

IOWA DEPARTMENT OF NATURAL RESOURCES
PROJECT MANUAL



**CENTRAL PARK LAKE
BOAT RAMP, FISHING ACCESS, AND
BEACH CONSTRUCTION
JONES COUNTY, IOWA**

PREPARED BY

**IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING BUREAU
502 E. 9TH STREET, WALLACE STATE OFFICE BUILDING
DES MOINES, IOWA 50319-0034**

IN PARTNERSHIP WITH

JONES COUNTY CONSERVATION BOARD

PROJECT NO. 16-06-53-02

Obtain complete sets of contract documents including Drawings, Specification, bid documents, bidders' list in electronic format at: www.beelineandblue.com

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JONES COUNTY, IOWA
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CENTRAL PARK LAKE
BOAT RAMP, FISHING ACCESS, AND BEACH CONSTRUCTION
JONES COUNTY, IOWA
PROJECT NO. 16-06-53-02

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Notice to Bidders - Iowa Department of Natural Resources

Sealed bids will be received by the Iowa Department of Natural Resources, Engineering Bureau, at the Wallace State Office Building, 502 East 9th Street, Des Moines, Iowa 50319-0034 until **11:00 A.M., July 20, 2017** for the public improvement projects listed below, at which time they will be opened publicly. No bids shall be accepted by FAX. After the bid opening, information concerning bid results may be obtained by visiting the Department's website at www.iowadnr.gov.

Note: The United States Postal Service (USPS) does not deliver mail or packages directly to the address provided above but rather to the Capitol Complex Mail Room. Extra time should be allotted for proposals sent by the USPS. The Iowa Department of Natural Resources shall not consider bids if they are not received by the Department of Natural Resources, either at its mail room or at its Fourth Floor Reception Desk, by the time and date described in this Notice to Bidders, regardless of whether the bid was mailed prior to that time and date or whether the bid was received at the Capitol Complex Mail Room or other state government location prior to that time and date.

Project documents, including drawings, specifications, proposal forms and addenda items for the project are available at Beeline and Blue, at 2507 Ingersoll Ave., Des Moines, Iowa 50312. Please visit www.beelineandblue.com or contact (515) 244-1611 for more information. Alternatively, Bid Documents can be viewed or printed online at <https://programs.iowadnr.gov/engreal/projectlist.asp>

The Department shall comply with all public improvement procurement laws, as outlined in the plans and specifications and including but not limited to: Iowa Code chapter 26 related to public construction bidding; Iowa Code chapter 73 related to preferences; Iowa Code chapter 573 related to labor and materials on public improvements; rules promulgated by the Department of Administrative Services – General Services Enterprise as they may apply; rules promulgated by the Department of Natural Resources and the Natural Resources Commission, as they may apply; and any federal statutes, rules and/or executive orders that may be associated depending on funding sources. Bidders shall comply with these laws to be considered and are encouraged to be familiar with public improvement procurement requirements and the bidding documents before submitting a bid.

Each bidder shall accompany the bid with a bid security as defined in Iowa code section 26.8. The bid security must be in an amount set forth in the bidding documents and made payable to the Iowa Department of Natural Resources. Failure to execute a contract for the proposed work and file an acceptable Performance Bond in an amount equal to 100% of the contract price and a certificate of liability insurance within thirty (30) days of the date of the award of the contract will be just and sufficient cause for the rescinding of the award and the forfeiture of the bid security.

SPECIAL NOTICE TO CONTRACTORS

CONTRACTOR IS RESPONSIBLE FOR CONTACTING STATE STORMWATER PROGRAM COORDINATOR (515/725-8415) FOR INFORMATION RELATING TO STORM WATER PERMIT THAT IS NECESSARY IF CONSTRUCTION ACTIVITIES DISTURB ONE ACRE OR MORE.

Engineer's Estimate of Probable Costs: \$1,100,000.00

Direct questions concerning the Project Design, Drawings and Specifications to:

Heath Delzell, P.E.
Project Manager
502 East 9th Street
Des Moines, IA 50319
Ph: (515) 979-0104
Heath.delzell@dnr.iowa.gov

Direct questions concerning Site Review and Project Inspection to:

Mike Dufoe, P.E.
District 6 Engineer
Ph: (515) 985-9196
Michael.dufoe@dnr.iowa.gov

Direct questions concerning Bidding and Contract Procedures to:

Kim Alliss, DNR Procurement
Wallace State Office Building
Des Moines, Iowa 50319-0034
Telephone: 515/725-0733

In accordance with House File 2622 implemented by Iowa Code Sections 442.42 (15) & (16) and 422.47.47(5), Contractors may purchase qualifying items for work on this contract exempt from sales tax. The DEPARTMENT will issue an authorization letter and exemption certificate to the prime contractor and each approved subcontractor." *Complete information on qualifying materials and supplies can be found at www.state.ia.us/tax, the Iowa Department of Revenue and Finance (IDRF) Web site. Links are found in the Business Taxes and Local Government categories. 701 IAC 19.1-20 is found in Tax Research/Tax Research Library.*

Recorded bid results can be accessed at <https://programs.iowadnr.gov/engreal/projectlist.asp>.

Time and Date of Letting 11:00 AM, July 20, 2017

PROPOSAL

Project No. 16-06-53-02

Project Description and Location

**BOAT RAMP, FISHING ACCESS, AND BEACH CONSTRUCTION
CENTRAL LAKE PARK
JONES COUNTY, Iowa**

Proposal of: _____
(Name of Bidder)

Located at: _____ () _____
(Address) (Area) (Telephone)

Amount of Proposal Guarantee	Specified completion date or Number of Working Days	Approx. or Specified Starting Date or Number of Working Days	Liquidated Damages Per Day
\$40,000.00	09/30/2018	08/01/2017	\$550

The undersigned hereby agrees, if awarded the contract, to execute the proposed contract and to furnish an approved performance bond in a amount not less than 100 percent of the contract award within 30 days after the date of approval of award of the contract, and to provide all labor, materials, and equipment required to complete the project designated above, for the price hereinafter set forth, in strict compliance with the contract documents prepared by the Iowa Department of Natural Resources.

The undersigned agrees, if awarded the contract, to commence the work within a reasonable time after the preconstruction conference or by the specific starting date, if so specified, and to complete the work within the contract period, or to pay liquidated damages in the amount stipulated herein for each calendar day the work remains uncompleted after the expiration of the contract period or any authorized reduction thereof.

A proposal guarantee in the amount stipulated herein is included with this proposal, to be forfeited to the Iowa Department of Natural Resources if the undersigned fails to execute the contract and furnish an approved performance bond, if awarded the contract.

By virtue of statutory authority, preference will be given to products and provisions grown and coal produced within the state of Iowa, and also, a resident bidder shall be allowed a preference against a nonresident bidder from a state or foreign country which gives or requires a preference to bidders from that state or foreign country on projects in which there are no federal funds involved.

BY

(Iowa Contractor Registration No.)

(Signed) _____
(Date)

(FID/EIN/SSN)

(Phone Number) _____
(Fax Number)

(Email Address)

**THE FOLLOWING AFFIDAVIT MUST BE COMPLETED AND NOTORIZED, OR THIS BID WILL BE REJECTED.
- AFFIDAVIT-**

The signatory, being duly sworn, does depose and say that the undersigned is an authorized representative of:

(Name of Firm)

Located at: _____

Hereinafter referred to as "Bidder" and does hereby affirm to have personal knowledge that said bidder has examined the drawings and specifications, carefully prepared the proposal form, and has checked the same in detail before submitting; and that said bidder, or the agents, officers, or employees thereof, have not either directly or indirectly, entered into any agreement, participated in any collusion or fraud, or otherwise taken any action in restraint of free competitive bidding in connection with this bid.

(Signed)

_____ Day of _____, 20 _____

(Signed Notary)

My Commission Expires _____, 20 _____

SCHEDULE OF PRICES

Project Description and Location

BOAT RAMP, FISHING ACCESS, AND BEACH CONSTRUCTION, CENTRAL LAKE PARK, JONES COUNTY

Name of Bidder

THE "UNIT PRICE" AND "AMOUNT" COLUMNS MUST BE FILLED IN FOR THIS PROPOSAL TO BE CONSIDERED COMPLETE. IF THERE IS A DISCREPANCY BETWEEN UNIT BID PRICES, EXTENSIONS, OR TOTAL AMOUNTS OF BID, THE UNIT PRICES SHALL GOVERN.

Item No.	Description	Estimated Quantity	Unit Price	Amount
1	1" Curb Stop	1 Each		
2	18" Dual Wall HDPE	40 LF		
3	24" CMP	206 LF		
4	24" CMP Apron	3 Each		
5	36" CMP	140 LF		
6	36" CMP Apron	2 Each		
7	5" PCC	521 SY		
8	6' Tree	4 Each		
9	6" PCC	2,564 SY		
10	6" PCC Curb	201 LF		
11	6" Perf. Tile	446 LF		
12	Beach Sand	3,360 Tons		
13	Bench, Backless	1 Each		
14	Bench, Standard	2 Each		
15	Bioswale	1 Each		
16	Class 10 Excavation	4,608 CY		
17	Control Structure	1 Each		
18	Drain Down Pit	1 Each		
19	Drinking Fountain	1 Each		
20	Electrical, Boat Ramp	Lump Sum		

21	Electrical, Fishing Access	Lump Sum		
22	Fishing Bumpout	4 Each		
23	Fishing Pier	Lump Sum		
24	Granular Shoulders	101 Tons		
25	Grill	1 Each		
26	Handicap Sign	3 Each		
27	HMA Patch	220 Tons		
28	Inline Drain	4 Each		
29	Jug Filler	1 Each		
30	Kiosk, Install Only	1 Each		
31	Light, Install and Foundation Only	1 Each		
32	Lights, Complete	3 Each		
33	Mobilization	Lump Sum		
34	Mulch Sock	1,299 LF		
35	Native Grass	0.22 Acres		
36	Pavement Removal	1,967 SY		
37	Pavement Sawcut	65 LF		
38	Pavement Striping	1,273 LF		
39	Retaining Wall	90 LF		
40	Seeding, Fertilizing, Mulching	1.5 Acres		
41	Shelter, Complete	2 Each		
42	Special Backfill	2,403 Tons		
43	Stairs, 5-Step	3 Each		
44	Stairs, 6-Step	1 Each		
45	Stairs, Fishing Access	1 Each		
46	Structural Concrete (Boat Ramp)	172 SY		
47	Subdrain Outlet	2 Each		
48	SW-501 Manhole	1 Each		
49	SW-603 Intake	1 Each		
50	Tree Clearing, As Necessary	Lump Sum		

51	Trench Drain	34 LF		
52	Construction Staking	Lump Sum		
		TOTAL		

Bidder Acknowledges Receipt of Any Issued Addenda Below (Number and Date)

PROPOSAL GUARANTEE BOND

STATE OF IOWA
DEPARTMENT OF NATURAL RESOURCES

KNOW ALL MEN BY THESE PRESENTS:

That we, _____

of _____ as PRINCIPAL,

and _____

of _____ as SURETY(S),

are hereby held and firmly bound unto the state of Iowa in the penal sum of:

_____ Dollars \$ _____

for the payment, whereof, the said PRINCIPAL and SURETY(S) bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that whereas the PRINCIPAL is herewith submitting to the state of Iowa, acting by and through the Iowa Department of Natural Resources, hereinafter called the DEPARTMENT, its sealed proposal for a contract for the _____

at _____ in _____ County, Iowa.

NOW THEREFORE,

the conditions of this obligation are such that, if said proposal is rejected by the DEPARTMENT, or if said proposal is accepted by the DEPARTMENT and the PRINCIPAL shall enter into a contract in the form specified by the DEPARTMENT in accordance with the terms of the proposal and shall furnish a bond for the faithful performance of said contract in the form specified by the DEPARTMENT, this obligation shall be null and void. Otherwise it shall remain in full force and effect.

In the event that the said proposal is accepted by the DEPARTMENT and the PRINCIPAL shall fail to enter into the contract as defined herein or shall fail to furnish the performance bond as noted above within thirty (30) days of the approval of the award, the PRINCIPAL and SURETY(S) agree to forfeit to the DEPARTMENT the penal sum herein mentioned, it being understood that the liability of the SURETY(S) shall in no event exceed the penal sum of this obligation.

IN WITNESS WHEREOF,

the above bounden parties have executed this instrument under their several seals this _____ day of _____, 20_____, the name and corporate seal of each party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

PRINCIPAL:

SURETY::

By _____

By _____

If a partnership all partners must sign.

PGB-1

**CENTRAL PARK LAKE
BOAT RAMP, FISHING ACCESS, AND BEACH CONSTRUCTION
PROJECT NO. 16-06-53-02
JONES COUNTY, IOWA**

THIS AGREEMENT, made this _____ day of, _____ 20____ by and between the state of Iowa acting through the Department of Natural Resources hereinafter called the **DEPARTMENT** and:

located at

hereinafter called the **CONTRACTOR**

WITNESSETH: That the **DEPARTMENT** agrees to pay the **CONTRACTOR** the contract price provided herein for the fulfillment of the work and the performance of the covenants set forth herein, and the **CONTRACTOR** agrees with the **DEPARTMENT** to commence and complete the project described as follows:

This project consists of removing and replacing the boat ramp parking lot, renovating the beach area, constructing a new fishing access parking lot, and constructing a steel fishing pier.

For the Sum of:

Dollars (\$)

and all extra work in connection therewith, all in accordance with the terms and conditions herein contained: and to furnish at the **CONTRACTOR'S** own proper cost and expense, all material, equipment, labor, insurance, and other accessories and services necessary to construct and complete, in a workmanlike manner, ready for continuous operation, the above mentioned project. The work shall be performed in accordance with the requirements and provisions of the following documents, all of which are made a part hereof and collectively evidence and constitute the contract:

1. Notice to Bidders.
2. Instructions to bidders.
3. IDNR Standard Specifications and Current Supplemental Specifications
4. Project Specifications Including Addenda Number _____ Through _____
5. Drawings, Sheet Number _____ A.01 Through _____ S.01 Inclusive
6. Contractor's Proposal.
7. Proposal Guarantee Bond.
8. Performance Bond.
9. This Instrument.
10. Modifications or Change Orders pursuant to IDNR Standard Specifications
11. Resident Bidder Preference Certification on Non-Federal-Aid Projects

The parties to this contract understand that time of completion of the work under this contract is the essence to the contract. The **CONTRACTOR** hereby agrees to commence work under this contract in accordance with Section 1108 of the IDNR Standard Specifications and to complete all the work by

September 30, 2018

The **CONTRACTOR** hereby agrees that liquidated damages in the amount of FIVE HUNDRED Dollars \$ 550.00
FIFTY

shall be retained or assessed against the **CONTRACTOR** for each day and every day the completion of the work is delayed beyond the time specified herein, not as a penalty, but as a mutually agreed to, predetermined amount to reimburse the **DEPARTMENT** for salaries of engineers and reviewers, clerk hire, interest charged during the period for delays and loss of use.

It is understood that the **CONTRACTOR** consents to the jurisdiction of the courts of Iowa, to hear, determine and render judgment as to any controversy arising hereunder, and that this contract shall be governed by, and construed according to, the laws of the state of Iowa.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, in the day and year first above mentioned.

FOR THE DEPARTMENT:

Deputy Director

This contract was approved by the **NATURAL RESOURCES COMMISSION** at its meeting held on

(Date)

FOR THE CONTRACTOR:

(Signature and Title)

(Firm)

(Address and Zip Code)

Seal if by a Corporation:

Identification Number _____

Soc. Sec. No. _____

Or Fed. I. D. No. _____

PERFORMANCE BOND

STATE OF IOWA
DEPARTMENT OF NATURAL RESOURCES

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
of _____ as PRINCIPAL,
and _____
of _____ as SURETY(S),
are hereby held and firmly bound unto the state of Iowa in the penal sum of:

_____ Dollars \$ _____
for the payment, whereof, the said PRINCIPAL and SURETY(S) bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that whereas the PRINCIPAL entered a certain contract, hereto attached, and made part hereof to the state of Iowa, acting by and through the Iowa Department of Natural Resources, hereinafter called the DEPARTMENT, dated _____ for the _____
at _____ in _____ County, Iowa.

NOW THEREFORE,
the conditions of this obligation are such that, if the PRINCIPAL shall faithfully perform the contract in accordance with the plans, specifications and contract documents, and shall fully indemnify and save harmless the state of Iowa from all cost and damage which the state of Iowa may suffer by reason of the PRINCIPAL's default or failure to do so and shall fully reimburse and repay the state of Iowa all outlay and expenses which the state of Iowa may incur in making good any such default, then this obligation shall be null and void, otherwise it shall remain in force and effect.

In the event that the PRINCIPAL is in default under this contract as defined herein, the DEPARTMENT shall by written notice inform the PRINCIPAL that this contract is in default; and may, at its option, without process or action at law:

- 1. Take over all or any portion of the work and complete it either by day labor or reletting the work. The DEPARTMENT may retain all material, equipment and tools on the work, at a rental which it considers reasonable, until the work has been completed.
- 2. Allow the surety to take over the work within fifteen (15) days and assume completion of said contract and become entitled to the balance of the contract price.
- 3. Allow the PRINCIPAL to complete the contract.

As required by Chapter 573 of the Code of Iowa.

- 1. The PRINCIPAL SURETY(S) on this bond hereby agree to pay all persons, firms or corporations having contracts directly with the PRINCIPAL or with subcontractors, all just claims due them for labor performed or material furnished, in the performance of the contract on account of which this bond is given, when the same are not satisfied out of the portion of the contract price shall have been established as provided by law.
- 2. Every Surety on this bond shall be deemed and held, any contract to the contrary notwithstanding, to consent without notices:
 - a. To any extension of time to the contractor in which to perform the contract.
 - b. To any change in the plans, specifications, or contract, when such changes does not involve an increase of more than 20 percent of the total contract price, and then only as to such excess increase.
 - c. That no provision of this bond or any other contract shall be valid which limits less than one year from the time of the acceptance of the work, the right to sue on this bond for defect in workmanship or material not discovered or known to the DEPARTMENT at the time such work was accepted.

No provision of this bond or any other contract shall be valid which limits to less than five years after the acceptance of the work, the right to sue on this bond for defects in workmanship or material in connection with paving or concrete work.

IN WITNESS WHEREOF,

the above bounden parties have executed this instrument under their several seals this _____ day of _____, 20_____, the name and corporate seal of each party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

PRINCIPAL:

SURETY:

By _____

By _____

If a partnership all partners must sign.

This bond approved by the Iowa Department of Natural Resources this _____ day of _____, 20 _____

By _____

Director

**IOWA DEPARTMENT OF NATURAL RESOURCES
GENERAL COVENANTS AND PROVISIONS
SECTION NO. 00700
JANUARY 1993 (Revised 11/06/12)**

This section consists of the general provisions applying to all types of construction and maintenance as set forth in the following sections

- Part 1100. Definitions
- Part 1101. Instructions to Bidders
- Part 1102. Bidder Qualifications
- Part 1103. Award and Execution of Contract
- Part 1104. Scope of Work
- Part 1105. Control of Work
- Part 1106. Control of Materials
- Part 1107. Legal Relations and Responsibilities to the Public
- Part 1108. Prosecution and Progress
- Part 1109. Measurement and Payment

PART 1100. DEFINITIONS

1100.01 GENERAL

- A. Whenever in these specifications or in other contract documents, the following definitions, or terms or both, or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:
- B. In order to avoid cumbersome and confusing repetition of expressions in these specifications, it is provided that whenever anything is, or is to be done, if, as, or, when, or where "contemplated, required, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, acceptable, unacceptable, suitable, accepted, satisfactory, unsatisfactory, sufficient, insufficient, rejected, or condemned," it shall be understood as if the expression were followed by the words "by the Engineer" or "to the Engineer."
- C. The titles or headings of the sections and articles herein, or referred to on the plans, are intended for convenience of reference and shall not be considered as having any bearing on their interpretation.
- D. Working titles and pronouns used for any person referred to in these specifications may be used with a masculine gender for the sake of brevity and are intended to refer to persons of either sex.

1100.02 DEFINITIONS OF ABBREVIATIONS

- A. Whenever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented.

AAN - American Association of Nurserymen
AAR - Association of American Railroads
AASHTO (or AASHO) - American Association of State Highway and Transportation Officials
ACI - American Concrete Institute
AIA - American Institute of Architects
ANSI - American National Standards Institute
APWA - American Public Works Association
ARA - American Railway Association
AREA - American Railway Engineering Association
ASCE - American Society of Civil Engineers
ASLA - American Society of Landscape Architects
ASTM - American Society of Testing and Materials
AWPA - American Wood Preservers Association
AWS - American Welding Society

AWWA - American Water Works Association
CFR - Code of Federal Regulations
DNR - Iowa Department of Natural Resources
DOT - Iowa Department of Transportation
EEI - Edison Electric Institute
EPA - Environmental Protection Agency
FHWA - Federal Highway Administration
FSS - Federal Specifications and Standards
IEES - Institute of Electrical and Electronics Engineers
IES - Illuminating Engineering Society
ICEA (or IPCEA) - Insulated Cable Engineers Association
MUTCD - Manual on Uniform Traffic Control Devices
NEC - National Electrical Code
NECA - National Electrical Contractors Association
NEMA - National Electrical Manufacturers Association
NFPA - National Fire Protection Association
NRC - Natural Resource Commission
SBC - State Building Code
UBC - Uniform Building Code
UL - Underwriters Laboratories, Incorporated
UMC - Uniform Mechanical Code
UPC - Uniform Plumbing Code
US - United States
USC - United State Code

B. Abbreviations may be used for materials and classes of work:

AC - Asphalt cement
ACC - Asphalt cement concrete
ATB - Asphalt treated base
BSC - Bituminous seal coat
BTA - Bituminous treated aggregate
CTG - Cement treated granular
PCC - Portland cement concrete
SAS - Soil-aggregate subbase
SLS - Soil-lime subbase

1100.03 DEFINITIONS OF TERMS

1. Acceptable Work - Work in reasonably close conformance with the contract requirements.
2. Addendum or Addenda - Changes, revisions, or clarifications of the specifications of contract documents which have been issued to prospective bidders, prior to the time of receiving bids.
3. Advertisement - The public announcements, publications, or solicitations as required by the Contracting Authority, inviting bids for work to be performed.
4. Approval of Award - The acceptance by the Contracting Authority of a bid.
5. Approximate Starting Date - A calendar day shown on the proposal on which it is anticipated, at the time of the letting, that conditions will be such as to permit the Contractor to commence work.
6. Assignment of Contract - The written agreement whereby the Contractor sells, assigns, or transfers his rights in the contract to any person, firm, or corporation.
7. Award - The execution of the contract.
8. Bidder - An individual, firm, corporation, or joint venture submitting a bid for the advertised work.
9. Calendar Day - Every day shown on the calendar.

10. Change Order - A written order to the Contractor, signed by the Engineer, ordering a change which has been found necessary in the work from that originally shown by the plans and specifications. Change orders duly signed and executed by the Contractor constitute authorized modifications of the contract.
11. Channel - A natural or artificial water course.
12. Chief Engineer - An engineer appointed by the Iowa Department of Natural Resources as the head of the Construction Service Bureau.
13. Classes of Work - The divisions made for the purpose of measuring and paying for labor to be performed or materials to be furnished according to the methods of construction involved, as indicated by the items for which bids have been received for each specific contract.
14. Commencement of Work - Work will be considered commenced when the Contractor's operations are started on items of work covered by the contract documents and which require inspection, or when the Contractor notifies the Engineer, and the Engineer agrees, that the Contractor's equipment and personnel are available at the site, but his operations are prevented by weather or soil conditions.
15. Commission - The state Natural Resources Commission as constituted under the laws of the state of Iowa (which is the party of the first part in the contract, let in behalf of the State, of which these specifications are a part).
16. Commissioner - A member of the state Natural Resources Commission.
17. Contract (Also Contract Document) - The written agreement between the Contracting Authority and the Contractor setting forth the obligations of the parties thereunder, including, but not limited to, the performance of the work, the furnishing of labor and materials, and the basis of payment. The contract includes the notice to bidders, proposal, contract form, and contract bonds specifications, supplemental specifications, special provisions, all items covered on the table of contents, plans, notice to proceed, and any change orders and agreements which are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.
18. Contract Item (Pay Item) - A specifically described unit of work for which a price is provided in the contract.
19. Contract Period (Also Contract Time) - The number of working days or calendar days allowed for completion of the contract, including authorized time extensions. In case a calendar date of completion is shown in the proposal, in lieu of or in addition to the working days, the contract shall be completed by that date.
20. Contract Sum - The aggregate sum obtained by totaling the amounts arrived at by multiplying the number of units of each class of work, as shown in the contracts by the unit price specified in the contract for that class of work.
21. Contracting Authority - The governmental body, board, commission, or officer having authority to award a contract.
22. Contractor - The individual, firm, corporation, or joint venture contracting with the Contracting Authority for performance of prescribed work.
23. Contractor Registration - The registration number issued by the Division of Labor Service, in accordance with Chapter 91C of the Code of Iowa.
24. Deficient Work - Work not in reasonably close conformance with the contract requirements, or otherwise inferior, but in the opinion of the Engineer, reasonably acceptable for its intended use and allowed to remain in place.
25. Department of Economic Development - As defined in Chapter 15, Code of Iowa.
26. Department of Labor Services - As defined in Chapter 91, Code of Iowa.

27. Department of Natural Resources (Department)- The Department of Natural Resources, as defined in Chapter 455A, Code of Iowa.
28. Department of Revenue and Finance - As defined in Chapter 421, Code of Iowa.
29. Department of Transportation -The Department of Transportation, as defined in Chapter 307, Code of Iowa.
30. Director - The duly appointed executive officer for the Department of Natural Resources.
31. Drainage Ditch -An artificially constructed, open depression, other than a road ditch, which is constructed for the purpose of carrying surface water runoff .
32. Drawings (or Plans) - The approved plans, profiles, typical cross sections, working drawings, and supplemental drawings, or exact reproductions thereof, including modifications, altered plan, revisions, and amendments, which show the locations characters dimensions, and details of the work to be done.
33. Employee - Any person working on the project, mentioned in the contract of which these specifications are a party, and who is under the direction or control, or receives compensation from, the Contractor or subcontractor.
34. Engineer - The Chief Engineer, or other Engineer of the Contracting Authority, acting directly or through a duly authorized representative, such representative acting within the scope of the particular duties assigned, or of the authority given.
35. Equipment - All machinery and equipment, together with the necessary supplies for upkeep and maintenance, and tools and apparatus necessary for the proper construction and acceptable completion of the work.
36. Extra Work - Work not provided for in the contract, as awarded, but deemed essential to the satisfactory completion of the contract within its intended scope and authorized by the Engineer. Extra work shall not include additional materials, equipment, and labor used due to natural variations in the surface and subsurface conditions, except as specifically provided for elsewhere in the contract documents.
37. Extra Work Order - A change order concerning the performance of work or furnishing of materials involving additional work. Such additional work may be performed at agreed prices, or on a force-account basis, as provided elsewhere in these contract documents.
38. Independent Contractor - Any persons firms or corporation who contracts with the Contractor to perform a service for which the basis of payment is in terms of units of service rather than salary or wages.
39. Inspector - An employee of the Contracting Authority and who is the authorized representative of the Engineer, assigned to make detailed inspections of any or all portions of the work, or materials included in the work.
40. Instruction to Bidders - The clauses setting forth in detail the information relative to the proposed work and requirements for the submission of proposals.
41. Invitation for Bids - See Notice to Bidders.
42. Item -See Contract Item.
43. Joint Venture - Two or more individuals, firms or corporations combining any equipment, personnel or finances for the purpose of submitting a single bid.
44. Laboratory - The testing laboratory of the Contracting Authority, or any other testing laboratory which may be designated or approved by the Engineer.
45. Lands Acquired for the Work - The land area, reserved or secured by the Contracting Authority, upon which to construct the work, or where to obtain material therefrom.

46. Major Item of Work - Any contract item (Pay item) for which the original contract amount plus authorized additions is more than 10% of the total original contract sum or \$50,000 whichever is less.
47. Materials - Any substances specified for use in the construction of the project and its appurtenances.
48. Notice to Bidders - That portion of the contract documents, prepared and furnished by the Contracting Authority for the information of bidders submitting proposals, which notice specifies provisions, requirements, and instructions pertaining to the method, manner, and time of submitting bids.
49. Notice to Proceed - Written notice to the Contractor to proceed with the contract work including, when applicable, the date of beginning of contract time.
50. Official Publications - The official publications are the formal resolutions and notices relative to the proposed improvement that are required by law to be published in a prescribed manner and that have been published in accordance with the statutes relating to them. Official publications area by statutes vested with all of the force and effect of contract obligations.
51. Owner - The state of Iowa, acting through the Iowa Department of Natural Resources as constituted under the laws of the state of Iowa.
52. Performance Bond - The bond executed by the Contractor and its surety in favor of the owner, guaranteeing the faithful performance of the contract and the payment of all debts pertaining to the work.
53. Plans (or Drawings) - The approved plans, profiles, typical cross sections, working drawings, and supplemental drawings, or exact reproductions thereof, including modifications, altered plan, revisions, and amendments, which show the locations characters dimensions, and details of the work to be done.
54. Project - One or more correlated improvements which constitute the complete improvement of a designated park, recreational reserve, state monument, lake, reserve, game area, fish hatchery, parkway, or other area under jurisdiction of the Department of Natural Resources.
55. Project Engineer - The representative of the Department of Natural Resources, regardless of actual title, directly in charge of the work.
56. Proposal - The formal offer of a bidders on the prescribed form, to perform the work and to furnish the labor and materials at the prices quoted.
57. Proposal Form - The approved form on which the Contracting Authority requires formal bids to be prepared and submitted for the work.
58. Proposal Guarantee - The security furnished by the bidder with his/her proposal for a projects as guarantee he/she will execute the contract for the work if the proposal is accepted.
59. Reasonably Close Conformity - Reasonably close conformity means compliance with reasonable and customary manufacturing and construction tolerances where working tolerances are not specified. Where working tolerances are specified, reasonably close conformity means compliance with such working tolerances. Without detracting from the complete and absolute discretion of the Engineer to insist upon such working tolerances as establishing reasonably close conformity, the Engineer may accept variations beyond such tolerances, as reasonably close conformity, where they will not materially affect value or utility of the work and the interest of the State.
60. Right-of-Way - The land area, the right to possession of which is secured or reserved by the Contracting Authority for road purposes.
61. Road - A general term denoting a public way for vehicular travel, including the entire area within the right-of-way.
62. Shop drawings - See "working drawings".
63. Special Provisions - Additions and revisions to the standard and supplemental specifications covering conditions peculiar to an individual project, method and manner.

64. Specifications - The requirements contained herein and in any supplemental specifications, or special provisions applying to the contract, and pertaining to the method and manner of performing the work, or to the quantity and quality of the materials to be furnished under the contract.
65. Specified Completion Date - The date specified in the proposal for completion of the work. After work has commenced or if the completion date is not specified, the last day of the contract period shall be the completion date.
66. Specified Starting Date - A calendar day shown on the proposal on which date commencement of the work is expected.
67. State - The State of Iowa acting through its authorized representative.
68. Station - One hundred lineal feet.
69. Subcontractor - Any individual, firm, or corporation to whom the Contractor, with the written consent of the Contracting Authority, sublets any part of the contract.
70. Superintendent - The Contractor's authorized representative in responsible charge of the work.
71. Supplemental Agreement - Written agreement between the Contractor and the Contracting Authority, modifying the original contract.
72. Surety - The corporation, partnership, or individual, other than the Contractor, executing a bond furnished by the Contractor.
73. Targeted Small Business - Any enterprise, located in the state of Iowa, which is operated for profits under a single management, and which is 51 percent owned, operated, and actively managed by one or more women or minority persons, and has been certified by the Iowa Department of Economic Development.
74. Unacceptable Work - Work not in reasonably close conformance with the contract requirements and ordered to be removed and replaced.
75. Unauthorized Work - Work neither contemplated by the contract documents nor authorized by the Engineer, and work done contrary to the instructions of the Engineer.
76. Work - Work shall mean the furnishing of all labor, materials, equipment, and other incidentals, as detailed in the plans, specifications, and by the Engineer, necessary or convenient to the successful completion of the project and the carrying out of all the duties and obligations imposed by the contract.
77. Work Order - A written order, signed by the Engineer, of contractual status, requiring performance by the Contractor without negotiation of any sort, and which may involve starting, resuming, or the suspension of work. (Not to be confused with extra work order.)
78. Working Day - Prior to commencement of work, beginning on the date designated in the notice to proceed or beginning on the specified starting date, or as soon thereafter as provided in the specifications, a day other than Saturday, Sunday, or another recognized legal holiday. Any weekdays exclusive of Saturdays, Sundays, or a recognized legal holidays on which weather or other conditions not under control of the Contractor, will permit construction operations to proceed for not less than 3/4 of a normal workday in the performance of a controlling item of work. If such conditions permit operations to proceed for at least 1/2 but less than 3/4 of the normal working hours, 1/2 of a working day will be counted. The days counted will exclude Saturdays, Sundays, and recognized legal holidays the Contractor does not work, but will include Saturdays, Sundays, and recognized legal holidays the Contractor does work. Nonproductive work that does not require inspection may be done on Saturdays with no time charged. Working days will not be charged for the day before or after a holiday when the contract documents specifically prohibit work and the Contractor does not work. Working days will not be counted during periods of suspension of work ordered by the Engineer, except when the suspension is a result of a violation of terms of the contract.

79. Working Drawings - Stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or any other supplementary plans or similar data which the Contractor is required to submit to the Engineer for approval. Also referred to as "shop drawings". After approval by the Engineer the working drawings became a part of the plans.

PART 1101. INSTRUCTIONS TO BIDDERS

1101.01 GENERAL

- A. These instructions are intended to serve as a guide to the requirements with which the bidder must comply prior to and in submitting a proposal, including various "conditions" affecting the award of the contract. They do not in themselves inform the bidder of all the requirements that must be complied with under the contract.
- B. The time for bid openings shall be the prevailing Central Standard or Daylight Savings time in force at Des Moines, Iowa on the date set forth in the Notice to Bidders.
- C. Before submitting a bid, the bidder shall examine all the drawings and specifications enumerated in the table of contents of this project manual. The successful bidder will be required to do all the work that is shown on the drawings, mentioned in the specifications, or reasonably implied as necessary to complete this contract.
- D. The bidder shall visit and examine the site to become acquainted with the adjacent areas, means of approach to the site, conditions of the actual job site, and the facilities for delivering, storing, placing, and handling of materials and equipment.
- E. Failure to visit the site or failure to examine any and all contract documents will not relieve the successful bidder from the necessity of furnishing any materials or equipment, or performing any work that may be required to complete the work, in accordance with the drawings and specifications. Neglect of the above requirements will not be accepted as reason for delay in the work or additional compensation.

1101.02 DRAWINGS AND SPECIFICATIONS

- A. The drawing and specifications, which are part of this contract, are enumerated in the table of contents of this project manual.
- B. It is the responsibility of the bidder to examine the plans, proposal form, specifications, supplemental specifications, special provisions, the site of the works and the state of the work of other contractors on the project to assure that all requirements of the contract and the plans are fully understood. It is the bidder's responsibility to satisfy herself/himself as to the nature of the work and all reasonably ascertainable conditions that may affect his/her performance under the contract.

1101.03 INTERPRETATION

- A. Nonverbal explanation or instructions will be given in regard to the meaning of the drawings or specifications during the bid period. Bidders shall bring all inadequacies, omissions, or conflicts to the Engineer's attention, at least ten days before the date set for the bidding. Prompt clarification will be supplied to all bidders of record by addendum.
- B. Neither the Department of Natural Resources nor the Engineer will be responsible for verbal instructions.
- C. Failure to request clarification or interpretation of the drawings and specifications will not relieve the successful bidder of responsibility. Signing of the contract will be considered as an implicit indication that the Contractor has thorough understanding of the scope of the work and comprehension of the contract documents.

1101.04 CONTENTS OF PROPOSAL FORMS

- A. Bidders will be furnished with proposal forms stating the location and description of the proposed work, the approximate quantities of work to be performed or materials to be furnished, the form and amount of the required proposal guarantee, and the contract period.
- B. The statement, "By virtue of statutory authority, preference will be given to products, provisions grown and coal produced within the state of Iowa where applicable," which is on the face of the proposal form shall not be applicable to contracts involving Federal-aid participation in construction.
- C. The following bidding and letting regulations shall apply to all construction projects for which the Department receives bids.
 - 1. Contracts will be recommended for approval for award on the basis of the greatest total savings in the public interest. The determination of which projects are to be awarded will be based on the approval by the appropriate Commission or other contracting agency.
 - 2. Contractors shall not be permitted to tie projects or to designate on the bidding proposal the limit of the amount they will accept.

1101.05 PREPARATION OF PROPOSALS

- A. Only signed proposals, submitted on forms furnished by the Contracting Authority, will be considered, and the bidder will be assumed to have familiarized himself with the requirements of all applicable contract documents. To insure consideration, the bidder shall specify a unit price in figures for each pay item for which a quantity is given and shall also show the products for the respective unit prices and quantities, written in figures in the column provided for the purposes and the total amount of the proposal obtained by adding the amounts of the several items. All the unit price figures shall be in ink or typed. If there is a discrepancy between unit bid prices, extensions, or total amounts of bid, the unit bid prices shall govern.
- B. If the proposal is made by a partnership or corporations the name of the partnership or corporations its agents and its principal place of business shall be shown. The proposal shall be signed by an authorized agent of the partnership or corporation.
- C. If the proposal is made on the basis of a joint bid, the proposal shall be signed by each of the joint bidders, or in the case of a firms' partnerships or corporations by an authorized agent for such firms' partnerships or corporations and the principal place of business for each shall be shown.
- D. For work let by the DNR, the sworn affidavit on the proposal shall be executed by the bidder of an agent thereof, on behalf of each person, firm, association, partnership, or corporation submitting a proposals certifying that such person, firm, association, partnership, or corporation has not, either directly or indirectly, entered into any agreements participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contracts and is not under debarment currently by the Federal government for a criminal violation which is reasonably related to bidding and contracting procedures.
- E. The attention of the bidders for the work covered by a proposal and referred to as this work, is directed to the fact that contracts for work other than the work covered in this proposal may have been awarded, are being advertised for letting on the same date as this work, or may be awarded in the future.
- F. Completion of work covered by this proposal may be contingent upon certain work covered by other contracts being performed on the project in advance of this work, likewise, completion of work covered by other contracts may be dependent upon completion of work covered by this proposal.
- G. The contract documents will list types of work involving other contracts anticipated to be let on the same letting date or same time within the contract period anticipated for this work. The contract documents will also list other governmental agencies, railroads, utilities, or other parties who will have work with which it is known that this work must be coordinated.

- H. The bidder is expected to be familiar with work already in progress or previously let on this project, the contract periods, the progress being made, and any other conditions regarding that work which may affect his/her bid or his/her performance under this contract.
- I. Cooperation and coordination of all contractors and other agencies authorized to do work on the project will be required.
- J. The bidder for this work acknowledges these facts and agrees that it is in the public interest to have the work of certain contracts and agencies performed concurrently rather than consecutively. The bidder further agrees to cooperate and coordinate his work with that of other contractors or agencies to the mutual interest of all parties doing work on the project, whether by contract with the State, County, or City or necessary work being done by governmental agency or utility force.
- K. By the submission of a bid on this works the bidder acknowledges and agrees that an investigation and inquiry has been made regarding the contracts for work with which this work must be coordinated.
- L. In the event disputes arise between contractors or other agencies, or both, doing work on the project as to their mutual rights or obligations, the Contracting Authority or its authorized representative will, when requested to do so or upon his own motion, act as referee and define the rights of all interested parties with regard to the conduct of the work, which decision shall be final as provided in 1105.01.
- M. If a prospective bidder, for a project for which the Department is the Contracting Authority, is in doubt as to the true meaning of any part of the contract documents, he may submit to the Contracting Authority a request for additional information, explanations, or interpretations. Interpretations may be in the form of an addendum to the proposal. The Contracting Authority will not be responsible for any information, explanation, or interpretation from any other source.

1101.06 IRREGULAR PROPOSALS

- A. Proposals will be considered irregular and may be rejected for any unauthorized changes in the proposal form or for any of the following reasons:
 - 1. If on a form other than that furnished by the Contracting Authority, or if the form is altered or any part thereof is detached.
 - 2. If there are unauthorized additions, conditional or alternate bids, or irregularities of any kind which may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.
 - 3. If the bidder adds any provisions reserving the right to accept or reject an award because he is low bidder on another project in the same letting,
 - 4. If the bidder adds any provisions reserving the right to accept or reject an award or to enter into contract pursuant to an award.
 - 5. If a bid on one project is tied to a bid on any other project, except as specifically authorized on the proposal form by the Contracting Authority,
 - 6. If the proposal does not contain a unit price for each pay item listed, except in the case of authorized alternate pay items.

1101.07 ESTIMATE OF QUANTITIES

- A. For all work let on a unit price basis, the Engineer's estimate of quantities, as shown in the notice to bidders and the proposals is understood to be approximate only, and will be used only for comparing bids except as otherwise provided in the basis of payment for the various classes of work.

1101.08 SUBMISSION OF PROPOSALS

- A. All proposals shall be submitted on the standard proposal form prepared specifically for this projects an example of which is bound in this specification volume. One separate, unbound copy of the standard proposal forms which has been specifically prepared for this projects is supplied by the Department of Natural Resources with the contract documents. Only proposals which are submitted on this form will be considered.
- B. One copy of the proposal shall be submitted.
- C. No proposal for any subdivision or any subclassification of the work, except as indicated, will be accepted. Any conditional bid, amendment to the proposal form, or the inclusion of any correspondence, written or printed matter, or details of any essential provision of the contract documents, or required consideration of unsolicited material or data in determining the award of the contracts will disqualify the proposal.
- D. The bid amounts shall be inserted in the spaces provided on the proposal form, setting forth clearly and concisely, all designations and prices. Erasures or other changes on the proposal form must be explained or noted over the signature of the bidder.
- E. Addenda issued during the time of bidding shall become part of the contract documents. Bidders shall acknowledge receipt of each addendum in the appropriate space provided on the proposal form. If no addenda are issued, the word "none" is to be entered in the space provided.
- F. When samples are required, they must be submitted by the bidder so as to arrive at the designated office prior to the hour set for opening the proposals. Samples shall be furnished free of expense to the Department of Natural Resources, properly marked by identifications and accompanied by a list when there is more than one sample. The Department of Natural Resources reserves the right to mutilate or destroy any samples submitted whenever it may be considered necessary to do so for the purpose of testing. Samples not so mutilated or destroyed, when no longer required to be retained in connection with the award or delivery of supplies, will be returned at the bidder's expense, if such return is requested in the proposal.
- G. All proposals must have the affidavit portion of the proposal completed and notarized affirming that the bidder is not guilty of collusion or fraud in connection with his proposal.
- H. All proposals must state the full business address of the bidder and be signed with the bidders usual signature. Proposals by partnerships must state the full names of all partners and must state the name of the partnership followed by the signature and designation of one of the members of the partnership or an authorized representative. Proposals by corporations must state the legal name of the corporation and the name of the state of incorporation followed by the signature and designation of the president, secretary, or other person authorized to bind the corporation to the proposal. Contractors are required to include the Iowa Contractors registration number assigned to them by the Iowa Division of Labor Services. The name of each person signing the proposal shall be typed or printed below the signature.
 - 1. A proposal by a person who affixes to their signature the word "president", "secretary", "agent", or any other designation without disclosing their principals may be held to be the proposal of the individual whose name is signed thereon. When requested by the Department of Natural Resources, satisfactory evidence of the authority of the officers signing in behalf of the corporation shall be furnished.
- I. The proposal, with the proposal guarantee, must be securely sealed in an envelope plainly marked as to its contents on the outside of the envelope. Sample envelope forms can be viewed and downloaded on the DNR website https://programs.iowadnr.gov/engreal/bid_envelope.doc. The bidder shall be responsible for the sealed envelope being delivered to the place designated for the bid opening on or before the date and time specified in the notice to bidders. The officer whose duty it is to open the proposal will decide when the specified time has arrived. Proposals received thereafter will not be considered and will be returned unopened.
- J. No bidder shall submit more than one proposal for identical work for the same project.

1101.09 WITHDRAWAL OF PROPOSALS

- A. Proposals may be withdrawn by written or telegraphic request received from the bidder or authorized representative prior to the time fixed for opening of bids, without prejudice to the right of the bidder to file a new proposal. No proposals may be withdrawn by telephone request. Withdrawn proposals will be returned unopened. Negligence on the part of the bidder in preparing the proposal confers no right for withdrawal of the proposal after it has been opened.

1101.10 TAXES

- A. The bidder shall include in the proposal all applicable federal and state taxes required by law. See Sales Tax Exemption below.
- B. For the purposes of retail sales tax and use tax, general construction contractors, special construction contractors, and construction subcontractors are regarded as consumers or users of all tangible personal property which they purchaser acquire, or manufacture for use in complying their respective construction contracts.
- C. Iowa retailers making sales, within the state of Iowa, of tangible personal property to a construction contractor for such use, are making sales at retail, the receipts of which are subject to retail sales tax. This means that a construction contractor should pay retail sales tax to his Iowa suppliers when purchases of tangible property are made within the state of Iowa. If a Contractor uses tangible personal property in completing the constructions which the Contractor has manufactured or fabricated, the tax will be 5% of the cost of manufacture.
- D. This likewise means that any construction contractor purchasing, acquiring, or manufacturing tangible personal property outside the state of Iowa, for such use in Iowa, owes use tax on such out-of-state purchases, measured at the rate of 5% of the purchase prices or in the case of a product manufactured by the Contractor, the Contractor owes 5% of the cost of manufacture.
- E. The use tax is to be paid by the Contractor directly to the Iowa Department of Revenue and Finance, using the retailers sales and use tax return, unless the out-of-state vendor from whom purchased is registered with the Use Tax Section of the Iowa Department of Revenue and does bill and collect the Iowa Use Tax for the state.
- F. In accordance with Iowa Code Section 442.42 (15) & (16) and 422.47 (5), the DEPARTMENT will issue a Sales Tax Exemption Certificate to CONTRACTOR and each approved contractor which will permit the material suppliers to sell material which will becomes an integral part of the structure exempt from Iowa sales tax and some applicable local option taxes and school infrastructure local option sales taxes.
- G. The CONTRACTOR is responsible for keeping records identifying the materials and supplies purchase and verifying they were used as an integral part of the structure governed by this Contract. Any material purchased tax free and not used on this project are subject to taxes payable within the same quarter as the project completion date.
- H. The Sales Tax Exemption Certificate must not be used to claim exemption for tax items not used on this project or thst do not qualify for exemption under the provisions of the Iowa Code Sections listed above. Such misuse will result in civil or criminal penalties.
- I. Bidders should enticipate that the sale and use tax could increase the cost of non-exempted services and material by at least 5% andmake the necessary llowance before submitting a bid.
- J. The Department will reclaim sales taxes, after receiving a Contractor's Statement of Sales Tax for those projects for which a Tax Exemption Certificate was not issued.

1101.11 WORK BY THE DEPARTMENT OF NATURAL RESOURCES

- A. Unless specifically provided in the contracts the Department of Natural Resources will not furnish any labor, materials, or supplies necessary to complete the work under this contract.

1101.12 PREFERENCE FOR LABOR AND MATERIALS

- A. The Contractor shall observe all of the laws of the state of Iowa with regard to preference for labor and materials, except that preference for Iowa labor and materials shall not apply when federal funding is to pay for any part of the project. When a project is federally funded it is indicated in the notice to bidders.

1101.13 PROPOSAL GUARANTEE

- A. All proposals submitted by bidders must be accompanied by a proposal guarantee in the form of a certified check, cashier's check, or a proposal guarantee bond prepared on the standard proposal guarantee bond form furnished to the bidder by the Department of Natural Resources, an example of which is bound in this specification volume.
 - 1. The proposal guarantee shall be made payable to the Department of Natural Resources in the amount specified in the notice to bidders and on the proposal form.
 - 2. If the bond form is utilized in lieu of certified check or cashier's checks it must be executed by a surety company authorized by the Commissioner of Insurance for the state of Iowa to do business in Iowa and which has filed its certificate of authority with the Clerk of Court. One copy of the proposal guarantee bond form is furnished by the Department of Natural Resources with the contract documents. Only one executed copy must be submitted with the bid proposal.
- B. Any bid which is not accompanied by a proposal guarantee will be considered no bid and will not be read at the bid opening.
- C. All proposal guarantees submitted by unsuccessful bidders will be returned as stated in Section 1103.03 of the General Covenants and Provisions.

1101.14 AWARD OF THE CONTRACT

- A. It is the intent of the Owner to award a contract to the lowest responsible Bidder provided the Bid has been submitted in accord with the requirements of the Bidding Documents, is judged reasonable, and does not exceed the funds available. Award of this contract will be at the place and at the time of the first regularly scheduled meeting of the appropriate commission of the Department of Natural Resources following the opening of the proposals, except for reasonable delays as provided in Section 1103.02 of the General Covenants and Provisions.
- B. The Department of Natural Resources reserves the right to reject all bids or any proposal or to waive informalities in any proposal or to accept any proposal which will best serve the interests of the state of Iowa.
- C. If, at the time this contract is to be awarded, the lowest proposal submitted by a qualified responsible bidder is in the best interest of the state of Iowa, the contract will be awarded, and the bidder to whom the award is made will be promptly notified after the Department of Natural Resources meeting.
- D. The Owner shall have the right to accept Alternates in any order or combination and to determine the low bidder on the sum of the Base Bid and the Alternates accepted.

1101.15 EXECUTION OF THE CONTRACT

- A. The successful bidder shall, within thirty calendar days after the date of the award of the contract, enter into a written contract with the Department of Natural Resources on the forms furnished by the Department for the performance of the awarded work.

1101.16 PERFORMANCE GUARANTEE BOND

- A. Simultaneously with delivery of the signed contracts, the Contractor shall furnish a performance guarantee bond prepared on the standard performance guarantee bond form furnished to the Contractor by the Department of Natural Resources, an example of which is bound in the specification volume.
 - 1. The bond must be executed by a surety company authorized by the Commissioner of Insurance of the State of Iowa to do business in Iowa and which has filed its Certificate of Authority with the Clerk of Court.
 - 2. A copy of the performance guarantee bond form will be attached to a copy of the contract furnished by the Department of Natural Resources to the Contractor after award of the contract. One executed copy of the bond must be returned to the Department of Natural Resources with the signed contract, one copy of the bond may be retained by the surety company for its own records.

1101.17 CERTIFICATE OF INSURANCE

- A. On or before execution of the contracts the Contractor shall furnish to the Department of Natural Resources a certificate of liability and property damage insurance.
 - 1. The bidder is directed to examine the insurance coverage limits section of this specification volume to determine the coverage limits which apply to this project. Insurance certificates furnished to the Department of Natural Resources showing inadequate limits of coverage will be rejected, thus delaying final execution of the contract. See Sections 1103.04, 1107.02, and 1107.03 of the General Covenants and Provisions.

1101.18 COMMENCEMENT AND COMPLETION

- A. The Contractor shall not commence work before the preconstruction meeting to be held after execution of the contract by all parties. The Contractor will be responsible for contacting the project Inspector to set up a time for the preconstruction meeting at the project site.
- B. The Contractor must agree to complete the work by the date specified, or within the number of working days indicated if so specified in the contract. Should it be found impossible to complete the work on or before the time specified for completion, a written request may be submitted for a time extension, setting forth the reasons believed to justify the granting of such requests.

1101.19 APPEAL OF CONTRACT AWARD

- A. If a Contractor who submitted a timely proposal disagrees with an award decision, it may appeal that decision by submitting a written appeal to department's director or the director's designee detailing the factual and legal basis for the challenge within five calendar days of the Notice of Intent to Award. The Issuing Officer may submit a written response to the Contractor's written appeal within five business days after receipt of the appeal. The department's director or designee will issue a written decision within seven business days of receipt of the Issuing Officer's written response.

PART 1102. BIDDER QUALIFICATIONS

1102.01 COMPETENCY AND OF BIDDERS

- A. Bidders submitting proposals must be recognized contractors, engaged in the class of work provided for in the plans and specifications, and must possess sufficient resources to complete the work. Before the contract is awarded, the bidder may be required to furnish evidence to the satisfaction of the Contracting Authority of the ability to perform and complete the contract.

1102.02 QUALIFICATIONS OF THE BIDDER

- A. Before award of the contract can be approved, the Department of Natural Resources shall be satisfied that the bidder involved:
 - 1. Maintains a permanent place of business.
 - 2. Has adequate equipment to do the work properly and expeditiously.
 - 3. Has suitable financial status to meet the obligations incident to the work.
 - 4. Has appropriate technical experience.
 - 5. Has satisfactorily completed past projects.
 - 6. Is not ineligible due to discrimination in employment.
- B. The Engineer will make such investigations as deemed necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Engineer all such information and data for this purpose as the Engineer may request.
 - 1. The Department of Natural Resources reserves the right to reject a bid if the evidence submitted by, or an investigation of, such bidder fails to satisfy the Department of Natural Resources that the bidder is responsible and qualified to carry out the obligations of the contract and to complete the work contemplated therein.
- C. Targeted small business set-aside projects.
 - 1. All contractors submitting proposals for set-aside projects shall meet the "Targeted Small Business" definitions and be capable of being certified by the Department of Economic Development within thirty (30) days after the bid letting date. Failure of the low bidder to become certified within this time will be just and sufficient cause for the denial of the award.
 - 2. Contractors eligible for "Targeted Small Business" designation but not currently certified as such by the Department of Inspections and Appeals, should do so immediately by contacting the Targeted Small Business Officer, Lucas State Office Building, Des Moines, Iowa 50319 -0083.

1102.03 REDUCTIONS IN BIDDER QUALIFICATIONS RESTRICTIONS

- A. The requirements and conditions for bidder qualifications may be reduced by the Contracting Authority either for contractors who have well established performance records in other fields or for contractors having adequate financial responsibility and experienced supervisory personnel available for the work that is under consideration or for both the above reasons.
- B. Likewise, the requirements may be modified by the Contracting Authority for newly formed or reorganized firms or corporations whose basic organization is composed of individuals who are veterans of the construction industry, with proven records of satisfactory performance in the field in which they have elected to bid, provided, however, that they have adequate financial responsibility, equipment, and available experienced supervisory personnel.

