

Project Manual
For
Pottawattamie County Conservation
Hitchcock Nature Center Improvements
Package A, Park Entry Road Improvements and
Package C, Areas C-1A and C-1B, Parking Improvements



HGM PROJECT NO. 115318

July 2019



640 Fifth Avenue
Council Bluffs, Iowa 51501

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NOTICE TO BIDDERS

Sealed bids for the **Hitchcock Nature Center Improvements Package A, Park Entry Road Improvements** located at 27792 Ski Hill Loop in Honey Creek, Iowa 51542 will be received at the offices of Pottawattamie County Conservation Board, 223 South 6th Street, Council Bluffs, Iowa until July 6th and will be opened publicly. The bid tab will be made public.

If you have any questions please contact Todd Maiellaro, PLA at the office of HGM Associates Inc., 640 Fifth Avenue, Council Bluffs, Iowa 51501, Phone (712) 323-0530.

Questions will be addressed up to 24 hours before the bid opening.

LICENSED CONTRACTORS:

All Work shall be performed by contractors licensed with the County where the work is to take place. Bidders shall determine licensing requirements prior to bidding.

PROJECT DESCRIPTION:The Work includes:

Package A, Park Entry Road Improvements, portions of Package C, Parking Areas Improvements to include Areas C1A and C1B, and the Design Addendum applicable to portions of Package A and Package C. Work related to Area C2 in Package C will be completed at a later date and under a different NTB.

Package A: Remove part of existing road into park and realign new asphalt roadway with 2 new entry lanes separated by concrete medians with site grading and new culvert pipe at entrance. Coordinate with owner on and install payment kiosks and associated conduit.

Package C, Areas C-1A and C-1B: Provide grading for and construct parking areas at two locations. Provide new concrete pad for ADA parking at existing shelter location.

A 5% bid bond is required.

No bidder may withdraw their proposal within 15 days after the bid opening.

A 100% Performance Bond and Payment Bond will be required.

Builder's risk insurance will be paid by the Owner.

Pottawattamie County Conservation is sales tax exempt. Exemption certificates will be issued to the contractor, sub-contractors and suppliers on this project. The bidders shall not include sales tax in their bids.

The earliest completion date is very important to the Owner. The Undersigned agrees that the work can begin no later than August 1st and that the project can be completed no later than 45 days after the start of construction. If the

Contractor shall fail to do so, the Contractor agrees to pay the Owner as liquidated damages and not as a penalty, the sum of \$250.00 for each and every calendar day that the Contractor is in default of substantial completion of the work under this Contract.

- 1
- 2 The Bid Documents may also be examined at the following locations:
- 3
- 4 POTTAWATTAMIE County Conservation Board
- 5 223 South 6th Street, Council Bluffs, Iowa 51501
- 6 Contact: Mark Shoemaker, Executive Director
- 7 Phone: (712) 328-5638
- 8 mark.shoemaker@pottcounty.com
- 9
- 10
- 11 Plans must be returned to Pottawattamie Conservation within 14 calendar days from the bid date.
- 12
- 13

INSTRUCTION TO BIDDERS

1
2
3 The Instructions to Bidders shall be American Institute of Architects Document A701
4 "Instructions to Bidders", 1997 Edition.
5
6

1 GENERAL CONDITIONS
2 OF THE CONTRACT FOR CONSTRUCTION
3

4 The General Conditions shall be American Institute of Architects Document A201 "General
5 Conditions of the Contract for Construction", 2007 Edition, hereby made a part of the Construction
6 Documents as though they were bound herein the Project Manual.
7
8

1 SUPPLEMENTARY CONDITIONS
2 OF THE CONTRACT FOR CONSTRUCTION
3

4 The following supplements modify the "General Conditions of the Contract for Construction",
5 AIA Document, 2017 Edition. Where a portion of the General Conditions is modified or deleted
6 by these supplementary conditions, the unaltered portions should remain in effect.
7

8 ARTICLE 2; OWNER

9 2.22 - Add the following clarification:

10 The Owner will pay Capital Facilities Charges assessments by the utility's provider.
11
12

13 ARTICLE 3; CONTRACTOR

14 3.2.2 - Add the following:

15
16 If the Contractor fails to obtain written clarification of inconsistencies in the Bid
17 Documents from the Architect, the contractor shall bid the more expensive version.
18

19 3.6 - Add the following clarification:

20
21 The Contractor shall pay all sales and other taxes associated with the work. The
22 Contractor shall secure and pay for the building permit, inspections, and testing fees
23 associated with the work.
24

25 Pottawattamie County Conservation is sales tax exempt. Exemption certificates will be
26 issued to the contractor, subcontractors and suppliers on this project. The bidders shall
27 not include sales tax in their bids.
28
29

30 ARTICLE 5: SUBCONTRACTORS

31 5.2.1 - Add the following :

32
33 The Contractor shall submit the list of subcontractors on AIA Document G705 "List of
34 Subcontractors".
35

36 ARTICLE 7: CHANGES IN THE WORK

37 7.3.3 - Add the following:

38
39 Construction Change Directive Work (Additions or Deletions) payment shall consist of
40 actual cost, plus fifteen percent (15%) markup to cover superintendence, general and
41 incidental expense, profit, use of small tools and all other items not reflected in said
42 actual cost. The Contractor's profit, and overhead markup on Subcontractor's work shall
43 not exceed a total of five percent (5%). In no event, regardless of whether the work
44 involved is done by the Contractor or by their subcontractors, shall such markup
45 percentage or cost of the work exceed twenty-five percent (25%) of such actual cost. The

1 total cost of such work shall not exceed a predetermined maximum.
2

3 Following is a summary of Construction Change Directive Markups:
4

5 Work by General Contractor's own forces 15% maximum (General)
6

7 Work by Sub-Contractor's forces 15% (Sub)
8 5% (General)
9 20% maximum
10

11 Work by Sub to Sub 15% (Sub/Sub)
12 5% (Sub)
13 5% (General)
14 25% maximum
15

16 Actual cost shall mean the cost of material, labor and rental of equipment plus any
17 additional performance bond premiums actually and necessarily paid in connection
18 therewith. A complete material and labor breakdown shall be included. Construction
19 directives submitted without a breakdown will not be considered.
20

21 The actual cost of material shall be the actual cost thereof delivered at the site of the work
22 as shown by true copies of original invoices. In no case will prices allowed for materials
23 delivered to the work site be in excess of prices for which such materials could have been
24 obtained and delivered if purchased by the Owner directly. Unused returned material may
25 include a restocking charge.
26

27 The actual cost of labor shall be the amount actually paid to workmen therefor plus social
28 security tax and premiums of worker's compensation insurance and any other
29 compensation required by law or contract actually paid in connection therewith. In no
30 case will the rate of pay allowed for each class of labor shall be in excess of the rate
31 established by current labor organizations.
32

33 The actual cost of rental of equipment shall be determined by rates agreed upon prior to
34 the commencement of such additional work. In cases of emergency, if such price
35 agreement is not practicable, the cost of rental or equipment shall be subject to the
36 approval of the Owner and/or Architect. In no case will the rate allowed for the rental of
37 equipment be in excess of the local rate customarily charged for rental of such equipment
38 or the rate which could be obtained by the Owner for the rental of such equipment.
39

40 ARTICLE 9; PAYMENTS AND COMPLETION

41 9.3.1 - Add the following:
42

43 The form of Application for Payment shall be a notarized AIA Document G702,
44 Application and Certification for Payment, supported by AIA Document G703,
45 Continuation Sheet.

