNR GRWN)    | EACH | 11       |
| 802-13.23                           | RHODODENDRON CANESCENS (WILD AZALEA SDLNG BR)            | EACH | 6        |
| TOTAL                               |  |      | 46       |

| ESTIMATED TREE QUANTITIES FOR STR-9 |  |      |          |
|-------------------------------------|--|------|----------|
| ITEM NO.                            | DESCRIPTION  | UNIT | QUANTITY |
| 802-02.30                           | CUTTINGS: SALIX NIGRA (BLACK WILLOW, 18IN-24IN LENGTH)   | EACH | 10       |
| 802-02.33                           | CUTTINGS: SAMBUCUS CANADENSIS (ELDERBERRY, 18IN-24IN)    | EACH | 11       |
| 802-12.12                           | CORNUS FLORIDA (FLOWERING DOGWOOD SEEDLNG B.R.)          | EACH | 11       |
| 802-13.06                           | HYDRANGEA QUERCIFOLIA (OAKLF HYDRANGEA 2-5FT CNTNR GRWN) | EACH | 21       |
| 802-13.08                           | ITEA VIRGINICA (VIRGINIA SWEETSPIRE 2-5FT CNTNR GRWN)    | EACH | 21       |
| 802-13.23                           | RHODODENDRON CANESCENS (WILD AZALEA SDLNG BR)            | EACH | 10       |
| TOTAL                               |  |      | 84       |

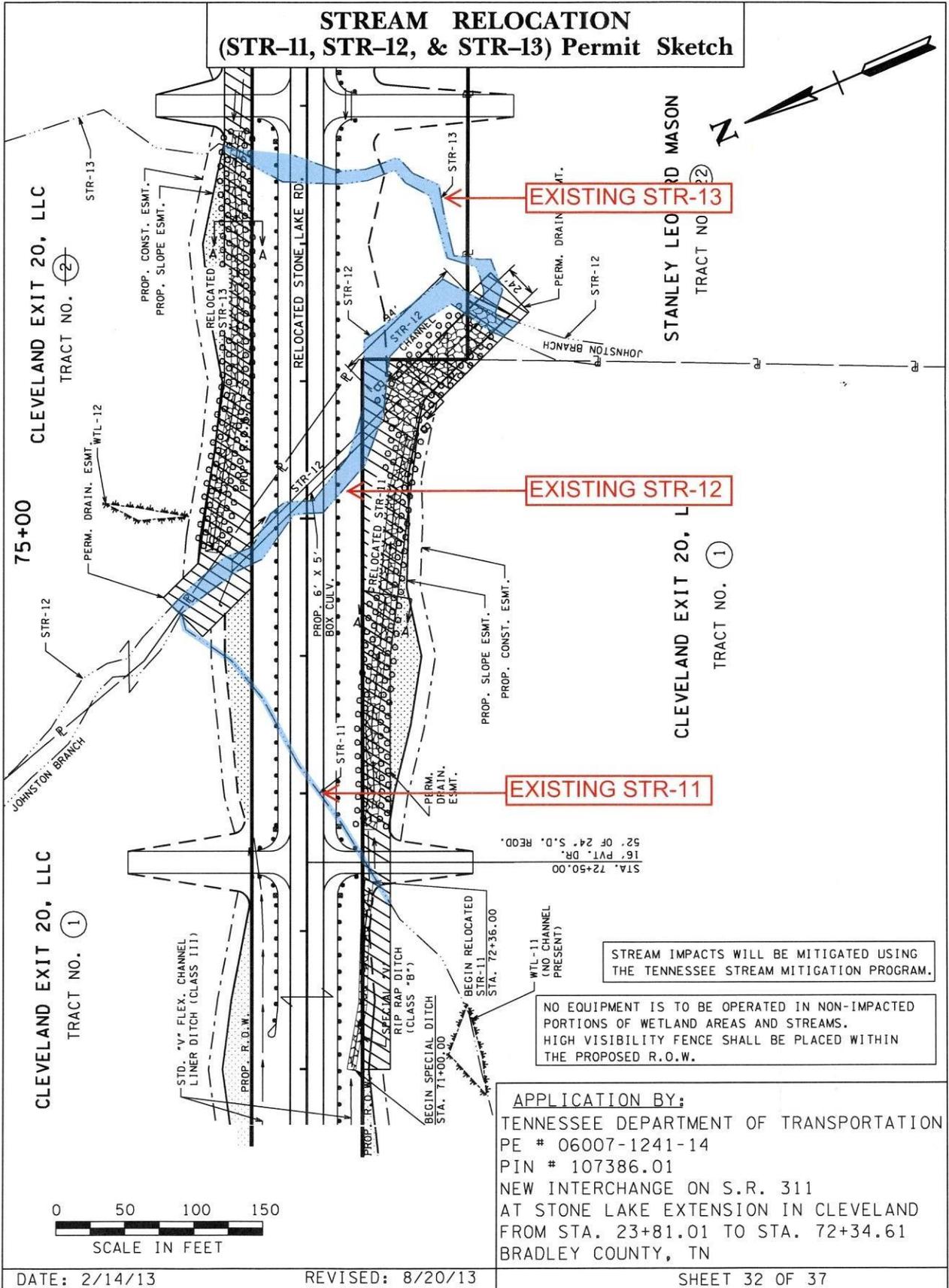
**APPLICATION BY:**  
 TENNESSEE DEPARTMENT OF TRANSPORTATION  
 PE # 06007-1241-14  
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 NEW INTERCHANGE ON S.R. 311  
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 FROM STA. 23+81.01 TO STA. 72+34.61  
 BRADLEY COUNTY, TN

