

# INFORMATIONAL PROPOSAL

(For information only, not to be used for bidding)

NEBRASKA DEPARTMENT OF ROADS  
LETTING DATE: February 04, 2016

CALL ORDER: 210  
CONTROL NO. SEQ. NO.: 22581 000

CONTRACT ID: 2581X  
PROJECT NO.: S-133-2(1004)

TENTATIVE START DATE: 09/26/2016

CONTRACT TIME: 20 Working Days

LOCATION: N-133, THOMAS CREEK BRIDGE NORTH (SB)

IN COUNTY: DOUGLAS

BIDDER

GROUP 1 GRADING  
GROUP 3 CONCRETE PAVING  
GROUP 7 GUARDRAIL  
GROUP 10 GENERAL

SEE SPECIAL PROVISIONS FOR GROUP TIES

## NOTES

THE TOTAL AMOUNT OR WORK WHICH WILL BE ACCEPTED IN  
THIS LETTING IS LIMITED TO \$\_\_\_\_\_.

THE NUMBER OF GROUP \_\_\_\_\_ CONTRACTS WHICH WILL BE  
ACCEPTED IN THIS LETTING IS LIMITED TO \_\_\_\_\_.

## NOTICE TO ALL BIDDERS

To report bid rigging activities, call: 1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free “hotline” Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the “hotline” to report such activities.

The “hotline” is part of the DOT’s continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

## LETTING QUESTIONS

Prior to the letting, any questions pertaining to the Special Provisions or the Plans for this project should be submitted to NDOR in a written format through the Bid Express (BidX) website at <https://www.bidx.com/ne/lettings>. Likewise, NDOR will post answers exclusively to the BidX website. All official answers will be identified as “Authorized by NDOR.” **Questions will not be answered verbally.**

STATE OF NEBRASKA  
DEPARTMENT OF ROADS

Required Provisions Supplemental to the

**Standard Specifications for Highway Construction**

**I. Application**

These contract provisions shall apply to all work performed on the contract by the contractor with his own organization and with the assistance of workmen under his immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

The contractor shall insert in each of his subcontracts all of the stipulations contained in the Special Provisions and these Required Provisions.

A breach of any of the stipulations contained in these Required Provisions may be grounds for termination of the contract.

**II. Equal Opportunity**

1. **Selection of Labor**

During the performance of this contract, the contractor shall not discriminate against labor from any other state.

2. **Nebraska Fair Employment Practices Act**

The contractor shall not discriminate against any employee or applicant for employment, to be employed in the performance of this contract with respect to his hire, tenure, terms, conditions, or privileges of employment, because of his race, color, religion, sex or national origin. The contractor agrees to post in a conspicuous place or places a notice to be provided by the State Highway Department which sets forth excerpts of the Act.

3. **Nebraska Equal Pay Act**

The contractor shall not discriminate on the basis of sex by paying wages to employees of one sex at a lesser rate than the rate paid to employees of the opposite sex for comparable work on jobs which have comparable requirements. An abstract of the Act is included on the notice which is provided by the State Highway Department.

April 4, 1995

### III. Employment of Labor

#### 1. General

No person under the age of sixteen (16) years, and no one whose age or physical condition is such as to make his employment dangerous to his health or safety, or to the health and safety of others shall be employed on any project. This paragraph shall not be construed to deny the employment of older people or physically handicapped persons, otherwise employable, where such persons may be safely assigned to work which they can ably perform.

No person currently serving sentence to a penal or correction institution shall be employed on any project.

Except as specifically provided under this section, workers who are qualified by training or experience to be assigned to projects of this character shall not be discriminated against on any grounds whatsoever.

#### 2. Payrolls

Payrolls and basic records relating thereto will be maintained during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working on the site of the work.

The contractor's and subcontractor's payroll records shall be available for inspection by authorized representatives of the State Highway Department and authorized representatives of Federal Agencies.

The wages of labor shall be paid in legal tender of the United States, except that this condition will be considered satisfied if payment is made by a negotiable check, on a solvent bank, which may be cashed readily by the employee in the local community for the full amount, without discount or collection charges of any kind. Where checks are used for payment the contractor shall make all necessary arrangements for them to be cashed and shall give information regarding such arrangements.

No fee of any kind shall be asked or accepted by the contractor or any of his agents from any person as a condition of employment on the project.

No laborers shall be charged for any tools used in performing their respective duties except for reasonably avoidable loss or damage thereto.

Every employee on the work covered by this contract shall be permitted to lodge, board and trade where and with whom he elects and neither the contractor nor his agents, nor his employees shall directly or indirectly require as a condition of employment that an employee shall lodge, board or trade at a particular place or with a particular person.

No charge shall be made for any transportation furnished by the contractor or his agents to any person employed on the work.

April 4, 1995

No individual shall be employed as a laborer on this contract except on a wage basis, but this shall not be construed to prohibit the rental of teams, trucks or other equipment from individuals. No such rental agreement, or any charges for feed, gasoline, supplies, or repairs on account of such agreement, shall cause any deduction from the wages accruing to any employee except as authorized by the regulations hereinbefore cited.

#### **IV. Safety and Accident Prevention**

In the performance of this contract, the contractor shall comply with all applicable Federal, State and local laws governing safety, health and sanitation. The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions, on his own responsibility or as the contracting officer may determine, 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.

#### **V. Subletting or Assigning the Contract**

The contractor shall perform with his own organization contract work amounting to not less than 30 percent of the total contract amount except that any items designated in the contract as "Specialty Items" may be performed by subcontract and the amount of any such "Specialty Items" so performed may be deducted from the total contract amount before computing the amount of work required to be performed by the contractor with his own organization.

Any items that have been selected as "Specialty Items" for the contract are listed as such in the Special Provisions found elsewhere in the contract.

No portion of the contract shall be sublet, assigned, or otherwise disposed of except with the written consent of the contracting officer or his authorized representative. Requests for permission to sublet assign or otherwise dispose of any portion of the contract shall be in writing and accompanied by a showing that the organization which will perform the work is particularly experienced and equipped for such work. The contractor shall give assurance that the minimum wage for labor as stated in his proposal shall apply to labor performed on all work sublet, assigned or otherwise disposed of in any way. Consent to sublet, assign or otherwise dispose of any portion of the contract shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract.

April 4, 1995

**SPECIAL PROVISIONS  
FOR  
STATE  
PROJECT NO. S-133-2(1004)**

**GENERAL CONDITIONS**

Bids for the work contemplated in this proposal form will be received at the office of the Nebraska Department of Roads in Room 104 of the Central Office Building at 1500 Highway 2 at Lincoln, Nebraska, on February 4, 2016, until 1:30 P.M.

- a. Bids submitted by mail should be addressed to the Nebraska Department of Roads, c/o Contract Lettings Section, P.O. Box 94759, Lincoln, NE 68509-4759.
- b. Bids submitted electronically over the internet, shall be submitted using [www.bidx.com](http://www.bidx.com).

The 2007 Edition of the Standard Specifications for Highway Construction, including all amendments and additions thereto effective at the date of the contract, are made a part of these Special Provisions, through reference.

The Required Provisions dated April 4, 1995, are attached to and are a part of this proposal form.

The attention of bidders is directed to the Required Provisions covering subletting or assigning the contract.

The proposal contains a statement that the contractor is complying with, and will continue to comply with, fair labor standards in the pursuit of his business and in the execution of the work contemplated in this proposal.

Fair labor standards shall be construed to mean such a scale of wages and conditions of employment as are paid and maintained by at least fifty per cent of the contractors in the same business or field of endeavor as the contractor filing this proposal.

GROUPS 1, 3, 7 & 10 ARE TIED TOGETHER AND BIDDING PROPOSAL FORMS  
FOR THIS WORK WILL BE ISSUED AND A CONTRACT AWARDED TO A CONTRACTOR  
WHO IS QUALIFIED FOR CONCRETE PAVEMENT.

**STATUS OF UTILITIES**

The following information is current as of December 18, 2015.

Utility facilities, aerial and/or underground may exist within this project. The Contractor shall determine to his satisfaction the extent of utility occupancy and utility conflict for facilities located within the construction areas.

At this time no utilities have been required to relocate their facilities.

Any utility adjustments or interruption of service for the convenience of the Contractor shall be the sole responsibility of the Contractor.

To arrange for utilities to locate and flag their underground facilities, contact Diggers Hotline of Nebraska at 1-800-331-5666, or dial 811.

Utilities known to be in the vicinity of this project:

- CenturyLink**
- Omaha Public Power District**
- Metropolitan Utility District**

Any work necessary will be concurrent with construction.

**STATUS OF RIGHT OF WAY**

The right of way for this project has been acquired and physical possession is held by the State of Nebraska and ready for the Contractor's use, except tracts listed below:

**Unacquired Right-of-Way Tracts as follows:**

<b>Tract Number</b>	<b>Status of Tract</b>	<b>Hearing Date</b>
None	None	None

**Right-of-Way Tracts with Pay Items:**

<b>Tract Number</b>	<b>Pay Items</b>
None	None

- No encroachments on the old right of way.
- Acquisition of right of way is not required for this project.

**SPECIAL PROSECUTION AND PROGRESS  
(Phasing)**

The plans depict phasing sequences that are to be used in the construction of this project. Any deviation from these sequences shall require the written approval of the Engineer.

## ENVIRONMENTAL COMMITMENT

**Control No.:** 22581                      **Project No.:** S-133-2(1004)  
**Project Name:** Thomas Creek Bridge North (SB)

Below are the Conservation Conditions that will be required for this project. All conditions and regulations of any permit obtained for this project will be followed by the contractor.

**(Responsible Party for the measure is found in parentheses)**

### **Conservation Measure for Environmentally Sensitive Areas**

All wetlands within the project area will be marked on the project plans for the Contractor as avoidance areas. (NDOR Design, NDOR Environmental)

The Contractor shall not stage, store, waste or stockpile materials and equipment in undisturbed locations, or in known/potential wetlands and/or known/potential streams that exhibit a clear “bed and Bank” channel. Potential wetland areas consist of any area that is known to pond water, swampy areas or areas supporting known wetland vegetation or areas where there is a distinct difference in vegetation (at lower elevations) from the surrounding upland areas. (Contractor, NDOR District)

- Regulated Wetlands and/or Water Resources for this project have been identified and delineated in the field by NDOR. The above condition pertains to the areas within delineated wetland boundaries (Wetlands – Do Not Disturb) and/or environmentally sensitive areas (Area of Environmental Concern – Do Not Disturb) as shown in the 2-W aerial plan sheets and/or the erosion control plan sheets included in the plan set. If access to any of these areas is required to complete the project construction, the NDOR construction project manager shall coordinate with the Environmental Permits Unit to determine need for field verification and/or permitting requirements prior to disturbance of the area. (Contractor, District Construction)

Contact Person:   Katie Krajicek, Highway Environmental Biologist, (402) 479-3116

**Changes in Project Scope.** If there is a change in the project scope, the project limits, or environmental commitments, the NDOR Environmental Section must be contacted to evaluate potential impacts prior to implementation. Environmental commitments are not subject to change without prior written approval from the NDOR Environmental Section.

**Threatened and Endangered Species.** The Contractor shall reference the AGC Endangered Species Guide or the Nebraska Game and Parks Commission website for a reference of federal and state listed species that may occur in the project vicinity prior to starting project construction. These guidance documents can be found at:

- [http://www.agcne.org/services/es\\_guide.htm](http://www.agcne.org/services/es_guide.htm)
- [http://outdoornebraska.ne.gov/wildlife/programs/nongame/Endangered\\_Threatened.asp](http://outdoornebraska.ne.gov/wildlife/programs/nongame/Endangered_Threatened.asp)



If federal or state listed species are observed during construction, stop work and contact the NDOR Environmental Section to determine action required prior to resuming work.

**Refueling.** Refueling will be conducted within the confines of the paved roadway surface or within the boundaries of an approved stockpile/staging site.

**Restricted Activities.** The following project activities shall, to the extent possible, be restricted to between the beginning and ending points of the project, within the right-of-way designated on the project plans.

- Borrow sites
- Construction debris waste disposal areas
- Asphalt plants
- Haul roads
- Stockpiling areas
- Staging areas
- Material storage sites

Any project related activities that occur outside of the project limits (includes the paved surface and within 12 inches of the paved surface) must be environmentally cleared/permitted with the Nebraska Game and Parks Commission as well as any other appropriate agencies by the contractor and those clearances/permits shall be submitted to the District Construction Project Manager prior to the start of the above listed project activities. The contractor shall submit a NDOR Plant Site/Stockpile Site Request Identification and Evaluation Form (DR Form 56) and/or a Borrow Site/Waste Site Request Identification and Evaluation Form (DR Form 119) as appropriate, and include information such as an aerial photo showing the proposed activity site, a plan-sheet or drawing showing the location and dimensions of the activity site, ground photos showing the existing conditions at the proposed activity site, etc. The contractor must receive notice of acceptance from NDOR, prior to starting the above listed project activities. These project activities cannot adversely affect state and/or federally listed species or designated critical habitat. Fill cannot be placed in Wetland, Stream or other Waters of the U.S without authorization. (NDOR Environmental, District Construction, Contractor)

**Waste/Debris.** Construction waste/debris will be disposed of in areas or a manner which will not adversely affect state and/or federally listed species and/or designated critical habitat.

Contact Person: Melissa Marinovich, Highway Environmental Biologist, (402) 479-3546

### **Encountering Unexpected Waste**

If contaminated soils and/or water or hazardous materials are encountered, then all work within the immediate area of the discovered hazardous material shall stop until NDOR/FHWA is notified and a plan to dispose of the Hazardous Materials has been developed. Then NDEQ shall be consulted and a remediation plan shall be developed for this project. The potential exists to have contaminants present resulting from minor spillage during fueling and service associated with construction equipment. Should contamination be found on the project during construction, the NDEQ shall be contacted for consultation and appropriate actions to be taken. The Contractor is required by NDOR's Standard Specification section 107 (legal relations and responsibilities to the public) to handle and dispose of contaminated material in accordance with applicable laws. (Contractor)

Contact Person: Carrie Wencel, Highway Environmental Biologist, (402) 479-4836

## FLOODPLAIN PERMIT

Nebraska Department of Roads  
**Floodplain/Floodway Development**  
**Permit/Application**

RECEIVED

AUG 31 2015

ENVIRONMENTAL SECTION

Permit Application No.
Date: 8/13/15

This form is used for any man-made change to improved or unimproved transportation facility, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations, or storage of equipment or materials.

Nebraska Department of Roads will obtain all other necessary federal, state, or local permits (e.g., Corps of Engineers 404 Permit, Local Levee District, etc.)

<b>1.</b>	Name of Applicant: Nebraska Department of Roads PO Box 94759 Lincoln NE 68509-4759
<b>2.</b>	Type and Use of Development: System Preservation Project
<b>3.</b>	Specific Location of Development: Highway 133 at Mile Marker (M.M.) 5+94 to M.M. 6+08
<b>4.</b>	Complete this section if the proposed development involves the improvement of a structure (i.e., walled and roofed building). Pre-improvement Value of Structure: \$ _____ Cost of Improvement: \$ _____

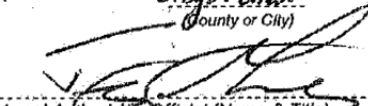
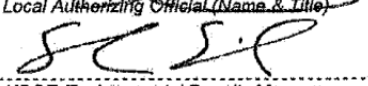
**The following section is to be completed by the community official:**

<b>5.</b>	Is the development Substantial Improvement? (see #4)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
<b>6.</b>	Is the development in an identified floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
<b>If Yes, complete the following:</b>				
a.	Elevation of the Base (100-Year) Flood	<u>1116.9</u>	Ft.	MSL/NGVD 29 or NAVD 88
b.	Elevation/Floodproofing Requirement (if applicable)	<u>N/A</u>	Ft.	MSL/NGVD 29 or NAVD 88
c.	Is the development in a designed Floodway?			
	<input checked="" type="checkbox"/> Yes	New structures for human habitation are prohibited. For any other Floodway development, the NDOR must provide certification by a registered professional engineer that the development would result in no increase along the floodway water surface profile.		
	<input type="checkbox"/> No	If a floodway has not been designated, the NDOR may be required to submit hydraulic data demonstrating that the proposed development will not increase flood heights more than one foot at any location.		

**If the development is in a floodplain, the following shall apply:**

This permit is issued with the condition that the lowest floor (including basement) of a new or substantially improved nonresidential building will be elevated or floodproofed at least one foot above the base flood elevation. NDOR will provide certification by a registered Engineer, Architect, or Land Surveyor that these provisions are met.

All provisions of the City of Omaha Floodplain Management Resolution/Ordinance (Number 39946) shall be complied with.

  
 Local Authorizing Official (Name & Title)  
 Date: 8/27/2015  
  
 NDOR Environmental Permits Manager  
 Date: 8-13-15

Project Name: Thomas Creek Brige North	
Project No.: 133-2(1004)	
Control No.: 22581	Structure No.: S10300591L

**SPECIAL PROSECUTION AND PROGRESS  
(Migratory Birds)  
(A-42-1112)**

The Department of Roads will, to the extent practicable, schedule the letting of projects such that clearing and grubbing can occur outside of the primary nesting season in Nebraska which has been determined to generally occur between April 1 and September 1. Work on structures, such as but not limited to bridges and culverts, should occur outside the primary swallow nesting season, April 15 to September 30, unless approved methods of avoiding nesting have been taken on the bridge and/or culvert structures. The nesting dates above are a guide only, nesting can occur outside of those dates. Work outside of those dates is not exempt from compliance with the Migratory Bird Treaty Act.

The Contractor shall, to the extent possible, schedule work on structures, such as but not limited to bridges and culverts, and clearing and grubbing activities to occur outside the primary nesting season in Nebraska. However, if circumstances dictate that project construction or demolition must be done when nesting migratory birds may be present, a survey of the number of active nests and species of birds shall be conducted by qualified personnel representing the Contractor, and assisted by the Project Manager (PM), NDOR Environmental Section staff, or the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) - Wildlife Services Office. If the survey finds that nests will be impacted by the proposed construction, the Contractor may be responsible for delays.

The following guidance is provided for compliance with the Migratory Bird Treaty Act for construction of NDOR projects:

1. The Contractor shall submit a plan to the NDOR regarding how he intends to accomplish bridge demolition or clearing and grubbing of the project to avoid conflict with nesting migratory birds.
2. The Contractor must submit a temporary erosion control plan tailored to fit the plan for clearing and grubbing.
3. If construction operations result in unavoidable conflict with nesting migratory bird's eggs or young, which will result in "taking" nests and their contents, the Contractor should notify the NDOR Project Manager (PM). The PM shall notify the Environmental Section of Planning and Project Development by telephone at 402-479-4766.
4. The NDOR Environmental Section will then determine if assistance in conducting the survey will be provided by the NDOR Environmental Section (if available) or from the USDA APHIS - Wildlife Services Office and arrange for assistance with the survey of nest numbers, bird species, etc. Results of the survey shall be maintained by the NDOR until project completion.
5. If the nesting survey is required, and the project was awarded prior to the nesting season, and the Contractor did not accomplish clearing/grubbing and/or work on bridge/culvert structures outside the nesting season, the Contractor will reimburse the Department of Roads for each survey required at \$1,000 per survey. If the project was awarded during the nesting season, and construction activities are such that clearing/grubbing and/or work on bridge/culvert structures must be accomplished prior to any other activity on the project, then there will be

no charge assessed for the initial survey. The Contractor is responsible for removing all trees surveyed, that do not contain active nests, and for taking appropriate measures on bridge/culvert structures, within 3 days of the survey. Reimbursement for additional surveys may be charged if the Contractor fails to remove the trees within 3 days of the survey, and requires an additional survey. Survey reimbursement will be determined on a project specific basis, considering the project timeline and associated activities.

6. If an active nest is found during the survey, the Contractor should do everything possible to restructure his activities and leave the nest undisturbed until the young fledge. Fledging could occur within a week, or up to a month, after the survey depending on the species of bird and whether the nest contained eggs or young. Also depending on the species of bird and their sensitivity to disturbance, a buffer of up to 30 feet surrounding the tree with the active nest could be required.
7. If construction cannot be rescheduled to allow the birds to fledge, and it is determined as an unavoidable "take" circumstance, the Contractor shall stop all work within 30 feet of the active nest and coordinate with the Construction Project Manager to determine how to proceed. The Construction Project Manager will then coordinate with the NDOR Environmental Section and they will facilitate coordination with the US Fish and Wildlife Service and the Federal Highway Administration (for projects using Federal-aid) to determine the appropriate way to address the active nest. No work shall occur within 30 feet of the active nest until US Fish and Wildlife Service coordination is complete and the requirements of the Migratory Bird Treaty Act are satisfied.
8. It is the Contractor's responsibility to schedule his work to accommodate the process of conducting a survey(s) and submitting the necessary documentation if avoidance is not practicable. The Contractor shall be responsible for using any legal and practical method to prevent the nesting of birds in order to prevent the need for any survey and prevent the need for additional surveys. It is understood and agreed that the Contractor has considered in the bid all of the pertinent requirements concerning migratory birds (including endangered species) and that no additional compensation, other than time extensions if warranted, will be allowed for any delays or inconvenience resulting in these requirements.

### **STORM WATER DISCHARGES (A-43-0408)**

In compliance with the Federal Water Pollution Control Act, authorization to discharge storm water on this project has been granted under National Pollutant Discharge Elimination System (NPDES) General NPDES Permit Number NER110000 for Storm Water Discharges from Construction Sites to Waters of the State of Nebraska. This permit became effective on January 1, 2008.

Contractors are advised that, under the Construction Storm Water General Permit, ***plant sites, camp sites, storage sites, and borrow or waste sites not shown on the plans may be subject to separate NPDES permit authorization requirements for stormwater discharges from those locations.*** Contractors shall be responsible for verifying the need for NPDES permit coverage with the Nebraska Department of Environmental Quality (NDEQ). When

required for these locations, the filing of a "Notice of Intent" shall be made by the Contractor directly to the NDEQ.

Additionally, asphalt (SIC Code 2951) or concrete (SIC Code 3273) batch plants that are owned by a private contractor and are operated on a contract-for-service basis to perform work for the Contractor completing the project may be subject to NPDES General Permit Number NER000000 for Industrial Storm Water Discharges. While the plant may be required for completion of the project, it is not under the control of the Department (or other project owner); and the filing of a "Notice of Intent" shall be made by the Contractor directly to the NDEQ.

The NDEQ may be contacted at 402-471-4220 for additional information.

### **REQUIRED SUBCONTRACTOR/SUPPLIER QUOTATIONS LIST (A-43-0307)**

All bidders must provide to the NDOR the identity of all firms who provided quotations on all projects, including both DBEs and non-DBEs. This information must be on a form provided by the NDOR Contracts Office.

If no quotations were received, the bidder must indicate this in the space provided.

Each bidder will be required to submit one list per letting to cover all projects bid.

### **PROPOSAL GUARANTY BID BOND (A-43-0307)**

Paragraphs 1.a. and 1.b. of Subsection 102.15 in the *Standard Specifications* are void and superseded by the following:

- a. OPTION 1 - (Project Specific Paper Bid Bond). The Bid Bond shall be executed on an original Department Bid Bond Form, which may be obtained from the Department. The original Bid Bond shall be delivered to the Department with the bid. A reproduction or a copy of the original form will not be accepted and will cause the bid not to be opened and read.
- b. OPTION 2 - (Annual Bid Bond). The Department at its discretion may allow a bidder to place an "Annual Bid Bond" on file with the Department. This bond would cover all projects the bidder bids for a 12-month period shown in the bond. The bidder must indicate in the bid submittal to the Department that their "Annual Bid Bond" applies to the submitted bid. The original Annual Bid Bond shall be executed on the Department of Roads Bid Bond Form, which may be obtained from the Department. A reproduction or a copy of the original form will not be accepted.

**WORKER VISIBILITY  
(A-43-0507)**

Pursuant to Part 634, Title 23, Code of Federal Regulations, the following modified rule is being implemented:

Effective on January 1, 2008, all workers within the right-of-way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to construction equipment within the work area shall wear high-visibility safety apparel.

High-visibility safety apparel is defined to mean personal protective safety clothing that:

- 1 - is intended to provide conspicuity during both daytime and nighttime usage, and
- 2 - meets the Performance Class 2 or Class 3 requirements of the ANSI/ISEA 107-2004 publication titled "American National Standards for High-Visibility Safety Apparel and Headwear."

**VALUE ENGINEERING PROPOSALS (VEP)  
(A-43-0807)**

Subsection 104.03 in the *Standard Specifications* is amended to include the following:

14. A VEP will not be accepted if the proposal is prepared by an Engineer or the Engineering Firm who designed the contract plans.

**LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC  
(A-43-0210)**

Paragraph 4.a. of Subsection 107.01 in the *Standard Specifications* is void and superseded by the following:

4. a. Whenever the Contractor violates any governing Federal, State or Local environmental quality regulation and/or is in noncompliance with any environmental commitment, the violating activity must cease immediately until the appropriate remedy can be determined by: the Engineer, the NDOR Environmental Section, the Federal Highway Administration (for projects utilizing Federal-aid) and other agencies, as deemed appropriate. The Engineer, with assistance from the NDOR Environmental Section and the FHWA, will provide a written order confirming the appropriate corrective action to the Contractor. Work can resume to normal conditions once the Engineer determines that the violation or non-compliance has been addressed in accordance with the order for corrective action.

Subsection 107.01 in the *Standard Specifications* is amended to include the following two paragraphs:

5. Should the Contractor encounter any previously unidentified hazardous materials, the Engineer shall be promptly notified. The Contractor shall suspend operations in the area involved until such time that arrangements are made for their proper treatment or removal.

6. The Contractor shall prevent the transfer of invasive plant and animal species. The Contractor shall wash equipment at the Contractor's storage facility prior to entering the construction site. The Contractor shall inspect all construction equipment and remove all attached vegetation and animals prior to leaving the construction site.

**SPECIAL PROSECUTION AND PROGRESS  
(Federal Immigration Verification System)  
(A-43-1209)**

The Contractor shall register with and use a Federal Immigration Verification System to determine the work eligibility status of newly hired employees physically performing services within the State of Nebraska. The Prime Contractor shall contractually require every subcontractor to register with and use a Federal Immigration Verification System to determine the work eligibility status of newly hired employees physically performing services within the State of Nebraska.

The Federal Immigration Verification System shall be an electronic verification of the work authorization program of the Illegal Immigration Reform and Immigration Responsibility Act of 1996, 8 U.S.C. 1324a, known as the E-Verify Program. The Contractor may use an equivalent Federal program designated by the United States Department of Homeland Security or other Federal agency authorized to verify the work eligibility status of a newly hired employee. The equivalent program shall comply with the Immigration Reform and Control Act of 1986.

The Prime Contractor shall furnish a letter to the NDOR Construction Division in Lincoln on company letterhead and signed by an officer of the company stating that documentation is on file certifying that the Contractor and all subcontractors have registered with and used a Federal Immigration Verification System. The Contractor shall maintain all records of registration and use for a period of three years and make records available upon request. The Contractor shall contractually require subcontractors to maintain all records for a period of three years and make records available upon request.

Payment will not be made to the Contractor for using the Federal Immigration Verification System or the maintenance of the records. This work shall be subsidiary to the work being performed.

The Contractor's Certification shall become part of the final records of the Contract. The Department considers this document to have direct bearing to the beginning interest date and may affect the amount of interest earned.

**CONTRACT TIME ALLOWANCE  
(A-43-0911)**

Paragraph 5. of Subsection 108.02 of the *Standard Specifications* is void and superseded by the following:

5. Each week, the Engineer shall post on the Department's website a report of working days or calendar days charged. The Contractor then has 14 days from the day the Engineer's report is posted to provide a written explanation of why he/she does not concur with the working days or calendar days as assessed.

Paragraph 6.b. of Subsection 108.02 of the *Standard Specifications* is amended to include the following:

- (4) If the time allowance for the contract has been established on a calendar day basis, the Contractor is expected to schedule the work and assign whatever resources are necessary to complete the work in the time allowance provided regardless of the weather. Accordingly, regardless of anything to the contrary contained in these *Specifications*, the Department will not consider delays caused by inclement or unseasonable weather as justification for an extension of the contract time allowance unless:
  - i. the weather phenomena alleged to have contributed to or caused the delay is of such magnitude that it results in the Governor issuing a Disaster Declaration, **and**
  - ii. the weather phenomena alleged to have contributed to or caused the delay can clearly be shown to have directly impacted the work on the critical path identified on the Contractor's schedule.

Paragraphs 10.b. and 10.c. of Subsection 108.02 of the *Standard Specifications* are void and superseded by the following:

- b.
  - (1) If the extra work is not in the original contract, time extensions will be granted by determining the actual time necessary to accomplish the extra work.
  - (2) If the extra work is the result of the addition of additional quantities of existing contract items, time extensions will be granted by either:
    - (i) determining the actual time necessary to accomplish the extra work; or
    - (ii) determining the additional time to be granted by comparing the value of the additional quantities of work to the total amount of the original contract when measurement of the actual additional time is not possible or practical.
  - (3) In either case, only the time necessary to perform the extra work of the additional quantities of existing contract items when the extra work or the additional quantities of existing contract items are deemed to be the current controlling operation will be granted as a time extension.
- c. Increases in quantities of work associated with traffic control items measured by the day will not be considered for extending the contract time allowance. Overruns of traffic control items that are measured by methods other than time may be considered for extending the contract time allowance, but they must be deemed to be a controlling operation when the overrun of quantities occurs.



**PARTIAL PAYMENT  
(A-43-1110)**

Paragraph 2. of Subsection 109.07 of the *Standard Specifications* is void and superseded by the following:

2. When the value of the work completed during a semi-monthly period exceeds \$10,000, the Contractor will receive semi-monthly progress estimates from which the Department shall make such retentions as may be allowed by the contract, provided that the nature and quality of the completed work are satisfactory and provided further that the progress of the work conforms to the requirements of Subsection 108.07.

Paragraph 3.b. of Subsection 109.07 of the *Standard Specifications* is void and superseded by the following:

- b. Under normal circumstances, the Department shall not retain any earnings on a progress estimate. However, the Department reserves the right to retain such amounts as are necessary for material deficiencies, anticipated liquidated damages, unpaid borrow, and for other reasons to protect the Department's interests.

**PARTIAL PAYMENT  
(A-43-0611)**

Paragraph 4. of Subsection 109.07 of the *Standard Specifications* is void and superseded by the following:

4. a. (1) Upon presentation by the Contractor of receipted bills, billing invoices, or such other documentation sufficient to satisfy the Engineer and verify the Contractor's or subcontractor's actual costs for the materials, payments may also be allowed for acceptable nonperishable materials purchased expressly to be incorporated into the work and delivered in the vicinity of the project or stored in acceptable storage places within Nebraska.
- (2) Materials not delivered and stored in the immediate vicinity of or on the actual project site must be clearly marked to identify the project on which they are to be used, must be segregated from similar materials at the storage site, and cannot be included in a supplier's inventory of material available for sale for other purposes.
- (3) All items eligible for partial payment as stored materials must be available for verification, sampling, and measurement.
- b. The amount to be included in the payment will be determined by the Engineer, but in no case shall it exceed 100 percent of the value of the materials documented. This value may not exceed the appropriate portion of the value of the contract item or items in which such materials are to be incorporated, nor shall the quantity in any case exceed the total estimated quantity required to complete the project.

- c. Payment will not be approved when the documented value of such materials amounts to less than \$1,000.00, when the progress of the work is not in accordance with the requirements set forth in Subsection 108.07, or when the material can reasonably be expected to be incorporated into the work and eligible for payment as completed work on a progress estimate within 15 days of being placed into storage.
- d. Deductions at rates and in amounts which are equal to the payments will be made from estimates as the materials are incorporated into the work.
- e. Payment for the materials shall not in itself constitute acceptance, and any materials which do not conform to the specifications shall be rejected in accordance with Subsection 106.05.
- f. The Contractor shall be responsible for all damages and material losses until the material is incorporated into the work and the work is accepted.
- g. Partial payment will not include payment for fuels, supplies, form lumber, falsework, other materials, or temporary structures of any kind which will not become an integral part of the finished construction.
- h. No partial payments will be made on living or perishable plant materials until planted.

**BUY AMERICA  
(A-43-0212)**

Subsection 106.07 in the *Standard Specifications* is void and superseded by the following:

**106.07 -- Buy America**

- 1. The Buy America rule requires that steel or iron materials be produced domestically, and only those products which are brought to the construction site and permanently incorporated into the completed project are covered. Construction materials, forms, etc., which remain in place at the Contractor's convenience, but are not required by the contract, are not covered.
- 2. To further define the coverage, a domestic product is a manufactured steel construction material that was produced in one of the 50 States, the District of Columbia, Puerto Rico, or in the territories and possessions of the United States.
- 3. All manufacturing processes to produce steel or iron materials (i.e., smelting, and any subsequent process which alters the steel or iron material's physical form or shape, or changes its chemical composition) must occur within one of the 50 States, the District of Columbia, Puerto Rico, or in the territories and possessions of the United States, to be considered of domestic origin. This includes processes such as casting, rolling, extruding, machining, bending, grinding, drilling, and coating. Coating includes epoxy coating, galvanizing, painting, and any other coating that protects or enhances the value of the material. The manufacturer shall include a statement on the material test report or certification that all material described above except the coating material is a domestic product.

4. Raw materials used in the steel or iron materials may be imported. All manufacturing processes to produce steel or iron materials must occur domestically. Raw materials are materials such as iron ore, limestone, waste products, etc., which are used in the manufacturing process to produce the steel products. Waste products would include scrap; i.e., steel no longer useful in its present form from old automobiles, machinery, pipe, railroad tracks and the like. Also, steel trimmings from mills or product manufacturing are considered waste. Extracting, crushing, and handling the raw materials which is customary to prepare them for transporting are exempt from Buy America. The use of pig iron and processed, pelletized, and reduced iron ore manufactured outside of the United States may be used in the domestic manufacturing process for steel and/or iron materials.
5. Notwithstanding this requirement, a minimum of foreign steel or iron materials will be permitted if its value is less than one-tenth of one percent of the total contract cost or \$2,500, whichever is greater.
6. Upon completion of all work utilizing steel or iron products, the Prime Contractor shall furnish a letter to the State on company letterhead and signed by an officer of the company stating that documentation is on file certifying that all steel or iron materials brought to the construction site and permanently incorporated into the work complied in all respects with the Buy America requirements.

**BORROW, WASTE, STOCKPILE, AND PLANT SITE APPROVAL  
(A-43-0512)**

Subsection 107.02 in the Standard Specifications is amended to include the following:

4. Site Approval:
  - a. When borrow is obtained from a borrow site or waste excavation is placed at sites which are not shown in the contract, or the Contractor plans to use a plant or stockpile site which is not shown in the contract, the Contractor shall be solely responsible for obtaining all necessary site approvals. The Department will provide the procedures necessary to obtain approvals from the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Nebraska State Historical Society, Nebraska Game and Parks Commission, and Nebraska Department of Natural Resources on the NDOR website. The Contractor shall also be responsible for obtaining a Discharge Number from the Nebraska Department of Environmental Quality (NDEQ) that allows work under the current Construction Stormwater Permit. The Contractor shall also be responsible for obtaining any and all other permits required by local governments.
  - b. It is anticipated that it may require 60 calendar days or more for the Contractor to obtain the necessary approvals. The Contractor will not be allowed to begin work at borrow or waste sites until the necessary approvals are obtained. No extension of completion time will be granted due to any delays in securing approval of a borrow or disposal site unless a review of the time frames concludes that there were conditions beyond the Contractor's control.

Paragraph 7. of Subsection 205.02 in the Standard Specifications is void and superseded by the following:

7. Borrow and Waste Site Approval:
  - a. Borrow and waste site approvals shall be in accordance with Section 107.02.
  - b. Material shall not be removed from borrow sites until preliminary cross sections and representative soil samples have been taken by the Engineer. The Contractor shall notify the Engineer a sufficient time in advance of the opening of any borrow site so that cross sections may be taken.
  - c. Material shall be removed in a manner that will allow accurate final cross sections to be taken for determining the quantity of excavation. The surfaces of the borrow sites shall be bladed and shaped to drain as shown in the contract or as directed by the Engineer.

**SPECIAL PROSECUTION AND PROGRESS  
(Subletting or Assigning of Contract)  
(A-43-0414)**

Subsection 108.01 in the Standard Specifications is void and superseded by the following:

**108.01 – Subletting or Assigning of Contract**

1. a.
  - (1) The Contractor will not be allowed to sublet, assign, sell, transfer, or otherwise dispose of any portion of the contract or any right, title, or interest therein; or to either legally or equitably assign any of the money payable under the contract or the claims without the prior written consent of the Engineer.
  - (2) With the Engineer's consent, the Contractor may sublet up to 70 percent of the work.
  - (3) Any items designated in the contract as "specialty items" may be performed by subcontract.
  - (4) The cost of any subcontracted "specialty items" may be deducted from the total contract cost before computing the percentage of work required to be performed by the Contractor.
  - (5) Subcontracts, or transfer of contract, will not release the Contractor of any liability under the contract and bonds.
- b. Certain items of work may be performed without a subcontract. A list of items not requiring a subcontract is available from the Engineer.
2. The performance of any work by a subcontractor before the date of authorization by the Department shall subject both the Contractor and subcontractor to the imposition of appropriate sanctions by the Department.

3. a. The Contractor's request to sublet work shall be made electronically to the NDR Construction Engineer using project management software identified by the Department. A signed subcontract agreement shall be on file in the Contractor's office when the request is made. The subcontract agreement must provide that the subcontracted work will be completed according to the terms of the contract. The required and Special Provisions contained in the proposal shall be physically included in any subcontract.
- b. **On all Federal-aid projects, a scanned copy (.pdf format) of the signed subcontract agreement shall be included with the subcontracting request. (Federal-aid projects can be identified by inclusion in the Proposal of Form FHWA-1273 (REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS)).**
- c. Scanned copies (.pdf format) of all executed subcontracts, written agreements, and/or lease agreements used to meet DBE goals shall be submitted to the NDR Construction Engineer with the subcontracting request. These copies must show labor cost, material prices, overhead and profit.
4. a. Second tier subcontracts will be allowed.
- b. If a DBE firm subcontracts work to another firm, only work subcontracted to another DBE firm can be counted toward meeting a DBE goal.
- c. All requests for second tier subcontracting shall be submitted to and approved by the Prime Contractor before they are forwarded to the NDR Construction Engineer for approval.
5. All subcontract documents relating to the contract shall be maintained during the course of the work and preserved for a period of three years thereafter. These documents shall be available for inspection by authorized representatives of State and Federal agencies. Scanned copies (.pdf format) of the signed subcontract agreements not specifically identified elsewhere in this Subsection shall be furnished to the Department upon request.
6. The Contractor may discuss a proposed subcontract with the Engineer before entering into a signed subcontract agreement, but final approval will not be granted until a formal request and proper certification has been received by the Department.
7. On projects requiring submittal of certified payrolls, all subcontractor payrolls shall be checked by the Contractor before submittal to the Engineer.
8. a. The Prime Contractor, and subcontractors when subletting work to lower tier subcontractors, shall include language which can be identified as a "Prompt Payment Clause" as a part of every subcontract for work and materials.
- b. (1) The language constituting the "Prompt Payment Clause" will require payment to all first tier subcontractors for all labor and materials --- for work completed to date --- within 20 calendar days of receipt of progress payments from the Department for said work. Similar language in a contract between a subcontractor and a lower-tier subcontractor will

- require payment to the lower tier subcontractor for all labor and materials --- for work completed to date --- within 10 calendar days of receipt of progress payments from the prime Contractor for said work.
- (2) The language constituting the “Prompt Payment Clause” will also stipulate the return of retainage within 30 calendar days after the satisfactory completion of the work by the subcontractor as evidenced by inclusion of the work on a progress payment.
  - (3) Additionally, the language constituting the “Prompt Payment Clause” may stipulate the subcontractor’s obligation to return to the Contractor or subcontractor, as the case may be, any overpayments which result from adjustments to measured and recorded quantities as part of the preparation of subsequent progress payments or the final records. Overpayments shall be returned to the Prime Contractor or subcontractor, as the case may be, within 20 calendar days of receiving notice of the adjusted quantities and the amount of the overpayment.
- c. The Prime Contractor of subcontractors, as the case may be, may withhold payment only for just cause and shall not withhold, delay, or postpone payment without first receiving written approval from the Department.
- d. (1) The failure by the Prime Contractor to abide by the agreements identified in the “Prompt Payment Clause” without just cause, including the timely return of retainage, is a material breach of this contract which may result in the Department withholding the amount of payment from the prime Contractor that should have been paid to the subcontractor, termination of this contract, or other such remedy as the Department deems necessary.
- (2) Additionally, the failure of any subcontractor to abide by the agreements identified in the “Prompt Payment Clause” without just cause, including the timely return of retainage to lower tier subcontractors, or by failing to return overpayments in a timely manner when the language permitted in Paragraph 8.b.(3) above is included in the subcontract may result in the Department withholding subcontract approval for other work until the overpayments have been returned.
9. a. (1) For Davis Bacon (DBRA)-covered projects and Non-DBRA-covered projects, a Contractor or subcontractor may wish to use another individual owner-operator or trucking company to supplement his or her hauling fleet. (The Department will not recognize multiple individuals claiming to be collectively identified as a single “owner operator.”)
- (2) This supplemental individual or company must either become a subcontractor (first tier or lower tier, as the case may be) or be otherwise documented by the utilizing Contractor or subcontractor by entering into a lease agreement for the trucks and showing the driver (or drivers) from the supplemental company on the Prime Contractor’s or subcontractor’s payrolls in the manner described below.
- (3) Payrolls will only be accepted from the Prime Contractor or approved subcontractors.

- b. (1) If the decision is made to subcontract the hauling, the Prime Contractor must first notify the NDOR Construction Office to request subcontract approval. As part of the subcontract approval process --- at any tier --- the proper certificates of insurance must be provided before approval will be granted.
- (2) Additionally, on DBRA-covered projects, the Prime Contractor must submit payrolls for all subcontractors --- at any tier.
- c. (1) Owner/Operators of trucks hired by a Contractor or subcontractor to supplement his or her hauling fleet are not subject to Davis Bacon wage requirements. However, they must still be shown on a payroll prepared by the Contractor or subcontractor for whom they are working with the notation "owner/operator."
- (2) Any other employees of the "owner/operator" must appear on the certified payroll in complete detail and must be compensated according to the wage rates established for the project.
- d. In the event a Prime Contractor or subcontractor elects to not subcontract the supplemental driver or drivers but instead chooses to "carry the workers/truckers on their payroll," the following requirements must be met:
  - (1) The Prime Contractor's or subcontractor's certified payroll must contain the names of all workers/truck drivers, and the payroll should identify their supervisors (including "owner-operators").
  - (2) Pay checks for the workers/truckers in question must be drawn against the Prime Contractor's or subcontractor's payroll or other account.
  - (3) Owner/Operators need only be identified as such on the payroll. Additional drivers, if any, from the "owner-operator's" company must appear on a payroll in complete detail and be compensated according to the wage rates established for the project.
  - (4) The Prime Contractor or subcontractor must enter into a lease agreement for the trucks driven by such drivers, and the lease agreement must show that the compensation for the leased equipment is on a time basis and not based on the amount of work accomplished. The lease agreements must be available for inspection by NDOR personnel.
  - (5) Any supplemental truckers employed under this arrangement must still carry the minimum automobile liability coverage specified in the contract. It shall be the duty of the Prime Contractor to ensure that the supplemental truckers have such coverage in effect. Evidence of proper insurance must be presented for verification on demand.

**ELECTRONIC SHOP DRAWINGS  
(A-43-0215)**

Paragraphs 5,6, and 7 of Subsection 105.02 of the Standard Specifications are void and superseded by the following:

5. a. The Contractor shall provide electronic working drawings in a Portable Document Format (PDF). The PDFs shall be sized to print on an 11x17 inch sheet of paper and have a minimum resolution of 300 dpi. Each sheet of the shop drawings shall have a space provided for an electronic stamp that measures 2.5 inches x 3.5 inches when printed.
- b. Electronic working drawing files shall be named with the following file naming format:  
  
Control Number\_Brief Description\_Date.pdf  
  
For example: 12345\_FloorDrains\_05Feb2015  
12345\_FloorDrainCoverLetter\_05Feb2015
- c. The project number, control number, and project location as it appears on the plans shall be shown on the front sheet of each Shop Drawing file. Structure numbers shall be included, if applicable.
6. No electronic working drawings shall be submitted to the Engineer unless they have been checked by the Contractor. The electronic submittal shall be accompanied by a Contractor's letter of approval in a PDF format. This letter shall also be named with the format shown in the example above. The letter of approval shall clearly indicate that the Contractor is responsible for any errors on the working drawings.
7. a. Electronic submittals shall be submitted by email to the following address:  
  
[DOR.ShopDrawings@nebraska.gov](mailto:DOR.ShopDrawings@nebraska.gov)
- b. Attachments shall be limited to 25 MB of data per email. Larger files shall be separated and sent in multiple emails.
- c. Electronic working drawings will only be accepted from the Prime Contractor.
8. Any reference to hard copy shop drawings in the contract shall be considered void.



**LIABILITY INSURANCE  
(A-55-0414)**

Subsection 107.13 in the Standard Specifications is void and superseded by the following:

**107.13 – Liability Insurance**

Prior to execution of the contract, the Contractor shall obtain insurance coverage to fully protect it from loss associated with the work, and have at a minimum the insurance described below:

1. General Liability:  
Limits of at least:
  - \$ 1,000,000 per Occurrence
  - \$ 2,000,000 General Aggregate
  - \$ 2,000,000 Completed Operations Aggregate
  - \$ 1,000,000 Personal and Advertising Injury
- a. Contractor shall be responsible for the payment of any deductibles.
- b. Coverage shall be provided by a standard form Commercial General Liability Policy (CG0001 or equivalent) covering bodily injury, property damage including loss of use, and personal injury.
- c. The General Aggregate shall apply on a Per Project Basis.
- d. The State of Nebraska, Department of Roads, shall be named as an Additional Insured on a primary and non-contributory basis including completed operations for three (3) years after final acceptance and payment.
- e. Contractor agrees to waive its rights of recovery against the State of Nebraska, Department of Roads. Waiver of Subrogation in favor of the State of Nebraska, Department of Roads shall be added to the policy.
- f. Contractual liability coverage shall be on a broad form basis and shall not be amended by any limiting endorsements.
- g. If work is being performed near a railroad track, the 50' railroad right-of-way exclusion must be deleted.
- h. Products and completed operations coverage in the amount provided above shall be maintained for the duration of the work, and shall be further maintained for a minimum period of three years after final acceptance and payment.
- i. Coverage shall be included for demolition of any building or structure, collapse, explosion, blasting, excavation and damage to property below surface of ground (XCU coverage).

- j. Policy shall not contain a total or absolute pollution exclusion. Coverage shall be provided for pollution exposures arising from products and completed operations as per standard CG0001 Pollution Exclusion or equivalent. If the standard pollution exclusion as provided by CG0001 has been amended, coverage must be substituted with a separate Pollution Liability policy of \$1.0 million per occurrence and \$2.0 million aggregate. If coverage is provided by a "claims made" form, coverage will be maintained for three years after project completion. Any applicable deductible is the responsibility of the Contractor.
2. Automobile Liability:  
Limits of at least:  
\$ 1,000,000 CSL per Accident
- a. Coverage shall apply to all Owned, Hired, and Non-Owned Autos.
  - b. If work is being performed near a railroad track, the 50-foot railroad right-of-way exclusion must be deleted.
  - c. Contractor agrees to waive its rights of recovery against the State of Nebraska, Department of Roads. Waiver of Subrogation in favor of the State of Nebraska, Department of Roads, shall be added to the policy.
  - d. Automobile liability coverage shall be obtained from an insurance carrier who is licensed with the Nebraska Department of Insurance.
3. Workers' Compensation:  
Limit: Statutory coverage for the State where the project is located.  
Employer's Liability limits: \$500,000 Each Accident  
\$500,000 Disease – Per Person  
\$500,000 Disease – Policy Limit
- a. Contractor agrees to waive its rights of recovery against the State of Nebraska, Department of Roads. Waiver of Subrogation in favor of the State of Nebraska, Department of Roads shall be added to the policy.
  - b. Workers' compensation coverage shall be obtained from an insurance carrier who is licensed with the Nebraska Department of Insurance.
  - c. Where applicable, the Longshore and Harborworkers Compensation Act endorsement shall be attached to the policy.
4. Umbrella/Excess:  
Limits of at least:  
\$1,000,000 per Occurrence
- a. Policy shall provide liability coverage in excess of the specified Employers Liability, Commercial General Liability and Automobile Liability.
  - b. The State of Nebraska, Department of Roads, shall be an "Additional Insured."
  - c. Contractor agrees to waive its rights of recovery against the State of Nebraska, Department of Roads. Waiver of subrogation in favor of the State of Nebraska, Department of Roads shall be provided.