1
2 9.3.1.3 - Add the following:

3
4 9.3.1.3 Until final completion, the Owner will pay 95 percent of the amount due the
5 Contractor on account of progress payments.
6

7 9.10.2 - Add the following:

8
9 The Contractor shall submit the following AIA Documents with the request for Final
10 Payment:

11
12 AIA Document G706, Contractors Affidavit of Payment of Debts and Claims.

13 AIA Document G706A, Contractors Affidavit of Release of Liens.

14 AIA Document G707, Consent of Surety to Final Payment.
15

16 ARTICLE 11; INSURANCE AND BONDS

17 11.1.1 - Add the following:

18 It shall be the Contractor's responsibility to have liability insurance covering all of the
19 construction operations incident to completion of his contract. The Contractor must have
20 on file with the Architect a current "Certificate of Insurance" prior to award of contracts.
21

22 11.1.2.5 - Add the following:

23
24 11.1.2.5 The Contractor shall furnish bonds covering faithful performance of the Contract and
25 payment of obligations arising thereunder. Bonds may be obtained through the Contractor's
26 usual source and the cost thereof shall be included in the Contract Sum. The amount of each
27 bond shall be equal to 100 percent of the Contract Sum.
28

29 11.1.2.6 The Contractor shall deliver the required bonds to the Owner not later than three days
30 following the date the Agreement is entered into, or if the Work is to be commenced prior
31 thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the
32 Work, submit evidence satisfactory to the Owner that such bonds will be furnished.
33

34 11.1.2.7 The Contractor shall require the attorney-in-fact who executes the required
35 bonds on behalf of the surety to affix thereto a certified and current copy of the power of
36 attorney.
37

38 11.1.4 - Add the following:

39
40 11.1.5 Liability Insurance shall include all major divisions of coverage and be on a
41 comprehensive basis including:
42

- 43 1. Premises Operations (including X, C and U coverages as applicable.
44 2. Products and Completed Operations.
45 3. Commercial General Liability, with fellow employee exclusion delete Contractual,

1 including specified provision for Contractor's obligation under Paragraph 3.18.

2 4. Owned, non-owned and hired motor vehicles.

3 5. Broad Form Property Damage including Complete Operations.

4
5 11.1.6 If the General Liability coverages are provided by a Commercial General Liability
6 Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract;
7 the termination date or Retroactive Date shall predate the Contract; the termination date of the
8 policy or applicable extended reporting period shall be no earlier than the termination date of
9 coverages required to be maintained after final payment, certified in accordance with
10 Subparagraph 9.10.2.

11
12 11.1.7 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to
13 the commencement of work. The Contractor shall cause the commercial liability coverage
14 required by the Contract Documents to include the Owner, and the Architect as additional
15 insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions
16 during the Contractors operations.

17
18 11.1.8 The insurance required by Subparagraph 11.1.1 shall be written for not less than the
19 following limits, or greater if required by law:

20
21 1. Workers' Compensation:

22 a. State: Statutory

23 b. Applicable Federal (e.g., Longshoremen's): Statutory

24 c. Employer's Liability: \$500,000.00 per Accident

25
26 2. Comprehensive or Commercial General Liability (including Premises-Operations;
27 Independent Contractors' Protective; Products and Completed Operations; Broad Form
28 Property Damage):

29 a. Bodily Injury:

30 \$1,000,000.00 Each Occurrence

31 \$2,000,000.00 Aggregate

32 b. Property Damage:

33 \$100,000.00 Each Occurrence

34 \$2,000,000.00 Aggregate

35 c. Products and Completed Operations to be maintained for 1 year after final payment

36 d. Property Damage Liability Insurance shall provide X, C and U coverage.

37 e. Broad Form Property Damage Coverage shall include completed Operations.

38
39 3. Contractual Liability:

40 a. Bodily Injury:

41 \$1,000,000.00 Each Occurrence

42 \$1,000,000.00 Aggregate

43 b. Property Damage:

44 \$1,000,000.00 Each Occurrence

45 \$1,000,000.00 Aggregate

- 1
2 4. Business Auto Liability (including owned, non-owned and hired vehicles):
3 a. Bodily Injury:
4 \$1,000,000.00 Each Person
5 \$1,000,000.00 Each Occurrence
6 b. Property Damage:
7 \$100,000.00 Each Occurrence
8 5. This insurance must have no less than a combined single limit liability of \$1,000,000
9 each occurrence and \$2,000,000 annual aggregate.

10
11 11.1.9 - If this insurance is written on the Comprehensive General Liability policy form, the
12 Certificates shall be AIA Document G705, Certificate of Insurance. If this insurance is written
13 on a Commercial General Liability policy form, ACORD form 25S will be acceptable.
14

15 The liability insurance must include underground coverage in case of damage to utility cables,
16 natural gas lines, or any other underground items. The Contractor must also have Worker's
17 Compensation and Employers liability coverages required by the State of Iowa.
18

19 11.3.1 - Add the following:
20

21
22 The form of policy for this coverage shall be "Completed Value".
23

24 **ARTICLE 12 - CHANGE OF CONTRACT TIME**

25

26 **12.1** The Contract Time may only be changed by a Change Order or a Written Amendment.
27 Any claim for an extension or shortening of the Contract Time shall be based on written
28 notice delivered by the party making the claim to the OWNER promptly (but in no event
29 later than seven days) after the occurrence of the event giving rise to the claim and stating
30 the general nature of the claim. Notice of the extent of the claim with supporting data shall
31 be delivered within twenty days after such occurrence (unless OWNER allows an additional
32 period of time to ascertain more accurate data in support of the claim) and said notice shall
33 constitute a representation by the party giving the notice that the adjustment claimed is the
34 entire adjustment to which the claimant has reason to believe it is entitled as a result of the
35 occurrence of said event. All claims for adjustment in the Contract Time shall be
36 determined by OWNER in accordance with paragraph 9.11 if OWNER and
37 CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time
38 will be valid if not submitted in accordance with the requirements of this paragraph 12.1.
39

