INFORMATIONAL PROPOSAL

FOR INFORMATION ONLY, NOT TO BE USED FOR BIDDING

NEBRASKA DEPARTMENT OF ROADS
LETTING DATE : February 07, 2002

CALL ORDER: N11 CONTRACT ID: 2051

CONTROL NO./SEQ. NO.: 22051 /000 PROJECT NO.: STR-480-9(1130)

TENTATIVE START DATE: 04/29/02 CONTRACT TIME: 105 WORKING DAYS

LOCATION: I-480, 14TH STREET - MISSOURI RIVER BRIDGES, OMAHA.
IN COUNTY: DOUGLAS

BIDDER

GROUP 6 BRIDGES

NOTES

THE TOTAL AMOUNT OF WORK WHICH WILL BE ACCEPTED IN THIS LETTING IS LIMITED TO $_____.

THE NUMBER OF _____ 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 directed to Construction Division personnel at (402) 479-4568 or (402) 479-4529.

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.

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.

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.

SPECIAL PROVISIONS
FOR
STATE
PROJECT NO. STR-480-9(1130)

GENERAL CONDITIONS

Sealed 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 7, 2002, until 1:30 P.M.

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.

The 1997 English 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 Supplemental Specifications to the 1997 English Edition of the Standard Specifications for Highway Construction dated July 12, 2001, including all amendments and additions thereto effective at the date of the contract, are made 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

No utilities have been or will be required to relocate within the limits of this project.

Underground utilities may exist within the limits of this project. The Contractor shall determine to his satisfaction the extent of occupancy of any underground utilities located within the respective construction areas and the extent of conflict with the proposed work under this contract.

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 The Diggers Hotline of Nebraska at 1-800-331-5666.

STATUS OF RIGHT-OF-WAY
(S1-16-0801)

According to the best information available, all necessary right-of-way has been acquired.

SUBCONTRACTOR BIDDERS LIST INFORMATION
(S1-43-0801)

All bidders must complete and submit with the bidding proposal, the "Subcontractor Bidders List" form provided by the NDR Contracts office.

Bidders must identify all firms who bid or quote subcontracts on all projects. If no bids or subcontractor quotations are received, the "Subcontractor Bidders List" must be submitted with the bidding documents and the bidder must indicate on the face of the "Subcontractor Bidders List" that no bids or subcontractor quotations were received.

CONTROL OF WORK
(S1-43-0901)

Subsection 105.08 in the 1997 Standard Specifications is void and replaced by the following:

105.08 - Authority and Duty of the Inspector

Department inspectors are authorized to inspect all work performed and all materials furnished. Such inspection may extend to the preparation, fabrication, or manufacture of the materials. The inspector has the authority to reject work or materials until any issues can be decided, including the right to suspend work. The inspector is not authorized to alter or waive the provisions of the contract or act as a supervisor for the Contractor.

105.13 – Tentative Acceptance of Portions of the Project

Paragraph 3.a. of Subsection 105.13 is amended by deleting the word "normal".

LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC (S1-43-1001)

107.14 – Opening of Sections of the Project to Traffic

Subsection 107.14 Paragraphs 2.b.(1) and (2) are void and replaced by the following:

2.b. (1) Whenever the Department permits the public use of a highway undergoing construction, repair, or maintenance in lieu of a detour route, the Contractor shall not be held responsible for damages to those portions of the project upon which the Department permitted public use, when such damages are the result of no proximate act or failure to act on the part of the Contractor.

(2) If the traveling public should cause damage to the roadway, the Contractor shall assist the State in identifying the responsible party and the Contractor shall as a minimum if present at the time of the damage record pertinent information regarding the accident. (Who caused the damage; when the damage occurred; and how the damage was resulted.)

107.15 – Contractor's Responsibility for Work

Subsection 107.15 is amended by adding Paragraph 1.b.(3) as follows:

(3) The Contractor shall not be held responsible for damage caused by the traveling public on those portions of the project where the Department has permitted public use of the road in lieu of using a detour route and the damage as not the result of any proximate act or failure to act on the part of the Contractor.

MEASUREMENT AND PAYMENT (S1-43-0901)

109.08 – Acceptance, Final Payment, and Termination of Contractor's Responsibility

Subsection 109.08 Paragraph c. amended by deleting the word "normal".

Subsection 109.08 Paragraph d. is void and replaced by the following:

d. If the traveling public should cause damage to the roadway the Contractor shall assist the State in identifying the responsible party and the Contractor shall as a minimum if present at the time of the damage record pertinent information regarding the accident. (Who caused the damage; when the damage occurred; and how are damage was resulted.)

SUBLETTING OF CONTRACT

Paragraph 1.a. (2) of Subsection 108.01, in the Standard Specifications, is void.

SPECIAL PROSECUTION AND PROGRESS
(Accommodation of Public Vehicular Traffic)

I. The contractor shall consider the following and be prepared to discuss at the pre-construction conference:

- Discuss the project schedule.
- Describe how the work will be accomplished.
- Discuss locations where lane closures are expected.
- Describe the size of the work area required to perform the work safely away from pedestrians and private property.
- Provide the Temporary Fence plan described in the Temporary Fence provision.

II. No lane closures on I-480 are expected.

III. When performing work operations underneath the structure, the contractor will be required to maintain traffic on local roadways and city streets as follows:

1. When working adjacent to a 2-way street with a single lane in each direction, one lane of traffic shall be maintained at all times.

2. When working adjacent to a 2-way street with multiple lanes in each direction, one lane of traffic in each direction shall be maintained at all times.

3. When working adjacent to a one-way street with multiple lanes, one lane of traffic as a minimum shall be maintained at all times.

SPECIAL PROSECUTION AND PROGRESS
(Remediation Project Protection)

As part of the ASARCO remediation project, some improvements have been made to the area directly under the Missouri River Bridge on the Nebraska side. Improvements include an access road, a retaining wall, a soil liner, fill soil and a pile foundation for a future bridge (cut off at ground level). The contractor shall perform their work in a manner so as not to damage structures or improvements completed by others. Our contractor will be responsible for repairing the damage to structures and improvements caused by their negligence.

SPECIAL PROSECUTION AND PROGRESS
(Heartland of America Park, Nebraska)

The contractor will not be allowed to use the parking lot within the Heartland Park for personnel or equipment parking.

If any plant material is damaged by construction activities, it shall be repaired or replaced at no additional cost to the State, as directed by the Engineer.

COORDINATION WITH OTHER PROJECTS

Construction shall be coordinated with the ASARCO Remediation Project on the Nebraska side of the river adjacent to the bridge. ASARCO Incorporated owns the area under the bridge on the Nebraska side. The State of Nebraska previously acquired an easement for construction, maintenance and reconstruction of the Missouri River Bridge.

A new access road under the bridge will be completed as part of the ASARCO project. NDOR and our contractors are guaranteed access to the area under the bridge via the permanent and temporary easements along the access road and shown in the plans.

Our contractor shall provide ASARCO with a construction schedule and documentation of how the area under the bridge will be used during the bridge project.

Send the documentation and schedule to:

Bob Litle
Unit Manager
ASARCO, Incorporated
500 Douglas Street
Omaha, NE 68102

Also send a copy of the information to the engineer.

PROCEDURE FOR CLOSING LANES ON LOCAL ROADWAYS

Lane closures are permitted on city streets as described in the Special Prosecution and Progress. The contractor shall advise the engineer a minimum of 48 hours prior to the lane closure. If the 48-hour time period falls on a weekend or a holiday, the notification shall be given 72 hours prior to the lane closure.

The City of Omaha shall be notified of any lane closure by calling Lionel Oropeza at 444-4978.

