



# DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

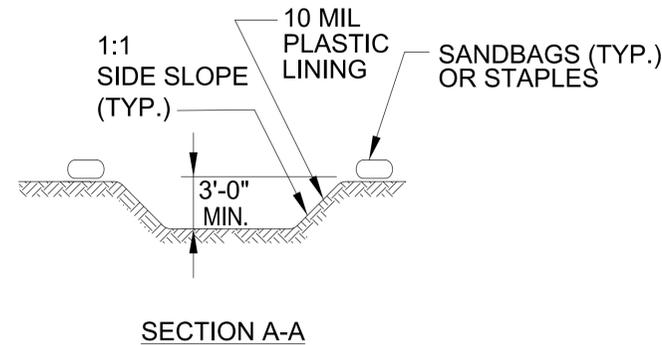
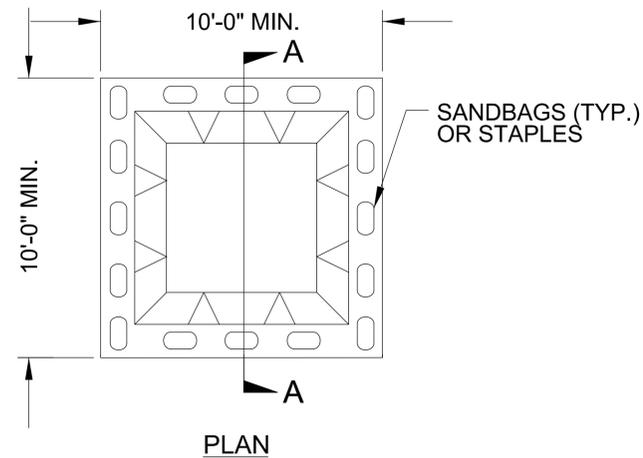
|  |                           |
|--|---------------------------|
| PROJECT REFERENCE NO.<br><b>W03293</b> | SHEET NO.<br><b>EC-02</b> |
| ROADWAY DESIGN<br>ENGINEER             | HYDRAULICS<br>ENGINEER    |

## EROSION & SEDIMENT CONTROL LEGEND

| Std. #  | Description                      | Symbol | Std. #  | Description   | Symbol |
|---------|----------------------------------|--------|---------|---|--------|
| 1605.01 | Temporary Silt Fence             |        | 1633.01 | Temporary Rock Silt Check Type A  |        |
| 1606.01 | Special Sediment Control Fence   |        | 1633.02 | Temporary Rock Silt Check Type B  |        |
| 1622.01 | Temporary Berms and Slope Drains |        | 1633.03 | Temporary Rock Silt Check Type A with<br>Excelsior Matting and Flocculant |        |
| 1630.02 | Silt Basin Type B                |        | 1634.01 | Temporary Rock Sediment Dam Type A  |        |
| 1630.03 | Temporary Silt Ditch             |        | 1634.02 | Temporary Rock Sediment Dam Type B  |        |
| 1630.04 | Stilling Basin                   |        | 1635.01 | Rock Pipe Inlet Sediment Trap Type A                                      |        |
| 1630.05 | Temporary Diversion              |        | 1635.02 | Rock Pipe Inlet Sediment Trap Type B                                      |        |
| 1630.06 | Special Stilling Basin           |        | 1636.01 | Excelsior Wattle Check  |        |
| 1630.07 | Skimmer Basin                    |        | 1636.01 | Excelsior Wattle Check with Flocculant                                    |        |
| 1630.08 | Tiered Skimmer Basin             |        | 1636.01 | Coir Fiber Wattle Check   |        |
| 1630.09 | Earthen Dam with Skimmer         |        | 1636.01 | Coir Fiber Wattle Check with Flocculant                                   |        |
|         | Infiltration Basin               |        | 1636.02 | Silt Fence Excelsior Wattle Break   |        |
|         | Rock Inlet Sediment Trap:        |        |         | Silt Fence Coir Fiber Wattle Break  |        |
| 1632.01 | Type A                           |        | 1636.03 | Excelsior Wattle Barrier  |        |
| 1632.02 | Type B                           |        | 1636.03 | Coir Fiber Wattle Barrier   |        |
| 1632.03 | Type C                           |        |         |   |        |

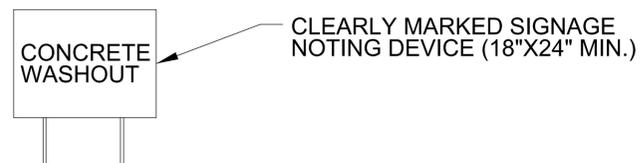
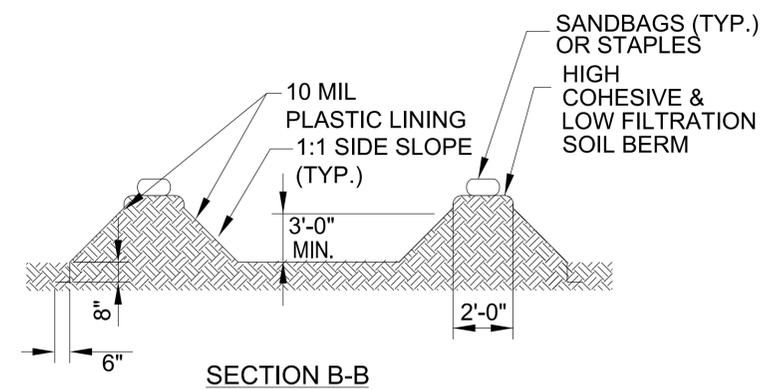
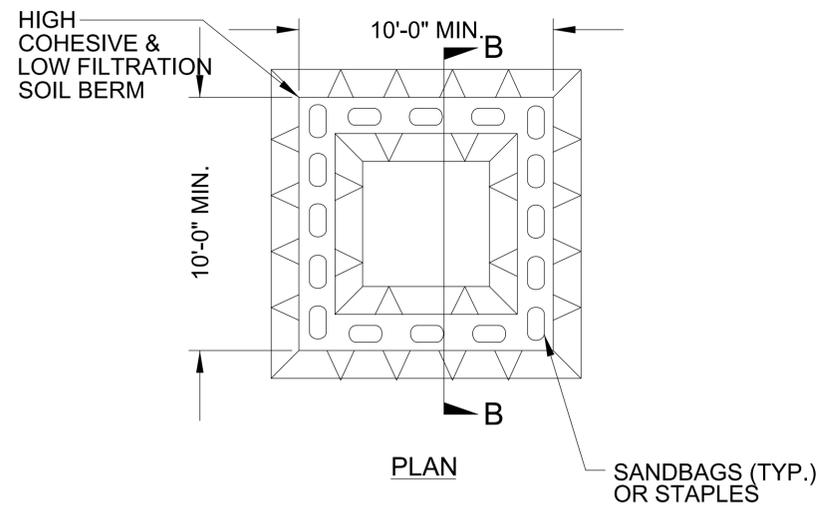
|                                 |                     |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>W03293 | SHEET NO.<br>EC-2A  |
| RW SHEET NO.                    |                     |
| ROADWAY DESIGN ENGINEER         | HYDRAULICS ENGINEER |

# ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



**BELOW GRADE WASHOUT STRUCTURE**  
NOT TO SCALE

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
  2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
  3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.



**ABOVE GRADE WASHOUT STRUCTURE**  
NOT TO SCALE

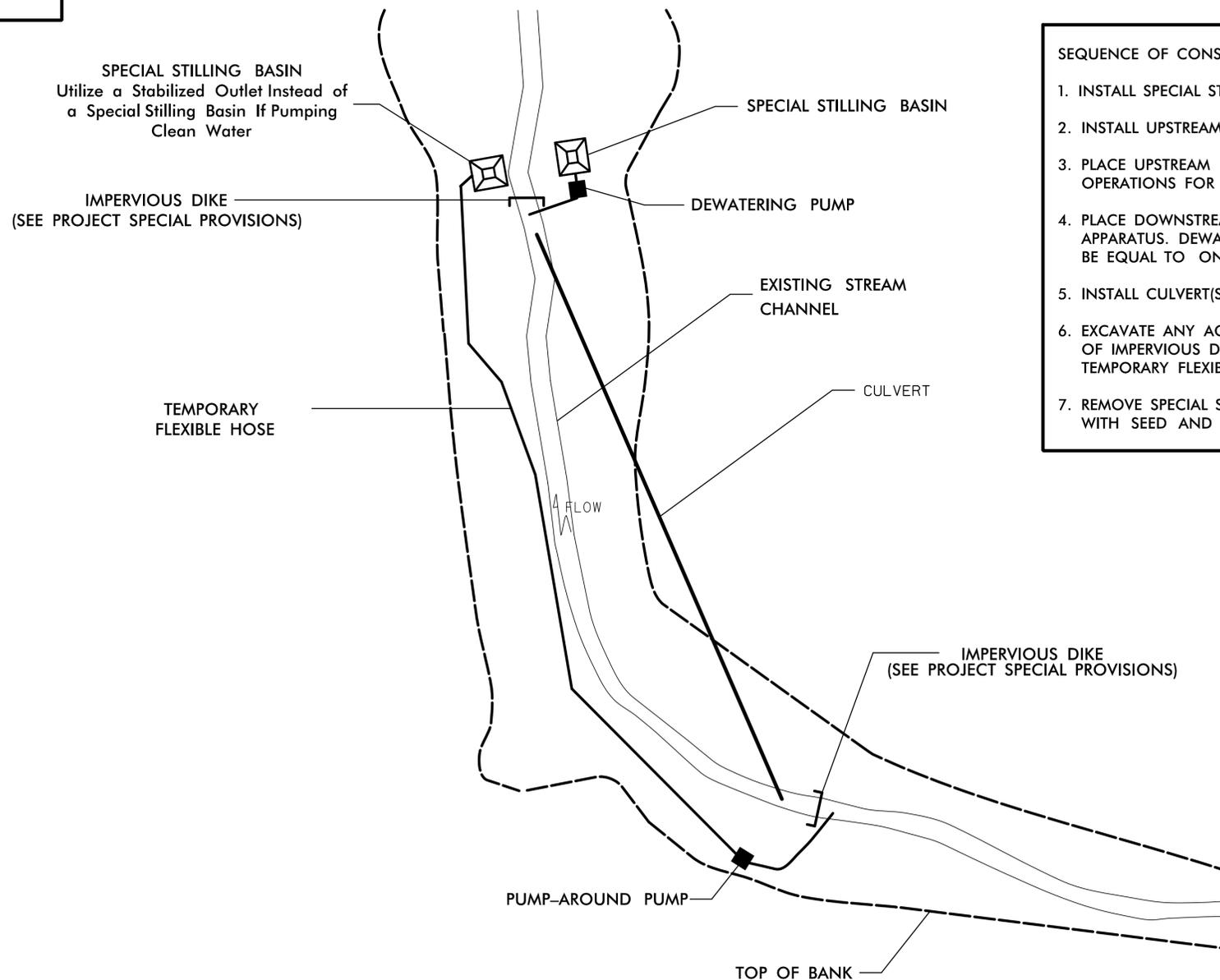
- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
  2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
  3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

|  |                           |
|--|---------------------------|
| PROJECT REFERENCE NO.<br><i>W03293</i> | SHEET NO.<br><i>EC-2B</i> |
| RW SHEET NO.                           |                           |
| ROADWAY DESIGN ENGINEER                | HYDRAULICS ENGINEER       |

# EXAMPLE OF PUMP-AROUND OPERATION

**NOTES:**

- 1) All excavation shall be performed in only dry or isolated areas of the work zone.
- 2) Impervious dikes are to be used to isolate work from stream flow when necessary.
- 3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
- 4) Pumps and hoses shall be of sufficient size to dewater the work area.



- SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA**
1. INSTALL SPECIAL STILLING BASIN(S).
  2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
  3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
  4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
  5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS.
  6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
  7. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

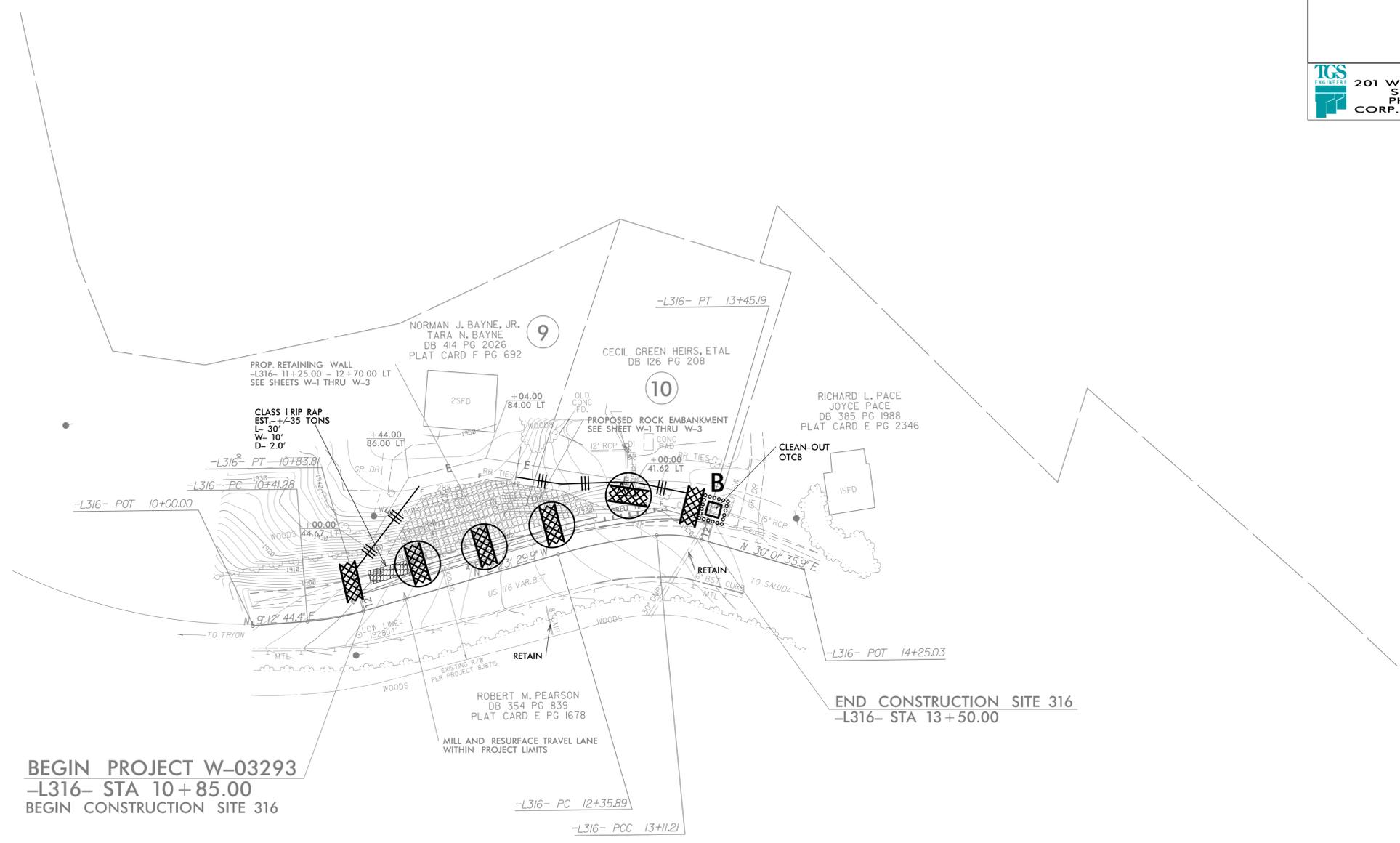
|                                 |                     |
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| PROJECT REFERENCE NO.<br>W03293 | SHEET NO.<br>EC-3A  |
| ROADWAY DESIGN ENGINEER         | HYDRAULICS ENGINEER |

**SOIL STABILIZATION TIMEFRAMES**

| <i>SITE DESCRIPTION</i>                      | <i>STABILIZATION TIME</i> | <i>TIMEFRAME EXCEPTIONS</i>   |
|--|---------------------------|---|
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES  | 7 DAYS                    | NONE  |
| HIGH QUALITY WATER (HQW) ZONES               | 7 DAYS                    | NONE  |
| SLOPES STEEPER THAN 3:1                      | 7 DAYS                    | IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.  |
| SLOPES 3:1 TO 4:1                            | 14 DAYS                   | 7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH WITH SLOPES STEEPER THAN 4:1.<br>7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES |
| ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1 | 14 DAYS                   | 7 DAYS FOR PERIMETER DIKES, SWALES, DITCHES PERIMETER SLOPES, AND HQW ZONES   |



|  |  |                            |  |
|--|--|----------------------------|--|
| PROJECT REFERENCE NO.<br>W03293  |  | SHEET NO.<br>EC-04/CONST.4 |  |
| RW SHEET NO.   |  |                            |  |
| ROADWAY DESIGN<br>ENGINEER   |  | HYDRAULICS<br>ENGINEER     |  |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST-STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |                            |  |



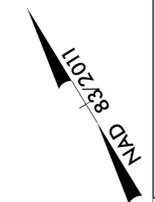
**BEGIN PROJECT W-03293**  
**-L316- STA 10+85.00**  
**BEGIN CONSTRUCTION SITE 316**

