REQUEST FOR PROPOSAL
STATE FEDERAL AID PROJECT NO. AC-NH-SOIB-7-085(109)125 (PCN-22041)

1.770 Miles
STRUCTURE REPLACEMENT, WILDLIFE CROSSING STRUCTURE, GRADING, AGGREGATE BASE, HMA, GUARDRAIL & INCIDENTALS
US 85, LONG X BRIDGE 2.2 MI S OF CMC 2739

MCKENZIE COUNTY
DBE Race Neutral Goal - 0%

BID OPENING: The bidder's proposal will be accepted via the Bid Express on-line bidding exchange at www.bidx.com until 09:30AM Central Time on May 10, 2019.

Prior to submitting a Proposal, the Bidder shall complete all applicable sections and properly execute the Proposal Form in accordance with the specifications.

Proposal Form of:

(Firm Name)

(Address, City, State, Zipcode)  (For official use only)
The company, firm, corporation, or individual hereby acknowledges that it has designated a responsible person or persons as having the authority to obligate the company, firm, or individual, through electronic or paper submittal, to the terms and conditions described herein and in the contract documents. The designated responsible person submitting this proposal shall be hereafter known as the bidder. By submitting this proposal, the bidder fully accepts and agrees to all the provisions of the proposal. The bidder also certifies that the information given in this proposal is true and the certifications made in this proposal are correct.

The bidder acknowledges that they have thoroughly examined the plans, proposal form, specifications, supplemental specifications, special provisions and agrees that they constitute essential parts of this proposal.

The bidder acknowledges that all line items which contain a quantity shall have a unit price bid. Any line item which is bid lump sum shall contain a lump sum bid price.

The bidder acknowledges that they understand that the quantities of work required by the plans and specifications are approximate only and are subject to increases and decreases; the bidder understands that all quantities of work actually required must be performed and that payment therefore shall be at the prices stipulated herein; that the bidder proposes to timely furnish the specified materials in the quantities required and to furnish the machinery, equipment, labor and expertise necessary to competently complete the proposed work in the time specified.

**NON-COLLUSION AND DEBARMENT CERTIFICATION**

The bidder certifies that neither he/she, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid.

By submitting this proposal, the bidder certifies to the best of his/her knowledge and belief that he/she and his/her principles:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or perform a public (Federal, State or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property
c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph b. of the certification; and

d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or Local) terminated for cause or default

Where the prospective bidder is unable to certify to any of the statements in this certification, the bidder shall submit an explanation in the blanks provided herein. The explanation will not necessarily result in denial of participation in a contract:

Explanation:

Failure to furnish a certification or an explanation will be grounds for rejection of a bid.

If the prequalified bidder’s status changes, he/she shall immediately submit a new fully executed non-collusion affidavit and debarment certification with an explanation of the change to the Contract Office prior to submitting the bid.

BID LIMITATION (Optional)

The bidder who desires to bid on more than one project on which bids are to be opened on the same date, and who also desires to avoid receiving an award of more projects than the bidder is equipped to handle, may bid on multiple projects and limit the total amount of work awarded to the bidder on selected projects by completing the “Bid Limitation”.

The Bid Limitation must be filled in on each proposal form for which the Bidder desires protection. Each such proposal must be covered by a proposal guaranty.

The bid limitation can be made by declaring the total dollar value of work OR total number of projects a bidder is willing to perform.

The Bidder desires to disqualify all of his/her bids on this bid opening that exceed a total dollar value of $

OR

that exceed a total number of ________ projects.

The Bidder hereby authorizes the Department to determine which bids shall be disqualified.
PERMISSIBLE DISCOUNT (optional)

Only when invited to do so in the Request for Proposal by Special Provision, Bidders are permitted to offer a discount on a specific project (discount project) if they are awarded the contract on one or more additional projects bid at the same bid opening time and date. The bidder must present the proposal so that it can be considered with or without the discount. The bid or discount offered on the “discount project” will not affect the determination of the low bid of any other project.

When discounts are offered, they must be presented as a reduction in the unit price for one or more items of work in the specified proposal (discount project).

Space for Offering Discounts:

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<tr>
<th>Item No:</th>
<th>Description</th>
<th>Unit</th>
<th>Proposal Quantity:</th>
<th>Unit Price Reduction: $</th>
<th>Discount: $</th>
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</tbody>
</table>

TOTAL DISCOUNT __________________________

It is understood that the discount will only apply if awarded under the conditions as listed above and signed by the bidder.
Project: AC-NH-SOIB-7-085(109)125 (PCN-22041)

RECEIPT OF ADDENDA ACKNOWLEDGEMENT

We hereby acknowledge receipt of the following addenda:

Addendum #___________  Dated__________________
Addendum #___________  Dated__________________
Addendum #___________  Dated__________________
Addendum #___________  Dated__________________
Addendum #___________  Dated__________________
Addendum #___________  Dated__________________
Addendum #___________  Dated__________________

PROPOSAL GUARANTY

A proposal guaranty is required. The proposal guaranty must comply with Section 102.09, “Proposal Guarantee” of the Standard Specifications.

TYPE OF PROPOSAL GUARANTY APPLIED TO THIS PROJECT (Check one):

_____ Annual Bid Bond*
_____ Single Project Bid Bond
_____ Certified or Cashier’s Check

*Annual Bid Bond is required when submitting proposals electronically
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<table>
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<th>Unit Price</th>
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</table>
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### Bid Items

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Project: AC-NH-SOIB-7-085(109)125 (PCN-22041)

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**BID ITEMS**

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<td>844.</td>
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**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.**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Spec No.</th>
<th>Code No.</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Approx. Unit Price</th>
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<td>$980 0171</td>
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**TOTAL SUM BID**
Project: AC-NH-SOIB-7-085(109)125 (PCN-22041)

Type of Work: STRUCTURE REPLACEMENT, WILDLIFE CROSSING STRUCTURE, GRADING, AGGREGATE BASE, HMA, GUARDRAIL & INCIDENTALS

County: MCKENZIE
Length: 1.7700 Miles

TIME FOR COMPLETION:
The undersigned Bidder agrees, if awarded the contract, to prosecute the work with sufficient forces and equipment to complete the contract work within the allowable time specified as follows:

WORKING DAY CONTRACT: NA working days are provided. The Department will begin charging working days beginning NA or the date work begins on the project site, whichever is earlier.

CALENDAR DAY CONTRACT: NA calendar days are provided. The completion date will be determined by adding NA calendar days to NA or the date work begins on the project site, whichever is earlier.

COMPLETION DATE CONTRACT: The project completion date is 11/14/2020 *. The Department provides a minimum of NA working days. The Department will begin charging working days beginning NA or the date work begins on the project site, whichever is earlier.

*THIS DATE IS FOR ALL WORK WITH THE EXCEPTION OF ANY PERMANENT SEEDING AND EROSION CONTROL THAT MAY NEED TO BE COMPLETED IN YEAR 3. REFER TO NOTE 251-P01 ORDER OF OPERATIONS FOR SEEDING.

REFER TO SPECIAL PROVISION SP752(14) WINTER SUSPENSION FOR ADDITIONAL TIME AND LIQUIDATED DAMAGE REQUIREMENTS.

LIQUIDATED DAMAGES FOR FAILURE TO COMPLETE ANY PERMANENT SEEDING AND EROSION CONTROL THAT MAY NEED TO BE COMPLETED IN YEAR 3 BY JUNE 15, 2021 WILL BE CHARGED ACCORDING TO SECTION 108.07.
Project: AC-NH-SOIB-7-085(109)125 (PCN-22041)

Type of Work: STRUCTURE REPLACEMENT, WILDLIFE CROSSING STRUCTURE, GRADING, AGGREGATE BASE, HMA, GUARDRAIL & INCIDENTALS

County: MCKENZIE
Length: 1.7700 Miles

CONTRACT EXECUTION:
The undersigned Bidder agrees, if awarded the contract, to execute the contract form and furnish a contract bond within fifteen calendar days, as determined by NDCC Section 1-02-15, after date of notice of award, in accordance with the provisions of Sections 103.05 and 103.06 of the Standard Specifications.

AFFIDAVIT:
STATE OF _______________________
COUNTY OF _____________________

The undersigned bidder, being duly sworn, does depose and say that they are an authorized representative of ________________________________, a

CONTRACTOR NAME
MAILING ADDRESS

☐ Individual ☐ Partnership ☐ Joint Venture ☐ Corporation

and that they have read, understand, acknowledge, and accept the entire proposal form; and that all statements made by said bidder are true and correct.

______________________________, TITLE ________________________________

Subscribed and sworn to before me this day.

________________________________________
COUNTY

(Seal) STATE DATE

________________________________________
NOTARY PUBLIC

My commission expires _____________________
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

Job # 32, AC-NH-SOIB-7-085(109)125

Structure Replacement, Construct Wildlife Crossing Structure, Grading Aggregate Base, HMA, Guardrail & Incidentals

INDEX OF PROVISIONS

Road Restriction Permits

Hot Line Notice

NDDOT Supplemental Specifications dated October 1, 2018

Price Schedule for Miscellaneous Items dated October 1, 2014 (PS-1)

SP DBE Program - Race Neutral dated February 1, 2018


Appendix A of the Title VI Assurances dated February 4, 2015

Appendix E of the Title VI Assurances dated February 4, 2015

SP Cargo Preference Act

Required Contract Provisions Federal Aid Construction Contracts (Form FHWA 1273 Rev. May 1, 2012)

SP Certified Payrolls, dated 9-6-17

SP DBE Project Payment Reporting, dated 10-3-17

Labor Rates from U.S. Department of Labor dated February 15, 2019 (Mod. No. 1)

On-The-Job Training Program dated October 1, 2016

SP 3(14) Temporary Erosion & Sediment Control Measures

SP 4(14) Federal Migratory Bird Treaty Act

SP 281(14) Buy America

SP 282(14) Certificate of Compliance

SP 453(14) Haul Roads
INDEX OF PROVISIONS
Page 2 of 2

SP 462(14) Limitations of Operations
SP 734(14) Ground Anchor
SP 735(14) Drilled Shaft
SP 736(14) Crosshole Sonic Log Tests
SP 745(14) Precast Reinforced Concrete Three Sided Arch - Topped Buried Bridge
SP 749(14) Temporary Mechanically Stabilized Earth Wall
SP 752(14) Winter Suspension
SP 753(14) Flexible Pavement Surface Tolerance
SP 754(14) Mass Concrete
SP 756(14) Quality Control /Quality Assurance Concrete for Bridges
SP 757(14) Work Zone Camera System
SP 758(14) Machine Hygiene & Noxious Weed Control
SP 759(14) Bridge Removal and Adoption
SP 760(14) Theodore Roosevelt National Park Sign Relocation
SP 764(14) Pile Driving System
SP 769(14) Bridge Deck Surface Tolerance and Texturing
SP 786(14) Architectural Surface Finish
SP 789(14) Permanent Mechanically Stabilized Earth Wall (Option)
SP 797(14) Geotechnical Instrumentation
SP 810(14) Fire Protection and Suppression
SP 818(14) Erionite Containment
SP 5232(14) Permits and Environmental Considerations
SP Fuel Cost Adjustment Clause dated September 8, 2006
NOTICE

TO: All prospective bidders on all North Dakota Department of Transportation Highway Construction Projects.

Contractors moving construction equipment to NDDOT highway construction projects are subject to the Road Restriction Policy with the following modifications:

A. The contractor may purchase up to 10 single trip permits for each NDDOT highway construction project at a cost ranging from $20 to $70 each. These permits must be purchased from the Motor Carrier Division of the Highway Patrol at the central office of the NDDOT in Bismarck, North Dakota.

B. The $1 per mile fee will not be charged for Gross Vehicle Weights (GVW) exceeding 105,500 pounds, 105,500 pounds, and 105,000 pounds for highways Restricted by Legal Weights, 8 Ton, and 7 Ton highways respectively.

C. The $5 per ton per mile fee will be charged only for loads exceeding a GVW of 130,000 pounds, 120,000 pounds, 110,000 pounds and 80,000 pounds for highways Restricted by Legal Weights, 8 Ton, 7 Ton, and 6 Ton highways respectively.

D. The maximum weights per axle for each of the class restrictions still apply. If it is shown that more axles cannot be added, movement may be authorized; however, a $1 per ton per mile fee will be charged for all weight in excess of the restricted axle limits.

E. These construction equipment single trip permits apply to State and US Highways only.

F. The District Engineers and Highway Patrol will select the route of travel.

G. Contractors moving equipment to other than NDDOT highway construction projects are subject to all fees as shown in the Road Restriction Permit Policy.

H. Contractors must call the Highway Patrol prior to movement of all overweight loads on all State and US Highways.
Permits shall be issued for the movement of non-divisible vehicles and loads on state highways which exceed the weight limits during spring road restrictions. The issuance of permits may be stopped or posted weights changed at any time based on the varying conditions of the roadways. Permits can be obtained from the Highway Patrol.

<table>
<thead>
<tr>
<th>RESTRUCTION CLASSIFICATIONS WITH ALLOWABLE AXLE WEIGHTS AND GROSS VEHICLE WEIGHTS</th>
<th>PERMIT AND TON/MILE FEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highways Restricted by Legal Weight</td>
<td>Permit Fee: $20-$70 per trip</td>
</tr>
<tr>
<td>Single Axle</td>
<td>-- 20,000 lbs.</td>
</tr>
<tr>
<td>Tandem Axle</td>
<td>-- 34,000 lbs.</td>
</tr>
<tr>
<td>Triple Axle</td>
<td>-- 48,000 lbs.</td>
</tr>
<tr>
<td>4 Axles or more</td>
<td>-- 15,000 lbs. per axle</td>
</tr>
<tr>
<td>Gross Vehicle Weight</td>
<td>-- 105,500 lbs.</td>
</tr>
<tr>
<td>Note: The above weights apply to state highways restricted by legal weights, other than interstate highways, in areas where road restrictions are in force. When the gross weight of an axle grouping exceeds 48,000 pounds, the $1 per ton per mile shall apply to all weight in excess of 15,000 pounds per axle.</td>
<td></td>
</tr>
</tbody>
</table>

**8-Ton:**

| Single Axle | -- 16,000 lbs. |
| Tandem Axle | -- 32,000 lbs. |
| 3 Axles or more | -- 14,000 lbs. per axle |
| Gross Vehicle Weight | -- 105,500 lbs. |
| Permit Fee: $20-$70 per trip |
| Ton Mile Fee: |
| 105,501 lbs. to 130,000 lbs. GVW -- $1 per mile |
| Over 130,000 lbs. GVW -- $1 per mile plus $5 per ton per mile for that weight exceeding 130,000 lbs. GVW |
| Exceeding axle limits -- $1 per ton per mile |

**7-Ton:**

| Single Axle | -- 14,000 lbs. |
| Tandem Axle | -- 28,000 lbs. |
| 3 Axles or more | -- 12,000 lbs. per axle |
| Gross Vehicle Weight | -- 105,500 lbs. |
| Permit Fee: $20-$70 per trip |
| Ton Mile Fee: |
| 105,501 lbs. to 110,000 lbs. GVW -- $1 per mile |
| Over 110,000 lbs. GVW -- $1 per mile plus $5 per ton per mile for that weight exceeding 110,000 lbs. GVW |
| Exceeding restricted axle limits -- $1 per ton per mile |

**6-Ton:**

| Single Axle | -- 12,000 lbs. |
| Tandem Axle | -- 24,000 lbs. |
| 3 Axles or more | -- 10,000 lbs. per axle |
| Gross Vehicle Weight | -- 80,000 lbs. |
| Permit Fee: $20-$70 per trip |
| Ton Mile Fee: |
| $5 per ton per mile for all weight exceeding 80,000 lbs. GVW |
| Exceeding restricted axle limits -- $1 per ton per mile |

**5-Ton:**

| Single Axle | -- 10,000 lbs. |
| Tandem Axle | -- 20,000 lbs. |
| 3 Axles or more | -- 10,000 lbs. per axle |
| Gross Vehicle Weight | -- 80,000 lbs. |
| No overweight movement allowed |
SINGLE UNIT FIXED LOAD VEHICLES SUCH AS TRUCK CRANES AND WORKOVER RIGS

A. Permit Fee and Ton Mile Fee for Self-Propelled Fixed Load Vehicles.

1. Permit Fee: $25 per trip

2. $1 per ton per mile for all weight in excess of restricted axle limits or in excess of legal limits on state highways in areas where road restrictions are in force. When the gross weight of an axle grouping exceeds 48,000 pounds, the $1 per ton per mile shall apply to all weight in excess of 15,000 pounds per axle (see weight classification chart in section C.)

3. $5 per ton per mile for all movements exceeding the following gross vehicle weight limits:
   a. 105,500 lbs. GVW on unrestricted state highways, other than interstate highways, in areas where road restrictions are in force.
   b. 105,500 lbs. GVW on 8-ton highways.
   c. 105,500 lbs. GVW on 7-ton highways.
   d. 80,000 lbs. GVW on 6-ton highways.
   e. No overweight movement allowed on 5-ton highways

B. Permit Fees for Work-Over Rigs and Special Mobile Equipment Exceeding 650 but not 670 Pounds Per Inch Width of Tire.

1. Permit Fee:
   a. $50 per trip on work-over rigs up to 650 pounds per inch width.
   b. $75 per trip on work-over rigs that exceed 650 but not 670 pounds per inch width of tire.

2. The work-over rig shall be stripped to the most minimum weights.

3. A minimal number of state highway miles shall be used.

4. District engineer approval shall be obtained prior to movement when vehicle exceeds restricted axle weights by more than 5,000 pounds.

5. A validation number ending in TM must be obtained from the Highway Patrol prior to using a self-issue single trip movement approval form.

6. The ton mile shall be waived.
NOTICE

U.S. DEPARTMENT OF TRANSPORTATION

"HOT LINE"

As part of its continuing investigation into Highway Construction Contract Bid Rigging and abuses in the Disadvantaged Business Enterprise Program, the Inspector General for the Department of Transportation (DOT) has established a "HOT LINE" to receive information from contractors, suppliers, or anyone with knowledge of such activities.

The toll-free "HOT LINE' telephone number is 1-800-424-9071 and will be manned during normal working hours (8 a.m. to 5 p.m. EST). This operation is under the direction of DOT's Inspector General. All information will be treated confidentially and anonymity will be respected.

CALL
Inspector General's 'HOT LINE'
Toll Free 1-800-424-9071
Washington, DC Area:
202-366-1461
Fax: 202-366-7749

WRITE
Inspector General
Post Office Box 23178
Washington, DC 20026-0178
Email: hotline@oig.dot.gov

The field office address and telephone number for NORTH DAKOTA is:

CHICAGO REGIONAL OFFICE

Special Agent-in-Charge
Commercial: 312-353-0106
111 N. Canal St., Suite 677
Chicago, Illinois 60606
CERTIFICATION

I hereby certify the attached supplemental specifications effective on October 1, 2018.

/S/      5/2/18
Bob Fode, P.E., Director
Office of Project Development

5/2/18
Date

North Dakota
Department of Transportation
The following specifications are supplementary to the 2014 Edition of the Standard Specifications for Road and Bridge Construction as they apply to this Contract. Page references in this document apply to the hard bound, printed edition of the specifications (the “blue book”) and the “as printed” version of the specifications on the Department’s website.

101.03 ABBREVIATIONS

Delete the line for “ACPA American Concrete Precast Association” and replace it with the following:

ACPA American Concrete Pipe Association

Add the following item to Section 101.03:

NPCA National Precast Concrete Association
SWPPP Storm Water Pollution Prevention Plan

101.04 DEFINITIONS

Delete the definition for “Sieve” and replace it with the following:

Sieve. U.S.A. Standard Sieve, as defined in ASTM E 11. The specified percent passing for each sieve is measured by weight.

102.07 B Electronic Proposal

Replace 102.07 B with the following:

B. Electronic Proposal.

1. Electronic Bidding Credentials.
   A Digital ID is required to electronically sign proposals.

   If a Bidder does not have a Digital ID, create a Digital ID and set up bidding privileges by following the instructions on the Bid Express website (www.bidx.com). Begin the Digital ID creation process a minimum of 7 business days before the bid opening.

2. Submitting an Electronic Proposal.
   Prepare the proposal using Bid Express as follows:
   1. Download the most current “Proposal Files” and “DBE Roster File” from the Bid Express website (www.bidx.com).
   2. Use the Bid Component for AASHTOWare Project Bids to prepare and submit the proposal forms. Follow the Bid Component software instructions and review the help
screens provided on the Bid Express website to ensure that the bid item list is prepared properly. Provide a unit price for each bid item.

If the proposal forms contain alternate or optional bid items, provide unit prices for those bid items as follows:
   a. For alternate bid items, provide a unit price for each bid item included in the Bidder's preferred alternate.
   b. For optional bid items, provide a unit price for all bid items under all options.

The user's Digital ID must be on file and enabled by Bid Express. The use of the Digital ID constitutes the Bidder's signature for execution of the proposal. The Department is not responsible for the Bidder's inability to submit a proposal using AASHTOWare.

---

103.08 A General

Replace the second paragraph with the following:

For subcontracts at any tier equal to or greater than $750,000, obtain from the subcontractor all bid documentation used to prepare the subcontractor’s bid for the portion of the work reflected in the subcontract. The subcontractor’s bid documentation requirements shall be the same as for the Contractor, except it shall be submitted within 5 days of approval of the Prime Contractor’s Request to Sublet. Submit to the Department the bid documentation and affidavit in a separate sealed container, including the subcontractor’s name and address on the container.

---

104.02 C Significant Changes to the Character of Work

Delete the following paragraph in its entirety:

If the Contractor believes an alteration in the work is a significant change that necessitates a contract revision, the Contractor shall notify the Engineer in accordance with Section 104.03, "Contractor Requested Contract Revisions".

---

104.05 A Submission of the Claim

Replace the fourth paragraph of Section 104.05 with the following:

Provide a claim submittal to the Engineer that contains, at a minimum, the following information for each claim issue included on the Notice of Intention to File a Claim (SFN 16743). Failure to supply the following information for each claim issue constitutes a waiver of claim for additional compensation for each submitted claim item.

---

104.07 C. Conditions

Replace number 5 with the following:

5. Contains revisions to the contract that the Department has previously accepted on another Department project, or is based on or similar to standard specifications, special provisions, or another set of plans.
Delete Section 105.03 COOPERATION WITH UTILITY OWNERS and replace with the following:

105.03 COOPERATION WITH UTILITY OWNERS

A. General.
Utility facilities shown on the plans, if any, are for reference purposes only and may not constitute an exhaustive representation of all utility facilities within the project. Notify the North Dakota One Call System (811) before starting the work, so they may locate and mark all utility facilities within the project.

Comply with Chapter 49-23 of the NDCC in determining the location of underground utilities.

Locate Department-owned, publicly-owned, and privately-owned utility facilities, whether on or off the One Call System.

If the Contractor's operations have the potential to damage utility facilities identified in the contract to remain in place during the work, including operations adjacent to these utility facilities, the Contractor shall account for and protect the utility facilities. Before starting the work, coordinate the protections with the utility owner.

B. Utilities Identified in Plans.
Notify all utility owners of the anticipated project schedule within two weeks of receiving notice to proceed. Coordinate adjustments and relocations with affected utility owners. The Contractor, the Engineer, and the utility owners shall agree to a schedule of the work and the adjustments and relocations before beginning the work.

Cooperate with utility owners in relocating and adjusting utility facilities to minimize interruption to service and duplication of work by utility owners.

The Department will provide utility conflict plans, if available. Utility conflict plans are not part of the contract and are for information purposes only.

C. Utilities Encountered During Work.
If the Engineer determines that adjustment or relocation of utility facilities is necessary to accommodate construction, the Engineer will arrange and coordinate the work with the owner if the contract does not otherwise provide for such work. This does not relieve the Contractor of any liability that may arise under the provisions of the NDCC.

D. Scheduling.

1. General.
In order to minimize interference with traffic operations, the Contractor, Engineer, and utility owner shall agree to a detailed schedule before starting work.

2. Utility Coordination Meeting.
If the contract requires a utility coordination meeting, arrange the meeting with the utility owners and the Engineer to occur no later than two weeks after the notice to proceed. At the meeting, provide an agenda and a tentative construction schedule for planning utility relocations and adjustments; after the meeting, publish minutes and distribute a copy to all meeting attendees.

E. Fire Hydrants.
Before starting work that affects a fire hydrant, coordinate with the local fire authority to determine if provisions need to be in place before starting the work. If provisions are necessary, obtain the approval of the local fire authority before beginning the work affecting the fire hydrant.
F. Damage and Interruptions.

If the Contractor causes damage to utility facilities, the Contractor is responsible for the costs of restoring or repairing the damaged utility facility to a condition equal to or better than the condition existing before the damage occurred. Immediately notify the utility owner of the damage or, if the owner is unknown, the One Call System. Do not conceal, attempt to conceal, or make repairs to the utility facilities until approved by the utility owner. If this damage causes interruption to utility service, continuously coordinate with the utility owner until the service is fully restored.

The Department will not pay the Contractor for the cost to restore or repair damage utility facilities and will consider any delays resulting from this damage to be non-excusable in accordance with Section 108.06, Determination of and Extensions to the Contract Time.

105.08 A.3 Additional Section 600 Work Drawing Submittal Requirements. PAGE 50 10/01/16

Replace the first paragraph with the following:

Provide work drawings on 11 inch × 17 inch sheets generated by a CADD system.

Use the minimum text sizes shown in Table 105-01.

<table>
<thead>
<tr>
<th>Table 105-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions and Notes</td>
</tr>
<tr>
<td>Detail Subtitles</td>
</tr>
<tr>
<td>Detail Titles</td>
</tr>
</tbody>
</table>

105.08 B Work Drawings Submittal Requirements PAGE 50 10/1/17

Replace 105.08 B with the following:

B. Work Drawing Submittal Requirements.

Submit work drawings by either of the following methods:

1. **Paper Submittal.**

   Submit a cover letter and two copies of the work drawings to the Engineer.

2. **Electronic Submittal.**

   To submit the work drawings electronically to the Engineer, post a cover letter and one electronic copy of the work drawing to the Department’s managed file transfer (MFT) website. Follow the requirements of NDAC Title 28 for all submittals.

   Contact the Engineer to receive instructions describing how to upload files to the MFT website.
C. **Engineer’s Response to Work Drawing.**
Allow 21 days for the Engineer to review the work drawing. The Engineer will respond in one of the following ways:
- No Exceptions Noted;
- Returned for Correction;
- Not Required for Review; or
- Not Acceptable.

If the work drawing is returned stating “Returned for Correction” or “Not Acceptable”, make necessary revisions and resubmit the work drawing as specified in Section 105.08, “Work Drawings”.

After the Department has reviewed the work drawings, the Department will return the reviewed work drawing submittal to the Contractor as follows:
- If a paper submittal, the Engineer will return the reviewed drawings to the Contractor.
- If an electronic submittal, the Department will post reviewed work drawings on the MFT site and will send an email notification to the Contractor that the reviewed work drawings are available on the MFT site. Retrieve the reviewed work drawings from the MFT site within 30 calendar days. The Department will delete files from the MFT site after 30 calendar days.

Include the cost of drafting and submitting work drawings in the contract unit price for the relevant contract items.

---

C. **Certificate of Compliance (CoC).**
SP 282(14) Certificate of Compliance (CoC) has replaced this section.

---

If electing to purchase material from a Department owned source, notify the Engineer and Gravel Prospecting Coordinator at Materials and Research Division in writing.

---

If exercising the Department’s option to purchase materials under the terms and conditions provided in the option, notify in writing the surface owner, material owner, the Engineer, and the Gravel Prospecting Coordinator at Materials and Research Division.
Delete number 8 and replace it with the following:

8. In Stark County, within the 2-mile radius from the center of Section 30-137-92;

Delete number 11 and replace it with the following:

11. In Hettinger County, within the 1-mile radius from the center of Section 28-135-91;

---

Replace the first paragraph with the following:

If the Contractor encounters one or more of the items included in the following list anywhere the Contractor performs the work, the Contractor shall immediately suspend the work and notify the Engineer of the encounter:
- Threatened or endangered species;
- Prehistoric dwelling sites;
- Human remains;
- Concentrated historic or prehistoric artifacts; or
- Vertebrate, invertebrate, plant and trace fossils.

If encountering one of the following, protect the location from further disturbance:
- Prehistoric dwelling sites;
- Human remains;
- Concentrated historic or prehistoric artifacts; or
- Vertebrate, invertebrate, plant and trace fossils.

Resume work in the location of the encounter only with written approval from the Engineer.

Add the following to the end of Section 107.07

F. Crossing Traffic.
Construction vehicles are not allowed to cross lanes of traffic to enter or exit work zones on the interstate. Construction vehicles are required to merge into public traffic.

Replace 107.08 with the following:

107.08 HAUL ROADS
SP 453(14) Haul Roads has replaced this section.

Delete the last sentence of the first paragraph.
107.17 REMOVED MATERIAL

Replace Section 107.17 with the following:

107.17 REMOVED MATERIAL

Unless otherwise designated in the contract, removed material becomes the property of the Contractor.

If the Contractor determines that the material will be disposed of, the material must be disposed in one of the following ways:

A. Dispose of the material through a beneficial use. Apply for a beneficial use permit from the NDDoH by completing an NDDOT Projects-Inert Waste Beneficial Use Application (SFN 58981). Provide the Engineer with copies of all documents submitted to the NDDoH.

B. Dispose of the material at an approved permanent waste management facility.

C. If waste cannot be reasonably managed at a permanent waste management facility, obtain approval from the NDDoH for a variance to dispose of the inert waste at another site. Apply for a variance by completing an NDDOT Projects-Inert Waste Disposal Variance Application (SFN 54344). Provide the Engineer with copies of all documents submitted to the NDDoH.

Obtain locations of permanent waste facilities, applications, and guidelines from the NDDoH, Division of Waste Management. View a list of municipal and inert waste landfills and review guidance on the NDDoH website: http://www.ndhealth.gov.

Include the cost of material disposal in the contract unit price of the relevant contract item.

107.18 High Visibility Clothing.

Replace the first paragraph of 107.18 with the following:

When not enclosed in a truck or equipment cab, require that all workers within the right of way wear retroreflective clothing in accordance with the MUTCD.

108.02 PRECONSTRUCTION CONFERENCE

Delete Section 108.02 and replace with the following:

108.02 CONSTRUCTION MEETINGS

A. Preconstruction Conference.

Before beginning the work, including pit operations specific to the project, and unless waived by the Engineer, coordinate and hold a preconstruction conference with the Engineer at a mutually agreed time and place. Notify subcontractors, utility companies, and other interested parties of the time and place of the preconstruction conference.

Submit the following to the Engineer before or at the preconstruction conference:

1. A company safety plan and the name of the safety officer;

2. An EEO / affirmative action plan and the name of the EEO officer;
3. A list of key project personnel and their phone numbers;

4. The initial or baseline schedule in accordance with Section 108.03, "Progress Schedule";

5. A list of proposed subcontractors requested in accordance with Section 108.01, "Subletting of Contract";

6. A list of material suppliers;

7. A list of pits to be used (owner and legal description);

8. All COAs in accordance with Section 107.05, "Material Source Approval";

9. The applicable storm water permits and the SWPPP in accordance with Section 107.02.C, “Storm Water Permits”;

10. The names of Quality Control Personnel and a Quality Control Plan in accordance with Section 430.04 A, “Contractor Quality Control (QC).”

B. Weekly Planning and Reporting Meeting.

The weekly planning and reporting meeting is required when specified in the plans.

Organize a weekly meeting to coordinate efforts between subcontractors, utilities, local authorities, and others. The Engineer will develop a list of parties to be invited to the meeting and will provide the list to the Contractor at the Preconstruction Meeting. The Engineer may provide an updated list with additional attendees at any time.

Send a knowledgeable representative to conduct the meeting. Prepare minutes for each meeting and make the appropriate distribution of the minutes. Distribute the minutes within 48 hours of the meeting conclusion. Allow the Engineer to review and approve the minutes before distribution.

Include in the meeting agenda a discussion of problems encountered since the last meeting, and information of interest to those invited to the meeting. Provide a written schedule of the next week’s work and a tentative schedule for the following week.

---

**Table 108-01**

<table>
<thead>
<tr>
<th>Days Late Submitting Update Schedule</th>
<th>Percentage Price Reduction to the Prorated Amount¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>100</td>
</tr>
</tbody>
</table>

¹ The “prorated amount” is equivalent to the amount calculated for each update schedule submission in Section 108.03 D, Item 2.
Replace 108.05 Limitations of Operations with the following:

108.05 LIMITATION OF OPERATIONS
SP 462(14) “Limitation of Operations” has replaced this section.

Replace the 6th paragraph of Section 108.06 B.1 with the following:

The Contractor’s plea that the contract time was insufficient is not a valid reason for an extension of time. For calendar day and completion date contracts, the Department will not extend the contract time for delays encountered on holidays and during the period from November 15 to April 15. When the time as extended by the Department falls on a date that is a holiday, the Engineer will extend the contract time to the next business day.

Replace letter “f.” with the following:

f. Delays due to utility or railroad work when the Contractor has complied with the requirements of Section 105.03.D, “Scheduling,” but the utility or railroad company failed to perform their work within the time agreed to in the utility coordination meeting.

Replace the paragraph with the following:

Use either computerized or non-computerized scales to determine weights for material when the quantity of the material included in the bid item list is 2,000 tons or less.

Replace the first paragraph with the following:

Use a computerized scale to determine the weight of material when the quantity included on the bid item list is greater than 2,000 tons.

Delete the first paragraph and replace with the following:

Loader bucket scales may be used to weigh materials when the quantity of material included in the bid item list is less than 10,000 tons and for aggregates specified under Sections 420 “Bituminous Seal Coat”, 421 “Microsurfacing”, and 422 “Slurry Seal” regardless of quantity.
Replace Section 109.01 J.4.b(2) with the following:

After the material has been weighed on the project scale and placed in a truck, weigh the loaded truck on a certified scale owned and operated by an entity other than the Contractor. Provide the tare weight of the truck along with the comparison weigh ticket.

Delete the second paragraph and replace with the following:

Document the weight of each load on a separate, sequentially numbered weigh ticket that has a maximum size of 5.5 × 8.5 inches. Provide one copy to the driver of the truck. The truck driver shall deliver the weigh ticket to the Engineer at the location where the material is incorporated into the work. The Engineer will reject loads that are not accompanied by a legible weigh ticket.

Replace the 12th paragraph of Section 109.05 with the following:

For material not produced or manufactured by the Contractor, within 35 calendar days after the date the Department released payment for the material on hand, the Contractor shall submit to the Engineer paid invoices for the material on hand covered by the payment. With each paid invoice, include a signed statement from the supplier or fabricator acknowledging receipt of payment. If the Contractor fails to submit paid invoices, the Department will deduct the amount paid the Contractor for the material on hand from future payments and will not pay for the material on hand until the Contractor incorporates it into the work.

Add the following sentence to the first paragraph:

Install tarps free of holes larger than 0.5 inches in diameter and of sufficient size to completely cover the opening above the asphalt.

Provide a NRMCA Certified plant for concrete used in Sections 550, “Concrete Pavement”, 570 “Concrete Pavement Repair”, 602 “Concrete Structures”, and 622 “Pilings”.

Replace the second paragraph in Section 155.03 A.3 with the following:

Use a water measuring system that:

- Delivers the designated quantity of water for each batch within the tolerance specified in Section 802.03 B.4, “Batching Water”;

Automatically stops the water flow when the designated quantity has been delivered; and
Is adjustable and has a calibrated indicator showing the quantity of water measured for each batch.

155.07 D Bridge Deck Overlay Finishing Machines

Replace Section 155.07 D with the following:

D. Bridge Deck Overlays Finishing Equipment.
Use a finishing machine that is:
- Equipped with an oscillating screed or screeds with an effective weight of at least 75 pounds for each square foot of bottom face area, and provided with positive control of vertical position, the angle of tilt, and the shape of the crown. At least one oscillating screed shall be capable of consolidating the concrete to the specified density;
- Long enough to uniformly strike off and consolidate the width of lane to be paved
- Capable of forward and reverse motion under positive control;
- Travelling on rails with fully-adjustable and stable supports;
- Supported without the use of shims; and
- Not anchored to the concrete using powder actuated fasteners, unless that concrete will be subsequently overlaid.

202.04 A General

Replace the second paragraph with the following:

Remove existing bituminous and concrete surfaces to a joint or create a smooth, vertical plane along the entire length of the remaining surface.

202.04 B Removal of Bridges and Box Culverts

Replace Section 202.04 B with the following:

B. Removal of Structures and Box Culverts.
When the removal is of a bridge, perform asbestos inspection and testing and submit SFN 17987 “Asbestos Notification of Demolition and Renovation” to NDDoH at least 10 working days before conducting any demolition. If asbestos is discovered, the Engineer will issue a contract revision for work related to the asbestos.

Remove existing substructures to one foot below the existing stream bottom, and remove those parts outside the stream to one foot below final ground surface.

If bridge elements are designated for salvage, match mark the elements and transport them to the location specified in the contract.

202.06 BASIS OF PAYMENT

Delete the “Saw Concrete, Linear Foot” and “Saw Bituminous Surfacing-Full Depth, Linear Foot” from the “Pay Item List”.
203.02 EQUIPMENT  PAGE 163  10/01/15

Replace the equipment list in Section 203.02 with the following:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibratory Sheepfoot/Pad Foot/Extended Pad Foot Rollers</td>
<td>151.01 E</td>
</tr>
</tbody>
</table>

203.04 B Topsoil  PAGE 164  10/01/17

Replace 203.04 B with the following:

**B. Topsoil.**

1. **General.**

Remove topsoil to its full depth or a depth up to 6 inches, whichever is less, from all excavation and embankment areas. Do not remove the subsoil or other deleterious material with topsoil. Stockpile the removed topsoil.

Place topsoil piles at acceptable locations outside of the grading limits or, if necessary, outside the right of way at no additional cost to the Department. If stockpiling topsoil outside the right of way, submit a copy of the agreement negotiated with the landowner 10 days before constructing topsoil stockpiles.

When stockpiling topsoil within the clear zone, construct topsoil stockpiles with foreslopes of 4:1 or flatter and approach slopes of 10:1 or flatter.

Scarify the surface to a depth of 2 inches before replacing topsoil.

Uniformly spread the stockpiled topsoil over the disturbed areas within the right of way.

2. **Topsoil – Imported.**

Provide imported topsoil consisting of friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoil, roots, heavy or stiff clay, stones larger than two inch in greatest dimension, noxious weeds, sticks, brush, litter, and other deleterious matter. Provide the topsoil from a site outside the right of way. Spread the topsoil uniformly to a minimum depth of 6 inches. Use all existing stockpiled topsoil before importing topsoil.

203.04 C Subcut  PAGE 165  10/01/15

Add the following paragraph to the end of Section 203.04 C:

Dispose of material removed from the subcut area as specified in Section 107.17, "Removed Material".

203.05 B Borrow Excavation  PAGE 169  10/01/16

Replace the third paragraph of Section 203.05 with the following:

If the borrow source is a Department option, the Engineer will measure the topsoil stripped from the borrow area. Provide a minimum of two working days’ notice to allow the Engineer to complete the
preliminary cross sectioning before removing topsoil. Remove and stockpile topsoil, as specified in Section 203.04 B, “Topsoil”, before excavation. Provide notice and allow one working day for the Engineer to complete the topsoil measurement before beginning borrow excavation.

---

### 203.05 C Topsoil

Add the following to 203.05 C:

The agreement will be in writing and signed by the both the Contractor and the Engineer.

---

### 203.05 D Topsoil – Wetland

Replace 203.05 D Topsoil – Wetland with the following:

D. Reserved.

Reserved.

---

### 203.06 BASIS OF PAYMENT

Delete “Topsoil Borrow Area, Cubic Yard” from the Pay Item List and replace with “Topsoil – Dept Option Borrow Area, Cubic Yard”.

Delete “Topsoil – Wetland, Cubic Yard” from the Pay Item List.

---

### 203.06 C Department Optioned Borrow

Add the following to the end of Section 203.06 C:

Include the removal and replacement of topsoil in Department optioned borrow areas in the contract unit price for “Topsoil – Dept Option Borrow Area”.

---

### 216.06 Basis of Payment

Replace Section 216.06 with the following:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>M Gal</td>
</tr>
</tbody>
</table>

An “M Gal” is equivalent to 1,000 gallons.

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.
230.05 B Reshaping Inslopes

Replace Section 230.05 Reshaping Inslopes with the following:

B. Reshaping Foreslopes.
   The Engineer will measure each foreslope on each side of the roadway separately.

251.03 D Seed Class.

Replace Table 251-01 with the following:

<table>
<thead>
<tr>
<th>Grass Species</th>
<th>Variety</th>
<th>Pounds Pure Live Seed Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kentucky Blue Grass</td>
<td>Park</td>
<td>4.0</td>
</tr>
<tr>
<td>Perennial Rye Grass</td>
<td>--</td>
<td>5.4</td>
</tr>
<tr>
<td>Blue Grama</td>
<td>Bad River</td>
<td>2.4</td>
</tr>
<tr>
<td>Sideoats Grama</td>
<td>Killdeer, Pierre, Butte</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>19.0</td>
</tr>
<tr>
<td>Class II – Early Season</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Wheatgrass</td>
<td>Rodan, Rosana, Walsh, Flintlock, W.R. Poole, Recovery</td>
<td>9.6</td>
</tr>
<tr>
<td>Switchgrass</td>
<td>Dacotah, Forestburg, or Sunburst, Summer</td>
<td>3.2</td>
</tr>
<tr>
<td>Green Needlegrass</td>
<td>Lodorm, AC Mallard, Fowler</td>
<td>2.4</td>
</tr>
<tr>
<td>Sideoats Grama</td>
<td>Killdeer, Pierre, Butte</td>
<td>3.6</td>
</tr>
<tr>
<td>Slender Wheatgrass</td>
<td>Revenue, Primar, Adanac, Pryor, Firstrike</td>
<td>5.0</td>
</tr>
<tr>
<td>Oats</td>
<td>--</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>33.8</td>
</tr>
<tr>
<td>Class II – Late Season</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Wheatgrass</td>
<td>Rodan, Rosana, Walsh, Flintlock, W.R. Poole, Recovery</td>
<td>9.6</td>
</tr>
<tr>
<td>Switchgrass</td>
<td>Dacotah, Forestburg, or Sunburst, Summer</td>
<td>1.6</td>
</tr>
<tr>
<td>Green Needlegrass</td>
<td>Lodorm, AC Mallard, Fowler</td>
<td>3.6</td>
</tr>
<tr>
<td>Canada Wild-rye</td>
<td>Mandan</td>
<td>5.2</td>
</tr>
<tr>
<td>Slender Wheatgrass</td>
<td>Revenue, Primar, Adanac, Pryor, Firstrike</td>
<td>5.0</td>
</tr>
<tr>
<td>Oats</td>
<td>--</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>35.0</td>
</tr>
</tbody>
</table>

253.02 A Hydraulic Mulch

Replace the first paragraph with the following:

When applying hydraulic mulch and seed together, use hydraulic spraying equipment that mixes the seed and mulch in water.
253.03 B Hydraulic Mulch
Delete the third paragraph.

253.03 C Straw Mulch
Delete the following sentence from this section:
At least 50 percent of the mulch by weight must be at least 8 inches in length.

260.03 C Silt Fence Backing.
Replace the title of 260.03 C with the following:
Silt Fence Supported.
Add the following to the beginning of 260.03 C:
Use wire backing or monofilament silt fence when installing supported silt fence.

262.04 A Installation
Replace the first paragraph of Section 262.04 A with the following:
Attach anchor lines to the flotation device.

265.06 Basis of Payment
Replace the first paragraph after the list of pay items with the following:
Include the cost for pipe, geosynthetic material, topsoil, and seed in the price bid for “Stabilized Construction Access”.

302.03 MATERIALS
Replace table in Section 302.03 with the following:

<table>
<thead>
<tr>
<th>Material</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregates</td>
<td>816</td>
</tr>
<tr>
<td>Salvaged Base Course</td>
<td>817</td>
</tr>
<tr>
<td>Traffic Service Aggregate</td>
<td>816 Class 5; or 817</td>
</tr>
</tbody>
</table>
302.04 A.2 Gradation

Replace the first paragraph in Section 302.04 A.2 with the following:

The Engineer will collect three samples for each 1,000 tons of material placed, except when more than 1,000 tons are placed in a day. If more than 1,000 tons are placed in a day, the Engineer will collect three samples for that day’s placement. If the aggregate fails to meet the specified gradation, the Engineer will apply a price reduction as specified in Section 302.06 B, “Contract Price Adjustments”.

302.04 B Placement and Compaction

Replace the third paragraph with the following:

Compact aggregate, utilizing pneumatic-tired rollers, until the surface is tightly bound and shows no rutting or displacement occurs under the roller operation. The Engineer may allow other compaction methods, when placing aggregate under sidewalks, driveways, or medians.

302.04 B Placement and Compaction.

Replace the last paragraph of 302.04 B with the following:

Compact material over geosynthetic fabric or geogrid as specified in Section 709.04 D. “Geosynthetic Reinforcement (Type R)”.

302.04 C Surface Tolerance

Replace Section 302.04 C with the following:

C. Surface Tolerance.

Unless one of the following surface tolerances is specified, construct the surface to within 0.08 feet of the proposed elevation.

1. Surface Tolerance Type B.

   Use trimming equipment, including motor graders, equipped with automatic grade control to adjust for the cross slope and longitudinal profile. Construct the finished surface to within 0.04 feet of the proposed elevation.

   Reincorporate material removed from high points during trimming into other portions of the base.

2. Surface Tolerance Type C.

   Use roadbed planers to construct the finished surface. The Engineer will allow the base or surface course to be used as the grade reference when trimming shoulders. Construct the finished surface to within 0.04 feet of the proposed elevation.

   Reincorporate material removed from high points during trimming into other portions of the base.
Replace the first paragraph in Section 306.04 A.1 with the following:

The Engineer will collect three samples for each 1,000 tons of material placed, except when more than 1,000 tons are placed in a day. If more than 1,000 tons are placed in a day, the Engineer will collect three samples for that day’s placement. If the aggregate fails to meet the specified gradation, the Engineer will apply a price reduction as specified in Section 306.06 B, “Contract Price Adjustments”.

Replace the last paragraph in Section 401.03 with the following:

Obtain samples of the bitumen under the observation of the Engineer. The Engineer will take immediate possession of the samples.

Delete Section 401.03 B and add the following:

**B. Tack Coat.**

Use a material from Table 401-01.

<table>
<thead>
<tr>
<th>Material</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS-1h</td>
<td>818.02 F</td>
</tr>
<tr>
<td>MS-1</td>
<td>818.02 F</td>
</tr>
<tr>
<td>CSS-1h</td>
<td>818.02 E.1</td>
</tr>
</tbody>
</table>

When MS-1 is used it may be diluted by the supplier or the Contractor.

**C. Fog Seal.**

Use a material from Table 401-02.

<table>
<thead>
<tr>
<th>Material</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS-1h</td>
<td>818.02 F</td>
</tr>
<tr>
<td>CSS-1h</td>
<td>818.02 E.1</td>
</tr>
</tbody>
</table>

Delete Section 401.04 A and add the following:

**A. Application of Bitumen.**

1. **General.**

   Prepare the surface by removing loose dirt and deleterious material.

   Provide the Engineer with the manufacturer recommended application temperature ranges. During application, maintain the temperature of bitumen within the ranges recommended by the manufacturer.
Apply bitumen with a distributor on a compacted and stable surface. Use hand sprayers to cover irregular areas. Completely cover the area receiving the bitumen application.

If applying bitumen in multiple passes, overlap the bitumen along adjoining edges of the passes.

Protect the surfaces of structures and other roadway appurtenances against tracking and splattering.

2. **Prime Coat.**
   Apply prime coat when the ambient air temperature is at least 40°F.

   Allow the prime coat to cure a minimum of 48 hours before placing pavement.

3. **Tack Coat.**
   Apply tack coat when the air temperature and existing mat temperature are at least 35°F.

   Apply tack coat to a dry surface.

   Allow tack coat to cure before applying surfacing material.

4. **Fog Coat.**
   Apply fog coat when the ambient air temperature is at least 40°F.

   Apply fog coat to a dry surface.

---

### 411.04 Construction Requirements

Replace the sixth paragraph with the following:

Coordinate milling and paving operations so that no section of milled roadway has public or construction traffic operating on it for more than 5 days. If public or construction traffic operates on the milled surface for more than 5 days, repair the roadway as directed by the Engineer at no additional cost to the Department.

---

### 420.04 A General

Replace Section 420.04 A with the following:

**A. General.**

Do not start seal work after September 1.

Allow material to cure as shown in Table 420-01 before applying seal coat materials.

<table>
<thead>
<tr>
<th>Table 420-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curing Period</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Curing Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime Coat</td>
<td>4 days</td>
</tr>
<tr>
<td>Asphalt Cement Pavements</td>
<td>7 days</td>
</tr>
<tr>
<td>Emulsion Pavements</td>
<td>15 days</td>
</tr>
</tbody>
</table>

Schedule the work so that the last bitumen application of the day is sufficiently cured to allow installation of the short-term pavement marking before sunset.
Replace the third paragraph with the following:

Within one minute following the application of the bitumen, spread the cover coat material uniformly over the bituminous material with an aggregate spreader. Apply cover material by hand to areas that are inaccessible to the aggregate spreader.

Delete the eighth paragraph in its entirety.

Replace Section 420.04 H.1 with the following:

1. Bitumen.
   Obtain samples of this material under the observation of the Engineer. The Engineer will take immediate possession of the samples.

Add the paragraph following to the end of Section 421.03:

Obtain samples of the bitumen under the observation of the Engineer. The Engineer will take immediate possession of the samples.

Add the paragraph following to the end of Section 422.03:

Obtain samples of the bitumen under the observation of the Engineer. The Engineer will take immediate possession of the samples.

Add the following to the end of 430.02:

When air temperatures fall below 50˚ F at any place along the haul route of the mix, deploy the tarps installed on the bituminous trucks.

Delete Section 430.03 F “Commercial Grade Hot Mix Asphalt” from Section “430.03 Material”.
Replace the third paragraph of Section 430.04 D.1 with the following:

Submit the mix design a minimum of 10 calendar days before beginning paving operations. The Engineer will review the mix design. If the Engineer does not approve the mix design, revise the mix design and submit the revised mix design. Allow 10 calendar days for the Engineer to review a revised mix design before beginning paving operations.

Add the following item to Section 430.04 D.2:

e. If the mix contains RAP, submit a 50 pound sample of the milled material.

Replace “Percent Air Voids” values in Table 430-07 with the following:

<table>
<thead>
<tr>
<th>Test/Assessment</th>
<th>Single Test Target Value Control Limit</th>
<th>Moving Average Target Value Control Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Air Voids</td>
<td>2.0% to 6.0%</td>
<td>2.5% to 5.0%</td>
</tr>
</tbody>
</table>

Replace the second paragraph of Section 430.04 F with the following:

Correct local irregularities in the existing surface before placing the first lift of bituminous material. If milling is specified, correct local irregularities after milling. Apply a tack coat to the surface before correcting the irregularities. Use the same type of mix that is required for the subsequent lift. Use a pneumatic roller as specified in Section 151.01 A.3, “Self-Propelled Pneumatic-Tired Roller” to compact the mix.

Replace Section 430.04 G with the following:

G. Patching.

Remove existing broken or unstable surface material and replace that material with the same mixture specified for the next course.

Place the bituminous material in lifts not to exceed 3 inches and compact the material. Allow the patch material to cool to 130°F before placing additional material. If patching is required during the paving operation, allow the patch material to cool to 185°F before placing additional material.

Delete the ninth paragraph of Section 430.04 H.1
Replace the second paragraph of Section 430.04 I.3.c with the following:

If roller tires pick up the bituminous material or there are excessive roller marks in the mat, the Engineer may allow the removal of the intermediate rolling operation if it appears to the Engineer that compaction is being achieved.

---

Replace Section 430.04 J with the following:

**J. Joints.**

1. **General.**
   Place pavement against the surface of curbing, gutters, manholes, and similar structures uniformly near the contact surfaces so the pavement is slightly higher than the edge of the structure after compaction. Do not construct a joint on top of a joint from a previous lift or in a wheel path.

2. **Longitudinal Joints.**
   Construct longitudinal joints on successive lifts between 6 and 12 inches from the previous longitudinal joint.

   Place and follow markings to guide the paver. Construct joints in a uniform line. Correct pavement edges that deviate from the uniform line and correct areas of the joint that vary from the intended location of the joint by more than 2 inches. Construct joints with tight seams and no visible segregation.

3. **Transverse Joints.**
   Construct transverse joints on successive lifts a minimum of 12 feet from the previous transverse joint.

---

Delete “Commercial Grade Asphalt, Ton” from the Pay Item List

---

Add the following to Section 550.03:

Develop a mix design with a maximum water-cement ratio of 0.40 when placing concrete with a slip form paving machine. Use the water-cement ratio shown in Section 802.01 B.2, “Concrete Class Designation” for all other paving methods.
Replace the fourth paragraph with the following:

Adjacent concrete may be used as a side form after the concrete has attained a minimum compressive strength of 3,000 psi or a minimum flexural strength of 450 psi.

Replace Section 550.04 H.1.d with the following:

d. Final Surface Finish.

(1) General.
Uniformly texture the surface by dragging a seamless strip of stiff-fiber artificial grass carpet longitudinally along the full width of the pavement in a single pass.

Use and maintain a taut string line for operating the carpet drag. Attach the leading edge of the carpet drag to a bridge. If the Engineer determines it is not feasible to use a bridge or string line, other texturing methods will be allowed.

Maintain a clean carpet free of encrusted concrete.

Provide a minimum texture depth of 0.031 inches.

(2) Roadways with Speed Limits Less than 45 MPH.
The Engineer will test the texture achieved by the carpet drag in accordance with ASTM E 965 and the Field Sampling and Testing Manual. The Engineer will determine the test location.

If three or more lots have texture depths less than 0.031 inches but greater than or equal to 0.025 inches, perform diamond grinding on those lots.

Perform grinding any lot having a texture depth of less than 0.025 inches.

Perform grinding as specified in Section 550.04 M.4, “Grinding.”

The Engineer will determine the limits of any failing test by running additional tests at 100 foot intervals before and after the failing test. The Engineer will determine the location of the additional tests.

(3) Roadways with Speed Limits 45 MPH or Greater.
Run a clean, metal tine longitudinally along the surface immediately following the carpet drag. Exclude areas within 3 inches of the edge of the slab and longitudinal joints. Run the tine continuously across transverse joints.

Use a tine that provides:
- 1/8 inch ±1/64 inch groove width;
- 3/16 inch ±1/16 inch groove depth; and
- 3/4 inch spacing of between grooves.

If the concrete has becomes too stiff to receive the metal tine finish, use diamond bladed equipment to produce the longitudinal grooves.
Replace the first paragraph of Section 550.04 I.3 with the following:

Use a curing compound that meets the requirements of Section 810.01 B.2, “Type 2, Class B”.

Replace the title of “Impervious Membrane Cure” with “Concrete Curing Compound”.

Replace the first sentence of the first paragraph with the following:

The Engineer will determine the pavement smoothness by profiling the finished surface of the mainline pavement.

Replace the second paragraph with the following:

The Engineer will apply a liquidated damage of $1,500 per trip for each profile collected after the second profile.

Replace the third paragraph with the following:

The Engineer will use an inertial profiler to collect the profile in each wheel path of each lane.

Replace the second bullet with the following:

- Use ProVal, http://www.roadprofile.com, to calculate the IRI for the Pavement Profile (PPF);

Replace all instances of “ERD” with “PPF”. 

Replace all instances of “ERD” with “PPF”.

Add the following to the end of the first paragraph of 550.04 N.1:

Fill the core hole with fresh concrete mix and use a vibrator to consolidate the concrete in the holes. Screed the new concrete off and apply curing compound to the new concrete.
Add the following item to the table:

| Impervious Membrane Cure | 810.01 B.1 |

Replace all occurrences of AASHTO M 85, Type I or Type IA in section 570.03 B with the following:

Section 804.01, “Cement”,

Replace Section 570.03 B.2.a with the following:

a. **Concrete.**
   Use Class AE concrete with cement that meets the requirements of Section 804.01, “Cement”, for spall repairs.

Delete Section 570.03 D.

Replace Section 570.04 A.1.b with the following:

b. **Full Depth Repairs.**
   Use the lift out method to remove concrete in full depth repair areas with minimal disruption to the subgrade and without damage to the remaining concrete. Do not operate equipment, other than compaction equipment, in areas where concrete has been removed. Fill voids deeper than 1 inch with aggregate and compact the material to the level of the existing subgrade.

Place concrete for repairs less than 100 feet long the same day that removals are initiated. Place concrete for repairs longer than 100 feet within 48 hours of initiating removals. Dampen the faces of existing concrete before placing new concrete.

Place, consolidate, finish, and cure concrete according to the following portions of Section 550.04, “Construction Requirements”:
- 550.04 C, “Roadbed Condition”;
- 550.04 D, “Placing and Spreading Concrete”;
- 550.04 E, “Placing Reinforcing Steel and Tie Bars”;
- 550.04 F, “Uncontrolled Cracking”;
- 550.04 G, “Joints”;
- 550.04 J, “Removing Forms”;
- 550.04 K, “Sealing Joints”; and
Provide finished concrete that is flush with all adjacent pavement surfaces. Before the concrete sets, check the repair utilizing a 10 foot straight edge and correct areas that deviate by 1/8 inch or greater.

Texture the repair by dragging a carpet of artificial grass longitudinally over the repaired area.

If repairs involve multiple lanes, fill the gap between the lane under repair and the existing concrete with cold bituminous material. Remove this material before making the repair to the adjacent lane.

(1) **Repairs One Lane Wide.**
   Use a bond breaker along the centerline joint. Tie bars are not required on repairs that are one lane wide.

   When the repair falls in a ramp, restore the longitudinal joints crossing the repair, but do not use tie bars.

(2) **Repairs Wider Than One Lane.**
   Before placing the concrete in the second lane, install 30 inch #5 tie bars in the longitudinal joint using the original tie bar pattern. Drill holes for the bars and secure the bars in the holes using epoxy.

(3) **Impervious Membrane Cure.**
   Use a curing compound that meets the requirements of Section 810.01 B.1, “Type 2”.

   Apply the cure at a minimum rate of 1 gallon per 150 square feet of pavement in one or two applications. If applying two coats, apply the second application within 30 minutes of the first application.