SPECIAL PROSECUTION AND PROGRESS (Holidays)

The contractor will be required to schedule his operations in a manner to have all roadways and city streets open to traffic on the following holidays:

Memorial Day
July 4th
Labor Day

In the event any of these holidays fall on a weekend, the Friday preceding or the Monday following the holiday shall be included as part of that holiday.

Failure to have all traffic lanes open as specified, on these holidays will result in a liquidated damage assessment of $5,000 per occurrence. This assessment will be in addition to other liquidated damages described elsewhere in this proposal.

COORDINATION WITH OTHER PROJECTS

Construction shall be coordinated with the following projects that may be under construction while work is being performed on this project:

1. IM-480-9(761), C.N. 21767, I-480 Missouri River Bridge
   Let to contract January 2001 and currently under construction. This project is a bridge deck replacement project.

2. STR-480-9(1132), C.N. 22071, I-480, 13th and 14th Street ramp modification.
   Let to contract by the City of Omaha in the fall of 2001 and currently under construction. The ramp bridges are being removed and replaced to match the new city street system being built under and adjacent to the I-480 bridge structure.

3. IM-480-9(876), C.N. 22056, I-480 Missouri River Bridge Painting.
   Let to contract in December 2001, this project will paint the outside girder of the bridge is scheduled for summer construction. Project includes the first span on the Nebraska side.

UNION PACIFIC RAILROAD COMPANY

RAILROAD SAFETY TRAINING
(S1-22A-0801)

The railroad company requires that anyone working within the railroad right-of-way attend a “Rail Safety Training” class. The Contractor, or their representative, will not be allowed on railroad right-of-way until they have successfully completed the mandatory safety training. The railroad will present a certification card to everyone who completes their safety training, and construction crews will be required to have their safety training certification cards in their possession at all times when they are working on railroad right-of-way.

The contractor will be responsible for all costs associated with attending this training class.

FLAGGING PROTECTION

When, for any reason, the Manager, Industry & Public Projects (Mr. Jack Dobrinska) or other duly authorized representative of the Union Pacific Railroad Company shall deem it necessary to employ flagmen for the protection of train operations, such flagmen shall be furnished by the Railroad Company and all costs for such flagmen shall be borne by the contractor.

Prospective bidders shall familiarize themselves fully with the Railroad Company's requirements for flagging protection before bidding on the work.

REIMBURSEMENT TO RAILROAD COMPANY FOR FLAGGING COSTS (S1-24-0801)

At all times while performing such work, flagmen shall be deemed to be employees of the Railroad Company.

The contractor shall reimburse the Railroad Company directly for this flagging protection and shall make a showing that the Railroad Company has been reimbursed for all necessary flagging required by his operations before final payment for the work contemplated in the contract is made by the State.

Direct payment for flagging protection as required in these special provisions will not be made but it shall be considered that this work is subsidiary to any or all of the items for which the contract provides that direct payment shall be made.

FLAGGING CONDITIONS (S1-25-0801)

Flagging and other protective services and devices will be provided by the Company to protect its facilities, property and movements of its trains or engine.

In general, the Company will furnish such flagging or other protective services and devices:

(a) For any excavation below elevation of track subgrade, if, in the opinion of the Company's representative, track or other railroad facilities may be subject to settlement or movement.

(b) During any clearing, grubbing, grading or blasting in proximity to the railroad, which, in the opinion of the Company's representative, may endanger or interfere with the railroad's facilities or operations.

(c) When any of the Contractor's operations are carried on or within the Railroad Company's right of way and in the opinion of the Company's representative could endanger Company's facilities or create a hazard to the Company's operations.

PROTECTION OF UTILITIES
(S1-26-0801)

Before the contractor begins his operations on the railroad right-of-way he shall confer with the official representatives of the State and the Railroad Company 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 Railroad Company may direct in protecting those utilities properly throughout the period his 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 their 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.

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 his operations, and shall repair promptly any such damaged property to the satisfaction of the 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 his operations.

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.

RAILROAD SPECIAL PROVISIONS

Before the contractor begins his operations on railroad right of way, he will contact the railroad at least 10 days in advance by telephone at 1-800-336-9193 (a 24-hour number) to determine if fiber optic cable is buried anywhere on the railroad property to be used by the contractor.

The railroad will advise the contractor if fiber optic cable exists at the location(s) being occupied and will dispatch a representative to locate, mark and protect each cable in the vicinity of the work to be performed by the contractor.

The railroad will need the Railroad Mile Post involved which is 0.4 (North OPPD Lead) on this project.

The contractor, for his own protection, should obtain and record the "Trouble Log Number" from the railroad for verification of the call made.

WRITTEN NOTICE TO RAILROAD COMPANY

The contractor shall give written notice to the Manager, Industry & Public Projects (Mr. Jack Dobrinska) or to his authorized representative, at least ten days in advance of the date on which he expects to begin any work under or adjacent to any of the tracks of the Railroad Company or he expects to begin any construction work on the right of way of the Railroad Company. The contractor shall also give written notice to the Manager, Industry & Public Projects (Mr. Jack Dobrinska) no later than ten days after completion of all work on the railroad company's right of way.

PROTECTION OF PROPERTY (S1-29-0801)

The contractor shall use the utmost care to guard against accidents or cause the least possible interference with the operation of trains of the Railroad Company and the telephone, telegraph or signal lines of the Railroad Company or of any tenant of the Railroad Company'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.

All work to be done under this contract shall be handled by the contractor so as to interfere as little as is reasonably possible with the use of tracks, wires, signals and property of the Railroad Company 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 the Railroad Company, 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 interferences which could have been avoided by the proper handling of said work. The contractor shall discontinue immediately, upon request of the engineer, any practices or actions which, in the opinion of the engineer, 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.

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 the Railroad Company. The contractor agrees to 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.

PROTECTION OF PROPERTY

The contractor shall not place or permit to be placed, or remain, piles of material or other temporary obstructions closer than 12 feet (3.7 meters) to the nearest rail of any track or closer than 23 feet (7 meters) above the top of any rail except that the construction forms and scaffolding may be placed no closer than 12 feet (3.7 meters) from the centerline of any such track.

Any changes necessary in the clearance set forth above shall be made only by special arrangements with the Manager, Industry & Public Projects (Mr. Jack Dobrinska) of the Company or his authorized representative.

The contractor agrees to 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.

RAILROAD CROSSINGS
(S1-31-1201)

The Contractor shall use only public roadways or special crossings that are specifically shown on the plans to cross railroad tracks. If the Contractor should desire a temporary crossing for construction purposes at a location other than an existing public crossing, provisions for such crossing shall be negotiated with the railroad by the Contractor, and all costs for such crossing shall be borne by the Contractor.

Prospective bidders should familiarize themselves with railroad temporary crossing and insurance requirements before bidding on the work.

INSPECTION
(S1-32-0801)

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 the railroad and that such inspection shall in no sense make the railroad a party to this contract and will in no way interfere with the rights of either party hereunder.

INSURANCE
(S1-33-1201)

The State shall require its Contractor or any of his subcontractors to carry regular Contractor's Public Liability and Property Damage Insurance as specified in Federal-Aid Policy Guide 23 CFR 646A providing for a limit of not less than Two Million Dollars ($2,000,000) for all damages arising out of bodily injuries to or death of one person, and subject to that limit for each person, a total limit of not less than Four Million Dollars ($4,000,000) for all damages arising out of bodily injuries to or death of two or more persons in any one accident and providing for a limit of not less than Two Million Dollars ($2,000,000) for all damages to or destruction of property in any one accident and subject to that limit a total (or aggregate) limit of not less than Four Million Dollars ($4,000,000) for all damages to or destruction of property during the policy period. A certified copy of the policy providing said Contractor's Public Liability and Property Damage Insurance executed by a corporation qualified to write the same in the State in which the work is to be performed, in form and substance satisfactory to the Railroad, shall be delivered to and approved by the Railroad prior to the entry upon or use of the Railroad's property by the Contractor.