DATE: 8/20/13

REVISED: / /

SHEET 31 OF 37

# STREAM RELOCATION (STR-11, STR-12, & STR-13) Permit Sketch



CLEVELAND EXIT 20, LLC  
TRACT NO. 2

CLEVELAND EXIT 20, LLC  
TRACT NO. 1

STANLEY LEONARD MASON  
TRACT NO. 22

EXISTING STR-13

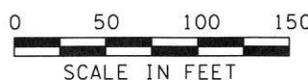
EXISTING STR-12

EXISTING STR-11

STREAM IMPACTS WILL BE MITIGATED USING THE TENNESSEE STREAM MITIGATION PROGRAM.

NO EQUIPMENT IS TO BE OPERATED IN NON-IMPACTED PORTIONS OF WETLAND AREAS AND STREAMS. HIGH VISIBILITY FENCE SHALL BE PLACED WITHIN THE PROPOSED R.O.W.

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DATE: 2/14/13

REVISED: 8/20/13

SHEET 32 OF 37

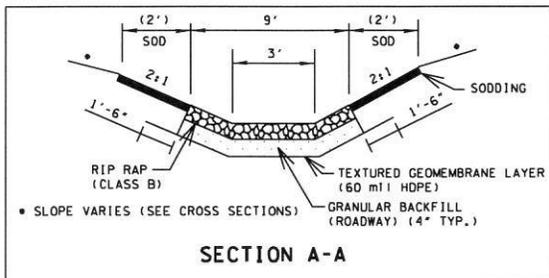
## STREAM RELOCATION (STR-11 & STR-13) Permit Sketch

**STANDARD STREAM RELOCATION:**

1. THE NEW CHANNEL SHALL BE EXCAVATED AND STABILIZED DURING A LOW-WATER PERIOD. RIP-RAP (ONLY AS SHOWN ON PLANS), SEEDING, AND SOD SHOULD BE INSTALLED IMMEDIATELY FOLLOWING CHANNEL COMPLETION. WATER SHALL BE DIVERTED INTO THE NEW CHANNEL ONLY AFTER IT IS COMPLETELY STABILIZED, AND ONLY DURING A LOW-WATER PERIOD. STABILIZED MEANS THAT SPECIFIED ROCK AND EROSION CONTROL BLANKET OR FLEXIBLE CHANNEL LINER IS IN PLACE, AND SEEDING AND SOD ARE IN PLACE AND ESTABLISHED.
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.
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  - D. PLACE TOPSOIL, EROSION CONTROL BLANKET OR FLEXIBLE CHANNEL LINER, SEED, AND SOD 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.
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**TREES:**

