

August 7, 2024

ADDENDUM 1 – JOB 23434

TO: All prospective bidders on Projects BRJ-0045(075), Job No. 23434 scheduled for the August 9, 2024 bid opening.

The following revision(s) shall be made:

Plan Revisions:

See attached summary from Paul M. Benning, P.E. dated August 7, 2024 for an explanation.

Request for Proposal Revisions:

- Remove and replace pages 5 thru 7 of 9 of the Proposal pages located at the beginning of the Request for Proposal with pages revised August 7, 2024.
- Bid Item Changes are summarized in the Plan Addendum Summary and Approval.

This addendum is to be incorporated into the bidder's proposal for this project. AASHTOWare Project Bids files should be updated by downloading the addendum file from the Bid Express on-line bidding exchange at <http://www.bidx.com/> and load it into the AASHTOWare Project Bids program.



for PHILLIP MURDOFF, P.E. – CONSTRUCTION SERVICES ENGINEER
80: jwj
Enclosure

PLAN ADDENDUM SUMMARY AND APPROVAL

PROJECT INFORMATION		
Project:	BRJ-0045(075)	PCN: 23434
Location:	0.5 miles west of South Heart, ND	
Date:	08/06/2024	Lead Designer: Charles Hankins, PE
Bid Opening Date:	08/09/2024	JOB#: 23434 Addendum#: 1

PLAN SHEET CHANGES		
Section	Sheet	Description
4	1	- Remove "COUNTY TO HAUL AWAY" under existing timber structure
6	1	- Add note 201-P01 for new item CLEARING AND GRUBBING - Remove note 203-P04.3 concerning RCBC embankment materials
6	2	- Remove note number 2 from 251-P01 regarding cover crop
6	3	- Change 404 Permit Status to "Secured by Consultant"
8	1	- Add item CLEARING AND GRUBBING - Revise quantity for FOUNDATION FILL - Revise quantity for FOUNDATION FILL-TYPE1 - Revise quantities for DBL 12FT X 10FT PRECAST RCB CULVERT and END SECTIONS
10	1	- Change Tons/CY in Basis of Estimate from 1.5 to 1.875
60	1	- Revise descriptions and quantities for DBL 12FT X 10FT PRECAST RCB CULVERT and END SECTIONS
170	1	- Revise stationing layout on drawing to support DBL RCB CULVERT installation - Change Unit for FOUNDATION FILL from CY to TON
170	2	- Revise the first paragraph under 606-P01 for clarity

CHANGES TO PROPOSAL	
Pages	Description

CHANGES MADE TO BID ITEMS FOR JOB					
Spec	Code	Description	Unit	Previous Quantity	Revised Quantity
201	0330	CLEARING AND GRUBBING	LS	0	1
210	0209	FOUNDATION FILL	TON	210	909
210	0225	FOUNDATION FILL-TYPE1	CY	213	236
606	3210	DBL 12FT X 10FT PRECAST RCB CULVERT	LF	110	55
606	7210	DBL 12FT X 10FT PRECAST RCB END SECTION	EA	4	2

APPROVAL

Should the revisions described above be processed as a plan addendum?

X Yes No

Paul M. Benning
 Paul Benning, P.E. – Local Government Engineer

8/7/2024
 Date

BID ITEMS

Project: BRJ-0045(075) (PCN-23434)

Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
001	103	0100	CONTRACT BOND	L SUM	1.				
002	201	0330	CLEARING & GRUBBING	L SUM	1.				
003	202	0102	REMOVAL OF BOX CULVERT	EA	1.				
004	202	0104	REMOVAL OF STRUCTURE	EA	1.				
005	203	0103	COMMON EXCAVATION-TYPE C	CY	5,797.				
006	203	0109	TOPSOIL	CY	2,876.				
007	203	0113	COMMON EXCAVATION-WASTE	CY	5,173.				
008	203	0180	ROADWAY OBLITERATION	LF	730.				
009	210	0050	BOX CULVERT EXCAVATION	EA	1.				
010	210	0127	CHANNEL EXCAVATION	L SUM	1.				
011	210	0209	FOUNDATION FILL	TON	909.				
012	210	0225	FOUNDATION FILL-TYPE 1	CY	236.				
013	210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1.				
014	216	0100	WATER	M GAL	630.				
015	251	0300	SEEDING CLASS III	ACRE	3.320				
016	251	1000	WETLAND SEED	ACRE	.024				