40 **12.2** The Contract Time will be extended in an amount equal to time lost due to delays
41 beyond the control of CONTRACTOR if a claim is made therefore as provided in
42 paragraph 12.1. Such delays shall include, but not be limited to acts or neglect by OWNER
43 or others performing additional work as contemplated by Article 7, or to fires, floods, labor
44 disputes, epidemics, abnormal weather conditions or Acts of God. A weather condition
45 which is not more extreme than has occurred at the closest official weather recording

1 stations in the most recent five year period will not be considered an abnormal weather
2 condition. The term "Act of God" as used herein above shall be defined as an inevitable
3 accident; such as an extraordinary interruption of the usual course of events that no
4 experience, foresight or care which might reasonably have been expected could have
5 foreseen or guarded against it, as lightning or tempests.
6

7 **12.3** All time limits stated in the Contract Documents are of the essence of the Agreement.
8 The provisions of this Article 12 shall not exclude recovery for damages [including but not
9 limited to fees and charges of engineers, architects, attorneys and other professionals and
10 court and arbitration (should the parties agree to arbitrate after the facts to be arbitrated are
11 known) costs] for delay by either party.
12

13 ARTICLE 13; MISCELLANEOUS PROVISIONS

14 13.5.1 - Add the following:

15
16 13.5.1 The Contractor shall pay for all testing as required by the Paragraphs on Quality
17 Assurance and Field Quality Control in the Specifications and as required by local
18 building codes. Engage a testing agency acceptable to Architect. The Contractor is
19 responsible for coordinating testing and notifying the Architect and Testing Agency as to
20 when testing is required. Testing Agency shall submit all reports for testing directly to the
21 Architect.
22

23 Materials and installed work may require testing and re-testing at any time during
24 progress of Work. Tests, including re-testing of rejected materials for installed Work,
25 shall be done at Contractor's expense.
26

BID PROPOSAL

TO: Mark Shoemaker, Executive Director
Pottawattamie County Conservation
223 South 6th Street, Council Bluffs, Iowa 51501

PROJECT: Hitchcock Nature Center Improvements
Package A and Package C, Areas C-1A and C-1B
27792 Ski Hill Loop, Honey Creek, Iowa 51542

I, or we, the Undersigned hereby propose to complete the above work, furnishing all materials, labor and service therefore, and all according to the DRAWINGS and PROJECT MANUAL as prepared by HGM ASSOCIATES INC., 640 5th Avenue, Council Bluffs, IA 51501, dated _____, for the sum set forth below, subject to all addenda officially issued by the Architect prior to bidding.

The Undersigned acknowledges that the following Addenda were received and considered in the preparation of this proposal, and their receipt and inclusion as a part of this proposal is hereby acknowledged.

ADDENDA NO.

DATED

The Undersigned agrees, upon receipt of written notice of intent to award the Contract that he will execute, AIA Document 101 "Agreement Between Contractor and Owner" on the standard form issued by the American Institute of Architects in accordance with his bid proposal.

Within 48 hours from when bids are opened the undersigned agrees to ***submit a list of subcontractors that they intend to use for the work.***

The Undersigned further agrees that if awarded the Contract he can commence work as soon as the Contract is approved and "Written Notice to Proceed" is issued.

Reasonable allowance will be made for delay in progress of work if cause by any act or neglect of the Owner or by any authorized agent of the Owner, by changes ordered in the work, by fire, by unavoidable casualties or causes beyond the Contractor's control

The undersigned agrees that withdrawal of this Bid Proposal, or failure to sign the Agreement or furnish a satisfactory Performance Bond and Payment Bond within time hereinabove set forth shall automatically bar Undersigned from any further consideration and terminate any and all rights Undersigned may have acquired in, by, or through this Bid or Proposal.

1 No bidder may withdraw their proposal within 15 days after the bid opening.

2
3 The earliest completion date is very important to the Owner. The Undersigned agrees that the
4 work can begin immediately and that the project be complete by _____
5

6 If the Contractor shall fail to do so, the Contractor agrees to pay the Owner as liquidated damages
7 and not as a penalty, the sum of \$250.00 for each and every calendar day that the Contractor is in
8 default of substantial completion of the work under this Contract.
9

10 The Contractor shall write their bid on corresponding description below.

11
12 A: TOTAL LUMP SUM BASE BID for PACKAGE A (ENTRY IMPROVEMENTS):

13
14 _____ Dollars

15
16 (\$ _____)
17

18
19 (The Bidder shall make no additional stipulations on the bid form nor qualify the Bid in any other manner.)
20

21 IN WITNESS WHEREOF THE Undersigned Bidder has caused (his, her, their) signature to be
22 affixed by a duly authorized (Officer, Partner, Owner), this ____ day of _____, 2020.
23

24
25 FIRM NAME: _____
26

27 MAILING ADDRESS: _____
28

29 _____
30
31 TELEPHONE: _____
32

33 BY: _____
34

35 _____
36 (Printed name)
37

38 _____
39 (Title)

AGREEMENT

This AGREEMENT is made and entered this ____ day of _____, 2020, by and between the Pottawattamie County Conservation, hereinafter called the Owner, and _____, hereinafter called the Contractor, with said Agreement to be effective when approved and executed by the Owner.

Whereas the Contractor on the ____ day of _____ 2020, did submit a proposal to the Owner on certain Plans and Specifications entitled, "***Hitchcock Nature Center Improvements, Package A: Park Entry Road Improvements and Package C, Areas C-1A and C-1B***" a copy of which Proposal is hereto attached and made a part hereof, the parties hereto do hereby, in consideration of the mutual covenants hereinafter contained, agree with each other as follows:

1. The Contract Documents include the Notice to Bidders, Instructions to Bidders, General Conditions, Supplemental Specifications, Proposal, Agreement, Bonds, Standard Details, Construction Drawings, Addenda and Modifications are a part of this Contract the same as if each had been fully set out and attached hereto.
2. The Contractor agrees to furnish all labor, mechanics for labor, tools, materials, and equipment to complete the construction under this Contract in a good and workmanlike manner in accordance with the Plans and Specifications.
3. The Owner agrees to pay the Contractor in accordance with the provisions of said plans and specifications and the accepted proposal.
4. It is mutually agreed by each party hereto that all provisions of said plans and specifications shall be strictly complied with and conformed to the same as if rewritten herein, and that no substitutions or changes in said plans and specifications shall be made except upon written consent of the Owner, and such allowance shall in no manner be construed to release either party from any specified or implied obligation of said plans and specifications.
5. The Contractor shall complete the work under this Contract within the time allotted by the Notice to Bidders or by an approved extension thereof. If the Contractor shall fail to do so, then the Contractor agrees to pay the Owner as liquidated damages, and not as a penalty, the sum of \$250 for each and every calendar day that the Contractor is in default of substantial completion of the work under this Contract.