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3. ALL PLANTS SHALL BE PLANTED AS PER SECTION 802.07 OF TDOT STANDARD SPECIFICATIONS FOR THE ROAD AND BRIDGE CONSTRUCTION.
4. PLANTS SHALL BE WATERED AS REQUIRED THROUGH THE PERIOD OF ESTABLISHMENT TO ENSURE SURVIVAL.
5. IF THERE ARE OVERHEAD UTILITY LINES, ONLY SMALL TREES (MAXIMUM HEIGHT OF 20 - 25 FT) OR SHRUBS CAN BE PLANTED UNDER THE UTILITY LINES. THEY MUST ALSO BE PLANTED AT LEAST 15 FT AWAY FROM THE LINES, MEASURED HORIZONTALLY.



STR-13 surface area:  
Permanent impact= 0.028 acre  
Temporary impact =0.0 acre

| STREAM IMPACT TABLE (STR-13) |                         |                |
|------------------------------|-------------------------|----------------|
| EXISTING                     |                         |                |
| OPEN STREAM                  |                         | 240 FT.        |
| PROPOSED                     |                         |                |
| OPEN STREAM                  |                         | 0 FT.          |
| INCLUDES:                    | CLASS "B" RIP RAP DITCH | 314 FT.        |
| <b>TOTAL STREAM</b>          |                         | <b>314 FT.</b> |

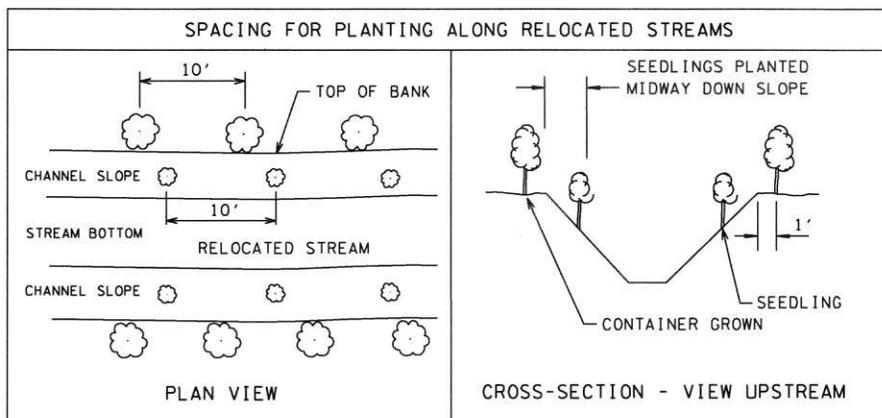
**NOTE:** RIP-RAP SHALL BE PLACED AS TO MIMIC THE EXISTING CONTOURS OF THE STREAM CHANNEL. THE TOP OF THE PROPOSED RIP-RAP SHALL BE AT GRADE WITH THE BOTTOM OF THE EXISTING STREAM CHANNEL. VOIDS WITHIN THE RIP-RAP SHALL BE FILLED WITH CREEK GRAVEL TO PREVENT LOSS OF STREAM WITHIN RIP-RAP AREAS. CREEK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

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FROM STA. 23+81.01 TO STA. 72+34.61  
BRADLEY COUNTY, TN

## STREAM RELOCATION (STR-11 & STR-13) Permit Sketch

| STREAM IMPACT TABLE (STR-11)              |         |
|---|---------|
| EXISTING                                  |         |
| OPEN STREAM                               | 265 FT. |
| PROPOSED                                  |         |
| OPEN STREAM                               | 0 FT.   |
| INCLUDES: CLASS "B" RIP RAP DITCH 300 FT. |         |
| STRUCTURE 24" SIDE DRAIN                  | 52 FT.  |
| TOTAL PROPOSED STRUCTURE                  | 52 FT.  |
| TOTAL PROPOSED LENGTH                     | 352 FT. |