1102.04 IMPOSITION OF INCREASE IN BIDDER QUALIFICATION REQUIREMENTS, SUSPENSIONS AND DISQUALIFICATION

- A. The requirements and conditions for bidder qualification in 1102.01 may be imposed or re-imposed or increased, or a contractor may be suspended or disqualified.
- B. The requirements and conditions for qualifications of a contractor may be imposed or re-imposed or increased if or when:
 - 1. The Contractor seriously delays commencement or completion of any work within the contract period or any extension thereof under circumstances that would normally give rise to a right of the Contracting Authority for liquidated damages or declaration of defaults or;
 - 2. The Contractor does any act or omits doing or performing any act which, in the judgment of the Contracting Authority, evidences a material change in the contractor's financial responsibility or work capability where, in the judgment of the Contracting Authority, the same will materially prejudice the

- contractor's ability to successfully prosecute such public improvement contracts, or he knowingly submits false information concerning prequalification, or;
3. The Contractor takes or fails to take any action which the Contracting Authority deems to warrant an imposition of increase in bidder qualification requirements.
- C. A contractor may be suspended from bidder qualification if or when:
1. The Contractor continually fails or refuses to remove and replace materials or work found by the Engineer not to be in reasonably close conformity with the contract documents or to correct such material or work so as to cause such materials or finished product to be reasonably acceptable work, or;
 2. The Contractor continually and, in the judgment of the Engineer, without good cause therefor, fails to carry on the work in an acceptable manner, or refuses to comply with a written order of the Engineer within a reasonable time, or;
 3. The Contractor fails to perform with his own organization the work as required in 1108.01, or otherwise assigns or disposes of work or the contract or any part thereof without approval of the Contracting Authority, or;
 4. The Contractor forfeits a proposal guaranty and fails to enter into the contract upon an offer of award by the guarantee Contracting Authority in response to a prior advertisement for bids for the same project for which award is currently being considered, or;
 5. The Contractor fails to comply with nondiscrimination requirements of the Standard Specifications or special provisions, or;
 6. The Contracting Authority deems a suspension is appropriate for reasons stated in Paragraph A, above.
 7. The Contractor is debarred from doing work for the federal government.
 8. The Contractor knowingly submitted false or misleading information concerning qualifications.
- D. A suspension is intended to be for an indefinite period of time or, in the case of Paragraph C4, for a specific project. A suspension shall continue until the contractor resolves, to the satisfaction of the Contracting Authority the problem for which the suspension was made.
- E. A contractor may be disqualified from bidder qualification if or when:
1. Currently debarred by some other state or Federal agency, or;
 2. Subcontracts, employs, or otherwise uses services, for work of the Contracting Authority, of one who is debarred by the Contracting Authority or disqualified according to Paragraph 1, except to fulfill agreements for work on existing contracts, or;
 3. Is convicted of or pleads guilty or nolo contendere to a charge of engaging in any conspiracy, combination, or other unlawful act in restraint of trade or of similar charges in any Federal court or a court of this or any other state, or;
 4. Has offered or given gifts or gratuities to employees of the Contracting Authority in violation of State law or has had as his employee a person who was at that time also an employee of the Contracting Authority, or
 5. The Contracting Authority deems a disqualification is appropriate for reasons stated in Paragraph C. above.
- F. A disqualification is intended to be for a specified time. A disqualification shall not exceed 36 months. The Contracting Authority will issue a written notice of any intent to disqualify or suspend a contractors except when suspended for a specific project according to Paragraph C4.

- G. Should the Contractor believe that the increase in bidder qualification requirements, intended suspensions or intended disqualification is based on false, biased, or incomplete information or that the increase or intended action is severe or unwarranted, the Contractor may make a written request to the Contracting Authority for an opportunity to be heard in a contested case pursuant to Chapter 17A, Code of Iowa.
 - 1. If notice is given, the written request for a hearing must be filed with the Contracting Authority within 10 days of receipt of the notice of intended agency action.
 - 2. If the basis of the intended disqualification is a criminal violation which is reasonably related to bidding and contracting procedures, the intended disqualification may be applied to the organization, including a person, firm, association, partnership, or corporation, to an affiliated officer, representative, or employee thereof, and to any other such organization in which the organization or affiliate or the officer, representative, or employee has an interest as either officer or owner.
- H. When a notice is given or when any action is contested, the Contracting Authority will issue a notice of the final action taken.

1102.05 FOREIGN CORPORATIONS

- A. Before entering into a contract involving construction or maintenance work, corporations organized under the laws of any other state shall file with the Contracting Authority a certificate from the Secretary of State of the State of Iowa showing that they have complied with all of the provisions of Chapter 404 Code of Iowa, governing foreign corporations. For contracts involving only the furnishing of materials, the foregoing requirement does not apply.
- B. When a contract not involving federal-aid participation for a public improvement is to be awarded to the lowest responsible bidder, a resident bidder shall be allowed a preference over a nonresident bidder from a state or foreign country which gives or requires a preference to bidders from that state or foreign country. The preference is equal to the preference given or required by the state or foreign country in which the nonresident bidder is a resident.
- C. If another state or foreign country has a more stringent definition of a resident bidder, the more stringent definition is applicable to bidders from that state or foreign country.
- D. Any joint venture that includes a nonresident bidder will be considered nonresident, and the preference rule will be used.

1102.06 INCOME TAX DEDUCTION ON NON-RESIDENT CONTRACTORS

- A. Each nonresident person or firm doing business as an individual and each nonresident co-partnership will be required, as precedent to receiving an award, to file a certificate issued by the State Tax Commissions as provided in Section 422.17, Code of Iowa, releasing the Contracting Authority from withholding any and all sums required by the provisions of Section 422.17, Code of Iowa.

PART 1103. APPROVAL FOR AWARD AND AWARD OF THE CONTRACT

1103.01 CONSIDERATION OF BIDS

- A. The Contracting Authority reserves the right to waive technicalities and to reject any or all proposals. Bidders may be denied a contract award for any one of the following reasons:
 - 1. For failure to meet the Contracting Authority's requirements for qualification of bidders, as set forth in Section 1102.02 and in the special provisions for the project.
 - 2. For failure to maintain satisfactory progress on work already under contract.
 - 3. For failure to meet promptly financial obligations undertaken in connection with other work under contract.
 - 4. For filing more than one proposal at any letting for the same work under the same or different names.

5. For an unsatisfactory record of performance and cooperation on previous contracts.
6. For submitting an obviously unbalanced bid.
7. For having sublet or otherwise assigned work without the approval of the Contracting Authority.
8. For forfeiture of a proposal guarantee and failure to enter into contract upon an offer of an award by the Contracting Authority in response to a prior advertisement for bids for the same project or any combination of projects involving the project for which award is currently being considered.
9. For failure to file and maintain with the Contracting Authority a current Certificate of Insurance meeting the requirements of 1107.02.
10. For failure to provide a current Iowa contractor's registration number according to the provisions of Chapter 91C of the Code of Iowa.

1103.02 APPROVAL FOR AWARD

- A. In the approval for award of contracts consideration will be given not only to prices bid but also to the mechanical and other equipment available to the bidders the financial responsibility of the bidders and his ability and experience in performance of like or similar contracts.
- B. Approvals for award will be made as promptly as practical after bids have been opened and read. The Contracting Authority reserves the right to delay the approval for award for such time as is needed for consideration of bids and for receipt of concurrence in recommended approvals for award from other governmental agencies whose concurrence may be required.

1103.03 RETURN OF PROPOSAL GUARANTEE

- A. Proposal guaranties will be returned to the unsuccessful bidder by mail promptly after the approval for award has been made. Return to the successful bidder will be made promptly after the filing of the contract documents.

1103.04 CERTIFICATE OF INSURANCE

- A. The Contractor's certificate of liability and property damage insurance described in 1107.02 shall be filed with the Contracting Authority on or before the execution of the contract and shall be maintained throughout the prosecution of the work and until final acceptance and completion of the contract. A separate verification shall be required for contracts awarded on the basis of joint bids.

1103.05 REQUIREMENT OF CONTRACT BOND

- B. In compliance with Section 573 of the Code of Iowa, the Contractor shall, at the request of the Contracting Authority, on all contracts amounting to five thousand (\$5,000.00) dollars or more, file an acceptable bond in an amount not less than 100 percent of the contract sum with the Contracting Authority.
 1. The bond shall be executed in on the standard form of the Contracting Authority, contractor shall provide one (1) original. This bond shall be held to cover all work included in the contracts whether performed by the Contractor or under a subcontract or assignment. The bond shall be executed by the Contractor and by a surety company authorized to do business in the state of Iowa.
 2. The Contractor shall not begin work on any contract before he is notified, in writing, that the required bond has been approved and accepted, or until the signed contract is returned to him.
- C. Prime contractors that are certified through Iowa Department of Economic Development as a targeted small business may request a performance bond waiver.
 1. The waiver shall be applied only to a prime contract where the project does not exceed \$50,000.00, not withstanding Section 573.2 of the Iowa Code.

2. The waiver shall only apply to those contractors which are able to demonstrate the inability of securing a bond because of a lack of experience.
3. A waiver shall not apply to business with a record of repeated failure of substantial performance or material breach of contract in prior circumstances. The granting of a waiver shall in no way relieve the business from its contractual obligations and shall not preclude the Contracting Authority from pursuing any remedies under the law upon default or breach of contract.

1103.06 EXECUTION OF CONTRACT

- A. The bidder to whom a contract is being awarded shall execute and file four copies of such contract with the Contracting Authority.

1103.07 FAILURE TO EXECUTE CONTRACT

- A. Unless the time limit is modified by special provisions failure to execute a contract and file an acceptable bond within 30 days of the date of the approval for awards herein provided, will be just and sufficient cause for annulment of the approval for award and for forfeiture of the proposal guarantee to the Contracting Authority.

1103.08 SUBCONTRACTORS

- A. The bidder to whom a contract is being awarded shall file a list of subcontractors and a copy of each subcontract with the Contracting Authority within 30 days of the date of the approval for award. All subcontracts must comply with the provisions of 1106.01.

1103.09 MATERIAL SUBSTITUTION

- A. The bidder to whom a contract is being awarded shall file all requests for materials substitutions within 30 days of the approval of award of the contract.

PART 1104. SCOPE OF WORK

1104.1 INTENT OF PLANS AND SPECIFICATIONS

- A. The intent of the plans and specifications is to provide for the construction and completion of every detail of the work described therein. It shall be understood that the Contractor shall furnish all labor, material, tools, transportation, and supplies required for all or any part of the work to make each item complete in accordance with the spirit of the contract. It is understood that the apparent silence of the specifications as to any detail or the apparent omission of a detailed description concerning any point shall be regarded as meaning that only the best general practice is to prevail and that only materials and workmanship of the first quality are to be used.
- B. For the purpose of design and the preparation of the Engineer's estimate, the Contracting Authority or its representatives may perform a reasonable amount of exploratory work to gain information relative to surface and subsurface conditions relating to types of soils moisture content, and types and extent of rock strata.
 1. This information, when shown on the plans, represents a summary of conditions as of the date the survey was made, it is only an approximate estimation of the site conditions made merely to be suggestive to the Contracting Authority of construction conditions and quantities and classes of work. This information may be used as the bidder sees fit. The appearance of this information on the plans or specifications will not constitute a guarantee that conditions other than those indicated will not be encountered at the time of construction.
 2. The bidder is advised that all information concerning the project, compiled by the Contracting Authority preceding the design, is available for examination at the Contracting Authority's headquarters. The prospective bidder shall conduct an examination as provided in 1102.06 to satisfy himself as to the character of the work to be done, the probable construction conditions, and any other

reasonably ascertainable conditions and the potential effect these could have on the performance of work under the contracts which shall be the basis for the bid to be prepared.

- C. Any bidder interested in the work is authorized to make whatever additional investigation he consider advisable. In making such additional investigation, the bidder is directed to the Engineer for information relating to available right-of-way. If there are, at that time, any parcels of land over which the Contracting Authority does not have jurisdiction, right of entry must be secured by the prospective bidder from those authorized to grant such permission.
 - 1. All such additional investigation work shall be performed without costing or obligating the Contracting Authority in any way.

1104.02 SPECIAL WORK

- A. Any conditions not covered by these standard specifications are stated in the special provisions.

1104.03 INCREASED OR DECREASED QUANTITIES

- A. The Contracting Authority reserves the right to make such increase or decrease in the quantities of the work shown on the plans as may be considered necessary to complete fully and satisfactorily the construction included in the contract. The compensation to the Contractor for such changes will be as provided in 1109.04.
- B. Except as provided in 1109.05, no significant change in quantities, as defined in 1109.17, shall be made by increasing or decreasing the project area to be improved as shown on the plans and described in the proposal forms unless the Contractor gives written consent to such increase or decrease. However, such consent will not be required for maintenance or restoration work ordered by the Engineer.
 - 1. For the purpose of this article a material change shall be defined as an increase or decrease of more than 20 percent in the measured quantity of any item in the contract.

1104.04 EXTRA WORK

- A. The Contracting Authority reserves the right to order, in writing, the performance of work of a class not contemplated in the proposal but which may be considered necessary to complete satisfactorily the work included in the contract. Such extra work will be paid for as provided in 1109.04B.

1104.05 MAINTENANCE OF DETOURS

- A. Unless so required by the plans or the special provisions, the Contractor will not be required to assume any responsibility in connection with the maintenance or marking of suitable detours.

1104.06 REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS

- A. The contractor for bridge and culvert work shall remove any existing structure, or part of structure, that in any way interferes with the new construction. If specific payment for such work has not been provided in the contract, it will be paid for as extra work.
- B. The contractor for road work shall remove any materials or structures found on the right-of-way which are not designated to remain in place or which have not been designated for use in the new construction.
 - 1. The removal and disposal of pipe culverts will not be paid for directly but shall be considered as incidental works and the cost of such removal and disposal shall be considered to be included in the contract price for other items. Pipe culverts designated for salvage shall be removed by methods that will cause a minimum of damage to the pipe culverts.
 - 2. The removal and disposal of bridges or other masonry or monolithic concrete construction will be paid for. If the contract does not contain an item for such work, it will be paid for as extra work.

1104.07 RIGHTS IN AND USE OF MATERIALS FOUND ON THE RIGHT-OF-WAY

- A. Unless stated to the contrary in the contract documents, all materials, such as stone, gravel, sand, timber, and structures or parts of structures, found on the right-of-way or on land acquired for the work, are the property of the Contracting Authority or the owner of the fee title to the land.
 - 1. If such materials are to be removed but use or salvage is not designated on the plans, they shall become the property of the Contractor, and shall be disposed of by the Contractor.
 - 2. When the Contractor is permitted to use materials found on the right-of-way, any excavations that are made below the grade elevations shall be backfilled with other suitable materials so that the finished road conforms to the grade shown on the plans. No extra compensation will be allowed for such backfilling.

1104.08 FINAL CLEANING UP

- A. Before final acceptance of the work, the Contractor shall remove all unused material and rubbish from the site of the work, remedy any objectionable conditions the Contractor may have created on private property, and leave the project site in a neat and presentable condition. The Contractor shall make no agreement which allows salvaged or unused material to remain on private property within view of the project except when consistent with previous land use.
- B. All ground occupied by the Contractor in connection with the work, which is within view of or adjacent to a road, shall be restored. Restoration shall include appropriate smoothing to its original condition and may include making the area suitable for cultivation and, where vegetation has been disturbed, seeding of the area.
 - 1. Unless otherwise provided for, the Contractor shall be responsible for securing waste privileges on private property. The general Contractor shall be responsible for cleanup of subcontractors at the completion of all work.
- C. This article is not intended to restrict burning in accord with applicable regulations.
- D. Final clean up shall be subject to approval of the Engineer.

1104.09 RIGHT-OF-WAYS OR LANDS ACQUIRED FOR THE WORK

- A. Access to the construction site will be over designated routes of travel, on land owned or made available by the Contracting Authority for the specific use of the Contractor.
- B. Right-of-way or lands will be provided without cost to the Contractor, and it is contemplated that all of the needed right-of-way or lands will have been acquired for the work placed under contract.
 - 1. Whenever it is necessary to secure additional right-of-way or land, performance of the work affected thereby is contingent upon the securing of such right-of-way or land. No claims will be allowed for loss or damage occasioned by delays in securing right-of-way or lands.

1104.10 PERMITS AND ARRANGEMENTS WITH OTHER GOVERNMENTAL AGENCIES

- A. Whenever the work involves construction with which federal, state, or local governmental agencies are concerned, the performance of the work is contingent on arrangements and/or permits with those concerned agencies.
 - 1. The Contracting Authority shall secure all necessary permits, certificates, and licenses required to prosecute the work, except specifically designated permits, local building permits, and any cost for inspections required by local authorities, which shall be paid for and secured by the Contractor.
 - 2. No additional compensation will be allowed for any delays, inconvenience, or damages sustained by the Contractor due to actions of those concerned agencies with respect to any arrangements or permits they may require.

1104.11 RAILROAD CROSSINGS

- A. Whenever the work involves construction with which railroad companies are concerned, the performance of the work is contingent upon arrangements with the railroad companies for the proposed construction.
 - 1. The performance of the work shall be in accord with arrangements established by the Contracting Authority. The Contractor may make additional arrangements.
 - 2. No claim will be allowed for loss or damage caused by failure of the railroad to comply with provisions of the agreement with the Contracting Authority. Upon notice given, the Contracting Authority will institute necessary legal action to enforce the conditions of its agreement with the railroad company.

1104.12 PUBLIC UTILITIES

- A. The Contracting Authority will notify all utility companies, all pipeline owners, or other parties affected, and will endeavor to have all necessary adjustments of the public or private utility fixtures, pipelines, and other appurtenances within or adjacent to the limits of construction made as soon as practicable.
- B. The Contractor shall be responsible for notification concerning work near pipelines, required by Section 479.47, Code of Iowa, and for conducting his work as required therein.
- C. Waterlines, gaslines, wirelines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners at their expense, except as otherwise provided for in the special provisions or as noted on the plans.
- D. It is understood and agreed that the Contractor has considered in the bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him/her due to any interference from the utility appurtenances or their operation or relocation.

1104.13 DRAWINGS AND SPECIFICATIONS

- A. Unless otherwise provided in the contract documents the Contracting Authority shall furnish to the Contractor, awarded the contract, free of charge, all copies of drawings and specifications reasonably necessary for the execution of the work.

1104.14 THE CONTRACTING AUTHORITY'S RIGHT TO OCCUPY

- A. The Contracting Authority shall have the right to enter the building or work site and store or attach such fixtures or furniture as it may elect, or to do such other work providing that such storage or work will not interfere with the completion of the Contractor's work. Such occupancy by the Contracting Authority shall in no way imply final acceptance of any portion of the Contractor's work.

1104.15 CONTRACTOR'S UNDERSTANDING

- A. It is understood and agreed that the Contractor has, by careful examination, satisfied him/herself as to the nature, character and location of the work, conformation of the ground, character, quality and quantity of the materials to be encountered, character of the equipment and facilities needed, preliminary to and during the prosecution of the work, general and local conditions and all other matters which can in any way affect the work under this contract. No verbal agreement or conversation with any officer, agency, or employee of the Contracting Authority, either before or after the execution of the contracts shall affect or modify any of the terms or obligations herein contained.

1104.16 HISTORICAL AND ARCHEOLOGICAL

- A. If during the course of construction evidence of deposits of historical or archeological interest is found, the Contractor shall cease operations affecting the find and shall notify the Iowa Department of Natural Resources and the state Historic Preservation Officer. No further disturbance of the deposits shall occur until the contractor has been notified by the agency that he/she may proceed. The agency will issue a notice to proceed only after the state official has surveyed the find and made a determination to the Iowa Department of Natural Resources.

- B. Compensation to the contractor, if any, for lost time or changes in construction to avoid the finds shall be determined in accordance with changed conditions or change order provisions of the specifications.

PART 1105. CONTROL OF WORK

1105.01 AUTHORITY OF ENGINEER

- A. The Engineer will decide all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the rate of progress of the work, all disputed and mutual rights between contractors, all plans and specifications, and all questions as to the acceptable fulfillment of the contract on the part of the Contractor. Except as provided in Section 1109, the Engineer's decisions will be final.
- B. For authority to temporarily suspend work see 1105.08 and 1108.06.

1105.02 PLANS

- A. The official plans, profiles, and cross sections, on file in the office of the Contracting Authority, show the location, typical construction details, and dimensions of the work contemplated. The work shall be performed in conformity therewith, except in case of error or unforeseen contingency.
- B. The plans are made from careful surveys and represent the foreseen construction requirements. Any appreciable deviation from the plans made necessary to expedite construction, or because of errors shall be called to the attention of the other party, in writing, by the party discovering such conditions. If necessary, revised plans will be provided.

1105.03 WORKING DRAWINGS

- A. The plans will be supplemented by such working drawings as are necessary to adequately control the work. Working drawings shall be furnished by the Contractor, as required by the specifications or the plans.
 - 1. When certification by a professional structural or civil engineer registered in Iowa is required, it will be so designated on the plans or in other contract documents.
 - 2. Working drawings may include shop drawings of fabricated materials, erection plans, falsework plans, cofferdam plans, or other supplemental plans or data. Contractor submitted shop drawings for steel structures shall show fully detailed dimensions and sizes of all component parts of the structure, descriptions of drains, etc.
 - a. Prior to review of working drawings, any work done or material ordered shall be at the Contractor's risk.
 - 3. The Contractor shall expressly understand that the Contracting Authority's review of working drawings submitted by the Contractor covers only requirements for strength and arrangement of component parts.
 - 4. The Contracting Authority assumes no responsibility for errors in dimensions and assumes the Contractor will use material complying with requirements of the contract documents, or, where not specified, those of sound and reasonable quality, and will erect the subjects of such working drawings in accord with recognized standards of first-quality workmanship or, when specified, in accordance with standards of the contract documents.
 - 5. If unanticipated and either unusual or complex construction procedures or site conditions occur, the Engineer may require the Contractor to submit such working drawings as, in the judgment of the Engineer, are necessary to satisfactorily complete the proposed construction.

1105.04 ALTERATION OF PLANS OR CHARACTER OF WORK

- A. The Engineer will have the right to make alterations in plans or character of work as may be considered necessary or desirable during the progress of the work to satisfactorily complete the proposed construction. Such alteration will neither waive any conditions of the contract nor invalidate any of the provisions thereof.

1105.05 CONFORMITY WITH AND COORDINATION OF SPECIFICATIONS, PLANS AND SPECIAL PROVISIONS

- A. Discrepancies within contract documents:
 - 1. In case of any discrepancy between the drawings on the plans and the figures written thereon, the figures, unless obviously incorrect, are to govern.
 - 2. In case of any discrepancy between the plans, including plan notes, and the general or supplemental specifications, the plans are to govern.
 - 3. In case of a discrepancy between the general specifications and supplemental specifications, the supplemental specifications are to govern.
 - 4. In case of any discrepancy between the general or supplemental specifications and the special provisions or between the plans and the special provisions, the special provisions shall govern.
- B. The Contractor shall not take advantage of any apparent error or omission in the plans, specifications, or of any discrepancy between the plans or specifications. The Engineer shall be permitted to make such correction in interpretation as may be deemed necessary for the fulfillment of the intent of the plans and specifications, subject to compensation as provided in 1109.03, 1109.05, and 1109.06.
- C. The plans shall not be so changed as to materially affect the cost or the difficulty of performing any item or work for which the contract amount is more than 20 percent of the total contract sum, except with the consent of the Contractor.
- D. All work performed and all materials furnished shall be in reasonably close conformity with the lines, grades, cross sections, dimensions, and material requirements, including tolerances, shown on the plans or indicated in the specifications.
- E. If the Engineer finds the material, or the finished product in which the material, is used is not within reasonably close conformity with the plans and specifications, but that reasonably acceptable work has been produced, the Engineer shall determine, based on engineering judgment, if the work shall be accepted and remain in place.
 - 1. In this events the Engineer will document the basis of acceptance and supplement it by contract modification which will provide for an appropriate adjustment in the contract price for such work or materials as deemed necessary to conform to the Engineer's determination.
- F. If the Engineer finds the material, the finished product in which the material is used, or the work performed is not in reasonably close conformity with the plans and specifications and has resulted in an inferior or unsatisfactory product, the work or material shall be considered unacceptable and shall be removed and replaced, or otherwise corrected, as acceptable to the Engineer, by and at the expense of the Contractor.

1105.06 SUPERVISION BY CONTRACTOR

- A. The Contractor, when absent from the construction site, shall have on site at all times, as its agent, a competent superintendent, capable of reading and thoroughly understanding the plans, specifications, and other contract documents and who shall be thoroughly experienced in the type of work being performed.
 - 1. The superintendent shall supervise, direct, and control the Contractor's operations, personnel, work, and subcontractor's operations. The superintendent shall have full authority to execute orders or directions of the Engineer, without delays, and to promptly supply such materials, equipment, tools, labor, and incidentals as may be required.
 - 2. The Contractor shall give the Engineer written notification of the name of the superintendent. The superintendent shall not be replaced, except with the consent of the Engineer, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in the Contractors employ.

1105.07 CONSTRUCTION STAKES AND BENCH MARKS

- A. If there is no provision in the Contract documents for a Construction Survey Bid Item, the Engineer will set the necessary centerline, slopes and grade stakes promptly upon notification by the Contractor that stakes are needed, unless otherwise noted on the Plans.
- B. For all structures, unless otherwise noted on the Plans, the Engineer will set stakes for centerline and such other stakes as are necessary to establish definitely, the location, elevations, and alignment of the structure. Every reasonable precaution will be taken by the Engineer and his technical assistants to insure that the construction stakes and/or computations are true and accurate, but the Contractor shall ensure that no gross error exists before beginning operations. Should such mistakes or errors be allowed to exist, and work completed on erroneous data, the Contractor will be held responsible to remedy the work to conform to the correct lines, grades, or standards without expense to the Contracting Authority or the Engineer.
- C. The Contracting Authority shall not be responsible for delays due to lack of grade or line stakes, unless the Contractor has given the Engineer 48-hour written notice that such stakes will be needed, and the Contractor's work is being conducted in a satisfactory manner and at the specified rate of progress.
- D. The Contractor shall be held responsible for the preservation of stakes and marks. If, in the opinion of the Engineer, any of the survey stakes or marks have been carelessly or willfully destroyed or disturbed by the Contractor, the cost of replacing them shall be charged against the Contractor.
- E. The Contractor shall provide and keep constantly upon the work site, first-class instruments for use in establishing the various lines, levels and grades for the construction and shall have a superintendent on the work who is thoroughly familiar with their use. The Contractor shall provide and maintain a permanent bench mark at the construction site for the use of mechanics and other subcontractors.

1105.08 AUTHORITY AND DUTIES OF INSPECTOR

- A. The Contracting Authority may appoint inspectors to represent the Engineer in the inspection of all materials used in and all work done under the Contract. Such inspection may extend to any part of the work and to preparation or manufacture of materials to be used.
 - 1. The inspector will not be permitted to modify in any way the provisions of the contract documents or to delay the work by failing to inspect materials and work with reasonable promptness. An inspector is placed on the work to keep the Engineer informed as to its progress and the manner in which it is being performed. The inspector will not be authorized to approve or accept any portion of the work.
 - 2. Results of inspection tests and examinations will be available to the Contractor on an informational basis. Absence or presence of representative test data does not alter the Contractor's responsibility for plan and specification compliance in accordance with 1104.01.
 - 3. The inspector will not act as foreman or perform other duties for the Contractors nor improperly interfere with management of the work.
 - 4. In case of dispute between the Contractor and inspector as to quality of materials or manner of performing the works the inspector will have authority to reject materials or suspend the work until the question at issue can be decided by the Engineer. Written notice of suspension of work will be given to the Engineer and Contractor by the inspector.

1105.09 INSPECTION OF WORK

- A. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work is being performed in conformance with the contract documents. At any time before acceptance of the works upon request of the Engineer, the Contractor shall remove or uncover such portions of finished work as the Engineer may direct. After examination has been made, the Contractor shall restore such portions of the work to the standard required by the contract documents.

1. If work thus exposed or examined proves acceptable, the uncovering or removing and replacing of coverings or the restoring of parts removed, shall be paid for as extra work, except that no payment will be made for work involved in checking smoothness of concrete surfaces.
 2. If work thus exposed and examined proves unacceptable, the Contractor shall replace the defective work in accordance with the specifications.
 3. If work thus exposed and examined proves either unacceptable or deficient, the Contractor will be paid only for work as finally accepted.
 4. Work done without the Engineer having been afforded ample opportunity to provide suitable inspection, or unauthorized work, may be ordered removed and replaced at the Contractor's expenses or may be excluded from the quantities measured for payment.
- B. If the specifications, Engineer's instructions, laws, ordinances, or any public authority require any work and/or materials to be specially tested or approved, the Contractor shall give the Engineer timely notice of readiness for review. If the review is to be made by authority other than the Engineer, the Contractor shall notify the Engineer of the date fixed for review. Reviews by the Engineer will be promptly made and, where practicable, at the source of supply.

1105.10 REMOVAL OF DEFECTIVE WORK

- A. Any defective work shall be removed and replaced at the Contractor's expense.
- B. Should the Contractor fail or refuse to remove defective work when so ordered by the Engineer, the Engineer shall have authority to order the Contractor to suspend further operations, and may withhold payment on estimates until such defective work has been removed and replaced in accordance with the plans and specifications.
1. Continued failure or refusal on the part of the Contractor to correct defective work promptly shall be sufficient cause for the Contracting Authority to declare the contract in default and to complete the work in accordance with 1108.11.

1105.11 UNAUTHORIZED WORK

- A. Unauthorized work and work done in excess of that provided by the lines and grades shown on the plans or as given by the Engineer, or any work done without the authority of the Engineers will be considered as unauthorized and will not be paid for.
1. Unauthorized work may be ordered removed and replaced at the Contractors expense.

1105.12 OTHER CONTRACTS

- A. The Contracting Authority reserves the right to do, or to contract for other work adjacent to, or in the vicinity of, the work herein described.
- B. The Contractor agrees to permit such other work to progress and to arrange for joint occupation of the site under such provision as the Engineer determines necessary. If in the judgment of the Engineer, such joint occupation of the site impedes progress on the work herein described, the Contracting Authority will proportionally extend the time for completion of the work.
1. The Contractor hereby waives any claim for damages or extra compensation by reason of such interference with his work.

1105.13 FINAL INSPECTION

- A. Upon notification, by the Contractor or his authorized representative, that the work is completed, the Engineer shall make prompt final inspection of each item of work included in the contract. If the work is found not to be in accordance with the contract documents, the Contractor will be advised as to the particular defects to be remedied before final acceptance can be made.

1105.14 RESTRICTIONS ON MOVING AND USE OF HEAVY EQUIPMENT

- A. The following restrictions shall apply to the moving and use of heavy equipment:
1. Movement of equipment to and from the project shall be in compliance with the laws governing the operation of vehicles on the highways of Iowa. Movement and operation of equipment over completed portions of pavements, bituminous surfaces, base courses, and structures which are a part of the project shall be with legal axle loads, except as modified in this article.
 2. In the case of earthwork and shouldering to be done in connection with either rigid or flexible pavement, or pavement widening and resurfacing, no tractor-drawn, earth-moving equipment shall be operated, or driven on or across the pavements, except at designated crossovers, as authorized by the Engineer.
 - a. When crossovers are specifically permitted, the Contractor will designate, before use, the location and number of crossovers to be used. The Engineer will not approve crossovers in areas of limited sight distance, near structures, railroad crossings, or at any other location which will place safety of the traveling public in jeopardy. At these crossovers, equipment having axle loads greater than the maximum permitted by law may be used.
 - b. Crossovers shall be 30 feet in length measured along the centerline and shall not be closer than 300 feet to each other.
 - c. For each crossover used, the Contractor shall, at the Engineer's option, either replace the pavement or pay the Contracting Authority at the rate of five thousand (\$5,000.00) dollars on the basis of a two-lane pavement.
 - d. In lieu of the surface crossover, approved hauling bridges may be used. The hauling bridge shall accommodate two lanes of public traffic, and it shall be removed from the roadway at the close of each day's operations. When a hauling bridge is used, no payment will be required.
 - e. The provisions of the Supplemental Specification for Traffic Controls in effect on the contract letting date, shall apply.
 3. No dragline, cranes or power shovel shall be operated with any part of the machine resting upon a pavement, bituminous surface, base course, or structure except with approval of the Engineer and in accord with restrictions in that approval.
 4. Under no conditions shall machines equipped with metal lugs or similar projections on the treads be operated on the surface of a pavement, bituminous surface or base course.
 5. For building shoulders, on completed pavements of any type, the maximum axle load used for equipment operating on pavement shall not exceed the legal axle load, as defined herein.
 6. Crawler-type tractors shall not be moved on or off a pavement or base course except at places where the compacted earth adjacent to slab is at least 2 inches higher than the surface of the pavement or base course. Whenever heavy, crawler-type equipment, such as a crane or mixers is moved on or off the edge of a pavement or base course, a substantial timber approach shall be built, at the edge of slab, to prevent overloading or otherwise injuring the edge of the slab.
 7. Compacting equipment having axle loads greater than 20,000 pounds may be used on the work under the following provisions:
 - a. The equipment shall be transported to and from the work and across the bridges on the work in compliance with laws of the State of Iowa.
 - b. For compaction of subbase, the weight of equipment used shall not be greater than that of compaction equipment used in correction of the roadbed for grade and cross section.
 - c. For compaction of base course, the weight of equipment used shall not be greater than the weight of equipment used in compaction of the subbase on which the base is placed.

- d. For compaction of surface courses, the weight of equipment shall not be greater than that of equipment used in compaction of the base on which the surface course is placed.
8. For grading or any other type of work, no rollers or other equipment, having an axle load greater than 50,000 pounds or a total weight in excess of 60,000 pounds shall be operated over a culvert, except as may be authorized by the Engineer, and then, in strict compliance with prescribed precautionary measures.

1105.15 PLACEMENT OF FILL MATERIAL IN STREAMS AND WATERBODIES

- A. The placement of fill material in streams is regulated by Federal law. The intent of this specification is to require contractor operations in streams and other waterbodies and adjacent swamps, marshes, bogs, or similar areas, to be in compliance with Federal regulations.
- B. Fill material shall mean; any material used for the primary purpose of replacing an aquatic area with dry land, or of changing the bottom elevation of a waterbody.
- C. Fill material shall consist of clean, suitable, naturally occurring material, free from toxic pollutants in other than trace quantities.
- D. Temporary stream crossings shall be bridged or culverted so as not to restrict expected high flows or disrupt the movement of aquatic life native to the stream or waterbodies. Expected high flows are those flows, which the Contractor expects to experience during the period of time that the crossing is in place.
 1. Temporary stream crossings shall:
 - a. Not extend over 100 feet into any swampy, boggy, marshy, or similar area that is adjacent to the stream or waterbody.
 - b. Be maintained to prevent unnecessary erosion and other nonpoint sources of pollution.
 - c. Be removed after they are no longer needed.

1105.16 COST REDUCTION INCENTIVE

- A. The Contractor may submit to the Engineer, in writing, proposals for modifying the plans, specifications, or other contract requirements for the sole purpose of reducing the total cost of construction.
 1. The proposals shall not impair, in any manner, essential functions or characteristics of the projects, including but not limited to, service life, economy of operation, ease of maintenance, desired appearance, or design and safety standards.
- B. Proposals shall contain the following changes:
 1. Existing requirements and proposed changes,
 2. Contract requirements that must be changed if the proposal is adopted,
 3. A detailed cost estimate of performing the work as stipulated and as proposed,
 4. The time within which the Engineer must make a decision thereon,
 5. The items of work affected by the proposed changes, including any quantity variation attributable thereto.
- C. The provisions of this article shall not be construed to require the Engineer to consider any cost reduction proposal which may be submitted hereunder.
 1. Proposed changes in basic design of a bridge or pavement type will not be considered an acceptable proposal.

2. The Contracting Authority will not be liable to the Contractor for failure to accept, or act upon, any proposal submitted pursuant to this article, or for any delays to the work attributable to any such proposal.
 3. If a proposal is similar to a change in plans or specifications under consideration by the Contracting Authority for the project at the time said proposal is submitted, or if such a proposal is based on, or similar to, standard specifications, special provisions, or plans adopted by the Contracting Authority after the advertisement for the contract, the Engineer will not accept such proposals and the Contracting Authority reserves the right to make such changes without compensation to the Contractor under provisions of this article.
- D. The Contractor shall continue to perform the work in accordance with contract requirements until a change order, incorporating the cost reduction proposal, has been issued. If a change order has not been issued by the date on which the Contractor's cost reduction proposal specifies that a decision thereon should be made, or such other date as the Contractor may subsequently have specified in writing, such proposal shall be deemed rejected.
- E. The Engineer shall be the sole judge of the acceptability of a cost reduction proposal and of the estimated net savings in construction costs from adopting all, or any part of, such proposal. In determining the estimated net savings, the right is reserved to disregard the contract bid prices if, in the judgment of the Engineer, such prices do not represent a fair measure of the value of work to be performed or to be deleted.
- F. The Contracting Authority reserves the right, where it deems such action appropriate, to require the Contractor to share in the Contracting Authority's costs of investigating a cost reduction proposal. Where such a condition is imposed, the Contractor shall indicate his acceptance thereof in writing, and such acceptance shall constitute full authority to deduct amounts, payable to the Contracting Authority from any money due, or that may become due, to the Contractor under the contract.
- G. If the Contractor's cost reduction proposal is accepted in whole or in part, such acceptance will be by change order, which shall specifically state that it is executed pursuant to this article. Such a change order shall incorporate the changes in the plans and specifications which are necessary to permit the proposal, or such part of it as has been accepted, to be put into effects and shall include any conditions upon which the Contracting Authority's approval is based, if the approval is conditional.
1. The change order shall also set forth the estimated net savings in the cost of performing the work attributable to the proposal effectuated by the change order, and shall further provide that the Contractor be paid 50 percent of said estimated net savings amount.
- H. Acceptance of the cost reduction proposal and performance of the work thereunder shall not extend the time of completion of the contract, unless specifically provided for in the change order authorizing use of the proposal.
- I. The amount specified to be paid to the Contractor in the change order which effectuates a cost reduction proposal shall constitute full compensation to the Contractor for the proposal and performance of the work thereof pursuant to the said change order.
- J. The Contracting Authority expressly reserves the right to adopt a cost reduction proposal, for general use on contracts administered by the Contracting Authority, when it determines that said proposal is suitable for application to other contracts.
1. When an accepted proposal is adopted for general use, only the contractor who first submitted such proposal will be eligible for compensation pursuant to this article, and in that case, only to those contracts awarded to him/her prior to submission of the accepted proposal and as to which such proposal is also submitted and accepted.
 2. Cost reduction proposals identical or similar to previously submitted proposals will be eligible for consideration and compensation under provisions of this article, if the identical or similar previously submitted proposals were not adopted for general application to other contracts administered by the Contracting Authority.

3. Subject to the provisions contained herein, the State or any other public agency shall have the right to use all, or any part of any submitted cost reduction proposal without obligation or compensation of any kind to the Contractor.

PART 1106. CONTROL OF MATERIAL

1106.01 QUALITY OF MATERIALS

- A. It is the intent of the specifications that first-class materials shall be used throughout the work, and that these first-class materials shall be incorporated in such a manner as to produce completed construction which is acceptable in every detail. Only materials conforming to the requirements of these specifications, approved by the Contracting Authority, shall be incorporated into the work
- B. When more than one kind of manufacture of a material is specified, the option will be with the Contractor, but the choice shall be confined to the materials mentioned.
- C. Whenever in any of the contract documents, an item of material or equipment is defined by describing a proprietary product or by using the name of a manufacturer or vendor, the terms "or equivalent", or "or equal", if not inserted, shall be implied. This specific item of material or equipment mentioned shall be understood as establishing a standard of type, function, efficiency, minimum basis of design, and quality desired. Other manufacturer's products of comparable quality, design and efficiency, and suitable for the service intended will be considered, but no change will be made without written approval of the Contracting Authority.
- D. Requests for materials substitutions must be submitted in duplicate, or in the quantities required elsewhere in the specifications, and meet the requirements of 1103.09

E. 1106.02 SOURCE OF MATERIALS

- A. At the option of the Engineer, the source of supply of each material shall be approved by the Contracting Authority before the delivery is stated.
 1. If requested by the Contracting Authority, representative preliminary samples, of prescribed character and quality, tested in accordance with the methods referred to under samples and tests, shall be submitted by the contractor or producer for examination.
 2. All materials proposed to be used may be inspected or tested at anytime during their preparation and use.
 3. If, after trial, it is found that sources of supply which have been approved do not furnish a uniform product or if products from any source do not meet the specifications, at any time, the Contractor shall furnish approved material from other approved sources. No material which, after approval has in any way become unfit for use, shall be used in the work.

1106.03 SAMPLES AND TESTS

- A. Each consignment of materials required by the Engineer, shall be tested or inspected before being incorporated into the work and approved by the same Engineer before it is used.
 1. The contractor shall afford facilities for collecting and forwarding samples as the Engineer may require.
 2. Unless otherwise designated in the standard, supplemental specifications, or instructional memorandums, the inspection, sampling, testing, and basis of acceptance of materials shall be in accordance with the current AASHTO "Standard Specifications for Sampling and Testing of Transportation Materials" including published interim standards.

1106.04 STORAGE OF MATERIALS

- A. The Contractor shall be responsible for care and storage of materials delivered for the work or purchased for use thereon. Material which has been delivered and has become damaged before actual incorporation in

the work may be rejected by the Engineer even though it may have been previously acceptable. Stored materials shall be located to facilitate thorough inspections.

1106.05 UNACCEPTABLE MATERIALS

- A. All materials not conforming to requirements of the specifications at the time they are to be used shall be considered unacceptable, and all such materials will be rejected and shall be removed immediately from the work site, unless otherwise instructed by the Engineer. No rejected materials the defects of which have been corrected shall be used until approval has been received.

PART 1107. LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

1107.01 LAWS TO BE OBSERVED

- A. The Contractor is presumed to be familiar with all laws, ordinances, and regulations that may, in any manner, affect those engaged or employed by the Contractor, the materials or equipment used, or which may in any way, affect the conduct of the Contractor's work. The Contractor shall conduct his work to avoid conflict with any such laws, ordinances, or regulations, and shall save harmless the Contracting Authority and its representatives against any claim arising from violation thereof.
- B. The Contractor shall give preference to Iowa domestic labor, in accordance with the provisions of Chapter 73 of the Code of Iowa, and this provision is hereby specifically made a part of any contract of which these contract documents are a part. A person shall be deemed a domestic laborer of this state if he/she is a citizen and has resided in this state for more than six months.
- C. The provisions of Chapter 73 of the Code of Iowa concerning preferences for Iowa products and labor shall not apply to contracts involving work financed wholly, or in part, by the federal government.
- D. The Contractor and all subcontractors shall have on file with the Contracting Authority, a valid state of Iowa contractors registration number, issued by the Iowa Department of Labor Services, in accordance with Chapter 91C of the Code of Iowa.

1107.02 LIABILITY INSURANCE

- A. It shall be the Contractor's responsibility to have liability insurance covering all of the construction operations incident to completion of this contract. The Contractor must have on file, with the Contracting Authority, a current "Certificate of Insurance" prior to award of contract. The certificate shall identify the following: insurance company firm name and address, contractor firm names policy period, type of policy, limits of coverage, and scope of work covered, (single project or statewide).
 - 1. This requirement shall apply with equal forces whether the work is performed by -- (1) persons employed directly by the Contractors (2) by a subcontractor or his employees, or (3) by an independent contractor.
- B. In addition to the above, the Contracting Authority shall be included as an insured party, or a separate owner's protective policy shall be filed showing the Contracting Authority as an insured party.
- C. The liability insurance shall be written by an insurance company (or companies) qualified to do business in Iowa. For independent contractors engaged solely in the transportation of materials, the minimum coverage provided by such insurance shall not be less than required by Chapter 327, Code of Iowa, for truck operators or contract carriers as defined therein. For all other contractors, subcontractors, and independent contractors, the minimum coverage by such insurance shall be as follows:

Public Liability Insurance
Per person - \$100,000.00
Each occurrence - \$300,000.00
Property Damage Insurance
Each occurrence - \$50,000.00

- D. Failure on the part of the Contractor to comply with the requirements of this article will be considered sufficient cause to suspend the work, withhold estimates, and to deny the Contractor from receiving further contract awards, as provided in 1103.01.

1107.03 PATENTS AND ROYALTIES

- A. The Contractor shall be responsible for all claims for infringement of patents, or for royalties on tools, machinery, appliances, devices, or materials used in construction and completion of the work, except as are specifically required by the contract documents.
 - 1. The Contractor agrees that the Department may retain out of the money that is or may become due the Contractor an amount to cover all such claims and to retain the same, until all such claims are paid or adjusted.
- B. The Contracting Authority assumes responsibility for payment of claims for damages from patent or copyright infringement or for royalties on material processes, specifications, or types of construction that are required by the contract documents.

1107.04 RESTORATION OF CONSTRUCTION WORK OPENED BY PERMIT

- A. Prior to final acceptance, if any repairs to the work constructed hereunder are made necessary by construction or repair of drains or sewers, laying or repairing of pipes or conduits for telegraphy, telephone or electric wires, or from any other disturbance of said work under permission issued by the Contracting Authority, the Contractor shall, upon notification by the Engineer, immediately make necessary repairs in conformity with the specifications.
 - 1. Such repairs shall be paid for as extra work, however, no compensation will be allowed when such repairs are made necessary by the Contractor's negligence or carelessness.
- B. The Contractor shall not authorize any person or persons to make alterations or additions to the construction work unless a permit duly authorized by the Contracting Authority is presented.

1107.05 FEDERAL PARTICIPATION

- A. The attention of the Contractor is called to the provisions of the Acts of Congress known as the "Land and Water Conservation Fund Act", the "Federal Aid in Wildlife Restoration Act", the "Federal Aid in Fish Restoration Act", the "Boating Safety Act", the "Superfund Amendments and Reauthorization Act", the "Clean Water Act" and amendments thereto, and any other acts of congress providing for fish and wildlife of conservation improvements.
 - 1. When the United States Government is to pay for all or any portion of the cost of an improvement or project, the construction work, although it is under the direct supervision of the Contracting Authority and subject to the laws of the State of Iowa, is also subject to the above mentioned Acts of Congress and all rules, regulations, and reimbursements that may be imposed by the federal authority thereunder. Such construction work will, therefore, be subject to inspection by the duly authorized agents of the federal government, but such inspections will not make the federal government a party to the contract.
- B. On all contracts involving Federal aid, all steel products incorporated into the work must have been manufactured in the United States. The Engineer may allow minimal amounts of these materials from foreign sources, provided the cost does not exceed 0.1 percent of the contract sum or \$2,500 whichever is greater.

1107.06 SAFETY, HEALTH, POLLUTION AND SANITATION

- A. In the performance of his contract, the Contractor shall comply with all applicable laws, rules, regulations, and ordinances governing safety, health, pollution, sanitation, noise control, and disposal of waste materials, and shall make available such additional safeguards, safety devices, protective equipment, and take such actions as are reasonably necessary to protect life and health of employees and the public.

1. The Engineer will not act as an enforcement agent for compliance of rules and regulations governing industrial safety. However, violations of properly promulgated laws, rules, regulations, and ordinances reported to the Engineer by responsible agencies may result in the issuance of a suspension order until such time as the violation is corrected.
- B. The Contractor shall make adequate provisions satisfactory to the Engineer for safety of inspectors, particularly at sampling locations. Provisions shall include guards for moving belts, pulleys, and wheels near the sampling point and a stable platform to be used when sampling is to be done from an elevated location.
- C. There shall be suitable retention dams, in areas where approved liquid asphaltic material, or asphalt cement are stored and used, to minimize pollution of nearby areas from effect of normal rains. The Contractor shall take other necessary precautions to prevent pollution of streams, lakes, ponds, reservoirs, and other areas with fuels, oily bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.
- D. The disposal by open burning of landscape waste originating on the construction site shall be permitted unless prohibited by local ordinances or regulations. However, the burning of landscape waste produced in clearing, grubbing, and construction operations shall be limited to areas located at least one-fourth mile from any inhabited buildings. Rubber tires will not be used to ignite landscape waste.
- E. The Contractor shall be specifically responsible for adhering to all local burning ordinances or regulations, and to ascertain what the local burning restrictions consist of in addition to the regulation stated above and to see that all subcontractors comply with those restrictions.
- F. All internal combustion engines, used for any purpose on the job, or related to the job, should be equipped with a muffler of the type recommended by the manufacturer. No internal combustion engine will be operated without a muffler. Faulty or damaged mufflers must be replaced. Machinery must be properly maintained at all times in order to limit engine noise, as well as other extraneous noise.
- G. When directed by the Engineer, the Contractor shall apply moisture to the construction area and haul routes, as necessary, to prevent the spread of dust, at no expense to the Contracting Authority.

1107.07 PUBLIC CONVENIENCE AND SAFETY

- A. The Contractor shall conduct the work as to assure the least possible obstruction to access by the residents along the project. The Contractor should schedule and conduct the work in such a way as to provide for their safety and convenience.
 1. Work and materials required by the Engineer for public convenience and safety in excess of that provided for in the contract, shall be considered as provided for in 1109.03.

1107.08 BARRICADES AND WARNING SIGNS

- A. The Contractor shall take every reasonable precaution to prevent the public from interfering with the work, and to prevent the work from interfering with the public, for providing for safety of the general public traveling to, through, within, along, and across the project, and shall take such precautions, measures, or acts as are required herein and as specifically required by the contract documents or by the Engineer. In additions the Contractor shall provide such additional safeguards as deemed necessary to protect equipment, the work, and the public at the Contractors own expense.
- B. The Contractor shall erect and maintain suitable barriers, and at night, such lights, as will prevent accidents to persons or property in and around the area of work.
- C. The Contractor shall provides at his own expense, such security guards as are necessary to protect equipment and to maintain proper lighting. Security guards that may be necessary for the protection of the public shall be provided by the contractor on written order from the Engineer.
- D. Whenever the work is under the Contractor's control, the Contractor shall be held responsible for any damage to the newly completed portions of the work resulting from public misuse.

1107.09 USE OF EXPLOSIVES

- A. When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property. The Contractor shall be responsible for all damage resulting from use of explosives.
- B. All explosives shall be stored in a secure manner in compliance with all laws and ordinances and in quantities maintained at a practical minimum. Storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided, satisfactory to the Engineer and, in general, not closer than 1,000 feet from the road or from any building, camping area , or place of human occupancy.
- C. The Contractor shall notify each public utility company, having structures in proximity to the site of the work, of the intent to use explosives. Such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury.

1107.10 PROTECTION AND RESTORATION OF PROPERTY

- A. The Contractor shall replace or renew fences, sidewalks, or other property damage by reason of the work or the negligence of the Contractors employees. The Contractor shall take suitable precautions to prevent damage to telephone, telegraphy, and electric transmission lines along the highway and to pipes, conduits, and other underground structures. The Contractor shall carefully protect from disturbance all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their locations and shall not remove them until so directed.
 - 1. The Contractor shall be responsible for damage or injury to property resulting from the prosecution of his work, however, responsibility shall not extend to damage to fences, telephones, telegraph, or electric lines occupying the right-of-way unlawfully, provided due caution has been used in removing them. The Contractor's responsibility shall not be released until the work under the contract is completed and accepted.

1107.12 RESPONSIBILITY FOR DAMAGE CLAIMS

- A. The Contractor shall indemnify and save harmless the state of Iowa, the Contracting Authority and other agencies which have concurred in the award of contract, their officers and employees, from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property because of any act, omissions or neglect in safeguarding or performing the work, or through use of unacceptable materials in constructing the work, and so much of the money due the said Contractor, under and by virtue of the contract, as may be considered reasonable and necessary by the Contracting Authority for such purpose, may be retained for the use of the State, or in case no money is due, the surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages, as aforesaid, shall have been settled and suitable evidence to that effect furnished to the Contracting Authority, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence of adequate protection by public liability and property damage insurance.
 - 1. Notwithstanding the above, it is specifically agreed between the parties executing this contract that it is not intended by any of the provisions of any part of the contract documents to create in the public or member thereof a third party beneficiary hereunder, or to authorize anyone not a party to this contract to maintain a suit for personal injuries or property damage pursuant to the terms of provisions of this contract.
 - 2. The duties, obligations, and responsibilities of the parties to this contract with respect to third parties shall remain as imposed by law. It being the intention of the parties that indemnity herein provided shall not extend to acts of omission, of negligence for which the Contracting Authority is solely responsible. But indemnity shall extend to all claims in which the Contractor and the Contracting Authority are found to be either jointly or concurrently negligent.
- B. Responsibility of the Contractor for providing warning devices, required by 1107.08 to avoid damages or injuries on any portion of the work covered by the contract, shall not cease until the work on such portion has been released by the Engineer.

1. A release shall be construed to mean a written statement by the Engineer to the effect that the Contractor may cease to maintain barriers and lights, that the work may be opened to the public and that the Contractor is relieved of further maintenance of that portion of the work. Such release shall not constitute an acceptance of the work.
- C. The Contractor's responsibility for maintenance of lights on any individual structure shall cease upon final acceptance of such structure, or when specifically released in writing by the Engineer.

1107.13 OPENING OF SECTION OF CONSTRUCTED WORK TO THE PUBLIC

- A. When any substantial portion, part, or feature of a contract is completed to the extent that its stability and integrity is not dependent upon completion of the other item, or work required in the contract, that portion, part, or feature may be released by the Engineers after conferring with the Contractor, and opened to traffic or received for public usage prior to final approval and acceptance of all work involved in the contract.
1. The Contractor will not be responsible for damages due to the elements or the ordinary use of the public to those portions, parts, or features of the work which have been released by the Engineer.
 2. The Contractor will be responsible for any damages which may be caused by defective work or failure to comply with the contract documents.
- B. The above provisions relating to a release by the Engineer will be applicable only to those portions, parts, or features of the contract for which the Engineer has furnished to the Contractor a written release.

1107.14 CONTRACTOR'S RESPONSIBILITY FOR WORK

- A. The Contractor shall be responsible for the care and maintenance of partially completed and furnished work on any portion of the project until released by the Engineer from such responsibility. It will be the Contractor's responsibility to adjust the Contractor's operation or method of operation to prevent any damage of any nature to any portion of the partially completed or completed work. Repair work shall be done promptly upon being so ordered by the Engineer.

1107.15 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES

- A. At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone, and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience. Work shall not be commenced until all arrangements necessary for the protection thereof have been made.
- B. The Contractor shall cooperate with owners of underground or overhead utility lines in their removal and rearrangement operations, in order that these operations may progress in a reasonable manner, that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.
- C. In the event of interruption to water or utility services, as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with said authority in restoration of service.
1. If water service is interrupted, repair work shall be continuous until service is restored.
 2. No work shall be undertaken around fire hydrants until provision for continued service has been approved by the local fire authority.

1107.16 PERSONAL LIABILITY OF PUBLIC OFFICIALS

- A. In carrying out any of the provisions of the contract, or in exercising any power or authority granted to any agency or representative of the Contracting Authority thereby, there shall be no liability upon such agent or representatives including the Engineer or authorized agents, either personally or as an official of the Contracting Authority, it being understood that in such matters the agent acts as the agency and representative of the Contracting Authority.

1107.17 NO WAIVER OF LEGAL RIGHTS

- A. The Contracting Authority shall not be precluded or stopped by any measurement, estimate, or certificate made, either before or after the completion and acceptance of the work and payment therefor, from showing the true amount and character of the work performed and materials furnished by the Contractor, or from showing that any such measurement, estimate, or certificate is untrue or incorrectly made, or that the work or materials do not, in fact, conform to the contract.
- B. The Contracting Authority shall not be precluded or stopped, notwithstanding any such measurement, estimate, or certificate, and payment in accordance therewith, from recovering from the Contractor and the Contractor's sureties such damages as it may sustain by reason of the Contractor's failure to comply with the terms of his contract.
- C. Neither acceptance by the Contracting Authority, or any representative of the Contracting Authority, nor any payment for or acceptance of the whole or part of the work, nor any extension of time, nor any possession taken by the Contracting Authority, shall operate as a waiver of any portion of the contract, or for any power herein reserved, or any right to damages herein provided. A waiver of any breach of contract shall not be held to be a waiver of any other or subsequent breach.