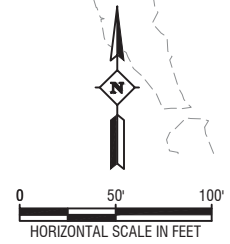
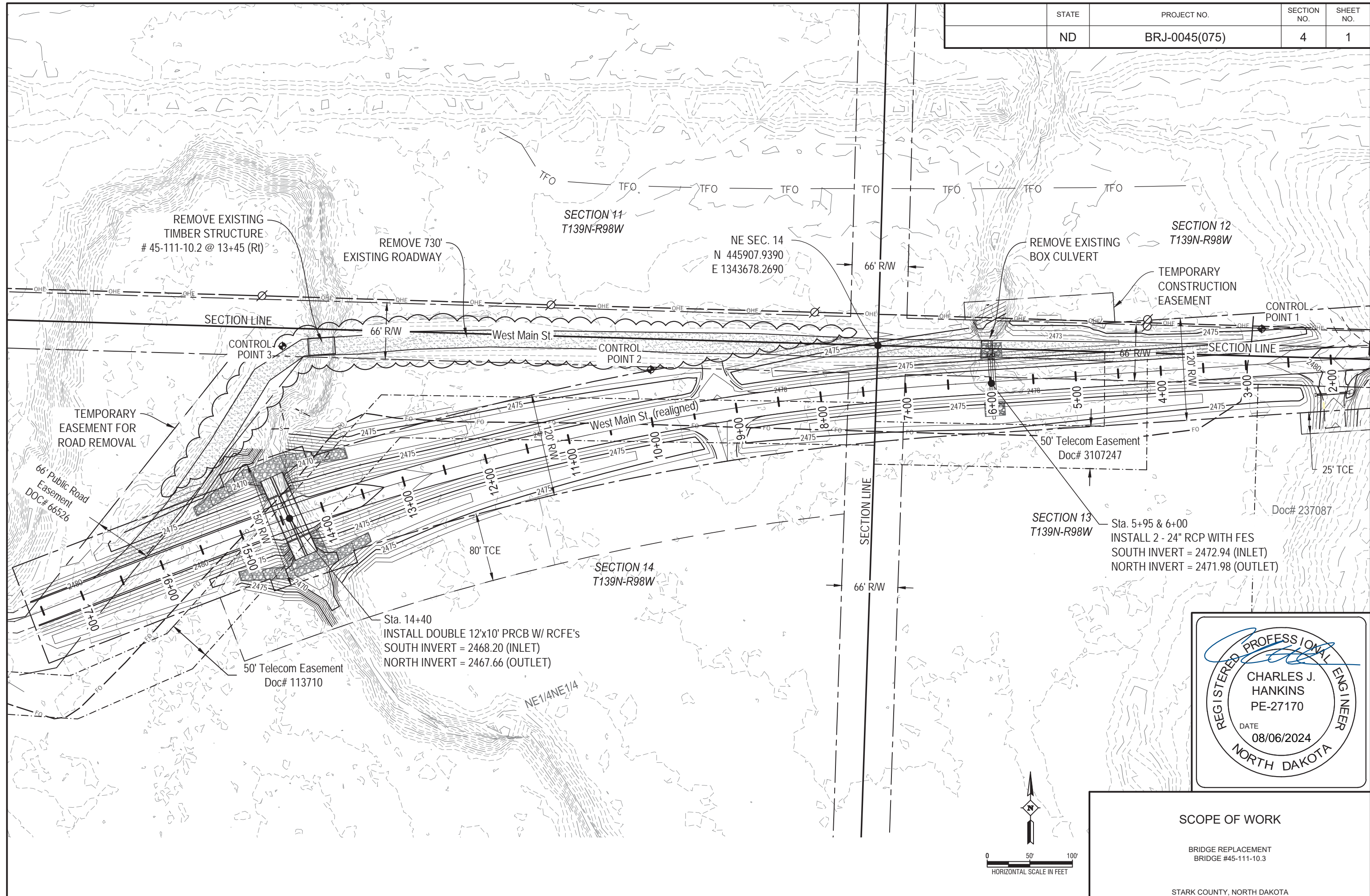
BID ITEMS

Project: BRJ-0045(075) (PCN-23434)

Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
017	251	2000	TEMPORARY COVER CROP	ACRE	3.320				
018	253	0101	STRAW MULCH	ACRE	6.660				
019	255	0102	ECB TYPE 2	SY	442.				
020	256	0200	RIPRAP GRADE II	CY	705.				
021	256	1000	GROUT FOR RIPRAP	SY	208.				
022	260	0100	SILT FENCE UNSUPPORTED	LF	1,340.				
023	260	0101	REMOVE SILT FENCE UNSUPPORTED	LF	1,340.				
024	261	0112	FIBER ROLLS 12IN	LF	745.				
025	261	0113	REMOVE FIBER ROLLS 12IN	LF	745.				
026	262	0100	FLOTATION SILT CURTAIN	LF	60.				
027	262	0101	REMOVE FLOTATION SILT CURTAIN	LF	60.				
028	606	3210	DBL 12FT X 10FT PRECAST RCB CULVERT	LF	55.				
029	606	7210	DBL 12FT X 10FT PRECAST RCB END SECTION	EA	2.				
030	702	0100	MOBILIZATION	L SUM	1.				
031	704	1000	TRAFFIC CONTROL SIGNS	UNIT	94.				
032	704	1052	TYPE III BARRICADE	EA	6.				

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BRJ-0045(075)	4	1



SCOPE OF WORK

BRIDGE REPLACEMENT
 BRIDGE #45-111-10.3

STARK COUNTY, NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BRJ-0045(075)	6	1

NOTES

100-P01 FENCES:

The County will attend to the removal of existing fence, installation of temporary fences (if needed), then final installation to the new County right of way. Contact the County 14 calendar days prior to construction.

100-P02 SIGNS:

Signs and supports located within the right-of-way shall be removed and salvaged and shall remain the property of the Owner. The cost for removing and salvaging the signs shall be included in the price bid for other items.

105-P01 UTILITIES:

1. Utilities that the Engineer has been made aware of are shown on the plans. Other utilities may exist that are not shown. Underground utility locations are approximate and not all utilities are shown on the plans. The location and elevations are unknown. The contractor will be liable for any costs resulting from damage to utilities or pipelines.
2. Consolidated will need to relocate the underground fiber optic line on the south side of the current West Main Street roadway. Owner has coordinated with Consolidated for relocation prior to Construction.
3. Overhead Power lines on north side of the project will not be relocated. It is assumed to have no impact to project area. If Contractor deems utility will be impacted, coordination with the Engineer prior to relocation commencing is required.

