

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	project number	170	11

NOTES

- 100 SCOPE OF WORK: Work at this site consists of removing an existing structure and building a new triple barrel 11' x 5' x 112'-0" precast concrete box culvert.
- 202 REMOVAL OF STRUCTURE: The existing structure is a 2-span concrete slab bridge, 36'-0" long with a clear roadway width of 26'-0". Include all work required to remove the bridge and old abutments from a previous structure in the contract unit price for "Removal of Structure."
- 210 ORDINARY BACKFILL: Compact material as specified in Section 203.04 E.2.a, "ND T 180."
- 606 JOINTS: Provide joints in accordance with Section 606.E.3, with the exception that a 12" minimum width waterproof membrane is allowable around the exterior surfaces of the box culvert walls and roof.
- 606 PRECAST SECTION: Tie the barrel sections together with 1"φ tie bolts as shown on Standard Drawing D-714-22. Place two ties per exterior wall joint, located at third points of the wall clear height.

MIX DESIGNS

Mix Design 1

Cement	100 lbs
Fly Ash	300 lbs
Fine Aggregate	2600 lbs
Water	70 gals

Mix Design 2 (No Fly Ash)

Cement	165 lbs
Fly Ash	NA
Fine Aggregate	2600 lbs
Water	50 gals

For the 12" cap, use a weatherproof and freeze/thaw resistant, non-shrink cement grout material such as SikaGrout® 212, BASF Masterflow® 928, Euclid NS Grout, or an approved equal which complies with ASTM C1107.

Include the controlled density backfill and material used for the 12" cap in the price bid for "Dbl 11Ft X 5Ft Precast RCB Culvert."

Payment for "Dbl 11Ft X 5Ft Precast RCB End Section" includes the apron, cutoff wall, parapet and wingwalls. Attach the apron to the last barrel section, the wingwalls and the cutoff wall. Attach the wingwalls to the last barrel section. Provide a welded tie type system for the connections of the apron to the box and wingwalls. Connect the wingwalls to the last barrel section by the use of tie bolts, steel-bolted plates or other approved method so the inside corner surface is smooth.

Use ASTM A36 steel for bolts, plates, angles, and studs. Use heavy hex nuts meeting the requirements of ASTM A563 and washers meeting ASTM F436, Type 1. Provide welded pipe sleeves meeting the requirements of ASTM A53, Grade B. Galvanize hardware and structural steel according to Section 854.

Welders are to meet the requirements of Section 105.06 D. Galvanize field welds according to Section 854.02.

Cast holes at 3'-0" centers through the apron and into the cutoff wall to receive ¾" diameter reinforcing bars. Cast holes in the last barrel section at 1'-0" centers for ½" diameter reinforcing bars to attach the parapet. Cast parapet against the section. Install the bars according to the manufacturer's recommendations, with a high strength adhesive specifically intended for concrete anchorage, in accordance with Section 806.02.

Provide a distance of 1'-0" between separate precast units. Fill this gap with a controlled density backfill. Use a controlled density backfill consisting of cement, water, pozzolanic materials, and fillers. Use a material that is fluid on placement to flow around and fill voids in the backfill area. Use a material that is able to support normal loads after 6 hours and have a compressive strength in the range of 75 psi to 125 psi at 28 days. If the mix design shown is used, no further testing will be required. The mix design yields approximately one cubic yard of flowable mortar.

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construction or
implementation
purposes.

PRELIMINARY