   Protect joints that require sealing from infiltration of the curing compound.

   Immediately cover the exposed sides of the concrete pavement with curing compound if removing forms exposes curing concrete before the expiration of the curing period.

   Immediately reapply curing compound to damaged areas within the curing period.

---

**570.04 A.2.c Dowel Bars**

Replace the first paragraph of Section 570.04 A.2.c with the following:

Drill 1-3/8 inch diameter holes using a rigid frame-mounted drill. Clean the hole, inject epoxy into the hole, and insert dowels.

---

**570.04 A.3.a Concrete Removal**

Replace the third paragraph of Section 570.04 A.3.a with the following:

If existing reinforcing steel is damaged or bent within the 18 inch lap area, replace the damaged reinforcing steel.
Replace the second and third bullet of 570.04 A.3.b with the following:

- Use Class ASE concrete.
- Place concrete between 4 p.m. and 8 p.m. Tie one rebar end and tie the other end less than 20 minutes before placing concrete.

Replace the first paragraph of Section 570.04 C with the following:

Allow new concrete and dowel bar retrofit patch material to cure for a minimum of 24 hours before grinding.

Replace Section 570.04 C.6 with the following:

   Continuously collect all slurry or residue resulting from the grinding operation.

   In areas with speed limits of 45 mph or less and in areas with curb and gutter, dispose of slurry as specified in Section 107.17, “Removed Material”.

   In areas with speeds greater than 45 mph and without curb and gutter, slurry may be placed on the foreslope of the roadway. Prevent slurry from entering pipes, culverts, storm drains, ravines, streams, waterways, wetlands, and all other water conveyances. Install erosion control features as necessary to prevent contamination, or dispose of slurry as specified in Section 107.17, “Removed Material”.

Replace the first sentence of the first paragraph with the following:

The Engineer will determine the pavement smoothness by profiling the finished surface of the mainline pavement.

Replace the second paragraph with the following:

The Engineer will apply a liquidated damage of $1,500 per trip for each profile collected after the second profile.

Replace the content of 570.04 E.1 with the following:

Clean and reseal the portion of the transverse joint that were ground.
Remove foreign material from vertical edges of the joint. Clean the joint using compressed air removing any incompressible material.

Install backer rod before applying the silicon sealant.

---

570.05 METHOD OF MEASUREMENT

Add the following to Section 570.05:

**E. Full-Depth Doweled.**
Include the cost of the end dowel bars in the contract unit price “___-Inch Concrete Pavement Repair – Full-Depth Doweled”. The cost for intermediate dowel bar assemblies is paid by “Doweled Contraction Joint Assembly”.

---

570.06 BASIS OF PAYMENT

Delete the following paragraph from Section 570.06:

Include all costs for saw cuts, steel reinforcing, bar supports, tie bars, and joint sealing in the unit price bid for “__Inch Concrete Pavement Repair - Full-Depth __________”.

---

602.02 EQUIPMENT

Add the following to Section 602.02.

**E. Curing Concrete.**
Use a fogging machine as specified in Section 156.02, “Fogger” for exposed surfaces.

**F. Shot Blasting Equipment.**
Use centrifugal or wheel type shot blasting equipment that is designed to clean concrete surfaces and leave no oil or other foreign material on concrete surfaces. Use a shot blaster capable of collecting blast media and dust.

---

602.02 A General

Add the following sentence to the end of 602.02 A:

Use a plant and equipment as specified in Section 155, “Concrete Equipment”.

---

602.03 A General

Delete the last paragraph.
Replace Section 602.04 D with the following:

D. **Deck and Bridge Approach Slab Finishing.**
Following the screed operations, obtain the final surfacing with a 10 foot long scraping straightedge with a suitable handle. Ensure the final surface has the required crown and does not vary more than 1/8 inch from a 10 foot straightedge laid longitudinally thereon.

Pull a burlap or artificial grass drag over the surface in a longitudinal direction while the concrete is plastic.

Immediately following the artificial grass drag, run a clean metal tine transversely across the deck. Stop the tine 18 inches from the face of the barrier or curb and 6 inches from the beginning and end of the deck or approach slab. The tine may be hand-operated. Use a tine that provides:

- 1/8 inch ±1/64 inch groove width;
- 3/16 inch ±1/16 inch groove depth; and
- 3/4 inch spacing between grooves.

Add the following to the end of the third paragraph of Section 602.04 F.1:

Do not use a waterproof material to cover the wet burlap during the curing period.

Delete Section 602.04 F.2 and replace with the following:

2. **Deck and Bridge Approach Slab Concrete.**
Cure the concrete surface by covering with a double thickness of burlap. Moisten the concrete surface using a light fog spray if the surface begins to dry after finishing and before placement of the wet cure. Keep the burlap continuously moist at all times.

During the curing process do not allow vehicles and equipment on the deck or approach slab and do not perform work on the deck or approach slab.

For deck slab concrete, place the wet cure burlap and start the wet cure within 15 minutes of the passing of the finishing machine.

Delete Section 602.04 G and add the following:

G. **Barriers.**

1. **General.**
Use Class AAE-3 concrete for barriers.

Perform corrective actions of any surface that deviates by 3/8 inches or more when measured with a 10 foot straightedge. Make corrections by grinding, filling with an approved epoxy mortar, or replacing.
Except at expansion joints, construct V-grooves that are 3/4 inch wide and 3/4 inch deep in all faces of the barriers at each pier and at equal spaces between piers and abutments at approximately 10 foot spacing.

2. **Conventional Forming.**
   Adequately tie forms to avoid any shifting during concrete placement.
   
   If concrete inserts in the deck slab are holding the barrier forms in place, remove the inserts. Clean and fill the cavities flush with the deck slab using an epoxy resin adhesive.

3. **Slipforming.**
   Conventional form a minimum distance of 4 feet on each side of expansion joints before slip forming.
   
   After the reinforcement is installed, check the clear distance between the reinforcement and the slipform for the entire length of the pour.
   
   The Engineer will allow slab overhang distance to be increased up to 1 inch provided the specified gutterline is maintained.
   
   The Engineer will allow a radius to be used instead of a bevel on all edges of the barrier.

---

**602.04 J Penetrating Water Repellent Treatment of Concrete Surfaces**

Replace section 602.04 J with the following:

**J. Penetrating Water Repellent Treatment.**

Apply penetrating water repellent solution a minimum of 21 days after placement of the concrete bridge deck and approach slabs.

Apply penetrating water repellent solution to the following surfaces:
- Driving surfaces of bridge deck;
- Approach slabs;
- Concrete medians;
- Front faces and tops of curbs; and
- Front faces and tops of barriers.

Remove the barrier forms before applying treatment to surfaces. Clean all surfaces receiving treatment using either sandblasting, shot blasting, or water-washing equipment. Remove dirt, dust, grease, oil, laitance, asphalt, or other materials that may inhibit the coverage and penetration of the solution. Use hand tools and penetrating water repellent solution manufacturer’s approved solvents to remove any bonded foreign materials. Do not remove or alter the existing surface finish or expose the coarse aggregate.

Allow any wet concrete surfaces to dry a minimum of 48 hours or longer if required by the solution manufacturer.

Apply the penetrating water repellent solution when the following conditions are met:
- The air temperature is within the following:
  - 40 °F and rising; or
  - 95 °F and falling;
- Wind is less than 25 mph; and
- Rain is not expected within 4 hours.

Use airless equipment that has a pressure range between 15 to 40 psi. Apply the repellent treatment solution uniformly so that one gallon of material does not spread over more than 200 sf. If the repellent solution manufacturer recommends a coverage of an area less than 200 sf per gallon, use the manufacturer’s recommended rate. Squeegee or broom excess material to avoid ponding.

602.04 K.1 General

Replace Section 602.04 K.1 with the following:

1. General.
   When shown in the plans, apply membrane and primer in dry weather and when the air temperature is above 40°F. Apply to surfaces that are dry, clean, free of sharp protrusions and above 40°F.

602.06 B Surface Tolerance.

Replace the last sentence with the following:

The amount of the contract price adjustment will be determined by multiplying the contract unit price for the deck concrete contract item by the area that is out of tolerance, measured in square yards, and the appropriate Contract Price Reduction Factor in Table 602-02.

604.03 B.1 General

Replace Section 604.03 B.1 with the following:

1. General.
   Develop a mix design that produces concrete that will achieve a minimum compressive strength of 5,000 psi within 28 days.
   
   Section 802.01 H, "Air Content" will not apply.

   Obtain the Engineer’s approval for admixtures before developing the mix design. Include approved admixtures in the mix design.

   Perform tests to determine the concrete’s compressive strength using 6 inch by 12 inch cylinders.

604.03 B.3 Trial Mix

Replace the “AASHTO T 23” test requirement with “ND T 23”

604.03 E.1 Concrete

Replace the “AASHTO T 23” test requirement with “ND T 23”
604.04 B Work Drawings

Replace Section 604.04 B with the following:

B. Work Drawings.

Provide work drawings that include:
- Beam dimensions;
- Size and location of all reinforcing and prestressing steel including:
  - Strand layout;
  - Pull down locations;
  - Tensioning forces;
  - Elongation; and
  - Proposed changes in the reinforcing steel;
- Initial prestress forces;
- Location of handling hooks or devices; and
- Losses in the prestress due to:
  - Elastic shortening;
  - Shrinking or creeping of concrete; and
  - Relaxation of steel stress as determined by the Contractor method of stressing.

Submit calculations and work drawings that are signed, sealed, and dated by a Professional Engineer registered in the State of North Dakota as set forth in NDCC Title 43.

604.04 D Placing Concrete

Replace Section 604.04 D with the following:

D. Placing Concrete.

Place concrete in forms made entirely of steel.

Vibrate concrete for the beams. Vibrate without displacement of reinforcing, conduits, voids, or wire. Vibrate for a sufficient duration and intensity to thoroughly consolidate the concrete without causing segregation.

Rough float and transversely broom the top of the beams.

606.04 A Design and Manufacture

Replace the second paragraph in Section 606.04 A with the following:

Use an ACPA or NPCA certified plant in the construction.

616.04 G Assembling Steel.

Replace all occurrences of “AASHTO M 164” with the “ASTM F 3125 Grade A 325”.

Replace all occurrences of “ASTM A 325” with “ASTM F 3125 Grade A 325”.

624.03 Materials.

Replace all occurrences of “ASTM A 325” with “ASTM F 3125 Grade A 325”.
624.03 B E-Rail Retrofit  
Replace ASTM A 307, Grade C with ASTM F 1554, Grade 36.

624.03 C Free Standing Rail Retrofit  
Replace ASTM A 307, Grade C with ASTM F 1554, Grade 36.

650.02 EQUIPMENT  
Replace the Equipment list with the following:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Mixer</td>
<td>155.03 C</td>
</tr>
<tr>
<td>Bridge Deck Overlays Finishing Equipment</td>
<td>155.07 D</td>
</tr>
<tr>
<td>Sawing</td>
<td>155.09</td>
</tr>
<tr>
<td>Grinding</td>
<td>155.11</td>
</tr>
<tr>
<td>Concrete Buggy</td>
<td>155.12</td>
</tr>
<tr>
<td>Fogger</td>
<td>156.02</td>
</tr>
<tr>
<td>Milling Machine</td>
<td>156.03</td>
</tr>
</tbody>
</table>

650.03 A Concrete  
Delete the last paragraph in its entirety.

650.03 B Low Slump Concrete  
Replace Section 650.03 B with the following:

B. Low Slump Concrete.

1. General.

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine Aggregate</td>
<td>802.01 C.3</td>
</tr>
<tr>
<td>Coarse Aggregate – Size 5</td>
<td>802.01 C.2</td>
</tr>
<tr>
<td>Concrete Admixtures</td>
<td>808</td>
</tr>
<tr>
<td>Burlap Cloth</td>
<td>810.01 A</td>
</tr>
<tr>
<td>Water</td>
<td>812</td>
</tr>
</tbody>
</table>

Use cement that meets the requirements of AASHTO M 85, Type I or Type IA.

Mix low slump concrete using 8.75 bags of cement per cubic yard and a maximum water-cement ratio of 0.42.

Use coarse aggregate composed of crushed stone. Use crushed stone that has at least one fractured face on 75 percent of the particles retained on the number 4 sieve.
Entrain air within the concrete as specified in Section 802.01 H, "Air Content", except supply concrete with an air content between 5.0 and 7.0 percent of the volume of the concrete at the time of placement.

Produce concrete that has a slump of 1 inch or less, when determined according to ND T 119.

Use a mobile mixer to produce low slump concrete.

2. Mix Design.
   Use a mix design that has the percentages shown in Table 650-01.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table 650-01</strong></td>
<td></td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>31%</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>31%</td>
</tr>
<tr>
<td>Air</td>
<td>6%</td>
</tr>
<tr>
<td>Water</td>
<td>16%</td>
</tr>
<tr>
<td>Cement</td>
<td>16%</td>
</tr>
</tbody>
</table>

650.04 C Removals with Hydrodemolition Equipment

Add the following to 650.04 C:

In areas inaccessible for using hydrodemolition equipment, remove concrete using hand held hydrodemolition equipment or mechanical equipment.

650.04 C.1 Class 1H

Delete the last paragraph in 650.04 C.1.

650.04 G Finishing

Remove and replace the last paragraph of 650.04 G with the following:

Pull a burlap or artificial grass drag over the surface in a longitudinal direction while the concrete is plastic. Immediately follow the drag with a metal tine finish as specified in Section 602.04 D, "Deck and Approach Slab Finishing".

650.04 I Curing

Replace all instances of Section 602.04 F.2, "Deck Slab Concrete" with the following:

Section 602.04 F.2, "Deck and Bridge Approach Slab Concrete".
Add the following to the end of Section 650.05:

**C. Hydrodemolition Removals.**
Removals made beyond the designated limits stated in Sections 650.04 C.1, “Class 1H”, and 650.04 C.2, “Class 2H” will not be paid for under any classification of removal.

---

Replace the last sentence with the following:

The amount of the contract price adjustment will be determined by multiplying the contract unit price for "Class AAE-3 Concrete" by the area, measured in square yards, that is out of tolerance and the appropriate Contract Price Reduction Factor in Table 650-02.

<table>
<thead>
<tr>
<th>Deviation</th>
<th>Contract Price Reduction Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 1/8 inch and ≤ 1/4 inch</td>
<td>0.6%</td>
</tr>
<tr>
<td>&gt; 1/4 inch and ≤ 1/2 inch</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

---

Replace the Table 702-01 with the following:

<table>
<thead>
<tr>
<th>Original Contract Amount Earned</th>
<th>Payment will be the Lesser of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mobilization Bid Amount</td>
</tr>
<tr>
<td>5%</td>
<td>25%</td>
</tr>
<tr>
<td>10%</td>
<td>50%</td>
</tr>
<tr>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>75%</td>
<td>100%</td>
</tr>
</tbody>
</table>

---

Add the following to the end of 704.03 A:

Provide traffic control devices that meet the crash testing requirements of the appropriate classification under NCHRP 350. The Engineer will accept devices that meet the requirements of MASH.

Submit a Certificate of Compliance for all temporary traffic control materials before installation.
1. **Requirements Before Device Installation.**

   Before beginning work, coordinate and hold a meeting with the Engineer to review the traffic control plans.

---

Replace all instances of “ATSAA” in Section 704.04 B with “ATSSA”.

---

If permanent or temporary traffic signals are being installed, designate a traffic signal maintenance person.

---

Replace the web address in the first paragraph with [http://www.ndsc.org](http://www.ndsc.org).

Replace the last sentence of the second paragraph with the following:

The handbook is available for download at [www.ndltap.org](http://www.ndltap.org) and at [http://www.ndsc.org](http://www.ndsc.org).

---

Equip the protection vehicle with an advance warning flashing or sequencing arrow panel conforming to Section 704.03 M, “Advance Warning Flasher or Sequencing Arrow Panel” and the MUTCD.

---

Replace all instances of “Sign W20-52-24” in Section 704.04 O with “W20-52-54”.

Change the title of Section 704.04 O.3.b to “Uneven Pavement Greater Than 2 Inches.”

Add the following to 704.04 O:

4. **Uneven Shoulder and Adjacent Lane.**

   If the shoulder and adjacent driving lane are not even at the end of the day, the following criteria will apply:

   Install “Shoulder Drop Off” signs (Sign W8-9a-48) at the following locations:
   - In advance of the drop off;
- Spaced at each mile from the advance sign; and
- At major intersections (CMC routes, state and US highways, and Interstate ramps).

If the difference in elevation between the shoulder and the driving lane is 2" or greater, construct a slough at the edge of the driving lane that is 4:1 or flatter.

If the difference in elevation between the shoulder and the driving lane is less than 2", no slough is required.

704.04 O.1 General.  Page 367  10/01/17
Replace 704.04 O.1 with the following:

1. General.
   If pavement in adjacent lanes or the shoulder adjacent to an open lane is uneven at the completion of a day’s work, install traffic control devices as specified in this section.

   Leave these devices in place until the pavement surface in the adjacent lanes or shoulder are even.

706.02 A General  PAGE 372  10/01/16
Add the following to the end of Section 706.02 A:

Furnish Aggregate and Bituminous labs with DSL broadband internet and a router that broadcasts Wi-Fi and will allow for hard wiring of a computer.

706.02 B Aggregate Laboratory  PAGE 372  10/01/15
Replace Section 706.02 B with the following:

B. Aggregate Laboratory.
   Place the laboratory at a location acceptable to the Engineer. The Engineer will have the full control and the exclusive use of the laboratory.

   Provide a laboratory with a minimum floor area of 230 square feet, minimum exterior width of 8 feet, and a minimum ceiling height of 7 feet.

   Partition the building into a minimum of two rooms, a smaller room having a floor area of approximately 70 square feet.

   Provide a workbench with a length of 7 feet in the smaller room.

   Provide the following equipment in the larger room:
   1. Mechanical shaker capable of receiving 6 trays that have a screen size of 14 inches by 14 inches and the following compatible sieves:
      - 1-1/2 inch;
      - 1-1/4 inch;
      - 1 inch;
      - 3/4 inch;
      - 1/2 inch;
      - 3/8 inch;
      - No. 4; and
– An enclosed dust pan.
2. Mary Ann shaker capable of being adjusted to receive 8 and 12 inch diameter sieves;
3. Splitter with a maximum hopper capacity of 0.6 cubic feet;
4. Splitter with a minimum hopper capacity of 1.0 cubic feet; and
5. An exhaust fan capable of changing the air in the room every minute.

706.04 A. General.

Add the following sentence to the first paragraph of 706.04 A:

Level, block, and tie down the lab when placing.

709.04 C Geosynthetic Geogrid (Type G)

Replace Section 709.04 C with the following:

C. Geosynthetic Geogrid (Type G).

Unroll geogrid parallel to the centerline of the road. Do not drag the geogrid across the underlying material. Use geogrid widths that produce overlaps of parallel rolls at the centerline and at the shoulders and so that no overlaps are required along wheel paths.

Overlap geogrid a minimum of 30 inches at all splices and joints when placing on subgrade. Overlap geogrid a minimum of 12 inches at all splices and joints when placing on base.

Construct overlaps at the end of a roll so the previous roll laps over the subsequent roll in the direction of the cover material placement. Mechanically tie transverse joints to maintain the minimum overlap. Place pins, staples, or small piles of aggregate to maintain the geogrid position before placement of cover material.

Stagger end overlaps at least 10 feet from other end overlaps in parallel rolls. Cut or increase overlaps to conform to curves.

Patch damaged areas of geogrid. Place a patch that overlaps the damaged area by 36 inches on all sides. Mechanically tie the patch to the underlying grid.

Place the first lift of material over geogrid installed on subgrade to a depth of 10 inches of loose material. Place the first lift of material over geogrid installed on base to a depth of 6 inches of loose material.

Use low ground pressure equipment to spread the initial lift of material. If rutting occurs, fill the ruts with additional material before placing the subsequent lift. Do not blade out ruts. Do not turn construction equipment on the first layer of material.

714.03 A Culverts and Storm Drains

Replace the last paragraph of Section 714.03 A with the following:

Provide mortar consisting of a mixture of one part Portland Cement to two parts mortar sand, and sufficient water to furnish proper consistency.
Where placing new end sections on existing pipe, identify whether the type of end section needed is male or female.

Add the following to the end of Section 714.03 A:

If using polymer coated corrugated steel pipe, install end sections that meet the requirements of Section 830.02 C “Polymer Coated Corrugated Steel Pipes” or 830.02 B, “Metallic (Zinc or Aluminum) Coated Corrugated Steel Culverts, Storm Drains, and Underdrains”.

714.04 A.1 Bedding
Delete the first paragraph from Section 714.04 A.1.

714.04 A.3 Joining Pipe
Delete the last paragraph.

714.04 A.5 Deflection Testing
Replace the second paragraph of 714.04 A.5 with the following:

The Engineer will visually inspect all metal and thermoplastic pipe under unpaved approaches for deflection. If the Engineer sees any deflection, the Engineer will require the Contractor to pass a nine point mandrel or other approved object through the pipe to check for deflection. Use a mandrel with a diameter not less than 95 percent of the inside diameter of the pipe. If the mandrel cannot be passed through the pipe, replace the pipe.

714.04 A.6 Connection to Manholes, Inlets, and Pipes
Replace Section 714.04 A.6 with the following:

6. Connection to Manholes, Inlets, and Pipes. If connections are required to a manhole, inlet barrel, or pipe entrance; connect pipe by cutting the opening and grouting in the connecting pipe.

714.04 A.7 Compaction Control for Aggregate
Replace Section 714.04 A.7 with the following:

7. Compaction Control for Aggregate. Compact aggregate according to Section 203.04 E.2, “Compaction Control, Type A”. The moisture content of the aggregate at the time of compaction shall be not less than 2.0 percentage points below, nor more than 3.0 percentage points above the optimum moisture content.

Compact aggregate for approach pipes according to the conduit manufacturer’s recommendation

Use a maximum lift thickness of 6 inches.
Replace Section 714.04 A.8 with the following:

8. **Compaction Control for Non-Aggregate Material.**

If Common Excavation Type A is specified, follow the compaction requirements in Section 203.04 E.2, "Compaction Control, Type A". If Common Excavation Type B is specified, follow the compaction requirements in Section 203.04 E.3, "Compaction Control, Type B".

Compact material for approach pipes according to the conduit manufacturer's recommendations.

---

Replace the first sentence of 714.06 with the following:

Include the cost of end sections in the price bid for pipe conduit.

---

Add the following item to the table:

| Impervious Membrane Cure | 810.01 B.1 or 810.01 B.2 |

---

Replace the 6th paragraph with the following:

If Class ASE concrete is used, maintain the surface temperature between 50°F and 90°F.

---

Add the following item to the table:

| Impervious Membrane Cure | 810.01 B.1 or 810.01 B.2 |

Replace the paragraph directly after the table with the following:

For imprinted concrete use any size coarse aggregate specified in Section 802.01 C.2, "Coarse Aggregate". Produce a mix that consists of 60 percent fine aggregate and 40 percent coarse aggregate.

---

Replace the 6th paragraph with the following:

If Class ASE concrete is used, maintain the surface temperature between 50°F and 90°F.
Add the following paragraph to the end of 752.04 E:

Maintain the temporary safety fence for the duration of the project. Remove the temporary safety fence when it is no longer needed.

Remove the last paragraph from 752.05:

Replace “Fence Terminal – Wood Posts” in the Pay Item List with “Fence Terminal”.

Replace Concrete Class AAE with Concrete Class AE.

Replace the last two paragraphs in Section 754.04 D.2 with the following:

If installation is in either concrete or bituminous material, omit the soil plate or use a surface mount anchor base.

Core concrete and bituminous surfacing before installing the anchor unit and fill the cored area with like material that matches the surrounding surfacing.

Replace the Section 754.04 F with the following:

F. Removing and Resetting Signs and Supports.

1. General.
   Remove and reset existing signs and supports as specified. Stockpile all signs and supports not to be reset at designated locations within the project limits. The Engineer will arrange to have stockpiled signs removed from the project limits and delivered to the Department’s facility.

   Replace removed or reset signs and supports that are damaged during removing, resetting, or stockpiling at no additional cost to the Department.

   Remove existing signs and supports as construction progresses, and immediately reset or install new signs.

   The Engineer will allow the temporary reset of existing signs, or the temporary installation of new signs. Include the cost of installing and resetting signs temporarily in the price bid for other items.
2. **Reset Sign Panel.**
Remove sign panels from existing supports. Reinstall sign panels, angles, stringers, and steel channels on new supports.

Provide all necessary brackets and hardware to attach sign panels, angles, stringers, and steel channels on new supports.

3. **Reset Sign Support.**
Remove sign panels from existing supports. Reinstall support and install new sign panels, angles, stringers, and steel channels.

Provide all necessary brackets and hardware to attach sign panels, angles, stringers, and steel channels on supports.

---

754.04 I Overlay Panel Sign Refacing

Replace the second paragraph of Section 754.04 I with the following:

Remove the legend, border, and symbol on those signs that have demountable copy and remove any existing sign overlays and place overlay panels on the signs. Do not remove direct applied sheeting legends, borders, and symbols. Direct apply the new legends, borders, and symbols to the overlay panels and install on the existing signs.

---

754.04 J Auxiliary Signs

Replace the Section 754.04 J with the following:

**J. Auxiliary Signs.**

Install auxiliary signs used with route markers with the same background color as the route markers:

- Interstate, Blue;
- Interstate Business Loop, Green;
- State, White;
- US, White; and
- County, Blue.

---

754.05 METHOD OF MEASUREMENT

Add the following to Section 754.05:

**D. Reset Sign Panel.**
The Engineer will measure the item “Reset Sign Panel” by the number of locations a sign or sign assembly has been reset.

**E. Reset Sign Support.**
The Engineer will measure the item “Reset Sign Support” by each leg of a sign support that has been reset.
Replace Section 760.03 with the following:

### 760.03 MATERIALS

Use one of the following materials when applying a fog coat to rumple strips:

- SS-1h, Section 818.02 F, “Anionic Emulsified Asphalt”;
- MS-1 Section 818.02 F, “Anionic Emulsified Asphalt”; or
- CSS-1h Section 818.02 E.1 “Cationic Emulsified Asphalt”.

When MS-1 is used it may be diluted by the supplier or the Contractor.

Replace Section 760.04 F with the following:

### F. Traffic Control.

1. **General.**
   
   Use a TMA as specified in Section 704.04 M, “Protection Vehicle with Truck Mounted Attenuation Device (TMA)”.

2. **Centerline Rumble Strip Installation.**
   
   Provide flaggers and 2 sets of the required flagger signing for each direction of travel. Ensure that at least one set of the required flagger signing is in place in each direction of travel whenever work centerline installation is performed. Limit the work area to a maximum of 3 miles.

Add the following to the end of Section 760.05:

The Engineer will measure flagging and traffic control signs as specified in Section 704.05, “Method of Measurement.

The Engineer will count each leg of an intersection receiving rumbles strips as one “Set”.

Delete “Rumble Strips – Intersection, Each” and replace with “Rumble Strips – Intersection, Set”.

Add the following paragraph after the list of pay items in Section 760.06:

Flagging and traffic control signs will be paid for as specified in Section 704.06, “Basis of Payment”.

a. General.
   For messages, groove the same area as the messages. Do not groove a rectangular area to contain the message.

   After grinding, blow the grooved slot clean to remove any residue and loose material before the installation of the pavement marking. When wet-grinding, immediately pressure wash the grooved slot to remove residue.

b. Grooves for Preformed Patterned Pavement Marking Film.
   If specified in the plans, groove a recess into the pavement surface for each stripe that meets the tolerances specified in Table 762-01.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth</td>
<td>90 to 110 mils</td>
</tr>
<tr>
<td>Smoothness</td>
<td>Ridges, within the groove, shall be no more than 6 mils higher than either adjacent valley</td>
</tr>
<tr>
<td>Width</td>
<td>line width plus 1/2 inch</td>
</tr>
<tr>
<td>Length</td>
<td>line length plus 3 inches per end of line</td>
</tr>
<tr>
<td>Line End Tapers</td>
<td>3 inches</td>
</tr>
</tbody>
</table>

   If pavement marking installation does not occur within 24 hours of grinding, sandblast the groove and install the pavement markings the same day the sandblasting occurs.

c. Grooves for Epoxy Paint.
   If specified in the plans, groove a recess into the pavement surface for each stripe that meets the tolerances specified in Table 762-02.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth</td>
<td>45 to 55 mils</td>
</tr>
<tr>
<td>Smoothness</td>
<td>Ridges, within the groove, shall be no more than 6 mils higher than either adjacent valley</td>
</tr>
<tr>
<td>Width</td>
<td>line width plus 1 inch</td>
</tr>
<tr>
<td>Length (skips)</td>
<td>line length plus 3 inches per end of line</td>
</tr>
<tr>
<td>Line End Tapers</td>
<td>3 inches</td>
</tr>
</tbody>
</table>

   After creating the groove, prepare the surface in accordance with the manufacturer’s instruction.

Delete the last paragraph of Section 762.04 C.1.a.
762.04 C.1.b. Data Logging System (DLS)  
Replace the first paragraph of Section 762.04 C.1.b with the following:

The use of a computerized DLS is required for monitoring the application of water based paint and epoxy pavement markings when the plan quantity of long lines for liquid pavement marking is 30,000 linear feet or greater.

762.04 C.2.a Method of Application  
Replace Section 762.04 C.2.a with the following:

a. Method of Application.
   Allow new bituminous treatment to cool to a temperature below 125°F and cure for a period of 72 hours before applying permanent pavement marking.
   
   Apply pavement marking paint and glass beads separately by machine. Use hand application where machine application is not feasible.
   
   Apply water based paint when the air and pavement surface temperatures are 45°F or warmer. Do not apply paint when the air or pavement surface temperatures are forecasted to be colder than the minimum application temperature during the curing period of the paint. Apply pavement marking paint and beads only during daylight hours.

762.04 C.2.c Tolerances  
Replace the content of 762.04 C.2.c with the following:

(1) Surface Applied.
   Place surface applied markings within the following tolerances:
   - 3 inches of the specified length;
   - 1/4 inch of the specified width;
   - 6 inches in a 40 foot cycle;
   - 2 inches from the proper alignment; and
   - Begin dashed lines placed over existing dashed lines within 6 inches of the beginning of the existing line.

(2) Grooved.
   Apply the grooved markings in the groove and within the following tolerances:
   - 2 inches of the specified length; and
   - 1/4 inch of the specified width.

762.04 C.3.a General  
Replace the last paragraph of Section 762.04 C.3.a with the following:

Place epoxy material after bituminous material has been in place for a minimum of 14 days.
Replace the second paragraph of Section 762.04 D.2 with the following:

Place the short term pavement markings at the rate specified in Section 762.04 C.2.b, “Rate of Application” with the following exception:

**Exception:** When the permanent pavement marking is specified as epoxy paint, apply the short term pavement marking at a thickness of 10 mils.

Replace Section 762.04 D.3 with the following:

3. **Short-Term Pavement Marking – Type R (Removable).**
   Install Type R markings when the air and pavement temperatures are at a minimum of 50°F and expected to remain above 50°F.

   If the air or pavement temperature falls below 50°F during installation, Type NR markings may be installed as specified in Section 762.04 D.2, “Short-Term Pavement Markings – Type NR (Non-Removable)”. Install Type R markings once the specified temperatures exist.

   Remove Type R markings once they are no longer necessary for traffic control operations. If Type NR markings were substituted for Type R markings, remove the Type NR markings using a method that does not leave a scar on the pavement.

Add the following to the end of the first paragraph:

If Type NR markings are substituted for Type R markings due to temperature requirements, the markings will be paid for at the contract unit price for Type R markings.

Replace section 764.04 A with the following:

A. **General.**

   1. **Installation Requirements.**
      Before guardrail removal, installation, and extension, develop a written construction schedule for work at the guardrail location, and have the schedule reviewed by the Engineer. Include a sequence of controlling items and the timing of each in the schedule of work. Do not stop work between controlling items for more than four working days at any individual run.

      Install the guardrail to produce a smooth continuous line with uniform height.

      Set posts plumb with the front faces uniformly aligned.

      Backfill posts with approved material placed and compacted in 6 inch layers, using a mechanical tamper.
Place hot bituminous pavement before guardrail post installation. Drill post holes for the new or reset guardrail through the hot bituminous pavement. Install the post in the remaining material by augured holes or driving.

When posts are installed in augured holes, backfill the holes with approved material without displacing the post alignment. Remove surplus excavated material.

When posts are driven, make the diameter of the hole in the bituminous pavement sufficient so when the soil around a post heaves up while the post is driven, the remaining asphalt will not move. If driving causes damage to posts, replace the post and install the replacement post by auguring the hole. Use a post cap if making minor vertical adjustments with a sledgehammer or maul.

Place a maximum thickness of 2 inches of bituminous material around each post to blend the post hole into the surrounding bituminous material.

Do not burn or weld after the material has been galvanized. All holes shall be machined drilled.

Repair areas exposed by cutting or drilling and any damaged galvanized coating according to Section 854.02, "Damaged Galvanized Coatings".

Hang guardrail and end terminals for individual runs in a single day.

2. **Installation on Roadways Open to Public Traffic.**

   At locations of guardrail installation where the roadway is open to traffic, complete the installation of each individual run within 10 working days from the date all controlling items allow guardrail installation to begin.

   Install delineator drums, as specified in Section 704, “Temporary Traffic Control”, at 25-foot intervals adjacent to areas meeting one of the following conditions:
   - Existing guardrail was removed and new guardrail will be installed;
   - Where no guardrail previously existed but will be installed; or
   - At guardrail extensions.

   Leave the drums in place until guardrail installation at that location is complete and accepted by the Engineer.

3. **Failure to Comply with Installation Requirements.**

   Provide temporary protection according to the plans at an object if unable to complete the required work in the specified time. Do not use material installed for this purpose in the final guardrail installation. The Department will not make separate payment for attenuation provided due to the Contractor’s inability to complete the work in the specified time.

   If the Contractor fails to comply with all requirements of Section 764.04 A.2, “Installation on Roadways Open to Public Traffic”, the Engineer will perform one or both of the following:

   1. The Engineer will apply a contract price reduction of $1000 per day if the deficiency is not remedied within 24 hours of notification to correct the item.

   2. The Engineer will have the temporary protection installed by other forces and deduct the costs from monies due or that become due to the Contractor.

   If the Engineer uses other forces to install temporary protections, remove and dispose of the materials installed by the other forces at no additional cost to the Department.
764.04 D Removal of Guardrail

Replace section 764.04 D with the following:

D. Removal of Guardrail.

1. General.
   If the Engineer determines that the concrete anchors do not interfere with other construction, cut off concrete anchors one foot below ground level. When concrete anchors are removed, backfill the holes with approved material in 6 inch layers. Thoroughly tamp each layer using a mechanical tamper. If concrete anchors are cut off or removed, shape the surface to match the surrounding area and dispose of the removed concrete.

   When removing guardrail posts and not replacing the posts in the same hole, backfill the hole with approved material. When the existing surrounding surface is bituminous, place 2 inches of bituminous material at the top of the hole to match existing surrounding surface.

2. Removed Guardrail in Locations Where There will be no permanent guardrail.
   At locations where guardrail is to be removed and no guardrail will exist upon completion of the work, leave the guardrail in place until the hazard associated with the guardrail is no longer present and all work is complete except for that which requires the guardrail to be removed.

764.04 G Completion Requirements

Replace section 764.04 G Completion Requirements with the following:

G. Reserved.
   Reserved.

764.04 H Attenuation Devices

Replace the first paragraph with the following:

Install attenuating devices that meet the appropriate MASH testing Requirements and have an eligibility letter from FHWA.

766.04 CONSTRUCTION REQUIREMENTS

Replace Section 766.04 with the following:

A. General.
   The mailbox owner will furnish a postal service approved mailbox. Install the furnished mailbox on the new support system.
B. Temporary Relocation.
If construction activities require the removal of the support system and delayed installation of the new support system, reset the existing support system at a location approved by the Engineer and postal service.

If existing mailboxes meet NCHRP 350 or MASH requirements, they may be reset temporarily during construction. If the existing support does not meet NCHRP 350 or MASH, place temporarily located mailboxes on supports that meet MASH requirements. If there is no support that meets MASH requirements, perform one of the following actions:
- Place them outside the clear zone;
- Place them on a 4 × 4 inch wood post; or
- Reset them using assemblies shown in the plans.

After construction has progressed to allow permanent installation, install the mailbox assemblies and mailboxes at the specified locations.

770.03 A General
Replace Concrete Class AAE-3 with Concrete Class AE-3.

Add the following to the Table:

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galvanizing</td>
<td>854</td>
</tr>
</tbody>
</table>

770.04 C. Concrete Foundation
Replace Section 770.04 C with the following:

C. Concrete Foundation.
Cast concrete foundations in place. Place the concrete in one continuous operation with no construction joints. Consolidate the concrete according to Section 602.04 C.2 “Vibration”.

Allow the concrete foundation to cure for 7 days before placing poles on the foundation.

Do not grout between the foundation and the pole base.

Install anchor bolts according to Section 754.04 D.5.b, “Anchor Bolt Installation”.

770.04 D.1 General
Replace the 10th paragraph with the following:

Seal conduit ends with steel wool immediately after installation and reinstall after each phase of construction.
Install conduit plugs in each conduit end after the conductor is installed. Provide conduit plugs which create an air and water tight seal, and are removable and reusable. Provide plugs that can be split to permit installation or removal of the plugs without removing the conductor. Provide conduit plugs that seal using an adjustable filler of neoprene or silicone rubber compressed with stainless steel hardware.

Add the following to the end of Section 770.04 D.1:

Install duct seal on all conduits containing cables at controller cabinets, traffic signal bases, and pull boxes.

---

### 770.04 G Light Standards

Replace the first paragraph of Section 770.04 G with the following:

Plumb the light standard with leveling nuts. Adjust the leveling nuts on assembled light standards before 10:00 am. Tighten anchor nuts according to Section 754.04 D.5.c “Anchor Bolt Tightening”.

---

### 772.03 A General

Replace the table with the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete, Class AE</td>
<td>802</td>
</tr>
<tr>
<td>Rapid-Hardening Cementitious Materials</td>
<td>806.01</td>
</tr>
<tr>
<td>Galvanizing</td>
<td>854</td>
</tr>
<tr>
<td>Highway Traffic Signals</td>
<td>896</td>
</tr>
</tbody>
</table>

---

### 772.03 D Wiring Diagrams

Replace the first paragraph with the following:

At the time the cabinet and control equipment is accepted, furnish a traffic signal cabinet wiring diagrams showing all circuits and parts in detail. Place the wiring diagram in the signal cabinet and submit one PDF copy to the Engineer.

---

### 772.04 A General

Replace the second paragraph with the following:

Provide and bear all costs for the electrical service necessary to operate and maintain the traffic signal system until the system is accepted as specified in Section 772.04 N.3, "Supplemental Inspections and Final Acceptance".
Replace Section 772.04 E.8 with the following:

After installing sealer, perform the tests specified in Section 772.04 E.6, “Initial Testing”. Record the test results on SFN 60844 Traffic Signal Loop Detector Test Report and submit the form to the Engineer.

Replace the content of 772.04 G with the following:

1. Use leveling nuts to plumb standards. Adjust the leveling nuts on assembled standards before 10:00 am.
2. Install and tighten the anchor bolts as specified in Section 754.04 D.5, “Overhead Sign Structures”.
3. Provide a rigidly-mounted terminal block in the base of each standard for the connection of control circuits. Install the luminaire fuses in the base of combination signal and light standards.
4. Provide rodent protection using wire mesh with a maximum size opening of 1/4 inch for all anchor base installations. Place the wire mesh continuously around the inside of the lower plate to prevent rodents from entering the base through the space between the concrete foundation and the lower plate. Secure the mesh to the anchor bolts and lower plate.

Replace 772.04 M with the following:

M. Reserved.
   Reserved.

Replace 772.04 N with the following:

1. General.
   Furnish all instruments and personnel required for testing and record test results. If a subcontractor performed electrical work, ensure the subcontractor is present during testing and inspection.

   The Engineer will perform the initial and final inspections when:
   – Winds are 30 mph or less;
   – Ambient temperature is 15°F or greater; and
   – It is not raining or snowing.

   a. Malfunction Management Unit Test.
      Before uncovering the signal heads, perform a malfunction management unit test. Record the test results on SFN 60836 Traffic Signal Malfunction Management Unit Test and submit the results to the Engineer.
b. **Ground Test.**
Before opening to traffic, perform a ground test. The maximum allowable resistance at the controller cabinet is 10 Ohms. The maximum allowable resistance at each traffic signal standard is 25 Ohms. Record and submit the test results on SFN 60834, *Traffic Signal Ground Test*.

2. **Initial Inspection.**
After the signal system is operational and open to traffic, submit a request to schedule the initial inspection. The system must be fully operational for a minimum of 15 days before the Engineer will perform the initial inspection. The Engineer will record the inspection results on form SFN 59867, *Traffic Signal Inspection Checklist* or SFN 60845 *Flashing Beacon Inspection Checklist*. Copies of completed forms will be sent to the Contractor.

3. **Supplemental Inspections and Final Acceptance.**
After performing corrections, submit a request for a supplemental inspection. The Engineer will perform a supplemental inspection within 30 days of receiving the request.

If this inspection discloses any unsatisfactory items, the Engineer will provide the Contractor with a written list of items that require correction. After correcting the items, request another supplemental inspection.

If the Engineer determines that the work is complete, the signal system must operate for 14 consecutive days without interruption from defective equipment or improper workmanship.

If the signal system fails within the 14 days, make necessary repairs. After repairs are complete, request another supplemental inspection.

If the signal system operates for 14 consecutive days without interruption from defective equipment or improper workmanship, the Engineer will consider the last supplemental inspection as the final inspection and will accept the signal system.

---

**802.01 A General.**

Replace the content of 802.01 A with the following:

1. **Development.**
Develop a mix design based on the requirements of this section. Perform the specified aggregate and strength tests and submit the results with the mix design. Submit the completed mix design a minimum of 14 days before beginning concrete placement operations.

Use materials slated for use on the project when developing and testing the mix design. If any material or material source changes, develop and submit a revised mix design and test results.

Provide concrete that is air entrained.

Concrete is divided into classifications as shown in Table 802-01.

<table>
<thead>
<tr>
<th>Concrete Class Designation</th>
<th>Cementitious Material Content (lbs) per CY</th>
<th>Water-Cement Ratio (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE</td>
<td>600 – 650</td>
<td>0.44</td>
</tr>
<tr>
<td>AE</td>
<td>550 – 600</td>
<td>0.47</td>
</tr>
<tr>
<td>ASE</td>
<td>575 – 625</td>
<td>0.40</td>
</tr>
</tbody>
</table>
A numeral following the alphabetical designation for the class of concrete indicates the gradation of coarse aggregate to be used in the mix, based on Table 802-03. If a specific gradation is not designated, use any gradation from Table 802-03. For ASE concrete, use aggregate that meets the requirements of Section 802.01 C.4, “Well Graded Aggregate”.

2. **Class AE and AAE Mixes.**
   Design a mix that will attain a compressive strength of 3,000 psi after 7 days or a flexural strength of 450 psi after 7 days.

   Mix designs used for Section 550, “Concrete Pavement” will be required to attain both a compressive strength of 3,000 psi and a flexural strength of 450 psi after 7 days.

   Measure compressive strength according to AASHTO T 22 and flexural strength according to AASHTO T 97. Apply a correction factor of 0.92 when using 4 inch x 8 inch concrete cylinders.

3. **Class ASE Mix.**
   Design a mix that will attain a minimum compressive strength of 3,000 psi after 30 hours or a minimum flexural strength of 450 psi after 30 hours.

   Develop a maturity curve according to ASTM 1074. Use 6 inch x 12 inch cylinders or flexural beams for strength determination.

4. **Certificate of Compliance.**
   Submit a certificate of compliance for non-aggregate materials.

---

**802.01 B Cement.**

Replace the content of 802.01 B with the following:

Provide cement as specified in Section 804.01, “Cement”.

---

**802.01 C.2 Coarse Aggregate**

Replace the first paragraph with the following:

Provide coarse aggregate that meets requirements of Table 802-02 and the appropriate numerical designation from Table 802-03.

Delete the second paragraph.

Replace Table 802-02 with the following:
Table 802-02
Miscellaneous Coarse Aggregate Properties

<table>
<thead>
<tr>
<th>Test</th>
<th>Method</th>
<th>Max. Percent by Weight of the Plus No. 4 fraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shale</td>
<td>NDDOT 3</td>
<td>0.7</td>
</tr>
<tr>
<td>Iron oxide particles</td>
<td>NDDOT 3</td>
<td>4.0(^1)</td>
</tr>
<tr>
<td>Lignite and other coal</td>
<td>NDDOT 3</td>
<td>0.5</td>
</tr>
<tr>
<td>Soft Particles (Excluding Shale, Iron oxide particles and Lignite and other coal)</td>
<td>NDDOT 3</td>
<td>2.5</td>
</tr>
<tr>
<td>Thin or Elongated Pieces</td>
<td>NDDOT 3</td>
<td>15</td>
</tr>
<tr>
<td>L.A. Abrasion</td>
<td>AASHTO T 96</td>
<td>40.0</td>
</tr>
<tr>
<td>Soundness (Sodium Sulfate)</td>
<td>AASHTO T 104</td>
<td>12</td>
</tr>
</tbody>
</table>

\(^1\) For concrete for spall repairs and bridge deck overlays, the maximum iron oxide particles shall be 2.0 percent.

802.01 C.3 Fine Aggregate

Replace the second paragraph of Section 802.01 C.3 with the following:

Test fine aggregates in accordance with AASHTO T 21. If the results of the analysis are darker than the standard color, determine the compressive strength of mortar mixed using the aggregate in accordance with AASHTO T 71. If the results of the AASHTO T 71 test result in a relative strength less than 95 percent, do not use the fine aggregate.

802.01 F Admixtures.

Replace the content of 802.01 F with the following:

1. **General.**
   Use admixtures as specified in Section 808 “Concrete Admixtures”.

2. **Bridge Deck Concrete.**
   Use a retarding admixture in Class AAE-3 concrete in bridge decks when the temperature of the concrete or the ambient air temperature at the time of placement exceeds 75°F. Provide a retarding admixture that meets the requirements of AASHTO M 194 and that are classified as Type B or D under ASTM C 494.

3. **ASE Concrete.**
   A non-calcium chloride accelerator may be used, but must meet the requirements of AASHTO M 194 and be classified as Type C under ASTM C 494. Accelerating admixtures are limited to a maximum of 2.0% by weight of cement.
802.01 G Fly Ash.

Replace the content of 802.01 G with the following:

1. **General.**
   Fly ash, meeting the requirements of Section 820, “Fly Ash”, may replace cement on a 1:1 ratio, up to a maximum of 29 percent by weight.

2. **ASE Concrete.**
   Include fly ash in the mix at a rate between 10 percent and 20 percent, by weight, of the cementitious material in the mix.

802.01 H Air Content

Replace the last paragraph with the following:

Supply concrete with an air content between 5.0 and 8.0 percent of the volume of the concrete at the time of placement.

802.01 I High-Early-Strength Concrete.

Replace 802.01 I with the following:

I. **Reserved.**
   Reserved.

802.01 J Tests on Concrete

Delete 802.01 J “Tests on Concrete” and replace with the following:

J. **Tests on Concrete.**
   Furnish the concrete necessary for the tests.
   
   Near the site of concrete placement, provide a level area protected from construction activities near the site of placement for the Engineer to conduct tests.

804.01 Cement.

Replace the content of 804.01 with the following:

Use one of the following materials:

- Portland Cement that meets the requirements of AASHTO M 85, Type II; or
- Blended Hydraulic Cement that meets the requirements of AASHTO M 240, Type IL(MS).
Add the following to the end of Section 810.01 B:

3. **Curing Compound for Pigmented Concrete.**
   Use a curing compound when curing pigmented concrete that meets the requirements of ASTM C 309 Type 1-D.

---

### 816.03 AGGREGATES FOR BLOTTER AND SEAL COATS

Replace Table 816-02 with the following:

<table>
<thead>
<tr>
<th>Sieve Size Or Testing Method</th>
<th>Aggregate Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41</td>
</tr>
<tr>
<td>Percent Passing or Testing Requirement</td>
<td></td>
</tr>
<tr>
<td>5/8 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td></td>
</tr>
<tr>
<td>No. 4</td>
<td></td>
</tr>
<tr>
<td>No. 8</td>
<td></td>
</tr>
<tr>
<td>No. 16</td>
<td></td>
</tr>
<tr>
<td>No. 50</td>
<td></td>
</tr>
<tr>
<td>No. 200</td>
<td></td>
</tr>
<tr>
<td>ND T 113, Shale (max %)</td>
<td></td>
</tr>
<tr>
<td>AASHTO T 96, L.A. Abrasion (max %)</td>
<td></td>
</tr>
<tr>
<td>NDDOT 4, Fractured Faces¹</td>
<td></td>
</tr>
</tbody>
</table>

¹ Minimum weight percentage allowable for the portion of the aggregate retained on a No. 4 sieve having at least 1 fractured face for Class 41M.

---

### 816.04 AGGREGATE FOR MICRO SURFACING

Replace Section 816.04 with the following:

#### 816.04 AGGREGATE FOR MICRO SURFACING

**A. General.**

Use aggregate that is manufactured crushed stone such as granite, slag, limestone, or other high quality aggregate or combination thereof.

Before stockpiling aggregate, perform the tests specified in Table 816-03.
Table 816-03

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soundness of Aggregates by Use of Sodium Sulfate</td>
<td>AASHTO T 104</td>
<td>15% Max</td>
</tr>
<tr>
<td>Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine(^1)</td>
<td>AASHTO T 96</td>
<td>30% Max</td>
</tr>
<tr>
<td>Deleterious Substances</td>
<td>ND T 176</td>
<td>60 or Higher</td>
</tr>
</tbody>
</table>

\(^1\) Perform the AASHTO T 96 test on the parent aggregate

**B. Mix Design.**

Develop a mix design using aggregate that meets the requirements of Table 816-04. Establish mix design target values for each sieve and submit the mix design before beginning placement operations.

Table 816-04

<table>
<thead>
<tr>
<th>Aggregate Gradation for Development of Mix Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIEVE SIZE</td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td>3/8”</td>
</tr>
<tr>
<td>#4</td>
</tr>
<tr>
<td>#8</td>
</tr>
<tr>
<td>#16</td>
</tr>
<tr>
<td>#30</td>
</tr>
<tr>
<td>#50</td>
</tr>
<tr>
<td>#100</td>
</tr>
<tr>
<td>#200</td>
</tr>
</tbody>
</table>

**C. Stockpile Tolerances.**

The mix design target values will be used for acceptance of material. Gradation tests may vary from the mix design target values based on the stockpile tolerances shown in Table 816-05. The percent passing each sieve for gradation tests may not fall outside the gradation limits specified in Table 816-04.

Table 816-05

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>STOCKPILE TOLERANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8”</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>± 5%</td>
</tr>
<tr>
<td>#8</td>
<td>±5%</td>
</tr>
<tr>
<td>#16</td>
<td>±5%</td>
</tr>
<tr>
<td>#30</td>
<td>±5%</td>
</tr>
<tr>
<td>#50</td>
<td>±4%</td>
</tr>
<tr>
<td>#100</td>
<td>±3%</td>
</tr>
<tr>
<td>#200</td>
<td>±2%</td>
</tr>
</tbody>
</table>

**D. Acceptance.**

1. **Stockpile Testing.**

Perform a gradation test in accordance with ND T 11 and ND T 27 for every 500 tons of material produced and placed in the stockpile. Also perform test ND T 176 when performing gradation tests. Submit the test results to the Engineer.

The Engineer will perform acceptance testing. If the result of the Engineer’s testing lead to rejection of the stockpile, additional material may be blended with the stockpiled material so that
the stockpile meets the requirements. The Engineer will resample and retest for both gradation and deleterious substances to determine if the stockpiled material will be accepted.

If choosing to blend additional material into the stockpile, use additional material that meets the requirements of Table 816-06. After blending, develop and submit a new mix design.

2. Gradation.
   The Engineer will obtain 5 independent samples from the stockpile and perform a gradation analysis in accordance with ND T 11 and ND T 27. If the average gradation for each sieve is within the stockpile tolerance of the mix design target values, the Engineer will accept the material.

   If the stockpile is rejected, additional material may be blended with the stockpiled material to obtain the required gradation. The Engineer will resample and retest to determine if the stockpiled material will be accepted.

   If choosing to blend additional material into the stockpile, use additional material that meets the requirements of Table 816-03. After blending, develop and submit a new mix design.

3. Deleterious Substances.
   The Engineer will determine the amount of deleterious substances in the aggregate using the same samples obtained in Section 816.04 D.2, "Gradation". If the average of the test results is 60 or higher, the Engineer will accept the material.

Replace Section 816.05 with the following:

816.05 AGGREGATE FOR SLURRY SEAL

A. General.
   Use aggregate that is manufactured crushed stone such as granite, slag, limestone, or other high quality aggregate or combination thereof. Use aggregate with 100 percent of the parent aggregate larger than the largest stone in the specified gradation.

   Before stockpiling aggregate, perform the tests specified in Table 816-06.

   **Table 816-06**

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Method</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soundness of Aggregates by Use of Sodium Sulfate</td>
<td>AASHTO T 104</td>
<td>15% Max</td>
</tr>
<tr>
<td>Resistance to Degradation of Small-Size Coarse Agg</td>
<td>AASHTO T 96</td>
<td>35% Max</td>
</tr>
<tr>
<td>by Abrasion and Impact in the Los Angeles Machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deleterious Substances</td>
<td>ND T 176</td>
<td>60 or Higher</td>
</tr>
</tbody>
</table>

   ^ Perform the AASHTO T 96 test on the parent aggregate

B. Mix Design.
   Develop a mix design using aggregate that meets the requirements of Table 816-07. Establish mix design target values for each sieve and submit the mix design before beginning placement operations.
Table 816-07
Aggregate Gradation for Development of Mix Design

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>TYPE II %PASSING</th>
<th>TYPE III %PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot;</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>#4</td>
<td>90 – 100</td>
<td>70 – 90</td>
</tr>
<tr>
<td>#8</td>
<td>65 – 90</td>
<td>45 – 70</td>
</tr>
<tr>
<td>#16</td>
<td>45 – 70</td>
<td>28 – 50</td>
</tr>
<tr>
<td>#30</td>
<td>30 – 50</td>
<td>19 – 34</td>
</tr>
<tr>
<td>#50</td>
<td>18 – 30</td>
<td>12 – 25</td>
</tr>
<tr>
<td>#100</td>
<td>10 – 21</td>
<td>7 – 18</td>
</tr>
<tr>
<td>#200</td>
<td>5 – 15</td>
<td>5 – 15</td>
</tr>
</tbody>
</table>

C. Stockpile Tolerances.
The mix design target values will be used for acceptance of material. Gradation tests may vary from the mix design target values based on the stockpile tolerances shown in Table 816-08. The percent passing each sieve for gradation tests may not fall outside the gradation limits specified in Table 816-07.

Table 816-08

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>STOCKPILE TOLERANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot;</td>
<td>-</td>
</tr>
<tr>
<td>#4</td>
<td>+ 5%</td>
</tr>
<tr>
<td>#8</td>
<td>+5%</td>
</tr>
<tr>
<td>#16</td>
<td>+5%</td>
</tr>
<tr>
<td>#30</td>
<td>+5%</td>
</tr>
<tr>
<td>#50</td>
<td>+4%</td>
</tr>
<tr>
<td>#100</td>
<td>+3%</td>
</tr>
<tr>
<td>#200</td>
<td>+2%</td>
</tr>
</tbody>
</table>

D. Acceptance.

   Perform a gradation test in accordance with ND T 11 and ND T 27 for every 500 tons of material produced and placed in the stockpile. Also perform test ND T 176 when performing gradation tests. Submit the test results to the Engineer.

   The Engineer will perform acceptance testing. If the result of the Engineer's testing lead to rejection of the stockpile, additional material may be blended with the stockpiled material so that the stockpile meets the requirements. The Engineer will resample and retest for both gradation and deleterious substances to determine if the stockpiled material will be accepted.

   If choosing to blend additional material into the stockpile, use additional material that meets the requirements of Table 816-06. After blending, develop and submit a new mix design.

2. Gradation.
   The Engineer will obtain 5 independent samples from the stockpile and perform a gradation analysis in accordance with ND T 11 and ND T 27. If the average gradation for each sieve is within the stockpile tolerance of the mix design target values, the Engineer will accept the material.
3. **Deleterious Substances.**

The Engineer will determine the amount of deleterious substances in the aggregate using the same samples obtained in Section 816.05 D.2, “Gradation”. If the average of the test results is 60 or higher, the Engineer will accept the material.

---

**817.01 D Salvage Base Course Containing Bituminous Material**

Replace the last paragraph with the following:

If salvaged base course is to be placed beneath a bituminous asphalt roadway or used as a final surfacing, the following specifications apply.

---

**817.01 D.2.a Extraction Test Method**

Replace the second paragraph of Section 817.01 D.2.a with the following:

The Engineer will determine the percentage of asphalt binder in the stockpile in accordance with AASHTO T 164 and average the results obtained from the three samples. The material will be rejected if any single sample has a value greater than 4.0 percent or the average extraction is greater than 3.5 percent. If the stockpile is rejected, the stockpiled material may be blended with other material.

---

**818.02 A Performance Graded (PG) Asphalt Cement**

Replace the first and second paragraph with the following:

If the Performance Graded (PG) asphalt cement called for in the plans contains an S, H, V, or E designation, use PG asphalt cement that meets AASHTO M 332.

Base asphalt may be modified with Polyphosphoric Acid (PPA). PPA may make up no more than 0.50 percent of the finished binder, by weight.

---

**818.02 E.2 Modified Cationic Emulsified Asphalt**

Replace the second paragraph of Section 818.02 E.2 with the following:

Use asphalt with a maximum 3.0 percent oil distillate by volume of emulsified asphalt when tested according to AASHTO T 59, Residue and Oil Distillate by Distillation on Emulsified Asphalt. Use the manufacturer’s recommended distillation temperature when using CRS-2P emulsion.
Replace Table 818-01 with the following:

<table>
<thead>
<tr>
<th>Test</th>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement and Storage Stability of Emulsified Asphalts, 24-h</td>
<td>AASHTO T 59</td>
<td>1% Minimum</td>
</tr>
<tr>
<td>Distillation of Emulsified Asphalt&lt;sup&gt;1&lt;/sup&gt;</td>
<td>AASHTO T 59</td>
<td>62% Minimum</td>
</tr>
<tr>
<td><strong>Tests on Emulsified Asphalt Residue</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Softening Point of Bitumen (Ring and Ball Apparatus)</td>
<td>AASHTO T 53</td>
<td>135°F Minimum</td>
</tr>
</tbody>
</table>

<sup>1</sup> Hold the temperature for this test at 350°F for 20 minutes.