IN WITNESS WHEREOF, we, the contracting parties by our agents hereto affix our signatures.

Executed for Contractor:

By: _____

(Title)

ATTEST: (Witness)

Date Signed

Executed by Owner:

By: _____

ATTEST: (Witness)

Date Signed

1 SECTION 31 10 00 - SITE CLEARING

2
3 PART 1 - GENERAL

4
5 SUMMARY

6 This Section includes the following:

7
8 Protecting existing trees and vegetation to remain.

9
10 Removing trees and other vegetation.

11 Clearing and grubbing.

12 Topsoil stripping.

13 Removing above-grade site improvements.

14 Disconnecting, capping or sealing, and abandoning site utilities in place.

15 Disconnecting, capping or sealing, and removing site utilities.

16
17 MATERIALS OWNERSHIP

18 Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials
19 shall become Contractor's property and shall be removed from the site.

20
21 PROJECT CONDITIONS

22 Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied
23 or used facilities during site-clearing operations.

24
25 Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's
26 premises where indicated.

27
28 Notify utility locator service for area where Project is located before site clearing.

29
30
31 PART 2 - PRODUCTS

32
33 SOIL MATERIALS

34 Satisfactory Soil Materials: As specified in Division 2 Section "Earthwork."

35
36 Obtain approved borrow soil materials off-site when satisfactory soil materials are not
37 available on-site.

38
39
40 PART 3 - EXECUTION

41
42 PREPARATION

43 Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water
44 runoff or airborne dust to adjacent properties and walkways.

45
46 Locate and clearly flag trees and vegetation to remain or to be relocated.

1
2 Protect existing site improvements to remain from damage during construction.

3
4 Restore damaged improvements to their original condition, as acceptable to Owner.

5
6 TREE PROTECTION

7 All efforts should be made to keep equipment and storage of materials outside of drip line of individual trees or around perimeter drip line of groups of trees to remain.

8
9
10 Do not excavate within drip line of trees, unless otherwise indicated.

11
12 Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

13
14
15
16 Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

17
18
19 UTILITIES

20 Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.

21
22 Do not interrupt utilities serving facilities occupied by Owner or others unless permitted.
23 Arrange to provide temporary utility services.

24
25 Excavate for and remove underground utilities indicated to be removed.

26
27 CLEARING AND GRUBBING

28 Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.

29
30
31 Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

32
33
34 Place fill material in horizontal layers not exceeding 8-inch (200-mm) loose depth, and
35 compact each layer to a density equal to adjacent original ground.

36
37 TOPSOIL STRIPPING

38 Remove sod and grass before stripping topsoil.

39
40 Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with
41 underlying subsoil or other waste materials.

42
43 Stockpile topsoil materials away from edge of excavations without intermixing with subsoil.
44 Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

45
46 SITE IMPROVEMENTS

1 Remove existing above- and below-grade improvements as indicated and as necessary to
2 facilitate new construction.

3

4 DISPOSAL

5 Disposal: Remove surplus soil material and unsuitable topsoil to an on-site location specified by
6 the Owner. Remove obstructions, demolished materials,
7 and waste materials, including trash and debris, and legally dispose of them off Owner's
8 property.

8

9

10 END OF SECTION 31 10 00

1 SECTION 31 20 00 – EARTH MOVING

2
3 PART 1 - GENERAL

4
5 RELATED DOCUMENTS

6 Drawings and general provisions of the Contract.

7
8 SUMMARY

9 This Section includes the following:

10
11 Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.

12
13 Excavating and backfilling trenches for buried conduit.

14
15 DEFINITIONS

16 Backfill: Soil materials used to fill an excavation.

17
18 Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support
19 sides of pipe.

20
21 Final Backfill: Backfill placed over initial backfill to fill a trench.

22
23 Excavation: Removal of material encountered above subgrade elevations.

24
25 Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated
26 dimensions without direction by Architect. Unauthorized excavation, as well as remedial work
27 directed by Architect, shall be without additional compensation.

28
29 Fill: Soil material used to raise existing grades.

30
31 Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or
32 backfill immediately below subbase, drainage fill, or topsoil materials.

33
34 Utilities include on-site aboveground and underground pipes, conduits, ducts, and cables, as
well as underground services within buildings.

35
36 SUBMITTALS

37 Material Test Reports: From a qualified testing agency indicating and interpreting test results for
38 compliance of the following with requirements indicated:

39
40
41 Laboratory compaction curve according to ASTM D 698 for each on-site or borrow soil material
42 proposed for fill and backfill.

1 QUALITY ASSURANCE

2 Geotechnical Testing Agency Qualifications: An independent testing agency qualified according
3 to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according
4 to ASTM D 3740 and ASTM E 548.

6 PROJECT CONDITIONS

7 Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless
8 permitted in writing by Architect and then only after arranging to provide temporary utility
9 services according to requirements indicated:

10
11 Notify Owner not less than two days in advance of proposed utility interruptions.

12
13 Contact utility-locator service for area where Project is located before excavating.

16 PART 2 - PRODUCTS

18 SOIL MATERIALS

19 Satisfactory Soils Structural Fill: Approved material free of organic matter, lean clay, and
20 debris. A low plasticity, cohesive material with liquid limit less than 45% and a plasticity index
21 less than 20 percent. Borrow material shall not contain an appreciable amount of roots, rock, or
22 debris, and should not contain any foreign material with a dimension greater than 3 inches. See
23 attached geotechnical report for additional structural fill material requirements.

24 Backfill and Fill: Satisfactory soil materials.

26 ACCESSORIES

27 Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape
28 manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4
29 mils thick, continuously inscribed with a description of utility, with metallic core encased in a
30 protective jacket for corrosion protection, detectable by metal detector when tape is buried up to
31 30 inches deep; colored as follows:

32
33 Red: Electric.

34 Yellow: Gas, oil, steam, and dangerous materials.

35 Orange: Telephone and other communications.

36 Blue: Water systems.

37 Green: Sewer systems.

40 PART 3 - EXECUTION

42 PREPARATION

43 Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by
44 settlement, lateral movement, undermining, washout, and other hazards created by earthwork
45 operations.

1 Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective
2 insulating materials as necessary.

