

INFORMATIONAL PROPOSAL

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

NEBRASKA DEPARTMENT OF ROADS
LETTING DATE: February 04, 2016

CALL ORDER: 100
CONTROL NO. SEQ. NO.: 13281 000

CONTRACT ID: 1281X
PROJECT NO.: ITS-MISC-D1(1031)

TENTATIVE START DATE: 04/04/2016

CONTRACT TIME: 419 Calendar Days

LOCATION: DISTRICT 1 - DISTRICTWIDE FIBER

IN COUNTIES: LANCASTER, CASS

BIDDER

GROUP 8B ELECTRICAL

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. ITS-MISC-D1(1031)**

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.

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.

STATUS OF UTILITIES

The following information is current as of November 2, 2015.

Aerial and/or underground utility facilities may exist within this project. The Contractor shall determine to his/her satisfaction the extent of 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:

US-77: RP 60+36 TO 63+02

Black Hills Energy: has permits for pipeline facilities that parallel and cross Highway 77.

City of Lincoln: has permits for water and sanitary sewer facilities that cross Highway 77.

Level 3 Communication: has facilities in the vicinity of the project

Lincoln Electric System: has permits for buried and aerial communication facilities that parallel and cross Highway 77.

Magellan Midstream Partners, LP: has pipeline facilities that cross Highway 77 (possibly in railroad ROW).

MCI Telecommunications: has permits for buried communications facilities that cross Highway 77.

NebraskaLink Holding, LLC: has facilities in the vicinity of the project

Time Warner Cable: has permits for buried and aerial communication facilities that cross Highway 77.

Unite Private Networks: has facilities in the vicinity of the project.

Windstream Communications: has permits for buried communication that parallel Highway 77.

I-180: RP 0+00 TO 2+97

Black Hills Energy: has permits for pipeline facilities that parallel and cross I-180.

CenturyLink has facilities in the vicinity of the project.

City of Lincoln: has permits for sanitary sewer and water facilities that parallel and cross I-180.

Level 3 Communication: has permits for buried communication facilities that cross the I-180.

Lincoln Electric System: has permits for aerial and buried electrical facilities that parallel and cross I-180.

MCI Telecommunications: has permits for buried communication facilities that cross I-180.

NebraskaLink Holding, LLC: has facilities in the vicinity of the project.

Sprint: has buried communication facilities that parallel I-180.

Time Warner Cable: has permits for aerial communication facilities that cross I-180.

Unite Private Networks: has facilities in the vicinity of the project.

University of Nebraska Utility Plant: has facilities in the vicinity of the project.

Windstream Communications: has permits for buried communication facilities that parallel and cross I-180.

I-80: RP 396+61 TO 428+37

Black Hills Energy: has permits for pipeline facilities that cross I-80.

City of Lincoln: has permits for water and sanitary sewer facilities that cross I-80.

City of Waverly: has permits for water lines that cross I-80.

Cox Communications: has permits for buried communication facilities that cross I-80.

Great Plains Communications: has permits for buried communication facilities that cross I-80.

Lincoln Electric System: has permits for buried and aerial electrical facilities that cross I-80.

MCI Telecommunications: has permits for buried communication facilities that cross I-80.
Nebraska Public Power District: has permits for aerial electrical facilities that cross I-80.
NebraskaLink Holding, LLC: has a permit for buried communication facilities that cross I-80.
Northern Natural Gas: has a permit for pipeline facilities that cross I-80.
Sprint: has a permit for buried communication facilities that cross I-80.
Time Warner Cable: has permits for buried communication facilities that cross I-80.
Unite Private Networks: has permits for buried communication facilities that cross I-80.
Union Pacific Railroad: has a permit for water lines that parallel I-80.
Windstream Communications: has permits for buried communication facilities that cross I-80.

Any utility 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:

Tract Number	Status of Tract	Hearing Date
None	None	None

Right-of-Way Tracts with Pay Items:

Tract Number	Pay Items
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 (General Requirements)

1.01 Contractor's Responsibility

A. Material and Equipment Storage and Construction Site Access

1. Contractor shall secure a designated material storage area for this project. Any request to store material in the right-of-way in order to complete the current work activity must be approved by the Engineer.
2. Construction equipment may be stored within the right-of-way during non-working hours if it is outside of the roadway clear zone, as far from the traveled way as practical and as approved by the Engineer. No equipment shall be stored at the toe of any roadway slope.
3. No worker vehicles will be allowed to park in, or access a job site directly from an Interstate or Freeway facility. Access to the job site for both workers and materials shall only be via interchanges or intersecting roadways unless otherwise approved by the Engineer. Worker vehicles shall be parked off-site or at a location acceptable to the Engineer.

B. Finishing Activities

Upon completion of the work at each project area, thoroughly clean the site and restore it to a condition at least equal to that existing prior to construction. Project area is defined as the approximate area disturbed during a normal week of work. During and after completion, employ appropriate measures for erosion control, where applicable. Seed and fertilize work areas upon completion of work in accordance with the Contract Documents.

1.02 Contractor Submissions

A. Materials List

Complete and submit one (1) electronic pdf file of the materials list within fourteen (14) calendar days after award of the project contract. Include the name of the materials supplier and catalog number of each item listed.

B. Materials Procurement

1. Shop drawings, specification data, and samples for acceptance testing (when requested) shall be submitted to NDOR for approval and/or selection prior to the placing of orders for any equipment and materials.
2. The Contractor shall order all materials requiring production lead time greater than 4 weeks within five (5) business days of receiving the approved shop drawing(s).
3. The Contractor shall submit to the Engineer proof of material purchase order in electronic pdf format.

2.01. Equipment and Materials List**NDOR PROJECT NO. MISC(1031)**

DESCRIPTION	MANUFACTURER	CATALOG #
Tracer Wire		
Pull Tape		
2" RGS Conduit		
2" LFMC Conduit		
4" Fiberglass Conduit		
1.25" Innerduct		
2" HDPE Conduit		
2" EMT		
1" EMT		
12x12x8 Junction Box		
24x12x8 Junction Box		
Pull Box, Type FOR27		
Pull Box, Type Fiber Vault		
Test Station		
12 SM Fiber Optic Cable		
144 SM Fiber Optic Cable		
Connector Adaptor Panel		
Fiber Connector Housing		
Terminated Fiber Connector		
Fiber Ethernet Switch		
Duplex Fiber Jumper		
10 km SFP Module		
40 km SFP Module		
Four Rack Unit Connector Housing		
Fiber Optic Splice Closure		
Module Connector Housing Cassette		
Fiber Optic 12 Splice Tray		
Ground Rod		
Exothermic Welding Kit		
Duct Seal		
Conduit Hangers/Clamps		
RGS Expansion Fittings		
Fusion Splicer		
OTDR Meter		
OLTS Meter		

**SPECIAL PROSECUTION AND PROGRESS
(Installation of Conduit on US-77 SB Bridge & Internal Liquidated Damage)**

I. Installation Requirements

Due to construction on I-80 from NW 56th Street to the I-80/US-77 South Interchange, which includes work on NW 48th Street, the installation of the 4 inch conduit on the southbound US-77 bridge shall not be installed until after the NW 48th Street eastbound I-80 on-ramp is open to traffic, or as otherwise directed by the Engineer. It is anticipated that this on-ramp will be opened to traffic about August 1, 2016.

The Contractor shall perform this installation work during nighttime non-peak from 9 pm to 6 am of the following morning. The Contractor will be allowed seven (7) nights to perform this installation and may have to adjust his schedule according to University of Nebraska home football games as describe elsewhere in the contract. During the nighttime installation, the eastbound West “O” Street on-ramp to southbound US-77 will be closed to traffic and detoured thru NW 48th Street to eastbound I-80.

The Contractor shall be required to provide the Engineer with an installation schedule one (1) week prior to beginning the installation of this conduit in order for the City of Lincoln Public Works Department to be notified of these closures.

II. Internal Liquidated Damage Assessment

The Contractor’s failure to have the eastbound West “O” Street on-ramp to southbound US-77 open to traffic by 6 am, as described in **Section I**, shall result in the assessment of a \$175 per hour internal liquidated damage assessment. This assessment shall begin at 6 am and it shall continue per hour until, and including, the hour that this on-ramp is open to traffic. This assessment has not been provided for elsewhere in the contract and shall be in addition to other liquidated damages that are part of the contract. The following formula was used to determine this assessment:

$$\begin{aligned} \text{Cost} &= [(1-\%T)(\text{PHV})(\$ \text{ Pass}) + (\%T)(\text{PHV})(\$ \text{ Trucks})] \times D \\ &= [(1-0.02)(498)(\$0.23) + (0.02)(498)(\$0.44)] \times 1.5 \\ &= [\$112.25 + \$4.38] \times 1.5 \\ &= \$174.95 \rightarrow \text{Rounded to } \$175/\text{hr} \end{aligned}$$

Where: %T = percent trucks
 PHV = peak hour volume
 \$ Pass = passenger car factor = \$0.23
 \$ Trucks = truck factor = \$0.44
 D = delay (in minutes)

**SPECIAL PROSECUTION AND PROGRESS
(Coordination with Others)**

The Contractor for Project ITS-MISC-D1(1031) shall be required to coordinate construction and signing activities with the Contractor for Project IM-NH-80-9(863), CN 12489, NW 56th St –

US-77 South Interchange, Lincoln. Project 80-9(863) is the reconstruction of I-80 from NW 56th Street to just west of the South Jct. of I-80/US-77 and this project includes the reconstruction of NW 48th Street to just north of I-80. The NW 48th Street on-ramp to eastbound I-80 is currently closed to traffic and it is anticipated that this ramp will be open to traffic about August 1, 2016.

**SPECIAL PROSECUTION AND PROGRESS
(Holidays and UNL Football Game Day)**

The Contractor will be required to schedule his operations in a manner to have all traffic lanes, ramps and shoulders on Highways US-77, I-80 and I-180 open to traffic on the following holidays:

- Memorial Day and Labor Day weekends – these holiday weekends shall begin at 3:00 p.m., Friday, and shall include the remainder of Friday and all day Saturday, Sunday and the Monday holiday.
- July 4th - If July 4th falls on a Monday or Friday, the Saturday and Sunday either preceding or following July 4th shall be included as part of the holiday.
- If July 4th falls on either Tuesday, Wednesday or Thursday, only that day will be considered as the holiday.
 - If July 4th falls on a Saturday or Sunday, the day preceding and the day following July 4th shall be included as part of the holiday.
 - The July 4th holiday shall begin at 3:00 p.m. on the day preceding the first day of the July 4th holiday, as defined above.

The Contractor will also be required to have all traffic lanes, ramps and shoulders open to traffic on any day that the University of Nebraska has a home football game (including the Spring game). All lanes, ramps and shoulders shall be open to traffic from 3:00 p.m. of the day before the home football game until 9:00 a.m. of the day following the home football game.

Failure to have all traffic lanes, ramps and shoulders open to traffic, as specified, on these holidays and any UNL home football game day will result in a liquidated damage assessment of \$5,000 per day, per occurrence, per location. This assessment will be in addition to other liquidated damages described elsewhere in this proposal or in the Standard Specifications used for this project.

ENVIRONMENTAL COMMITMENT

Control No.: 13281 **Project No.:** ITS-MISC-D1(1031)
Project Name: District 1 - Districtwide Fiber

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: Kimberly Baker, Highway Environmental Biologist, (402) 479-4544

General Conservation Conditions

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. (District Construction, Contractor)

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://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. (NDOR Environmental, District Construction, Contractor)

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

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. (Contractor)

Northern Long-Eared Bat

NLEB-1 Any tree clearing will be scheduled to occur between October 1st – March 31st to avoid impacts to the northern long-eared bat roosting period. (NDOR Environmental, Construction, Contractor)

NDOR Construction Project Managers should contact NDOR Environmental at 402-479-3546 or Melissa.marinovich@nebraska.gov at least 30 days prior to construction start to schedule Northern Long-Eared Bat surveys.

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)

Monitoring Wells

There may be monitoring wells located in the project right-of-way in the southwest and southeast quadrants of the I-80 and Hwy 63 Interchange. Monitoring wells, if present, shall be located and marked as Do Not Disturb. Construction activities near the wells will be performed with care to avoid damaging any wells. In the event that a monitoring well is damaged, the contractor shall notify the Engineer immediately. NDOR will coordinate with the Nebraska Department of Environmental Quality as directed by the Engineer. The contractor shall replace any damaged manholes at the Engineer's direction. If the well casing or seal was damaged, NDOR would contact the NDEQ to discuss further necessary actions. The Contractor shall comply with NDEQ direction concerning repair and/or replacement of damaged monitoring wells. Repair and/or replacement of damaged wells may require assistance by a certified Water Well Monitoring Supervisor and/or a licensed well driller. All work to repair and/or replace the damaged wells shall be the contractor's responsibility (NDOR, Contractor).

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

FLOODPLAIN PERMIT

RECEIVED

JUN 08 2015

Nebraska Department of Roads Floodplain/Floodway Development Permit/Application

ENVIRONMENTAL SERVICE

Permit Application No.:	
Date:	5/1/15

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.)

1.	Name of Applicant:	Nebraska Department of Roads PO Box 94759 Lincoln NE 68509-4759
2.	Type and Use of Development:	Fiber Installation
3.	Specific Location of Development:	I-80 - M.M. 396+98 to 428+37
4.	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:

5.	Is the development Substantial Improvement? (see #4)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
6.	Is the development in an identified floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
If Yes, complete the following:				
a.	Elevation of the Base (100-Year) Flood	113B	Ft.	MSL/NGVD 29 or NAVD 88
b.	Elevation/Floodproofing Requirement (if applicable)	_____	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 Waverly Floodplain Management Resolution/Ordinance (Number _____) shall be complied with.
(County of Cole)

Local Authorizing Official (Name & Title)

 NDOR Environmental Permits Manager

6/3/15
 Date
5-4-15
 Date

Project Name: District 1-Districtwide Fiber	
Project No.: ITS-MISC-D1(1031)	
Control No.: 13281	Structure No.: NONE

**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
- 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.

BNSF RAILWAY COMPANY

BNSF RAILWAY SPECIAL PROVISIONS FOR PROJECTS FOR HIGHWAY IMPROVEMENTS

1. CONTRACTOR REQUIREMENTS

1.1 General

1.1.1 The Contractor must cooperate with **BNSF RAILWAY COMPANY**, hereinafter referred to as "Railway" where work is over or under on or adjacent to Railway property and/or right-of-way, hereafter referred to as "Railway Property", during the construction of District 1 – Districtwide Fiber.