STR-11 surface area:  
Permanent impact= 0.015 acre  
Temporary impact =0.0 acre



| ESTIMATED TREE QUANTITIES FOR STR-11 |  |      |          |
|--------------------------------------|--|------|----------|
| ITEM NO.                             | DESCRIPTION  | UNIT | QUANTITY |
| 802-02.30                            | CUTTINGS: SALIX NIGRA (BLACK WILLOW, 18IN-24IN LENGTH)   | EACH | 15       |
| 802-02.33                            | CUTTINGS: SAMBUCUS CANADENSIS (ELDERBERRY, 18IN-24IN)    | EACH | 15       |
| 802-12.12                            | CORNUS FLORIDA (FLOWERING DOGWOOD SEEDLING B.R.)         | EACH | 15       |
| 802-13.06                            | HYDRANGEA QUERCIFOLIA (OAKLF HYDRANGEA 2-5FT CNTNR GRWN) | EACH | 30       |
| 802-13.08                            | ITEA VIRGINICA (VIRGINIA SWEETSPIRE 2-5FT CNTNR GRWN)    | EACH | 29       |
| 802-13.23                            | RHODODENDRON CANESCENS (WILD AZALEA SDLNG BR)            | EACH | 14       |
| TOTAL                                |  |      | 118      |

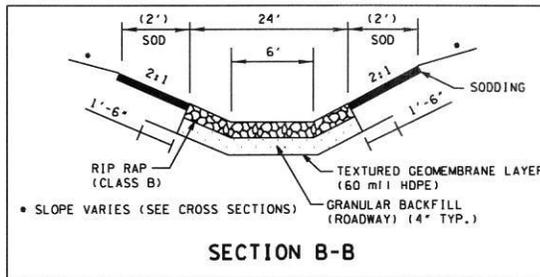
| ESTIMATED TREE QUANTITIES FOR STR-13 |  |      |          |
|--------------------------------------|--|------|----------|
| ITEM NO.                             | DESCRIPTION  | UNIT | QUANTITY |
| 802-02.30                            | CUTTINGS: SALIX NIGRA (BLACK WILLOW, 18IN-24IN LENGTH)   | EACH | 15       |
| 802-02.33                            | CUTTINGS: SAMBUCUS CANADENSIS (ELDERBERRY, 18IN-24IN)    | EACH | 15       |
| 802-12.12                            | CORNUS FLORIDA (FLOWERING DOGWOOD SEEDLING B.R.)         | EACH | 15       |
| 802-13.06                            | HYDRANGEA QUERCIFOLIA (OAKLF HYDRANGEA 2-5FT CNTNR GRWN) | EACH | 30       |
| 802-13.08                            | ITEA VIRGINICA (VIRGINIA SWEETSPIRE 2-5FT CNTNR GRWN)    | EACH | 31       |
| 802-13.23                            | RHODODENDRON CANESCENS (WILD AZALEA SDLNG BR)            | EACH | 16       |
| TOTAL                                |  |      | 122      |

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 BRADLEY COUNTY, TN

## STREAM ENCAPSULATION (STR-12) Permit Sketch

| STREAM IMPACT TABLE (STR-12)      |         |         |
|-----------------------------------|---------|---------|
| EXISTING                          |         |         |
| OPEN STREAM                       |         | 322 FT. |
| PROPOSED                          |         |         |
| OPEN STREAM                       |         | 0 FT.   |
| INCLUDES: CLASS "B" RIP RAP DITCH | 116 FT. |         |
| STRUCTURE 6' X 5' BOX CULVERT     |         | 156 FT. |
| INCLUDES: 2 WINGWALLS             |         |         |
| TOTAL PROPOSED STRUCTURE          |         | 156 FT. |
| TOTAL PROPOSED LENGTH             |         | 272 FT. |