Replace 820.01 with the following:

**A. General.**
If using fly ash, use fly ash from an electrical generating plant using a single coal source not using limestone injection.

Use fly ash that meets the requirements of AASHTO M 295, Class F, with the following modifications:

A. Revise “Silicon Dioxide (SiO<sub>2</sub>) plus aluminum oxide (Al<sub>2</sub>O<sub>3</sub>) plus iron oxide (Fe<sub>2</sub>O<sub>3</sub>), min percent” to 66.0.
B. Revise “Loss on ignition, max percent” to 2.0.
C. The silicon dioxide (SiO<sub>2</sub>) shall be at least 40.0 percent by dry weight of the total fly ash composition.

Before developing the concrete mix design, submit fly ash test data prepared by an independent lab. Include a chemical and physical analysis report with the test data.

**B. Available Alkalies.**
The available alkalies, or equivalent, as Na<sub>2</sub>O, max percentage is 2.0. If the available alkalies percentage is above 2.0 percent, determine the alkali-silica reactivity according to ASTM C 1567. If the expansion is less than 0.10 percent at 16 days, the material will be accepted.

Submit results of the ASTM C 1567 test with the Certificate of Compliance for cement. Provide results from tests performed no more than one year before the date of certificate submission.

**C. Certificate of Compliance.**
At the time of delivery, submit a certificate of compliance for each car and tank truck of material. In addition to the requirements of Section 106.01 C "Certificate of Compliance", provide the following information on each certificate of compliance:

A. Fly ash source by name of company and location of plant.
B. Gross, tare, and net weight if shipped by truck.
C. Car initials and number or tank truck number.
D. Date of shipment.
822.01 General

Replace the second paragraph with the following:

Use an Alkyl-Alkoxysilane organosilicon compound.

Replace the second bullet in the third paragraph with the following:

- Contains 100 percent active solids;

Replace the last bullet in the third paragraph with the following:

- Treated concrete is surface dry a maximum of 4 hours after application.

---

822.02 TESTING

Replace the first sentence of Section 822.02 with the following:

Provide a repellent that, when applied to concrete, meets the following requirements:

Add the following to Section 822.02:

C. Scaling Resistance to Deicing Chemicals.

<table>
<thead>
<tr>
<th>Test</th>
<th>Duration</th>
<th>Visual Rating</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt Water Ponding</td>
<td>50 Cycles</td>
<td>0 at 25 cycles</td>
<td>ASTM C 672</td>
</tr>
<tr>
<td></td>
<td></td>
<td>≤ 3 at 50 cycles</td>
<td>ASTM C 672</td>
</tr>
</tbody>
</table>

---

826.02 B.1 Sealant

Replace Section 826.02 B.1 with the following:

1. Sealant.

Provide a one-part silicone joint sealant that meets the requirements of ASTM D 5893, Type NS and the following:

- Low modulus; and
- Is capable of withstanding repeated joint movement between 50 percent shrinkage and 100 percent expansion without losing adhesion to the concrete and without cohesion failure.

---

826.02 B.2 Backer Rod

Replace the first paragraph of Section 826.02 B.2 with the following:

Use backer rod that meets the requirements of ASTM D 5249, Type 1 or Type 3.
Replace Section 830.01 with the following:

830.01 CONCRETE PIPE AND DRAINAGE STRUCTURES
The Department will evaluate the fabricator’s concrete pipe plant according to Department procedures described in Field Sampling and Testing Manual, Quality Assurance Program for Prestressed and Precast Concrete Products. The results of this evaluation will determine if the material may be accepted by certificate of compliance as specified in Section 106.01 C “Certificate of Compliance.”

Use an ACPA or NPCA certified plant in the construction.

A. Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
Provide pipe that meets AASHTO M 170, M 206, or M 207 for the specified diameters and strength class except use aggregates that meet the requirements in:
- Table 802-02 of Section 802.01 C.2 “Course Aggregate”
- Table 802-05 of Section 802.01 C.3 “Fine Aggregate”

B. Work Drawings.
Provide work drawings for Class IV and V Pipes that include:
- Reinforcing steel layouts;
- Type and strength of concrete and reinforcing steel;
- All concrete and reinforcing dimensions;
- Installation and handling instructions; and
- Design calculations.

Submit calculations and work drawings that are signed, sealed, and dated by a Professional Engineer registered in the State of North Dakota as set forth in NDCC Title 43.

C. Fasteners and Tie Bolts.
Provide tie bolts and nuts that are of steel meeting ASTM A 307 Grade A. Provide steel washers that meet ASTM A 1008 or ASTM A 1011. Provide fastener castings that are gray iron castings that meet ASTM A 48 Class 20.

Replace all instances of “ASTM A 325” with “ASTM F 3125 Grade A 325”.

Replace Section 834.03 A.2 with the following:

2. Rotational Capacity Testing of Assemblies.
Perform the rotational capacity test according to ASTM F 3125 Grade A 325, except as modified by this specification.

a. General.
Perform rotational capacity tests on all bolt, nut, and washer assemblies before shipping.

If galvanized parts are required, perform the rotational capacity test after galvanization.

Washers are required as part of the tests even if the final assembly does not require washers.
b. **Assemblies.**
   Test each combination of bolt lot, nut lot, and washer lot as an assembly.

c. **Rotational Capacity Lot Numbers.**
   Assign each combination of lots a rotational capacity lot number. Washers do not need to be identified as part of the assembly lot if they are not required in the final assembly.

d. **Testing Frequency.**
   Test a minimum of two assemblies per rotational capacity lot.

e. **Testing Device.**
   Use a Skidmore-Wilhelm Calibrator, or an approved alternate, to perform the rotational capacity tests.

   Test bolts that are too short for the Skidmore-Wilhelm Calibrator in a steel joint. The tension requirements of Table 834-02 do not apply. Compute the maximum torque required in Section 834.03 A.2.g, “Results” using a value of “P” equal to the Turn Test Tension in Table 834-02.

f. **Performance of the Test.**
   The minimum rotation from initial tightening (10 percent of the specified proof load) shall be as specified in Table 834-01.

   **Table 834-01**

<table>
<thead>
<tr>
<th>Bolt Length</th>
<th>Amount of Turn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length ≥ 4 diameters</td>
<td>240 degrees (2/3 turn)</td>
</tr>
<tr>
<td>4 diameters &lt; Length ≤ 8 diameters</td>
<td>360 degrees (1 turn)</td>
</tr>
<tr>
<td>Length &gt; 8 diameters</td>
<td>480 degrees (1-1/3 turn)</td>
</tr>
</tbody>
</table>

   The tension reached at the rotation specified in Table 834-01 shall be equal to values for the Turn Test Tension shown in Table 834-02.

   **Table 834-02**

<table>
<thead>
<tr>
<th>Diameter (in)</th>
<th>1/2</th>
<th>5/8</th>
<th>3/4</th>
<th>7/8</th>
<th>1</th>
<th>1-1/8</th>
<th>1-1/4</th>
<th>1-3/8</th>
<th>1-1/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation Tension (kips)</td>
<td>12</td>
<td>19</td>
<td>28</td>
<td>39</td>
<td>51</td>
<td>56</td>
<td>71</td>
<td>85</td>
<td>103</td>
</tr>
<tr>
<td>Turn Test Tension (kips)</td>
<td>12</td>
<td>22</td>
<td>32</td>
<td>45</td>
<td>59</td>
<td>64</td>
<td>82</td>
<td>98</td>
<td>118</td>
</tr>
</tbody>
</table>

g. **Results.**
   After exceeding the Installation Tension specified in Table 834-02, obtain and record a reading of the tension and torque.

   The maximum torque (T) shall be equal to 0.25 the measured bolt tension (P) and the bolt diameter (D):

   \[
   T \text{ (foot pounds)} \leq 0.25 \times P \text{ (pounds)} \times D \text{ (feet)}
   \]
Replace the “Slope Gradient” row in Table 856-01 with the following:

<table>
<thead>
<tr>
<th>Slope Gradient Application</th>
<th>≤ 3H:1V</th>
<th>&lt; 3H:1V - 2H:1V</th>
<th>≤ 2H:1V</th>
<th>&lt; 2H:1 - 1.5H:1V</th>
</tr>
</thead>
</table>

Replace the “AOS” line of Table 858-01 with the following:

<table>
<thead>
<tr>
<th>Geosynthetic Material Property</th>
<th>Test Method</th>
<th>Separation²</th>
<th>Riprap RR</th>
<th>Reinforcement R1</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOS less than mm, (greater than US STD. Sieve)</td>
<td>ASTM D 4751</td>
<td>S1</td>
<td>S2</td>
<td>RR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geosynthetic Material Property</th>
<th>Test Method</th>
<th>D1</th>
<th>D2</th>
<th>D3²</th>
<th>D4²</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOS less than mm, (greater than US STD. Sieve)</td>
<td>ASTM D 4751</td>
<td>0.3 (50)</td>
<td>0.15 (100)</td>
<td>0.125-0.600 (30-120)</td>
<td>0.125-0.600 (30-120)</td>
</tr>
</tbody>
</table>

Replace Section 860.02 A with the following:

**A. Barbed Wire.**

Provide barbed wire that meets the requirements of AASHTO M 280. Provide wire that has a minimum gage of 12½ and at least 2 point barbs.

Replace Section 860.02 B with the following:

Provide woven wire that meets the requirement of AASHTO M 279, Design Number 939-6-12½.

Replace the first paragraph with the following:

Provide W-beam guardrail end treatments that meet the requirements of MASH TL-3.
Replace the Section 862.04 C with the following:

C. 3-Cable.
   Provide round treated timber posts used for three-cable guardrail that are between 4.5 and 6.5 inches in diameter.

Replace 880.01 with the following:

A. Material Requirements.

1. General.
   Use acrylic emulsion polymer or modified acrylic polymer in the manufacture of the water-based pavement marking paint.

   Provide paint capable of receiving and holding glass beads for producing retroreflective pavement marking.

   Provide paint that is free of heavy metals as defined by the EPA.

   Provide finished paint that is:
   - Fast-drying;
   - Capable of withstanding air and roadway temperatures without:
     - Bleeding;
     - Staining;
     - Discoloring; or
     - Deforming;
   - Smooth;
   - Free of:
     - Coarse particles;
     - Skins; or
     - Any other deleterious materials that are detrimental to its use or appearance;
   - Homogeneous; and
   - Will not have detrimental interactions with common roadway chemicals.

   Provide paint film that is capable of maintaining the original dimensions and placement during the curing period without:
   - Chipping;
   - Spalling; or
   - Cracking.

2. Physical Properties
   a. General
      Provide paint with the physical properties specified in Table 880-01.

Table 880-01

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Requirement</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatile Organic Compounds</td>
<td>1.25 lbs/gal Max</td>
<td>ASTM D 3960</td>
</tr>
<tr>
<td>Viscosity</td>
<td>83-98 Krebs units</td>
<td>ASTM D 562</td>
</tr>
</tbody>
</table>
Table 880-01

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Requirement</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grind</td>
<td>3 Hegman Units Minimum</td>
<td>ASTM D 1210</td>
</tr>
<tr>
<td>No-Pick-Up Time</td>
<td>10 Minutes Max</td>
<td>ASTM D 711</td>
</tr>
</tbody>
</table>

b. **Dry Through Time.**
Provide paint with a maximum dry through time of 150 minutes. Dry through is when a twisting thumb action, without pressure, does not distort the paint film. Apply the paint to a non-absorbent substrate at a wet film thickness of 15 mils, with a tolerance of 1 mil. Place the substrate, with the film applied, in a humidity chamber controlled at 90 percent relative humidity with a tolerance of 5 percent and at 72.5°F with a tolerance of 2.5°F.

c. **Water Resistance.**
Prepare a 15 mil wet film thickness sample on a non-absorbent substrate; allow to dry at 25°C ±1 for 72 hours. Immerse the sample in distilled water without circulation at 25°C ±1. After 18 hours, remove the sample and allow the panels to dry for two hours. Examine the sample for paint softening, blistering, wrinkling, and loss of adhesion.

d. **Freeze-Thaw Stability.**
Place 1 pint of paint in chamber maintained at -10±1°C for 16 hours. Remove the paint from the chamber and place in ambient conditions (25±1°C) for eight hours. Repeat for a total of five cycles. Acceptable paint shall show no coagulation and no change in viscosity greater than 5 Krebs Units after completion of the freeze thaw cycles.

e. **Color.**
Provide paint with pigment that falls within CIE Chromaticity coordinate limits specified in Table 880-02. Make color determinations for liquid marking material over the black portion of a 2A or 5C Leneta Chart or equal a minimum of 24 hours after application of a 15-mil wet film. Determine color readings in accordance with the requirements of ASTM E 1349 using CIE 1931 2-degree standard observer and CIE standard illuminant D65.

<table>
<thead>
<tr>
<th>Color</th>
<th>1 x</th>
<th>y</th>
<th>2 x</th>
<th>y</th>
<th>3 x</th>
<th>y</th>
<th>4 x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>0.355</td>
<td>0.355</td>
<td>0.305</td>
<td>0.305</td>
<td>0.285</td>
<td>0.325</td>
<td>0.335</td>
<td>0.375</td>
</tr>
<tr>
<td>Yellow</td>
<td>0.560</td>
<td>0.440</td>
<td>0.490</td>
<td>0.510</td>
<td>0.420</td>
<td>0.440</td>
<td>0.460</td>
<td>0.400</td>
</tr>
</tbody>
</table>

f. **Contrast Ratio.**
Provide paint that when tested according to ASTM D 2805 has a minimum contrast ratio (hiding power) that is 0.96 when drawn down with a 0.005 bird film applicator on a 2A or 5C Leneta Chart and air-dried for 24 hours. Calculate the contrast ratio as black/white.

g. **Reflectance.**
Determine the daylight directional reflectance of paint according to ASTM E 1349. Apply a 15-mil wet film to a 2A or 5C Leneta Chart and allow the paint to air dry for 24 hours. Provide white paint with a minimum of 84 percent reflectance and yellow paint with a minimum of 50 percent reflectance.

h. **Durability.**
Provide paint with a minimum durability rating of 7 on both concrete and asphalt pavement, when tested in the skip line area of a Northern NTPEP Test Deck.
i. **Retroreflectivity.**
   
The minimum retroreflectivity of beaded lines, on both concrete and asphalt pavement, after 12 months of exposure on a Northern NTPEP Test Deck shall be 75 milicandelas per foot candle per square foot, when measured in the skip line area according to ASTM E 1710.

B. **Manufacturing and Packaging.**
   
If the project quantities are more than 1,000 gallons, manufacture the paint in lot sizes of 1,000 gallons or more. If the project quantities are less than 1,000 gallons, manufacture the entire project quantity in one lot.

   Store paint at a temperature of at least 32°F.

   Use paint within 12 months from the time of manufacture.

C. **Acceptance.**
   
1. **General.**
   
The Department will determine conformance to this Specification using the evaluation of test data from NTPEP or other Department-approved facilities, however, the Department reserves the right to utilize additional methods when determining conformance.

   Use preapproved pavement marking paint. A list of preapproved pavement marking paint lots is available at the Department’s website: [www.dot.nd.gov](http://www.dot.nd.gov).

   Materials will be added to the list based on successful completion and submission of the information listed below. Failure to fully comply with either section will result in the rejection of the material and the lot will be rejected for inclusion.

2. **NTPEP Testing.**
   
Submit paint to the National Transportation Product Evaluation Program. Include a reference to the specific NTPEP Test Deck to which the paint formulation was applied, including NTPEP identification numbers and report numbers.

   Provide test results from laboratory testing and field evaluation from a Northern NTPEP test deck from within the previous 6 years.

   October 1, 2020: Provide test results from laboratory testing and field evaluation from a Northern NTPEP Test Deck from within the previous 4 years.

3. **Laboratory Verification Testing.**
   
Samples of each lot manufactured for NDDOT projects must be tested for verification of compliance with this specification. Obtain two, 1-pint samples of paint from each lot. Use epoxy lined cans for sampling and shipping. Obtain samples in the presence of the Engineer. Submit the samples a minimum of 30 days before the scheduled use of the marking paint.

D. **Glass Beads.**
   
1. **General.**
   
Use glass beads for pavement marking that meet AASHTO M 247, Type I except use beads that have a minimum of 80 percent true spheres. Use beads that have a dual surface treatment consisting of a moisture resistant silicone treatment and a silane adherence surface treatment.

   Furnish beads in moisture proof containers or moisture proof bags. Mark each container or bag with name of contents, manufacturer, lot or batch number, ton number, coating type, date of manufacture and the net weight.
2. **Acceptance.**
Use preapproved glass beads for pavement marking. A list of preapproved glass bead lots is available at the Department’s website: [www.dot.nd.gov](http://www.dot.nd.gov).

Materials will be added to the list based on successful sampling and testing according to the NDDOT *Materials Sampling and Testing Manual*.

Provide a certificate for each lot of the material furnished, giving the properties of the beads and certifying that they meet the required specifications. In addition to the certificate of compliance specified in Section 106.01 C, “Certificate of Compliance” include the date of manufacture.

### 880.02 B.2 Epoxy Resin Material

Replace Section 880.02 B.2 with the following:

2. **Color.**
Provide material that meets the requirements of Table 880-03 and 880-04 when tested in accordance with ASTM D 2805.

#### Table 880-03

<table>
<thead>
<tr>
<th>Color</th>
<th>1 x</th>
<th>1 y</th>
<th>2 x</th>
<th>2 y</th>
<th>3 x</th>
<th>3 y</th>
<th>4 x</th>
<th>4 y</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>0.355</td>
<td>0.355</td>
<td>0.305</td>
<td>0.305</td>
<td>0.285</td>
<td>0.325</td>
<td>0.335</td>
<td>0.375</td>
</tr>
<tr>
<td>Yellow</td>
<td>0.510</td>
<td>0.490</td>
<td>0.473</td>
<td>0.453</td>
<td>0.490</td>
<td>0.432</td>
<td>0.537</td>
<td>0.462</td>
</tr>
</tbody>
</table>

#### Table 880-04

<table>
<thead>
<tr>
<th>Color</th>
<th>Minimum Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>83</td>
</tr>
<tr>
<td>Yellow</td>
<td>50</td>
</tr>
</tbody>
</table>

### 885.01 E.1 Cast Iron

Replace Section 885.01 E.1 with the following:

1. **Cast Iron.**
Provide cast iron panels with a minimum thickness of 0.2 inches. Use either grey cast iron that meets AASHTO M 105, Class 35 B or use ductile cast iron that meets ASTM A 536, Grade 65-45-12. Provide panels without a surface coating and allow the panels to transition to the iron’s natural patina.

### 894.03 A Hardware for Signs.

Replace all instances of “ASTM A 325” with “ASTM F 3125 Grade A 325”.

### 894.03 A.1 General

Delete the second paragraph from Section 894.03 A.1:
894.05 Structures for Overhead Signs. 

Replace all instances of “ASTM A 325” with “ASTM F 3125 Grade A 325”.

894.05 A General

Replace Section 894.05 A with the following:

A. General.
   Galvanize all materials requiring galvanization according to Section 854, “Galvanizing” after fabrication.

Submit work drawings for all structures for overhead signs according to Sections 105.08 A.3, “Additional Section 600 Work Drawing Submittal Requirements”.

1. Welding.
   a. General.
      Perform all steel welding according to the specifications for welding of steel structures in the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

   b. Treatment of Welded Areas.
      Punch a minimum 3/4 inch hole into chords to facilitate galvanizing the struts and diagonal tubes. Provide two 1/2 inch holes at the top and bottom of the chords on the capped end to facilitate galvanizing. Provide on the end tower vertical columns two 1/4 inch holes in the base plate and two 3/4 inch holes at the top of each column to facilitate galvanizing.

   c. Repair Galvanization.
      Repair damaged galvanization according to Section 854, “Galvanizing”.

894.05 B.2 Round-Tapered or Octagonal-Tapered Tubes

Replace the second paragraph of 894.05 B.2 with the following:

Retain major dimensions, such as truss cross section and length, and end towers vertical dimensions. If this option is chosen, furnish to the Engineer all necessary calculations and drawings used in designing these structures. Design the structures according to the latest issue of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Use a wind velocity of 90 mph to compute the wind pressures on the signs and structures.

895.05 A General

Replace Section 895.05 A with the following:

A. General.
   Design lighting poles to meet the requirements of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

When a breakaway base is required, provide a manufacturer certification that the light standard base meets the AASHTO requirements for both breakaway and structural adequacy.
Use a wind velocity of 90 mph with the following height and exposure correction factor:

- If the traffic signal is less than 33 feet use a $K_{za}$ of 1.00; or
- If the traffic signal is greater than 33 feet use the $K_{za}$ found in Table 3.8.4-1 “Height and Exposure Factors, $K_{za}$”.

Apply different wind pressures to the structure at different heights rather than using an average wind pressure for the entire height of the structure.

Design each structural component on light standards 55 feet or greater for fatigue using the requirements of Table 11.6-2, “Fatigue Importance Categories for HMLT’s”.

Furnish all the necessary calculations and drawings used in the design of poles with the shop drawing submittal. A Professional Engineer duly registered in the State of North Dakota must sign, seal, and date the calculations and work drawings used in the design of lighting standards.

---

895.05 D Base.  
Replace all instances of “ASTM A 325” with “ASTM F 3125 Grade A 325”.

896.02 C Traffic Signal and Flashing Beacon Control Circuits  
Replace the first paragraph with the following:

Use cables that are rated for 600 volts and meet IMSA 19-1 or 20-1.

Delete the fifth paragraph.

896.05 A GENERAL  
Replace Section 896.05 A with the following:

A. Design.

Design traffic signal standards to meet the requirements of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.

Use a wind velocity of 90 mph with the following height and exposure correction factor:

- If the traffic signal is less than 33 feet use a $K_{za}$ of 1.00; or
- If the traffic signal is greater than 33 feet use the $K_{za}$ found in Table 3.8.4-1 “Height and Exposure Factors, $K_{za}$”.

Apply different wind pressures to the structure at different heights rather than using an average wind pressure for the entire height of the structure.

Design each structure component using the requirements of Table 11.6-1, “Fatigue Importance Factors, $I_{f}$.”

Design the components for the total deflection, with galloping, at the free end of the traffic signal arm is limited to less than 8 inches.
Furnish all the necessary calculations and drawings used in the design of poles with the shop drawing submittal. A Professional Engineer duly registered in the State of North Dakota must sign, seal, and date the calculations and work drawings used in the design of lighting standards.

896.05 C.4 Transformer Base. PAGE 550 10/01/18

Replace all instances of “AASHTO M 164” with “ASTM F 3125 Grade A 325”.

896.10 Controller Cabinet PAGE 557 10/01/15

Replace the 3 with the following:

3. Provide a metal weatherproof cover that blocks air flow in cold weather, and adequately covers the fan vent assembly and the louver on the door. Install a gasket to the cover and attach the cover to the inside of the cabinet. Construct the cover of the same material as the cabinet.

Provide a weep hole in the bottom loop on each end of the cabinet full-size door.

Build the cabinet to contain the following items:

- All items of control equipment specified in these Specifications.
- Provide a thermostatically-controlled minimum 250 watt strip-type heater mounted on the full-size door cover with a protective wire-mesh shield installed around the heater. Use a heavy-duty thermostat capable of being set within a temperature range of 30°F to 90°F. Activate the power to the fan and to the heater using a three-position toggle switch located on the auxiliary switch panel.

Use a switch that operates vertically up and down with the:

- Up position being FAN (power to the fan on and power to the heater off);
- Center position being OFF (power to both the fan and the heater off); and
- Down position being HEATER (power to the heater on and power to the fan off).

Provide an electrical three-prong twist lock-type plug between the switch and the heater. Mount the heater thermostat on the auxiliary switch panel. Make the connection to the heater with stranded copper wire having 200°C insulation and non-insulated, solderless terminals.

- Provide three duplex receptacles with ground fault interrupter. Fuse the receptacles ahead of the main circuit breaker.
- Provide a switched lamp socket, fuse the lamp socket ahead of the main circuit breaker.
- Include the following in the maintenance switches inside the cabinet:
  - Stop time control.
  - Timer power.
  - Flash.
  - Vehicle detector input for each phase in use and all future phases.
  - Pedestrian input for each phase in use and all future phases.
The Contractor agrees to accept the following unit prices for each listed item of work and or material when no project contract unit price exists for that item. Each price listed will be full compensation for the cost of labor, material and equipment necessary to provide the item of work and/or material, complete in place, including (but not limited to) royalty, disposal of unsuitable material, equipment rental, sales tax, use tax, overhead, profit, and incidentals.

Each listed item is referenced to the Standard Specifications by Section number and Section name.

<table>
<thead>
<tr>
<th>SECTION NO.</th>
<th>SECTION NAME</th>
<th>ITEM NAME</th>
<th>PRICE PER ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>107.08</td>
<td>Haul Roads</td>
<td>Water</td>
<td>$27 per M Gal</td>
</tr>
<tr>
<td>107.08</td>
<td>Haul Roads</td>
<td>Bitumen for Mix</td>
<td>Invoice Price (^1 + 10%)</td>
</tr>
<tr>
<td>107.08</td>
<td>Haul Roads</td>
<td>Bituminous Mix</td>
<td>$42 per Ton (^2)</td>
</tr>
<tr>
<td>107.08</td>
<td>Haul Roads</td>
<td>Aggregate Base</td>
<td>$17 per Ton (^2)</td>
</tr>
<tr>
<td>203.01 B</td>
<td>Rock Excavation</td>
<td>Rock Excavation</td>
<td>$11 per CY</td>
</tr>
<tr>
<td>203.01 C</td>
<td>Shale Excavation</td>
<td>Shale Excavation</td>
<td>Common Excavation Price + $1.00 per CY</td>
</tr>
<tr>
<td>203.01 D</td>
<td>Muck Excavation</td>
<td>Muck Excavation</td>
<td>$9 per CY</td>
</tr>
<tr>
<td>203.05 H.3</td>
<td>Embankment</td>
<td>Overhaul</td>
<td>$1.40 per CY - Mile</td>
</tr>
<tr>
<td>260</td>
<td>Silt Fence</td>
<td>Mucking Silt Fence</td>
<td>$3.90 per LF</td>
</tr>
<tr>
<td>260</td>
<td>Silt Fence</td>
<td>Removal of Silt Fence (^3)</td>
<td>$4.25 per LF</td>
</tr>
<tr>
<td>261</td>
<td>Fiber Rolls</td>
<td>Mucking of Fiber Rolls</td>
<td>$3.90 per LF</td>
</tr>
<tr>
<td>261</td>
<td>Fiber Rolls</td>
<td>Removal of Fiber Rolls (^3)</td>
<td>$4.25 per LF</td>
</tr>
<tr>
<td>420.04 E</td>
<td>Bituminous Seal Coat</td>
<td>Blotter Sand</td>
<td>$27 per Ton (^2)</td>
</tr>
<tr>
<td>430.04 G</td>
<td>Hot Mix Asphalt (Exc. Material Hauled to Disposal Area)</td>
<td>Bituminous Mixture</td>
<td>Machine Placed: Bid or Invoice Price + $31 per ton Hand Placed: Bid or Invoice Price + $48 per Ton</td>
</tr>
<tr>
<td>704</td>
<td>Temporary Traffic Control</td>
<td>Flagging</td>
<td>$32 per MHR</td>
</tr>
</tbody>
</table>

\(^1\) Price paid for bituminous material will be invoice price plus freight costs.

\(^2\) Price includes haul up to 10 miles. Payment for haul exceeding 10 miles will be according to Section 109.03 E, “Force Account.” The haul distance for aggregate base and bituminous mix will be based on the average haul. The haul distance for blotter sand will be from the point where the haul begins to the point where it enters the project.

\(^3\) This is only for pre-existing items that were not installed under the Contract.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION SPECIAL PROVISION:  
DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM  
PROJECT AC-NH-SOIB-7-085(109)125 (PCN-22041)

RACE/GENDER NEUTRAL GOAL: 0%

<table>
<thead>
<tr>
<th>NDDOT Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor Sign In &amp; Submit Advertisements</td>
</tr>
<tr>
<td><a href="https://apps.nd.gov/dot/cr/csi/login.htm">https://apps.nd.gov/dot/cr/csi/login.htm</a></td>
</tr>
<tr>
<td>Amy Conklin, DBE Program Administrator</td>
</tr>
<tr>
<td>701-328-3116 - or - <a href="mailto:aconklin@nd.gov">aconklin@nd.gov</a></td>
</tr>
<tr>
<td>Submit quotes and post-bid documentation to:</td>
</tr>
<tr>
<td><a href="mailto:subquotes@nd.gov">subquotes@nd.gov</a> or Fax: 701-328-0343</td>
</tr>
<tr>
<td>Ramona Bernard, Civil Rights Division Director</td>
</tr>
<tr>
<td>701-328-2576 - or - <a href="mailto:rbernard@nd.gov">rbernard@nd.gov</a></td>
</tr>
<tr>
<td>DBE Directory</td>
</tr>
<tr>
<td><a href="https://dotnd.diversitycompliance.com/">https://dotnd.diversitycompliance.com/</a></td>
</tr>
<tr>
<td>All times are stated in Central Time. The day of the bid opening is not counted as one of the business days.</td>
</tr>
</tbody>
</table>

PURPOSE

These provisions:
1. Provide an explanation of the federal law and outline the obligations to comply with the Federal DBE requirements applicable to this contract,
2. Explain the process NDDOT will follow to evaluate bidders’ efforts to obtain DBE participation
3. Provide the standards NDDOT will use to measure compliance with the requirements
4. Identify sanctions for failing to comply with DBE program requirements.

QUOTES:

All bidders and all subcontractors over $500,000 (regardless of whether they are apparent low bidder or their quote was used on a project in this bid opening) should submit a completed SFN 52013-List of Businesses Submitting Quotes by 4:00 pm CST, within 5 business days after the bid opening. (Copies of quotes are no longer accepted). This process is necessary in identifying “ready, willing, and able” contractors upon which to base the NDDOT Triennial DBE Goal. The number of contractors and the types of work they have bid/quoted will be used in the calculation of the DBE goal for each goal setting period.

All subcontractors, suppliers, manufacturers, regular dealers, vendors, and brokers should fax or email quotes to the Department no later than 9 PM the day before each bid opening.

All DBEs quoting on this project should submit all quotes and a list of contractors they quoted to NDDOT no later than 9 PM the day before each bid opening.

Prime contractors preparing to bid on NDDOT highway projects have requested that quotes be sent to them the day before the bid opening by:

   2 PM Central - Suppliers (brokers/regular dealers), vendors, & manufacturers
   5 PM Central - Subcontractors under $500,000
   8 PM Central - Subcontractors over $500,000
REQUIREMENTS FOR ALL BIDDERS:

- ALL BIDDERS are strongly encouraged to submit all documentation at the time of bid opening.
- Must submit Form A with bid package at the time of bid opening.
- Must submit Form C (Notification of Intent to use) for DBE (if used) by 4:00 pm CST, within 2 business days after the bid opening. If no DBE's are used, Form C is not required.
- Completed Form B, or a spreadsheet containing all the information on Form B, should be submitted by 4:00 pm, CST within 5 business days after the bid opening.
- Prime contractors are strongly encouraged to submit their bid documentation in one electronic file. Forms incorrectly submitted could result in a technicality, forcing the Department to award to the next responsive bidder.

To maximize subcontracting opportunities the following actions are encouraged.

ADVERTISE

All DBE and Non-DBE prime contractors and all subcontractors (over/under $500,000), vendors, regular dealers/suppliers, and manufacturers, are encouraged to advertise using one of the two options:

OPTION 1: Place an advertisement soliciting DBE participation using the electronic DBE Advertisement System.
  - Submit the required information online at https://apps.nd.gov/dot/cr/csi/login.htm no later than noon, 15 calendar days before the bid opening.

OPTION 2: Directly contact by email or fax, all DBEs certified in the specific work type (NAICS) required for the job.
  - Make contact with DBEs no later than 5 PM 7 calendar days before the bid opening.
  - Use the DBE Directory to determine the DBE firms certified in the work to be subcontracted.

Either method of advertisement should:
  - Provide the name, email address, telephone, and fax number of the company contact who will be available to discuss and/or receive quotes.
  - Offer assistance to DBEs in interpreting plans; quantities; expected overtime; project scheduling; pit and batch plan locations, length of haul, type of road; method of measurement (seeding by the mile or acre, hauling by hour or by ton-mile) or other issues that may affect a price quote.

Indicate your intention to bid and/or receive quotes on specific jobs by using the Department’s Bid Opening Sign in System

  - The Bid Opening Sign-In web application located at https://apps.nd.gov/dot/cr/csi/login.htm. Sign-In opens at 8 AM 7 calendar days prior to the bid opening and closes at 11 AM the day before the bid opening.
  - Fill in the online form fields as required.
  - Log in to download the “Bid Opening Contact Report” at https://apps.nd.gov/dot/cr/csi/public/listBidOpenings.htm

RECEIVE & EVALUATE ALL QUOTES GIVEN

All prime contractors and all subcontractors over $500,000 should receive and evaluate all quotes offered.

All quotes given for each job should be faxed or emailed to prime contractors or subcontractors no later than the day before the bid opening. Subcontractors interested in work on the advertised jobs are encouraged to quote all contractors on the Sign-In report.
POST-AWARD REQUIREMENTS

FEDERAL AUTHORITY

The following paragraph must be included in all subcontracts of all tiers in accordance with 49 CFR § 26.13(b):

The contractor or all tiers of subcontractors shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR § 26.13 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as NDDOT deems appropriate which may include, but is not limited to:

1. Withholding monthly progress payments;
2. Assessing sanctions;
3. Liquidated damages; and/or
4. Disqualifying the contractor from future bidding as non-responsible

It is the prime contractors’ responsibility to ensure all tiers of subcontractors, brokers, manufacturers, suppliers, vendors, and regular dealers comply with the requirements of this special provision. In addition, the prime contractor has the responsibility to monitor DBE performance on the project, and to ensure that the DBE performs a commercially useful function (CUF).

PRIME CONTRACTOR’S MONITORING, RESPONSIBILITIES, REPORTING

For the life of the project, the prime contractor is responsible for the DBEs listed on Form C and for the specific spec/code items or products that the prime committed to during the award process.

The prime contractor is responsible to:

- Report payments to DBEs used to meet the project goal. Payments on the contract must be entered and stored in the CCS. Use of CCS on the project eliminates the requirement to submit SFN 60638 and SFN 14268.
- Invite and encourage all subcontractors and all DBEs listed on Form C to the pre-construction conference.
- Provide minutes to any DBE not in attendance at the pre-construction conference.
- Ensure their firm as well as any subcontractors, manufacturers, and regular dealers/suppliers comply with the requirements of this special provision.
- Provide all subcontractors with Proposed Project Schedules and any necessary updates.
- Monitor DBE performance on the project.
  - Submit SFN 60597, DBE Performance – Commercially Useful Function (CUF) Certification to the project engineer with SFN 5682, Prime Contractor’s Request to Sublet. Project engineers will not approve Requests to Sublet without the CUF Certification.
- Maintain project records and documentation of payments to DBEs for three years following acceptance of the final payment from NDDOT (per FHWA-1273, Section II Nondiscrimination #11).
  - This reporting requirement also applies to any certified DBE.
  - NDDOT may perform interim audits of contract payments to DBEs to ensure that the actual amount paid to DBEs equals or exceeds the dollar amount stated on Form C.
  - Make these records available for inspection, upon request, by an authorized representative of the NDDOT or USDOT.

If SFN 60597, and reports of payment are not received in a timely manner, progress payments will be withheld from the prime until submitted.
NDDOT MONITORING AND ENFORCEMENT MECHANISMS

The Department will bring any false, fraudulent, or dishonest conduct in connection with the DBE program to the attention of USDOT. USDOT may pursue action as provided in 49 CFR § 26.107. Actions include referral to the Department of Justice for criminal prosecution or referral to the USDOT Inspector General for action under suspension and debarment, or Program Fraud and Civil Remedies rules. The Department will also consider similar action under its own legal authority, including responsibility determination in future contracts.

COMMERCIALY USEFUL FUNCTION

DBEs are required to perform a commercially useful function (CUF). CUF refers to those services the DBE is certified to perform. Certified services for each DBE are listed in the online DBE Directory. It is a DBE’s responsibility to immediately notify the prime contractor in writing if the DBE is unable to perform a CUF or the services indicated on Form C.

The contractor must certify that DBEs working on the prime’s contract are performing a commercially useful function. Submit SFN 60597, DBE Performance – Commercially Useful Function Certification to the project engineer with SFN 5682 -Contractor’s Request to Sublet. Project engineers will not approve the Requests to Sublet without the CUF Certification. A review of the certification must be performed by the project engineer to determine whether the contract dollar value of the DBE’s work may be counted toward the project goal.

The Department counts participation to a DBE contractor toward DBE goals only if the DBE is performing a CUF on that contract.

A. A DBE performs a CUF when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a CUF, the DBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material, installation and paying for the material itself. 49 CFR § 26.55(c)(1)

B. A DBE does not perform a CUF if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation. 49 CFR § 26.55(c)(2)

C. If a DBE does not perform or exercise responsibility for at least 30 percent of the total cost of its contract with its own work force, the Department must presume that it is not performing a CUF. 49 CFR § 26.55(c)(3)

D. When a DBE is presumed not to be performing a CUF as provided in paragraph C (above), the DBE may present evidence to rebut this presumption. 49 CFR § 26.55(c)(4)

E. The Department’s decisions on CUF matters are subject to review by Federal Highway Administration, but are not administratively appealable to USDOT. 49 CFR § 26.55(c)(5)

COUNTING RACE/GENDER NEUTRAL DBE PARTICIPATION - 49 CFR § 26.55

The Department does not count the participation of a DBE subcontractor toward a contractor’s final compliance with its DBE obligations on a contract until the amount being counted has actually been paid to the DBE. 49 CFR § 26.55 (h)

The Department will count DBE participation toward our overall annual goal as provided in 49 CFR § 26.55 as noted below.

1. The Department will use the following factors in counting DBE trucking participation.

   A. For purposes of this section, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE. 49 CFR § 26.55(d)(7)
B. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract. 49 CFR § 26.55(d)(1)

C. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract and receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs. 49 CFR § 26.55(d)(2-3)

D. The DBE may lease trucks and drivers from another DBE firm and receives credit for the total value of the transportation services the lessee DBE provides. 49 CFR § 26.55(d)(4)

E. The DBE may also lease trucks with drivers and is entitled to credit for the total value of transportation services provided by non-DBE leased trucks equipped with drivers not to exceed the services under items 1C and 1D. Additional participation by non-DBE owned trucks equipped with drivers receives credit only for the fee or commission it receives as a result of the lease arrangement. 49 CFR § 26.55(d)(5)

Example to 1D: DBE Firm X uses two of its own trucks on a contract. It leases two trucks with drivers from DBE Firm Y and six trucks with drivers from non-DBE Firm Z. DBE credit would be awarded for the total value of transportation services provided by Firm X and Firm Y, and may also be awarded for the total value of transportation services provided by four of the six trucks provided by Firm Z. In all, full credit would be allowed for the participation of eight trucks. DBE credit could be awarded only for the fees or commissions pertaining to the remaining trucks Firm X receives as a result of the lease with Firm Z.

F. The DBE may lease trucks without drivers from a non-DBE truck leasing company and if the DBE uses its own employees as drivers, it is entitled to credit for the total value of these hauling services.

Example to paragraph 1F: DBE Firm X uses two of its own trucks and drivers on a contract. It leases two additional trucks and drivers from non-DBE Firm Z. Firm X uses its own employees to drive the trucks leased from Firm Z. DBE credit would be awarded for the total value of the transportation services provided by all four trucks. 49 § 26.55(d)(6)

2. Only the value of the work actually performed by the DBE counts toward the project goal when a DBE participates in a contract provided the DBE is certified in this work.

A. The Department counts the entire amount of that portion of a construction contract, or other contract not covered by item 2. B, that is performed by the DBE's own forces. Included are the cost of supplies and materials obtained by the DBE for the work of the contract, including supplies purchased or equipment leased by the DBE (except supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate). 49 CFR § 26.55 (a)(1)

B. The Department counts the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service for which they are certified, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a USDOT-assisted contract, toward DBE goals, if the Department determines the fee to be reasonable and not excessive. 49 CFR § 26.55 (a)(2)

C. When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the DBE's subcontractor is also a DBE. 49 CFR § 26.55 (a)(3)

3. The Department counts expenditures with DBEs for materials or supplies toward DBE goals as provided in the following:

A. If the materials or supplies are obtained from a DBE manufacturer, count 100% of the cost of the materials or supplies toward DBE goals. 49 CFR § 26.55 (e)(1)(i)

B. If the materials or supplies are purchased from a DBE regular dealer, count 60 percent of the cost of the materials or supplies toward DBE goals. 49 CFR § 26.55 (e)(2)(i)

C. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers within the meaning of 3B (above) 49 CFR § 26.55 (e)(2)(ii)(C)

D. With respect to materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals, if the Department determines the fees to be reasonable and not excessive. Do not count any portion of the cost of the materials and supplies themselves toward DBE goals, however.
49 CFR § 26.55 (e) (3)

E. The Department determines the amount of credit awarded to a firm for the provisions of materials and supplies (e.g., whether a firm is acting as a regular dealer or a transaction expediter) on a contract-by-contract basis. 49 CFR § 26.55 (e)(4)

4. If a firm is not currently certified in ND at the time of the execution of the contract, the Department does not count the firm’s participation toward any DBE goal. 49 CFR § 26.55 (f)

5. The Department does not count the dollar value of work performed under a contract with a firm after it has ceased to be certified toward the Department’s overall annual goal. 49 CFR § 26.55 (g)

**DEFINITIONS**

The definitions specified below apply only to this Special Provision and may contain differences from NDDOT Standard Specifications.

**Achievement** means any DBE certified service dollar amount committed to at the time of award. Any achievement must be supported by a request to sublet and Monthly DBE Payment Records for each DBE.

**Aggregate providers** are considered subcontractors rather than regular dealers/suppliers, regardless of the amount of their quote.

**Apparent low bidder (ALB)** means the bidder whose bid is read as low bid at the bid opening.

**Bid Opening Sign-In System** means the Department’s online system to which all prime contractors and subcontractors must register to indicate their interest in quoting or bidding prior to each bid opening.

**Bidder** means a contractor intending to serve as the prime contractor for highway construction projects.

**Blanket quote** means when a business provides the same quote, for all projects, at a bid opening, using the same price at one rate, which is not project specific. Blanket quotes for the construction season are not allowed, i.e. trucking, striping, signing, construction supplies, etc.

**Commercially Useful Function (CUF)** describes a DBE’s responsibilities and involvement in a project, see section Commercially Useful Function of this SP.

**Commitment** means the dollar amount of work the DBE will complete as stated in the bidder’s proposal.

**Contractor** means all DBE and non-DBE firms, including prime contractors, brokers, vendors, regular dealers/suppliers, and manufacturers at any tier.

**DBE Goal** means a percentage of the total contract targeted for the hiring of DBE subcontractors to do specific bid items for which the DBE has been certified to perform. Project goals are set by assessing the project’s bid items, location, whether DBEs are available to do the work.

**DBE Participation** means the percentage achieved when the dollar amount committed to the DBE is divided by the dollar amount of all contract items.

**DBE Participation Review** summarizes the prime’s participation at the time of award. A replacement approval request must be submitted to substitute a firm for any DBEs reported as being used at the time of award.

**Department** means the project owner regardless of whether the owner is NDDOT, a city or a county project.

**Disadvantaged business enterprise or DBE** means a for-profit small business concern that is certified by the Department and listed in the DBE Directory available on the Department’s web site. DBEs must first be certified in the work intended before any DBE achievement may be counted toward the project goal.

**Equipment supplier** is a firm which provides equipment for sale or lease, without operators, and whose primary business function is equipment sales or leasing.

**Manufacturer** means a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications. 49 CFR § 26.55 (e) (1) (ii)

**Materials** means aggregate, steel, petroleum products, concrete, asphalt, and other construction supplies.
**NAICS Codes** means industry codes assigned by North American Industry Classification System. When certified, DBE businesses are assigned NAICS codes which are identified in the DBE Directory.

**NDDOT Certification & Compliance System (CCS)** refers to the online compliance reporting system whereby contractors report/submit job related payments, commitments, and Utilization Plan documentation.

**Positive Contact** means active and documented solicitation of DBE and other subcontractors. Advertising the prime’s intention to bid, using the Contractor sign in to notify DBEs and other subcontractors of the jobs the prime is interested in, and contacting individual DBEs is deemed positive contact.

**Prime contractor** means bidders who are submitting proposals on this project, regardless of the size of the project.

**Project owner** means any political subdivision such as a city or county which provides match to federal highway funds and uses NDDOT’s electronic bidding system to let their projects to bid. The Department “owns” state projects.

**Quoter** means DBE or a non-DBE subcontractors, brokers, vendors, regular dealers/suppliers, and manufacturers at any tier who submits quotes to another contractor.

**Race/Gender Neutral (RGN)** means a zero (0) percent goal that is used to assist all small businesses. Please note, NDDOT intends to achieve its overall DBE goals via RGN means; 3.47 percent is the Department’s RGN goal.

**Responsible Bid Proposal** means a bidder’s proposal in which the project goal has been achieved, or the bidder demonstrates Good Faith Efforts (GFE) as outlined in this Special Provision timely.

**Subcontractor** means any firm intending to perform work, or intending to perform work and supply the materials, which were intended for their work on the project. All subcontractors must attach a list of DBE subcontractors intended for use to their quote when submitting it to the prime contractor.

**Supplier** means a party providing goods, services, and supplies on the project.

**Broker** means an agent who, without having custody of the property, a) negotiates contracts of purchase, work, lease, or sale; b) buys and sells goods; or c) negotiates between buyers and sellers. See Counting DBE Participation section.

**Regular Dealer** means a DBE firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials supplies, articles, or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. See Counting DBE Participation section.

**Tier** means various levels of contractors on the job. For example a prime contractor’s subcontractor (B) is referred to as the second tier. When B subcontracts with C, C becomes the third tier, etc.

**Tied quote** means the quote will be considered only if all of the bid items are included.

**Untied quote** means that any item or group of items quoted may be used for price noted on the quote whether one or all are used.
Bidders shall become familiar with the following requirements and be prepared to comply in good faith with all of them:

**APPENDIX A**

Notice or Requirement for Action to Ensure Equal Employment Opportunity (Executive Order 11246).

1. The Bidder’s attention is called to the “Equal Opportunity Clause” and the “Standards” set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor’s aggregate work force in each trade on all construction work in the covered area, are as follows:

   a. Goals for Female Participation in Each Trade – Statewide ................. 6.9%

   b. Goals for Minority Participation in Each Trade by County:
      Barnes, Cass, Dickey, Eddy, Foster, Griggs, LaMoure, Logan, McIntosh, Ransom, Richland, Sargent, Steele, Stutsman, Traill ............ 0.7%
      Grand Forks .......................................................... 1.2%
      Benson, Cavalier, Nelson, Pembina, Ramsey, Towner, Walsh ............ 2.0%
      Burleigh, Morton ..................................................... 0.4%
      Adams, Billings, Bowman, Dunn, Emmons, Golden Valley, Grant, Hettinger, Kidder, Mercer, Oliver, Sheridan, Sioux, Slope, Stark, Wells .. 1.3%
      Bottineau, Burke, Divide, McHenry, McKenzie, McLean, Mountrail, Pierce, Renville, Rolette, Ward, Williams .......................... 4.4%

These goals are applicable to all the Contractor’s construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both federally involved and nonfederally involved construction.

The Contractor’s compliance with the Executive Order and the regulations in 41 CFR
and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor’s goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall notify the Office of Federal Contract Compliance Programs, in writing, within ten working days of award of any subcontract in excess of $10,000. The notification shall include the name, address, and telephone number of the subcontractor; estimated starting and completion dates of the contract; the contract number; and geographical area in which the contract is to be performed.

U.S. Department of Labor/ESA
OFCCP
1244 Speer Boulevard
Denver, Colorado 80202
Phone: 720-264-3200
Fax: 720-264-3211

4. As used in this “Notice” and in the contract for this project, the “covered area” is the State of North Dakota.

APPENDIX B

(Executive Order 11246)

1. 
   a. “Covered area” means the geographical area described in the proposal from which this contract resulted.
   
   b. “Director” means Director United States Department of Labor, or any person to whom the Director delegates authority.
   
   c. used on the Employer’s Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
   
   d. “Minority” includes:
(1) Black (all persons having origins in any of the Black African racial groups, not of Hispanic origin);

(2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish Culture or origin, regardless of race);

(3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific islands);

(4) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America)

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each sub-

which contains the applicable goals for minority and female participation and which is set forth in the proposal from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually

area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor’s or Subcontractor’s failure to take good faith efforts to achieve the Plan goals and timetables.

4. The goals set forth in the solici-

tation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor’s obligations under these 1246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted
in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor. (Training programs approved by the North Dakota Department of Transportation are recognized by the U.S. Department of Labor.)

7. actions to ensure equal employment opportunity. The evaluation of the Contractor’s compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor’s employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. ensure that all Foremen, Superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor’s obligation to maintain such working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources to community organizations when the Contractor or its union have employment opportunities available, and maintain a record of the organization’s responses.

c. each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union, or if referred, not employed by the Contractor, this shall be documented Contractor may have taken.

d. the Contractor has a collective bargaining agreement has not referred to the Contractor a minority or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor’s efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor’s employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to
the sources compiled under 7b above.

f. Disseminate the Contractor’s EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the Company newspaper personnel and with all minority and female employees at least once a year; and by posting the Company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the Company's obligation for hiring, assignment, layoff, termination, or other employment decisions such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor’s EEO policy externally by including it in any advertising in the news media specifically including minority and female news media and providing written notification to and discussing it with the Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students, and to minority and female recruitment and training organizations serving the Contractor’s recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minorities and women, and where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of the Contractor’s work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Personnel practices do not have a discriminatory effect by continually monitoring
all personnel and employment related activities to ensure that the EEO policy and the Contractor'
out.

n. Ensure that all facilities and Company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be pro-
vided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction Contractors and Suppliers, including circulation of solicitations to minority and female Contractor associations and other business associations.

p. Conduct a review, at least annually, of all Supervisors’ adherence to and perform-
ance under the Contractor’

8. Contractors are encouraged to participate in voluntary associations which assist The efforts of a Contractor association, joint Contractor- union, Contractor-community, or other similar group of which the Contractor is a member and participant, may be
the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minority and female work force participa-
tion, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Con-
tractor’
the Contractor’s noncompliance.

9. Goals for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for wom-
en generally minority group of women is underutilized).

10. The Contractor shall not use the goals and t
-
11. The Contractor shall not enter into any subc
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12. The Contractor shall carry out such sanctions and penalties for violation of these
tion, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by Any Contractor who fails to

and Executive Order 11246, as amended.

13. The Contractor

from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, 4.8.

14. The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the Company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee the name, employee number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form, however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).
During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees as follows:

1. Compliance with Regulations: The Contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. Non-discrimination: The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the Contractor’s obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. Information and Reports: The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Recipient or the Federal Highway Administration as appropriate, and will set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of a contractor’s noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

   a. withholding payments to the Contractor under the contract until the Contractor complies; and/or
   b. cancelling, terminating, or suspending a contract, in whole or in part.

6. Incorporation of Provisions: The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.
During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

CARGO PREFERENCE ACT (CPA)

DESCRIPTION
The Federal Highway Administration (FHWA) in partnership with the Federal Maritime Administration (MARAD) has mandated the implementation of 46 CFR 381 making the cargo preference requirements applicable to the Federal Aid Highway Program.

The requirements of this Special Provision apply to items transported by ocean vessel.

CONTRACT REQUIREMENTS

A. General
Utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. Gross tonnage is computed separately for dry bulk carriers, dry cargo liners, and tankers.

Furnish a legible, English language copy of a rated ‘on-board’ commercial ocean bill-of-lading for each shipment of cargo described in the previous paragraph. Furnish the bill-of-lading within 20 days following the date of loading for shipments originating in the United States and within 30 working days following the date of loading from shipments originating outside the United States.

Furnish bills-of-lading to the Engineer and to the following:

Division of National Cargo
Office of Market Development
Maritime Administration
Washington, DC 20590

B. Subcontracts
Include the language in Section “A, General” of this Special Provision in all subcontracts issued pursuant to this contract.
REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under...
this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are
applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor’s work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor’s association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT’s U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor
will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt.

Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

   a. All laborers and mechanics employed or working upon the site or the right-of-way will be paid the contractual rate and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

   Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

   The wage determination (including any additional classification and wage rates confirmed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

   b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

      (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

      (ii) The classification is utilized in the area by the construction industry; and

      (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

   (2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

   (3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or
will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing a bona fide fringe benefit under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing a fringe benefit under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(3)(i) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee’s social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

(2) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeymen's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeymen wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.
apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor’s own organization (23 CFR 635.116).

   a. The term “perform work with its own organization” refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include costs for the payment of the services of leasing employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

      (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
      (2) the prime contractor remains responsible for the quality of the work of the leased employees;
      (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
      (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

   b. “Specialty Items” shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:
"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.  
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not debarred, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epis.gov), which is compiled by the General Services Administration.
i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

   (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

   (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

   (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

   (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epils.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the
department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

   a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

   b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.
ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

   a. To the extent that qualified persons regularly residing in the area are not available.

   b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

   c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.
CONTRACT SPECIAL PROVISION
MANDATORY USE OF
AUTOMATED CERTIFIED
PAYROLL

All contractors on NDDOT federal-aid projects, including city/county projects, must file weekly Certified Payrolls, as required under Davis-Bacon and Related Acts (DBRA). The NDDOT requires the use of LCPtracker, a paperless online system for entering and filing these certified payrolls. Certified payrolls in paper form will no longer be accepted, and all contractors must file their payroll electronically.

After award, the Prime Contractor (Prime) must:

1. Designate an individual as Prime Approver for the project. The Prime Approver will oversee DBRA payroll for all subcontractors of all tiers on the project. A contractor may inform the NDDOT Civil Rights Division (CRD) that the same individual will be Prime Approver on all projects. CRD will set up the Prime Approver Account for the project. Thereafter, the Prime Approver will have the responsibility to use the Account to approve all payroll on the project. Until payroll is approved by the Prime Approver, it cannot be viewed by the NDDOT and it is not deemed submitted to the NDDOT.

2. The prime contractor has the responsibility to assign subcontractors within the LCPtracker system to the project and to ensure that all subcontractors are aware of the necessity to file payrolls electronically and are set up within the system. Any subcontractor not on Approved Subcontractor List or the Qualified Contractor List must register and be placed one of these lists before entry of the subcontractor into LCPtracker. These lists may be found at https://www.dot.nd.gov/pacer/qualified.htm and https://www.dot.nd.gov/pacer/registered.htm. Only Prime Approvers or the CRD may enter subcontractors into LCPtracker.

3. The prime contractor has the responsibility to see that all required payrolls are filed by subcontractors of all tiers. If payroll is rejected or project staff otherwise requests a correction of payroll by any subcontractor on the project, the prime contractor has a responsibility to see that corrected payroll is submitted.

4. For further information on certified payroll, go to the NDDOT Labor Compliance/LCPtracker page at https://www.dot.nd.gov/divisions/civilrights/laborcompliance.htm. On this page, contractors will find a Getting Started on LCPtracker Guide and a Prime Approver Guide. Recorded trainings are also available on this page for both contractors and prime approvers. Contractors can obtain an LCPtracker user name and password by calling the NDDOT Civil Rights Division at (701) 328-2605 or (701) 328-2576.

09/06/2017
Payments made to all tiers of subcontractors must be reported electronically using the B2GNow system. Paper forms (Monthly Record of DBE Project Payments – SFN 60638) will no longer be accepted.

After award, the Prime Contractor (Prime) must:

1. Create a new account if not already in the system. Create a user for each employee who will use the system. If there is no account already set up, you can email Customer Support directly from the Account Lookup page. Your email address will be your user ID. Customer Support will email you with the information you need to log in.

2. Once the project has been awarded and the Utilization Plan (UP) has been created in the system and assigned to the contractor it must be filled out and submitted. An automated email message will be sent to a designated individual within the company alerting them that a UP is pending. Log into the system using the link provided in the email. For each contract the Prime must add all DBE and non-DBE subs being used on the project. When all information has been provided submit the UP. Civil Rights will review the UP and if everything is in order it will be approved. If changes need to be made the UP will be returned to the contractor and they will have 7 days to make the necessary adjustments and resubmit. If DBE or non-DBE subcontractors are added after the initial UP is set up the Prime can submit a request for them to be added.

3. Once the UP is submitted the project is “locked in” after Financial Management has processed the project in their system. After a UP is locked in payments from NDDOT to the Prime are reported through the system. The Prime must start reporting DBE and non-DBE subcontractor payments through the system in accordance with prompt pay guidelines outlined in the contract.

4. A user manual for UP’s and recording project payments is available to the contractors within the system. After login they can go to View>>My Utilization Plans and they will find the guide on the top of the Utilization Plan screen. They do not have to have a current UP assigned to them to see this guide. The guide is also on the actual UP page when a UP is assigned to them.