1.1.2 Contractor shall have a background investigation performed on all of its employees, subcontractors and agents who will be performing any services for Railroad under this Agreement which are determined by Railroad in its sole discretion a) to be on Railroad's property, or b) that require access to Railroad Critical Infrastructure, Railroad Critical Information Systems, Railroad's Employees, Hazardous Materials on Railroad's property or is being transported by or otherwise in the custody of Railroad, or Freight in Transit involving Railroad.

The required background screening shall at a minimum meet the rail industry background screening criteria defined by the e-RAILSAFE Program as outlined at <http://www.e-railsafe.com>, in addition to any other applicable regulatory requirements.

Contractor shall obtain written consent from all its employees, subcontractors or agents screened in compliance with the e-RAILSAFE Program to participate in the Program on their behalf and to release completed background information to Railroad's designee. Contractor shall be subject to periodic audit to ensure compliance.

Contractor subject to the e-RAILSAFE Program hereunder shall not permit any of its employees, subcontractors or agents to perform services hereunder who are not first approved under e-RAILSAFE Program standards. Railroad shall have the right to deny entry onto its premises or access as described in this section above to any of Contractor's employees, subcontractors or agents who do not display the authorized identification badge issued by a

background screening service meeting the standards set forth in the e-RAILSAFE Program, or who in Railroad's opinion, which may not be unreasonable, may pose a threat to the safety or security of Railroad's operations, assets or personnel.

Contractors shall be responsible for ensuring that its employees, subcontractors and agents are United States citizens or legally working in the United States under a lawful and appropriate work VISA or other work authorization.

1.1.3 The Contractor is responsible for determining and complying with all Federal, State and Local Governmental laws and regulations, including, but not limited to environmental laws and regulations (including but not limited to the Resource Conservation and Recovery Act, as amended; the Clean Water Act, the Oil Pollution Act, the Hazardous Materials Transportation Act, CERCLA), and health and safety laws and regulations. The Contractor hereby indemnifies, defends and holds harmless Railway for, from and against all fines or penalties imposed or assessed by Federal, State and Local Governmental Agencies against the Company which arise out of Contractor's work under this Agreement.

1.1.4 Except as otherwise agreed to between Railway and State, the Contractor must notify the (State) at (402) 471-0850, and Railway's Manager of Public Projects; telephone number (913) 551-4964 at least thirty (30) calendar days before commencing any work on Railway Property. Contractor's notification to Railway must refer to Railroad's file MP 3.00, 61.700 & 50.150.

1.1.5 For any false work above any tracks, any excavations located within twenty-five (25) feet of the nearest track, and any intersecting slope from the plane of the top of rail on a 1½ horizontal to 1 vertical slope beginning at eleven (11) feet from centerline of the nearest track, both measured perpendicular to centerline of track, the Contractor must furnish the Railway five sets of working drawings showing details of construction affecting Railway Property and tracks. The working drawing must include the proposed method of installation and removal of false work, shoring or cribbing, not included in the contract plans and two sets of structural calculations of any false work, shoring or cribbing. All calculations must take into consideration Railway surcharge loading and must be designed to meet American Railway Engineering and Maintenance-of-Way Association (previously known as American Railway Engineering Association) Coopers E-80 live loading standard. All drawings and calculations must be stamped by a registered professional Engineer licensed to practice in the state the project is located. The Contractor must not begin work until notified by the Railway that plans have been approved. The Contractor will be required to use lifting devices such as, cranes and/or winches to place or to remove any false work over Railway's tracks. In no case will the Contractors be relieved of responsibility for results obtained by the implementation of said approved plans.

1.1.6 Subject to the movement of Railway's trains, Railway will cooperate and make reasonable effort to assist the Contractor so that the work may be handled and performed in an efficient manner. The Contractor will have no claim whatsoever for any type of damages or for extra or additional compensation in the event his work is delayed by necessary Railway operations.

1.2 Contractor Safety

1.2.1 No employee of the Contractor, its subcontractors, agents or invitees may enter Railway Property without first having completed Railway's Engineering Contractor Safety Orientation, found on the web site www.contractororientation.com. The Contractor must ensure that each of its employees, subcontractors, agents or invitees completes Railway's Engineering Contractor Safety Orientation through Internet sessions before any work is performed on the Project. Additionally, the Contractor must ensure that each and every one of its employees, subcontractors, agents or invitees possesses a card certifying completion of the Railway Contractor Safety Orientation before entering Railway Property. The Contractor is responsible for the cost of the Railway Contractor Safety Orientation. The Contractor must renew the Railway Contractor Safety Orientation annually. Further clarification can be found on the web site or from the Railway's Representative.

1.2.2 Each Contractor that will perform work within 25 feet of the centerline of a track must develop and implement a Roadway Worker Protection/On Track Safety Program and work with Railway Project Representative to develop an on-track safety strategy as described in the guidelines listed in the on track safety portion of the Safety Orientation. This Program must provide Roadway Worker protection/on-track training for all employees of the Contractor, its subcontractors, agents or invitees. This training is reinforced at the job site through job safety briefings. Additionally, each Contractor must develop and implement the Safety Action Plan, as provided for on the web site www.contractororientation.com, which will be made available to Railway prior to commencement of any work on Railway Property. During the performance of work, the Contractor must audit its work activities. The Contractor must designate an on-site project Supervisor who will serve as the contact person for the Railway and who will maintain a copy of the Safety Action Plan, safety audits, and Material Safety Datasheets (MSDS), at the job site.

1.3 Railway Requirements

1.3.1 The Contractor must take protective measures as are necessary to keep Railway facilities, including track ballast, free of sand, debris and other foreign objects and materials resulting from his operations. The Railway shall notify the Contractor of any damage to the Railway facilities resulting from Contractor's operations. The Railway will repair such damages and the cost of such repairs or replacement must be paid for by the Contractor.

1.3.2 The Contractor must notify the Railway's Division Superintendent and provide blasting plans to the Railway for review seven (7) calendar days prior to conducting any blasting operations adjacent to or on Railway's Property.

1.3.3 The Contractor must abide by the following clearances during construction:

- ◆ 25'-0" Horizontally from centerline of nearest track
- ◆ 23'-31/2" Vertically above top of rail (Temporary False work Clearance may be reduced to 21'-6" subject to Railway approval)
- ◆ 27'-0" Vertically above top of rail for electric wires carrying less than 750 volts
- ◆ 28'-0" Vertically above top of rail for electric wires carrying 750 volts to 15,000 volts
- ◆ 30'-0" Vertically above top of rail for electric wires carrying 15,000 volts to 20,000 volts
- ◆ 34'-0" Vertically above top of rail for electric wires carrying more than 20,000 volts

1.3.4 Any infringement within the clearances provided above due to the Contractor's operations must be submitted to Railway and must not be undertaken until approved in writing by the Railway. No extra compensation will be allowed in the event the Contractor's work is delayed pending Railway approval.

1.3.5 The details of construction affecting the Railway's property and tracks not included in the contract plans must be submitted to the Railway by the Contractor for approval before work is undertaken and this work must not be undertaken until approved by the Railway.

1.3.6 At other than public road crossings, the Contractor must not move any equipment or materials across Railway's tracks until permission has been obtained from the Railway. The Contractor must obtain a "Temporary Private Crossing Agreement" (substantially in the form of Exhibit "F" of this agreement and in the form hereof) from the Railway prior to moving his equipment or materials across the Railway's tracks. The temporary crossing must be gated and locked at all times when not required for use by the Contractor. The temporary crossing for use of the Contractor will be at the expense of the Contractor.

1.3.7 Discharge, release or spill on the Railway Property of any hazardous substances, oil, petroleum, constituents, pollutants, contaminants or any hazardous waste is prohibited and Contractor must immediately notify the Railway's Resource Operations Center at 1-(800) 832-5452, of any discharge, release or spills in excess of a reportable quantity. Contractor must not allow Railway Property to become a treatment, storage or transfer facility as those terms are defined in the Resource Conservation and Recovery Act or any similar State law.

1.3.8 In the event the Contractor shall in any manner move or disturb other property of the Railway, in connection with the use of the said property, then, and in that event, the Contractor shall, as soon as possible and at its sole expense, restore such property to the same condition as it was in before such property was moved or disturbed.

1.3.9 In addition to Subsection 104.08 of the Standard Specification, the Contractor upon completion of the work covered by this contract, must promptly remove from the Railway's Property all of Contractor's tools, equipment, implements and other materials whether brought upon said property by said Contractor or any Subcontractor, employee or agent of Contractor or of any Subcontractor, and must cause Railway's Property to be left in a condition acceptable to the Railway's representative.

1.4 Protection of Railway Facilities and Railway Flagger Services:

1.4.1 The Contractor must give Railway's Roadmaster (telephone Larry Schmidt, (402) 458-7593) a minimum of thirty (30) calendar days advance notice when flagging services will be required so that the Roadmaster can make appropriate arrangements (i.e., bulletin the flagger's position). If flagging services are scheduled in advance by the Contractor and it is subsequently determined by the parties hereto that such services are no longer necessary, the Contractor must give the Roadmaster five (5) working days advance notice so that appropriate arrangements can be made to abolish the position pursuant to Union requirements.

1.4.2 Unless determined otherwise by Railway's Project Representative, Railway flagger and protective services and devices will be required and furnished when Contractor's work activities are located over, under and/or within twenty-five (25) feet measured horizontally from centerline of the nearest track and when cranes or similar equipment positioned beyond 25-feet from the

track centerline could foul the track in the event of tip over or other catastrophic occurrence, but not limited thereto for the following conditions:

- a- When in the opinion of the Railway's Representative it is necessary to safeguard Railway's Property, employees, trains, engines and facilities.
- b- When any excavation is performed below the bottom of tie elevation, if , in the opinion of Railway's representative, track or other Railway facilities may be subject to movement or settlement.
- c- When work in any way interferes with the safe operation of trains at timetable speeds.
- d- When any hazard is presented to Railway track, communications, signal, electrical or other facilities either due to persons, material, equipment or blasting in the vicinity.
- e- Special permission must be obtained from the Railway before moving heavy or cumbersome objects or equipment which might result in making the track impassable.
- f- Flagging services will be performed by qualified Railway flaggers.
- g- A flagging crew generally consists of one employee. However, additional personnel may be required to protect Railway Property and operations, if deemed necessary by the Railway Representative.
- h- Each time a flagger is called, the minimum period for billing will be the eight (8) hour basic day.

1.4.3 The cost of flagger services provided by the Railway, when deemed necessary by the Railway's representative, will be borne by the Contractor. The estimated cost for one (1) flagger is \$1,600/10 hr./day for an eight (8) hour basic day with time and one-half or double time for overtime, rest days and holidays. The estimated cost for each flagger includes vacation allowance, paid holidays, Railway and unemployment insurance, public liability and property damage insurance, health and welfare benefits, transportation, meals, lodging and supervision. Negotiations for Railway labor or collective bargaining agreements and rate changes authorized by appropriate Federal authorities may increase actual or estimated flagging rates. The flagging rate in effect at the time of performance by the Contractor hereunder will be used to calculate the actual costs of flagging pursuant to this paragraph.

1.4.4 The average train traffic on this route is 21 freight trains per 24-hour period at a timetable speed 70 MPH and 0 passenger trains at a timetable speed of N/A MPH.

1.5 Contractor General Safety Requirements

1.5.1 Work in the proximity of Railway track(s) is potentially hazardous where movement of trains and equipment can occur at any time and in any direction. All work performed by Contractors within 25 feet of any track must be in compliance with FRA Roadway Worker Protection Regulations.

1.5.2 Before beginning any task on Railway Property, a thorough job safety briefing must be conducted with all personnel involved with the task and repeated when the personnel or task changes. If the task is within 25 feet of any track, the job briefing must include the Railway's flagger, as applicable, and include the procedures the Contractor will use to protect its employees, subcontractors, agents or invitees from moving any equipment adjacent to or across any Railway track(s).

1.5.3 Workers must not work within 25 feet of the centerline of any track without an on-track safety strategy approved by the Railway's Project Representative. When authority is provided, every Contractor employee must know: (1) who the Railway flagger is, and how to contact the flagger, (2) limits of the authority, (3) the method of communication to stop and resume work, and (4) location of the designated places of safety. Persons or equipment entering flag/work limits that were not previously job briefed, must notify the flagger immediately, and be given a job briefing when working within 25 feet of the centerline of track.

1.5.4 When Contractor employees are required to work on the Railway Property after normal working hours or on weekends, the Railroad's representative in charge of the project must be notified. A minimum of two employees must be present at all times.

1.5.5 Any employees, agents or invitees of Contractor or its subcontractors under suspicion of being under the influence of drugs or alcohol, or in the possession of same, will be removed from the Company's Property by Contractor and subsequently released to the custody of a representative of Contractor management. Future access to the Railway's Property by that employee will be denied.

1.5.6 Any damage to Railway Property, or any hazard noticed on passing trains must be reported immediately to the Railway's representative in charge of the project. Any vehicle or machine which may come in contact with track, signal equipment, or structure (bridge) and could result in a train derailment must be reported immediately to the Railway representative in charge of the project and to the Railway's Resource Operations Center at 1(800) 832-5452. Local emergency numbers are to be obtained from the Railway representative in charge of the project prior to the start of any work and must be posted at the job site.

1.5.7 For safety reasons, all persons are prohibited from having pocket knives, firearms or other deadly weapons in their possession while working on Railway's Property.