3
4 Provide erosion-control measures to prevent erosion or displacement of soils and discharge of
5 soil-bearing water runoff or airborne dust to adjacent properties and walkways.

6
7 DEWATERING

8 Prevent surface water and ground water from entering excavations, from ponding on prepared
9 subgrades, and from flooding Project site and surrounding area.

10
11 Protect subgrades from softening, undermining, washout, and damage by rain or water
12 accumulation.

13
14 Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in
15 excavations. Do not use excavated trenches as temporary drainage ditches.

16
17 EXCAVATION FOR WALKS AND PAVEMENTS

18 Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

19
20 EXCAVATION FOR UTILITY TRENCHES

21 Excavate trenches to uniform widths to provide a working clearance on each side of pipe or
22 conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of
23 pipe or conduit, unless otherwise indicated.

24
25 Clearance: As indicated in details in the drawings.

26
27 Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of
28 pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of
29 pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects
30 along trench subgrade.

31
32 APPROVAL OF SUBGRADE

33 If Architect determines that unsatisfactory soil is present, continue excavation and replace with
34 compacted backfill or fill material as directed.

35
36 Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of
37 excess yielding. Do not proof roll wet or saturated subgrades.

38
39 Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or
40 construction activities, as directed by Architect.

41
42 UTILITY TRENCH BACKFILL

43 Place and compact bedding course on trench bottoms and where indicated. Shape bedding
44 course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings,
45 and bodies of conduits.

1 Place and compact initial backfill of subbase material, free of particles larger than 1 inch, to a
2 height of 12 inches over the utility pipe or conduit.

3
4 Carefully compact material under pipe haunches and bring backfill evenly up on both sides and
5 along the full length of utility piping or conduit to avoid damage or displacement of utility
6 system.

7
8 Coordinate backfilling with utilities testing.

9
10 Place and compact final backfill of satisfactory soil material to final subgrade.

11
12 Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches
13 below subgrade under pavements and slabs.

14
15 FILL

16 Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and
17 deleterious materials from ground surface before placing fills.

18
19 Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill
20 material will bond with existing material.

21
22 Place and compact fill material in layers to required elevations as follows:

23
24 Under grass and planted areas, use satisfactory soil material.

25 Under walks and pavements, use satisfactory soil material.

26
27 MOISTURE CONTROL

28 Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before
29 compaction to -3 to +4 percent of optimum moisture content value as determined by the
30 Standard Proctor Test.

31
32 Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

33
34 Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds
35 optimum moisture content by 4 percent and is too wet to compact to specified dry unitweight.

36
37 COMPACTION OF BACKFILLS AND FILLS

38 Refer to attached geotechnical report.

39
40 GRADING

41 General: Uniformly grade areas to a smooth surface, free from irregular surface changes.
42 Comply with compaction requirements and grade to cross sections, lines, and elevations
43 indicated.

44
45 Provide a smooth transition between adjacent existing grades and new grades.

46
47 Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

1
2 Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish
3 subgrades to required elevations within the following tolerances:

- 4
5 Lawn or Unpaved Areas: Plus or minus 1 inch.
6 Walks: Plus or minus 1 inch.
7 Pavements: Plus or minus 1/2 inch.

8
9 FIELD QUALITY CONTROL

10 Testing Agency: Contractor shall engage a qualified independent geotechnical engineer testing
11 agency to perform field quality-control testing.

12
13 Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with
14 subsequent earthwork only after test results for previously completed work comply with
15 requirements.

16
17 Testing agency will test compaction of soils in place according to ASTM D 1556,
18 ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at
19 the following locations and frequencies:

20
21 Paved Areas: At subgrade and at each compacted fill and backfill layer, at least one test for
22 every 2000 sq. ft. or less of paved area, but in no case fewer than three tests.

23
24 Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150
25 feet or less of trench length, but no fewer than two tests.

26
27 When testing agency reports that subgrades, fills, or backfills have not achieved degree of
28 compaction specified, scarify and moisten or aerate, or remove and replace soil to depth
29 required; recompact and retest until specified compaction is obtained.

30
31 PROTECTION

32 Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep
33 free of trash and debris.

34
35 Repair and reestablish grades to specified tolerances where completed or partially completed
36 surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent
37 construction operations or weather conditions.

38
39 Scarify or remove and replace soil material to depth as directed by Architect; reshape and
40 recompact.

41
42 Where settling occurs before Project correction period elapses, remove finished surfacing,
43 backfill with additional soil material, compact, and reconstruct surfacing.

44
45 Restore appearance, quality, and condition of finished surfacing to match adjacent work, and
46 eliminate evidence of restoration to the greatest extent possible.

47

1 DISPOSAL OF SURPLUS AND WASTE MATERIALS

2 Disposal: Remove surplus satisfactory soil and unsuitable topsoil to a location specified by owner;
3 remove waste material,
4 trash, and debris, and legally dispose of it off Owner's property.

5 SOILS REPORT

6 Thiele Geotech Inc. completed a geotechnical engineering report dated April 23, 2019, for the
7 proposed Hitchcock Nature Center Improvements which are included in the specifications and
8 made part of this earthwork specification.

9
10
11 END OF SECTION 31 20 00

1 SECTION 321216 - HOT-MIX ASPHALT PAVING

2
3 PART 1 - GENERAL

4
5 RELATED DOCUMENTS

6 Drawings and general provisions of the Contract, including General and Supplementary
7 Conditions and Division 1 Specification Sections, apply to this Section.

8
9 SYSTEM DESCRIPTION

10 Provide hot-mix asphalt paving according to materials, workmanship, and other applicable
11 requirements of standard specifications of state or local DOT.

12
13 Standard Specification: Iowa Department of Transportation (IDOT) Standard
14 Specifications for Highway and Bridge Construction Series 2015 and all supplemental
15 specifications.

16
17 Measurement and payment provisions and safety program submittals included in standard
18 specifications do not apply to this section.

19
20 SUBMITTALS

21 Product Data: For each type of product indicated. Include technical data and tested physical and
22 performance properties.

23
24 Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix
25 proposed for the Work.

26
27 Job-Mix Designs: For each job mix proposed for the Work.

28
29 Material Test Reports: For each paving material.

30
31 QUALITY ASSURANCE

32 Manufacturer Qualifications: A qualified manufacturer.

33
34 Manufacturer shall be a paving-mix manufacturer registered with and approved by
35 authorities having jurisdiction or the DOT of the state in which Project is located.

36
37 Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated, as
38 documented according to ASTM E 548.

39
40 DELIVERY, STORAGE, AND HANDLING

41 Deliver pavement-marking materials to Project site in original packages with seals unbroken and
42 bearing manufacturer's labels containing brand name and type of material, date of manufacture,
43 and directions for storage.