PART 1108. PROSECUTION OF PROGRESS

1108.01 SUBLETTING OF CONTRACT

- A. The Contractor shall perform, with his/her own organization, work amounting to not less than 30% of the total contract cost, however, any items designated in the contract as "specialty items" may be performed by subcontracts and the cost of any such specialty items so performed by subcontract may be deducted from the total cost before computing the amount of work required to be performed by the Contractor with his/her own organization.
- B. 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 documents.
- C. At the time specified by the contract documents or when requested by the Engineer, the Contractor shall submit, in writing to the Contracting Authority, for approval the names of the subcontractors proposed for the work. Subcontractors may not be changed except at the request of and with the approval of the Contracting Authority.
 - 1. The Contractor is responsible to the Contracting Authority for the acts and omissions of the subcontractors, and of their direct and indirect employees, to the same extent as the Contractor is responsible for the acts and omissions of its own employees.
 - 2. The contract documents shall not be construed as creating any contractual relation between the subcontractor and the Contracting Authority.
- D. The Contractor shall bind every subcontractor and every subcontractor agrees to be bound by the terms of the contract, the contract documents, the plans, the general conditions of the contract, the supplementary general conditions, the special conditions, and the specifications as far as applicable to the subcontractors work.
- E. The subcontractor shall be bound to the Contractor by the terms of the contract, the contract documents, the plans, the general conditions, and specifications, and to assume toward the Contractor all the obligations and responsibilities that the Contractor, by those documents, assumes towards the Contracting Authority.
 - 1. The Contractor agrees to be bound to the subcontractor by all the same obligations that the Contracting Authority assumes to the Contractor under the terms of said documents, and by all the provisions thereof affording remedies and redress to the Contractor from the Contracting Authority.
- F. The Contractor shall not assign, sublet, or transfer in whole or part any of the work herein specified without the written consent of the Contracting Authority. Any such assignment, subletting, or transfer shall not in any manner relieve the Contractor from any of the responsibilities assumed herein.

- G. For convenience of reference and to facilitate the letting of contracts and subcontracts, the specifications are separated into title sections. Such separations shall not, however, operate to make the Engineer an arbitrator to establish limits to the contracts between Contractor and subcontractors.
- H. This article shall further be applicable to contracts involving Federal-aid participation in construction insofar as they are consistent with the required provisions for Federal-aid contracts attached to the contracts, and shall be additional specifications insofar as they cover matters not covered by the required provisions for Federal-aid contracts.

1108.02 PROSECUTION OF WORK

- A. The proposal form may designate the contract period by either completion date, approximate starting date, of specified starting date.
- B. Intermediate contract periods may be designated for completion of certain portions of the contract. The contract period for each portion and the liquidated damages, if any, will be listed in the special provisions.
- C. The return of the signed and executed contract to the Contractor shall serve as notice to the Contractor that the contract bond is acceptable, that the contract is in force, and that the Contractor may complete arrangements for materials and other work in accordance with the contract documents.
- D. Should delay become apparent before or after the work is started, the Engineer will immediately notify the Contractor, in writing, that work on the contract will be delayed and, if possible, the approximate duration of such delay. For delays exceeding 2 weeks, new construction dates may be established by the Engineer after consulting with the Contractor.
 - 1. Specified Starting Date: When a starting date is specified, working days will be charged to the Contractor starting on the specified starting date or 10 days after execution of the contract, whichever is later. Starting work prior to the specified date will be considered upon request, and working days will be charged when work starts.
 - 2. Approximate Starting Date:
 - a. Site available immediately, as determined by the Engineer: Anytime after execution of the contract and on or after the approximate starting date, the Contractor may work, weather and specifications permitting. Working days will be charged any time the Contractor is working on/or after the approximate starting date. Starting work prior to the approximate starting date will be considered upon request. If allowed, working days will be charged.
 - b. Site Availability Date Unknown, as determined by the Engineer: It is expected the site will be available by the approximate starting date. If it appears the site will not be available by the approximate starting date, the Engineer will inform the Contractor of the delay and if possible the duration of the delay. The Contractor may commence work, weather and specifications permitting, any time after execution of the contract and on or after the approximate starting date provided the site has become available. If work is started under these conditions, working days will be charged. Starting work before the approximate starting date and before the site is available, will be considered only after the Contractor has submitted a signed waiver of any right to claim extra compensation for damages due to delays from any cause related to the early commencement. If approved, working days will not be charged when working prior to the date of site availability. If the Contractor is working on the project when the site becomes available, working days will be first charged on the following day.
 - 3. Specified Completion Date: The Contractor may commence work any time after execution of the contract, weather and specifications permitting.
 - a. Working days will begin to be charged whenever the Contractor starts work.
 - 4. Winter Work: The proposal may require winter work on all or portions of the project, and working days will be counted as indicated therein. When not so specified, the Contractor may work, unless advised to the contrary by the Engineers between November 15 and April 1 with no working time

charged. If the best interest of the Contracting Authority so dictates, the Engineer may require the Contractor to continue work after November 15.

- a. Working days will not be charged if working time remains on November 15, and working days may be charged for days worked if no working time remains on November 15.
5. Notice to Proceed: A notice to proceed will be issued when, in the opinion of the Engineer, considering the approximate starting date, site availability, and working days allowed, failure of the Contractor to commence work places the timely completion of the project in jeopardy. The starting date in the notice to proceed will not be less than 15 calendar days after the date of the issuance of the notice. Working days will be charged beginning with the starting date established by the notice or when the Contractor starts work if prior thereto. A notice to proceed will be issued, except:
 - a. It will be assumed when a specified starting date is used.
 - b. It will be assumed when a specified completion date is used, the number of working days allowed will be counted back from the specified completion date, exclusive of Saturdays, Sundays, and holidays, to determine the first day working days will be charged.
 - c. It may be included as an agreed starting date at a preconstruction conference for projects with an approximate starting date.
 - d. It will be assumed when the Contractor is working at the time for issuance of the notice.
 - e. It will be assumed, if an early work waiver is approved, as having been issued at the time of site availability, as documented in the project records.
 6. Weekly Report of Working Days: Whenever the Contractor is subject to being charged with working days, the Engineer will furnish the Contractor a weekly statement indicating the working days to be charged against the Contractor for that period. Should the Contractor believe the statement to be inaccurate, a statement should be submitted to the Engineer, in writing, stating the objection and reasons, within 10 calendar days after receipt of the statement. If the Contractor fails to submit an objection within that time, the original statement may be considered as accurate and final.
 7. Work Progress: The progress of the work shall be at a rate sufficient to complete the contract within the time allowed. If it appears that the rate of progress is such that the contract will not be completed within the time allowed, or if the work is not being executed in a satisfactory and workmanlike manner, the Engineer may order the Contractor to take such steps as necessary to complete the contract within the period of time specified or to prosecute the work in a satisfactory manner.
 - a. If the Contractor fails to comply with such order within 2 weeks after receipt of the order, the Contractor may be disqualified from receiving any additional bidding proposals, and the Contracting Authority shall have the right to declare the contract in default and to complete the work in accordance with 1108.11.
 - b. Failure of the Contracting Authority to issue such order shall not alter the Contractor's responsibility under the contract.
 - c. The Contractor's sequence of operations shall be such as to cause as little inconvenience to the general public as possible.
 8. Schedule of Staging: On any project, or part of a project, on an existing road where the work may prohibit or restrict public or private access that has been previously available, the Contractor may be required to submit a schedule of staging for the Engineer's approval before work is started.
 - a. Preliminary work may be required in stage construction, even though the work involved in these operations is similar, in order to minimize the inconvenience to the public and those to whom access has been previously available. This requirement will apply equally to work that is subcontracted.

9. Accelerated Work Schedule: An accelerated work schedule may be required by a note on the proposal. When required, the Contractor shall marshal the necessary forces, including but not limited to: extra crews, subcontractors, extra work hours, or other acceptable methods to insure completion of the projects or various stages of the projects within the contract period and in compliance with the specifications.
 - a. A work plan shall be submitted to the Engineer for review prior to commencement of work. Work will be permitted on a 24-hour-day basis and on Sundays and holidays when traffic interference exists, though work may be restricted during peak traffic periods. No credit will be allowed for delayed or slow delivery of materials. The special provisions may include other requirements or modifications for the accelerated work schedule.
10. Preconstruction Conference: The Engineer shall schedule and conduct a preconstruction conference. The Contractor and intended subcontractors shall participate in this conference. The Engineer will invite utilities and others having responsibilities or interest in the work.

1108.03 LIMITATIONS OF OPERATIONS

- A. The Contractor shall conduct the work so as to create a minimum amount of inconvenience to the public. At anytime, when in the judgment of the Engineer, the Contractor has obstructed, closed, or is conducting his/her operations on a greater portion of the project vicinity than is necessary for the proper prosecution of the work, the Engineer may require the Contractor to finish the section on which work is in progress before work is started on any additional sections.
- B. Whenever work which is being done by other contractors or subcontractors is contiguous to, or a part of the work included in this contract, the Engineer shall in case of dispute, determine and define the respective rights of the various interests involved, in order to secure the completion of all parts of the work in general harmony and with satisfactory results.
- C. Except when an accelerated work schedule is required, no work will be permitted on Sundays, holidays observed by the Department of Natural Resources or within the time frame of dusk until dawn (as observed by current Farmer's Almanac) unless explicit permission from the Engineer has been obtained.
 1. The Contractor should request a determination of the holidays to be observed at the beginning of each calendar year.

1108.04 METHODS AND EQUIPMENT

- A. The methods, equipment, and appliances used shall produce a satisfactory quality of work and shall be adequate to maintain the schedule of progress specified. Equipment used on any portion of the project shall be such and its use so regulated that no serious or irreparable damage to the adjacent property, or highways will result from its use. If damage does occur to the highways suitable repairs shall be made.
- B. When the methods and equipment to be used by the Contractor in accomplishing the construction are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the contract work in conformity with the requirements of the contract, as demonstrated to the satisfaction of the Engineer.
- C. When the contract specifies that the construction be performed by use of certain methods and equipment, such methods and equipment shall be used, unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the contract, he/she may request approval from the Engineer to do so.
 1. The request shall be in writing and shall include a full description of the methods and equipment proposed to be used and an explanation of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing construction work in conformity with contract requirements.
 2. If after trial use of the substituted methods or equipment the Engineer determines that the work produced does not meet contract requirements, the Contractor shall discontinue use of the substitute

method or equipment and shall complete the remaining construction with the specified method and equipment.

3. The Contractor shall remove the defective work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the construction items involved or in contract time as a result of authorizing a change in methods or equipment under these provisions.

1108.05 CHARACTER OF WORKERS

- A. Any employee of the Contractor who is careless, incompetent, or disorderly, or who refuses or neglects to perform work in accordance with the specifications, or who shall commit trespass upon any public or private property in the vicinity of the work, shall be discharged upon the written request of the Engineer and shall not be reemployed on any of the work unless written permission is given by the Engineer.

1108.06 TEMPORARY SUSPENSION OF WORK

- A. Work shall be suspended, wholly or in part when, in the opinion of the Engineer, weather or other conditions are unfavorable to its satisfactory prosecution.
 1. Work shall also be suspended at the direction of the Engineer pending settlement of disputes arising of failure of the Contractor to comply with provisions of the contract. Written notice of suspension of work shall be given by the Engineer.
 2. When the conditions causing suspension no longer exists, written notice to resume work will be given to the Contractor by the Engineer. Promptly after such written notices the Contractor shall resume prosecution of the work as provided in 1106.02.
- B. The start of work may be delayed or work may be suspended upon request of the Contractor and with approval of the Engineer. The Engineer may require the request to be in writing and also may require the Contractor to include with the request a schedule for satisfactory completion of the work.

1108.07 EXTENSION OF CONTRACT PERIOD

- A. An extension of the contract period will be granted by the Engineer for additional work requiring additional construction time and may result from a modification of the plans or extra work.
 1. If any delay is caused by active interference by the Contracting Authority, the Contracting Authority will grant such an extension of time for completion of the contract as will, in the opinion of the Engineer, compensate for such delay. An extension of the contract period will be granted by the Contracting Authority for:
 - a. Additional work resulting from a modification of the plans for the project, or
 - b. Other reasons beyond the control of the Contractor which, in the Contracting Authority's judgment would justify such extension.
- A. All claims for extension of the contract period shall be made in writing to the Engineer no more than thirty days after the occurrence of the delays otherwise they shall be waived. In the case of continuing cause of delays only one claim is necessary.

1108.08 LIQUIDATED DAMAGES

- A. Time is an essential element of the contract and it is important that the work be pressed vigorously to completion.
- B. For each calendar day that any work shall remain uncompleted after the end of the contract period, number of working days allowed, or any extension granted under 1108.07, the amount per calendar day specified in the proposal form will be assessed, not as a penalty, but as predetermined and agreed liquidated damages.

1. The Contracting Authority will prepare and forward to the Contractor an invoice for such liquidated damages.
 2. The final payment will be withheld until payment shall have been made on this invoice.
- C. Assessment of liquidated damages will be based only on the number of working days required to complete the work in excess of the specified working days allowed, plus authorized extensions thereto.
- D. This provision for the assessment of liquidated damages for failure to complete work within the contract period does not constitute a waiver of the Contracting Authority's right to collect any additional damages other than time delays which the Contracting Authority may sustain by failure of the Contractor to carry out the terms of the contract.

1108.09 FAILURE TO COMPLETE WORK WITHIN CONTRACT PERIOD

- A. If the Contractor fails to complete his work within the contract periods or any extension thereof, as provided in 1108.07, upon written notice to the Contractor and surety, said contract shall be in default. The Contracting Authority may, at its option, permit the Contractor or the Contractor's surety to complete the work included in the contracts or may proceed to complete the work in accordance with 1106.11. In either event, the Contractor or the Contractor's surety shall be responsible for all costs incident to the completion of the work, and also for the liquidated damages stipulated in the proposal form. The Contracting Authority may waive such portion of the liquidated damages as may accrue after the work is in condition for safe and convenient use by the public.

1108.10 CONTRACTS IN DEFAULT

- A. The Contracting Authority may declare a contract in default for any one of the following reasons:
1. Failure to complete the work within the contract period or any extension thereof,
 2. Failure or refusal to comply with an order of the Engineer within a reasonable time,
 3. Failure or refusal to remove rejected materials,
 4. Failure or refusal to correct any defective or unacceptable work,
 5. Bankruptcy or insolvency, or the making of an assignment for the benefit of creditors,
 6. Failure to carry on the work in an acceptable manner.

1108.11 COMPLETION OF CONTRACTS IN DEFAULT

- A. If for any reason a contract is declared in default, the Contracting Authority shall have the right, without process or action at law, to take over all or any portion of the work and complete it, at its option, either by day labor or by reletting the work.
1. Written notice shall be given the Contractor by the Contracting Authority that the contract has been declared in default, and upon receiving such notices the Contractor shall peaceably relinquish possession of the said work or the parts thereof specified in the notice.
- B. The Contracting Authority may, at its option and, at a rental which it considers reasonable, retain all material, equipment, and tools on the work until the work has been completed.
- C. Neither the Contracting Authority nor any member or employee thereof shall be in any way liable or accountable to the Contractor or the Contractor's surety for the method by which the completion of said work, or any portion thereof, may be accomplished, or for the price paid therefor.
1. Should the cost of completing work be in excess of the original contract prices the Contractor and the Contractor's surety shall be held responsible for such excess cost.

2. Should the cost of such completion, including all proper charges, be less than the original contract price, the amount so saved shall be paid to the Contractor.
3. Neither by taking over the work nor by declaring the contract in default shall the Contracting Authority forfeit the right to recover damages from the Contractor or the Contractor's surety for failure to complete the entire contract.

1108.12 REMOVAL OF EQUIPMENT

- A. In the case of cancellation of this contract before completion from any cause whatsoever, the Contractor, if notified to do so by the Contracting Authority, shall promptly remove any part or all of his equipment and supplies from the property of the Contracting Authority. In the event of failure of the Contractor to remove such equipment and supplies within thirty days after the issuance of the notification for removal, the Contracting Authority shall have the right to remove such equipment and supplies at the expense of the Contractor.

1108.13 ORDER OF COMPLETION AND USE OF COMPLETED PORTIONS OF THE WORK

- A. The Contractor shall complete any portion or portions of the work in such order of time as the Engineer may require. The Contracting Authority shall have the right to take possession of, and use any completed or partially completed portion of the work at anytime, but such taking possession and use shall not be deemed as acceptance of the work so taken or used or any part thereof. If such prior use increases the cost or delays the work, the Contractor shall be entitled to such extra compensation or extension of time, or both, as determined by the Engineer.

1108.14 METHOD OF SERVING NOTICES

- A. Any notice to be given by the Contracting Authority to the Contractor under this contract shall be deemed to be served if delivered to any office used by the Contractor, or foreman, or agent, at or near the work, or deposited in the post office, postpaid, addressed to the Contractor at the last known place of business.

1108.15 TERMINATION OF CONTRACTOR'S RESPONSIBILITY

- A. The contract shall be considered completed when the work has been accepted in writing by the Contracting Authority.
 1. Such acceptance shall release the Contractor from all further obligation with respect thereto, except as to conditions and requirements set forth in the performance bond, and if, within one year after the final acceptance or a longer period of time, as may be prescribed by law or by the terms of any applicable guarantee required by the contract documents, any of the work is found to be defective or not in accordance with the contract documents, the Contractor shall correct it promptly after receipt of a written notice from the Contracting Authority to do so unless the Contracting Authority has previously given the Contractor a written acceptance of such conditions specifically stating the condition that is accepted.
 2. The Contracting Authority shall give such notice promptly after discovery of the condition. All such defective or non conforming work shall be removed from the site if necessary, and the work shall be corrected to comply with the contract documents without cost to the Contracting Authority.
- B. The Contractor shall bear the cost of making good, all work destroyed or damaged by such removal or correction of separate contractors.

PART 1109. MEASUREMENT AND PAYMENT

1109.01 MEASUREMENT OF QUANTITIES

- A. The work completed under the contract shall be measured according to United States standard measures. Payment will be based on the actual quantity of work performed under the various work classifications in the contract, unless otherwise provided below, or by the method of measurement for the various classes of work.
- B. By written agreement between the Contractor and the Engineer, final settlement may be made on the basis of contract quantities without final field measurements. Such an agreement may be made before work is started or after work has been completed, if no material deviation from the original plans is involved.
 - 1. Except for those items for which quantities cannot be accurately predetermined, the contract quantities have been accurately and properly estimated, but adjustments will be made for obvious errors or authorized changes.
 - 2. The Engineer shall exercise such controls and make such measurements, as are necessary, to assure that each item of work is done in substantial compliance with the contract documents. The use of this agreement for payment shall not be considered as a change in the contract.

1109.02 SCOPE OF PAYMENT

- A. The Contractor shall accept the compensation herein provided as full payment for furnishing all materials labor, tools, and equipment for performing all work under the contract or any extension thereof allowed under 1108.07, also, for all costs arising from the action of the elements or other natural causes, agreements, and performance, nonperformance, or delays involving other contractors and third parties, or injunctions or lawsuits resulting therefrom, or from any unforeseen difficulties not otherwise provided for in the specifications and which may be encountered during prosecution of the work and up to the time of acceptance thereof, except damage to the work due to acts of war. Nothing herein shall in itself be construed to prejudice or deny any claim filed under provisions 1109.12.
- B. The contract price for any item shall be full compensation for acceptable work and for materials, equipment, tools, and labor for performance of all work necessary to complete the item in accordance with the plans and specifications, except as specifically exempt in the clauses covering the basis of payment for the item.

1109.03 ADJUSTMENT IN CONTRACT PRICE

- A. When the measured quantity of any item varies by more than 20% from the estimated quantity specified in the contracts an adjustment in price may be made for such item of work, and the adjustment will be made on the full variance from the contract quantity. Such adjustment may be requested by either party to the Contract.
 - 1. If the contract sum for an item is less than five thousand (\$5,000.00) dollars, the price of that item will not be subject to adjustment.
- B. If the increase or decrease in quantity is due to an alteration in plans, any price adjustment shall be requested and agreed upon before the work is done. If the increase or decrease in quantity is not the result of an alteration in plans, but results from errors in original estimates, or unforeseen conditions, price adjustments may be requested after the work is completed.
- C. In making price adjustments, consideration shall be given to the portion of the cost of the work that can be classified as fixed costs, independent of the exact quantity of work performed, such as transportation and installation costs on equipment, overhead costs, etc. Any price adjustment shall be arrived at from the standpoint that neither party to the contract shall be penalized by the increase or decrease in quantities which occasioned the price adjustment.
- D. If changes or alterations, as outlined in 1105.04, result in a substantial increase or decrease in cost or difficulty of the work, appropriate modifications will be made in the contract by extra work order, regardless of the quantity.
- E. All price adjustments shall be agreed to by the Engineer and the Contractor and shall be subject to the approval of the Contracting Authority.

1109.04 PAYMENT FOR WORK PERFORMED

- A. All contract price adjustments approved by the Engineer shall be subject to the concurrence of the Contracting Authority.
- B. The Contractor will receive and accept payment for work performed under his contract as follows:
 1. Items or Work Performed Which Are Covered by Definite Prices Stipulated in the Contract: For all items of acceptable work performed which are covered by definite unit prices or lump-sum amounts specified in the contract, the Contractor shall receive and accept compensation at the rate specified in the contract, except as provided in 1109.03 and for items identified as that of "significant change" as provided in 1109.17.
 2. Extra Work: Extra work ordered by the Engineer, of a quality or class not covered by the contract, will be paid for, either at an agreed price or on a force-account basis.
 3. Agreed-Price Basis: For extra work ordered by the Engineer and performed on an agreed-price basis, the Engineer and the Contractor shall enter into a written agreement before such work is undertaken. This written agreement shall describe the extra work that is to be done and shall specify the agreed price or prices.
 4. Force-Account Basis: Extra work performed on a force-account basis will be paid for in the following manner:
 - a. For laborers, timekeepers, foremen, and superintendents, the Contractor shall receive the rate of wage shown on previous payrolls for the time they are actually engaged in the extra work, to which shall be added an amount negotiated up to 15% thereof, plus the amount of social security tax imposed by law upon the Contractor because of such force-account work, plus the cost of worker's compensation, public liability insurance, and employment security contributions. The percentage shall cover compensation for furnishing of necessary small tools for the work together with all other overhead expense items.
 - b. The wage of the superintendent, timekeeper, or foreman who is employed partly on force-account work and partly on other work shall be prorated between the two classes of work according to the number of persons shown by the payroll, as employed on each class of work.
 - c. For materials used on force-account work, the Contractor shall receive the actual cost of materials delivered on the work, including the freight and handling charges as shown by original receipted bills, to which cost shall be added an amount negotiated to 15% thereof.
 - d. For machinery, tools, or equipment, fuel and lubricants therefor, except small hand tools which may be used, the Engineer shall allow the Contractor a reasonable rental rate to be agreed upon in writing before such work is begun. No profit percentage shall be added to the rate.
 - e. Compensation, as herein provided, shall be accepted by the Contractor as payment in full for extra work done on a force-account basis. It will be assumed that such payment includes the use of tools and equipment for which no rate is allowed, overheads and profit.
 - f. At the end of each day, the Contractor shall prepare payrolls in duplicate for labor furnished on a force-account basis, using the Contracting Authority's standard force-account forms. Both copies shall be signed by the inspector and Contractor's representative. One copy shall be furnished to the Engineer and one to the contractor.
 - g. Claims for extra work performed on a force-account basis shall be submitted to the Engineer in triplicate. To the claims shall be attached such receipt or statements as the Engineer may require in support of such claims. Such claims shall be filed not later than the tenth day of the month following that in which the work was actually performed, and shall include all labor charges, rental charges on machinery, tools, and equipment, and all material charges insofar as they are available.

5. Deficient Work: Payment for work judged by the Engineer to be deficient work shall be made at the reduced rate specified in the contract documents or, if no such rate is specified, at a modification of the contract prices as determined by the Engineer.

1109.05 CANCELLED WORK

- A. The Contracting Authority shall have the right to cancel any or all items from the contract when unforeseen circumstances, failure to secure permits, approvals, loss of funding, unanticipated design changes, or other reasons beyond the control of the Contractor prevent or unreasonably delay completion of the contract, or of certain items of the contract, or when the Contracting Authority determines that cancellation is in the public or national interest.
- B. The Contractor may be prevented from starting work on a contract, or an identified phase of a contract, as a result of a delay caused by the Contracting Authority or others.
- C. When the contract period is defined by approximate starting date and the delay prevents the Contractor's starting work on the contract or an identified phase of the contract for 30 days beyond the date which, by notice to the Engineer, the Contractor proposed to start work, the Contractor may request cancellation by written notice to the Engineers stating the reasons.
- D. In either case, within 30 days from the date of the request, the Engineer will eliminate or minimize, if possible, the cause for the delay and issue a notice to proceed, redefine the basis on which the work is to proceed, or cancel the contract or phase of the contract.
- E. The Contractor shall not use delays that occur prior to starting work or an identified phase of the work as a basis of a claim against the Contracting Authority except for an extension of contract period.
- F. Notices described in this article should be transmitted by certified mail.
- G. For finished portions of items canceled, the Contractor will be paid at the contract unit prices, in accordance with the provisions of 1109.04. For finished portions of major items canceled, the Contractor will be paid as provided in 1109.17. For all items, materials ordered and delivered for the unfinished portion of such canceled, or omitted items, the Contracting Authority will pay cost plus 10 percent as an overhead charge. The Contractor's expense for work of handling or transporting such material shall be included in computing the cost.
- H. The Contracting Authority will also pay any actual expenses sustained by the Contractor by reason of such cancellation or omission and not represented by work completed or material delivered. In computation of material cost or expenses sustained, no anticipated profit will be included.
 1. Material paid for shall become the property of the Contracting Authority and shall be disposed of as directed by the Engineer.

1109.06 PARTIAL PAYMENTS

- A. If the work extends over a period of more than one month, the Engineer may, upon request from the Contractor, prepare monthly estimates based on the amount of work completed in an acceptable manner.
 1. On contracts for which the contract sum is \$10,000.00 or more, monthly estimates may be allowed, based on 90% of invoiced value of processed or fabricated materials which have been delivered on the project site, provided the materials are of acceptable quality and the manner of storage is satisfactory to the Engineer.
 2. The Engineer's monthly estimates shall be partial payments on the contract, and the allowance of a monthly estimate by the Contracting Authority does not constitute final acceptance of the work upon which the estimates are based. Each estimate shall be filed by the Contractor in the form of a claim against the Contracting Authority and certified to by the Engineer on a payment request form supplied by the Contracting Authority.

- B. Five percent (5%) of each progress estimate shall be deducted and held as a suspended payment. Payments may be made on the remainder of the progress estimate, except under circumstances which would prejudice the rights of those who have filed claims pursuant to Chapter 573, Code of Iowa.
 - 1. The retained percentage will not be due and payable for a period of at least 30 days after the date of final acceptance of the entire contract or following the release or adjudication of claims that may have been filed, or until the Contractor has filed the sworn final estimate and sales and use tax statement with the Contracting Authority.
 - 2. Should a reasonable doubt arise as to the integrity of any part of the completed work, the estimate for that portion shall not be allowed until the cause for such doubt has been removed.
 - 3. The progress estimates and payments are approximate only, and shall be subject to correction in the final estimate and payment.
- C. Failure to make partial payment within 30 days after receipt and approval of the monthly estimate by the Engineer, will cause interest to accrue and additional payment therefor to be made in accordance with provisions of Chapter 573, Code of Iowa, subject to limitations included therein.

1109.07 SUPPLEMENTAL CONTRACT FOR WORK INTERRUPTED

- A. After ninety-five (95%) of the work has been performed to the satisfaction of the Contracting Authority, including consideration of the contract period, and it is apparent that conditions beyond the control of the Contractor will delay the completion of the contract for more than 60 days, the Contractor may request a supplemental contract for the uncompleted portion of work on the same terms as those of the original contract.
 - 1. If the Contracting Authority agrees, and the surety for the Contractors consents to the extension of the bond for the time required to complete the supplemental contract, the supplemental contract will be issued. After the contract has been entered into, full payment will be made for the work completed, except under circumstances which would prejudice the rights of those who have filed claims pursuant to Chapter 573, Code of Iowa.
- B. The unpaid money, held by the Contracting Authority as a retainer of the original contract price, will be due and payable to the Contractor 30 days after the date of the Contracting Authority's approval of the supplemental contract, except as provided for the release and adjudication of claims in 1109.06.

1109.08 CERTIFIED STATEMENT OF SALES TAX AND USE TAX PAID

- A. Unless the Contracting Authority has issue an authorization letter and a Sales Tax Exemption Certificate for this project, before final payment can be made on a contract, the Contractor and subcontractors shall file a certified statement on forms provided by the Contracting Authority, showing the amount of Iowa sales tax and use tax paid by them on all materials which have become a component part of the finished, completed contract and on such supplies for this construction as were actually consumed on this work.
- B. These statements shall be submitted in duplicate to the Contracting Authority at the completion of the contract.

1109.09 ASSIGNMENT OF MONIES

- A. The Contractor shall not assign, by power of attorney or otherwise, any of the monies to become due and payable under this agreement unless the Contractor has received written consent of the Contracting Authority.

1109.10 SUBMITTALS REQUIRED BEFORE FINAL PAYMENT

- A. Before final payment can be made on this contract, the Contractor shall submit to the Engineer the following:
 - 1. A request for prefinal and final payment.

2. One copy of any guarantees for products incorporated into the work.
3. Two copies of the operating instructions on each piece of equipment incorporated into the work.
4. Statements of Sales Tax from the Contractor and subcontractors, unless in receipt of an authorization letter and a Sales tax Exemption Certificate issued by the Contracting Authority fo this project.

1109.11 FINAL ACCEPTANCE AND PAYMENT

- A. Final acceptance is stipulated to mean a written acceptance by the Contracting Authority. The Contracting Authority shall make final acceptance promptly upon the satisfactory completion of the work. Final payment shall be made as soon as possible following the expiration of statutory time for filing claims, or following adjudication or release of claims against the amount withheld.
- B. Failure to make final payment within 70 days after completion of the work, and if all requirements of the contract are completed, will cause interest to accrue and additional payment therefor to be made in accordance with provisions of Chapter 573, Code of Iowa, subject to limitations included therein, however, this provision shall not apply when final payment includes a supplemental contract for work interrupted, as provided for in 1109.07.
- C. Completion of the work will be considered as the date of approval and work acceptance by the Contracting Authority. When interest is to be paid, the date from which interest is to be calculated will be the thirty-first day after all required materials, certifications, and other documentation required to be submitted by the Contractor are received by the Engineer, however, the Contractor will be paid no interest if final payment is made within 70 days from the date of approval and work acceptance. The signed final payment request is not required documentation, but if not returned to the Engineer within 30 days, it will be considered required documentation.
- D. Signing of the final payment request or acceptance of payment based thereon, shall not waive any rights of either party in the resolution of any claim filed in accordance with 1109.12.
- E. The Contracting Authority shall satisfy itself as to the faithful completion of each part of the work, and may reject any portion found to be inconsistent with the terms of the contract.

1109.12 DISPUTED CLAIMS FOR EXTRA COMPENSATION

- A. In any case where the Contractor deems that extra compensation is due for work or material not clearly covered in the contract and not ordered by the Engineer as extra work as defined herein, the Contractor shall notify the Engineer in writing of the intention to make a claim for extra compensation before beginning the work on which the claim is based.
- B. The Contracting Authority shall be responsible for damages attributable to the performance, nonperformance, or delay of any other contractor, governmental agency, utility, firm, corporation, or individual authorized to do work on the project, only when such damage is a result from negligence on the part of the Contracting Authority, Engineer, or any of its officers or employees.
 - 1. In any case where the Contractor deems that extra compensation is due from the Contracting Authority as damages resulting from such performances, nonperformances, or delays, the Contractor shall notify the Engineer in writing at the time the delay occurs.
- C. In either cases if such notification is not given, or if after such notification is given, the Engineer is not afforded facilities for keeping strict account of actual cost, as defined for force-account construction, the Contractor thereby agrees to waive the claim for extra compensation for such work. Such notice by the Contractors and the fact that the Engineer has kept account of the cost as aforesaid, shall not be construed as establishing the validity of the claim.
 - 1. The claims when filed, shall be in writing and in sufficient detail to permit auditing and evaluation by the Contracting Authority. Claims shall be supported by such documentary evidence as the claimant has available and shall be verified by affidavit of the claimant or other persons having knowledge of the facts.
 - 2. In the event the claimant wishes an opportunity to present the claim in person, then the claim shall be accompanied by a written request to do so.
 - 3. Where the claimant asks an opportunity to present the claim in person, the Contracting Authority, within a reasonable period of time after the filing of the claim, shall fix a time and place for a meeting between the claimant and the Contracting Authority or its designated representatives.

- a. The Contracting Authority shall, within a reasonable time from filing of the claim or the meeting above referred to, whichever is later, rule upon the validity of the claim and notify the claimant in writing, of its ruling together with the reasons therefor. In case the claim is found to be just, in whole or in part, it shall be allowed and paid to the extent so found.
- E. The Contractor shall not institute any court action against the Contracting Authority for the adjudication of any claims until such claim has first been presented to Contracting Authority pursuant to this articles and submitted to arbitration or a request for arbitration is denied pursuant to 1109.13.

1109.13 ARBITRATION

- A. If a Contractor's claim, as outlined in 1109.12, has been disallowed, in whole or in part, then the Contractor may, within 30 days from the date the ruling of the Engineer is mailed to the Contractor, make a written request to the Engineer that the claim or claims be submitted to a board of arbitration.
 1. The Engineer shall decide whether the matter is one which is subject to arbitration and shall, within 30 days of the receipt of the request for arbitration, grant or deny the request.
 2. The Engineer's decisions shall be final.
- B. Said board of arbitration shall consist of three persons, one to be chosen by the Engineer, one by the Contractor, and the third by the two arbitrators.
- C. The arbitrators selected shall be persons experienced and familiar with construction or engineering practices in the general type of work involved in the contract, but shall not have been a regular employee or an individual retained by either party at the time involved in the controversy, or at the time of arbitration.
- D. The board of arbitration shall make its own rules of procedure and shall have authority to examine records kept by the Engineer and the Contractor.
 1. If the desired records are not produced within 10 days after they are requested, the board of arbitration shall proceed without them as best it may.
 2. In determining the findings, or awards, or both, the majority vote of the board shall govern. Copies of the findings or awards or both, signed by the arbitrators shall be filed with the Engineer and the Contractor.
 3. A majority report or minority report may be filed. The board of arbitration shall fix the cost of the proceedings, including a reasonable compensation to the arbitrators, and shall determine how the total cost shall be borne.
- E. The board of arbitration shall have jurisdiction to pass upon questions involving compensation to the Contractor for work actually performed or materials furnished and upon claims for extra compensation which have not been allowed by the Engineer. Jurisdiction of the board shall not extend to:
 1. A determination of quality of workmanship, or materials furnished, or to an interpretation of the intent of the plans and specifications, except as to matters of compensation.
 2. Setting aside or modifying the terms or requirements of the contract.
- F. The findings or awards or both, of the arbitration board, if acceptable to both parties to the contract, may become a basis for final payment.
- G. If the findings of the arbitration board are unacceptable to either party to the contract, said findings may become the basis for further negotiations between the parties. If a solution agreeable to both parties has not been reached through the filing of a claims through arbitration, or if arbitration has been denied, either party may resort to whatever other methods for resolving the claim are available.

1109.14 CLAIMS AGAINST CONTRACTOR

- A. The Contractor guarantees the payment of all just claims against him/her or any subcontractor, in connection with the work. If another contractor on the project submits a claim for alleged damages caused by delay due to the Contractor not having completed its work in a timely manner, the Contractor's bond shall remain in effect until payment of such claim is made, or until litigation is started, at which time the bond will be released.

1109.15 TIME LIMITS FOR FINAL ADJUSTMENT

- A. The Contractor shall understand that the Contracting Authority will not be bound to consider applications for correction of estimates and payments after the Contractor has signed the final estimate, or after 30 days from the date when the final estimate is submitted to the Contractor for approval. Should an error be discovered as a result of the Contractor's annual audit, an application for corrections promptly made will be considered.

1109.16 NATIONAL EMERGENCY PROVISIONS

- A. The Contracting Authority may, with written notice, terminate the contract, or a portion thereof, when the Contractor is prevented from proceeding with the construction contract as a direct result of an executive order of the President with respect to the prosecution of war, or in the interest of national defenses as provided in Chapter 573A of the Code of Iowa.
- B. When contracts, or any portion thereof, are terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract unit prices or as mutually agreed for items of work partially completed or not started. No claim for loss of anticipated profits shall be considered.
 - 1. Reimbursement for organization of work (when not included in the contract) and moving equipment to and from the job will be considered where the volume of work completed is too small to compensate the contractor for these expenses under the contract unit prices, the intent being that an equitable settlement will be made with the Contractor.
- C. Acceptable materials, obtained by the Contractor for the work, which have been inspected, tested, and accepted by the Engineer, and which are not incorporated into the work, shall be purchased from the Contractor at actual cost, as shown by receipted bills and actual cost records, at such points of delivery as may be designated by the Engineer.
- D. Termination of a contract, or a portion thereof, shall not relieve the Contractor of its responsibilities for the completed work, nor shall it relieve the Contractor's surety of its obligation for and concerning any just claims arising out of the work performed.

1109.17 STANDARD CONTRACT CLAUSES

- A. Differing site conditions.
 - 1. During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the contract or if unknown physical conditions of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the contract, are encountered at the site, the party discovering such conditions shall promptly notify the other party, in writing, of the specific differing conditions before they are disturbed and before the affected work is performed.
 - 2. Upon written notification, the Engineer will investigate the conditions, and if he/she determines that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the contract, an adjustment, excluding loss of anticipated profits, will be made and the contract modified in writing accordingly.
 - a. The Engineer will notify the Contractor of his/her determination whether or not an adjustment of the contract is warranted.

3. No contract adjustment which results in a benefit to the Contractor will be allowed unless the Contractor has provided the required written notice.
4. No contract adjustment will be allowed under this clause for any effects caused on unchanged work.

B. Suspension of work ordered by the Engineer.

1. If the performance of all or any portion of the work is suspended or delayed by the Engineer, in writing, for an unreasonable period of time (not originally anticipated, customary, or inherent to the construction industry) and the Contractor believes that additional compensation and/or contract time is due as a result of such suspension or delay, the Contractor shall submit to the Engineer, in writing, a request for adjustment within seven (7) calendar days of receipt of the notice to resume work. The request shall set forth the reasons and support for such adjustment.
2. Upon receipt, the Engineer will evaluate the Contractor's request. If the Engineer agrees that the cost and/or time required for the performance of the contract has increased as a result of such suspension and the suspension was caused by conditions beyond the control of and not the fault of the Contractor, its suppliers, or Subcontractors at any approved tier, and not caused by weather, the Engineer will make an adjustment, excluding profit, and modify the contract in writing accordingly.
 - a. The Engineer will notify the Contractor of his/her determination, whether or not an adjustment of the contract is warranted.
3. No contract adjustment will be allowed unless the Contractor has submitted the request for adjustment within the time prescribed.
4. No contract adjustment will be allowed under this clause to the extent that performance would have been suspended or delayed by any other cause, or for which an adjustment is provided for or excluded under any other term or condition of this contract.

C. Significant changes in the character of work.

1. The Engineer reserves the right to make, in writing, at any time during the work, such changes in quantities and such alterations in the work, as are necessary to satisfactorily complete the project.
 - a. Such changes in quantities and alternations shall not invalidate the contract nor release the Surety, and the Contractor agrees to perform the work as altered.
2. If the alterations or changes in quantities significantly change the character of the work under the contract, whether or not changed by any anticipated profits, adjustments will be made to the contract. The basis for the adjustment shall be agreed upon prior to the performance of the work. If such a basis cannot be agreed upon, an adjustment will be made either for or against the Contractor in such amount as the engineer may determine to be fair and equitable.
3. If the alterations or changes in quantities do not significantly change the character of the work to be performed under the contracts the altered work will be paid for as provided elsewhere in the contract.
4. The term "significant change" shall be construed to apply only to the following circumstances:
 - a. When the character of the work as altered, differs materially in kind or nature from that involved or included in the original proposed construction or;
 - b. When a major item of work, as defined elsewhere in the contract, is increased in excess of 125 percent or decreased below 75 percent of the original contract quantity, any allowance for an increase in quantity shall apply only to that portion in excess of 125 percent of original contract item quantity, or in case of a decrease below 75 percent, to the actual amount of work.

1109.18 INTEREST PAYMENTS

A. Interest on monthly payment estimates.

1. Interests shall be paid to the Contractor on any progress payment approved by the Chief Engineer under paragraph A of paragraph 1109.06 of these General Covenants and Provisions, which remains unpaid after thirty (30) days of the receipt by the Contracting Authority.
 - a. Receipt by the Contracting Authority shall be defined as the date the Contracting Authority's central office mail staff receives the progress payment request and stamp it. All progress payment requests which are delivered directly to the central office by the Contractor or the Inspector of the Contracting Authority shall have a date of receipt entered by the mail room staff.
 - b. Interest shall accrue on the 31st day after receipt by the Contracting Authority, if approved by the Chief Engineer, and shall end on the date the warrant is issued by the Iowa Department of Revenue. The rate of interest shall be the same as the rate of interest in effect under 453.6 of the Iowa Code, as the date interest begin to accrue.

B. Interest on retainage.

1. Interest shall be paid on any retained funds held under paragraph B of section 1109.06 of these General Covenants and Provisions. Interest shall be paid as outlined in Iowa Administrative Code section 561, Chapter 8.7.

END OF SECTION 00700

SECTION 00710

(Revised 9/8/95)

SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES

Notice of Requirements for Affirmative Action to ensure Equal Employment Opportunity (Executive Order 11246 as amended) and Iowa Executive Orders 15 and 34. This includes employment goals for minorities and women in construction.

60-1.4 EQUAL OPPORTUNITY CLAUSE.

A. Federally assisted construction contracts.

1. Except as otherwise provided, each administering agency shall require the inclusion of the following language as a condition of any grant, contract, loan, insurance, or guarantee involving federally assisted construction which is not exempt from the requirements of the equal opportunity clause.

B. The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loans insurance, or guarantee, the following equal opportunity clause:

C. During the performance of this contracts the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee, or applicant for employment because of race, colors, religion, sex, national origin, or disability.
 - a. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following; Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.
 - b. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
2. The Contractor will in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, national origin, or disability.
3. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor or as otherwise provided by law.
7. The Contractor will include the portion of the sentence immediately preceding paragraph 1. and the provisions of paragraphs 1. through 7. in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor.
 - a. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.
 - b. Provided, however, that in the event a Contractor becomes involved in, or is threatened with litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

I. DEFINITIONS.

A. Definitions as used in these specifications:

1. **Covered Area** means the entire State of Iowa, however, those areas of a Hometown Plan approved by the U.S. Department of Labor will be considered separately.
2. **Director** means Director, Office of Federal Contract Compliance Program, United States Department of Labor or any person to whom the Director delegates authority.
3. **Employer Identification Number** means the Federal Social Security Number used on the Employer's Quarterly Federal Tax Returns U.S. Treasury Department Form 941.
4. **Designated Geographical Areas**
 - a. **Standard Metropolitan Statistical Area (SMSA)**. These areas represent a reasoned judgement as to how metropolitan areas are defined statistically in a uniform manner, using data items that are:
 - (1) widely recognized as indicative of metropolitan character, (population, urban character, nonagricultural employment, population, density, and commuting ties), and
 - (2) available from a body of Federal statistics which has been uniformly and simultaneously collected in all parts of the country, and processed and tabulated according to consistent standards. Thus, if a project is located within an SMSA, it can be concluded that a reasonable commuting area exists within the SMSA, and that goals based on SMSA statistics are accurate.
 - b. **Economic Area (EA)**. These areas are viewed as centers of commerce, and they generally cover areas which include the places of work and residence for most workers. There are 183 such areas, defined along county lines, covering the entire country. Counties were assigned to these economic areas in accordance with commuting patterns based primarily on data gathered by the Bureau of the Census.
5. **Minority** includes:

- a. **Black** (all persons having origins in any of the Black African racial groups not of Hispanic origin);
- b. **Hispanic** (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish Culture or origin, regardless of race),
- c. **Asian and Pacific Islander** (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands), and
- d. **American Indian or Alaskan Native** (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

(Note: Minority women from the above referenced groups shall be counted as satisfying both the minority and female employment goals in each geographic area.)

II. GENERAL.

- A. Equal Employment Opportunity requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246 and Executive Order 11375. The requirements set forth in this specification shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract Provisions.

III. EQUAL OPPORTUNITY POLICY.

- A. The Contractor will accept as his/her operating policy the following statement which is designed to farther the provision of equal employment opportunity to all persons without regard to their age, race, color, religion, sex, national origin, or disability, and to promote the full realization of equal employment opportunity through a positive, continuing program.

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their age, race, religion, sex, color, national origin, or disability. Such action shall include: employment, upgrading, demotion, and transfer, recruitment and recruitment advertising, layoff, and termination, rates of pay and other forms of compensation, and selection of training, including apprenticeship, preapprenticeship, and/or on-the-job training."

IV. GOALS.

- A. Specific goals for female and minority participation have been established.
- B. The goals for female participation, expressed in percentage terms for the total hours worked by the Contractor's aggregate workforce in each trade on all construction work, is 6.9 percent, with no timetable. This goal applies nationwide.
 - 1. Goals for minority participation in Iowa, expressed in percentage terms for the total hours worked by the Contractor's aggregate workforce in each trade on all construction work, are shown on the map of Iowa that follows. The goals shown apply to each designated geographical area, as shown on the map.
- C. These goals are applicable to all the Contractor's construction work (whether or not it is non-Federal or Federally assisted) performed in the designated area. For each contract and/or subcontract in excess of \$10,000, the goals for minority participation will apply for all work to be performed in geographical areas designated by the Director pursuant to 41 CFR 60-4.6, and the goal for female participation will apply nationwide.
 - 1. The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on his/her implementation of the Equal Opportunity Clause, specific affirmative action obligations

required by the specifications set forth in 41 CFR 60-4.3(a), and his/her efforts to meet the goals established for minority participation for the geographical area where the work is to be performed, or nationwide goal for female participation.

2. The hours of minority and female employment and training must be substantially uniform throughout the time period for the work of the contracts and within each trade, and the Contractor shall make a good-faith effort to employ minorities and women evenly on each of his/her projects.
3. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Orders and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

D. The Contractor shall provide written notification to the Department of Natural Resources (on behalf of the Director of the Office of Federal Contract Compliance Programs) within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under this contract.

1. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number, estimated dollar amount of the subcontract, estimated starting and completion dates of the subcontracts and the geographical area in which the contract work is to be performed.

E. Application of Minority Participation Goals

1. **Minority Participation.** A single minority participation goal is established for each SMSA and EA. Timetables for the achievement of minority goals are not provided. A separate goal is established for each SMSA and for each EA. When a contract or subcontract to which this specification applies is for work located within a SMSA, the goal for that SMSA applies. When a contract or subcontract to which this specification applies is for work located outside an SMSA, the goal for that EA applies.

a. The applicable goal for the Contractor or subcontractors is the goal for each geographical area where the work is being performed, and all the work of the Federal or Federally assisted construction contractor or subcontractor is covered, whether the work is being performed for a contract to which the specification applies or not. Therefore, a contractor with work in SMSA "X" would apply the goal for SMSA "X" for that work. The same contractors however, would apply the SMSA "Y" goal to all his/her work in SMSA "Y", even though the Contractor's work in SMSA "Y" is neither Federal nor Federally assisted.

2. **Participation of Minority Women.** The Contractor and required subcontractors will be permitted to count minority women belonging to one of the recognized minority groups listed in Article I of this specification as satisfying both the minority goal for each designated geographic area and the overall female goals. Conversely, nonminority women will only count toward satisfying the overall female goal.

V. STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246).

- A. Whenever the Contractors or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, he/she shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation set forth herein.
- B. If the Contractor is participating (pursuant to 41 CFR 60-4.5) In a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, his/her affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan.

1. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or subcontractor participating in an approved Plan is individually required to comply with his/her obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which he/she has employees.
 2. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to make good faith efforts to achieve the Plan goals and timetables.
- C. The Contractor shall implement the specific affirmative action standards provided in paragraphs 6a through p. Article V, of these specifications. The goals set forth in the specifications are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which he/she has employees in the covered area. The Contractor is expected to make substantially uniform progress toward his/her goals in each craft during the period specified.
- D. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
- E. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training program, approved by U.S. Department of Labor.
- F. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluations of the Contractor's compliance with these specifications shall be based upon his/her effort to achieve maximum results from his/her actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
1. Endure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project.
 - a. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of, and carry out, the Contractor's obligations to maintain such a working environments with specific attention to minority or female individuals working at such sites or such facilities.
 2. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
 3. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization, and of what action was taken with respect to each such individual.
 - a. If such individual was sent to the union hiring hall for referral and not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
 4. Provide immediate written notification to the Director, when the union or unions with which the Contractor has a collective bargaining agreement, have not referred to the Contractor a minority person or women sent

by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet his/her obligations.

5. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. Training programs may be specifically required elsewhere in the contract documents. The Contractor's responsibility for training opportunities is not necessarily limited to training programs that are specifically required. The Contractor shall provide notice of these programs to the sources compiled under 6b above.
6. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting his/her EEO obligations, by including it in any policy manual and collective bargaining agreement, by publicizing it in the company newspaper, annual report, etc., by specific review of the policy with all management personnel and with all minority and female employees, at least once a year, and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
7. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions, including specific review of these items with on-site supervisory personnel, such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained, identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
8. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to, and discussion on the Contractor's EEO policy, with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.
9. Direct the Contractor's recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment sources the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
10. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after schools summer, and vacation employment to minority and female youths both on the site and in other areas of the Contractor's workforce.
11. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
12. Conduct, at least annually, an inventory and evaluation, of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
13. Ensure that seniority practices, job classifications, work assignments, and other personnel practices, do not have a discriminatory effect, by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
14. Ensure that all facilities and company activities are nonsegregated, except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

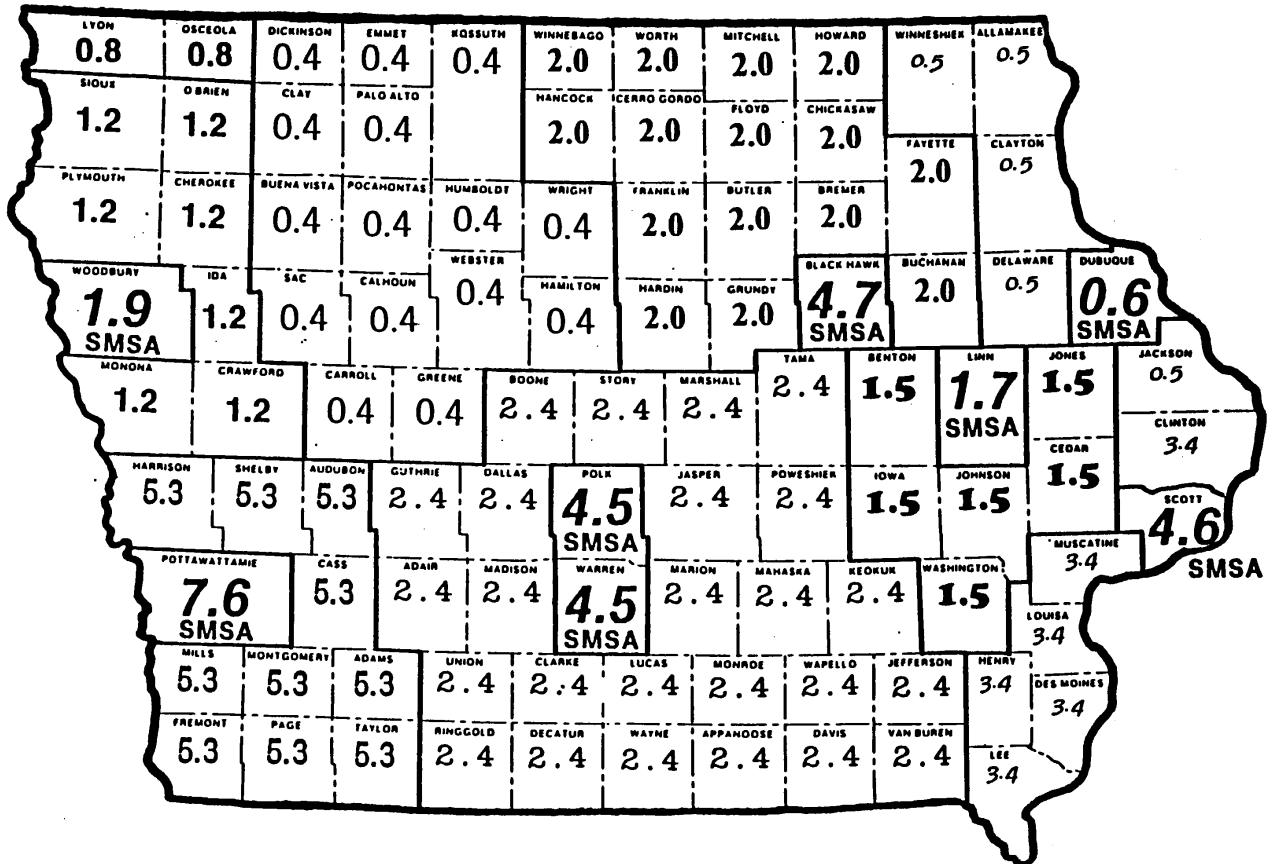
15. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractor and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
 16. Conduct a reviews at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- G.** Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (6a through p).
1. The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of the obligations under 6a through p of these specifications, provided the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet his/her individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor.
 2. The obligation to comply, however, is the Contractor's, and failure of such group to fulfill an obligation shall not be a defense for the Contractor's noncompliance
- H.** A single overall goal for women and goals for minorities in each designated area are included in Article IV of these specifications. The Contractor is required to provide equal opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and nonminority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved the goal for women generally, the Contractor may be in violation of the Executive Order if a specific minority group or women are underutilized.
- I.** The Contractor shall not use the goal, or affirmative action standards to discriminate against any person because of age, race, color, religion, sex, national origin, or disability.
- J.** The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts, pursuant to Executive Order 11246.
- K.** The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- L.** The Contractors in fulfilling his/her obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph G of these specifications, so as to achieve maximum results from his/her efforts to endure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
- M.** The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records.
1. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed.

2. Records shall be maintained in an easily understandable and retrievable form, however, to the degree that existing records satisfy this requirement, Contractor shall not be required to maintain separate records.
- N. Nothing herein provided shall be construed as a limitation upon the application of other Iowa which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

VI. SUPPLEMENTAL REPORTING REQUIREMENTS.

- A. The Contractor and subcontractors are required to make available upon request its Affirmative Action Program containing goals and time specifications. These contractual provisions shall be fully enforced. Any breach of the provisions shall be regarded as a material breach of contract.
- B. The Contractor will keep such records as are necessary to determine compliance with equal employment opportunity obligations. The records kept by the Contractor will be designed to indicate the number of minority and nonminority group members and women employed in each work classification on the project. All such records must be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the Department of Natural Resources and any Federal Agency funding any part of this project.

“Minority employment goals are expressed as a percentage (%) of total hours worked for each craft and/or trade in each county.”



PART 0 - GENERAL

0.00 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

0.01 GENERAL:

- A. The general conditions of the contract are the General Covenants and Provisions bound within.
 - 1. These General Covenants and Provisions are herein modified or supplemented by this Supplementary Covenant and Provisions.
 - 2. Articles of the General Covenant and Provision not directly affected by this section remains in full force as written unless exceeded in requirement herein or elsewhere in the Specifications.