**END CONSTRUCTION SITE 316**  
**-L316- STA 13+50.00**

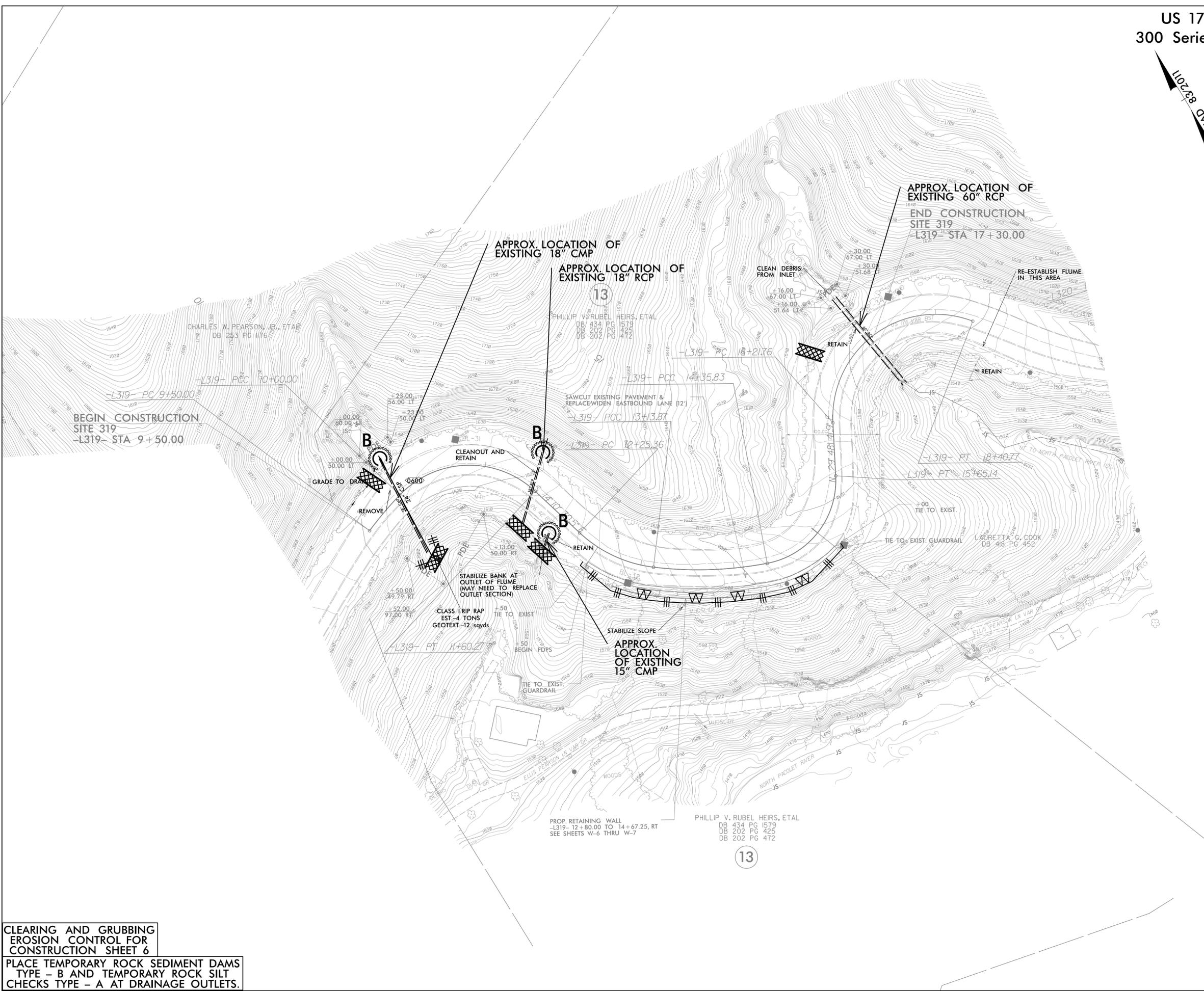
CLEARING AND GRUBBING  
 EROSION CONTROL FOR  
 CONSTRUCTION SHEET 4

PLACE TEMPORARY ROCK SEDIMENT DAMS  
 TYPE - B AND TEMPORARY ROCK SILT  
 CHECKS TYPE - A AT DRAINAGE OUTLETS.





|  |  |                            |  |
|--|--|----------------------------|--|
| PROJECT REFERENCE NO.<br>W03293  |  | SHEET NO.<br>EC-06/CONST.6 |  |
| RW SHEET NO.   |  |                            |  |
| ROADWAY DESIGN<br>ENGINEER   |  | HYDRAULICS<br>ENGINEER     |  |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST-STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |                            |  |



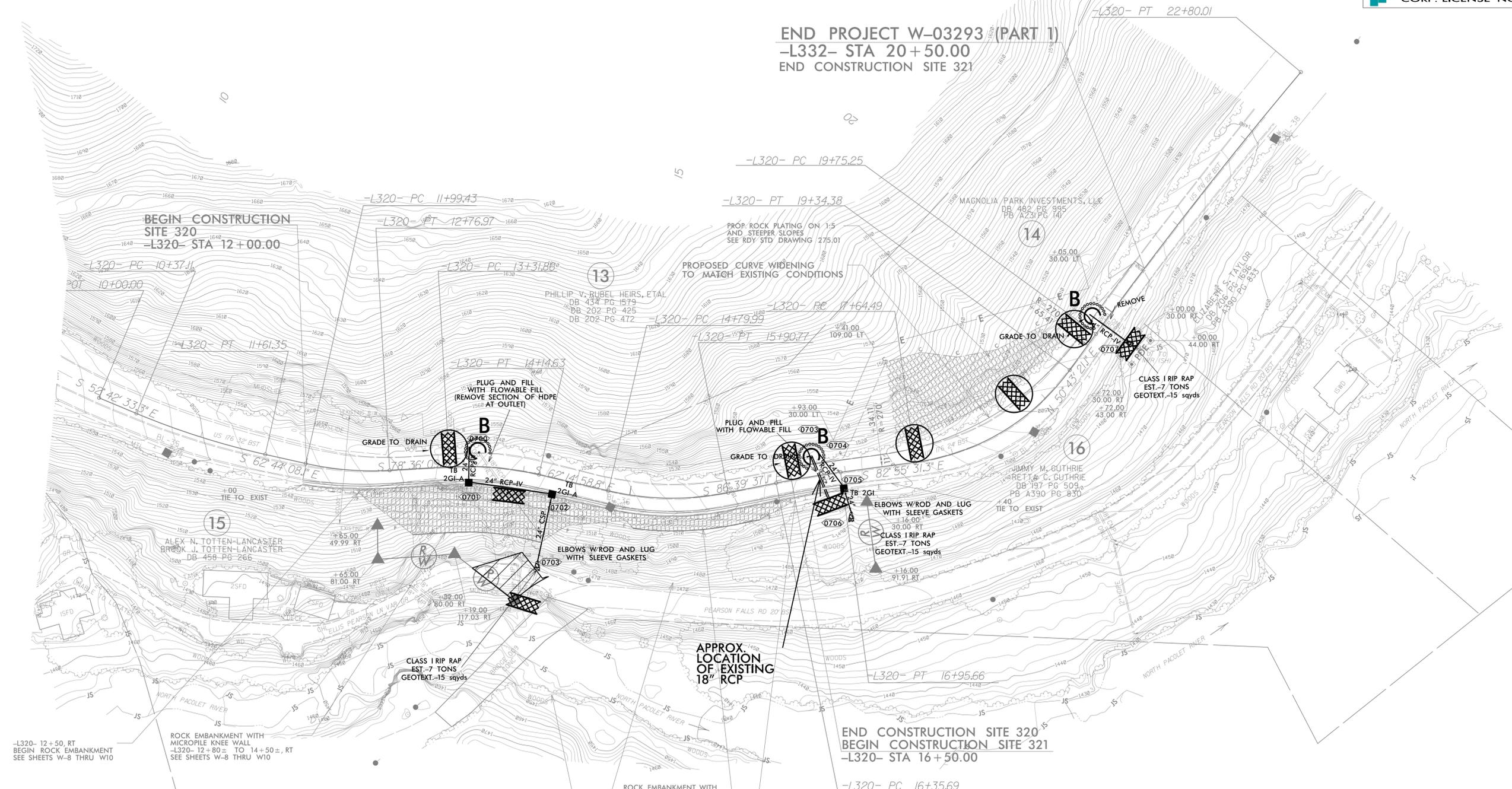
CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 6

