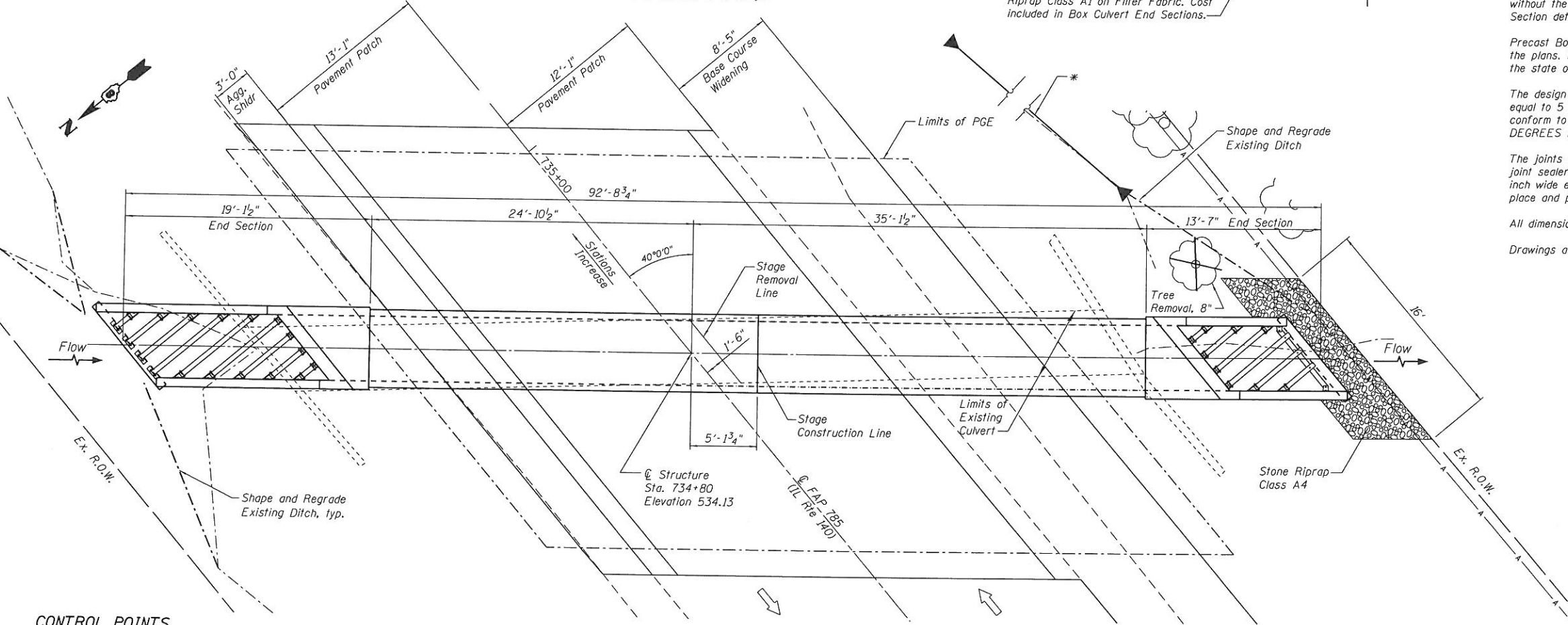


**LONGITUDINAL SECTION**  
(Dim. at Rt. L's to C.Rdwy.)

Replace unsuitable material as directed by the engineer with Stone Riprap Class A1 on Filter Fabric. Cost included in Box Culvert End Sections.



**PLAN**

**GENERAL NOTES**

- Build tops of headwalls parallel to the grade lines.
- All construction joints shall be bonded according to Article 503.09 of the Standard Specifications.
- Reinforcement bars shall conform to the requirements of ASTM A706 Gr. 60.
- The 6" porous granular material required per Article 540.06 of the Standard Specifications shall also extend beneath the Box Culvert End Sections and shall be considered included in the cost of Precast Concrete Box Culverts and Box Culvert End Sections.
- When lapping sheets of welded wire fabric, the overlap measured between the outermost cross wires of each fabric sheet shall not be less than 8".
- End Sections shall be paid for at the contract unit price per each for BOX CULVERT END SECTIONS, as outlined in section 540 of the Standard specifications.
- Class SI concrete shall be used throughout.
- Concrete, Rebar, and welded wire fabric quantities and lengths calculated for the cast-in-place End Sections may vary based on the precast box culverts supplied.
- Drain holes shall be provided in accordance with Article 503.11 of the Standard Specifications.
- The ends of the precast box sections adjacent to the end sections shall be formed without the male and female shapes specified in Article 8.1 of ASTM C1577. See End Section details.
- Precast Box Culvert End Sections may be used in lieu of cast-in-place as shown on the plans. Shop Drawings and calculations sealed by a structural engineer registered in the state of Illinois will be required.
- The design fill height for this box culvert is greater than 2 feet and less than or equal to 5 feet. The Skew is 40 degrees. The precast box culvert sections shall conform to BDE special provision "CONCRETE BOX CULVERTS WITH SKEWS > 30 DEGREES AND DESIGN FILL <= 5 FEET (BDE)".
- The joints between precast box sections shall be sealed, all voids filled with a mastic joint sealer. In addition the joints shall be externally sealed on all four sides with a 1/2 inch wide external sealing band. The seal shall be centered over the joint, secured in place and protected during the backfilling process.