5. For further information on the Certification and Compliance System, go to the NDDOT Civil Rights page at https://www.dot.nd.gov/divisions/civilrights/civilrights.htm. There is various training available on a regular basis, to sign up for training go to the main Certification and Compliance System page and click the “Training and Events” box. Contractors that need to obtain an account or need subcontractors set up within the system should call the NDDOT Civil Rights Division at (701) 328-3116 or email civilrights@nd.gov

10/3/2017
# LABOR RATES FROM U.S. DEPARTMENT OF LABOR

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<tr>
<td>Drill Runner Tender; Flaggers and Pilot Car Drivers; General Construction Laborer; Light Truck and Pickup Driver; Pipe Handler; Sack Shaker (cement and mineral filler); Salamander Heater and Blower Tender</td>
<td>20.90</td>
<td>2.90</td>
</tr>
<tr>
<td>LABORERS: (CONT.)</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td><strong>Group 2</strong></td>
<td>Bituminous Worker (Shoveler, Dumper, Raker, and Floater); Brick and Mason Tender; Bulk Cement Handler; Carpenter Tender; Chain Saw Operator; Chipping Hammer, Grinders, and Paving Brakers (tamper-dirt); Concrete Bucket Signalman; Concrete Curing Man (not water); Concrete Saw Operator; Concrete Vibrator Operator; Conduit Layer, telephone or electrical; Culvert Pipe Layer; Form Seller (pavement); Gas, Electric, or Pneumatic Tool Operator; Kettleman (bilum. or lead); Multiplate Pipe Layer; Power Buggy Operator, Semi-Skilled Laborer</td>
<td></td>
</tr>
<tr>
<td><strong>Group 3</strong></td>
<td>Bottom Man (sanitary sewer, storm sewer, water, and gas lines); Caisson Worker; Concrete Mixer Operator (one bag capacity); Mortar Mixer</td>
<td></td>
</tr>
<tr>
<td><strong>Group 4</strong></td>
<td>Drill Runner (includes Wagon Chum or Air Track); Pipe Layers (sanitary sewer, storm sewer, water, and gas lines); Powderman, gunite and sandblast; Nozzleman; Rein forcing Steel Sellers/Tiers: Concrete Finisher Tender</td>
<td></td>
</tr>
<tr>
<td><strong>POWER EQUIPMENT OPERATORS:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group 1</strong></td>
<td>All Cranes, 60 tons and over; Cranes doing piling, sheeting, dragline/clam work; Derrick (Guy and Stiff); Gentry Crane Operator; Helicopter Operator; Mole Operator or Tunnel Mucking Machine; Power Shovel, 3-112 cy and over; Traveling Tower Crane</td>
<td></td>
</tr>
<tr>
<td><strong>Group 2</strong></td>
<td>All Cranes, 211 tons and up to 59 tons; Backhoe Operator, 3 cy and over; Crater Crane; Dredge Operator, 12&quot; and over; Equipment Dispatcher; Equipment Foreman, Finish Dozer Finish Motor Grader; Front End Loader Operator, 8 cy and over; Master Mechanic (when supervising 5 or more Mechanics) Mon-O-Rail Hoist Operator, Power Shovel, up to and including 3-112 cy; Tugboat</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Basic Hourly Rates</th>
<th>Fringe Benefits</th>
<th>Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 2</strong></td>
<td>$21.15</td>
<td>$2.90</td>
</tr>
<tr>
<td><strong>Group 3</strong></td>
<td>21.30</td>
<td>2.90</td>
</tr>
<tr>
<td><strong>Group 4</strong></td>
<td>22.05</td>
<td>2.90</td>
</tr>
</tbody>
</table>

- **Fringe Benefits**: H & W/Pensions, Vacation, App. Tr., Others
- **Payments**: Basic Hourly Rates, Fringe Benefits, Payments
POWER EQUIP. OPERATORS: (CONT.)

<table>
<thead>
<tr>
<th>Group 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All Cranes, 20 tons and under; Asphalt Paving Machine Operator; Asphalt Plant Operator; Automated Grade Trimmer; Backhoe Operator, 1 cy up to and including 2-112 cy; Boom Truck, Hydraulic, 8 tons and over; Cableway Operator; Concrete Batch Plant Operator (electronic or manual); Concrete Mixer Paving Machine Operator; Concrete Paver, Bridge Decks; Concrete Pump; Concrete Spreader Operator and Belt Placar; Crushing Plant Operator; Dozer Operator; Dredge Operator or Engineer, 11” and under; Drill Rigs, Heavy Duty Rotary or Churn or Cable Drill; Front End Loader Operator, 3-1/2 cy up to and including 7-1/2 cy; Gravel Washing and Screening Plant Operator; Locomotive, all types; Mechanic or Welder, Heavy Duty; Motor Grader Operator; Pavement Breaker, Non-Hydro Hammer Type: Pipeline Wrapping, Cleaning, and Bending Machine Operator; Power Actuated Auger and Horizontal Boring Machine Operator, 6” and over; Refrigeration Plant Engineer; Rota Milling Machine (Surface Planer), 43” and over; Scraper Operator; Slip Form Concrete Paving Operator; Tandem Pushed Quad 9 or similar; Tractor with Boom Attachment; Trenching Machine Operator, 100 H.P. and over</td>
<td></td>
</tr>
</tbody>
</table>

| Basic Hourly Rates | Fringe Benefits Payments |
|---|---|---|---|---|
| H & W/Pensions | Vacation | App. Tr. | Others |

| $28.00 | $16.60 | |

<table>
<thead>
<tr>
<th>Group 4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulated/Off Road Hauler; Asphalt Dump Person; Asphalt Paving Screed Operator; Backhoe, up to and including 1/2 cy; Boring Machine Locator; Con-sole Board Operator; Curb Machine Operator, Distributor Operator (Bituminous); Forklift Operator; Front End Loader, 1-1/2 cy up to and including 3 cy; Grade Person; Gravel Screening Plant Operator (not Crushing or Washing); Greaser Lazar Screed Operator; longitudinal Float and Spray Operator; Micro Surfacer Machine; Motor Grader Operator (Haul Road); Paving Breaker, Hydro Hammer Type; Pugmill Operator; Push Tractor; Roller, Steel and Rubber on Hot Mix Asphalt Paving; Rotomill Machine (Surface Planer), up to and including 42”; Rumble Strip Machine; Sand and Chip Spreader, Self-Propelled Sheepsfoot Packer with or without Blade Attachment; Self-</td>
<td></td>
</tr>
</tbody>
</table>

| Basic Hourly Rates | Fringe Benefits Payments |
|---|---|---|---|---|
| H & W/Pensions | Vacation | App. Tr. | Others |

| | | | | |
| | | | |
### POWER EQUIP. OPERATORS: (CONT.)

**Group 4 (cont.)**
Packer with Dozer Attachment, 100 H.P. and over; Shouldering Machine; Slip Form, Curb and Gutter Operator, Slurry Seal Machine; Tamping Machine Operator; Tie Tamper and Ballast Machine; Trenching Machine Operator, 46 H.P. up to and including 99 H.P.; Truck Mechanic; Tub Grinder; Well Points; Fuel/Lube Operator

<table>
<thead>
<tr>
<th>Basic Hourly Rates</th>
<th>Fringe Benefits Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>$27.85</td>
<td>$16.60</td>
</tr>
</tbody>
</table>

**Group 5**
Boom Truck, A-Frame or Hydraulic, 2 tons up to and including 7 tons; Broom, Self-Propelled; Concrete Saw (power operated); Cure Bridge Operator; Front End Loader Operator, less than 1-1/2 cy; Mobile Cement Mixer; Oiler; Power Actuated Auger and Horizontal Boring Machine Operator, up to and including 5"; Roller (on other than hot mix asphalt paving); Vibrating Packer Operator (Pad Type) (Self-Propelled); Water Spraying Equipment, Self-Propelled; Skidsteer Operator with attachments

<table>
<thead>
<tr>
<th>Basic Hourly Rates</th>
<th>Fringe Benefits Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.00</td>
<td>16.60</td>
</tr>
</tbody>
</table>

**Group 6**
Brakeman or Switchman; Curb Machine Operator (Manual); Dredge or Tugboat Deckhand; Drill Truck Gravel/Testing Operator; Form Trench Digger (Power); Gunite Operator Gunall; Paint Machine Striping Operator; Pickup Sweeper, 1 cy and over Hopper Capacity; Scissor Jack (Self-Propelled) Platform Lift; Straw Mulcher and Blower; Slump Chipper Operator; Tractor Pulling Compaction or Arealing Equipment; Trenching Machine Operator, up to and including 45 H.P.; Assistant/Apprentice Operator

<table>
<thead>
<tr>
<th>Basic Hourly Rates</th>
<th>Fringe Benefits Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.70</td>
<td>16.60</td>
</tr>
</tbody>
</table>

### TRUCK DRIVERS:
- Single-Axle Truck
- Tandem- and Tri-Axle Truck
- Tandem- and Tri-Axle Semi
- Lowboy
- Off Road Heavy Duty End Dumps, 20 Yards and Under
- Euclid, Over 20 Yards

<table>
<thead>
<tr>
<th>Basic Hourly Rates</th>
<th>Fringe Benefits Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>28.42</td>
<td>13.25</td>
</tr>
<tr>
<td>28.54</td>
<td>13.25</td>
</tr>
<tr>
<td>28.85</td>
<td>13.25</td>
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<td>28.85</td>
<td>13.25</td>
</tr>
<tr>
<td>28.85</td>
<td>13.25</td>
</tr>
<tr>
<td>30.37</td>
<td>13.25</td>
</tr>
</tbody>
</table>

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses [29 CFR, 5.5 (a) (1) (ii)].
The bidder's signature on the proposal sheet indicates the bidder agrees to take part in the On-the-Job Training (OJT) Program and to follow the OJT Program Manual and Special Provision. Contractors that fail to do so will be subject to suspension of progress payments or sanctions up to and including revocation of bidding privileges.

OJT is training conducted in a highway construction work environment designed to enable minority, female, and economically disadvantaged individuals to learn a bona fide skill and qualify for a specific occupation through demonstration and practice.

After a training program and trainee candidate have been approved, the contractor begins training its regular employee according to the approved program. The goal of this training is to retain the trainee as a permanent employee. OJT involves individuals at the entry level. Training is designed to help participants reach their fullest potential and become self-sufficient in the job.

I. POLICY STATEMENT

The purpose of the OJT Program is to provide training in the highway construction industry for minority, female, and economically disadvantaged individuals, from this time known as the targeted group. Pursuant to 23 Code of Federal Regulations Part 230, Subpart A, Appendix B - Training Special Provisions, this program provides for on-the-job training aimed at developing journey-level workers in skilled trades.

The Contractor shall take all necessary and reasonable steps to ensure that minorities and women have the opportunity to compete for and participate as trainees or apprentices and to develop as journey-level workers employed in the skilled trades.

Contractors should select a training program(s) based on their company’s employment/staffing needs as stated in the OJT Program Manual.

II. INTRODUCTION/PROGRAM BACKGROUND

The OJT Program was originally prepared through the cooperative efforts of the Associated General Contractors of North Dakota (AGC); the Federal Highway Administration (FHWA); the North Dakota Department of Transportation (Department); and, other program stakeholders.

Successful operation of the OJT Program requires contractors to follow uniform and basic training procedures, keep records of trainee progress, and report each trainee's completion or termination.

III. ASSIGNED OJT POSITIONS

A. Trainee positions are assigned contractors based only on federal highway dollars awarded from October 1 to September 30. Trainee assignments are not project specific; that means the contractor may train program participants on any project where training opportunities exist.

The number of trainee positions assigned will be determined by formula based on calculations involving particular project specification numbers on applicable projects. The types of projects NOT applicable in the calculation to assign trainee positions are:

- County-only or state-only funded projects
- Emergency relief, concrete pavement repair (CPR), electrical, rest area, signing, striping projects
- Projects subject to Tribal Employment Rights Ordinances (TERO)
- Projects not let through NDDOT bid openings

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B. Contractors will receive the number of positions assigned and links to resources necessary for completion of program requirements via email.

C. The number of trainee positions assigned to each contractor will increase proportionately, as shown below, for any applicable federally funded projects awarded to them.

For all federal highway dollars awarded from October 1 to September 30:

<table>
<thead>
<tr>
<th>Dollar Amount Range</th>
<th>Number of Trainees</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,000,000 to 15,000,000</td>
<td>1 trainee</td>
</tr>
<tr>
<td>15,001,000 to 23,000,000</td>
<td>2 trainees</td>
</tr>
<tr>
<td>22,000,001 to 31,000,000</td>
<td>3 trainees</td>
</tr>
<tr>
<td>31,000,001 and above</td>
<td>4 trainees</td>
</tr>
</tbody>
</table>

A maximum of four (4) trainee positions in a federal fiscal year will be assigned to any prime contractor regardless of dollar amount. Carryover positions from a prior construction season are not included in the four trainee maximum, e.g., a contractor with one carryover and four assigned positions may have a total five trainees.

Failure to follow this OJT Special Provision and the accompanying OJT Program Manual may result in suspension of progress payments or sanctions up to and including revocation of bidding privileges.

IV. FUNDING

The Department will establish an OJT fund annually from which contractors may bill the Department directly for eligible trainee hours. The funds for payment of trainee hours on federal-aid projects will be made available based on 23 USC 504(e) to a maximum of $100,000. The funds for payment of trainee hours on state-aid only projects will be allocated to a maximum of $10,000.

V. ONLINE RESOURCES

*OJT Program Manual*: Includes program requirements, wage rates, and curriculum:  
https://www.dot.nd.gov/divisions/civilrights/docs/ojtprogram.pdf

*SFN 60226 Request for On-the-Job Training Program and Trainee Approval*:  
http://www.dot.nd.gov/forms/sfn60226.pdf

*SFN 51023 Voucher for On-the-Job Training Program Hourly Reimbursement*:  
http://www.dot.nd.gov/forms/sfn51023.pdf


VI. APPROVALS REQUIRED

A. Requests for Training Programs and Trainee Approvals must be submitted to Civil Rights Division (CRD). Contractors must request and receive program and trainee candidate approval in order to pay trainees less than the established Davis-Bacon wage for the job classification concerned. No training program hours will count toward the fulfillment of an assigned trainee position or be eligible for reimbursement without prior approval. No retroactive approval will be granted.

1. Submit *SFN 60226 Request for On-the-Job Training Program and Trainee Approval* with each trainee’s employment application. [http://www.dot.nd.gov/forms/sfn60226.pdf](http://www.dot.nd.gov/forms/sfn60226.pdf) and the pre-approved training curriculum for each trainee position assigned by April 1 or within fifteen (15) calendar days of notification of any additional position assignments.

2. Submit *SFN 7857 Application for Eligibility*, Job Service North Dakota (JSND) approval of an economically disadvantaged individual for participation in the OJT Program.
B. Pre-approved curriculum: NDDOT’s OJT Program Manual contains pre-approved training curriculum for a number of skilled trade positions. Contractors should select a training program(s) based on their company’s employment/staffing needs.

C. Customized curriculum: To request a training curriculum not included in the pre-approved curriculum, submit a written request for approval by NDDOT and FHWA.

The request must include:

- A training curriculum, including the classification requested, minimum number of hours required, and type of training the individual will receive to achieve journey-level worker status.
- A minimum wage scale.

If approved, each new classification must comply with the provisions specified in the OJT Program Manual. No hours worked prior to approval will be credited toward completion of the customized training program. Training programs for classifications not covered by the Davis-Bacon and Related Acts (DBRA) will be considered on a limited basis.

The contractor may commence its “customized” training as of the date of the written approval.

D. Union apprenticeship and on-the-job training programs registered with the Bureau of Apprenticeship and Training (BAT), U.S. Department of Labor, may be used for trainee positions assigned under the OJT Program, provided the trainees or apprentices are minority, female, or economically disadvantaged. Nonminority males not certified as economically disadvantaged may only be used when the contractor has requested and received approval, from the Department, for additional trainee positions. The apprenticeship indenture agreements serve as the trainee’s job application and must be provided prior to any hours being credited toward OJT Program completion.

E. Power Equipment Operators:

The contractor may train an individual on a combination of equipment if each piece of equipment falls within the same groups of power equipment operators identified in the training curricula (groups 1-3 and groups 4-6). These power equipment operator groups are referenced to the federal DBRA wage rates contained in the contract proposal. As an example, a “utility operator” may receive training on a broom, a front-end loader less than 1½ cubic yards, or other piece of equipment that is used around a paver if each piece falls within either groups 1-3 or groups 4-6. When multiple wage rates apply, the trainee’s wage will be based on the equipment being operated at the time or on the highest of the applicable wage rates.

Use of the classification “pickup machine operator (asphalt dump-person)” as a group 4 power equipment operator is considered standard industry practice. The classification is defined as: "Operates the controls on the pickup machine that runs in front of the paver, trips the levers on the dump trucks, and balances the loads for the paver. The pickup machine operates on similar principles as a shouldering machine."

F. Contractors not qualifying for the OJT Program, or contractors desiring to train more than the allotted number of trainees, may apply to the Department for additional trainee positions. Approval of additional positions will be at the sole discretion of the Department. Approval of additional positions will be at the sole discretion of the Department. The Department will take into consideration whether there is enough work for the trainee to successfully complete the curriculum and whether the contractor will be exceeding the allowable ratio of trainees to journey-workers (generally considered to be one trainee or apprentice to every three to five journey-workers).

The additional positions may be filled by individuals outside of the targeted groups. The contractor may pay the reduced training rates to additional trainees outside of the targeted groups, but will not receive hourly reimbursement for any individuals who are outside the targeted groups.

VII. NDDOT’S RESPONSIBILITIES

A. The NDDOT OJT supportive services (OJTSS) consultant will monitor excerpts from the weekly certified payrolls submitted with the monthly vouchers for reimbursement. This includes weekly payrolls from
contractors working on state funded only projects. On contracts where certified payrolls are not required and not available for supporting documentation, contractors may enter trainee wages, hours in training, and the project control number(s) (PCN) in a spreadsheet to support their reimbursement vouchers. In this case, contractors should work with OJTSS to assure that all information required for payment is provided. The OJTSS consultant will assess when the trainees have completed the specified number of hours and their wages are increased accordingly. The OJTSS consultant will also assure that applicable fringe benefits are paid either directly to the trainees or for the trainee into approved plans, funds, or programs.

B. The OJTSS consultant is charged with visiting trainees and monitoring their progress under the OJT Program. To facilitate the on-site visits, the OJTSS consultant will contact contractors for the location of the trainees weekly.

VIII. CONTRACTOR’S RESPONSIBILITIES

A. Consistently demonstrate efforts to recruit, hire, and train candidates for the OJT Program.

B. Assign each trainee to a particular person—either a supervisor or an employee proficient in the skills to be trained—who shall see that the trainee is given timely, instructional experience. This person must be familiar with the OJT Program, keep proper records, and ensure completion of the required training hours in accordance with the training curriculum.

C. Appoint a company employee who will be available and responsive to weekly contacts by the OJTSS consultant. OJTSS monitors the status of assigned trainee positions (e.g., program and trainee approvals, trainees’ progress, etc.). The OJTSS consultant will contact the individual listed on the company’s approved SFN 60226 Request for OJT Trainee Approval. This person must reply to communications from the Department and the OJTSS consultant in a timely manner.

D. Make trainees available to the OJTSS consultant for at least two on-site visits during the construction season.

E. Make the trainer and project superintendent available to the OJTSS consultant for at least two on-site visits each construction season.

F. Make trainees aware they are formally enrolled in the OJT program.

G. Identify trainees on the payroll excerpts, for example: “grp. 4 roller operator trainee.” This includes trainees in job classifications not covered by DBRA. Handwritten notes are appropriate for identification.

H. Notify the Department when a trainee completes the number of hours required to graduate from the OJT Program. The Department will issue the trainee a certificate of completion and a wallet-sized card as proof of the graduate’s successful training program completion.

I. Notify the Department to “propose graduation” or discontinue the training period of a trainee who has completed 90% or more of their hours and thereafter advance the trainee to journey-worker status.

J. Elect to upgrade proficient trainees from one power equipment operator group or truck driver group to another, with the approval of CRD. Fewer hours are required to complete the upgraded position.

Minimum number of hours required:

- Power Equipment Operator Groups 4-6 to Groups 1-3 = 400 hrs.
- Class C Truck Driver to Class B = 200 hrs.
- Class B Truck Driver to Class A = 200 hrs.

Depending on the variety of experience the trainee has gained under the previous curriculum, the difference in the hours may be deducted from the actual operation of the piece of equipment or truck. The contractor will need to review the trainee’s past performance in order to make this determination.

K. May hire commercial driver’s license (CDL) holders as truck driver trainees. Those having over-the-road driving experience, with little or no highway construction experience, may be considered to have completed
the Class C truck driver training curriculum and, therefore, are eligible to be upgraded to a Class B truck
driver trainee, with the approval CRD.

L. May transfer trainees from one project to another in order to complete the OJT Program. If transfers are
made, CRD must be notified and provided with the name of the trainer. The training hours will count toward
overall OJT Program completion.

M. May train trainees on municipal, private, out-of-state projects or other non-highway work. These training
hours must be paid at the OJT minimum wage scale to count toward their OJT Program completion;
however, no program reimbursement will be made for those hours.

N. May delegate or reassign trainee positions to subcontractors, with the acceptance of the subcontractors and
the approval of CRD. The prime contractor must verify that the trainee will be able to accumulate enough
hours to complete his or her training program. If approved, the subcontractor must obtain training program
and trainee approval from CRD before the trainee begins work under the OJT program. Program
reimbursement will be made directly to the prime contractor. The trainee position will remain the
responsibility of the prime contractor.

O. May use trainees on projects subject to TERO requirements as part of the core crew or as part of the skilled
labor supplied by the contractor. The training hours will count toward overall OJT Program completion;
however, no program reimbursement will be made for those hours unless it is a NDDOT let project.

P. May not use one trainee to simultaneously fill multiple trainee positions

Q. May use a trainee on a piece of equipment in groups 1-3 or groups 4-6 for one assigned trainee position,
then once that trainee has completed the program, the trainee may be trained on a different piece of
equipment in groups 1-3 or groups 4-6 to fulfill a second assigned trainee position. When a trainee is used
for a second time within a group, the contractor must pay that trainee at the higher wage rate as described
in paragraph B under Wage Rates (page 8).

IX. CLASSROOM TRAINING

A. Classroom training may be used to train employees. Each classroom training curriculum must be pre-
approved by CRD if the contractor wishes to count the classroom hours as training hours and be
reimbursed.

Submit a proposed classroom training curriculum to CRD for approval. Define the type of training the
individual will receive, classroom training curriculum, and the minimum number of hours required. The
Department will determine the number of hours of credit each trainee will receive toward their training. No
retroactive approval will be granted.

B. Contractors will be reimbursed for classroom training hours after the trainee has completed 80 hours of work
on highway construction projects.

C. Reimbursement for classroom training will be limited to 60 hours per trainee per construction season.
Reimbursement for classroom training required under the NDDOT Transportation Technician Qualification
Program will be at the NDDOT discretion.

D. The minimum wage scale to be used for classroom training will be that of the first federal-aid highway
construction project on which the trainee will be employed. If the trainee is already employed on a federal-
aid highway construction project, the trainee will be paid in accordance with the minimum wage scale
applicable to that project. However, if the first project on which the trainee will be employed is a state
funded only contract, the minimum wage scale to be used for the classroom training will be that of the
appropriate DBRA wage in effect at the time of award of the state funded contract.

X. WAGE RATES

A. When the contractor is submitting the trainee’s hours toward training program, wages paid shall in no case
be less than that of those stated in the approved curriculum. A trainee working on a state funded only project, must be paid the DBRA wage rate in effect at the time of award for the type of work the trainee is performing as a trainee.

B. The minimum wage rates shall not be less than 80% of the journey-worker rate for the first two quarters of training, 85% of the journey-worker rate for the third quarter, and 90% of the journey-worker rate for the fourth quarter.

- Under the power equipment operator training curricula only, once a trainee has completed a training curriculum in either groups 1-3 or groups 4-6, the contractor may enroll the trainee in another training curriculum on a different piece of equipment in either groups 1-3 or groups 4-6.
- The minimum wage rate under the trainee’s second program shall not be less than 85% of the journey-worker rate for the first two quarters of training, 90% of the journey-worker rate for the third quarter, and 95% of the journey-worker rate for the fourth quarter.
- For the purpose of the OJT Program, a quarter is 25% of the hours the trainee works toward completion of their approved program. The first two quarters of a 550-hour training curriculum would end after 275 hours, the third quarter after 138 hours, and the fourth after 137 hours.

C. At any time hours are being attributed toward the completion of the approved training program, trainees shall be paid full fringe benefit amounts, where applicable, in accordance to DBRA requirements.

D. At the completion of the OJT Program, the trainee shall receive the wages of a skilled journey-worker.

XI. RECRUITMENT AND SELECTION

A. Prerequisites:
Trainees must possess basic physical fitness for the work to be performed, dependability, willingness to learn, ability to follow instructions, and an aptitude to maintain a safe work environment.

B. Licenses:
Truck driver trainees must possess appropriate driver permits or licenses for the operation of Class A, B, and C trucks. When an instructional permit is used in lieu of a license, the trainee must be accompanied by an operator who:

1. Holds a license corresponding to the vehicle being operated;
2. Has had at least one year of driving experience; and
3. Is occupying the seat next to the driver.

C. Recruitment:

1. Place notices and posters setting forth the contractor's Equal Employment Opportunity (EEO) Policy and the availability of the OJT Program in areas readily accessible to employees, applicants for employment, and potential employees.

2. Employ members of the targeted group (minority, female, or economically disadvantaged individuals) for all trainee positions assigned in accordance with the OJT Program. Additional positions requested by the contractor may be filled by individuals outside of the targeted groups.

3. Conduct systematic and direct recruitment through public and private employee referral sources.

4. Screen present employees for upgrading to higher skilled crafts. A present employee may qualify as a trainee; however, no work hours will be reimbursed or counted toward program completion prior to training program and trainee approval by CRD.

D. Selection:

1. Hire and enroll OJT trainee candidates who qualify as an individual in the targeted group.
2. Select a training program(s) based on their company’s employment/staffing needs.

3. Individuals in the targeted group having experience in the selected curriculum may be eligible to participate in the OJT Program providing they:
   - Are not or have not been journey-workers in the selected curriculum, and/or
   - Have not been previously trained in the selected curriculum.

4. Non-minority males who are economically disadvantaged must obtain written certification from Job Service North Dakota (JSND) to qualify for the OJT Program. Contractors wishing to hire and enroll economically disadvantaged candidates must provide JSND’s certification along with SFN 60226 and the employment application when requesting trainee approval.
   - JSND is the only agency that may certify an individual as economically disadvantaged. If JSND refers the candidate to the contractor, written certification under this category will be provided to the contractor at the time of the interview.
   - Any person wishing to obtain this certification must apply to JSND and complete the Workforce Investment Act Program’s Application for Eligibility (SFN 7857). A contractor recruiting a candidate who may qualify must contact the Workforce Investment Act Program Manager at JSND. JSND contacts are also online: [http://www.dot.nd.gov/divisions/civilrights/docs/jobservice-workforce-invest-contacts.pdf](http://www.dot.nd.gov/divisions/civilrights/docs/jobservice-workforce-invest-contacts.pdf)

XII. BASIS OF PAYMENT

A. Contractors will be paid $4.00 for each hour of training in accordance with the OJT Program Manual.

B. Reimbursement will be made directly to the contractor. Complete SFN 51023 Voucher for On-the-Job Training Program Hourly Reimbursement for each trainee. Attach excerpts from the weekly certified payrolls showing the trainee’s hours, rate of pay, and how applicable fringe benefits were paid. Excerpts from weekly payrolls are also required for state funded only projects. Vouchers without excerpts from payrolls will not be paid until the excerpts are provided. If the excerpts from the payrolls are not provided within one week, the voucher will not be paid and the trainee’s hours will not be credited toward completion. [http://www.dot.nd.gov/forms/sfn51023.pdf](http://www.dot.nd.gov/forms/sfn51023.pdf)

C. On contracts where certified payrolls are not required and not available for supporting documentation, contractors may enter trainee wages, hours in training, and the project control number(s) (PCN) in a spreadsheet to support their reimbursement vouchers. In this case, contractors should work with OJTSS to assure that all information required for payment is provided.

D. Submit completed vouchers to CRD for approval and processing by the fifteenth (15th) calendar day of every following month the trainee is employed under the OJT Program.

Regardless, all vouchers for trainee hours worked on state funded only projects from July 1 to June 30 must be received by CRD no later than July 15 in order to be reimbursed. All vouchers for trainee hours worked on federally funded projects from October 1 to September 30 must be received by CRD no later than October 15 in order to be reimbursed. This is due to state and federal end-of-the-year budget fiduciary requirements.

XIII. FAILURE TO PROVIDE THE TRAINING OR HIRE THE TRAINEE AS A JOURNEY-WORKER

A. The contractor is required to consistently demonstrate efforts to recruit, hire, and train candidates for the OJT Program.

B. If the contractor does not show in a timely manner good faith efforts to recruit, hire, and train candidates in the targeted group, the Department may withhold progress payments

C. If payments have been made, the Department will deduct the amount paid from the contractor’s progress
payment.

D. No payment shall be made to a contractor for failure to provide the required training or failure to hire the trainee as a journey-worker when such failure is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirements of this OJT Program Special Provision.

E. Hiring a trainee to begin training as soon as feasible after start of work is evidence of a contractor’s good faith efforts to comply with the OJT Program requirements. Additional evidence supporting a contractor’s good faith efforts would be to keep the trainee employed as long as training opportunities exist in the approved work classification or until the trainee has completed his or her training program.

F. It is not required that all trainees be employed for the entire length of the construction season. A contractor will have fulfilled its responsibilities under this OJT Special Provision if it has provided acceptable training to the number of trainees assigned.

XIV. UNFILLED OR INCOMPLETE TRAINEE POSITIONS

A. By October 1, provide written explanation of the firm’s good faith efforts for unfilled or incomplete trainee assignments to CRD. CRD will decide, on a case-by-case basis, whether to carry the assigned positions over to the next construction season.

B. Positions carried over from the previous construction season must be among the first positions filled at season startup. To notify CRD of the trainee’s rehiring, submit SFN 60226 Request for On-the-Job Trainee Approval, marking ‘Check if Carryover Trainee’ in the Approved Training Program section of the form. There is no need for the training position or a returning trainee to be re-approved.

C. Sanctions, up to and including revocation of bidding privileges, may be imposed on the contractor for failure to provide sufficient explanation and documentation for reasons assigned trainee positions when unfilled or incomplete.

XV. DEFINITIONS

Carryover Position: Incomplete trainee position carried forward from a prior program year.

Carryover Trainee: Trainee scheduled to continue training hours under prior year’s approved program.

CRD: NDDOT’s Civil Rights Division administers the NDDOT On-the-Job Training Program.

Good Faith Efforts: Documentation supporting a contractor’s efforts to fulfill the program requirements, e.g., new hires list, advertising examples/locations, current employees reviewed for upgrades, etc.

Journey-worker: A worker employed in a trade or craft who has attained a level of skill, abilities, and competencies recognized within the industry.

OJT Supportive Services (OJTSS): Department contractor providing in-person oversight, support, and guidance to contractors and trainees to increase the effectiveness of approved training programs.

Trainee: A person who receives training through an apprenticeship program or other FHWA approved program.

Trainer/Supervisor: Contractor’s employee assigned to train, supervise, and support a trainee.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

1. GENERAL

Install, maintain and remove appropriate Temporary Erosion and Sediment Control Measures (ESCMs).

Definitions:

A. **Temporary Erosion and Sediment Control Measures** are to be installed and maintained before and during the term of the land disturbance activity. These items are removed when permanent erosion and sediment ESCMs are installed.

B. **Permanent Erosion and Sediment Control Measures** are to be installed and maintained once the project is completed so that the applicable permits can be terminated.

In some instances, individual temporary and permanent erosion and sediment ESCMs for a site may consist of identical ESCMs. In these cases, the temporary erosion and sediment ESCMs may be used as the permanent erosion and sediment ESCMs if they meet the following criteria:

1. The ESCM was installed correctly,
2. Is in a functional condition,
3. Has had all accumulated sediment removed.

C. **The Stormwater Pollution Prevention Plan (SWPPP)** is the document that identifies potential sources of sediment or other pollution from construction activity and ensures practices are used to reduce the contribution of pollutants from construction site runoff.

D. **Contractor Controlled Areas** are project areas not included in the contract, but are obtained and solely controlled by the Contractor (e.g., concrete or asphalt batch plants, concrete washout areas, equipment staging yards, material storage areas, excavated material disposal areas, Contractor furnished borrow areas, etc.).

E. **Maintenance** is any action taken to keep an ESCM in working condition. These actions may consist of repairing failures of the ESCM itself.
F. Noncompliance is any action or inaction that violates the regulations imposed by the applicable permits or the requirements of this special provision and other contract documents. Failure of an ESCM does not necessarily constitute noncompliance as long as the ESCM is repaired, replaced or supplemented within the timelines established in the applicable permits and no sediment is discharged from the site or into a water of the state.

2. CONSTRUCTION REQUIREMENTS

Develop a SWPPP specific to the project. The creation of the SWPPP is a cooperative effort between the NDDOT who creates the project plan sheets and the Contractor who creates a complete SWPPP which incorporates the plan sheets and the Contractor’s means and methods. The project plan sheets by themselves do not meet the requirements of a complete SWPPP and should not be considered as such. The Contractor has the flexibility to modify the design and implementation of the temporary erosion and sediment controls to match the Contractor’s means and methods and/or field conditions. These changes must be documented in the SWPPP and meet all regulatory requirements.

Obtain appropriate permit coverage for the activities conducted in Contractor Controlled Areas. A permit will be required for these areas regardless of their size. The NDDOT will have no responsibility for these areas. Provide copies of the completed and signed Notice of Intent submitted for permit coverage to the Engineer before activities in these areas commence. Do not commence activities in these areas until after permit coverage has begun. Provide copies of Permit Coverage Letters for these areas to the Engineer within 7 days of receiving them from the regulating agency.

Install perimeter erosion and sediment ESCMs according to the plans/SWPPP prior to site disturbance.

Change the location of temporary erosion and sediment ESCMs to fit the field conditions.

Update the SWPPP as work progresses, or as directed by the Engineer. Update the SWPPP to show changes due to revisions in work schedules or sequence of construction. Update the site map to reflect erosion and sediment ESCMs that have been installed, changed, or removed.

Do not rely on perimeter ESCMs as the sole method of controlling erosion. As the project progresses, install temporary erosion and sediment ESCMs within the perimeter ESCMs to control erosion resulting from the construction of the project.

Use temporary erosion and sediment ESCMs to prevent contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment.
Coordinate temporary erosion and sediment ESCMs with the construction of permanent erosion and sediment ESCMs to provide continuous erosion control. Do not install temporary erosion and sediment ESCMs when permanent erosion and sediment ESCMs are able to be installed. Once the permit is terminated or transferred to the Department, the maintenance of the permanent erosion and sediment ESCMs becomes the responsibility of the NDDOT.

Install stabilization ESCMs (mulch, seeding and mulch, etc.) in areas that have been disturbed where work has temporarily or permanently ceased following the timelines established in the applicable permits. If implementation of stabilization is precluded by snow cover, undertake such measures as soon as conditions allow.

Maintain the effectiveness of the temporary erosion and sediment ESCMs as long as required to contain sediment runoff. Inspect the temporary erosion and sediment ESCMs and complete the inspection and maintenance reports every 14 days and within 24 hours of a rainfall event of 0.25 inch or more. During prolonged rainfall (more than 1 day), conduct an inspection within 24 hours of the first day of the event and within 24 hours after the end of the event. Inspections are required only during normal business hours. Install a rain gauge to monitor rainfall amounts as required by the appropriate permit.

Correct any deficiencies in the ESCMs within the timelines established in the applicable permits. If conditions do not permit access to the ESCM, corrective actions can be taken by installing additional ESCMs. Correct the original deficiencies as soon as conditions allow access to their location without causing additional damage to the slopes. In the inspection logs, document the conditions that prohibit access.

Provide copies of all inspections, documentation, record keeping, maintenance, remedial actions, and repairs required by the applicable permits to the Engineer. Provide inspection and maintenance reports within 3 working days after an inspection has been conducted.

Provide, at the preconstruction conference, documentation of any Subcontractor hired for erosion control showing that the Subcontractor’s on site supervisor is certified through the NDDOT Erosion & Sediment Control Construction Certification Training. This certification must be maintained by the Subcontractor’s onsite supervisor through the term of the contract. The Engineer will provide a verification of their certification through the NDDOT Erosion & Sediment Control Construction Certification Training at the preconstruction conference and will maintain that certification through the term of the contract.

Provide immediate written notification to the Engineer of proposed changes to the erosion control plan or SWPPP. The Engineer will review the proposed changes and determine if they are adequate. Documentation of maintenance and inspections that does not affect the erosion control plan or SWPPP does not require approval by the Engineer.
Remove the temporary devices when directed by the Engineer or when permanent erosion and sediment controls are installed.

3. Erosion and Sediment Control Supervisor.

A. General. Designate an erosion and sediment control supervisor. Provide the name and contact information for the supervisor at the preconstruction meeting. If this erosion and sediment control supervisor becomes unavailable on the project, designate a replacement supervisor. Notify the Engineer if this supervisor changes and provide the contact information for the new supervisor.

B. Qualifications. The supervisor shall be:

1. An employee of the Prime Contractor;

2. Familiar with installation, maintenance and removal of ESCMs and the requirements of the erosion and sediment control plans, applicable permit requirements, specifications, plans and this provision; and

3. Competent to supervise personnel in erosion and sediment control operations.

4. Certified through the NDDOT Erosion & Sediment Control Construction Certification Training and maintain that training throughout the term of the contract.

C. Duties. The supervisor shall:

1. Provide erosion and sediment control as required by the SWPPP, Plans, and Specifications.

2. Be on the site to supervise the installation, operation, inspection, maintenance, and removal of the erosion and sediment ESCMs.

3. Update the SWPPP as work progresses to show changes due to revisions in work schedules or sequence of construction, or as directed by the Engineer. Update the site map to reflect erosion and sediment ESCMs that have been installed, changed, or removed.

4. Propose changes to improve erosion and sediment control.

5. Be accessible to the job site within 24-hours.

6. Provide the Engineer with documentation of all erosion and sediment control activities and inspections as required above.
4. PERFORMANCE

Correct all areas of noncompliance within 24 hours after notification of noncompliance. If corrective actions are not taken within 24 hours, the Engineer may:

1. Assess a contract price reduction of $500 per day per instance;

2. Have deficiencies corrected by another Contractor and deduct the cost of the work from the monies due or to become due to the Contractor;

3. Suspend all work; or

4. Withhold payment on other contract items/pay estimates.

These actions will be applied until deficiencies have been corrected.

5. BASIS OF PAYMENT

ESCM installation will be paid for at the contract unit price for erosion and sediment control for the appropriate items and sections. The plans will detail the required ESCMs for temporary and permanent installations. The same bid items may be used for temporary and permanent ESCMs.

ESCM items will be measured as specified in the “Method of Measurement” portion of the appropriate section of the specifications.

ESCM item removal will be paid for at the contract unit price for “Remove ________” in the appropriate section of the specifications.

Include the costs for labor, materials, maintenance, equipment, disposal, adherence to the permit, and SWPPP modifications in the respective pay items.

When the Engineer directs the replacement of temporary erosion and sediment ESCMs that are no longer functional because of deterioration or functional incapacity and those items were installed as specified in the Contract or as directed by the Engineer, the Department will pay for replacement ESCMs.

No payment will be made for replacing temporary erosion and sediment ESCMs that the Engineer determines are ineffective because of improper installation, lack of maintenance, or the Contractor’s failure to pursue timely installation of permanent erosion and sediment ESCMs as required in the Contract.

No payment will be made for replacing temporary erosion and sediment ESCMs due to contractor operations. Include the cost to move Flotation Silt Curtain as work progresses in the price bid for “Flotation Silt Curtain”.

Erosion and sediment controls for Contractor Controlled Areas are the responsibility of the Contractor and will not be paid for by the Department.

Removal of sediment from silt fence and fiber rolls will be paid for at the price listed in the “Price Schedule PS-1.”
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FEDERAL MIGRATORY BIRD TREATY ACT

GENERAL
Work may impact migratory birds or active migratory bird nests. A nest is considered active when it contains eggs or chicks.

Nests are active primarily during the primary breeding season for migratory birds in North Dakota from February 1 to July 15.

All reasonable, prudent, and effective measures should be identified and implemented to avoid take. The definition of take in 50 CFR 10.12 is: to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.

PREVENTATIVE MEASURES

General
If no active nests are present at bridges, reinforced concrete box culverts, or structural plate pipes; prevent migratory birds from building new nests and from using nests built in previous years.

Preventative measures include securing tarps, fabric, netting, or wire mesh to the structure to prevent and discourage nesting. Additional measures may include hosing or knocking down any inactive nests or unfinished nests while avoiding take.

Preventative measures may be utilized before, during, and after breeding season.

Collect nests and nest debris and treat as agriculture waste. Disposal can occur by hauling waste to a permitted landfill or on-site when mixed with topsoil uniformly at the rate of 2 tons per acre away from water bodies and runoff.

If a nest where birds are present is found; the Contractor shall have a qualified biologist conduct a bird/nest survey no more than 5 working days prior to starting work at the structure site. A biologist is considered qualified if they have obtained a 4 year degree from an accredited university in a natural sciences field and is employed as an environmental professional.

If active nests are identified, cease construction or demolition and maintain a minimum buffer of 25 feet around active nests to avoid take. The qualified biologist may adjust the buffered distance in coordination with the USFWS. Maintain the buffer as construction resumes until the nests are no longer active.

SURVEY REQUIREMENTS

The USFWS requires that field surveys conducted for nesting birds with the intent of avoiding take include documentation of the presence of migratory birds, eggs, inactive and active nests, along with information regarding the qualifications of the biologists performing the survey, and any avoidance measures implemented at the project site.
If the survey or other available information indicates a potential for take of migratory birds, their eggs, or active nests, contact the USFWS for further coordination on the extent of the impact and the long-term implications of the intended use of the project on migratory bird populations.

Ecological Services
U.S. Fish & Wildlife Service
3425 Miriam Avenue
Bismarck, ND 58501
701-250-4481

BASIS OF PAYMENT
Include the costs for the removal and disposal of nests, the prevention of nesting, and bird/nest surveys in the price bid for the work at the structure site.

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.
DESCRIPTION
Replace Section 106.08, “Buy America”, with the following:

Buy America.

A. General.
Provide materials from domestic sources when products are permanently incorporated into the work and the products are composed of steel or iron materials.

Ensure all manufacturing processes, including applications of coatings, occur in the United States. A coating includes all processes required to apply the coating to a product to protect or enhance the value of the product.

The requirements of this SP are not applicable to the temporary iron and steel materials, including materials left in place at the Contractor's convenience.

B. Steel and Iron Certification.

1. General.
All certifications are submitted by the prime Contractor. When submitting certifications for materials that are subject to the requirements of this section, the prime Contractor shall include a signed letter stating that the submitted documentation is the documentation that was received by the prime contractor for the material incorporated into the work. The prime Contractor's signature on the Department's Certificate of Compliance form meets this requirement.

2. Bulk Manufactured Materials.
In addition to the requirements of Section 106.01 C, “Certificate of Compliance”, submit a contractor's Certificate of Compliance stating that the iron and steel products listed in Table 1 that are permanently incorporated into the work are of domestic origin.

<table>
<thead>
<tr>
<th>Table 1</th>
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<tbody>
<tr>
<td>Mailbox supports</td>
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<tr>
<td>Chain Link Fence Materials</td>
</tr>
<tr>
<td>Guardrail Components</td>
</tr>
<tr>
<td>Culvert Markers</td>
</tr>
<tr>
<td>Perforated Tube Sign Supports and Related Materials</td>
</tr>
</tbody>
</table>

3. Other Steel and Iron Products.
For steel and iron products permanently incorporated into the work that are not listed in Table 1, submit a manufacturer's Certificate of Compliance as specified in Section 106.01 C, “Certificate of Compliance” and the following information:
a. A signed mill test report.
b. A signed certification from each fabricator and manufacturer that has handled the steel and iron products affirming that all processes performed on the steel and iron products were conducted in the United States.
c. Material descriptions, quantities, and a means of material identification (lot number, bin number, heat number, or factory identification) for each process performed on the steel and iron products.

Each certification shall contain the material identification from all previous fabricators and manufacturers in the process.

C. Foreign or Uncertified Products.
These requirements allow the use of steel and iron products produced and manufactured outside the United States, or products that cannot be certified as originating in the United States, of a total value less than 0.1 percent of the original contract amount, or $2,500, whichever is greater.

The total value is that shown to be the cost of the steel and iron products as delivered to the project site.

Document the cost of:
- Foreign steel and iron products, plus
- Steel and iron products which cannot be certified as originating in the United States.

Submit the documentation of foreign and uncertified products with the certifications required in Section B, “Steel and Iron Certification” of this SP.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
CERTIFICATE OF COMPLIANCE (CoC)

DESCRIPTION
Section 106.01 C, “Certificate of Compliance” is no longer valid. Use this Special Provision in place of that section.

Certificate of Compliance
A Certificate of Compliance (CoC) states that the materials represented by the CoC comply with the contract requirements.

All materials manufactured off-site require either a Manufacturer or Contractor CoC. Materials listed in Table 1 require a Manufacturer CoC. All other materials require a Contractor CoC.

Submit a CoC before incorporating the material into the work. Submit CoC’s electronically. Some materials require the submission of additional information as part of the CoC. When this is required, the contract documents will state the additional requirements.

The Department will not include quantities of material represented by a CoC on a progressive estimate until the Contractor has fully met the CoC requirements.

The Department may sample, test, and inspect material represented by a CoC at any time before project acceptance, and will accept or reject materials based on inspections or test results.

Retain records and information relating to material compliance with contract requirements. The Engineer may request receipt of records and information before accepting material for installation or payment.

A. Manufacturer Certificate of Compliance.
A Manufacturer CoC requires the signature of a person having the legal authority to act for the material manufacturer. The manufacturer and prime contractor must sign the Manufacturer CoC.

Provide Manufacturer CoC for the products shown in Table 1.

The entity batching Portland Cement Concrete is considered the manufacturer. When submitting CoC for Portland Cement Concrete, include all manufactured items used in batching concrete on the CoC.

Table 1
Manufacturer Certificates of Compliance

<table>
<thead>
<tr>
<th>Section</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>604</td>
<td>Prestressed Concrete Beams</td>
</tr>
<tr>
<td>606</td>
<td>Precast Reinforced Concrete Box Culverts</td>
</tr>
<tr>
<td>802</td>
<td>Portland Cement Concrete</td>
</tr>
<tr>
<td>804</td>
<td>Cement and Lime</td>
</tr>
</tbody>
</table>
Submit Manufacturer CoC using the form *Manufacturer Certificate of Compliance (SFN 61041)*.

**B. Contractor Certificate of Compliance.**
A Contractor CoC requires the signature of a person having the legal authority to act for the prime Contractor. The prime Contractor may require the manufacturer, supplier, or subcontractor to sign the Contractor CoC.

Submit Contractor CoC using the form *Contractor Certificate of Compliance (SFN 61040)*.

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| 820  | Fly Ash          |
| 830  | Pipe and Drainage Structures |
| 834  | Structural Steel |
| 836  | Reinforcing Steel, Dowel Bars, and Tie Bars |
| 840  | Piling          |
| 846  | Preservatives and Pressure Treatment Process for Timber (excluding materials provided under Sections 752 and 764) |
| 858  | Geosynthetics   |
DESCRIPTION
Section 107.08, “Haul Roads” is no longer valid. Use this Special Provision in its place.

107.08 HAUL ROADS

A. General.
Before submitting a proposal, contact the appropriate State, County, Township, or City officials to determine if there are any roadways that will be designated as “no haul” routes.

Notify the Engineer of each public road proposed for use as a haul road before hauling over that route. The Engineer will designate the most practical route for transporting materials and designate the route as a “haul road,” upon completion of the pre-haul inspection unless deemed unacceptable by a local jurisdiction request.

Change the route of a designated haul road only with the Engineer’s written approval. For route change requests made for the Contractor’s convenience, the Engineer may require an agreement limiting the Department’s liability for the cost of maintenance and restoration of the haul road.

The Engineer will consider the entire haul cycle, loaded and empty, when designating haul routes.

B. Designation of Haul Roads
The Engineer will not designate paved roads off the state system as haul routes.

The Engineer will not designate a road susceptible to severe damage from concentrated heavy hauling as a haul road unless no alternate route is available. Investigate alternate routes before submitting a proposal.

If the Contractor desires to haul on a road that the Engineer determined to be unsuitable for hauling, the Engineer will designate that road as a haul road if the Contractor provides improvements that the Engineer and Contractor agree make the road suitable. Make these improvements at no additional cost to the Department.

If the Engineer determines that pre-haul improvements to a designated haul road will reduce the maintenance or restoration costs, the Department will pay for the materials used to make pre-haul improvements.

A route used to haul material from a commercial pit to the project site is not considered a haul road. A commercial pit is a pit that meets one of the following criteria at the time the project is advertised:
1. The pit has long-term facilities in place and partially derives its annual sales from ongoing operation and sources other than Department or other short-term government contracts;

2. The operator owns the land or has a long-term lease, and did not primarily set up and equip the pit at the location to serve Department contracts; or

3. The operator regularly advertises the availability of material for public sale and has facilities available for effecting public sales at times when there are no government contracted projects utilizing the pit.

C. Pre-Haul Inspection.
Before hauling over a designated haul road, the Engineer, the Contractor, and the agency charged with control and maintenance of the route will make a joint inspection of the haul road. The joint inspection will determine the existing condition of the haul road, including the type, thickness, and width of the surfacing material. The Engineer will record the results in an inspection report. The inspection report will set forth any special conditions for use, maintenance, and restoration of the route. The Contractor, the Engineer, and the agency charged with control and maintenance of the route shall review and sign the report.

D. Use, Maintenance, and Restoration.
Maintain the haul roads used by public traffic in a condition that safely and adequately accommodates public traffic.

If the Contractor damages the haul road by hauling loads in excess of the legal limit, or through negligence or failure to perform maintenance, the Contractor shall repair the damage; the Department will not pay the Contractor for the repairs.

After completing hauling operations over a designated haul road, restore the road to a condition at least equal to the condition existing at the time of the pre-haul inspection. The Engineer will order the type and amount of maintenance and restoration work and the requirements for performing this work.

Maintain and restore the road as required despite the use of the haul road concurrently by other traffic. For haul roads jointly used by multiple contractors on Department contracts, the Engineer will determine the respective obligations for maintenance and restoration.

For haul roads under Department jurisdiction, the Department will only relieve the Contractor of any further obligation for restoration of the road when the Contractor has restored the road to the condition required in the pre-haul inspection report, as accepted in writing by the Engineer. For haul roads under other jurisdiction, obtain a haul road release from the agency charged with control or maintenance of the route and submit a copy of the executed release to the Engineer.

If the Engineer determines that dust from hauling operations on designated haul roads is creating a hazard to traffic or a nuisance to the public, apply water to the haul road as necessary to control the dust.

E. Materials and Construction.
Materials and construction methods used in performing maintenance and restoration work shall meet the requirements of the relevant specifications.
F. **Method of Measurement.**
   The Engineer will measure all approved quantities of material ordered by the Engineer for pre-haul improvements, maintenance, and restoration of designated haul roads as specified in the applicable portions of the contract. The Engineer will measure water used for dust control as specified in Section 216.05, “Method of Measurement”.

G. **Basis of Payment.**
   The Department will pay the Contractor for measured quantities of material ordered by the Engineer for pre-haul improvements, maintenance, and restoration of designated haul roads in accordance with Section 109.03, “Compensation for Contract Revisions.”

   The Department will not pay the Contractor for the costs to maintain and restore routes used to haul materials from commercial pits. Include these costs in the contract unit prices of the relevant contract items.

   If maintenance and restoration work only requires the use of equipment, the Department will not pay the Contractor for the costs to use the equipment. Include these costs in the contract unit prices of the relevant contract items.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

LIMITATIONS OF OPERATIONS

DESCRIPTION
Section 108.05, “Limitations of Operations” is no longer valid. Use this Special Provision in its place.

108.05 LIMITATION OF OPERATIONS

A. General.
Perform the work in a manner and sequence that minimizes interference to traffic, and with due regard to the location of detours and provisions for handling traffic. Do not begin work to the prejudice or detriment of work already started; the contract may require a section of roadway to be finished before starting additional sections if the opening of the section is essential to public convenience.

If the prosecution of the work is discontinued, provide the Engineer at least 24-hours notice before resuming operations.

B. Holidays.
Unless the contract allows work on holidays, perform work on holidays only with the Engineer’s prior written approval. Submit a written request to the Engineer by noon 2 business days before the requested holiday.

C. Night-time Operations and Extended Hours.

1. General.
When performing work in low light conditions, implement proper safety precautions and provide adequate lighting for the performance and inspection of the work.

Unless the contract allows for nighttime operations, perform work at night only with the Engineer’s prior written approval.

Submit a written request to the Engineer a minimum of 7 calendar days before anticipated nighttime operations. The Engineer may deny the request or delay approval if it would require additional staffing considerations. If nighttime operations requires the Engineer to hire additional forces, nighttime operations may not be allowed for up to 30 days from the receipt of the request.

When requesting to perform nighttime operations, include a plan to ensure the safety of all individuals on the project site, including the Contractor’s and subcontractor’s workers, Department representatives, and the traveling public.

The Department bears no liability for costs or delays resulting from the Engineer’s approval, rejection, or delay for staffing purposes of a request to perform nighttime operations.
3. **Extended Hours.**
   Extended hours are allowed before sunrise with verbal notice given to the Engineer the previous day. Extended hours are allowed after sunset with verbal notice given to the Engineer that same day.
DESCRIPTION
This work consists of furnishing equipment, materials, work drawings and experienced labor to install, test, stress, and complete the permanent ground anchors as specified.

Select the drilling method, grout mix, and drill hole diameter to achieve the specified acceptance criteria for every permanent ground anchor. If necessary to achieve the specified acceptance criteria, include post-grout tubes, and determine the number of post-grouting tubes, post-grouting injection pressures, and the number of post-grouting cycles.

Conduct verification, extended creep, and proof tests as specified.

DEFINITIONS
For the purpose of this special provision, the following terms are defined as follows:

A. Alignment Load: A nominal load applied to the ground anchor during testing to keep the testing equipment in the correct position.

B. Anchorage: The combined system of the anchor head, bearing plate, and trumpet that transfers the force in the tendon to the supported structure.

C. Anchor Grout: Grout that is injected into the drill hole just before or just after the Contractor installs the tendon. The anchor grout within the bond length transfers the applied tensile force from the tendon to the surrounding soil or rock.

D. Anchor Strain Gauge: Instruments installed on ground anchor strands within the bonded or unbonded zone to measure distribution of load along the anchor.

E. Bearing Plate: A steel plate that evenly distributes the ground anchor force to the supported structure.

F. Bond length: The length of the tendon that is bonded to the grout and transfers the applied tensile force to the surrounding soil or rock.

G. Ground Anchor: A system, referred to as a tieback or as an anchor, used to transfer tensile loads to soil or rock. A ground anchor includes all prestressing steel, anchorage devices, grout, coatings, sheathings, and couplers if used.

H. Lock-off Load: The tensile force or load in a ground anchor immediately after transferring the load from the jack to the anchorage after testing is complete.
I. **Maintaining Consistency of Load:** Maintaining the test load within 5 percent of the specified value.

J. **Maximum Test Load:** The maximum load applied to the ground anchor during testing.

K. **Minimum Ultimate Tensile Strength (MUTS):** The minimum specified breaking load of the prestressing steel as defined by the specified standard.

L. **Post-grouting:** The injection of grout along the anchor bond length after the primary grout has set. Post-grouting is performed to increase the pullout resistance of the anchor.

M. **Tendon and Tendon Steel:** The tendon includes the steel strands, corrosion protection, sheaths, centralizers, and spacers. The tendon steel consists of the high strength, steel strands.

N. **Unbonded Length:** The length of the tendon that is not bonded to the grout and surrounding ground.

**MATERIALS**

A. **General.**

Provide materials meeting the requirements in the following sections. Do not deliver the materials to the site until the Engineer has approved the Contractor experience and ground anchor work drawing submittals.

B. **Tendons.**

Furnish multi strand, Grade 270, 0.6 inch diameter, seven-wire steel strands conforming to ASTM A416 including S1.

C. **Centralizers and Spacers.**

Furnish centralizers and spacers made from plastic or steel.

D. **Sheath, Bond Breaker, and Encapsulation.**

Furnish plastic tubing or pipe with the following properties:

- Resistant to chemical attack from aggressive environments, grout, or corrosion inhibiting compounds.
- Resistant to aging by ultraviolet light.
- Fabricated from material that is not detrimental to the tendon.
- Capable of withstanding abrasion, impact, and bending during handling and installation.
- Allow the tendon to elongate during testing and stressing.

For the sheath, furnish plastic tubing or pipe, corrugated or smooth. A smooth sheath may also function as a bond breaker. Furnish a separate bond breaker if using a corrugated sheath.

For the bond breaker, furnish smooth plastic tubing or pipe that allows the tendon to elongate with minimal friction during testing and stressing.
Furnish high density polyethylene corrugated pipe and end caps conforming to AASHTO M 252, Type C, for tendon bond length encapsulation.

E. Corrosion Inhibiting Compound.
Furnish either grease, wax, or gel with corrosion inhibiting additives that conform with Section 4.6 of Recommendations for Prestressed Rock and Soil Anchors by the Post-Tensioning Institute (2014).

F. Heat-Shrink Sleeves and Tape.
Furnish heat-shrink sleeves and tape manufactured from polyolefin, cross-linked by radiation, and coated with an adhesive sealant.

G. Wax Tape.
Furnish petrolatum (wax) tape consisting of synthetic fabric saturated with a stable composition of petrolatum compound (wax) with inert fillers.

H. Cement Grout.

1. General.

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>AASHTO M 85, Type V</td>
</tr>
<tr>
<td>Water</td>
<td>812</td>
</tr>
</tbody>
</table>

2. Fine Aggregate.
If using fine aggregate in the grout mix, provide natural sand that meets the following requirements.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 16</td>
<td>100</td>
</tr>
<tr>
<td>No. 200</td>
<td>5</td>
</tr>
</tbody>
</table>

3. Admixtures.

a. General.
Only use admixtures with the approval of the Engineer. Accelerating admixtures are not allowed.

Admixtures may be added to the grout to control bleed, improve flowability, and reduce water content if the admixtures meet the requirements of ASTM C 494 Type A or F.

Use only admixtures that are compatible with the prestressing steel and with the grout manufacturer’s recommendation.
b. Expansive Admixtures.
Expansive admixtures may only be used for the following:
- Filling sealed encapsulations;
- Trumpet covers; or
- Anchorage covers.

I. Anchorages.

1. General.
Provide certificates of compliance in accordance with Special Provision 282(14) Certificate of Compliance, for the anchorages, anchorage components, and corrosion protection requirements described herein.