PLACE TEMPORARY ROCK SEDIMENT DAMS  
TYPE - B AND TEMPORARY ROCK SILT  
CHECKS TYPE - A AT DRAINAGE OUTLETS.

13



|  |  |                            |  |
|--|--|----------------------------|--|
| PROJECT REFERENCE NO.<br>W03293  |  | SHEET NO.<br>EC-07/CONST.7 |  |
| RW SHEET NO.   |  |                            |  |
| ROADWAY DESIGN ENGINEER  |  | HYDRAULICS ENGINEER        |  |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST-STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |                            |  |



-L320- 12+50, RT  
BEGIN ROCK EMBANKMENT  
SEE SHEETS W-8 THRU W10

ROCK EMBANKMENT WITH  
MICROPILE KNEE WALL  
-L320- 12+80± TO 14+50±, RT  
SEE SHEETS W-8 THRU W10

ROCK EMBANKMENT WITH  
MICROPILE KNEE WALL  
-L320- 15+07± TO 16+14±, RT  
SEE SHEETS W-8 THRU W10

-L320- 16+50, RT  
END ROCK EMBANKMENT  
SEE SHEETS W-8 THRU W10

FUTURE PROJECT BP14-R038

**CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 7**

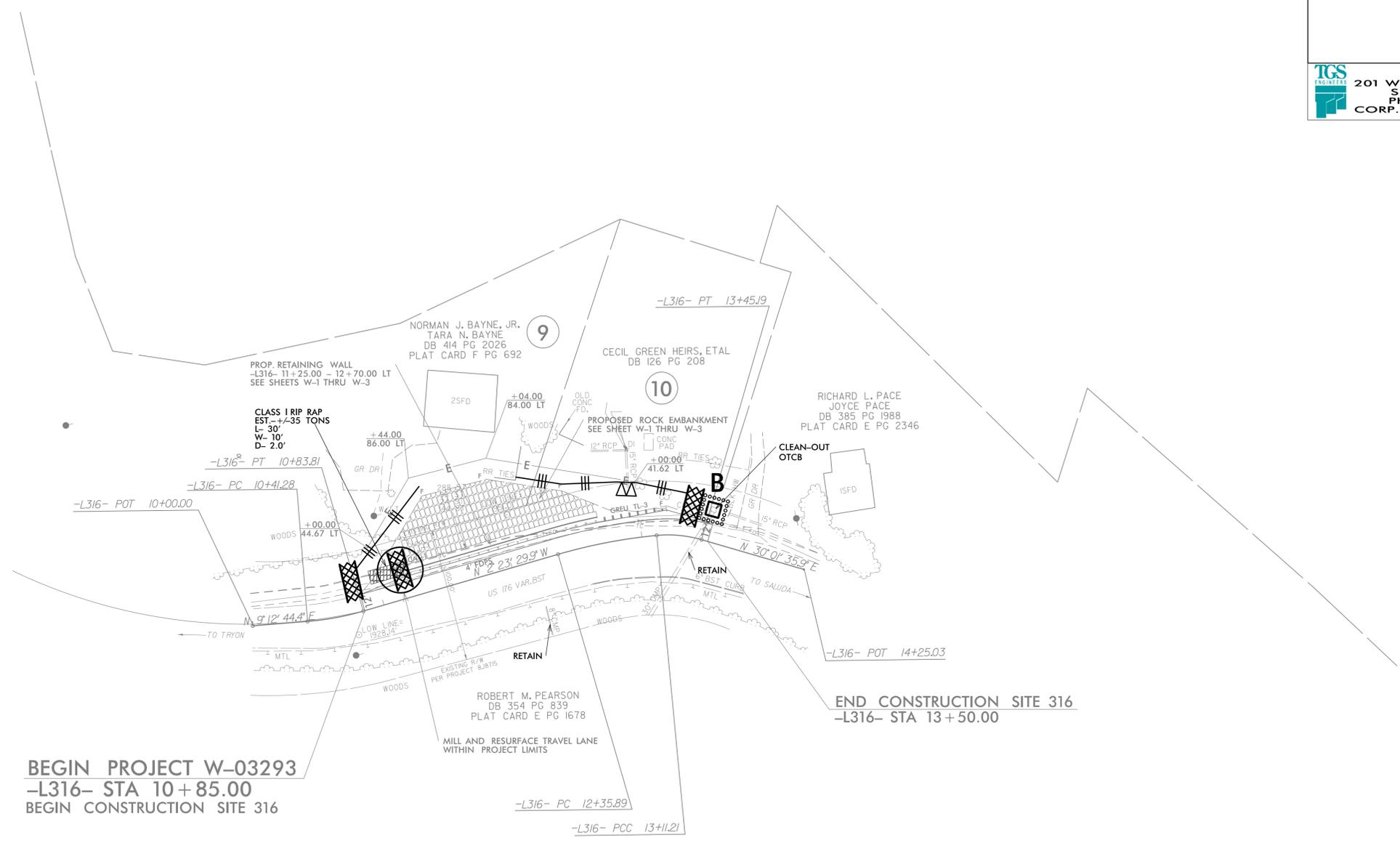
 ENVIRONMENTALLY  
SENSITIVE AREA  
SEE PROJECT  
SPECIAL PROVISIONS

PLACE TEMPORARY ROCK SEDIMENT DAMS  
TYPE - B AND TEMPORARY ROCK SILT  
CHECKS TYPE - A AT DRAINAGE OUTLETS.