5. Pollution Liability:
  - a. When “hazardous wastes” or contaminated or polluted materials must be handled and/or moved, the Contractor shall obtain Pollution Liability Coverage with minimum limits of \$1,000,000 per occurrence and \$2,000,000 aggregate.
  - b. If, during the course of construction, hazardous wastes, contaminated or polluted material are discovered on the project, the Contractor shall immediately cease any operation that may disturb these materials, and shall immediately notify the Engineer of all facts related to the discovery of these materials.
  - c. Unforeseen work related to the discovery of hazardous, contaminated or polluted materials on the project, and the extra cost, if any, of pollution liability coverage will be handled as “extra work.”
6. Additional Requirements:
  - a. The Contractor shall provide and carry any additional insurance required by the Special Provisions.
  - b. Except as otherwise provided herein, all insurance shall be kept in full force and effect until after the State releases the Contractor from all obligations under the contract.
  - c.
    - (1) If any of the work is sublet, equivalent insurance shall be provided by or on behalf of the subcontractor or subcontractors (at any tier) to cover all operations.
    - (2) Approved trucking subcontractors (at any tier) who are being utilized only for the purpose of hauling materials shall be exempt from the requirements of Paragraphs 1, 4, and 5.
    - (3)
      - (i) When a Contractor or subcontractor chooses to employ a trucker by carrying the driver on his or her payroll and entering into a lease agreement for the truck, the owner-operator of the truck shall be required to comply with the Automobile Liability provisions of Paragraph 2.
        - (ii) Furthermore, it shall be the duty of the Prime Contractor to ensure that the owner-operator of the truck has such insurance in effect. The Prime Contractor shall maintain evidence that any truckers so utilized (at any tier) are insured to the minimum limits specified and be able to furnish documentation of the same on demand.
        - (iii) Failure to ensure that insurance coverage exists and failure to maintain evidence thereof shall be considered a breach of the contract.
  - d. Any insurance policy shall be written by an insurance company with a Best’s Insurance Guide Rating of A – VII or better.
  - e. Prior to execution of the contract, Contractor shall provide the State of Nebraska, Department of Roads evidence of such insurance coverage in effect in the form of an Accord (or equivalent) certificate of insurance executed by a licensed representative of the participating insurer(s).

Certificates of insurance shall show the Nebraska Department of Roads as the certificate holders.

- f. For so long as insurance coverage is required under this agreement, the Contractor shall have a duty to notify the Department when the Contractor knows, or has reason to believe, that any insurance coverage required under this agreement will lapse, or may be cancelled or terminated. The Contractor must forward any pertinent notice of cancellation or termination to the Department at the address listed below by mail (return receipt requested), hand-delivery, or facsimile transmission within 2 business days of receipt by Contractor of any such notice from an insurance carrier. Notice shall be sent to:

Nebraska Department of Roads  
Construction Division --- Insurance Section  
1500 Highway 2, P.O. Box 94759  
Lincoln, NE 68509-4759

Facsimile No. 402-479-4854

- g. Failure of the owner or any other party to review, approve, and/or reject a certificate of insurance in whole or in part does not waive the requirements of this agreement.
- h. The limits of coverage set forth in this document are suggested minimum limits of coverage. The suggested limits of coverage shall not be construed to be a limitation of the liability on the part of the Contractor or any of its subcontractors/tier subcontractors. The carrying of insurance described shall in no way be interpreted as relieving the Contractor, subcontractor, or tier subcontractors of any responsibility or liability under the contract.
- i. If there is a discrepancy of coverage between this document and any other insurance specification for this project, the greater limit or coverage requirement shall prevail.

## **CONSTRUCTION DETAILS**

### **TEMPORARY WATER POLLUTION CONTROL (B-3-1014)**

Section 204 in the Standard Specifications is void.

### **CONSTRUCTION STORMWATER MANAGEMENT CONTROL (B-3-1014)**

#### **A. General**

1. This Section defines some best management practices (BMPs) for erosion and sediment control measures and construction practices the Contractor shall use to prevent soil erosion and avoid water pollution.
2.
  - a. The Department and the Contractor are co-permittees of the NPDES Construction Storm Water General Permit.
  - b. The Contractor shall comply with all conditions required by the current NPDES Construction Storm Water General Permit.
3. The Contractor shall exercise every reasonable precaution throughout the life of the contract to prevent silting of the waters of the state, the project site, and adjacent property. Construction of drainage facilities, as well as performance of other contract work which will contribute to the control of siltation, shall be carried out in conjunction with earthwork operations or as soon thereafter as is practicable.
4.
  - a. The Contractor shall take sufficient precautions to prevent pollution of the waters of the state, the project site, and adjacent property from construction debris, petroleum products, chemicals, or other harmful materials.  
  
The Contractor shall conduct and schedule the operations to avoid interference with any protected species.
  - b. The Contractor shall comply with all applicable statutes relating to pollution of the waters of the state and fish and game regulations.
5. All construction debris shall be disposed in a manner that it cannot enter any waterway. Excavation shall be deposited as to protect the waters of the state from siltation.
6. All erosion and sediment control measures shall be properly installed and maintained by the Contractor until all permanent drainage facilities have been constructed, and all slopes are sufficiently vegetated to be an effective erosion deterrent; or until tentative acceptance of the work.

7. All erosion and sedimentation resulting from the Contractor's operations and the weather conditions must be corrected by the Contractor.

### **LIMITATION OF OPERATIONS (B-3-1014)**

#### **A. General**

1. The maximum exposed surface area for the Contractor's operations in excavation, borrow, and embankment is 18 acres (72,800 m<sup>2</sup>) plus an equal area of clearing and grubbing/large tree removal. A written request for an increase in the maximum exposed surface area may be approved by the Engineer. This approval will be based on the soil, moisture, seasonal conditions, the Contractor's operation, or other conditions.
2. The Engineer shall have the authority to reduce the maximum exposed surface area when any of the following conditions warrant:
  - a. Soil and moisture conditions are such that erosion is probable.
  - b. Seasonal conditions may force extended delays.
  - c. Proximity to the waters of the state requires more stringent controls.
  - d. Equipment and personnel available on the job is not sufficient to properly maintain erosion and dust control measures.
  - e. Any other environmental condition in the area that may exist which would be affected by erosion from the project.
3. Construction operations in rivers, streams, wetlands, and impoundments shall be restricted to those areas specifically shown in the contract. Rivers, streams, wetlands, and impoundments shall be promptly cleared of all false work, piling, debris, or other obstructions placed therein or caused by the construction operations.
4. Fording and operation of construction equipment within streams and wetlands will not be allowed, unless explicitly allowed in the contract. Streams are defined as any area between the high banks, regardless of the flow conditions.

### **CONSTRUCTION METHODS (B-3-1014)**

#### **A. General**

1. The Contractor shall conduct all construction activities and install temporary erosion control measures, as necessary, to control sediment and avoid soil erosion during construction.

2. The Contractor shall incorporate all permanent erosion control features into the project at the earliest practicable time.
3. Construction stormwater management control measures for Contractor obtained work areas located outside the right-of-way, such as borrow site operations, haul roads, plant sites, staging sites, waste sites, equipment storage sites, etc. are the sole responsibility of the Contractor. All construction stormwater management control measures for these areas are at the Contractor's expense. The Contractor is responsible for securing all required permits for use of these sites.
4. The construction stormwater management procedures contained herein shall be coordinated with any permanent erosion control measures specified elsewhere in the contract to the extent practical to assure economical, effective, and continuous erosion and sediment control throughout the construction period.
5. The Contractor shall be responsible to limit erosion and prevent siltation into the waters of the state during the construction period, as well as during the times that work may be suspended.
6.
  - a. All erosion and sediment control items shall be installed by personnel who are knowledgeable in the principles and practice of various BMP installations.
  - b. The installation of all erosion and sediment control items shall be done under the direct supervision of the Contractor's employee who has successfully completed training provided by the Department and has been certified as an Erosion and Sediment Control Inspector (Inspector). The Contractor's Inspector shall be present at each site during installation to direct and inspect all erosion and sediment control BMP installations.
    - i. The NDOR Erosion and Sediment Control Inspector Certification is obtained by completing an Erosion and Sediment Control Inspector Training Course provided by the Nebraska Department of Roads and passing the examination that accompanies the training.
  - c. The Contractor shall notify the Engineer of all employees, who have been certified as Inspectors, who will be on the project to direct and inspect all erosion and sediment control BMP installations.
  - d. No payment will be made for any erosion and sediment control item unless a Contractor's Inspector was present to directly supervise and inspect the work.
  - e. No payment will be made for any erosion and sediment control item that is not properly installed. All erosion and sediment control items shall be installed as per the contract.

**ENVIRONMENTAL COMMITMENT DOCUMENT  
(B-3-1014)**

**A. Environmental Commitment Document**

1. a. An Environmental Commitment Document will be created by the Department to identify all project specific environmental commitments and will be included in the Contract.
- b. The Department will provide information for the following, when applicable:
  - i. Storm Water Pollution Prevention Plan (SWPPP)
  - ii. U.S. Army Corps of Engineers (USACE) Section 404 Permit
  - iii. Nebraska Department of Environmental Quality 401 Water Quality Certification
  - iv. State Title 117 Waters (USACE Non-Jurisdictional)
  - v. Floodplain Permit
  - vi. Historic Clearance
  - vii. Endangered Species Act Clearance
  - viii. Nebraska Nongame and Endangered Species Conservation Act Clearance
  - ix. National Environmental Policy Act Compliance
  - x. NPDES Construction Stormwater Permit (within Right-of-Way limits, only)
  - xi. Conservation Measures
  - xii. Migratory Bird Treaty Act
  - xiii. Bald and Golden Eagle Protection Act Compliance
  - xiv. Other pertinent issues
- c. The Contractor shall provide information for the following, when applicable:
  - i. Temporary Erosion Control Plan
  - ii. Spill Prevention and Control Plan
  - iii. Migratory Bird Treaty Act Compliance Plan
  - iv. Name and telephone number of the Contractor's representative responsible for the Environmental Commitments
  - v. Name and telephone number of the employees that are NDOR-Certified Erosion and Sediment Control Inspectors
  - vi. Critical Path Construction Schedule
  - vii. Other items as defined elsewhere in the contract



**STORM WATER POLLUTION PREVENTION PLAN (SWPPP)  
(B-3-1014)**

**A. General**

1. A SWPPP is required for projects that construction activities will cause a land disturbance of one (1) acre or more. The Department will prepare the SWPPP for the areas within the Right-of-Way, temporary easements and permanent easements.
2. For projects not requiring a SWPPP, the Contractor shall comply with the requirements of Environmental Commitment Document, Paragraph 1.b. of this Special Provision, as applicable.
3. Contractor obtained work areas, located on private property, are not included in the NDOR Project SWPPP.

**B. Temporary Erosion Control Plan**

1. The Contractor shall prepare and submit the Temporary Erosion Control Plan prior to the start of any work. The Contractor shall not begin work until the Temporary Erosion Control Plan has been submitted to the Engineer and appropriate erosion control measures are in place. Payment for any work on the contract will be withheld if erosion control measures are not in place or properly maintained.
2. The Temporary Erosion Control Plan will be reviewed at project progress meetings. All active Contractors shall have their Inspectors present and work in cooperation to determine any necessary changes. Necessary changes will be documented on the Temporary Erosion Control Plan by the Engineer.
3. Payment for preparing the Temporary Erosion Control Plan, inspections and meeting reviews are subsidiary to items that direct payment is made.

**C. Spill Prevention and Control Plan**

1. All project activities shall be addressed in the Spill Prevention and Control Plan. The Contractor shall prepare and submit the plan to the Engineer and install all appropriate spill prevention and control measures prior to the start of any work.
2. The Spill Prevention and Control Plan shall clearly state measures to prevent, contain, document and clean up a spill. It shall state measures for disposal of the contaminated material, disposal documentation and incident review to train personnel to prevent spills from reoccurring.
3. Spill Prevention and Control Plans are applicable to construction sites where hazardous materials are stored, used and/or generated onsite. Hazardous materials include, but not limited to: hazardous wastes, pesticides, paints, cleaners, petroleum products, fertilizers, solvents and porta-potty wastes.
4. Direct payment will not be made for the Spill Prevention and Control Plan.

**D. Migratory Bird Treaty Act Compliance Plan**

1. The Contractor shall not begin work until a Migratory Bird Treaty Act Compliance Plan has been submitted to the Engineer and appropriate nesting migratory bird avoidance measures are in place.
2. a. The Contractor shall clearly state the necessary measures they intend to use to avoid a “Take” of nesting migratory birds in the Migratory Bird Treaty Act Compliance Plan. Measures may include but are not limited to:
  - i. Clearing and grubbing prior to April 1<sup>st</sup> or after September 1<sup>st</sup>
  - ii. Tree removal prior to April 1<sup>st</sup> or after September 1<sup>st</sup>
  - iii. Clearing empty nests on structures prior to April 1<sup>st</sup>
  - iv. Maintaining clear structures until commencement and throughout the duration of work on structures
  - v. Netting structures to prevent nesting
  - vi. Commitment to perform surveys according to protocol
  - vii. Hire a biologist to survey areas to be disturbed prior to commencement of work during the nesting season
  - viii. Submittal of required bird survey reports
  - ix. Training of Contractor Personnel to insure compliance
3. a. The Migratory Bird Treaty Act Compliance Plan is applicable to the entire project site to avoid the “Take” of migratory birds protected under the Migratory Bird Treaty Act.  
  
b. “Take” is defined as: pursuit, hunt, shoot, wound, kill, trap, capture, collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.
4. The Migratory Bird Treaty Act Compliance Plan shall adhere to the NDOR’s Avian Protection Plan located at:  
<http://www.transportation.nebraska.gov/environment/guides/avian-protection-plan.pdf>

Direct payment will not be made for the Migratory Bird Treaty Act Compliance Plan.

**E. SWPPP Inspection**

1. The Contractor shall accompany the Engineer on inspections in accordance with the NPDES Construction Storm Water General Permit.
2. The SWPPP will be maintained and updated by the Engineer as work progresses and site conditions change to accurately describe the BMPs that are currently in place.
3. The Contractor’s participation in SWPPP inspections, maintenance and updates shall begin on the first day construction activities cause land disturbance and end on the date of project completion as evidenced as the completion date in the District Engineer’s Letter of Tentative Acceptance.

4. a. The Contractor's Inspector shall be responsible for ensuring that all BMPs are installed in accordance with the contract or the manufacturers' recommendations. The Contractor's Inspector shall be capable of reading and interpreting these documents.
- b. The Contractor's Inspector shall be familiar with product and structural BMPs. The Contractor's Inspector shall inspect, assess, and supervise the maintenance of erosion and sediment control BMPs to ensure compliance with the NPDES Construction Storm Water General Permit while preserving BMP functionality.
5. Payment for project inspection is subsidiary to items that direct payment is made.

### **ENVIRONMENTAL COMMITMENT ENFORCEMENT (B-3-1215)**

#### **A. General**

1. This specification establishes payment and disincentive assessment for the Contractor's performance in complying with Contract Environmental Commitments.
2. Deficiencies are described but not limited to:
  - a. Failure to install pollution prevention control BMPs as work progresses or as described in the SWPPP.
  - b. Failure to maintain existing pollution prevention control BMPs.
  - c. Failure to remove non-functioning pollution prevention control BMPs.
  - d. Failure to comply with USACE Section 404 Permit requirements.
  - e. Failure to comply with NPDES Construction Storm Water General Permit requirements.
  - f. Failure to comply with all applicable statutes relating to pollution of the waters of the state.
  - g. Exceeding the maximum exposed surface area for excavation of 18 Acres without written request for permission and written approval.
  - h. Failure to comply with wildlife species specific conservation conditions.
  - i. Failure to comply with the Contract.
  - j. Failure to comply with the Engineers directives.

#### **B. SWPPP Deficiency Notification**

1. The Engineer will document and direct the Contractor to correct deficiencies.

- a. The Contractor shall commence correcting deficiencies, provide adequate equipment and personnel, and diligently pursue correcting deficiencies without cessation until all deficiencies have been corrected.
  - b. The count of Working Days and/or Calendar Days will continue during the time period that corrective work is being performed.
  - c. Delays to the project as a result of the Contractor conducting corrective actions for the Contract Environmental Commitments will not constitute a valid reason for an extension of the contract time allowance.
3. Deficiencies shall be corrected within seven (7) calendar days of notification or within an approved extension. When deficiencies are not corrected within seven (7) calendar days or within an approved extension, the Engineer will make a disincentive assessment to the contract as stated herein.
4.
  - a. If soil, weather, or other conditions prevent the Contractor from completing the corrective actions within seven (7) calendar days, the Contractor shall notify the Engineer in writing. The Contractor's letter shall state the reasons preventing corrective action within the time allowed. The Contractor shall propose a written Corrective Action Plan within 48 hours. Corrective work shall continue while the Corrective Action Plan is developed. The Contractor's Corrective Action Plan must contain a course of action and a time frame for completion. If the reasons and the Corrective Action Plan are acceptable, the Engineer may extend the time in which to complete the corrective work.
  - b. The Contractor will be allowed to proceed with the plan as proposed without incurring a disincentive assessment. If all corrective work is completed within the time allowance shown in the Notification or within an approved extension, a disincentive assessment will not be imposed upon the Contractor.
  - c. Storm events or soil and weather conditions occurring on other projects, which interfere with a Contractor completing corrective actions on the project within seven (7) calendar days, will not be justification for a time extension to complete the corrective work.
5. If all corrective work identified in the Notification has not been completed at the end of the seventh (7<sup>th</sup>) calendar day after the Initial Notice Date or within an approved extension, a Shut-Down Notice will be issued on the eighth (8<sup>th</sup>) calendar day after the Initial Notice Date or on the calendar day following the last day of an approved extension.
6. All operations shall cease as of the date and time cited in the Shut-Down Notice. The Contractor shall work, exclusively, on the deficiencies until all have been corrected or as directed by the Engineer. Upon issuance of the Shut-Down Notice, a disincentive of \$500.00 per deficiency per calendar day will be assessed thru the day the corrective work is completed, inclusive.

7. The Engineer may require the Contractor to provide a written Procedures Plan that describes the process to prevent reoccurrence of deficiencies. The written Procedures Plan shall be provided within two (2) calendar days of the request. Failure to correct all deficiencies and provide a Procedures Plan may result in payments being withheld until such time that procedures are outlined.
  - a. Payment for preparing a written Procedures Plan is subsidiary to items that direct payment is made.

**C. Storm Event Restoration – Incentive and Disincentive**

1. The Department will pay “Storm Event Restoration - Incentive” when the Contractor completes the restoration work to eliminate the pollution prevention control deficiencies within seven (7) calendar days of Notification or within an approved extension. Multiple deficiencies may be included in one notification. If the restoration work has not been completed within seven (7) calendar days after the Initial Notice or within an approved extension, payment for the item of “Storm Event Restoration - Incentive” will not be made.
2. A storm event is defined as a storm exceeding 0.50 inch of rain in a 24 hour period.
3. The Department will notify the Contractor of pollution prevention control deficiencies.
4.
  - a. Payment for the item of “Storm Event Restoration - Incentive” may not be made when the Contractor is notified to correct pollution prevention devices not installed in accordance with the contract or the manufacturer’s recommended installation instructions.
5. If the restoration work is not completed within seven (7) calendar days or within an approved extension, a disincentive assessment of \$500.00 per deficiency per calendar day will be assessed. The disincentive assessment will begin on the eighth (8<sup>th</sup>) calendar day after the issuance of the Initial Notice Date or on the calendar day following the last day of an approved extension(s) and continue through the day that the restoration work is completed, inclusive.

**D. Method of Measurement**

1.
  - a. “Storm Event Restoration – Incentive” will be measured by the each upon completion of restoration of all deficiencies included in a notification within the allowed time and only one payment per notification is allowed when multiple deficiencies are included on the notification.
  - b. If deficiencies from multiple notifications are restored during the same restoration operation, only one (1) incentive is eligible for payment.
  - c. If multiple notifications are the result of successive storm events and deficiencies are transferred to ensuing notifications, incentive payment is only eligible for the latest notification.
2. “Storm Event Restoration – Disincentive” will be measured by the calendar day in accordance with Paragraph C.5. above.

**E. Basis of Payment**

- | <b>1. Pay Item</b>                     | <b>Pay Unit</b> |
|--|-----------------|
| Storm Event Restoration – Incentive    | Each            |
| Storm Event Restoration – Disincentive | Calendar Day    |
2. All equipment, materials, etc. used in the restoration work will be paid for in accordance with Division 800 of the Standard Specifications.
  3. Payment is full compensation for all other incidentals required to complete the restoration work included in the notification within the allowed time.

**F. Environmental Commitments – Contractor Compliance**

1. To provide payment for all plans, inspections, surveys, reports, travel, qualified inspection person's, carrion removal, and any other subsidiary activities for the work of implementing threatened and endangered species commitments, temporary erosion control or any other environmental commitments prescribed in the contract.
2. Multiple visits to the project may be required to comply with environmental commitments prescribed in the contract.

**G. Method of Measurement**

1. No measurement is required.

**H. Basis of Payment**

- | <b>1. Pay Item</b>                                | <b>Pay Unit</b> |
|---|-----------------|
| Environmental Commitments – Contractor Compliance | Lump Sum        |
2. Partial payments will be made as follows:
    - a. The Department will pay 50 percent of the total amount bid for the item Environmental Commitments – Contractor Compliance within seven (7) calendar days after the Notice to Proceed Date.
    - b. Upon completion of 50 percent of the Original Contract Amount, the Department will pay 30 percent of the amount bid for the item Environmental Commitments – Contractor Compliance.
    - c. Upon completion of 75 percent of the Original Contract Amount, the Department will pay the remaining 20 percent of the amount bid for the item Environmental Commitments – Contractor Compliance.
    - d. Failure to comply with any or all of the contract requirements, included for payment under the item of Environmental Commitments – Contractor Compliance, will preclude all payment for the item, including any previous payment.
  3. Payment is full compensation for all work prescribed in the contract.

**I. Immediate Action Deficiencies**

1. Deficiencies that pose an imminent threat to the environment are considered an emergency situation. These deficiencies will be identified in the Immediate Action Deficiencies Section of the Environmental Commitment Deficiency Notification Form. The corrective work for Immediate Action Deficiencies shall begin immediately and continue without cessation until completed.
2. The Engineer will issue a shut-down notice. All work on the contract shall cease until the corrective work has been completed. The Engineer may allow the Contractor to continue working in areas unaffected by the Immediate Action Deficiency, provided corrective actions are being actively performed on the deficiency.
3. Immediate Action Deficiencies are not eligible for an incentive payment.
4. The Contractor will be assessed a disincentive assessment of \$1,000.00 per deficiency per calendar day for failure to begin corrective actions or failing to continue to completion as directed by the Engineer or by the regulatory agency with jurisdiction.
5. Examples of Immediate Action Deficiencies include but are not limited to:
  - a. Threatened & Endangered Species habitat protection deficiencies
  - b. USACE Section 404 Permit Noncompliance
  - c. Petroleum Spills/Tank Leakage
  - d. Hazardous Material Spills

**J. Rights Reserved**

1. The Department reserves the right to initiate and perform corrective action on any deficiencies which result from the Contractors' actions, inactions, or for failure to comply with the NPDES Construction Stormwater General Permit, USACE Section 404 Permit, or any other applicable permit.
2. The Contractor shall be liable to the Department for any and all costs incurred by the Department for corrective actions taken by the Department.
3. It is expressly understood that the provisions of this specification shall not relieve the Contractor of their responsibilities nor shall it relieve the Surety of its obligation for and concerning any just claim.
4. The Contractor shall indemnify and save harmless the Department and all of its representatives from any and all actions or claims brought because of the Contractor's actions, inactions, or for failure to comply with the NPDES Construction Storm Water General Permit, USACE Section 404 Permit, or any other applicable permit.

**ACCEPTANCE TESTING OF SOILS BY USE OF THE LIGHT WEIGHT  
DEFLECTOMETER (LWD) SCOPE  
(B-4-0915)**

This test method covers the in-place measurement of deflection and moisture content of Class III embankments, subgrade preparation, granular fill and backfill for acceptance testing on Nebraska Department of Roads Projects. Refer to Subsection 205.03 of the NDOR Standard Specifications for Highway Construction for a definition of Class III embankments. Refer to NDR Test Method T 2835 for the proper operation of the LWD.

The deflection test measurement shall be the average measured deflection of the fourth, fifth, and sixth drops of the falling weight of the LWD. The first three drops are to be used to seat the LWD.

The Deflection Target Value (DTV) is the deflection value of each soil determined by using a test strip or from correlation with the Nebraska Group Index for an individual Soil.