In addition to any other forms of insurance or bonds required under the terms of the contract and the specifications, the Contractor shall furnish to the Railroad a Railroad Protective

Policy in the form provided by Federal-Aid Policy Guide 23 CFR 646A. The combined single limit of said policy shall not be less than Two Million Dollars ($2,000,000) for all damages arising out of bodily injuries to or death of any person or persons and for all damages arising out of loss or destruction of or injury or damage to property in any one occurrence during the policy period; and subject to that limit, a total (or aggregate) limit of not less than Six Million Dollars ($6,000,000) for all damages arising out of bodily injuries to or death of any person or persons and for all damages arising out of or loss or destruction of or injury or damage to property during the policy period. Said insurance policy executed by a corporation qualified to write the same in the State in which the work is to be performed shall be in form and substance satisfactory to the Railroad and shall be delivered to and approved by the Railroad prior to the entry upon or use of its property by the Contractor.

The above mentioned insurance shall be written in accordance with the Federal-Aid Policy Guide 23 CFR 646A issued by the Federal Highway Administration, which is hereby, through reference, made a part of these provisions.

The State shall require its Contractor or any of its subcontractors to carry a Business Automobile Insurance Policy or equivalent policy with minimum limits of one million dollars ($1,000,000) for bodily injury and property damage per occurrence on all vehicles which the Contractor or subcontractors, their agents or employees may use at any time in connection with the performance of the work on this project. A certified copy of the policy providing said Business Automobile Insurance executed by a corporation qualified to write the same in the state in which the work is to be performed, in form and substance satisfactory to the companies, shall be delivered to and approved by the companies prior to the entry upon or use of the companies property by the Contractor.

The insurance as hereinbefore specified shall be carried by the Contractor and the Railroad covering all work performed on this project within the limits of the rights-of-way of the Railroad. Said insurance shall be carried until all work required under the terms of the contract is satisfactorily completed, as evidenced by formal acceptance by the State.

The State's Contractor shall cause triplicate originals of the policy or policies covering the Railroad Protective Liability Insurance specified above to be delivered to the State for delivery to the Railroad. The Contractor shall not enter upon or perform any work upon the property or the rights-of-way of the Railroad until the specified originals of the policy or policies have been delivered to and approved by the Railroad. The Contractor shall deliver one original policy of the above described Contractor's Property Damage Liability Insurance and one copy of the Business Automobile Insurance Policy to the State prior to the beginning of any work on the Railroad's right-of-way.

In addition to the above, the Contractor shall indemnify and hold the railroad(s) harmless against and from all cost, liability, and expense whatsoever (including the railroad attorney's fees and court costs and expenses) actually incurred arising out of or in any way contributed to by any negligent act or omission of the Contractor and its employees, for any damage to or destruction of any telecommunications system by the Contractor and its employees on the railroad's property.

RIGHT OF WAY
(S1-34-0801)

The right of way and property which the public has, or will have, by ownership or easement, for the permanent construction and the prosecution of the construction operations, is indicated in the plans or will be defined upon request. Any additional ground, or working or storage space that the contractor may require for his operations, shall be provided by the contractor at his own expense.

RESTORATION OF RAILROAD COMPANY'S PROPERTY
(S1-35-0801)

In the event the contractor shall in any manner move or disturb other property of the Railroad Company, 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, and the contractor shall indemnify and save harmless the Railroad Company against and from any and all liability, loss, damages, claims, demands, costs and expenses of whatsoever nature, including court costs and attorneys' fees, which may result from injury to or death of persons whomsoever, or damage to or loss or destruction of property whatsoever, when such injury, death, damage, loss or destruction grows out of or arises from the taking down of any fence, or the moving or disturbance of any other property, of the Railroad Company.

FINAL CLEANING UP
(S1-36-0801)

Subsection 104.08 in the Standard Specifications is amended to provide also that upon the completion of the work contemplated in this contract, the contractor 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 the Railroad Company and shall leave the said right of way in a neat condition satisfactory to the Chief Engineer of the Railroad Company, 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: Mr. Jack Dobrinska

Title: Manager, Industry & Public Projects

Address: 1416 Dodge Street, Room 940, Omaha, NE 68179

Telephone Number: (402) 271-2029

Project Number: 480-9(1130)

Project Location: I-480, 14th Street, Missouri River, Omaha

Type of Project: Pier Repair

No. of trains/day: Total: 4

Freight or Coal: X Speed: 10 mph Passenger 0 Speed -- mph

No. of Tracks: Mainline ___ Branchline X

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

Railroad Shoo-fly Required: No X Yes __

Project Parallel to RR: No X Yes __ If Yes, Number of Miles ___

Crossings on State Highway or City Street System: No __ Yes X

If Yes, Number of Crossings 1 (Grade separation, I-480 Bridge over UPRR)

Pavement or Overlay up to Crossing on County or City Road:

No X Yes __ If Yes, Number of Crossings __

Work to be done by Railroad None

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.

Group	Approximate Percent of Work Within 50 feet (15.25 meters) of Centerline of Nearest Track	Approximate Percent of Work on RR/ROW Not Within 50 feet (15.25 meters) of Centerline of Nearest Track	Description of Work
6	0 %	5 %	Pier Repair

CONSTRUCTION DETAILS

TEMPORARY FENCE

The contractor shall provide, install, maintain and remove a temporary fence to protect pedestrians and private property from the construction zone under the bridge. The temporary fence shall be constructed as first order of work.

The contractor shall provide, as part of this work, a fencing plan to outline the areas along the project that need to be protected.

The temporary fence can be let down to allow access during a day's construction but shall be replaced if work crews are not in the area. The temporary fence must be in place at the end of each day's operation.

The fence material, supplied by the contractor, shall be a lightweight plastic orange colored fence such as "Snow Fence" produced by the Tensar Corporation product code UX315016. The contractor shall also furnish metal "T" posts and ties. The fence must be handled with care to minimize damage.

The metal "T" posts shall be set at approximately 10-feet intervals and the fabric tied with a minimum 3 ties per post.

The work of providing, installing, maintaining and removing the temporary fence will be paid at the contract unit price per linear foot as "Temporary Fence" and shall be full compensation for all the labor, equipment, tools, materials and incidentals necessary to supply the fence.

TEMPORARY TRAFFIC CONTROL DEVICES
(S4-9-1201)

Paragraphs 2.a. of Subsection 422.05 in the Standard Specifications is void and superseded by the following:

2.a. If signs are not returned or are returned damaged, and the damage is beyond reasonable “wear and tear” and the damage was caused by the Contractor, then the Contractor shall be charged the value of the missing or damaged items. These charges shall be deducted from monies due the Contractor upon final payment.

PIERS RESTORATION

The pier restoration work includes the Concrete Repair, the Electrochemical Chloride Extraction and the Concrete Coating.

The Contractor shall secure the technical service of a qualified concrete restoration specialty companies to perform the concrete repairs, the electrochemical chloride extraction and the coating.

The company that will perform the Concrete Repairs shall have documented three years experience performing concrete repairs using the spray or the trowel applied mortar. The company that will perform the Electrochemical Chloride Extraction (ECE) shall have documented experiences from at least five previous successful ECE installations on concrete structures. Such documentation must be submitted prior to award.