# US 176 300 Series



|  |  |                            |  |
|--|--|----------------------------|--|
| PROJECT REFERENCE NO.<br>W03293  |  | SHEET NO.<br>EC-08/CONST.4 |  |
| RW SHEET NO.   |  |                            |  |
| ROADWAY DESIGN<br>ENGINEER   |  | HYDRAULICS<br>ENGINEER     |  |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST-STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |                            |  |

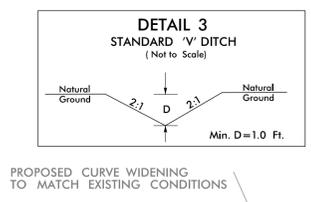
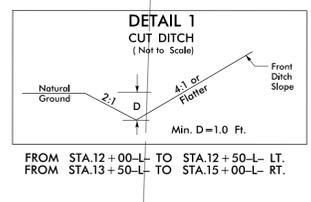
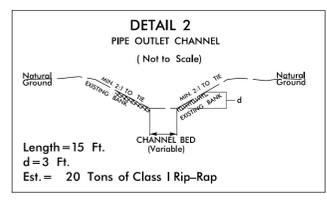


**BEGIN PROJECT W-03293**  
**-L316- STA 10 + 85.00**  
**BEGIN CONSTRUCTION SITE 316**

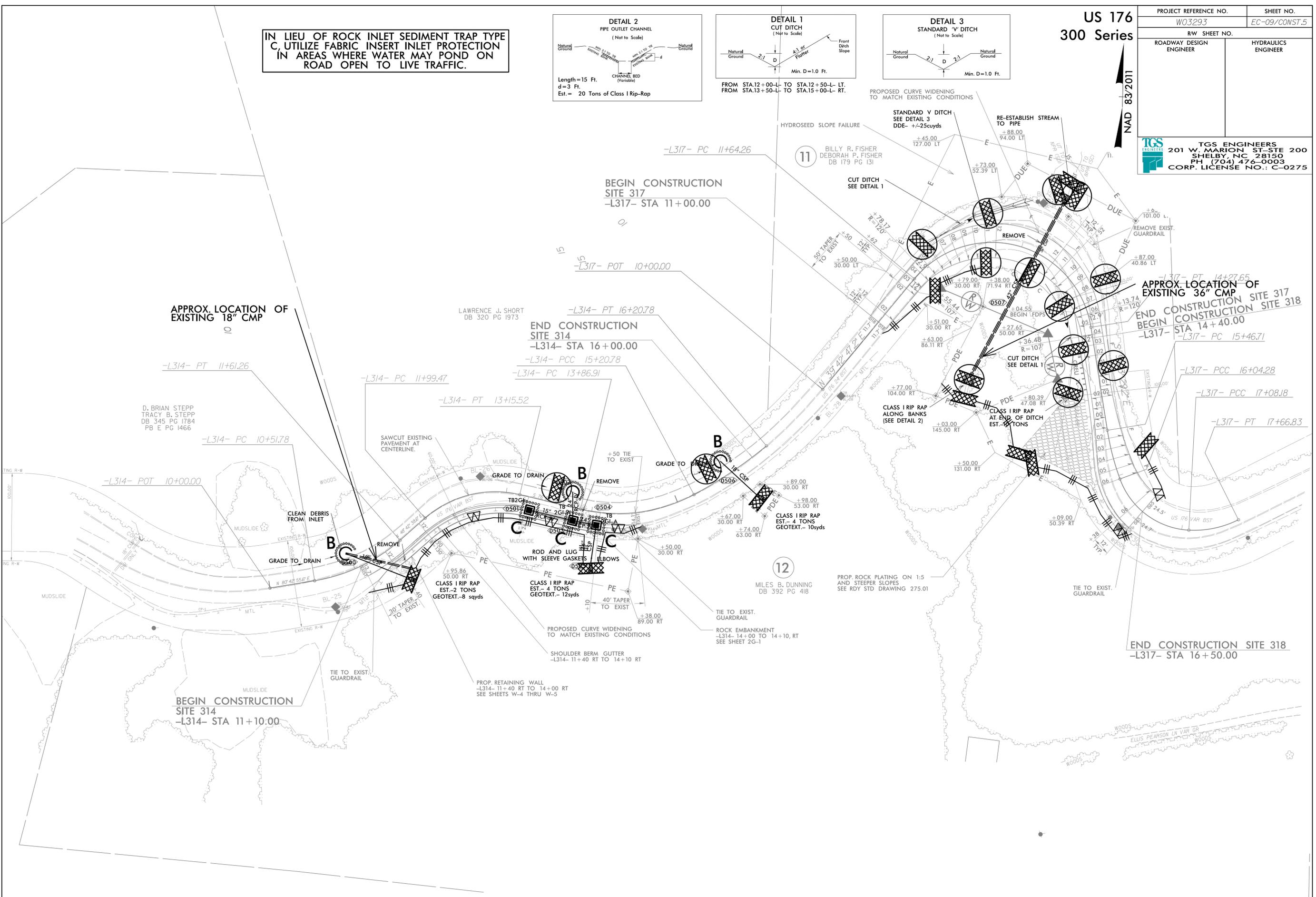
**END CONSTRUCTION SITE 316**  
**-L316- STA 13 + 50.00**

|  |  |                            |  |
|--|--|----------------------------|--|
| PROJECT REFERENCE NO.<br>W03293  |  | SHEET NO.<br>EC-09/CONST.5 |  |
| RW SHEET NO.   |  |                            |  |
| ROADWAY DESIGN ENGINEER  |  | HYDRAULICS ENGINEER        |  |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST-STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |                            |  |

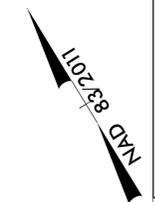
**IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.**