107-P01 HAUL ROADS:

1. The Contractor is referred to Section 39-12-05.3 of the North Dakota Century Code, which pertains to weight limits. A portion of Paragraph #2 of this section of the code reads: "The gross weight on state highways may not exceed one hundred five thousand five hundred pounds (47,854 kilograms) unless otherwise posted, and on all other highways the gross weight may not exceed eighty thousand pounds (36,287.39 kilograms), unless designated by local authorities for highways under their jurisdiction for gross weights not to exceed one hundred five thousand five hundred pounds (47,854 kilograms)".
2. Contractors are advised to check with the County Road Superintendent(s) for the load limits on roads that will be considered for use as "haul roads" for this project

201-P01 CLEARING AND GRUBBING

Clearing and Grubbing is required for this project and incorporates the entire new alignment area on the plans. The work shall include but is not limited to ground cover, shrubs, and tree stumps. Topsoil shall be addressed under a different line item.

202-P01 REMOVAL OF BOX CULVERT:

The existing structure to be removed at Sta 6+02 (right) consists of a single box culvert. Box culvert shall be removed and disposed of by Contractor (The Contractor shall note that some riprap and concrete debris exists near the existing box culvert that shall also be removed under this item).

All costs for removal and disposal of the structure shall be included in the price bid for "Removal of Box Culvert" including items listed as environmental commitments.

202-P02 REMOVAL OF STRUCTURE:

Existing structure to be removed at Sta 13+45 right, consists of steel and timber.

The Contractor is advised that the County has installed a temporary bridge bearing on roadway on either side of the channel. The County shall remove and haul prior to obliteration and removal of structure. The bridge shall be removed and disposed of by the Contractor. All costs associated with removal and disposal of this structure shall be included in the price bid for "Removal of Structure" including items listed as environmental commitments.

203-P01 COMPACTION CONTROL:

Place RCBC embankment material in accordance with Section 203.04 G3 of the Standard Specifications (Compaction Control Type B).

203-P02 SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.

203-P03 TOPSOIL:

The topsoil depth was estimated to be 6 inches removed, 6 inches replaced for the overall average. Topsoil will not be measured separately and will be paid at plan quantity. All costs to salvage, stockpile, and replace the topsoil shall be included in the unit price bid for "Topsoil."

203-P04 COMMON EXCAVATION-TYPE C:

1. Common Excavation-Type C shall not be measured for payment and shall be paid based on plan quantity (Contract Quantity).
2. After removing topsoil from original ground under all roadbed embankment areas, an additional one-foot shall be scarified and re-compacted. Benching of the existing roadway inslopes shall be required. A standard detail is included; however, the contractor shall note that all benches shall be deep enough to provide sufficient width to permit placing, spreading, and compaction equipment to operate and each bench shall be thoroughly compacted before additional roadway embankment is placed. All scarifying, re-compacting, and benching shall be included in price bid for "Common Excavation – Type C."

203-P05 ROADWAY OBLITERATION:

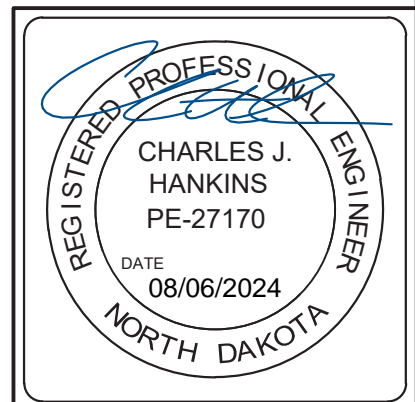
Roadway Obliteration shall not commence until the County has removed temporary bridge deck installed over the structure. The roadway obliteration item includes all work associated with the restoration of the roadway embankment to a more natural contour. Strip the topsoil, gravel, spread the dirt out, flatten the existing road, and replace the topsoil. Seeding of the obliterated areas shall be in accordance with Section 251 of the Standard Specifications for a Class III seed mixture as indicated in the notes. All labor, equipment and materials required to do the roadway obliteration shall be included in the price bid for "Roadway Obliteration". Assure positive drainage is met.

203-P06 BACKSLOPE ROUNDING:

Round back slopes on all cut sections per detail. Include this work in the unit price bid for "Common Excavation-Type C".

203-P07 APPROACHES:

Construct approaches at locations shown on the plans. Any location adjustments will be determined by the Engineer. Include all associated costs with the construction of approaches in the unit price bid for "Common Excavation-Type C".



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BRJ-0045(075)	6	2

NOTES

210-P01 BOX CULVERT EXCAVATION:

Box Culvert Excavation shall be to the limits shown on the plan typical box culvert layout drawing. All material not considered suitable for the roadbed shall be used to fill the road inslopes unless the material is deemed waste excavation by the Engineer. It is assumed that this material will be suitable for use in embankment areas. Payment for all Box Culvert Excavation to the limits shown on the plans will be Lump Sum. The price bid for Box Culvert Excavation shall include the costs for placement of this material in embankment areas. The embankment shall meet the requirements of Compaction Control. Type B.

210-P02 CHANNEL EXCAVATION:

Channel Excavation within the project limits is assumed suitable for use in embankment areas. All material not considered suitable for the roadbed shall be used to fill the road inslopes unless the material is deemed waste excavation by the Engineer. Payment for all Channel Excavation to the limits shown on the plans will be Lump Sum. The price bid for Channel Excavation shall include the costs for placement of this material in embankment areas. The embankment shall meet the requirements of Compaction Control Type B.