1.5.8 All personnel protective equipment (PPE) used on Railway Property must meet applicable OSHA and ANSI specifications. Current Railway personnel protective equipment requirements are listed on the web site, **www.contractororientation.com**, however, a partial list of the requirements include: a) safety glasses with permanently affixed side shields (no yellow lenses); b) hard hats c) safety shoe with: hardened toes, above-the ankle lace-up and a defined heel; and d) high visibility retro-reflective work wear. The Railroad's representative in charge of the project is to be contacted regarding local specifications for meeting requirements relating hi-visibility work wear. Hearing protection, fall protection, gloves and respirators must be worn as required by State and Federal regulations. **(NOTE – Should there be a discrepancy between the information contained on the web site and the information in this paragraph, the web site will govern.)**

1.5.9 The Contractor must not pile or store any materials, machinery or equipment closer than 25'-0" to the centerline of the nearest Railway track. Materials, machinery or equipment must not be stored or left within 250 feet of any highway/rail at-grade crossings, where storage of the

same will interfere with the sight distances of motorists approaching the crossing. Prior to beginning work, the Contractor must designate any proposed areas with concurrence of the Railroad's representative.

1.5.10 Machines or vehicles must not be left unattended with the engine running. Parked machines or equipment must be in gear with brakes set and if equipped with blade, pan or bucket, they must be lowered to the ground. All machinery and equipment left unattended on Railway's Property must be left inoperable and secured against movement. (See Internet Engineering Contractor Safety Orientation program for more detailed specifications)

1.5.11 Workers must not create and leave any conditions at the work site that would interfere with water drainage. Any work performed over water must meet all Federal, State and Local regulations.

1.5.12 All power line wires must be considered dangerous and of high voltage unless informed to the contrary by proper authority. For all power lines the minimum clearance between the lines and any part of the equipment or load must be; 200KV or below – 15 feet; 200 to 350 KV – 20 feet; 350 to 500 KV – 25 feet; 500 to 750 KV – 35 feet; and 750 to 1000 KV – 45 feet. If capacity of the line is not known, a minimum clearance of 45 feet must be maintained. A person must be designated to observe clearance of the equipment and give a timely warning for all operations where it is difficult for an operator to maintain the desired clearance by visual means.

1.6 Excavation

1.6.1 Before excavating, the Contractor must investigate to determine whether any underground pipe lines, electric wires, or cables, including fiber optic cable systems are present and located within the Project work area. The Contractor must determine whether excavation on Railway's Property could cause damage to buried cables resulting in delay to Railway traffic and disruption of service to users. Delays and disruptions to service may cause business interruptions involving loss of revenue and profits. Before commencing excavation, the Contractor must contact Railway's Field Engineering Representative (John Caldwell, (913) 551-4564). All underground and overhead wires will be considered HIGH VOLTAGE and dangerous until verified with the company having ownership of the line. It is the Contractor's responsibility to notify any other companies that have underground utilities in the area and arrange for the location of all underground utilities before excavating.

1.6.2 The Contractor must cease all work and notify the Railway immediately before continuing excavation in the area if obstructions are encountered which do not appear on drawings. If the obstruction is a utility and the owner of the utility can be identified, then the Contractor must also notify the owner immediately. If there is any doubt about the location of underground cables or lines of any kind, no work must be performed until the exact location has been determined. The Railway will grant no exceptions to the requirements of this section.

1.6.3 All excavations must be conducted in compliance with applicable OSHA regulations and, regardless of depth, must be shored where there is any danger to tracks, structures or personnel.

1.6.4 Any excavations, holes or trenches on the Railway's Property must be covered, guarded and/or protected when not being worked on. When leaving work site areas at night and over weekends, the areas must be secured and left in a condition that will ensure that Railway

employees and other personnel who may be working or passing through the area are protected from all hazards. All excavations must be back filled as soon as possible.

1.7 Hazardous Waste, Substances and Material Reporting

1.7.1 If Contractor discovers any hazardous waste, hazardous substance, petroleum or other deleterious material, including but not limited to any non-containerized commodity or material, on or adjacent to Railway's Property, in or near any surface water, swamp, wetlands or waterways, while performing any work under this Agreement, Contractor must immediately: (a) notify the Railway's Resource Operations Center at 1(800) 832-5452, of such discovery: (b) take safeguards necessary to protect its employees, subcontractors, agents and/or third parties: and (c) exercise due care with respect to the release, including the taking of any appropriate measure to minimize the impact of such release.

1.8 Personal Injury Reporting

1.8.1 The Railway is required to report certain injuries as a part of compliance with Federal Railroad Administration (FRA) reporting requirements. Any personal injury sustained by an employee of the Contractor, subcontractor or Contractor's invitees while on the Railway's Property must be reported immediately (by phone mail if unable to contact in person) to the Railway's representative in charge of the project. The Non-Employee Personal Injury Data Collection Form contained herein is to be completed and sent by fax to the Railway at 1 (817) 352-7595 and to the Railway's Project Representative no later than the close of shift on the date of the injury.

NON-EMPLOYEE PERSONAL INJURY DATA COLLECTION

INFORMATION REQUIRED TO BE COLLECTED PURSUANT TO FEDERAL REGULATION. IT SHOULD BE USED FOR COMPLIANCE WITH FEDERAL REGULATIONS ONLY AND IS NOT INTENDED TO PRESUME ACCEPTANCE OF RESPONSIBILITY OR LIABILITY.

1. Accident City/St _____
County: _____
(if non-Railway location)
2. Date: _____ Time: _____
3. Temperature: _____
4. Weather _____
5. Social Security # _____
6. Name (last, first, mi) _____
7. Address: Street: _____ City: _____ St. _____ Zip: _____
8. Date of Birth: _____ and/or Age _____ Gender: _____
(if available)
9. (a) Injury: _____ (b) Body Part: _____
(i.e. (a) Laceration (b) Hand)
11. Description of Accident (To include location, action, result, etc.): _____

12. Treatment:
? First Aid Only
? Required Medical Treatment
? Other Medical Treatment
13. Dr. Name _____ 30. Date: _____
14. Dr. Address:
Street: _____ City: _____ St: _____ Zip: _____
15. Hospital Name: _____
16. Hospital Address:
Street: _____ City: _____ St: _____ Zip: _____
17. Diagnosis: _____

**FAX TO
RAILWAY AT (817) 352-7595
AND COPY TO
RAILWAY ROADMASTER FAX**

2. INSURANCE

The Contractor shall carry the following insurance coverage:

- A. **Commercial General Liability** insurance. This insurance shall contain broad form contractual liability with a single limit of **at least \$3,000,000** each occurrence or claim and an aggregate limit of **at least \$4,000,000**. Coverage must be purchased on a post 1998 ISO or equivalent form, including but not limited to coverage for the following:

- Bodily injury including death and personal injury.
- Property damage.
- Fire legal liability.
- Products and completed operations.

The policy shall also contain the following endorsements **which shall be indicated on the certificate of insurance**:

The employee and workers compensation related exclusions in the above policy apply only to Contractor's employees.

The exclusions for railroads (except where the Job Site is more than fifty feet (50') from any railroad including but not limited to tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings), and explosion, collapse and underground hazard shall be removed.

Waiver of subrogation.

- B. **Business Automobile Coverage** insurance. This insurance shall contain a combined single limit of **at least \$3,000,000** per occurrence or claim, including but not limited to coverage for the following:

- Bodily injury and property damage.
- Any and all motor vehicles including owned, hired and non-owned.

The policy shall also contain the following endorsements **which shall be indicated on the certificate of insurance**:

The employee and workers compensation related exclusions in the above policy apply only to Contractor's employees.

The exclusions for railroads (except where the Job Site is more than fifty feet (50') from any railroad including but not limited to tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings), and explosion, collapse and underground hazard shall be removed.

Motor Carrier Act Endorsement - Hazardous materials clean up (MCS-90) **if required by law.**

- C. **Workers Compensation and Employers Liability** insurance including but not limited to:

Contractor's statutory liability under the workers' compensation laws of the state(s) affected by this Agreement.

Employers' Liability (Part B) with limits of at least
\$500,000 each accident, \$500,000 disease policy limit
\$500,000 each employee

If Workers Compensation Insurance will not cover the liability of Contractor in states that require participation in State Workers' Compensation Fund, Contractor shall comply with the laws of such states. If Contractor is self-insured, evidence of State approval must be provided along with evidence of excess workers compensation coverage. Coverage shall include liability arising out of the U. S. Longshoremen's and Harbor Workers' Act, the Jones Act, and the Outer Continental Shelf Land Act, if applicable.

- D. **Umbrella or Excess Policies** in the event Contractor utilizes Umbrella or Excess Policies, these policies shall "follow form" and afford no less coverage than the primary policy.
- E. **Railroad Protective Liability** insurance naming only the Railway as the insured with a combined single limit of \$2,000,000 per occurrence with a \$6,000,000 aggregate. The policy shall be broad form coverage for "Physical Damage to Property" (ISO Form CG 00 35 07 98 or equivalent). A binder stating the policy is in place must be submitted to the Railroad until the original policy is forwarded to the Railroad.

Other Requirements

- F. Punitive damage exclusion must be **deleted, which deletion shall be indicated on the certificate of insurance.**
- G. Contractor agrees to waive its right of recovery, and its insurers, through policy endorsement, agree to waive their right of subrogation against Railway. Contractor further waives its right of recovery, and its insurers also waive their right of subrogation against Railway for loss of its owned or leased property or property under its care, custody and control. With the exception of the umbrella or excess policies, Contractor's insurance shall be primary with respect to any insurance carried by the Railroad, other than a Railway Protective Policy. All waivers of subrogation **shall be indicated on the certificate of insurance.**
- H. All policy(ies) required above (excluding Workers Compensation) shall provide severability of interests and shall name Railway as an additional insured. **Severability of interest and naming Railway as an additional insured shall be indicated on the certificate of insurance.**
- I. Prior to commencing the work, Contractor shall furnish to Railway original certificate(s) of insurance evidencing the required coverage, endorsements and amendments. The certificate(s) shall contain a provision that obligates the insurance company(ies) issuing such policy(ies) to notify Railway in writing of any cancellation or material alteration. **Upon request from Railway, a certified duplicate original of any required policy shall be furnished.**

- J.** Any insurance policy shall be written by a reputable insurance company acceptable to Railroad or with a current Best's Insurance Guide Rating of A- and Class VII or better, and authorized to do business in the state(s) in which the service is to be provided.
- K.** Contractor **WARRANTS** that this Agreement has been thoroughly reviewed by Contractor's insurance agent(s)/broker(s), who have been instructed by Contractor to procure the insurance coverage required by this Agreement and acknowledges, with the exception of the umbrella or excess policies, that Contractor's insurance shall be primary with respect to any insurance carried by the Railroad, other than a Railroad Protective Policy.
- L.** If Contractor fails to procure and maintain insurance as required, Railway may elect to do so at the cost of Contractor plus 25% administration fee.
- M.** The fact that insurance is obtained by Contractor or Railway on behalf of Contractor shall not be deemed to release or diminish the liability of Contractor, including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by Railway shall not be limited by the amount of the required insurance coverage.

3. ADDITIONAL RIGHT OF WAY

3.1 The Department right-of-way plans show the permanent and temporary easements acquired, or to be acquired by the Department for this project. Any additional land or easements that the Contractor may desire for the construction of the project shall be provided by the Contractor at its own expense.

BNSF INDEMNITY PROVISION

The State agrees to insert the following provision in any contract in which State's Contractor will have access to The Railway property:

To the extent allowed by law, Contractor hereby releases and shall indemnify, defend and hold harmless The Railway, its affiliated companies, partners, successors, assigns, legal representatives, officers, directors, shareholders, employees and agents for, from and against any and all claims, liabilities, fines, penalties, costs, damages, losses, liens, causes of action, suits, demands, judgments and expenses (including, without limitation, court costs and reasonable attorneys' fees) of any nature, kind or description of any person (including, without limitation, the employees of the parties hereto and the employees of The Railway) or entity directly or indirectly arising out of, resulting from, or related to (in whole or in part) (i) the use, occupancy or presence of State, its Contractors, subcontractors, employees or agents, in, on, or about the construction site; (ii) the performance or failure to perform by the Contractor, its subcontractors, employees, or agents, its work or any obligation under this Agreement; or (iii) the sole or contributing acts or omissions of Contractor, its subcontractors, employees, or agents, in, on, or about the construction site. Contractor further agrees to appear and defend in the name of The Railway, any suits or actions brought against The Railway, on account of any personal injury or death, and loss or damage to or destruction of Property, and to pay and satisfy any final judgment that may be rendered against The Railway and any such suit or action, to the extent such suits, actions, or judgments were not solely caused by, or arising out of, the acts or omissions of Railway, its employees, agents, servants, successors or assigns. THE LIABILITY ASSUMED BY CONTRACTOR WILL NOT BE AFFECTED BY THE FACT, IF IT IS A FACT, THAT THE DAMAGE, DESTRUCTION, INJURY OR DEATH WAS OCCASIONED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF THE RAILWAY, ITS AGENTS, SERVANTS, EMPLOYEES, OR OTHERWISE, EXCEPT (I) TO THE EXTENT THAT SUCH CLAIMS ARE PROXIMATELY CAUSED BY THE ACTIVE GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT OF THE RAILWAY, OR (II) FOR CLAIMS ARISING SOLELY OUT OF THE NEGLIGENT ACTIONS OF THE RAILWAY EMPLOYEES, SERVANTS OR AGENTS.

PERCENTAGE OF COST OF WORK WITHIN RAILROAD RIGHT-OF-WAY

The following information is furnished to aid in the determination of a proper premium for the Railroad Protective Liability Insurance required elsewhere in these special provisions.