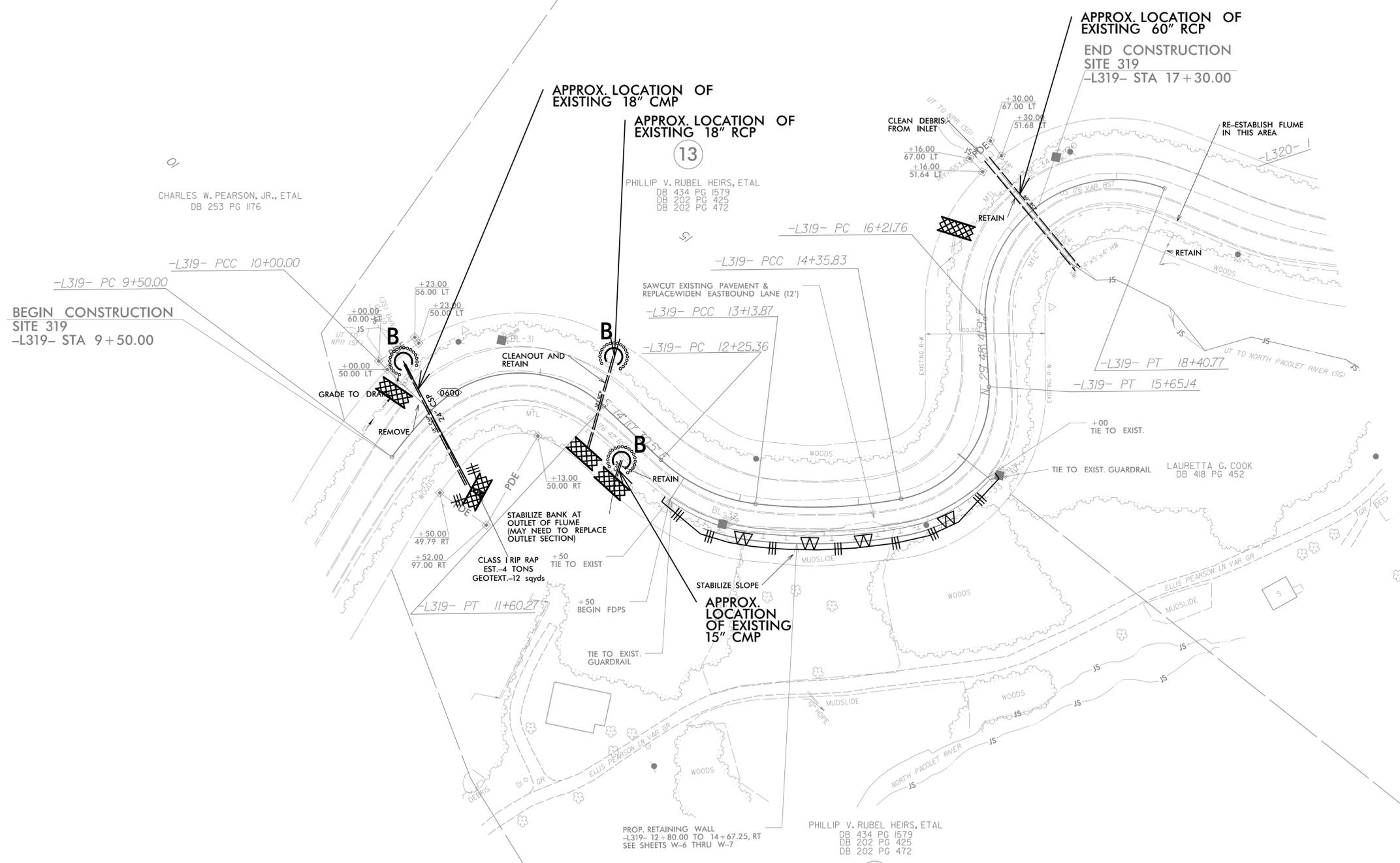
NAD 83/2011



**INSTALL LARGE PIPES VIA PUMP AROUND. REFER TO PUMP AROUND DETAIL ON EC-02B.**



|  |  |                            |  |
|--|--|----------------------------|--|
| PROJECT REFERENCE NO.<br>W03293  |  | SHEET NO.<br>EC-10/CONST.6 |  |
| RW SHEET NO.   |  |                            |  |
| ROADWAY DESIGN<br>ENGINEER   |  | HYDRAULICS<br>ENGINEER     |  |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST-STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |                            |  |



CHARLES W. PEARSON, JR., ETAL  
DB 253 PG 1176

PHILLIP V. RUBEL HEIRS, ETAL  
DB 434 PG 1579  
DB 202 PG 425  
DB 202 PG 472

LAURETTA G. COOK  
DB 418 PG 452

PHILLIP V. RUBEL HEIRS, ETAL  
DB 434 PG 1579  
DB 202 PG 425  
DB 202 PG 472

13

PROP. RETAINING WALL  
-L319- 12+80.00 TO 14+67.25, RT  
SEE SHEETS W-6 THRU W-7

STABILIZE BANK AT  
OUTLET OF FLUME  
(MAY NEED TO REPLACE  
OUTLET SECTION)  
CLASS 1 RIP RAP  
EST-4 TONS  
GEOTEXT-12 sayds

STABILIZE SLOPE  
APPROX  
LOCATION  
OF EXISTING  
15" CMP

APPROX. LOCATION OF  
EXISTING 18" CMP  
APPROX. LOCATION OF  
EXISTING 18" RCP

APPROX. LOCATION OF  
EXISTING 60" RCP  
END CONSTRUCTION  
SITE 319  
-L319- STA 17+30.00

BEGIN CONSTRUCTION  
SITE 319  
-L319- STA 9+50.00

-L319- PCC 10+00.00  
-L319- PC 9+50.00

-L319- PCC 14+35.83  
-L319- PC 16+21.76

-L319- PT 18+40.77  
-L319- PT 15+65.14

-L319- PT 11+60.27

-L319- PCC 13+13.87  
-L319- PC 12+25.36

SAWCUT EXISTING PAVEMENT &  
REPLACE/WIDEN EASTBOUND LANE (12')

RE-ESTABLISH FLUME  
IN THIS AREA

CLEAN DEBRIS  
FROM INLET

GRADE TO DRAIN  
REMOVE

CLEANOUT AND  
RETAIN

RETAIN

RETAIN

RETAIN

+00  
TIE TO EXIST.