If spray applied concrete is used, the nozzle man shall have three years experience performing spray applied mortar.

SECTION 1 CONCRETE REPAIR

PART 1. GENERAL
1.01 SUMMARY

This work shall include the removal of all the delaminated concrete on the piers as shown on the plans and identified on site, surface preparations, and applying the repair mortar. In the case of low cover, this work will include removing minimum 1/2 inch concrete and reinforcing steel chairs, surface preparation and applying the repair mortar. The repair mortar may be spray or trowel applied. This work shall include the repairs of the top of the piers (not shown on the plans). If spray applied is selected, the work shall be done in accordance with the ACI specification on Shotcrete (reported by ACI committee 506)

1.02 REFERENCES

Use the most current of the following references:

A. American Concrete Institute: ACI 546R - Guide to Concrete Repairs.

B. American Society for Testing and Materials:

1. ASTM A 185- Specification for Steel Welded Wire, Fabric, Plain, for Concrete.
2. ASTM C 39- Compressive Strength of Cylindrical Concrete Specimens.
3. ASTM C 42- Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
4. ASTM C 109- Compressive Strength of Hydraulic Cement Mortars (Using 2” Cube specimens).
5. ASTM C 138- Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.
6. ASTM C 157- Length Change of Hardened Cement Mortar and Concrete.
7. ASTM C 348- Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).
8. ASTM C 469- Static Modulus of Elasticity and Poisson’s Ratio of Concrete in Compression.
9. ASTM C 496- Splitting Tensile Strength of Cylindrical Concrete Specimens.

10. ASTM C 666- Resistance of Concrete to Rapid Freezing and Thawing.
11. ASTM C 882 Bond Strength of Epoxy-Resin Systems used with Concrete by Slant-Shear.

C. Corps of Engineers: CRD C39- Coefficient of Linear Thermal Expansion of Concrete.

D. Steel Structures Painting Council: SSPC SP10 VIS 1- Near White Metal Blast Cleaning.

E. International Concrete repair Institute: Guide for Selecting Application Method for the Repair of Concrete Surfaces.

1.03 SUBMITTALS

Prior to starting the work the contractor shall submit to the engineer: The manufacturer's certification that the mortar mix will meet the performance specifications. If spray applied concrete is used, the contractor shall also submit the nozzle man qualification.

1.04 QUALITY ASSURANCE

A. Field Samples:

1. At a location selected by the engineer, the contractor shall perform a sample substrate preparation work using methods proposed for the Project. Notify the engineer to allow observation. Accepted sample establishes standard for Work.

2. At a location selected by the engineer, the contractor will demonstrate the mortar application using the method proposed for the project. For demonstration purpose, the contractor shall apply the mortar into boxes to the thickness and orientations required on the Project.

B. Perform Work in accordance with ACI 546R except where exceeded by Specification requirements.

1.05 DELIVERY, STORAGE AND HANDLING

All materials shall be delivered to the site in the original, unopened packaging, and shall be stored in dry conditions between 45°F and 85°F, or according to the manufacturer's recommendations.

1.06 WEATHER CONDITIONS

The contractor shall apply the repair mortar only when ambient, surface and material temperatures are above 45°F. The contractor shall not apply the mortar if the ambient temperature is expected to fall below 40°F within 24 hours after placement, or rise above 100°F with in 8 hours after placement. The contractor will not be allowed to apply repair mortar when ambient or surface temperatures are 100°F and above.

PART 2. PRODUCTS

2.01 MATERIALS

A. Repair Mortar: The repair mortar shall be one of the following products:

EMACO S88-CA by Master Builders, Inc. a blend of Portland cement, silica fume, specially graded aggregates, synthetic fibers, and set-control admixtures including shrinkage compensating additives.

Fosroc Renderoc SP20; a single component, factory-blended mix of processed cement, graded aggregate, chemical additives, fibers and microsilica.

Performance specifications: The mortar mix shall have good electrical conductivity suitable for ECE. The mortar mix shall also have the following minimum properties as certified by the manufacturer.

1. Compressive Strength, ASTM C109:	3000 psi (20.7 MPa @ 1 day 6000 psi (41.4 MPa) @ 7 days 7500 psi (51.7 MPa) @ 28 days
2. Compressive Strength, ASTM C39:	5000 psi (34.5 MPa) @ 7 days 6000 psi (41.4 MPa) @ 28 days
3. Fresh Wet Density, ASTM C138:	130 lb/cu ft (2.1 kg/L)
4. Flexural Strength, ASTM C348:	1000 psi (6.9 MPa) @ 7 days 1500 psi (10.3 MPa) @ 28 days
5. Splitting Tensile Strength, ASTM C496:	550 psi (3.8 MPa) @ 7 days 650 psi (4.5 MPa) @ 28 days
6. Slant Shear Bond Strength, ASTM C882:	1750 psi (12.0 MPa) @ 7 days 2250 psi (15.5 MPa) @ 28 days
7. Drying Shrinkage, ASTM C157:	0.093% @ 28 days (air cure)
8.Thermal Expansion Coefficient, CRD C39:	10.8 x 10-6/C
9. Freeze-Thaw Resistance, ASTM C666:	99% RDM @ 300 cycles
10. Elastic Modulus, ASTM C469:	4.7 x 106 psi (32.4 Gpa)

B. Welded Wire Mesh: ASTM A 185, 4" x 4" spacing, gauge 10 - 12, where required.

C. Water: Drinkable

2.02 EQUIPMENT

The contractor will provide all equipment necessary to produce quality mortar application (spray or trowel applied).

2.03 MIXES

The contractor will mix the mortar according to the manufacturer’s recommendations.

PART 3. EXECUTION

3.01 PREPARATION

A. Concrete Substrates: The contractor shall prepare the substrate according to the following:

1. Remove loose or unsound concrete (the general location and the areas of delaminations and the low concrete cover are indicated on the plans).
2. Saw cut edges of areas to be repaired to a depth of at least 1/2" to provide a square edge. Do not create or permit featheredges.
3. Remove concrete by mechanical means or hydrodemolition to minimum 1/2" depth across entire repair. In the low cover repairs; remove 1/2" across the entire repair area.
4. Before applying the repair mortar, remove laitance, contamination, plaster, oil, paint, grease, corrosion deposits, algae, and other materials detrimental to adhesion of mortar using mechanical means. Where breaking out is not required, roughen substrate by mechanical means or abrasive blasting.

B. Reinforcing Steel: Where reinforcing steel is encountered, the contractor shall comply with the following:

1. Abrasive blast reinforcing steel to remove rust, scale and contaminants to achieve a white metal finish (SSPC SP10 - Near White Metal).
2. If half of the diameter of the reinforcing steel is exposed, chip out behind the reinforcing to a 3/4” minimum depth.
3. If corrosion has depleted the cross-section area by 25%, provide additional reinforcing steel to compensate for the depleted cross section, as directed by the Engineer.
4. Mechanically fasten reinforcing to assure electrical continuity and to secure against movement during application of mortar.
5. Steel shall be high pressure washed with clean water or steam cleaned immediately after abrasive blasting to remove corrosion deposits from pits and imperfections in steel surface.

C. Welded wire mesh: When the repair area is greater than 10 lineal feet in the longest direction or in overlays at depths of 1" or greater, 3/4" for overhead applications, the contractor shall install a 4" x 4" low gauge mesh (10 - 12 gauge).

1. The mesh shall cover the entire repair area, and shall be firmly tied to the reinforcing steel or to the properly prepared substrate.
2. Locate the mesh no closer than 1/2” and no more than 1" from the finished surface, using spacers and concrete anchors. A minimum cover of mortar over the mesh should be 1/2”.

