STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-5-200(035)102	170	2

NOTES

100 SCOPE OF WORK: Work at this site consists of removing an existing structural plate pipe (SPP) and installing a new double barrel 12' x 10' x 148' precast concrete box culvert.

202 REMOVAL OF STRUCTURE: The existing structure is a triple 12'-6" x 119' structural plate pipe. Include all work required to remove the existing structure in the contract unit price for “Removal of Structure-Site 3.”

210 ORDINARY BACKFILL: Compact material as specified in Section 203.04 G.2.a, “ND T 180.”

606 PRECAST COMPONENTS: Provide lift anchors designed to safely lift, handle, ship, and place precast components. Holes cast through the roof, floor, or walls of the precast components will not be permitted unless the weight of components exceed the rated capacity of industry available lift anchor systems. If lift holes are required due to segment weight, plug all lift holes after installation with polymer plugs and seal the outside of the precast component using 12” x 12” minimum sized waterproof membrane centered on each lift hole. Galvanize all lift anchors or lift hole pipe sleeves permanently incorporated into precast concrete components in accordance with Section 854.

606 PRECAST SECTION DESIGN: The precast concrete structure has been designed and detailed to utilize double cell precast barrel segments and end sections. The “Barrel Information Table” provided in the plans lists the minimum required dimensions and reinforcement. Alternate designs for double cell precast boxes using dimensions or reinforcement areas less than those listed in the table will not be permitted. Substitution of double cell precast segments using roof, floor, or wall thicknesses larger than those listed in the table will be permitted with approval by the Engineer.

606 PRECAST END SECTIONS: Provide a system to connect the cutoff walls to the end sections using ¾” minimum diameter rebar dowels spaced at 2’-0” maximum. Provide a system to connect the parapets to the structure using ¾” minimum diameter rebar dowels spaced at 2’-0” maximum.

Include all costs to fabricate and install the cutoff wall and parapet in the price bid for the Precast RCB End Sections.

606 SINGLE CELL PRECAST SECTION DESIGN: Two single cell units can be used as an alternate to a double cell unit with the design being the responsibility of the Contractor. Design the box culvert and box culvert end sections in accordance with the AASHTO LRFD Bridge Design Specifications, 9th Edition. Design for a HL-93 live load using a fill height of 18' and the following:

Lateral Earth Pressure: Use a maximum equivalent fluid weight of 60 pcf.
Use a minimum equivalent fluid weight of 30 pcf for the unbalanced condition.

For Contractor designed single cell precast units, load rate the box culvert in accordance with the NDDOT Load Rating Manual and the AASHTO Manual for Bridge Evaluation, 2018 Edition, incorporating the latest Interim Revisions. Provide a box culvert design to achieve a rating factor greater than or equal to 1.0 for the design, legal, and permit trucks at the specified fill height.

Include with the work drawing submittals a Load Rating Report sealed by a ND registered PE, and an AASHTOWare BrR model of the structure in XML format if two single cell precast units are designed.

Provide a distance of 1'-0" between separate precast units. Fill the gap between sections with a controlled density backfill consisting of cement, water, pozzolanic materials, and aggregate per the mix design provided. Use material that is fluid on placement to flow around and fill voids in the backfill area. The mix design yields approximately one cubic yard of controlled density backfill. Mix the material continuously during pumping or placement to keep the solution from separating.

Material	Weight
Cement	175 lbs
Fly Ash	175 lbs
Water	375 lbs (45 gallons)
Fine Aggregate	2600 lbs

Fill the gap between end sections with Class AE concrete meeting Section 602.03 B.

No additional compensation will be made if single cell units are used. Payment will be made using the plan quantities and prices bid for the double cell unit.

This document is preliminary and not for construction or implementation purposes.

PRELIMINARY