44 Store pavement-marking materials in a clean, dry, protected location within temperature range
45 required by manufacturer. Protect stored materials from direct sunlight.

1 PROJECT CONDITIONS

2 Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively
3 damp or if the following conditions are not met:

4
5 Prime and Tack Coats: Minimum surface temperature of 60 deg F .

6
7 Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of
8 placement.

9
10 Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

11
12 Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces
13 and at a minimum ambient or surface temperature of 40 deg F for oil-based materials,
14 50 deg F for water-based materials, and not exceeding 95 deg F.

15
16
17 PART 2 - PRODUCTS

18
19 AGGREGATES

20 General: Use materials and gradations that have performed satisfactorily in previous
21 installations.

22
23 Coarse Aggregate and Fine Aggregate: Shall meet the criteria for Type B Aggregate hot mix
24 asphalt, Section 2303 and 4127 of the IDOT Standard Specifications.

25
26 ASPHALT MATERIALS

27 Asphalt Binder: Iowa DOT 58-28S.

28
29 Fog Seal: AASHTO M 140, emulsified asphalt or AASHTO M 208, cationic emulsified asphalt,
30 slow setting, factory diluted in water, of suitable grade and consistency for application.

31
32 AUXILIARY MATERIALS

33 Sand: AASHTO M 29, Grades Number 2 or 3.

34
35 Joint Sealant: AASHTO M 301, hot-applied, single-component, polymer-modified bituminous
36 sealant.

37
38 Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying
39 with FS TT-P-115, Type I or II or AASHTO M 248, Type N or F.

40
41 Color: White, Yellow and Blue

42
43 Glass Beads: AASHTO M 247, Type I.

44
45 MIXES

1 Provide mixes complying with composition, grading, and tolerance requirements in ASTM D
2 3515 for the following nominal, maximum aggregate sizes:

- 3
- 4 Base Course: 3/4-inch
- 5 Surface Course: 1/2-inch
- 6 Minimum 60% crushed aggregate
- 7

8 Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes (commercial mix) complying
9 with the following requirements:

10
11 Surface Courses: 3" thick total

12
13 Hot Mix Asphalt Surface Course, 1/2-inch Mix, PG58-28S

14
15 Base Course/Patching: 4" thick

16
17 Hot Mix Asphalt Base Course, 3/4-inch Mix, PG58-28S

18
19
20 PART 3 - EXECUTION

21
22 EXAMINATION

23 Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

24
25 Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that
26 require further compaction.

27
28 Proceed with paving only after unsatisfactory conditions have been corrected.

29
30 PATCHING

31 Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section
32 to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches (300 mm) into
33 adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove
34 excavated material. Recompress existing unbound-aggregate base course to form new subgrade.

35
36 Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt
37 paving at a rate of 0.05 to 0.15 gal./sq. yd.

38
39 Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.

40
41 Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings.

42
43 Remove spillages and clean affected surfaces.

1 Patching: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot,
2 compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with
3 adjacent surfaces.

4

5 REPAIRS

6 Crack and Joint Filling: Remove existing joint filler material and vegetation from cracks or
7 joints to a depth of 1/2-inch.

8

9 Clean cracks and joints in existing hot-mix asphalt pavement.

10

11 Used hot-applied joint sealant to seal cracks and joints more than 1/4-inch (6 mm) wide.

12 Fill flush with surface of existing pavement and remove excess.

13

14 SURFACE PREPARATION

15 General: Immediately before placing asphalt materials, remove loose and deleterious material
16 from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

17

18 Sweep loose granular particles from surface of unbound-aggregate base course. Do not
19 dislodge or disturb aggregate embedded in compacted surface of base course.

20

21 Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq.
22 yd.

23

24 Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.

25

26 Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings.

27

28 Remove spillages and clean affected surfaces.

29

30 HOT-MIX ASPHALT PLACING

31 Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place
32 asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of
33 mix. Place each course to required grade, cross section, and thickness when compacted.

34

35 Place hot-mix asphalt base course in number of lifts and thicknesses indicated.

36

37 Place hot-mix asphalt surface course in single lift.

38

39 Spread mix at minimum temperature of 250 deg F.

40

41 Begin applying mix along centerline of crown for crowned sections and on high side of
42 one-way slopes, unless otherwise indicated.

43

44 Regulate paver machine speed to obtain smooth, continuous surface free of pulls and
45 tears in asphalt-paving mat.

46

1 Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser
2 width are required.

3
4 After first strip has been placed and rolled, place succeeding strips and extend rolling to
5 overlap previous strips. Complete a section of asphalt base course before placing asphalt
6 surface course.

7
8 Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to
9 remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent
10 segregation of mix; use suitable hand tools to smooth surface.

11
12 JOINTS

13 Construct joints to ensure a continuous bond between adjoining paving sections. Construction
14 joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt
15 course.

16
17 Clean contact surfaces and apply tack coat to joints.

18
19 Construct transverse joints as described in AI MS-22, "Construction of Hot Mix Asphalt
20 Pavements."

21
22 Compact joints as soon as hot-mix asphalt will bear roller weight without excessive
23 displacement.

24
25 Compact asphalt at joints to a density within 2 percent of specified course density.

26
27 COMPACTION

28 General: Begin compaction as soon as placed hot-mix paving will bear roller weight without
29 excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate
30 compactors in areas inaccessible to rollers.

31
32 Complete compaction before mix temperature cools to 185 deg F.

33
34 Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and
35 outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade,
36 and smoothness. Correct laydown and rolling operations to comply with requirements.

37
38 Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-
39 mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix
40 asphalt course has been uniformly compacted to the following density:

41
42 Average Density: 96 percent of reference laboratory density according to
43 AASHTO T 245, but not less than 94 percent nor greater than 100 percent.

44
45 Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still
46 warm.