RAILROAD PROTECTIVE POLICY DATA SHEET

Railroad: BNSF Railway Company

Railroad Contact: Bentley Tomlin

Title: Manager Public Projects

Address: 4545 Kansas Avenue,
Kansas City, Kansas 66106

Telephone Number: (913)551-4964

Project Number: ITS-MISC-D1(1031)

Project Location: District 1 – Districtwide Fiber

Type of Project: System Preservation

No. of trains/day: Total: 21

Freight or Coal: 21 Speed: 70 mph Passenger 0 Speed NA mph

No. of Tracks: Mainline 2+ Branchline 0

Project Over RR: No Yes Project Under Railroad: No Yes

Railroad Shoo-fly Required: No Yes

Project Parallel to RR: No Yes If Yes, Number of Miles NA

Crossings on State Highway or City Street System: No Yes

If Yes, Number of Crossings 3 @ DOT #077803W MP 3.00,
DOT#083045K MP 61.700, DOT #074936D MP 50.150

Pavement or Overlay up to Crossing on County or City Road: No Yes

If Yes, Number of Crossings NA

Work to be done by Railroad Flagging

It shall be the contractor's responsibility to contact the railroad for additional information needed to purchase the Railroad Protective Policy.

The percentage of work within railroad right of way that is within 50 feet (15.25 meters) of any railroad track shall be covered by railroad protective insurance. The railroad's ownership of right of way that extends beyond 50 feet (15.25 meters) from the closest track shall be covered under regular Contractor's Public liability and Property Damage Insurance in the amounts specified in this contract.

<u>Group</u>	Approximate Percent of Work <u>Within</u> 50 feet (15.25 meters) <u>of Nearest Track</u>	Approximate Percent of Work on RR/ROW <u>Not Within</u> 50 feet (15.25 meters) <u>of Nearest Track</u>	<u>Description of Work</u>
<u>All</u>	<u>3.0</u> %	<u>0.1</u> %	<u>--</u>

UNION PACIFIC RAILROAD COMPANY
UNION PACIFIC RAILROAD SPECIAL PROVISION
FOR HIGHWAY PROJECTS

For purposes of these Special Provisions, Union Pacific Railroad Company is referred to as "UPRR" and the term "Contractor" shall mean the Contractor or Contractors hired by the State to perform any Project work on any portion of UPRR's property and shall also include the Contractor's subcontractors and the Contractor's and subcontractor's respective employees, officers and agents.

UPRR shall provide an inspector or inspectors for any direct labor work undertaken by UPRR, the State or Contractor on or in connection with the Project as a Project expense.

I. RAILROAD SAFETY TRAINING

- A. UPRR requires that anyone working within 25 feet of any track be trained in Federal Railroad Administration (FRA) Roadway Worker Protection. This training is available from several sources, including other railroads, railroad industry training professionals and computer based training. UPRR requires such training per 49 CFR 214.343 but does not endorse any specific Roadway Worker Protection Training.
- B. UPRR requires that anyone working on UPRR property, although greater than 25 feet from the track, be trained on the minimum UPRR safety requirements. This training is available from several sources, including a video and pamphlet titled "Minimum Safety Requirements for Engineering Department Contractors" and computer based training. This training is in addition to the regulatory training described in Paragraph A above.
- C. The Contractor, or its agents or representatives, will not be allowed on UPRR railroad right-of-way until it has successfully completed the mandatory safety training as outlined above. The Contractor must furnish employees with documentation that they have completed the required regulatory and UPRR safety training. This can be accomplished by issuing cards showing the employee's training, issuing lists of employees who have completed specific training or by having available, at the job site, other forms of documentation.
- D. The Contractor will be responsible for all costs associated with attending each training class.

II. FLAGGING PROTECTION

- A. The Contractor shall notify UPRR's Manager of Track Maintenance, Ron Read, (402) 305-9650, at least fifteen (15) calendar days in advance of the Contractor's commencement of work within railroad right-of-way. The Contractor shall give notice thirty (30) calendar days in advance of proposed performance of any work in which any person or equipment will be within 25 feet of any track, or will be near enough to any track that any equipment extension (such as, but not limited to, a crane boom) can reach to within 25 feet of any track. This notice shall

include the Project Number, the Contractor's name, date of flagging, location of flagging services to be provided, and an estimate of the expected duration of flagging. No work of any kind shall be performed, and no person, equipment, machinery, tools, materials or vehicles shall be located, operated, placed or stored within 25 feet of any railroad track at any time, for any reason, unless and until a UPRR flagger is provided. Upon receipt of such 30 calendar days' notice, the Manager of Track Maintenance will determine and inform the Contractor whether a flagger need be present and whether the Contractor need implement any special protective or safety measures. If flagging or other special protective or safety measures are performed by UPRR, such services will be provided at the Contractor's expense with the understanding that if UPRR provides any flagging or other services, the Contractor shall not be relieved of any of its responsibilities or liabilities set forth herein.

- B. Prospective bidders shall familiarize themselves fully with all flagging special provisions of UPRR.

III. REIMBURSEMENT TO UPRR FOR FLAGGING COSTS

- A. The Contractor shall promptly pay UPRR all charges connected with such flagging services within thirty (30) calendar days after the Contractor's receipt of the monthly billing or final billing from UPRR. To enable orderly flagger reassignment to other projects the Contractor shall be required to notify the UPRR Manager of Track Maintenance described in Paragraph A above at least five (5) working days prior to the termination of flagging needs or five (5) working days prior to completion of the Contractor's Project work, whichever is sooner. The Contractor may request a final billing at this time. The Contractor shall inform the following UPRR Manager of Industry & Public Projects person in writing, Kyle D. Nodgaard, (402) 544-2029, when the Project is complete. The State shall not make final payment to the Contractor until UPRR has provided written notification to the State that the Contractor has paid UPRR in full for all flagging or other protective services expenses that UPRR has billed to the Contractor in connection with the Project. The Contractor is responsible for all flagger requests and payments on the Project. The Contractor's work may be suspended upon notice of non-compliance from UPRR until required flaggers or other protective measures are in place. UPRR will notify the Contractor when non-compliance is reported by UPRR train crews or other UPRR employees.
- B. The rate of pay per hour for each worker will be the UPRR prevailing hourly rate in effect for an eight-hour day for the class of worker used during regularly assigned hours and overtime in accordance with Labor Agreements and Schedules in effect at the time the work is performed, a full eight-hour day or greater during which any flagger is furnished shall be charged in full to the State's Prime Contractor. The estimated cost for one flagger is \$1,267/12 hr./day per day. A full eight-hour day or greater will not be split between any Contractor. In addition to the cost of such labor, a composite charge for vacation, holiday, health and welfare, supplemental sickness, Railroad Retirement and UC, supplemental pension, Employee, Liability & Property Damage, and administration will be included, computed on actual payroll. The composite charge will be the prevailing composite charge in effect on the day that flagging was performed. One and one-half times the current hourly rate is paid for

overtime, Saturdays and Sundays; two and one-half times current hourly rate for holidays. Wage rates are subject to change, at any time, by law or by agreement between UPRR and its employees, and may be retroactive as a result of negotiations or a ruling of an authorized Governmental Agency. Additional charges on labor are also subject to change. If the wage rate or additional charges are changed, the Contractor shall pay on the basis of the new rates and charges. The Contractor shall also be required to pay UPRR for all other expenses incurred by UPRR including, but not limited to, travel time, travel expense, set up and take down activities associated with any Railroad flagging or protective services provided by the Railroad.

- C. Reimbursement to UPRR will be required covering the full eight hour day during which any flagger is furnished, unless they can be assigned to other UPRR work during a portion of such day, in which event reimbursement will not be required for the portion of the day during which the flagger is engaged in other UPRR work. Reimbursement will also be required for any day not actually worked by said flagger following its assignment to work on the Project for which UPRR is required to pay the flagger and which could not reasonably be avoided by UPRR by assignment of such flagger to other work, even though the Contractor may not be working during such time.

IV. PROTECTION OF UTILITIES

- A. Before the Contractor begins its operations on UPRR right-of-way it shall confer with the designated representatives of the State and UPRR with regard to any underground or overhead utilities which may be on or in close proximity to the site of the work. The Contractor shall take such measures as the State or UPRR may direct in protecting those utilities properly throughout the period its construction operations are in progress. The party or parties owning or operating overhead or underground utilities shall perform the actual work of moving, repairing, reconditioning or revising those utilities, except as otherwise provided in the contract. Whenever and wherever such operations are undertaken by owners of utilities, the Contractor shall cooperate to the extent that ample protection of its work will be provided so that the entire work that is contemplated in the contract may be expedited to the best interests of all concerned, as judged by the Engineer for the State.
- B. The Contractor shall be responsible for any and all damages to utilities that are permitted to remain in place, or to reconstructed utilities in the vicinity, which may be due either directly or indirectly to its operations, and shall repair promptly any such damaged property to the satisfaction of the State's Engineer and the owner of the property, or shall make payment to such owners for repairs as may become necessary on account of damages that are due to its operations.
- C. Direct payment for this work will not be made but it shall be considered that the protection of the utilities is subsidiary to any or all of the items for which the contract provides that direct payment shall be made.
- D. The Contractor shall telephone UPRR during normal business hours (7:00 a.m. to 9:00 p.m., Central Time, Monday through Friday, except holidays) at 1-800-336-9193 (also a 24-hour, 7-day number for emergency calls) to determine if

fiber optic cable is buried anywhere on UPRR's property to be used by the Contractor. If there is fiber optic cable, the Contractor shall telephone the telecommunications company(ies) involved, make arrangements for a cable locator and, if applicable, for relocation or other protection of the fiber optic cable. The Contractor shall not commence any work until all such protection or relocation (if applicable) has been accomplished.

V. WRITTEN NOTICE TO UPRR

The Contractor shall give written notice to UPRR's Manager Industry and Public Projects, Kyle D. Nodgaard, (402) 544-2029; to his or her authorized representative, at least fifteen (15) days in advance of the date on which it expects to begin any work under or adjacent to any of the tracks of UPRR or it expects to begin any construction work on the right-of-way of UPRR. The Contractor shall also give written notice to such UPRR Manager of Industry and Public Projects, no later than fifteen (15) days after completion of all work on UPRR's right-of-way.

VI. BRIDGE REMOVAL PLANS

- A. If any existing bridge or portion thereof, needs to be demolished and removed, the Contractor, at its expense, shall submit to UPRR by certified mail three (3) complete sets of the Bridge Removal Plan. The Bridge Removal Plan shall include details, procedures and the sequence of staged removal of the bridge, including all steps necessary to remove the bridge in a safe and controlled manner.
- B. The Contractor shall submit to UPRR: three (3) complete sets of the Contractor's Bridge Removal Plan for review and comments. The Bridge Removal Plan shall be sealed by a Civil or Structural Engineer registered in the State of Nebraska. A minimum of thirty (30) days shall be allowed for UPRR's review after the complete submittal is received and approved by UPRR. The Contractor shall not perform any bridge removal work until it has received written approval from UPRR of the Contractor's final Bridge Removal Plan. The Bridge Removal Plan and all demolition work shall conform to the requirements of the "Guidelines for Preparation of a Bridge Demolition and Removal Plan for Structures over Railroad" (Attachment XX) and "Guidelines for Temporary Shoring" (Attachment XX).

VII. PROTECTION OF PROPERTY

- A. The Contractor shall use the utmost care to guard against accidents or cause the least possible interference with the operation of trains of UPRR and the telephone, telegraph or signal lines of UPRR or of any tenant of UPRR's right-of-way. The Contractor shall use the utmost care in guarding against injury to underground and overhead public utilities and services at or near the site of the work.
- B. All work to be done under this contract shall be handled by the Contractor so as to not interfere with the use of tracks, wires, signals and property of UPRR or its tenants, and the underground or overhead services of public and private utilities, and the Contractor shall be responsible for any damages which may be

sustained by UPRR, its tenants, employees, passengers or freight in its care, or by the owners of any public or private overhead or underground services caused by such interference which could have been avoided by the proper handling of said work. The Contractor shall discontinue immediately, upon request of the Engineer or UPRR representative, any practices or actions which, in the opinion of the Engineer or UPRR representative, are unsafe or cause damage to underground or overhead services of public or private utilities, or which might result in delays to trains, engines or cars, or damage to tracks, roadbed, telephone, telegraph or signal wires.

- C. The Contractor shall take all precautions for the purposes of protecting the embankment of all railroad tracks as may be determined necessary by the authorized representative of UPRR. The Contractor shall affix the seal of a registered professional Engineer licensed to practice in the State of Nebraska on all plans and calculations pertaining to details for sheeting or otherwise protecting excavations next to or adjacent to railroad tracks if necessary and noted on the State's plans. The Contractor also shall take all precautions for the protection of underground and overhead services either public or private, as may be determined by the Engineer.
- D. A minimum temporary horizontal construction clearance of 12 feet measured perpendicular from the centerline of the nearest track to all physical obstructions including, but not limited to, formwork, stockpiled materials, parked equipment, bracing or other construction supports shall be provided. Temporary horizontal construction clearance shall provide sufficient space for drainage ditches parallel to the standard roadbed section or provide an alternative system that maintains positive drainage. A minimum temporary vertical construction clearance of 21 feet measured above top of high rail for all tracks shall be provided.
- E. Any changes necessary in the clearance set forth above shall be made only by special arrangements with the UPRR Manager Industry and Public Projects that is named in Section V above.

VIII. UPRR CROSSINGS

- A. The Contractor shall use only public roadways, or approved temporary crossings that are specifically shown on the plans, to cross railroad tracks. Every attempt should be made to use public roadways. If the Contractor should require a temporary crossing for construction purposes at a location other than an existing public crossing, provisions for such crossing shall be negotiated with UPRR by the Contractor, and all costs for such crossing shall be borne by the Contractor. It is not guaranteed that UPRR will grant a temporary crossing. The requirements of these Special Provisions shall apply, and all costs for such crossing, shall be borne by the Contractor.
- B. Prospective bidders should familiarize themselves with UPRR temporary crossing and insurance requirements before bidding on the work.

IX. INSPECTION

Subsection 105.09 in the Standard Specifications is amended to provide also that the work shall be subject to the inspection of the properly authorized representatives of UPRR and that such inspection shall in no manner make UPRR a party to this contract and will in no manner interfere with the rights of either party hereunder.