251-P01 SEEDING: Seeding Class III shall consist of the following mixture:

Species	Lbs./Acre
Alfalfa	9
Western wheatgrass	4
Intermediate wheatgrass	5
Slender wheatgrass	2
Oats	32
Total	52

- Seeding shall cover the entire disturbed right-of-way excepting the roadbed. The seed mixture shall be Class III in accordance with Section 251 of the Standard Specifications. Payment for seeding shall be per acre.
- The "Seeding Class III", "Temporary Cover Crop", and "Straw Mulch" quantities shown in Sections 76 and 77 are based on the calculated area between the edge of roadway and the limits of construction. They will be paid for at plan quantity. Additional seeding and mulching for disturbed areas used to facilitate construction or accommodate the Contractor's method and means will be the responsibility of the Contractor with no additional cost to the project. This includes locations such as staging areas, stockpile sites and any other temporary locations. Seed these areas with the same mixture shown above and mulch.

255-P01 EROSION CONTROL BLANKET:

An estimated quantity of erosion control blanket has been included in the plans to be placed at erosion critical locations primarily around the structure as directed by the engineer.

256-P01 RIRAP GRADE II:

- Geosynthetic Filter Fabric Type RR shall be installed under the Riprap and shall be included in the unit price bid for "Riprap Grade II".

302-P01 SURFACE AGGREGATE:

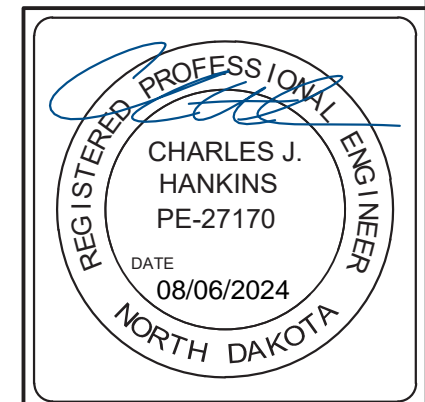
- County forces will haul, lay & compact the 6 inches of aggregate surfacing as noted on the Typical Sections. Coordinate grading operation with Stark County so that the surfacing can be placed within 48 hours after the finished grading is complete. The County is available to haul, lay & compact Aggregate Surface Course Monday through Thursday only.
- The Contractor is responsible for all roadway maintenance from the project start through final acceptance. The only exception is if the County does not begin delivery of aggregate surface course within the 48 hour notice period, not including Friday through Sunday.

704-P01 TRAFFIC CONTROL:

- The project will be closed to traffic during construction.
- Construction signing for the project shall be provided and maintained by the Contractor as per Section 100 sheets 1 and 2, Section 704 of the Standard Specifications, referenced Standard Drawings, and the MUTCD Manual. Traffic control for the bridge replacement shall consist of a road closure. Detour is not provided.

714-P01 PIPE CONCRETE REINFORCED 24 INCH CL III:

- Each precast reinforced concrete pipe section shall be secured with four tie bolts per joint.
- A 24 inch wide geosynthetic fabric Type RR shall be placed on the exterior sides of each joint and shall be included in the unit price bid for "Pipe Conc Reinf 24in CL III".



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BRJ-0045(075)	6	3

ENVIRONMENTAL NOTES

ENVIRONMENTAL NOTES (EN):

The North Dakota Department of Transportation, the Federal Highway Administration, and Stark County have made environmental commitments to secure approval of this project. The following environmental notes are requirements to comply with these commitments:

EN-1 AQUATIC NUISANCE SPECIES (ANS):

Notify the North Dakota Game and Fish Department (NDGFD) at least 72 hours prior to any vehicles, vessels, pumps and equipment entering the water, to allow the NDGFD ANS Coordinator, Benjamin Holen, by phone (701) 368-9117 for equipment inspections, or any additional information regarding ANS prevention protocol. Supply the inspection report to the engineer prior to work taking place in the water.

EN-2 TEMPORARY WETLAND IMPACT:

Temporary impact areas within wetlands and or other waters are incorporated into the plans for this project. Remove temporary fill placed and sedimentation in wetlands or other waters. Restore these wetlands to preconstruction contours.

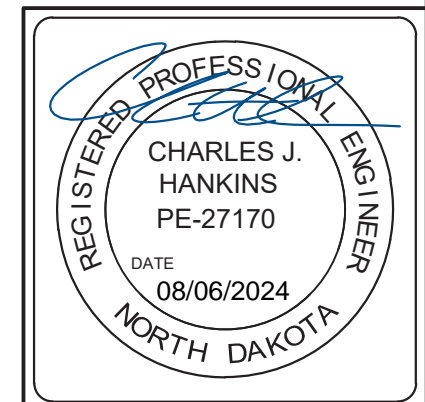
EN-3 WETLAND MITIGATION:

Wetland mitigation is required for unavoidable permanent wetland impacts. The wetland mitigation plan is incorporated into the plans for this project. After completion of the mitigation area, the Engineer will complete the Onsite Mitigation Certification Form SFN 61042. Any sedimentation occurring within the mitigation area will be removed.