D. Immediately before application of mortar, the contractor shall thoroughly soak concrete substrate with water, then remove excess water to provide a saturated surface dry (SSD) condition.

3.02 APPLICATION

The contractor shall apply the mortar according to the following provisions:

A. If spray application is selected, apply the spray mortar according to the manufacturer's recommended procedures for nozzle angle, material build-up, coverage of reinforcement, and finishing. Mortar shall be fully adhered and free of voids and rebound. Provide not less than 6,000 psi compressive strength in accordance with ASTM C42 at 28 days.

B. If wet spraying is selected, apply in layers not less than 1/2", nor more than 2" on overhead surfaces, 4" on vertical surfaces. Build up the required thickness by applying wet on wet layers without allowing previous layer to dry out. If material sags or slumps, remove it and replace with new material.

C. Use guide wires and rodding to achieve final shaping and elevations on vertical or overhead placements.

D. Remove excess material and over spray promptly.

E. If hand trowel application is selected, Hand trowel in layers up to 2" thickness on vertical surfaces, up to 1" thickness on overhead surfaces per lift. Build up the required thickness by applying wet on wet layers. If material sags or slumps, remove it and replace with new material.

F. Finishing: Tamp to compact, then steel trowel to an even hard, dense surface.

3.03 CURING

The contractor shall cure the repair mortar as follows:

A. Begin curing immediately after application and finishing.

B. Damp cure for seven days using fine mist of water, or burlap kept in direct contact with entire repair surface and continuously moist.

C. Protect from freezing temperature and heavy rainfall throughout curing period.

3.04 FIELD QUALITY CONTROL

A. Site Tests: The contractor shall verify (to the engineer) the quality of installation by sounding or impact-echo testing.

B. When applying the mortar, the contractor shall make three test cubes per day (as directed by the engineer). The engineer will test these cubes according to ASTM C 109.

At the discretion of the engineer, the contractor may be required to take up to a maximum (for the entire project) of 4- 4" core samples. The engineer will test these samples in accordance with ASTM C42.

C. The contractor will be required to remove work that does not meet specifications and replace with new materials at no additional cost.

PART 4. BASIS OF PAYMENT

4.01 The pay item “Concrete Repair” per Square foot.
4.02 Method of measurement: the Concrete Repair will be measured per square foot of surface area, as determined by field measurements. This payment will be full compensation for all work, materials, equipment, testing, and incidentals, to complete the work.

SECTION 2 EMBEDDED GALVANIC ANODES

Part 1. Description.

This work includes furnishing all labor, materials, and equipment necessary to properly install embedded galvanic anodes in concrete. The embedded galvanic anodes serve to provide localized corrosion protection to existing steel reinforcement. When placed at the specified spacing along the perimeter of concrete patches or along the interface between the new/existing concrete, the anodes mitigate the formation of new corrosion sites in the existing concrete.

Part 2. Materials.

Embedded galvanic anodes shall be puck-shaped approximately 2½ inches in diameter by 1 inch high, pre-manufactured, and consist of 2.1 ounces minimum of electrolytic high grade zinc in compliance with ASTM B418 cast around a pair of steel tie wires and encased in a highly alkaline cementitious shell with a pH of 14 or greater. The cementitious shell shall contain a minimum of 0.70 ounces of lithium hydroxide. Embedded galvanic anodes shall be Galvashield XP available from Vector Corrosion Technologies, phone number (330) 723-1177, or approved equal. The Engineer will sample one galvanic anode from each lot, but not less than one sample per 100 anodes supplied. The anodes shall be furnished with a Type D certification. Deliver, store, and handle all materials according to the manufacturer’s instructions. Repair mortars, concrete and bonding agents shall be Portland cement-based materials. Non-conductive repair materials such as epoxy, urethane, or magnesium phosphate shall not be permitted.

Part 3. Constructions.

3.1 The concrete work shall be done according to Section 1 of this special Provision.

3.2 Galvanic Anode Installation:

A. Install galvanic anodes along the perimeter of the repair at spacing as specified on the plans. In no case shall the distance between anodes exceed 24 inches.

B. Provide ¾ inch clearance between anodes and substrate to allow repair material to encase anode

C. Secure the galvanic anodes as close as possible to the patch edge using the anode tie wires. The tie wires shall be tightened to allow little or no free movement.

   a. If the anode is to be tied onto a single bar, or if less than 1 ½ inch of concrete cover is expected, place anode beneath the bar and secure to reinforcing steel.
   b. If 1½ inch concrete cover will exist over the anode, the anode may be placed at the intersection between two bars and secured to each bar.

D. Electrical Continuity

D.1. Confirm electrical connection between anode tie wire and reinforcing steel with a multi-meter. The maximum DC resistance shall be 1 Ohm.

D.2. Confirm electrical continuity of the exposed reinforcing steel within the repair area. Steel reinforcement shall be considered continuous when the DC resistance is 1 Ohm or less. If necessary, electrical continuity shall be established with uncoated steel tie wire.

E. The Engineer must verify proper installation of the galvanic anodes prior to placement of the concrete.

Part 4. Measurement and Payment.

The completed work will not be measured and paid for directly but will be considered subsidiary to the pay item “Concrete Repair”

SECTION 3. ELECTROCHEMICAL CHLORIDE EXTRACTION

Part 1. DESCRIPTION

This special provision pertains to the use of electrochemical treatment to remove chloride from salt-contaminated concrete piers and, thereby, prevent and/or halt reinforcement corrosion. This ECE treatment is performed by applying an electrical field between the reinforcement and an anode mesh placed in a reservoir on the surface of the concrete.

This work shall include sealing all concrete cracks on the pier surfaces, preparing the piers to receive the electrochemical chloride extraction (ECE) treatment, supplying, installing, operating and maintaining the ECE apparatus. When the ECE treatment is complete, the contractor as part of this work, will remove all the ECE apparatus, clean and repair any damage to the piers.

The treatment shall be applied after the delaminations and cracks repairs and after the seven days curing of the concrete mortar.

The Contractor shall provide for appropriate traffic control, whenever such is necessary during the installation and performance of the treatment.

Part 2. MATERIALS AND EQUIPMENT

2.1 Anode System

2.1.1 General

The anode system shall consist of an anode mesh embedded in a reservoir placed on the concrete surface. The reservoir shall consist of cellulose fibers saturated with an electrolyte.

2.1.2 Anode mesh

The anode mesh to be utilized during the treatment shall be steel mesh.

2.1.3 Cellulose fibers

For optimum spraying and moisture retention properties, the 2000 FG fibers, or an approved equal shall be used. Prior to spraying of the cellulose fibers onto the concrete surface to be treated, wooden battens of appropriate size or suitable spacers shall be fixed to the concrete.

2.1.4 Electrolyte

The electrolyte shall consist of potable water.

2.2 Electrical Insulating Material

The electrical insulating materials to be used to cover all high voltage connections shall be waterproof.

2.3 AC Power Supply

The Contractor shall provide an appropriate AC power supply, either by securing such with the local power company or by providing an appropriately controlled AC generator.

2.4 DC Power Supply

2.4.1 General

The DC power supply shall have sufficient number of independent AC/DC convertor circuits for the number of individual concrete piers (zones) to be treated.

Each AC/DC converter shall be rated to provide total output current and voltage to meet the current demand of the individual pier (zone). A current distribution box shall be provided for each zone, so that each zone can be divided into subzones that can operate electrically in parallel. The voltage on the secondary side shall be limited to approximately 40 VDC. These converters shall be rated to operate continuously at maximum output under site conditions of temperature and relative humidity.