2. Anchor Heads and Wedges.
Furnish anchor heads conforming to one of the following:
- ASTM A36,
- ASTM A108 Grades 1040 or 1045,
- ASTM A536 Grade 80-55-06, or
- ASTM A576 Grade 1045.

Furnish three-part wedges that conform to ASTM A108 Grade 12L14, case hardened, 0.012 to 0.015 inches thick, and have a Rockwell C hardness from 59 to 65. Furnish the anchor heads and wedges from the same supplier.

3. Bearing Plate and Trumpet
Fabricate trumpets from steel pipe with a minimum wall thickness of 0.20 inch that meets the requirements of ASTM A 53 or steel tubing that meets the requirements of ASTM A 500. Weld the trumpet and bearing plate to create a watertight seal.

Provide bearing plates conforming to one of the following:
- ASTM A529,
- ASTM A536,
- ASTM A572, or
- ASTM A588.
Supply anchor covers (end caps) that completely cover the anchor head and provide a permanent watertight seal between the cover and the bearing plate. Supply anchor covers with a port that allows anchor covers to be completely filled with grout after installation. Provide end caps with a minimum thickness of 0.20 inch fabricated from the following:

- Steel Pipe: ASTM A 53,
- Steel Tubing: ASTM A 500, or
- Steel Plate:
  - ASTM A 36
  - ASTM A 529,
  - ASTM A 572, or
  - ASTM A 588.

Hot-dip galvanize the bearing plates and anchorage end cap covers in accordance with ASTM A-153.

J. Ground Anchor Strain Gauges.
Furnish elasto-magnetic anchor strain gauges for measuring loads, such as DYNA Force Sensors from Dywidag-Systems International, EM Sensor from Intelligent Instrument Systems Inc., or approved equal. Select gauges that are compatible with the DYNA Force Model PS-500 readout.

Size gauges appropriately for the anticipated range of load in the strand anchors.

Provide sufficient length of signal cable from each gauge to extend from gauge, out through head, and to the readout. Furnish and install any necessary plugs or fittings to permit connection of a DYNA Force Model PS-500 readout to the anchor strain gauges.

CONSTRUCTION REQUIREMENTS

A. Ground Anchor Pre-Construction Conference.
Hold a Ground Anchor preconstruction conference at the site a minimum of 10 calendar days before beginning ground anchor construction work.

Have the following personnel attend the preconstruction conference:

- The Contractor’s superintendent,
- On-site supervisors,
- Foremen in charge of:
  - Installation of ground anchors,
  - Construction of sacrificial anchor reaction blocks, and
  - Conducting ground anchor testing.
- The Engineer,
- The NDDOT Geotechnical Section.

Discuss the following at the preconstruction conference:

- Construction procedures,
- Personnel,
- Equipment, and
- Other elements of ground anchor installation.
B. Contractor Experience Requirements.
Submit proof that the Contractor performing the work described in this special provision has successfully installed similar size and length ground anchors in comparable ground conditions. Provide a list describing at least five projects completed over the past five years. Provide a single-page summary for each project including the following:

- A brief description of the project,
- The project’s location and project date,
- The project’s owner, and
- An owner reference, including an individual’s name, relationship to the project, and current phone number.

The Contractor shall assign an engineer to supervise the work with at least three years of experience in the design and construction of permanently anchored structures.

Submit a list of projects for each of the drill operators and on-site supervisors, demonstrating at least one year of experience installing permanent ground anchors.

Submit the information, qualifications, and staff noted above within 10 business days after the award of the contract, to the NDDOT Construction Services Division.

C. Ground Anchor Work Drawing.
Furnish the ground anchor tendon size, unbonded free stressing lengths, and bond lengths as specified in the Plans. Select the drilling method, grout mix, grouting methods, and hole diameter appropriate for the soil and rock conditions at the site, so that every ground anchor meets the specified acceptance criteria.

Prepare the Ground Anchor Work Drawings in accordance with Section 105.08, “Work Drawings.” Prepare the work drawings under the supervision and direction of a North Dakota Registered Engineer, and have the Registered Engineer sign and seal the work drawings. Submit the sealed Ground Anchor Work Drawings to the Engineer for acceptance prior to ordering the permanent ground anchors. Submit the Anchor Work Drawings at least 21 calendar days before the Ground Anchor Pre-Construction Conference. Include the following items:

1. Permanent Ground Anchor Tendon.
   Furnish details of a 6-strand tendon as indicated in the Plans and in accordance with these specifications. Show locations of centralizers and spacers. Show locations and type of grout tubes for initial grouting.

2. Instrumented Permanent Ground Anchor Tendon.
   Furnish details of the instrumented ground anchor showing locations of strand anchor strain gauges. Include four anchor strain gauges in each anchor as the following locations:
   - One 5 feet from the back of the bearing plate, in the free length,
   - One 5 feet from the front of the bond zone, in the bond zone,
   - One 20 feet from the front of the bond zone, in the bond zone,
   - One 35 feet from the front of the bond zone, in the bond zone.
Show adjustments to corrosion protection of strand at gauge locations. Show how signal cables will be routed along the tendon and through anchor heads and end caps, with descriptions, locations, and details of any weatherproof duct ports located in the end caps. Modify dimensions of end caps to accommodate load cells and platens.

Show locations of extra centralizers and spacers for gauge protection.

Show locations and type of grout tubes for grouting.

3. Sacrificial Instrumented Ground Anchor Tendon.

Furnish details of a 9-strand, high strength steel wire tendon in accordance with these specifications. Show locations of centralizers and spacers. Show locations and type of grout tubes for grouting.

Show details of strand anchor strain gauges installed in the ground anchor bond zone as follows:
- One 5 feet from the back of the bearing plate, in the free length,
- One 5 feet from the front of the bond zone, in the bond zone,
- One 20 feet from the front of the bond zone, in the bond zone,
- One 35 feet from the front of the bond zone, in the bond zone.

4. Bond length.

Use a bond length that is equal to or greater than the bond length shown in the plans for all of the ground anchors.

5. Grout Mix Design.

For each proposed mix design, develop a grout mix design that achieves a compressive strength of 3,000 psi per ASTM C 942. Provide a mix design that is a pumpable, stable fluid, with less than 2 percent bleed when tested in accordance with ASTM C 940.

Provide compressive strength test results of two-inch cubes, molded, cured and tested in accordance with ASTM C942 for each proposed grout mix design prior to installing the first ground anchor. Provide three additional compressive strength test results on samples randomly selected by the Engineer. Demonstrate that the grout achieves a 3,000-psi compressive strength at the time of stressing.

6. Unbonded length.

Use an unbonded length for each ground anchor that is equal to the unbonded length shown on the Plans.

7. Tail length.

Show length of tail extensions at the front of ground anchor that is necessary to accommodate pre-stressing chairs, hydraulic jacks, stressing anchor heads, and load cell instrumentation where appropriate.
8. Centralizers.

Centralizers must support the tendon in the hole and position it to provide at least 0.5 inch of grout cover over the encapsulation. Centralizers must permit grout to flow freely around the tendon and along the drill hole.

Place centralizers in the following locations:

- Within 1 foot of the bottom of the tendon.
- Within 5 feet of the top of the bond length.
- With a maximum center-to-center spacing of 10 feet.


Place spacers for strand tendon at the following locations in the bond zone:

- Within 5 foot of the bottom of the tendon.
- Within 5 feet of the top of the bond length.
- With a maximum center-to-center spacing of 10 feet.

Spacers used along the bond zone, inside the encapsulation must separate the strands and position the tendon steel to provide at least 0.2 inch of grout cover between the tendon steel and the inside surface of the encapsulation.

10. Bearing Plate and Trumpet.

Show dimensions of a bearing plate and trumpet sized for safely supporting the minimum ultimate tensile strength of the permanent ground anchor tendons on the anchor block. Provide calculations in accordance with AASHTO LRFD Bridge Design Specifications, demonstrating sufficiency of the bearing plate dimensions.

Provide a trumpet long enough to overlap the corrosion protection in the unbonded length of the tendon by at least 4 inches with a seal between the trumpet and the corrosion protection, or by at least 12 inches without a seal.

11. Sacrificial Ground Anchor Reaction Block.

Design a Sacrificial Ground Anchor Reaction Block, including bearing plate, capable of safely supporting 80 percent of the MUTS of the sacrificial 9-strand ground anchor. Provide sufficient details, dimensions, and calculations that demonstrate the reaction block will not exert a maximum ground pressure exceeding 5,000 psf when the sacrificial ground anchor is tested to 80 percent of the MUTS.

Provide details of the anchor block’s composition, size, fasteners, spacing, and orientations. Provide details of the material strength and individual component dimensions, including the bearing plate. Show the size and location of the opening on the ground anchor reaction block and the position of the sacrificial ground anchor and bearing plate.

12. Anchorage Head and End Cap.

Provide details and dimensions of anchorage head wedge plate and end cap. Show details of waterproof end cap seal at bearing plate.

Provide Class I corrosion protection for permanent, encapsulated strand, ground anchors as shown in the Plans and in accordance with Recommendations for Prestressed Rock and Soil Anchors by the Post-Tensioning Institute, 2014.

Provide continuous corrosion protection at the transition from the bond length to the unbonded length of the anchor tendon.


Corrosion protection is not required for the sacrificial ground anchors, bearing plates or the anchorage head wedge plates. Trumpets are required to protect the strain gage signal cables and anchor strands. End caps are not required for the sacrificial ground anchors.

15. Hole Diameter.

Size the hole diameter for the ground anchor to provide sufficient surface area to achieve the specified load testing acceptance criteria and to provide at least 0.5 inch grout cover over the encapsulation. Ensure that the area of the steel strands does not exceed 15 percent of the total area of the hole. Ensure that the hole diameter meets the minimum shown in the Plans.

D. Anchor Installation Plan and Anchor Testing Plan.

Submit the Anchor Installation and Testing Plans to the Engineer at least 21 working days before the Ground Anchor Preconstruction Conference. Obtain the Engineer’s approval for the Anchor Installation Plan and Anchor Testing Plan before beginning ground installation of sacrificial and production anchors.

Use the approved drilling procedures and equipment from the sacrificial ground anchor testing program to install the production ground anchors.

1. Anchor Installation Plan.

Include the following in the Anchor Installation Plan:

- Drilling procedure and equipment.
- Hole diameter.
- Initial grout mix design.
- Grouting methods and equipment.
- If proposed, post-grouting procedure, including:
  - Number of post-grout tubes,
  - Location and spacing of grout ports on post-grout tubes,
  - Grout mix,
  - Post-grouting volumes,
  - Post-grouting pressures, and
  - Range of elapsed time between grouting stages.


Describe testing procedures and equipment for sacrificial, proof, and performance testing and extended creep. Include the following in the Anchor Testing Plan:
• Testing equipment, including hydraulic jack, pump, pressure gauge, load cell and displacement gauges,
• Calibration certificates for jack, gauges, and load cell,
• Sample testing forms,
• Test load Schedule (provide the factored design load at all test load increments in both force and pressure gauge units),
• Lengths of tendon extensions, jack, load cell, and jacking chair.

Follow the Sacrificial Ground Anchor Test Load Schedule in Table 1 for the sacrificial ground anchor testing and the Proof and Extended Creep Test Load Schedule in Tables 2 and 3 for the permanent ground anchors.

E. Sacrificial Ground Anchor Testing.
Perform verification pullout tests on one sacrificial (nonproduction) ground anchor. Install the sacrificial ground anchor, perform the testing, and submit the test results to the Engineer for review and approval before beginning installation of the permanent ground anchors. Allow the Engineer five calendar days to review and approve the test results.

Perform the Sacrificial Ground Anchor Testing within 25 feet of Abutment 1 of the bridge. Excavate and grade the approved site location for the test and construct or place the ground anchor reaction block. Drill and install the sacrificial ground anchors at the same length, inclination, and orientation as the permanent ground anchors shown in the Plans. Do not apply a test load to a sacrificial ground anchor that is greater than 80 percent of the ultimate tensile strength of the tendon steel.

If the Contractor makes any modifications to the work drawings, design calculations, or anchor installation plan after the results of sacrificial ground anchor testing, submit the revisions and obtain the Engineer’s approval before beginning or resuming ground anchor installation.

F. Ground Anchor Installation.
Install the permanent ground anchors using the same drilling method, drill hole diameter, and post-grouting procedures (if proposed) used to install the sacrificial ground anchors, as accepted by the Engineer, to achieve the specified acceptance criteria. Do not vary the procedures used to install the permanent ground anchors from those used to install the sacrificial ground anchor, unless another sacrificial ground anchor is installed (at no cost to the NDDOT). Perform all work according to the work drawings and anchor installation plans approved by the Engineer.

Do not stress or test permanent ground anchors until the abutment has been backfilled. Stress and lock off the ground anchors before the bridge girders are placed.

1. Drilling.
   a. General.
      Provide casing when required to maintain an open hole in unstable soil or rock formations.

      Do not drill within 15 feet of any open, un-grouted holes.

      Allow grout to cure at least 24 hours before drilling within 15 feet of a grouted ground anchor.
anchor.

b. Tolerances.
Drill the hole for the ground anchor through the abutment. Locate the collar of the hole so that the anchor tendon is aligned with the steel sleeve installed through the abutment. Ensure that the collar of the drill hole is located within 6 inches in all directions of the location shown in the Plans and that the inclination of the drill hole is within 3 degrees of the inclination shown on the Plans.

2. Anchor Installation.
Inspect the permanent and sacrificial anchor tendon for signs of damage or corrosion before installation. Anchor tendons with a light coating of rust are acceptable, but do not use anchor tendons that show signs of heavy corrosion or pitting.

Clean open holes, blockout pipe, and cased holes before inserting the anchor tendon and grouting. Insert the anchor tendon in the drill hole without damaging the tendon, corrosion protection, or grout tubes. Do not drive or force the tendon into the drill hole. If the tendon cannot easily reach to the design length, then remove the tendon and clean or redrill the hole to allow insertion.

3. Anchor Grouting.
Begin grouting no more than 18 hours after completing the drilling for the bond length. Inject grout at the lowest point of the drill hole by pumping through grout tubes, casing, hollow-stem augers, or drill rods. Either leave the grout tube in place or withdraw the grout tube during grouting, but ensure that the discharge end of the tube remains below the top of the grout during grout placement. If leaving the grout tube in place, ensure that it is filled with grout at the completion of grouting.

Do not allow differential pressure to develop between fluid grout inside and outside the corrugated encapsulation such that the encapsulation is damaged by the pressure differential. Do not cut holes in the encapsulation or remove the end cap to allow equalization of interior and exterior grout pressures.

Fill the hole with grout in one continuous operation, to a distance 1 to 2 feet behind the end of the trumpet. Remove any grout placed in this area before it hardens.

Do not pressure grout the unbonded length.

4. Anchorage Installation.
Install the trumpeted bearing plate and the anchor head wedge plate perpendicular to the anchor tendon with a tolerance of ±3 degrees. Do not bend or kink the anchor tendon. Ensure that the wedges and wedge holes are free of rust, grout, and dirt.

Ensure the trumpet overlaps the corrosion protection in the unbonded length of the permanent ground anchor tendon by at least 4 inches when a seal is provided between the trumpet and the corrosion protection. When a seal is not provided, ensure the trumpet overlaps the corrosion protection in the unbonded length by at least 12 inches. Ensure the corrosion protection in the unbonded length does not contact the
anchor bearing plate or anchor head wedge plate. If necessary, trim the corrosion protection to prevent contact.

G. Ground Anchor Testing.
Test each permanent ground anchor to demonstrate that it meets the specified acceptance criteria. Conduct a minimum of one extended creep tests on a permanent ground anchor selected by the Engineer. Conduct proof tests on all ground anchors that are not subject to extended creep testing.

During the hold periods for all types of tests, maintain a constant load by adjusting the jack pressure as necessary. Do not allow the jack pressure to drop more than 50 psi during a hold period. Measure and record anchor movement to the nearest 0.001 inch. Avoid regripping strands or creating wedge bite marks on the strand below the anchor head.

1. Testing Equipment.
Provide testing equipment conforming to the following.

Provide a hydraulic jack and pump with a rated capacity greater than the maximum test load. Provide a hydraulic jack with a stroke length at least 1 inch greater than the theoretical elastic elongation of the tendon steel at the maximum test load.

b. Pressure Gauges.
Provide two pressure gauges to measure the pressure in the hydraulic jack, a production gauge, and a reference gauge. Provide pressure gauges with graduations of 50 psi or smaller. Ensure the hydraulic jack and the pressure gauges have been calibrated as a unit within 9 months of the beginning of anchor testing. Ensure the calibration is traceable to the National Institute of Standards and Technology (NIST). Use the reference gauge to check the production gauge at least once per day when testing.

c. Load Cell and Readout.
Provide a load cell and readout with a rated capacity greater than the maximum test load for sacrificial ground anchor tests. Ensure the load cell and readout have been calibrated as a unit within 9 months of the beginning of anchor testing. Ensure the calibration is traceable to NIST.

d. Displacement Gauge.
Provide a displacement gauge that can measure movement in increments of 0.001 inch or less. Provide a displacement gauge with a 4.0-inch minimum range of travel. If the anticipated elongation of the tendon steel at the factored design test load will exceed 4.0 inches, provide displacement gauges with a sufficient range of travel, or provide multiple displacement gauges that can be arranged in series to allow the continuous measurement of the displacement of the anchor head.

e. Jack Chair.
Provide a jack chair that can transfer 100 percent of the ultimate tensile strength of the tendon steel.
2. **Testing Equipment Setup.**

   Position the hydraulic jack, load cell, and other necessary items over the anchor tendon and parallel to its axis. Apply the alignment load to hold the jack in place.

   Set the displacement gauge after applying the alignment load. Support the displacement gauge on a tripod or other support device that is independent of the ground anchor and the block. Position the displacement gauge so that its axis is parallel to the axis of the anchor tendon within 5 degrees. Check that the stem of the displacement gauge is free to move over its entire measurement range.

3. **Sacrificial Ground Anchor Test.**

   Perform a sacrificial ground anchor load test by incrementally loading the sacrificial ground anchor according to the following schedule shown in Table 1. Use a load cell to monitor the load during hold periods.

   **TABLE 1 SACRIFICIAL GROUND ANCHOR LOAD TEST SCHEDULE**

<table>
<thead>
<tr>
<th>Load Increment</th>
<th>Load Increment</th>
<th>Hold Period (minutes)</th>
<th>Time for Displacement Reading (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AL (0.05 DL)</td>
<td>10</td>
<td>Initial Reading</td>
</tr>
<tr>
<td></td>
<td>0.10 MUTS</td>
<td></td>
<td>1, 2, 3, 4, 5, 6, 10</td>
</tr>
<tr>
<td>2</td>
<td>0.20 MUTS</td>
<td>60</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>0.30 MUTS</td>
<td>60</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>0.40 MUTS</td>
<td>60</td>
<td>*</td>
</tr>
<tr>
<td>5</td>
<td>0.50 MUTS</td>
<td>60</td>
<td>*</td>
</tr>
<tr>
<td>6</td>
<td>0.60 MUTS</td>
<td>60</td>
<td>*</td>
</tr>
<tr>
<td>7</td>
<td>0.70 MUTS</td>
<td>60</td>
<td>*</td>
</tr>
<tr>
<td>8</td>
<td>0.80 MUTS</td>
<td>60</td>
<td>*</td>
</tr>
<tr>
<td>9</td>
<td>AL (0.05 MUTS)</td>
<td>1</td>
<td>Final Reading</td>
</tr>
</tbody>
</table>

   * - Record Displacement Readings and Strain Gauge Readings at 1, 2, 5, 10, 20, 30 and 60 minutes.

   AL = Alignment Load;

   MUTS = Minimum Ultimate Tensile Strength

   Conduct the sacrificial ground anchor load tests until completion or until reaching a pullout failure. Submit copies of all the test data to the Engineer.

   After completing the test on the sacrificial ground anchor and after receiving approval from the Engineer, remove and dispose of the anchor reaction apparatus (block or frame). Remove and dispose of the ground anchor end hardware, cut the ground anchors and restore the grading to the pre-testing condition to the satisfaction of the Engineer.
4. Proof Test.

Complete a proof test by incrementally loading and unloading the ground anchor according to the following schedule shown in Table 2.

<table>
<thead>
<tr>
<th>Load Increment</th>
<th>Hold Period (minutes)</th>
<th>Time for Displacement Reading (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>Initial Reading</td>
</tr>
<tr>
<td>0.20 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>0.40 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>0.60 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>0.75 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>0.90 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>1.0 FDL</td>
<td>10</td>
<td>1, 2, 3, 4, 5, 6, 10</td>
</tr>
<tr>
<td></td>
<td>(60) [1]</td>
<td>(20, 30, 40, 50, 60) [1]</td>
</tr>
<tr>
<td>0.40 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>1</td>
</tr>
</tbody>
</table>

* Hold load just long enough to read displacement, but not longer than one minute
[1] If the amount of movement between the 1 minute and 10 minute displacement readings exceeds 0.04 inch, then hold the load for 60 minutes and take additional displacement readings at the times shown in parentheses.

AL = Alignment Load    FDL = Factored Design Load

5. Extended Creep Test.

Perform an extended creep test on one permanent ground anchor identified by the Engineer, by incrementally loading and unloading the ground anchor according to the following schedule shown in Table 3. Use a load cell to monitor the load during hold periods. Record displacement, load cell, and strain gauge readings.
### TABLE 3 EXTENDED CREEP LOAD TEST SCHEDULE

<table>
<thead>
<tr>
<th>Load Cycle</th>
<th>Load Increment</th>
<th>Hold Period (minutes)</th>
<th>Time for Displacement, Load Cell and Strain Gauge Readings (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>Initial Reading</td>
</tr>
<tr>
<td></td>
<td>0.20 FDL</td>
<td>10</td>
<td>1, 2, 3, 4, 5, 6, 10</td>
</tr>
<tr>
<td>2</td>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.20 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.40 FDL</td>
<td>30</td>
<td>1, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30</td>
</tr>
<tr>
<td>3</td>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.20 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.40 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.60 FDL</td>
<td>30</td>
<td>1, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30</td>
</tr>
<tr>
<td>4</td>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.20 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.40 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.60 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.75 FDL</td>
<td>45</td>
<td>1, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30, 45</td>
</tr>
<tr>
<td>5</td>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.20 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.40 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.60 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.75 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.90 FDL</td>
<td>60</td>
<td>1, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30, 45, 60</td>
</tr>
<tr>
<td>6</td>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.25 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.40 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.60 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.75 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>0.90 FDL</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>1.0 FDL</td>
<td>300</td>
<td>1, 2, 3, 4, 5, 6, 10, 15, 20, 25, 30, 45, 60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75, 90, 100, 120, 150, 180, 210, 240, 270, 300</td>
</tr>
<tr>
<td></td>
<td>AL (≤0.10 FDL)</td>
<td>---</td>
<td>1</td>
</tr>
</tbody>
</table>

* Hold load just long enough to read displacement, but not longer than one minute.

AL = Alignment Load  FDL = Factored Design Load

### 6. Acceptance Criteria for Ground Anchors.

A sacrificial ground anchor is acceptable when:

- It holds the maximum test load for the specified hold period (60 minutes).
- It meets the acceptance criteria for creep movement at a load equal to 1.0 times the factored design load.
- It meets the acceptance criteria for the apparent free length during testing.
A permanent ground anchor is acceptable when:

- It holds the maximum test load for the specified hold period.
- It meets the acceptance criteria for creep movement.
- It meets the acceptance criteria for the apparent free length during testing.

**a. Creep Movement.**

The acceptance criteria for both sacrificial and permanent ground anchors is 0.04 inches of creep movement or less between the 1 and 10 minute displacement readings, or 0.08 inches of creep movement or less between the 6 and 60 minute displacement readings.

The acceptance criteria for ground anchors subject to extended creep testing is 0.08 inches or less of creep movement in the last log cycle of time for each hold period. A log cycle of time is the time between two displacement readings where the second reading is at a time 10 times longer than the time of the first reading (for example, 1 minute to 10 minutes, 6 to 60 minutes, and 30 to 300 minutes are each one log cycle of time).

Tendons which have not been proof stretched may require adjustments to the creep displacement readings to account for the creep of the wire strand tendons. Determine necessary adjustments from test results furnished by the tendon supplier.

**b. Apparent Free Length.**

The apparent free length of a ground anchor is the equivalent length of the tendon steel that has the same elongation as the measured elastic movement under the same net load (the test load minus the alignment load). Calculate the apparent free length at the maximum test load in a proof test and at the maximum test load in each load cycle in a performance test or extended creep test. Use the following equation to calculate the apparent free length.

\[
\text{Apparent Free Length} = \frac{(A \times E \times d)}{(TL - AL)}
\]

Where:

- \(A\) = cross-section area of the tendon steel
- \(E\) = modulus of elasticity of the tendon steel
- \(d\) = elastic movement (displacement reading at the test load minus the subsequent displacement reading at the alignment load)
- \(TL\) = test load
- \(AL\) = alignment load

An acceptable apparent free length is equal to or greater than the theoretical elastic elongation of 80 percent of the unbonded free stressing length of the ground anchor plus the jack length and equal to or less than the theoretical elastic elongation of 100 percent of the unbonded free stressing length plus 50 percent of the tendon bond length plus the jack length.

If movement measured during a ground anchor test does not meet this acceptance criterion, but the anchor can hold the required test load and it meets the acceptance criteria for creep movement, then repeat the test load cycle by reducing the test
load to the alignment load and then incrementally increasing the test load to the design test load per the proof test schedule.

If the ground anchor fails to meet the apparent free length acceptance criteria on the second attempt, repeat the test load cycle a third time.

If after three attempts the ground anchor still fails to meet the apparent free length acceptance criteria, correct the ground anchor in accordance with the following section.

7. Permanent Ground Anchors Not Meeting Acceptance Criteria.

When a ground anchor does not meet the acceptance criteria, correct the problem at no additional expense to the Department. The corrections may include, but are not limited to:

- Completing post-grouting cycles on the ground anchor, if post-grout tubes are included,
- Replacing the unacceptable ground anchor, or
- Reducing the ground anchor design load and installing additional ground anchors.

Ground anchors that do not meet one of the acceptance criteria may still be incorporated into the Work under the following conditions:

a. If the ground anchor cannot hold the design test load and the post-grouting system is still intact (if included), then conduct additional post-grouting cycle(s) on the ground anchor and repeat the testing using the original acceptance criteria.

b. If the ground anchor holds the design test load but does not meet the acceptance criteria for creep movement at the design test load and the post-grouting system is still intact, then conduct additional post-grouting cycle(s) on the ground anchor and repeat the testing using an enhanced acceptance criterion for creep movement. The enhanced acceptance criterion consists of no more than 0.04 inches of creep movement between the 1 and 60 minute displacement readings at the design load.

c. If the ground anchor does not meet the acceptance criteria for creep movement or if it cannot hold the design load, the ground anchor may be incorporated into the Work at a reduced load. Lock off the ground anchor at no more than 50 percent of the stabilization load (the load that the anchor holds without detectable movement at the end of testing). To determine the stabilization load, stop adjusting the jack pressure, wait until the displacement reading has not changed for 10 minutes, and then measure the load in the anchor. When incorporating a ground anchor into the Work in this manner, install additional ground anchors or use some other corrective procedure approved by the Engineer to compensate for the reduced anchor load.

Except for items “a” and “b” above (post-grouting), submit the proposed corrective work to the Engineer in writing before beginning corrective work.

a. General.
After successful testing of a ground anchor is complete, adjust the load on the ground anchor to the lock-off load shown in the Plans. Increase the load as necessary to compensate for seating losses. Transfer the load from the jack to the anchorage device.

b. Lift-Off Testing.
Before removing the jack, perform a lift-off test to confirm the load in the anchor tendon. Perform the lift-off test by re-applying load to the anchor tendon until the wedge plate lifts off the bearing plate or the wedges lift. The lift-off reading must be within 5 percent of the specified lock-off load.

If the lift-off reading is more than 5 percent below the specified lock-off load, increase the lock-off load by lifting the anchor head and placing shims under the anchor head. If the lift-off reading is more than 5 percent above the specified lock-off load, notify the Engineer and adjust the procedures to ensure this does not occur on subsequent ground anchors.

c. Completion.
Cut off excess tendon steel, leaving at least 0.5 inch extending above the wedges, and completely fill the trumpet with grout. Prevent the grout from freezing. Ensure that the permanent anchorage cover fits over the anchor head and seals against the bearing plate. Completely fill the cover with grout.

H. Anchor Strain Gauge Installation.
At the strand anchor manufacturer’s factory, install anchor strain gauges and signal cable per the gauge manufacturer’s recommendation.

Protect instrument signal cables and gauges during transportation and installation of instrumented anchors.

METHOD OF MEASUREMENT
Permanent ground anchors that are installed, tested, and accepted will be measured from the base of the bearing plate (in contact with the abutment bearing area) to the end of the installed anchor as shown in the Plans. Additional permanent ground anchors installed by the Contractor to achieve the acceptance criteria are considered corrective measures and will not be measured for payment.

Sacrificial ground anchor testing will be measured by each test completed and submitted to the Engineer.

BASIS OF PAYMENT
The unit price of a permanent ground anchor is for full compensation of the work, including but not limited to, completing the drill hole for the permanent ground anchor; hauling and disposal of drill cuttings; furnishing the multi-strand ground anchor tendon with Class I corrosion protection; furnishing end hardware, including the bearing plate with trumpet, anchorage heads with wedge grips and end caps; furnishing and placing initial grout through grout tubes; completing pressurized post-grouting cycles through grout tubes; placement and removal of
temporary drill casing; permanent casing, if used by the Contractor; all costs associated with proof and extended creep testing; costs of submittals and test reports; and for furnishing all tools, labor, equipment, materials and incidentals necessary to complete the work.

Costs associated with instrumenting the permanent ground anchors will be measured and paid for under the Instrumentation Pay Items in accordance with the Special Provision for Instrumentation.

The unit price of sacrificial ground anchor testing is for full compensation of the work, including but not limited to, design, construction and disposal of the ground anchor reaction block; furnishing the 9-strand sacrificial ground anchor; completing the drill hole for the sacrificial anchor, hauling and disposal of drill cuttings; furnishing end hardware, including the bearing plate and anchorage heads with wedge grips; furnishing and placing initial grout through grout tubes; completing pressurized post-grouting cycles through grout tubes; placement and removal of temporary drill casing; all costs associated with sacrificial ground anchor load testing; costs of submittals and test reports; and for furnishing all tools, labor, equipment, materials and incidentals necessary to complete the work.

The Department will pay for accepted quantities at the contract unit price as follows:

<table>
<thead>
<tr>
<th>Spec - Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>930-4150</td>
<td>Ground Anchor</td>
<td>Linear Feet</td>
</tr>
<tr>
<td>930-4155</td>
<td>Sacrificial Ground Anchor Testing</td>
<td>Each</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all material, equipment, labor, and incidentals to complete the work as specified.
DESCRIPTION
This work consists of furnishing equipment, materials, and experienced labor to complete drilled excavations filled with steel casing and reinforcement bars and concrete.

MATERIALS

A. General.
Provide materials meeting the requirements in the following sections. Do not deliver the materials to the site until the Engineer has approved the Contractor Experience and Shaft Installation Narrative submittals.

B. Concrete for Drilled Shafts.
Provide Concrete conforming to Section 802 “Portland Cement Concrete” with the following revisions:

- Attain a minimum compressive strength of 4,000 psi at 28 days.
- Minimum slump of 8 inches, as measured at the chute of the concrete truck.
- Use Class F fly ash to replace 25 to 35 percent of the cement by weight.
- Provide water reducing and/or retarding concrete admixtures Types A, B or D, as classified under ASTM C 494 that meet the requirements of AASHTO M 194, to achieve the required concrete workability and slump throughout concrete placement.

C. Reinforcing Steel
Provide steel reinforcement bars in conformance with Section 836 of the Standard Specifications.

D. Permanent Steel Casing.
Provide clean, watertight, smooth wall permanent steel casing consisting of spiral weld pipe in conformance with ASTM A252, Grade 3 and ASTM A709. Weld pipe according to AWS D1.1/D1.1M Structural Welding Code, except that all weld filler metal shall be low Hydrogen material selected from Table 4.1 in AASHTO/AWS D1.5M/D1.5:2010 Bridge Welding Code.

Provide permanent casing with a minimum inside diameter as specified in the Plans. The inside diameter of the casing may exceed the shaft diameter indicated in the Plans by no more than 6 inches.

The minimum casing thickness specified in the plans is specified to satisfy structural design requirements only. Ensure that the permanent casing is of sufficient strength to resist damage and deformation from transportation and handling, installation stresses, and all
pressures and forces acting on the casing during construction. If necessary, increase the thickness of the permanent casing to meet these requirements.

E. **Temporary Steel Casing.**
If using temporary steel casing, provide temporary casing consisting of a clean, watertight, smooth wall steel of sufficient strength to resist damage and deformation from transportation and handling, installation and extraction stresses, and all pressures and forces acting on the casing.

F. **Mineral Slurry.**
If using mineral slurry, furnish mineral slurry prepared and maintained in conformance with the manufacturer’s recommendations, Table 1, and the quality control plan specified in the Shaft Installation Narrative Submittal.

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
<th>Test Method/Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>63 to 75 pcf</td>
<td>Mud Weight (Density), API 13B-1, Section 1</td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Bentonite</td>
<td>1) 28 to 50 sec/qt</td>
<td>Marsh Funnel and Cup, API 13b-1, Section 2.2</td>
</tr>
<tr>
<td>2) Attapulgite</td>
<td>2) 28 to 40 sec/qt</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>8 to 11</td>
<td>Glass Electrode, pH Meter, or pH Paper</td>
</tr>
<tr>
<td>Sand Content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Prior to final</td>
<td>1) 4.0% max</td>
<td>Sand Content, API 13B-1, Section 5</td>
</tr>
<tr>
<td>cleaning</td>
<td>2) Immediately</td>
<td></td>
</tr>
<tr>
<td>2) Immediately</td>
<td>2) 4.0% max</td>
<td></td>
</tr>
<tr>
<td>prior to placing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>concrete</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maintain slurry temperature at 40 degrees Fahrenheit or greater when tested.

G. **Synthetic Slurry**
If using synthetic slurry, furnish synthetic slurries from one of the manufacturers listed in Table 2. Prepare and maintain synthetic slurry in accordance with the manufacturer’s recommendations, Tables 3 through 6 (as applicable), and the quality control plan specified in the Shaft Installation Narrative Submittal.
The synthetic slurry must be one of the materials shown in Table 2.

<table>
<thead>
<tr>
<th>TABLE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
</tr>
</tbody>
</table>
| SlurryPro CDP | KB International LLC  
735 Board St Ste 209  
Chattanooga TN 37402  
(423) 266-6964 |
| Super Mud | PDS Co Inc  
105 W Sharp St  
El Dorado AR 71731  
(870) 863-5707 |
| Shore Pac GCV | CETCO Construction Drilling Products  
2870 Forbs Ave  
Hoffman Estates IL 60192  
(800) 527-9948 |
| Terragel or Novagel Polymer | Geo-Tech Services LLC  
220 N. Zapata Hwy Ste 11A-449A  
Laredo TX 78043  
(210) 259-6386 |

Use synthetic slurries in compliance with the manufacturer's instructions. Provide certification of compliance from slurry manufacturer in accordance with Section 106.01 C. that indicates their product meets the requirements of this Special Provision and is suitable for subsurface site conditions indicated in the plans.

Meet the requirements shown in Tables 3 through 6 for the applicable product. Maintain slurry temperature at 40 degrees Fahrenheit or greater when tested.

<table>
<thead>
<tr>
<th>TABLE 3 -- SLURRYPRO CDP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Property</strong></td>
</tr>
</tbody>
</table>
| Density | ≤ 67.0 pcf  
≤ 64.0 pcf | Mud Weight (Density),  
API 13B-1, Section 1 |
| Viscosity | 50 – 120 sec/qt  
≤ 70 sec/qt | Marsh Funnel and Cup,  
API 13b-1, Section 2.2 |
| pH | 6.0 – 11.5 | Glass Electrode, pH Meter, or  
pH Paper |
| Sand Content | < 0.5% | Sand Content,  
API 13B-1, Section 5 |
### TABLE 4 -- SUPER MUD

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
<th>Test Method/Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During drilling</td>
<td>≤ 64.0 pcf</td>
<td>Mud Weight (Density), API 13B-1, Section 1</td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td>≤ 64.0 pcf</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During drilling</td>
<td>32 – 60 sec/qt</td>
<td>Marsh Funnel and Cup, API 13b-1, Section 2.2</td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td>≤ 60 sec/qt</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.0 – 10.0</td>
<td>Glass Electrode, pH Meter, or pH Paper</td>
</tr>
<tr>
<td>Sand Content</td>
<td>&lt; 0.5%</td>
<td>Sand Content, API 13B-1, Section 5</td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 5 -- SHORE PAC GCV

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
<th>Test Method/Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During drilling</td>
<td>≤ 64.0 pcf</td>
<td>Mud Weight (Density), API 13B-1, Section 1</td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td>≤ 64.0 pcf</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During drilling</td>
<td>33 – 74 sec/qt</td>
<td>Marsh Funnel and Cup, API 13b-1, Section 2.2</td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td>≤ 57 sec/qt</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.0 – 11.0</td>
<td>Glass Electrode, pH Meter, or pH Paper</td>
</tr>
<tr>
<td>Sand Content</td>
<td>&lt; 0.5%</td>
<td>Sand Content, API 13B-1, Section 5</td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 6 -- TERRAGEL OR NOVAGEL POLYMER

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
<th>Test Method/Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During drilling</td>
<td>≤ 67.0 pcf</td>
<td>Mud Weight (Density), API 13B-1, Section 1</td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td>≤ 64.0 pcf</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During drilling</td>
<td>45 - 104 sec/qt</td>
<td>Marsh Funnel and Cup, API 13b-1, Section 2.2</td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td>≤ 104 sec/qt</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
<td>Glass Electrode, pH Meter, or pH Paper</td>
</tr>
<tr>
<td>Sand Content</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before final cleaning and immediately before placing concrete</td>
<td>&lt; 0.5%</td>
<td>Sand Content, API 13B-1, Section 5</td>
</tr>
</tbody>
</table>

H. Water Slurry.
Water slurry may be used if the full length of the drilled hole is cased. Do not mix soil into water slurry. Prepare and maintain water slurry in conformance to the following requirements:

TABLE 7

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
<th>Test Method/Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>≤ 65 pcf</td>
<td>Mud Weight (Density), API 13B-1, Section 1</td>
</tr>
<tr>
<td>Sand Content</td>
<td>≤ 1.0%</td>
<td>Sand Content, API 13B-1, Section 5</td>
</tr>
</tbody>
</table>

Maintain slurry temperature at 40 degrees Fahrenheit or greater when tested.

I. Steel Reinforcing Bar Cage Centralizers, Boots, and Base Plates.
Provide commercially manufactured devices for properly aligning, centering and supporting steel rebar cages in drilled shaft excavations that will maintain the concrete cover specified in the Plans.
J. Cement Grout.

1. General.

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>804.01</td>
</tr>
<tr>
<td>Water</td>
<td>812</td>
</tr>
</tbody>
</table>

2. Fine Aggregate.

If using fine aggregate in the grout mix, provide natural sand that meets the following requirements.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 16</td>
<td>100</td>
</tr>
<tr>
<td>No. 200</td>
<td>5</td>
</tr>
</tbody>
</table>

3. Admixtures.

Only use admixtures with the approval of the Engineer. Accelerating admixtures are not allowed.

Admixtures may be added to the grout to control bleed, improve flowability, and reduce water content if the admixtures meet the requirements of ASTM C 494 Type A or F.

CONSTRUCTION REQUIREMENTS

A. Contractor Experience Requirements.

Prior to award of the contract, submit proof that the Contractor performing the work described in this special provision has successfully installed similar size and length drilled shafts, using similar installation methods in comparable ground conditions. Provide a list describing at least five projects completed over the past five years. Provide a single-page summary for each project including the following:

- A brief description of the project,
- The project's location and project date,
- The project's owner, and
- An owner reference, including an individual's name, relationship to the project, and current phone number.

The Contractor shall assign an on-site supervisor with at least three years of experience supervising construction of drilled shafts of similar size (diameter and depth) and scope to those shown in the Plans, and in similar geotechnical conditions to those described in the plans. Provide a resume for the on-site supervisor documenting this experience. Project management level positions indirectly supervising on-site shaft construction operations are not acceptable for this experience requirement.

Provide drill rig operators that have at least one year of experience in construction of shaft foundations on the equipment proposed for this project using the methods proposed for this
project (wet method drilled shaft construction, etc.). Submit a list of projects for each of
the drill operator demonstrating at least one year of experience installing drilled shafts of
similar size (diameter and depth) and scope to those shown in the Plans.

Submit the information documenting and satisfying the Contractor Experience
Requirements within 10 business days after the award of the contract, to the NDDOT
Construction Services Division.

B. Shaft Pre-Construction Conference.
Hold a drilled shaft preconstruction conference at the site a minimum of 10 calendar days
before beginning drilled shaft construction work.

Have the following personnel attend the preconstruction conference:

- The Contractor's superintendent,
- On-site supervisors,
- Foremen in charge of:
  - Excavating the shaft,
  - Placing the casing and slurry, as applicable,
  - Placing steel reinforcing bars,
  - Placing concrete,
- If mineral or synthetic slurry will be used to construct the shafts, the slurry
  manufacturer's representative and Contractor's employees trained in the use of the
  mineral or synthetic slurry,
- The Engineer,
- The NDDOT Geotechnical Section.
- The Geotechnical Engineer.

Discuss the following at the preconstruction conference:

- Construction procedures,
- Personnel,
- Equipment, and
- Other elements of the approved Shaft Construction Submittal.

C. Shaft Installation Narrative.
Develop a Shaft Installation Narrative referencing the available subsurface data for the
project. Submit the Shaft Installation Narrative to the Engineer for acceptance at least 21
calendar days before the Shaft Pre-Construction Conference.

In the Shaft Installation Narrative, account for potential ground movement due to the active
landslide in the selection of drilling equipment, drill tooling, stabilization of the drilled shaft
excavation, steel casing and reinforcement cage placement, and concrete placement
operations. Include the following information in the Shaft Installation Narrative:

1) Proposed overall construction operation sequence.
2) The description, size, and capacities of proposed drilling equipment, including but
   not limited to, cranes, drills, auger, bailing buckets, final cleaning equipment, and
   drilling unit. Describe why the equipment was selected and describe equipment
   suitability to the anticipated site conditions and work methods. Include a project
history of the drilling equipment demonstrating the successful use of the equipment on drilled shafts of equal or greater hole size in similar soil/rock conditions. Include specific details of drilled shaft excavation and cleanout methods.

3) A list of potential problems that could occur during construction of the drilled shafts and proposed solutions. Include equipment breakdowns and related contingency plans. Include potential problems related to the subsurface conditions at the site, and landslide movement considering the rate of ground movement measured at the site.

4) Details of method(s) proposed to ensure drilled shaft stability (i.e., prevention of caving, bottom heave, using temporary casing, slurry, or other means) during excavation (including pauses and stoppages during excavation) and concrete placement.

5) A slurry mix design (if slurry is proposed), listing and describing all additives and their specific purpose in the slurry mix, with a discussion of their suitability to the anticipated subsurface conditions. Discuss the procedures for mixing, using, and maintaining the slurry.

6) A detailed plan for quality control of the selected slurry (if slurry is proposed), listing:
   • The tests to be performed,
   • Test methods to be followed,
   • Name and qualifications of individual(s) completing testing, and
   • Slurry properties to achieve with consideration of the anticipated subsurface conditions and shaft construction methods, in accordance with the slurry manufacturer’s recommendations and these Special Provisions.

7) A description and details of the storage and disposal plan for excavated material and drilling slurry (if applicable). Include permit applications and approved permits required for slurry storage and disposal.

8) The details of concrete placement, including proposed operational procedures for pumping methods, the estimated time for concrete placement, and a sample uniform yield form for plotting the approximate volume of concrete placed versus the depth of shaft for all shaft concrete placement.

9) A concrete mix design meeting the requirements of this Special Provision.

10) The procedure and materials that will be used to grout the annulus between permanent casing and the soil/rock, if using grout to fill the annulus. Provide a grout mix design that achieves an unconfined compressive strength of at least 100 psi at 7 days per ASTM D 2166.

D. Reinforcing Steel Work Drawings.
Provide Reinforcing Steel Work Drawings. Prepare the work drawings in accordance with Section 105.08. Submit the Reinforcing Steel Work Drawings to the Engineer for acceptance at least 21 calendar days before the Shaft Pre-Construction Conference.

At a minimum include the following items on the Reinforcing Steel Work Drawings:
1) Procedure and sequence of steel reinforcing bar cage assembly.
2) The tie pattern, tie types, and tie wire gages for all ties on permanent reinforcing and temporary bracing.
3) Number and location of primary handling steel reinforcing bars used during lifting operations.
4) Type and location of all steel reinforcing bar splices.
5) Details and orientation of all internal cross-bracing, including a description of connections to the steel reinforcing bar cage.
6) Description of how temporary bracing is to be removed.
7) Location of support points during transportation.
8) Cage weight and location of the center of gravity.
9) Number and location of pick points used for lifting for installation and for transport (if assembled off-site).
10) Crane charts and a description and/or catalog cuts for all spreaders, blocks, sheaves, and chokers used to equalize or control lifting loads.
11) The sequence and minimum inclination angle at which intermediate belly rigging lines (if used) are released.
12) Pick point loads at 0, 45, 60, and 90 degrees and at all intermediate stages of inclination where rigging lines are engaged or slackened.
13) Methods and temporary supports required for cage splicing.
14) For picks involving multiple cranes, the relative locations of the boom tips at various stages of lifting, along with corresponding net horizontal forces imposed on each crane.
15) Details and locations of reinforcing cage centralizers and bottom supports.
16) Qualifications of proposed welders in accordance with Section 105.06 D., "Welders" and Section 622.04 F., "Welders."

E. Slurry Technical Assistance Plan.

If mineral or synthetic slurry is used to construct the shafts, provide or arrange for technical assistance in the use of the slurry as specified in this special provision. Submit the following to the Engineer:

- The name and current phone number of the slurry manufacturer's technical representative assigned to the project.
- The frequency of scheduled visits to the project site by the slurry manufacturer's representative.
- The name(s) of the Contractor's personnel trained by the slurry manufacturer in the proper use of the slurry and assigned to the project. Include a copy of a signed training certification letter from the slurry manufacturer for each Contractor's employee listed, including the date of the training.

F. Shaft Excavation.

Excavate the shafts to the required depth as shown in the Plans.
Conduct shaft excavation operations, including casing installation and removal, such that the soil adjacent to the shaft for the full height of the shaft is not disturbed. Disturbed soil is defined as soil whose geotechnical properties have been changed from those of the original in-situ soil, and whose altered condition adversely affects the structural integrity of the drilled shaft or the interface between the drilled shaft and the soil.

Contain all water and drilling slurry for disposal. Collect and dispose of excavated soil and slurry without allowing erosion or runoff. Follow all local, state and federal laws and regulations for handling, collecting, storage, transporting and disposing of the drilled shaft spoils and slurry.

1. Tolerances.
   Ensure that the center at the top of the shaft is within 6 inches of the horizontal location and 2 inches of the vertical location shown in the Plans. Ensure that the shaft is within 1.5 percent of plumb.

   Regularly check the plumbness, alignment, and dimensions of the shaft during excavation of the shaft. Correct any deviations from the specified tolerances with a procedure approved by the Engineer.

2. Excavation Stops.
   a. General.
      Conduct the excavation in a continuous operation until the excavation of the shaft is completed, except for pauses and stops as noted.

      Pauses for casing splicing, tooling changes, slurry maintenance, and removal of obstructions are permissible during excavation operations.

      Stops are shaft excavation operation interruptions for anything other than casing splicing, tooling changes, slurry maintenance, or removal of obstructions.

      Do not exceed 16 hours for stops in uncased or partially cased excavations.

      Do not exceed 65 hours for stops in case, rock, or casing seated into rock excavations.

      For stops exceeding the time durations specified above in excavations where mineral or synthetic slurry is not present, stabilize the excavation using one or both of the following methods:

      a) For an uncased excavation, before the end of the work day, install casing in the hole to the depth of the excavation. The outside diameter of the casing shall not be smaller than 6 inches less than either the plan diameter of the shaft or the actual excavated diameter of the hole, whichever is greater. Sound the annular space between the casing and the excavation prior to removing the casing and resuming shaft excavation. If the sounding operation indicates that caving has occurred, do not remove the casing or resume shaft excavation until stabilizing the excavation in conformance with the approved Shaft Installation Narrative Submittal.
b) For both a cased and uncased excavation, backfill the hole with granular material. Backfill the hole to the ground surface if the excavation is not cased, or to a minimum of 5 feet above the bottom of temporary casing if the excavation is cased.

During stops, stabilize the shaft excavation to prevent bottom heave, caving, loss of slurry, and loss of ground. The Contractor bears full responsibility for selection and execution of the method(s) of stabilizing and maintaining the shaft excavation. Stabilize the shaft in conformance to the approved Shaft Installation Narrative Submittal.

b. Slurry Levels.
If slurry is present in the shaft excavation, maintain the minimum slurry level required by this special provision throughout the stoppage of the shaft excavation operation. Before resuming excavation, recondition the slurry to the required slurry properties.

3. Temporary Drilled Shaft Casing.
If using temporary drilled shaft casing for excavation stabilization, furnish temporary drilled shaft casing in with this Special Provision and the approved Shaft Installation Narrative. Telescoping casing is permissible.

Provide enough temporary casing to meet the needs of the anticipated construction method. Provide a casing with an outside diameter that is equal to or greater than the specified diameter of the shaft. Completely remove temporary casing after shaft construction is complete, without deforming or causing damage to the completed shaft and without disturbing the surrounding soil. As the temporary casing is withdrawn, maintain the concrete and slurry inside the casing at a level sufficient to balance the hydrostatic pressure outside the casing.

4. Permanent Drilled Shaft Casing.
Do not allow the ground to cave into any gap between the ground and outside of permanent casing. If necessary, use slurry to prevent caving of soil into the annulus between the ground and permanent casing. Fill any annulus between the permanent casing and ground with concrete or cement grout in accordance with the approved Shaft Installation Narrative. If grout is used, place the grout from the bottom up using tremie methods. If concrete is used, maintain the concrete level on the inside and outside of the permanent casing within 5 feet of each other during concrete placement.

Remove any soil or caked-on drilling slurry from the inner surface of the permanent casing before concrete placement. Ensure that the inner surface of the permanent casing is free of deleterious material.

Weld casing splices with complete penetration groove welds in accordance with AWS D1.1 and Section 622.04 F. "Welders."

Perform ultrasonic nondestructive testing in accordance with AWS D1.1 on 100% of the field splice welds.

5. Bottom of Shaft Excavation.
Use a cleanout bucket or air lift to clean the bottom of the excavation of all shafts. Ensure that no more than 2 inches of loose or disturbed material is present over the shaft base
area immediately prior to placing concrete.

Sound the bottom of the excavated shaft with a steel tape with a heavy weight of at least 1 pound attached to the end of the tape or other means acceptable to the Engineer to determine that the shaft bottom is at the depth shown in the plans.

After observing the Contractor inspecting each shaft for cleanliness and depth, the Engineer will approve each shaft prior to the Contractor proceeding with construction.

6. Required Use of Slurry in Shaft Excavation.

Use slurry to maintain a stable excavation during excavation and concrete placement operations once water begins to enter the shaft excavation at an infiltration rate of 12 inches of depth or more in 1 hour. If concrete is to be placed in the dry, pump all accumulated water in the shaft excavation down to a 3-inch maximum depth prior to beginning concrete placement operations.

G. Slurry Methods.

1. Slurry Technical Assistance.

If slurry other than water slurry is used, the manufacturer's representative, as identified to the Engineer in accordance with the Slurry Technical Assistance Plan, shall:

   a) Provide technical assistance for the use of the slurry.
   b) Be at the site prior to introduction of the slurry into the first drilled hole requiring slurry
   c) Remain at the site during the construction of at least the first shaft excavated, to adjust the slurry mix to the specific site conditions.

After the manufacturer's representative is no longer present at the site, the Contractor's employee trained in the use of the slurry, as identified the Slurry Technical Assistance Plan, shall provide technical assistance for testing, mixing, maintaining, and adjusting the slurry mix in accordance with the manufacturer's requirements and this Special Provision throughout the remainder of shaft slurry operations.


Meet the following requirements:

   a) Sustain the height of the slurry as required to prevent bottom heave, caving, and sloughing.
   b) If necessary, provide casing, or other measures in addition to slurry, to prevent bottom heave, caving, and sloughing.
   c) Minimum slurry level:
      • 5 feet or more above the groundwater table for mineral slurries.
      • 10 feet or more above the groundwater table for water slurries.
      • 10 feet or more above the groundwater table for synthetic slurries.


   a. General.
When synthetic slurry is used, keep a written record of all additives and the concentrations of the additives in the synthetic slurry. Provide these records to the Engineer after installation of the first drilled shaft. Provide revised data to the Engineer if changes are made to the type or concentration of additives during construction.

Sample and test all slurry in the presence of the Engineer, unless otherwise directed. Record the date, time, names of the persons sampling and testing the slurry, and the results of the tests. Submit a copy of the recorded slurry test results to the Engineer at the completion of each shaft. Provide a copy of the recorded slurry test results during construction of each shaft when requested by the Engineer.

b. Test Frequency and Sample Locations
   Collect slurry samples in conformance with Table 8.

<table>
<thead>
<tr>
<th>Shaft Construction Stage</th>
<th>Slurry Sample Locations</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to placing slurry in excavation.</td>
<td>At mid-height and within 2 feet of the bottom of the slurry storage area.</td>
<td>Do not introduce slurry into excavation until conforming results are achieved.</td>
</tr>
<tr>
<td>At beginning of drill shift and every 4 hours during drilling.</td>
<td>At mid-height and within 2 feet of the bottom of the slurry storage area and at mid-height and within 2 feet of the bottom of the shaft excavation.</td>
<td>Adjust slurry mix, agitate, recirculate, and clean slurry as required to achieve conforming test results. Retest slurry within two hours of nonconforming test results.</td>
</tr>
<tr>
<td>After cleaning the bottom of the excavation and immediately prior to placing the rebar cage</td>
<td>At mid-height and within 2 feet of the bottom of the shaft excavation.</td>
<td>Adjust slurry mix, agitate, recirculate, and clean slurry as required to achieve conforming test results before placing rebar cage in the excavation.</td>
</tr>
<tr>
<td>Immediately prior to placing concrete</td>
<td>At mid-height and within 2 feet of the bottom of the shaft excavation.</td>
<td>Adjust slurry mix, agitate, recirculate, and clean slurry as required to achieve conforming test results before placing rebar cage in the excavation.</td>
</tr>
</tbody>
</table>

   Clean, recirculate, de-sand, or replace the slurry to maintain the required slurry properties.

5. Maintenance of a Stable Drilled Shaft Excavation.
   Demonstrate to the satisfaction of the Engineer that stable excavation conditions are being maintained. If the Engineer determines that stable conditions are not being maintained, take immediate action to stabilize the excavation. Submit a revised Shaft
Installation Narrative that addresses the problem and prevents future instability. Do not continue with shaft construction until the damage that has occurred is repaired in accordance with the specifications and until receiving the Engineer’s approval of the revised Shaft Installation Narrative.


Dispose of the slurry and slurry-contaminated spoils in accordance with the approved Shaft Installation Narrative and Section 107.17 of the Standard Specifications.

H. Assembly and Placement of Reinforcement Steel.

1. Steel Reinforcing Bar Cage Assembly.

In accordance with the approved Work Drawings, rigidly brace the reinforcing cage to retain its configuration during handling and construction. Support shaft reinforcing bar cages on a continuous surface to the extent possible during fabrication and transport. Locate all rigging connections at primary handling bars, as identified in the approved Work Drawings. Provide internal bracing at each support and lift point. Do not include individual or loose bars.

Position and fasten the reinforcement to provide the minimum clearances as shown on the Plans and to ensure no displacement of the reinforcing steel bars occurs during placement of the concrete. Hold the steel reinforcing bars in the same position throughout the concrete placement operation.

2. Centralizers.

At each level of centralizers, provide one centralizer per foot of excavation diameter and evenly distribute the centralizers around the perimeter of the reinforcing bar cage. Do not exceed a longitudinal spacing of 20 feet between adjacent levels of centralizers.

Utilize centralizers with adequate dimensions to provide the minimum concrete cover shown in the Plans and to ensure proper positioning of the cage is maintained during placement of the concrete.


Provide cylindrical concrete feet (bottom supports) or other means in accordance with the approved Work Drawings, to ensure that the bottom of the cage is maintained the proper distance above the base of the shaft as shown on the Plans. Do not utilize skids or chairs constructed of steel or other electrically conductive material. The reinforcing cage may be hung from casing to provide the required concrete cover at the bottom of the shaft.


Furnish and install access tubes for Crosshole Sonic Log (CSL) testing and provide CSL testing in accordance with the Special Provision for Crosshole Sonic Log Tests.
J. Concrete Placement.

1. General.

Commence concrete placement immediately after approval of the completed excavation by the Engineer. Place concrete in one continuous operation to the top of the shaft. Ensure that concrete placement from successive trucks overlaps with no interruption in concrete placement.

During concrete placement, monitor and minimize the difference in the level of concrete inside and outside of the steel reinforcing bar cage. Conduct concrete placement operations to maintain the differential concrete head at a 1-foot maximum.

2. Dry Excavation.

If 3 inches of water or less is present at the base of the excavation immediately prior to concrete placement, deposit the concrete through the center of the reinforcement cage by a method that prevents segregation of aggregates and splashing of concrete on the reinforcement cage. Place the concrete such that any free-fall is vertical down the center of the shaft without hitting the sides of the excavation, the steel reinforcing bars, or the steel reinforcing bar cage bracing.

3. Wet Excavation.

If greater than 3 inches or more of water or slurry is present at the base of the excavation immediately prior to concrete placement, place the concrete at the bottom of the shaft by using a watertight tremie pipe having a minimum diameter of 4 inches and equipped with an attached hopper.

Keep the discharge end of the tremie pipe at the bottom of the shaft during placement of the concrete until the concrete level in the excavation is at least 5 feet above the discharge end of the tremie pipe.