STR-12 surface area:  
Permanent impact= 0.08 acre  
Temporary impact =0.0 acre



**NOTE:** 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.

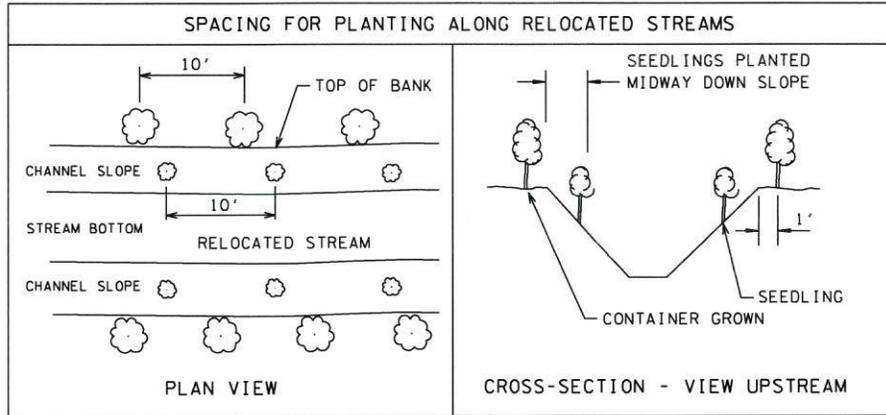
**TREES:**

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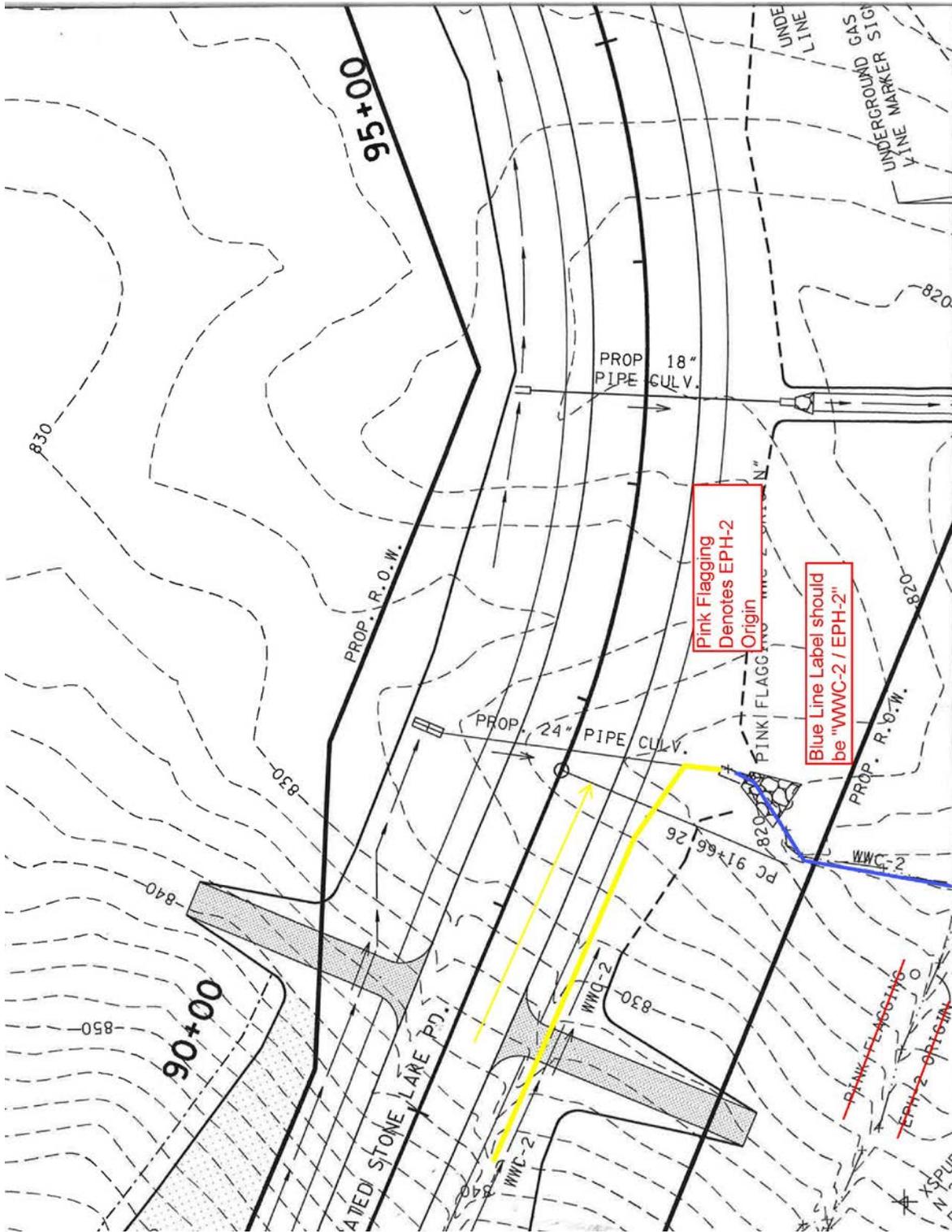
## STREAM ENCAPSULATION (STR-12) Permit Sketch