X. INDEMNITY

- A. The State agrees to insert the following provision in any contract in which State's Contractor will have access to UPRR's property:

To the extent allowed by law, Contractor hereby releases and shall indemnify, defend and hold harmless UPRR, its affiliated companies, partners, successors, assigns, legal representatives, officers, directors, shareholders, employees and agents for, from and against any and all claims, liabilities, fines, penalties, damages, losses, liens, causes of action, actions, suits, demands, costs and expenses (including, without limitation, court costs and reasonable attorneys' fees) and judgments (collectively, "Claims"), of any nature, kind or description of any person (including, without limitation, the employees of the parties hereto and the employees of UPRR) or entity directly or indirectly arising out of, resulting from, or related to (in whole or in part) (i) the use, occupancy or presence of State, Contractor, or its subcontractors, employees or agents, in, on, or about UPRR's property pursuant to this Agreement; (ii) the performance or failure to perform by Contractor, its subcontractors, employees, or agents, its work or any obligation under this Agreement; or (iii) the sole or contributing acts or omissions of Contractor, its subcontractors, employees, or agents, in, on, or about UPRR's property pursuant to this Agreement. Contractor's duty to defend under the above indemnity provision includes, without limitation, the obligation of Contractor to appear and defend in the name of UPRR, any suits or actions brought against UPRR with respect to any such Claims, and to pay and satisfy any final judgment that may be rendered against UPRR in any such suit or action. THE LIABILITY AND DUTY TO DEFEND ASSUMED BY CONTRACTOR UNDER THE ABOVE INDEMNITY PROVISION WILL NOT BE AFFECTED BY THE FACT, IF IT IS A FACT, THAT THE CLAIM WAS OCCASIONED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF UPRR, ITS AGENTS, SERVANTS, EMPLOYEES, OR OTHERWISE, EXCEPT (I) TO THE EXTENT THAT SUCH CLAIM WAS PROXIMATELY CAUSED BY THE ACTIVE GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT OF UPRR OR ITS EMPLOYEES, SERVANTS OR AGENTS, OR (II) FOR CLAIMS ARISING SOLELY OUT OF THE NEGLIGENT ACTIONS OF UPRR OR ITS EMPLOYEES, SERVANTS OR AGENTS.

- B. If Contractor fails to indemnify, defend and hold UPRR harmless as provided in the above indemnity provision, then to the extent allowed by law, the State shall indemnify, defend and hold UPRR harmless under the above indemnity provision as if State were Contractor.

XI. INSURANCE

For purposes of this Special Provision, Union Pacific Railroad Company is referred to as “UPRR” and the term “Contractor” shall mean the Contractor or Contractors hired by the State to perform any Project work on any portion of UPRR’s property and shall also include all the Contractor’s subcontractors and the Contractor’s and subcontractor’s respective employees, officers and agents.

The Contractor shall carry the following insurance coverage:

- A. Commercial General Liability insurance. Commercial general liability (CGL) with a limit of not less than \$3,000,000 each occurrence and an aggregate limit of not less than \$4,000,000. CGL insurance must be written on ISO occurrence form CG 00 01 12 04 (or a substitute form providing equivalent coverage).

The policy must also contain the following endorsement, (WHICH MUST BE STATED ON THE CERTIFICATE OF INSURANCE):

- “Contractual Liability Railroads” ISO form CG 24 17 10 01 (or a substitute form providing equivalent coverage) showing “Union Pacific Railroad Company Property” as the Designated Job Site.
- “Designated Construction Project(s) General Aggregate Limit” ISO Form CG 25 03 03 97 (or a substitute form providing equivalent coverage) showing the Project location as described in the Agreement on the Form Schedule.

- B. Business Automobile Coverage insurance. Business auto coverage written on ISO form CA 00 01 (or a substitute form providing equivalent liability coverage) with a limit not less than \$3,000,000 for each accident. Such insurance shall cover liability arising out of any auto (including owned, hired, and non-owned autos).

The policy must contain the following endorsements, (WHICH MUST BE STATED ON THE CERTIFICATE OF INSURANCE):

- “Coverage For Certain Operations In Connection With Railroads” ISO form CA 20 70 10 01 (or a substitute form providing equivalent coverage) showing “Union Pacific Property” as the Designated Job Site.
- Motor Carrier Act Endorsement - Hazardous materials clean up (MCS-90) if required by law.

- C. Workers Compensation and Employers Liability insurance including but not limited to:

Contractor's statutory liability under the workers' compensation laws of the State of Nebraska
Employers' Liability (Part B) with limits of at least
\$500,000 each accident, \$500,000 disease policy limit
\$500,000 each employee

If rules and regulations issued by the State of Nebraska require the Contractor to participate in the State’s Worker’s Compensation fund and if Workers Compensation insurance will not cover the liability of Contractor, Contractor shall

comply with such rules and regulations. If Contractor is self-insured, evidence of State approval must be provided along with evidence of excess Workers Compensation coverage. Coverage shall include liability arising out of the U.S. Longshoremen's and Harbor Workers' Act, the Jones Act, and the Outer Continental Shelf Land Act, if applicable.

- D. Umbrella or Excess Policies. In the event Contractor utilizes umbrella or excess policies, these policies shall "follow form" and afford no less coverage than the primary policy.
- E. Railroad Protective Liability insurance. Contractor must maintain "Railroad Protective Liability" insurance written on ISO occurrence form CG 00 35 12 04 (or a substitute form providing equivalent coverage) on behalf of Railroad as named insured, with a limit of not less than \$2,000,000 per occurrence and an aggregate of \$6,000,000. A BINDER OF INSURANCE STATING THE POLICY IS IN PLACE MUST BE SUBMITTED TO THE RAILROAD BEFORE WORK MAY COMMENCE AND UNTIL THE ORIGINAL POLICY IS FORWARDED TO UNION PACIFIC RAILROAD.

Other Requirements

- F. Punitive damages exclusion, if any, must be deleted (and the deletion indicated on the certificate of insurance), unless (a) insurance coverage may not lawfully be obtained for any punitive damages that may arise under this Agreement, or (b) all punitive damages are prohibited by all states in which this Agreement will be performed.
- G. Contractor waives all rights against Railroad and its agents, officers, directors and employees for recovery of damages to the extent these damages are covered by the workers compensation and employer's liability or commercial umbrella or excess liability insurance obtained by Contractor required by this Agreement (WHICH MUST BE STATED ON THE CERTIFICATE OF INSURANCE).
- H. All policy(ies) required above (except worker's compensation and employers liability) must include Railroad as "Additional Insured" using ISO Additional Insured Endorsements CG 20 26, and CA 20 48 (or substitute forms providing equivalent coverage). The coverage provided to Railroad as additional insured shall, to the extent provided under ISO Additional Insured Endorsement CG 20 26, and CA 20 48 provide coverage for Railroad's negligence whether sole or partial, active or passive, and shall not be limited by Contractor's liability under the indemnity provisions of this Agreement.
- I. Any insurance policy shall be written by a reputable insurance company acceptable to UPRR or with a current Best's Insurance Guide Rating of A- and Class VII or better, and authorized to do business in the State of Nebraska.
- J. The fact that insurance is obtained by Contractor or UPRR on behalf of Contractor shall not be deemed to release or diminish the liability of Contractor, including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by UPRR shall not be limited by the amount

of the required insurance coverage.

XII. ADDITIONAL RIGHT-OF-WAY

The State right-of-way plans show the permanent and temporary easements acquired or to be acquired by the State for this Project. Any additional land or easements that the Contractor may desire for the construction of the Project, shall be provided by the Contractor at its own expense.

XIII. RESTORATION OF UPRR PROPERTY

In the event the Contractor shall in any manner move or disturb other property of UPRR, in connection with the use of the said property, then, and in that event, the Contractor shall, as soon as possible and at its sole expense, restore such property to the same condition as it was in before such property was moved or disturbed.

XIV. FINAL CLEAN UP

In addition to Subsection 104.08 in the Standard Specifications, the Contractor, upon the completion of the work contemplated in this contract, shall remove all machinery, equipment, surplus materials, falsework, rubbish, ditches, and temporary building, furnished or erected by him from within the limits of the right-of-way of UPRR and shall leave the said right-of-way in a condition acceptable to UPRR's Manager of Track Maintenance, or his authorized representative.

PERCENTAGE OF COST OF WORK WITHIN RAILROAD RIGHT-OF-WAY

The following information is furnished to aid in the determination of a proper premium for the Railroad Protective Liability Insurance required elsewhere in these special provisions.

RAILROAD PROTECTIVE POLICY DATA SHEET

Railroad: Union Pacific Railroad Company

Railroad Contact: Kyle D. Nodgaard

Title: Manager Industry & Public Projects

Address: Union Pacific Railroad Company,

1400 Douglas Street, Stop 0910

Omaha, NE 68179

Telephone Number: (402) 544-2029

Project Number: ITS-MISC-D1(1031)

Project Location: District 1 – Districtwide Fiber

Type of Project: System Preservation

No. of trains/day: Total: 2

Freight or Coal: 2 Speed: 10 mph Passenger 0 Speed NA mph

No. of Tracks: Mainline 1 Branchline 0

Project Over RR: No Yes Project Under Railroad: No Yes

Railroad Shoo-fly Required: No Yes

Project Parallel to RR: No Yes If Yes, Number of Miles NA

Crossings on State Highway or City Street System: No Yes

If Yes, Number of Crossings 1 @ DOT #815571X RRMP 54.91

Pavement or Overlay up to Crossing on County or City Road: No Yes

If Yes, Number of Crossings NA

Work to be done by Railroad Flagging

It shall be the contractor's responsibility to contact the railroad for additional information needed to purchase the Railroad Protective Policy.

The percentage of work within railroad right of way that is within 50 feet (15.25 meters) of any railroad track shall be covered by railroad protective insurance. The railroad's ownership of right of way that extends beyond 50 feet (15.25 meters) from the closest track shall be covered under regular Contractor's Public liability and Property Damage Insurance in the amounts specified in this contract.

<u>Group</u>	<u>Approximate Percent of Work Within 50 feet (15.25 meters) of Nearest Track</u>	<u>Approximate Percent of Work on RR/ROW Not Within 50 feet (15.25 meters) of Nearest Track</u>	<u>Description of Work</u>
<u>All</u>	<u>0.1 %</u>	<u>-- %</u>	<u>--</u>

**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 m²) 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 1st or after September 1st
 - ii. Tree removal prior to April 1st or after September 1st
 - iii. Clearing empty nests on structures prior to April 1st
 - 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.
2.
 - 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 (7th) calendar day after the Initial Notice Date or within an approved extension, a Shut-Down Notice will be issued on the eighth (8th) 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 (8th) 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

- | | | |
|----|--|-----------------|
| 1. | Pay Item | Pay Unit |
| | 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

- | | | |
|----|---|-----------------|
| 1. | Pay Item | Pay Unit |
| | 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	Upper 3 feet	Opt. -3	Opt. +2
	Silt- Clay	Greater than 3 feet	Opt. -3	Opt. +2
	Granular	All Depths	**	**
Soil materials receiving flexible pavement	Silt – Clay	Upper 3 feet	Opt. -2	Opt. +1
	Silt- Clay	Greater than 3 feet	Opt. -3	Opt. +2
	Granular	All Depths	**	**
Soil materials receiving gravel surfacing	All materials	All Depths	**	**
Subgrade prep. Shoulder subgrade prep (concrete pavement)	Silt – Clay	The upper 6 inches of subgrade soil	Opt. -3	Opt +2
	Granular		**	**
Subgrade prep. Shoulder subgrade prep (flexible pavement)	Silt – Clay	The upper 6 inches of subgrade soil	Opt. -2	Opt +1
	Granular		**	**
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:

DTV \leq 1.10 x average deflection value determined from Option 1, Part B, of this provision

DTV \leq 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.

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).

CONDUIT

GENERAL

- A. This section applies to items specifically listed below in addition to requirements set forth in NDOR Standard Specifications for Highway Construction 2007 Edition.

405.03 CONSTRUCTION METHODS

Subsection 405.03 in the Standard Specifications is amended to include the following:

18.
 - a. Open trench installation is only permitted within 25' of any pull box, pole, structure, tower, or other similar improvement unless approved by the Engineer.
 - b. Tunneling under pavement or water jetting is not permitted.
 - c. Seal all conduit openings using an approved sealing compound. This applies to the final product and openings left temporarily during construction.
 - d. Depth of all conduit shall be a minimum of 48" unless stated otherwise.
 - e. At locations indicated in the plans, multiple ducts shall be installed in continuity in the same bore/plow/trench.
 - f. Maintain a minimum of 2' separation when underground conduits parallel an existing facility.
 - g. All conduit shall be HDPE unless stated otherwise in the plans.
19. HDPE Conduit - The minimum bending radius of HDPE conduit shall be the larger of 20 times the outside diameter or the HDPE manufacturer's recommendations for minimum bending radius.

20. Fiberglass Conduit

- a. The conduit hanger support system shall have a maximum spacing of 12 feet between hangers or as required to avoid mid-span deflection exceeding 5/8 inches.
- b. Intermediate anchor hangers shall be placed at the midpoint between expansion joints and installed per conduit manufacturer's recommendations.
- c. The maximum distance from abutment to the first expansion joint shall not exceed 100 feet and then shall be spaced equally at intervals no greater than 200 feet.
- d. All conduit expansion fittings shall bear the UL label.
- e. Epoxy adhesive shall be applied to the spigot end of the conduit to create a tight lock joint designed to provide water tightness and increase pull out strength.

21. Innerduct

- a. Ducts (1.25") shall be installed inside the 4" Fiberglass conduit as indicated on the plans.
- b. Contractor shall provide and install two Junction Boxes to be placed at the ends of the Innerduct / Fiberglass conduit. Junction boxes shall be of the size and type indicated on the plans and shall adhere to the requirements set forth in the Building Entrance specification.

22. Splicing

- a. Mechanically joined conduit splices shall use compression couplings designed for underground placement and blown-in fiber installation.
- b. Electrofusion joining of HDPE conduit will be allowed provided that the method used does not create a ridge on the inside of the conduit that may impact future fiber installation.
- c. Butt fusion welding and solvent welding of conduits will not be allowed.
- d. All splices shall be watertight to 200 psi.

23. Plowing

- a. Use equipment and construction methods subject to the approval of the Engineer that cause minimal displacement of the soil.
- b. The equipment shall be capable of extending the plow in order to maintain the required minimum depths under all terrain conditions.