0.03 DEFINITION OF TERMS:

- A. Article 1101.03 "Definition of Terms" is supplemented and modified as follows:
 - 1. General Explanation: A substantial amount of specification language constitutes definitions for terms found in other Contract Documents, including Drawings which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used in Contract Documents are defined generally in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to the extent not stated more explicitly in another provision of Contract Documents.
 - 2. Imperative Language: Used generally in Specifications. Except as otherwise indicated, requirements expressed imperatively are to be performed by Contractor. For clarity of reading at certain locations, contrasting subjective language is used to describe responsibilities which must be fulfilled indirectly by Contractor, or when so noted, by others.
 - 3. Chief Engineer: This term will apply to the Chief of the Engineering Bureau of the Department of Natural Resources.
 - 4. Project Engineer: The Project Engineer will be the reviewing and approving authority for all equipment, material or systems to be used in the construction as specified herein. Unless otherwise specified, no material, equipment or systems or components of systems will be used or installed on this project without written approval. The Project Engineer will be the individual, regardless of the title actually used. listed in the special notice to bidders as the contact for questions concerning design, plans and specifications.

5. DNR Construction Inspector: The Department of Natural Resources Construction Inspector will be the direct representative of the department at the project location with the authority to verify compliance with the provisions of each and all divisions of this Project Manual. Contact the DNR Construction Inspector regarding questions on site review, inspections and project coordination.
6. Procurement Supervisor: The Procurement Supervisor will answer all questions regarding Bidding and Contract Procedures.
7. General Requirements: The provisions of requirements of Division-1 sections. General requirements apply to entire work of Contract and, where so indicated, to other elements which are included in project.
8. Indicated: The term "indicated" is a cross-reference to details, notes or schedules on Drawings, to other paragraphs or schedules in the Specifications, and to similar means of recording requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for the purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
9. Directed, Requested, Etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "directed by Project Engineer," "requested by the Project Engineer," etc. However, no such implied meaning will be interpreted to extend Project Engineer's responsibility into Contractor's area of construction supervision.
10. Approve: Where used in conjunction with Project Engineer's or Project Inspector's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of the term "approved," will be held to limitations of responsibilities and duties as specified in General Covenants and Provisions and Supplementary Covenants and Provisions. In no case will "approval" be interpreted as a release of Contractor from responsibilities to fulfill requirements of contract documents.
11. Project Site: The space available to Contractor for performance of the work, either exclusively or in conjunction with others performing other work as part of the project. The extent of project site is shown on Drawings, and may or may not be identical with description of land upon which project is to be built.
12. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
13. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
14. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

SUPPLEMENTARY COVENANTS AND PROVISIONS

00811-2

6/24/2017

15. Installer: The entity (person or firm) engaged by Contractor or its subcontractor or sub-subcontractor for performance of a particular unit of work at project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in portions of the work they are to accomplish.

PART 1 - INSTRUCTIONS TO BIDDERS

1.02 DRAWINGS AND SPECIFICATIONS:

- A. Article 1101.02 "Drawings and Specifications" is supplemented and modified as follows:
 1. The Drawings and Specifications, which are enumerated in the Index of drawings and Table of Content of this project manual, are part of this contract.

PART 4 - SCOPE OF WORK

4.10 PERMITS AND ARRANGEMENTS WITH OTHER GOVERNMENTAL AGENCIES:

- A. Article 1104.10 "Permits and Arrangements with Other Governmental Agencies" is supplemented and modified as follows:
 1. Contractor shall take out and pay for any building or construction permit which may be required, secure and pay for all permits, certificates and licenses required to prosecute the work, and shall arrange for and pay for all inspections required by local authorities.
 2. Contractor is to apply and pay for NPDES Stormwater Discharge Permit for Construction Operations, as required by EPA regulations for work performed after March 10, 2003, for any land-disturbing activity which will disturb an area of one or more acres.
 - a. Permits are available from IDNR Stormwater Coordinator, Wallace State Office Building, Des Moines, Iowa 50319. (Tel. 515/281-7017)
 - b. Copies of Permit Application and Permit issued are to be furnished to DNR Construction Inspector prior to any construction operations.

4.13 DRAWINGS AND SPECIFICATIONS:

- A. Article 1104.13 "Drawings and Specifications" is supplemented and modified as follows:
 1. Contractor shall be responsible for distributing to all involved in this project, Drawings and Specifications in quantities reasonably necessary for the completion of the portion of work they are responsible for. No additional payment will be made for shortcomings resulting from misunderstanding of Contract Documents due to any shortage of information between General Contractor, subcontractors, and Material Suppliers.

PART 5 - CONTROL OF WORK

5.02 PLANS:

- A. Article 1105.02 "Plans" is supplemented or modified as follows:
 - 1. Plans for this project may be referred to as "Drawings, Project Drawings or Plans, Profiles and Cross Sections."

PART 6 - CONTROL OF MATERIALS

6.03 SAMPLES AND TESTS:

- A. Article 1106.03 "Samples and Tests" is supplemented and modified as follows:
 - 1. All testing required by the contract documents or the DNR Construction Inspector shall be considered a part of the Contract and shall be paid for by the Contractor.

PART 9 - MEASUREMENT AND PAYMENTS

9.10 SUBMITTAL REQUIRED BEFORE FINAL PAYMENT:

- A. Article 1109.10 "Submittals Required Before Final Payment" is supplemented and modified as follows:
 - 1. Submit to the Engineer or the DNR Construction Inspector all submittals required in Section 01300 before final payment can be made, unless otherwise specified.
 - 2. Other submittals may be required in other sections.

END OF SECTION 00811



GS-15004

(Replaces GS-15003)

General Supplemental Specifications for Highway and Bridge Construction

Effective Date
April 18, 2017

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS, ADDITIONS, AND DELETIONS. THESE ARE GENERAL SUPPLEMENTAL SPECIFICATIONS AND SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

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Division 11. General Requirements and Covenants.

Section 1101

1101.03, Definition of Terms.

Add the Article:

Holidays.

The following holidays are observed by the Department:

- New Year's Day, January 1,
- Martin Luther King, Jr.'s Birthday, third Monday in January,
- Memorial Day, last Monday in May,
- Independence Day, July 4,
- Labor Day, first Monday in September,
- Veterans Day, November 11,
- Thanksgiving Day, fourth Thursday in November,
- Friday after Thanksgiving, and
- Christmas Day, December 25.

Section 1102

1102.01, Competency and Qualification of Bidders.

Replace the second sentence of Article A:

To prequalify, a prospective bidder shall complete the required sections, including Bidder Status Form, of the "Contractor's Financial - Experience - Equipment Statement" (Form 650004) and submit it to the Department.

Add to the end of Article H:

Bidders shall complete Bidder Status Form portion of Form 650004.

1102.05, Issuance of Proposals.

Replace the first sentence:

Requests for proposal forms to bid construction and maintenance contracts ~~must~~ and a Bidder Status Form shall be filed by noon of the working day prior to the letting.

1102.09, E.

Replace the Articles:

5. For Federal-aid contracts, certifies acknowledgment of the limitations of lobby activities shown in the bidding documents, ~~and~~
6. For Federal-aid contracts, certifies the bidder does not maintain segregated facilities., and

Add the Article:

7. Certifies Bidder Status Form on file with the Office of Contracts is accurate.

1102.11, Proposal Guaranty.

Replace Articles C and D:

C. A Proposal Guaranty/Bid Bond (Form ~~131084~~ 518003) may be used for the proposal guaranty in lieu of that specified above, using the electronic bid bond verification feature authorized by the Department. Bid bonds will be declared invalid and bid proposals will not be considered if any of the following items are omitted or incorrect:

- Date of Letting
- Bid Order Number
- Name of Contractor
- ~~Original~~ Digital Signature of Contractor: In case of joint venture bid, all contractors must sign.
- Name of the Surety Company

- ~~Original~~ Digital Signature of Surety (if Surety's limitation is less than the amount of the bid bond, a certificate of reinsurance must be attached).
- D. A Contractor's Annual Bid Bond (Form 650043) may also be used for the proposal guaranty in lieu of that specified above. The Annual Bid Bond shall contain the following items:
- Name of Contractor
 - ~~Digital~~ Original signature of the Contractor
 - Date of signature
 - Name of Surety Company
 - ~~Digital~~ Original signature of the Surety

Section 1103

1103.01, Consideration Of Bids.

Add the Article:

- K. For failure to have Bidder Status Form on file with Office of Contracts.

Section 1104

1104.09, Right-of-Way.

Add to the beginning of the second paragraph:

Contractor shall not remove trees outside the construction limits, including areas in divided medians and inside of interchanges, without approval of the Engineer.

Section 1105

1105.03, Working Drawings.

Delete Article B and **Renumber** Articles C, D, and E:

~~B. For projects on the Secondary Road System (non-Primary projects), working drawings shall be submitted to the Engineer unless noted otherwise in the contract documents.~~

~~C B.~~

~~D C.~~

~~E D.~~

Replace and **Renumber** Articles F and G:

F E. Electronic Submittals.

1. For projects on the Secondary Road System (non-Primary and Interstate projects), working drawings shall be submitted to the Engineer unless noted otherwise in the contract documents.
- 4 2. For Primary and Interstate projects (and when specified for Secondary Road System projects), ~~electronic submittals may be made via email and sent to the following email addresses corresponding to the review office identified in Table 1105.03-4 shall be made via electronic document management system (Doc Express).~~ or If noted in the contract documents, submittals shall also be made to the consultant email address indicated on the contract documents:.

REVIEW OFFICE
Bridges and Structures
Design (Soils Design Section)
Traffic and Safety

EMAIL ADDRESS
Bridges.Structures@dot.iowa.gov
Soils.Design@dot.iowa.gov
Traffic.Safety@dot.iowa.gov

~~2. Provide a courtesy copy of the submittal to the Engineer and District Materials Engineer.~~

~~3. When the contract documents specify submittals to be sent to the design consultant's email address, the review office shall be courtesy copied, in addition to the Engineer and District Materials Engineer.~~

- ~~4. Electronic submittals shall be sent from the Contractor's email address that is applicable to the project. Emails sent from subcontractor's, fabricator's, and supplier's email address will not be accepted. Emails from personal email addresses are discouraged and may require authentication by the Engineer prior to acceptance for review.~~
- ~~5. Submittals shall be limited to 15 MB attachment file size. Split larger files and send in multiple emails.~~
- 6 a.** The submittal file shall be Portable Document Format (PDF) sized to print on 11 inch by 17 inch (279.4 mm by 431.8 mm) or 8.5 inch by 11 inch (215.9 mm by 279.4 mm) paper. Full size print documents cannot be accepted in electronic format. Minimum resolution of 300 dpi (118 dots/cm) is recommended. Ensure document submitted is legible. Submittal files in other formats (e.g. CAD files) will not be accepted.
- 7 b.** Provide project number and submittal description in the email subject line for the document title in Doc Express. The email Doc Express submittal will serve as the transmittal log and shall include, by virtue of the user login, the Contractor's name, address, and telephone number, and the fabricator's name, address, and telephone number (if applicable) in the body of the email, or on the electronic attachment.
- 8 c.** Shop drawings submitted electronically via email Doc Express will be tracked, processed, and returned to the Contractor via email Doc Express. Paper copies will not be distributed.

G. Paper Submittals.

For Primary and Interstate projects, all paper submittals shall be processed by the Contractor and sent to the review office identified in Table 1105.03-1 below with a copy of the cover letter sent to the Engineer and District Materials Engineer. The cover letter shall include the following information:

- ~~Date of submittal or resubmittal~~
- ~~Project number~~
- ~~Description of submittal~~
- ~~Contractor's name, address, and telephone number~~
- ~~Number of submittal copies~~
- ~~Fabricator's name, address, and telephone number (if applicable).~~

When the contract documents specify submittals to be sent to the design consultant, copies of the cover letter shall be sent to the review office, as well as the Engineer and District Materials Engineer.

Table 1105.03-1: Review Offices for Working Drawings

DESCRIPTION	REVIEW OFFICE	NUMBER OF COPIES ^(a)	REVIEW TIME (calendar days)
Falsework for slab bridges	Bridges and Structures	2-(6)	30
Cofferdam design (when required)	Bridges and Structures	2-(6)	30
Reconstruction of substructure (detailed plans for supporting the superstructure)	Bridges and Structures	2-(6)	30
Steel Structures	Bridges and Structures	2-(7)	30
Detail plans for falsework or centering support of steel structures (i.e. erection plans)	Bridges and Structures	2-(6)	30
Steel and aluminum pedestrian hand rails and aesthetic fences	Bridges and Structures	2-(7)	30
Highway sign support structures (i.e. bridge-type trusses, cantilevers trusses, & bridge mounts)	Bridges and Structures	2-(7)	30
Precast concrete (i.e. deck panels, RCB culverts, noise wall panels, arch sections, etc.)	Bridges and Structures	2-(8)	30
Tower lighting	Bridges and Structures	2-(7)	30
Highway lighting	Traffic & and Safety	2	30
Highway signing steel breakaway posts	Traffic and Safety	2	30

Traffic signalization ^(b)	Traffic and Safety	2	30
Highway signing - Type A and B signs	Traffic and Safety	2	30
Bridge components	Bridges and Structures	2 (7)	30
Pre-engineered steel truss recreational trail bridge	Bridges and Structures	2 (8)	30
MSE, segmental, and modular block retaining walls (Preliminary and final submittals shall include design calculations, shop drawings, and field construction drawings)	Design (Soils Design Section)	Preliminary submittal: 3 design calculations, 3 shop drawings, & and 3 field construction drawings	30
		Final submittal: 3 design calculations, 3 shop drawings, & and 3 field construction drawings	14
Soil nail and tie-back retaining walls (Submittal includes final design plans)	Design (Soils Design Section)	6 final design plans	60
Intermediate foundation improvement (IFI) (i.e. stone columns, geopiers, etc.) (Submittal shall include design calculations and field construction drawings)	Design (Soils Design Section)	4 design calculations & and 8 field construction drawings	30
Removal of box girder bridges	Bridges and Structures	2 (5)	30
Structural erection manual	Bridges and Structures	2 (6)	30
Temporary shoring	Bridges and Structures	2 (6)	30
Temporary sheet pile retaining wall	Bridges and Structures	2 (6)	30
Architectural mock-ups ^(a)	Bridges and Structures	4	30
Architectural paving ^(a)	Bridges and Structures	4	30
Architectural paint color samples and manufacturer data ^(a)	Bridges and Structures	3	30
Architectural concrete texture form liner samples and drawings ^(a)	Bridges and Structures	3	30
Architectural concrete sealer samples and manufacturer data ^(a)	Bridges and Structures	3	30
Architectural ornamental brick ^(a)	Bridges and Structures	3	30
<p>(a) Number of copies only applies to paper submittals. Number of copies in parenthesis is the number required for full size prints. Full size prints are any print exceeding 11 inches by 17 inches (279.4 mm by 431.8 mm). Submittals of physical samples shall be through the Engineer.</p> <p>(b) Submittal time shall be within 45 calendar days from the date of award of contract.</p>			

1105, Control of Work.

Add the Articles:

1105.13, C.

26. Active Nests of Migratory Birds.

To protect migratory birds, do not conduct construction activities where active nests are present between the dates of April 1 and July 15, inclusive or until the birds have fledged and left the nest. Active nests are nests containing eggs or young of migratory birds.

Beginning on the date the contract is fully executed, the contractor shall remove all non-active, existing migratory bird nests and monitor to prevent the establishment of active nests. Prior to that date, the Contracting Authority is responsible to remove all non-active, existing migratory bird nests and monitor to prevent the establishment of active nests.

If evidence of migratory bird nesting is discovered after beginning work, or in the event that migratory birds nests become established, immediately stop work and notify the Engineer.

1105.17, Subsoil Tillage.

Prior to placement of topsoil and/or stabilizing crop seeding, perform subsoil tillage to an average depth of 16 to 20 inches on stockpile areas, haul roads, and areas used for storage of equipment. Till at 3 foot maximum centers and at right angles to finished slope.

Equip tillage equipment with arrowhead type shoe providing lateral displacement and limit movement of subsoil to the surface. Obtain Engineer's approval for equipment.

It is intended that following subsoil tillage, the area remain in a loosened condition. Additional compaction or operation of heavy equipment, other than that required for topsoil placement and shaping, will not be allowed on areas tilled.

This work shall be considered incidental to other work on the project and will not be paid for separately.

1105.18, Topsoil on Haul Road.

Before placing a construction haul road, strip topsoil from within proposed haul road footprint to a depth of 8 inches and stockpile. After haul road has been removed, prepare disturbed area according to Article 1105.17, and place topsoil over disturbed area to a minimum depth of 4 inches.

This work shall be considered incidental to Mobilization and will not be paid for separately.

Section 1107

1107.06, B, Buy America.

Replace the Article:

~~On all contracts Per Materials I.M. 107, all products of iron, steel, or a coating of steel which are incorporated into the work shall be of domestic origin and shall be melted and manufactured in the United States. The Engineer may allow minimal amounts of these materials from foreign sources, provided the cost does not exceed 0.1% of the contract sum or \$2,500, whichever is greater. This amount shall include transportation, assembly, and testing as delivered cost of foreign products to the project. Per Materials I.M. 107, miscellaneous steel or iron components, subcomponents, and hardware, as defined by FHWA, will not be subject to Buy America requirements.~~

1107.06, Federal Requirement.

Add the Article:

C. Use of United States-Flag Vessels.

In accordance with 46 CFR 381.7(b), on all Federal-Aid contracts, the Contractor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50% of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.
2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in Article 1107.06, C, 1, to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.
3. To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract.

Section 1108

1108.02, A, 1.

Replace the second sentence:

The proposal form may also indicate the contract period by a Completion Date for non-highway type contracts (e.g. buildings, furnishing materials, etc.).

1108.02, C, 1, Specified Start Date.**Replace** the Article:

Except as noted in Article 1108.02, E, 2, f, ~~Working days will be charged to the Contractor starting on the Specified Start Date, but not prior to 15 calendar days after the contract has been signed by the Contracting Authority.~~ Starting work prior to the Specified Start Date will be considered upon request, and working days will be charged when work starts.

1108.02, E, 2.**Replace** the Article:

Working days will be charged beginning with the following circumstances:

- ~~a. On the date specified for projects with a Specified Start Date.~~
- b. On the date that has been agreed to at the preconstruction conference for ~~projects~~ contracts with an Approximate Start Date.
- c. On the start date indicated in the Notice to Proceed for ~~projects~~ contracts with an Approximate Start Date.
- d. On the day following the date the site becomes available if the Contractor is already working ~~on the site~~ onsite for ~~projects~~ contracts with an Approximate Start Date.
- e. On the date the Contractor begins work prior to the Late Start Date.
- f. On the date specified for ~~projects~~ contracts with a Late Start Date or Specified Start Date, and the Contractor has not ~~begun~~ started work prior to that date. However, working days will not be charged prior to 15 calendar days after the contract has been signed by ~~the Contracting Authority~~ all required entities, ~~as long as~~ provided the Contractor furnished the signed contract, performance bond, and proof of insurance within the time allowed by Article 1103.07~~;~~, and has not ~~begun~~ started work on the contract.

1108.03, C.**Delete** the second sentence:

~~The Contractor should request a determination of the holidays to be observed at the beginning of each calendar year.~~

Section 1109**1109.03, B, 2, g.****Replace** the first sentence:

Rental rate for machinery, tools, or equipment (except small hand tools which may be used) and fuel and lubricants shall be based on the average monthly rental rate published in the ~~RENTAL RATE BLUE BOOK~~ by Equipment Watch ~~Cost Recovery~~.

1109.05, A, 2.**Replace** the Article:

On contracts for which the contract sum is \$10,000 or more, payments may be allowed based on value of processed or fabricated materials or rolled steel products which have been delivered on the work or 90% of the value of processed or fabricated material, or rolled steel products, reserved for the project and stored elsewhere ~~within Iowa or in other locations where there is routine inspection by Departmental personnel,~~ provided the materials ~~are of acceptable quality~~ conform to the requirements of the contract and the manner of storage is satisfactory to the Engineer. Contractor is responsible for damages and material losses until the material is incorporated into the work and the work is accepted.

Section 1113**1113, Electronic Document Storage.****Add** the Section:**1113.01 GENERAL.**

Electronic Document Management shall be used for electronic document storage on contracts where the Department is the Contracting Authority. This requirement may be used on other contacts when specified in the contract documents.

This specification contains requirements for collection and management of electronic documents through the use of Doc Express at <https://doceexpress.com>. Doc Express is a web based document management program which accepts electronic documents and provides security as appropriate for each submittal.

The Contracting Authority will perform setup of Doc Express in accordance with project requirements. Doc Express is the complete and officially recognized construction document management system for contract documents required by the Contracting Authority.

Costs associated with the use of Doc Express are incidental to Mobilization. Contract item progress payments will be withheld until documentation is provided as defined in this specification.

A. Structure.

The framework utilizes basic contract drawers to store project documents.

Within each drawer are types used to group similar items together. A complete listing of the types in each drawer can be seen when submitting a document to that drawer in Doc Express.

B. Security.

As requested, each user within an organization will be assigned an account within Doc Express by their own organization. Access to Doc Express will be tracked through the use of the user's unique email address and password. User permissions will be defined within Doc Express for each specific contract.

1. **Prime** - The Contractor will be assigned Prime permission to submit documents and view all documents submitted into Doc Express - including those submitted by the Contracting Authority and users with an Associate level permission.

The Prime can grant access to all associates to all drawers except the Payroll drawer to which only the Prime should have access.

2. **Associate** - Subcontractors and suppliers will be assigned Associate permission which will authorize any user associated with the respective subcontractor or supplier to submit documents but can view only those documents submitted by that respective entity. An Associate user is not able to view documents submitted by a Prime, Contracting Authority, or other Associate users.
3. **Reviewer** - Reviewer permission allows the user to only view all documents and will typically be assigned to those that will oversee the specific contract, but are not responsible for daily tasks.
4. **Contracting Authority** - A formal permission level is not assigned. Contracting Authority staff has the ability to submit, receive, audit, or reject a document.

Documents submitted into Doc Express are secure. Security of the program will not allow modifications to a submitted document by any user. The user, or another user within the organization, who submitted the document may delete the submittal from Doc Express as long as the document has not been received, rejected, or had a comment attached.

The Payroll drawer has a more restrictive security setting. Only the user who submits a payroll document or a Contracting Authority user specifically assigned to access payroll information for the specific contract can view the payroll document. Other Prime users will not be able to view the submitted payroll document nor will other Contracting Authority users.

C. Document Types.

Doc Express will accept all types of electronic documents including, but not limited to, Microsoft Excel files, Microsoft Word documents, Adobe Portable Document File (PDF), Tagged Image File (TIFF), and Joint Photographic Experts Group (JPEG). The maximum size limit of a file is 50 MB, but uploading and opening of the document will take longer as the file size increases. Preference should be given to smaller file sizes anytime they can be used.

1113.02 RESPONSIBILITIES.**A. Contracting Authority.**

1. Contract set-up including drawer and type creation within a contract with applicable Prime, Associate, and Reviewer permissions.
2. The Construction Project File will be maintained in Doc Express. The Contracting Authority will submit to the appropriate drawer and type, all construction related documents generated by the Contracting Authority.
3. Review and verify that the documentation submitted meets the applicable submittal requirements. The review of documents will be made promptly from when the documents were able to be verified. Contractor payment may be withheld for contract documents not submitted.

B. Contractor.

1. Verify subcontractors and suppliers involved with the project have access to contract in Doc Express. Add any subcontractor or supplier which was omitted from the set-up performed by the Contracting Authority.
2. Submit electronic documentation per type defined in Doc Express. Each electronic submittal may contain multiple pages of documentation but shall provide information required for the specified type only.
3. Provide daily or weekly statements that show an itemized summary of the quantity of certified non-proportioned material delivered to the project site. The statement is to include a total for the day or week provided and a running total for the amount delivered to the project to date.
4. Submit the invoice, certified bill of materials, or bill of lading for each shipment as documentation to allow the Contracting Authority to authorize progress payments for:
 - Corrugated Metal Culvert Pipe – Materials I.M. 441.
 - Precast Concrete – Materials I.M. 445.
 - Plastic Pipe – Materials I.M. 446.

C. Shared Contracting Authority and Contractor/Supplier Responsibilities.

Doc Express will store final versions of documentation required for the contract. Some documents require involvement and coordination between the Contracting Authority and Contractor to reach a final version. This shared responsibility will be coordinated to prevent incomplete or redundant data from being electronically stored.

Division 20. Equipment Requirements.**Section 2001****2001.12, G.**

Add to the end of the Article:

- Provide a manufacturer produced tank stick.

2001.12, H.

Delete the Article:

- ~~H. Calibrate distributors initially at the Iowa DOT Materials Laboratory. Verification of a manufacturer's calibration may be made by the Iowa DOT Materials Laboratory or by a District Materials Office. Have distributor calibrations certified annually by either the Iowa DOT Materials Laboratory or District materials personnel. If distributors are found to have inaccurate calibrations, have distributors recalibrated by the Iowa DOT Materials Laboratory before further use.~~

2001.19, B, 4.**Replace the Article:**

A screed extension may be used, provided it has a screed plate with vibration.

a. Flush-mounted Screed Extension.

If the extension exceeds 1 foot, extend the auger as well.

b. Offset-mounted Screed Extension.

Operate screed unit to produce a uniform distribution of mixture ahead of the extension.

c. Other extensions will be allowed for placing fillets or short or irregular tapers.**Division 21. Earthwork, Subgrades, and Subbases.****Section 2101****2101.04, B, 1.****Replace the Article:**

The area in acres will be based on that the quantity shown in the contract documents, computed from a need line, or computed from a right-of-way line if the limits are not shown for this item in the contract documents. If limits for this item are not shown in the contract documents, they will be calculated from a need line or right-of-way line as indicated in the plans.

Section 2102**2102.04, A, 8, Contractor Furnished Select Treatment.****Add as the second sentence:**

Shrinkage will not be included in the quantity.

Section 2116**2116.02, A, 1, b.****Replace the Article:**

Foamed Asphalt using PG 52 -34S or PG 46-34 asphalt binder meeting requirements of Section 4137.

Section 2122**2122.02, A, Hot Mix Asphalt Mixture (1,000,000 ESAL Base Mixture).****Replace the title and Article:****Hot Mix Asphalt Mixture (1,000,000 ESAL Base Mixture).**

Use materials specified in a 1,000,000-ESAL Standard Traffic (ST) base mixture with PG 58-28S binder according to Section 2303.

2122.02, B, 3.**Replace the Article:**

For shoulder construction in which PCC is placed over HMA asphalt, thoroughly clean the surface by brooming prior to placing concrete. When HMA asphalt is to be placed over HMA asphalt, prepare the surface according to Article 2303.03, C, 4.

2122.02, C, 1, Hot Mix Asphalt Mixture.**Replace the title and Article:****Hot Mix Asphalt Mixture.**

a. Prior to placement, tack coat the pavement edge.

b. Proportion, mix, place, and compact HMA asphalt mixture to the width, thickness, grade, and slope shown in the contract documents, according to the requirements of Section 2303.

2122.05, A, 2, c.

Renumber the Article:

3. Separate payment will not be made for:

2122.05, A, 3.

Renumber the Article:

3 4. Furnish samples as specified in Section 2303 or 2301, with payment to be made as specified.

2122.05, C, Resurfacing or Overlay of Existing Paved Shoulders.

Replace the Article:

For HMA asphalt of the type, width, and thickness specified and satisfactorily constructed, payment will be according to Article 2303.05.

Division 22. Base Courses.

Section 2213

2213.02, A, 1, HMA Base Widening.

Replace the title and Article:

HMA Asphalt Base Widening.

Use 1/2 inch or 3/4 inch ~~4,000,000~~ ESAL Standard Traffic (ST) Base mixture. For base widening for shoulders, use PG 58-28S binder.

- ~~a. Use mixture specified on the contract documents.~~
- ~~b. Meet requirements of Section 2303, as specified.~~

2213.03, E, Preparation of Subgrade.

Replace Articles 1 and 2:

1. Cut the trench to the width of the widening shown in the contract documents. Ensure ~~if the existing pavement is HMA, saw or trim the~~ a vertical edge of existing asphalt (if any) to a vertical line flush with the ~~edge of the existing concrete~~ pavement by sawing or milling, if needed. At the Contractors option, this trim line may be made at any uniform distance in from the edge of ~~the~~ existing concrete, but not to exceed 3 inches.
2. For HMA asphalt base widening, tack coat the edge of the old pavement at a rate of 0.10 to 0.15 gallon per square yard according to Article 2303.03, C, 2, b. A waiting period will not be required before placing the widening.

2213.03, F, 1, HMA Base Widening.

Replace the title and Article:

HMA Asphalt Base Widening.

- ~~a. Limit the compacted thickness of the top layer to no more than 2 inches. The maximum thickness of lower layers may exceed 3 inches if the Contractor demonstrates the thicker layers have compaction and riding characteristics within conformance to that expected from a 3 inch thick layer. Avoids dumping base material on the surface of the pavement. Immediately remove, by brooming, base material spilled on adjacent pavement.~~
- ~~b. Spread base material so that after compaction, the constructed width conforms to the design dimension.~~
- ~~c b.~~ Promptly and thoroughly compact each layer. Compact to the density specified in Article 2303.03, C, 5 for Class I compaction.
 - For widening in a travel lane apply Class I compaction per Article 2303.03, C, 5, b.
 - For widening in non-travel lane apply Class II compaction per Article 2303.03, C, 5, c.
- ~~d. The percent of compaction will be based on the laboratory density obtained for that day's mixture.~~
- ~~e c.~~ Succeeding layers of base material may be placed as soon as the previous layer has been compacted. Take density samples from the compacted material and test according to Article 2303.03, D.

f d. When the contract for base widening does not include resurfacing:

- Ensure the final surface of the widening is flush with, or not more than 1/8 inch below, the surface of the old pavement.
- Limit compacted thickness of top lift to no more than 2 inches.

2213.03, I, Winter Seal.

Delete the Article:

~~I. Winter Seal.~~

- ~~1. Prime HMA base which is not covered with upper base or surface in the same construction season in which it is built. The Engineer may require an application of a winter seal consisting of:

 - ~~• The bituminous material used as the primer or tack coat applied at 0.12 gallon per square yard, and~~
 - ~~• A sand cover applied at 10 to 15 pounds per square yard, according to Section 2307.~~~~
- ~~2. Winter seal that the Engineer requires will be paid for as provided in Article 1109.03, B.~~
- ~~3. Except where road closure is provided in the contract documents, traffic will be allowed to use the road from the time construction is stopped until work is resumed the following season. Make required repairs to the base when construction is resumed, at no additional cost to the Contracting Authority.~~

Section 2216

2216.03, A, 2, a, 1.

Delete Article c and Renumber Article d:

- ~~c) The roller tires shall be inflated to the pressure necessary to obtain proper surface contact pressure to satisfactorily seat pavement slabs.~~
- ~~d c) At the Contractor's option, the roller tires may contain liquid.~~

2216.03, A, 2, a, 2.

Replace the Article:

Weight body suitable for ballasting to a minimum gross load of ~~50~~ 30 tons. The ballast shall allow gross roller weight (~~mass~~) to be readily determined and controlled to maintain a minimum gross roller weight (~~mass~~) of 50 30 tons.

2216.03, A, 2, b.

Delete the Article:

- ~~b. Tow the roller with a rubber tired prime mover.~~

2216.03, D, 2.

Replace the Article:

Roll the cracked pavement until seated to the Engineer's satisfaction. The intent is to:

- ~~• Load the roller so that satisfactory seating can be reasonably assured by one complete coverage by the roller, and~~
- ~~• Accomplish seating with a minimum damage to aggregate interlock at the cracks.~~

Division 23. Surface Courses.

Section 2301

2301.05, D, 2.

Replace the ninth bullet:

Placing, finishing, texturing, ~~grooving~~, and curing.

Section 2303**2303, Flexible Pavement.****Replace the Section:****2303.01 DESCRIPTION.**

- A. Design, produce, place, and compact flexible paving mixtures using proper quality control. Construct to the dimensions specified in the contract documents.
- B. A surface course is the top lift. An intermediate course is the next lower lift or lifts. Use intermediate course mixtures for leveling, strengthening, and wedge courses. A base course is the lift or lifts placed on a prepared subgrade or subbase.

2303.02 MATERIALS.**A. Asphalt Binder.**

Use the specified Performance Graded (PG) asphalt binder meeting the requirements of Section 4137. For shoulder mixtures refer to Section 2122. For base widening mixtures refer to Section 2213. Adjustments to the contract binder grade may be required according to Article 2303.02, C, 6.

B. Aggregates.**1. Individual Aggregates.**

- a. Use virgin mineral aggregate as specified in Section 4127.
- b. When specified, furnish friction aggregate from sources identified in Materials I.M. T203.
 - 1) **Friction Classification L-2.**
Use a combined aggregate such that:
 - a) At least 80% of the combined aggregate retained on the No. 4 sieve is Type 4 or better friction aggregate, and
 - b) At least 25% of the combined aggregate retained on the No. 4 sieve is Type 2 or better friction aggregate, and
 - c) For Interstates and all mixtures designed for ~~30,000,000 ESALS and higher~~ Very High Traffic (VT), the fineness modulus of the combined Type 2 aggregate is at least 1.0. Calculations for fineness modulus are shown in Materials I.M. 501.
 - d) On Interstates and all mixtures designed for ~~30,000,000 ESALS and higher~~ Very High Traffic (VT), if 40% or more of the total aggregate is a limestone as defined in Materials I.M. T203, at least 30% of the combined aggregate retained on the No. 4 sieve is Type 2 or better friction aggregate
 - 2) **Friction Classification L-3.**
Use a combined aggregate such that:
 - a) At least 80% of the combined aggregate retained on the No. 4 sieve is Type 4 or better friction aggregate, and
 - b) At least 45% of the combined aggregate retained on the No. 4 sieve is Type 3 or better friction aggregate, or if Type 2 is used in place of Type 3, at least 25% of the combined aggregate retained on the No. 4 sieve is Type 2.
 - 3) **Friction Classification L-4.**
Use a combined aggregate such that at least 50% of the combined aggregate retained on the No. 4 sieve is Type 4 or better friction aggregate.

2. Combined Aggregates.

- a. Use a combined aggregate meeting the requirements in Materials I.M. 510.
- b. When mixtures include RAM, use a combined aggregate gradation consisting of a mixture of RAM aggregate and virgin aggregate.

C. Recycled Asphalt Materials.

- 1. RAM includes RAP and RAS. The designations Classified and Unclassified are exclusively for the use of RAP in HMA.

2. Identify each RAP stockpile and document Classified and Unclassified RAP stockpiles as directed in Materials I.M. 505. Do not add material to a Classified RAP stockpile without the approval of the District Materials Engineer.
3. The Engineer may reject a RAP stockpile for non-uniformity based on visual inspection. Work the stockpiles in such a manner that the materials removed are representative of a cross section of the pile.
4. Place stockpiles of RAP as directed in Materials I.M. 505. Do not use RAP stockpiles containing concrete chunks, grass, dirt, wood, metal, coal tar, or other foreign or environmentally restricted materials. RAP stockpiles may include PCC (not to exceed 10% of the stockpile) from patches or composite pavement that was milled as part of the asphalt pavement.
5. When RAP is taken from a project, or is furnished by the Contracting Authority, the contract documents will indicate quantity of RAP expected to be available and test information, if known. RAP not used in HMA becomes the property of the Contractor.
6. For mix design purposes, the Contracting Authority will test samples of the RAM. The aggregate gradation and amount of asphalt binder in the RAM will be based on the Contracting Authority's extraction tests. For mixtures containing RAM, adjust the contract binder grade as directed in Materials I.M. 510. No adjustments will be made to the contract unit price for required changes to the asphalt binder grade. RAP may be used in accordance with Materials I.M. 510 Appendix C. For surface mixtures, 70% of the total asphalt binder shall be virgin.
 - a. **Classified RAP.**
 - 1) Classified RAP is one of the following
 - RAP from a documented source.
 - RAP from an undocumented source meeting quality control sampling, testing, and reporting requirements in Materials I.M. 505. Material shall be tested at a lab designated by the Engineer according to Iowa Test Method 222 at no additional cost to the Contracting Authority.
 - 2) Classified RAP may be used in mixtures for which the RAP aggregate meets the quality requirements for the mixture design per Materials I.M. 510 Appendix A.
 - 3) When from a documented source, credit will be given for frictional aggregate and crushed particles used in the original pavement to be reclaimed as determined in the paving history (or mix design when paving history is unavailable).
 - 4) For all other Classified RAP, credit for crushed particles shall be the percent of aggregate retained on the No. 8 sieve from Engineer's extraction test. No friction credit will be given.
 - b. **Unclassified RAP.**
 - 1) Any stockpiled RAP not meeting the requirements of Classified RAP shall be designated as Unclassified RAP. No frictional aggregate credit or aggregate crushed particles credit will be given for Unclassified RAP.
 - 2) When an Unclassified RAP stockpile is characterized by sampling and testing for mix design, no material can be added to the stockpile until the project is completed.
7. Pre-consumer or post-consumer shingles that have been processed, sized, and ready for incorporation into an asphalt mixture constitute RAS material.
8. Up to 5% RAS by weight of total aggregate may be used in the design and production of an asphalt mixture. The percentage of RAS used is considered part of the maximum allowable RAP percentage. Unless explicitly stated otherwise in this specification or Materials I.M. 505, use RAS according to the same requirements as prescribed for RAP material.
9. RAS shall be certified from an approved supplier designated in Materials I.M. 506. Material processed prior to Iowa DOT source approval will not be certified.

D. Flexible Paving Mixture.

1. The JMF is the percentage of each material, including the asphalt binder, to be used in the asphalt mixture. Ensure the JMF gradation is within the control points specified for the particular mixture designated.

2. The basic asphalt binder content is the historical, nominal mixture asphalt binder content, expressed as percent by weight (mass) of the asphalt binder in the total mixture. Apply the values in Table 2303.03-1, based on mixture size and type.
3. If the asphalt binder demand for the combination of aggregates submitted for an acceptable mix design exceeds the basic asphalt binder content (see Table 2303.02-1) by more than 0.75%, include an economic evaluation with the mix design. For economic evaluation, provide an alternate mix design utilizing aggregates which results in an optimum binder content not exceeding basic asphalt binder content by more than 0.75% and documentation of costs associated with hauling both proposed aggregates and alternate aggregates to plant site. Alternate JMF shall meet requirements of Section 2303.

Table 2303.02-1: Basic Asphalt Binder Content (%)

Size	Aggregate Type	1 inch	3/4 inch	1/2 inch	3/8 inch
Intermediate and Surface	Type A	4.75	5.50	6.00	6.00
Intermediate and Surface	Type B	5.25	5.75	6.00	6.25
Base	Type B	5.25	6.00	6.00	6.25

4. Use a mixture design meeting gyratory design and mixture criteria corresponding to the design level specified in the contract documents. The Engineer may approve mixtures substitutions meeting guidelines in Materials I.M. 511. When a commercial mix is specified, use a 1/2 inch 300K surface mixture or higher for JMF approval.
5. For shoulders placed as a separate operation refer to Section 2122. When paving the shoulder with the mainline the Contractor has the option to substitute the mainline intermediate or surface mixture for a specified shoulder mixture at the Contractor's expense.
6. For base widening refer to Section 2213. When an adjoining surface is designed for ~~300,000 ESALs or less~~ Standard Traffic (ST) and is paved during the same project, use a base mixture at same ~~ESAL level~~ traffic designation used in surface mixture.
7. WMA refers to asphalt concrete mixtures produced at temperatures approximately 50°F or more below those typically used in production of HMA but no higher than that shown in Article 2303.03, C, 3, d, 2, a. Temperature reductions may be achieved through additives or water injection systems.
8. Submit a mixture design complying with Materials I.M. 510. Propose both a production and a compaction temperature between 215°F and 280°F for WMA mixture designs.
9. Produce and place WMA mixtures meeting the same requirements established for HMA mixtures. Equivalent WMA mixtures may be substituted for HMA mixtures unless it is prohibited by the specifications.

E. Other Materials.

1. Tack Coat.

Tack coat may be SS-1, SS-1H, CSS-1, or CSS-1H. Do not mix CSS and SS grades. RC-70 and MC-70 may also be used prior to May 1 and after October 1, at the Contractor's option. ~~An equivalent trackless product approved on AASHTO's Product Evaluation Listing (APEL) may be used when ambient temperatures are at least 55°F.~~

2. Anti-strip Agent.

- a. Perform a moisture sensitivity evaluation of the proposed asphalt mixture design in accordance with Materials I.M. 319 for the following mixtures when placed in travelled lanes:

- 1) Mixtures for Interstate and Primary highways designed for ~~30,000,000 ESALS~~ and higher Very High Traffic (VT), and
- 2) Mixtures for Interstate and Primary highways containing quartzite, granite, or other siliceous (not a limestone or dolomite) aggregate obtained by crushing from ledge rock in at least 40% of the total aggregate (virgin and recycled) or at least 25% of the plus No. 4.

For the purpose of evaluating moisture sensitivity of a proposed mix design, Contractor may test proposed JMF from plant produced material placed off-site at no additional cost to the Contracting Authority.

- b. Sample and test plant produced mixture for moisture susceptibility in accordance with Materials I.M. 204 Appendix F and Materials I.M. 319 for bid item plan quantities of more than 1000 tons as follows:
 - 1) For mixtures satisfying Article 2303.02, E, 2, a.
 - 2) For conditions satisfied in Article 2303.02, E, 2, f.
- c. Moisture susceptibility testing will not be required for base repair, patching, temporary pavement, or paved shoulders. Moisture susceptibility testing for mixture bid items of 1000 tons or less is only required on the mix design for mixtures satisfying Article 2303.02, E, 2, a.
- d. Use the following minimum stripping inflection point (SIP) requirements for plant produced material based on traffic designation:

PG High Temperature, °C	SIP, Number of Passes ^{1,2}	
	< 3,000,000 ESALS	≥ 3,000,000 ESALS
58	10,000	14,000
64	10,000	14,000
70	10,000	14,000

Table 2303.02-1: Minimum Stripping Inflection Point

Traffic Designation	SIP, Number of Passes ^{1,2}
S	10,000
H, V	14,000

Note 1: If ratio between creep slope and stripping slope as defined in Materials I.M 319 is less than 2.00, the SIP is invalid.

Note 2: Minimum SIP for mixtures placed as base widening is 5000 passes.

When notified of non-compliant results, the Engineer may suspend paving operations until an approved “significant mix change” is implemented.

- e. When the Contractor’s mix design SIP results are below the minimum specified in Article 2303.02, E, 2, d, an anti-strip agent will be required. Plant produced material with anti-strip shall be tested to verify the minimum SIP is achieved.
 - f. The Engineer may require an evaluation of the test method in Materials I.M. 319 for plant produced mixture at any time.
 - g. The following anti-strip agents may be used:
 - 1) **Hydrated Lime.**
Meet the requirements of AASHTO M 303, Type I or ASTM C 1097, Type S. Hydrated lime will not be considered part of the aggregate when determining the job mix formula.
 - 2) **Liquid Anti-strip Additives.**
For each JMF, obtain approval for liquid anti-strip additives blended into the binder. Approval will be based on the following conditions:
 - a) The asphalt binder supplier provides test results that the additive does not negatively impact the asphalt binder properties, including short term and long term aged properties.
 - b) The design is to establish the additive rate that produces the maximum SIP value.
 - 3) **Polymer-based Liquid Aggregate Treatments.**
For each JMF, obtain approval for polymer-based liquid aggregate treatments. Approval will be based on the design establishing the optimum additive rate that produces the maximum SIP value. See Materials I.M. 319 for additional information.
3. **Sand for Tack Coats.**
Use sand meeting the requirements of Gradation No. 1 of the Aggregate Gradation Table in Article 4109.02.

4. WMA Technologies.

Chemical additives, organic additives, zeolites, or water injection systems may be used at the rate established by the mixture design in the production of WMA. Once production of a bid item has begun with a WMA technology, continue its use throughout the remainder of the bid item's production unless otherwise approved by the District Materials Engineer.

2303.03 CONSTRUCTION.**A. General.**

1. The Contractor is responsible for all aspects of the project.
2. Provide quality control management and testing, and maintain the quality characteristics specified.
 - a. Apply Article 2303.03, D to asphalt mixture bid items when the plan quantity is greater than 1000 tons.
 - b. Apply Article 2303.03, E, for asphalt mixture bid items that have a plan quantity of 1000 tons or less as well as patching, detours, and temporary pavement bid items. For items bid in square yards, apply Article 2303.03, E when the plan quantity by weight (estimated with a unit weight of 145 pounds per cubic foot unless otherwise stated on the plans) does not exceed 1000 tons.

B. Equipment.

Use equipment meeting the requirements of Section 2001 with the following modifications:

1. Plant Calibration.

- a. Calibrate each plant scale and metering system before work on a contract begins. Use calibration equipment meeting the manufacturer's guidelines and Materials I.M. 514.
- b. The Engineer may waive calibration of permanent plant scales when a satisfactory operational history is available. The Engineer may require any scale or metering system to be recalibrated if operations indicate it is necessary.
- c. Make calibration data available at the plant.
- d. Calibrate each aggregate feed throughout an operating range wide enough to cover the proportion of that material required in the JMF. Make a new calibration each time there is a change in size or source of any aggregate being used.
- e. For continuous and drum mixing plants, calibrate the asphalt metering pump at the operating temperature and with the outlet under pressure equal to that occurring in normal operations.

2. Paver.

Apply Article 2001.19. Spreaders described in Article 2001.13, D, may be used to place paved shoulders. Spreaders used to place the final lift of paved shoulders shall meet additional requirements of Article 2001.19.

3. Rollers.

- a. For initial and intermediate rolling, use self-propelled, steel tired, pneumatic tired or vibratory rollers meeting the requirements of Article 2001.05, B, C, or F. Their weight (mass) or tire pressure may be adjusted when justified by conditions.
- b. For finish rolling, use self-propelled, steel tired rollers or vibratory rollers in the static mode that meet the requirements of Article 2001.05, B, or F.

4. Scales.

Apply Article 2001.07, B, to paving operations regardless of the method of measurement.

C. Construction.**1. Maintenance of the Subgrade and Subbase.**

- a. Maintain completed subgrade and subbase to the required density, true cross section, and smooth condition, prior to and during subsequent construction activities.
- b. If rutting or any other damage occurs to the subgrade or subbase as a result of hauling operations, immediately repair the subgrade and subbase. Such repair will include, if necessary, removal and replacement, at no additional cost to the Contracting Authority.

- c. Should traffic by others authorized to do work on the project be specifically permitted by the Engineer to use loads which exceed the Contractor's established limit, the Contracting Authority will pay repair costs for repairs directed by the Engineer.

2. Preparation of Existing Surfaces.

a. Cleaning.

Clean and prepare existing surface according to Article 2212.03, B, 1.

b. Tack Coats.

- 1) Apply tack coats when the entire surface area on which the coat is to be applied is free of moisture. Do not apply them when the temperature on the surface being covered is less than 25°F.
- 2) Place a tack coat to form a continuous, uniform film on the area to be covered. Tack coat may be diluted with water at a 1:1 ratio to improve application. Unless directed otherwise, spread tack coat at the following undiluted rates:
 - New HMA Surface: 0.03 to 0.05 gallon per square yard
 - Milled HMA/CIR Surface: 0.05 to 0.07 gallon per square yard
 - PCC/Existing HMA Surface: 0.04 to 0.06 gallon per square yard
- 3) Tack the vertical face of exposed, longitudinal joints as a separate operation at a rate from 0.10 to 0.15 gallon per square yard. Tack before the adjoining lift is placed. Lightly paint or spray vertical surfaces of all fixtures, curbs, bridges, or cold mixture with which the hot mixture will come in contact to facilitate a tight joint with the fresh mixture.
- 4) Limit tack coat application lengths to minimize inconvenience to the public. Keep applications within the hot mixture placing work area that is controlled by flaggers at each end. Plan applications so they will be covered with hot mixture when the work area is opened to traffic at the end of the days' work.
- 5) Allow tack coat to adequately cure prior to placement of HMA. If tack coat surface becomes dirty from weather or traffic, thoroughly clean and, if necessary, retack. A light application of sand cover may also be required for excessive application rates, breakdowns, and short sections remaining at the end of a day's run.

3. Handling, Production, and Delivery.

Ensure plant operation complies with the following requirements:

a. Handling Mineral Aggregate and RAM.

Apply Materials I.M. 505 and Materials I.M. 508.

b. Handling Asphalt Binder.

Maintain asphalt binder temperature between 260°F and 330°F. Heat modified asphalt binder according to the supplier's recommendations.

c. Handling Anti-strip Agents.

1) Hydrated Lime.

a) Added to a Drum Mixer.

- (1) Add hydrated lime at the rate of 0.75% by weight of the total aggregate (virgin and RAM) for Interstate and Primary projects. Add hydrated lime to a drum mixer using one of the following methods:

(a) Add to virgin aggregate on the primary feed belt, as a lime water slurry.

(b) Add to the outer drum of a double drum system away from heated gas flow and prior to the addition of the virgin asphalt binder.

- (2) Alternative methods for mixing will be allowed only with the Engineer's approval. Do not introduce hydrated lime directly into a single drum mixer by blowing or by auger.

b) Added to a Batch Plant.

Add hydrated lime at the rate of 0.5% by weight of the total aggregate (virgin and RAM) for Interstate and Primary projects. Introduce it to a batch plant using one of the methods below. In any case, introduce the lime prior to the start of the dry mix cycle.

(1) Place on the recycle belt which leads directly into the weigh hopper.

(2) Add directly into the pugmill.

(3) Add directly into the hot aggregate elevator into the hot aggregate stream.

c) Added to the Aggregate Stockpile.

Add hydrated lime at a rate established by the optimization of the SIP as determined by Materials I.M. 319. Add it to the source aggregates defined in Article 2303.02, E, 2, thoroughly mixed with sufficient moisture to achieve aggregate coating, and then place in the stockpile.

2) Liquid.

- a) When liquid anti-strip additives are used, employ equipment complying with the anti-strip manufacturer's recommended practice to store, measure, and blend the additive with the binder.
- b) The additive may be injected into the asphalt binder by the asphalt supplier or the Contractor. If the Contractor elects to add the liquid anti-strip agent, they assume the material certification responsibilities of the asphalt binder supplier. Ensure the shipping ticket reports the type and amount of additive and time of injection.
- c) Ensure the asphalt supplier provides the Contractor and Engineer with the shelf life criteria defining when the anti-strip additive maintains its effectiveness. Do not use binder that has exceeded the shelf life criteria.
- d) When using polymer-based aggregate treatment, comply with the manufacturer's recommended specifications and guidelines.

d. Production of Hot Mix Asphalt Mixtures.

- 1) Regulate the exact proportions of the various materials to be within the limits specified to produce a satisfactory asphalt coating and mixture.
- 2) Do not allow the temperature of the mixtures to fall outside the following parameters:
 - a) Keep the production temperature of WMA mixtures between 215°F and 280°F until placed on the grade. Maximum production temperature for WMA is 330°F after October 1st.
 - b) Do not produce WMA mixtures more than 10°F below the target temperature designated in the JMF without the approval of the Engineer.
 - c) Keep the production temperature of HMA mixtures between 225°F and 330°F until placed on the grade. Do not discharge HMA into the hopper when its temperature is less than:
 - (1) 245°F for a nominal layer thickness of 1 1/2 inches or less, or
 - (2) 225°F for a nominal layer thickness of more than 1 1/2 inches.
 - d) Flexible paving mixtures not meeting these requirements will be rejected.
 - e) Production temperature limits apply starting at point of discharge from mixer.
- 3) Minimize segregation to the extent that it cannot be visibly observed in the compacted surface.
- 4) Apply only approved release agents to trucks and equipment, as specified in Article 2001.01.
- 5) Except for an unavoidable delay or breakdown, provide continuous and uniform delivery of hot HMA to any individual spreading unit.

4. Placement.

- a. Clean each lift according to Article 2212.03, B, 1. If necessary, re-tack.
- b. Prior to placing the final lift, correct bumps or other significant irregularities that appear or are evident in the intermediate course or other lower course.
- c. Do not place HMA mixtures under the following circumstances:
 - 1) On a wet or damp surface.
 - 2) When road surface temperature is less than that shown in Tables 2303.03-1 and 2303.03-2.

Table 2303.03-1: Base and Intermediate Course Lifts of Asphalt Mixtures

Nominal Thickness - inches	Road Surface Temperature, °F
1 1/2	40
2 – 3	35
Over 3	35

Table 2303.03-2: Surface Course Lifts of Asphalt Mixtures

Nominal Thickness - inches	Road Surface Temperature, °F
1	HMA: 50 / WMA: 40
1 1/2	HMA: 45 / WMA: 40
2 and greater	40

- d. The Engineer may further limit placement if, in the Engineer's judgment, other conditions are detrimental to quality work.
- e. Maintain a straight paving edge alignment. Correct edge alignment irregularities immediately.
- f. Base the minimum layer thickness on Table 2303.03-3. Minimum layer thickness does not apply to leveling/scratch courses.

Table 2303.03-3: Minimum Lift Thickness

Design Mix Size - inches	Minimum Lift Thickness - inches
3/8	1
1/2	1 1/2
3/4	2
1	3

- g. Complete each layer to full width before placing succeeding layers.
- h. While operating on the road surface, do not use kerosene, distillate, other petroleum fractions, or other solvents, for cleaning hand tools or for spraying the paver hopper. Do not carry containers of cleaning solution on or near the paver. When a solvent is used, do not use the paver for at least 5 hours after cleaning.
- i. After spreading, carefully smooth to remove all segregated aggregate and marks.
- j. When placing two adjacent lanes, pave no more than 1 day of rated plant production before paving the adjacent lane(s). Place the adjacent lane to match the first lane during the next day of plant production.
- k. At the close of each working day, clear all construction equipment from the roadbed.
- l. Prior to opening a lane to traffic, place fillets, safety edge, or full width granular shoulders according to Article 2121.03, C, 4. Place the material adjacent to and equal in thickness to the resurfacing. Fillet removal is incidental to the HMA mixture.

5. Compaction.

a. General.

- 1) Promptly and thoroughly compact each layer. Use mechanical tampers for areas inaccessible to the rollers.
- 2) Use a rolling procedure and compactive effort that will produce a surface free of ridges, marks, or bumps.
- 3) The quality characteristic is in-place air void content and will be based on the theoretical maximum specific gravity (G_{mm}) for that day's mixture.

b. Class I Compaction.

1) Applications.

Use Class I compaction for all courses for the traffic lanes, ramps, and loops on all roadways.

2) Test Strip Construction for Class I Compaction.

- a) For the purpose of evaluating properties of the asphalt mixtures and for evaluating an effective rolling pattern:
 - (1) Construct a test strip of the surface mixture prior to its placement on the surface course for Interstate highways, Primary highways, and ramps connecting Interstate and Primary highways.
 - (2) Construct a test strip of the intermediate mixture at the start of its placement on the intermediate course for Interstate highways, interstate-to-interstate ramps.
 - (3) Test strips for other mixtures may be constructed, but are not required.
- b) Test strips are not required when the entire production of the mixture bid item is placed in a single day.
- c) The quantity of mixture subject to the test strip production, will be pre-established with the Engineer and limited to a half day's production
- d) When the contract documents specify both intermediate and surface courses and a test strip is required, place a surface course test strip in lieu of intermediate mixture in a section of the intermediate course prior to actual surface course placement. If surface course and intermediate course are not placed the same calendar year, then place test strip at beginning of surface mix production.
- e) Only one test strip will be allowed for each mixture and shall be declared to the Engineer prior to placement. The Engineer may require additional test strips if a complying HMA mixture or rolling pattern was not established.
- f) Use test strip production control that meets the requirements of Article 2303.03, D, 3, b. The test strip will be an independent lot. Determine sublots in accordance with Table 2303.03-5.

c. Class II Compaction.