| ESTIMATED TREE QUANTITIES FOR STR-12 |  |      |          |
|--------------------------------------|--|------|----------|
| ITEM NO.                             | DESCRIPTION  | UNIT | QUANTITY |
| 802-02.30                            | CUTTINGS: SALIX NIGRA (BLACK WILLOW, 18IN-24IN LENGTH)   | EACH | 4        |
| 802-02.33                            | CUTTINGS: SAMBUCUS CANADENSIS (ELDERBERRY, 18IN-24IN)    | EACH | 4        |
| 802-12.12                            | CORNUS FLORIDA (FLOWERING DOGWOOD SEEDLNG B.R.)          | EACH | 5        |
| 802-13.06                            | HYDRANGEA QUERCIFOLIA (OAKLF HYDRANGEA 2-5FT CNTNR GRWN) | EACH | 9        |
| 802-13.08                            | ITEA VIRGINICA (VIRGINIA SWEETSPIRE 2-5FT CNTNR GRWN)    | EACH | 9        |
| 802-13.23                            | RHODODENDRON CANESCENS (WILD AZALEA SDLNG BR)            | EACH | 5        |
| TOTAL                                |  |      | 36       |

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**Exhibit F – Impacts Tables**

**TENNESSEE DEPARTMENT OF TRANSPORTATION  
SR-311 (US-74) Interchange between I-75 and South Lee Hwy. (SR-2)(US-11/64) PIN 107386.01**

**WETLAND Impact and Mitigation:**

| <u>Label</u> | <u>Type - Size</u>                  | <u>Permanent</u><br>(Acres) | <u>Mitigation</u><br>(Bank Credits) | <u>Temporary</u><br>(Acres) | <u>Mitigation</u>  |
|--------------|-------------------------------------|-----------------------------|-------------------------------------|-----------------------------|--|
| WTL-1        | Emergent - 0.16 Acre                | 0                           | 0                                   | 0.03                        | restore to pre-existing conditions   |
| WTL-2        | Emergent – 0.02 Acre                | 0.02                        | 0.08                                | 0                           | Purchase credits   |
| WTL-3        | Forested - 0.41 Acre                | 0.36                        | 1.44                                | 0.01                        | Temporary impacts - restored to pre-existing conditions;<br>Permanent impacts - Purchase credits |
| WTL-4        | Scrub-shrub - 0.25 Acre             | 0.25                        | 1                                   | 0                           | Purchase credits   |
| WTL-5        | Emergent/farmed wetland – 0.59 Acre | 0.59                        | 2.36                                | 0                           | Purchase credits   |
| WTL-6        | Emergent - 0.15 Acre                | 0.15                        | 0.6                                 | 0                           | Purchase credits   |
| WTL-7        | Emergent - 0.15 Acre                | 0.15                        | 0.6                                 | 0                           | Purchase credits   |
| WTL-9        | Emergent - 0.07 Acre                | 0.03                        | 0.12                                | 0                           | Purchase credits   |
| WTL-13       | Forested - 0.28 Acre                | 0.12                        | 0.48                                | 0.09                        | Temporary impacts - restored to pre-existing conditions;<br>Permanent impacts - Purchase credits |
|              | <b>Total Wetland Impacts</b>        | <b>1.67</b>                 | <b>6.68</b>                         | <b>0.13</b>                 |  |