2.4.2 Enclosures

The converters shall be housed in vandal-proof enclosure suitable for the site conditions.

2.4.3 Controls and connections

Each AC/DC converter output unit shall be provided with:

(i) All output controls.

(ii) One output voltmeter and one output ammeter.

(iii) Provision for direct measurement of output voltage of the secondary side with an external meter.

(iv) Fuses which are labeled with circuit designation. The rating of each fuse shall be marked by indelible labels on the panel adjacent to the appropriate fuse holder.

(v) Easy access to the positive and negative terminals of each output, which shall be clearly marked "+VE Anode" and "- VE Rebars". All output terminals shall be fully insulated from the chassis or its enclosure.

(vi) An adequately rated circuit breaker on the main input to ensure protection against short circuit and thermal overload.

(vii) Convenient, separate "ON" indicators (either bulbs or LED's) for indicating AC power supply and DC output are on.

(viii) Main cable connections shall conform to all applicable standards and regulations.

2.4.4 Electrical components

All electronic component subassemblies shall be encapsulated in epoxy resin or varnishes which shall be recommended by the component manufacturers.

The rectifiers shall be suitable for continuous operation at the specified output ratings, with a peak inverse voltage of at least 800 volts. These rectifiers shall have double windings, which must be separated by a grounded metallic screen or mounted on separate limbs of a grounded core.

Rectifiers shall be of the silicon type with suitable AC surge protection. Fuses shall be used to protect the rectifiers on the DC output side.

AC ripple on DC output of all rectifiers shall not exceed 2V at all output settings from 10 to 100% of rated voltage and current outputs.

2.5 Cables

2.5.1 General

All cables or wirings shall contain copper conductors. The cables shall be insulated with crosslinked polyethylene listed by UL RHH/RHW/USE.

2.5.2 DC cables

Cables for connection to the anode mesh (positive) shall be color coded red and of a minimum gauge 10 AWG.

Cables for connection to the reinforcing steel (negative) shall be color coded black and of a minimum gauge of 6 AWG.

Each DC cable shall be labeled according to the zone or portion of a concrete structure that it is connected to.

2.6 Digital Voltmeter

A battery-operated digital voltmeter (DVM) shall be provided to enable test and monitoring during the treatment period. Spare batteries shall be provided.

The DVM shall, at the minimum, have 3.5 digit display and resolution of 10 mV and an error of no more than 1 digit. The input impedance of the DVM shall be at least 10 Mohms.

2.7 Current Probes

A battery-operated current tong probe, with spare batteries, shall be provided for current readings during the treatment period. The error of the probe shall be no more than +/- 5%.

2.8 Equipment and Tests for Monitoring Chloride and Electrolyte

2.8.1 Core and rotary impact drills

Drills for obtaining concrete cores and powder during and after treatment shall be available. Typical diameter of the cores to be drilled is 2 to 4 inch.

2.8.2 Chloride analyses

Sampling of concrete for chloride analyses is performed by dry drilling for powder or by drilling for cores. Cores shall be dry cut into slices and crushed to fine powder.

Analyses to determine the residual water-soluble chloride content in the concrete shall be done in accordance to ASTM C-1218 or AASHTO T260 or AASHTO T277.

Part 3. INSTALLATION PROCEDURE

3.1 Preparation of the Concrete Piers for Treatment

The contractor shall seal all concrete cracks using a cement slurry coating. The coating shall be applied in such a way that it will have smooth even finish.

3.1.1 Pre-installation survey

Visual and sounding surveys has been completed and are shown on the plans.

3.1.2 Removal and replacement of delaminated concrete

Delaminated and spalled concrete areas shall be repaired before the ECE treatment.

3.1.3 Remediation for insufficient concrete cover

The low cover areas shall be repaired before the ECE treatment.

3.1.4 Insulation of visible or shallow metal components

Any tie wires, nails, or other metal components, that are close to the surface or visible on the surface of the concrete, shall be removed or insulated with silicon rubber. If necessary, these may be cut back to not less than 10 mm below the surface, then patched with a cement-based grout.

3.1.5 Reinforcement continuity

The Contractor shall ensure that the top-layer rebars in the structure are electrically continuous prior to the ECE treatment. Holes can be chipped or drilled if required. Normally, existing spall locations and locations for rebar connections can be used. Measurements can be made using DC ohms, DC mV or both as required. Rebars are considered continuous if the resistance is less than one ohm. Values up to 10 ohms can be acceptable with the proper consideration. Rebars are also considered continuous if the voltage difference, when measured with a high impedance voltmeter, is less than 1.0 mV.

Drawings of the structure showing reinforcement details shall be inspected to locate areas where continuity might not exist, and direct measurements of voltage differences or resistances between rebars in these areas and other areas in the structure shall be made. In addition, measurement points shall include the perimeters and the middle of each structural component. Records of the locations of measurement points and the measured voltage differences or resistances shall be submitted to the engineer.

Where any electrical discontinuities are identified, proposals for providing continuity shall be submitted to the Engineer for approval before proceeding.

3.1.7 Reinforcement (negative) connections

There shall be at least 1 connection to the rebars per 60 Sq Yd of concrete surface, and never less than 2 connections per pier or zone. Connection to the rebars shall be made by drilling and using self-tapping screws, clamps or other approved methods. Immediately after a connection has been made, the connection and the adjacent rebars shall be coated with a non-conductive material, such as silicon rubber.

3.1.8 Connection of metal fixtures

Any metal fixtures attached to the concrete structure must be protected against corrosion by electrical connection to the reinforcement. Any cable used in providing electrical connections shall comply with this specification and the sheathing shall be color coded black.

3.2. Installation of the Anode System

3.2.1 Preparation of the concrete surface

The surface of the concrete shall be clean of any grease, coating, etc., that may interfere with the passage of electrical current, to ensure optimum treatment efficiency. If needed, the cleaning can be performed by sandblasting, water jetting, or chiseling.

To prevent short circuits, any exposed steel, in or on the surface of the concrete, shall be adequately masked and, if necessary, connected to the reinforcement or removed, before applying the anode system.

3.2.2 Electrolytic reservoir

The reservoir shall consist of an anode mesh embedded within electrolyte-saturated cellulose fibers.

The fibers and the electrolyte shall be delivered through separate hoses, then mixed at a nozzle and sprayed directly onto the surface of the concrete. The fiber-electrolyte may be applied in one or two layers, to a sufficient thickness so that the mesh is completely submerged. The anode mesh shall be securely fixed. Wooden battens or suitable plastic spacers may be used to facilitate the installation of the anode mesh. (Plastic screws and plugs must be used with wooden battens). The distance between the wooden battens shall depend upon the geometry of the pier and the dimensions of the anode meshes proposed for use. There shall be at least two wooden battens for each face of any pier cap and column (that is no more than 4ft wide).

Throughout the ECE treatment, the fibers shall be kept continuously wet with the electrolyte.

3.3 Connection of Cables

All DC cables shall be placed and connected so that they do not cause any unnecessary inconvenience. Cable insulation shall be checked; any damaged shall be repaired using a generous amount of an appropriate insulation material.

All AC power cables shall be installed in accordance to relevant NEC codes and standards.

3.4 Placement of the AC/DC Converters

The location for placement of the converters shall be approved by the Engineer. The chassis of the converters shall be grounded in accordance with relevant NEC codes and standards.

3.5 Inspection of the Installation

The installed anode system, its electrical connections, and power cables shall be fully inspected to the satisfaction of the Engineer prior to the initiation of ECE treatment. AC power will be connected by a certified electrician as per code.