All dimensions are in FEET (') - INCHES (") unless otherwise noted.  
Drawings are not to scale.

**TOTAL BILL OF MATERIAL**

| ITEM                                    | UNIT    | TOTAL |
|---|---------|-------|
| Removal of Existing Structures          | Each    | 1     |
| Precast Concrete Box Culverts 5' x 5'   | Foot    | 60    |
| Box Culvert End Sections, Culvert No. 1 | Each    | 2     |
| Traversable Pipe Grate                  | Foot    | 75    |
| Granular Backfill for Structures        | Cu. Yd. | 300   |
| Stone Riprap, Class A4                  | Sq. Yd. | 7     |
| Filter Fabric                           | Sq. Yd. | 7     |
| Temporary Soil Retention System         | Sq. Ft. | 400   |
| Tree Removal (6-15 Units Diameter)      | Unit    | 8     |
| Pipe Culvert Removal                    | Foot    | 42    |
| Pipe Culverts, Class D, Type I, 18"     | Foot    | 53    |
| Steel End Section                       | Each    | 2     |
| Inlet and Pipe Protection               | Each    | 1     |

\* Remove exist. pipe culvert and replace with Pipe Culvert, Class D, Type I, 18" with Steel End Sections  
D.S. : Sta. 734+70, Off. 33.7 Rt., Elev. 527.0  
U.S. : Sta. 735+21.8, Off. 24.7 Rt., Elev. 532.2 (Match Existing)

**CONTROL POINTS**

- Benchmark: IDOT BM 140-11 Chiseled "C" on east headwall, north side of IL 140. Elev. = 531.125
- Sta. 729+30.00 : Mag. nail in pavement  
N: 809,559.275  
E: 376,273.716
- Sta. 734+80.00 : Mag. nail in pavement  
N: 809,557.912  
E: 376,823.714
- Sta. 740+80.00 : Mag. nail in pavement  
N: 809,556.425  
E: 377,423.712

**WATERWAY INFORMATION**

Drainage Area = 0.14 Sq. mi Low Grade Elev. 534.1 @ Sta. 734+80

| Flood       | Freq. Yr. | Q C.F.S. | Opening Sq. Ft. |       | Nat. H.W.E. | Head - Ft. |       | Headwater El. Prop. |
|-------------|-----------|----------|-----------------|-------|-------------|------------|-------|---------------------|
|             |           |          | Exist.          | Prop. |             | Exist.     | Prop. |                     |
| Design      | 50        | 167      | 25              | 25    |             |            | 530.1 | 530.1               |
| Base        | 100       | 198      | 25              | 25    |             |            | 531.0 | 531.0               |
| Overtopping | -         | 283      | 25              | 25    |             |            | 534.1 | 534.1               |
| Max. Calc.  |           |          |                 |       |             |            |       |                     |

**DESIGN STRESSES**

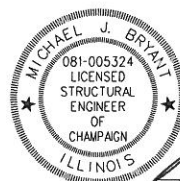
- PRECAST UNITS**  
f'c = 5,000 psi  
fy = 65,000 psi (Welded wire fabric)
- FIELD UNITS**  
f'c = 3,500 psi  
fy = 60,000 psi (reinforcement)  
fy = 65,000 psi (Welded wire fabric)

**LOADING HL-93**

Allow 50#/sq. ft. for future wearing surface.

**INDEX OF SHEETS**

- General Plan and Elevations.
- Stage Construction Plan.
- Box Culvert End Section Details.
- Steel Pipe Grate System.
- Details - Granular Backfill.
- Soil Borings.
- Cross Sections.



MICHAEL J. BRYANT, S.E.  
LICENSED STRUCTURAL ENGINEER  
ILLINOIS NO. 5324 EXPIRES 11-30-14  
DATE 3/19/14



|              |            |           |
|--------------|------------|-----------|
| USER NAME =  | DESIGNED - | REVISED - |
| PLOT SCALE = | CHECKED -  | REVISED - |
| PLOT DATE =  | DRAWN -    | REVISED - |
|              | CHECKED -  | REVISED - |

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**GENERAL PLAN AND ELEVATION**  
**STA. 734 + 80.00 CULVERT REPLACEMENT - S.N. 060-2490**

| F.A.P. RTE. | SECTION           | COUNTY  | TOTAL SHEETS | SHEET NO. |
|-------------|-------------------|---------|--------------|-----------|
| 785         | (133,134,135)RS-4 | MADISON | 28           | 21        |

CONTRACT NO. 76G58