PERMITS REQUIRED:

US Army Corps of Engineers - Section 404 Permit
 Status: Secured by Consultant

ND Department of Health - NDPDES Permit
 Status: To be obtained by contractor prior to construction. Owner to be listed as Stark County on permit



ESTIMATED QUANTITIES

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BRJ-0045(075)	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	PARTICIPATING	NON-PARTICIPATING	TOTAL
103	0100	CONTRACT BOND	L SUM	0.85	0.15	1
201	0330	CLEARING AND GRUBBING	L SUM	1		1
202	0102	REMOVAL OF BOX CULVERT	EA	1		1
202	0104	REMOVAL OF STRUCTURE	EA		1	1
203	0103	COMMON EXCAVATION - TYPE C	CY	2104	3693	5797
203	0109	TOPSOIL	CY	1287	1589	2876
203	0113	COMMON EXCAVATION WASTE	CY		5173	5173
203	0180	ROADWAY OBLITERATION	LF		730	730
210	0050	BOX CULVERT EXCAVATION	EA	1		1
210	0127	CHANNEL EXCAVATION	L SUM	1		1
210	0209	FOUNDATION FILL	TON	909		909
210	0225	FOUNDATION FILL-TYPE 1	CY	236		236
210	0405	FOUNDATION PREPARATION - BOX CULVERT	L SUM	1		1
216	0100	WATER	M GAL	95	535	630
251	0300	SEEDING CLASS III	ACRE	0.8	2.52	3.32
251	1000	WETLAND SEED	ACRE		0.024	0.024
251	2000	TEMPORARY COVER CROP	ACRE	0.8	2.52	3.32
253	0101	STRAW MULCH	ACRE	1.6	5.06	6.66
255	0102	ECB TYPE 2	SY	340	102	442
256	0200	RIPRAP - GRADE II	CY	648	57	705
256	1000	GROUT FOR RIPRAP	SY	208		208
260	0100	SILT FENCE (UNSUPPORTED)	LF	1043	297	1340
260	0101	REMOVE SILT FENCE (UNSUPPORTED)	LF	1043	297	1340
261	0112	FIBER ROLLS 12IN	LF	150	595	745
261	0113	REMOVE FIBER ROLLS 12IN	LF	150	595	745
262	0100	FLOTATION SILT CURTAIN	LF	60		60
262	0101	REMOVE FLOTATION SILT CURTAIN	LF	60		60
606	3210	DBL 12FT X 10FT PRECAST RCB CULVERT	LF	55		55
606	7210	DBL 12FT X 10FT PRECAST RCB END SECTION	EA	2		2
702	0100	MOBILIZATION	L SUM	0.85	0.15	1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	94		94
704	1052	TYPE III BARRICADE	EA	6		6
714	0615	PIPE CONC REINF 24IN CL III	LF		100	100
714	3020	END SECT-CONC REINF 24IN	EA		4	4
714	5015	PIPE CORR STEEL 0.064IN 18IN	LF		34	34
714	5810	END SECT CORR STEEL 0.064IN 18IN	EA		2	2
900	1000	TEMPORARY STREAM DIVERSION	EA	1		1

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BRJ-0045(075)	10	1

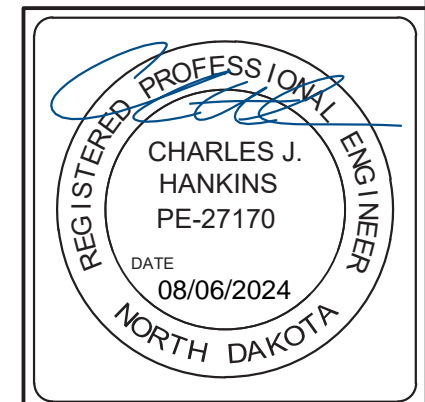
BASIS OF ESTIMATE

210 FOUNDATION FILL:			
Plan dimension plus 25% for shrinkage		1.875	tons/CY
216 WATER:			
Embankment	10	Mgal/CY	
Dust Control	50	Mgal/mile	
256 RIPRAP GRADE II:		1.5	tons/CY