Part 4. SYSTEM OPERATION AND MAINTENANCE

4.1 System Start-Up

4.1.1 Circuit verification

Prior to start-up the circuit shall be tested to ensure correct wiring and labeling. The contractor shall also check the circuit resistance to ensure adequate connections.

Using a suitable voltmeter, the polarity of the reinforcement shall be ascertained when the power sources are switched on.

4.1.2 Adjustment of current output

Initial energizing of the system shall be undertaken only upon completion of the procedures described in clause 4.1.1.

The current used for the chloride removal treatment shall not exceed 200 mA/ft' of concrete or steel. Usually, current is not determined on this basis. Often current is limited by the resistance of the concrete and the maximum allowable voltage.

During the treatment, the current output shall be measured individually in each anode cable. The total current can be adjusted by decreasing or increasing the applied voltage. If the results indicate an unexpected current distribution, an inspection shall be carried out to determine the reason, and remedial action shall be taken.

4.2 Monitoring of System Operation

4.2.1 Daily inspections

During the treatment, the operation of the system shall be checked daily and the following records shall be made:

* date and time
* current (to each zone)
* voltage (to each zone)
* amp-hour

If a sharp decrease in current or increase in voltage is observed, a problem may have developed. In such case, the Contractor shall determine the cause, rectify the problem, and report it to the Engineer.

In addition, visual inspection of cable connections, cable insulation, and anode meshes, and wetting of the fibers shall be conducted daily.

Any interruption in the operation shall be recorded and reported to the Engineer.

4.2.2 Determination of residual chloride

The contractor shall test the residual water-soluble chloride in the concrete (per ASTM C-1218, AASHTO T260 or AASHTO T277) prior to terminating treatment. The test shall be conducted on concrete samples to be taken from at least 2 test locations from each concrete component. These locations shall be submitted to the Engineer for approval prior to taking samples. Samples are generally taken near the location and at the same depth (reinforcing steel depth) as previous pre-treatment test locations.

If the results of any of these analyses indicate that the system is not operating properly, the Contractor shall determine the cause and rectify the situation.

4.3 Remedial Work

During the treatment, remedial work shall be conducted whenever any inspection indicates that the system is not performing properly. This remedial work shall include, but not necessarily be limited to, the following:

i) Repair or replacement of defective components of the system.
ii) Modification to correct any electrical short circuits or to prevent stray currents.

The materials and workmanship for remedial works shall be in accordance with this specification.

Part 5. TERMINATION OF ECE TREATMENT

The ECE treatment shall be performed:

(1) for approximately 60 days, or
(2) until the results of the residual water-soluble chloride analyses (clause 4.2.2) indicate that the chloride in the concrete (at the depth of the reinforcing steel) has decreased by no less than 50% and has stabilized, and that the engineer is satisfied with the results, or
(3) until total accumulated charge of 600 to 1500 A-hr/sq yd of steel surface area has been achieved, whichever is the earliest.

Part 6. DISMANTLEMENT AND DISPOSAL OF THE SYSTEM

After the system is turned off, the Contractor shall remove all electrical cables, conduits, hangers, and power supplies from the site. The fibers anode mesh and wooden battens shall also be removed from the site and be disposed in accordance with applicable disposal and safety regulations.

If steel mesh is used as anode, the concrete surface shall be lightly sandblasted to remove any stain left by the corrosion of the mesh.

The site shall be completely clean at the end of the job.

Part 7. POSTTREATMENT CLEANING AND PATCHING OF THE CONCRETE

The surface of all treated concrete shall be washed with pressure cleaning, using clean water.

The entire treated structure shall be inspected after the treatment; the occurrence, location, and extent of any physical damage or changes to the concrete shall be rectified as directed by the engineer. The contractor shall repair any such defects and holes made on the concrete (to install wooden battens, conduit hangers, system negative connections, etc.).

Part 8. DOCUMENTATION

Within 30 days upon completion of the work, the Contractor shall submit a written final report to the Engineer, detailing the installation and all operating data for the system. This shall include records of all tests and measurements, made before and during treatment, including those listed in clause 4.2.1.

The final report shall include, and describe in detail, at least the following information:

- Rebar continuity on the structure and locations of any continuity bondings made
- Description of the ECE installation and procedure used
- Materials used with manufacturers' data sheets
- Description of test locations and test procedures
- Current and voltage readings during treatment
- All test results
- Locations and repair of any damage to the concrete arising from the treatment
- Discussion of results, including consideration of any local anomalies or variations in results
- Statement on effectiveness of the treatment

Part 9. BASIS OF PAYMENT

9.1 Pay Item

The pay item “Electrochemical Chloride Extraction” per square foot.

9.2 Method of Measurement

The “Electrochemical Chloride Extraction” will be be paid for at the contract price per square foot. This payment will be full compensation for work, materials, equipment, testing, and incidentals to complete the work. This work will also include all concrete crack sealing.

SECTION 3 CONCRETE COATING

PART I - GENERAL

1.01 SUMMARY: Work in this section consists of furnishing all labor, materials, equipment, supervision and incidentals as necessary to prepare the existing substrate and install the coating on the piers.

1.02 DESCRIPTION: A two coat, coating system, for above grade pier concrete surfaces. The water-resistant system shall keep vertical surfaces dry, resist water intrusion, resist chloride intrusion, resist efflorescence, resist freeze-thaw spalling, resist stain damage and prolong surface life.

1.03 FIELD SAMPLE: At a location selected by engineer, the contractor will perform a 5-foot by 5 foot applied sample on a prepared substrate using methods proposed for Project. Notify the engineer to allow observation. Accepted sample establishes standard for Work.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in original unopened, undamaged factory packaging bearing identification of product, manufacturer, batch number, and expiration data as applicable.
B. Store the product in a location protected from freezing, damage, construction activity, precipitation and direct sunlight in strict accordance with the manufacturer's recommendations.
C. Maintain product temperature between 40^{o}F and 95^{o}F.

1.05 ENVIRONMENTAL REQUIREMENTS

A. The coating system manufacturer shall provide Material Safety Data Sheets. The applicator shall be responsible to post these sheets during the application.

B. Weather Conditions:

1. Do not proceed with application of materials if ambient temperature is below 40^{o}F (4^{o}C) or if ice or frost is covering the substrate.
2. Do not proceed with application if ambient temperature exceeds 90^{o}F (33^{o}C) in direct sunlight.
3. Do not proceed with application of materials in rainy conditions or if rain is anticipated within two hours after application. Prime coat may be applied to

absorbent substrates, the surface should be sufficiently dry to observe the spray pattern during application. Apply top coat only to a dry surface

4. Provide adequate ventilation during and after application such that odors are not evident.

C. The Contractor shall protect the steel girders, and the plants and vegetation from overspray. The Contractor shall also protect all other items that may be damaged by the coating system

PART 2 PRODUCTS

2.01 The contractor shall select one of the following systems.

1. Carboline (Owen Lea (319) 447-2071)
   Primer: Carboline Multi-Bond 120
   Finish: Carboline Flexxide Elastomeric Coating System
2. ICI Devoe Coatings (Gary Jepsen (402) 697-8559)
   Primer: Bond Prep Interior/Exterior Waterborne Pigmented Bonding Primer
   Finish: Decra-Flex Elastomeric Coating System
3. Sherwin-Williams (Tony Ippoliti (317) 594-0083)
   Primer: Loxon Exterior Masonry Acrylic Primer
   Finish: DTM Acrylic Primer/Finish

The color of the topcoat shall be light gray to match the concrete.