Include a device to seal out water from the discharge end of the tube on the tremie pipe while it is first filled with concrete. Alternatively, use a plug manufactured for use in concrete tremie pipes that is inserted at the top of the tremie pipe and travels through the tremie to keep the concrete separated from the water and slurry. Completely fill the tremie pipe and hopper with concrete prior to allowing the plug to discharge from the end of the tremie pipe.

Throughout the concrete placement operation, keep the discharge end of the tremie pipe submerged in the concrete at least 5 feet and maintain a sufficient level of concrete in the tremie pipe contain to prevent water from entering the pipe.

Place concrete in a single continuous operation, resulting in a shaft composed of seamless, uniform concrete. Overpump the concrete in the excavation until uniform concrete visually free from slurry, soil, and laitance reaches the top elevation of the shaft. Remove excess concrete and contaminated concrete above the top elevation of the shaft.

4. Concrete Vibration.

When placing concrete in a dry excavation, remove all contaminated concrete, laitance, loose gravel, and sediment on the upper surface of the drilled shaft concrete and vibrate the upper 5 feet of the drilled shaft concrete in accordance with Section 602.04 C.2., "Vibration." If a temporary casing is used, remove it before vibration. Vibration is not required if a temporary casing is used and removed with a vibratory hammer during the concrete placement operation.
5. Testing and Repair of Concrete Placed in a Wet Excavation.

If the underwater concrete placement operation is interrupted, the Engineer may require the Contractor to prove by core drilling or other tests that the shaft contains no voids or horizontal joints. If testing reveals voids or joints, repair or replace the shaft at no expense to the Department. If no voids or joints are discovered, responsibility for coring costs will be in accordance with Section 109.03, “Negotiated Price.”


Thoroughly clean the projecting reinforcing steel and permanent casing and other tubes attached to the reinforcing cage of all accumulations of splashed concrete, slurry, and other debris immediately following concrete placement and removal of casing and slurry.

Remove all accumulations of soil, loose aggregate, contaminated concrete, or other debris on the surface of the drilled shaft concrete to expose fresh concrete and smooth any high spots on the upper surface of the exposed fresh concrete. Verify that the top of the drilled shaft is in conformance with the planned elevation.

7. Protection Fresh Concrete.

Do not install casing or conduct drilled shaft excavation within three shaft diameters of a completed drilled shaft within 24 hours of the completion of concrete placement.

8. Uniform Yield Form.

Except for shafts where the shaft concrete is placed in the dry or inside permanent casing, complete a uniform yield form, consistent with the sample form submitted as part of the approved Shaft Installation Narrative, for each shaft. Submit the completed form to the Engineer within 24 hours of completing the concrete placement in the shaft.

9. Rejection of Shafts and Revisions to Concrete Placement Operations.

If the Engineer determines that the concrete for a given shaft is structurally inadequate, that shaft will be rejected. Suspend subsequent placement of concrete until submitting written changes to the Shaft Installation Narrative. Describe the actions that will be taken to ensure concrete is structurally adequate. Do not continue with shaft installation until the revised Shaft Installation Narrative is approved by the Engineer.


1. Coring.

At the Engineer's request, drill a corehole in any shaft with potentially inadequate concrete, as determined from CSL testing and analysis or by observation of the Engineer, to explore the shaft condition.

Prior to beginning coring, submit the method and equipment used to drill and remove cores from the shaft concrete to the Engineer for approval. Use either a conventional double-tube, swivel-type core barrel with split liners or a wireline barrel with split inner liners. Use a new diamond coring bit. Replace the coring bit and core barrel as necessary to minimize core loss. Obtain core samples in accordance with ASTM D 2113 to a depth of 5 feet below the bottom elevation of the possible defect or as directed by the Engineer.

Obtain core samples with a minimum diameter of 3.0 inches, except that coring to replace an unusable CSL access tube can be 2.0 inches in diameter. Preserve all core
in wooden core boxes, identified as to location and depth, and make the core available for inspection by the Engineer.

Grout the core holes in accordance with the Crosshole Sonic Log Test Special Provision.

If a defect is identified by coring, submit a proposed remedial action plan with supporting calculations and work drawings for correcting the shafts. If grouting is proposed, prepare the remedial action plan in accordance with the the most current version of the Association of Drilled Shaft Contractors – International Association of Foundation Drilling (ADSC – IAFD Standard Mitigation Plan. Submit all remedial correction procedures and designs to the Engineer for approval.

METHOD OF MEASUREMENT
Drilled shafts will be measured by the linear foot from the top drilled shaft elevation shown on the Plans to the bottom depth of the drilled shaft excavation as indicated on the Plans. Access tubes for CSL testing and CSL testing will be measured in accordance with the Special Provision for Crosshole Sonic Log Tests.

BASIS OF PAYMENT
The unit price of drilled shafts shall be full compensation of the work, including but not limited to, making all excavations; hauling, stockpiling and disposal of excavated material; performing all necessary pumping; furnishing and placing required concrete, permanent casing, and reinforcement steel, including the reinforcement blocking, splices, chairs and the reinforcement projecting above the tops of the drilled shaft concrete necessary for splicing; all backfilling; furnishing, placement, and removal of temporary casings; permits, placement, maintenance, testing, storage, removal and disposal of slurry; and for furnishing all tools, labor, equipment, materials and incidentals necessary to complete the work.

CSL Testing will be paid for in accordance with the Special Provision for Crosshole Sonic Log Tests.

All materials and work necessary, including engineering analysis, testing, evaluation, and redesign, to investigate and effect corrections for shaft flaws, defects or to replace the shaft shall be furnished to the Engineer's satisfaction at no additional cost to the Department. If the Engineer directs the Contractor to conduct coring of a potential defect, but no defect is encountered, the Department will pay for the coring and grouting costs.

The accepted quantities for drilled shafts will be paid for at the contract bid price for:

<table>
<thead>
<tr>
<th>Spec - Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>930-4015</td>
<td>8.0 ft Diameter Drilled Shaft with Casing</td>
<td>Linear Feet</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all material, equipment, labor, and incidentals to complete the work as specified.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

CROSSHOLE SONIC LOG TESTS

Project 7-085(109)125 – PCN 22041

DESCRIPTION

This work consists of furnishing equipment, materials, and experienced labor to complete crosshole sonic log (CSL) testing of completed drilled shafts.

MATERIALS

A. CSL Access Tubes and Caps.

Access tubes for CSL testing consist of non-galvanized, standard weight, Schedule 40 steel tubes with an inside diameter of 1½ inches to 2 inches, as appropriate for compatibility with the CSL probe.

Provide access tubes that are round with a uniform regular inside diameter free of defects and obstructions, including all tube joints, to permit the free, unobstructed passage of source and receiver probes used for the crosshole sonic log tests. Furnish access tubes that are watertight and free from corrosion, with clean internal and external faces to ensure a good bond with the drilled shaft concrete and CSL grout. Provide watertight, threaded caps on the bottom and removable watertight caps on the top of the access tubes.

B. Neat Cement Grout.

Furnish neat cement grout for filling the access tubes at the completion of the CSL tests. Use grout that is a homogeneous mixture of water and Portland cement Type I/II or Type 1L (MS). Do not exceed a water-cement ratio of 0.45. Provide grout with an unconfined compressive strength of 4,000 psi at 28 days when tested in accordance with ASTM C 1107.

<table>
<thead>
<tr>
<th>Item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>804.01</td>
</tr>
<tr>
<td>Water</td>
<td>812</td>
</tr>
</tbody>
</table>

CONSTRUCTION REQUIREMENTS

A. CSL Testing Consultant.

Submit a resume of the CSL Consultant retained by the Contractor, for approval by the Engineer. List 5 projects over the past 3 years consisting of similar sized drilled shafts (diameter and length) constructed in similar conditions. Limit the resume length to 5 pages. Use a ND licensed Professional Engineer to supervise the testing and interpretation of the results.
B. Access Tubes for CSL Testing.
   1. Drilled Shafts Requiring CSL Access Tubes.
      Equip each drilled shaft with CSL access tubes prior to CSL testing.

   2. Orientation and Assembly of the CSL Access Tubes.
      Securely attach the access tubes to the interior of the reinforcement cage of the shaft, as shown on the Plans. Where circumferential components of the rebar cage bracing system prevent bundling the access tubes directly to the vertical reinforcement, place the access tubes inside the circumferential components of the rebar cage bracing system as close as possible to the nearest vertical steel reinforcement bar.

      Install the access tubes in straight alignment and as near to parallel to the vertical axis of the reinforcement cage as possible. Extend the access tubes within 0.5 feet of the bottom of the drilled shaft to at least 2 feet above the top of the shaft.

      Splice watertight joints in the access tubes to achieve full-length access tubes, as required. Clear the access tubes of all debris and extraneous materials before installing the access tubes. Debur the tops of access tubes. Prevent damage to access tubes by carefully installing and placing the reinforcement cage and concrete in the shaft excavation.

      Fill the access tubes with water before concrete placement and securely install a watertight cap at the top of each tube. Do not allow any other material to enter the access tubes during construction of the drilled shaft. Keep access tubes full of water through the completion of CSL testing of that shaft. When temperatures below freezing are possible, protect the access tubes against freezing by wrapping the exposed tubes with insulating material, adding antifreeze to the water in the tubes, or other methods as approved by the Engineer.

C. CSL Testing.
   1. Inspection of CSL Access Tubes.
      Inspect the access tubes after placing the shaft concrete and before beginning the CSL testing to verify that the CSL test probes can travel easily to the bottom of the access tubes without encountering obstructions or snags. Replace each access tube that a test probe cannot pass through, at no additional cost to the Department, with a 2-inch diameter hole cored through the concrete for the entire length of the shaft in accordance with the Drilled Shaft Special Provision.

      Unless directed otherwise by the Engineer, locate cored holes approximately 6 inches inside the reinforcement and without damaging the drilled shaft reinforcement. Log descriptions of inclusions and voids encountered in the cored holes and submit a copy of the log to the Engineer. Preserve the core from the holes in wooden core boxes, identified as to location and depth, and make the core available for inspection by the Engineer.

   2. CSL Testing Procedure.
      Perform CSL testing and analysis on each drilled shaft completed. Conduct CSL testing in accordance with ASTM D 6760. Notify the Engineer of the date and time of each CSL test at least 48 hours prior to the scheduled test. Perform CSL testing after the drilled
shaft concrete has cured at least 72 hours and after the concrete compressive strength reaches or exceeds 2,500 psi.

Pull the CSL probes simultaneously, starting from the bottoms of the access tubes, over an electronic depth measuring device. Perform the CSL tests with the source and received probes in the same horizontal plane. Continuously record CSL signals at depth intervals of 2.5 inches or less from the bottom of the tubes to the top of each shaft. Perform CSL testing on every possible tube combination.

D. Reporting.
Submit a report stamped by a ND Professional Engineer to the Engineer for review and acceptance that contains the following:
- A description of the testing equipment.
- Date and location of test.
- The number of days between concrete placement and CSL testing.
- The CSL ultrasonic profiles with analyses of the following for each tube pair tested:
  - First pulse arrival time (FAT) versus depth.
  - Relative pulse energy / amplitude versus depth.
  - A presentation of the nested signal peak as a function of time plotted versus depth (waterfall diagram).
- Identify any defect zones on the above plots.
- A discussion and assessment of the data quality, and integrity of the tested drilled shaft.

Evaluate the concrete in the shaft using the following classification on each CSL profile:

<table>
<thead>
<tr>
<th>Satisfactory</th>
<th>FAT Increase 0 to 20% and Energy Reduction ≤ 9 decibels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defect</td>
<td>FAT Increase &gt; 20% or Energy Reduction &gt; 9 decibels</td>
</tr>
</tbody>
</table>

The rating of the drilled shaft concrete considers the increases in FAT and the energy reduction relative to the arrival time or energy in a nearby zone of satisfactory concrete.

Within the report, indicate the defect zones, if any, on the CSL profiles for each tube pair tested and list them in a table with their magnitude (horizontal and vertical extent) and location on the shaft.

E. Defects.
If a defect is identified, provide additional CSL tests for all tube combinations after a longer waiting time to verify the CSL test results. If a defect does not occur in all tube pairs, complete a 3D tomographic evaluation of the defect zone, including any necessary additional CSL testing.

Depending on the results of the additional CSL testing and the depths of the defects, additional measures such as core drilling, repair, or drilled shaft replacement may be required, as determined by the Engineer.
F. Engineer’s Final Acceptance of CSL Tested Drilled Shafts.
The Engineer will determine final acceptance of each drilled shaft tested, based on the CSL test report(s) received for the tested shafts, and will provide a response to the Contractor within 5 working days after receiving the test report.

G. Contractor’s Investigation and Remedial Action Plan.
For all drilled shafts determined to be unacceptable by the Engineer, submit a plan for further investigation or remedial action to the Engineer for approval in accordance with the Drilled Shaft Special Provision. Submit supporting calculations and work drawings for all proposed modifications to the drilled shafts, required by the investigation and remedial action plan. Submit all investigation and remedial correction procedures and designs to the Engineer for approval. Do not begin repair operations until receiving the Engineer’s approval of the investigation and remedial action plan. Include CSL testing in the remedial action plan to verify the effectiveness of the proposed remediation.

H. Requirements for CSL Access Tubes and Cored Holes after CSL Testing.
After CSL tests are completed and final acceptance of the drilled shaft is obtained, fill CSL access tubes and cored holes with grout conforming to this Special Provision. Fill the access tubes and cored holes using a tremie tube that extend to the bottom of the tube or cored hole.

Do not grout CSL tubes that will be used to install instrumentation until the instrumentation has been installed.

METHOD OF MEASUREMENT
Drilled shafts will be measured in accordance with the Special Provision for Drilled Shafts.

CSL Testing will be measured by each drilled shaft tested and accepted by the Engineer.

All CSL tests conducted to verify defects found in the initial testing and conducted to verify the effectiveness of remediation, as well as related 3D tomographic evaluations, will not be measured for payment and are provided at no additional cost to the Department.

BASIS OF PAYMENT
The unit price of CSL testing shall be full compensation for each drilled shaft tested including, but not limited to: furnishing the steel access tubes, end caps, and installing the access tubes to the steel reinforcement cage; filling tubes with water; providing experienced personnel to conduct the CSL testing; furnishing adequate equipment to complete the tests; preparation of the CSL report that includes presentation of the CSL data, interpretation of the CSL data, and assessment of drilled shaft’s integrity; submittal of report; removing the water and filling the access tubes with the specified grout; and for furnishing all tools, labor, equipment, materials and incidental necessary to complete the CSL testing work.

The accepted quantities for CSL testing will be paid for at the Contract unit price per each tested drilled shaft tested and reported to be free of addressable flaws and defects.
The accepted quantities for drilled shafts will be paid for at the contract bid price for:

<table>
<thead>
<tr>
<th>Spec - Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>930-4250</td>
<td>Crosshole Sonic Log Test</td>
<td>Each</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all material, equipment, labor, and incidentals to complete the work as specified.
DESCRIPTION
This work consists of furnishing the design, load rating and required materials and fabricating, transporting and erecting a three-sided precast reinforced concrete arch-topped buried bridge in accordance with the specifications and plan details.

This work also consists of furnishing the design and required materials and installing headwalls and wingwalls for the precast arch bridge in accordance with the specifications and plan details. The headwalls and wingwalls may consist of mechanically stabilized earth (MSE) with modular block facing (SP 789(14) “Permanent Mechanically Stabilized Earth Wall”), precast reinforced concrete, or cast-in-place reinforced concrete retaining walls.

In addition, this work consists of furnishing the design and required materials and constructing steel H-pile foundations with cast-in-place reinforced concrete footings in accordance with the specifications and plan details to support the precast arch bridge.

Use one of the following designs of three-sided arch-topped bridge systems or approved equivalent:
- CON/SPAN or BEBO Bridge (Contech Engineered Solutions);
- Forterra Arch Bridge; or
- ECO-SPAN Arch System (PreTek Group).

DESIGN
The precast concrete arch bridge system Engineer of Record is to have a minimum of 5 years of experience with design of precast arch soil interaction structures. Provide names and PE license numbers with the submittal.

Design a three-sided arch-topped buried bridge with the rise and span shown on the plans. Design the precast three-sided arch-topped bridge system, including headwalls and wingwalls, as well as the foundation, including driven steel H-pile and reinforced concrete footing, according to AASHTO LRFD Bridge Design Specifications (8th Edition) and all applicable sections of the North Dakota Department of Transportation Design Manual.

Design the three-sided arch bridge and foundation for a maximum fill height at the crown of the arch equal to 11 feet and a minimum fill height equal to 2 feet.

A Geotechnical Report is included in the bidding proposal with design criteria for a driven steel H-pile foundation. If the design utilizes a soil/structure interaction model, determine material properties by additional field and laboratory testing.

Investigate all load factor combinations to produce the maximum and minimum force effects. Determine maximum factored inward and outward horizontal forces and vertical forces at the
base of the arch bridge wall. Ensure the maximum factored horizontal and vertical forces are less than the horizontal and vertical resistance of the foundation. Provide a summary table listing the member forces at all critical locations of the structure including the crown, corner, haunch and base of the legs. Provide member forces including maximum and minimum moments, shear and thrust. Design the arch bridge segments for shear. Design headwall connections and wingwalls for sliding and overturning.

LOAD RATING

A. General.
   Have a Professional Engineer registered in the State of North Dakota, as set forth in the North Dakota Century Code (NDCC) Title 43, sign and seal all load rating calculations.

   Perform all load rating calculations according to AASHTO Manual of Bridge Evaluation, Section 6, Part A using the Load and Resistance Factor Rating method.

   Calculate the Inventory and Operating Ratings, National Inventory items 66 and 64, respectively.

B. Before Fabrication.
   Perform initial load ratings of the structure using the as-designed conditions before fabrication of the structure elements.

C. After Installation.
   After the installation of the structure and backfill is placed, perform a review of the before fabrication load rating using the as-constructed conditions.

WORK DRAWINGS
Submit work drawings according to Section 105.08, "Work Drawings" for the precast arch bridge segments, headwalls, wingwalls and foundations including steel H-pile and cast-in-place concrete footing containing the following information:
   o Design assumptions;
   o Design loads;
   o Design calculations;
   o Load rating;
   o Layout of three-sided arch bridge, headwalls and wingwalls;
   o Layout of foundation piling and concrete footing;
   o Bridge span and rise;
   o Type and strength of concrete and reinforcing steel;
   o All concrete and reinforcing steel dimensions;
   o Reinforcing steel clearances;
   o Backfill limits and requirements;
   o Method of covering the joints; and
   o Installation and handling instructions.

Provide design calculations, checked by a Professional Engineer, and work drawings for the three-sided arch bridge, headwalls, wingwalls, and foundations that are signed, sealed, and dated by a Profession Engineer registered in the state of North Dakota as set forth in the North Dakota Century Code (NDCC) Title 43.
Do not fabricate material or begin construction before the Department has responded to a set of work drawings with “No Exceptions Noted.” Notify the Engineer of the date and location of fabrication at least 20 working days before fabrication begins.

MATERIALS

A. Concrete.

1. General.
   Use Portland cement concrete that meets the requirements of Section 802, “Portland Cement Concrete,” for the precast bridge elements, headwalls and wingwalls (if concrete is used), and foundation. Use Portland cement that meets the requirements of AASHTO M 85, Type V. Use Class F fly ash to replace 25 to 29 percent of the cement by weight.

2. Precast Elements.
   Provide precast elements that have a minimum compressive strength of 5,000 psi at 28 days. Use a mix design having a minimum cement content of six sacks per cubic yard for all precast elements.

3. Cast-In-Place.
   Use Class AE-3 concrete for all cast-in-place items with a minimum compressive strength of 3,000 psi at 28 days.

B. Reinforcing Steel.
   Use deformed welded wire reinforcing with a minimum yield strength of 65 ksi or deformed bars with a minimum yield strength of 60 ksi that meet the requirements of Section 836 for the precast elements.

   Use deformed bars with a minimum yield strength of 60 ksi that meet the requirements of Section 836 for the cast-in-place concrete.

C. Steel Hardware & Plates.
   If required, use bolts and threaded rods for wingwall connections and hook bolts in headwall connections that meet the requirements of ASTM A307. Use nuts that meet the requirements of AASHTO M 292 (ASTM A194) Grade 2H.

   Use structural steel for wingwall connection plates and plate washers that meet the requirements of AASHTO M 270 (ASTM A709) Grade 36.

   Galvanize all structural steel and steel hardware, including bolts, hook bolts, threaded rods, nuts and inserts according to Section 854.

D. Joint Sealant & Waterproof Membrane.
   Supply a preformed bituminous joint sealant that meets ASTM C990 and a waterproof membrane that meets Section 602.03 B, “Waterproof Membrane,” on the joints between arch bridge segments and on the joint between the end bridge segment and the headwall.

   Use a fabric that meets the requirements of Section 858, “Geosynthetics” Type S2 on the joint between the end bridge segment and the wingwall.
E. **Grout.**
Use non-shrink grout that meets the following:
- AASHTO M 85, Type V Portland cement;
- Compressive strength at 28 days of 5,000 psi; and
- Maximum aggregate size of 1/4 inch.

F. **Piling.**
Use steel H-pile that meet the requirements of Section 840 “Piling”.

G. **Foundation Fill.**
Use CL 5 aggregate that meets the requirements of Section 816, “Aggregates.”

**MANUFACTURE**

A. **Quality Control/Quality Assurance.**
Use a Precast/Prestressed Concrete Institute (PCI), National Precast Concrete Association (NCPA), or American Pipe Concrete Association (ACPA) certified plant in the fabrication of the precast three-sided arch bridge system.

B. **Forms.**
Use rigid forms capable of maintaining the required precast element dimensions within the given tolerances. Do not use wood forms or Redi-radius forms. Provide a smooth steel form or steel-troweled surface of the precast elements.

C. **Reinforcement Placement.**
Provide the reinforcement cover shown in Table 1 for the locations.

<table>
<thead>
<tr>
<th>Minimum Clearance (in)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Outside circumferential reinforcement</td>
</tr>
<tr>
<td>1.5</td>
<td>Inside circumferential reinforcement</td>
</tr>
<tr>
<td>1 to 2</td>
<td>End of bridge segment to the reinforcement</td>
</tr>
</tbody>
</table>

D. **Laps Lengths & Spacing.**
Provide tension splices in the circumferential reinforcement by lapping. Laps may be tack welded together for assembly purposes. Provide lap lengths for deformed welded wire reinforcing and deformed reinforcing bars according to the AASHTO LRFD Bridge Design Specifications. Measure the overlap of welded wire reinforcing between the outer-most longitudinal wires of each sheet. The spacing center-to-center of the circumferential wires in a wire fabric sheet is to be between 2 and 4 inches. The spacing center-to-center of the longitudinal wires in a wire fabric sheet is to be no more than 8 inches. The spacing center-to-center of the longitudinal distribution steel for either line of reinforcing is to be no more than 16 inches.

E. **Joints.**
Produce arch bridge segments with flat butt ends.
Produce bridge segments with ends that when the segments are laid together they will make a continuous line with a smooth interior free of irregularities, all compatible with the tolerance listed in these specifications.

Provide a joint width between adjacent precast segments that does not exceed 3/4 inch.

F. Curing.
Cure precast elements according to the methods specified in ASTM C1504.

G. Storage, Handling & Delivery.
Store and lift precast concrete arch bridge segments in “as-cast” position. Cast, store and ship precast concrete headwall and wingwall units in a flat position. Store precast elements in such a manner to prevent cracking or damage and use timber supports as appropriate. Do not move the precast elements until the concrete compressive strength has reached a minimum of 2,500 psi.

Handling devices are permitted in each precast element for the purpose of handling and setting. Spreader beams may be required for the lifting of precast concrete bridge elements to preclude damage from bending or torsion forces.

Do not ship the precast concrete elements until the concrete has attained the specified design compressive strength. Precast concrete elements may be unloaded and placed on the ground at the job site until installed. Store elements using timber supports as appropriate.

H. Marking.
Mark each precast segment clearly by indentation, waterproof paint, or other approved means on the inside of the vertical leg with the following:
- Bridge Span and Rise;
- Date of Manufacture;
- Name or Trademark of the Manufacturer; and
- Design Earth Fill (minimum and maximum).

TOLERANCES
Fabricate precast elements to the dimensions shown in the plans and work drawings within the following applicable tolerances:
- Internal dimensions within 1% or 1/2 inch, whichever is less;
- Haunch radius variation within 3/4 inch;
- Slab and wall thickness within 1/4 inch;
- Laying lengths of two opposite surfaces of arch bridge segment within 1/2 inch;
- Length underrun of a segment within 1/2 inch;
- Total structure length underrun within 3 inches;
- Outside diagonal dimensions within 1% or 1 inch, whichever is less; and
- Position of reinforcement variation within 1/2 inch, with concrete cover over reinforcement within 1/4 inch.

TESTING AND INSPECTION
Perform the following concrete tests in accordance with the ASTM standards listed:
- Air content: ASTM C231 or ASTM C173
- Slump: ASTM C143
Perform compression tests on cylinders to determine concrete compressive strength. Make a minimum of 4 cylinders for each precast element. Consider each element separately for the purpose of testing and acceptance. Cure the cylinders in the same environment as the precast elements.

The Department will inspect the quality of materials, the process of manufacture, and the finished precast elements. Precast elements are subject to rejection based on these specification requirements. Rejection may take place either at the precast facility or at the project site. Individual precast elements will be rejected for any of the following reasons:

- Fractures or cracks through a section at a depth or location that compromises strength, function or durability;
- Defects that indicate proportioning, mixing, or forming deficiencies;
- Honeycombed or open textured surfaces;
- Damaged ends, where such damage would prevent making a satisfactory joint;
- Concrete not attaining required compressive strength; or
- Out of tolerance dimensions.

CONSTRUCTION REQUIREMENTS

A. Foundation, Headwalls & Wingwalls.
   Drive piles according to 622.04 “Construction Requirements”.

   Construct and cure cast-in-place concrete according to Section 602. Furnish and install reinforcing steel according to Section 612.

B. Installation.
   Have an experienced full time employee of the precast arch bridge system onsite to provide technical instruction and consultation during the entire installation of the precast arch bridge elements. Install all precast concrete elements according to the manufacturer’s recommendation.

   Lift the precast bridge units only by the provided lift anchors or holes. Set the arch bridge segments on hardboard shims conforming to ASTM D1037 measuring 6-inch x 6-inch minimum. Have a supply of 1/4 inch, 1/2 inch and 1/8 inch thick hardboard or plastic shims on the job site for various shimming purposes. Provide a minimum gap of 1/2 inch between the pedestal wall and the bottom of the bridge segment vertical legs. Install the precast arch bridge segments so that joints between adjacent segments fit as tight as possible, with a maximum gap of 3/4 inch wide.

   Maintain the structure span during all phases of installation. Use temporary tie rods to prevent lateral spreading of the arch bridge segments. Do not remove tie rods until grout has attained a minimum compressive strength of 2,000 psi.

   Do not have construction equipment cross the bare precast concrete bridge segments. Construction equipment weighing less than 30 tons may cross over the arch bridge when at least 1 foot of compacted fill is over the crown. Do not have construction equipment operating in excess of the design live load (HL-93) cross over the arch bridge segments.
C. Joints.
Make sure surfaces are free of dirt before applying joint material. Clean surfaces of any materials that will inhibit the application of joint material. Cover the butt joint made by two adjoining bridge segments with 7/8 inch x 1-3/8 inch preformed bituminous joint sealant and a 9-inch minimum wide waterproof membrane. Use a primer compatible with the waterproof membrane for a minimum of 9 inches on each side of the joint. Cover the joint continuously from the bottom of one bridge segment leg, across the top of the arch and to the opposite bridge segment leg. Seal the joint between the end bridge segment and the headwall. Prime and cover all formed lift holes with a 9-inch x 9-inch square waterproof membrane. Seal the joint between the end bridge segments and the wingwall with a 2 feet wide strip of geosynthetic fabric.

D. Grouting.
Fill the precast arch bridge and foundation keyway and all lifting and erection anchor recesses with grout.

Do not grout when temperatures are expected to fall below 40°F for a period of 72 hours.

Vibrate grout as necessary to ensure that the keyway around the bridge element is completely filled.

E. Backfilling.
Do not begin backfill operations until the foundation grout has attained the full design strength.

Do not dump backfill material closer than 3 feet from the arch bridge legs.

Do not place foundation fill in layers deeper than 8 inches. Place the foundation fill behind wingwalls at the same time as that of the arch bridge fill. Place and compact foundation fill to within 2 feet of the same elevation on both sides of the structure. Compact fill material as specified in Section 203.04 E.2.a, “ND T 99.” Hand-compact foundation fill within 1 foot of the structure.

Do not damage the waterproof material when backfilling.

F. Surface Finish “D”.
Apply Surface Finish “D” according to Section 602.04 on all exposed headwall and wingwall surfaces unless a MSE wall with modular block facing is used. Use brown surface finish, color number 30475 meeting Federal Standard 595C.

Submit to the Engineer a 3" x 5" FED-STD-595C color chip card for color number 30475 with a declaration of conformity along with a 1’ x 1’ sample of the surface finish.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT
The Engineer will measure, completed and in place, as specified in Section 109.01, “Measurement of Quantities.”

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precast Reinf Concrete 3-Sided Arch Bridge</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>Headwalls – 3-Sided Arch Bridge</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>
Such payment is full compensation for furnishing the design, load rating, materials, equipment, labor, and incidentals to complete the work as specified. Include all costs associated with the steel piling, concrete, and reinforcing steel for the footings in the bid item “Foundation – 3-Sided Arch Bridge.”
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

TEMPORARY MECHANICALLY
STABILIZED EARTH WALL

PROJECT SOIB-7-085(109)125 – PCN 22041

DESCRIPTION
This work consists of designing, furnishing and installing a temporary mechanically stabilized earth (MSE) wall as designated in Section 20 of the plans and as specified herein or established by the Engineer.

MATERIALS

A. Geosynthetic Reinforcement
Supply a geosynthetic with a Long Term Tensile Strength (T_{rl}) as per AASHTO R69 that meets the Long Term Strength used in the design of the temporary MSE wall system.

Submit manufacturer certification that the material meets the Long Term Tensile Strength requirements and has been tested for compliance by National Transportation Product Evaluation Program (NTPEP).

B. Geosynthetic Separation Material (Type S)
Provide a geosynthetic separation material (Type S) that meets the requirements of section 858.01 Geosynthetic Material.

C. Drainage Aggregate
Supply aggregate meeting the following gradation determined per AASHTO T-27:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ½ inch</td>
<td>100</td>
</tr>
<tr>
<td>1 inch</td>
<td>75-100</td>
</tr>
<tr>
<td>¾ inch</td>
<td>50-75</td>
</tr>
<tr>
<td>No. 4</td>
<td>0-60</td>
</tr>
<tr>
<td>No. 40</td>
<td>0-50</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-5</td>
</tr>
</tbody>
</table>

The Engineer will sample and test drainage aggregate according to Section 816.04 of the Field Sampling and Testing Manual.

D. Reinforcement Aggregate
Supply virgin aggregate free of shale, organic matter, mica, gypsum, smectite, montmorillonite, or other soft poor durability particles.

Meet the following standards:
Gradation (AASHTO T-27)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 40</td>
<td>0-60</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-15</td>
</tr>
</tbody>
</table>

Plasticity Index (P.I) (AASHTO T-90)

P.I. < 6

Soundness (AASHTO T-104)

Less than 30% magnesium sulfate soundness loss after 4 cycles or a sodium sulfate value less than 15% after 5 cycles

The Engineer will sample and test reinforcement aggregate according to Section 816.04 of the Field Sampling and Testing Manual.

E. Temporary MSE Wall Base

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL 5 Aggregate</td>
<td>816</td>
</tr>
</tbody>
</table>

F. Temporary MSE Wall Leveling Pad

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL 5 Aggregate</td>
<td>816</td>
</tr>
</tbody>
</table>

G. Ordinary Backfill

Use on-site excavation for backfill in front of the temporary MSE wall face.

SUBMITTAL

Submit work drawings and design computations of the temporary mechanically stabilized earth wall system per section 105.08 Work Drawings. If design software is used to design the temporary MSE wall system, the following design computations are required to be submitted:

- Hand calculations verifying the design software results or
- A copy of the software used to design the temporary MSE wall system along with instructions and the inputs used

The Engineer will submit the work drawings and design computations to the NDDOT Materials and Research Geotechnical Section for review. Provide drawings that are signed and sealed by a Professional Engineer licensed in North Dakota.

Submit a design for a temporary mechanically stabilized earth wall system to be built to the lines and grades shown in the plans and as described herein. Design the wall to the following requirements:
1. Design the wall according to the procedures in the current AASHTO “LRFD Bridge Design Specifications,” Article 11.10 – Mechanically Stabilized Earth Walls.

2. Use the following design criteria:

<table>
<thead>
<tr>
<th>Structure Criticality</th>
<th>Non Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Life</td>
<td>5 years</td>
</tr>
<tr>
<td>Slope of ground at base of wall</td>
<td>0.0%</td>
</tr>
<tr>
<td>Foundation Soil</td>
<td>$\phi = 26, \gamma = 120 \text{ lb/ft}^3$</td>
</tr>
<tr>
<td>Retaining Wall Base</td>
<td>$\phi = 34, \gamma = 140 \text{ lb/ft}^3$</td>
</tr>
<tr>
<td>Retained Backfill</td>
<td>$\phi = 34, \gamma = 140 \text{ lb/ft}^3$</td>
</tr>
</tbody>
</table>

$\phi = \text{Friction Angle}$

$\gamma = \text{Unit Weight}$

Include the following information in the work drawings:

(A) Plan and elevation drawings for the temporary MSE wall containing the following:

(1) A plan view of the temporary MSE wall identifying the offset from the construction centerline to the face of the temporary MSE wall at its base and at all changes in horizontal alignment. The width of each block and the length of the geosynthetic reinforcement for each corresponding row.

(2) An elevation view of the temporary MSE wall identifying:

(a) The elevation at the top of the temporary MSE wall, at all horizontal and vertical break points, and at least every 25 feet along the temporary MSE wall.

(b) Elevations at the top of the leveling pads.

(c) The distance along the face of the temporary MSE wall to all steps in the leveling pads.

(d) The length and type of geosynthetic reinforcement.

(e) The distance along the face of the temporary MSE wall to where changes in length of geosynthetic reinforcement occurs.

(B) Cross section showing the temporary MSE wall batter.

(C) Details regarding the drainage system.

(D) General notes for constructing the temporary MSE wall.

(E) Details and dimensions for the leveling pad including steps in the leveling pad.

(F) Details for terminating the temporary MSE wall.

(G) Design notes including an explanation of any symbols and computer programs used in the design of the temporary MSE wall.
CONSTRUCTION REQUIREMENTS

A. Temporary MSE Wall Excavation
Do not disturb the foundation soil beyond what is required to install the CL 5 Aggregate. Over-excavation will not be paid for.

If required, dewater the area prior to placement of the temporary MSE wall base.

B. Reinforcement Aggregate
Compact the Reinforcement Aggregate to at least 90 percent of the maximum dry density with moisture content not less than 2.0 percentage points below, nor more than 3.0 percentage points above the optimum moisture content as determined by ND T 180

C. Temporary MSE Wall Base
Compact the temporary MSE wall base to at least 90 percent of the maximum dry density with moisture content not less than 2.0 percentage points below, nor more than 3.0 percentage points above the optimum moisture content as determined by ND T 180

D. Temporary MSE Wall Leveling Pad
Construct leveling pad with class 5 aggregate.

Construct leveling pad 8 inches wider than the width of the facing unit.

E. Temporary MSE Wall Erection
Construct leveling pad for temporary MSE wall. Place the temporary MSE wall form system (wood or welded wire) on the leveling pad.

Unroll geosynthetic reinforcement and position it so that a 4’ wide “tail” drapes over the temporary MSE wall form system. Install the geosynthetic reinforcement according to the manufacturer's recommendations and as specified herein. Place geosynthetic reinforcement elements normal to the face of the temporary MSE wall (Machine Direction). Tension all geosynthetic reinforcement layers to remove any slack and stake to maintain tension. Overlapping and splicing of the geosynthetic reinforcement will not be permitted.

Place geosynthetic material type S over the geosynthetic reinforcement to prevent backfill from spilling through the geosynthetic reinforcement.

Place and compact the Drainage Aggregate and Reinforcement Aggregate behind the form system of the temporary MSE wall.

Control alignment by using a string line or offset from a base line.

F. Aggregate Placement
At each geosynthetic reinforcement level, place the fill to the level of the connection before placing the geosynthetic reinforcement.

Remove and replace any wall or geosynthetic materials damaged during fill placement operations. Correct any misalignment or distortion of the temporary MSE wall due to placement of fill outside the limits of this specification.
Prohibit all vehicles from being within 3 feet of the face of the temporary MSE wall until the wall is complete.

Do not exceed a maximum six inch compacted lift.

Compact the aggregate simultaneously with lay-down operations. Operate all equipment to produce uniform density throughout the entire section. The desired degree of compaction will be considered obtained when the compaction requirements are satisfied and the surface is tightly bound and shows no rutting or displacement. Slope the last level of aggregate fill away from the temporary MSE wall to rapidly direct runoff away from the wall at the end of each day’s operation. Prevent surface runoff from adjacent areas to enter the temporary MSE wall construction site.

G. Ordinary Backfill
Place ordinary backfill in front of the temporary MSE wall before the wall reaches a height of five feet. Compact the backfill according to Section 203.04 E.2.a, ND T 180 and slope the backfill away from the temporary MSE wall.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT
Payment for the temporary mechanically stabilized earth wall will be made at the Contract Unit Price for the following

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Stabilized Earth Wall</td>
<td>L SUM</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all materials, submittals, equipment, labor, and incidentals to complete the work as specified.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

WINTER SUSPENSION

Project: 7-085(109)125 – PCN 22041

DESCRIPTION
Plans for this project have been developed to accommodate a 2-year construction schedule, with the exception of any permanent seeding and erosion control that may need to be completed in year 3. Winter suspension will be from November 15, 2019 to April 15, 2020. Work on the Long X – Little Missouri River Bridge is exempt from the Winter Suspension.

Project construction phasing was developed to accommodate the following work during the 2019 construction season (Year 1):
2. Grading, Aggregate Base and HMA Paving (All lifts except the top 2" final lift) on Hwy 85 as shown in Section 100 Phases 1a to 2b (Year 1);
3. Long X Road (east of Hwy 85);
4. Ranch Access Road (south of Long X Bridge);
5. Jack/Bore Pipe Conduit;
6. Pipe extensions and approach pipe with exception of the approach pipe at Long X Road (west of Hwy 85);
7. Construction and Removal of the Temporary Bypass at Wildlife Crossing Structure;
8. Construction of the Wildlife Crossing Structure at RP 126.057;
9. Theodore Roosevelt National Park Sign - Relocation;
10. Topsoil, Seeding, ECB, TRM, Bonded Fiber Matrix, Temporary and Permanent Erosion Control;
11. Temporary and Permanent Fencing; and

If the contractor elects to do the above work in the 2019 construction season and completes it before November 15, 2019, the Contactor may request permission, in writing, to perform work in the other areas of the project site.

WINTER SUSPENSION REQUIREMENTS
Meet the following conditions before beginning winter suspension:

A. If construction of the Wildlife Crossing Structure is started in Year 1, construct it to the extent necessary to carry two-way traffic as shown in Section 100 Phase 2b with traversable 4:1 or flatter foreslopes within the roadway clear zone.
B. The Hwy 85 roadway surface is bituminous and is open to two-way traffic (one lane in each direction) with traversable 4:1 or flatter foreslopes.
C. Replace all pavement marking that was removed or faded during construction as directed by the Engineer. This work will be paid under the bid items for short term pavement marking.
D. Reset existing signs where replacement signs have not been installed. The cost of labor, materials, and equipment necessary to reset and remove the existing signs before and after the winter suspension is included in the contract unit price for “Traffic Control Signing.” Reset all signs according to Standard Drawing D-754-23.
E. Any locations where ground disturbance has occurred, permanently or temporarily stabilize according to the project SWPPP.
F. Maintain access on approaches.
G. Do not stockpile aggregate or earthen material(s) within 60-feet of the edge of driving lane. Submit proposed stockpile locations to Engineer for approval prior to stockpiling materials that will remain in place over winter suspension.
H. Remove excess construction equipment and garbage from the Right of Way. Equipment required for the construction of the Long X Bridge may remain within the staging areas located north of the bridge.
I. Remove all portable traffic control devices (including state furnished jersey barrier). Post mount or anchor any signs or devices required by the plans over the winter.

Schedule a winter suspension walk through with the Engineer 2 days before the anticipated winter suspension. The Engineer may require the completion of additional items of work relating to the suspension before issuing suspension.

If the winter suspension requirements are not met, Liquidated Damages of $5000 per calendar day will be charged from November 15, 2019 until April 15, 2020 or until the winter suspension requirements are met.

The Contractor will be responsible for roadway maintenance and winter snow and ice control on the project until the winter suspension requirements are met.
DESCRIPTION
This provision details the surface tolerance requirements, corrective actions, performance incentives, and contract price adjustments for flexible pavement.

CONSTRUCTION REQUIREMENTS

A. Applicable Areas and Exceptions.
The pavement smoothness will be determined by profiling the finished surface of the mainline pavement. All finished bituminous surfaces will be profiled with the following exceptions:

1. Bridge decks and/or approach slabs and 150 feet on either side.
2. Side roads and approaches.
3. Shoulders, ramps and gore areas.
4. At-grade railroad crossings and 150 feet on either side.
5. Beginning and end of the project and 50 feet on either side of these boundaries.
6. 50 feet from areas that are not receiving surfacing.
7. Where safety and roadway geometrics do not allow the proper operating speed for the profiler to collect data. These areas will be determined by the Engineer.

On surfaces exempt from the profile testing, the Engineer will determine the pavement smoothness in accordance with Section 430.04 K, “Tolerances”.

B. Profiler.
The Engineer will furnish and operate the data collection equipment. The smoothness of the final roadway surface profile will be measured and analyzed using the International Roughness Index (IRI) to the nearest 0.1 inch. The Engineer will use a Class 1 profiler meeting ASTM E 950.

C. Operation.
The Engineer will use an inertial profiler to collect the profile in each wheel path of each lane.

The Engineer will trace the profile at approximately 31 and 97 inches, measured from the left edge of the lane, as determined by the direction of traffic. Provide traffic control for 500 feet beyond the ends of the project to facilitate the collection of profile data.
The data will be marked and labeled at the beginning and end of each trace, and event markers as identified by the Engineer.

Each trace will be labeled showing:
- Project;
- Location;
- Lane;
- Date tested; and
- Operator’s name.

The Engineer will not test the roadway between November 30 and May 15. The Engineer will not test when the ambient temperature is below 32°F, or while it is raining or under inclement weather conditions. The Engineer will test when the pavement is dry and at an agreed upon time between the Engineer and the Contractor.

Prepare the surface for profile collection to ensure a clean surface for accurate testing. The Engineer will collect the profile at the agreed upon time, regardless of the condition of the final surface.

After the final lift of pavement is complete, schedule a time for the profile to be collected. The Engineer will collect the profile within 5 working days after notification. Data will be collected and the results submitted to the contractor a maximum of 5 working days after the testing date.

If the final lift of pavement cannot be completed before November 30, the Engineer will collect data for all portions of the roadway that have the final lift in place. Profile data for the unfinished portion of the roadway will be collected after May 15 of the following year.

D. Evaluation.
A lot is defined as a 528 foot road segment, one lane wide. The Engineer will include a partial lot less than or equal to 370.0 feet in the previous lot. The Engineer will treat a lot greater than 370.0 feet as an independent lot. The MRI will be determined by averaging the IRI values from the right and left wheel paths to the nearest 0.1 inch.

The Engineer will evaluate the data and the data will remain the property of the Department. The MRI data will be used to determine performance incentives, contract price adjustments, and the need for corrective action.

E. Corrective Actions.
Areas that would result in a contract price adjustment may be ground to a lower lot MRI. If grinding occurs and results in an MRI of less than 50.0, the Engineer will not apply a performance incentive to that lot. Lots with an initial MRI of 42.0 or less will receive a performance incentive based on the initial readings, before grinding.

Submit a detailed corrective action plan. Corrective action can include a mill and overlay or diamond grinding. Perform corrective action in accordance with the relevant specifications. If the corrective action includes diamond grinding, apply a fog coat to the ground areas.

Do not perform corrective actions until the Engineer has approved the corrective action plan.
Grind lots to a maximum MRI of 70.0 in /mile.

The Engineer will collect a second profile a maximum of 5 working days after the completion of corrective action. If additional corrective action is necessary, the Engineer will apply a liquidated damage of $1,500 per trip for each profile collected after the second profile.

Perform corrective action on surface irregularities that exceed the requirements of Section 430.04 K, “Tolerances

F. Grinding.
Use equipment that does not cause strain or damage to the underlying surface of the pavement. Do not cause excessive ravels, aggregate fractures, or disturbance of the joints.

Perform grinding in the longitudinal direction so grinding begins and ends at lines normal to the pavement centerline. Do not overlap more than 2 inches between passes and ensure the depth variance between adjacent passes is less than 1/8 inch. Feather the grinding at the beginning and end of each pass.

Grind high shoulders to provide drainage and safety.

Grind the full width of the lane and daylight grinding on the shoulder by performing a feather pass.

Grind a minimum length of 30 feet. Join grind sections if the distance between grind sections is less than 60 feet.

When grinding in areas with speeds less than 45 MPH, areas with curb and gutter, and areas adjacent to waterways continuously collect all slurry or residue resulting from the grinding operation. Dispose of the slurry or residue as specified in Section 107.17, “Removed Material”.

BASIS OF PAYMENT

A. Liquidated Damages.
If the project would be considered substantially complete, as specified in Section 108.07 B, “Failure to Complete within the Contract Time” and corrective action is required, the Engineer may suspend time charges and the assessment of liquidated damages for up to 21 calendar days after the contract time has expired. If the corrective action is not complete within 21 calendar days after the contract time has expired, the Engineer will restart time charges and will assess liquidated damages.

B. Ride Quality.
The Engineer will pay a performance incentive for ride quality based on Table 1.
Table 1
Ride Quality Performance Incentives

<table>
<thead>
<tr>
<th>MRI Range</th>
<th>Performance Incentive per Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 32.0</td>
<td>$400</td>
</tr>
<tr>
<td>32.1 to 36.0</td>
<td>$300</td>
</tr>
<tr>
<td>36.1 to 39.0</td>
<td>$200</td>
</tr>
<tr>
<td>39.1 to 42.0</td>
<td>$100</td>
</tr>
<tr>
<td>42.1 to 50.0</td>
<td>$0</td>
</tr>
</tbody>
</table>

The Engineer will process contract price adjustments for ride quality based on Table 2.

Table 2
Ride Quality Contract Price Adjustments

<table>
<thead>
<tr>
<th>MRI Range</th>
<th>Contract Price Adjustment per Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>42.1 to 50.0</td>
<td>$0</td>
</tr>
<tr>
<td>50.1 to 57.0</td>
<td>($100)</td>
</tr>
<tr>
<td>57.1 to 64.0</td>
<td>($200)</td>
</tr>
<tr>
<td>64.1 to 70.0</td>
<td>($400)</td>
</tr>
<tr>
<td>70.1 ≥</td>
<td>Corrective Action</td>
</tr>
</tbody>
</table>

C. MISCELLANEOUS
Include costs necessary to prepare the roadway for testing in the contract unit price for asphalt pavement items.

Traffic control items, including flagging and pilot cars will be paid for according to Section 109.03, “Compensation for Contract Revisions”.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

MASS CONCRETE

Project # 7-085(109)125 – PCN 22041

DESCRIPTION
This work consists of controlling the temperature of mass concrete elements for the purpose of minimizing thermal cracking during the curing process. This special provision was developed using ACI 301-16 “Specifications for Structural Concrete”.

MATERIALS

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admixtures</td>
<td>808</td>
</tr>
<tr>
<td>Fly Ash</td>
<td>820</td>
</tr>
</tbody>
</table>

CONSTRUCTION REQUIREMENTS

A. Mass Concrete Elements.
The following elements in the permanent structure for Mass Concrete:

- Abutment Bearing Seat;
- Pier Footings; and
- Pier Columns.

B. Mass Concrete Mix Design.

1. General.
Develop a mix design for each mass concrete element with a maximum w/c ratio of 0.44.

A new mix design is required for changes in any of the following:
- Aggregate source;
- Cementitious material;
- Total water weight by more than 3%; or
- Changes in admixture manufacturer.

If changes are made to the mix design, re-submit the mix design for review and verification. Do not use the revised mix design until it is reviewed and verified.

If placed concrete is out of tolerance with the mix design as defined in this section, remove and replace the concrete with material that meets the tolerances of the accepted mix design.

2. Compressive Strength.
For lab results, the 28-day strength may be attained at 56 days for mix designs that include fly ash. Individual strength test below 80% of f'c at 28 days will not be accepted.

Apply a correction factor of 0.92 when using 4 inch x 8 inch concrete cylinders.
3. **Finely Divided Mineral Admixtures.**
Use fly ash in the mix at a rate between 25 and 40 percent of the total cementitious material.

4. **Admixtures.**
Include admixtures and dosage rates in the concrete mix design. Do not use admixtures that contain chloride.

5. **Sample Preparation and Testing.**
Develop trial batches and prepare the samples according to ACI 301, “Specification for Structural Concrete”. Perform testing of the trial batches in an AASHTO laboratory certified for Portland Cement Concrete.

Test the plastic properties of the concrete after all admixtures are added.

Cure all concrete cylinders used for compressive strength according to ASTM C 511.

6. **Mix Design Documentation.**
Include the following test data:

- **Fine Aggregate:**
  - Weight (lbs - SSD);
  - Source;
  - Type;
  - Specific gravity; and
  - Percent Absorption;

- **Coarse Aggregate:**
  - Weight (lbs – SSD);
  - Source;
  - Size;
  - Specific gravity; and
  - Percent Absorption

- **Cement:**
  - Weight;
  - Source;
  - Specific gravity; and
  - Type;

- **Fly Ash:**
  - Weight (lbs)
  - Source; and
  - Specific Gravity;

- **Weight of Water (lbs.).**

- **Admixtures:**
  - Type;
  - Brand Name; and
  - Dosage;

- **Water/Cement Ratio** (including all cement and fly ash); and

- The following test results:
  - Concrete Temperature;
  - Tested Slump;
- Tested Air Content;
- Unit weight;
- Yield;
- Tested Strength moist room cured testing at following days:
  - 3;
  - 7;
  - 14;
  - 28; and
  - 56 days, if required;
- Strength Gain Curves; and
- Rapid Chloride Permeability Test Results AASHTO T277.

Create a 9 yard trial batch of each mix design to assess workability near the project site. If the trial batch is not workable, modify the mix design or batching sequence and retest. Resubmit any changes in the mix design to Materials and Research.

C. Thermal Control Plan (TCP).

Develop a Thermal Control Plan (TCP) according to ACI 301 Section 8.1.4 “Submittals” with the following additions:

- Identify the thermal modeling software used and provide a copy of the software with one license for use by the Engineer.
- Include the following site and element data used for modeling:
  - Input parameters;
  - Output data;
  - Results;
  - Summary of findings; and
  - Thermal control direction for each element.
- Describe the methods used to control the maximum temperature and temperature differentials for each element.

D. Submittals.

1. General.

Deliver the samples, the mix design, and the TCP to the Materials and Research Division for review 45 calendar days before placing mass concrete. The Materials and Research Division will review the strength of the mix design and base verification off those strengths. Materials and Research Division will review and verify the TCP for completion.

Supply the Department samples that are the same sources as the proposed mix design. Attach a tag to the samples identifying the Departments project number and type of material.

Supply samples of material based on the minimum sample size in Table 1. Provide additional material upon request.
Table 1
Minimum Mix Design Sample Size

<table>
<thead>
<tr>
<th>Material</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>100 lb</td>
</tr>
<tr>
<td>Fly Ash</td>
<td>35 lb</td>
</tr>
<tr>
<td>Aggregate</td>
<td>1000 lb</td>
</tr>
<tr>
<td>Admixtures</td>
<td>1/2 pint each</td>
</tr>
</tbody>
</table>

2. Mix Design Acceptance.
Acceptance of the mix design is based upon trial batching and testing results.

The Engineer has 45 calendar days to review the mix design or any resubmitted mix design.

If the mix design is rejected, develop a new mix design and resubmit.

E. Temperature Limitations and Monitoring.

1. General.
Monitor the temperature conditions from the time of concrete placement until the interior temperature of the concrete is within 35°F of the ambient temperature.

Provide concrete to the project that does not exceed 70°F at time of placement.

2. Use of Ice.
Ice may be used to reduce the heat of hydration. If ice is used, use ice particles smaller than 3/8 inch. The quantity of ice used will replace an equal weight of mixing water.

Blend concrete so there is no ice during placement.

3. Temperature Monitoring and Recording Devices and Locations.
Place temperature monitoring and recording devices in the locations shown in ACI 301 Section 8.3.1.2(a) “Monitoring of Temperatures” with the following exception.

Provide a temperature monitoring and recording device that operates in a range of 0 to 200°F (±2°F).

Provide Automatic Temperature Devices that begin recording immediately after completion of a pour and continue until 24 hours after the following conditions are met:
- Maximum temperature differential is reached and begins to drop;
- Maximum peak curing temperature is reached and begins to drop; and
- All formwork, insulation, and other temporary items have been removed from the mass concrete element and it is exposed to ambient temperature and the environment.

Physically verify the readings of the sensors for temperature and differential temperature every 4 hours to confirm the automatic temperature devices are working and address any
issues that occur. Record all readings of the actively monitored temperature and differential temperatures.

Transmit all temperature readings, data logs, and graphs at the end of every 4 hour period to the Engineer by email.

5. **Maximum Peak Curing Temperature.**
   Do not allow the maximum peak temperature to exceed 150°F.

6. **Maximum Temperature Differential.**
   During the curing period, the measured temperature differential will not exceed 35°F.

7. **Thermal Protection.**
   Remove thermal protections only after the following criteria are met:
   - The temperature difference between the ambient air temperature and a point 2 inches inside the element has reached its maximum and is decreasing; and
   - The temperature difference between a point 2 inches inside the element and the center of the element has reached its maximum and is decreasing.

   Remove thermal protection gradually so that the rate of temperature reduction to the surface does not exceed 15°F during any 12 hour period. Continue removing the thermal protection until the concrete surface reaches the ambient air temperature.

F. **Corrective Action.**
   If monitoring indicates that any temperatures differential exceeds 35°F or the maximum temperature exceeds 145°F, immediately contact the Engineer and take action to reduce the temperature to within acceptable range.

   Revise the TCP to reduce the temperatures of the Mass Concrete for future Mass Concrete pours. Submit the revised TCP for review 14 days before the next Mass Concrete placement.

G. **Cracks.**
   Inspect the Mass Concrete element and determine the nature of any cracking.

   The Engineer will inspect all cracking that occurs on all mass concrete elements.

   The Engineer and Bridge Division will make a determination on replacement or repair of the Mass Concrete element after all thermal control and cooling operations are complete.

H. **Future Work.**
   Allow the concrete element to develop a minimum of 80% of the designed strength before loading with successive lifts of concrete or placement of elements.

   Before superstructure construction, allow the substructure to achieve design strength.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**
Include the costs associated for Mass Concrete in the contract unit price of Class AAE-3 Concrete.
GENERAL
Perform Quality Control (QC) of the Section 602 “Concrete Structures” via sampling, testing, and inspection during all phases of the work. The Engineer will perform Quality Assurance (QA) as defined in the “QA Responsibilities”.

Document all the QC results and submit the results to the Engineer on a daily basis.

QUALITY CONTROL PERSONNEL

A. General.
Identify a primary contact for the Contractor for the QC process.

The QC personnel will be dedicated to the QC process and not used in other construction operations.

QC Manager and the Engineer will both have the authority to stop unsatisfactory work until the quality meets the Contract Requirements and the QC Plan.

Submit a list of all employed and subcontracted technicians who will be performing sampling, testing, and inspection in the field and in the laboratory. Include the qualifications for all the work that each QC technician will perform.

B. Qualifications.

1. General.
Maintain QC Personnel certifications for the duration of the project.

2. Concrete Field Sampling.
Provide at least 2 people certified in the following:
   - American Concrete Institute (ACI) Concrete Field Testing Technician Grade 1;
   - ACI Aggregate Testing Technician Level 1 or NDDOT; and
   - ACI Concrete Construction Special Inspector or International Code Council Reinforce Concrete Special Inspector.

3. QC Manager.
Provide an ACI certified Plant Quality Technical Manager to oversee the QC Program.

4. Concrete Plant Manager.
Provide a National Ready Mixed Concrete Association (NRMCA) Certified Concrete Plant Manager to oversee the concrete plant during production and concrete trucks.
5. Laboratory Technicians.
Staff the laboratory with ACI Concrete Strength Testing Technicians when breaking concrete cylinders.

CONCRETE MIX DESIGN

A. General.
Develop a mix design for each class of concrete. Perform the tests for the mix design as specified in the NDDOT Field Sampling and Testing Manual. The materials used in the mix design shall be the same as those used on the project.

Deliver the samples and the mix design, including the test results, to the Materials and Research Division a minimum of 45 calendar days before the first concrete pour. The same day the material is delivered, notify the Engineer that the samples have been delivered. Provide the Engineer with a copy of the mix design and the test results at the same time they are submitted to the Materials and Research Division.

The Department requires a maximum of 45 calendar days to verify mix designs before the Engineer will allow the concrete pour.

The Engineer will notify the Contractor when the mix design is verified.

B. Samples.
The Materials and Research Division will verify the mix design. Attach a tag to the samples identifying the Department’s project number and type of material.

Supply samples of material based on the minimum sample size specified in Table 1. Provide additional material upon request.

<table>
<thead>
<tr>
<th>Material</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement</td>
<td>100 lbs</td>
</tr>
<tr>
<td>Fly Ash†</td>
<td>35 lbs</td>
</tr>
<tr>
<td>Aggregate</td>
<td>1000 lbs</td>
</tr>
<tr>
<td>Admixtures</td>
<td>1/2 pint each</td>
</tr>
</tbody>
</table>

† If fly ash is not part of the mix design, provide 135 lbs of cement.

QUALITY CONTROL PLAN

A. General.
Develop a QC Plan for all onsite and offsite operations where concrete or aggregate are being produced.

B. QC Plan.

1. General.
The QC Manager will be responsible for developing the QC Plan.
Submit the QC Plan within 30 days of the Contract Award.