Intended for paved shoulders, temporary crossovers, onsite detours, base widening in a non-travel lane and other situations where Class I is not specified.

- 1) Establish a rolling pattern to verify adequate density.

- 2) At the Engineer's option, cores or gauge readings at the frequency designated in Materials I.M. 204 Appendix F for the first day of placement will be used. The Engineer may modify the sample size and frequency provided compaction is thorough and effective.
 - 3) The Engineer will accept the rolling pattern based on the average test results. When the average field voids is less than or equal to 8.0%, the pattern is considered thorough and effective.
 - 4) When the average field voids exceeds 8.0%, modify the rolling pattern. The Engineer may require additional testing until thorough and effective compaction is achieved.
 - 5) For areas inaccessible to rollers, use mechanical tampers or other approved compaction methods.
- 6. Joints and Runouts.**
- a. Construct longitudinal joints for courses on resurfacing projects within 3 inches of the existing longitudinal joint. Construct longitudinal joints to secure complete joint closure and avoid bridging of the roller. When the joint is completed, the hot side shall be no more than 1/4 inch higher than the cold side.
 - b. Saw transverse construction joint to a straight line at right angles to the center line to provide a full thickness vertical edge before continuing paving.
 - c. Place temporary runouts according to road standards. Remove temporary runouts before commencing paving. Runout removal is incidental to the HMA mixture.
- 7. Miscellaneous Operations.**
- a. **Leveling and Strengthening Courses.**
 - 1) Use the same mixture specified for the base or intermediate course.
 - 2) Compact leveling courses and intermediate mixtures placed as leveling/scratch courses (less than or equal to 1 inch plan thickness) using pneumatic and vibratory rollers.
 - b. **Wedge Courses.**
 - 1) Use the base or intermediate mixture to construct wedge courses used to secure desired curve super-elevation. When possible, spread using a finishing machine.
 - 2) Place wedge courses in compacted layers no thicker than 3 inches.
 - 3) On super-elevated curves which require wedge course placement, stage the shoulder construction. After completing each day's wedge placement operations and prior to suspending that day's construction activities, construct a full width shoulder on the high side up to the completed wedge course elevation. Shoulder construction staging will be considered incidental to shoulder construction.
 - 4) Use Class II compaction.
 - c. **Fixtures in the Pavement Surface.**
 - 1) Adjust manholes, intakes, valve boxes, or other fixtures encountered within the area to be covered by HMA to conform to the final adjacent finished surface. Payment for adjustment of manholes or intakes will be per Section 2435. Payment for adjustment of valve boxes and other fixtures will be per Section 2554. Unless specified otherwise in the plans, adjust fixtures:
 - Between placing the surface course and the layer preceding the surface course, or
 - After placing the surface course using a composite patch or PCC patch.
 - 2) Use PCC and HMA patch material complying with the requirements of Section 2529. Make patches large enough to accommodate the structure being adjusted.
 - 3) Unless otherwise approved, construct patches to be square. Orient them diagonally to the direction of traffic flow. Ensure the elevation of the adjusted fixture and patch does not differ from the elevation of the surrounding pavement surface by more than 1/4 inch.
 - 4) When shaping and compacting resurfacing near inlets to storm sewer intakes, shape to ensure maximum drainage into intakes.
 - d. **Fillets for Intersecting Roads and Driveways.**
 - 1) Shape, remove loose material, and tack the surface adjacent to the pavement. On the tack coated surface, place and compact the hot mixture in layers equal to the adjacent layer. Extend from the edge of the pavement as shown on the plans.
 - 2) Place and compact fillets at intersecting roads at the same time as the adjacent layer.
 - 3) Entrance fillets that are 8 feet or wider may be placed as a separate operation. Pave fillets which are 8 feet or wider with a self-propelled finishing machine described in Article 2001.19.
 - 4) The Engineer may approve other equipment for placement of fillets, based on a demonstration of satisfactory results.

e. Stop Sign Rumble Strips.

If the plans include the bid item Rumble Strip Panel (In Full Depth Patch), apply Section 2529. To meet the requirements of placing Stop Sign Rumble Strips before opening roadway sections to traffic, the Contractor may construct temporary rumble strip panels meeting the final pattern and location of the Stop Sign Rumble Strip indicated in the plans

f. Paved HMA Shoulders.

- 1) Compact paved HMA shoulders using one of the following methods:
 - a) Class II compaction (Article 2303.03, C, 5, c),
 - b) Same rolling pattern established for adjoining mainline or ramp driving lane, as determined by density coring.
- 2) Shoulder area will not be included in PWL calculations for field voids on adjoining mainline or ramp driving lane. A price adjustment may be applied to shoulder areas that do not adhere to the established roller pattern.

D. Quality Assurance Program.

1. General.

Except for small quantities as defined in Article 2303.03, A, 2, follow the procedures and meet the criteria established in Articles 2303.02 and 2303.03, B, Section 2521, and Materials I.M. 510 and 511.

2. Mix Design - Job Mix Formula.

- a. The Contractor is responsible for the JMF for each mixture.
- b. Submit a completed JMF, using the computer format of Form 956, for approval to the materials lab designated by the Contracting Authority. Submit supporting documentation demonstrating the design process was followed and how the recommended JMF was determined. Include an economic evaluation when required. Include trial and final proposed aggregate proportions (Form 955) and corresponding gyratory data. In addition, submit sufficient loose mixture and individual material samples for approval of the design.
- c. Personnel preparing the JMF shall be Iowa DOT certified in HMA Level II.
- d. An approved JMF will be required prior to beginning plant production.

3. Plant Production.

a. General.

All of the following qualify as a "significant mix change":

- A single occurrence of an aggregate interchange of greater than 5%.
- An aggregate interchange of greater than 5% from last approved JMF.
- A single occurrence of an asphalt content change greater than 0.2%.
- An asphalt content change greater than 0.2% from last approved JMF.
- A deletion or introduction of a new material into the mix.
- A change of additive dosage rate.
- A change of binder, aggregate, or additive source.

b. Production Control.

- 1) After the JMF is established, the combined aggregate gradation furnished for the project, asphalt binder content, asphalt film thickness, and laboratory air voids should consistently comply with the JMF target values and design criteria in Materials I.M. 510 Appendix A. Control them within the production tolerances given in Table 2303.03-4.

Table 2303.03-4: Production Tolerances

Measured Characteristic	Target Value (%)	Specification Tolerance (%) ^(a)
Cold feed gradation No. 4 and larger sieves	by JMF	± 7.0
Cold feed gradation No. 8	by JMF	± 5.0
Cold feed gradation No. 30	by JMF	± 4.0
Cold feed gradation No. 200	by JMF	± 2.0
Field laboratory air voids absolute deviation from target ^(b)	0.0	≤ 1.0
Daily asphalt binder content	by JMF	± 0.3

- (a) Based on single test unless noted otherwise.
- (b) When lab voids acceptance is not based on PWL.

- 2) The gyratory mix design gradation control points for the size mixture designated in the project plans will not apply to plant production control.
- 3) Adjustments to the JMF target gradation and asphalt binder content values may be made.
 - a) The Contractor determines from quality control testing that adjustments are necessary to achieve the specified properties.
 - b) Consult with the Engineer regarding adjustments to the JMF.
 - c) Notify the Engineer if the average daily gradation for a mixture bid item is outside the production tolerances. If other production tolerances and mixture requirements of Materials I.M. 510 Appendix A are acceptable, a change in gradation target can be requested.
 - d) The Contractor's adjustment recommendations prevail provided all specifications and established mix criteria are being met for plant production.
- 4) Calculate estimated film thickness every day of production according to Materials I.M. 501. Compliance is based on limits in Materials I.M. 510 Appendix A.
- 5) Calculate absolute deviation from target lab voids according to Materials I.M. 501. To determine the moving average absolute deviation from target laboratory voids, use the average of the last four individual sample absolute deviations from target laboratory voids.
- 6) Notify the Engineer whenever the process approaches a specification tolerance limit. When acceptance for lab voids is not based on PWL, cease operations when the moving average point for absolute deviation from target lab voids is outside the specification tolerance limit. Assume responsibility to cease operations, including not incorporating material which has not been placed. Do not start the production process again until notifying the Engineer of the corrective action proposed. The moving AAD may restart only in the event of a mandatory plant shutdown for failure to maintain the average within the production tolerance.
- 7) After the second occurrence of the moving AAD falling outside the specification tolerance limit, the Engineer may declare the lot or portions of the lot defective.

4. Sampling and Testing.

a. General.

- 1) Perform sampling and testing to provide the quality control of the mixture during plant production. Certified Plant Inspection according to Section 2521 is required.
- 2) Personnel involved in sampling and testing on both verification and quality control shall be Iowa DOT certified for the duties performed per Materials I.M. 213.
- 3) Provide easy and safe access for Iowa DOT staff to the location in the plant where samples are taken.
- 4) Maintain and calibrate the quality control testing equipment using prescribed procedures. Sample and test according to the specified procedures as listed in the applicable Materials I.M. and Specifications. When the results from a Contractor's quality control lab are used as part of product acceptance, the Contractor's quality control lab is required to be qualified.
- 5) Identify, store, and retain all quality control samples and field lab gyratory specimens used for acceptance until the lot is accepted.
- 6) Obtain verification samples at random times as directed and witnessed by the Engineer according to Materials I.M. 204 Appendix F. Secure all verification samples according to Materials I.M. 205 Appendix A. Store verification samples for the Contracting Authority until delivery to the Contracting Authority's lab.
- 7) Deliver the Plant Report to the Engineer and the designated district materials laboratory daily. At project completion, provide the Engineer a copy of the reports, charts, and other electronic file(s) containing project information generated during the progress of the work.

b. Asphalt Binder.

Sample and test asphalt binder to verify the quality of the binder grade. Do not sample when daily production is less than 100 tons of mixture.

c. Tack Material.

Sample and test asphalt emulsions to verify residual asphalt content.

d. Aggregate Gradation.

- 1) Use cold feed or ignition oven gradation for aggregate gradation control to assure materials are being proportioned according to the specifications.

- 2) Take a minimum of one aggregate gradation for each day's production that exceeds 100 tons of mixture. When more than one sample in a day's production is tested, use the average gradation to determine compliance of the daily lot.
 - 3) Engineer will verify Contractor gradation with an ignition oven or a split cold feed sample. For ignition oven validation, split a cold feed sample with the Engineer to determine the need for a correction factor according to Materials I.M. 511. The Engineer may require additional cold feed split samples.
- e. Uncompacted Asphalt Mixture.**
- 1) Sample the loose mixture according to Materials I.M. 322.
 - 2) Modify sampling location to include placement with mix stored from a previous day's production.
 - 3) The number of daily samples is defined in Table 2303.03-5 based on the day's estimated production. See Materials I.M. 511 for determining sample locations.

Table 2303.03-5: Uncompacted Mixture Sampling

Estimated Daily Production, Tons	Number of Samples
101-500	1
501-1250	2
1251-2000	3
2001-4500	4
Over 4500	5

- 4) Do not take samples from the first 100 tons of mix produced each day or the first 100 tons of mix following a significant mix change. When paving operations are staged so each day of placement is less than 100 tons for the entire production of the bid item, establish a sampling plan with the Engineer that includes a minimum of one sample per 2500 tons.
 - 5) Split samples for specimen preparation according to Materials I.M. 357.
 - 6) Paired sampling may also be accomplished by taking a bulk sample and immediately splitting the sample according to Materials I.M. 322 on the grade.
 - 7) Test the quality control sample of each production paired sample as follows:
 - a) Prepare and compact two gyratory specimens according to Materials I.M. 325G.
 - b) Determine the bulk specific gravity of compacted mixture (G_{mb}) at N_{design} for each specimen according to Materials I.M. 321. Average the results.
 - c) Determine the Theoretical Maximum Specific Gravity (G_{mm}) of the uncompacted mixture according to Materials I.M. 350.
 - d) Determine laboratory air voids for each sample according to Materials I.M. 501. Use the target laboratory voids listed in Materials I.M. 510 Appendix A unless otherwise specified in the contract documents.
- f. Compacted Pavement Cores.**
- 1) The Engineer will determine the core locations. The length laid in each lot will be divided into approximately equal sublots. Obtain one sample at a random location in each subplot. Determine a new random location for the subplot when the designated core location falls on a runout taper at an existing pavement, bridge, or bridge approach section where the thickness is less than the design thickness.
 - 2) Take samples from the compacted mixture and test no later than the next working day following placement and compaction.
 - 3) Restore the surfaces the same day. Dry, fill with the same material, and properly compact core holes.
 - 4) Pavement core samples will be identified, taken possession of by the Engineer, and delivered to the Contractor's quality control field laboratory.
 - 5) The Engineer may either:
 - Transport the cores directly to the lab, or
 - Secure the cores and allow the Contractor to transport the cores to the lab.
 - 6) Prepare and test the cores according to Materials I.M. 320, 321, and 337.
 - 7) Cut and trim samples under the direction of and witnessed by the Engineer for tests of G_{mb} , thickness, or composition by using a power driven masonry saw.
 - 8) The compacted HMA pavement will be tested in a timely manner by the Engineer's personnel. The Engineer will test each lot of cores at the Contractor's field quality control laboratory. Cores may also be tested by the Contractor; however, the Contractor's test results will not be used for material acceptance.

5. Verification and Independent Assurance Testing.

- a. The Contractor's quality control test results will be validated by the Engineer's verification test results on a regular basis using guidelines and tolerances set forth in Materials I.M. 216 and 511.
- b. If the Engineer's verification test results validate the Contractor's test results, the Contractor's results will be used for material acceptance. Disputes between the Contractor's and Engineer's test results will be resolved according to Materials I.M. 511.
- c. The Engineer will randomly select one or more of the daily production verification samples. Some or all of the samples selected will be tested in the materials laboratory designated by the Engineer. The Engineer will use the verification test results to determine if the Contractor's test results can be used for acceptance.
- d. Personnel and laboratory equipment performing tests used in the acceptance of material are required to have participated in the statewide Independent Assurance Program according to Materials I.M. 207.

6. Acceptance of Asphalt Mixtures.**a. Lab Voids.**

- 1) Use the following methods of acceptance for laboratory voids:
 - a) For base widening, ramps and loops, shoulders, recreational trails, and other mixture bid items not placed in travel lanes of a permanent pavement, acceptance for laboratory voids will be based on a moving average absolute deviation (AAD) from target as defined in Materials I.M. 501. Use the production tolerance in Table 2303.03-4. During a day's production, if more than 100 tons of the bid item is placed in an area not listed above, apply Article 2303.03, D, 6, b, for entire production of bid item.
 - b) Determine PWL for each lot as defined in Materials I.M. 501. The PWL limits shall be +/- 1.0% from the target air voids. Each mixture bid item will constitute a lot. Lot size is defined as follows:
 - (1) No less than eight and no more than 15 sequential tests will constitute a lot (exceptions stated below).
 - (2) After the eighth test, all subsequent samples collected will also be included in the lot up to a maximum of 15.
 - (3) Once a lot has been established with at least eight tests, a new lot will begin the day following the fifteenth sample. Lots shall not contain partial days. When the fifteenth sample is reached, include all samples taken that day in the lot.
 - (4) If the bid item's production has ended and fewer than eight tests are available, those tests may be combined with the previous lot provided the maximum lot size has not already been reached. When combining results, if the day to be combined contains the fifteenth sample, include all samples for that day. Do not combine partial day's results.
 - (5) If samples cannot be combined with the previous lot due to maximum lot size restrictions or if fewer than eight tests are available for the entire production of a bid item, combine those tests into a single lot and use the AAD analysis in Materials I.M. 501.
 - (6) Test strips will be considered a separate lot.
 - (7) When the same mix type is produced for multiple bid items in one day from a single plant and the production going to each item exceeds 500 tons, assign all box samples to each bid item's existing lot for lab voids. In addition, assign the quantity of each bid item produced to its respective lot.
 - (8) When the same mix type is placed in both PWL and AAD areas in a single day on a single project, include all samples for that day in the PWL lot as well as the quantity of the mixture bid item produced and placed in the PWL area.
- 2) Determine the pay factor using the AAD procedure described in Materials I.M. 501 for mix in a PWL lot which is produced at irregular intervals and placed in irregular areas. The following items qualify as such and shall be combined into a single lot:
 - Asphalt mixture produced and placed on gores, detours, cross-overs, temporary pavements, turning lanes, and fillets,
 - Asphalt mixture produced and placed on ramps
 - Asphalt mixture produced and placed on shoulders.To be considered irregular, the production rate for mixture bid items described above is not to exceed 1000 tons in a single day.

b. Field Voids.**1) Class I.**

- a) A lot is considered to be one layer of one mixture bid item placed during a day's operation. The Engineer may approve classifying multiple layers of construction placed during a single day as a lot provided only one mixture was used.
- b) For the following situations sampling for field voids may be waived by the Engineer provided compaction has been thorough and effective, or sampling may be modified by mutual agreement to include more than one day's production provided samples are taken prior to trafficking:
- When the day's operation is not more than 2500 square yards excluding areas deducted from the field voids lot,
 - When the day's operation is not more than 500 tons excluding quantities deducted from the field voids lot,
 - When the mixture is being placed in irregular areas, or
 - When placing strengthening courses.
- c) If a sample is damaged or measures less than 70% or more than 150% of the intended thickness, an alternate sampling location will be determined and used. Take samples from no less than 1 foot from the unconfined edge of a given pass of the placing equipment, from run-outs, or from day's work joints or structures.
- d) Use the following methods of acceptance for field voids:
- (1) For mixture bid items placed in the following areas:
- Base widening placed in a travel lane,
 - Ramps,
 - Bridge approaches placed as a separate operation,
 - Non-interstate travel lanes intended to be in service for fewer than 12 months,
 - State Park and Institutional roadways,
 - Recreational trails, and
 - Irregular areas identified by the Engineer that may include areas not suitable for continuous paving,

The Engineer will accept the field voids lot based on the average test results or an established effective rolling pattern when approved by the Engineer. Do not exceed 8.0% average field voids. The Engineer may modify the sample size and frequency provided compaction is thorough and effective. The Engineer may apply the pay schedule in Article 2303.05, A, 3, b, 3, to areas where thorough and effective compaction is not achieved.

- (2) For all other areas of Class I compaction, determine PWL as defined in Materials I.M. 501. The PWL limits shall be between 91.5% of G_{mm} (8.5% voids) and 98.5% of G_{mm} (3.5% voids). Use maximum specific gravity (G_{mm}) results in field voids calculations as follows:

- (a) When cores represent one day's production and more than one G_{mm} test result is available, use the average G_{mm} in the field voids calculation for all cores.
- (b) When cores represent one day's production and only one G_{mm} test result is available, use the single G_{mm} test result in the field voids calculation for all cores.
- (c) When the cores represent more than one day's production, use the average of all G_{mm} test results from all days corresponding with the cores.
- e) When the PWL falls below 80.0, use the procedure outlined in Materials I.M. 501 to identify outliers with 1.80 as the quality index criterion. Only one core may be considered an outlier in a single lot. If an outlier is identified, recalculate the PWL with the results of the remaining cores and determine whether the PWL is improved. Use the larger of the original and recalculated PWL to determine the pay factor.

- 2) For Class II apply Article 2303.03, C, 5, c.

c. Asphalt Film Thickness.

A lot is considered one day's production of one mixture. When film thickness falls outside the limits in Materials I.M. 510 Appendix A, see Article 2303.05, A, 3, c, for payment adjustment.

d. Thickness.

- 1) The Engineer will measure cores, exclusive of thin surface treatments, according to Materials I.M. 337. Sampling frequency and lot definitions are as follows:
- a) **Class I Compaction.**
The Engineer will obtain and test samples for each lot according to Materials I.M. 204 Appendix F. Density cores sampled as part of a field voids lot will be combined into daily lots

based on cores' intended thickness. Samples for thickness not tested for G_{mb} , because they are less than 70% of the intended thickness, are included for thickness. In these particular instances, do not measure the thickness of additional sufficiently thick samples used to determine field voids. When measuring density of top lift from a full depth core, measure thickness before trimming core for density testing.

b) Class II Compaction.

The Engineer will obtain and test samples full depth once the final lift is placed. The lot shall be defined as the length of a day's production of the final lift. Take a minimum eight cores from each lot. The Engineer may approve classifying multiple days of construction as a lot.

- 2) Provided there is reasonable assurance that the pavement complies with the required thickness, the Engineer may waive sampling for thickness for the following situations:
 - a) When an alternate method is deployed by the Engineer
 - b) When the day's operation is 2500 square yards or less.
 - c) When the mixture is being placed in irregular areas.
 - d) When the mixture is being placed next to structures.
- 3) When the quality index falls below 0.00, the Engineer may declare the lot or parts of the lot defective. If the final lift has not been placed, the Engineer may approve additional thickness to be placed on succeeding lifts to ensure a final grade as intended. The unit price of the defective lot will be used for payment of the additional material.

e. Smoothness.

Construct pavement to have a smooth riding surface according to the following:

- 1) Apply Section 2317 to HMA surface mixture bid items of a Primary project if any individual HMA mixture bid item is 1000 tons or greater or 5000 square yards or greater. Apply Section 2316 to all other Primary projects with a surface course and when specifically required for other projects.
- 2) When neither Section 2316 nor Section 2317 is applied to a project, the Engineer may check the riding surface for defects using one of the following criteria:
 - The surface shall not deviate from a straight line by more than 1/8 inch in 10 feet when measured longitudinally with a 10 foot straightedge.
 - The surface shall not contain any bump or dip exceeding 1/2 inch over a 25 foot length when measured with a method in Materials I.M. 341.

The Engineer may either require the defects be corrected according to Article 2316.03, B, 2, or apply a price adjustment.

E. Quality Control for Small HMA Paving Quantities.

1. General.

For small quantities, a lot will be the entire quantity of each HMA mixture bid item.

2. Mix Design.

- a. Prepare the JMF. Prior to production, obtain the Engineer's approval for the JMF. Comply with Article 2303.02 and Materials I.M. 510.
- b. For mixtures meeting the criteria in Article 2303.02, E, 2, a:
 - 1) An anti-stripping agent is required when the optimum dosage is greater than 0%.
 - 2) Use Materials I.M. 319 to optimize the design dosage rate.
 - 3) When prior-approved designs have demonstrated acceptable field SIP values, the anti-stripping agent and dosage from the JMF may be used in lieu of optimization testing.

3. Plant Production.

- a. Ensure production plant calibration for the JMF is current and no more than 12 months old.
- b. Use certified asphalt binder and approved aggregate sources meeting the JMF. Ensure the plant maintains an asphalt binder log to track the date and time of binder delivery. Ensure delivery tickets identify the JMF.
- c. Monitor the quality control test results and make adjustments to keep the mixture near the target JMF values.

4. Sampling and Testing.

a. Field Voids.

- 1) Take compacted mixture G_{mb} measurements, except when Class II compaction is specified, no later than the next working day following placement and compaction.
- 2) The Engineer may accept the void content of the compacted layer based on cores or calculations

from density gauge measurements. The Engineer may waive field void sampling provided the compaction has been thorough and effective.

- 3) PWL for field voids will not apply to small quantities.
 - b. **Lab Voids.**
Material sampling and testing is for production quality control. Acceptance of mixture is based on Contractor certification. Sampling and testing of uncompacted mixture is only required for mechanically placed mixture. Sample and test a minimum of one uncompacted mixture sample according to the Standard Specifications and Materials I.M.s using certified technicians and qualified testing equipment. The Engineer may approve alternative sampling procedures or may waive sampling of uncompacted mix and gradation if Contractor can provide plant reports from other recent project(s) demonstrating the JMF has been produced within specification. Take the sample between the first 100 to 200 tons of production. No split samples for agency verification testing are required.
 - c. **Binder.**
No binder sampling or testing is required.
 - d. **Moisture Sensitivity.**
Moisture susceptibility testing on plant produced mixture is not required.
 - e. **Gradation.**
Perform a minimum of one aggregate gradation.
5. **Certification.**
 - a. When the production tolerances in Table 2303.03-4 are not met, payment may be adjusted according to Article 1105.04.
 - b. When the production tolerances are met, provide a certification for the production of any mixture in which the requirements in this article are applied. Place the test results and the following certification statement on the Daily Plant Report.
“The mixture contains certified asphalt binder and approved aggregate as specified in the approved mix design and was produced in compliance with the provisions of Article 2303.03, E.”
 - c. The Daily Plant Report may be submitted at the end of the project for all certified quantities, or submitted at intervals for portions of the certified quantity.

2303.04 METHOD OF MEASUREMENT.

A. Hot Mix Asphalt Mixture.

1. **General.**
 - a. Removal of fillets is incidental to the contract unit price for the mixture.
 - b. If the Contractor chooses to place intermediate or surface mixture in lieu of base for the outside shoulders, the quantity will be calculated from the pavement and shoulder template. If placed as a separate operation, the quantity will be calculated from scale tickets. If the substitute mixture placed on the shoulder is for an intermediate course fillet only, include the quantity in the fillet for payment in the quantity placed in the adjacent intermediate course.
 - c. Payment for the quality control requirements for small quantities will not be measured separately.
2. **Measurement by Weight.**
 - a. The quantity of the type specified, expressed in tons, will be determined from the weight of individual loads, including fillets, measured to the nearest 0.01 tons.
 - b. Loads may be weighed in trucks, weigh hoppers, or from the weight from batch plants computed by count of batches in each truck and batch weight. Article 2001.07 applies. Segregate the weights of various loads into the quantities for each pay item.
3. **Measurement by Area.**
 - a. The quantity of the type specified, expressed in square yards, will be shown in the contract documents to the nearest 0.1 square yard. The area of manholes, intakes, or other fixtures will not be deducted from the measured pavement area.
 - b. When constructing shoulders on a basis of payment of square yards, inspection of the profile and elevation will be based on the completed work relative to the pavement edge. The Contractor is responsible for the profile and elevation of the subgrade and for thickness.

B. Asphalt Binder.

1. Measure the amount of asphalt binder by in-line flow meter reading, according to Article 2001.07, B.
2. Compute the asphalt binder quantity added to the storage tank using a supplier certified transport ticket accompanying each load.
3. The quantity of asphalt binder not used in the work will be deducted.
4. When the quantity of asphalt binder in a batch is measured by weight and is separately identified by automatic or semi-automatic printout, the Engineer may compute the quantity of asphalt binder used from this printout. By mutual agreement, this method may be modified when small quantities or intermittent operations are involved.
5. The Engineer will calculate and exclude the quantity of asphalt binder used in mixtures in excess of the tolerance specified in Article 2303.03, D, 3, b.
6. When payment for-HMA is based on area, the quantity of asphalt binder used will not be measured separately for payment.

C. Recycled Asphalt Pavement.

1. A completed Daily HMA Plant Report with the certification statement is required for measurement and payment for Contractor Certified HMA. The quantity of asphalt binder will be based on the approved JMF and any plant production quality control adjustments.
2. The quantity of asphalt binder in RAP incorporated into the mixture will be calculated in tons. This quantity shall be based on the actual asphalt binder content determined for the mix design from the results of the Engineer's extraction tests.
3. The quantity of asphalt binder in RAP, which is incorporated into the mix, will be included in the quantity of asphalt binder used.

D. Anti-strip Agent.

Will not be measured separately. The quantity will be based on tons of HMA mixture with anti-strip agent added.

E. Tack Coat.

Will not be measured separately.

F. Hot Mix Asphalt Pavement Samples.

Will not be individually counted for payment if furnished according to Article 2303.03, D, 4, or required elsewhere in the contract documents,

G. Recycled Asphalt Shingles.

67% of the asphalt binder from RAS which is incorporated into the mixture will be included in the quantity of asphalt binder used.

2303.05 BASIS OF PAYMENT.

The costs of designing, producing, placing, and testing bituminous mixtures and the cost of furnishing and equipping the QM-A field laboratory will not be paid for separately, but are included in the contract unit price for the HMA mixes used. The application of tack coat and sand cover aggregate are incidental and will not be paid for separately. Pollution testing is at the Contractor's expense. The installation of temporary Stop Sign Rumble Strips will not be paid for separately, but is incidental to the price bid for the HMA course for which it is applied.

The quality control requirements for small quantities are incidental to the items of HMA mixtures in the contract.

A. Flexible Paving Mixture.

1. Payment will be the contract unit price for Asphalt Mixture of the type specified per ton or square yard.

2. Payment for test strips will be the contract unit price for the test strip mixture bid item per ton regardless of lift placement.
3. Payment will be adjusted by the following Pay Factor for field voids, laboratory voids, and film thickness determined for the lot.

Multiply the unit price for the HMA bid item by the Pay Factor rounded to three decimal places.

a. Laboratory Voids.

- 1) Payment when PWL is used for acceptance:

PWL	Pay Factor
95.1 – 100.0	PF = 0.006000*PWL + 0.430
80.0 – 95.0	1.000
50.0 – 79.9	PF = 0.008333*PWL + 0.3333
Less than 50.0	0.750 maximum

When PWL is less than 50.0, the Engineer may declare the lot or parts of the lot deficient or unacceptable.

- 2) Payment when PWL lots are incomplete:

AAD from Target Air Void	Pay Factor
0.0 to 1.0	1.000
1.1 to 1.5	0.900
1.6 to 2.0	0.750
Over 2.0	0.500 maximum

When the AAD is more than 2.0, the Engineer may declare the lot or parts of the lot deficient or unacceptable.

- 3) Use the following payment schedule when a test strip is constructed:

AAD from Target Air Void	Pay Factor
0.0 to 1.5	1.000
1.6 to 2.0	PF = 2.5 - AAD
Over 2.0	0.500 maximum

When the AAD is more than 2.0, the Engineer may declare the lot or parts of the lot deficient or unacceptable.

b. Field Voids.

- 1) Payment when PWL is used for acceptance:

PWL	Pay Factor
95.1 – 100.0	PF = 0.008000*PWL + 0.240
80.0 – 95.0	1.000
50.0 – 79.9	PF = 0.008333*PWL + 0.3333
Less than 50.0	0.750 maximum

When PWL is less than 50.0, the Engineer may declare the lot or parts of the lot deficient or unacceptable.

- 2) Payment when a test strip is constructed:

Average Field Voids (Pa), %	Pay Factor
0.0 to 9.0	1.000
9.1 to 9.5	PF = 10 - Pa
Over 9.5	0.500 maximum

When the average air void content from a test strip exceeds 9.5%, the Engineer may declare the lot or parts of the lot deficient or unacceptable.

3) Payment when PWL is not used for acceptance:

Average Field Voids (Pa), %	Pay Factor
0.0 to 8.0	1.000
8.1 to 9.5	PF=(11-Pa)/3
Over 9.5	0.500 maximum

When the average air void content exceeds 9.5%, the Engineer may declare the lot or parts of the lot deficient or unacceptable.

c. **Film Thickness.**

When film thickness is outside the limits in Materials I.M. 510 Appendix A, apply the following pay factor

Placement	Pay Factor	
	(Low Film)	(High Film)
Base/Shoulders	0.85*(LL - FT)	0.85*(FT-UL)
Intermediate	0.80*(LL - FT)	0.80*(FT- UL)
Surface	0.75*(LL - FT)	0.75*(FT- UL)

Where

LL = Lower Limit (Materials I.M. 510, Appendix A)

UL = Upper Limit (Materials I.M. 510, Appendix A)

1. When basis of payment is by area, multiply the pay factor by 0.5.
2. For FT < 7.0 or FT > 16.0, the Engineer may consider the lot defective. This applies to all lots (days) of production.
3. No film thickness price adjustment for the test strip (first day of production, if no test strip performed) for each job mix formula.
4. No film thickness price adjustment on temporary pavement.

d. **Pavement Thickness**

Payment will be further adjusted by the appropriate percentage in Table 2303.05-1 below according to the quality index for thickness determined for that lot:

$$QI_{Thickness} = \frac{\text{Average Thickness}_{Measured} - (\text{Thickness}_{Intended} - 0.5)}{\text{Maximum Thickness}_{Measured} - \text{Minimum Thickness}_{Measured}}$$

Table 2303.05-1: Payment Adjustment for Thickness

Quality Index (Thickness) 8 Samples	Percent of Payment
Greater than 0.34	100
0.14 to 0.34	95
0.00 to 0.13	85
Less than 0.00	75 maximum

4. Payment for courses for which quality index (thickness) is not determined because of size or shape, and courses which are found to be deficient in average width, will be according to Article 1105.04.

B. Asphalt Binder.

1. Payment will be the contract unit price per ton for the number of tons of asphalt binder used in the work.
2. Payment for asphalt binder will be for new asphalt binder, the asphalt binder in the RAP which is incorporated in the mixture, and 67% of the asphalt binder from RAS which is incorporated into the mixture. The quantity of asphalt binder in RAM, which is incorporated into the mix, will be calculated in tons of asphalt binder in the RAM. This will be based on the actual asphalt binder content determined for the mix design from the results of the Engineer's extraction test.

3. When the basis of payment for HMA is in square yards, compensation for asphalt binder will be included in the contract unit price per square yard.

C. Recycled Asphalt Pavement.

RAP owned by the Contracting Authority will be made available to the Contractor for the recycled mixture at no cost to the Contractor other than loading, hauling, and processing as required for incorporation into the mix.

D. Anti-strip Agent.

1. When anti-strip agent is required, the incorporation of the anti-strip agent into the asphalt mixture will be considered as extra work ordered by the Engineer if the Contracting Authority's test results from the field produced mixture meet or exceed the minimum requirement established in Article 2303.02, E, 2, d . Payment will be made at the rate of \$2.00 per ton of asphalt mixture in which the anti-strip agent is incorporated.
2. Payment will be full compensation for designing, adding, and testing for anti-strip agent.

E. Tack Coat.

Incidental to HMA.

G. Hot Mix Asphalt Pavement Samples.

1. Payment will be the lump sum contract price.
2. Payment is full compensation for furnishing all samples for all courses or items of work, and for delivery of samples as specified in Article 2303.03, D, 4.

Section 2304

2304.02, A, PCC Option.

Replace the title and Add the Article:

A. PCC Portland Cement Concrete Option.

3. For detour pavement left in place, meet requirements of Section 2301 for Class C PCC Pavement. Use Class 3 durability aggregate, or better, as defined in Article 4115.04.

2304.02, B, HMA Option.

Replace the title and Article:

B. HMA Hot Mix Asphalt Option.

Design a mixture per Materials I.M. 510 for the following:

1. For detour pavement carrying less than 10,000,000 total 20-year ESALs, use HMA 1,000,000 ESAL surface or intermediate course, 1/2 inch or 3/4 inch, with PG 64-22 asphalt binder. For detour pavements or median crossovers on interstates and multi-lane primary highways, use a 40,000,000 ESAL High Traffic (HT) surface or intermediate mixture, with PG 64-22S asphalt binder. The surface lift requires L-4 friction aggregate.
2. For detour pavement carrying more than 10,000,000 total 20-year ESALs, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch, with PG 64-22 asphalt binder. For detour pavements on all other primary highways, use a 3,000,000 ESAL High Traffic (HT) surface or intermediate mixture with a PG 64-22S asphalt binder.
3. For median crossovers, use HMA 10,000,000 ESAL surface or intermediate course, 3/4 inch, with PG 64-22 asphalt binder. Apply compaction per Section 2303. The surface lift requires L-4 friction aggregate. For detour pavements on non-primary projects use a 4,000,000 ESAL Standard Traffic (ST) surface or intermediate mixture with a PG 64-22S asphalt binder.

2304.03, A, 2.**Replace** the Article:

Do not apply Articles 2301.03, H, 2; 3; and 4, b, unless stated otherwise in the contract documents.

2304.03, B, HMA Option.**Replace** the Article:

Meet the requirements of ~~Section~~ Article 2303.03, E.

Section 2310**2310.02, B, Hot Mix Asphalt Stress Relief Course.****Replace** Articles 2 and 3:

2. Use PG 58-28S asphalt binder.
3. Use a mixture meeting the following:
 - a. ~~300,000 ESAL~~ Standard Traffic (ST), 3/8 inch HMA mix requirements.
 - b. Target air voids of 3.0%.
 - c. No maximum film thickness restriction and no minimum filler/bitumen ratio restriction.
 - d. Type B Aggregate (or better) with no percent crushed particle requirements and gradation falling below the restricted zone.

Section 2316**2316.02, A, 6, b.****Replace** the Article:

For through traffic lanes wider than 8.5 feet which requires matching the surface of the new pavement to the surface of an existing old pavement, the price reduction tables for Schedule A and B will be replaced by Schedule C. When the Profile Index is greater than 7.0 inches for schedule A segments or 22.0 inches per mile for Schedule B segments, calculate an Average Base Index (ABI) ~~will be calculated~~ for each segment as shown in Table 2316.02-1 ~~on lanes wider than 8.5 feet. This will be the smoothness base in inches per mile for payment for the new pavement unless specified otherwise. The requirements are shown in Schedule C.~~

2316.02, B, 2, c.**Replace** the Article:

~~Testing will be done at the quarter point of the traffic lanes~~ Determine pavement profiles for each lane according to procedures for one lane, as shown in Materials I.M. 341 except for main line traffic lanes which will be tested in the wheel paths. Round trace scallops to nearest 0.01 inch. Wheel paths are defined as 3 feet and 9 feet from center line or lane line. Average the two wheel path profile indexes for each segment. For projects with less than 0.5 miles of mainline paving, Contractor may elect to determine pavement profile in the quarter point unless another location is specified in the contract documents.

Section 2318**2318.02, A, 2.****Replace** the first two sentences:

Foamed Asphalt using PG 52-34S ~~or PG 46-34~~ asphalt binder meeting the requirements of Section 4137 may be used on Interstate, Primary, Secondary, and local projects. For projects using PG 52-34S as the cold in-place stabilizing agent, meet the following requirements:

2318.03, A, 1.**Replace** the third and fourth bullets:

- Producing the properly sized RAP ~~or additional screening.~~
- ~~Crushing the RAP.~~ Additional screening and/or crushing is allowed to produce properly sized RAP.

Section 2320

2320.02, A, 1.

Replace the Article:

Use a blend of emulsified quick-set polymer-modified CSS-1H or CQS-1H asphalt and latex-based polymer.

2320.02, B, Aggregate.

Replace the Article:

1. Use mineral aggregate composed of a combination of crushed stone and mineral filler meeting the following requirements based on the friction classification specified in the contract documents. Aggregate source frictional classifications can be found in Materials I.M. T-203.

a. Friction Classification L-2.

Use Friction Type 2 crushed stone (for non-Interstate mixes steel slag may also be used) complying with the following:

1) Table 4124.03-1 with the following exceptions:

- Maximum abrasion loss of 30%, and
- Sand equivalence of not less than 60.

2) Objectionable materials limits in Table 2320.02-01.

b. Friction Classification L-4.

Use Friction Type 4 or better crushed stone complying with the following:

1) Table 4124.03-1, and

2) Objectionable materials limits in Table 2320.02-01.

c. No Special Friction Requirement.

Use Friction Type 5 or better crushed stone complying with the following:

1) Table 4124.03-1, and

2) Objectionable materials limits in Table 2320.02-01.

Table 2320.02-01: Maximum Permissible Amounts of Objectionable Material

Objectionable Materials	Maximum Percent Allowed	Test Method
Unsound chert particles retained on No. 4 sieve	0.5	Materials I.M. 372
Total of all unsound chert, shale, coal, and iron combined	1.0	Materials I.M. 372
Clay Lumps/Friable Particles	0.5	Materials I.M. 368
Organic Materials, except coal	0.1	Iowa DOT Materials Laboratory Test Method No. 215

2. The job mix (target) gradation within the gradation band specified below. The percent passing shall not go from the high end to the low end of the range for any two consecutive screens.

Table 2320.02-2: Job Mix (Target) Gradation

	Sieve Size - Percent Passing							
	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
Quartzite/Granite/Slag	100	90-100	65-90	45-70	30-50	18-30	10-21	5-15
Limestone/Dolomite	100	70-90	45-70	25-50	15-35	10-25	5-20	5-15

Meet the requirements of Section 4126.

2320.03, A, Equipment.

Add the Article and renumber following Articles:

1. Machinery.

a. Self-propelled Machine.

Use a spreading machine designed and manufactured to perform microsurfacing work, including prewetting the surface. To mix the material, use an automatic sequenced, self-propelled microsurfacing mixing machine, able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral filler, control setting additive and water to a revolving multi-blade double shafted

mixer, and discharge the mixed product on a continuous flow basis. Use a mixing machine with sufficient storage capacity for aggregate, emulsified asphalt, mineral filler, control additive and water to ensure a constant flow of a homogeneous slurry mixture.

b. Truck-mounted Machines.

- 1) Use truck-mounted machines specifically designed and manufactured to perform microsurfacing work. The machine shall supply a consistent amount of material to all parts of the spreader box to ensure complete and uniform coverage.
 - 2) Operate a minimum of two truck-mounted machines. Cycle these truck-mounted units so mixture production is never delayed more than 15 minutes. Control forward speed of truck in a manner resulting in a uniform spread rate of material. If there is noncompliance with these requirements, stop production and make appropriate adjustments to the operation.
 - 3) Finished surface, joints, and edges shall meet the requirements of Article 2320.03, F. If there is noncompliance with these requirements, stop production and make corrections to affected areas. The Engineer may require a second lift, to correct widespread segregation or variations in the spread rate, at no additional cost to the Contracting Authority.
2. Use a screening unit to remove objectionable oversize material that may be encountered. Screen material before loading the mixing machine and/or weighing for payment.
 3. Use equipment providing individual volume or weight controls for proportioning each material to be added to the mix. Calibrate and properly mark each material control device.
 4. Equip the aggregate feed to the mixer with a revolution counter or similar device so that the amount of aggregate used may be determined at any time.
 5. Use equipment with a positive displacement type emulsion pump equipped with a revolution counter or similar device so that the amount of emulsion used may be determined at any time.
 6. Use a mixing machine equipped with a pressurized water system and a nozzle-type spray bar to provide water spray to the roadway surface immediately ahead of and outside the spreader box.
 7. Use a mixing machine equipped with fines feeder that delivers a uniform, positive, accurately-metered, predetermined amount of mineral filler at the same time and location that the aggregate is fed.
 8. Calibrate the mixing unit in the presence of the Engineer prior to the start of construction.
 9. Provide nurse trucks to ensure that legal axle loads are maintained and a steady rate of progress in the laying of the microsurfacing is made.

Division 24. Structures.

Section 2401

2401.03, A, Notification for Complete Removal of Bridges.

Replace the Article:

1. Notify the Iowa DNR ~~by mail and the Engineer~~, with the "Asbestos Notification of Bridge Demolition and Renovation" form, no less than 10 business days prior to the start of bridge demolition. Iowa DNR form is available at <http://www.iowadnr.gov/Environmental-Protection/Air-Quality/Asbestos-Training-Fires>. Provide a copy of the submitted form to the Engineer.
2. If unable to begin work on the original intended start date, notify the Iowa DNR and the Engineer, by sending a revised "Asbestos Notification of Bridge Demolition and Renovation" form, of the new intended start date. Provide notification of the inability to commence work on the intended start date no later than 1 business day prior to the original intended start date. Failure to notify the Engineer of a change in start date 1 business day prior to the original intended start date will result in the need for a new 10 business day notification to the Iowa DNR and the Engineer.
3. The Contracting Authority has inspected the existing bridge for asbestos. Unless otherwise indicated in the contract documents, no asbestos was found, or it has been removed prior to the letting. The

Contractor may use this information to complete the "Asbestos Notification of Bridge Demolition and Renovation" form.

2401.05, Basis of Payment.

Add the Article:

- C. Payment for Removal of Existing Bridge is full compensation for submittal of Asbestos Notification of Bridge Demolition form(s) and associated fees to Iowa DNR, removal of bridge according to contract documents, and transporting and disposal of materials.

Section 2402

2402.03, Construction.

Add the Article and renumber existing Article:

J. Backfilling and Compaction of Pipe and Reinforced Box Culverts by Flooding.

1. Use floodable backfill material meeting the requirements of Section 4134. When required, use porous backfill material meeting the requirements of Section 4131.
2. When shown in the contract documents, use perforated subdrain meeting requirements of Section 4143.
3. When backfilling and compaction by flooding is required, backfill may be placed in lifts up to 2 feet thick. Place backfill simultaneously on both sides of culvert. Determine if pipe culverts need to be restrained and take appropriate actions to prevent floating of culverts during backfilling, flooding, and compaction.
4. Begin surface flooding for each lift at the inlet end of the culvert and progress to the outlet. To ensure uniform surface flooding and adequate compaction, fan-spray water in successive 6 to 8 foot increments using a 2 inch diameter hose for three minutes within each increment. Run hose fully, but with water pressure low enough to avoid eroding cohesive soil plugs.
5. After flooding, evaluate effectiveness of compaction with a vibratory pan compactor. If pan compactor produces visible compaction, repeat flooding process until pan compactor produces no visible compaction.

↓ K. Classification of Excavation.

2402.04, B, 4.

Replace the first sentence:

For cast-in-place culverts, the amount of excavation measured for payment will be computed from an excavation centered on the center line of the culvert, to the required depth, length, and a width \geq 4 feet greater than the inside width of the culvert.

2402.04, Method of Measurement.

Add the Article:

I. Flooded Backfill.

Quantity of Flooded Backfill, in cubic yards, will be the quantity shown in the contract documents, including pipe culverts installed by fill installation. Quantity measured for payment will not be adjusted unless the quantity of culvert installed is adjusted.

2402.05, Basis of Payment.

Add the Article:

J. Flooded Backfill.

Contractor will be paid contract unit price for Flooded Backfill per cubic yard. Backfill material subdrains, restraining culverts against floating, and water required for flooding will not be measured separately for payment, but will be considered incidental to the contract unit price bid for Flooded Backfill.

Section 2403**2403.03, F, 5, e.**

Replace the first sentence:

If all concrete is at least 1 foot below ground water level, it may be placed at a temperature no less than 40°F and flooded to a minimum depth of 1 foot in lieu of other methods of protection and curing provided the water temperature is 50°F or greater.

Section 2404**2404.03, E.**

Replace the Article:

Hold epoxy coated reinforcing steel in place with epoxy coated steel or plastic coated bar supports, and epoxy or plastic coated tie wires.

Section 2405**2405.03, H, 2, Bridge Bearings.**

Add the Article:

c. Nut Tightening.

Tighten nuts to snug tight condition. Snug tight is defined as the full effort of one person on a wrench with a length equal to 14 times the bolt diameter, but not less than 18 inches. Apply full effort as close to the end of the wrench as possible. Perform tightening by leaning back and using entire body weight to pull firmly on the end of the wrench until the nut stops rotating. Perform a minimum of two separate passes of tightening. Sequence tightening in each pass so the nut on the opposite side, to the extent possible, is subsequently tightened until all nuts in that pass have been tightened.

Section 2408**2408.02, Materials Requirements, Identification, and Fabrication.**

Replace the second sentence of the first paragraph:

All main member fabrication, except bearing devices, shall be fabricated by plants certified as ~~Category III, Major Steel Bridges, under the provisions of~~ Simple, Intermediate, or Advanced Bridges according to the AISC's Quality-Certification Program for Steel Bridge Fabricators. AISC categories are defined as follows:

- Simple bridges consist of unspliced rolled sections with no radius in the section.
- Intermediate bridges are typical bridges not requiring extraordinary measures. Typical examples include: (1) a rolled beam bridge with field or shop splices, either straight or with a radius over 500 feet; (2) a built up I-shaped plate girder bridge with constant web depth (except for dapped ends), with or without splices, either straight or with a radius over 500 feet; (3) a built-up I-shaped plate girder with variable web depth (e.g., haunched), either straight or with a radius over 1000 feet; (4) a truss with a length of 200 feet or less that is entirely or substantially pre-assembled at the certified facility and shipped in no more than three sub-assemblies.
- Advanced bridges require an additional standard of care in fabrication and erection, particularly with regard to geometric tolerances. Examples include tub or trapezoidal box girders, closed box girders, large or non-preassembled trusses, arches, bascule bridges, cable-supported bridges, moveable bridges, and bridges with a particularly tight curve radius.

Certification in a higher category qualifies all lower categories.

2408.03, B, Welding.

Replace the Article:

1. Current AWS standards in effect at the time of letting are applicable.
2. Comply with ANSI/AWS D1.1 Structural Welding Code procedures and requirements for the following items, except comply with AASHTO/AWS D1.5-02 as modified below for filler metal and welder qualification requirements.
 - a. Bridge Components and Miscellaneous Items. This includes bearing assemblies, sole plates, expansion joint devices, pile and appurtenances, drainage system components, guardrail connections, metal railing, chain link enclosures and wire fence components, conduit systems, and tread plates.
 - b. Traffic Signal Components.
 - c. Sign Support Components.
 - d. Lighting Structure Components.
 - e. Pre-Engineered Pedestrian Bridges.
3. Comply with AASHTO/AWS D1.5-02, as modified by this specification, for welding and fabricating steel structures.
4. Each of the modifications in this article is referenced by the appropriate paragraph number in AASHTO/AWS D1.5-02, to which it is a modification.

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SECTION 1. General Provisions

1.3 Welding Processes

ADD the following Paragraphs after the existing 1.3.1:

1.3.1.1 Welding of main members and welding of attachments thereto shall be performed using only shielded metal arc, flux cored arc, submerged arc, and/or stud welding processes. Unless otherwise approved by the Engineer, all welding of butt splices and flange to web welds and stiffeners to web welds

shall be done using the submerged arc process. Shielded metal arc welding may be used for repairs to butt splices and flange to web welds.

1.3.1.2 The WPS shall be initialed by the welder and posted at the welder's workstation at all times during welding operations.

REPLACE Paragraph 1.3.2 with the following:

Electroslag (ESW) and electrogas (EGW) welding are specifically disapproved for use.

SECTION 3. Workmanship

3.2 Preparation of Base Metal

ADD the following paragraph before the existing first Paragraph 3.2.2:

For main members, thermal cutting is limited to oxygen cutting except that plasma arc cutting of web and stiffeners may be used when approved by the Engineer.

DELETE the last sentence of Paragraph 3.2.7 which reads "Excess Camber may be corrected by heating without the engineer's approval."

3.5 Dimensional Tolerances

REPLACE all of the text and tables of Paragraph 3.5.1.3 with the following:

Camber of main members of continuous or simple span bridges with lines composed of rolled beams, beams and girders, or girders, shall be fabricated so that when the members are assembled in laydown with bearing points accurately positioned as shown on the erection diagram, points on any member shall not vary in the offset position from that indicated in the erection diagram by more than $\pm 1/2$ inch.

The erection diagram on the shop drawings shall show camber offsets at bearing points and splice points, and at midpoints of individually cambered beams or girders.

REPLACE Paragraph 3.5.1.4 with the following:

Permissible variation in specified sweep for horizontally curved welded beams or girders is

$$\frac{\pm 1/8 \text{ in.} \times \text{No. of ft. of total length}}{10} \quad (\pm 1 \text{ mm/m of the total length})$$

provided the member has sufficient lateral flexibility to permit the attachment of diaphragms, cross-frames, lateral bracing, etc., without damaging the structural member or its attachments.

REPLACE Paragraph 3.5.1.14 with the following:

Mechanically connected joints and splices of main members with surfaces intended to be parallel planes shall be nearly parallel after connection, and the surfaces to be in contact shall have an offset no greater than 1/16 inch after all filler plates have been added, if any. The accuracy of the angle of connecting stiffeners, angles, or plates shall be ± 0.5 degrees, when measured at the hole locations.

3.7 Repairs

REPLACE Paragraph 3.7.4 with the following:

Prior approval of the Engineer shall be obtained for repairs to base metal, repair of major or delayed cracks, or for a revised design to compensate for deficiencies.

ADD the following paragraph before the existing Paragraph 3.7.7:

The approval of the Engineer is required for all corrections of mislocated holes.

ADD the following Paragraph after the existing 3.7.7:

3.7.8 The maximum number of repairs to unacceptable defects in a butt splice shall be three, i.e., the times a butt splice may be opened, welded closed, and resubmitted for NDT inspection, unless otherwise approved by the Engineer.

SECTION 5. Qualifications

Part A. General Requirements

5.2 Qualification Responsibility

REPLACE ~~ADD the following paragraph after the first paragraph of~~ Paragraph 5.2 ~~with the following:~~

To qualify welding procedures, the Contractor shall produce test weldments, perform nondestructive testing and machine specimens for mechanical testing in accordance with this code. ~~The Contracting Authority will witness the production of test weldments and conduct mechanical tests.~~

Part B. Welder, Welding Operator, and Tack Welder Qualification

5.21 General Requirements

REPLACE Paragraph 5.21.4 with the following:

Shop welder's, welding operator's, or tack welders qualification herein specified shall be considered as remaining in effect from the end of the month in which the tests were taken, for a period of 1 year. The qualification for the above may be extended annually, based on a letter from the fabricator/Contractor certifying that they have been engaged in the process(es) for which they qualified without interruption of more than 6 months during the preceding twelve months, or by requalification.

Field welder's qualification herein specified will be considered as remaining in effect from the end of the month in which the test was taken, for a period of ~~4~~ 3 years. ~~For field welders who have successfully passed their qualification tests without failure for 3 consecutive years, requalification will only be required every 2 years. Requalification may be required at any time there is a specific reason to question a welder's ability to make sound welds.~~

5.21.6 Responsibility

REPLACE Paragraph 5.21.6.1 with the following:

To qualify shop welders, welding operators, and tackers, the Contractor shall ~~furnish test weldments, and perform nondestructive testing in accordance with this code. The Contracting Authority shall witness the production of test weldments and conduct mechanical tests. The Contractor may, at no additional cost to the Contracting Authority, engage an outside firm or agency to witness production of test weldments and conduct mechanical tests. The acceptance of work performed by an outside firm or agency is the prerogative of the Contracting Authority. The engineer may require recertification if there is specific reason to question the welder's ability.~~

Field welders shall be certified by a test facility with an accredited AWS Certified Welder Program as defined in the current AWS Standard QC 4. Welders shall be certified per the current QC 7 Standard for AWS Certified Welders. The code of acceptance shall be AWS Bridge Welding Code D1.5. Certification maintenance per applicable AWS Code of Acceptance shall be the responsibility of the certification holder. A copy of the current welder's certification from the AWS test facility shall be available to the Engineer upon request. The Engineer may require recertification if there is specific reason to question the welder's ability.

5.23 Qualification Tests Required

ADD Subparagraph 5.23.1 (5) after the existing 5.23.1 (4):

Plate weld tests may also be accepted for qualification of welding pipe piling of any diameter.

REPLACE Paragraph 5.23.3 with the following:

Tack Welder Qualification. A tack welder shall be qualified by fillet-weld-break specimen made using the same criteria as listed for plate-fillet welder qualification in Table ~~5.6~~ 5.8. The tack welder shall make a 1/4 inch maximum size tack weld approximately 2 inches long on the fillet-weld-break specimen, as shown in Fig. 5.28.

SECTION 6. Inspection

Part A. General Requirements

6.7 Nondestructive Testing

REPLACE Subparagraph 6.7.1.2(1) with the following:

100% of each joint subject to tension or reversals of stress, except that on vertical butt weld splices in beam or girder webs, only 1/3 of the web depth beginning at the point, or points, or maximum tension need be tested. If unacceptable discontinuities are found in the first 1/3, the remainder of the weld shall be tested.