**Option 1**

**A. Determination of DTV using a Test Strip**

1. A test strip shall be constructed for each soil type to determine the deflection target value.
2. A new test strip shall be constructed when there is an observed change in material or as determined by the Engineer.
3. The test strip dimensions for roadway embankment and subgrades shall have a minimum length of 200 feet and a width equal to the embankment or roadway. The total thickness shall be no less than 6 inches for roadway subgrade and no less than 1-foot and no more than 3 feet for roadway embankment.
4. The test strip dimensions for trenches, culverts, and structures shall have a minimum length of 10 feet and a width equal to that of the excavation. The total thickness shall be no less than 1-foot and no more than 3 feet.
5. The optimum moisture of fine grained soils shall either be determined in the NDOR Branch Lab or Central Lab, and shall be based on a correlation with the Plastic Limit or determined from AASHTO T-99. A 10-lb sample of proposed material shall be submitted to the NDOR Branch Lab or Central Lab a minimum of 14 days prior to grading operations.
6. The moisture content for granular soils shall be "as necessary" to achieve proper compaction.
7. The moisture content limits of the soil shall follow the requirements provided in Table 1.
8. The test strip area construction shall be incidental to the embankment construction.
9. The testing rate during the test strip construction is provided in Table 2.



**Table 1 - Moisture Requirements**

Location	Soil Type	Depth Below Finished Subgrade	Minimum %	Maximum %
Soil materials receiving concrete pavement	Silt – Clay Silt- Clay Granular	Upper 3 feet Greater than 3 feet All Depths	Opt. -3 Opt. -3 **	Opt. +2 Opt. +2 **
Soil materials receiving flexible pavement	Silt – Clay Silt- Clay Granular	Upper 3 feet Greater than 3 feet All Depths	Opt. -2 Opt. -3 **	Opt. +1 Opt. +2 **
Soil materials receiving gravel surfacing	All materials	All Depths	**	**
Subgrade prep. Shoulder subgrade prep (concrete pavement)	Silt – Clay Granular	The upper 6 inches of subgrade soil	Opt. -3 **	Opt +2 **
Subgrade prep. Shoulder subgrade prep (flexible pavement)	Silt – Clay Granular	The upper 6 inches of subgrade soil	Opt. -2 **	Opt +1 **
Stabilized Subgrade	-	-	See Specifications	
Granular Structural Fill (MSE Walls, bridges, culverts, et.)	Granular	All Depths	**	**

\*\* Moisture as necessary to obtain proper compaction. The moisture target value for granular materials shall be established in the field by the Contractor during the compaction process. Once established the target moisture shall not vary by more than  $\pm 2\%$ .

**Table 2 - Test Strip Testing Rate**

Material Location	Minimum Testing Rate
Roadway embankment and subgrade	3 tests/ pass*
Trenches, culverts, and miscellaneous structures	1 test / pass*

\* Number of passes with compaction equipment as described in paragraph 14c of Subsection 205.03 of the NDOR Standard Specifications for Highway Construction.

## B. Test Strip Construction and Testing

1. Prior to placing the fill material for the test strip, the subgrade shall be scarified and re-compacted.
2. The fill material shall be placed with a lift thickness no greater than 8 inches uncompacted.
3. The test strip shall be constructed with uniform material and moisture content, and compaction; until it meets the requirements of numbers 3 or 4 of Section A of this provision.
4. The deflection target value is obtained when:
  - i. The moisture content is within the acceptable range.

- ii. The average of the deflection test measurements for three consecutive passes of compaction equipment does not change by more than 10% with additional compaction. The DTV shall be based on the lowest average deflection test measurement from these passes.
5. A 10-lb sample of the test strip material shall be submitted to the NDOR Branch Lab or Materials and Research Soil Lab for index testing.
6. The DTV shall be re-evaluated when:
  - i. Deflection test measurements are consistently less than the DTV. (3 out of 5 consecutive deflection test measurements are less than 0.80 of the DTV).
  - ii. Failing test results are consistently occurring and adequate compaction is observed.

## **Option 2**

### **C. Determination of Deflection Target Values based on the Nebraska Group Index (NGI)**

1. Prior to construction a 10-lb bag of representative material shall be submitted to the nearest NDOR Branch Lab or Materials and Research Soil Lab for each different soil type no less than 21 days prior to grading operations.
2. From the laboratory testing NDOR will determine the Nebraska Group Index (NGI) for each soil type submitted and provide a correlated minimum DTV and optimum moisture content.
3. If no correlation data is available for an individual NGI, a test strip shall be used to determine the DTV as discussed in parts A and B in this provision.
4. The DTV shall be re-evaluated when:
  - i. Deflection test measurements are consistently less than the DTV. (More than 20% of the deflection test measurements are less than 0.80 of the DTV).
  - ii. Failing test results are consistently occurring and adequate compaction is observed.

## **Acceptance Testing**

1. The Deflection Target Value for use as acceptance testing shall be:  
$$\text{DTV} \leq 1.10 \times \text{average deflection value determined from Option 1, Part B, of this provision}$$
  
$$\text{DTV} \leq \text{Correlated DTV determined from the NGI correlation, Option 2, Part C}$$
2. The testing frequency for moisture and deflection shall follow the NDOR Materials Sampling Guide.

3. The moisture content of soil shall be performed using NDOR's approved equipment and methods. Approved equipment includes: 1) hot plates, stove, or microwave, 2) Speedy Moisture Method, or 3) Laboratory oven method.
4. Moisture content results shall be reported to the nearest tenth of a percent.

### **SUBGRADE PREPARATION (C-1-0307)**

Paragraph 2.a. of Subsection 302.03 in the Standard Specifications is amended to include that trimming on narrow, irregular or roadway grading of 1/2 mile (0.8 km) or less may be accomplished using conventional methods.

### **BITUMINOUS FOUNDATION COURSE (C-2-0915)**

Paragraph 2.b. of Subsection 307.02 in the Standard Specifications is void and superseded by the following:

2. b. All salvaged bituminous material must be less than 3 inches (75 mm) in maximum dimension and shall not contain more than 5 percent by weight of material retained on a 2-inch (50 mm) sieve just prior to its use.
  - (1) Contractor Production
    - (i) All salvaged bituminous material produced by the Contractor from pavement removal or by cold milling material from the existing pavement structure on the project, whether hauled directly to the site of use or temporarily stockpiled, shall be screened to meet the requirements of Paragraph 2.b.
    - (ii) If, after screening, there is insufficient material to produce the plan quantity, the Engineer may order the oversized salvaged bituminous material to be further processed at no cost to the State prior to delivery to the roadway. Processing shall mean crushing, pulverizing, re-screening, or a combination of these methods.
    - (iii) On projects that allow multiple foundation course materials to be used, the Engineer may direct that the remaining salvaged bituminous material continue to be placed for bituminous foundation course to the extent this material is available and can be utilized on the project.
    - (iv) Unless otherwise shown in the plans or Special Provisions, all Contractor produced salvaged bituminous material including oversized remaining at the end of the bituminous foundation course operation shall become the property of the Contractor and removed from the project.

- (v) Asphaltic concrete millings shall be free of deleterious matter as determined by the Engineer.
- (2) State Provided Stockpiles
  - (i) If the salvaged bituminous material is to be obtained from existing stockpiles described in the Special Provisions or the plans, the salvaged bituminous material shall be screened to meet the requirements of Paragraph 2.b. prior to delivery to the roadway. Any oversized bituminous material remaining from the screening operation shall remain the property of the State.
  - (ii) If, after screening, there is insufficient material to produce the plan quantity, the Engineer may order the oversized bituminous material to be further processed prior to the delivery to the roadway. Processing shall mean crushing, pulverizing, re-screening, or a combination of these methods.

Paragraph 2.b.(2) through Paragraph 2.b.(5) of Subsection 307.03 are void.

#### **Method of Measurement**

Subsection 307.04 is amended to include the following:

- 4. a. Screening of salvaged bituminous material will not be measured for payment.
- b. Processing of Contractor produced salvaged bituminous material, ordered by the Engineer, which contains excessive oversized material due to the Contractor's production methods, will not be measured for payment.

#### **Basis of Payment**

Paragraph 6. of Subsection 307.05 is void and superseded by the following:

- 6. Screening of salvaged bituminous material shall be considered subsidiary to the bituminous foundation course item.
- 7. Processing of salvaged bituminous material, ordered by the Engineer, which contains excessive oversize material due to the Contractor's production methods, shall be considered subsidiary to the bituminous foundation course item.
- 8. If the Contractor is required to reprocess the oversized bituminous material from State stockpiles, the work of reprocessing will be paid for as "extra work".
- 9. Payment is full compensation for all work prescribed in this Section.

**AGGREGATE FOUNDATION COURSE-D  
(C-3-0915)**

Amend Section 307 of the Standard Specifications to include Aggregate Foundation Course-D.

1. Material Requirements

- a. Foundation Course-D shall consist of mineral aggregate.
- b. Aggregate shall conform to the quality requirements of Subsection 1033.02, Paragraphs 1., 2., and 9.
- c. At least 14 days before beginning foundation course production, the Contractor shall submit a proposed mix design along with a 50 pound (23 kg) sample of each aggregate to the NDR Materials and Research laboratory for approval. The mix design will:
  - (1) Result in an aggregate mix that meets the gradation requirements of Table 1.
  - (2) Propose single defined values for the percentage passing each sieve on the gradations of Table 1.
  - (3) Include the average aggregate(s) gradations used to calculate the mix design.
  - (4) Create a fine aggregate angularity value of 43.0 or greater. The specific gravity for calculation of the Fine Aggregate Angularity (FAA) shall be determined on a combined aggregate sample of the material passing the No. 8 (2.36 mm) sieve and retained on the No. 100 (150  $\mu$ m) sieve as defined in AASHTO T 304 Method A, except the specific gravity material shall be washed over the No. 100 (150  $\mu$ m) sieve.
- d. The NDR Materials and Research laboratory will determine the specific moisture value for the proposed foundation course design. The compaction requirements shall be established by rolling pattern using the light weight deflectometer.

Table 1

Aggregate Foundation Course-D Gradation Requirements		
Sieve Size	Target Value (Percent Passing)	Tolerance
1/2 in (12.5 mm)	100	0
3/8 in (9.5 mm)	100	-4
No. 4 (4.75 mm)	93	$\pm$ 4
No. 10 (2.0 mm)	55	$\pm$ 10
No. 30 (600 $\mu$ m)	25	$\pm$ 5
No. 40 (425 $\mu$ m)	20	$\pm$ 4
No. 200 (75 $\mu$ m)	3	$\pm$ 3

2. Construction Methods

- a. The Contractor shall place compact and profile the foundation course as shown in the plans.

- b. The foundation course shall be spread in a uniform layer and compacted to a stiffness established by a rolling pattern.
- c. After compaction the foundation course shall be trimmed such that the thickness will not vary from the plan thickness by more than 1/2 inch (12.5 mm).

**CRUSHED CONCRETE FOUNDATION COURSE  
(C-4-0915)**

Section 307 of the Standard Specifications is amended to include the following:

All samples, including field samples, will be washed sieve. All samples will be taken from the project grade prior to spreading and trimming. Material represented by samples with 15 percent or more passing the No. 200 (75 µm) sieve will be subject to removal.

Paragraph 3.b. of Subsection 307.02 of the Standard Specifications is void.

Paragraph 3.c. of Subsection 307.02 is void and superseded by the following:

Crushed Concrete shall be free of deleterious matter as determined by the Engineer.

Paragraph 3.d. of Subsection 307.02 of the Standard Specifications is void and superseded by the following:

The crushed concrete gradation shall be determined as prescribed in NDR T 27 (washed test). The target gradation requirement for the crushed concrete foundation course is shown below:

Material gradation will be accepted by the table below on a lot basis of 2500 cubic yards on the average of 5 consecutive tests, one for each 500 cubic yard subplot. If at the end of the project, the final lot consists of less than 2500 cubic yards, a minimum of 3 samples, or 1 sample for each 500 cubic yards or fraction thereof, whichever is greater shall be taken and tested and acceptance based on the average of those tests.

Crushed Concrete Foundation Course Gradation Requirements	
Sieve Size	(Percent Passing)
1½ inch (37.5 mm)	100 minimum
¾ inch (19.0 mm)	85 maximum
No. 4 (4.75 mm)	20 to 50
No. 200 (75 µm)	0 to 8

Paragraph 3.e. of Subsection 307.02 is void and superseded by the following:

Moisture content shall be no higher than necessary to facilitate compaction.

Paragraph 3.a. of Subsection 307.03 of the Standard Specifications is amended to include the following:

- a. (1) The Contractor shall roll the crushed concrete foundation course until no further compaction can be obtained and all roller marks are eliminated.
- (2) The Department will establish a rolling pattern for the project and set a deflection target value.
- (3) The Department shall monitor the rolling pattern with a light weight deflectometer, testing and recording the value every 1,500 square yards. Additional testing of separately placed irregular areas shall be performed as directed by the Engineer.
- (4) The Contractor shall take immediate action to correct the foundation course stiffness if any deflection measurements are outside of the specified range.

Paragraph 4 of Subsection 307.03 is void and superseded by the following:

Foundation course stiffness and thickness testing shall be tested by the Department.

### **FOUNDATION COURSE 4”**

The Contractor shall have the option of using either Aggregate Foundation Course-D, Crushed Concrete Foundation Course or Bituminous Foundation Course; and the Contractor shall bid the pay item “Foundation Course” accordingly.

These different foundation courses may be used interchangeably throughout the project, with the exception being that the same type of foundation course shall be used across the entire width of a pavement section to provide uniform drainage across that template. The Contractor shall make every attempt to use the same type of foundation course in long paving runs and any changes in foundation course type shall be approved by the Engineer.

Regardless of the type of material used it shall be obtained from Contractor sources or from the pavement removal operation on the project.

All work necessary to place the foundation course material shall be considered subsidiary to other items for which direct payment is made.

Regardless of the type of material used it shall be measured and paid for as Foundation Course 4”.

Method of Measurement

Foundation Course shall be measured as prescribed in Paragraph 3 of Subsection 307.04.

Paragraph 3 of Subsection 307.04 is amended to include the following:

Any increased depth Foundation Course of more than 4 inches will not be measured for payment. Payment for such increased depth shall be considered as included within payment for Foundation Course 4”.

Basis of Payment

Amend Subsection 307.05 of the Standard Specifications to include the following:

1. Pay Item	Pay Unit
Foundation Course_____	Square Yard

**FOUNDATION COURSE**

Paragraph 1.e. of Subsection 307.02 is void and is superseded by the following:

The NDR Materials and Research Engineer will evaluate the soil sample characteristics and determine the specific moisture and compaction requirements for the proposed foundation course design.

Paragraph 1.a.(4)(i) of Subsection 307.03 is void and is superseded by the following:

The foundation course material shall be hauled to the road, spread in a uniform layer and compacted to the stiffness that is determined by a control strip.

Amend Subsection 307.03 of the Standard Specifications to include:

Equipment

A minimum of one self-propelled double drum vibratory roller shall be required. The vibratory roller shall have a minimum operating weight of 18,000 pounds.

Compaction and Stiffness

The Department shall monitor the in-place stiffness by measuring the deflection of the foundation course by using a control strip by performing Light Weight Deflectometer measurements of the foundation course for acceptance. Refer to NDR Test Method T 2835 for the proper operation of the Light Weight Deflectometer (LWD). The procedure for conducting Lightweight Deflectometer testing is as follows:

1. The deflection test is defined as the average of the fourth, fifth, and sixth drops of the deflectometer at one location.
2. The deflection value is defined as the average of 3 test locations.
3. The Deflection Target Value (DTV) is the lowest deflection value determined by using a control strip.
4. A single coverage is defined as the compacting of unbound material over a given point a single time.
5. A new control strip shall be constructed when there is an observed change in material or as determined by the Engineer.



A Control Strip shall be constructed for the purpose of determining the Deflection Target Value.

6. The control strip dimensions for roadway shall have a minimum length of 200 feet.
7. The control strip area construction shall be incidental to the pay item Foundation Course\_\_\_\_\_.
8. During construction of the control strips, the Contractor shall make repeated compaction coverages. When the material is visibly densified, the Engineer will take deflection tests at 3 locations to get an average deflection value. Following each test, additional coverages shall be conducted and deflection tests taken until a Deflection Target Value is established.
9. The Deflection Target Value of the control strip shall be determined by compacting the foundation course to a point that three consecutive coverages do not change the deflection by more than 10%. The DTV shall be based on the lowest average deflection test. The roller procedure shall have a minimum of 6 consecutive coverages unless an alternate rolling pattern is approved by the Engineer.
10. The Deflection Target Value shall be re-evaluated when:
  - i. Deflection test measurements are consistently less than the DTV. (3 out of 5 consecutive deflection tests are less than 0.8 of the DTV).
  - ii. Failing test results are consistently occurring and adequate compaction is observed.

#### Acceptance Testing

A passing deflection test is defined as a deflection value that is less than  $1.10 \times \text{DTV}$ . The frequency of testing deflection is 1 test at one location for every 1500 square yards or less.

### **TYPE B HIGH INTENSITY WARNING LIGHTS (D-6-0307)**

All references in the plans to Type B High Intensity Warning Lights shall be considered void. The plans will not be revised to reflect this change.

**TEMPORARY TRAFFIC CONTROL DEVICES  
(Type II Barricades, Reflectorized Drums, 42" (1070 mm) Reflective Cones, and  
Vertical Panels)  
(D-6-1112)**

Paragraph 2.d. of Subsection 422.03 in the Standard Specifications is void and superseded by the following:

- d. (1) Reflectorized drums used for traffic warning or channelization shall be constructed of lightweight, flexible, and deformable materials, be a minimum of 36 inches (900 mm) in height, and have a minimum width of 18 inches (450 mm), regardless of orientation. The predominant color of the drum shall be orange.
- (2) Steel drums shall not be used.
- (3) The markings on drums shall be horizontal, shall be circumferential, and shall display four 6-inch (150 mm) wide bands of retroreflective sheeting, alternating fluorescent orange - white – fluorescent orange - white. The fluorescent orange sheeting shall meet the luminance requirements of the following table.

**FHWA Luminance Factor**

Sheeting Type	Luminance Factor $Y_T$		
	Min	Max	Fluorescence Luminance Factor Limit, $Y_F$
Fluorescent Orange	25	None	15

- e. When approved by the Engineer or shown in the plans, 42" (1070 mm) reflective cones may be used in lieu of Type II Barricades or Reflectorized Drums. 42" (1070 mm) reflective cones shall include a 30-pound (14 kg) rubber base and display four 6-inch (150 mm) wide bands of retroreflective sheeting, alternating fluorescent orange - white - fluorescent orange - white. 42" (1070 mm) reflective cones shall not be used for lane-closure tapers or shifts.
- f. Rubber base-mounted 36-inch vertical panels shall not be used for channelization when the speed limit exceeds 40 miles per hour.

Paragraph 2.b. of Subsection 422.04 of the Standard Specifications is void and superseded by the following:

- b. (i) Type II Barricades, Reflectorized Drums, and 42" (1070 mm) Reflective Cones shall be counted as "Barricades, Type II" and measured for payment by the number of calendar days each is in place and positioned as shown in the plans or as directed by the Engineer.
- (ii) Vertical Panels shall be measured for payment as permanent "Sign Days" (by the each) by the number of calendar days each vertical panel unit is in place and positioned as shown in the plans or as directed by the Engineer.

Paragraph 2.c. of Subsection 422.04 of the Standard Specifications is amended to include Reflectorized Drums.

Paragraphs 3. and 4. of Subsection 422.05 of the Standard Specifications are void and superseded by the following:

3. a. The pay item "Barricade, Type II" is used to pay for three items ("Barricades, Type II", "42" (1070 mm) Reflectorized Cones", and "Reflectorized Drums").
- b. "Barricades, Type II", which includes "42" (1070 mm) Reflectorized Cones", and "Reflectorized Drums", is paid for as an "established" contract unit price item. The established unit price is identified on the "Schedule of Items" shown in the Proposal.
4. Payment for vertical panels includes all posts, brackets, or hardware necessary to install and maintain the vertical panel units.

### **WORK ZONE TRAFFIC CONTROL SIGNS (D-6-1212)**

The Department has adopted the FHWA 2009 Manual of Uniform Traffic Control (MUTCD) and the 2011 Nebraska Supplement to the MUTCD as the official guidance for work zone traffic control signs. Many work zone traffic control signs have been revised, redesigned, or replaced in the 2009 MUTCD (and 2011 Nebraska Supplement). Accordingly, all work zone signs shall comply with the following:

- 1 - All signs, regardless of age, shall meet the design standards of the 2009 MUTCD (and 2011 Nebraska Supplement).

### **TEMPORARY PAVEMENT MARKING (D-10-0811)**

Paragraph 4.f. of Subsection 422.01 in the Standard Specifications is void.

Paragraph 6.a.(2) of Subsection 422.03 is void and superseded by the following:

- (2) When the markings are no longer needed, the Contractor shall remove them. If removing markings from the final wearing surface, the removal process shall not mar or damage the surface. Removed markings shall no longer be visible on the final wearing surface.

Paragraph 6. of Subsection 422.03 in the Standard Specifications is amended to include the following:

This work shall consist of installing and removing reflectorized temporary pavement lines of the color, width and line configuration shown in the plans or as designated by the Engineer.

Temporary paint markings will be used on this project. The use of Type I tape will not be permitted and Type II tape may be used for short durations only, as directed by the Engineer. Temporary paint stripes shall be a minimum 4" (100 mm) wide, 10' (3 m) long with a 30-foot (9 m) gap or a minimum 4" (100 mm) wide solid line as shown on the plans.

Temporary pavement marking which is no longer applicable shall be removed as directed by the Engineer.

Paragraph 12.a. of Subsection 422.04 is void and superseded by the following:

- a. "Pavement Marking Removal" and "Temporary Pavement Marking Removal" shall be measured by the linear foot (meter) along the centerline of the traveled roadway for each line removed.

Subsection 422.04 is amended to include the following:

21. The use of paint for Temporary Pavement Marking shall be measured per linear foot (meter) for the item "Temporary Pavement Marking, Type Paint".
22. Temporary pavement marking tape Type II shall be measured per linear foot (meter) for the item "Temporary Pavement Marking, Type II".
23. Initial surface preparation requiring sand or shot blasting shall be measured per linear foot (meter) for the item "Temporary Pavement Marking, Surface Preparation". Surface preparation for repainting, consisting of air blasting and brushing, shall be subsidiary to other items for which payment is made.

Paragraph 1. of Subsection 422.05 is amended to include the following:

<b>Pay Item</b>	<b>Pay Unit</b>
Temporary Pavement Marking Removal	Linear Foot (LF)
Temporary Pavement Marking, Type Paint	Linear Foot (LF)
Temporary Pavement Marking, Type II	Linear Foot (LF)
Temporary Pavement Marking, Surface Preparation	Linear Foot (LF)

Paragraph 9.c. of Subsection 422.05 is void.

Paragraph 13. of Subsection 422.05 is void and superseded by the following:

13. Removal of temporary pavement markings including overlay broken/solid lines will be paid for except:
  - a. When the temporary markings are intended to be covered up by permanent markings.
  - b. When surface preparation removes the temporary markings.

Section 1069 in the Standard Specifications is amended to include the following:

1. Prior to the initial placement of the markings, temporary paint, or Type II tape the pavement upon which the markings are to be placed shall be dry, cleaned and properly prepared by sand or shot blasting, as a minimum, and to the extent recommended by the manufacturer so that all contaminants, loose debris, and other foreign material are completely removed. Surface preparation for any subsequent application shall consist of air blasting and brushing the roadway

surface to remove all loose dirt, mud or other debris and to dry the surface. Each additional application of paint shall be applied over the previously painted stripes.

Prior to placing the temporary pavement markings on the prepared surface, the Contractor shall layout, spot or string line the proposed temporary marking location. The temporary markings shall be aligned in such a way as to provide a smooth and gradual transition to and from the existing markings, and throughout both straight and horizontally curved sections of the project.

2. The material used for temporary paint marking shall be a commercially available acrylic resin Type II traffic paint that dries to no pickup in 4 minutes and shall be applied with a minimum of 6 pounds (0.7 kg) of glass beads per gallon (liter). The paint shall be applied at a minimum width of 4 inches (100 mm) and a wet thickness of approximately 15 mils (380  $\mu$ m) {approximately 16.5 gallons (39 liters) of paint per mile (kilometer) of solid line}. The equipment used to paint the line shall be a machine designed for the purpose of applying long line traffic lane markings of the type, width and thickness required, and shall be self-propelled or truck mounted and be equipped with an adjustable guide-on to assure proper placement of the line. Hand application, walk behind equipment or towing of the equipment will not be allowed.

Temporary paint lines shall be used on new or existing concrete pavement and asphaltic concrete pavement.

Any temporary painted line or segment of line, placed before December 1, which fails to adhere to the roadway surface for a minimum of 60 days under normal vehicular traffic or which appears wavy, nonuniform, thin, poorly applied, misaligned, beadless or nonreflective, shall be replaced as directed by the Engineer. For temporary painted pavement markings placed between December 1 and March 15, the minimum time requirement shall be 15 days with the same conditions applicable. No direct payment will be made for replacement within the 60 day or 15 day warranty periods.