The Engineer will have 14 days to review the submittal. Work with the Engineer to correct any issues noted with the QC Plan. An additional 14 days may be required for review of the correction on the QC Plan.

Obtain the Engineer’s written acceptance of the QC plan before incorporating materials related to the construction of the structure into the work.

Keep the QC Plan on all sites in which the production of concrete items is taking place for the duration of the project.

2. Submittals.

   a. General.
      Include procedures for corrective action of aggregate or concrete.

      Provide procedures for when material is rejected offsite and show modifications.

      Provide a Cold Weather Concrete Plan with curing procedures.

   b. Documentation.
      Provide documentation on the following:
      - An organization chart indicating the lines of authority, including the names and phone numbers;
      - QC Charts:
        - Coarse Aggregate Gradation;
        - Fine Aggregate Gradation;
        - Coarse Aggregate Moisture Content;
        - Fine Aggregate Moisture Content;
        - Slump;
        - Air Content;
        - Water/Cementitious Material (Cement and Fly Ash) ratio;
        - Mix Compressive Strength;
        - Mix Temperature; and
        - Yield or Unit Weight;
      - Concrete Plant:
        - Copy of NRMCA Plant certification;
        - Physical address;
        - Telephone number; and
        - Contact information for the NRMCA Concrete Plant Manager with copy of certification;
      - Truck mixer’s NRMCA Certifications;
      - Aggregate:
        - Pit name;
        - Physical address; and
        - Type of aggregate produced.

   c. Storage of Materials.
      If the material requires storage, describe the methods to prevent the following:
Segregation;
Contamination; and
Degradation.

Include a site plan showing where the material will be stored including bedding details and other methods to protect the material from the environment.

d. Transportation and Placement.
Describe the method of transportation, length of haul to the location, and how placement will occur.

QC RESPONSIBILITIES

A. General.
Update the QC Plan as the work progresses.

B. Testing.

1. General.
Perform testing using ACI certified technicians and under the direction of the QC Manager.

Provide copies of the tests to the Engineer daily.

Sample the aggregate according to ND T 2 and reduce the sample size according to ND T 248. Perform testing of the concrete aggregate gradation at the frequency shown in Table 2.

| Table 2 |
| QC – Aggregate Testing Frequency |
| Coarse Aggregate |
| Gradation (ND T 27) | 1 test per 100 CY of concrete production |
| Moisture Content (ND T 255) | 1 test per gradation |
| Shale, Iron Oxide Particle, Lignite and other Coal, Soft Particles, Thin or Elongated Pieces. (NDDOT 3) | 1 per day of concrete production |
| Fine Aggregate |
| Gradation (ND T 27) | 1 test per 100 CY of concrete production |
| Moisture Content (ND T 255) | 1 test per gradation |
| Lightweight pieces in Aggregate (ND T 113) | 1 per day of concrete production |

Record the results of the testing on SFN 2455 “Concrete, Sand, and Gravel Worksheet”.
3. **Concrete Testing.**
Perform testing of the concrete at the frequency shown in Table 3. If concrete is pumped, perform QC testing with samples obtained from the end of the discharge hose. Sample the concrete according to ASTM C 172.

<table>
<thead>
<tr>
<th>QC – Mix Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength(^{(1)/(2)}) (ASTM C31)</td>
</tr>
<tr>
<td>Air Content (ASTM C231)</td>
</tr>
<tr>
<td>Slump (ASTM C143)</td>
</tr>
<tr>
<td>Yield and Unit Weight (ASTM C138)</td>
</tr>
<tr>
<td>Temperature (ASTM C1064)</td>
</tr>
</tbody>
</table>

\(^{(1)}\) A set is a minimum 9 cylinders for substructure concrete and 6 cylinders for deck concrete

\(^{(2)}\) Additional cylinders may be taken for Contractor’s usage.

Record the results of the Air, Slump and Unit Weight testing on SFN 10069 “Progress Tests on Air, Slump, and Weight per Cubic foot of Concrete Report”.

If the concrete has an Air Content outside the range of Section 802.01 H, “Air Content” or Slump outside the range of Section 802.01 E, “Slump”, notify the Engineer and QC Manager of the failing results. If a truck has been rejected, sample the next truck until the tests are within tolerance.

Additional testing required for Contractor Operations will be conducted at the Contractor’s expense.

4. **Strength Testing.**

a. **General.**
Perform compressive strength testing according to ASTM C 39.

Record the Compressive Strength results on SFN 7623 and submit the form to the Engineer.

b. **Substructure.**
Perform compressive strength testing of the substructure cylinders on the following days after a pour:
- 3 cylinders at 7 days;
- 3 cylinders at 28 days; and
- 3 cylinders at 56 days.

c. **Deck.**
Perform compressive strength testing of the deck cylinders on the following days after a pour:
- 3 cylinders at 7 days; and
- 3 cylinders at 28 days.
C. Noncompliance of the QC Plan.
If materials are found not to be in compliance with the QC Plan, cease all work relating to that item. The QC Manager, Engineer, and Concrete Plant Manager will meet to review the QC Plan and determine what corrections need to be made to the QC Plan. Work can resume after a new QC Plan is developed and verified to correct materials that are out of compliance.

QA RESPONSIBILITIES

A. General.
QA testing and inspection will be conducted by the Engineer to assure the QC testing meets the requirements of this special provision.

The Engineer will provide a QA Plan to the Contractor at the time the Contractor submits the QC Plan specified in “Quality Control Plan.” The QA Plan will contain:
− The names and phone numbers of the individuals responsible for the QA program.
− A listing of the personnel responsible for the QA testing and their Technician ID and qualifications.
− An organizational chart indicating lines of authority, including names and phone numbers.

B. Aggregate Testing.
Sample aggregate according to ND T 2 and reduce the sample size according to ND T 248. Perform QA testing on the concrete aggregate gradation at the frequency shown in Table 4.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>QA – Aggregate Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coarse Aggregate</td>
</tr>
<tr>
<td>Gradation (ND T 27)</td>
<td>1 test per 400 CY of concrete produced</td>
</tr>
<tr>
<td>Moisture Content (ND T 255)</td>
<td>1 test per gradation</td>
</tr>
<tr>
<td>Shale, Iron Oxide Particle, Lignite and other Coal, Soft Particles, Thin or Elongated Pieces. (NDDOT 3)</td>
<td>1 test per week concrete production</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td></td>
</tr>
<tr>
<td>Gradation (ND T 27)</td>
<td>1 test per 400 CY of concrete produced</td>
</tr>
<tr>
<td>Moisture Content (ND T 255)</td>
<td>1 test per gradation</td>
</tr>
<tr>
<td>Lightweight pieces in Aggregate (ND T 113)</td>
<td>1 test per week of concrete production</td>
</tr>
</tbody>
</table>

C. Concrete Testing.
The Engineer will perform QA testing on the concrete at the frequency shown in Table 5. Sampling will be conducted according to ASTM C172.

<table>
<thead>
<tr>
<th>Table 5</th>
<th>QA – Mix Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength(^{(1)}) (ASTM C31)</td>
<td>1 set per 200 CY or a minimum of 1 set</td>
</tr>
</tbody>
</table>
Table 5
QA – Mix Production

<table>
<thead>
<tr>
<th>Test</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Content (ASTM C231)</td>
<td>1 test per 200 CY or a minimum of 1 test per day of concrete production.</td>
</tr>
<tr>
<td>Slump (ASTM C143)</td>
<td>1 test per 200 CY or a minimum of 1 test per day of concrete production.</td>
</tr>
<tr>
<td>Yield and Unit Weight (ASTM C138)</td>
<td>1 test per 200 CY or a minimum of 1 test per day of concrete production.</td>
</tr>
<tr>
<td>Temperature (ASTM C1064)</td>
<td>1 test per 200 CY or a minimum of 1 test per day of concrete production.</td>
</tr>
</tbody>
</table>

(1) A set is 3 cylinders

Compressive strength testing will be conducted at 28 days and will be tested according to ASTM C39.

Validation between QA and QC Testers.

A. General.
To ensure that no equipment or procedural discrepancy occurs in the testing process, validation testing will be conducted.

Validation testing between the QC and QA testers will be performed as the project progresses. Additional validation tests are required if new testing personnel begins on the project or if different equipment is used for testing.

If either party feels that the validation is no longer accurate, perform additional correlations.

B. Aggregate.
Sample the aggregate according to ND T 2 and split the sample according to ND T 248.

During mix production, one half of the split aggregate QC samples will be retained by the QA.

These samples will be retained until QA testing confirms the validity of the QC testing.

For the tests to be considered validated the testers shall be within the tolerance shown in Table 6.

Table 6
Validation of QC/QA Aggregate Tests

<table>
<thead>
<tr>
<th>Test</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND T 27</td>
<td>±5 %</td>
</tr>
<tr>
<td>No. 4 Sieve and Larger</td>
<td>±5 %</td>
</tr>
<tr>
<td>ND T 11</td>
<td>±3 %</td>
</tr>
<tr>
<td>No. 30 Sieve</td>
<td>±2 %</td>
</tr>
<tr>
<td>No. 200 Sieve</td>
<td>±1 %</td>
</tr>
<tr>
<td>NDDOT 3</td>
<td>±2.5 %</td>
</tr>
<tr>
<td>Soft Particles</td>
<td>±1 %</td>
</tr>
<tr>
<td>Thin or Elongated</td>
<td>±2.5 %</td>
</tr>
</tbody>
</table>
If the tests are not within the tolerances shown in Table 6, retain the remaining material from the split sample. The QC and QA personnel will meet to review testing procedures, equipment conditions, and equipment calibration.

If the QC and QA personnel cannot determine why the tests are outside of the tolerance shown in Table 6, perform Dispute Resolution.

C. Concrete.
Perform validation testing for slump, unit weight, and air content on a batch of at least 1 CY of concrete for each tester that will test the material.

Validation testing can take place on any concrete delivered to the project.

For the tests to be considered validated the testers shall be within the tolerance shown in Table 7.

<table>
<thead>
<tr>
<th>Test</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured Slump</td>
<td>± 1.0 Inch</td>
</tr>
<tr>
<td>Air Content</td>
<td>± 1.0%</td>
</tr>
<tr>
<td>Unit Weight</td>
<td>± 3.0 lb/ft³</td>
</tr>
<tr>
<td>Temperature</td>
<td>± 2 °F</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>± 10 %</td>
</tr>
</tbody>
</table>

If the tests are not within the tolerances shown in Table 7, the QC and QA personnel will meet to review testing procedures, equipment conditions, and equipment calibration.

If the QC and QA personnel cannot determine why the tests are outside of the tolerance shown in Table 7, perform Dispute Resolution.

DISPUTE RESOLUTION
Contact the Engineer and Materials and Research Division.

The Materials and Research Division will review the testing procedures, testing personnel’s qualifications, equipment conditions, and equipment calibration.

The results and recommendations of this review will be considered final.

INDEPENDENT ASSURANCE (IA) RESPONSIBILITIES

A. General.
IA will be conducted by the District Materials Coordinator. The IA tester will periodically observe tests performed by the QC and QA testers to ensure that testing personnel are qualified.

IA samples are a split sample tested by the QC (Contractor), QA (Engineer), and IA (District Materials Coordinator).
B. Aggregate Testing.
Sample aggregate according to ND T 2 and reduce the sample size according to ND T 248. The IA testing on the concrete aggregate gradation will be at the frequency shown in Table 8.

<table>
<thead>
<tr>
<th>Table 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA – Aggregate Testing Frequency</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
</tr>
<tr>
<td>Gradation (ND T 27)</td>
</tr>
<tr>
<td>Moisture Content (ND T 255)</td>
</tr>
<tr>
<td>Shale, Iron Oxide Particle, Lignite and other Coal, Soft Particles, Thin or Elongated Pieces. (NDDOT 3)</td>
</tr>
<tr>
<td>Fine Aggregate</td>
</tr>
<tr>
<td>Gradation (ND T 27)</td>
</tr>
<tr>
<td>Moisture Content (ND T 255)</td>
</tr>
<tr>
<td>Lightweight pieces in Aggregate (ND T 113)</td>
</tr>
</tbody>
</table>

C. Concrete Testing.
Conduct an IA test on the concrete at the frequency shown in Table 9. Sampling will be conducted according to ASTM C172.

<table>
<thead>
<tr>
<th>Table 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA – Mix Production</td>
</tr>
<tr>
<td>Compressive Strength(^{(1)}) (ASTM C31)</td>
</tr>
<tr>
<td>Air Content (ASTM C231)</td>
</tr>
<tr>
<td>Slump (ASTM C143)</td>
</tr>
<tr>
<td>Yield and Unit Weight (ASTM C138)</td>
</tr>
<tr>
<td>Temperature (ASTM C1064)</td>
</tr>
</tbody>
</table>

\(^{(1)}\) A set is 3 cylinders

Compressive strength testing will be conducted at 28 days and will be tested according to ASTM C39.

D. VALIDATION BETWEEN QC, QA, and IA TESTS

1. General.
To ensure that no equipment or procedural discrepancy occurs in the testing process, validation testing will be conducted.

Validation testing between the QC, QA, and IA testers will be performed as the project progresses. Additional validation tests are required if new testing personnel begins on the project or if different equipment is used for testing.

If any party feels that the validation is no longer accurate, perform additional correlations.
2. **Aggregate.**

Sample the aggregate according to ND T 2 and split the sample according to ND T 248.

During mix production, one half of the split aggregate QC samples and one half of the split aggregate QA sample will be retained by the IA. These samples will be retained until IA testing confirms the validity of the QC and QA testing.

For the tests to be considered validated the testers shall be within the tolerance shown in Table 10.

<table>
<thead>
<tr>
<th>Tests</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 4 Sieve and Larger</td>
<td>±7 %</td>
</tr>
<tr>
<td>ND T 27</td>
<td></td>
</tr>
<tr>
<td>No. 4 Sieve and Larger</td>
<td>±7 %</td>
</tr>
<tr>
<td>ND T 11</td>
<td></td>
</tr>
<tr>
<td>No. 30 Sieve</td>
<td>±5 %</td>
</tr>
<tr>
<td>No. 200 Sieve</td>
<td>±2.5 %</td>
</tr>
<tr>
<td>NDDOT 3</td>
<td></td>
</tr>
<tr>
<td>Soft Particles</td>
<td>±1 %</td>
</tr>
<tr>
<td>Thin or Elongated</td>
<td>±2.5 %</td>
</tr>
</tbody>
</table>

If the tests are not within the tolerances shown in Table 10 perform the additional test specified in INDEPENDENT ASSURANCE (IA) RESPONSIBILITIES Section D.4 “IA Validation Outside of Tolerance”.

3. **Concrete.**

Perform validation testing for slump, unit weight, and air content on a batch of at least 1 CY of concrete for each tester that will test the material.

Correlation can take place on any concrete delivered to the project.

For the tests to be considered validated the testers shall be within the tolerance shown in Table 11.

<table>
<thead>
<tr>
<th>Tests</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured Slump</td>
<td>± 1.5 Inch</td>
</tr>
<tr>
<td>Air Content</td>
<td>± 1.5%</td>
</tr>
<tr>
<td>Unit Weight</td>
<td>± 3 lb/ft³</td>
</tr>
<tr>
<td>Temperature</td>
<td>± 3 °F</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>± 10 %</td>
</tr>
</tbody>
</table>

If the tests are not within the tolerances shown in Table 11, perform the additional test specified in INDEPENDENT ASSURANCE (IA) RESPONSIBILITIES Section D.4 “IA Validation Outside of Tolerance”.
4. **IA Validation Outside of Tolerance.**
   If the IA tests are not within the specified tolerances, obtain an additional sample for testing under the observation of the IA tester.

   The QC, QA, and IA will conduct equipment checks and review testing procedures. This will continue until the differences are resolved.

   The IA tester and either the QC or QA lab, whichever is not within the specified tolerances, will perform the additional IA tests.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**
Include the cost of the QC in the contract unit price for the Class AAE-3 and Class AE-3 Concrete.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

WORK ZONE CAMERA SYSTEM

PROJECT 7-085(109)125 – PCN 22041

DESCRIPTION
Provide a self-powered mobile trailer webcam to allow users to remotely view the project by a secure network connection.

EQUIPMENT

A. General.
Provide a camera from one of the following:
- Live View Technologies;
- EarthCam; or
- An approved equal.

B. Trailer Camera System (Camera).
Provide a trailer mounted cellular communicating camera system with the following:
- 30’ adjustable telescoping mast;
- 2” ball hitch;
- Manual outriggers or guide wires for stability;
- Solar power capable of operating without sun for a minimum of 10 days; and
- Pan Tilt Zoom (PTZ) Camera:
  - 768 x 494 resolution;
  - 30x optical and 12x digital zoom;
  - 360° continuous pan, +2° to 92° tilt;
  - Low light capable;
  - 30 fps in all resolutions;
  - On-board data back-up to provide minimum twenty days image retention;
  - 8 customizable presets; and
  - Preset tour capable.

C. Online Interface.
Provide a secure online interface to allow users to access the feed using account security features including the following:
- IP address block/ permission;
- 20 separate user accounts with passwords; and
- SSL protection of user login.

Capture and upload images every 15 minutes, 24 hours a day to the online interface. Keep the images available for a minimum of 60 days after the project completion.

Provide an archived schedule of still photos and a calendar based system to allow for images to be selected by date and time.
Provide the users a real-time video viewing that allows the user to do the following:
- Control the pan, tilt, zoom functions of the camera;
- Capable of capturing a live shot; and
- Full screen mode.

Include a time-lapse feature that allows for viewing by the day, week, month, and year.

CONSTRUCTION REQUIREMENTS

A. Installation.
Before beginning construction, install the camera at a location that will provide an unobstructed view of the bridge construction, as approved by the Engineer.

If the Engineer deems that the location does not provide an unobstructed view, move the camera to a new location.

B. Moving the Camera during Construction.
If the camera needs to be moved because of construction phasing, notify the Engineer 24 hours before the camera is moved.

Move the camera to a new location with an unobstructed view and have all functions of the camera restored within 24 hours of the move.

C. Maintenance and Support.
Maintain 98% reliability on the camera for the duration of the project.

Notify the Engineer if the camera goes out of service. Provide service on the camera within 24 hours. If the camera is out of service for more than 48, provide a new camera system.

D. Removal.
Do not remove the camera until it is released by the Engineer or the final completion date, including any extension approved by the Engineer.

The camera system will remain the property of the Contractor at the end of the project.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Monitoring System</td>
<td>Each</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

MACHINE HYGIENE & NOXIOUS WEED CONTROL

PROJECT 7-085(109)125 – PCN 22041

DESCRIPTION
The North Dakota Department of Transportation (NDDOT) in cooperation with the Federal Highway Administration (FHWA) have made the following environmental commitments to the United States Forest Service (USFS) and National Parks Service (NPS) for all work within USFS and NPS lands:
• Machinery Hygiene;
• Noxious Weed Management Plan; and
• All commitments as outlined in Section 6 of the plans.

DEFINITIONS

Contractor Controlled Areas are areas not included in the contract, but are obtained and solely controlled by the Contractor (e.g. concrete or asphalt batch plants, concrete washout areas, equipment staging yards, material storage areas, excavated material disposal areas, Contractor furnished borrow or waste areas, etc.).

Decontaminate means to remove all mud, dirt, and plant material.

Decontamination Site refers to any location where decontamination is being performed, which shall be situated on ground away from drainages and waterways.

Noncompliance is any action or inaction that violates the regulations imposed by the applicable permits or the requirements of this Special Provision or other contract documents.

Noxious Weeds are those plants deemed detrimental to public health, agriculture, recreation, wildlife and/or property by the North Dakota Department of Agriculture, USFS, and/or the NPS.

Off-Road Equipment includes any non-road engines (e.g. generators, welders, etc.), equipment and vehicles that leave the roadway, and any licensed trucks and vehicles used to excavate, remove, and haul vegetation, debris, and topsoil.

Service Vehicles include vehicles that stay on the roadway, travelling frequently in and out of the project area, that are used to transport personnel, tools, equipment, supplies, and construction materials to and from the project site, with the exception of excavated materials (borrow, topsoil, aggregate, etc.).

USFS Lands are lands designated by federal law as managed by USFS for the Public.

NPS Lands are lands designate by federal law as managed by NPS for the Public.
CONSTRUCTION REQUIREMENTS

A. Machine Hygiene.

1. General.
   Decontaminate on road and off-road equipment prior to accessing the project site or any Contractor controlled site to prevent the spread of noxious weeds.

2. Coordination.
   At least 10 work days prior to commencement of any construction activities, coordinate with the Engineer McKenzie County Weed Control Officer (701)842-4131, and the McKenzie Ranger District, (701) 842-2393 to perform a noxious weed inventory along the project corridor where existing right-of-way or easements occur, as well as in areas outside of right-of-way, such as borrow and/or waste sites, haul routes, and any other contractor controlled areas.

   During this inventory if noxious weeds are found to be present in these areas, the Contractor shall treat or removed the vegetation in a manner acceptable to the USFS and/or NPS. This inventory will be at the start of each growing season during which construction occurs. Perform the noxious weed inventory at the beginning of each growing season that construction will occur.

3. Decontamination Requirements.
   Decontaminate all on road and off road equipment before entering project sites for the first time. Equipment used within the areas established to be free of noxious weeds as described herein does not need to be decontaminated each time it enters the project sites.

   Repeat decontamination of any equipment utilized on another job prior to reentry of project sites. Conduct decontamination on site or outside of the project site, USFS lands, and NPS lands.

   Service vehicles do not need to be decontaminated.

4. Decontamination Procedures.

   a. Offsite Decontamination.
      Pressure wash all on road and off-road equipment at an offsite location. Remove all caked on dirt, mud, and plant material.

      Perform pressure washing at an offsite, dedicated washing station, with proper containment and disposal of wash water and solid waste to avoid the spread of noxious weeds.

   b. Inspection.
      Inspect all on and off road equipment for the following before accessing the project sites:
      - Dirt;
      - Mud; and
      - Plant material.
The following tools are typically required for inspection:

- Mirrors;
- Tools required to access internal components;
- Probes;
- Gloves;
- Safety glasses;
- Containers for any contaminated material; and
- Check list for inspection points (including, but not limited to, components of the cabin, engine underside, tracks/wheels, blades/buckets, booms/arms, accessories/attachments, bumper/brush guard, and running boards).

In order to ensure the absence of mud, dirt, and plant material. Tools needed for inspection typically include, mirrors, tools necessary to access internal components, probes, gloves, safety glasses, containers for contaminated material, and a checklist of inspection points (including, but not limited to, components of the cabin, engine, underside, tracks/wheels, blades/buckets, booms/arms, accessories/attachments, bumper/brush guard, and running boards).

c. Onsite Decontamination.

Onsite Decontamination at consists of vacuuming, sweeping, and physical removal of caked on mud/dirt or plant material.

Do not use water for onsite decontamination. Sweep and/or vacuum cabins.

Caked on mud/dirt and large vegetative debris shall be physically removed using hand tools, including, but not limited to, brooms, brushes, scrapers, and shovels.

Collect all waste and debris that is removed from the equipment and place the material in sealed refuse containers. Dispose of the material at the appropriate landfill.

Collect waste and debris removed from the equipment. Seal material in refuse containers and dispose of the materials at the appropriate landfill.

5. Documentation and Reporting.

Document all decontamination (both on and off project site) and inspection of all on road and off-road equipment that accesses project sites. A log book shall be maintained by the Machinery Hygiene Supervisor to document the following for each piece of on road and off-road equipment accessing the project sites:

1) was pressure washed prior to arrival at the project site,
2) was inspected onsite for noxious weeds and passed said inspection (i.e., was free of mud, dirt and vegetative debris).

The log book shall include applicable equipment identification, dates, responsible parties, locations, and methods.

Weekly provide copies of this documentation to the Engineer, NPS, and USFS McKenzie Ranger District (701) 842-2393.


Provide a Machinery Hygiene Supervisor that meets the following requirements.
a. **Qualifications:** The Prime Contractor shall name a supervisor that:
   i. Is an employee of the Prime Contractor.
   ii. Is familiar with project specifications, plans and this Special Provision.
   iii. Has the ability to identify noxious weeds that may be present in McKenzie County, North Dakota.
   iv. Has at least one year of experience supervising personnel.

b. **Duties: Have the supervisor:**
   i. Adhere to this Special Provision.
   ii. Be on the decontamination site to supervise the decontamination and inspection of equipment, and required documentation.
   iii. Distribute documentation of decontamination and inspection as described herein.

7. **Performance.**
   The Engineer will determine if the Contractor is in compliance through inspection of the log book.

   Equipment that is in non-compliance will not be allowed to remain on the project site until decontamination has occurred.

B. **Noxious Weed Plan.**

1. **Development and Submission of Noxious Weed Plan**
   Develop and submit a Noxious Weed Plan at the preconstruction conference. Include the following information:
   - Personnel involved in the Noxious Weed Inspections;
   - List of noxious weed species;
   - Inspection for noxious weed intervals, including example documentation;
   - Method of identifying and notifying construction personnel of weed location until treatment;
   - Treatment method of any noxious weeds found;
   - Spill plan for chemicals used in treatment; and
   - Disposal methods for weeds removed.

   The Engineer will have 10 days to review the plan.

   If more information is required for the Noxious Weed Plan, resubmit the plan to the Engineer and the Engineer will have 10 days to review.

2. **Update to Noxious Weed Plan.**
   Update the Noxious Weed Plan throughout the duration of the project based on field conditions.

   Provide the updated Noxious Weed Plan to the Engineer.

C. **Noxious Weed Inspections.**
   Perform noxious weed inspections at the intervals shown in the Noxious Weed Plan.

   Document the noxious weed inspections and treatments in a log book.
Provide the log book to the Engineer upon request.

**BASIS OF PAYMENT**

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Hygiene</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>

Payment for Machine Hygiene will be based on the following table.

<table>
<thead>
<tr>
<th>Original Contract Amount Earned</th>
<th>Payment of Machine Hygiene</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>25%</td>
</tr>
<tr>
<td>25%</td>
<td>50%</td>
</tr>
<tr>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>95%</td>
<td>100%</td>
</tr>
</tbody>
</table>

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NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

BRIDGE REMOVAL AND ADOPTION

PROJECT 7-085(109)125 – PCN 22041

DESCRIPTION
This works consists of removing the existing steel, cantilevered, subdivided, 3-span, Warren through truss bridge. The overall bridge length is 969'-0" with a clear roadway width of 30'-0". The abutments are reinforced concrete supported by steel piling. The piers are reinforced concrete wall piers, approximately 50' high, supported by steel piling.

The south 250' of the structure is a suspended truss, which will be salvaged, along with other items, for adoption. See the section “Salvaged for Adoption Portions of Structure” for salvage instructions.

CONSTRUCTION REQUIREMENTS

A. Removal of Existing Long X Structure.
   Include all costs, materials, and labor for the following items in the unit price bid for “Removal of Structure”.

   Contact Materials and Research Division at 701-328-6901 2 weeks before beginning removal of the existing Long X Structure to allow for the adoptee to witness demolition of the existing structure.

   1. General.
      Explosives are not permitted.

      Install a below-deck containment system over the river to capture any falling deconstruction materials, debris, or slurry. The system shall be constructed in such a way to capture debris or slurry and allow removal without releasing debris or slurry into the river.

      Remove all deconstruction materials or debris and capture all slurry generated in removal.

      Remove any deconstruction materials, debris, or material within 14 days that accidentally falls or escapes containment within the ordinary high water mark limits during construction or demolition, and dispose at an upland site.

      Large structural elements may be dropped and removed within the ordinary high water mark limits if the elements are large enough to be visible and remain intact after dropping. Remove these elements within 48 hours of dropping and dispose or stockpile in an upland area.
2. Salvage and Demolition Plan.
Before any removals, submit a salvage and demolition plan stamped by a Professional Engineer. Provide a salvage and demolition plan that outlines the methods and order of operations proposed to salvage the south suspended span of the structure and the methods and order of operations proposed to demolish and remove the remainder of the structure. The salvage methods must ensure that the structure is disassembled in a manner that enables transportation and reassembly for use as a structural crossing elsewhere.

Include the following items in the stamped salvage and demolition plan:

1. Shoring plan(s)
2. Causeway plan(s)
3. Cofferdam plan
4. Below deck containment system
5. Pier demolition containment system
6. Method(s) of deconstruction, salvage, and demolition
7. Order of operation(s) for deconstruction, salvage, and demolition
8. Member removal sequence, using the numbering system of the original plans

Allow the Engineer 14 days for review of the salvage and demolition plan.

Remove the non-salvaged portions of the truss and both abutments completely.

4. Pier Demolition
During pier demolition, install a containment system to capture any deconstruction materials and debris or slurry from discharging into the river. The system shall be constructed in such a way to capture debris or slurry and allow removal without releasing debris into the river.

Remove the existing south pier down to elevation 1937.0 ft.

Remove the existing north pier down to the top of the existing footing. The top of footing elevation of the north pier is approximately 1919.0 ft.

B. Salvaged for Adoption Portions of Structure.
Include all costs associated with labor, equipment and materials for the following items in the unit price bid for "Removal of Portions of Existing Structure".

1. General.
The following items are to be salvaged:

   1. Structural Steel for the south suspended truss, including all bolts, nuts, pins, expansion bearings at the south abutment, and fixed bearings at the south pier.
   2. All guardrail within the south suspended truss

2. Disassembly, Salvage, and Marking
Disassemble the salvaged portions of the structure.
Mark each member before disassembly following the numbering system shown in the original plans or DWG 85-126.562-7. Replace or repair any pieces that are damaged during removal or loading. There are built up members that are bolted and riveted together. Do not remove the rivets from these members. There are gusset plates bolted and riveted to members. Do not remove the rivets from gusset plates.

Salvage the bolts and nuts that are removed from the existing members. Package and label the salvaged bolts from each connection separately. Use a label system matching the numbering system shown in the original plans.

Do not salvage the vertical member that supports the suspended span.

3. **Coordination and Hauling.**
   One week prior to salvaged portions being ready for transport, contact the Materials and Research Division of the NDDOT at 701-328-6901 to get the contact information of the bridge adoptee to coordinate loading and hauling.

   Load the salvaged portions of the structure onto the trucks of the bridge adoptee.

   Allow the bridge adoptee 3 weeks to complete hauling operation of the salvaged material after disassembly. If the salvage material is not hauled away within 3 weeks of disassembly, stack any remaining material on the NDDOT’s right of way in an accessible location for the new owner to load and haul away.

**BASIS OF PAYMENT**

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of Structure</td>
<td>L Sum</td>
</tr>
<tr>
<td>Removal of Portions of Exiting Structure</td>
<td>L Sum</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

THEODORE ROOSEVELT NATIONAL PARK SIGN RELOCATION

PROJECT 7-085(109)125 – PCN 22041

DESCRIPTION
This work consists of relocating the Theodore Roosevelt National Park (TRNP) North Unit Entrance Sign and base.

CONSTRUCTION REQUIREMENTS

A. Pre-relocation Inspection.
   Before relocating the TRNP entrance sign, contact the TRNP Superintendent and arrange a pre-relocation inspection of the sign with the Engineer and the TRNP Superintendent. Document all defects of the sign and base.

B. Relocation Plan.
   Develop a relocation plan for the sign and provide the plan to the Engineer 15 days before relocating the sign. Include the following information in the plan:
   - Equipment proposed to relocate the sign;
   - Proposed method of relocation; and
   - Anticipated duration of the relocation.

C. Relocation.
   Contact the TRNP Superintendent 5 days before relocation the sign.
   Relocate the sign to the final location.

C. Post Relocation Inspection.
   After the completion of the relocation, perform a post relocation inspection of the sign and base.

D. Repairs.
   Repair any damage that occurred to the sign and base.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset Historical Marker</td>
<td>EA</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

PILE DRIVING SYSTEM

Project 7-085(109)125 – PCN 22041

DESCRIPTION
This work consists of completing a pile drivability analysis and preparing the Pile Driving System Submittal.

MATERIALS
Reserved

CONSTRUCTION REQUIREMENTS
A. General.
The Engineer will use the Pile Driving System Submittal as the basis for approval of the proposed pile driving equipment. Acceptance of the pile driving equipment does not relieve the Contractor of the responsibility to install the piling to the required elevation and capacity. If, in the opinion of the Engineer, the accepted driving system fails to perform satisfactorily during actual driving, the Engineer reserves the right to revise the driving criteria or to require change of equipment.

B. Pile Driving System Submittal
1. General.
Prepare the Pile Driving System Submittal under the supervision and direction of a North Dakota Registered Engineer, and have the Registered Engineer sign and seal the Submittal. Submit the sealed Pile Driving System Submittal to the Engineer for acceptance. Allow 15 calendar days for the Department’s review. Submit a revised Pile Driving System Submittal for review and acceptance if the hammer or other driving system components change from those shown in the original approved submittal.

2. Pile Driving System.
Provide a description of the proposed pile driving system and a completed version of the attached Pile and Driving Data Form for each proposed pile driving system and pile type.

For each driving system, calculate the pile driving resistance (inches per blow) required to achieve the ultimate bearing value as indicated in Table 1.

<table>
<thead>
<tr>
<th>Pile</th>
<th>Ultimate Bearing (Kip)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10x42</td>
<td>545</td>
</tr>
<tr>
<td>12x53</td>
<td>680</td>
</tr>
<tr>
<td>14x73</td>
<td>940</td>
</tr>
<tr>
<td>14x102</td>
<td>1315</td>
</tr>
</tbody>
</table>
3. **Wave Equation Analysis of Pile Driving.**
   For each proposed combination of pile type and hammer, perform a wave equation analysis of pile driving conforming to the following requirements:
   - Conduct the analysis with the software GRLWEAP or a similar commercial program approved by the Engineer.
   - Completely model the proposed driving system.
   - Account for variations in the pile length and stick-up length during driving.
   - Account for the expected range in hammer driving energy.
   - Consider a range of soil parameters to account for potential geotechnical uncertainty and variability.

Demonstrate with the wave equation analysis that the selected pile driving system meets the following requirements:
   - The proposed driving system can overcome the maximum expected driving resistance and install the piles to the ultimate bearing value shown in Table 1.
   - Compressive and tensile stresses in the pile do not exceed 90 percent of the steel yield strength during driving.
   - The driving resistance does not exceed 20 blows per inch.

For each combination of pile type and driving system considered, provide the following for the wave equation analysis:
1. Scaled graphs depicting:
   a. Pile compressive stress vs. blows per foot.
   b. Pile tensile stress vs. blows per foot
   c. Nominal pile resistance vs. blows per foot
2. Soil parameters assumed for the analysis, including:
   a. Soil quake,
   b. Damping coefficients,
   c. Skin friction distribution,
   d. Ratio of shaft resistance to total resistance.
3. Assumptions made regarding soil plugging, pre-augering, pre-boring, jetting, the use of methods other than impact driving to advance the pile, and the use of closure plates, shoes, and other tip treatment.
4. List of all hammer operation parameters assumed in the analysis, including fuel settings, stroke limitations, and hammer efficiency.
5. An electronic copy of the WEAP input files;
6. The pile driving resistance (hammer blow count or pile set) and pile hammer stroke at the ultimate bearing value shown in the Plans.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**
All costs associated with the preparation of the Pile Driving Submittal are considered incidental to the cost of Steel Piling. Separate payment will not be made for preparation of the Pile Driving Submittal.
Pile and Driving Equipment Data

Project No. and PCN: __________________________  Structure Name and/or No.: __________________________
Project: ____________________________________  Pile Driving Contractor or Subcontractor: __________________________
County: ____________________________________  (piles driven by)

Manufacturer: __________________________  Model: __________________________
Type: __________________________  Serial No.: __________________________
Rated Energy: __________________________  @ __________________________  Length of Stroke
Explosive Force: __________________________  (for diesel hammers)

RAM

Ram Weight: __________________________  Ram Length: __________________________  (for diesel hammers)
Ram Cross Sectional Area: __________________________

ANVIL

Area: __________________________  (with diesel hammers)  Anvil weight: __________________________

CAPBLOCK

Material: __________________________  Area: __________________________
Thickness: __________________________
Modulus of Elasticity - E: __________________________ (psi)
Coefficient of Restitution - e: __________________________

CUSHION

Cushion Material: __________________________  Area: __________________________
Thickness: __________________________
Modulus of Elasticity - E: __________________________ (psi)
Coefficient of Restitution - e: __________________________

PILE CAP

Helmet  Bonnet  Anvil Block  Drivehead  Weight: __________________________

PILE

Type: __________________________
Pile Size: Length (in leads): __________________________
Section or Diameter: __________________________
Wall Thickness: NA  Taper: NA
Material: __________________________  Weight/Ft.: __________________________
Required Ultimate/Nominal Pile Capacity: __________________________ (tons)
Description of Splice: __________________________
Tip Treatment Description: __________________________

HAMMER COMPONENTS

HAMMER

RAM

ANVIL

CAPBLOCK

CUSHION

PILE CAP

PILE
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

BRIDGE DECK SURFACE TOLERANCE AND TEXTURING

Project 7-085(109)125 – PCN 22041

DESCRIPTION

The smoothness requirements contained within this provision apply to each bridge encounter. A bridge encounter is single lane from the entry approach slab through the bridge deck and exit approach slab.

EQUIPMENT

A. Grinding Equipment.
   Provide grinding equipment that meets the requirements of Section 155.11 “Grinding”.

B. Grooving Equipment.
   Provide grooving equipment that is power driven, self-propelled and specifically designed to groove concrete pavement. Use diamond impregnated blades that will produce the specified groove pattern. Use equipment with a depth control device that detects variations in the surface and adjusts the cutting head to maintain the specified groove depth.

CONSTRUCTION REQUIREMENTS

A. General.
   Perform work in the following order of operations upon completion of bridge deck curing:
   1. The Department will profile the bridge encounter (initial profile);
   2. Perform initial grinding on the bridge encounter;
   3. The Department will profile the bridge encounter (2nd profile);
   4. Perform necessary corrective action;
   5. The Department will profile the bridge encounter;
   6. Groove the bridge encounter.

   Steps 4 and 5 may be completed multiple times, however no more than 1/2 inch of material may be removed from the deck in total over all grinding passes.

   Apply a penetrating water repellant to the deck and approach slabs according to Section 602, “Concrete Structures” if step 6 will not be performed in the same calendar year as all of the previous steps.

   Perform initial grinding before opening to traffic.

   Grind and groove parallel to the direction of traffic.

   Continuously collect residue and water produced during grinding and grooving. Dispose of collected material as specified in Section 107.17, “Removed Material”.
B. Initial Grinding.
Remove a minimum of 1/16 inch of material during the initial grinding pass.

Perform as much corrective action as possible during initial grinding.

Do not overlap more than 2 inches between passes and ensure the depth variance between adjacent passes is less than 1/8 inch. Feather the grinding at the beginning and end of each pass.

Provide a ground pavement with a texture consisting of grooves between 0.090 and 0.130 inches wide. Keep the peaks of the ridges approximately 1/32 inch higher than the bottom of the grooves.

Stop full grinding 18 inches from the face of curb or barrier. Feather the grinding up to the face of curb or barrier in the 18 inches not receiving a full grind.

Stop grinding 6 inches on either side of finger joints.

C. Profile Measurement.

1. General.
Schedule a time for the profile to be collected. The Engineer will collect the profile within 5 working days after notification.

The Engineer will not test the roadway between November 30 and May 15. The Engineer will not test when the ambient temperature is below 32°F, or while it is raining or under inclement weather conditions. The Engineer will test when the pavement is dry and at an agreed upon time between the Engineer and the Contractor.

Sweep and prepare the surface as necessary before the Engineer collects profile data.

The Engineer will use lasers to collect the profile in each wheel path of each lane.

The Engineer will trace the profile at approximately 31 and 97 inches, measured from the left edge of the lane, as determined by the direction of traffic. Provide traffic control for 500 feet beyond the ends of the bridge encounter to facilitate the collection of profile data.

The initial profile collected will be used to determine the performance incentive, contract price adjustment, and identify areas for mandatory corrective action.

If no mandatory corrective action due to ride quality is required, the Engineer will process a performance incentive or contract price adjustment as specified in the Basis of Payment section of this SP.

Each bridge encounter with ride quality MRI greater than 100 inches per mile may be ground to reduce or eliminate the contract price adjustment. If a bridge encounter is ground to a ride quality MRI less than 93.1, Engineer will not process a performance incentive.
The Engineer will apply a liquidated damage of $1,500 per trip for each profile collected after the second profile.

2. Data Evaluation.

a. **ProVal.**
   The Engineer will:
   - Measure the smoothness of the roadway using the International Roughness Index (IRI) to the nearest 0.1 inch;
   - Use ProVal, [http://www.roadprofile.com](http://www.roadprofile.com), to calculate the IRI from the Pavement Profile (PPF) files;
   - Provide a copy of the ERD file upon completion of the data collection.
   - Apply a 250 mm filter to generate the IRI in ProVal;
   - Average the IRI of the two wheel paths to calculate the Mean Ride Index (MRI); and
   - Use the MRI option in ProVal for evaluation.

   Download the current version of ProVal at [http://www.roadprofile.com](http://www.roadprofile.com).

b. **Ride Quality.**
   Identify the Ride Quality of the roadway using the Ride Quality Module within the current version of ProVal.

   Use the following settings in the Ride Quality Module:
   - Analysis type – Overall
   - Ride Quality Index – MRI

c. **Localized Roughness.**
   Identify areas of localized roughness using the Smoothness Assurance Module (SAM) within the current version of ProVal.

   Use the following settings in SAM:
   - Ride Quality Index – MRI
   - Short Continuous – Segment length 25’, Threshold 250
   - Long Continuous – Default settings
   - Fixed Interval – Default settings

D. **Corrective Action.**

1. **General.**
   Do not overlap more than 2 inches between grinding passes and ensure the depth variance between adjacent passes is less than 1/8 inch. Feather grinding at the beginning and end of each pass.

2. **Ride Quality.**
   MRI for ride quality will be calculated for each lane over the full length of the bridge encounter.

   Corrective action is required for each travel lane with an MRI greater than 130.0 inches per mile.
Submit a corrective action plan that reduces the MRI to 100.0 inches per mile or less.

3. **Localized Roughness**
   MRI for localized roughness will be developed using a continuous 25-foot base length analysis.

   Perform corrective action where the MRI in any 25-foot segment is greater than 250 inches per mile, except in segments containing a finger joint. If a segment contains a finger joint, perform corrective action if the MRI for that segment is greater than 350 inches per mile.

   Submit a corrective action plan that reduces the MRI to below the respective corrective action threshold.

   The Engineer will determine if further corrective action will be required. If further corrective action is required, submit a new corrective action plan.

4. **Corrective Action Plan.**
   Submit a detailed corrective action plan using the ride quality and SAM evaluation results, three working days in advance of grinding. Generate grinding simulations in SAM with multiple grinding depths, varying equipment, and multiple pass patterns. Include the grinding simulations with the corrective action plan.

   If corrective action includes an area containing a finger joint, consult with the Engineer and the NDDOT Bridge Engineer for possible corrective actions.

   The Engineer will provide another profile PPF file. Submit a new corrective action plan after being provided the subsequent profile PPF file.

   The Engineer will determine if further corrective action will be completed based on the new corrective action plan.

E. **Grooving.**
   Create grooves that are 1/8 inch wide and 3/16 inch deep. Space grooves at 3/4 inch on center. The tolerance on the width and depth is 1/16 inch.

   Stop grooving 24 inches from the face of curb or barrier and 6 inches on either side of finger joints and the beginning and end of approach slabs.

F. **Joint Sealant.**
   Re-saw and reseal joints where filler material was removed during grinding or grooving operations. Saw and seal using the same methods and materials as specified in the plans.

G. **Tolerances.**
   Correct elevation differences between the approach slab and the mainline road that exceed 3/16 Inch tolerance when measured with a 16 foot straight edge.
METHOD OF MEASUREMENT
The Engineer will measure, completed and in place, as specified in Section 109.01, “Measurement of Quantities”. Measurement will extend over the full width and length of the textured surface and be measured by the actual surface area textured.

BASIS OF PAYMENT
Include the cost of additional applications of the penetrating water repellant in the contract unit price for “Bridge Deck Texturing”.

Include the costs for initial grinding and grooving in the contract unit price for “Bridge Deck Texturing”.

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Deck Texturing</td>
<td>Square Yard</td>
</tr>
</tbody>
</table>

The Engineer will pay a performance incentive for ride quality based on Table 1.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Ride Quality Performance Incentives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ride Quality MRI Range</td>
</tr>
<tr>
<td></td>
<td>≤ 70.0</td>
</tr>
<tr>
<td></td>
<td>70.1 to 78.0</td>
</tr>
<tr>
<td></td>
<td>78.1 to 86.0</td>
</tr>
<tr>
<td></td>
<td>86.1 to 93.0</td>
</tr>
<tr>
<td></td>
<td>93.1 to 100.0</td>
</tr>
</tbody>
</table>

The Engineer will process contract price adjustments for ride quality based on Table 2.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Ride Quality Contract Price Adjustments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ride Quality MRI Range</td>
</tr>
<tr>
<td></td>
<td>93.1 to 100.0</td>
</tr>
<tr>
<td></td>
<td>100.1 to 111.0</td>
</tr>
<tr>
<td></td>
<td>111.1 to 122.0</td>
</tr>
<tr>
<td></td>
<td>122.1 to 130.0</td>
</tr>
</tbody>
</table>
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

Architectural Surface Finish

Project 7-085(109)125 – PCN 22041

DESCRIPTION
This work consists of supplying and installing the specified form liner and applying concrete stain to all exposed concrete surfaces that were cast against form liner recessed areas.

ATTACHEMENTS
Appendix A – Custom Rock Form Liner Pattern #1208 “Dry Stack” and Desired Stain Colors.

MATERIALS
Obtain all concrete stain from a single source. Provide a 100 percent acrylic; water-repellant, semi-opaque, tinted emulsion sealer designed for concrete and masonry surfaces.

Use products intended for outdoor use and that allow for moisture vapor transmission.

Provide products that are resistant to the following:
- Freeze thaw;
- Moisture;
- Alkali;
- Acid;
- Mold and fungus; and
- Discoloration and degradation.

Use products that meet the requirements of ASTM G155 for a minimum of 1,000 hours.

Use color pigments, for tinted products, derived from synthetic mineral oxides.

CONSTRUCTION REQUIREMENTS

A. General.
   Install form liners as recommended by the manufacturer.

   Use multi-colored stains to simulate the full color range of natural stone on to concrete surfaces. An example of the desired staining, for bidding purposes, is provided in Appendix A. A copy of the Appendix A image, for Test Panel approval purposes, will be provided at the preconstruction conference.

   Furnish, store, prepare, apply, and cure all materials according to the product manufacturer's directions.

B. Submittals.
   Within 30 calendar days of execution of the Contract, submit the following to the Engineer for approval:
1. Product data including manufacturer’s technical information and application instructions for each material proposed for use.
2. Laboratory test reports showing that materials proposed for use meet physical or performance property requirements.
3. Certificates of Compliance of the stain.
4. Supply 1 foot by 1 foot color sample for each color of the concrete stain to be used on the architectural surface.
5. Submit proof that the Contractor performing the work described in this special provision has five years of experience performing similar work.

C. Test Panel.
Once the 1 x 1 foot color samples have been approved by the Engineer, produce a test panel that measures 48 × 24 × 3 inches. Construct the panel(s) on the project site at a location acceptable to the Engineer and demonstrate the final colors simulating the appearance of real stone including:
- Multiple colors matching supplied color image;
- Shading;
- Flecking; and
- Veining.

Construct a new panel if the initial panel does not match the color samples of the concrete stain. The Engineer will use the test panel to evaluate the final colors. Do not remove the test panel from the jobsite until the Engineer releases it.

D. Surface Preparation
Following removal of forms, finish all exposed concrete textured surfaces as specified in Section 602.04 I.1 “Surface Finish A” before preparing surface according to the stain manufacturer’s specifications. Finish defects greater than 1/2” in diameter to blend with the balance of the textured surface.

Thoroughly clean all surfaces that are receiving an architectural surface finish before applying the finish.

E. Application.
Allow concrete to cure a minimum of 28 days before applying the surface finish.

Apply the base color according the manufacturer’s recommendations for thickness and coverage.

Use undiluted staining products.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Surface Finish</td>
<td>SF</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.
Appendix A
Custom Rock Form Liner Pattern #1208 “Dry Stack”
and Desired Stain Colors
Install form liner so that the long lines are parallel to the ground surface.
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

PERMANENT MECHANICALLY STABILIZED EARTH WALL (OPTION)

PROJECT SOIB-7-085(109)125 – PCN 22041

DESCRIPTION
This work consists of designing, furnishing and installing a prefabricated modular block mechanically stabilized earth (MSE) wall for the headwalls and wingwalls of the arch bridge as designated in Section 170 of the plans and as specified herein or established by the Engineer. Headwalls and wingwalls will be called out as “retaining wall” throughout this document unless otherwise noted.

EQUIPMENT

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.C.C. Equipment</td>
<td>155</td>
</tr>
</tbody>
</table>

MATERIALS

A. General.
Select one of the following retaining wall systems with a Hitech Evaluated product to be used for the retaining walls designated in the plans.

- Allan Block Retaining Wall Systems
- Anchor Wall Systems
- Rockwood Retaining Walls, Inc.
- Versa-Lok Retaining Wall Systems
- Keystone Retaining Wall Systems

Other manufacturer’s blocks may be submitted for approval.

B. Concrete Modular Block Units (CMBUs).
Meet the requirements of ASTM C1372, modified as follows:

- A minimum 28 day compressive strength of 5,500 psi on any individual unit.
- Use ASTM C150 Type V Cement
- A maximum water absorption of 6% after 24 hours.

Have adequate freeze thaw resistance in accordance with ASTM C1262 in a 3% saline solution or water, modified as follows:

Wall Units

The minimum of the following:
- Less than 1% mean weight loss of its initial weight of five test specimens at the conclusion of 90 cycles.
2. Less than 1.5% mean weight loss of its initial weight of the four lowest out of five test specimens at the conclusion of 100 cycles

**Cap Units**

The minimum of the following:
1. Less than 1% mean weight loss of its initial weight of five test specimens at the conclusion of 40 cycles
2. Less than 1.5% mean weight loss of its initial weight of the four lowest out of five test specimens at the conclusion of 50 cycles

Provide CMBUs with the following requirements:

1. Color matching or similar to color number 30475 meeting Federal Standard 595B
2. Straight face geometry
3. Split rock face texture
4. Minimum dimension of 6 inches high x 10 inches deep x 14 inches wide
5. Minimum wall thickness of 1-1/4 inches for hollow CMBUs
6. Must be able to be positively interlocked by shear connections beyond molded feature of the block (pins, bars, clips)
7. Units shall be capable of near vertical wall where batter is equal to or less than 1 degree

Provide CMBUs within the following tolerances of the design size:

1. Length and width within ± 1/8 inch
2. Height within ± 1/16 inch.

Do not use CMBUs that have the following:

1. That are not sound or have cracks or other defects that would interfere with the proper installation
2. Impair the strength or performance of the wall
3. Will create an unsatisfactory appearance as determined by the engineer

If pins are required in the retaining wall system, use pins that consist of a non-degrading polymer or hot-dipped galvanized steel and are made to be used with the particular CMBUs supplied. Supply pins capable of holding the geosynthetic reinforcement in the proper design position during backfilling.

Attach cap units in accordance with the manufacturer’s requirements and use an adhesive that the manufacturer recommends.

Clearly scribe the date of manufacture and the production lot number on a tag affixed to each pallet of CMBUs shipped.

**C. Geosynthetic Reinforcement**

Supply a geosynthetic reinforcement with a Long Term Tensile Strength (T₉₀) as per AASHTO R69 that meets the long term strength used in the design of the retaining wall system.
Submit manufacturer certification that the material meets the Long Term Tensile Strength requirements and has been tested for compliance by National Transportation Product Evaluation Program (NTPEP).

D. Drainage Aggregate
Supply aggregate meeting the following gradation determined per AASHTO T-27:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ½ inch</td>
<td>100</td>
</tr>
<tr>
<td>1 inch</td>
<td>75-100</td>
</tr>
<tr>
<td>¾ inch</td>
<td>50-75</td>
</tr>
<tr>
<td>No. 4</td>
<td>0-60</td>
</tr>
<tr>
<td>No. 40</td>
<td>0-50</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-5</td>
</tr>
</tbody>
</table>

The Engineer will sample and test drainage aggregate according to Section 816.04 of the Field Sampling and Testing Manual.

E. Reinforcement Aggregate
Supply virgin aggregate free of shale, organic matter, mica, gypsum, smectite, montmorillonite, or other soft poor durability particles.

Meet the following standards:

Gradation (AASHTO T-27)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 40</td>
<td>0-60</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-15</td>
</tr>
</tbody>
</table>

Plasticity Index (P.I) (AASHTO T-90)

P.I. < 6

Soundness (AASHTO T-104)

Less than 30% magnesium sulfate soundness loss after 4 cycles or a sodium sulfate value less than 15% after 5 cycles

The Engineer will sample and test reinforcement aggregate according to Section 816.04 of the Field Sampling and Testing Manual.

F. Retaining Wall Base (For wingwall only)

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL 5 Aggregate</td>
<td>816</td>
</tr>
</tbody>
</table>

G. Retaining Wall Leveling Pad (For wingwall only)

<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE3</td>
<td>802</td>
</tr>
</tbody>
</table>
H. Drainage Pipe
Use a 4 inch perforated corrugated polyethylene (PE) pipe meeting the requirements of Section 830.03 A.4.

Wrap the PE pipe with a geosynthetic sock meeting the requirements of Section 858.01, Type D3 or D4.

I. Discharge Pipe
Use a non-perforated rigid polyvinyl chloride (PVC) pipe meeting the requirements of Section 830.03 A.3. Use a solvent cement on the joints in accordance with the manufacturer's recommendations. Provide a headwall with rodent protection at the outlet.

J. Acceptance of Materials
In addition to the "Certificate of Compliance", furnish copies to the Engineer of all CMBU test results performed by the manufacturer necessary to assure contract compliance.

SUBMITTAL

Submit work drawings and design computations of the proposed retaining wall system per section 105.08 Work Drawings. If design software is used to design the retaining wall system, the following design computations are required to be submitted:

- Hand calculations verifying the design software results
- A copy of the software used to design the wall system along with instructions and the inputs used

The Engineer will submit the work drawings and design computations to the NDDOT Materials and Research Geotechnical Section for review. Provide drawings that are signed and sealed by a Professional Engineer licensed in North Dakota.

Arrange for a competent field representative from the manufacturer to instruct the Contractor and the Engineer in the proper installation procedures.

Design and construct the retaining wall system to provide the minimum clearances shown at all points along the headwalls and wingwalls.

- Minimum distance to front face of retaining wall blocks east of US Hwy 85: 68'-0" (measured from Proposed CL US Hwy 85)
- Minimum distance to front face of retaining wall blocks west of US Hwy 85: 75'-0" (measured from Proposed CL US Hwy 85)

Submit a design for a modular block mechanically stabilized earth wall system to be built to the lines and grades shown in the plans and as described herein. Design the retaining wall to the following requirements:

1. Design the retaining wall according to the procedures in the current AASHTO “LRFD Bridge Design Specifications,” Article 11.10 – Mechanically Stabilized Earth Walls.

2. Use the following design criteria:
<table>
<thead>
<tr>
<th>Structure Criticality</th>
<th>Non Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Life</td>
<td>75 years</td>
</tr>
<tr>
<td>Slope of ground at base of wall</td>
<td>0.20%</td>
</tr>
<tr>
<td>Foundation Soil</td>
<td>$\phi = 26$, $\gamma = 120 \text{ lb/ft}^3$</td>
</tr>
<tr>
<td>Retaining Wall Base</td>
<td>$\phi = 34$, $\gamma = 140 \text{ lb/ft}^3$</td>
</tr>
<tr>
<td>Reinforcement Aggregate</td>
<td>$\phi = 34$, $\gamma = 140 \text{ lb/ft}^3$</td>
</tr>
<tr>
<td>Retained Backfill</td>
<td>$\phi = 34$, $\gamma = 140 \text{ lb/ft}^3$</td>
</tr>
</tbody>
</table>

$\phi = \text{Friction Angle}$  
$\gamma = \text{Unit Weight}$

Include the following information in the work drawings:

(A) Plan and elevation drawings for each retaining wall containing the following:

(1) A plan view of the retaining wall identifying the offset from the construction centerline to the face of the retaining wall at its base and at all changes in horizontal alignment. The width of each block and the length of the geosynthetic reinforcement for each corresponding row.

(2) An elevation view of the retaining walls identifying:

(a) The elevation at the top of the retaining wall, at all horizontal and vertical break points, and at least every 25 feet along the retaining wall.

(b) Elevations at the top of the leveling pads.

(c) The distance along the face of the retaining walls to all steps in the leveling pads.

(d) The length and type of geosynthetic reinforcement.

(e) The distance along the face of the wall to where changes in length of geosynthetic reinforcement occurs.

(f) Sheets showing the transitional joint that allows for differential movement of the wingwall portions of the wall from the headwall.

(B) Cross section showing the retaining wall batter.

(C) Details regarding the drainage system.

(D) General notes for constructing the retaining wall.

(E) Details and dimensions for the leveling pad including steps in the leveling pad.

(F) Details for terminating the retaining walls.

(G) Design notes including an explanation of any symbols and computer programs used in the design of the retaining walls.
CONSTRUCTION REQUIREMENTS

A. General
Check the CMBUs upon delivery to ensure that the proper materials have been received. Remove damaged or other unsuitable materials from the site. Ensure the faces of the CMBUs are free of chips, cracks and stains. Prevent excessive mud, wet cement, epoxy, and like material from coming in contact with the faces of the CMBU’s.

Store the CMBUs above ground on wood pallets or blocking.

B. Retaining Wall Excavation
Do not disturb the foundation soil beyond what is required to install the retaining wall base and leveling pad. Over-excavation will not be paid for.

If required, dewater the area prior to placement of the retaining wall base.

C. Reinforcement Aggregate
Compact the Reinforcement Aggregate to at least 90 percent of the maximum dry density with moisture content not less than 2.0 percentage points below, nor more than 3.0 percentage points above the optimum moisture content as determined by ND T 180.

D. Retaining Wall Base (For wingwall only)
Retaining wall base must extend 2' wider than the width of the leveling pad and extend 6.5' below existing ground. Maximum lifts of compacted base material is 6 inches. Compact the retaining wall base to at least 90 percent of the maximum dry density with moisture content not less than 2.0 percentage points below, nor more than 3.0 percentage points above the optimum moisture content as determined by ND T 180.