REPLACE Subparagraph 6.7.1.2(2) with the following:

50% of each joint subject to compression or shear in each main member including longitudinal butt weld splices in beam or girder webs. If unacceptable discontinuities are found in the first 50% of joint, the entire length shall be tested.

Part B. Radiographic Testing of Groove Welds in Butt Joints

6.10 Radiographic Procedure

ADD the following Paragraph after existing 6.10.5.3:

6.10.5.4 Where areas being radiographed are adjacent to the edge of the plate, edge block shall be used.

6.12 Examination, Report, and Disposition of Radiographs

REPLACE Paragraph 6.12.3 with the following:

Two sets of radiographs shall be taken for welds subject to radiographic testing, including any that show unacceptable quality prior to repair. One radiograph of each test shall, upon completion of Q.C. and Q. A. interpretation, be forwarded to the Office of Materials, Ames, Iowa. The second set of radiographs shall be retained by the Contractor as part of on-site inspection records. Upon completion of the project, this second set will become the property of the Contractor.

Section 2412

2412.02, Materials.

Add the Article:

- G.** Meet requirements of Article 2403.02, B, 3 for entrained air content. When concrete is placed by pumping, use a target value of 7.0% plus or minus 2.0%.

2412.03, C, Placing Concrete.

Add the Article:

5. Concrete placement equipment proposed to be operated directly on bridge deck reinforcing steel shall be submitted to the Engineer with manufacturer's specifications for review/approval prior to use in concrete placement. Requests may require closer spacing of reinforcing bar supports and tying of all reinforcing bar intersections.

2412.03, E, Curing Concrete Decks.

Replace the first paragraph:

Use burlap ~~with sufficient water~~ that is prewetted by fully saturating, stockpiling to drain, and covering with plastic to maintain wetness prior to placement, ~~to prevent absorption of moisture from the concrete surface.~~
~~Keep the burlap wet.~~

2412.03, E, 2.

Replace the Article:

As soon as practical, but no later than 2 hours after placing the first layer, place a second layer of prewetted burlap on the deck.

Section 2413

2413.02, D, 1, b.

Replace the Article:

Fly ash substitution up to 20% is ~~not~~ permitted for Class O PCC. The proportions for Class O mix with fly ash are in Materials I.M. 529.

2413.03, C, Preparation of Surface for Deck Repair.

Add to the end of the first paragraph:

Deck repairs on concrete beam and steel girder bridges have no removal area restrictions. Deck repairs on continuous concrete slab bridges shall not extend below top mat of deck reinforcing without review and approval of the Engineer.

2413.03, F, Curing.

Replace the Article:

Use burlap that is prewetted by fully saturating, stockpiling to drain, and covering with plastic to maintain wetness prior to placement.

1. Place a single layer of prewetted burlap on the concrete as follows:
 - a. **Interstate and Primary Projects.**
Place within 10 minutes after finishing. If Class O PCC is revibrated because of failure to meet density requirements with initial vibration, place the prewetted burlap within 10 minutes after finishing of the revibrated area.
 - b. **Other Projects.**
Immediately after final finishing, cover the area finished with white pigmented curing compound meeting the requirements of Article 4105.05, applied at a rate of no more than 135 square feet per gallon (3.3 square meters per liter). Place the prewetted burlap on the concrete within 30 minutes after the concrete has been deposited on the deck. If Class O PCC is revibrated because of failure to meet density requirements with initial vibration, this time limit will be extended by 15 minutes.
 - c. Failure to apply prewetted burlap within the required time is cause for rejecting the affected work. Remove surface concrete in the rejected area and replace at no additional cost to the Contracting Authority.
- ~~2. Cure the concrete as follows:

 - a. ~~For Class O PCC or Class HPC O:~~
 - 1) ~~Allow the surface to cure for at least 72 hours.~~~~

- ~~2) Keep the burlap continuously wet by means of an automatic sprinkling or wetting system.~~
 - ~~3) Failure to apply wet burlap within the required time is cause for rejecting the affected work. Remove the surface concrete in the rejected area and replace at no additional cost to the Contracting Authority.~~
 - ~~b. Prewet the burlap with sufficient water, prior to placement, to prevent absorption of moisture from the concrete surface.~~
2. Apply water to the burlap covering for a period of 72 hours. Use a pressure sprinkling system that is effective in keeping burlap wet during the moist curing period. The system may be interrupted to replenish water supply, during periods of natural moisture, or during construction contiguous to the concrete being cured. The Engineer may approve interruptions for periods longer than 4 hours on the basis of the method for keeping the concrete moist.
 3. Maintain continuous contact, except as noted above, between all parts of the concrete deck and the burlap during the 72 hour moist curing period.

2413.03, H, 10.

Replace the first sentence:

Do not allow traffic on a finished surface course until 72 hours after placement ~~or 168 hours for Class HPC-O projects with greater than 1800 square yards.~~

Section 2416

2416.03, A.

Replace Table 2416.03-1:

Table 2416.03-1: Minimum and Maximum Allowable Pipe Sizes

Culvert Use	Minimum Pipe Size in.	Maximum Pipe Size in.
Roadway Culvert	18	108
Entrance Culvert	18*	108

* 15 inch entrance pipes allowed on non-interstate and non-primary roadways.

2416.03, D, 2, a, 1, Class B Bedding.

Replace the Article:

~~Class B bedding consists of a 2 inch cushion of sand shaped with a template to a concave saddle in compacted or natural earth to such a depth that 15% of the height of the pipe rests on the sand cushion below the adjacent ground line. Place Class B Bedding as shown in the contract documents.~~

2416.03, D, 4, d.

Add as the last sentence of the Article:

If backfilling and compaction by flooding is specified, comply with Article 2402.03, J.

2416.04, B.

Replace the Article:

Aprons: ~~quantity shown in the contract documents~~ each apron installed will be counted for each size class.

Section 2417

2417.03, A, 1.

Replace Table 2417.03-1:

Table 2417.03-1: Minimum Allowable Pipe Sizes

Culvert Use	Minimum Pipe Size in.
Roadway Culvert	18

Entrance Culvert	18*
------------------	-----

* 15 inch entrance pipes allowed on non-interstate and non-primary roadways.

2417.03, C, 1, Class B Bedding.

Replace the Article:

When installing corrugated metal pipe or polyethylene pipe for roadway culverts, ~~use Class B Bedding described in Article 2416.03, D, 2~~ place Class B Bedding as shown in the contract documents.

2417.04, B.

Replace the Article:

Aprons: ~~quantity shown in the contract documents~~ each apron installed will be counted for each size class.

2417.04, D, 1.

Replace the Article:

Roadway culverts: Article 2402.04, ~~E~~ C, applies.

Section 2418

2418.01, Description.

Replace the second sentence:

Temporary stream diversion involves diverting flow of a ~~perennial~~ stream around the construction site by use of ~~either~~ a diversion channel, pipe, or hose.

Section 2419

2419.01, E.

Add to the end of the Article:

Section 2523: Highway Lighting

Section 2426

2426.02, B, 2, Regular Repair.

Add as the second sentence:

Materials I.M. 447 provides for use of packaged, dry, combined materials for Class O PC concrete.

Section 2428

2428.04, B, 1.

Add to the end of the Article:

When the Engineer requires correction of a dip by grinding, and grinding would result in a cover concrete thickness less than 2 inches, use the following method to correct the dip:

- Identify limits of dip area,
- Saw cut 3/4 inches deep at the perimeter,
- Remove deck concrete to 1 inch below top mat of deck reinforcing, and
- Place a deck overlay patch in accordance with Articles 2413.03, D; E, 2 & 3; F; G; and H.

2428.05, B, 3.

Replace Table 2428.05-2:

Table 2428.05-2: Price Reduction

New Bridge Decks		Bridge Deck Overlays	
Initial Profile Index Inches Per Mile (mm/km) Per Segment	Dollars Per Segment	Initial Profile Index Inches Per Mile (mm/km) Per Segment	Dollars Per Segment
22.1 - 30.0 (351 - 470)	2000	15.1 - 20.0 (241 - 315)	1000
30.1 - 35.0 (471 - 550)	4000	20.1 - 25.0 (316 - 390)	2000
35.1 - 40.0 (551-630)	6000	25.1 - 30.0 (391 - 470)	3000
over 40.0 (over 630)	^(a)	over 30.0 (over 470)	^(a)
^(a) Correction is required to an index of 15.0 inches per mile (240 mm/km) for overlays and to an index of 22.0 inches per mile (350 mm/km) for new decks.			

Section 2433

2433.03, L, 1, b, 4.

Add to the end of the Article:

Concrete strength will be determined based on a cylinder test the day of the load cell test.

Section 2435

2435.03, A, 9, Adjustment Ring(s).

Replace the second sentence:

Bed each polyethylene or expanded polypropylene ring with the manufacturer's approved product and according to manufacturer's recommended installation procedure.

2435.03, A, 11, Infiltration Barrier.

Add the Article:

c. Heat Shrink Sleeve.

- 1) Ensure surfaces are clean, dry, and free of foreign objects and sharp edges.
- 2) Warm surface to drive off any moisture.
- 3) Cut sleeve to required length per manufacturer's requirements.
- 4) Apply primer to manhole and casting surface.
- 5) Place sleeve according to manufacturer's requirements.
- 6) Apply heat to sleeve, smooth out wrinkles, and remove trapped air.
- 7) Cut sleeve at the casting gussets. Reheat to place sleeve onto the casting.
- 8) Trim off excess material.

Division 25. Miscellaneous Construction.

Section 2502

2502.03, A, 8.

Replace the second and third sentences:

Drive the posts 3 feet into the ground and install 4 foot plastic sleeves over the posts. If plastic sleeves are furnished by the Contracting Authority furnish sleeves, install the sleeves they furnish over posts.

2502.03, C, 10.**Replace** the Article:

Use trench rollers with a minimum trench wheel weight of 6000 pounds or a vibratory compactor wheel.

Section 2503**2503.01, Description.****Add** the Article:

F. Low clearance pipe is defined as either arch or elliptical pipe. Unless specified otherwise, Contractor may supply either pipe shape when low clearance pipe is specified.

2503.03, D, 2, Reinforced Concrete Pipe, Reinforced Concrete Arch Pipe, and Reinforced Concrete Elliptical Pipe.**Replace** the Article:

- ~~a. Use cold applied bituminous or rubber rope gasket jointing materials unless specified otherwise.~~
 - ~~1) Apply joint material to entire tongue, or to top half of tongue and bottom half of groove, in sufficient quantity to fill the joint. Close the joint between pipes.~~
 - ~~2) Fill remaining voids in the joint, both inside and outside of pipe, with joint material. Smooth the joint material on the inside of pipes 24 inches and larger.~~
- b. If a rubber O-ring or profile gasket is specified for RCP, coat the rubber gasket and joint with soap based lubricant immediately prior to closing the joint.
- ~~c. If wrapped pipe joint is specified, c~~ **a.** Comply with the contract documents Standard Road Plan SW-211 for pipe joint wrapping. Secure engineering fabric in place to prevent displacement while placing backfill material.
- ~~d c.~~ **c.** Place pipe such that joint openings on the outside or inside of the pipe do not exceed 1/8 inch at the bottom and 5/8 inch at the top.

Section 2504**2504.03, D, Gravity Main Pipe Jointing.****Renumber** Article 5 and **Add** the Article:**5. Polypropylene Pipe.**

Coat gasket and bell with lubricant immediately prior to closing joint.

5 6. Connections between Dissimilar Pipes.

- a. Use manufactured adapters or couplings approved by the Engineer.
- b. Where adapters or couplings are not available, the Engineer may authorize use of a Type PC-2 concrete collar as shown in the contract documents.

Section 2511**2511.02, B, Hot Mix Asphalt.****Replace** the Article:

- 1. For sidewalks and recreational trails not adjacent to pavement, use ~~400,000 ESAL~~ Standard Traffic (ST), 3/8 inch HMA, according to Section 2303.
- 2. When the recreational trail or sidewalk is adjacent to the pavement and also functions as the pavement shoulder, use ~~4,000,000 ESAL~~ Standard Traffic (ST), 1/2 inch base mixture.
- 3. Use PG 58-28S or ~~PG 52-34~~ Performance Grade binder as specified in the plans.

Section 2512

2512.03, C, 3.

Replace the Article:

Place forms in a manner that ensures the top face of forms curb does not vary from a true plane by more than 1/8 inch in 10 feet. Ensure the upstanding face, ~~including any extension,~~ does not vary from a true plane by more than 1/4 inch in 10 feet. Remove forms that are bent, twisted, warped, broken, or battered from the work. Allow Engineer to inspect and approve repaired forms before using.

Section 2513

2513.02, Materials.

Add the Article:

G. Micro Fibers.

Use 100% virgin polypropylene, fibrillated fibers complying with Materials I.M. 491.27.

2513.03, A, 2, b, 2.

Replace the Article:

Aggregates for Class BR. Use a well graded combination of aggregates complying with Materials I.M. 532 in Zone II-A or II-B. Meet requirements in Division 41 for each individual aggregate used.

2513.03, A, 2, b, 4.

Add to the end of the Article:

Target air may be adjusted by the Engineer based on random tests of consolidated concrete behind slip form machine. These additional random tests will be used to consider the need for a target change, and will not be used in the acceptance decision.

2513.03, A, 2, b.

Add the Article:

5) Micro Fibers. For slip form, Contractor may use synthetic fibers at an addition rate and using batching recommendations provided by manufacturer.

Section 2517

2517.02, B, HMA Paving Projects.

Replace the title and Article:

B. HMA Hot Mix Asphalt Paving Projects.

Use an High Traffic (HT) HMA surface mixture ~~that is one mix level above the approaching surface course.~~ Use asphalt binder meeting or exceeding PG 64-22S ~~asphalt binder.~~

Section 2522

2522.03, G, 1, a.

Replace the Article:

Ensure the luminaire frame and head frame assembly meet the requirements of ASTM A 709 Grade 50 36. For the purpose of Charpy V-notch toughness requirements, all steel ~~required to be ASTM A 709 Grade 50~~ used for the luminaire frame and head frame assembly shall meet impact requirements specified in Article 4152.02. Miscellaneous appurtenant steel components may be constructed using ASTM A 709 Grade 36 steel. Ensure all steel and the head frame dome are galvanized. Alternately, in a two cable lift system, the luminaire frame, head frame and miscellaneous appurtenant steel components will all be fabricated from ASTM A 240 Type 201LN stainless steel.

Section 2523

2523.02, B.

Replace the Article:

Use cast-in-place concrete meeting the requirements of Section 2403 or precast materials meeting Section 2419.

2523.03, G, Foundations.

Replace the Article:

1. Construct cast-in-place concrete foundations for all lighting units not located on structures or barriers. Form and pour the top portion of all foundations in form work to at least 6 inches below the finished ground level. Precast foundations may be installed if allowed by the Engineer.
2. Ensure foundations conform to the details, including reinforcement and alignment to provide the correct overhang, as indicated in the contract documents. Ensure maximum exposed concrete above finished grade does not exceed 4 inches on all sides of finished foundation.
- 2 3. Ensure finished surfaces are smooth and free from stains and foreign material.
- 3 4. Construct or install an alternate foundation, as directed by the Engineer, when shale, sandstone, broken or shattered rock, solid rock, or other similar materials are encountered.
- 4 5. Place anchor bolts to provide for placement of nuts and washers on the top and bottom of the transformer base or pole flange, leaving ample room for adjustment and plumbing the pole. When slip bases are used, position anchor bolts so that they do not interfere with the operation of the slip base. Place anchor bolts according to Article 2405.03, H, 3.
6. When precast foundations are used, drill the hole a minimum 1 foot larger than the diameter of the foundation. Leave bottom of hole as undisturbed as possible. If caving soil or groundwater is present, remove prior to placing foundation. Place backfill consisting of Class B concrete.

Section 2524

2524.03, A, 1, b.

Replace the Article:

All traffic signs, except ~~milepost markers~~ reference location signs and 6 inch by 6 inch route markers, are classified into two groups, Types A and B, as indicated in the contract documents.

2524.03, A, 2, Milepost Markers.

Replace the title and Article:

~~Milepost Markers~~ Reference Location Signs.

- a. Comply with the following:
 - Green reflectorized sheeting on flat aluminum or galvanized steel sheets as for Type A signs.
 - Reflectorized white message applied directly to the face material.
 - Dimensions as specified in the contract documents.
- b. Mount ~~milepost markers~~ reference location signs on posts of the type specified for delineators.

2524.03, A, 4, b.

Replace the Article:

Mount above ~~milepost markers~~ reference location signs on the same delineator post.

2524.03, B, Erection of Signs, Reference Location Signs, and 6 Inch by 6 Inch Route Markers.

Replace the title:

Erection of Signs, ~~Milepost Markers~~ Reference Location Signs, and 6 Inch by 6 Inch Route Markers.

2524.03, B, 2, Delineators, Milepost Markers, and 6 by 6 Inch Route Markers.

Replace the title and Article:

Delineators, Milepost Markers Reference Location Signs, and 6 Inch by 6 Inch Route Markers.

- a. Drive the posts for delineators, milepost markers reference location signs, and 6 inch by 6 inch route markers. Provide a suitable driving cap. Attach signs and delineators after driving.
- b. Erect markers and delineators so that the signs and delineator reflectors will be at elevations called for in the contract documents. Ensure they are true to line and grade and are truly vertical. Where a milepost marker reference location sign is designated, attach the marker in place of a delineator. Where a 6 inch by 6 inch route marker is designated, attach it above the milepost marker reference location sign on the same post.
- c. Ensure delineator posts for these signs are plumb and firm in the ground, spaced as shown in the contract documents, and driven to the required lines and grades. Ensure that after driving, the top of the post has substantially the same cross section dimensions as the body of the post. Battered heads will not be permitted. Remove from the site and replace (at no additional cost to the Contracting Authority) all posts which are bent or otherwise damaged to the extent that they are, in the Engineer's opinion, unfit in the finished work.

2524.04, F, Delineators, Milepost Markers, and 6 by 6 Inch Route Markers.

Replace the title:

Delineators, Milepost Markers Reference Location Signs, and 6 Inch by 6 Inch Route Markers.**2524.05, F, Delineators, Milepost Markers, and 6 by 6 Inch Route Markers.**

Replace the title and Article:

Delineators, Milepost Markers Reference Location Signs, and 6 Inch by 6 Inch Route Markers.

1. Delineators and Milepost Markers Reference Location Signs:
 - a. Each for the various types.
 - b. Payment is full compensation for:
 - Furnishing, fabricating, and erecting the delineators or milepost markers reference location signs complete, including posts, reflector units, and frames for delineators, posts and milepost marker signs reference location signs,
 - Furnishing all necessary fittings and attachments, and
 - All labor necessary to complete the work.
2. 6 inch by 6 inch Route Markers:
 - a. Each.
 - b. Payment is full payment for furnishing, fabricating, and erecting the route marker to a milepost marker post reference location sign previously measured for payment, including all necessary fittings and attachments and all labor necessary to complete the work.

2524.05, I, Excavation in Unexpected Rock.

Replace the first sentence:

Excavation in unexpected rock for wood posts for Type A or B signs, steel posts for Type A or B signs, concrete footings for Type A or B signs, delineators, perforated square steel tube posts, and milepost marker posts reference location signs will be paid for as extra work in Article 1109.03, B.

Section 2525**2525.03, E, 2, Traffic Signal and Pedestal Poles and Pedestrian Push Button Posts.**

Replace the Article:

- a. Erect poles and posts vertically under normal load.
- b. Securely bolt bases to the cast-in-place concrete foundations using the procedures in Articles 2522.03, H, 2, a through h.
- ~~1) Mast Arm Poles: Provide footing type (A through F) as specified in the contract documents. Level by using two nuts on each anchor bolt or according to the manufacturer's recommendations.~~

- ~~2) Pedestal Poles: Level by using metal shims and one nut on each anchor bolt or according to the manufacturer's recommendations.~~
- ~~3) Pedestrian Push Button Posts: Weld the post to the base plate using a minimum 3/16 inch weld. Level by using two nuts on each bolt.~~
- c. Use a torque wrench to verify that a torque at least equal to the computed verification torque, T_v , is required to additionally tighten the top nuts. An inability to achieve this torque shall be interpreted to indicate the threads have stripped and shall be reported to the Engineer.

$$T_v = 0.12d_b F_t$$

Where:

T_v = verification torque (inch-kips)

d_b = nominal body diameter of the anchor rod (inches)

F_t = installation pretension (kips) equal to 50% of the specified minimum tensile strength of ASTM F 1554, Grade 36 rods, and 60% for the rest of threaded fasteners.

- d. After leveling the poles, use non-shrink grout or a rodent guard between the pole base and foundation. When non-shrink grout is used, neatly finish exposed edges of grout to present a pleasing appearance, and place a weep hole in the grout.
- e. Apply anti-seize compound to all mechanical fasteners on pole access doors.
- f. Install pedestrian push button post caps with tamper-proof set screws per manufacturer's direction or by driving the cap a minimum of 1/2 inch onto the post.

Section 2526

2526, Construction Survey.

Replace the Section:

2526.01 DESCRIPTION.

Perform survey for construction projects.

2526.02 MATERIALS.

None.

2526.03 SURVEY.

- A. Furnish all survey necessary for construction of the project before work begins in the area. Comply with Iowa Code requirements, including monument preservation, under the direct supervision of an Iowa licensed land surveyor. Do not apply the provisions of Article 1105.15 to this work, except to preserve the original stakes set by the Engineer. Refer to Article 1105.16 for requirements when AMG is utilized. If, in the opinion of the Engineer, the Contractor has destroyed or disturbed any of the original survey stakes or benchmarks, the cost of replacing will be charged to the Contractor. Bring design errors discovered to the Engineer's attention for review prior to staking. Construction survey includes qualified personnel, equipment, and supplies required for, but not limited to, the following items:

1. Monument Preservation

Preserve existing monuments as required by Iowa Code.

4 2. Project Control.

a. Primary Control Monuments.

A primary control monument is a survey point the Contracting Authority establishes prior to project commencement. ~~These are shown in the contract documents.~~ The point will be established by placing a monument in the ground.

b. Secondary Control Monuments.

A secondary control monument is a survey point the Contractor establishes on grading or other projects specified in the plans, and preserves on all other projects.

- 1) The Engineer will provide monuments, similar to those the Department uses for GPS control.
- 2) Place secondary permanent horizontal control monuments, under the Engineer's direction, at locations likely to survive project construction and at intervals not to exceed 2640 feet. Place the monuments in the ground along the project corridor. Place at higher elevations along the corridor to provide a view of the immediate project topography and to provide for visible clear line of sight

- to the nearest secondary permanent control monument in either direction. Primary project monuments may be substituted if appropriate.
- 3) Plant secondary control monuments 1 to 4 inches below existing ground. Drive a metal fence post within 1 foot to mark their location.
 - 4) Carefully determine project coordinates relative to the nearest primary project control monument using project coordinate values the Engineer has provided. Ensure the resulting error radius of the secondary monument does not exceed 0.10 feet \pm 2 ppm relative to the primary control. ~~Provide the Engineer with all the field data of the survey. The data may be either unedited printed or electronic formatted field data, or both. Provide the Engineer with an ASCII comma delineated file of the coordinates formatted as (Point Number, Northing, Easting, Elevation, Point Description, Feature).~~
 - 5) Perform an independent traverse check between the secondary control monuments by observing distance and angular measurements or by use of GPS. ~~Provide the Engineer with all the field data for the traverse check. The data may be either unedited printed or electronic file, or both.~~ Provide the Engineer with a diagram indicating horizontal ground distances to nearest 0.01 foot and angles to at least the nearest 10 seconds between each secondary control monument. Ensure inverses between the coordinate pairs as determined in the previous paragraph do not exceed 0.10 feet of the direct measurements.
 - 6) Replace secondary control monuments disturbed during construction activities using procedures outlined above, at no additional cost to the Contracting Authority.
- c. Durable Physical Objects.**
- 1) ~~Using measurements to the nearest 0.10 foot, reference each control monument to a minimum of three durable physical objects located 20 to 100 feet away from the monument. Durable physical objects could include trees, poles, fence posts, station marks in new roadway pavement, or metal fence posts.~~
 - 2) ~~Provide the Engineer with either a printed or electronic reference image (for example JPEG, TIFF, etc), or both, including each reference and project coordinate.~~
- d c. Benchmarks.**
- 1) Establish permanent vertical control benchmarks at all bridges and reinforced concrete box culverts within the project. Use an Iowa DOT brass plug on bridge barrier rail or headwall of reinforced concrete box culvert to indicate the benchmark. If the Engineer approves, a sawn "X" on bridge barrier rail or headwall of reinforced concrete box culvert may be used.
 - 2) Transfer all benchmark elevations from construction plan benchmarks to the permanent benchmarks using the three-wire method or by trigonometric leveling. Use temporary benchmarks of reasonable stability to preserve the plan benchmarks.
 - 3) ~~Provide the Engineer with all field benchmark elevation data. The data may be either unedited printed or electronic formatted, or both. Provide the Engineer with the project x and y coordinates of all benchmarks along with an ASCII comma delineated file of the coordinates formatted as (Point Number, Northing, Easting, Elevation, Point Description, Feature).~~
 - 4) 3) Ensure benchmark level loops do not exceed an error of 0.05 feet times the square root of the loop's length in miles. Distribute the error equally along the loop on all intermediate traverse/benchmark points.

2 3. Grading.

a. General.

- 1) Survey right-of-way line between permanent right-of-way corners at 100 foot intervals, or less if needed, including borrows, temporary easements, and right of entry. Mark these points by placement of a metal pin or wood hub, flat, and lath at the same location as the slope stakes. Clearly mark the flat with the station number, distance from centerline, and elevation (cut or fill) to subgrade.
- 2) Take original and final elevations of all borrows. Provide original and final ~~graphical cross sections at 100 foot intervals, or less if needed~~ digital terrain model (DTM) in LandXML-format, suitable for use by the Engineer to calculate excavation quantities.
- 3) Set bridge berm slope stakes to establish all transitions, including the face of the berm. Set finish grade stakes (blue tops) on all roadway shoulder lines and roadway centerlines to project down the face of the bridge berm at the top, face of berm bench, and toe.
- 4) When Class 12 excavation is an item, ~~take cross section elevations at 100 foot intervals, or less if needed, and plot cross sections~~ provide original and final DTM in LandXML format for use by the Engineer to calculate the excavation quantities.

- 5) Use a lath to locate, on each side of roadway at the right-of-way line, agricultural drain tile shown in the contract documents. Clearly mark lath to show station location, distance from centerline, tile size and type, and flowline elevation.
- b. Areas Constructed Without AMG.**
 - 1) Set slope stakes at 100 foot intervals, or less if needed, for embankment and excavation work including roadway, channel changes, and borrow areas. Interpolations may be necessary to match cross-sections. Set stakes at toe of foreslope or top of backslope, or both. Mark slope stakes with a flat and lath. Clearly mark flat with station location, distance, slope, and cut or fill information.
 - 2) Set grade check stakes at 100 foot intervals for bottoms of subgrade treatments. Set stakes on centerline for two-lane roads and in median for four-lane roads. Mark grade check stakes with a lath. Clearly mark lath with station location and cut or fill information.
 - 3) Set finish grade stakes (blue tops) at 100 foot intervals, or less if needed. Set blue tops at each shoulder line and each point where there is a change in cross slope. Mark blue tops with a wood hub and stake chaser or similar type tassel.
- c. Areas Constructed With AMG.**
 - 1) Establish elevation of secondary control points using differential leveling from project benchmarks, forming closed loops. Provide a copy of new control point information to Engineer prior to construction work. Contractor is responsible for errors resulting from their efforts. Correct deficiencies to the satisfaction of the Engineer at no additional cost to Contracting Authority.
 - 2) Set hubs at top of finished subgrade at hinge points on cross section at 1000 foot intervals on mainline and at least two cross sections on side roads and ramps. Establish these hubs, using means other than the machine guidance surface (such as plan typicals and cross sections), for use by Engineer to check accuracy of construction.
 - 3) Provide grade stakes at critical transition points such as, but not limited to, PC's, PT's, super elevation points, and other critical points required for construction of drainage and roadway structures.

3 4. Bridges.

- a. Mark locations and elevations with metal pin or tack in a wood hub, flat, and lath. Clearly mark flat with the pier/abutment station location, design number, and offset distance from centerline of the approach roadway.
- b. Establish a minimum of three temporary benchmarks.
- c. Mark location of test pile with a wood hub.
- d. Perform an independent check of the above stakes. Independent check shall be performed by a second survey crew using their own calculations and equipment entries for staking bridge. Results and staking layout shall be sent to the Engineer prior to starting structure construction.
- e. Submit elevations of all completed substructure beam seats to the Engineer for review prior to installation of bearings and superstructure elements.
- f. Take elevations of beams as erected. Develop proposed final deck grades for review by the Engineer on an Excel spreadsheet format. Provide proposed final deck grades to the Engineer for determination of required deck grade adjustments and approval of final deck grades for deck construction. Locations for determining beam elevations are to be according to the plans.
- g. Provide the Engineer with a copy of the staking diagram prior to commencing work.

4 5. Reinforced Concrete Box Culverts.

- a. Mark locations and elevations with metal pin or tack in a wood hub, flat, and lath. Clearly mark the flat with the station location, design number, cut/fill elevation, and offset distance from the centerline of the culvert and back of parapet.
- b. Perform an independent check of the above stakes.
- c. Provide the Engineer with a copy of the staking diagram prior to commencing work.
- d. Report to the Engineer questionable flow lines and alignments that do not match existing drainage.

5 6. Pipe Culverts.

- a. Mark locations and elevations with metal pin or a wood hub, flat, and lath. Clearly mark the flat with the station location, cut/fill elevation, and offset distance to both ends or centerline of pipe.
- b. Report to the Engineer questionable flow lines and alignments that do not match existing drainage.

6 7. Sanitary and Storm Sewers.

Mark locations and elevations with metal pin or tack in a wood hub, flat, and lath. Clearly mark the flat with the station location, pipe number, cut/fill elevation, and offset distance to centerline of pipe.

7 8. Water Mains.

Mark locations and elevations with metal pin or tack in a wood hub, flat, and lath. Clearly mark the flat with the station location, pipe number, cut/fill elevation, and offset distance to centerline of pipe.

8 9. Intakes and Utility Accesses.

Mark locations and elevations with metal pin or tack in a wood hub, flat, and lath. Clearly mark the flat with the station location, intake or utility access number, cut/fill elevation (including bottom of well and form grade), and offset distance to the Station Location.

9 10. Pavements (PCC & HMA) and Overlays (PCC).**a. General.**

- 1) Obtain elevations of adjacent pavement and bridges at centerline, edge of pavement, and other locations necessary to characterize existing profile and cross slope. Obtain elevations at maximum 10 foot intervals for a minimum of 100 feet. Adjust design profile grade and cross slope to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer before paving begins.
- 2) For PCC and HMA pavements, ~~W~~when a new profile grade is not included in the contract documents:
 - a) Obtain elevations of the existing pavement and bridges at 100 foot intervals on straight and level sections and 50 foot intervals on horizontal and vertical curves.
 - b) Using these elevations, design a profile grade and cross slopes to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Design a smooth profile grade line to provide the required pavement or shoulder thickness as detailed in the contract documents. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer before paving begins.
- 3) For PCC overlays, when a new profile grade is not included in the contract documents:
 - a) Obtain elevations of existing pavement at centerline and both pavement edges for bonded overlays and projects including mainline stress relief course and/or pavement scarification.
 - b) Obtain elevations of existing pavement at centerline, quarter points, and both pavement edges for unbonded overlays and whitetopping projects when a stress relief course and/or pavement scarification are not included.
 - c) Obtain elevations at maximum 50 foot intervals on straight and level sections and at maximum 25 foot intervals on horizontal and vertical curves.
 - d) Using these elevations, design a profile grade and cross slopes to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Design a smooth profile grade line to provide the required pavement or shoulder thickness as detailed in the contract documents. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer before paving begins.

b. Areas Constructed Without AMG.

Mark locations and elevations with metal pin or tack in wood hub (only tack one side), flat, and lath. Mark elevations on both sides of pavement at 50 foot intervals on straight and level sections and 25 foot intervals on horizontal and vertical curves. Clearly mark flat with station location, cut or fill information, and offset distance to edge of pavement. Include pavement cross slope information in superelevated curves.

c. Areas Constructed With AMG.

- 1) When total stations are used for the AMG paving system, set additional control points at maximum 500 foot intervals on each side of pavement. Furnish x,y,z coordinates and station offset information for each point.
- 2) Set paving hubs with cut or fill to finish pavement elevation at A, B, C, and D points along superelevated curve transitions and at station equation locations. Additional paving hubs will not be required for mainline pavement.

10. HMA Overlays

- ~~a. Reference and preserve existing control points located at each Point of Intersection (P.I.).~~
- ~~b. Obtain the Engineer's approval for the method used to reference points.~~

- ~~c. Reset Control Points after the work is complete.~~

11. PCC Overlays

a. General.

- ~~1) Obtain elevations of adjacent pavement and bridges at centerline, edge of pavement, and other locations necessary to characterize existing profile and cross slope. Obtain elevations at maximum 10 foot intervals for a minimum of 100 feet. Adjust design profile grade and cross slope to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer before paving begins.~~
- ~~2) When a new profile grade is not included in the contract documents:

 - ~~a) Obtain elevations of adjacent pavement and bridges per Article 2526.03, A, 11, a, 1.~~
 - ~~b) Obtain elevations of existing pavement at centerline and both pavement edges for bonded overlays and projects including mainline stress relief course and/or pavement scarification.~~
 - ~~c) Obtain elevations of existing pavement at centerline, quarter points, and both pavement edges for unbonded overlays and whitetopping projects when a stress relief course and/or pavement scarification are not included.~~
 - ~~d) Obtain elevations at maximum 50 foot intervals on straight and level sections and at maximum 25 foot intervals on horizontal and vertical curves.~~
 - ~~e) Using these elevations, design a profile grade and cross slopes to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Design a smooth profile grade line to provide the required pavement or shoulder thickness as detailed in the contract documents. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer before paving begins.~~~~
- ~~3) Reference and preserve existing control points located at each Point of Intersection (P.I.).~~
- ~~4) Obtain Engineer's approval for method used to reference points.~~
- ~~5) Reset Control Points after work is complete.~~

b. Areas Constructed Without AMG:

~~Mark locations and elevations with metal pin or tack in wood hub (only tack one side), flat, and lath. Mark elevations on both sides of pavement at 50 foot intervals on straight and level sections and 25 foot intervals on horizontal and vertical curves. Clearly mark flat with station location, cut or fill information, and offset distance to edge of pavement. Include pavement cross slope information in superelevated curves.~~

c. Areas Constructed With AMG:

- ~~1) When total stations are used for the AMG paving system, set additional control points at maximum 500 foot intervals on each side of pavement. Furnish x,y,z coordinates and station offset information for each point.~~
- ~~2) Set paving hubs with cut or fill to finish pavement elevation at A, B, C, and D points along superelevated curve transitions and at station equation locations. Additional paving hubs will not be required for mainline pavement.~~

12 11. Structural Walls.

- a. Survey requirements for structural walls includes the following work types:

- 1) Mechanically Stabilized Earth (MSE) Walls.
- 2) Cast in Place (CIP) Retaining Walls.
- 3) Soil Nail Walls.
- 4) Tie Back Walls.
- 5) Noise Walls.
- 6) Modular Block Retaining Walls.
- 7) Segmental Retaining Walls.

- b. Mark locations and elevations with a metal pin or a wood hub, flat, and lath. Clearly mark the flat with the station location, cut/fill elevation, and offset distance to face of wall.

- B. ~~Submit the method used to preserve project control to the Engineer for approval. Format the survey work documentation in a manner acceptable to the Engineer.~~ Ensure monument preservation work is completed by a Professional Land Surveyor licensed in the State of Iowa in responsible charge, according to the provisions of Iowa Code 542B. Ensure all other survey work is completed by a Professional Engineer licensed in the State of Iowa in responsible charge or a Professional Land Surveyor licensed in the State of Iowa in responsible charge, according to the provisions of Iowa Code 542B. Submit a resume to the Engineer identifying the field survey personnel and their capabilities to perform the intended requirements.

- C. Obtain the Engineer's approval for the method of determining alignments and elevations and the method of preserving control points. This approval does not act to relieve the Contractor of the responsibility for the correctness of the survey work. Do not use plan cross-sections for vertical or horizontal control.
- ~~D. The Engineer will provide bench mark elevations, right of way corners, and reference control points on the original survey as shown in the contract documents. A GeoPak alignment will be provided if available.~~
- E D. Check tie-ins with existing roadways for correctness of alignment prior to construction staking.
- ~~F. When survey work is done under traffic, detail sheets in the contract documents will establish the required signing.~~
- G E. Establish benchmarks in the adjacent area before installing settlement plates in accordance with Article 2526.03, A, 4 2, d c.
 - ~~1. Obtain Engineer's approval for method of determining alignments and elevations and the method of preserving control points. This approval does not relieve Contractor of the responsibility for correctness of survey work.~~
 - 2. Do not use plan cross sections for vertical or horizontal control. The Engineer will locate and determine elevations of settlement plates.
- ~~H. Replace land corners and permanent reference markers unless stated otherwise in the contract documents.~~
- I F. All survey work documentation becomes the property of the Contracting Authority. Assemble required documentation into a single electronic package upon completion of the project and furnish to the Engineer. The work of this specification will be considered ~~finished~~ complete when the following documentation is furnished to and accepted by the Engineer:
 - 1. ASCII comma delineated file of the coordinates formatted as (Point Number, Northing, Easting, Elevation, Point Description, Feature). Identify coordinate system used.
 - 2. Monument preservation certificates.
 - 3. Secondary control monument coordinates including traverse check.
 - 4. Reference monument drawings.
 - 5. Benchmark coordinates.
 - 6. Required DTMs.
 - 7. Bridge and box culvert staking diagrams.
 - 8. Final profile grades.
- J G. For the purpose of subcontracting, this item will be considered a specialty item.

2526.04 METHOD OF MEASUREMENT.

None. Lump sum item.

2526.05 BASIS OF PAYMENT.

- A. Payment for Construction Survey will be paid for at the lump sum contract price.
- B. Payment is full compensation for the survey work required for the project as let, including any interpolations that may be necessary between cross-section and field staking.
- C. Payment for revisions after the letting will be paid for according to Article 1109.03, B.

Section 2527

2527.02, D, 2, c, 4.

Add to the end of the Article:

The Engineer will use the procedure in Materials I.M. 386 to determine retroreflectivity.

Section 2528

2528.01, A, 10.

Delete the first bullet:

- ~~Iowa Department of the Blind: Director's Office, telephone: 515.281.1336, website: www.blind.state.ia.us.~~

2528.03, L, 5.

Replace the first sentence:

Personnel in the highway right-of-way shall wear orange or strong yellow green ANSI 107 Type R Class 2 apparel when exposed to traffic or construction equipment.

Section 2529

2529.02, A, Hot Mix Asphalt Mixture.

Replace the Article:

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a 300,000 ESAL Standard Traffic (ST) surface mixture. ~~with~~ Use an asphalt binder meeting or exceeding PG 64-22S Performance Graded asphalt binder.

2529.02, B, 4, Cement.

Replace Table 2529.02-1:

Table 2529.02-1: Cement Types and Maximum Allowable Substitution Rates

Patch Type	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
5 Hour	Type I, Type II Type IS	0% Fly Ash 0% Fly Ash	75°F 80°F*
10 Hour	Type I, Type II Type IS	10% Fly Ash 0% Fly Ash	65°F 70°F*
24 Hour	Type I, Type II, Type IS	0% Fly Ash	50°F
* When a Type A Mid Range Water reducing admixture is used, limit the minimum mix temperature to that required when Type I/II cement is used.			

2529.02, B, 9, Concrete Mixers.

Replace the Article:

For PCC patches, use Class M mixtures with calcium chloride. ~~The Engineer may waive the use of calcium chloride on patches cured longer than 10 hours.~~ Use Class M without calcium chloride for patches cured for 24 hours.

2529.03, G, 4.

Replace the Article:

Cure PCC patches placed on multi-lane sections for a minimum of 10 hours before opening to traffic. Cure PCC patches placed on two-lane sections a minimum of 5 hours before opening to traffic. When allowed by the contract documents or Engineer, cure PCC patches without calcium chloride on multi-lane sections a minimum of 24 hours. These restrictions may be modified in the plans or by the Engineer for specific sections.

Section 2530**2530.02, A, Hot Mix Asphalt Patching Material.****Replace** the Article:

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a ~~300,000 ESAL~~ Standard Traffic (ST) 3/8 or 1/2 inch (9.5 mm or 12.5 mm) surface mixture. ~~with Use an asphalt binder that meets or exceeds a PG 64-22S Performance Graded asphalt binder.~~

Section 2532**2532.03, B, 3, a.****Add** as the second sentence:

No areas greater than 2 feet in length shall be left without texture. Total depth of concrete surface ground shall not exceed 1/4 inch.

Section 2535**2535.03, A, 2.****Replace** the last sentence of the Article:

When not included in contracts for grading, all excavation in connection with this construction is Class 23 Excavation according to Article 2402.03, ~~J~~ **K**.

Section 2540**2540.02, Materials.****Replace** the Article:

- A.** Use the following materials for filling the longitudinal joint in the PCC base:
1. For a 0 to 3/4 inch opening, fill the existing joint with either PG 58-xxS or CRS-2 emulsion.
 2. For an opening greater than 3/4 inch, fill the existing joint with a 3/8 inch to 1/2 inch commercial HMA mixture with PG 58-xxS or other suitable hot or cold bituminous mixture approved by the Engineer.
- B.** For completing the joint repair (filling the milled trench above the PCC base), use a ~~300,000 ESAL~~ Standard Traffic (ST) HMA or similar mixture approved by the Engineer.

Section 2543**2543.02, A.****Replace** the Article:

Unless stated elsewhere in the contract documents, use HMA meeting or exceeding Section 2303 requirements for a ~~300,000 ESAL~~ Standard Traffic (ST) surface mixture.

Section 2548**2548.03, Construction.****Add** to the end of the first paragraph:

Allow PCC to cure for a minimum of 14 days prior to placing milled rumble strips.

Section 2552**2552.02, B, Bedding (Class I) Material.**

Renumber and Retitle the Article:

B C. Bedding (Class I) Material (Non-Primary Roadways).**2552.02, C, Backfill Material (Under Interstate and Primary Roadways).**

Renumber, Retitle, and Replace the Article:

C B. Pipe Bedding and Backfill Material (Under Interstate and Primary Roadways).

Meet requirements of Article 2102.02, A, and Section 4119.

2552.02, D, Backfill Material (Other Areas).

Retitle the Article:

Backfill Material (Other Areas Non-Primary Roadways)**2552.03, E, Pipe Bedding and Backfill Material.**

Add to Article 1:

- f. Refer to Standard Road Plan SW-101 for bedding and backfill zones.

Replace Articles 2 and 3:

2 3. Pipe Bedding (Non-Primary Roadways).**a. Granular Material.**

- 1) Class I granular material is required for all gravity mains. Use when specified for pressure pipes.
- 2) Place bedding material in the bottom of the trench in lifts no greater than 6 inches thick. Consolidate and moderately compact bedding material.
- 3) Shape bedding material to evenly support pipe at the proper line and grade, with full contact under the bottom of the pipe. Excavate for pipe bells.
- 4) Install pipe and system components.
- 5) Place, consolidate, and moderately compact additional bedding material adjacent to the pipe to a depth equal to 1/6 the outside diameter of the pipe.

b. Suitable Backfill Material.

- 1) Only use with pressure pipe.
- 2) Use suitable backfill material to shape trench bottom to evenly support pipe at the proper line and grade, with full contact under the bottom of the pipe. Excavate for pipe bells.

c. Special Pipe Embedment and Encasement Materials.

- 1) If required in the contract documents, use concrete, flowable mortar, or CLSM in lieu of other bedding materials.
- 2) Secure pipe against displacement or flotation prior to placing concrete, flowable mortar, or CLSM.

3 2. Bedding and Backfill Under (Interstate and Primary Roads).

- a. Place in lifts no greater than 6 inches thick. Thoroughly tamp or vibrate each layer to ensure compaction.

~~b. Thoroughly tamp or vibrate each layer to insure compaction.~~

a. Pipe Bedding.

- 1) Use material meeting requirements of Section 4119. Shape bedding material to evenly support pipe at proper line and grade, with full contact under bottom of pipe. Excavate for pipe bells.
- 2) Install pipe and system components.
- 3) Place, consolidate, and moderately compact additional bedding material adjacent to pipe to a depth equal to 1/6 the outside diameter of pipe.

b. Backfill.

- c. Place backfill material after recording locations of connections and appurtenances or at the Engineer's direction. Terminate backfill material at subgrade elevation.

~~d. Terminate backfill material at subgrade elevation.~~

1) Under Roadway.

Use material meeting requirements of Section 4119 for haunch support, primary backfill, secondary backfill, and final trench backfill.

2) Outside of Roadway.

Use material meeting requirements of Section 4119 for haunch support, primary backfill, and secondary backfill. Use Class 10 material meeting requirements of Article 2102.02, A, for final trench backfill.

Retitle Articles 4, 5, and 6:

4. **Haunch Support (Other Areas Non-Primary Roadways).**
5. **Primary and Secondary Backfill (Other Areas Non-Primary Roadways).**
6. **Final Trench Backfill (Other Areas Non-Primary Roadways).**

2552.02, F, Stabilization (Foundation) Material.

Replace the Article:

1. ~~Clean 2 1/2 inch crushed stone with the following gradation:~~

Sieve	Percent Passing
2 1/2 inch	100
2 inch	90 to 100
1 1/2 inch	35 to 70
1 inch	0 to 20
1/2 inch	0 to 5

2. ~~The Engineer may authorize a change in gradation subject to materials available locally at time of construction.~~

3. ~~Crushed concrete may be used, if approved by the Engineer, if it is within \pm 5% of the gradation for each size of material.~~

Meet the requirements of Section 4128.

Section 2554

2554.04, A, Pipe and Fittings.

Replace Article 4 title:

Water Service Stubs by Each.

Add the Article:

5. **Water Service Stubs by Length.**

a. **Water Service Pipe.**

Each type and size of water service pipe will be measured in linear feet along the centerline of the pipe.

b. **Water Service Corporation.**

Each type and size of water service corporation will be counted.

c. **Water Service Curb Stop and Box.**

Each type and size of water service curb stop and box will be counted.

2554.05, A, Pipe and Fittings.

Replace Article 4 title:

Water Service Stubs by Each.

Add the Article:

5. **Water Service Stubs by Length.**

a. **Water Service Pipe.**

Payment will be the contract unit price per linear foot for each type and size of water service stub.

b. **Water Service Corporation.**

Payment will be made at the contract unit price for each type and size of water service corporation.

c. **Water Service Curb Stop and Box.**

Payment will be made at the contract unit price for each type and size of water service curb stop and box.

Division 26. Roadside Development.

Section 2601

2601.01, Description.

Replace the tenth bullet:

~~Outlet or channel scour protection (Transition mat), and~~

2601.03, A, 14, Straw Mulching Machine.

Replace the second sentence:

~~Engineer may consider~~ Excessive pulverization as is the general absence of straw longer than 6 inches after distribution.

2601.03, A, 15, a.

Delete the second bullet:

- ~~• Have a nominal minimum diameter of 20 inches, and~~

2601.03, A, 15, b.

Delete the second and third sentences:

~~Use equipment that weighs approximately 1000 pounds. When directed by the Engineer, increase the weight (mass) of the equipment by the addition of ballast.~~

2601.03, A, Equipment.

Add the Articles:

18. Slit Seeder.

Use a gas, diesel, or electric powered mechanical slit seeder that:

- Is capable of cutting vertical grooves a maximum of 1/4 inch deep into the soil with a maximum horizontal blade spacing of 3 inches,
- Deposits metered seed directly behind the vertical grooves, and
- Contains packer wheels that press and firmly pack seed into the soil.

19. Drop Seeder.

One piece of equipment containing the following:

- Pulverizer rollers in front of the seed tubes.
- Ground driven seed meters.
- Max seed tube spacing of 3 inches delivering seed between the pulverizer rollers and packer wheels.
- Packer wheels pressing and firmly packing seed into the soil.

2601.03, B, 4, b, 1.

Add to the end of the Article:

A fertilizer will be considered equivalent when it meets the minimum total pounds per acre of nitrogen (N), available phosphoric acid (P₂O₅), and water soluble potassium (K₂O).

2601.03, B, 4, c, 1.

Replace the Article:

~~Except when a hydraulic seeder is used, thoroughly mix all seed specified for the contract prior to placing seed in seed hopper. For seed mixing, shall meet comply with the requirements of Materials I.M. 469.02. Use P permanent rural, permanent urban, urban stabilizing, salt tolerant seeding, Native Grass, Wetland~~

Grass, and Wildflower seeding mixtures shall be mixed off-site by a seed conditioner approved by the Iowa Crop Improvement Association or other state's Crop Improvement Association.

2601.03, C, 2, b, Seed Mixture.

Replace Table 2601.03-2:

Table 2601.03-2: Urban Stabilizing Crop Seeding Rates

Bluegrass, Kentucky ¹	422 126 lbs. per acre
Ryegrass, Perennial (fineleaf turf-type variety) ²	35 40 lbs. per acre
Fescue, Creeping Red	18 lbs. per acre
1. Choose three different cultivars of Kentucky bluegrass, at 42 lbs. per acre each.	
2. Choose two different cultivars of turf-type perennial ryegrass, at 20 lbs. per acre each.	

2601.03, C, 2, d, Application Dates.

Replace the Article:

~~Normal seed application dates are March 1 through May 31, and August 10 through September 30. Seed may be applied throughout the year unless ground conditions are unsuitable for seeding due to moisture or frost.~~

2601.03, C, 3, a, Preparation and Application.

Replace the Article:

- 1) Prepare seedbed according to Article 2601.03, B, 4, a c.
- 2) ~~Prepare seed according to Article 2601.03, B, 4, c.~~ In areas without existing stabilized crop seeding residue, prepare seedbed according to Article 2601.03, B, 4, a, and apply seed according to Article 2601.03, B, 4, d.
- 3) ~~Apply seed according to Article 2601.03, B, 4, d.~~ In areas with existing stabilized crop residue, apply seed with a native grass seed drill with a no till attachment through the small seed box slit seeder. Seedbed preparation will not be required, except for areas with rills and gullies.

2601.03, C, Types of Seeding.

Add the Article:

9. Salt Tolerant Seeding.

a. Preparation and Application.

- 1) Prepare seed according to Article 2601.03, B, 4, c.
- 2) Prepare seedbed according to Article 2601.03, B, 4, a, and apply seed according to Article 2601.03, B, 4, d using only a drop seeder according to Article 2601.03, A, 19.

b. Seed Mixture.

Use seeding rates in Table 2601.03-7 for permanent seeding of rural areas, unless otherwise specified in the contract documents:

Table 2601.03-7: Salt Tolerant Seed Rates

Alkali grass	109 lbs. per acre
Turf-type Tall Fescue ¹	109 lbs. per acre
Perennial ryegrass	66 lbs. per acre
Crested wheatgrass	66 lbs. per acre
Hard fine fescue	44 lbs. per acre
Sheep fine fescue	44 lbs. per acre
¹ Turf-type Tall Fescue shall contain a minimum 36 lbs. of each cultivar Inferno and Quest.	

c. Fertilizing.

- 1) Spread over the areas at the rate of 300 pounds per acre of 6-24-24 (or equivalent).
- 2) Apply provisions of Article 2601.03, B, 4, b.

d. Application Dates.

Normal permanent seed application dates are March 1 through May 31, and August 10 through September 30.

2601.03, C, 4, a, Preparation and Application.

Renumber Articles 2, 3, 4 and **Add** the Article:

- 2) In areas with existing urban crop stabilizing of 50% or greater density, full seedbed preparation and rolling will not be required. Apply seed using a slit seeder as defined in Article 2601.03, A, 18.
- ~~2 3)~~
- ~~3 4)~~
- ~~4 5)~~

2601.03, C, 4, b, Seed Mixture.

Replace Table 2601.03-4:

Table 2601.03-4: Permanent Seed Rates, Urban Area

Bluegrass, Kentucky ¹	422 126 lbs. per acre
Ryegrass, Perennial (fineleaf turf-type variety) ²	35 40 lbs. per acre
Fescue, Creeping Red	18 lbs. per acre
1. Choose three different cultivars of Kentucky bluegrass, at 42 lbs. per acre each. 2. Choose two different cultivars of turf-type perennial ryegrass, at 20 lbs. per acre each.	

2601.03, C, 5, b, Seed Mixture.

Add row to Table 2601.03-5:

Butterfly weed (<i>Asclepias tuberosa</i>)	3 oz. per acre
----------------------------------------------	----------------

2601.03, C, 7, d, Application Dates.

Replace the Article:

~~Normal seed application dates are April 15 through June 30.~~ Normal seed application dates are April 1 through May 31 and November 1 until ground conditions are unsuitable for seeding due to moisture or frost.

2601.03, E, 2, a, Straw Mulch.

Add the Article:

- 3) Crimp/tuck straw to a minimum of 2 inches below ground surface.

2601.03, G, 3, d, 4.

Replace the Article:

After sodding and seeding, water the sod, sodbed, and disturbed areas according to Article ~~2601.03, G, 3, e~~ 2601.03, I, 2.

2601.03, G, 3, e, Watering Sod.

Delete the Article:

~~**e. Watering Sod.**~~

- ~~1) Provide watering equipment and an approved water supply before beginning any sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform the second, third, and fourth waterings at 4 calendar day intervals, and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day the watering is to occur. A price adjustment will be assessed at a~~

rate of \$200.00 per day for each calendar day that the Contractor fails to complete the watering from the day watering is to commence.

- ~~2) Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.~~
- ~~3) Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

2601.03, G, 3, f, Urban, Island, and Safety Rest Area Sodding.

Renumber the Article:

f e. Urban, Island, and Safety Rest Area Sodding.

2601.03, H, Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).

Replace the title of the Article and Articles 1, 6, and 7, and Delete Article 8:

Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).

- ~~1. Preparation of Area to be Treated with Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).~~
- ~~6. Outlet or Channel Scour Protection (Transition Mat) (TM).~~
- ~~7. Finishing Adjacent to Special Ditch Control, Turf Reinforcement Mat, Slope Protection Areas, and Outlet or Channel Scour Protection (Transition Mat).~~
- ~~8. Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).~~
 - ~~a. Provide watering equipment and an approved water supply before starting special ditch control, TRM, slope protection, or TM work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement a price adjustment will be assessed at a rate of \$200.00 per calendar day until the watering has been completed.~~
 - ~~b. Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price adjustment will be assessed at a rate of \$200.00 per calendar day, beginning on the 9th day, until the watering is completed.~~
 - ~~c. Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.~~
 - ~~d. Each watering may require a maximum of 50 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.~~
 - ~~e. More than one application for each watering may be necessary to provide adequate saturation without runoff.~~

2601.03, H, 5, a, 2.

Replace the Article:

~~Use mixture specified.~~ Seed slopes using seeding rates in Tables 2601.03-7 for slopes adjacent to native grass seedings and 2601.03-8 for slopes adjacent to rural seedings.

2601.03, H, 5, b, Fertilizing.

Replace the Article:

~~For slope protection, use fertilizer specified. Apply provisions of Article 2601.03, B, 4, b.~~

- ~~1) After area is prepared and prior to laying slope protection, fertilize at the rate specified. Apply provisions of Article 2601.03, B, 4, b. Spread with a mechanical spreader to secure a uniform rate of application. Manipulation or mixing with the soil other than that incidental to Article 2601.03, H, 7, will not be required.~~
- ~~2) If the type of fertilizer is not specified, apply 300 pounds per acre of 6-24-24 (or equivalent) to slopes adjacent to rural seedings.~~
- ~~3) No fertilizer will be required for slopes adjacent to native grass seedings.~~

2601.03, Construction.