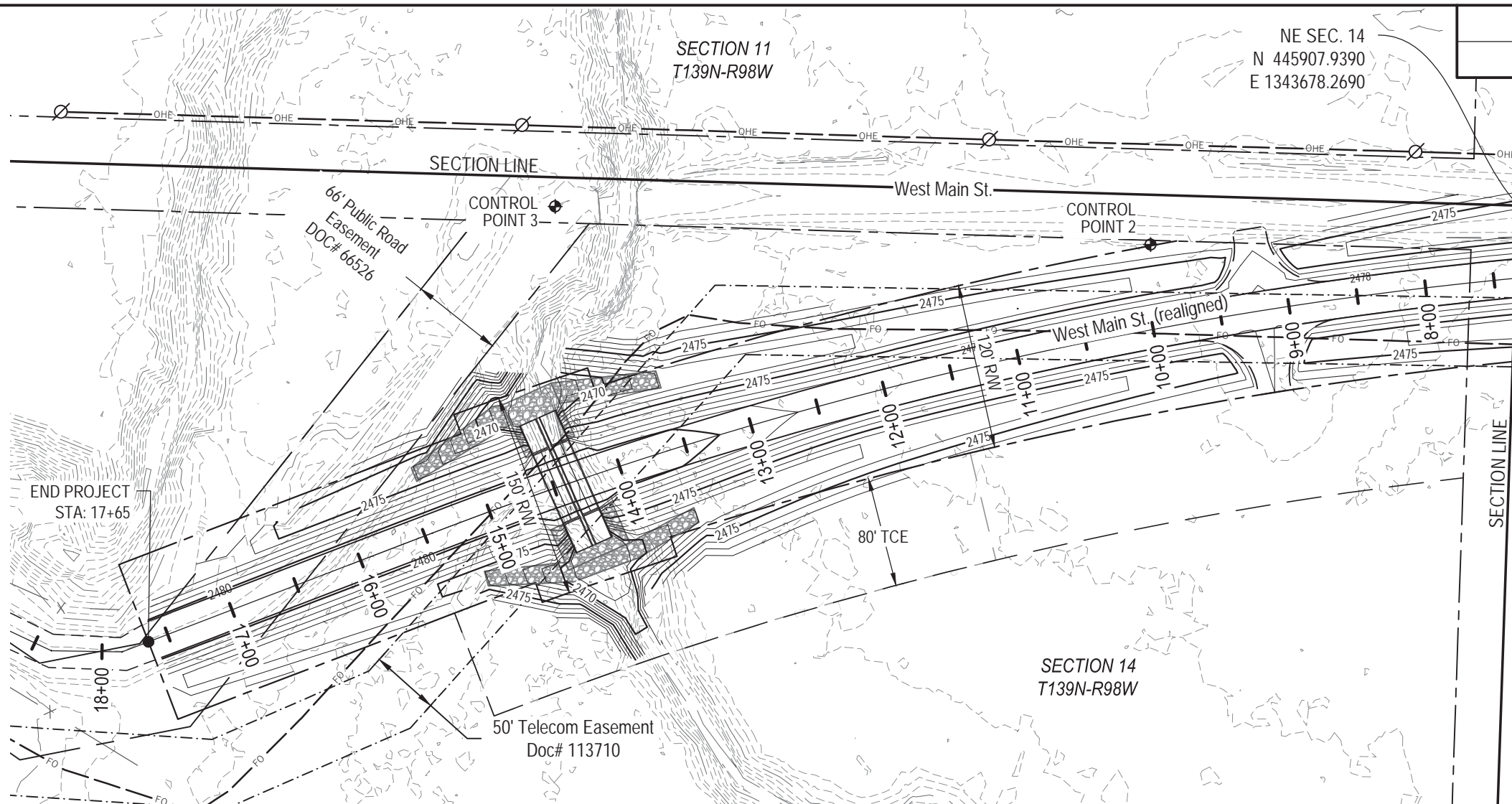
EARTHWORK:

Total Excavation	10,970	CY
Total Embankment* (Includes 25% shrinkage)	5,797	CY
Common Excavation - Waste	5,173	CY
Topsoil	2,876	CY

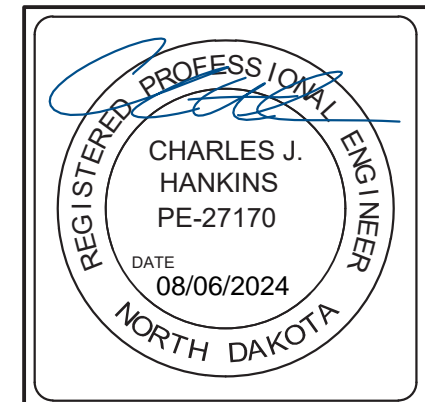
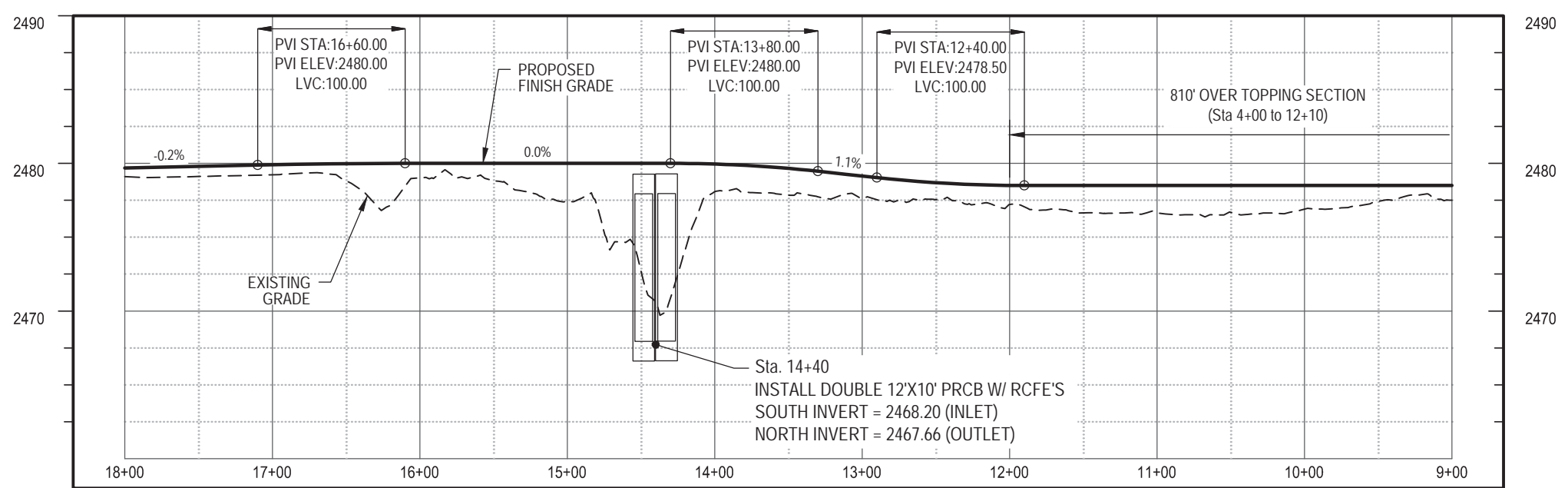
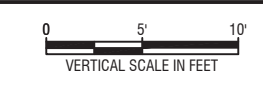
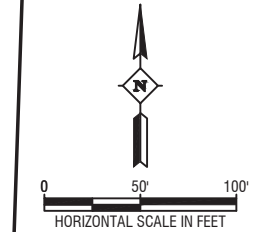
*Not a Pay Item
**Pay Item, Paid as Lump Sum