1
2 Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper
3 alignment. Bevel edges while asphalt is still hot; compact thoroughly.
4

5 Repairs: Remove paved areas that are defective or contaminated with foreign materials and
6 replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface
7 smoothness.
8

9 Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled
10 and hardened.
11

12 Erect barricades to protect paving from traffic until mixture has cooled enough not to become
13 marked.
14

15 INSTALLATION TOLERANCES

16 Thickness: Compact each course to produce the thickness indicated within the following
17 tolerances:
18

19 Base Course: Plus or minus 1/2 inch.

20 Surface Course: Plus 1/4 inch, no minus.
21

22 SURFACE TREATMENT

23 Fog Seals: Apply fog seal at a rate of 0.10 to 0.15 gal./sq. yd. (0.45 to 0.7 L/sq. m) to existing
24 asphalt pavement and allow to cure. With a fine sand, lightly dust areas receiving excess fog
25 seal.
26

27 PAVEMENT MARKING

28 Do not apply pavement-marking paint until layout, colors, and placement have been verified
29 with Architect.
30

31 Allow paving to age for 30 days before starting pavement marking.
32

33 Sweep and clean surface to eliminate loose material and dust.
34

35 Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated,
36 with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum
37 wet film thickness of 15 mils.
38

39 Broadcast glass spheres uniformly into wet pavement markings at a rate of 6 lb/gal.
40

41 FIELD QUALITY CONTROL

42 Testing Agency: Owner will engage a qualified independent testing and inspecting agency to
43 perform field tests and inspections and to prepare test reports.
44

45 Testing agency will conduct and interpret tests and state in each report whether tested
46 Work complies with or deviates from specified requirements.

1
2 Additional testing and inspecting, at Contractor's expense, will be performed to determine
3 compliance of replaced or additional work with specified requirements.
4

5 Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined
6 according to ASTM D 3549.
7

8 Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for
9 compliance with smoothness tolerances.
10

11 In-Place Density: Testing agency will take samples of uncompacted paving mixtures and
12 compacted pavement according to ASTM D 979 or AASHTO T 168.
13

14 Reference maximum theoretical density will be determined by averaging results from
15 four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared
16 according to ASTM D 2041, and compacted according to job-mix specifications.
17

18 In-place density of compacted pavement will be determined by testing core samples
19 according to ASTM D 1188 or ASTM D 2726.
20

21 One core sample will be taken for every 1,000 sq. yd. or less of installed
22 pavement, with no fewer than 3 cores taken.
23

24 Field density of in-place compacted pavement may also be determined by nuclear
25 method according to ASTM D 2950 and correlated with ASTM D 1188 or
26 ASTM D 2726.
27

28 Remove and replace or install additional hot-mix asphalt where test results or measurements
29 indicate that it does not comply with specified requirements.
30

31 DISPOSAL

32 Except for material indicated to be recycled, remove excavated materials from Project site and
33 legally dispose of them in an EPA-approved landfill.
34

35
36 END OF SECTION 32 12 16

1 SECTION 32 13 13 - CONCRETE PAVEMENT

2
3 PART 1 - GENERAL

4
5 RELATED DOCUMENTS

6 Drawings and general provisions of the Contract, including General and Supplementary
7 Conditions and Division 1 Specification Sections, apply to this Section.

8
9 DEFINITIONS

10 Cementitious Materials: Portland cement alone or in combination with one or more of blended
11 hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans, ground granulated
12 blast-furnace slag, and silica fume.

13
14 SUBMITTALS

15 Product Data: For each type of manufactured material and product indicated.

16
17 Design Mixes: For each concrete pavement mix. Include alternate mix designs when
18 characteristics of materials, project conditions, weather, test results, or other circumstances
19 warrant adjustments.

20
21 Material Certificates: Signed by manufacturers certifying that each of the following materials
22 complies with requirements:

- 23
24 Cementitious materials and aggregates.
25 Steel reinforcement and reinforcement accessories.
26 Fiber reinforcement.
27 Admixtures.
28 Curing compounds.
29 Applied finish materials.
30 Bonding agent or adhesive.
31 Joint fillers.
32

33 QUALITY ASSURANCE

34 Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with
35 ASTM C 94 requirements for production facilities and equipment.

36
37 Manufacturer must be certified according to the National Ready Mix Concrete
38 Association's Plant Certification Program.
39

40 Testing Agency Qualifications: An independent testing agency, acceptable to authorities having
41 jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing
42 indicated, as documented according to ASTM E 548.

43
44 ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless
45 modified by the requirements of the Contract Documents.

46
47 Concrete Testing Service: Engage a qualified independent testing agency to perform material
48 evaluation tests and to design concrete mixes.

1
2 PROJECT CONDITIONS

3 Traffic Control: Maintain access for vehicular and pedestrian traffic as required.
4
5

6 PART 2 – PRODUCTS
7

8 FORMS

9 Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials
10 to provide full-depth, continuous, straight, smooth exposed surfaces.
11

12 Use flexible or curved forms for curves.
13

14 Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain,
15 or adversely affect concrete surfaces and will not impair subsequent treatments of concrete
16 surfaces.
17

18 STEEL REINFORCEMENT

19 Reinforcement Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
20

21 Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60 (Grade 420). Cut bars true
22 to length with ends square and free of burrs.
23

24 Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
25

26 CONCRETE MATERIALS
27

28 Concrete materials for parking areas, driveways, and sidewalks shall conform to the
29 requirements of the City of Council Bluffs mix CV-QMC-C15.
30

31 The mix proportions per cubic yard of concrete for CV-QMC-C15 shall be:
32

33	Cement, Type IPF	482 lbs.	2.62
34	Fly Ash, Class C	85 lbs.	0.51
35	Water (Max 0.40)	0.38 lb./lb.	3.36
36	CL V Sand-Gravel	1,719 lbs.	10.51
37	#557 Limestone	1,402 lbs.	8.38
38	Air Content	6%	1.62
39	Pozzoloth 80	3 oz./100#	0.00

40

41 ADMIXTURES

42 General: Admixtures shall conform to the requirements of the City of Council Bluffs and
43 SUDAS Specifications.
44

45 CURING MATERIALS

46 Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing
47 approximately 9 oz./sq. yd. dry.
48

1 Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

2
3 Water: Potable.

4
5 Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application
6 to fresh concrete.

7
8 White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.

9
10 Available Products: Subject to compliance with requirements, products that may be incorporated
11 into the Work include, but are not limited to, the following:

12
13 White Waterborne Membrane-Forming Curing Compound:

14
15 AH Curing Compound #2 WB WP; Anti-Hydro International, Inc.

16 Aqua Resin Cure; Burke Group, LLC (The).

17 W.B. Resin Cure; Conspec Marketing & Manufacturing Co., Inc.

18 Thinfilm 450; Kaufman Products, Inc.

19 Aqua Kure-White; Lambert Corporation.

20 L&M Cure R-2; L&M Construction Chemicals, Inc.

21 1200-White; W. R. Meadows, Inc.

22 White Pigmented Resin Cure E; Nox-Crete Products Group, Kinsman Corp.

23 Rich Cure White E; Richmond Screw Anchor Co.

24 Resi-Chem High Cure; Symons Corporation.

25 Horcure 200-W; Tamms Ind. Co, Div of LaPorte Cons. Chemicals N. America, Inc.

26 Hydro White 309; Unitex.

27
28 CONCRETE MIXES

29 Concrete mix shall conform to the requirements of the City of Council Bluffs mix CV-QMC-C15.

30
31 CONCRETE MIXING

32 Ready-Mixed Concrete: Comply with requirements of the Iowa Department of Transportation
33 (IDOT) Class C-V47B concrete.