**STREAM Impact and Permittee Responsible Mitigation:**

| <u>Label</u>   | <u>Type - Size</u>                             | <u>Impact Type</u>                                  | <u>Mitigation<br/>(bank<br/>Credits)</u>   |
|----------------|--|---|--|
| STR-1          | Intermittent stream –<br>2,217LF               | 1,266ft -<br>relocated rip-<br>rap lined<br>channel | Purchase 950<br>credits and<br>plant trees<br>along the<br>relocated<br>stream           |
| STR-1          | -  | 515ft -<br>stream<br>encapsulation                  | Purchase 515<br>credits  |
| STR-1          | -  | 27ft -<br>channel loss                              | Purchase 27<br>credits   |
| STR-2          | Perennial Stream – 420<br>LF                   | 218ft -<br>encapsulation                            | Purchase 218<br>credits  |
| STR-2          | -  | 22ft- channel<br>loss                               | Purchase 22<br>credits   |
| STR-2          | -  | 40ft - rip-<br>rap<br>lined channel                 | No<br>mitigation<br>proposed   |
| STR-3/PND<br>1 | Intermittent Stream – 25<br>LF; Pond - 0.05 AC | 60ft –<br>pond/channel<br>loss                      | Purchase 60<br>credits   |
| STR-5          | Intermittent Stream –<br>571 LF                | 191ft- stream<br>encapsulation                      | Purchase 191<br>credits  |
| STR-6          | Ephemeral Stream –<br>340 LF                   | 285ft -<br>stream<br>encapsulation                  | Purchase 285<br>credits  |
| STR-7          | Ephemeral Stream –<br>151 LF                   | 87ft - paved<br>stream<br>relocation                | replace with<br>82 ft of rip-<br>rap lined<br>channel and<br>plant trees<br>along stream |

|   |  |   |  |
|---|--|---|--|
| STR-9                                   | Ephemeral Stream –<br>218 LF                 | 218ft - paved<br>channel<br>relocation                              | replace with<br>215ft of lined<br>channel and<br>plant trees<br>along stream |
| STR-11                                  | Not regulated by Corps;<br>regulated by TDEC | 265ft -<br>stream<br>relocation                                     | Purchase 199<br>credits and<br>plant trees<br>along the<br>stream            |
| STR-12                                  | Perennial Stream – 322<br>LF                 | 116ft - rip-<br>rap lined<br>channel                                | Purchase 87<br>credits and<br>plant trees<br>along the<br>stream             |
| STR-12                                  | -  | 50ft -<br>channel loss  | Purchase 50<br>credits   |
| STR-12                                  | -  | 156ft -<br>encapsulation  | Purchase 156<br>credits  |
| STR-13                                  | Intermittent Stream –<br>240 LF              | 240ft - rip-<br>rap lined<br>channel                                | Purchase 180<br>credits and<br>plant trees<br>along the<br>stream            |
| STR-14                                  | Intermittent Stream –<br>240 LF              | 130ft -<br>encapsulation  | No<br>mitigation<br>proposed   |
| WWC<br>2/EPH2                           | Ephemeral Stream – 50<br>LF                  | 15' of U-<br>Type endwall<br>and 22' of<br>rip-rap lined<br>channel | No<br>mitigation<br>proposed   |
| Pond 2                                  | Open Water – 0.03 AC                         | Stone fill  | No<br>mitigation<br>proposed   |
| Total<br>Permanent<br>Stream<br>Impacts |  | 3,923 LF  |  |