- c. The reel carrier shall be of adequate size and be configured so that the reel sizes being used can be safely handled.
- d. Avoid damaging any paved surfaces, ditches, or other similar surface features. Immediately repair any damage to such features to the satisfaction of the Engineer.
- e. Perform plowing in accordance with standard industry practices using a prime mover with hydrostatic type steering and a vibratory plow. The design of the plowshare shall be such that the buried conduit passing through the plow shall not bind and shall not be bent in a radius less than 20 times the outside diameter of the conduit and maintains the structural integrity of the conduit. The feed chute shall have a removable gate for the purpose of inspection and to allow the conduit to be removed from or inserted into the feed chute at any intermediate point between splice locations. The conduit path inside the feed chute shall have low friction surfaces and be free of burrs and sharp edges to prevent damage to the conduit as it passes through. Smooth any welds before use. Internal guide rollers shall not be used. Exercise care during the plowing operation to avoid conduit damage. Feed the conduit into the ground through the plow loose and at no tension.
- f. Excavate as needed start and finish pits and pits at points of intersection in advance of plowing. Expose ends of casings and crossings of foreign utilities before the start of plowing operations for a conduit segment. Exercise care in the use of trenching and excavating tools and equipment to avoid damaging installed and intersecting conduits or other facilities.
- g. Restore plow furrowed areas to conform to the surrounding terrain using a rubber tired tractor or heavy truck or a vibratory roller having a weight of three tons and a drum width between four (4) and six (6) feet or by other suitable means approved by NDOR.

24. Boring

- a. Use equipment and methods that cause minimal displacement of the soil.
- b. Bore all crossings beneath roadways, streets, paved surfaces, railroads, drainage structures, drainage areas, or flow lines in accordance with requirements and regulations of the authority having jurisdiction.
- c. Limit bore pit sizes to the outside diameter of the conduit being places.

405.04 METHOD OF MEASUREMENT

Subsection 405.04 is amended to include the following:

In the absence of a count shown, contractor shall install 1 conduit of the size and method indicated.

Conduits with multiple counts shall be measured together as one linear foot quantity.

405.05 BASIS OF PAYMENT

Subsection 405.05 is amended to include the following:

1. Pay Item	Pay Unit
___ Conduit, Innerduct	Linear Foot (LF)
___ Conduit, Bored	Linear Foot (LF)
___ Conduit, Plowed	Linear Foot (LF)

1073.02 ROADWAY LIGHTING, SIGN LIGHTING, AND TRAFFIC SIGNALS

Paragraph 3.a. of Subsection 1073.02 is amended to include the following:

3. Electrical Conduit and Duct Systems:

a.

(4) LFMC

- i. The metal core is made with a continuously interlocked hot-dipped galvanized steel strip with a heavy zinc coating.
- ii. Trade sizes 3/8" to 1-1/4" contain an integral copper bonding conductor located within the interlocking strip.
- iii. A thermoplastic jacket is extruded over the metal core which provides protection from sunlight, weather, temperature, liquids, oil, and certain chemicals.
- iv. UL listed per UL Standard for Safety 360.
- v. Use manufacturer approved LFMC fittings.

Paragraph 3.b. of Subsection 1073.02 is amended to include the following:

b.

(3)

- i. HDPE shall be orange in color.
- ii. HDPE shall be SDR 13.5 minimum.
- iii. HDPE shall have sequential foot markings printed on the outside wall.
- iv. HDPE shall be UL 651 listed.

(4) Fiberglass

- i. All fiberglass conduit and fittings shall have a temperature range of -60°F to +250°F.
- ii. The conduit shall be designed for above ground installation and ORANGE in color.
- iii. The wall thickness should be extra heavy wall to provide the highest level of physical protection.
- iv. The conduit hanger support system shall consist of clevis type hangers designed for use with four 4-inch conduit, with ½" hanger rods rated for a maximum load of 600 pounds.
- v. Anchorage into the existing bridge deck concrete shall be achieved through use of a stainless steel expansion anchor.
- vi. Anchorage tensile capacity shall be twice that of the clevis rated capacity.
- vii. Expansion joints shall be installed in order to meet the requirement of NEC 2011 Article 355.44 Expansion Fittings.
- viii. Expansion joints shall be designed for four (4) inch conduit and consist of a single expansion joint socket.
- ix. The jointing between individual segments of conduit shall be completed using an interference joint system consisting of an integral bell and spigot. The spigot end shall have a buttress type, male thread for easy installation. The belled end shall contain the mating female threads.
- x. Epoxy adhesive shall be a two part adhesive, epoxy resin system.
- xi. The anchoring system assembly will consist of a trapeze hanging system using threaded rods that are attached to the bridge.
- xii. The horizontal components are fiberglass flatbars, 2" wide x ½" thick, and the threaded rods shall be sleeved over using 1" fiberglass pultruded pipe, in order not to abrade the conduit.
- xiii. Fiberglass conduit shall be manufactured by Champion Fiberglass, United Fiberglass, or approved equal.

FIBER OPTIC CABLE, ACCESSORIES, AND HARDWARE

GENERAL

- A. This section consists of the material requirements, construction details, testing, methods of measurement and basis of payment necessary to complete construction Fiber Optic Cable, Accessories and Hardware, as described in the Contract Documents.
- B. Contractor shall supply new materials only.
- C. The Engineer shall authorize any changes in location in writing before performing the installation. No additional compensation shall be provided for additional work associated with or resulting from unauthorized changes to the Contract Documents.
- D. The single-mode fiber optic cable, accessories, and hardware shall meet the latest applicable standard specifications by American National Standards Institute (ANSI), Electronic Industries Association (EIA), Telecommunications Industries Association (TIA) and Underwriters Laboratory (UL).
- E. Components, accessories, and hardware must be compatible.
- F. All Manufactures manuals, instructions and warranties shall be transferred to NDOR. Warranty periods shall not commence prior to final acceptance of the work.
- G. Required Submittals: In addition to submissions required under each pay item, Contractor shall provide shop drawings or catalog cuts for each material prescribed including manufacturer name and model number.
- H. All material shall be stored in an environment between -40° C to +85° C. Material shall operate in an environment of -40° C to +75° C and relative humidity of 0% to 95% (non-condensing) without the assistance of fan-forced cooling unless specified otherwise.
- I. All materials shall be kept in manufacturers packaging until installation. Contractor shall prevent dust, water and other pollutants from contaminating any fiber optic connection point at all times.

1.0 SM FIBER OPTIC CABLE

1.1 DESCRIPTION

- A. Fiber Optic Cable shall be Single-mode Fiber Optic Outside Plant (OSP) Cable – Dielectric Loose Tube.
- B. All Fiber Optic Cable used on this project shall be from one manufacturer.

1.2 MATERIAL

- A. Fiber optic, single-mode, graded loose tube dielectric cable constructed with industry standard 2.5 mm buffer tubes stranded around a central strength member.
- B. The buffer tubes shall be compatible with standard hardware and shall have 12 fibers per tube, the fibers shall not adhere to the inside of the buffer tube, each buffer tube and fiber shall be distinguishable by means of color coding in accordance with TIA/EIA-598-B, "Optical Fiber Cable Color Coding" and be colored with ultraviolet (UV) curable ink.
- C. The central member shall consist of a dielectric, glass reinforced plastic rod. Each buffer shall be water blocked material embedded in the inside wall of the buffer tube for water-blocking protection. The water blocking material shall be non-nutritive to fungus, electrically non-conductive, and homogeneous.

This material will preclude the need for other water-blocking materials such as gels, yarns, foams, or tapes; the buffer-tube shall be gel-free.

- D. Water swellable yarn(s) shall be applied longitudinally along the central member during stranding, water blocking elements shall be applied uniformly throughout the buffer tube.
- E. The cables shall be designed for point-to-point applications as well as mid-span access, and shall be stranded around the dielectric central member using the reverse oscillation, or "S-Z", stranding process.
- F. Single-mode, dispersion-unshifted fiber meeting ITUT G.652D requirements.
- G. The fiber shall be fully capable of handling existing and legacy single-mode applications which traditionally operate in the 1310 nm and 1550 nm regions and shall also be designed to operate the full-spectrum from 1260 nm to 1625 nm for optical transmission.
- H. The fiber shall be designed to provide optimum performance from 1260 nm to 1625 nm intended for 16-channel Course Wavelength Division Multiplexing applications.
- I. Cables shall be sheathed with medium density polyethylene (MDPE). The minimum nominal jacket thickness shall be 1.3 mm. Jacketing material shall be applied directly over cable core and water swellable tape. The polyethylene shall contain carbon black to provide ultraviolet light protection and shall not promote the growth of fungus.
- J. The MDPE jacket material shall be as defined by ASTM D1248, Type II, Class C, Category 4 and Grades J4, E7 and E8.
- K. The jacket or sheath shall be free of holes, splits, and blisters.
- L. The cable jacket shall contain no metal elements and shall be of a consistent thickness.
- M. Cable jackets shall be marked with the manufacturer's name, month and year of manufacturer, sequential meter or foot markings, a telecommunication handset symbol

as required by Section 350G of the National Electrical Safety Code (NESC), fiber count, and fiber type. The actual length of the cable shall be within -0/+1% of the length markings. The print color shall be white, with the exception that cable jackets containing one or more coextruded white stripes, which shall be printed in light blue. The height of the marking shall be approximately 2.5 mm.

- N. The maximum pulling tension shall be 2700 N (600 lbf) during installation (short term) and 890 N (200 lbf) long term installed.
- O. The minimum bend radius shall be 15 times the cable outside diameter while under tension and 10 times the cable outside diameter installed.
- P. The shipping, storage, and operating temperature range shall be -40°C to +70°C. The installation temperature range shall be -30°C to +70°C.

1.3 CONSTRUCTION

A. General

1. Remove fiber optic cable from the reel in a manner acceptable to the Manufacturer and Engineer.
2. Visually inspect all Fiber Optic Cable prior to installation. Report any defects to Engineer.
3. Do not twist or bend the fiber optic cable in excess of the limits recommended by the manufacturer.
4. As the cable is fed into the duct and conduit system, the Contractor shall use a manufacturer approved water-based cable lubricant for all fiber optic cable installations.
5. Protect at all times all proposed cables, cable ends, and any exposed portions of fiber optic cable from damage including water intrusion.
6. Any existing pull tape or tracer wire that is used as a pull rope for fiber optic cable installation shall be replaced in kind. The cost of any tracer wire or pull tape replacement shall be subsidiary to the fiber optic cable installation.

B. Cable Installation

1. All fiber optic cable shall be installed in ducts or conduits according to contract documents.
2. A suitable cable feeding method shall be used between the cable reel and the face of the duct and conduit to protect the cable and guide it into the duct.
3. Dynamometers and breakaway pulling swings shall be used to ensure that the pulling line tension does not exceed 2700 N (600 lbf).
4. The mechanical stress placed on a cable during installation shall not be such that the cable is twisted or stretched. A pulling eye and swivel shall be attached to the cable and used to install the cable through the duct conduit system to prevent the cable from twisting.
5. The figure-eight configuration should be used to prevent kinking or twisting when the cable must be unreeled or backfed. Cables shall not be forced around sharp corners or allowed to be kinked or crushed.

6. Minimum bending radius during installation shall not be less than twenty (20) times the outside diameter of the cable or as recommended by the manufacturer, whichever is greater.
7. Pulling of the cable shall be hand assisted.
8. NDOR approved installation methods include Pulling, High Air Speed Blowing, Air-Assist, Push/Pull Installation, and Air Blown Cable. Installation shall comply with all manufacturers' recommendations for cable installation including pulling tensions and bending radii.
9. The cable shall be carefully inspected for jacket defects. If defects are noticed, the pulling operation shall be stopped immediately and the Engineer notified. The Engineer shall make a determination of acceptability or shall reject the cable.
10. If cable ends are not capped while exposed to the environment, the contractor shall cut off a minimum of three (3) feet of each cable end before splicing.
11. The fiber cable shall be installed in continuous runs as marked on the plans. End of reel splices not shown in the plans shall be pre-approved by the Engineer and are subsidiary to the cost of the installation of the cable. No splices shall be allowed unless indicated by the plans or approved by the NDOR.
12. Seal all conduit openings using sealing compound at the junction boxes, pull boxes, poles, cabinets, and building entrances after cable installation.

C. Facilities Protection

1. In the event it is suspected that cable damage has occurred prior to final acceptance, Contractor shall test the cable with an OTDR within seventy-two (72) hours after notification and submit a copy of the OTDR test to the Engineer upon completion.
2. Contractor shall replace or repair, as directed by the Engineer, any damage occurring before final acceptance at no additional cost to the NDOR. Perform any repairs or replacements within seventy-two (72) hours unless otherwise approved by the Engineer.
3. Contractor shall repair or replace any defect in the installed cable at no additional cost to the NDOR. Consider a defect to be any condition resulting in a negative or adverse effect on current or future operations of the completed fiber optic communication system as determined by the Engineer.
4. Any existing wiring that is damaged during fiber optic cable installation shall be replaced or repaired, as directed by the Engineer, at no additional cost to the NDOR.

D. Slack Coils

1. Sufficient slack shall be left at each end of the cable to allow proper cable splicing and termination. The minimum slack amount shall be as follows or as indicated in the plans:
 - a. Pull box, type FOR27 – 60 feet
 - b. Pull box, type Fiber Vaults – 150 feet
2. Storage of slack cable in cabinets and pull boxes shall be neatly coiled. The slack coils shall be bound at a minimum of three (3) points around the coil

perimeter. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames and terminals.

3. For storage purposes, the minimum bending radius shall not be less than ten (10) times the outside diameter of the cable or as recommended by the manufacturer, whichever is greater.

E. Cable Identification

1. Place tags on all fiber optic cable identifying the owner and direction of the cable.
2. Tags shall clearly identify where each individual cable run originated and where it ends (pull box to pull box, pull box to cabinet, pull box to building, etc.).

2.0 TERMINATED FIBER CONNECTOR

2.1 DESCRIPTION

- A. Fiber Connectors shall consist of a pigtail with terminated end.
- B. Fiber used for pigtails shall be of the same manufacturer as the Fiber Optic Cable.