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BRJ-0045(075)	60	1



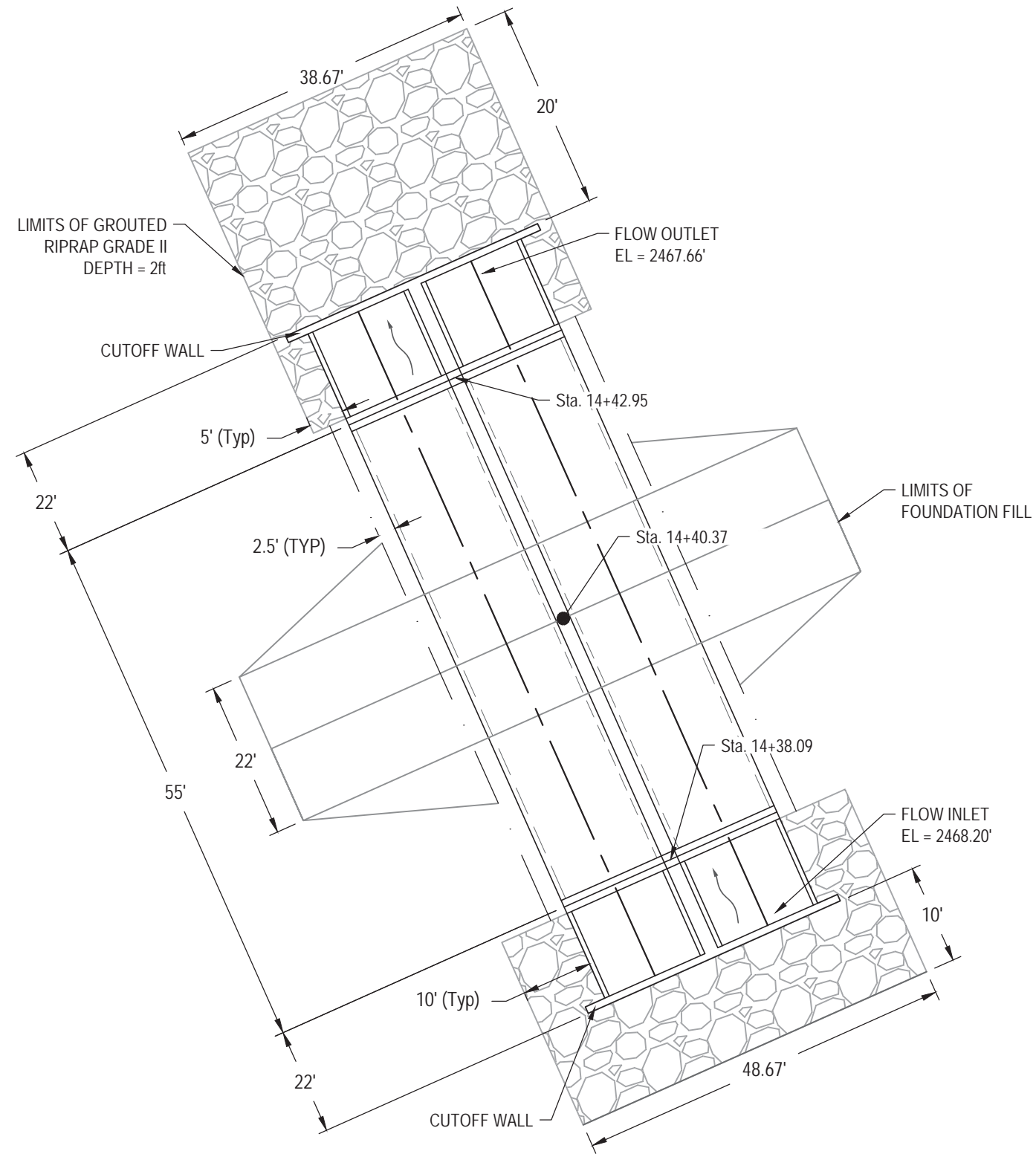
SPEC CODE	BID ITEM	UNIT	QTY
202 0104	REMOVAL OF STRUCTURE		
13+45 - Rt		EA	1
606 3210	DBL 12x10 PRECAST RCB CULVERT		
14+40 - CL		LF	55
606 7210	DBL 12x10 PRECAST RCB END SECTION		
14+37 - Lt		EA	1
14+43 - Rt		EA	1



PLAN & PROFILE

BRIDGE REPLACEMENT
BRIDGE #45-111-10.3

STARK COUNTY, NORTH DAKOTA



HYDRAULIC DESIGN DATA	
DRAINAGE AREA (CONTRIBUTING)	142 SQ MILES
DESIGN FREQUENCY	15 YEARS
DESIGN DISCHARGE	2522 CFS
DESIGN STAGE	2478.75
STREAM GRADIENT	0.0010 FT/FT
WATERWAY PROVIDED BELOW DESIGN STAGE	240 SQ FT
AVG. VELOCITY OF FLOW IN NATURAL CHANNEL	7.98 FPS
DEPTH OF FLOW	1.11 FT
VELOCITY OF FLOW THRU CULVERT	6.93 FPS
FREEBOARD PROVIDED	8 FT (MIN.)
100 YEAR FREQUENCY DISCHARGE	1061 CFS
100 YEAR FREQUENCY STAGE	2479.33
MAXIMUM OBSERVED STAGE	UNKNOWN
MAXIMUM RECORDED DISCHARGE	UNKNOWN
FREQUENCY OF MAXIMUM FLOOD	UNKNOWN
MINIMUM WATER ELEVATION	±2 FT