Add the Article and **Renumber** subsequent Articles:

I. Watering.**1. Watering of Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Transition Mat.**

- a. Provide watering equipment and an approved water supply before starting special ditch control, turf reinforcement mat, slope protection, or transition mat work. Water the area no later than the day following placement of the materials. If Contractor fails to water by second day following placement, a price adjustment will be assessed at a rate of \$200.00 per calendar day until watering has been completed.
- b. Apply three additional waterings at intervals of 5 to 8 calendar days. Perform waterings unless notified by Engineer in writing at least 1 calendar day prior to the day watering is to occur. If Contractor fails to complete watering before the 8th calendar day has elapsed, a price adjustment will be assessed at a rate of \$200.00 per calendar day, beginning on the 9th day, until watering is completed.
- c. Ensure waterings are sufficient to thoroughly saturate seedbed to a depth of approximately 2 inches.
- d. Each watering may require a maximum of 50 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the seedbed. Complete each watering within a 4 hour period.
- e. More than one application for each watering may be necessary to provide adequate saturation without runoff.

2. Watering Sod.

- a. Provide watering equipment and an approved water supply before beginning sodding operation. Six waterings will be required. Allow no more than 1 hour to elapse between laying and initial watering of sod. Perform second, third, and fourth waterings at 4 calendar day intervals; and fifth and sixth waterings at weekly intervals. Perform waterings unless notified by the Engineer in writing at least 1 calendar day prior to the day watering is to occur. A price adjustment will be assessed at a rate of \$200.00 per day for each calendar day that the Contractor fails to complete watering from the day watering is to commence.
- b. Ensure waterings are sufficient to thoroughly saturate sod, sodbed, and adjacent disturbed areas to a depth of approximately 4 inches.
- c. Each watering may require a maximum of 100 gallons of water per square. Apply water as a spray or dispersion to prevent damage to the sod. Complete each watering within a 4 hour period. More than one application for each watering may be necessary to provide adequate saturation without runoff.

† J. Mowing.**‡ K. Completion of the Work.****2601.04, D.**

Replace the second and third sentences:

Measurement of actual ditch area covered will be used, but will not exceed an area based on the actual measured length and design width. Materials used for anchor slots, junction slots, check slots, terminal folds, and lap joints are incidental. Seed, and fertilizer for Special Ditch Control and TRM are incidental.

2601.04, E.

Replace the Article:

~~Outlet or Channel Scour Protection (Transition Mat):~~ square feet calculated from measurements to the nearest foot.

2601.04, H.

Replace the Article:

Mowing described in Article 2601.03, † J: acres to the nearest 0.1 acre of surface area.

2601.05, A, 6.**Replace** the Article:

Mulch furnished and placed: ~~predetermined contract unit price per acre (hectare)~~ contract unit price per acre to the nearest 0.1 acre for mulching. Payment is full compensation for preparing the area and furnishing and applying mulch.

2601.05, A, 10, b.**Replace** the Article:

Payment is full compensation for slope protection preparation and materials ~~in addition to the amount paid for seed and fertilizer~~. This includes seedbed preparation, seed and fertilizer, slope protection, stapling, and installation of materials.

2601.05, A, 11.**Replace** the Article:

Square feet of ~~Outlet or Channel Scour Protection (Transition Mat)~~ with material as specified:

- a. Contract unit price per square feet.
- b. Payment is full compensation for ~~Outlet or Channel Scour Protection (Transition Mat)~~, TRM, preparation and materials including shaping outlets/channels, ditches, soil fill (if required), seed, fertilizer and anchors.

2601.05, A, 12.**Replace** the second sentence and delete the third sentence:

For the quantity of water applied to sod, (Article ~~2601.03, G, 3, e~~ 2601.03, I, 2), and to special ditch control, TRM, slope protection, and TM, (Article 2601.03, H, 8), payment will be the predetermined contract unit price per 1000 gallons. ~~When an item for watering is not included, the cost of watering is included in the amount paid for the item to be watered.~~

2601.05, A, 14.**Replace** the Article:

Mowing as described in Article 2601.03, † J: contract unit price per acre to the nearest 0.1 acres.

Section 2602**2602.01, D, 2.****Replace** the first bullet:

Attend required storm water inspections with the Contracting Authority. ~~However, when the Contractor is not mobilized onsite, the Contractor may delegate this responsibility to a subcontractor.~~

2602.03, L, 1.**Replace** the Article:

Mobilizations, Erosion Control, applies to projects not identified as erosion control or landscaping and ~~containing at least one of the following items:~~ contain a Storm Water Pollution Prevention Plan (SWPPP).

- ~~Stabilizing crop seeding and fertilizing: 1 acre (0.4 ha) or more,~~
- ~~Stabilizing crop seeding and fertilizing (urban): 1 acre (0.4 ha) or more,~~
- ~~Silt fence: 250 feet (75 m) or more, or~~
- ~~Silt fence for ditch checks: 250 feet (75 m) or more.~~

2602.03, M, Mobilizations, Emergency Erosion Control.**Add** as the first sentence:

Mobilizations, Emergency Erosion Control, applies to projects not identified as erosion control or landscaping and containing a Storm Water Pollution Prevention Plan (SWPPP).

2602.04, K, Mobilizations, Erosion Control.**Add to the end of the Article:**

For multi-project contracts, count will be on a per project basis, except for projects where limits are overlapping or contiguous.

Division 41. Construction Materials.**Section 4100****4100.06, A.****Delete the last sentence:**

~~Method 804 may be used when a coating is specified by uniformity.~~

Section 4108**4108.01, Fly Ash.****Replace the Article and title:****FLY ASH AND NATURAL POZZOLANS.**

- A. Comply with AASHTO M 295, either Class N, Class F, or Class C; except the value of available total equivalent alkalies is are not to exceed 1.50% 3.80% as determined by Materials I.M. 491.17. Sources with fly ash between 1.5% and 2.5% available alkalies may be approved based on satisfactory results of the mortar bar expansion test specified in Materials I.M. 491.17. For Class C fly ash, the pozzolanic activity test with lime will not be required.
- B. When Class F is required, a Class C fly ash with minimum total oxides ($\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3$) of 66% and minimum SiO_2 of 38% may be used.
- C. Approval of the source of fly ash will be required. This shall be based on fly ash produced when the power plant is using specific materials, equipment, and processes. Any change in materials, equipment, and processes voids the source approval, and a new approval of the source will be required. Initial approval of Class N pozzolans will be based on meeting the additional requirements of Materials I.M. 491.17.
- D. Inspection and acceptance of fly ash and natural pozzolans will be according to Materials I.M. 491.17.
- E. Fly ash for soil stabilization shall meet ASTM C 618, Class C, except loss of ignition (LOI) requirement will not apply. Fly ash shall also contain a minimum of 22% calcium oxide (CaO).

Section 4115**4115.01, Description.****Add to the end of the first paragraph:**

Unless stated otherwise on the source approval, coarse aggregate for Portland Cement Concrete shall be washed with sufficient agitation to cause material coatings to be separated and removed.

Section 4119**4119, Pipe Backfill Material Under Interstate and Primary Roadways.****Retitle the Section:**

Pipe Bedding and Backfill Material Under for Interstate and Primary Roadways.

Section 4126**4126, Aggregate for Polymer-Modified Microsurfacing.**

Add the Section:

Section 4126. Aggregate for Polymer-Modified Microsurfacing**4126.01 DESCRIPTION.**

Crushed stone. For non-Interstate mixes steel slag may also be used.

4126.02 GRADATION.

For quartzite, granite, and slag meet requirements for Gradation No. 37 of the Aggregate Gradation Table, Article 4109.02. For limestone and dolomite meet requirements for Gradation No. 38 of the Aggregate Gradation Table, Article 4109.02

4126.03 QUALITY.

Meet requirements of Table 4126.03-1 and 4126.03-2 with the exception that use of Friction Type 2 crushed stone requires a maximum abrasion loss of 30% and sand equivalence of not less than 60. Testing is based on aggregate crushed to 3/4 inch nominal size.

Table 4126.03-1: Aggregate Quality

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
A Freeze	10	Office of Materials Test Method No. Iowa 211, Method A
Alumina ^(a)	0.7	Office of Materials Test Method No. Iowa 222
Sand Equivalence	45 (Minimum)	AASHTO T 176
Organic Materials	0.01	Office of Materials Test Method No. Iowa 215
(a) If the Alumina value fails, determine the A Freeze value for specification compliance. Office of Materials Test Method No. Iowa 222 does not apply to gravel or quartzite.		

Table 4126.03-02: Maximum Permissible Amounts of Objectionable Material

Objectionable Materials	Maximum Percent Allowed	Test Method
Unsound chert particles retained on No. 4 sieve	0.5	Materials I.M. 372
Total of all unsound chert, shale, coal, and iron combined	1.0	Materials I.M. 372
Clay Lumps/Friable Particles	0.5	Materials I.M. 368
Organic Materials, except coal	0.1	Iowa DOT Materials Laboratory Test Method No. 215

Section 4127**4127.01, Description.**

Replace the Article:

- A.** Crushed stone, gravel, slag, sand, and filler from an approved source. Crushed gravel may be used to satisfy crushed particle and friction requirements for HMA mixtures. Produce crushed gravel as a separate operation by crushing the portion of a gravel aggregate retained on a screen at least 1/4 inch larger than the sieve size that 100% of the gravel will pass after crushing.
- B.** ~~If a gravel aggregate has 100% passing the 3/8 inch sieve, the Engineer may replace the requirements of Table 4127.02-1 with the requirements of Article 4127.03.~~

4127.02, Coarse Aggregate.

Replace Table 4127.02-1:

Table 4127.02-1: Coarse Aggregate Quality (Flexible Paving Mixtures)

Coarse Aggregate Quality	Type A Maximum %	Type B Maximum %		Test Method
		Primary	Other	
Abrasion	45	45	45	AASHTO T 96
Absorption ^(a)	6.0	6.0	6.0	Iowa DOT Materials Laboratory Test Method No. 201
Alumina ^(b)	0.7	1.5	2.5	Iowa DOT Materials Laboratory Test Method No. 222
A Freeze	10	25	45	Iowa DOT Materials Laboratory Test Method No. 211, Method A
C Freeze	N/A	10	10	Iowa DOT Materials Laboratory Test Method No. 211, Method C
Clay Lumps/Friable Particles	0.5	N/A	N/A	Materials I.M. 368
Organic Material	0.01	0.01	0.01	Iowa DOT Materials Laboratory Test Method No. 215
(a) When a coarse aggregate for use in asphalt fails absorption using Iowa DOT Materials Laboratory Test Method No. 201; absorption determined by Materials I.M. 380 (Vacuum-saturated specific gravity & absorption) will be used. (b) If the Alumina value fails, determine the A Freeze value for specification compliance. Iowa DOT Materials Laboratory Test Method No. 222 does not apply to gravel.				

4127.03, A.

Replace the second sentence:

A gradation for wearing course mixture of no more than 50% retained between two consecutive standard sieves below the No. 4 sieve or gravel aggregate with 100% passing the 3/8 inch sieve meeting these requirements.

Section 4128

4128.

Add the Article:

Section 4128. Stabilization (Foundation) Material

4128.01 DESCRIPTION.

Aggregate of the following types:

- Crushed stone, or
- Crushed PCC, if approved by the Engineer.

4128.02 GRADATION.

Meet the requirements of Gradation No. 13 of the Aggregate Gradation Table, Article 4109.02.

4128.03 QUALITY.

The requirements of Table 4128.03-1 apply to individual virgin aggregates when crushed to a 3/4 inch or 1 inch nominal size for testing:

Table 4128.03-1: Stabilization Material Quality

Macadam Quality	Maximum Percent Allowed	Test Method
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Abrasion	50	AASHTO T 96
C Freeze	20	Office of Materials Test Method No. Iowa 211, Method C

Section 4134

4134.02, Gradation.

Replace the Article:

- ~~A. For natural sand and gravel use Gradation No. 35 of the Aggregate Gradation Table, Article 4109.02.~~
- ~~B. For natural sand use Gradation No. 1 or Gradation No. 36 of the Aggregate Gradation Table, Article 4109.02.~~

Meet requirements for Gradation No. 1, Gradation No. 35, or Gradation No. 36 of the Aggregate Gradation Table, Article 4109.02.

Section 4136

4136.03, Expansion Joint Fillers and Seals.

Add the Article:

- E. Preformed, Pre-Compressed, Self-Expanding, Sealant System with Silicone Pre-Coated Surface.**
1. Furnish an expansion joint system comprised of the following three components:
 - a. Cellular polyurethane foam impregnated with a hydrophobic polymer and factory coated with highway-grade, low modulus, fuel resistant silicone.
 - b. Field-applied epoxy adhesive.
 - c. Field-applied silicone sealant edging.
 2. Use an impregnation agent having proven non-migratory characteristics. The highway grade, low modulus, fuel resistant silicone facing shall be factory applied to the impregnated foam when the foam is at a width greater than the maximum working joint opening and once cured and compressed will form a bellows. The self-expanding foam sealant system shall have a depth as recommended by the manufacturer.
 3. Furnish material capable of movements of +/-50% (100% total) of nominal material size.
 4. Approved sources of sealant systems are listed in Materials I.M. 436.07, Appendix A.

Section 4137

4137, Asphalt Binder.

Replace the Section:

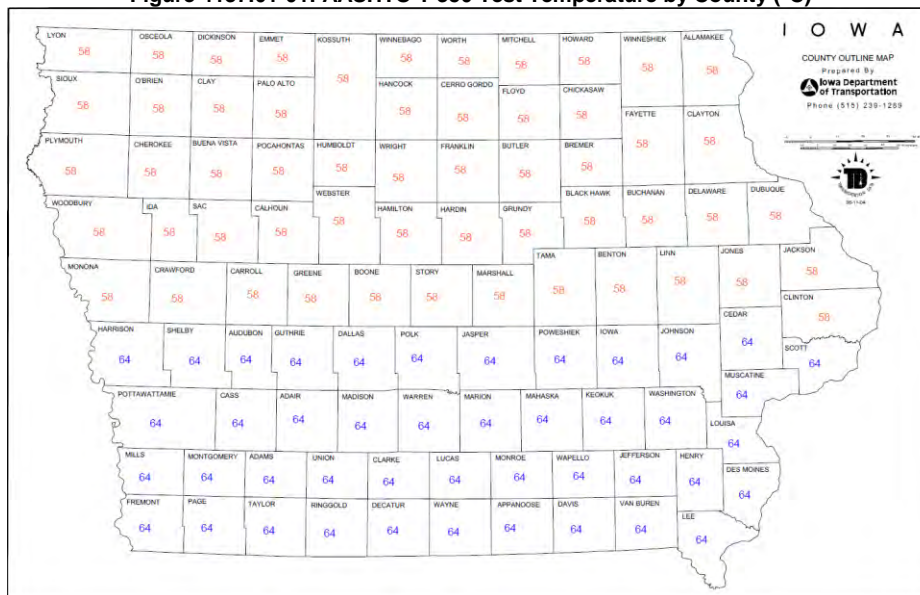
- A. Meet the requirements for the type and grade specified in the contract documents and comply with the Combined States Binder Group.
- B. Determine performance grade according to AASHTO R29.
- C. ~~Do not add acids to modify asphalt binders.~~ Polyphosphoric Acid may be used as a co-modifier up to 0.4% by weight of binder. The Engineer may verify with laboratory testing.
- D. ~~For asphalt binder grades with a temperature spread of 92° or greater⁴, meet the requirements of the Combined State Binder Group as follows:~~ Except for Standard Traffic grades, meet CSBG requirements for Minimum Percent Recovery when tested per AASHTO T 350 at the high temperature identified by the PG grade.

Table 4137.01-1: PG+ Requirements

AASHTO R 29 Grade	AASHTO T 350 Minimum Percent Recovery (R _{3.2})		DSR Phase Angle; degrees (original binder)
	Test Temperature ²		
	58°C	64°C	
58-34P	30	25	77
64-28P	30	25	77
64-34P	55	45	75
70-22P	55	45	77
70-28P	55	45	75
70-34P	75	75	73
76-28P	75	75	73
76-34P	75	75	73
82-22P	75	75	73

1 — Temperature spread is determined by subtracting low temperature from high temperature; for example PG 64-28: 64 - (-28) = 92.
 2 — See Figure 4137.01-01 for test temperatures.

Figure 4137.01-01: AASHTO T 350 Test Temperature by County (°C)



(Delete figure)

E. Waive stress sensitivity limits (J_{nr} Diff) for AASHTO M 332 when J_{nr} at 3.2 kPa is below 0.5 kPa^{-1} .

Section 4149

4149.02, A, Sanitary Sewer (Gravity Mains).

Add the Articles:

9. **Double Walled Polypropylene Pipe 12 inch to 30 inch.**
 - a. Comply with ASTM F 2736
 - b. Minimum pipe stiffness per ASTM D 2412, 46 psi.
 - c. Integral bell and spigot joint complying with ASTM D 3212 and ASTM F 477.

10. **Triple Walled Polypropylene Pipe 30 inch to 36 inch.**
 - a. Comply with ASTM F 2764
 - b. Minimum pipe stiffness per ASTM D 2412, 46 psi.
 - c. Integral bell and spigot joint complying with ASTM D 3212 and ASTM F 477.

4149.02, B, 3, Sewage Air Release Valve.

Replace Articles a and b:

a. General.

Consists of an elongated tapered or conical body ~~with outward-slanting walls~~ and a float to operate (open and close) under pressure without spillage. Provide valves suitable for pressures up to 150 psi. Use a float with a ~~flexible~~ linkage connection to the seal plug assembly to prevent irregular air release and protect the connecting rod. Ensure the bottom of the valve body is sloped or funnel-shaped to encourage the accumulated sewage and solids to drain from the valve. Preserve a volume of air at all times between the liquid sewage and the seal plug assembly. Provide a flushing port with attachments for backwashing.

b. Materials.

- 1) ~~Body and Cover: Stainless steel, fiberglass-reinforced nylon, or other corrosion-resistant materials.~~
 - a) Stainless steel: ASTM A 351.
 - b) Cast Iron: ASTM A 126, Grade B.
 - c) Ductile Iron: ASTM A 536, Grade 65-45-12.
 - d) Other corrosion resistant materials.
- 2) Internal Metal Components: Stainless steel.
- 3) Float: Stainless Steel, ASTM A 240/A 240M, Type 304 or Type 316, or foamed polypropylene.
- 4) Seal Plug Assembly: Stainless steel, foamed polypropylene, EPDM rubber, Nitrile (Buna-N) rubber, and reinforced nylon.

4149.03, Storm Sewer Pipe.

Replace Articles A and B:

A. Reinforced Concrete Pipe.

1. Comply with Section 2419 and ASTM C 76.
2. Minimum Class 2000D (Class III, Wall B).
3. Tongue and groove joints ~~with cold-applied bituminous or rubber rope jointing materials, unless otherwise specified~~ wrapped with engineering fabric. ~~If specified, use rubber O-ring or profile gasket complying with ASTM C 443 (AASHTO M 315).~~
4. If specified, ~~wrap exterior of each joint with engineering fabric~~ use rubber O-ring or profile gasket complying with ASTM C 443.

B. Low Clearance Reinforced Concrete Pipe.

1. Comply with Section 2419 and ~~ASTM C 506~~ either AASHTO M 206 (RCAP) or M 207 (RCEP).
2. Minimum Class 2000D (A-III or HE-III).
3. ~~Use~~ Tongue and groove joints ~~with cold-applied bituminous or rubber rope gasket jointing materials, unless specified otherwise~~ wrapped with engineering fabric.
4. If specified, ~~wrap exterior of each joint with engineering fabric~~ use rubber O-ring or profile gasket complying with ASTM C 443.

4149.03, E, Jointing Material for Concrete Apron.

Delete the Article:

~~**E. Jointing Material for Concrete Apron.**~~

~~1. **Bituminous Jointing Material.**~~

~~Use a cold-applied mastic sewer joint sealing compound recommended by the manufacturer for the intended use and approved by the Engineer. Comply with ASTM C 990.~~

~~2. **Rubber Rope Gasket Jointing Material.**~~

~~Comply with ASTM C 990.~~

~~3. Rubber O-Ring or Profile Gasket.~~

~~Comply with ASTM C 443 (for RCP) or ASTM C 361 (for RCPP).~~

4149.04, H, 1.

Replace the Article:

Use one of the following methods for grade adjustments of manhole or intake frame and cover assemblies:

a. Reinforced Concrete Adjustment Rings.

Comply with ASTM C 478. Provide rings free from cracks, voids, and other defects.

b. High Density Polyethylene Adjustment Rings.

Comply with ASTM D 1248 for recycled plastic.

- 1) Test and certify material properties by the methods in Table 4149.04-1:

Table 4149.04-1: Test Methods

Property	Test Method	Acceptable Value
Melt Flow Index	ASTM D 1238	0.3 to 30 g/10 min.
Density	ASTM D 792	0.94 to 0.98 g/cm ³
Tensile Strength	ASTM D 638	2000 to 5000 psi

- 2) Do not use polyethylene grade adjustment rings when they are exposed to HMA pavement or heat shrink infiltration barriers.

- 3) When used in a single configuration, provide tapered adjustment ring with thickness that varies from 1/2 inch to 3 inches.

- 4) Install adjustment rings on clean, flat surfaces according to the manufacturer's recommendations with the proper butyl rubber sealant/adhesive.

c. Expanded Polypropylene Adjustment Rings.

Comply with ASTM D 4819 for expanded polypropylene when tested according to ASTM D 2375.

- 1) Use adhesive meeting ASTM C 920, Type S, Grade N5, Class 25.
- 2) Provide finish rings with grooves on the lower surface and flat upper surface.
- 3) Do not use when heat shrinkable infiltration barrier is used.

4149.04, J, 1, Infiltration Barrier.

Add the Article:

d. Heat Shrink Sleeve.

Heat-shrinkable wrap around sleeve designed for protection of buried and exposed sanitary sewer manholes. Do not use with polypropylene or polyethylene adjustment rings.

1) Primer.

Compatible with concrete, ductile and cast iron, and sleeve material.

2) Sleeve and Backing.

Table 4149.04-2: Heat Shrink Sleeve

Property	Test Method	Acceptable Value
Water Absorption	ASTM D 570	0.05% maximum
Low Temperature Flexibility	ASTM D 2671	-40°F
Tensile Strength	ASTM D 638	2900 psi minimum
Elongation	ASTM D 638	600% minimum
Hardness	ASTM D 2240	Shore D: 46
Shrink Factor		40% minimum
Thickness		0.1 inch minimum

3) Adhesive.

Softening point of 212°F maximum meeting ASTM E 28.

Section 4151**4151.03, Reinforcement for Structures.**

Replace Articles C, D, E, F, G, and H:

C. Epoxy Coated Reinforcement.

1. Ensure reinforcement (deformed and plain) required to be epoxy-coated has a protective coating of epoxy applied by electrostatic spray method according to the requirements of ASTM A 775.
2. Acceptance and handling of epoxy-coated reinforcing steel reinforcement bars at the project site are to be according to the requirements of these specifications and the requirements of Materials I.M. 451.03B.

~~D. Stainless Steel Reinforcement.~~

- ~~1. Unless otherwise specified in the contract documents, stainless steel reinforcement bars shall be deformed and meet requirements of ASTM A 955 and be the grade, UNS designations, and types listed in Materials I.M. 452.~~
- ~~2. Bar sizes will be specified in the contract documents.~~
- ~~3. Bars shall be heat treated using one of the three methods listed in ASTM A 955.~~
- ~~4. If welding and/or tack welding is employed in the placement of stainless steel reinforcement, the following requirements shall be met prior to welding:

 - ~~a. Welding shall not be performed without prior approval of Engineer.~~
 - ~~b. Welding procedure suitable for the chemical composition and intended use shall be submitted for approval prior to welding.~~
 - ~~c. Welding shall be performed by a state certified welder.~~
 - ~~d. Welding and/or tack welding shall be performed in accordance with the requirements of the contract documents, and latest edition of the American Welding Society, AWS D1.6, including requirements for minimum preheat and interpass temperature.~~~~

~~E. Surface Preparation.~~

- ~~3. Thoroughly blast (near-white) clean reinforcing steel surfaces to be coated. Remove mill scale, rust, and foreign matter. Ensure the blast media produces a suitable anchor pattern profile (a depth of 2.0 to 4.0 mils). Apply the coating within 0.5 hour after cleaning.~~
- ~~4. Ensure blast media meets the requirements of ASTM A 775. A maximum of 10% steel shot may be added to blast media.~~

~~F. Repair to Damage Incurred During Fabrication.~~

- ~~5. Ensure coating damage due to fabrication or handling at the fabricator facility is repaired using patching material meeting the requirements of Section 3.1 of ASTM D 3963. The fabricator is responsible for the repair.~~

~~G. Repair of Damage Incurred during Shipment and Handling at the Job Site.~~

~~Comply with the following:~~

- ~~6. Repair visible damage incurred during shipment, storage, and /or placement of epoxy-coated bars at the job site.~~
- ~~7. Use coating patch materials of organic composition consisting of a two-component liquid properly mixed that hardens to a solid form upon curing. Approved repair/patch compounds are listed in Materials I.M. 451.03B.~~
- ~~8. Repair damage to the coating caused by shipment, storage, and/or placement at the job site.~~

- 4 9. Ensure sheared ends/saw-cut ends of the coated bars have adequate coating, have no signs of surface rust or damage, and are repaired and/or coated with the same patching material that is used for repairing damaged coating.
- 5 10. The maximum amount of repaired, damaged areas is not to exceed 2% of the total surface area in each 1.0 linear foot of the bar. Should the amount of damage exceed the 2% in 1.0 linear foot, then remove that bar and replace with an acceptable bar. Coating the cut ends will not be included in the repair percentage.
- 6 11. Apply a minimum coating thickness of 7 mils to areas to be repaired.
- 7 12. Allow patches to cure (dry to the touch) before placing concrete over the coated bars.
- 8 13. Prepare the surface, repair it, and apply patches according to the resin manufacturer's recommendations.

H D. Storage, Handling, and Placement at the Job Site.

1. Comply with the following:
 - a. Store coated bars or bundles above ground on wooden or padded supports with padded timbers placed between bundles when stacking is necessary. Place supports to prevent sags in the bundles.
 - b. Ensure systems for handling (loading, unloading, storing) the coated bars at the job site have padded contact areas. Do not drop or drag coated bars or bundles.
 - c. Store coated and uncoated steel reinforcing bars separately.
 - d. Minimize handling and re-handling of the coated bars.
 - e. Tie coated bars using tie wire coated with epoxy, plastic, Nylon, or other non-conductive Materials that will not damage or cut the coating.
 - f. Use a non-conductive Material compatible with concrete to coat or fabricate bar supports or spacers.
2. Use a non-transparent material to cover coated bars if they will be exposed for 2 months or more. Ensure adequate ventilation is provided to minimize condensation under the cover.

E. Stainless Steel Reinforcement.

1. Stainless steel reinforcement bars shall be deformed and meet requirements of ASTM A 955 and be one of the following grade, UNS designations, and (types): listed in Materials I.M. 452.
 - S24100 (XM-28)
 - S31653 (316LN)
 - S31803
 - S32304 (2304)

UNS designations (types) listed in this specification meet the requirements of ASTM A 955. Bars shall be heat treated using one of the three methods listed in ASTM A 955.
2. Supply bars free of dirt, mill scale, oil and debris. Stainless steel reinforcing bars shall be pickled to a bright or uniform light finish. Bars supplied displaying rust/oxidation, questionable blemishes, or lack of bright uniform pickled surface may be rejected.
3. Employ lifting, handling, securing and transport equipment and processes that will prohibit contamination of stainless steel reinforcing from fragments of carbon steel or other material residues/fragments. Minimize handling and re-handling of stainless steel reinforcing bars. Do not drop or drag stainless steel reinforcing bars or bundles.
4. Store stainless steel reinforcing bars or bundles above ground on wooden supports with timbers placed between bundles when stacking is necessary. Place supports to prevent sags in the bundles. Store stainless steel reinforcing separately from coated or uncoated reinforcing bars.

5. Fabricate and bend stainless steel bars using tools and equipment that have been thoroughly cleaned or otherwise modified to prohibit contamination from fragments of carbon steel or other material residues/fragments.
6. Protect stainless steel from contamination during construction operations including cutting, grinding, or welding above or in the vicinity of the stainless steel.
7. Stainless steel reinforcing bars shall not be permitted to come in direct contact with uncoated reinforcing bars, bare metal form hardware, or other bare or galvanized metals unless specifically approved herein or otherwise approved in writing by the Engineer. When practicable, stainless steel reinforcing shall maintain a minimum 1 inch clearance from bare or galvanized metals. When 1 inch clearance is not practicable, stainless steel reinforcing shall be isolated from contact with bare or galvanized metals by a wrap of electrical tape or other approved means. Protective wrap shall encompass the full perimeter of the bar and extend at least 1 inch in each direction past the point of closest contact between the stainless bar and dissimilar metal. Stainless steel reinforcing bars may be in direct contact with undamaged epoxy coated reinforcing bars. Stainless steel reinforcing bars may be in direct contact with shear studs on steel girders.
8. **Bar Chairs.**
 - a. Bar chairs for support of stainless steel reinforcing shall comply with one of the following:
 - 1) Bar chairs fabricated from solid plastic, meeting requirements of Materials I.M. 451.01.
 - 2) Bar chairs fabricated from stainless steel. Stainless steel materials for bar chairs shall be compatible with the type of stainless steel materials used for reinforcing bars.
 - 3) Epoxy coated bar chairs meeting requirements of Materials I.M. 451.01, except where prohibited by the contract documents. Care shall be taken during installation of epoxy coated bar chairs to prevent damage to epoxy coating. Bar chairs exhibiting cracked or otherwise damaged epoxy coating shall be replaced.
 - b. Non-coated carbon steel bar chairs shall not be permitted to support or come into direct contact with stainless steel reinforcing.
9. **Tie Wire.**
 - a. Tie wire for stainless steel reinforcing shall comply with one of the following:
 - 1) Tie wire coated with epoxy, plastic, nylon, or other non-conductive materials. Care shall be taken during installation of coated wire ties to prevent damage to protective coating. Wire ties exhibiting cracked or otherwise damaged protective coating shall be discarded and replaced with undamaged ties.
 - 2) Stainless steel tie wire. Stainless steel materials for tie wire shall be compatible with the type of stainless steel materials used for reinforcing bars.
 - b. Coated wire ties or stainless steel wire ties as noted herein shall be required for bar tie locations in which a stainless steel reinforcing bar is present (includes stainless-to-stainless bar tie locations and stainless-to-epoxy coated bar tie locations.)
10. Prior to placing concrete, ensure reinforcing bars are clean and exhibit a bright finish free of contaminants, oxidation, or rust. Oxidation or rust on bar surface will not be permitted and shall be immediately brought to the attention of the Engineer.
11. At the discretion of the Engineer, isolated areas exhibiting minor oxidation or rust attributable to trace contaminants on bar surface shall be thoroughly cleaned and treated with pickling paste marketed for such application. Bars exhibiting evidence of oxidation/rust not attributable to trace contaminants on bar surface, or oxidation/rust otherwise suspected to have a negative impact on the intended performance and/or service life of the bar, may be rejected.
12. If welding and/or tack welding is employed in the placement of stainless steel reinforcement, the following requirements shall be met prior to welding:
 - a. Welding shall not be performed without prior approval of the Engineer.
 - b. Welding procedure suitable for the chemical composition and intended use shall be submitted to the Engineer for approval prior to welding.
 - c. Perform welding using a state certified welder.
 - d. Perform welding and/or tack welding in accordance with the requirements of the contract documents, and latest edition of AWS D1.6, including requirements for minimum preheat and interpass temperature.

4151.07, A, Reinforcement Couplers.

Replace Articles A, B, C, and D:

A. Strength Requirements.

1. ~~Withstand 80,000 cycles of fatigue tensile loading from 5000 psi to 30,000 psi at a maximum frequency of 5 cycles per second. Ultimate Tensile Strength of splice shall be minimum 90% of ultimate tensile strength of reinforcement bars.~~
2. Develop in tension at least 125% of the specified yield strength of the bars being spliced ~~both before and after fatigue loading.~~
3. Maximum slip of coupler after being loaded to 30,000 psi tension and unloaded to 3000 psi tension:
 - For bar size up to No. 14 (45) - 0.01 inches
 - For No. 18 (60) Bars - 0.03 inches

~~**B.** Couplers shall be made of steel conforming to one of the following:~~

- ~~• ASTM A 108, Level one or Level two,~~
- ~~• ASTM A 519 Grade 1025, or~~
- ~~• ASTM A 576.~~

~~**C B.** Epoxy coated couplers shall be coated according to ASTM A 934. Other couplers shall have similar steel properties and same coating properties as reinforcement being spliced.~~

~~**D C.** Install couplers following manufacturer's requirements.~~

Section 4152

4152.02, C.

Replace Table 4152.02-1:

Table 4152.02-1: Non-Fracture Critical Tension Component Impact Test Requirements

Grade	Thickness (in.) and Joining Method	Minimum Average Energy, ft.lbf. at °F
36T ^(a)	to 4, mechanically fastened or welded	15 at 40
50T ^(a, b) , 50WT ^(a, b)	to 2, mechanically fastened or welded over 2 to 4, mechanically fastened over 2 to 4, welded to 4	15 at 40 15 at 40 20 at 40 20 at 10
HPS 50WT ^(a, b)	to 4	25 at -10 25 at 0 -30 25 at 0 35 at 0 -30
400T HPS 70WT ^{(c)(d)} HPS 100WT ^(c)	to 2 1/2, mechanically fastened or welded over 2 1/2 to 4, mechanically fastened over 2 1/2 to 4, welded	
(a) CVN-impact testing of "H" heat frequency testing according to ASTM A 673. (b) If the yield point of the material exceeds 65 ksi, reduce the testing temperature for the minimum average energy required by 15°F for each increment of 10 ksi above 65 ksi. The yield point is the value given on the certified "Mill Test Report". (c) CVN-impact testing of "P" plate frequency testing according to ASTM A 673. (d) If yield strength of structural product exceeds 85 ksi, testing temperature for minimum average energy required shall be reduced by 15°F for each increment of 10 ksi above 85 ksi. Yield strength is the value given in the mill test report.		

Section 4153**4153.06, B, 1, a.****Replace** the Article:

High strength bolts, nuts, and washers meet the requirements of the appropriate ASTM Specifications as follows:

- bolts A 325
- nuts A 563 Grade DH3
- washers F 436

Section 4154**4154, Fence Materials.****Replace** Section 4154:**4154.01 DESCRIPTION.**

- A. Materials covered by this section include woven wire farm field and deer fence fabric, chain link fabric, barbed wire, steel fence posts, wood fence posts, tie and brace wire, gates, and special fittings.
- B. Use material of the size and type designated in the contract documents. ~~Use new material meeting the requirements of the following provisions.~~
- C. Inspection and acceptance of fence materials will be according to Materials I.M. 454.10.
- ~~D. Ensure similar parts with different shapes or protective coatings are not intermingled within the project limits.~~

4154.02 FIELD FENCE AND DEER FENCE FABRIC.

- A. Field fence shall conform to AASHTO M 279 ~~and~~ or ASTM A 116 and shall be, unless otherwise specified:
 1. Type Z, Class 3.
 2. Design numbers 1047-6-11 or 939-6-11 for grade 60 wire or design numbers 1047-6-12 1/2 or 939-6-12 1/2 for grade 125 wire.
 3. Use galvanized (as determined by visual inspection) steel rod for splicing fence material.
- B. Deer fence shall be woven wire that meets the following requirements:
 1. 12.5 gauge wire according to ASTM A 116 (excluding wire spacing and fence height).
 2. Wires are spaced horizontally and vertically as shown in the contract documents ~~or closer.~~

4154.03 CHAIN LINK FABRIC.

- A. When chain link fence is specified in the contract documents, chain link fabric shall conform to one of the following:
 1. Zinc coated fabric meeting requirements of ASTM A 392, Class 2 (2.0 ounces per square foot) or AASHTO M 181 Type I, Class D.
 2. Aluminum coated fabric meeting the requirements of ASTM A 491 or AASHTO M 181, Type II.
 3. PVC coated fabric meeting requirements of ASTM F 668, Class 2b or AASHTO M 181, Type IV, Class B Fused.
- B. Unless otherwise specified in contract documents, use:

1. 9 gauge coated wire with a breaking strength of 1290 pounds.
2. Height of fabric of 72 inches.
3. Selvage knuckled at both the top and bottom.
4. Mesh size 2 ± 1/8 inches.

4154.04 BARBED WIRE.

Unless otherwise specified in contract documents, use barbed wire conforming to ASTM A 121 or AASHTO M 280, Design Number 12-4-5-14R, Type Z Class 3.

4154.05 BRACE WIRE, TENSION WIRE, AND TIE WIRE.

- A. Tension wire shall meet requirements of AASHTO M 181 or one of the following:
 1. ASTM A 824 or A 817, Type II, Class 3.
 - ~~2. ASTM A 121, Type Z, Class 3 zinc coated or aluminum coated.~~
 3. 2. ASTM A 824 or A 817, Type I.
 4. 3. ASTM F 1664, PVC (Vinyl) Coated, Class 2b.
- B. Brace and tie wire shall meet the requirements of ASTM F 626 zinc coated or aluminum coated.
 1. Where specified, round metallic-coated tie wires, clips, and hog rings shall be polymer coated to match the color of the chain-link fabric as selected from ASTM F 934
 2. The coating process and metallic-coated core wire materials shall be in accordance with ASTM F 668.
- C. Unless designated otherwise, use wire sizes no smaller than the following diameters:

Table 4154.05-1: Wire Sizes

Use	Wire Size
Tension wire	No. 7
Brace wire	No. 9
Tie wires or clips for fastening field fence to steel posts	No. 12
Use tie wires for chain link fence no smaller than No. 9 diameter for post ties or No. 12 diameter for rail and brace ties. Equivalent steel clips or aluminum wires or clips may be used if the Engineer approves.	

4154.06 STAPLES.

- A. Unless otherwise specified in the contract documents, use fence staples conforming to ASTM F 1667 - 13, Table 57: F 1667 ST FN - 06 Z.
- B. Obtain Engineer’s approval for the staples to be used.

4154.07 WOOD POSTS.

- A. Use pine posts of the size and length designated in the contract documents that meet the requirements of Section 4164 with pressure preservative treatment meeting the requirements of Section 4161.
- B. Unless specified otherwise, use round stock posts of the following sizes and lengths:

Table 4154.07-1: Post Sizes and Lengths

Use	Length, feet

Line posts, 4 inch top	7
End, corner, gate, pull, angle, and brace posts, 6 inch top	8

- C. If contemplating driving the line posts, the tip of the post may have a blunt point made before treatment and located near the center line of the post.

4154.08 BRACES FOR FIELD FENCE.

- A. Unless otherwise specified in the contract documents, use either of the following between wood pull posts:
1. 2 3/8 inch ~~SS-40~~ ASTM F 1043 steel pipe.
 2. 5 inch diameter wood posts.
- B. Use diagonal trussing with a double-wrapped 9 gauge, Class 3 steel brace wire.
- C. Ensure ends are flattened to fit squarely against the posts with brace approximately horizontal.

4154.09 STEEL LINE POSTS FOR FIELD FENCE AND DEER FENCE.

- A. Use T-section steel posts, of the length specified, as line posts with wood posts, as shown in the contract documents. Do not use them for corner, brace, pull, end, or gate posts.
- B. Only one type of steel post may be used in any installation 1000 feet or less in length.
- C. Equip posts with lugs or other approved means to prevent the fence fabric from moving vertically.
- D. Use nominal 1.33 pounds per foot T-section post meeting requirements of ASTM A 702 and hot dip galvanizing requirements of ASTM A 123.
- E. Completely paint the finished post with a prime coat with no limitation on color or tip identification except as provided for 1000 foot installations. Ensure the paint is thoroughly dry before posts are bundled for shipment.

4154.10 STEEL POSTS, BRACES, AND RAILS FOR CHAIN LINK FENCE.

- A. Steel pipe length shall be designated in the contract documents and shall conform to ~~AASHTO M 181 (ASTM)~~ one of the following requirements:
1. ~~AASHTO M 181 Grade 1 or (ASTM F 1083); minimum average zinc coating weight of 1.8 ounces per square foot~~ Schedule 40.
 2. ~~AASHTO M 181 Grade 2 or (ASTM F 1043, Group I-C IC); external zinc coating minimum of 0.9 ounces per square foot and internal zinc coating minimum 0.9 ounces per square foot. Group IC galvanized before forming product shall be minimum G-210 (ASTM A 653).~~
- B. When specified, PVC thermoplastic coating shall be fused and adhered to zinc-coated posts with a minimum coating thickness of 0.010 inch conforming to ASTM F 934 & ASTM F 1043 ~~Sections 7 and 8.~~

4154.11 FITTINGS FOR CHAIN LINK FENCE.

- A. Comply with the following:
1. Attach braces to posts using fittings which will hold both the post and brace rigidly.
 2. Use diagonal truss rods of 3/8 inch diameter, round steel rods with an appropriate commercial means for tightening.
 3. Furnish a locknut or other device to hold the tightening device in place.
 4. Furnish a suitable sleeve or coupling device, recommended by the manufacturer, to connect sections of top rail and to provide for expansion and contraction.

5. Use stretcher bars no less than 3/8 inch diameter, or equivalent cross section area, with suitable clamps for attaching fabric to corner, end, or gate posts.

B. Ensure fittings also conform to AASHTO M 181 or ASTM F 626.

4154.12 GATES.

A. Field Fence and Chain Link Fence.

1. Ensure gates provide the width of opening shown in the contract documents. Install a vertical stay in gates more than 6 feet wide. Where the width of opening specified is:
 - 16 feet or less, provide a single gate frame.
 - More than 16 feet, provide two gate frames using a drop bar locking device allowing operation as a double gate.
2. Ensure each gate is furnished complete with necessary hinges, latch, and other special fittings recommended for the type of gate and gate post being installed.
3. For chain link fence gates, use the pipe size shown in the contract documents or approved by the Engineer. When size is not shown in the contract documents, use:
 - 1 1/2 inch nominal diameter pipe for gates 6 feet wide or more, and
 - 1 1/4 inch nominal diameter pipe for gates less than 6 feet wide.
4. Use gate fabric similar to that used for the fence. Attach using stretcher bars.
5. Use adjustable rods to cross truss gates 6 feet wide or more.
6. Ensure materials are galvanized with no less than 0.8 ounce per square foot of surface. Gates for field fence may be painted with a prime coat and an enamel finish coat.

B. Deer Fence.

Furnish the following, galvanized according to Article 4154.10:

1. Tines molded in one piece of steel with no welds.
2. Structural steel tubes with wall thickness of 0.1875 inches and unit weight of 4.32 pounds per foot.
3. Support plates, hinges, and top braces.

Section 4155

4155.04, B, 3.

Replace the first sentence:

Ensure steel posts ~~and blocks~~ are galvanized according to requirements of ASTM A 123.

4155.05, C.

Delete the Article:

~~**C.** Ensure galvanizing is done after fabrication and after all bolt holes have been drilled.~~

Section 4160

4160.01, General Requirements.

Replace the Articles:

B. Pentachlorophenol.

Meet the requirements of AASHTO M 133 (AWPA P4 P35). Ensure petroleum solvent meets the requirements of AWPA P9 HSA for Hydrocarbon Solvent Type A.

C. Copper Napthenate.

Meet the requirements of AASHTO M 133 (AWPA P8 P36). Ensure petroleum solvent meets the requirements of AWPA P9 HSA for Hydrocarbon solvent Type A.

D. Ammoniacal Copper Zinc Arsenate (ACZA).

Meet the requirements of AASHTO M 133 (AWPA P5 P22).

E. Chromated Copper Arsenate (CCA).

Meet the requirements of AASHTO M 133 (AWPA P5 P23), Type A, Type B, or Type C.

Section 4161

4161.03, A.

Replace Table 4161.03-1:

Table 4161.03-1: Minimum Preservative Retention Requirements (lb./cu. ft. of wood)

Material and Usage		Retention					AWPA UC-Section-Special Req.
		Creosote ^(a)	Pentachlorophenol ^(a)	Copper Napthenate ^(a)	ACZA ^(b)	CCA ^(b,c)	
Lumber and Timber for Structures ^(d)		AWPA U1	AWPA U1	AWPA U1	AWPA U1	AWPA U1	AWPA U1
Piles for Foundation							
Douglas Fir		17	0.85	0.14	-	-	UC4C-E
Southern Pine		12	0.60	0.10	-	-	
Guardrail Posts, and Spacer Blocks							
Sawed Four Sides	10	0.6 0.5	0.075 0.06	0.5 0.4	0.5 0.4	UC4A-A-4.3	
Fence, Guide, and Sign Posts							
Round		-	0.4	0.055 0.4	0.4	UC4A-B	
Sawed Four Sides		10	0.5	0.060 0.4	0.4	UC4A-A-4.3	
^(a) Oil type preservatives. ^(b) Waterborne preservatives. ^(c) Do not use for the treatment of Douglas Fir. ^(d) Retentions based on AWPA Use Category and Commodity Specifications for different applications.							

4161.03, B, 6, Handling Treated Products.

Add to the end of the Article:

End cuts, drilled holes, other fabrication after treatment, and damage/injuries require field treatment and shall be treated with preservatives as specified in AWPA M4.

4161.03, B, 7, b.

Replace the first sentence:

Ensure all treated wood material that requires a grade, with the exception of 45 inch Terminal Posts¹, displays a quality grade mark of an accredited grade monitoring and inspection agency approved under the American Lumber Standards Committee (ALSC).

Section 4164**4164.01, A.**

Replace the second sentence:

For sawed wood posts and wood sign posts, Ensure a straight line from the centers of the ends of a post does not deviate from the longitudinal axis of the post at any point by more than 0.5% of the length of the post.

Section 4169**4169.07, B, Hydraulic Mulches.**

Add as the first sentence of the Article:

Materials used shall be safe to the applicator and adjacent workers, and nontoxic to plants, fish, and other wildlife when properly applied according to EPA and other regulatory agencies.

Replace Articles 2 and 3:

2. Bonded Fiber Matrix.

- ~~a. Long strand wood fibers held together by organic tackifiers and bonding agents that, when dry, become insoluble and non-dispersible.~~
- ~~b. Upon curing (24 to 48 hours) forms a continuous, 100% coverage, flexible, absorbent, erosion-resistant blanket that encourages seed germination.~~
- ~~c a. Manufactured to be applied with standard hydraulic mulching equipment and dyed green to facilitate visual metering during application.~~
- ~~d. Contains no growth or germination inhibiting factors.~~
- ~~e. Physical Properties:~~
 - ~~1) **Fibers:** Virgin wood, greater than 88% by volume.~~
 - ~~2) **Organic Material:** Greater than 96% by volume.~~
 - ~~3) **Tackifier:** 8 to 10%.~~
 - ~~4) **pH:** 4.8 minimum.~~
 - ~~5) **Moisture Content:** 12% ±3%.~~
 - ~~6) **Minimum Water Holding Capacity:** 1.2 gallons per pound.~~
- ~~f b. All components pre-packaged by manufacturer to ensure material performance and compliance. Field mixing of additives or any components will not be allowed.~~
- ~~g c. Other products not meeting requirements of Article 4169.07, B, 2, e, may be approved if they mMeet the following requirements:~~
 - 1) Contain non-toxic tackifiers that upon drying become insoluble and non-dispersible to eliminate direct raindrop impact on soil according to ASTM D 7101 and EPA 2021.0-1.
 - 2) Contain no germination or growth inhibiting factors and do not form a water-resistant crust that can inhibit plant growth.
 - 3) Hydraulic mulch that is completely photo-degradable or biodegradable.
 - 4) Contain a minimum 90% organic material according to ASTM D 2974.
 - 5) Have a rainfall event (R-factor) of $140 < R$ according to ASTM D 6459.
 - 6) Have a cover factor of $C \leq 0.03$ according to ASTM D 6459.
 - 7) Vegetation Establishment of 400% minimum according to ASTM D 7322.
 - 8) Water Holding Capacity 600% minimum according to ASTM D 7367.

3. Mechanically-Bonded Fiber Matrix.

- ~~a. Long strand wood fibers and crimped, interlocking synthetic fibers.~~
- ~~b. Upon curing (2 hours) forms a continuous, 100% coverage, flexible, absorbent, porous, erosion-resistant blanket that encourages seed germination.~~

- ~~e a.~~ Manufactured to be applied with standard hydraulic mulching equipment and dyed green to facilitate visual metering during application.
- ~~d.~~ Contains no growth or germination inhibiting factors.
- ~~e.~~ Physical Properties:
 - ~~1) Virgin Wood Fibers: 73% minimum.~~
 - ~~2) Crimped, Interlocking Synthetic Fibers: 5% ±1%.~~
 - ~~3) Tackifier: 10% ±1%.~~
 - ~~4) Moisture Content: 12% ±3%.~~
 - ~~5) Minimum Water-Holding Capacity: 1.2 gallons per pound.~~
 - ~~6) pH: 4.8 minimum.~~
- ~~f b.~~ All components pre-packaged by manufacturer to ensure material performance and compliance. Field mixing of additives or any components will not be allowed.
- ~~g c.~~ Other products not meeting requirements in Article 4169.07, B, 3, e, may be approved if they meet the following requirements:
 - 1) Contain non-toxic tackifiers that upon drying become insoluble and non-dispersible to eliminate direct raindrop impact on soil according to ASTM D 7101 and EPA 2021.0-1.
 - 2) Contain no germination or growth inhibiting factors and do not form a water-resistant crust that can inhibit plant growth.
 - 3) Hydraulic mulch that is completely photo-degradable or biodegradable.
 - 4) Contain a minimum 90% organic material according to ASTM D 2974.
 - 5) Have a rainfall event (R-factor) of $175 < R$ according to ASTM D 6459.
 - 6) Have a cover factor of $C \leq 0.01$ according to ASTM D 6459.
 - 7) Vegetation Establishment of 500% minimum according to ASTM D 7322.
 - 8) Water Holding Capacity of 700% minimum according to ASTM D 7367.

4169.10, Special Ditch Control, Turf Reinforcement Mat, Slope Protection, and Outlet or Channel Scour Protection (Transition Mat).

Replace the title:

SPECIAL DITCH CONTROL, TURF REINFORCEMENT MAT, SLOPE PROTECTION, AND OUTLET OR CHANNEL SCOUR PROTECTION (TRANSITION MAT).

4169.10, A, Wire Staples.

Replace the Article:

Meet the following requirements for wire staples ~~for holding special ditch control wood excelsior mat and special ditch control jute mesh over sod:~~

1. U-shaped wire staples.
2. Each leg a minimum of 6 inches long for special ditch control and slope protection and 10 inches long for turf reinforcement mat. In sandy soil conditions the Engineer may require the length of each leg to be a minimum of 12 inches.
3. No. 11 diameter wire.
4. Staples of sufficient hardness to facilitate installation without bending.

4169.10, F, Outlet or Channel Scour Protection (Transition Mat).

Replace the title:

Outlet or Channel Scour Protection (Transition Mat).

4169.12, Perimeter and Slope Sediment Control Device.

Replace the Article:

A. General.

Interstate and Primary highway projects shall use sediment logs only.

1. Provide wattles, sediment logs, and filter socks consisting of ~~wood products (including wood mulch), cereal grain straw, or native grass straw~~ the following materials contained in a tube of photo degradable fabric or synthetic netting:
 - a. Wattles: Cereal straw or native grass straw certified by the Iowa Crop Improvement Association or other state's Crop Improvement Associations as Certified Noxious Weed Seed Free Mulch. Wattles with observed seed heads will not be accepted.
 - b. Sediment logs: Wood excelsior fibers with 80% of the wood excelsior fibers being 6 inches long or longer.
 - c. Filter socks: Compost (from an approved source meeting Article 4169.08) wood chips, or mulch.
2. Fill wattles, sediment logs, and filter socks using a mechanical device. Hand filling of wattles, sediment logs, and filter socks will not be allowed.
3. Ensure wattles, sediment logs, and filter socks do not contain:
 - A visible admixture of refuse or other physical contaminants,
 - Germination or growth inhibiting factors, or
 - Material toxic to plant growth.
4. Ensure wattles, sediment logs, and filter socks have waterproof identification tags printed using permanent ink and containing manufacturer's name and address. For wattles and sediment logs, tags shall be attached to the inside of the netting of each wattle or sediment log. For filter socks, tags shall be attached to the outside of each sock.
5. Approved ~~perimeter and slope sediment control devices~~ sediment logs are listed in Materials I.M. 469.10, Appendix E. Wattles and filter socks will be accepted based on the manufacturer's certification.

B. Wattles and Sediment Logs.

1. ~~Ensure cereal grain straw for wattles or sediment logs is Certified Noxious Weed Seed Free Mulch certified by the Iowa Crop Improvement Association or other state's Crop Improvement Associations.~~
2. ~~Wattles or sediment logs with observed unharvested seed heads will not be accepted.~~
3. ~~For wood excelsior sediment logs and straw wattles, m~~Meet the following minimum weight requirements:
 - 20 inch sediment logs and straw wattles: 3 pounds per foot with tolerance of 0.25 pounds per foot.
 - 12 inch sediment logs and straw wattles: 2 pounds per foot with tolerance of 0.25 pounds per foot.
 - 9 inch sediment logs and straw wattles: 1 pound per foot with a tolerance of 0.1 pounds per foot.
 - ~~6 inch sediment logs and straw wattles: 0.5 pounds per foot with a tolerance of 0.1 pounds per foot.~~

C. Filter Socks.

Provide filter socks with a maximum 3/8 inch opening ~~and filled with a compost/wood blend filter material consisting of compost from an approved source meeting Article 4169.08.~~

Section 4171

4171.04, Cast Iron Detectable Warning Panels.

Delete the second bullet:

- ~~Wear resistance—ASTM C 501 greater than 8500.~~

4171.05, Steel Detectable Warning Panels.

Delete the second bullet:

- ~~Wear resistance—ASTM C 501 greater than 8500.~~

Section 4185**4185.02, B, 6.**

Add as the last bullet:

- Refer to Articles 2522.03, H, 2, b through h for tightening procedure and requirements.

Section 4186**4186.09, A, 4, b.**

Replace the Article:

Washers shall be 3/8 inch I.D. by ~~4-3/8~~ 1 1/2 inch O.D. by 0.125 inch.

4186.09, C, Delineators, Milepost Markers, and 6 Inch by 6 Inch (150 mm by 150 mm) Route Markers.

Replace the title:

Delineators, Milepost Markers Reference Location Signs, and 6 Inch by 6 Inch (~~150 mm by 150 mm~~) Route Markers.

4186.09, C, 2.

Replace the Article:

Fasten ~~milepost markers~~ reference location signs and 6 inch by 6 inch route markers to the post as shown in the contract documents.

4186.10, C, Posts for Delineators, Milepost Markers, and 6 Inch by 6 Inch Route Markers.

Replace the title:

Posts for Delineators, Milepost Markers Reference Location Signs, and 6 Inch by 6 Inch Route Markers.

Section 4187**4187.01, C, 3, a, 2.**

Replace the Article:

Comply with either ASTM F 1554, ~~Grade 36~~, Grade 55, S1; or Grade 105, S5 as specified.

4187.01, C, 3, b, Nuts.

Add the Article:

- 5) Refer to Articles 2522.03, H, 2, b through h for tightening procedure and requirements.