2.2 MATERIAL

- A. All fiber connectors shall be factory installed connectors. Field terminated connectors shall not be allowed.
- B. Connectors shall be single-mode UPC/SC or UPC/LC as indicated on the plans and have a typical insertion loss of 0.20 dB or less, a maximum loss of 0.50 dB or less, with typical reflectance of -55 dB.

2.3 CONSTRUCTION

C. Fusion Splices

1. Fusion splices shall be used splice Fiber Optic Cable to Terminated Fiber Connector pigtails for each connector shown in the plans.
2. Splices shall be allowed only in Fiber Connector Housings as indicated on the plans.
3. Maximum attenuation per splice as estimated by the fusion splicer shall not exceed 0.02 dB. Any splice exceeding 0.02 dB at the time of splicing shall be re-spliced.
4. Splice shall provide three axis core alignment using light injection and loss measurement techniques.
5. No mechanical splices of fiber cable will be allowed.

2.4 FIBER OPTIC ACCEPTANCE TESTING

- A. The Contractor shall not perform testing without being observed by NDOR unless granted permission to do so in writing.
- B. Post installation, one hundred percent (100%) of the terminated fiber shall be tested with an Optical Time Domain Reflectometer (OTDR) at 1310 nm and 1550 nm; in addition an Optical Loss Test Set (OLTS) shall be used to test the fiber. The contractor shall provide the Engineer with up to two copies of any software required for viewing electronic files of the OLTS and OTDR traces.
- C. Each and every tube will be tested. Contractor shall test one strand per tube that doesn't have a terminated strand.
- D. All test equipment shall be factory certified within the last year. The Contractor shall provide copies of the certification 10 days prior to testing.
- E. Test results will be recorded on a form supplied by the Contractor, with data compiled in PDF format through the meter manufacturer's software. No additional alteration using software from the Contractor beyond the meter manufacturer's software will be allowed. The Contractor shall submit test results in a format approved by the Engineer. Completed test forms on each terminated fiber shall be submitted to the Engineer. Contractor shall also provide bi-directional native test (electronic version) with no alterations and meter software for viewing of fiber traces. At a minimum, test results shall show the following:
 - 1. Cable and fiber identification (as approved by NDOR).
 - 2. Operator name.
 - 3. Date and Time.
 - 4. Setup and test parameters including wavelength, pulse width, range, scale and ambient temperature.
 - 5. Test results for OTDR test averaged for total fiber trace, splice loss/gain (dB), connector loss (dB), all events greater than 0.05 dB, measured length from cable markings and total length from OTDR.
 - 6. Test results for attenuation test including measured cable length (cable marking) total length (from OTDR test) number of splices (from as-built) and total link attenuation versus allowed attenuation.
- F. OTDR testing shall use a launch and receiving cables minimum 1000 meters or greater than the dead zone for the OTDR used for this test.
- G. Contractor shall verify prior to submittal that all test results satisfy the requirements of the Contract Documents. All test results submitted by the Contractor are subject to the penalties detailed below:
 - 1. The fiber optic cable is to have a maximum attenuation of 0.4 dB/km at 1310 nm and 0.3 dB/km at 1550 nm when measured with an OLTS. Fiber test results submitted to the Engineer that exceed the max attenuation loss specification will be identified as Out Of Specification (OOS) and shall result in deductions of \$150.00 for each OOS trace.
 - 2. Each connector shall have an averaged loss value of 0.25 dB or less when measured bi-directionally with an OTDR at 1310 nm and 1550 nm. Connector

test results submitted to the Engineer that exceed the max loss of 0.50 dB in a single direction or an average bi-directional loss of 0.25 dB will be identified as Out Of Specification (OOS) and shall result in deductions of \$150.00 for each OOS trace.

3. Each splice shall have an averaged loss value of 0.08 dB or less when measured bi-directionally with an OTDR at 1310 nm and 1550 nm. Splice test results submitted to the Engineer that exceed the 0.08 dB will be identified as Out Of Specification (OOS) and shall result in deductions of \$150.00 for each OOS trace.
- H. All fiber connectors shall be cleaned and checked for dirt, scratches or chips before installed in adapters and testing. All dust covers shall be installed after testing is complete.
 - I. Remove malfunctioning units, replace with new units, and retest as specified above.

3.0 FIBER CONNECTOR HOUSING

3.1 DESCRIPTION

- A. Shall be a single panel and surface mounted housing. Housing shall provide termination capabilities, splice protection, and associated fiber optic cable and terminated fiber connector storage.
- B. Shall be the same manufacturer as Connector Adaptor Panel.
- C. Fiber Connector Housing manufacturer shall be Corning, Commscope, or approved equal.

3.2 MATERIAL

- A. Surface mounted termination/splice housings shall provide for termination capabilities, splice protection, and associated fiber/pigtail storage.
- B. Surface mount housing shall be intended for fiber terminations, it shall have built in splice tray, fiber management, and cross-connect for up to 12 fibers.
- C. Top and bottom cable entry grommets for incoming fiber optic cable and duplex fiber jumper.
- D. Manufactured of metal.
- E. Housing shall have a hinged front door, universal and DIN rail mounting option, jumper bend limiters, and labels for identifying fiber terminations.

4.0 CONNECTOR ADAPTOR PANEL

4.1 DESCRIPTION

- A. Connector Adaptor Panel shall be 6 Duplex SC.
- B. Connector Adaptor Panel shall be the same manufacturer as Fiber Connector Housing.

4.2 MATERIAL

- A. Adaptor panels shall provide inter-connect or cross-connect capability in housing and provide a secure way to mate two connectors.
- B. The panel shall be manufactured of metal.
- C. The fiber adapter shall have a ceramic alignment and composite housing.
- D. The fiber adapter shall be for single-mode UPC (OS2) fiber connectors, and be Blue in color.
- E. The adaptor panel shall be able to accommodate fiber counts of 12 connectors.

5.0 DUPLEX FIBER JUMPER

5.1 DESCRIPTION

- A. Duplex Fiber Jumper shall connect Connector Adaptor Panel to Fiber Ethernet Switch or Fiber Ethernet Transceiver as shown in the plans. Duplex fiber jumpers shall be subsidiary to the associated Connector Adaptor Panel.

5.2 MATERIAL

- B. The fiber jumper shall be configurable with standard LC and SC terminations, and shall be available in 3.0 nm and Yellow in color.
- C. The fiber shall be fully capable of handling existing and legacy single-mode applications which traditionally operate in the 1310 nm and 1550 nm regions and shall also be designed to operate the full-spectrum from 1260 nm to 1625 nm for optical transmission.
- D. This fiber jumper shall be designed to provide optimum performance from 1260 nm to 1625 nm intended for 16-channel Course Wavelength Division Multiplexing applications.
- E. The fiber jumper shall be available in 1.6 nm cordage, have pull-proof connector design and have distinctive color coding for positive identification.

- F. Jumper shall be a factory terminated assembly with a standard length of 1 meter.

6.0 FIBER ETHERNET SWITCH

12.1 GENERAL

- A. Part 6 addresses a Twelve Port Fiber Optic Gigabit Ethernet Managed Switch.
- B. Manufacturer shall be Comnet, Control or approved equal.

12.2 DESCRIPTION

- A. The module shall provide 8 (eight) combo 10/100//1000T(X) RJ-45 ports and 100/1000FX ports and 4 (four) 1000FX ports. Use of an SFP port disables the corresponding 10/100/1000TX RJ-45 port. Similarly, use of 10/100/1000TX RJ-45 port disables the corresponding SFP port.
 - 1. The system shall have SFP ports allowing for the use of SFP modules for flexibility in determining operating wavelength, range, number or fibers, type of receptacle, and type of fiber.
- B. The module shall support transmission utilizing Category 6 cable or better, or single-mode fiber. The module shall support the Ethernet data IEEE 802.3 protocol using Auto-negotiating and Auto-MDI/MDI-X features.

Similarly, use of a 10/100/1000TX RJ-45 port disables the corresponding SFP port. The module shall require no in-field electrical or optical adjustments or in-line attenuators to ease installation. The module shall provide power, link speed, and fiber port status indicating LED's for monitoring proper system operation. The modules shall provide automatic re-settable solid-state current limiters on each module to reduce the chance of a single point failure of the system. The module shall have dual redundant power supply connections to minimize single point failure. The module shall provide a serial connection for local management of the device. The module shall have a lifetime warranty.

- C. The following IEEE Networking Standards shall be supported:
 - 1. IEEE 802.3 10Base-T Ethernet
 - 2. IEEE 802.3u 100Base-TX Fast Ethernet
 - 3. IEEE 802.3ab 1000Base-TX
 - 4. IEEE 802.3z Gigabit Ethernet Fiber
 - 5. IEEE 802.3x Flow Control and Back-pressure
 - 6. IEEE 802.3AB LLDP
 - 7. IEEE 802.1p class of service
 - 8. IEEE 802.1Q VLAN and GVRP
 - 9. IEEE 802.1D Spanning Tree Protocol
 - 10. IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
 - 11. IEEE 802.1s Multiple Spanning Tree Protocol
 - 12. IEEE802.3ad LACP
 - 13. IEEE802.1x Port_based Network Access Control

D. NEMA TS2-1998

E. Switching Performance

1. Switch Technology: Store and Forward Technology with 24Gbps Switch Fabric.
2. System Throughput: 14,880pps for 10M Ethernet; 148,800pps for 100M Fast Ethernet; 1,488,100 for Gigabit Ethernet
3. Transfer Packet Size: 64 bytes to 9000 bytes (with VLAN Tag)
4. MAC Address: 8K MAC
5. Packet Buffer: 1Mbits
6. Relay Alarm: Dry Relay output with 1A@24V ability

F. Management

1. Configuration: Web, HTTPS, SSH, TFTP/Web Update for firmware and configuration backup/restore, DHCP client, Warm reboot, Reset to default, Admin password, Port Speed/Duplex control, status, statistic, MAC address table display, Static MAC, Aging time, SNMP v1, v2c, v3, Traps and RMON1.
2. SNMP MIN: MIB-II, Bridge MIB, VLAN MIB, SNMP MIB, RMON and Private MIB
3. Port Trunk: Up to 8 Static Trunks and 802.3 ad LACP
4. VLAN: IEEE802.1Q VLAN, GVRP. Up to 4096 VLAN groups.
5. Quality of Service: Four priority queues per port. IEEE802.1p COS and Layer 3 TOS/DiffServ.
6. IGMP Snooping: IGMP Snooping v2/v3 for multicast filtering and IGMP Query
7. Rate Control: Ingress filtering for Broadcast, Multicast, Unknown DA or all packets, and Egress filtering for all packets.
8. NTP: Network Time Protocol to synchronize time from Internet Embedded Watchdog: Embedded hardware watchdog timer to auto reset system when switch system failure.
9. Port Mirroring: Online traffic monitoring on multiple selected ports
10. Port Security: Assign authorized MAC to specific port
11. IP Security: IP security to prevent unauthorized access
12. 802.1x: Port_based Network Access Control
13. NDCP Server: Can assign 255 IP address, support IP and MAC binding
14. System Log: Supports both Local mode and Server mode

G. Network Redundancy

1. Rapid spanning Tree Protocol: IEEE802.1w
2. Compatible with Legacy STP: IEEE802.1D
3. Multiple Spanning Tree Protocol: IEEE802.1s
4. C-Ring: Ring Redundancy Technology
5. Failure Recovery within 30ms for 250 units of connection
6. Dual Homing: Multiple uplink paths to upper switches
7. Coupling Ring: Couple multiple C-Rings
8. Legacy Ring: Backward compatible in client mode with X-Ring based configurations

12.3 DATA SPECIFICATIONS

- A. Data Interface: Ethernet IEEE802.3
- B. Data Rate: up to 1000 Mbps
- C. Data Inputs/Outputs: up to 8
- D. Operation mode: Half or Full Duplex

12.4 OPTICAL SPECIFICATIONS

- A. Number of Optical ports: up to 12, SFP-dependent
- B. Number of Fibers Required: 1 or 2, SFP-dependent
- C. Optical Wavelength: 1310 or 1550 nm, SFP-dependent
- D. Optical Power Budget: SFP-dependent
- E. Maximum Distance: up to 120 km (70 mi) single-mode, SFP-dependent

12.5 CONNECTORS

- A. Optical: LC or SC, SFP-dependent
- B. Power: Screw Clamp Terminal Strip
- C. Data: RJ-45
- D. Console: RJ-45 Serial communication

12.6 ELECTRICAL SPECIFICATIONS

- A. Current Protection: Automatic re-settable solid-state current limiters.
- B. Voltage Regulation: solid-state, Independent on each board.
- C. Circuit Board: UL 94 flame rated and meets all IPC standards.

12.7 EXAMINATION

- A. All optical connectors shall be covered with dust caps and remain on the switch until installing cable connectors to switch.

12.8 PREPARATION

A. DIN Rail Mount Module

1. Shall be mounted on a DIN Rail adequate for the size and weight of the module. The placement of the unit shall allow provision for cable installation and maintenance.
2. If DIN Rail does not exist, Contractor shall furnish and install necessary DIN Rail. This work and material shall be subsidiary and no additional payment will be made.

12.9 PATCH CORD

- A. Factory-made, four-pair cables in 1m lengths; terminated with eight-position modular RJ-45 plug at each end.
- B. Shall have 24AWG copper alloy polycarbonate stranded conductors, PVC non-plenum UL 94 V-0 jacket material. The cable shall be unshielded Category 6.
- C. Patch Cords shall be used to connect switch to ITS devices inside specified cabinet.

7.0 SFP MODULE

7.1 DESCRIPTION

- A. Shall be a Small Form-Factor Pluggable Fiber Optic Module.
- B. The Contractor shall verify 10 km or 40 km requirements based on actual field measurements prior to ordering SFP Modules.