After the minimum 60 day or 15 day warranty periods, the Contractor may be required to repaint the temporary traffic markings, as directed by the Engineer. Direct payment will be made for each additional application. However, should the additional application fail within the 60 day or 15 day warranty periods, the provisions as stated in the previous paragraph shall apply.

The Contractor must begin each additional repainting application within 72 hours after notification by the Engineer. Should the Contractor fail to begin repainting within this 72 hour period, the Engineer may use State forces or hire a private contractor to repaint the temporary traffic markings. The Contractor will be assessed any costs above the contract unit price "Temporary Pavement Marking, Type Paint" incurred by the State as a result of performing the corrective action by others, and the project will be shut down until the painting is completed.

When painting is required with air temperatures between 38° F (3° C) and 50° F (10° C), the paint shall be heated according to the manufacturer's recommendation prior to application on the dry, clean and properly prepared pavement. Any paint application made when the air temperature is below 38° F

(3° C) will be paid for by the State, even if the application falls within either the 60 day or 15 day warranty periods previously described.

3. Temporary pavement marking tape Type II shall be a mixture of high quality polymeric materials and pigments, with glass beads throughout the pigmented portion of the film, and a reflective layer of high index of refraction glass beads bonded to the top surface. The film shall be precoated with a pressure-sensitive adhesive. Unless otherwise specified, the temporary pavement marking shall be 4 inches (100 mm) wide and the reflectorizing glass beads shall be incorporated to facilitate removal of the tape easily from asphalt and Portland cement concrete surfaces intact or in large pieces, at temperatures above 40° F (4° C), either manually or with a recommended roll up device. Removal shall be accomplished without the use of heat, solvents, grinding or sandblasting.

**WET REFLECTIVE PREFORMED PAVEMENT MARKING  
TYPE 4- GROOVED  
(D-12-1208)**

**I. Description**

This work shall consist of furnishing and installing retroreflective preformed patterned pavement markings in Contractor installed grooves in accordance with this provision and in reasonably close conformance to the dimensions and lines shown on the plans and/or required by the Engineer.

**II. Materials - General**

The preformed patterned markings shall consist of film with clear microcrystalline ceramic beads incorporated to provide immediate and continuing retroreflection during both wet and dry conditions. This film shall be manufactured without the use of lead chromate pigments or other similar, lead-containing chemicals.

Preformed words and symbols shall conform to the applicable shapes and sizes as outlined in the "Manual on Uniform Traffic Control Devices for Streets and Highways."

The preformed markings shall be capable of adhering to asphaltic cement concrete and Portland cement concrete by the use of a pre-coated pressure sensitive adhesive. A surface preparation adhesive may be used to precondition the pavement surface. The preformed markings shall conform to pavement contours by the action of traffic. The pavement markings shall be capable of application on new, dense and open-graded asphalt concrete wearing courses during the paving operation in accordance with the manufacturer's instructions. After application, the markings shall be immediately ready for traffic. The bidder shall identify proper surface preparation adhesives (where necessary) to be applied at the time of application, all equipment necessary for proper application, and recommendations for application that will assure effective product performance. The preformed markings shall be suitable for use for one year after the date of receipt when stored in accordance with the manufacturer's recommendations.

### III. Surface Preparation

The grooves for tape widths equal to or less than 8 inches shall preferably be made in a single, dry-cut pass. However, alternate (multiple pass) methods may be used, provided they produce the desired result --- a groove, the bottom of which has a fine corduroy or textured appearance, is of a uniform depth with no visible ridge(s), and does not significantly and obviously deviate from a plane. (If the tape manufacturer publishes any type of grooving and application guidelines, the Contractor shall provide the Engineer with the most current information available prior to commencing work and make reference to it.)

The equipment and method used shall be approved by the tape manufacturer and shall leave the cut groove ready for tape installation. If a course, tooth pattern is present, the Contractor shall increase the number of blades and decrease the number of spacers on the cutting head. If self-vacuinating equipment is not used, the groove shall be immediately vacuumed.

The pavement marking tape shall be placed in the grooves the same day the grooves are cut. Grooves shall be clean and dry prior to tape application. All conflicting pavement markings remaining after tape installation shall be removed; and this removal shall be subsidiary to the pavement marking.

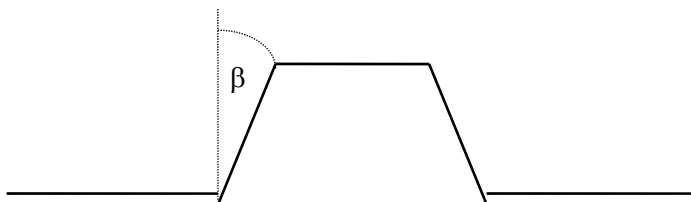
Groove width:	tape width + 1 inch to 2 inch max
Groove depth:	100 mils $\pm$ 10 mils
Groove length:	full length of tape + required grooving transition
Groove position:	2 inches off of joint line (per plan)

### IV. Classification

The markings shall be highly durable, retroreflective, pliant polymer materials designed for longitudinal and word/symbol markings subjected to high traffic volumes and severe wear conditions such as shear action from crossover or encroachment on typical longitudinal configurations such as edge lines and lane lines. The markings shall be capable of providing retroreflection during both wet and dry conditions.

### V. Composition and Retroreflectivity Requirements

Composition: The retroreflective pliant polymer pavement markings shall consist of a mixture of high-quality polymeric materials, pigments and glass beads distributed throughout their base cross-sectional area, with a reflective layer of microcrystalline ceramic beads bonded to a durable polyurethane topcoat surface. The patterned surface shall have approximately 50%  $\pm$  15% of the surface area raised and presenting a near vertical face ( $\beta$  angle of 0° to 60°) to traffic from any direction. (See diagram below.) The channels between the raised areas shall be substantially free of exposed beads or particles.



Retroreflectance: The white markings shall have the initial expected retroreflectance values as shown in Table 1 under dry, wet, and rainy conditions. The photometric quantity to be measured shall be coefficient of retroreflected luminance ( $R_L$ ) and shall be expressed as millicandelas per square foot per foot-candle  $[(\text{mcd} \cdot \text{ft}^{-2}) \cdot \text{fc}^{-1}]$ . The metric equivalent shall be expressed as millicandelas per square meter per lux  $[(\text{mcd} \cdot \text{m}^{-2}) \cdot \text{lx}^{-1}]$ .

Retroreflectance values shall be measured under dry conditions in accordance with the testing procedures of ASTM D4061.

Retroreflectance values shall be measured under wet conditions in accordance with ASTM E2176 or ASTM E2177. Wet retroreflectance values measured under a “condition of continuous wetting” (simulated rain) shall be in accordance with ASTM E2176. Wet retroreflectance values measured under a “condition of wetness” shall be in accordance with ASTM E2177.

**Table 1**  
**Expected Initial  $R_L$  under dry, wet, and rainy conditions**

<u>Dry, Wet &amp; Rainy</u>		
Entrance Angle	88.76°	88.76°
Observation Angle	1.05°	1.05°
Retroreflected Luminance $R_L [(\text{mcd} \cdot \text{m}^{-2}) \cdot \text{lx}^{-1}]$	500	250

Note: The test instrument shall use an Entrance Angle of 88.76° and Observation Angle of 1.05° which represent a simulated driver viewing geometry at a 30 meter distance.

Beads: Index of Refraction: All “dry-performing” microcrystalline ceramic beads bonded to the polyurethane-coated, patterned surface of the material shall have a minimum index of refraction of 1.70 when tested using the liquid oil immersion method. All “wet-performing” microcrystalline ceramic beads bonded to the polyurethane-coated, patterned surface of the material shall have a minimum index of refraction of 2.30 when tested using the liquid oil immersion method. The glass beads mixed into the pliant polymer shall have a minimum index of refraction of 1.5 when tested by the liquid oil immersion method.

### Testing Procedure For Refractive Index of Beads By Liquid Immersion

Equipment Required:

1. Microscope (minimum 100X magnification)
2. Light source - preferably sodium light or other monochromatic source, but not absolutely essential
3. Refractive index liquids\*
4. Microscope slide and slide cover
5. Mortar and pestle

\*Available from R.P. Cargille Laboratories, Inc., Cedar Grove, NJ.



Procedure:

1. Using the mortar and pestle, crush a few representative beads and place a few of these crushed particles on a microscope slide.
2. Place a drop of a refractive index liquid, with an index as close to that of the glass as can be estimated, on the particles.
3. Cover the slide with a microscope slide cover and view the crushed particles by transmitted light normal to the slide surface (illuminated from the bottom).
4. Adjust the microscope mirror to allow a minimum light intensity for viewing. This is particularly important if sodium light is not used.
5. Bring a relatively flat and transparent particle into focus.
6. By slightly raising and lowering the objective (microscope tube), look for one or both of the following:
  - a. Becke Line - This light line will appear to move either into the particle or away from it. In general, if the objective is raised, the line will move toward the material of higher refractive index; if the objective is lowered, the line will move toward the material of lower index.
  - b. Variation in Particle Brightness - When raising the object from a sharp focus, the particle will appear to get brighter or darker than the surrounding field. If it becomes brighter, the glass has a higher refractive index than the liquid. If it becomes darker, the glass has a lower refractive index than the liquid. In both cases, the opposite will be true if the object is lowered.
7. This test can be used to confirm that the beads are above or below a specified index. It can also be used to give an accurate determination of the index ( $\pm 0.001$ ). This is done by using several refractive index liquids until a match or near match of indices occurs. The index of the glass will equal that of the liquid when no Becke line and no variation in bead brightness can be observed.

The size and quality of the beads shall be such that the performance requirements for the retroreflective pliant polymer shall be met.

Acid Resistance: The beads shall show resistance to corrosion of their surface after exposure to a 1% solution (by weight) of sulfuric acid. The 1% acid solution shall be made by adding 5.7cc of concentrated acid into 1000cc of distilled water. CAUTION: Always add the concentrated acid into the water, not the reverse. The test shall be performed as follows:

Take a 1-inch x 2-inch sample, adhere it to the bottom of a glass tray and place just enough acid solution to completely immerse the sample. Cover the tray with a piece of glass to prevent evaporation and allow the sample to be exposed for 24 hours under these conditions. Then decant the acid

solution (do not rinse, touch or otherwise disturb the bead surfaces) and dry the sample while adhered to the glass tray in a 150° F. (66° C.) oven for approximately 15 minutes.

Microscopic examination (20X) shall show no more than 15% of the beads having a formation of a very distinct opaque white (corroded) layer on their entire surface.

**Color:** The preformed markings shall consist of white film with pigments selected and blended to conform to standard highway colors.

**Skid Resistance:** The patterned surface of the retroreflective pliant polymer shall provide an initial average skid resistance value upon manufacturing of 45 BPN when tested according to ASTM E303 except values shall be taken in one direction and then at a 45° angle from that direction. These two values shall then be averaged to find the skid resistance of the patterned surface.

**Patchability:** The pavement marking material shall be capable of use for patching worn areas of the same type in accordance with manufacturer's instructions.

**Thickness:** The patterned material without adhesive shall have a minimum caliper of 0.065 inches (1.651mm) at the thickest portion of the patterned cross-section and a minimum caliper of 0.02 inches (.508mm) at the thinnest portion of the cross-section.



## VI. **Installation**

The markings shall be applied in accordance with the manufacturer's installation instructions. Marking configurations shall be in accordance with the "Manual on Uniform Traffic Control Devices." Tape shall not be installed unless the surface and air temperatures are in compliance with the manufacturer's specifications.

The Contractor shall have on the project at all times during the application of the permanent pavement markings at least one employee with a valid American Traffic Safety Services Association (ATSSA) certification. The ATSSA certification may be for either a "Certified Pavement Marking Technician" or a "Certified Pavement Marking Specialist." The Contractor shall provide the Engineer a copy of the employee's certification prior to the beginning of work.

## VII. **Observation**

Following initial completion of all pavement marking, there will be a 180 day observation period before final acceptance. During the observation period, the Contractor, at no expense to the Department of Roads, shall replace any markings that the Engineer determines are not performing satisfactorily due to defective materials and/or workmanship in manufacture and/or application. At the end of the observation period, the minimum required retention percentage for markings installed shall be 90%.

Determination of Percentage Retained - The percentage retained shall be calculated as the nominal area of the strip less the area of loss divided by the nominal area and expressed as a percentage of the nominal area. A claim, made by the State against the Contractor, shall be submitted to the Contractor in writing within 30 days after the 180-day observation period. When such a claim is made prior to August 1, the replacement material shall be installed during that same construction season. Replacement material for any claim after August 1, shall be installed prior to June 1, of the following year. Marking replacement shall be performed in accordance with requirement specified herein for the initial application, including but not limited to surface cleaning, sealer application, etc.

Final acceptance of all marking will include an inspection of the appearance of the markings during daylight and darkness. Any markings that fail to have a satisfactory appearance during either period, as determined by the Engineer, shall be reapplied at no expense to the Department of Roads.

Final acceptance of the pavement marking will be: (1) 180 days after the initial completion of all work, or (2) upon completion of all corrective work, whichever occurs last.

**VIII. Contract Units and Basis for Payment**

Subsection 423.04 of the 2007 Standard Specifications is amended to include the item: “\_\_\_\_\_ Wet Reflective Preformed Pavement Marking, Type 4, Grooved”. The price shall be full compensation for grooving the pavement surface, furnishing and installing all markings, and for all materials (including adhesive), labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
_____ Wet Reflective Preformed Pavement Marking, Type 4, Grooved	Linear Foot

**TEMPORARY TRAFFIC CONTROL FOR PERMANENT PAVEMENT MARKING  
(D-13-1007)**

Paragraph 4. of Subsection 423.04 in the Standard Specifications is void.

**SURFACING UNDER GUARDRAIL  
(E-3-0315)**

Amend Section 503 in the Standard Specifications to include Surfacing Under Guardrail.

At the Contractor’s option, the surfacing may be constructed using Class “47B-3000” Concrete, Class “BX-3000” Concrete, Class “PR-3000” Concrete (Class 47B-20 Concrete, Class BX-20 Concrete, Class PR-20 Concrete), or any commercially produced hot mix asphaltic concrete, which has been approved by the Engineer. These materials may be used interchangeably during the course of the work except that surfacing at any individual location must be completed with the same material with which the work was begun.

If concrete is used in the surfacing, it shall reach a minimum strength of 3000 psi (20 Mpa) before opening to traffic.

Amend Subsection 302.04 in the Standard Specifications to provide that the work of subgrade preparation for surfacing under guardrail will not be measured for payment, but shall be considered subsidiary to the item "Surfacing Under Guardrail".

Subsection 304.04 in the Standard Specifications is amended to provide that the work of earth shoulder construction associated with surfacing under guardrail will not be measured for payment, but shall be considered subsidiary to the item "Surfacing Under Guardrail."

Subsection 503.05 in the Standard Specifications is amended to provide that P.G. Binder used in the asphaltic concrete will not be measured for payment, but shall be considered subsidiary to the item "Surfacing Under Guardrail".

Subsection 504.04 in the Standard Specifications is amended to provide that the application of a tack coat, including furnishing emulsified asphalt, will not be measured for payment, but shall be considered subsidiary to the item "Surfacing Under Guardrail".

The work and materials required for any drainage curb placed on surfacing under guardrail will not be measured and paid for, but will be considered subsidiary to the item "Surfacing Under Guardrail".

The work and materials required for surfacing under guardrail will be paid for at the contract unit price per square yard (square meter) for the item "Surfacing Under Guardrail". Payment will be full compensation for the work prescribed in these Special Provisions and the Standard Specifications.

### **RUMBLE STRIPS (E-13-0911)**

This work consists of cutting rumble strips in pavements to the dimensions, spacing, and at the locations shown in the plans or directed by the Engineer. The cutting head shall have the cutting tips arranged in a pattern as to provide a smooth cut [approximately 1/16" (2 mm) between peaks and valleys].

Alignment of the edge of the pattern will be randomly checked by the Engineer. Any rumble strips misaligned [+/- 2 inches (+/-50 mm)] shall be re-cut.

The Contractor shall demonstrate to the Engineer on an initial 500 foot (150 m) test section that the equipment and method will provide the desired milled rumble strip and surface inside each depression without tearing, snagging, or chipping the pavement. If the desired results are not being provided, as determined by the Engineer, the Contractor shall provide new equipment or method, or make necessary adjustments to provide the desired results. If the initial 500 foot (150 m) section results are unsatisfactory it will be repaired or replaced as determined by the Engineer, at no additional cost to the Department.

Excess waste material resulting from the operation shall be removed on a daily basis by use of a power broom or other method approved by the Engineer. Excess waste material shall be removed prior to opening the adjacent lane to traffic.

Any joint that had been previously sealed and then was damaged due to the installation of the rumble strip shall be resealed as directed by the Engineer.

The Contractor shall not place rumble strips on bridge decks and bridge approach slabs.

**Method of Measurement**

Each shoulder receiving rumble strips shall be measured separately in stations of 100 feet (100 meters). Centerline rumble strips placed left and right of centerline, as shown in the plans, shall be measured separately in stations of 100 feet (100 meters). Stations shall be measured horizontally along the project centerline between the beginning and ending points. Deductions will be made for all areas where rumble strips are not required.

**Basis of Payment**

<b>Pay Item</b>	<b>Pay Unit</b>
Rumble Strips, Asphalt _____	Station (Sta) Station (StaM)
Rumble Strips, Concrete _____	Station (Sta) Station (StaM)

Payment is full compensation for all work required to install the rumble strips, and resealing joints as required. No additional payment will be made for the test sections that were deemed unsatisfactory.

**CONCRETE PAVEMENT CORING  
(F-17-0110)**

Paragraphs 3. a. and 3.b. of Subsection 603.05 of the Standard Specifications are void and superseded by the following:

- 3. a. (1) A pay factor will be applied to each unit based on the compressive strength of 1 core per unit tested in accordance with AASHTO T 24.
- (2) Concrete cores must have a minimum age of 28 days before testing.
- (3) The paved area shall be divided into units, and each unit will be considered separately.
- (4) Units are 750 linear feet (230 m) of pavement for each separately placed width or width of each class of concrete whether or not placed separately starting at the beginning of the pavement.
- b. (1) When any unit core fails to have the required minimum compressive strength, the Contractor will have the option to obtain, at no cost to the Department, two additional cores from that unit provided that:
  - (i) The cores shall be cut by the contractor. (The cutting to be witnessed by the Engineer)
  - (ii) The cores shall be cut within seven (7) days of being notified of the strength deficiency, and

- (iii) The cores shall be cut within 6 inches of the original unit core in the longitudinal direction.
- (2) The Engineer will take possession of the cores and have them tested within 24 hours at the Materials and Research laboratory.
- (3) The results of all three cores sampled at the location will be averaged for the final compressive strength calculation and pay factor.
- (4) The Department may agree to cut the additional cores if requested to do so by the Contractor, but will do so only if the Department's coring crew is available on the project and has sufficient time to cut and transport the cores for testing during normal working hours within seven (7) days of the Contractor being notified of the strength deficiency.

Paragraph 4.a.(4) of Section 603.05 in the Standard Specifications is void and replaced by the following:

A separately placed width is the width between field constructed longitudinal joints, between a longitudinal construction joint and the edge, or between two pavement edges. A separately placed width may include more than one pay class of concrete, such as doweled and non-doweled.

**PORTLAND CEMENT CONCRETE PAVEMENTS  
GENERAL REQUIREMENTS  
(F-20-0611)**

Paragraph 7.b. of Subsection 601.02 in the Standard Specifications is void and superseded by the following:

- b. The finishing machine shall travel at a controlled speed such that it produces a uniform, well consolidated pavement that does not contain large voids.

Paragraph 10.d. of Subsection 601.02 is void and superseded by the following:

- d. The Contractor shall always have a tachometer available to monitor vibrator frequency. The vibrator frequency shall be within the manufacturer's specifications not to exceed 9,000 vpm.

Paragraph 12.d.(1) of Subsection 601.02 is void and superseded by the following:

- (1) The mechanical joint saw shall have an adjustable guide to insure a true line is cut. The mechanical joint saw blade shall be water-cooled, or specifically designed for early-entry sawing if air cooled.

Paragraph 12.d.(2) of Subsection 601.02 is void.

Paragraph 12.d.(3) of Subsection 601.02 is void and superseded by the following:

- d. (3) The joint cut shall be made with a diamond-toothed blade.

**CONCRETE PAVEMENT  
(F-21-0611)**

Paragraph 2.a. of Subsection 603.03 in the Standard Specifications is amended to include the following:

- (6) The base material shall be moistened through a uniform, lightly applied spray pattern prior to concrete placement as directed by the Engineer.

Paragraphs 2.d. and e. of Subsection 603.03 are void and superseded by the following:

- d. After being consolidated with internal mechanical vibration, the concrete shall be struck off to a uniform height approximately 0.5 inch (12 mm) above the finished surface and then finished to the final elevation by means of a vibrating mechanical or vibrating hand operated screed.
- e. Finished concrete shall be of uniform density with no segregation, honeycombing, or large voids.

Paragraph 3.f. of Subsection 603.03 is void and superseded by the following:

- f. (1) A wet burlap, carpet, or canvas drag will be drawn over the entire surface in a longitudinal direction for a final finish, dampening of this drag material will be accomplished through a uniform, lightly applied spray pattern.
- (2) The drag shall be suspended from a mandrel, or similar device, to insure a uniform texture.
- (3) The drag shall be lifted from the surface of the concrete pavement when the paving train is not in motion for 30 minutes or more and carefully reset before resuming the dragging operations.
- (4) Drags shall be rinsed or washed as necessary to obtain a uniform surface. Drags that cannot be cleaned shall be replaced.

Paragraphs 4.e., f., g., and h. of Subsection 603.03 are void and superseded by the following:

- e. For areas with pavement widening, dowel baskets shall be placed in all transverse contraction joints which are 6 feet (1.8 mm) or wider.
- f. If normal vibration is found inadequate to thoroughly consolidate the plastic concrete within and around the dowel basket assemblies, adjustments to the material and/or operations shall be made.
- g. Precautions shall be taken to assure that the sawed contraction joint is located directly over the center of the dowel bars.
- h. Transverse cracks which form in the concrete pavement panels between load transfer joints shall be stitched as shown in the plans, described in the Special Provision or repaired as directed by the Engineer. No payment will be made for this work.

Paragraph 6.b.(7)(i) of Subsection 603.03 is void and superseded by the following:

- (7) (i) The concrete shall be textured by dragging a wet burlap, carpet, or canvas belt over the full width of the surface in a longitudinal direction. Dampening of this drag material will be accomplished through a uniform, lightly applied spray pattern.

Paragraph 6.c.(4)(i) of Subsection 603.03 is void and superseded by the following:

- (4) (i) The concrete shall be textured by dragging a wet burlap, carpet, or canvas belt over the full width of the surface in a longitudinal direction. Dampening of this drag material will be accomplished through a uniform, lightly applied spray pattern.

Paragraph 7.a.(3) of Subsection 603.03 is void and superseded by the following:

- (3) (i) The curing compound shall be applied in 2 equal applications immediately following each other or other methods approved by the Engineer.
- (ii) The total rate of applications shall be at a minimum of 1 Gal/100 SF (0.3 L/m<sup>2</sup>) of surface area for tined surfaces or 1 Gal/150 SF (0.2 L/m<sup>2</sup>) of surface area for all other finishes.

Paragraph 8.a.(6) of Subsection 603.03 is voided and superseded by the following:

- (6) Any panels that contain random cracking will be considered unacceptable. The Engineer will decide whether to replace or repair the panel. The Contractor shall replace or repair these panels at the direction of the Engineer at no cost to the Department. A 20% deduction will be assessed on any repaired panel. Any panel that is replaced will not be assessed a 20% deduction.

Paragraph 8.d.(3) of Subsection 603.03 is void.

Paragraphs 8.d.(4), (5) and (6) of Subsection 603.03 are void and superseded by the following:

- (4) Before sealing, the joint wall (not the bottom of joint) surfaces shall be sandblasted or water-blasted to remove all dirt, curing compound residue, laitance, and any other foreign material. After sandblasting, the entire joint shall be cleaned with compressed air having a minimum pressure of 90 psi (620 kPa). The compressed air shall be free of oil, water, and other contaminants. The joints shall be dry at the time of sealing.
- (5) (i) Transverse contraction joints in Portland cement concrete pavements shall be sealed so that the joint is filled to approximately 1/8" to 3/8" (3 to 9 mm) below the top of the joint with an approved hot poured sealant.
  - (ii) All overflow material shall be removed from the surface of the pavement.
  - (iii) If adhesion is not satisfactory, the material shall be rejected.
- (6) The Contractor shall give the Engineer one copy of the hot pour manufacturer's sealing recommendations.