SPEC.	CODE	ITEM DESCRIPTION	UNIT	QUAN.
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0127	CHANNEL EXCAVATION	L SUM	1
210	0209	FOUNDATION FILL	TON	909
210	0225	FOUNDATION FILL - TYPE I	CY	236
210	0405	FOUNDATION PREPARATION BOX CULVERT	L SUM	1
256	0200	RIPRAP - GRADE II	CY	648
256	1000	GROUT FOR RIPRAP	SY	208

- NOTE:
1. CHANNEL EXCAVATION INCLUDES FILLING OF THE OLD CHANNEL TO FACILITATE RIPRAP PLACEMENT WHERE REQUIRED TO PRODUCE SATISFACTORY TRANSITIONS TO/FROM CHANNEL TO END SECTIONS.
 2. EXISTING STREAM BED ELEVATION = 2471.9±



BOX CULVERT LAYOUT

BRIDGE REPLACEMENT
BRIDGE #45-111-10.3

STARK COUNTY, NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BRJ-0045(075)	170	2

STRUCTURAL NOTES

100 SCOPE OF WORK:

Work at this site consists of removing a single span steel and timber bridge and replacing it with a new double 12'x10'x55' precast reinforced concrete box culvert.

210-P01 FOUNDATION FILL-TYPE 1:

Foundation Fill-Type 1 shall be used under the box culvert as shown in the plan details. This material shall be foundation fill per the standard specifications. Foundation Fill – Type I will be measured by the CY based on plan dimensions and shall be paid for based on the quantity shown in the plans (Contract Quantity). Materials for Foundation Fill - Type I shall follow specification 210.3.B.

210-P02 FOUNDATION PREPARATION:

The Contractor shall note that flowing or standing water is present in the channel at this location. The water level fluctuates throughout the year. Bidders shall include all costs generated due to site conditions into associated bit items when bidding this project. No additional compensation nor revisions to the completion date will be made due to fluctuations in the water level.

606-P01 PRECAST REINFORCED CONCRETE BOX CULVERT AND END SECTIONS:

As an alternative to the double-cell precast segment, two single-cell precast segments may be provided. This provision also applies to the end sections. This substitution will be made at no additional cost to the project.

The "DBL 12FT X 10FT PRECAST RCB END SECTION" bid item consists of the cutoff wall, parapet, and end sections. Attach the end sections to the last barrel section by the use of tie bolts or another approved method so the inside surface is smooth. After backfilling, end sections are to be in line. If the end sections are not in line remove and reset the end sections to be in proper alignment. Any foundation fill not shown in plans that is required to facilitate the installation of the end sections is to be included in price bid for "DBL 12FT X 10FT PRECAST RCB END SECTION".

Tie all barrel sections together with prestressing strands 1" galvanized tie-bolts as shown on Standard Drawing D-714-22. If strands are used, use a minimum of six 1/2" diameter 270K strands for double box section with one strand in each corner and the center wall. Stress prestressing strands from opposite ends to a force of 20 kips. Protect prestressing cables against corrosion and grout their ends. If tie-bolts are used, the joints will require two ties per exterior wall located at the third points of the wall clear height.

Install five 3/4" diameter threaded inserts and steel eye bolts along top of south facing end sections to provide anchorage for fencing. A hot dipped galvanized angle, shown on Standard Drawing D-752-01, is to also be included at each end section. All costs associated with the threaded inserts, steel eye bolts, and galvanized angles are to be included in the price bid for "DBL 12FT X 10FT PRECAST RCB END SECTION".

The space between single cell precast units shall be filled with controlled density backfill and a cap as shown on the detail. All costs associated with completing these items as detailed shall be included in the price bid for the precast units.

The requirements for the water proof 24-inch wide membrane of specification 606.04 E5 shall not apply to this project. A 24-inch wide geosynthetic fabric type-RR 24-inches wide shall be placed on the exterior four sides of each joint.

606-P01 PRECAST REINFORCED CONCRETE BOX CULVERT AND END SECTIONS: (CONT.)

Box Culvert Design

BASIS OF DESIGN

Top slab thickness = 9 inches

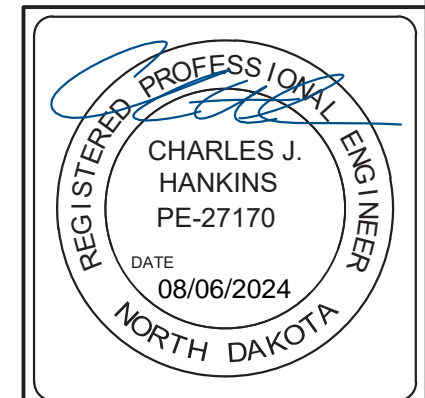
Bottom thickness = 9 inches

Wall thickness = 8 inches

Haunches = 12 inches

HL-93 Loading

Max fill height = 4.5 feet



STRUCTURAL NOTES

BRIDGE REPLACEMENT
BRIDGE #45-111-10.3

STARK COUNTY, NORTH DAKOTA