7.2 MATERIAL

- A. MSA Compliant device shall utilize 1310/1550nm optics capable of simultaneous bi-directional signal transmission on two single mode optical fibers.
- C. The interchangeable optical fiber SFP modules shall be available in Gigabit one and two fiber versions. They also shall be available with LC or SC optical connectors. The SFP modules shall have different wavelengths and optical power to offer distances from 10 kilometers to 120 kilometers. The module shall require no in-field electrical or optical adjustments or in-line attenuators to ease installation.

8.0 FOUR RACK UNIT CONNECTOR HOUSING (HOLDS 12 CONNECTOR PANELS)

8.1 MATERIAL

- D. Termination/splice housing shall provide for termination capabilities, splice protection, and associated fiber/pigtail storage.

- E. Use splice cassettes modules for splice protection of connector pigtails.
- F. Termination adapter panels shall be duplex SC.
- G. 144 connector position panel, fitting standard 19" EIA racks or cabinets, with standard mounting, and hinged to allow complete access to the interior of the termination panel.
- H. Supply appropriate cables and adapters to satisfy intended operation and use. The termination unit shall be lightweight and designed to operate fully from -55 degrees C to +85 degrees C.
- I. Rack mountable connector housing shall be Corning CCH-0 (with CCH splice cassettes and CCH adaptor panels), Systimax (rack mountable connector housing, splice cassettes, and adaptor panels), or approved equal.

9.0 FIBER SPLICE CLOSURE

9.1 MATERIAL

- J. Supply environmental protection of cable and splices from water and dirt and that is designed to be submersed in water and installed underground outside plant use for splicing fiber optic cables in pull boxes.
- K. The splice closure shall be compatible with all sizes of fiber cables used on this project and large enough to accommodate the number of splices plus an additional 10% at locations where splices are shown on the plans.
- L. The closures shall be a dome type splice closure manufactured from a high density polyethylene or approved equivalent nonmetallic material with the following properties:
 - 1. Cable entry shall be manufactured of similar material to the dome body and shall seal the closure with re-usable compressed gel cable sealing components that accommodate a wide range of cable sizes.
 - 2. Closures shall be re-enterable and re-sealable without the need for specialized tools or equipment or any additional parts.
 - 3. No encapsulated materials shall be allowed.
 - 4. Be provisioned for a minimum of six cable entries.
 - 5. Hinging splice trays that provide controlled access to splices and slack storage.
 - 6. Splice and storage compartments accessible via a removable dome-clamp system.
 - 7. The closure shall allow for the storage of at least eight unopened buffer tubes.
- M. The splice closure shall contain all splice trays, storage, splice sleeves, organizing materials, and any other incidental materials required to complete the splices at the locations shown in the plans.
- N. After splicing is complete, the fiber optic cable and closure shall be flash tested for leaks.
- O. The splice closure shall be TYCO Model FOSC450 series, Systimax, or approved equal.

10.0 TEST STATION

10.1 MATERIAL

- P. Test station shall be 60” triangular flexible orange plastic marker with 5 separate access terminals and set screws to hold terminal concealment cap in place.

10.2 CONSTRUCTION

- Q. Place custom warning decals on all sides per detail in the plans.

11.0 METHOD OF MEASUREMENT

- A. Fiber Optic Cable shall be measured in linear feet from center to center of the pull boxes, vaults and cabinet and include prescribed coils for each fiber count shown in the plans.
- B. Terminated Fiber Connectors, Fiber Connector Housings, Connector Adaptor Panels, Fiber Ethernet Switches, SFP Modules, Four Rack Unit Connector Housings, Fiber Optic Splice Closures, Module Connector Housing Splice Cassettes, Fiber Optic 12 Splice Trays, Fiber Optic Splice, and Test Station shall be measured by the each.
- C. Fiber Optic Acceptance Testing shall be subsidiary to Terminated Fiber Connectors.

12.0 BASIS OF PAYMENT

Pay Item	Pay Unit
___ SM Fiber Optic Cable	Linear Foot (LF)
Terminated Fiber Connector	Each (ea)
Fiber Connector Housing	Each (ea)
Connector Adaptor Panel	Each (ea)
Duplex Fiber Jumper	Each (ea)
Fiber Ethernet Switch	Each (ea)
___ km SFP Module	Each (ea)
Four Rack Unit Connector Housing	Each (ea)
Fiber Optic Splice Closure	Each (ea)
Module Connector Housing Splice Cassette	Each (ea)
Fiber Optic 12 Splice Tray	Each (ea)
Fiber Optic Splice	Each (ea)
Test Station	Each (ea)

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

BUILDING ENTRANCE

GENERAL

- R. This section applies to materials and work necessary to continue the fiber optic cable system and network to two interior locations; District 1 Building and the Rest Area.
- S. The "Building Entrance" work will begin with materials identified on the corresponding detail sheets in the plans.
- T. All work in or around any building facility shall be coordinated with the Engineer and the NDOR District staff. Provide a minimum of 72 hours' notice to the Engineer before performing any work in the immediate vicinity of a building or surrounding parking area.
- U. It generally begins at the exterior wall of the structure and includes all tubing, penetrations, sealing, junction boxes, and wall attachments. Cables, fiber accessories, and fiber hardware shall be paid for separately as indicated in the plans.

2.0 BUILDING ENTRANCE

13.2 MATERIAL

- A. Conduit runs will include Rigid Steel and Electrical Metallic Tubing as indicated in the plans and will adhere to Standard NDOR Specifications.
- B. Approximately 40' of 2" EMT will be required in the District 1 Building (for informational purposes only; not a bid quantity).
- C. Approximately 25' of 1" EMT will be required in the Rest Area Building (for informational purposes only; not a bid quantity).
- D. Junction Box
 - 1. Shall be sized as indicated on the plans
 - 2. Shall be of NEMA type indicated on the plans.
 - 3. Shall be of machine able quality gray iron castings, outside flanged with recessed cover and designed especially for flush mounting.
 - 4. Cover and box shall have hot-dipped galvanized finish.
 - 5. Cover shall be gasket and secured to the box with hex head stainless steel screws.
 - 6. Provide O-Z Gedney, Crouse-Hinds, or approved equal.

13.3 CONSTRUCTION

- A. Electrical Metallic Tubing shall be supported with industry standard methods at not less than 36" spacing.

- B. Only round, drilled wall penetrations will be allowed to minimize disruption to the structure. Technique should be used to minimize paint and brick chipping.
- C. Contractor shall perform all necessary patching that result from cutting of any holes.
- D. The Contractor shall verify that the location of the penetration will not damage any existing wiring, plumbing, duct work, or other utility lines.
- E. Building penetration shall be sealed to a watertight condition using duct seal or other approved methods.
- F. Junction Box
 - 1. Conduit entrance into the box shall be through slip holes.
 - 2. Fasten conduit to box using sealing type locknuts.

2.0 METHOD OF MEASUREMENT

Building Entrances shall be measured and paid for by the each. The measured item will be specific to the location where building entrance work is performed and shall include all materials, labor, and incidentals necessary to complete the work.

3.0 BASIS OF PAYMENT

Pay Item	Pay Unit
Building Entrance District 1	Each (ea)
Building Entrance Rest Area	Each (ea)

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

GEOGRAPHIC-LOCATING REQUIREMENTS

For new facility installations, the Contractor shall use a survey grade Global Positioning System (GPS) to survey the locations of all fiber optic cable installed and submit an electronic file to NDOR. Specific requirements for survey data will be to 3" (.25"), both horizontally and vertically. The location survey points shall include major junction points, manholes, valves, changes in line or grade, and any other significant feature that will facilitate installation approval and future planning activities. There shall also be a maximum of 500' between locations. It shall also include the depth below grade to the utility line.

This work will not be measured and paid for directly, but shall be considered subsidiary to Group 8B work.

WIRE AND CABLE IN CONDUIT

Section 402 in the Standard Specifications is amended to include the following:

402.01 DESCRIPTION

Tracer wire shall be installed throughout the project in all conduit containing fiber and any underground conduit segment (pull box to pull box) that is empty of cables.

Pull tape shall be installed throughout the project in all empty conduit to facilitate the installation of future cables.

402.03 CONSTRUCTION METHODS

6. a. Install, splice, and test for continuity Tracer Wire in all conduit installations as indicated.
- b. Splice Tracer Wires in Fiber Vault pull boxes and cabinets to form a continuous network using splice kits that are UL listed for wet locations.
- c. Terminate each Tracer Wire run at Fiber Vault pull boxes and in Test Stations.
- d. Maintain the continuity of the Tracer Wire through FOR27 pull boxes.

402.05 BASIS OF PAYMENT

1. Pay Item	Pay Unit
Tracer Wire	Linear Foot (LF)
Pull Tape	Linear Foot (LF)

Paragraph 14. of Subsection 1073.02 is amended to include the following:

14. Electrical Wire and Cable:
 - e. Tracer Wire shall be Type THHN, No. 12 AWG, and green colored jacket.
 - f. Pull Tape shall be sequentially numbered with a minimum proper tensile strength of 2,670 N.

**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 ₍₄₎		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 ₍₅₎	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.

Table 1002.03	
Table of Acceptable Concrete Class Substitutions	
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 (Na_2O) and the Potassium Oxide (K_2O) 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 Intergrround/Blended cement which has become caked or lumpy shall be used.
3. Portland and Intergrround/Blended cement which has been spilled shall not be used.
4. Accepted Portland and Intergrround/Blended cement which has been held in storage at the concrete mix plant more than 90 days shall be retested.
5. Portland and Intergrround/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 Intergrround/Blended cements must be on the NDR Approved Product List (APL).
2. The Contractor shall submit any new Portland and Intergrround/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 Intergrround/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) Intergrround/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/ft² (0.55 kg/m²) 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

Silicone Joint Sealer Requirement		
Property	Requirement	Test
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 or 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/cm²) 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 CaCO_3 from the value determined for 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 μm) 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									
			1½"	1"	¾"	½"	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 Interground/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
			Max	100	100	90	--	45	12	--	*4	--
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

*Class R - Combined Aggregate Gradation Limits (Percent Passing)								
Sieve Size	1 1/2 inch	1 inch	3/4 inch	No.4	No.10	No.30	No. 50	No.200
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

Aggregate Classes and Uses	
Aggregate Class	Concrete Description
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

Sieve Size	Tolerances
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: 1281X

PROJECT(S): ITS-MISC-D1(1031)

CALL ORDER NO.: 100

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS

SECTION 1 GROUP 8B ELECTRICAL

0001	0001.08	BARRICADE, TYPE II	5000.000 BDAY	0.50000		2,500.00	
0002	0001.10	BARRICADE, TYPE III	104.000 BDAY	.		.	
0003	0001.75	TEMPORARY SIGN DAY	1102.000 EACH	.		.	
0004	0001.99	CONTRACTOR FURNISHED SIGN DAY	28.000 EACH	.		.	
0005	0002.97	FLASHING ARROW PANEL	27.000 DAY	.		.	
0006	0030.80	MOBILIZATION	LUMP	LUMP		.	
0007	5900.00	BUILDING ENTRANCE DISTRICT 1	1.000 EACH	.		.	
0008	5900.01	BUILDING ENTRANCE REST AREA	1.000 EACH	.		.	
0009	A001.35	PULL BOX, TYPE FOR-27	165.000 EACH	.		.	
0010	A001.39	PULL BOX, TYPE PB FIBER VAULT	27.000 EACH	.		.	
0011	A069.11	2-INCH CONDUIT ON STRUCTURE	120.000 LF	.		.	
0012	A069.13	4-INCH CONDUIT ON STRUCTURE	1712.000 LF	.		.	
0013	A074.00	1 1/4" CONDUIT INNERDUCT	6848.000 LF	.		.	
0014	A074.42	2-INCH CONDUIT BORED	8822.000 LF	.		.	
0015	A074.43	2-2-INCH CONDUIT BORED	63968.000 LF	.		.	

CONTRACT ID: 1281X

PROJECT(S): ITS-MISC-D1(1031)

CALL ORDER NO.: 100

LINE NO	ITEM DESCRIPTION		APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
				DOLLARS	CTS	DOLLARS	CTS
0016	A074.52	2-INCH CONDUIT PLOWED	1288.000 LF	.		.	
0017	A074.53	2-2-INCH CONDUIT PLOWED	119351.000 LF	.		.	
0018	A078.99	40 KM SFP MODULE	13.000 EACH	.		.	
0019	A079.22	TRACER WIRE	194059.000 LF	.		.	
0020	A079.27	10 KM SFP MODULE	41.000 EACH	.		.	
0021	A079.71	TERMINATED FIBER CONNECTOR	520.000 EACH	.		.	
0022	A079.72	CONNECTOR ADAPTOR PANEL	51.000 EACH	.		.	
0023	A079.73	FIBER CONNECTOR HOUSING	15.000 EACH	.		.	
0024	A079.74	FIBER ETHERNET SWITCH	15.000 EACH	.		.	
0025	A081.21	12 SM FIBER OPTIC CABLE	20567.000 LF	.		.	
0026	A081.22	144 SM FIBER OPTIC CABLE	197050.000 LF	.		.	
0027	A081.23	DUPLEX FIBER JUMPER	54.000 EACH	.		.	
0028	A081.31	TEST STATION	27.000 EACH	.		.	
0029	A081.32	FIBER OPTIC SPLICE	84.000 EACH	.		.	
0030	A081.33	FIBER OPTIC 12 SPLICE TRAY	20.000 EACH	.		.	
0031	A081.34	MODULE CONNECTOR HOUSING SPLICE CASSETTES	36.000 EACH	.		.	

CONTRACT ID: 1281X

PROJECT(S): ITS-MISC-D1(1031)

CALL ORDER NO.: 100

LINE NO	ITEM DESCRIPTION		APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
				DOLLARS	CTS	DOLLARS	CTS
0032	A081.35	FIBER OPTIC SPLICE CLOSURE	20.000 EACH	.		.	
0033	A081.36	FOUR RACK UNIT CONNECTOR HOUSING	3.000 EACH	.		.	
0034	A960.00	PULL TAPE	201210.000 LF	.		.	
0035	L860.50	ENVIRONMENTAL COMMITMENTS - CONTRACTOR COMPLIANCE	LUMP	LUMP		.	
SECTION 1 TOTAL						.	
TOTAL BID						.	