E. Retaining Wall Leveling Pad (For wingwall only)
Construct leveling pad of reinforced concrete within 1/8 inch from the design elevation when measured by a straightedge over a 10 foot run.

Construct leveling pad 8 inches wider than the width of the facing unit.

Allow the leveling pad to cure a minimum of 24 hours prior to placement of the CMBUs.

F. Retaining Wall Erection
Erect the CMBUs according to the selected manufacturer’s recommendations. Arrange for a competent field representative from the manufacturer to instruct the Contractor and the Engineer in the proper installation procedures. Keep the field representative available during construction of the retaining wall until the Engineer is satisfied the Contractor can perform the work.

Place the first course of CMBUs. Check the CMBUs levelness and alignment. Place each row so top of all CMBUs in the row are at the same elevation. Place the CMBUs in full contact with the leveling pad. Place the CMBUs end to end for the full length of the wall section.

Place and compact the Drainage Aggregate and Reinforcement Aggregate behind the first course of CMBUs. Fill all voids completely. Sweep all excess material from the top of the CMBUs before placement of the next course. Repeat this procedure to the designated
height of the first geogrid layer. Cut the geosynthetic reinforcement to designed embedment length and place on top of the preceding course of CMBUs. Extend horizontally on compacted backfill.

Place the next course of CMBUs on top of the geosynthetic reinforcement and if the CBMUs are hollow fill the CMBU cores with Drainage Aggregate to lock in place. Remove slack in the geosynthetic reinforcement and stake to maintain tension.

Install the geosynthetic reinforcement according to the selected manufacturer's recommendations and as specified herein. Place geosynthetic reinforcement elements normal to the face of the wall (Machine Direction). Tension all geosynthetic reinforcement layers to remove any slack and stake to maintain tension. Overlapping and splicing of the geosynthetic reinforcement will not be permitted.

Control alignment by using a string line or offset from a base line.

G. Aggregate Placement
Place Reinforcement and Drainage Aggregate closely following erection of each course of CMBUs. Place fill in such a manner as to avoid any damage or disturbance of the wall materials or misalignment of the CMBUs or geosynthetic reinforcing elements. At each geosynthetic reinforcement level, place the fill to the level of the connection before placing the geosynthetic reinforcement.

Remove and replace any wall or geosynthetic reinforcement materials damaged during fill placement operations. Correct any misalignment or distortion of the wall due to placement of fill outside the limits of this specification.

Prohibit all vehicles from being within 3 feet of the face of the wall until the retaining wall is complete.

Do not exceed a maximum six inch compacted lift.

Compact the aggregate simultaneously with lay-down operations. Operate all equipment to produce uniform density throughout the entire section. The desired degree of compaction will be considered obtained when the compaction requirements are satisfied and the surface is tightly bound and shows no rutting or displacement.

Slope the last level of aggregate fill away from the wall to rapidly direct runoff away from the wall at the end of each day’s operation. Prevent surface runoff from adjacent areas to enter the wall construction site.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT
Payment for modular block mechanically stabilized earth wall will be made at the Contract Unit Price for the following:

<table>
<thead>
<tr>
<th>Bid Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headwalls - 3-Sided Arch Bridge</td>
<td>L SUM</td>
</tr>
<tr>
<td>Wingwalls - 3-Sided Arch Bridge</td>
<td>L SUM</td>
</tr>
</tbody>
</table>

Such payment is full compensation for furnishing all materials, submittals, equipment, labor, and incidentals to complete the work as specified.
DESCRIPTION
This work consists of procuring, installing, and measuring geotechnical instrumentation pertaining to loads and deformations of selected structural components as specified.

DEFINITIONS
For the purpose of this special provision, the following terms are defined as follows:

A. Instrumentation. Drilled shaft movement sensors, ground anchor strain gauges, and data logging equipment.

B. Crosshole Sonic Logging (CSL) Access Tubes. Vertical steel tubes installed in drilled shafts to perform CSL testing. Selected CSL tubes will also be used for the installation of drilled shaft movement sensors.

C. Ground Anchor Strain Gauges. Instruments installed on ground anchor strands within the bonded and unbonded zone to measure distribution of load along anchor.

MATERIALS

A. Drilled Shaft Movement Sensor
Furnish Drilled Shaft Movement Sensors (DSMS) for measuring drilled shaft displacement, such as SAAV, from Measurand, Inc., or approved equal.

B. Ground Anchor Strain Gages
Furnish tension measuring gauges, such as TENSMEG – Tension Measuring Gauge, from RST Instruments Ltd., DYNA Force, from DSI International, Inc., or approved equal.

Size gages appropriately for the anticipated range of load in the strand anchors.
Provide sufficient length of signal cable from each gage to extend from gage, out through head, and to final data logger location.

Provide a portable readout unit, compatible with anchor strand gages and from the same manufacturer anchor strand gauges.

C. Data Logging Equipment
Furnish data logging equipment to facilitate automated reading of the DSMSs and ground anchor strain gauges. Provide data loggers, such as Sensemetrics THREAD XC, Campbell Scientific CR6, or approved equal, and appurtenant equipment and hardware to interface the data logging equipment with the DSMSs and ground anchor strain gauges.
Equip the data logging equipment with a cellular modem for remote data transmission and access to the instrumentation readings. Cellular signal strength at the site is approximately one bar on an iPhone with Verizon service. Provide antennas or a repeater station to achieve cellular connectivity and remote accessibility. Provide a web-based interface for remote viewing and plotting of the instrumentation readings and offsite storage of instrumentation readings, such as Sensemetrics Cloud Platform, Eagle.IO, or approved equal. Provide two years of service for the cellular modem and web-based interface.

Furnish a solar panel and backup battery to power the data logging equipment. Provide earth ground wiring and grounding rods for all data logging equipment in accordance with the manufacturer's recommendations.

CONSTRUCTION REQUIREMENTS
Provide and install all new instruments as indicated in the Plans, Special Provisions, and herein.

Collect data from the anchor strand gages during stressing and lock-off, as described in the Ground Anchor Special Provision.

All instruments, reading devices, fixtures, cables, recorded data, data transfer and reduction software, and data templates become the property of the Department upon completion of the Contract. Transfer all hardware, recorded data, instrumentation warranties, calibration certificates, and software in working condition and within calibration to the Department upon completion of the Contract.

A. Quality Assurance
Install the instrumentation in conformance to the manufacturer's requirements and these specifications.

Maintain the instrumentation systems within the manufacturer's calibration requirements for the duration of the project.

In the cases of instrument failure or other reasons for nonperformance during the term of the Contract, replace those instruments with acceptable instruments at no additional cost to the Department.

B. Instrumentation Specialist Qualifications
Submit a resume listing experience and qualifications of the instrumentation specialist overseeing design, installation, and setup of the instrumentation. Submit descriptions for 4 projects that demonstrate the instrumentation specialist has procured, installed, and monitored similar geotechnical instruments on similar projects over the last 3 years. Include a brief description of each project, instruments used, the project’s location, date of project, owner, and a reference for each project listed. Include an individual's name and current phone number for each reference.

C. Instrumentation Plan and Work Drawings
Prepare an Instrumentation Plan and Work Drawings in accordance with Section 105.08, “Work Drawings.” Prepare the Instrumentation and Work Drawings under the supervision and direction of a North Dakota Registered Engineer. Have the Registered Engineer sign and seal the Instrumentation Plan and Work Drawings. Submit the Instrumentation Plan and Work
Drawings for review and approval beginning any drilled shaft or ground anchor construction activities. Include the following items:

- Schedule and outline of procedures for instrument installation.
- Comprehensive list and description of each type of instrument, including:
  - Name of manufacturer and model number, as appropriate.
  - Operating manuals and specifications.
  - Installation procedures for each type of instrument.
- A description of the proposed data logging equipment, including:
  - Model number and manufacturer for all system components.
  - A description of how the components will be setup and interface with each other and the instruments.
  - A description and screenshots of the web-based interface that will be used to remotely access instrument readings.
- Work Drawings showing:
  - Instrumentation sensor locations.
  - Proposed location(s) for all components of the data logging equipment.
  - Proposed routing of all cabling, including routing of the DSMS cables through the abutment.
  - Details including conduit, covers, protection of signal cables, and backfill, as appropriate.
- Documentation of calibration for instruments and readout devices.

D. Installing Instrumentation

Install instruments in accordance with manufacturer’s recommendations and as described herein.

1. Drilled Shaft Movement Sensor.

   a. Install DSMS in Drilled Shafts 4 (near the center of the abutment) and 7 (east of the abutment) in accordance with the manufacturer’s instructions. Install the DSMSs inside 1-inch diameter PVC electrical conduit placed inside the CSL access tube. Before installing the DSMS in the PVC conduit, install the conduit inside the CSL access tube and completely fill the annulus between the conduit and the CSL access tube with grout in accordance with the CSL Special Provision. Cover the top of the conduit to prevent the intrusion of foreign matter and debris until the DSMS is installed inside the conduit. Use a length of chain attached to the bottom of the PVC conduit or other methods recommended by the DSMS manufacturer to counteract buoyancy during grouting. Allow the grout to cure for at least 24 hours, then install the DSMSs in the conduit, with the top of the sensor located within 5 feet of the top of the CSL access tube.

   b. Connect DSMSs to the data logging equipment as indicated in the approved Instrumentation Plan and Work Drawings. Provide all necessary connections, conduit, and cabling to connect DSMSs to the data logger system.

   c. Make any required cable splices using a splice kit from the instrumentation manufacturer and designed for the splice environment.
d. Protect DSMSs through project acceptance. Repair or replace any damage to instrumentation resulting from construction activities at no additional cost to the Department.

2. Ground Anchor Strain Gauges.

a. Install ground anchor strain gages and signal cables at the strand anchor manufacturer's shop location. Install gauges prior to corrosion protection installation. Complete corrosion protection after strand gauges are attached to the anchor, without damaging to gauge, gauge cable, strand anchor, or compromising corrosion protection of ground anchor.

b. Ensure strand anchor corrosion protection is intact after gauges and signal cables are attached.

c. Protect instrument signal cables and gauges during transportation and installation of instrumented anchors.

d. Connect ground anchor strain gauges to the data logging equipment as indicated in the approved Instrumentation Plan and Work Drawings. Provide all necessary connections, conduit, and cabling to connect the ground anchor strain gauges to the data logger system.

e. Make any required cable splices using a splice kit from the instrumentation manufacturer and designed for the splice environment.

f. All strain gauges must function after installation for the system to be deemed acceptable. If one or more strain gauges do not function after installation, install a replacement instrumented anchor at no additional cost to the department.

3. Data Logging Equipment.

a. Install all components of the data logging equipment in accordance with the approved Instrumentation Plan and Work Drawings.

b. Affix the serial number of each instrument to its corresponding connecting cable at the point where it attaches to the data logging equipment.

c. Connect components of the data logging equipment to the earth ground.

d. Complete activation of cellular connectivity.

e. Configure the data logging equipment to measure and collect data from all instruments at a frequency of once per hour and provide a power cycling of the digital cellular modem once a day. Provide output in measure units as follows:

- DSMS: profile of cumulative displacement.
- Ground anchor strain gauges: Measured raw strain and total anchor load (load per strand times the number of strands in a given anchor).
f. Protect the data logging equipment through project acceptance. Repair or replace any datalogging equipment damaged as by construction activities at no cost to the Department.

g. Upon completion of installation, setup, and programming of data logging equipment, the Instrumentation Specialist will provide on-site walk through and training of system operations with Department staff.

h. Configure a web-based platform for remote access and plotting of instrumentation readings. Provide the Department staff with access to the website.

E. Maintenance

During the Contract term, protect and maintain all instruments in accordance with manufacturer’s recommended procedures.

Report all damaged or non-functional instrumentation to the Engineer immediately. Repair or replace damaged instrumentation, as a result of construction activities, at no additional cost to Department.

F. Instrument Monitoring

Provide access and necessary assistance to enable the Engineer to view data online through web-based platform.

Record measurements of strand anchor strain gages during each hold point of the ground anchor performance tests and ground anchor extended creep tests schedule in accordance with the Ground Anchor Special Provision, unless otherwise directed by the Engineer. Record ground anchor gage measurements at lock-off, 24 hours after lock off, and 7 days after lock-off for each instrumented ground anchor. Provide the data to the Engineer with the extended creep test data in accordance with the Ground Anchor Special Provision.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The Department will pay for accepted quantities at the contract price as follows:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Pay Item</th>
<th>Pay Unit</th>
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</thead>
<tbody>
<tr>
<td>930-4220</td>
<td>Instrumentation – Drilled Shaft Movement Sensor</td>
<td>Each</td>
</tr>
<tr>
<td>930-4205</td>
<td>Instrumentation – Strain Gauge</td>
<td>Each</td>
</tr>
<tr>
<td>930-4210</td>
<td>Instrumentation – Data Logging Equipment</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>

The unit price of the installed instruments is for full compensation of the work including but not limited to costs associated with the instrumentation specialist’s labor, per diem, and travel costs.

The unit price for Instrumentation – Drilled Shaft Movement Sensor is for full compensation of the work including but not limited to: costs associated with testing, installation, and programming and documentation by the Instrumentation Specialist; and costs for furnishing all tools, labor, equipment, materials, and incidentals necessary to complete the work.
The unit price for Instrumentation – Strain Gauge is for full compensation of the work including but not limited to: costs associated with installing gauges onto ground anchor, including travel expenses to the manufacturer’s plant for strand anchor gauge attachment; costs associated with manufacturer’s preparation of strand for gauge installation and restoration of Class 1 corrosion protection onto strand anchor; preparation of submittals; instrumentation monitoring; maintenance of instruments and data reports; acquisition of instrumentation; calibration of instrumentation; costs for data collection, readout devices, data cables; and for furnishing all tools, labor, equipment, materials and incidentals necessary to complete the work.

The unit price for Instrumentation – Data Logging Equipment is for full compensation of the work including but not limited to: procurement of all data logging equipment meeting these specifications; wiring, conduit, and cable connections; earth ground rod and wiring; all costs associated with testing, installation, programming, documentation, and assistance to NDDOT during system handover by the Instrumentation Specialist; two years of cellular modem and web monitoring service; and costs for furnishing all tools, labor, equipment, materials and incidentals necessary to complete the work.
DESCRIPTION
The North Dakota Department of Transportation (NDDOT) in cooperation with the Federal Highway Administration (FHWA) have made the following environmental commitments to the United States Forest Service (USFS) for all work within USFS lands:

FIRE PROTECTION AND SUPPRESSION

A. General.
A Holder is defined as the Permittee (permit holder), or Lessee and/or Operator and their representatives, employees, workers, contractors, and subcontractors.

1. Compliance to the stipulations in this exhibit shall not preclude the Holder from complying with any other Federal, State, County, or municipal laws, ordinances, or regulations pertaining to fire prevention and suppression.

2. The Fire Season for the Medora and McKenzie Ranger Districts normally will be from April 1 to October 31 of each year. If conditions warrant, the District Ranger may begin or extend the fire season as deemed necessary. The District Ranger may also amend, add, or delete any requirement as deemed necessary, and prudent given state of fire risk.

3. It is the Holder's responsibility to obtain and know the daily Fire Danger Index and fire restrictions on or near the lands to be occupied under an approved authorization. For information on Fire Danger Index and fire restrictions contact local fire officials, the North Dakota Forest Service, Bismarck National Weather Service, or the North Dakota Division of Emergency Services.

4. To the extent practicable, the Holder, their employees, contractors, and subcontractors, shall take measures to prevent uncontrolled fires on the area of operations resulting from the operations. Self-inspections are encouraged.

5. The Holder shall promptly report all fires, regardless of size, to the following:
   1.) The local fire department and
   2.) The Forest Service office.

   The Holder is responsible to submit a complete written follow-up Fire Report within 24 hours of reporting a fire.

6. The Holder, and if applicable, the applicable lessees and transferees are jointly and severally liable in accordance with Federal and State laws for indemnifying the United States for:
(a) Injury, loss or damage, including fire suppression costs, which the United States incurs as a result of the operations; and
(b) Payments made by the United States in satisfaction of claims, demands or judgments for an injury, loss or damage, including fire suppression costs, which result from the operations.

B. Fires.
With the exception of approved facilities, no open fires (fires for warming, burning wastes, brush disposal, debris, etc.) are allowed unless approved in writing from the District Ranger.

C. Smoking.
All smoking will be done inside of vehicles or in areas cleared of flammable material when the "Fire Danger Index" is “Very High” or “Extreme”.

D. Exhaust & Arrester Systems.
Each internal combustion engine shall be equipped with a manufacturer’s approved or equivalent spark arrester or spark arresting device or system. Heavy-duty trucks may have a vertical stack exhaust system with muffler, provided the exhaust stack extends above the cab of the vehicle. An exhaust driven turbocharger is considered to be a satisfactory spark arrester. Internal combustion engine exhaust systems, arresters and other devices shall be properly installed and maintained.

E. Catalytic Converters.
The Holder shall take extra precautionary measures when driving off-road with vehicles equipped with catalytic converters. Such measures shall include but are not limited to: avoiding driving over or through vegetation tall enough to come into contact with the converter, avoid parking in vegetation tall enough to come into contact with the converter, and keep all debris from building up around or on the exhaust system.

F. Chainsaws.
Equip users of chainsaws with a shovel and a minimum 8 ounces of extinguisher fluid or a minimum 1 pound dry chemical powder extinguisher. Carry the extinguisher at all times. Refuel saws on bare soil. Use saws that are equipped with the manufacturers approved spark arrester.

G. Required Fire Suppression Equipment.
Any vehicle and/or piece of equipment used off-road will be equipped with an operational, charged fire extinguisher with a minimum 2 ½ pounds capacity and 4 BC or higher rating; a shovel (round point #0 or equal); and a 5-gallon backpack container with a hand pump attached, to be filled at all times.

H. Welding.

1. General.
Welding and use of cutting torches or cutoff saws will be permitted only in areas that have been cleared or are free of all material capable of carrying fire. Flammable debris and vegetation must be removed from within a minimum 10 foot radius of all welding and cutting operations or fireproof welding blankets used.
2. **Fire Danger Index Categorized As High.**
   When the "Fire Danger Index" is in the "High" category or above, each welding crew will have the following available in the immediate working area:
   1) A mix of the required fire suppression equipment and
   2) A ground tanker with a minimum 300 gallon capacity with a pump capable of pumping 20 gallons per minute at a minimum of 40 pounds per square inch (PSI) and a minimum of 100 feet of hose.

3. **Fire Danger Index Categorized As Very High or Extreme.**
   When "Fire Danger Index" is in the "Very High" or "Extreme" category and a Red Flag Warning is issued no welding is permitted.

I. **Fire Suppression Plan.**
   Upon request from the District Ranger, or when required by regulation, the Holder shall submit a Fire Suppression Plan to be included as part of the Permit Package or Plan of Operations.

J. **Failure to Comply.**
   Failure to comply may result in the immediate suspension of all or portions of the operations.

**MEASUREMENT AND BASIS OF PAYMENT**
The cost of Fire Protection and Suppression will not be paid for, but will be included the cost of other contract items.
ENKTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

ERIONITE CONTAINMENT

Project # 7-085(109)125 – PCN 22041

DESCRIPTION

The location of this project and the construction history of the roadway indicate that the asphalt and aggregate base contain the mineral erionite. Information regarding the properties of erionite can be found at the North Dakota Department of Health (NDDoH) website:

http://www.ndhealth.gov/EHS/Erionite/

The presence of erionite requires special handling of the existing material.

CONSTRUCTION REQUIREMENTS

Salvage the existing surfacing using one or both of the following methods:

A. In Place Blending.

1. Crush and blend the existing asphalt pavement and aggregate base in place. Reincorporated existing material into the new base course.

2. Provide a mining/blending machine that meets the requirements of Section 153.01, “Reclaimer” with the additional capability of adding water to the blended aggregate and asphalt pavement during the crushing and blending operation.

3. Keep the aggregate and crushed asphalt damp throughout the operation to minimize fugitive dust.

B. Off Site Blending.

1. General.
   a. Mill the existing asphalt pavement and reincorporate into the new base course.

   b. Provide a milling machine that meets the requirements of Section 156.03, “Milling Machine” with the additional capability of adding water directly to the asphalt pavement during milling operations.

   c. Keep the milled asphalt damp throughout the operation to minimize fugitive dust.

2. Hauling.

   Cover loads of removed material to prevent loss of material during hauling operations.
3. **Stockpiling and Mixing Plant.**
   Removed material may be crushed or screened to meet gradation requirements. If crushing or screening is performed, obtain approval from the Engineer and the NDDoH of a Dust Prevention Plan before crushing or screening.

   A cold feed system may be used in blending the material with the virgin aggregate. If a cold feed system is used, it shall meet the requirements of Section 154.01 G, “Cold-Feed Control.”

C. **Traffic and Maintenance.**

   1. Keep aggregate and blended base courses damp at all times until the courses are covered with asphalt pavement or prime.

   2. Have personnel on the project at all times to monitor the moisture of exposed courses and apply water as necessary to prevent fugitive dust caused by public and construction traffic.

D. **Exclusion Areas.**

   Do not use erionite containing salvaged base for Traffic Service Aggregate or on approaches.
This Special Provision incorporates the US Army Corps of Engineers (USACE) Section 404 Permit obtained by the North Dakota Department of Transportation (NDDOT) into the bidder’s proposal.

The Contractor is responsible for complying with all the terms and conditions as contained in the permit(s) attached hereto. Bidders will become familiar with all standard conditions and special conditions of the permit(s) and submit their bid for the construction of this project based on the following:

- **Section 404 Permit**
  A Section 404 Permit authorizes fill within USACE jurisdictional waters of the US. The Section 404 Nationwide 14 Permit, permit number NWO-2015-0767-BIS, authorizes 0.02 acre of permanent and 0.40 acre of the temporary impact to jurisdictional wetlands and 1.71 acre of temporary and 0.04 acre of permanent impacts to other waters. Temporary impacts were assumed by the designer and will be restored to preconstruction contours.

  See the Section 75 sheets of the design plans for the permitted impact areas. The Section 404 Permit is attached.

The Section 404 Permit and 401 Water Quality Certification special conditions have been incorporated into the plans. The Contractor is responsible for preparing and submitting for Permit(s) for any additional impacts not authorized by the attached Permit(s) obtained by the NDDOT. The Contractor is responsible for any delays associated with obtaining any additional Permit(s). For changes to the existing 404 Nationwide 14 Permit, the USACE has 45 days from when the USACE receives a complete application to issue a Nationwide Permit as stated in condition 32 Pre-Construction Notification listed in the attached Fact Sheet.
March 13, 2019

North Dakota Department of Transportation
Attn: Mr. Mark Gaydos P.E.
608 East Boulevard Avenue
Bismarck, North Dakota 58505-0700

Dear Mr. Gaydos:

We are responding to your February 21, 2019, request for a Department of the Army permit for the construction of a new bridge and demolition of the existing Long X Bridge. The Long X Bridge Crossing is located approximately 15 miles south of Watford City, near the entrance to Theodore Roosevelt National Park at Latitude 47.590976, Longitude -103.253017 in Section 35, Township 148 North, Range 99 West, in McKenzie County, North Dakota.

Based on the information you provided to this office, the Long X Bridge project involves the construction of a new bridge and demolition of an existing bridge that crosses the Little Missouri River. The project must be completed in accordance with the SOIB-7-085(109)125 plans dated August 23, 2018. The specific activities that require work/structure and the discharge of dredged or fill material in waters of the United States include approaches for construction activities, new bridge piers, cofferdams and temporary causeways or a temporary work bridge or platform for construction and demolition. These activities will result in the permanent loss of approximately 0.04 acres (40LF) of the Little Missouri River and temporarily impact approximately 1.71 acres (305LF) of the Little Missouri River. The activities will also result in approximately 0.38 acres of temporary impacts to Palustrine emergent wetlands.

We have determined activities in waters of the U.S. associated with the project are authorized by Nationwide Permit Number (NWP) 14, found in the January 6, 2017 Federal Register (82 FR 1860), Reissuance of Nationwide Permits. Enclosed is a fact sheet that fully describes this Nationwide Permit and lists the General, Regional and Water Quality Conditions that must be adhered to for this authorization to remain valid. Please note that deviations from the original plans and specifications of your project could require additional authorization from this office.

This determination is applicable only to the permit program administered by the Corps of Engineers. It does not eliminate the need to obtain other Federal, state, tribal and local approvals before beginning work.
You are responsible for all work accomplished in accordance with the terms and conditions of the Nationwide Permit, including the Regional Conditions specific to projects undertaken in North Dakota. Information about the NWP and regional conditions are available on our website at http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota. If a contractor or other authorized representative will be accomplishing the work authorized by the Nationwide Permit on your behalf, it is strongly recommended that they be provided a copy of this letter and the attached conditions so that they are aware of the limitations of the applicable Nationwide Permit. Any activity that fails to comply with all of the terms and conditions of the Nationwide Permit will be considered unauthorized and subject to appropriate enforcement action.

In addition, your work must comply with the attached special conditions. The North Dakota Department of Health provided additional recommendations which have become special conditions of this verification. Within 30 days after completion of the authorized work, you must sign the enclosed Compliance Certification and return it to this office.

This verification will be valid until March 18, 2022. If the nationwide permit is modified, suspended, or revoked prior to this date, but is reissued without modification or the activity complies with any subsequent modification, this authorization remains valid until the expiration date. All of the existing nationwide permits are scheduled to be modified, reissued, or revoked prior to March 18, 2022. It is incumbent upon you to remain informed of changes to the nationwide permits. We will issue a public notice when the nationwide permits are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant nationwide permit is modified or revoked, you will have twelve (12) months from the date of the modification or revocation to complete the activity under the present terms and conditions.

The Omaha District, North Dakota Regulatory Office is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete our Customer Service Survey found on our website at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. If you do not have Internet access, you may call and request a paper copy of the survey that you can complete and return to us by mail or fax.
Please refer to identification number **NWO-2015-0767-BIS** in any correspondence concerning this project. If you have any questions, please contact Mr. Swade Hammond by email at swade.d.hammond@usace.army.mil, or telephone at 701-255-0015 ext. 2012.

Sincerely,

Patricia L. McQueary
State Program Manager
North Dakota

Enclosures
COMPLIANCE CERTIFICATION

Permit File Name: Long X Bridge, SOIB-7-085(109)125, PCN 22041; Watford City; McKenzie County

Action ID: NWO-2015-0767-BIS

Nationwide Permit Number: NWP 14

Permittee: North Dakota Department of Transportation
Attn: Mr. Mark Gaydos
608 East Boulevard Avenue
Bismarck, North Dakota 58505-0700

County: McKenzie County

Date of Verification: March 5, 2019

Within 30 days after completion of the activity authorized by this permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers, Omaha District
North Dakota Regulatory Office
3319 University Drive
Bismarck, North Dakota 58504
CENWO-OD-RND@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of the permit your authorization may be suspended, modified, or revoked. If you have any questions about this certification, please contact the U.S. Army Corps of Engineers.

* * * * * * *

I hereby certify that the work authorized by the above-referenced permit, including all the required mitigation, was completed in accordance with the terms and conditions of the permit verification.

Permittee Signature _______________________________ Date ______________
Long X Bridge Special Conditions

1. Causeway(s) would be needed as a stable work platform for both bridge construction and demolition of the existing Long X Bridge. The causeway(s) and any necessary cofferdams would be installed below the ordinary high water mark and may be in place for the duration of the project (approximately 3 years). The causeway(s) would be constructed anywhere within the area labeled as limits of disturbance on plan sheet Section 75 Sheet 12.

2. Causeway(s) shall not span across the entire river. Normal and high flows shall be maintained with a minimum 50-foot water way opening. The water way opening shall be located in the natural channel at the time of construction.

3. A below-deck containment system shall be installed below the bridge during the bridge deck removal to capture any falling deconstruction materials, debris, or slurry. The system shall be constructed in such a way to capture debris or slurry and allow removal without releasing debris into the river.

4. During demolition of the piers, a containment system shall be installed to capture any deconstruction materials and debris from discharging into the river. Any debris or material that accidentally falls or escapes containment shall be removed within 14 days and disposed at an upland site. Explosives shall not be used for demolition.

5. Larger structural elements may be allowed to be dropped within the ordinary high water mark if the elements are large enough to be visible and remain intact after dropping. These elements shall be removed within 48 hours of dropping and disposed or stockpiled in an upland area.

6. You shall implement the Memorandum of Agreement (MOA), entitled Adoption of the Long X Bridge (NDDOT Bridge No 85-126.262), and signed by the North Dakota Department of Transportation, Federal Highway Administration, North Dakota Historic Preservation Office, and the identified Adoptee, in its entirety. This Federal Highway Administration (FHWA) has been designated the lead federal agency responsible for implementing and enforcing the MOA as signed. If you fail to comply with the implementation and associated enforcement of the MOA as outlined in the document, this office may determine that you are
out of compliance with the conditions of your verification and suspend the verification. Suspension may result in modification or revocation of the authorized work.

7. To ensure your project complies with the Federal Endangered Species Act, you must implement all of the Conservation Measures (CM) proposed as part of your project description, which are identified in the submitted Programmatic Biological Assessment which was signed by the United States Fish and Wildlife Service on February 9, 2017. If you are unable to implement any of the proposed measures, you must immediately notify this office and the agencies identified in the Programmatic Agreement so we may consult as appropriate, prior to initiating the work, in accordance with Federal law.

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8. Maintain and protect to the maximum extent possible all existing water uses during construction of the causeway, new bridge, demolition of the existing bridge, and throughout the duration of the project.

9. Specific to the Causeway and Causeway Construction. During construction of the causeway appropriate erosion controls need to be in place during construction and the causeway should be constructed: (a) Robustly enough to prevent continued erosion and failure when over-topped, (b) with culverts or other water passage systems to prevent trapping of water and associated aquatic animals in backwater areas, (c) with a gap large enough for the free passage of the main river channel at normal and low flows (river gap), and (d) The river gap will be located where the natural base-flow channel is at the time of construction to prevent destabilization of the river elsewhere. Note that the department believes the 50-foot gap identified in the PCN will be enough to meet this objective if located at the natural main channel.

10. All material used in building temporary cofferdams, containment systems, causeway, shall be completely removed from the river within 49 days after the work is completed. This objective of this recommendation is to ensure that all barriers and intrusion into the river, that impede or change the natural flow, are removed in a timely manner after they are no longer needed for construction of the new bridge or deconstruction of the old.

11. Remove, stockpile and contain on site the excavated or dredged materials from the river bed in a manner that prevents runoff of sediments back into the Little Missouri River. The issues of concern with river bed materials is that once disturbed, they may release stored trace elements into the water at concentrations that would be harmful to the aquatic community.

12. This material should not be placed back into the river. It may be used for "fill" in other parts of the project. The department would consider disposing of the
material back into the river if it is tested (using an approved elutriate method) and
elutriate is found to contain trace elements in concentrations below the water
quality criteria for aquatic life.

13. Develop a secure upland staging area or areas for the storage of equipment,
fuel, petroleum products, and hazardous materials when not in use. The staging
area(s) are to be located at or constructed in such a way that a spill will not enter
the river. Equipment, which cannot be moved to the staging area at the end of
each day, will be locked or secured in such a manner as to prevent vandalism.

14. Develop a list of fuels, lubricants, antifreeze, hydraulic fluids, petroleum
products and hazardous materials used. Have the list available on request.

15. Maintain containment booms and/or absorbent materials on site. The
numbers, types, and length of booms and/or absorbent materials need to be
enough to address the types and volumes of materials listed in condition 16.

16. Prior to allowing any equipment on the construction site, inspect it for oil,
gas, diesel, antifreeze, hydraulic fluid, and other petroleum leaks. Properly repair
all such leaks, and clean equipment prior to allowing it on the site. Equipment
leaks that occur during the project must be fixed within 24 hours, or the
equipment must be removed from the project area. Equipment is not allowed to
continue operating once a leak is discovered.

17. Clean and inspect all equipment, temporary bridge materials, watercraft,
barges, and tools before and after use to prevent the spread of aquatic nuisance
species.

18. All exposed riparian areas are to be re-vegetated with native species
immediately following completion of work.

19. For re-vegetation purposes, vegetation and organic riverbank material
removed during construction of the bridge or bridge approaches may be stored at
an upland site. The site should be located where it will not reenter the river during
high water or precipitation events. Wetland and river bank topsoil stored at
upland sites may be reused.

20. Protect upland, riparian, and adjacent vegetation not being removed.

21. During demolition, install a below-deck system to capture any falling
deconstruction materials and debris and cement slurry. The system shall be
constructed in such a way to capture debris and allow removal without releasing
debris and slurry into the river.
22. During demolition of the piers, install a containment system to capture any deconstruction materials and debris. The system shall be constructed in such a way to capture debris and allow removal without releasing debris into the river.

23. Large pieces of concrete or metal may be purposely dropped into the river. These large pieces must be removed from the river within 48 hours and disposed of at an upland site.

24. Debris or rubble that incidentally escapes during construction or demolition must be removed from the river bed and riparian areas within 14 days of entering the river and disposed of at an upland site.


26. Remove and test materials potentially containing lead-based paint from the existing bridge. If lead-based paint is found, the material will be properly disposed of off-site at an approved site.

27. New construction material for the bridge must be asbestos free.
engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

**Nationwide Permit General Conditions**

**Note:** To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. **Navigation.**

   (a) No activity may cause more than a minimal adverse effect on navigation.
   
   (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee’s expense on authorized facilities in navigable waters of the United States.
   
   (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements.**

   No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity’s primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. **Spawning Areas.**

   Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or
downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas.**

Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds.**

No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. **Suitable Material.**

No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. **Water Supply Intakes.**

No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects from Impoundments.**

If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. **Management of Water Flows.**

To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).
10. **Fills Within 100-Year Floodplains.**

The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. **Equipment.**

Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. **Soil Erosion and Sediment Controls.**

Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. **Removal of Temporary Fills.**

Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. **Proper Maintenance.**

Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. **Single and Complete Project.**

The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. **Wild and Scenic Rivers.**

(a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency
with direct management responsibility for that river has determined in writing that the proposed
NWP activity will not adversely affect the Wild and Scenic River designation or study status.
(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land
management agency responsible for the designated Wild and Scenic River or study river (e.g.,
Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights.

No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty
rights), protected tribal resources, or tribal lands.

18. Endangered Species.

(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize
the continued existence of a threatened or endangered species or a species proposed for such
designation, as identified under the Federal Endangered Species Act (ESA), or which will
directly or indirectly destroy or adversely modify the critical habitat of such species. No activity
is authorized under any NWP which ‘‘may affect’’ a listed species or critical habitat, unless ESA
section 7 consultation addressing the effects of the proposed activity has been completed. Direct
effects are the immediate effects on listed species and critical habitat caused by the NWP
activity. Indirect effects are those effects on listed species and critical habitat that are caused by
the NWP activity and are later in time, but still are reasonably certain to occur.
(b) Federal agencies should follow their own procedures for complying with the requirements of
the ESA. If pre-construction notification is required for the proposed activity, the Federal
permittee must provide the district engineer with the appropriate documentation to demonstrate
compliance with those requirements. The district engineer will verify that the appropriate
documentation has been submitted. If the appropriate documentation has not been submitted,
aditional ESA section 7 consultation may be necessary for the activity and the respective
federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.
(c) Non-federal permittees must submit a pre-construction notification to the district engineer if
any listed species or designated critical habitat might be affected or is in the vicinity of the
activity, or if the activity is located in designated critical habitat, and shall not begin work on the
activity until notified by the district engineer that the requirements of the ESA have been
satisfied and that the activity is authorized. For activities that might affect Federally-listed
endangered or threatened species or designated critical habitat, the pre-construction notification
must include the name(s) of the endangered or threatened species that might be affected by the
proposed activity or that utilize the designated critical habitat that might be affected by the
proposed activity. The district engineer will determine whether the proposed activity ‘‘may
affect’’ or will have ‘‘no effect’’ to listed species and designated critical habitat and will notify
the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete
pre-construction notification. In cases where the non- Federal applicant has identified listed
species or critical habitat that might be affected or is in the vicinity of the activity, and has so
notified the Corps, the applicant shall not begin work until the Corps has provided notification
that the proposed activity will have ‘‘no effect’’ on listed species or critical habitat, or until ESA
section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide Web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.


The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.


(a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic
Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to
avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely
affected a historic property to which the permit would relate, or having legal power to prevent it,
allowed such significant adverse effect to occur, unless the Corps, after consultation with the
Advisory Council on Historic Preservation (ACHP), determines that circumstances justify
granting such assistance despite the adverse effect created or permitted by the applicant. If
circumstances justify granting the assistance, the Corps is required to notify the ACHP and
provide documentation specifying the circumstances, the degree of damage to the integrity of
any historic properties affected, and proposed mitigation. This documentation must include any
views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking
occurs on or affects historic properties on tribal lands or affects properties of interest to those
tribes, and other parties known to have a legitimate interest in the impacts to the permitted
activity on historic properties.

21. **Discovery of Previously Unknown Remains and Artifacts.**

If you discover any previously unknown historic, cultural or archeological remains and artifacts
while accomplishing the activity authorized by this permit, you must immediately notify the
district engineer of what you have found, and to the maximum extent practicable, avoid
construction activities that may affect the remains and artifacts until the required coordination
has been completed. The district engineer will initiate the Federal, Tribal, and state coordination
required to determine if the items or remains warrant a recovery effort or if the site is eligible for
listing in the National Register of Historic Places.

22. **Designated Critical Resource Waters.**

Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments,
and National Estuarine Research Reserves. The district engineer may designate, after notice and
opportunity for public comment, additional waters officially designated by a state as having
particular environmental or ecological significance, such as outstanding national resource waters
or state natural heritage sites. The district engineer may also designate additional critical resource
waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by
NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity
within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54,
nomination is required in accordance with general condition 32, for any activity proposed in the
designated critical resource waters including wetlands adjacent to those waters. The district
engineer may authorize activities under these NWPs only after it is determined that the impacts
to the critical resource waters will be no more than minimal.

23. **Mitigation.**

The district engineer will consider the following factors when determining appropriate and
practicable mitigation necessary to ensure that the individual and cumulative adverse
environmental effects are no more than minimal:
(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

   (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.
(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2- acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.


Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality. Specifically for North Dakota, the North Dakota Department of Health has issued water quality certification for projects under this Nationwide Permit provided the attached Construction and Environmental Disturbance Requirements are followed. On Tribal Lands, Water Quality Certification is denied for all Nationwide Permits. Applicants must work with EPA to obtain individual water quality certification. Contact: USEPA, Region 8, 401 Certification Program – 8WP-AAP, 1595 Wynkoop Street, Denver, Colorado 80202-1129. (303-312-6909)


In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions.

The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits.

The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.
29. **Transfer of Nationwide Permit Verifications.**

If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_________________________________ (Transferee)   ___ ________________ (Date)

30. **Compliance Certification.**

Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
(c) The signature of the permittee certifying the completion of the activity and mitigation. The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. **Activities Affecting Structures or Works Built by the United States.**

If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a “USACE project”), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.
32. **Pre-Construction Notification.**

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

1. He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or
2. 45 calendar days have passed from the district engineer’s receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is “no effect” on listed species or “no potential to cause effects” on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee’s right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

1. Name, address and telephone numbers of the prospective permittee;
2. Location of the proposed activity;
3. Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;
4. A description of the proposed activity; the activity’s purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the
proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act.

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the “study river” (see general condition 16); and
For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity’s compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity’s adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than ½-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district fully consider agency comments received within the specified time frame concerning the proposed activity’s compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies’ concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.
(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

2017 NATIONWIDE PERMITS
REGIONAL CONDITIONS
OMAHA DISTRICT
STATE OF NORTH DAKOTA

The following Nationwide Permit Regional Conditions will be used in the State of North Dakota. Regional conditions are placed on Nationwide Permits to ensure projects result in no more than minimal adverse impacts to the aquatic environment and to address local resource concerns.

1. **Wetlands Classified as Peatlands – Revoked for use**

   All Nationwide Permits, with the exception of 3, 5, 20, 32, 38 and 45, are revoked for use in peatlands. Peatlands are permanently or seasonally saturated and inundated wetlands where conditions inhibit organic matter decomposition and allow for the accumulation of peat. Under cool, anaerobic, and acidic conditions, the rate of organic matter accumulation exceeds organic decay.

2. **Wetlands Classified as Peatlands – Preconstruction Notification Requirement**

   For Nationwide Permits 3, 5, 20, 32, 38 and 45 permittees must notify the Corps in accordance with General Condition 32 (Pre-Construction Notification) prior to initiating any regulated activity impacting peatlands.

3. **Waters Adjacent to Natural Springs – Preconstruction Notification Requirement**
For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 32 (Pre-Construction Notification) for regulated activities located within 100 feet of the water source in natural spring areas. For purposes of this condition, a spring source is defined as any location where there is flow emanating from a distinct point at any time during the growing season. Springs do not include seeps and other groundwater discharge areas where there is no distinct point source.

4. **Missouri River, including Lake Sakakawea and Lake Oahe – Pre-construction Notification Requirement**

For all Nationwide Permits permittees must notify the Corps in accordance with General Condition No. 32 (Pre-Construction Notification) prior to initiating any regulated activity occurring in or under the Missouri River, including Lake Sakakawea and Lake Oahe. In addition, any activity occurring in an off channel area (marinas, bays, etc.) of any of these waterbodies, a preconstruction notification is required.

5. **Spawning Areas**

Spawning restrictions and important fish habitat areas, if applicable, can be accessed on the North Dakota Game & Fish Department’s website at: [http://gf.nd.gov/gnf/conservation/docs/spawning-restriction-exclusions.pdf](http://gf.nd.gov/gnf/conservation/docs/spawning-restriction-exclusions.pdf)

No regulated activity within the Red River of the North shall occur between 15 April and 1 July. Spawning season restrictions do not apply to projects involving dredging or other discharges of less than 25 cubic yards of material in any jurisdictional water.

6. **Counter-Sinking Culverts and Associated Riprap – All Nationwide Permits**

In streams with intermittent or perennial flow and a stable stream bed, culvert stream crossings shall be installed with the culvert invert set below the natural streambed according to the table below. This regional condition does not apply in instances where the lowering of the culvert invert would allow a headcut to migrate upstream of the project into an unaffected stream reach or result in lowering the elevation of the stream reach.

Riprap inlet and outlet protection shall be placed to match the height of the culvert invert.

<table>
<thead>
<tr>
<th>Culvert Type</th>
<th>Drainage Area</th>
<th>Minimum Distance Culvert Invert Shall Be Lowered Below Stream Flow Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>All culvert types</td>
<td>&lt; 100 acres</td>
<td>Not required</td>
</tr>
<tr>
<td>Pipe diameter &lt; 8.0 ft</td>
<td>100 to 640 acres</td>
<td>0.5 ft</td>
</tr>
<tr>
<td>Pipe diameter &lt; 8.0 ft</td>
<td>&gt; 640 acres</td>
<td>1.0 ft</td>
</tr>
<tr>
<td>Pipe diameter ≥ 8.0 ft</td>
<td>All drainage sizes</td>
<td>1.0 ft</td>
</tr>
<tr>
<td>Box culvert</td>
<td>All drainage sizes</td>
<td>1.0 ft</td>
</tr>
</tbody>
</table>
REGIONAL CONDITIONS APPLICABLE TO SPECIFIC NATIONWIDE PERMITS

Nationwide Permit 7 – Outfall Structures and Associated Intake Structures and
Nationwide Permit 12 – Utility Line Activities.

Intake Structures – Intake screens with a maximum mesh opening of ¼-inch must be provided, inspected annually, and maintained. Wire, Johnson-like, screens must have a maximum distance between wires of 1/8-inch. Water velocity at the intake screen shall not exceed ½-foot per second.

Pumping plant sound levels will not exceed 75 dB at 50 feet.

Intakes located in Lake Sakakawea, above river mile 1519, and on the Yellowstone River, are subject to the following conditions:
- The intakes shall be floating.
- At the beginning of the pumping season, the intake shall be placed over water with a minimum depth of 20 feet.
- If the 20-foot depth is not attainable, then the intake shall be located over the deepest water available.
- If the water depth falls below six feet, the intake shall be moved to deeper water or the maximum intake velocity shall be limited to ¼ foot per second.

Intakes located in Lake Sakakawea, below river mile 1519, and the Missouri River below Garrison Dam are subject to the following conditions:
- The intakes shall be submerged.
- At the beginning of the pumping season, the intake will be placed at least 20 vertical feet below the existing water level.
- The intake shall be elevated 2 to 4 feet off the bottom of the river or reservoir bed.
- If the 20-foot depth is not attainable, then the intake velocity shall be limited to ¼-foot per second with intake placed at the maximum practicable attainable depth.

Intakes and associated utility lines that are proposed to cross sandbars in areas designated as piping plover critical habitat are prohibited.

Utility Lines
- Any temporary open trench associated with utility lines are to be closed within 30 days of excavation. This time limit may be extended by notifying the North Dakota Regulatory Office and receiving a written response that the extension is acceptable.

Nationwide Permit 11 – Temporary Recreational Structures – Boat Docks

To ensure that the work or structure shall not cause unreasonable obstruction to the free navigation of the navigable waters, the following conditions are required:
- No boat dock shall be located on a sandbar or barren sand feature. The farthest point riverward of a dock shall not exceed a total length of 30 feet from the ordinary high
watermark. Information Note: Issuance of this permit does not supersede authorization required by the North Dakota State Engineer’s Office.

- Any boat dock shall be anchored to the top of the high bank.
- Any boat dock located within an excavated bay or marina that is off the main river channel may be anchored to the bay or marina bottom with spuds.

Section 10 Waters located in the State of North Dakota are:
- Bois de Sioux River
- James River
- Missouri River
- Red River of the North
- Upper Des Lacs Lake
- Yellowstone River

**Nationwide Permit 13 – Bank Stabilization**

Permittees must notify the Corps in accordance with General Condition No. 32 (Pre-Construction Notification) prior to initiating any regulated activity. The notification must also include photo evidence of erosion in the area. Prohibited materials found at http://www.nwo.usace.army.mil/Media/FactSheets/FactSheetArticleView/tabid/2034/Article/487696/prohibited-restricted-materials.aspx cannot be used in waters of the United States.

**Nationwide Permit 23 – Approved Categorical Exclusions**

Permittees must notify the Corps in accordance with General Condition No. 32 (Pre-Construction Notification) prior to initiating any regulated activity. In addition to information required by General Condition 32 (Pre-Construction Notification), permittees must identify the approved categorical exclusion that applies and provide documentation that the project fits the categorical exclusion.

**GENERAL CONDITIONS (REGIONAL ADDITIONS)**

**General Condition 32 Notification – Pre-construction Notification**

Prospective permittees should be aware that a field aquatic resources delineation may be required for applications where notification is required in accordance with General Condition 32 (Pre-Construction Notification) and/or mitigation may be required. Specific guidelines outlining the aquatic resources delineation process in the State of North Dakota and the Corps 1987 Wetland Delineation Manual and applicable Regional supplements to the Manual can be accessed on the North Dakota Regulatory Office’s website at: http://www.nwo.usace.army.mil/Missions/RegulatoryProgram/NorthDakota.aspx
Construction and Environmental Disturbance Requirements

These represent the minimum requirements of the North Dakota Department of Health. They ensure that minimal environmental degradation occurs as a result of construction or related work which has the potential to affect the waters of the State of North Dakota. All projects will be designed and implemented to restrict the losses or disturbances of soil, vegetative cover, and pollutants (chemical or biological) from a site.

Soils

Prevent the erosion of exposed soil surfaces and trapping sediments being transported. Examples include, but are not restricted to, sediment dams or berms, diversion dikes, hay bales as erosion checks, riprap, mesh or burlap blankets to hold soil during construction, and immediately establishing vegetative cover on disturbed areas after construction is completed. Fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage.

Surface Waters

All construction which directly or indirectly impacts aquatic systems will be managed to minimize impacts. All attempts will be made to prevent the contamination of water at construction sites from fuel spillage, lubricants, and chemicals, by following safe storage and handling procedures. Stream bank and stream bed disturbances will be controlled to minimize and/or prevent silt movement, nutrient upsurges, plant dislocation, and any physical, chemical, or biological disruption. The use of pesticides or herbicides in or near these systems is forbidden without approval from this Department.

Fill Material

Any fill material placed below the high water mark must be free of top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations). This includes, but is not limited to, asphalt, tires, treated lumber, and construction debris. The Department may require testing of fill materials. All temporary fills must be removed. Debris and solid wastes will be removed from the site and the impacted areas restored as nearly as possible to the original condition.
Introduction

This Special Provision provides for price adjustments to the Contract when significant changes in the cost of motor fuels and burner fuels occur while completing the Contract work. Participation in fuel cost adjustment program is not mandatory. A Contractor is not required to notify the Department at the time of submitting bids whether the Contractor will or will not participate in the fuel cost adjustment provision.

The North Dakota Department of Transportation (NDDOT) will send the low responsible bidder a “Fuel Cost Adjustment Affidavit” (SFN 58393) with the proposed Contract. The Contractor shall return a completed Fuel Adjustment Affidavit with the signed Contract as specified in Standard Specification Section 103.06, Execution and Approval of the Contract. The affidavit shall be returned on all Contracts with this provision even if the Contractor elects not to participate in the provision.

Compensation adjustments for motor fuels and burner fuels consumed in prosecuting the Contract shall be determined by the Engineer in accordance with the provisions set forth herein. Compensation adjustments will be assessed monthly for the cost of the motor fuels and burner fuels whenever the Current Fuel Index (CFI) is outside the given threshold of the Base Fuel Index (BFI) for the Contract.

If the Contractor has a fixed price for fuel for motor or burner fuels to complete the work, no fuel cost adjustments will be made for that fuel type. If there is no fixed fuel price for motor or burner fuels, participation in the Fuel Adjustment provision is the decision of the prime Contractor.

If the prime Contractor decides not to participate, no fuel cost adjustments will be made to the Contract for the Contractor or any subcontractors. If the prime Contractor elects to participate in the fuel cost adjustment provision, the prime Contractor shall include the anticipated fuel cost of subcontractors who wish to participate. If fuel cost adjustments are made to the Contract, the prime Contractor shall ensure that participating subcontractors including second and lower tier, are included in the adjustments in proportion to the percentage of work and anticipated fuel cost by that subcontractor.

Fuel Indexes

Each month, NDDOT will record the average wholesale price for No. 2 diesel fuel and the average wholesale price for unleaded gasoline (87 octane). The monthly average will be the average of the daily rack prices for the month as reported by DTN Energy for Fargo ND.

The burner fuel index will be the No. 2 diesel fuel index regardless of the type of burner fuel actually used.

The Base Fuel Index (BFI) price for motor fuels and burner fuel to be used in the Contract will be the average wholesale price for the month prior to the bid opening.

The Current Fuel Index (CFI) price for motor fuels and burner fuel to be used for each monthly adjustment will be the average wholesale price for the month prior to the adjustment month.
Fuel Ratio

For motor fuels diesel and unleaded gas, the fuel ratio of the Contract will be determined by dividing the Contractor’s affidavit costs for each motor fuel by the original Contract amount.

For burner fuels, the fuel ratio of the contract will be determined by dividing the Contractor’s affidavit cost for burner fuels by the original Contract amount of plant-mixed hot bituminous pavement paid by the ton. Asphalt cement, binders and other miscellaneous bituminous items shall not be included.

The fuel ratio of the contract for motor and burner fuels will remain the same throughout the length of the contract. The sum of the affidavit fuel costs shall not exceed 15% of the original Contract amount.

The fuel ratio for the three fuel types will be determined by the following equation:

\[
\text{Fuel Ratio}_{(x, y, z)} = \frac{\text{Affidavit Cost}_{(x, y, z)}}{\text{Original Contract Amount}_{(x, y, z)}}
\]

\[
(x) = \text{Motor Fuel (Diesel)}
\]

\[
(y) = \text{Motor Fuel (Unleaded)}
\]

\[
(z) = \text{Burner Fuel}
\]

\[
\text{Fuel Ratio}_{(x, y, z)} = \text{Fuel ratio of the contract for each respective fuel type}
\]

\[
\text{Affidavit Cost}_{(x, y, z)} = \text{Fuel costs from Fuel Adjustment Affidavit (SFN 58393)}
\]

\[
\text{Original Contract Amount}_{(x, y)} = \text{Total of the original contract amount excluding lane rental, and Part B of the bid (when A+B bidding is used), if applicable.}
\]

\[
\text{Original Contract Amount}_{(z)} = \text{Total original contract amount for all hot bituminous pavement bid items combined, excluding bid items for asphalt cement, sawing and sealing joints, coring, etc. Only hot bituminous pavement bid items measured by the Ton will be included in the calculation.}
\]
Cost Change

The monthly change in fuel costs will be determined by the following equation:

\[
\text{Cost Change}_{(x, y, z)} = \left( \frac{\text{CFI}_{(x, y, z)} - \text{BFI}_{(x, y, z)}}{\text{BFI}_{(x, y, z)}} \right)
\]

- \((x)\) = Motor Fuel (Diesel)
- \((y)\) = Motor Fuel (Unleaded)
- \((z)\) = Burner Fuel (use diesel prices)

Cost Change\(_{(x, y, z)}\) = The relative change in the current CFI and the BFI for each fuel type

- \(\text{CFI}_{(x, y, z)}\) = Current Fuel Index for each fuel type
- \(\text{BFI}_{(x, y, z)}\) = Base Fuel Index for each fuel type

Contract Adjustments

Contract adjustments will be made for the cost of motor and burner fuels whenever the cost change exceeds a ±0.10 threshold. No fuel cost adjustment will be made for work done under liquidated damages. Adjustments will be determined for Motor Fuel (diesel), Motor Fuel (unleaded), and Burner Fuel (burner) separately and shall be computed on a monthly basis.
When the cost change is greater than 0.10, the rebate to the Contractor for each fuel type shall be computed according to the following formulas:

\[
FCA_{(x, y, z)} = \text{Fuel Ratio}_{(x, y, z)} \times \text{Estimate}_{(x, y, z)} \times (\text{Cost Change}_{(x, y, z)} - 0.10)
\]

- \((x)\) = Motor Fuel (Diesel)
- \((y)\) = Motor Fuel (Unleaded)
- \((z)\) = Burner Fuel

\(FCA_{(x, y, z)}\) = Fuel Cost Adjustment for each of the fuel types

\(\text{Fuel Ratio}_{(x, y, z)}\) = Fuel Ratio for each of the fuel types

\(\text{Estimate}_{(x, y)}\) = The monthly total of work done on estimates issued in the current month excluding incentive or disincentive payments, pay factor adjustments and any work completed under liquidated damages.

\(\text{Estimate}_{(z)}\) = The monthly total of hot bituminous pavement work done on estimates issued in the current month, excluding bid items for asphalt cement, sawing and sealing joints, coring, etc. Only hot bituminous pavement bid items measured by the Ton will be included in the calculation. Hot bituminous pavement work completed under liquidated damages will not be included.

\(\text{Cost Change}_{(x, y, z)}\) = The monthly change in fuel costs for each of the fuel types
When the cost change is less than -0.10, the credit to the Department for each fuel type shall be computed according to the following formulas:

\[
FCA_{(x, y, z)} = \text{Fuel Ratio}_{(x, y, z)} \times \text{Estimate}_{(x, y, z)} \times (\text{Cost Change}_{(x, y, z)} + 0.10)
\]

(x) = Motor Fuel (Diesel)
(y) = Motor Fuel (Unleaded)
(z) = Burner Fuel

\(FCA_{(x, y, z)}\) = Fuel Cost Adjustment for each of the fuel types

\(\text{Fuel Ratio}_{(x, y, z)}\) = Fuel Ratio for each of the fuel types

\(\text{Estimate}_{(x, y)}\) = The monthly total of work done on estimates issued in the current month excluding any incentive or disincentive payments, pay factor adjustments and any work completed under liquidated damages.

\(\text{Estimate}_{(z)}\) = The monthly total of hot bituminous pavement work done on estimates issued in the current month, excluding bid items for asphalt cement, sawing and sealing joints, coring, etc. Only hot bituminous pavement bid items measured by the Ton will be included in the calculation. Hot bituminous pavement work completed under liquidated damages will not be included.

\(\text{Cost Change}_{(x, y, z)}\) = The monthly change in fuel costs for each of the fuel types

Payments

Adjustments will be determined by the Engineer monthly. Adjustments will be made under the following spec and code for each fuel type:

- 109 0100 Motor Fuels (Diesel)
- 109 0200 Motor Fuels (Unleaded)
- 109 0300 Burner Fuel

When significant payment adjustments are made on final estimates to account for final in-place measured quantities, the Engineer may prorate the adjustments back to the months when the work was done.

Attachments

For informational purposes, a 'Fuel Cost Adjustment Affidavit' (SFN 58393) is included as Attachment A.
The Contractor is not required to notify the Department at the time of submitting bids whether he will or will not participate in the fuel cost adjustment program. The Contractor shall return the affidavit on all Contracts with this Provision even if the Contractor elects not to participate.

Check the box for each fuel type that has a fixed price. No adjustments in fuel price will be made for the boxes that are checked.

☐ Diesel  ☐ Unleaded  ☐ Burner

Does your company elect to participate in a fuel adjustment for this contract for the fuels that do not have a fixed price? No adjustments in fuel prices will be made if No is checked.

☐ Yes  ☐ No

If yes, provide the total dollars for each of the applicable fuels:

Diesel (D)

Unleaded (U)

Burner Fuel (B)

Sum (D+U+B) % of Original Contract Amount *

*The sum of the D, U, and B may not exceed 15% of the original contract amount.

Under the penalty of law for perjury of falsification, the undersigned,

Name (print or type)  Title (print or type)

Contractor (print or type)

hereby certifies that the documentation is submitted in good faith, that the information provided is accurate and complete to the best of their knowledge and belief, and that the monetary amount identified accurately reflects the cost for fuel, and that they are duly authorized to certify the above documentation on behalf of the company.

I hereby agree that the Department or its authorized representative shall have the right to examine and copy all Contractor records, documents, work sheets, bid sheets and other data pertinent to the justification of the fuel costs shown above.

Signature  Date

Acknowledgement

State of

County of

Signed and sworn to (or affirmed) before me on this day (month, day, year)

Name of Notary Public or other Authorized Officer (Type or Print)  Affix Notary Stamp

Signature of Notary Public or other Authorized Officer

Commission Expiration Date (if not listed on stamp)