TIE TO EXIST. GUARDRAIL

TIE TO EXIST.  
GUARDRAIL

+50  
BEGIN FDPS

+52.00  
97.00 RT

+50.00  
49.79 RT

+13.00  
50.00 RT

+23.00  
50.00 LT

+23.00  
56.00 LT

+00.00  
60.00 LT

+00.00  
50.00 LT

+16.00  
67.00 LT

+16.00  
51.64 LT

+30.00  
67.00 LT

+30.00  
51.68 LT

-L320- 1

UT TO NORTH PACOLET RIVER (SG)

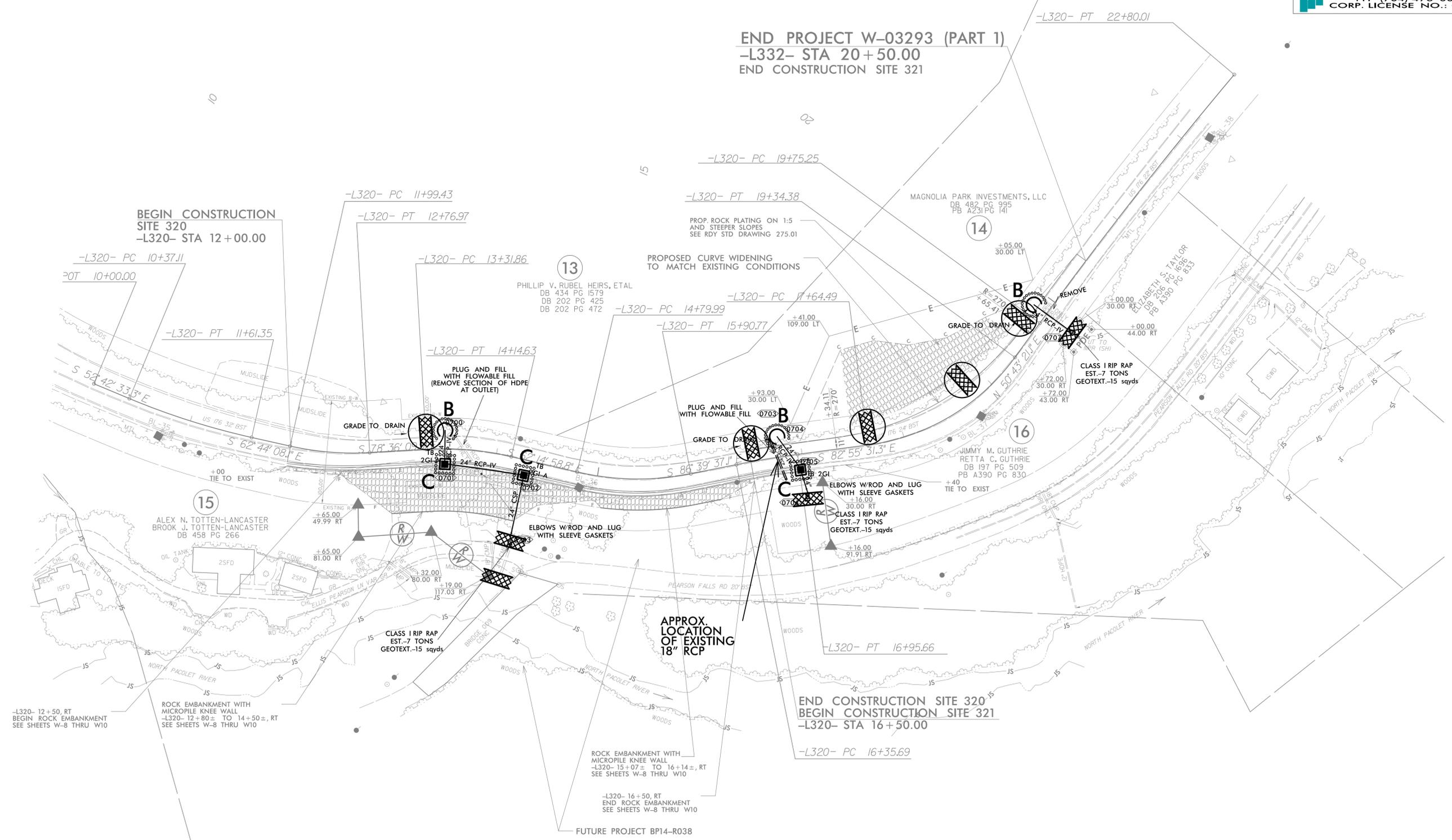
UT TO NORTH PACOLET RIVER (SG)

EXISTING R.W.

|  |  |                            |  |
|--|--|----------------------------|--|
| PROJECT REFERENCE NO.<br>W03293  |  | SHEET NO.<br>EC-II/CONST.7 |  |
| RW SHEET NO.   |  |                            |  |
| ROADWAY DESIGN ENGINEER  |  | HYDRAULICS ENGINEER        |  |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST-STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |                            |  |

IN LIEU OF ROCK INLET SEDIMENT TRAP TYPE C, UTILIZE FABRIC INSERT INLET PROTECTION IN AREAS WHERE WATER MAY POND ON ROAD OPEN TO LIVE TRAFFIC.

INSTALL MATTING FOR EROSION CONTROL ON ALL GRADED DITCHES AND GRADED SLOPES THAT DO NOT ALREADY CALL FOR OTHER MEANS OF PERMANENT OR TEMPORARY STABILIZATION



-L320- 12+50, RT  
BEGIN ROCK EMBANKMENT  
SEE SHEETS W-8 THRU W10

ROCK EMBANKMENT WITH  
MICROPILE KNEE WALL  
-L320- 12+80± TO 14+50±, RT  
SEE SHEETS W-8 THRU W10

ROCK EMBANKMENT WITH  
MICROPILE KNEE WALL  
-L320- 15+07± TO 16+14±, RT  
SEE SHEETS W-8 THRU W10

-L320- 16+50, RT  
END ROCK EMBANKMENT  
SEE SHEETS W-8 THRU W10

FUTURE PROJECT BP14-R038