Paragraph 9.b. of Subsection 603.03 in the 2007 edition of the NDOR Standard Specifications for Highway Construction is void and superseded by:

- b. When the pay item "Portland Cement Concrete Smoothness Testing" is not included in the contract, the Contractor shall test the hardened concrete for surface irregularities with a California Profilograph. Areas showing high spots (bumps) in excess of 0.30 inches in a 25 foot span will be plainly marked on the pavement and on the printed pavement profile trace. All identified high spots shall be ground to the required profile. The grinding shall be performed so that the cement-aggregate bond is not broken. The equipment and profilograph test procedure requirements of Section 602 of the Standard Specifications for Highway Construction shall apply to this surface testing.

Paragraph 9.c of Subsection 603.03 is amended to include:

- c. At the Engineer's option, the use of a 10 foot straightedge to locate high spots in excess of 1/8 inch may be allowed in lieu of bump detection using a profilograph testing.

Paragraphs 11.c., d. and e. of Subsection 603.03 are void and superseded by the following:

- c. The Contractor's forces may be allowed on the concrete pavement when the concrete has reached a minimum age of 14 days or when the concrete has reached a compressive strength of 3000 psi (24 MPa) when tested in accordance with ASTM C 39.
- d. With the approval of the Engineer, the Contractor may elect to increase the early strength of the concrete by adding cement and/or reducing the water/cement ratio, and then the pavement may be opened to traffic provided it has attained a compressive strength of 3500 psi (24 MPa). The concrete in the area where the early strength is required shall be paid for at the bid price.
- e. When required by the Special Provisions or when requested by the Contractor, the maturity method, as provided for in ASTM C 1074, may be used in lieu of the requirements of Subsection 603.03, Paragraph 10.c. and d. to determine the strength of concrete pavement for the purpose of early opening to traffic. Requests by the Contractor for use of the maturity method shall be on a project basis and shall be made in writing to the Materials and Research Engineer. The Contractor shall be responsible to coordinate with the Materials & Research Division to develop the maturity curve.

Paragraph 3.a. and b. of Subsection 603.05 is void and superseded by the following:

- 3. a. A pay factor will be applied to each unit based on the compressive strength of 1 core per unit tested in accordance with AASHTO T 24. Concrete cores must have a minimum age of 28 days before testing. The Contractor will have the option to obtain two additional cores for any unit core that fail to have the required minimum compressive strength provided that the cores are:
  - (1) Obtained and tested within seven (7) days of being notified of the strength deficiency, under the supervision of the Engineer.
  - (2) Cut within 6 inches of the original unit core in the longitudinal direction.

The results of all three cores sampled at the location will be averaged for the final compressive strength calculation and pay factor.

- b. The paved area shall be divided into units. Each unit will be considered separately. Units are 750 linear feet (230 m) of pavement for each separately placed width, or width of each class of concrete whether or not placed separately starting at the beginning of the pavement.

Paragraph 4.a.(7) of Subsection 603.05 is void and superseded by the following:

- (7) At the option of the Engineer, cores may not be required from irregular areas with widths less than 8 feet (2.4 m) or from an individual pavement type that involve less than 5,000 square yards (4200 m<sup>2</sup>) of pavement.

Paragraph 4.c.(4) of Subsection 603.05 is void and superseded by the following:

- (4) If the average thickness of the cores is deficient by more than 0.25 inch (6 mm) but not more than 0.50 inch (12.5 mm) an adjusted unit price will be paid in accordance with Table 603.04. Cores deficient by more than 0.50 inch (12.5 mm) will be treated as prescribed in Paragraph 4.d. of this Subsection.

## **EROSION CONTROL**

Subsection 807.01 in the Standard Specifications is void and superseded by the following:

This work shall consist of the preparation of slopes and waterways and the furnishing and application of soil retention blankets at the locations shown in the plans.

Paragraphs 2., 2.a., 2.b. and 2.c. of Subsection 807.02 are void and superseded by the following:

Wire staples shall be used for anchoring the soil retention blanket. The staples shall be a minimum of 13 gauge U-shaped steel wire with a 1 inch or larger throat with at least 6 inch long legs.

Paragraph 5. of Subsection 807.02 is void.

Subsection 807.02 is amended to include the following:

	Minimum Purity (%)	Application rate in lb. of Pure Live Seed/1000 yd. <sup>2</sup>
Perennial ryegrass – Linn, Norlea, Amazon	85	1.25
Western wheatgrass – Barton, Flintlock	85	1
Slender wheatgrass	85	1
Canada wildrye – Mandan, Homestead, Neb. native	85	0.75
K-31 fescue	85	0.75
Blue grama – NE, KS, SD, CO, MN	30	0.2
Buffalograss – Sharp's Improved, Cody, Bison, Texoka	80	1
Inland saltgrass ( <i>Distichlis spicata</i> )	75	0.25
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	90	0.1
Oats/wheat (wheat in the fall)	90	7

All seeds shall be origin Nebraska, adjoining states, or as specified. A Contractor proposing to use a substitute variety or origin shall submit for the Engineer's consideration a seed tag representing the seed, which shows the variety, origin and analysis of the seed.

Rate of application of inorganic fertilizer shall be:

	Rate of Application Per 1000 yd. <sup>2</sup> (Min.)
Available Nitrogen (N <sub>2</sub> ) -----	4 or 9 lb.
Available Phosphoric Acid (P <sub>2</sub> O <sub>5</sub> ) -----	0 lb.

Rate of application of granular sulphur coated urea fertilizer or urea-formaldehyde fertilizer shall be:

	Rate of Application Per 1000 yd. <sup>2</sup> (Min.)
Nitrogen (Total Available) -----	0 lb.

Paragraph 6.c. of Subsection 807.03 is void.

Paragraphs 7.a.i. and 7.a.ii. of Subsection 807.03 are void.

Paragraph 8. of Subsection 807.03 is void.

Paragraph 1. of Subsection 807.05 is amended to include the following:

<b>Pay Item</b>	<b>Pay Unit</b>
Erosion Control, Class _____	Square Yard (SY)

**SILT CHECKS  
(H-17-0515)**

**Description**

1. This work shall consist of furnishing and placing silt check devices at the locations shown in the plans, Temporary Erosion Control Plans or as directed by the Engineer. Bale Checks shall not be allowed.
2. There are two separate and distinct types of silt checks.
  - a. Silt Checks are placed as shown in the plans or as directed by the Engineer after final grading is complete in conjunction with the final stabilization.
  - b. Temporary Silt Checks are placed as shown in the Temporary Erosion Control plans or as directed by the Engineer throughout the construction process.

**Material Requirements**

1. Approved silt check devices are listed in and shall be selected from the Approved Products List.
  - a. Silt Checks used for final stabilization shall be the type shown in the plans and selected from the Approved Products List.
  - b. Temporary Silt Checks may be any product listed on the Approved Products List. The following chart shall be used to determine the appropriate application of Temporary Silt Checks during construction.

Type	Material	Ditch Grade	Uses/Locations
1 – Low	9 " Diameter Straw Wattle	< 2 %	Medians, Slopes and Urban Ditches
1 – High	12" Diameter Straw Wattle	< 2 %	Wetlands, Stream Banks, Slopes and Rural Ditches
2 – Low	9" Diameter Wood Fiber Wattle	All	Medians and Urban/Rural Ditches
2 - High	12" Diameter Wood Fiber Wattle	All	Wetlands, Stream Banks, and Rural Ditches
3 – Low	9" Diameter Coir Wattle	All	Slopes, and Rural Ditches
3 – High	>12" Diameter Coir Wattle	All	Wetlands, Stream Banks, Slopes and Rural Ditches
4	Synthetic	All	Urban Ditches

2. All silt check devices have unique staking or pinning requirements based upon the BMP and its use. The hold down stakes and pins shall be as shown on the Silt Check Detail Sheet.

**Construction Methods**

1. The silt checks shall be placed as shown in the plans or as directed by the Engineer and secured in accordance with the plans.
2. The limits of the completed silt check shall extend up the foreslope and backslope of the ditch to effectively contain the run-off and prevent erosion and washout at the edges of the installation as shown on the Silt Check Detail Sheet.
3. Temporary Silt Checks
  - a. The “Temporary Silt Checks” shall be installed at the locations shown in the plans, Temporary Erosion Control Plan and as directed by the Engineer.
  - b. The “Temporary Silt Checks” shall be installed immediately after the rough grading is completed in an area.
  - c. The “Temporary Silt Check” shall be left in place until the finish grading begins. Reinstall the “Temporary Silt Checks” as soon as finish grading is done unless the permanent erosion control is initiated immediately after finish grading. “Temporary Silt Checks” should be in place at all times after finish grading until permanent “Silt Check,” are in place.
  - d. The Temporary Silt Check shall be removed and remain the property of the Contractor when it is no longer functional or needed.

**Method of Measurement**

1. All work involved in constructing silt checks as described above will be included and paid for per linear feet of devices used in the silt checks.
2. “Temporary Silt Checks” shall be measured by the linear foot (meter) for the initial installation. The removing or replacing of the temporary silt checks will not be measured for payment, but will be considered subsidiary to the initial installation.
3. Removal of sediment will be measured based on equipment rental. All incidentals associated with the cleanout shall be subsidiary to the equipment rental items.

**Basis of Payment**

1.	<b>Pay Item</b>	<b>Pay Unit</b>
	Silt Check, Type _____	Linear Foot
	Temporary Silt Check	Linear Foot
	Rental of Skid Loader, Fully Operated	Hour
	Rental of Loader, Fully Operated	Hour
	Rental of Crawler Mounted Hydraulic Excavator, Fully Operated	Hour
	Rental of Dump Truck, Fully Operated	Hour

2. Payment is full compensation for all work prescribed in this Section.

### **SILT FENCE (H-18-0515)**

Section 809 of the Standard Specifications is void and superseded with the following:

#### **Description**

This work shall consist of installing the silt fence at locations shown in the plans and at locations as approved or determined by the Engineer. The installation shall be in accordance with these *Specifications*, the special provisions, and the plans.

#### **Material Requirements**

1. All silt fence material shall be selected from the NDR Approved Products List.
  - a. Low Porosity Silt Fence is typically used for perimeter control.
  - b. High Porosity Silt Fence is used for velocity control.
  - c. Low Profile Silt Fence is used for perimeter control and inlet protection
  - d. Coir Silt Fence is used for perimeter control of wetlands and locations specified to use a biodegradable silt fence.
  - e. Temporary Silt Fence shall be any product from the silt fence category of the Approved Products List with a use appropriate to the situation.
2. Silt Fence Posts
  - a. The silt fence posts shall be Studded "T" Steel Posts with a minimum weight of 1.25 lbs/foot (37 Kg/m).
  - b. Used Studded "T" Steel Posts are acceptable.
  - c. Coir Silt Fence shall be installed with wooden posts, derived from hardwood tree species. The posts shall only be driven until firm.
3. Wire staples shall be used for anchoring the silt fence.
4. Silt Fence shall be attached to the posts with black zip ties. Zip ties shall be UV stabilized, black with a 50 lb (22 Kg) minimum tensile strength.

#### **Construction Methods**

1. The silt fence shall be installed and in good working condition prior any grading or excavation operations and as needed throughout the construction process. The silt fence installation shall not exceed the amount required for the current construction season.

2. Silt Fence may be installed in the ground by either of the two methods listed below.
  - a. Trenching Method
    - (i) The Contractor shall excavate a trench to the depth, width, and length shown in the plans.
    - (ii) The Contractor shall place the silt fence in the trench and pin it as shown in the plans.
    - (iii) The Contractor shall backfill the trench, compact the soil, and attach the fabric to the posts as shown in the plans.
  - b. Slicing Method
    - (i) The Contractor shall install silt fence by mechanically slicing the material into the soil.
    - (ii) The Contractor shall compact the soil and attach the fabric to the posts as shown in the plans.
3. Fabric Silt Fence installed in a wetland or below water conditions.
  - a. Trenching is not required. Fold a 6 inch (150 mm) flap toward the sediment source and pin as shown in the plans. Install the stakes as for a dry installation. Attach the fabric to the posts with zip ties or other approved methods and secure from slipping down the post. For a wetland or below water installation, the sediment shall be left in place.
4. All silt fence splice joints shall be overlapped a minimum of 6 feet (1.8 m).
5. The Contractor shall remove sediment that accumulates near the silt fence during construction and dispose it in an upland location.
  - a. Sediment removal shall be initiated when sediment depth has reached one-half the height of the above ground portion of the silt fence or as directed by the Engineer in conjunction with silt fence repairs.
  - b. Sediment shall be removed to approximately 6 inches (150 mm) from the silt fence.
  - c. Each time sediment is removed, the silt fence shall be repaired to a good working condition. Good working condition includes fabric repair, retrenching, post repair, tie replacement, and any associated hand work.
6. The Contractor shall maintain the silt fence in good working condition throughout the life of the construction project. Upon completion of the project silt fence shall remain in place in good working condition, in locations specified in the plans or at locations specified by the Engineer.
  - a. Silt fence may be removed from locations during construction or upon completion of the project as directed by the Engineer.

- b. Silt fence that has been determined to be unnecessary and is subject to removal shall be cut off at ground level and shall remain the property of the Contractor for disposal. Any accumulated sediment shall be removed to an upland location.
- c. Silt fence posts from removed fence shall remain the property of the Contractor and may be reused on other installations.
- d. Temporary Silt Fence shall be removed at the completion of the project or when it is no longer functional.

**Method of Measurement**

- 1. Fabric silt fence is measured by the length of the silt fence in linear feet (meter).
- 2. Removal of sediment from the silt fence will be measured based on equipment rental.
- 3. All silt fence repairs, such as fabric repair, tie replacement, retrenching, and splicing and associated handwork are subsidiary to the appropriate silt fence item.
- 4. Removal of silt fence and all of its components is subsidiary to the silt fence item.

**Basis of Payment**

1.	<b>Pay Item</b>	<b>Pay Unit</b>
	Fabric Silt Fence “Low Porosity”	Linear Foot (LF) [Meter (m)]
	Fabric Silt Fence “High Porosity”	Linear Foot (LF) [Meter (m)]
	Fabric Silt Fence “Low Profile”	Linear Foot (LF) [Meter (m)]
	Fabric Silt Fence “Coir Fiber”	Linear Foot (LF) [Meter (m)]
	Temporary Silt Fence	Linear Foot (LF) [Meter (m)]
	Rental of Skid Loader, Fully Operated	Hour (h)
	Rental of Loader, Fully Operated	Hour (h)
	Rental of Dump Truck, Fully Operated	Hour (h)
	Rental of Crawler Mounted Hydraulic Excavator, Fully Operated	Hour (h)
2.	Payment is full compensation for all work prescribed in this Section.	

**GUARDRAIL END TREATMENT, TYPE I  
(I-1-1214)**

Section 902 in the Standard Specifications is amended to include “Guardrail End Treatment, Type I”.

This work consists of furnishing and installing a guardrail end treatment system according to the details and at the locations shown in the plans.



The Contractor has the option of installing one of the following systems:

- |                |   |
|----------------|---|
| 1.) SKT-SP-MGS | Manufactured by Road Systems, Inc.<br>3616 Old Howard County Airport<br>Big Springs, TX 79720<br>(915) 263-2435 |
| 2.) X-Tension  | Manufactured by Lindsay Manufacturing<br>505 Crown Point Ave.<br>Omaha, NE 68110<br>(402) 210-4593              |

The lengths of manufacturers' end treatments vary; the Contractor must install a total length of 53'-1.5", including the end treatment, to last post with curved end or rectangular "head" beyond the last post. The additional length required will be W-beam guardrail with Midwest Guardrail System 31" design.

The Contractor will be required to furnish two sets of shop plans to the Department of the system to be installed. The guardrail end treatment shall be installed in accordance with the recommendations of the manufacturer.

Payment shall be full compensation for all work required to provide and install the system.

### **GRANULAR SUBDRAINS**

Subsection 915.02 of the Standard Specifications is void and superseded by the following:

Aggregate that is used in granular subdrains shall consist of crushed gravel or crushed rock and shall conform to the requirements of Paragraphs 1. and 2. of Subsection 1033.02.

Crushed gravel shall have a fine aggregate angularity value of 43.0 or greater. The specific gravity for calculation of the Fine Aggregate Angularity (FAA) shall be determined on a combined aggregate sample of the material passing the No. 8 (2.36 mm) sieve and retained on the No. 100 (150 µm) sieve as defined in AASHTO T 304 Method A, except the specific gravity material shall be washed over the No. 100 (150 µm) sieve. Gravel aggregate shall have a soundness loss of not more than 12 percent by weight at the end of 5 cycles using sodium sulfate solution.

Crushed rock shall consist of clean, hard particles of crushed limestone, quartzite, or dolomite. Crushed rock shall have a percent loss of not more than 14 at the end of 16 cycles of the freezing and thawing test.

The crushed gravel or crushed rock shall meet the following gradation requirements.

Granular Subdrains Gradation Requirements		
Sieve Size	Target Value (Percent Passing)	Tolerance
1 inch	100	0
No. 4	40	±20
No. 10	15	±15
No. 200	4	±4

Paragraph 2. of Subsection 915.03 of the Standard Specifications is void and superseded by the following:

The Contractor shall provide and place aggregate in the trench as prescribed in the plans but shall be placed at the midpoint of the adjacent concrete slab (midway between contraction joints) or as directed by the Engineer.

Paragraph 5. of Subsection 915.03 is void and superseded by the following:

Excavated material shall become the property of the Contractor and removed from the project or used for shoulder construction on the project. Excess material shall become the property of the Contractor and removed from the project.

**POSTS AND FASTENERS FOR HIGHWAY SIGNING  
(J-3-0411)**

Paragraph 1.G.(3) of Subsection 1071.02 in the Standard Specifications is void and superseded by the following:

- (3) Light-duty posts shall be painted black or dark green.

**PORTLAND CEMENT CONCRETE  
(J-15-0216)**

Paragraph 1. of Subsection 1002.02 in the Standard Specifications is amended to include the following:

Concrete mixes will be in accordance of Table 1002.02.

Paragraph 3. of Subsection 1002.02 is void and superseded by the following:

- 3. Type IP, IS and IT Interground/Blended cement shall be used for all classes of concrete except for pavement repair. Type IP, IS and IT Interground/Blended cement shall meet all requirements of ASTM C 595. Pavement repair shall include Type I/II Portland Cement for Class PR1 Concrete and Type III Portland Cement shall be used in Class PR3 Concrete.

Tables 1002.02 and 1002.03 in Subsection 1002.02 are void and superseded by the following:

**ENGLISH  
TABLE 1002.02**

Class of Concrete (1)	Base Cement Type	Total Cementitious Materials Min. lb/cy	Total Aggregate		Air Content % Min.-Max. (2)	Coarse Aggregate (%)	Water/Cement Ratio Max. (3)	Required Strength Min. psi
			Min. lb/cy	Max. lb/cy				
47B**	IP/IS/IT*	564	2850	3150	6.5 - 9.0	-	0.45	3500
47B***		564	2850	3150	6.0 - 8.5	-	0.45	3500
47BD		658	2500	3000	6.0 - 8.5	30+3	0.42	4000
47B-HE		752	2500	3000	6.0 - 8.5	30±3	0.40	3500
BX <sub>(4)</sub>		564	2850	3150	6.0 - 8.5	-	0.45	3500
47B-OL****		564	2850	3200	5.0 - 7.0	30±3	0.36	4000
PR1	I/II	752	2500	2950	6.0 - 8.5	30±3	0.36	3500
PR3	III	799	2500	2950	6.0 - 8.5	30±3	0.45	3500
SF <sub>(5)</sub>	I/II	589	2850	3200	6.0 - 8.5	50±3	0.36	4000

- (1) Each class of concrete shall identify the minimum strength requirement, per plans and specifications.  
All classes of concrete shall be air-entrained and a water-reducing admixture shall be used per manufacture's recommendations.
- Class R Combined Aggregate shall use a mid-range water reducer admixture. The dosage shall be at the manufacture's recommendation and the Engineer may approve a low-range water reducer admixture.
- (2) As determined by ASTM C 138 or ASTM C 231.  
*FOR INFORMATION ONLY. The Contractor may develop a Quality Control Program to check the quantity of air content on any given project; such as, checking the air content behind the paver.*
- (3) The Contractor is responsible to adjust the water/cement ratio so that the concrete supplied achieves the required compressive strength without exceeding the maximum water/cement ratio. The minimum water/cement ratio for any slip form concrete pavement is 0.38, unless the Contractor requests approval from the Engineer in writing to change the minimum water/cement ratio to 0.36.
- (4) For temporary surfacing, Type I/II cement is allowed.
- (5) Minimum Portland Cement shall be 564 lbs/cyds and the total Silica Fume added shall be 25 lbs/cyds.
- (\* ) Refer to Subsection 1004.02 for material characteristics.  
**Lithium Nitrate** may be used in place of Supplemental Cementitious Materials (SCMs), see Section 1007 of the Standard Specifications as modified in these Special Provisions.
- (\*\*) For slip form applications.
- (\*\*\*) For hand-pours and substructures applications.
- (\*\*\*\*) When IP using Class N pozzolan, the maximum water/cement ratio is 0.41.

<b>Table 1002.03</b>	
<b>Table of Acceptable Concrete Class Substitutions</b>	
Class Specified	Acceptable Class for Substitution
BX	47B, 47BD or 47B-HE
47B	47BD or 47B-HE

Paragraphs 5., 6., 7., 8., 9. and 10. of Subsection 1002.02 are void and superseded by the following:

5. Class PR1 and PR3 Concrete:
  - a. The calcium chloride for use in PR concrete shall be either:
    - (1) A commercially prepared solution with a concentration of approximately 32 percent by weight.
    - (2) A Contractor prepared solution made by dissolving 4.5 pounds of Grade 2 or 6.2 pounds of Grade 1 calcium chloride per gallon of water to provide a solution of approximately 32 percent by weight.
  - b. The 7.4 pounds of water in each gallon of solution shall be considered part of the total water per batch of concrete.
  - c. The calcium chloride solution shall be added, just prior to placement, at a rate of 0.375 gallons/100 pounds of cement (1.4 lb. calcium chloride per 100 lb. cement).
  - d. Class A, Flaked or Pellet Calcium Chloride shall be added at a rate not to exceed 2.0 percent of the weight of the cement for Grade 1, or 1.6 percent of the weight of the cement for Grade 2. Grade 1 Calcium Chloride purity is between 70 and 90 percent and Grade 2 Calcium Chloride is between 91 and 100 percent.
  - e. Where mixing trucks are used:
    - (1) For Class PR3 Concrete, calcium chloride shall be thoroughly mixed into the concrete before placement. The minimum mixing time is 2 minutes.
    - (2) For Class PR1 Concrete, calcium chloride shall be added first and then the concrete mixed at least 2 minutes or as required by manufacturer. Next, the Type F high range water-reducer admixture is added and the concrete is mixed an additional 5 minutes.
6. Class High Early (47B-HE) Concrete
  - a. High Early (47B-HE) concrete shall be cured as prescribed in Subsection 603.03, Paragraph 7. The Contractor shall take necessary curing measures so the required strength is achieved.
  - b. High Early concrete shall achieve a compressive strength of 3,500 psi at 48 hours after placement.

- c. The 48-hour compressive strengths shall be used to determine pay factor deductions for high early concrete in accordance with Table 603.03.
  - d. A non-calcium chloride accelerator shall be used when the ambient temperature at the time of the placement of concrete is 70°F or less.
  - e. When requested by the Contractor, the maturity method, as provided in NDR C 1074, may be used in lieu of the requirements of Subsection 603.03, Paragraphs 11.c. and d. to determine the strength of concrete pavement for the purpose of early opening to traffic and acceptance. Requests by the Contractor for use of the maturity method shall be on a project basis and shall be made in writing to the Engineer.
7. The yield of the concrete proportions shall be determined and adjusted by the Producer.
8. All Classes of Concrete with the exception of PR1 and PR3 shall have a Durability Factor not less than 70 and a mass loss not greater than five percent after 300 freeze/thaw cycles when tested in accordance with ASTM C 666. The freeze/thaw testing shall be conducted according to Procedure A.

Paragraphs 1. & 2. of Subsection 1002.03 are void and superseded by the following:

1. The Contractor shall identify the plant that will supply the concrete 14 days before use and be entirely responsible for its calibration, batching of concrete, aggregate and sampling of cement per NDR Sampling Guide.
- a. The Contractor shall be responsible for the following:
    - 1) Batching concrete.
    - 2) Contractor shall sample aggregate from the conveyor belt or stockpile. Gradations from a split sample shall be tested in accordance to Section 1033 and reported to the Engineer at the frequency required by the Materials Sampling Guide.
      - i. Contractor shall retain possession of the split samples on-site at the Contractor's facility until such a time as determined by the Engineer.
        - a. At the pre-construction meeting:
          - 1) Contractor shall determine the location of testing and report the names of the technician performing the sampling and testing.
          - 2) Engineer will notify the Contractor of the retrieval of the split samples.
        - ii. The Contractor shall split the sample, place the Department's split sample into a cloth bag and immediately seal the split sample with the provided security seal. The cloth sample bag shall be supplied by the Department.