2.02 PERFORMANCE SPECIFICATION:

A. The coating system shall be based on non-yellowing, durable acrylic resin system.

B. The coating system shall have minimum solid contents of 49.5 % by weight.

C. The coating system shall have high pigmentation with complete hiding power in two-coat application at 300 sq ft / gallon.

PART 3 - CONTRACTOR EXECUTION

3.01 SURFACE PREPARATION

A. All concrete repairs and electrochemical chloride extraction shall be completed prior to applying the coating system.

B. Verify that new concrete has reached 28-day cure strength.

C. The contractor shall clean surfaces to remove dust, dirt, oil, wax, other coatings, efflorescence and other foreign materials utilizing high-pressure water, sandblasting or other suitable methods.

3.02 APPLICATION: Both the primer and topcoat materials are applied directly from the container with no thinning. The prime coat should be allowed to dry for at least 1/2 hour to 2 hours before the topcoat is applied. The coatings should be applied at the rates recommended by the manufacturer for complete coverage. The coating may be either spray or roller applied.

3.03 PROTECTION OF FINISHED WORK: The contractor shall protect the finished work until cured. The contractor shall also prohibit traffic around surface finish for 12 hours after installation.

PART 4- BASIS OF PAYMENT

4.01 The pay item “Concrete Coating” per square foot.

4.02 Method of measurement: the Concrete Coating will be measured and paid for per the Square foot. This payment will be full compensation for all work, materials, equipment, testing, and incidentals, to complete the work.

PRESERVATION OF TREES
(S8-11-0801)

Subsection 107.09 in the Standard Specifications is amended to include the following: "Precautions necessary to prevent damage or injury" shall mean that the trees within the construction area and along project access roads shall be protected.

The protection may be either snowfence, plastic barrier fence or barrier tape. Either material shall be supported on steel posts.

The protection shall be erected at the dripline of a tree or a minimum of 10 feet (3 meters) diameter around the tree. Where several trees are close together, the entire group shall be protected by a common treatment.

No material or vehicles may be stored or parked inside the protected area, or within 20 feet (6 meters) of any tree on the state right-of-way.

The protection material, including posts, shall be removed at the end of the contract and remain the property of the contractor.

No direct payment will be made for this tree protection, but shall be considered the duty of the contractor as described in Section 107.09 of the Standard Specifications.

FLY ASH
(S10-5-0801)

Subsection 1008.01 in the Standard Specifications is void and superseded by the following:

Fly ash shall be Class C or F meeting the requirements of ASTM C 618.

STRUCTURAL STEEL
(S10-5-0801)

Section 1045 of the Standard Specifications is amended to include the following:

1045.03 -- Steel Plate Substitution

The Contractor may use either English or Metric steel plates in accordance with Table 1045.01.

Table 1045.01

English-Metric Steel Plate Substitution Table

Metric (millimeters)	English (inches)	Metric (millimeters)	English (inches)
9	3/8	32	1 1/4
10	3/8	35	1 3/8
11	7/16	38	1 1/2
12	1/2	40	1 5/8
14	9/16	45	1 3/4
16	11/16	50	2
18	3/4	55	2 1/4
20	13/16	60	2 3/8
22	7/8	70	2 3/4
25	1	80	3 1/4
28	1 1/8	90	3 1/2
30	1 1/4		

REPAIR OF DAMAGED METALLIC COATINGS
(S10-5-0801)

Paragraph 2. of Subsection 1061.01 in the Standard Specifications is void and superseded by the following:

2. The material used for repair shall provide a minimum coating thickness of at least 50 µm with one application.

DOWEL BARS
(S10-5-0801)

Subsection 1022.02 in the Standard Specifications is amended to include the following:

In addition to these certificates, two 1.8 meter samples of the coated bar (for tension testing and bend testing) of each size bar and each heat number shall be sent to the NDR Materials and Research Laboratory, Lincoln, Nebraska. These bars will be properly identified with tags showing the size and heat number.

CORRUGATED METAL PIPE
(S10-5-0801)

Table 1035.01 in Section 1035 of the Supplemental Specifications is amended by deleting the title “Steel and Aluminum Culvert Thickness”.

METAL FLARED-END SECTIONS
(S10-5-0801)

Table 1036.01 in Section 1036 of the Supplemental Specifications is amended by deleting the title “Steel and Aluminum Flared-End Thickness”.

REINFORCED CONCRETE PIPE, MANHOLE RISERS, AND FLARED-END SECTIONS
(S10-5-0801)

Paragraph 3.a. of Subsection 1037.02 in the Supplemental Specifications is void and superseded by the following:

3.a. Round reinforced concrete pipe shall conform to the requirements of AASHTO M 170-95 with the exception of the minimum circumferential reinforcing (in2/ft. (mm 2/m) of pipe wall) for 15, 21, and 24 inch (380, 460, 600 mm) Class III pipe, as shown below:

Paragraph 3.b. of Subsection 1037.02 is void and superseded by the following:

b. AASHTO M 170-95 Specifications are modified as follows:

Paragraph 4. of Subsection 1037.02 is void and superseded by the following:

4. Reinforced concrete arch pipe shall conform to the requirements of AASHTO M 206-95.

Paragraph 5. of Subsection 1037.02 is void and superseded by the following:

5. Reinforced concrete elliptical pipe shall conform to the requirements of AASHTO M 207-95.

Paragraph 7. of Subsection 1037.02 is void and superseded by the following:

7. Concrete flared-end sections shall be of the design shown in the plans and in conformance with the applicable requirements of AASHTO M 170-95, Class II pipe, AASHTO M 206-95, Class A-II pipe, or AASHTO M 207-95, Class HE-II pipe for the diameter of pipe which it is to be installed.

HIGH TENSILE BOLTS, NUTS, AND WASHERS (S10-5-1001)

Subsection 1058.02 in the Supplemental Specifications is void.

Paragraph 4.b.(5) in the Standard Specifications is void and superseded by the following:

(5) The bolt, nut, and washer assembly shall be assembled in a Skidmore-Wilhelm calibrator or an acceptable equivalent device. For bolts that are too short to be assembled in the calibrator, see Subsection 1058.03, Paragraph 4.b.(9).

ELASTOMERIC BEARINGS AND LAMINATED BEARING PADS (S10-5-0202)

Paragraph 2. of Subsection 1068.02 in the Standard Specifications is void and superseded by the following:

2. Certification shall be furnished in accordance with NDR's *Materials Sampling Guide*.

Paragraph 3. of Subsection 1068.02 is void.

STEEL BARS FOR CONCRETE REINFORCEMENT (S10-5-1201)

Section 1020 in the Standard Specifications is void and superseded by the following:

1020.01 - Description

Steel tie bars for longitudinal joint reinforcement in concrete pavements shall be epoxy coated and deformed Grade 40 or 60 billet steel as shown in the plans, specifications or Special Provisions.

1020.02 - Material Characteristics

1. Billet-steel bars shall conform to the requirements of ASTM A 615/A 615M.
2. Epoxy coatings shall conform to the requirements in Section 1021 of the Standard Specifications and Supplemental Specifications.

1020.03 - Acceptance Requirements

Acceptance shall be based on sampling, testing, and certification requirements in accordance with the NDR *Materials Sampling Guide*.

PROPOSAL GUARANTY
(S1-38-0801)

As an evidence of good faith in submitting a proposal for this work or for any portion thereof as provided in the proposal form, the bidder must file with his proposal a bid bond, which must be executed on the Department of Roads' Bid Bond form, in the amount of 5 percent of the amount bid for any group of items or collection of groups for which the bid is submitted. Any alterations, conditions or limitations added to the Department of Roads' Bid Bond form will be unacceptable and cause the bid not to be opened and read.

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