Section 4189**4189.04, A, 2, c.**

Replace the first sentence:

Police door with auto/flash switch, manual/stop time switch, and on/off power switch for signal heads only.

4189.05, Poles, Heads, and Signs.

Replace Article A and renumber Articles A and B:

A C. Traffic Signal Poles and Mast Arms.**1. General.**

- a. Use Mast arm length and vertical pole height as specified in the contract documents.
- b. Ensure the mast arms, poles, and supporting bases are galvanized ~~inside and out~~ on both interior and exterior surfaces according to ASTM A 123.

- c. Use ~~C~~continuously tapered, round steel poles of the transformer base type. Fabricated poles from low carbon (maximum carbon 0.30%) steel of U.S. standard gauge.
 - d. When a transformer base is not specified, provide a 6 inch by 16 inch handhole in the pole shaft for cable access. Provide a cover for the handhole. Secure the cover to the base with simple tools. ~~Hardware to be~~ Use corrosion resistant hardware.
 - e. Ensure minimum yield strength of 48,000 psi after manufacture. Supply base and flange plates of structural steel complying with ~~AASHTO M 183~~ ASTM A 36 and cast steel complying with ASTM A 27, Grade 65-35 or better.
 - f. Where a combination street lighting/signal pole is specified in the contract documents, ensure the luminaire arm is ~~to be~~ mounted in the same vertical plane as the signal arm unless otherwise specified. Use a luminaire arm of the single member tapered type ~~arm for the luminaire arm type~~. ~~Equip~~ Fabricate the pole with a minimum 4 inch by 6 inch handhole and cover located opposite the signal mast arm.
 - g. If allowed by the Engineer, poles and mast arms may be fabricated by shop welding two sections together, resulting in a smooth joint ~~and factory weld~~ as follows:
 - 1) Ensure a minimum of 60% penetration for longitudinal butt welds in plates 3/8 inch and less in thickness ~~for longitudinal butt welds~~, except within 1 foot of a transverse butt-welded joint. Ensure a minimum of 80% penetration for longitudinal butt welds in plates over 3/8 inch in thickness.
 - 2) Ensure 100% penetration for longitudinal butt welds ~~on~~ in poles and arms within 1 foot of a transverse butt-welded joint.
 - 3) Ensure 100% penetration, ~~achieved by~~ for transverse butt welds by using a back-up ring or bar, ~~for transverse butt welds for connecting~~ to connect the sections.
 - 4) Examine ~~100%~~ the full length of all transverse butt welds and 100% penetration longitudinal butt welds by ultrasonic inspection according to the requirements of ANSI/AWS D1.1-80-AH.
 - 5) Comply with ~~Structural Welding Code AWS D1-180, as modified by AASHTO 1981 Standard Specifications for Welding of Structural Steel Highway Bridges and by Supplemental Specifications No. 969~~ ANSI/AWS D1.1 except as modified by Article 2408.03, B.
 - h. Provide non-shrink grout (complying with Materials I.M. 491.13) or a rodent guard (complying with Materials I.M. 443.01) for placement between the pole base and the foundation.
- 2. Pole Design.**
- a. Comply with ~~AASHTO 4994~~ 2013 Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Use a 90 mph basic wind speed with a 50 year mean recurrence interval for strength design. Use Category II for fatigue design. Apply only natural wind gust loads (i.e., do not apply galloping loads, vortex shedding loads, or truck-induced gust loads) for fatigue design. Install vibration mitigation devices on all traffic signal pole mast arms over 60 feet in length as shown in the standard details.
 - ~~b. Designed to support the loading necessary for all traffic control equipment. Capable of withstanding winds up to 80 mph with a 1.3 gust factor without failure.~~
- 3. Hardware.**
- a. Equipped poles and mast arms with all necessary hardware and anchor bolts to provide for a complete installation without additional parts.
 - b. Use Aanchor bolts complying with ASTM F 1554 Grade 105 S5 Class 2A,; ~~hot dip galvanized,~~ and threaded to a minimum of 6 inches at one end; and having a 4 inch long, 90 degree bend at the other end.
 - c. Use ~~W~~washers complying with ASTM F 436 Type 1.
 - d. Use ~~H~~heavy hex nuts complying with ASTM A 563 Grade DH Class 2B.
 - e. Ensure Aall hardware is made of steel, and is hot-dipped galvanized ~~complying with~~ according to ASTM F 2329, with a zinc bath temperature limited to 850°F or mechanically galvanized according to ASTM B 695, Class 50 55, Type 1, ~~or electrodeposited coated of the same coating thickness and designed for this purpose.~~

B D. Traffic Signal Pedestal Poles.

4189.05, D, 2.

Replace the Article:

Anchor Bolts: Four 3/4 inch by 15 inch steel, hot dip galvanized anchor bolts complying with ASTM F 1554, Grade 36, with right angle bend at the bottom end, complete with all hardware required for installation.

Section 4196**4196.01, B, 5, a.**

Replace the second bullet:

Has the properties listed in Table 4196.01-5 ~~for the type specified for use in the contract documents.~~

4196.01, B, 6, Bridge Abutment Backfill Fabric.

Replace Table 4196.01-6:

Table 4196.01-6: Fabric for use in bridge abutment backfill

Property	Value	Test Method
Tensile Strength (at 5% Strain), minimum	1356 lbs/ft	ASTM D 4595
Apparent opening size (AOS), maximum	US Sieve #40	ASTM D 4751
UV resistance (at 500 hours)	70% retained strength	ASTM D 4355
Flow Rate, maximum minimum	18 20 10 gal./min./ft ²	ASTM D 4491

Appendix.

Appendix.

Add to the Aggregate Gradation Table:

AGGREGATE GRADATION TABLE															
Grad. No.	Section No.	Std. Sieve Sz.	1 1/2"	1.00"	3/4"	1/2"	3/8"	4	8	30	50	100	200	Notes	
		Intended Use	Percent Passing												
1	4110, 4125, 4133, 4134	PCC FA, Cover Agg.					100	90-100	70-100	10-60			0-1.5	1	
2	4112	PCC Intermediate				95-100			0-10						
3	4115 (57, 2-8), 4118	PCC CA	100	95-100		25-60		0-10	0-5				0-1.5	2, 10	
4	4115 (2-8)	PCC CA	100	50-100	30-100	20-75	5-55	0-10	0-5				0-1.5	10	
5	4115 (67, 2-8)	PCC CA		100	90-100		20-55	0-10	0-5				0-1.5	10	
6	4115.06 (Repair & Overlay)	PCC CA			100	90-100	40-90	0-30					0-1.5	10	
7	4117 (Class V)	PCC FA & CA	100					80-92	60-75	20-40					
8	4117.03 (Class V)	Fine Limestone					100	90-100					0-30		
10	4119, 4120.02, 4120.03 (C gravel)	Granular Surface			100			50-80	25-60					3, 11	
11	4119, 4120.02, 4120.04, 4120.05, 4120.07, (A, B Cr. St.)	Granular Surface & Shoulder		100	95-100	70-90		30-55	15-40				6-16	4, 5, 11	
12a	4121 (Cr. St.)	Granular Subbase	100			40-80			5-25				0-6	6, 11	
12b	4121 (Cr. Gravel)	Granular Subbase	100			50-80			10-30		5-15		3-7	7, 11	
13	4122.02 (Cr. St.)	Macadam St. Base	3" nominal maximum size screened over 3/4" or 1.00" screen.												
14	4123	Modified Subbase	100		70-90				10-40				3-10	5, 7, 11	
19	4125 (1/2" Cr. Gr. or Cr. St.)	Cover Aggregate			100	97-100	40-90	0-30	0-15				0-1.5	11	
20	4125 (1/2" Scr. Gr.)	Cover Aggregate			100	95-100	40-80	0-15	0-7				0-1.5	11	
21	4125 (3/8")	Cover Aggregate				100	90-100	10-55	0-20	0-7			0-1.5	11	
22	4124	Fine Slurry Mixture					100	85-100	40-95	20-60	14-35	10-25	5-25	9, 11	
23	4124 (Cr. St.)	Coarse Slurry Mixture					100	70-90	40-70	19-42			5-15	11	
29	4131	Porous Backfill			100	95-100	50-100	0-50	0-8					11	
30	4132.02 (Cr. St.)	Special Backfill	100						10-40				0-10	5, 11	
31	4132.03 (Gravel)	Special Backfill		100	90-100	75-100			30-55				3-7	11	
32	4133 (Sand/Gr./Cr. St.)	Granular Backfill	100% passing the 3" screen								10-100			0-10	8, 11
35	4134 (Natural Sand/Gr.)	Floodable Backfill	100						20-90				0-4	11	
36	4134 (Natural Sand)	Floodable Backfill						100					0-2	11	
37	2320 (Quartzite/Granite/Slag)	Polymer-Modified Microsurfacing					100	90-100	65-90	30-50	18-30	10-21	5-15	12, 13	
38	2320 (limestone/Dolomite)	Polymer-Modified Microsurfacing					100	70-90	45-70	15-35	10-25	5-20	5-15	12, 13	

Notes: (Gradations No. 9, 15, 16, 17, 18, 24, 25, 26, 27, 28, 33, and 34 have been deleted)

1. For Section 4110, when the fine aggregate is sieved through the following numbered sieves - 4, 8, 16, 30, 50, and 100 - no more than 40% shall pass one sieve and be retained on the sieve with the next higher number.
2. When used in precast and prestressed concrete bridge beams, 100% shall pass the 1.00" sieve. When used for pipe bedding the No. 200 restriction does not apply.
3. When compaction of material is a specification requirement, the minimum percent passing the No. 200 sieve is 6%.
4. See specifications for combination of gravel and limestone.
5. Unwashed air dried samples of crushed composite material shall be tested for gradation compliance except that no gradation determination will be made for material passing the No. 200 sieve.
6. The gradation requirement for the No. 8 sieve shall be 5% to 20% when recycled material is supplied.
7. For Section 4121 gravel, one fractured face on 30% or more of the particles retained on the 3/8 inch sieve. For Section 4123 gravel, one fractured face on 75% or more of the particles retained on the 3/8 inch sieve.
8. Crushed stone shall have 100% passing the 1½" sieve.
9. Gradation limitations for the 30, 50, and 100 sieves shall not apply when slurry mixture is applied by hand lutes, such as for slurry leveling.
10. Maximum of 2.5% passing the No. 200 sieve allowed if for crushed limestone or dolomite when documented production is 1% or less.
11. When Producer gradation test results are used for acceptance, test results representing at least 90% of the material being produced shall be within the gradation limits and the average of all gradation results shall be within the gradations limits. Stockpiled material not meeting the criteria may, at the District Materials Engineer's discretion, be resampled using Materials I.M. 301 procedures. One hundred percent of the stockpile quality control and verification test results shall be within the gradation limits.
12. For Quartzite/Granite/Slag: 45% to 70% passing No. 16 Sieve; for Dolomite/Limestone: 25% to 50% passing No. 16 Sieve.
13. Percent passing shall not go from the high end to the low end of the range for any two consecutive screen.

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions and the Supplementary Covenants and Provisions.

1.02 SUMMARY OF WORK:

A. Work Covered by Contract Documents:

- 1. Name of the project is "Central Park Lake Boat Ramp, Fishing Access, and Beach Construction", Project Number 16-06-53-02. Drawings and Specifications are dated June 2017.
- 2. Briefly and without force and effect upon contract documents, work of the contract can be summarized as follows:
 - a. This project consists of removing and replacing the boat ramp parking lot, renovating the beach area, constructing a new fishing access parking lot, and constructing a steel fishing pier.

B. Occupancy:

- 1. Owner: The DNR shall have the right to enter the building or work site and store or attach such fixtures or furniture as it may elect, or to do other work providing that such storage or work will not interfere with the completion of the Contractor's work. Such occupancy by the DNR shall in no way imply final acceptance of any portion of the Contractor's work.

1.04 MEASUREMENT AND PAYMENTS:

- A. Measurements and payments shall be in accordance with Section 01250 of these specifications.
- B. Before ordering any fabricated material or doing any work, verify all measurements at the project site. No additional compensation will be allowed because of difference between actual dimensions and the measurements indicated on the drawings. Report any difference immediately to the DNR for instructions before proceeding with the work.

1.06 COORDINATION:

A. Project Coordination:

- 1. Take out and pay for any building permit which may be required, secure and pay for all permits, certificates and licenses required to prosecute the work, and arrange and pay for all inspections required by local authorities.

2. Visit the site, compare the Drawings and Specifications with any work in place, and verify all conditions, including other work, if any, being performed. Failure to visit the site will in no way relieve the Contractor from necessity of furnishing any materials or performing any work that may be required in accordance with Drawings and Specifications.
- B. Job Site Administration: Take complete charge of work under this contract. Coordinate the work of all trades and all phases of general, structural, plumbing, mechanical, and electrical work.

1.07 FIELD ENGINEERING:

- A. Provide such field engineering services as are required for a proper completion of the work.
1. Immediately upon entering project site for the purpose of beginning work:
 - a. Establish actual project location, set back and side yards, if any, with the DNR Construction Inspector.
 - b. Establish and maintain all lines and levels.
- B. Additional requirements for field engineering may also be described in other sections of these specifications.
- C. Verify all figures shown on Drawings before laying out work and report all discrepancies to the DNR Construction Inspector. Contractor will be held responsible for any error resulting from failure to do so.

1.09 ABBREVIATIONS AND SYMBOLS:

- A. Reference to a technical society, institution, association, or government authority is made in the Specifications in accordance with the following abbreviations:

AAMA	Architectural Aluminum Manufacturers Association
AASHO	American Association of State Highway Officials
ACI	American Concrete Institute
AIA	American Institute of Project Engineers
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ALS	American Lumber Standards
APA	American Plywood Association
ATI	Asphalt Tile Institute
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWI	Project Architectural Wood Work Institute
AWPA	American Wood Preservers' Association
AWS	American Welding Society

CS	Commercial Standard, U.S. Department of Commerce
FGJA	Flat Glass Jobbers Association
FS	Federal Specification
GA	Gypsum Association
IES	Illuminating Engineering Society
MIA	Marble Institute of America
MLMA	Metal Lath Manufacturers Association
MS	Military Specification
MSTD	Military Standard
NAAMM	National Association of Metal Manufacturers, The
NHLA	National Hardwood Lumber Association
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NEC	National Electric Code of NBFU
NFPA	National Fire Protection Association
NLMA	National Lumber Manufacturers Association
NTMA	National Terrazzo and Mosaic Association, Inc.,
NWMA	National Woodwork Manufacturers Association
SDI	Steel Deck Institute
SSPC	Steel Structures Painting Council
SCPI	Structural Clay Products Institute
SPR	Simplified Practice Recommendations, U.S. Department of Commerce
TCA	Tile Council of America
UL	Underwriters' Laboratories, Inc.
USA	United States of America Standards Association

1.13 PROJECT MEETINGS:

- A. Preconstruction Conference: Soon after award of contract and prior to the start of construction, attend a preconstruction conference with the representative of the Owner to define the requirements for contract administration and construction operation.
 - 1. Contact the DNR Construction Inspector who will determine the time, date and place of the conference.
- B. Progress Meetings: The Contractor or the Contractor's representative shall be available at the job site to meet with the DNR Construction Inspector, as frequently and as arranged during the preconstruction conference, to discuss work progress.
 - 1. Give verbal report of progress, discuss work schedule, and present all conflicts, discrepancies and other difficulties for resolution.

1.16 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS:

- A. Definitions: Specific administrative and procedural minimum actions are specified in this section, as extension of provisions in other contract documents. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this section will be recognized as an indication by Project Engineer that such temporary activity is not required for successful completion of the work and compliance with contract documents.

- B. General: Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have replaced the need.
- C. Temporary Utilities: The types of services required may include, but not by way of limitation, water, sewerage, surface drainage, electrical power and telephones. Where possible and reasonable, connect to existing franchised utilities for required services; comply with service companies recommendations on materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.
 - 1. Sanitary Facilities:
 - a. Temporary Toilets: When such or permanent facilities do not exist, provide and maintain toilets for use by workers. Keep toilets in sanitary condition.
 - b. Temporary toilet facilities shall meet OSHA requirements.
- D. Security:
 - 1. Protection of Work and Property:
 - a. Place and maintain such barricades as may be necessary to prevent public access to the project site at no cost to the Owner.
- E. Options and Substitutions:
 - 1. Bid shall include all equipment, materials, and services as specified, noted on the Drawings or required for a complete and proper installation.

1.19 CONTRACT CLOSEOUT:

- A. Final Cleaning:
 - 1. Remove waste material and rubbish caused by the Work and leave all work clean and free of debris of any kind.
 - 2. Keep the site and access road reasonably clean and free of rubbish or waste material in order that the work may progress efficiently. Remove such rubbish or waste material entirely from the premises at each time of such cleaning.
 - 3. When the Work is completed and ready to turn over to the Owner, leave such work clean. This applies to all areas affected by contract work.
 - 4. On completion of the Work, thoroughly police and clean-up the premises surrounding the building.
- B. Final Inspection:

1. Request a final inspection in writing, at least ten days prior to the anticipated date of completion, from the DNR Construction Inspector.
2. Work will not be considered ready for final inspection until all the work has been completed and the Contractor has certified that all items are properly operating and in strict compliance with the Contract Documents.
3. The Contractor or project supervisor shall be at the job site during the final inspection.
4. After the inspection, the DNR Construction Inspector will present the Contractor a list of items not meeting contract requirements which must be made acceptable before final payment is made.

END OF SECTION 01000

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes: General requirements pertaining to:
 - 1. The Work specified for accepted alternate bids, the materials and methods referenced in other sections to achieve specified work, and the coordination and modification of related work and surrounding construction to complete the project under each accepted bid.
- B. Related Sections: Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 DESCRIPTION OF ALTERNATE BIDS:

- A. Base Bid: In the event that the base bid is selected, the contractor shall complete bid items #1-35, and all incidental work associated with this project. Mechanical dredging will be limited to material located above elevation 938.00.
- B. Alternate Bid No. 1: In the event that Alternate Bid No. 1 is selected, the contractor shall dredge down to elevation 937.00. The estimated quantity of material between elevations 938.00 and 937.00 is 22,000 BCY.
- C. Alternate Bid No. 2: In the event that Alternate Bid No. 2 is selected, the contractor shall remove an additional 10,000 BCY of deposited sediment (not hardpan clay) from the area near the dam, at elevations below 938.00 (or elevations below 937, if Alternate No. 1 is chosen as well).
- D. Alternate Bid No. 3: In the event that Alternate Bid No. 3 is selected, the contractor shall remove an additional 15,000 BCY of deposited sediment (not hardpan clay) from the area near the dam, at elevations below 938.00 (or elevations below 937, if Alternate No. 1 is chosen as well)

1.03 ALTERNATE BID REQUIREMENTS:

- A. Bidder must submit alternate bids. Bids submitted without alternate bid will be rejected as unresponsive.
- B. Alternate bids, if awarded, will be considered as a basis for award. The low bid will be analyzed on the base bid and any combination of alternate bids. The Owner reserves the right to award the base bid and all alternates, that in the Owner's opinion, will provide the most cost-effective end product. The Owner's decision is final.
- C. Provide alternate bid for the cost of the service requested in each alternate, either as an addition or as a reduction in the total bid.

- D. The Owner may award any alternate bid or bids at the time of contract award. Any alternate bids awarded as part of the original contract will not extend the project completion time beyond that specified.

END OF SECTION 01030

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 DESCRIPTION OF WORK:

- A. Provide such field engineering services as are required for proper completion of the work including, but not necessarily limited to:
 - 1. Establishing and maintaining lines and levels;
 - 2. Structural design of shores, forms, and similar items provided as part of the Contractor's means and methods of construction;
 - 3. Establishing finish grade stakes (including blue tops) as necessary;
- B. Additional requirements for field engineering may also be described in other sections of these specifications.

1.03 REFERENCES:

- A. Refer to Section 1105.07 "Construction Stakes and Bench Marks" of the General Covenants and Provisions for assignment of responsibilities for the Owner and Contractor.

1.04 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01300, if applicable.

1.05 PROCEDURES:

- A. In addition to procedure directed by the Contractor for proper performance of the Contractor's responsibilities:
 - 1. Locate and protect control points before starting work on the site.
 - 2. Preserve permanent reference points during progress of the work.
 - 3. Do not change or relocate reference points or items of the work without specific approval from the DNR Construction Inspector.
 - 4. Promptly advise the DNR Construction Inspector of a lost, destroyed, or reference point-requiring relocation due to other changes in the work.

- a. When directed by the DNR Construction Inspector, replace referenced stakes at no additional cost to the Owner.
- B. Meet with DNR Construction Inspector to establish actual building location, set backs, and side yards, if required.

END OF SECTION 01050

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 LUMP SUM / UNIT PRICE BID:

- A. Bid each item on a Unit Price basis or Lump Sum basis as required, including furnishing all labor, equipment and materials necessary to complete all the work indicated in the Contract Documents.

1.03 QUANTITIES:

- A. Various estimated quantities are furnished within the Contract Documents to assist the Contractor in reviewing the Project prior to bidding. The estimated quantities are not intended to be used by the Contractor as sole basis for determining the scope and volume of the work. The Contractor is responsible for verifying all quantities necessary to submit bids for the construction of a proper and complete project.

1.04 MEASUREMENT:

- A. The contractor is responsible for constructing the project to the final lines and grades shown. Owner will measure construction units only to ensure that at least minimum quantities have been properly installed.

1.05 SCOPE:

- A. Each item in the Bidder's Proposal Schedule of Prices will be paid at the unit or lump sum price. The price for each item shall be considered full compensation for furnishing superintendence, overhead, bonds, insurance, mobilization, testing and profit necessary to complete the construction of the item of the project listed in the Bidder's Proposal.
- B. It is not the intent of the Bidder's Proposal to itemize each and every item and system required. Items required for project completion and not specifically mentioned in Bidder's Proposal shall be included with items which they would be considered subsidiary.

1.06 ESTIMATED QUANTITIES:

- A. The items and quantities described above, as well as others listed throughout the Contract Documents, are provided for the bidder's review and consideration. The quantities listed herein are not guaranteed by the owner or the Project Engineer to be totally accurate nor to include all items of work. They are provided for the bidder's

convenience to assist in the preparation of the bid. The bidder is responsible for preparing his own quantity takeoff and bid preparation.

END OF SECTION 01250

MEASUREMENT AND BASIS OF PAYMENT
01250-2

2/6/2012

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 SUMMARY:

- A. Provide submittals required in this Section, refer to technical specification for submittal requirements for each section of the work to be performed.

1.03 PROGRESS SCHEDULE:

- A. Submit a project schedule to the Project Engineer for approval within 30 days after award of contract, but not later than the contract start date. The type of schedule required is at Contractor's option.
- B. Prepare an approved, reproducible form and include the following:
 - 1. Breakdown of work activities in categories so approved and segmented as necessary to allow close monitoring of progress of the work during construction.
 - 2. Order of the work necessary to meet time for completion.
 - 3. Breakdown of the work schedule of all subcontractors scheduled in cooperation with Contractor's work.
 - 4. Anticipated monthly value for work completed.
 - 5. Space for the additional display of actual performance on the schedule.
- C. After necessary revisions have been made and approved, present one print of schedule to each subcontractor and three copies to the Owner.
- D. Upon request, update the schedule to reflect changes required by actual conditions and indicate actual work completed. Provide same number of copies as required for original submission.
- E. Payment will be withheld until progress schedule in acceptable form has been received by Project Engineer.

1.04 PRICE BREAKDOWN:

- A. Within 30 days after award of contract, but not later than the contract start date, submit to the Project Engineer for approval a price breakdown of major lump sum bid items into smaller components for the purpose of determining monthly progress payments.
- B. Include profit and overhead prices in each item.
- C. Payment will be withheld until receipt of price breakdown.
- D. Provide breakdown as follows:
- E. Items listed above include, but are not limited to, the following:

1.05 SHOP DRAWINGS AND MANUFACTURER'S LITERATURE:

- A. Prior to installation of any item specified as requiring submittal, submit two (2) copies for Owner's use plus the number required for return to the Contractor, of manufacturer's literature containing detailed specifications and performance data, or shop drawings fully describing the items showing fabrication, layout, setting or erection details, including erection plan and details as required.
- B. Number all submittals consecutively . Resubmittals shall bear the original submittal number plus a letter suffix: Example - #30A is the first resubmittal of item #30; #30B is the second resubmittal, etc.
- C. Shop drawings used at site must be approved by the Project Engineer.
- D. Do not construe the approval of shop drawings to be a complete check. This approval will indicate only that the general method of construction and detailing is satisfactory. Approval of such drawings will not relieve the Contractor of the responsibility to comply with all terms and conditions of the plans and specifications. The Contractor shall be responsible for the dimensions and design of adequate connections, details and satisfactory construction of all work.

1.06 SAMPLES:

- A. Submit in Duplicate:
- B. Provide samples of sufficient size to permit an accurate appraisal of color, texture, finish, workmanship, and other appropriate characteristics.
- C. Submit samples with shop drawings when both are required.
- D. Field Samples and Mock-Ups:
 - 1. Erect mock-ups at location acceptable to the DNR Construction Inspector, at project site.
 - 2. Construct each sample or mock-up complete to the dimension indicated, including work of all crafts required in finish work.

1.07 QUALITY ASSURANCE:

A. Coordination of Submittals:

1. Prior to submitting required material, carefully review and coordinate all aspects of each item being submitted.
2. Verify that each item and its submittal conform in all respects with the specified requirements.
3. Prior to sending submittals to Project Engineer, the stamp and sign each submittal, certifying that they conform in all respects with the specified requirements.

B. Substitutions:

1. The contract is based on the standards of quality established in the Contract Documents. Substitutions will be considered only when listed with the Project Engineer prior to the bid date, and when substantiated by Contractor's submittal of required data within 35 calendar days after award of contract.
2. The following products do not require further approval except for interface within the work:
 - a. Products specified by reference to standard specifications such as ASTM or similar standards.
 - b. Products specified by manufacturer's name and catalog model number for which another product is not substituted.
3. Do not substitute materials, equipment or methods unless such substitutions have been specifically approved in writing.

C. Or Equal:

1. Where the phrase "or equal," or "or equal as approved by the Project Engineer," occurs in the Contract Documents, do not assume that the materials, equipment or methods will be approved as equal unless the item has been specifically approved for this work by the Project Engineer.
2. The Project Engineer's decision shall be final.

1.08 RESUBMISSION REQUIREMENTS:

A. Shop Drawings:

1. Revise initial Drawings as directed and resubmit in accordance with submittal procedures.
2. Indicate on Drawings all changes which have been made in addition to those requested by the Project Engineer.

- B. Product Data and Samples: Resubmit new data and samples as specified for initial submittal.
- C. Make all resubmittals within 7 calendar days after date of Project Engineer's previous review.

1.09 DISTRIBUTION OF SUBMITTALS AFTER REVIEW:

- A. Project Engineer will distribute copies of shop drawings and product data, after review, to:
 - 1. DNR Construction Inspector (1 copy)
 - 2. Project Engineer's File (1 copy)
 - 3. General Contractor (remaining copies)
- B. Project Engineer will distribute samples in accordance with requirements.

1.10 CONTRACTOR RESPONSIBILITIES:

- A. Review shop drawings, product data, and samples prior to submission to the next level of control.
- B. Verify:
 - 1. Field dimensions.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
- C. Coordinate each submittal with requirements of:
 - 1. The work.
 - 2. The contract documents.
 - 3. The work of other contractors.
- D. Contractor's responsibility for errors and omissions in submittals is not relieved by Project Engineer's review of submittals.
- E. Notify Project Engineer, in writing, of proposed deviations in submittals from contract requirements, prior to or at the time of submission.
- F. Contractor's responsibility for deviations in submittals from contract document requirements is not relieved by Project Engineer's review of submittals.
- G. Do not begin any work which requires submittals without having Project Engineer's stamp and initials or signature indicating approval.

1.11 REQUIRED SUBMITTALS:

A. Include, but do not limit to, the following submittals:

<u>Spec. Section</u>	<u>Item Description</u>	<u>Shop Drawing</u>	<u>Product Data</u>	<u>Samples, Test Results, Certification</u>
	Engineering Fabric		X	
	CMP		X	
	CMP Apron		X	
	Concrete Mix Design		X	
	6' Tree		X	
	Beach Sand		X	
	Bench, Backless		X	
	Bench, Standard		X	
	Drinking Fountain		X	
	Grill		X	
	Jug Filler		X	
	Retaining Wall		X	X
	Shelter	X		
	SW-501 Manhole	X		
	SW-603 Intake	X		

1.12 RECORD DRAWINGS:

- A. Provide and maintain at the project site, one complete set of prints of the project drawings. The drawings shall be kept in good, clean and readable condition.
- B. The project site drawings shall have neatly inscribed all changes in work including relocation of lines, valves and fixtures, change in type of materials, etc. Changes shall be noted with red pencil or red ink.
- C. Submit these corrected prints at time of final acceptance and prior to final payment. Note all data and changes on these record drawings in sufficient detail and clarity and provide information necessary for preparation of "as-built" drawings.
- D. Final payment will be withheld until a set of corrected prints of the record drawings has been received by the Project Engineer/DNR Construction Inspector.

1.13 GUARANTEES, WARRANTIES AND CERTIFICATES:

- A. Submit all guarantees, warranties and certificates prior to final payment.
- B. Refer to Section 01700 of these specifications.

1.14 OPERATING AND MAINTENANCE INSTRUCTIONS:

- A. Submit all operating and maintenance instructions to the DNR Construction Inspector prior to final payment.
- B. Refer to Section 01700 of these specifications.

1.15 CHANGE ORDER PRICE QUOTES:

- A. In the event of the need for change order, the DNR Construction Inspector will request a price quote from the Contractor for proposed changes to the contract.
- B. For evaluation purposes, the Contractor's quote shall be broken down to show the costs of labor and materials for each proposed category of work included with the change, along with the total cost for Contractor's overhead, profit and bond for the proposed change.
- C. All contract time extensions required as a result of a proposed change must be justified and supported in detail at the time of the proposal.

1.16 TEST REPORTS:

- A. Refer to Section 01400 of these specifications.

1.17 DELIVERY TICKETS:

- A. Submit to the DNR Construction Inspector one legible copy of each delivery ticket for all material delivered to the construction site.
- B. The delivery ticket shall show brand name, catalog number and number of items received.

END OF SECTION 01300

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 SCOPE:

- A. Supplementary tests and reports required in this section with any tests, reports, and other information that may be required additionally in any section of the specifications.
- B. Inspection, sampling, and testing is required, but not limited to, the following:
 - 1. Section 03300 – Cast In Place Concrete
- C. Sampling and testing frequencies and requirements are to comply with IDOT IM-204.

1.03 TESTS BY INDEPENDENT TESTING LABORATORY:

- A. Testing Laboratory:
 - 1. Contractor to select and pay for an independent testing laboratory, acceptable to the Project Engineer, to perform specified services required by the contract.
 - 2. Employment of testing laboratory will in no way relieve Contractor's obligations to perform work in accord with the contract.
 - 3. Include in lump sum bid the cost for all testing services required. No separate payments will be made for testing. Include all associated costs in the various appropriate bid items. Project Engineer/DNR Construction Inspector will direct all tests. The Contractor shall pay the testing firm.
- B. Contractor Shall:
 - 1. Make available at no cost, all material to be tested.
 - 2. Provide labor necessary to supply samples and assist in making tests.
 - 3. Advise laboratory of the identity of material sources and instruct suppliers to allow inspections by laboratory.
- C. Testing laboratory shall:
 - 1. Submit written report promptly, covering each inspection and test to the Project Engineer, including:
 - a. Date issued.
 - b. Project title and number.

- c. Testing laboratory name and address.
 - d. Name and signature of laboratory technician.
 - e. Date of inspection and sampling.
 - f. Record of temperature and weather.
 - g. Date of test.
 - h. Identification of product and specification section.
 - i. Location of project.
 - j. Type of inspection or test.
 - k. Observations regarding compliance with Contract Documents.
- 2. Promptly notify Project Engineer of irregularities or deficiencies of work which are observed during performance of testing services.
 - 3. Perform additional services required by the Project Engineer/DNR Construction Inspector.
- D. Laboratory is not authorized to:
- 1. Release, revoke, alter or enlarge on, contract requirements.
 - 2. Approve or accept any portion of work.
 - 3. Perform any duties of the Contractor.
- E. Conduct tests in accordance with the requirements of the designated specifications or, where not specified, the latest appropriate standard of the American Society for Testing and Material.

1.04 LABORATORY SERVICES AND TESTS REQUIRED:

- A. Concrete:
- 1. Secure samples of aggregates Contractor proposes to use and test for compliance with specifications.
 - 2. Certify compliance with specification of cement proposed for use by the Contractor.
 - 3. Review concrete design mix proportions for the required concrete strengths using materials Contractor proposes to use on the project. Incorporate specified admixtures and not less than amount of cement specified. Perform appropriate laboratory tests, including compression tests of cylinders and slump test to substantiate mix designs. Submit one copy of report to the Project Engineer, one copy to the DNR Construction Inspector, and one copy to the Contractor, clearly indicating the results of the mix design review.
 - 4. When requested by the DNR Construction Inspector, inspect and test material during concrete work to substantiate compliance with specifications and mix requirements.
 - 5. Slump Test: The DNR Construction Inspector will require slump tests to be performed as he desires in accordance with the provisions of these specifications.
 - 6. Test Cylinders:
 - a. Each test shall consist of a set of three cylinders provided by the Contractor. Sampling and testing frequencies and requirements are to comply with IDOT IM-204.

- b. Provide a minimum of one set of test cylinders each day concrete is placed.
- d. The Contractor shall make and cure test cylinders in conformity with ASTM C-31.
- e. Note on record drawings placement locations represented by test cylinders.
- 7. Perform compression tests in accordance with applicable sections of IDOT specifications.
- 8. Identify all test cylinders with symbols to indicate location on the job where concrete tests were made. Note on record drawings.
- C. Aggregate gradation and compaction as per applicable specifications.

1.05 CONTRACTOR'S RESPONSIBILITIES:

- A. Furnish product mix design to meet or exceed Contract Documents.
- B. Cooperate with laboratory personnel and provide access to work, as well as to manufacturer's operations.
 - 1. Monitor each inspection, sampling and test.
- C. Provide to laboratory, preliminary representative samples of material to be tested, in specified quantities.
- D. Furnish copies of mill test reports.
- E. Furnish verification of compliance with contract requirements for material and equipment.
- F. Furnish casual labor and facilities:
 - 1. To provide access to work to be tested.
 - 2. To obtain and handle samples at site.
 - 3. To facilitate inspections and tests.
 - 4. For laboratory's exclusive use for storage and curing of test samples.
- G. Notify laboratory sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests. Notify DNR Construction Inspector when work is ready for testing. Schedule testing after approval of the DNR Construction Inspector. The Department of Natural Resources will not pay for any testing scheduled without the DNR Construction Inspector's specific authorization.
- H. Correct work which is defective or which fails to conform to the Contract Documents in accordance with the general condition. Do not delay the project schedule or the work of other contractors with corrective work.
- I. Pay all costs of re-testing when test results indicate non-compliance with contract requirements.
- J. Patch all surfaces and areas disturbed by testing operations.

END OF SECTION 01400

SECTION 01500
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 WEATHER PROTECTION:

A. General:

1. Provide necessary protection against weather to maintain all materials, apparatus, fixtures, and work free from damage whether in shipment, in storage, or in place.
2. Do not perform wet work when temperature is below 40 degrees Fahrenheit or is forecast to be below 40 degrees Fahrenheit within the ensuing 48 hours, except when work is properly protected and sufficient heat is provided.

B. Heat Provision:

1. When heat is required for proper weather protection, provide temporary enclosures of work and acceptable means to provide sufficient heat to maintain a temperature of not less than 50 degrees Fahrenheit. Provide higher temperatures when required by these specifications.
2. Use only heating apparatus and fuels of approved safe types. Keep equipment and surroundings in a clean, safe condition. Use flame resistant tarpaulins and other materials for temporary enclosure of space. Use vented heaters only.

1.03 TEMPORARY UTILITIES:

A. Electricity, Lighting and Heating:

1. Provide such temporary service as may be required for construction purposes with required distributing facilities and meter.
2. Pay the cost of all electrical energy used on this part of the project until completion of the contract. If partial occupancy by the Owner occurs prior to completion, the Owner will pay proportional share of electrical energy used.
3. Provide light bulbs required for all temporary construction lighting and replace when necessary.
4. Use no temporary service material in permanent system without written approval of the Owner. When temporary electrical lines are no longer required, remove them

and restore any parts of buildings or grounds damaged by such removal to original condition.

5. Provide and maintain temporary lighting at barricades as required for safety.
6. Provide any heating required by these specifications.

B. Telephone:

1. Provide and pay all charges for telephone service.

C. Water:

1. Provide, protect, and maintain an adequate water supply for use on the project for construction purposes, either by means of the permanent water supply line or by installing a temporary waterline as may be required.
2. Install, valve, maintain, and protect such water supply lines as may be required.
3. Remove temporary lines when they are no longer required. Restore to original condition any part of grounds or buildings damaged by removal.
4. Pay the cost of all water used on this portion of the project until final completion of the contract.

D. Toilets:

1. Provide and maintain suitable, weather tight, painted sanitary toilet facilities for all workers during construction period. When toilet facilities are no longer required, promptly remove from site. Disinfect, clean or treat the area as required.
2. Provide and maintain facilities in accordance with requirements of applicable local and state health authorities and OSHA.
3. Keep all toilet facilities clean and supplied with toilet paper at all time.

1.04 OPERATION AND STORAGE AREAS:

- A. All operations of the Contractor (including storage of materials) upon premises shall be confined to areas authorized or approved by the DNR.
- B. Premises adjacent to the construction will be made available for use by the Contractor without costs whenever such use will not interfere with other uses or purposes.
- C. Do not enter on or occupy with personnel, tools, equipment, or material any ground outside the DNR's property without the written consent of the owner of such ground.
- D. Other contractors and employees or agents of the DNR may for all necessary purposes enter upon the work and premises used by the Contractor, and the Contractor shall conduct

his work so as not to impede unnecessarily any work being done by others on or adjacent to the site.

- E. Provide and maintain weather tight storage sheds for own use.
- F. Provide storage sheds with substantial floors raised a minimum of six (6) inches above the ground.
- G. Locate all storage sheds as approved by the DNR Construction Inspector.
- H. Completely remove from site after completion of work.

1.05 PROTECTION AND RESTORATION:

- A. General: Protect all structures, including walks, pipelines, trees, shrubbery, and lawns during the progress of the work; remove from the site all debris and unused materials; and, upon completion of the work, restore the site as nearly as possible to its original condition, including the replacement, at the Contractor's sole expense, of any facility or landscaping which has been damaged.

1.06 ACCESS ROADS:

- A. Temporary Roads and Storage Areas:
 - 1. Construct and maintain all temporary access roads and storage areas required. Locate and construct all roads, ramps, mats, storage areas, and similar items in a manner approved by the Owner and provide overall management of available site areas.
- B. Laws and Regulations:
 - 1. Observe all laws and regulations of the local, county, and state authorities in the use of all public roads and highways for the transportation of materials and equipment in connection with work on the project. Observe all overhead construction, bridges, cables, and the like. Repair damage to roads, highways, overhead construction and similar off-site items, resulting from operations in connection with this project.

1.07 WATER CONTROL:

- A. Carry on construction work in a manner that will direct surface water away from the structures and away from adjoining property.
- B. Provide own means of pumping, well pointing or otherwise maintaining excavations free from ground water encountered. Provide means of properly conveying such water off the construction site.

1.08 PARKING:

- A. Make necessary provisions for parking of all employees on the project within the site limits. Include necessary access roads and maintenance of all roads and parking areas during construction period.
- B. Park vehicles to avoid interference with normal construction activities and to avoid interference with Owner's operation.

1.10 SAFETY:

- A. Provide at least one non-freezing-type fire extinguisher in each workshop and shed used for storage of materials on the premises. Place in readily accessible location.
- B. Provide and maintain a basic first aid kit.
 - 1. Provide first aid supply commensurate with size of project with items necessary for first aid treatment of all injuries.
 - 2. Advise workers of the location of first aid supplies.
 - 3. Post telephone numbers of nearest hospital or ambulance service and fire station in conspicuous location. Advise all workers of location of telephone numbers.

END OF SECTION 01500

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes: The work consists of furnishing all labor, material and equipment for the control and prevention of environmental pollution and damage as the result of construction operations under this Contract and for those measures set described herein, as indicated on the Drawings, specified herein, and as required for the construction of all work of this contract.
 - 1. Scope: The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual aesthetics, noise, solid waste, radiant energy and radioactive materials, as well as other pollutants.
 - 2. Protect the environmental resources within the project boundaries and those affected outside the limits of permanent work during the entire period of this contract.
 - a. Confine activities to areas defined by the Drawings and Specifications.
- B. Related Sections: Drawings and General Provisions of the Contracts, including the General Covenants and Provisions, Supplementary Covenant and Provisions and General Requirements.

1.02 REFERENCES:

- A. Provide protection of Air Resources in accordance with the following state and local codes and rules: Iowa Department of Environmental Quality Act, Oh. 455B of the 1977 Code of Iowa; Iowa Department Rules, 1973 I.D.R. 267 et seq.

1.03 DEFINITIONS:

- A. Environmental pollution and damage: For the purpose of this specification, environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes.

1.04 QUALITY ASSURANCE:

- A. Quality Control: Establish and maintain quality control for environmental protection of all items set forth herein.
 - 1. Record on daily reports any problems in complying with laws, regulations and ordinances and corrective action taken.
 - 2. Assure compliance of subcontractors with this section.

B. Regulatory Requirements:

1. Notification: The Project Engineer/DNR Construction Inspector will notify the Contractor in writing of any observed noncompliance with the aforementioned Federal, state or local laws, or regulations, permits and other elements of the Contractor's environmental protection plan.
2. After receipt of such notice, inform the Project Engineer/DNR Construction Inspector of proposed corrective action and take such action as may be approved.
3. If the Contractor fails to comply promptly, the Project Engineer/DNR Construction Inspector may issue an order stopping all or part of the work until satisfactory corrective action has been taken.
 - a. No time extensions shall be granted such suspension.

C. National Pollutant Discharge Elimination System (NPDES): Contractor to provide a Notice of Intent (Form 1415) for application of a General Permit for Storm Water Discharge, file all necessary Forms and Drawings with the applicable Bureau of the DNR, and pay necessary application fees.(Required for sites of one acre or more)

1. For Storm Water General Permit Assistance: Contact (515)281-7017 or (515)281-8693 for information.

D. Pollution Control Training: Train personnel in all phases of environmental protection.

1. Include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities to insure adequate and continuous environmental pollution control.

1.05 PROJECT/SITE CONDITIONS:

A. Environmental Requirements:

1. Protection of Land Resources: Prior to beginning construction, the Contractor shall identify all land resources to be preserved within the Contractor's work area.

1.06 MAINTENANCE OF POLLUTION CONTROL FACILITIES:

- A. Maintain all constructed facilities and portable pollution control devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

PART 2 - PRODUCTS

2.01 MATERIAL AND EQUIPMENT:

- A. Provide and maintain material and equipment necessary to perform the specified work.

PART 3 - EXECUTION

TEMPORARY POLLUTION CONTROLS
01560-2

3.01 EXAMINATION:

- A. Verification of Conditions: Prior to beginning construction, the Contractor shall identify all land resources to be preserved within the Contractor's work area.
- B. Limits of Work Area:
 - 1. Mark the areas that are not required to accomplish work to be performed under this contract.
 - 2. Mark or fence isolated areas within the general work area which are to be saved and protected.

3.02 PROTECTION OF LAND RESOURCES:

- A. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without special permission from the Contracting Authority.
- B. Do not fasten nor attach ropes, cables, or guys to any trees for anchorage unless specifically authorized.
- C. Where such special emergency use is permitted, provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

3.03 PROTECTION OF MONUMENTS AND MARKERS:

- A. Protect monuments and markers before and during construction operations.
- B. Where construction operations are to be conducted during darkness, the markers shall be visible.
- C. The Contractor shall convey to his personnel the purpose of marking and/or protection of all necessary object.

3.04 PROTECTION OF LANDSCAPE:

- A. Clearly identify trees, shrubs, vines, grasses land forms and other landscape features to be preserved by marking, fencing, or wrapping with boards, or any other approved techniques.

3.05 LOCATION OF FIELD OFFICES, STORAGE AND OTHER CONTRACTOR FACILITIES:

- A. Place field offices, staging areas, stockpile storage, and temporary buildings in areas approved by the Project Engineer/DNR Construction Inspector.
- B. Do not temporarily move or relocate Contractor facilities unless approved by the Engineer/DNR Construction Inspector.

3.06 DISPOSAL OF SOLID WASTES:

- A. Place solid wastes in containers to be emptied on a regular schedule.
 - 1. Conduct handling and disposal to prevent contamination.
 - 2. Transport all solid waste off state property and dispose of in compliance with Federal, state, and local requirements for solid waste disposal.

3.07 DISPOSAL OF CHEMICAL WASTE:

- A. Store chemical waste in corrosion resistant containers, remove from the work area and dispose of in accordance with Federal, state and local regulations.

3.08 DISPOSAL OF DISCARDED MATERIALS:

- A. Handle discarded materials other than those which can be included in the solid waste category as directed by the Contracting Authority.

3.09 PRESERVATION AND RECOVERY OF HISTORICAL, ARCHEOLOGICAL AND CULTURAL RESOURCES:

- A. Existing historical, archeological and cultural resources within the Contractor's work area will be so designated by the Department and precautions taken to preserve all such resources as they existed at the time they were pointed out to the Contractor.
- B. Install protection and assume responsibility for the preservation of these resources as designated on the Drawings, or if not designated as necessary for their preservation.
- C. Report any unusual items that might have historical or archeological value, found or observed during construction activities as soon as practicable to the DNR Construction Inspector.

3.10 PROTECTION OF WATER RESOURCES:

- A. Keep construction activities under surveillance, management and control to avoid pollution of surface and ground waters.
- B. Implement applicable management techniques to control water pollution in accordance with the listed construction activities which are included in this contract.
- C. Installation, maintenance and removal of water pollution control methods and materials to be incidental to other items of work on the project, unless a specific Bid Item for Erosion Control exists.
- D. Comply with detailed Project Plans for temporary erosion control procedures to be performed on this project.

3.11 PROTECTION OF FISH AND WILDLIFE RESOURCES:

- A. Keep construction activities under surveillance, management and control to minimize interference with, disturbance to and damage of fish and wildlife.

- B. List species that require specific attention along with measures for their protection prior to beginning of construction operations.

3.12 PROTECTION OF AIR RESOURCES:

- A. Keep construction activities under surveillance, management and control to minimize pollution of air resources. Perform or operate activities, equipment, processes, and work to accomplish the specified construction in strict accordance with the State of Iowa and all Federal emission and performance laws and standards.
- B. Implement special management techniques as set out below to control air pollution by construction activities.
 - 1. Control of Particulates: Control dust particles, aerosols, and gaseous by-products from all construction activities at all times, including weekends, holidays and hours when work is not in progress.
 - a. Maintain all work areas within or outside the project boundaries free from particulates which would cause the applicable air pollution standards to be exceeded or which would cause a hazard or a nuisance.
 - b. Sprinkling, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area.
 - c. Sprinkling, to be efficient, must be repeated at such intervals as to keep the disturbed area damp at all times, The Contractor must have sufficient competent equipment available to accomplish this task.
 - d. Perform control of particulates as the work proceeds and when ever a particulate nuisance or hazard occurs.
 - 2. Control hydrocarbons and carbon monoxide emissions from equipment in accordance with Federal, State and local allowable limits at all times.
 - 3. Control odors at all times for all construction activities.
 - 4. Assume responsibility for monitoring of air quality throughout the entire areas affected by the construction activities.

3.13 PROTECTION OF SOUND INTRUSIONS:

- A. Keep construction activities under surveillance and control to minimize damage to the environment by noise.

3.14 MOSQUITO CONTROL:

- A. During dredging and due to large areas of shallow water in the disposal area, mosquito breeding must be controlled.

- B. Deposit dredge material to minimize stagnant water pools.
- C. Conduct non-aerial spraying or other methods of application of EPA approved chemicals to control mosquito breeding.

3.15 CLEANING:

- A. Post Construction Clean Up: Cleanup all areas used for construction.
- B. Restoration of Landscape Damage: Restore all landscape features damaged or destroyed during construction operations outside the limits of the approved work areas, in accordance with the plan submitted for approval by the Contracting Authority.

END OF SECTION 01560

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 MATERIAL:

- A. All materials, equipment, and other items incorporated in the work of this project must be new, and both materials and workmanship of best grade of their respective kinds.
- B. To assure ready availability of materials, parts, or components for repair, replacement or future expansion purposes, all materials, equipment, and related components must be obtained from sources which maintain a regular, domestic stock.
- C. Throughout all sections of these specifications, provide other material not specifically described but required to provide Owner with a complete and proper installation of all phases of the work of this contract. Select these materials subject to the approval of Project Engineer/DNR Construction Inspector.

1.03 ITEMS NOT IN CONTRACT:

- A. All items indicated "N.I.C." on drawings or specifications are items not included in this contract.
- B. Provide necessary provisions in the work of this project to permit proper installation of "N.I.C." items.

1.04 TRANSPORTATION AND HANDLING:

- A. Provide protection against damage for all materials during delivery to and storage at the site.
- B. Handling of all materials and equipment shall be such as will prevent damage to such material and/or equipment.
- C. Replace or repair to the satisfaction of the DNR Construction Inspector, all items damaged because of Contractor's failure to properly protect during transportation and handling, when on or off the project site, at no additional cost to the Owner.

1.05 STORAGE AND PROTECTION:

- A. Protect all materials, work, and equipment against damage at all times.

- B. Refer to Section 01500 for requirements for storage sheds. Store all materials that might be damaged within storage sheds.

END OF SECTION 01600

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 CLEANING UP:

- A. Keep premises free of accumulation of surplus materials and rubbish from contractor and subcontractor operations.
 - 1. Remove all rubbish from premises.
- B. Remove rubbish weekly and at other times as required by the DNR Construction Inspector. Keep interior of building free at all times of unattended combustible rubbish.
- C. Immediately prior to final inspection:
 - 1. Clean all surfaces to condition acceptable for immediate occupancy.
 - 2. Remove all marks, stains, fingerprints, paint droppings, and other foreign matter from all finished items.

1.03 GUARANTEES, BONDS AND AFFIDAVITS:

- A. Submit all written guarantees, bonds and affidavits required to the Owner prior to final payment.
- B. Guarantees shall extend the full period of the required guarantee period after:
 - 1. Replacement of work found defective during guarantee period.
 - 2. Repair of inoperative items or adjustments to proper working conditions of items not operating properly at time of inspection at final completion.

1.04 RECORD DRAWINGS:

- A. Required prior to final payment. Refer to Section 01300 of these specifications. Submit to DNR Construction Inspector.

1.05 SHOP DRAWINGS:

- A. Refer to Section 01300 of these specifications.

1.06 TESTS:

- A. Complete all tests required to prove actual operating performance of equipment and systems incorporated into the project. Refer to Section 01400 of these specifications.
- B. Submit reports of all tests to the Owner prior to final payment.

1.07 MAINTENANCE AND OPERATING:

- A. Refer to Section 01730 of these specifications, if applicable.

1.08 DAMAGE TO EXISTING STRUCTURES:

- A. Prior to final acceptance by the Owner, repair or otherwise return to original condition any parts of the existing facilities which have been damaged during construction.

1.09 FINAL INSPECTION:

- A. Request a final inspection in writing, at least ten days prior to the anticipated date of completion, from the DNR Construction Inspector.
- B. Work will not be considered ready for final inspection until all the work has been completed and the Contractor has certified that all items are properly operating and in strict compliance with the contract documents.
- C. The Contractor or his project supervisor shall be present at the job site during the final inspection.
 - 1. The DNR Construction Inspector will present the Contractor, after the final inspection, a list of any items not meeting contract requirements. This list will be confirmed in writing and all items listed must be made acceptable before final payment will be made.

END OF SECTION 01700

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes: To aid the instruction of operating and maintenance personnel, and to provide a source of information regarding the systems incorporated into the Work, furnish and deliver the data described in this section and in pertinent other sections of these specifications.

- 1. Additional data requirements may be described in individual sections.

- B. Related Sections: Drawings and General Provisions of the contract, including the General Covenants and Provisions, Supplementary Covenants and Provisions and General Requirements.

1.02 SUBMITTALS:

- A. Comply with pertinent provisions of Section 01300.
- B. Submit two copies of a preliminary draft of the proposed manual or manuals to the Engineer for review and comments.
- C. Unless otherwise directed in other sections, or in writing by the Engineer, submit two copies of the final manual to the DNR Construction Inspector.

1.03 QUALITY ASSURANCE:

- A. In preparing required data, use only personnel thoroughly trained and experienced in operation and maintenance of the described items, completely familiar with this section's requirements, and sufficiently skilled in technical writing to communicate the essential data.

PART 2 - PRODUCTS

2.01 INSTRUCTION MANUALS:

- A. Where instruction manuals are required to be submitted under other sections of these specifications, prepare in accordance with the provisions of this section.
- B. Format:
 - 1. Size: 8-1/2" x 11"
 - 2. Paper: White bond, at least 20 lb. weight
 - 3. Text: Neatly written or printed

4. Drawings: 11" in height preferable; bind in with text; foldout acceptable; larger drawings acceptable but fold to fit within the manual and provide a drawing pocket inside rear cover or bind in with text.
 5. Flysheets: Separate each portion of the manual with neatly prepared flysheets briefly describing contents of the ensuing portion; flysheets may be in color.
 6. Binding: Use heavy-duty plastic or fiberboard covers with 3-ring binders. All binding is subject to the Owner's approval.
 7. Measurements: Provide all measurements in U.S. standard units: feet-and-inches, lbs., and cfm.
- C. Provide front and back covers for each manual, using durable Owner's approved material, clearly identified on or through the cover with at least the following information:

OPERATING AND MAINTENANCE INSTRUCTIONS

- (name and address of work)
- (name of contractor)
- (general subject of this manual)
- (space for approval signature of)
- (the owner and approval date)

- D. Contents include at least the following:
1. Neatly typewritten index near the front of the manual, giving immediate information as to location within the manual of all emergency information regarding the installation.
 2. Detailed list of subcontractors, including address, phone number and product or equipment installed.
 3. Complete instructions regarding operation and maintenance of all equipment involved, including lubrication, disassembly, and reassembly.
 4. Complete nomenclature of all parts of all equipment.
 5. Complete nomenclature and part number of all replaceable parts, name and address of nearest vendor, and all other data pertinent to procurement procedures.
 6. Copy of all guarantees and warranties issued.
 7. Manufacturers' bulletins, cuts, and descriptive data, where pertinent, clearly indicating the precise items included in this installation and deleting, or otherwise clearly indicating, all manufacturers' data with which this installation is not concerned.
 8. Such other data as required in pertinent sections of these specifications.

PART 3 - EXECUTION

3.01 INSTRUCTION MANUALS:

A. Preliminary:

1. Prepare a preliminary draft of each proposed manual.
2. Show general arrangement, nature of contents in each portion, probable number of drawings and their size, and proposed method of binding and covering.
3. Secure the Architect's approval prior to proceeding.

B. Final: Complete the manuals in strict accordance with the approved preliminary drafts and the Architect's review comments.

C. Revisions:

1. Following the instruction of operation and maintenance personnel, review all proposed revisions of the manual with the DNR Construction Inspector.

END OF SECTION 01730