- iii. The sampling splitting and placement of the security seal of aggregate samples shall be witnessed by certified Department personnel.
  - iv. Contractor shall secure the split sample using a consecutively numbered security seal of 75 pounds breaking strength provided by the Department. The Contractor shall use the consecutively numbered security seals to identify and track each Aggregate Class. Samples that are not consecutively numbered will be investigated for custody of the sample and the Engineer may cease production until it is determined what action will be required.
    - a. The Contractor shall report the security seal tracking number with the split sample gradation.
    - b. The following training shall be required for personnel who oversee the batching of the concrete:
      - 1) Concrete Technician Personnel
        - i. Concrete Plant Technician
      - 2) Portland Cement Sampler
        - i. NDR Portland Cement Sampler
2. Portland Cement Concrete shall be supplied by certified Ready Mix Plants that are in compliance with the requirements in the *Quality Control Manual*, Section 3, -- Certification of Ready Mixed Concrete Production Facilities published by the National Ready Mixed Concrete Association. Refer to NDR Material Sampling Guide for the policy on stationary and portable plants.

Paragraph 4. of Subsection 1002.03 is void and superseded by the following:

- 4.
  - a. Mix times shall meet the requirements of ASTM C 94. Mixing time tests shall be repeated whenever the concrete appearance indicates that mixing was inadequate.
  - b. Batch plants that are transporting the concrete in non-agitating trucks, the mixing time will not be less than 60 seconds, and for agitating trucks, the mixing time will not be less than 45 seconds.
  - c. The Certification of stationary and portable ready mix plants will conform to the tests that are required in the NDR Materials Sampling Guide.

Paragraph 6. of Subsection 1002.03 is void and superseded by the following:

- 6. Batch tickets shall be prepared as prescribed in the National Ready Mixed Concrete Association's *Quality Control Manual*. The Contractor shall keep all gradations and batch tickets until final acceptance by the Department. Projects that have less than 200 cubic yards of concrete placed will be allowed to have hand written tickets. For projects greater than 200 cubic yards, hand written tickets will be at the Engineer's discretion. The concrete batch tickets shall show batch weights, aggregate moisture (shall be tested daily and moisture probes are

allowed), admixtures used, water, and mix design calculations. A copy of the batch ticket shall be given to the Engineer upon delivery of concrete.

Paragraph 8. of Subsection 1002.03 is void and superseded by the following:

8. Coarse aggregate from a dry pit shall be uniformly saturated with water before it is used. The wetting shall begin 24 hours prior to the concrete mixing to allow complete saturation.

Paragraph 13.a. of Subsection 1002.03 is void and superseded by the following:

13. a. The quantity of water shall be determined by the Contractor. The minimum quantity of water should be used which will produce required workability. Any additional water used to rinse the charging hopper and fins after the batching of concrete is allowed. This water must be estimated and recorded on the batch ticket.

Subsection 1002.04 is void and superseded by the following:

1. Class 47B Concrete Mix Design Submittal:
  - a. The Contractor shall submit the Concrete Mix Design Worksheet consisting of design mix proportions, testing of mix design from a minimum of 4 cubic yards and aggregate data for 47B class of concrete being placed on the project.
    - (1) All testing must be performed by a qualified laboratory found on the NDR's Material and Research website, under the *Nebraska Qualified Consultant & LPA Laboratories* and submitted to the Engineer.
    - (2) The Concrete Mix Design shall be submitted to the Engineer 4 weeks prior to any concrete being placed on the project.
    - (3) The Concrete Mix Design shall not be paid for directly by the Department and shall be subsidiary to items which direct payment is made.
    - (4) Concrete shall not be placed on the project before the Concrete Mix Design Worksheet has been reviewed and approved by the Engineer.
  - b. The Contractor shall submit the Concrete Mix Design Worksheet to the Engineer. Email submissions are preferred but will be accepted by fax or postal mail.
    - (1) Contractor's Mix Design Worksheet can be found on the Materials and Research website. The submitted Mix Design Worksheet shall include the following:
      - Contractor Name
      - Project Number
      - Date

- Location of ready mix or central mix plant
  - Date submitted
  - Signature of Contractor representative
- (2) Material Source Information.
- Cement Manufacturer
  - Type of Interground/Blended Cement
  - Type of Admixtures
  - Aggregate Pit and Quarry location
- (3) Specific Gravity of each individual aggregate source.
- (4) Sand Equivalent for dry pit sand-gravel aggregate.
- (5) Combined Aggregate percent passing as described on Table 1033.03C.
- (6) Contractor's Target combined aggregate gradation percent passing.
- (i) The Contractor's required worksheet can be found on the Materials and Research website.
- (7) Testing of Mix Design:
- The mix design shall show the weights of all ingredients including Interground/Blended cements, aggregates, water, admixtures types and water cement ratio.
- Temperature of concrete at time of sampling, ASTM C 1064.
  - The air content of plastic concrete, ASTM C 231.
  - Weight per cubic foot, Yield, ASTM C 138. The relative Yield shall be a minimum of 97%.
  - Compressive strength shall be performed with a minimum of three averaged specimens at 7-day and 28-day, ASTM C 39. The minimum 28-day compressive strength shall be 3500 psi.
- (8) Traditional 47B Mix Design is defined as a 70 percent Class B Aggregate and 30 percent Class E Aggregate may be exempt from the concrete testing described in Paragraph 1.(b)(7). All other requirements shall be included in the Concrete Mix Design Report.
- c. The PCC Engineer will notify the Contractor of the mix design approval for Class 47B Concrete. Approval of the mix design does not alleviate the Contractor of the responsibility of the in-place concrete. The Contractor may adjust admixtures, water cement ratio, vibrator frequency, etc., as needed in accordance to the specifications.



- d. The Contractor shall submit a new concrete mix design worksheet meeting the above requirements when a change occurs in the source, type, or proportions of cements or aggregates; unless otherwise approved by the Engineer.
- 2. The quantity of water to be used shall be determined by the Contractor. It shall not be varied without the Engineer's consent.
- 3. If the concrete mixture is excessively wet causing segregation, excessive bleeding, excessively dry or any other undesirable condition, the concrete shall be rejected. At the option of the Engineer, slump tests may be performed to determine the consistency.
- 4. Concrete which has developed initial set before it is consolidated and finished shall be rejected.
- 5.
  - a. If false set is encountered, the batching operation shall be stopped until the problem is resolved.
  - b. Each batch must be mixed or agitated for at least 3 additional minutes after observing the false set and the concrete must be of satisfactory consistency.
- 6. Compressive strength tests shall be made in accordance with ASTM C 39.
- 7. Concrete shall be sampled as prescribed in the NDR *Materials Sampling Guide*. Samples shall be taken at the point of placement, never before the discharge from the last conveyance.
- 8. Aggregate Acceptance, Verification, Sampling and Testing:
  - a. The aggregate will be accepted based on the Contractor's testing results except as noted below.
  - b. The aggregate verification sampling and testing by the Department will be randomly selected and tested according to subplot sizes in Table 1002.05.

Table 1002.05

Aggregate Class	Lot	Sublot
E and F	3000 tons	1000 tons
A,B and C	6000 tons	2000 tons
R	6000 tons	2000 tons

- c. The results of Contractor split sample will be verified by the Department's verification tests. Any samples outside of the tolerances as specified according to the Materials Sampling Guide, Section 28 under the *Acceptable Tolerance Limits for Independent Assurance* will result in an Independent Assurance (IA) review of testing and may result in the Department test results being applied.

- d. On any given Lot, if the results of the gradation from the verification test are within Department's specification, the Contractor's results will be used for the entire lot. On any given Lot, if the gradations results from the verification test are outside Department's specification, further investigation will be initiated by the Engineer for that subplot. Any or all of the remaining Department subplot samples may be tested and the Department subplot test results may be applied to the respective subplot and the acceptance will apply.
- e. When verification tests are within testing tolerance but results show a consistent pattern of deviation from the split sample results, the Engineer will exercise one or more of the following:
  - Cease production.
  - Request additional verification testing.
  - Initiate a complete IA review.
- f. Independent Assurance (IA) Review of Testing:
  - 1) The Contractor shall allow the Department personnel access to the Contractors' laboratory to conduct IA review of the technician testing procedures and apparatus. Any deficiencies discovered in the Contractor's testing procedures will be reported to the Contractor and corrected by the Contractor.
  - 2) During the IA review, the Department personnel and the Contractor shall split a sample for the purpose of IA testing. The samples selected will be tested in the Department's Branch Laboratory. Any IA test results found to be outside of defined testing tolerances as stated in Paragraph 8.c. of Subsection 1002.04 will be reported to the Contractor. The Contractor shall immediately correct any deficiencies found during the IA review.
  - 3) If the project personnel and the Contractor cannot reach agreement on the accuracy of the test results, the Department Central Laboratory will be asked to resolve the dispute, which will be final. All dispute resolutions will be in accordance with the Quality Assurance Program requirements in the NDR's Materials Sampling Guide.

### **PORTLAND AND INTERGROUND/BLENDED CEMENT (J-15-0216)**

Section 1004 in the Standard Specifications is void and superseded by the following:

#### **1004.01 – Description**

- 1. Portland cement is the binder in concrete, locking the aggregate into a solid structure. It is manufactured from Lime, Silica, and Alumina (with a small amount of plaster of Gypsum).

2. Equivalent alkali referred to herein is hereby defined as the sum of the Sodium Oxide ( $\text{Na}_2\text{O}$ ) and the Potassium Oxide ( $\text{K}_2\text{O}$ ) calculated as Equivalent Alkali  $\text{Na}_2\text{O}_e = \text{Na}_2\text{O} + 0.658 \text{K}_2\text{O}$ .
3. Interground and Blended cements consist of intimate and uniform intergrinding or blending of Portland cement clinker, Slag cement, Pozzolan and/or Limestone.

#### **1004.02 – Material Characteristics**

1. Type I, Type II, Type I/II and Type III Portland cement shall conform to the requirements in ASTM C 150 with the following additional requirements:
  - a. Portland cement shall not contain more than 0.60 percent equivalent alkali.
2. Interground and Blended Cement shall conform to the requirements in ASTM C 595 with the following additional requirements:
  - a. Interground/Blended cement (Type IP)
    - (1) For Type IP(25) shall be composed of Class F fly ash or Class N pozzolan replacement shall be  $25\% \pm 2\%$ .
    - (2) For Type IP(20) shall be composed of Class F fly ash or Class N pozzolan replacement shall be  $20\% + 2\%$ .
  - b. Interground/Blended cement (Type IS)
    - (1) For Slag Cement, the maximum replacement shall be  $35\% + 5$  when incorporated into the final Interground/Blended cement.
  - c. Interground/Blended cement (Type IT)
    - (1) For SCMs, Slag cement and Limestone, the maximum replacement by weight shall be 40%. The manufacturer has a production tolerance of  $\pm 2\%$  from the proposed replacement.
    - (2) For Limestone cement, the replacement range shall be from 5.1% to 10.0% when incorporated into the final Interground/Blended cement.
  - d. No additional SCMs, Slag cement and Limestone will be added at the batch plant.

#### **1004.03 – Procedures**

1. The Contractor shall provide adequate protection for the Portland and Interground/Blended cement against dampness.
  - a. Portland and Interground/Blended cement shall be hauled or stored in railroad cars, dry bulk trailers or in suitable moisture-proof buildings.
  - b. The use of tarpaulins for the protection of the Portland and Interground/Blended cement against moisture will not be allowed.

2. No Portland and Interground/Blended cement which has become caked or lumpy shall be used.
3. Portland and Interground/Blended cement which has been spilled shall not be used.
4. Accepted Portland and Interground/Blended cement which has been held in storage at the concrete mix plant more than 90 days shall be retested.
5. Portland and Interground/Blended cement coming directly from the manufacturer shall not be used until the temperature is 150°F or less.
6. Portland cement having false set when tested in accordance with in ASTM C 150 will not be used.

#### **1004.04 – Acceptance Requirements**

1. For Department projects, Portland and Interground/Blended cements must be on the NDR Approved Product List (APL).
2. The Contractor shall submit any new Portland and Interground/Blended cements to the Engineer to be approved for the APL with the following:
  - a. Material source information:
    - 1) Mill Location
    - 2) Type of Portland and Interground/Blended cements
    - 3) Grinding Period
    - 4) Associated Manufacture Product Name
    - 5) Provide source and type of each SCMs and/or Slag Cement used for final product.
      - (i) The Department will allow the use of ASTM C 1697.
        - a. When two or more SCMs and/or Slag Cement are pre-blended, the Contractor shall report chemical composition analysis of the final blend.
        - b. The final blend shall be reported as per ASTM C 1697, Paragraph 4.
    - 6) Portland cement shall conform to ASTM C 150.
    - 7) Interground/blended cements shall conform to ASTM C 595.
    - 8) Provide total cementitious materials replacement per ASTM C 595.
    - 9) Report test results per ASTM C 1567 at 28-days.

3. Alkali Silica Reaction Requirements and Testing:
  - a. Interground/Blended cement shall be tested according to the provisions of ASTM C 1567.
    - (1) The mortar bars shall be composed of Type IP, IS or IT Interground/blended cement and sand and gravel from an approved Platte River Valley-Saunders County source.
      - i. When Elkhorn River-Madison County source or an out of state aggregate source is being used on a project, the Elkhorn River or an out of state aggregate source shall be used in lieu of the Platte River Valley-Saunders County source.
      - ii. When Contractor proposes a change of aggregate source, then the new aggregate source shall be tested by ASTM C 1567.
    - (2) The mortar bars for the ASTM C 1567 shall not exceed 0.10% expansion at 28 days.
4. Portland and Interground/Blended cements will be placed on NDR's APL based on the conformance with the NDR's Acceptance Policy Portland and Interground/Blended Cements.

#### **1004.05 - Sampling and Testing Requirements**

1. All Portland and Interground/Blended cements shall be sampled and tested at the rate as described in the NDR's Materials Sampling Guide.
  - a. The Department will inform the Contractor when a sample is required.
  - b. A sample shall be taken by a Contractor's Certified Portland Cement Sampler and must be under the supervision of Department certified personnel.
  - c. The sample shall be taken at the plant from a bulk shipment of a rail car, dry bulk trailer, batch plant silo or from the line between the bulk truck and the silo. Upon sampling, the Department will take immediate custody of the sample.
2. Noncompliant material shall be tested in accordance with ASTM C 1567 and in accordance with Section 1004.04, Paragraph 3.a. (1).
  - i. The mortar bars for the ASTM C 1567 shall not exceed 0.10% expansion at 28 days.
  - ii. If the expansion is greater than 0.10% at 28 days, then the Interground/Blended cement shall be subject to removal, 40% pay and/or removal from NDR's APL in accordance with NDR's Acceptance Policy on Portland and Interground/Blended Cements.
3. Noncompliant material from the mill, terminal or project will be temporarily removed from the Approved Products List pending further investigation.
4. If the noncompliant Portland or Interground/Blended cement is removed from the Approval Products List, all shipments from the supplier will be held until the investigation of the failing samples have been completed by the NDR Materials and Research Division.

## **WATER FOR CONCRETE (J-15-0214)**

Section 1005 in the Standard Specifications is void and superseded by the following:

### **1005.01 – Description**

1. Water shall be free from objectionable quantities of oil, acid, alkali, salt, organic matter, or other deleterious materials and shall not be used until the source of supply has been approved.
2. Wash water from the mixer washout may be used only with the Engineer's approval. Use of wash water will be discontinued if undesirable reaction with admixtures or aggregates occurs.

### **1005.02 – Material Characteristics**

1. Water which contains more than 0.25 percent total solids by weight shall not be used.
2. When required by the Engineer, the quality of mixing water shall be determined by NDR C 114, NDR T 290, NDR D 512, NDR C 1602, ASTM C 31, ASTM C 109, ASTM C 191, and ASTM C 1603.
3. Upon written request by the concrete producer and approval by Materials and Research, the concrete producer may utilize up to 10% wash water for batching all classes of concrete with the following conditions:
  - a. Wash water shall conform to the requirements in NDR's Material Sampling Guide under Policy for Certification of Ready Mix Plants.
  - b. Wash water must be clarified wash water that has been passed through a settling pond system.
  - c. Wash water must be scalped off of a settling basin that has been undisturbed for a minimum of 12 hours.
  - d. Wash water must be metered into each load.
  - e. Wash water quantities shall be shown on the batch ticket.

## **CALCIUM CHLORIDE (J-15-0214)**

Section 1006 of the Standard Specifications is void and superseded by the following:

### **1006.01 – Description**

Calcium Chloride shall be Type S (Solid) or Type L (Liquid). Calcium Chloride can be used for; but not limited to, dust control and acceleration of the set of concrete.

### **1006.02 – Material Characteristics**

The requirements for calcium chloride shall be tested in accordance with ASTM D 98.

### **1006.03 – Acceptance Requirements**

Acceptance shall be based on requirements contained in the NDR Materials Sampling Guide.

## **SECTION 1007 -- CHEMICAL ADMIXTURES (J-15-0214)**

Section 1007 in the Standard Specifications is void and superseded by the following:

### **1007.01 -- Description**

1. Admixtures are materials added to Portland cement concrete to change characteristics such as workability, strength, permeability, freezing point, and curing.
2. The Department's concrete admixture types are:
  - a. Type A - Water-Reducing Admixture - An admixture that reduces the quantity of mixing water required to produce concrete of a given slump.
  - b. Type B - Retarding Admixture - An admixture that slows the setting of concrete.
  - c. Type C - Accelerating Admixture - An admixture that speeds the setting and early strength development of concrete.
  - d. Type D - Water-Reducing and Retarding Admixture - An admixture that reduces the quantity of mixing water required to produce concrete of a given slump and slows the setting of concrete.
  - e. Type E - Water-Reducing and Accelerating Admixture - An admixture that reduces the quantity of mixing water required to produce concrete of a given slump and speeds the setting and early strength development of concrete.
  - f. Type F - Water-Reducing, High Range Admixture - An admixture that reduces the quantity of mixing water required to produce concrete of a given slump by 12 percent or greater.
  - g. Type G - Water-Reducing, High Range and Retarding Admixture - An admixture that reduces the quantity of mixing water required to produce concrete of a given slump by 12 percent or greater and slows the setting of concrete.
  - h. Air-Entraining - An admixture that encapsulates air in the concrete.
  - i. Lithium Nitrate – An admixture used to control the Akali Silica Reaction (ASR) in concrete.

**1007.02 -- Material Characteristics**

1. Type A through G admixtures shall meet the requirements in ASTM C 494.
2. Air-entraining admixtures shall meet the requirements in ASTM C 260.
3. Use of admixtures other than those cited may be requested by the Contractor.
4. Admixtures shall not contain more than 1 percent of chlorides calculated as calcium chloride unless specified otherwise in the Specification.
5. Admixtures shall be used at the manufacturer's recommended dosage rates.
6. The air-entraining admixture characteristics shall produce concrete with satisfactory workability and total air content as prescribed in Table 1002.02.
7.
  - a. When using the Lithium Nitrate admixture, the Contractor shall submit to the Engineer:
    - (i) A five pound sample of Portland cement that will be used on the project.
    - (ii) The Manufacturer's method for determining the recommendation for the required dose rate based on the equivalent alkali content.
    - (iii) Water content of the Lithium Nitrate admixture solution.
  - b. The Engineer will report the equivalent alkali content to the Contractor. The Contractor shall use the reported equivalent alkali content to determine the required dose rate based on the manufacturer's recommendation.

**1007.03 -- Procedures**

1. The process for adding admixtures to a ready mix truck on the project site involves positioning the load of concrete up to the truck chute, stopping short of discharge.
  - a. The admixture is then poured over the surface of the concrete and mixed for at least 5 minutes.
  - b. No more than 1.3 gallons of water shall be used to rinse the admixture from the fins and top chute. This water must be shown on the proportioning report and shall not exceed the water cement ratio.
  - c. When Lithium Nitrate is used, the portion of the admixture that is water will be shown on the proportioning report and shall not exceed the water cement ratio.
  - d. The Contractor is responsible for the addition of the admixture.
2.
  - a. If the air content is less than the minimum specified, addition of air-entraining admixtures is allowed.
  - b. The Contractor shall take measures based on manufacturer's recommendations, that are within compliance of NDR Specifications, to bring the load of concrete into NDR prescribed limits according to Table 1002.02.
  - c. If the air content is then outside the limits in Table 1002.02, the load of concrete shall be rejected.



**1007.04 -- Acceptance Requirements**

1. a. Approved chemical admixtures are shown on the NDR Approved Products List.
- b. Admixture approval shall be based upon annual certifications and certified test results submitted to the NDR Materials and Research Division.
2. The admixture must be essentially identical in concentration, composition, and performance to the admixture tested for certification.
3. Admixtures not identified on the NDR Approved Products List may be used under the following conditions:
  - a. A certificate of compliance and certified test results must be submitted to the NDR Materials and Research Division and approval for use must be given by the NDR Materials and Research Division.

**SILICA FUME  
(J-15-0307)**

Paragraph 2 of Subsection 1009.03 in the Standard Specifications is void and superseded by the following:

2. Silica fume shall be protected from temperatures in excess of 90°F (32°C).

**LIQUID MEMBRANE-FORMING COMPOUNDS FOR CURING CONCRETE  
(J-15-0307)**

Subsection 1012.03 in the Standard Specifications is void and superseded by the following:

**1012.03 – Acceptance Requirements**

1. All curing compounds to be approved must be from the current calendar year with no carry-over from the previous years.
2. Approved compounds are on the NDR Approved Products List.
3. Products not on the NDR Approved Products List shall be sampled and tested in accordance with requirements of the NDR Materials Sampling Guide.

**BITUMINOUS LIQUID COMPOUNDS FOR CURING CONCRETE  
(J-15-0515)**

Section 1013 in the Standard Specifications is void and superseded by the following:

**1013.01 – Description**

The compound shall consist essentially of an asphaltic base and shall be of a consistency suitable for spraying at temperatures existing at the time of construction operations. It shall

form a continuous, uniform film. It shall be free of precipitated matter caused by conditions of storage or temperature. The compounds shall be relatively nontoxic.

#### **1013.02 – Material Characteristics**

- a. When tested in accordance with AASHTO T 155, the loss of water shall not be more than 0.11 lb/ft<sup>2</sup> (0.55 kg/m<sup>2</sup>) of surface area at 3 days, unless otherwise specified by the Engineer.
- b. The Contractor has the option of using bituminous tack coat. The tack coat shall conform to all requirements of Section 504.
- c. The base material shall conform to Sections 1030, 1031 and 1032.

#### **1013.03 – Acceptance Requirements**

Products shall be sampled and tested in accordance with requirements of the NDR Materials Sampling Guide.

### **JOINT AND CRACK SEALING FILLER (J-15-0813)**

Section 1014 in the Standard Specifications is void and superseded by the following:

#### **1014.01 – Description**

Joint sealing filler shall be either a cold applied silicone product or an asphalt product (hot pour) conforming to the requirements of this Section. The type of joint filler to be used shall be as specified in the plans or special provisions. If not specified, any of the joint sealing fillers in this Section may be used.

Crack sealing filler shall be a hot pour sealer conforming to the requirements of this Section.

#### **1014.02 -- Material Characteristics**

1. NE-3405 and NE-3405LM (hot pour)
  - a. NE-3405 joint and crack sealer shall conform to the requirements of ASTM D6690, Type II. The material shall conform to the requirements of Table 1 with the following exception:
    - (i) The test of Bond, non-immersed, ASTM D5329, 3 specimens through 3 cycles shall be run at 0°F (-18°C), 100% extension.
  - b. NE-3405LM (Low Modulus) joint and crack sealer shall conform to the requirements of ASTM D6690, Type IV. The material shall conform to the requirements of Table 1.
  - c. The test of Bond, non-immersed, ASTM-D5329, will be tested on concrete blocks that will be constructed by the NDR Concrete Laboratory. The concrete blocks will be made of a 47B concrete mixture as prescribed in Section 1002 in the NDR

Standard Specifications. The design is amended so that no fly ash is used in the mixture. All other specifications for Portland Cement Concrete apply.

d. Sample conditioning, preparation and heating shall be in accordance with ASTM D 5167 with the following exceptions:

(i) The following sentence of Section 8.1.2, "Also, if present, remove container liner by cutting it away", is void and superseded by the following:

"Also, if present, as much of the polyethylene bag as possible, shall be removed by cutting it away. Wholly-meltable type container in contact with the sample section shall be left in place."

(ii) The last sentence of Section 8.1.2 "Solid Materials" is void and superseded by the following:

The entire vertical section which has been cut, shall be placed into the pot for melting.

(iii) The Section of 8.2.2.1 "Solid Materials" is void.

(iv) The Section of 8.2.3 is void and superseded by the following:

After the solid segment is added to the melter, the material shall be allowed to minimally melt to a uniform viscous state suitable for the installation of the stirrer or paddle. The sample shall then be stirred for one full hour. The oil bath temperature shall be regulated to bring the material to the maximum heating temperature within the one hour of stirring.

(v) The Section of 8.2.4.1 is void and superseded by the following:

During the one full hour of stirring, check the temperature of the material at maximum 15 minute intervals using a Type K thermocouple with the calibration verified in accordance with Section 6.1.7 to ensure conformance with specified temperature requirements. Stop the mechanical stirrer when measuring temperatures. If material temperatures ever exceed the maximum heating temperature, or ever drop below the minimum application temperature after the maximum heating temperature was reached, discard the sample and re-do the heating. Maintain appropriate records of times and temperatures to verify conformance with specification requirements.

(vi) The Section of 8.2.4.2 is void.

- e. ASTM D 5329 shall include the following changes:
  - (i) Sections 6.4 and 12.4 “Specimen Preparation” shall have the reference of “177 ml (6 oz.)” replaced with “3 oz.”
  - (ii) Section 6 “Cone Penetration, Non-Immersed” shall be superseded with the following exceptions:
    - 1. Section 6.5 “Procedure” is void and superseded by the following:  
 Place the specimen in a water bath maintained at 77 +/- 0.2°F (25 +/- 0.1°C) for two hours immediately before testing. Remove the specimen from the bath and dry the surface by shaking gently to remove free water from the surface of the specimen. Using the apparatus described in Section 6.3, make one determination at or near the center of the specimen. Take care to ensure the cone point is placed on a point in the specimen that is representative of the material itself, and is free of dust, water, bubbles, or other foreign material.
    - 2. Section 6.6 “Report” is void and superseded by the following:  
 Record the value as penetration of the specimen in dmm units.
  - (iii) Section 12 “Resilience” shall be superseded with the following exceptions:
    - 1. Section 12.5 “Procedure”, void the sentence “Make determinations at three points equally spaced from each other and less than 13mm (½ inch) from the container rim” and supersede with the sentence “Make one determination at or near the center of the tin.”
    - 2. Section 12.6 “Report” is void.

2. Silicone Joint Sealer (cold applied)

- a. Silicone joint sealers may be either self-leveling or non-sag and shall meet the requirements in Table 1014.01.

**Table 1014.01**

<b>Silicone Joint Sealer Requirement</b>		
<b>Property</b>	<b>Requirement</b>	<b>Test</b>
As supplied:		
Specific Gravity	1.010-1.515	ASTM D792
Work Time, minimum	10 minutes	
Tack-Free, at 25°C	20-360 minutes	
Cure Time, at 25°C, maximum	14 days	
Full Adhesion, maximum	21 days	
As cured, at 25°C + 1.5		
Elongation, minimum	800%	ASTM D412
Durometer		
Non-Sag, Shore A	10-25	ASTM D2240
Self-Leveling, Shore 00, minimum	40	ASTM D2240
Joint Movement Capacity	+100% to -50%	ASTM C719
Tensile Stress, at 150% Elongation	45 psi	ASTM D412

### 1014.03 -- Packaging

1. NE-3405 and NE-3405LM
  - a. The joint and crack sealer can be packaged in either cardboard box of wholly-meltable type containers.
    - (i) Cardboard box containers shall be manufactured from double wall kraft board producing a minimum bursting test certification of 350 PSI (241 N/cm<sup>2</sup>) and using water-resistant adhesives. The use of metal staples or fasteners of any kind will be prohibited for closing the lids of the boxes. Tape or other like material is acceptable.
      - a. The joint and crack sealer shall be in meltable [300°F (149°C)] polyethylene bag(s).
    - (ii) Wholly-meltable type containers, and any of their components, shall be fully meltable and integrational with the joint and crack sealer by the time the manufacturer's minimum application temperature is reached.
      - a. The wholly-melted and integrated container must not adversely affect the test specifications of the joint and crack sealer.
2. Silicone Joint Sealer
  - a. Each container shall include information regarding manufacturer and product name.

### 1014.04 -- Acceptance Requirements

1. NE-3405 and NE-3405LM
  - a. Acceptance of the manufactured material is based on pre-approval by either on or off-site sampling. Acceptable hot pour sealant lots are listed on the NDR Approved Products List.
    - (i) NDR on-site field sampling shall be in accordance with the NDR Materials Sampling Guide.
    - (ii) Off-site (Proxy) sampling shall be in accordance with ASTM D 6690.
      1. Proxy sampling shall be overseen by an outside party approved by the NDR, preferably another DOT Agency. Proxy samples shall include a manufacturer's Certificate of Compliance. Proxy samples shall also include a dated signature of origin by the Representative that is not affiliated with the manufacturer, and can either be on the Certificate of Compliance, or separate letter.
      2. For convenience in both sampling and shipping samples, sample containers smaller than a manufacturer's usual production containers are allowed, as long as the sample is 1500 grams min.

3. Samples shall be sent to the NDR Bituminous Laboratory, or alternatively, sent to an NDR-approved independent laboratory for testing which will be at no cost to the Department. If a NDR-approved independent laboratory will be used for testing purposes, the NDR Bituminous Laboratory must be notified so that NDR concrete blocks for Bond testing can be sent to it.
2. Silicone Joint Sealer
    - a. Acceptance of applied silicone joint sealers shall be in accordance with the NDR *Materials Sampling Guide*.
    - b. Acceptable silicone joint sealer manufacturer products are listed on the NDR Approved Products List.
      - (i) For products that are not listed, approval may be based upon test results from an independent laboratory submitted to the NDR Concrete Materials Section by the manufacturer, and testing by the NDR. Approval must be made prior to product use.

### **EPOXY COMPOUNDS AND ADHESIVES (J-15-0308)**

Section 1018 in the Standard Specifications is void and superseded by the following:

#### **1018.01 – Description**

This specification provides requirements for two-component, epoxy-resin bonding systems for use in non-load bearing applications and resin adhesives for application to Portland cement concrete.

#### **1018.02 – Material Characteristics**

1. Epoxy-resin bonding systems shall conform to the requirements of ASTM C 881. Approved systems are shown on the NDR Approved Products List.
2. The classification of Epoxy-Resin Bonding Systems is as follows:
  - a. Type I For use in non-load bearing applications for bonding hardened concrete and other material to hardened concrete.
  - Type II For use in non-load bearing applications for bonding freshly mixed concrete to hardened concrete.
  - Type III For use in bonding skid resistant materials to hardened concrete, and as a binder in epoxy mortars or epoxy concretes.
  - b. Grade 1 Low viscosity.
  - Grade 2 Medium viscosity.
  - Grade 3 Non-sagging consistency.

- c. Class A For use below 40°F (4°C); the lowest allowable temperature to be defined by the manufacturer of the product.
- Class B For use between 40°F and 60°F (4°C and 15°C).
- Class C For use above 60°F (15°C); the highest allowable temperature to be defined by the manufacturer of the product.
- Class D For use between 40°F and 65°F (4°C and 18° C).
- Class E For use between 60°F and 80°F (15°C and 26°C).
- Class F For use between 75°F and 90°F (24°C and 32°C).

### **1018.03 – Procedures**

1. The compounds shall be of the type and grade specified in the plans or as directed by the Engineer.
2. The class of the compounds shall be selected for use according to climatic conditions at the time of application.
3. All bonding surfaces shall be clean and free of all oil, dirt, grease, or any other materials which would prevent bonding.
4. Mixing and application shall be in strict accordance with the manufacturer's instructions.

### **1018.04 – Acceptance Requirements**

1. Epoxy-resin bonding systems and resin adhesives approved for use are shown on the NDR Approved Products List.
2. Epoxy-resin bonding systems that are not on the NDR Approved Products List may be accepted based on a manufacturer's certificate of compliance.

## **DEFORMED METAL CENTER JOINT AND METAL KEYWAY (J-15-0307)**

Paragraph 1 a. of Subsection 1027.01 in the Standard Specifications is void and superseded by the following:

- a. Metal Center Joint:

Metal center joint sections shall be manufactured from sheets no less than 18 gauge [0.05 inch (1.3 mm)] thick and shall be of the size and trapezoidal shape shown in the plans. The sections shall be punched along the centerline of the narrow face of the trapezoid to admit the tie bars required by the plans and also at intervals of not greater than 2 feet (600 mm) to receive pins that are driven vertically into the subgrade to support the metal center joint.

## AGGREGATES (J-15-0216)

Subsection 1033.01 is amended to include the following paragraphs and Subsection 1033.02, Paragraphs 1., 2. and 3. of the Standard Specifications are void and superseded by the following:

### 1033.01 – Description

This combined aggregate gradation using Class R aggregate is to optimize aggregate blends utilizing more locally available materials.

Achieving a uniform gradation for Class R may require the use of two or more different aggregates. It is the responsibility of the contractor to consider additional material characteristics; such as, but not limited to particle shape, cubicity, angularity, etc., when designing a mix.

### 1033.02 -- Material Characteristics

#### 1. Sampling and Testing Procedures:

All materials shall be sampled and tested in accordance with Table 1033.01. All material source locations and quarries must be approved by the Department for prior to use.

**Table 1033.01**  
**Sampling and Testing Procedures**

Procedure	Method
Sampling	NDR T 2
Sieve Analysis	NDR T 27
Clay Lumps, Shale, and Soft Particles	NDR T 504
Abrasion	AASHTO T 96
Freeze and Thaw Soundness	NDR T 103
Specific Gravity and Absorption (course aggregate)	AASHTO T 85
Specific Gravity and Absorption (fine aggregate)	AASHTO T 84
Total Evaporable Moisture Content of Aggregates by Drying	AASHTO T 255
Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test	AASHTO T 176
Sodium Sulfate Soundness	AASHTO T 104
Calcium Carbonate	NDR C 25
Organic Impurities	AASHTO T 21
Mortar-Making Properties	AASHTO T 71
Reducing Field Samples of Aggregate to Testing Size	AASHTO T 248
Lightweight Pieces in Aggregates	NDR T 113

#### 2. General Aggregate Properties:

- a. Aggregates shall be free from injurious quantities of dust, soft or flaky particles, loams, alkali, organic matter, paper, wood or other deleterious matter as determined by the Engineer.



- b. Dolomite as herein defined is a magnesium limestone containing calcium carbonate and magnesium carbonate in approximately a 4 to 3 ratio.
- c. The calcium carbonate content of limestone shall be at least 80 percent (computed as  $\text{CaCO}_3$  from the value determined for  $\text{CaO}$ ).
- d. Fine Sand shall have at least 95 percent of its particles pass the No. 10 (2.0 mm) sieve and no more than 25 percent pass the No. 200 (75  $\mu\text{m}$ ) sieve. This definition applies to sodium sulfate soundness test.
- e. Once an aggregate's soundness and abrasion quality has been determined, additional quality testing for soundness and abrasion loss will be at the Engineer's discretion.
- f. All aggregates or combine aggregates shall not exceed 3.5 percent with any combinations of clay lumps, shale, soft particles, lightweight pieces and injurious materials.
- g. All aggregates or combine aggregates that have been washed or coming from a wet pit shall be stockpiled for a minimum of 48 hours before being introduced into concrete.

**3. Portland Cement Concrete Aggregates:**

**a. Fine Aggregate:**

- (1) Aggregate shall be washed and composed of clean, hard, durable and uncoated particles.
- (2) Aggregates produced from wet pits by pumping must be adequately washed by means approved by the Department.
- (3) Aggregates from dry pits shall be adequately washed by means approved by the Department and have a Sand Equivalent value not less than 90 in accordance with AASTHO T 176.
  - (i) If the Sand Equivalent is less than 90, the Engineer may elect to stop aggregate production until such a time ASTM C 109 has been completed. The aggregate, when subjected to the test for mortar-making properties, shall produce a mortar having a compressive strength at the age of 7 days equal to or greater than that developed by mortar of the same proportions and consistency made of the same cement and aggregate after the aggregate has been washed to a sand equivalent greater than 90. Materials failing to produce equal or greater strength shall be unacceptable.
- (4) Aggregate for concrete shall have a soundness loss of not more than 10% by weight at the end of 5 cycles using Sodium Sulfate Soundness test AASHTO T 104.
- (5) The weight of the aggregate shall not contain more than 0.5% clay lumps.

- (6) Aggregate subjected to the colorimetric test for organic impurities which produces a color darker than the standard shall be further tested for its mortar-making properties in accordance with AASHTO T 71. The Engineer may elect to stop aggregate production until such a time AASHTO T 71 testing has been completed.
  - (i) Aggregate, when subjected to the test for mortar-making properties, shall produce a mortar having a compressive strength at the age of 7 days equal to or greater than that developed by mortar of the same proportions and consistency made of the same cement and aggregate after the aggregate has been treated in a 3% solution of sodium hydroxide. Materials failing to produce equal or greater strength shall be unacceptable, except when determined to be acceptable under the provisions of Subsection 105.03.
- (7) Aggregate shall meet the requirement in Tables 1033.02A, 1033.02B and 1033.03C.

**Table 1033.02A**

		Percentage	Percent Passing									
			1 1/2"	1"	3/4"	1/2"	3/8"	No.4	No.10	No.20	No.30	No.200
AGGREGATE SPECIFICATION RANGE	Class A	Max	--	--	--	--	100	100	90	--	40	3
		Min	--	--	--	--	100	92	64	--	10	0
	Class B	Max	--	100	--	--	--	97	70	--	40	3
		Min	--	100	--	--	--	77	50	--	16	0
	Class C	Max	--	100	--	--	--	88	50	--	20	3
		Min	--	100	--	--	--	44	24	--	4	0

**Table 1033.02B**

Aggregate Classes and Uses	
Aggregate Class	Concrete Description
A	Overlay Concrete SF
B	47BD, 47B-HE, 47B-OL, PR 1 and PR 3
C	BX

**b. Coarse Aggregate:**

- (1) Aggregate shall consist of Limestone, Quartzite, Dolomite, Gravel and Granite composed of clean, hard, durable, and uncoated particles.
- (2) The percent of clay lumps, shale, or soft particles shall not exceed the following amounts:

Clay Lumps .....	0.5%
Shale .....	1.0%
Soft Particles .....	3.5%
Lightweight Pieces .....	3.5%

- (3) Any combination of clay lumps, shale, soft particles, lightweight pieces and injurious material shall not exceed 3.5%.
- (4) Aggregate for concrete shall be free of coatings that will inhibit bond and free of injurious quantities of loam, alkali, organic matter, thin or laminated pieces, chert, or other deleterious substances as determined by the Engineer.

- (5) Aggregate for concrete shall not have a soundness loss greater than 8.0% by weight at the completion of 16 cycles of alternate freezing and thawing.
- (6) Aggregates for concrete shall have a Los Angeles Abrasion loss percentage of not more than 40.
- (7) All fractions passing the No.4 sieve shall meet quality requirement of soundness loss of not more than 10% by weight at the end of 5 cycles using sodium sulfate solution.
- (8) The coarse aggregate shall be tested according to ASTM C 1260.
  - (a) The mortar bars for the ASTM C 1260 shall not exceed 0.10% expansion at 28 days.
    - (i) If the proposed coarse aggregate exceeds 0.10% expansion at 28 days, the aggregate proportions used on the project shall be tested in accordance to ASTM C 1567.
      - a. The ASTM C 1567 mortar bars shall be composed of Intergrated/blended cement being used on the project.
      - b. If the expansion is greater than 0.10%, the coarse aggregate shall not be used.
- (9) Aggregate shall meet the requirements in Tables 1033.03A, B, and C.

**Table 1033.03A**

AGGREGATE SPECIFICATION RANGE	Class	Percent	Percent Passing									
			1 1/2"	1"	3/4"	1/2"	3/8"	No.4	No.10	No.20	No.30	No.200
	Class E	Max	100	100	90	--	45	12	--	*4	--	3
		Min		92	66		15	0		0		0
	Class F	Max	--	--	100	100	90	30	8	--	--	3
		Min				96	40	4	0			0

\*If the No. 200 sieve is less than 1.5% passing the No.20 sieve could be increased to maximum of 6% passing.

**Table 1033.03B**

Aggregate Classes and Uses	
Aggregate Class	Concrete Description
E	47BD, 47B-HE, PR 1 and PR 3
F	47B-OL, Overlay Concrete SF

**c. Combined Aggregates:**

- (1) The Contractor shall design and meet the specification requirements. It is the Contractor's responsibility to provide desirable mix properties; such as, but not limited to, workability, resistance to segregation, stable air void system, good finishing properties and good consolidation properties.

- (2) The combined blended aggregate shall meet the requirement in Table 1033.03C and 1033.03D.

**Table 1033.03C**

<b>*Class R - Combined Aggregate Gradation Limits (Percent Passing)</b>								
<b>Sieve Size</b>	<b>1 ½ inch</b>	<b>1 inch</b>	<b>¾ inch</b>	<b>No.4</b>	<b>No.10</b>	<b>No.30</b>	<b>No. 50</b>	<b>No.200</b>
Max	100	100	98.0	70.0	50.0	30.0	12.0	3.0
Min	-	92.0	85.0	45.0	31.0	8.0	2.0	0

\* Refer to Subsection 1002.04, Paragraph 1.b.(8) for the traditional 47B Mix Design

**Table 1033.03D**

<b>Aggregate Classes and Uses</b>	
<b>Aggregate Class</b>	<b>Concrete Description</b>
R	47B

**d. Aggregate Production and Testing:**

- (1) Any change greater than 3% in the original verified constituent percentage of the combined aggregates gradation will be considered non-compliant. Any change of the combined gradation targets must remain within the Combined Aggregate Gradation Limits in Table 1033.03C. The Contractor shall resubmit a new mix design if the material is deemed non-compliant in accordance with Subsection 1002.04, Paragraph 1.
- (2) The blended gradation tolerance ranges from the approved mix design are established in Table 1033.03E.
- (i) The Contractor shall assume the responsibility to cease operations when the specifications are not met. Production shall not be started again without the approval of the Engineer.

**Table 1033.03E Blended Aggregate Production Tolerances**

<b>Sieve Size</b>	<b>Tolerances</b>
No. 4 or greater	± 5%
No. 10 to No. 30	± 4%
No. 50	± 3%
Minus No. 200	± 1%

- (3) Coarse aggregate from a dry pit shall be uniformly saturated with water before it is used. The wetting shall begin 24 hours before concrete mixing to allow complete saturation.

**DOWEL BARS  
(J-15-0812)**

Paragraph 1.c. of Subsection 1022.01 in the Standard Specifications is void and superseded by the following:

1. c. Both Type A and Type B coated dowel bars shall be coated with a bond breaker shown on the NDR Approved Products List, dipped in asphalt or paraffin, or greased in accordance with the specified requirements as shown in the Standard Plans.

**EPOXY COATED REINFORCING STEEL  
(J-15-0509)**

Paragraph 5. of Subsection 1021.03 in the Standard Specifications is void and superseded by the following:

5. In order to protect the coated reinforcement from damage, the Contractor shall use padded or nonmetallic slings and padded straps. Bundled bars shall be handled in a manner which will prevent excessive sagging of bars which will damage the coating. If circumstances require storing coated steel reinforcing bars outdoors for more than two months, protective storage measures shall be implemented to protect the material from sunlight, salt spray and weather exposure. Coated steel reinforcing bars, whether individual bars or bundles of bars, or both, shall be covered with opaque polyethylene sheeting or other suitable opaque protective material. For stacked bundles, the protective covering shall be draped around the perimeter of the stack. The covering shall be secured adequately, and allow for air circulation around the bars to minimize condensation under the covering. Coated steel reinforcing bars, whether individual bars or bundles of bars, or both, shall be stored off the ground on protective cribbing. The bundled bars shall not be dropped or dragged. If, in the opinion of the Engineer, the coated bars have been extensively damaged, the material will be rejected. The Contractor may propose, for the approval of the Engineer, alternate precautionary measures.

**PROPOSAL GUARANTY  
(A-40-0307)**

As an evidence of good faith in submitting a bid for this work, the bidder shall indicate the type of bid bond applied to this project in accordance with the Proposal Guaranty Bid Bond Section of these Special Provisions.

\* \* \* \* \*

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CONTRACT ID: 2581X

PROJECT(S): S-133-2(1004)

CALL ORDER NO.: 210

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
SECTION 1 GROUP 1 GRADING						
0001	0030.10	MOBILIZATION	LUMP	LUMP	.	.
0002	1102.00	REMOVE ASPHALT SURFACE	3369.000 SY	.	.	.
0003	7017.00	REMOVE GUARDRAIL	241.000 LF	.	.	.
0004	L019.13	EROSION CONTROL, CLASS 1D	1461.000 SY	.	.	.
SECTION 1 TOTAL					.	.

SECTION 2 GROUP 3 CONCRETE PAVING

0005	0030.30	MOBILIZATION	LUMP	LUMP	.	.
0006	1020.03	DELINEATOR, TYPE III	3.000 EACH	.	.	.
0007	1020.20	INSTALL CHEVRONS	3.000 EACH	.	.	.
0008	3075.52	10" CONCRETE PAVEMENT, CLASS 47B-3500	461.000 SY	.	.	.
0009	3075.56	10" DOWELED CONCRETE PAVEMENT, CLASS 47B-3500	2764.000 SY	.	.	.
0010	7517.04	4" WHITE WET REFLECTIVE PREFORMED PAVEMENT MARKING, TYPE 4, GROOVED	1000.000 LF	.	.	.
0011	7518.04	4" YELLOW WET REFLECTIVE PREFORMED PAVEMENT MARKING, TYPE 4, GROOVED	800.000 LF	.	.	.
0012	8029.25	FOUNDATION COURSE 4"	3225.000 SY	.	.	.
0013	8060.05	GRANULAR SUBDRAIN	9.000 EACH	.	.	.



CONTRACT ID: 2581X

PROJECT(S): S-133-2(1004)

CALL ORDER NO.: 210

LINE NO	ITEM DESCRIPTION		APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
				DOLLARS	CTS	DOLLARS	CTS
0014	9111.00	WATER	13.000 MGAL	.		.	
0015	9170.00	EARTH SHOULDER CONSTRUCTION	16.580 STA	.		.	
0016	9173.20	SUBGRADE PREPARATION	3225.000 SY	.		.	
0017	9185.77	RUMBLE STRIPS, CONCRETE	16.580 STA	.		.	
0018	9188.50	SURFACING UNDER GUARDRAIL	207.000 SY	.		.	
SECTION 2 TOTAL						.	

SECTION 3 GROUP 7 GUARDRAIL

0019	0030.70	MOBILIZATION	LUMP	LUMP		.	
0020	7011.20	W-BEAM GUARDRAIL	200.000 LF	.		.	
0021	7020.00	BRIDGE APPROACH SECTIONS	1.000 EACH	.		.	
0022	7024.25	GUARDRAIL END TREATMENT, TYPE I	1.000 EACH	.		.	
SECTION 3 TOTAL						.	

SECTION 4 GROUP 10 GENERAL

0023	0001.08	BARRICADE, TYPE II	2460.000 BDAY	0.50000		1,230.00	
0024	0001.10	BARRICADE, TYPE III	123.000 BDAY	.		.	
0025	0001.90	SIGN DAY	1488.000 EACH	.		.	

CONTRACT ID: 2581X

PROJECT(S): S-133-2(1004)

CALL ORDER NO.: 210

LINE NO	ITEM DESCRIPTION		APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
				DOLLARS	CTS	DOLLARS	CTS
0026	0002.28	TEMPORARY PAVEMENT MARKING REMOVAL	6000.000 LF	.		.	
0027	0002.30	PAVEMENT MARKING REMOVAL	3000.000 LF	.		.	
0028	0002.44	TEMPORARY PAVEMENT MARKING, TYPE PAINT	8000.000 LF	.		.	
0029	0002.47	TEMPORARY PAVEMENT MARKING SURFACE PREPARATION	4000.000 LF	.		.	
0030	0002.97	FLASHING ARROW PANEL	41.000 DAY	.		.	
0031	0030.00	MOBILIZATION	LUMP	LUMP		.	
0032	9110.01	RENTAL OF LOADER, FULLY OPERATED	10.000 HOUR	.		.	
0033	9110.03	RENTAL OF DUMP TRUCK, FULLY OPERATED	10.000 HOUR	.		.	
0034	9110.07	RENTAL OF SKID LOADER, FULLY OPERATED	10.000 HOUR	.		.	
0035	9110.27	RENTAL OF CRAWLER MOUNTED HYDRAULIC EXCAVATOR, FULLY OPERATED	10.000 HOUR	.		.	
0036	L022.75	TEMPORARY SILT CHECK	200.000 LF	.		.	
0037	L022.90	TEMPORARY SILT FENCE	200.000 LF	.		.	
0038	L860.50	ENVIRONMENTAL COMMITMENTS - CONTRACTOR COMPLIANCE	LUMP	LUMP		.	
SECTION 4 TOTAL						.	
TOTAL BID						.	