34
35 When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time
36 from 1½ hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and
37 delivery time to 60 minutes.

38
39 Project-Site Mixing: Is not allowed.

40
41 PAVEMENT MARKINGS

42 Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying
43 with FS TT-P-115, Type I or II or AASHTO M 248, Type N or F.

44
45 Color: White, Yellow, or Blue

46
47 Glass Beads: AASHTO M 247, Type I.

1 JOINT MATERIALS

2 Expansion joint filler for stoops, pads, stairs, walks, paving, curbs and other concrete site
3 improvements shall be "Sonoflex F" manufactured by Sonneborn, Degussa Building Systems,
4 Minneapolis, Minnesota, or Ceramer manufactured by W.R. Meadows, Inc., Elgin Illinois.
5 Thickness shall be 1/2" unless indicated otherwise on the Drawings.

6
7 SEALANTS

8 Joint Sealant Material for slabs, curbs, pavement and other exterior concrete site improvements
9 shall be as follows:

10
11 Hot-pour type joint sealant shall conform to ASTM D 6690 and shall be Hi-Spec
12 manufactured by W.R. Meadows.

13
14 Cold-applied rubber pavement sealant shall be non-tracking gardox manufactured by
15 W.R. Meadows, Inc.

16
17 Thermosetting paving sealant shall be used on all exterior expansion joints.

18
19 Expansion Joint Sealant for all exterior expansion joints shall be 2-part polyurethane sealants and
20 shall be one of the following types and manufacturers:

21
22 Sonolastic Paving Joint Sealant (Sonneborn) Degussa Building Systems
23 NR-200 Urexpan Sealant Pecora Corporation
24 THC-900 Tremco Manufacturing Company
25 Sikaflex 2c NS TG Sika Corporation
26

27
28 PART 3 - EXECUTION

29
30 PREPARATION

31 Refer to the Geotechnical Engineering report dated April 23, 2019 and notations on the drawing.

32
33 Remove loose material from compacted subbase surface immediately before placing concrete.

34
35 EDGE FORMS AND SCREED CONSTRUCTION

36 Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to
37 required lines, grades, and elevations. Install forms to allow continuous progress of work and so
38 forms can remain in place at least 24 hours after concrete placement.

39
40 Clean forms after each use and coat with form release agent to ensure separation from concrete
41 without damage.

42
43 STEEL REINFORCEMENT

44 General: Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and
45 with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting
46 reinforcement.

47
48 All reinforcing bars shall be epoxy coated.

1
2 Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during
3 concrete placement. Maintain minimum cover to reinforcement.

4
5 JOINTS

6 General: Construct construction, isolation, and contraction joints and tool edgings true to line
7 with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles
8 to centerline, unless otherwise indicated.

9
10 When joining existing pavement, place transverse joints to align with previously placed
11 joints, unless otherwise indicated.

12
13 Construction Joints: Set construction joints at side and end terminations of pavement and at
14 locations where pavement operations are stopped for more than one-half hour, unless pavement
15 terminates at isolation joints.

16
17 Use a bonding agent at locations where fresh concrete is placed against hardened or
18 partially hardened concrete surfaces.

19
20 Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as
21 indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete
22 thickness, as follows:

23
24 Grooved Joints: Form contraction joints after initial floating by grooving and finishing
25 each edge of joint with groover tool to the following radius. Repeat grooving of
26 contraction joints after applying surface finishes. Eliminate groover marks on concrete
27 surfaces.

28
29 Radius: ¼ inch.

30
31 Sawed Joints: Form contraction joints with power saws equipped with shatterproof
32 abrasive or diamond-rimmed blades. Cut joints per plan details into concrete when
33 cutting action will not tear, abrade, or otherwise damage surface and before developing
34 random contraction cracks.

35
36 Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with
37 an edging tool to the following radius. Repeat tooling of edges after applying surface finishes.
38 Eliminate tool marks on concrete surfaces.

39
40 Radius: ¼ inch

41
42 CONCRETE PLACEMENT

43 Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement
44 steel, and items to be embedded or cast in. Notify other trades to permit installation of their
45 work.

1 SECTION 32 92 00 – TURF AND GRASSES

2
3 PART 1 - GENERAL

4
5 RELATED DOCUMENTS

6 Drawings and general provisions of the Contract, including General and Supplementary
7 Conditions and Division 1 Specification Sections, apply to this Section.

8
9 DEFINITIONS

10 Finish Grade: Elevation of finished surface of planting soil. Manufactured Soil: Soil produced
11 off-site by homogeneously blending mineral soils or sand with stabilized organic soil
12 amendments to produce topsoil or planting soil.

13
14 Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to
15 become topsoil; mixed with soil amendments.

16
17 Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface
18 of a fill or backfill immediately beneath planting soil.

19
20 QUALITY ASSURANCE

21 Installer Qualifications: A qualified landscape installer whose work has resulted in successful
22 lawn establishment.

23
24 Installer's Field Supervision: Require Installer to maintain an experienced full-time
25 supervisor on Project site when planting is in progress.

26
27 DELIVERY, STORAGE, AND HANDLING – PERFORMED BY OWNER

28 Seed: Deliver seed in original sealed, labeled, and undamaged containers.

29
30
31 LAWN MAINTENANCE – PERFORMED BY OWNER

32 Begin maintenance immediately after each area is planted and continue until acceptable lawn is
33 established, but for not less than the following periods:

34
35 Seeded Lawns: 60 days from date of Substantial Completion.

36
37 Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting,
38 and other operations. Roll, regrade, and replant bare or eroded areas and mulch to produce a
39 uniformly smooth lawn.

40
41 In areas where mulch has been disturbed by wind or maintenance operations, add new mulch.
42 Anchor as required to prevent displacement.

43
44 Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified
45 height without cutting more than 40 percent of grass height. Remove no more than 40 percent of

1 grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades
2 bend over and become matted. Do not mow when grass is wet.

3
4 Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.

5
6 Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to lawn area.

7
8
9 PART 2 - PRODUCTS

10
11 SEED – PROVIDED AND PERFORMED BY OWNER

12 Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed
13 Technology; Rules for Testing Seeds" for purity and germination tolerances.

14
15 Type 1: Super Turf 2 - turf type tall fescue/rye/blue blend by United Seeds, Inc. Install
16 at rate supplier's recommendation.

17
18 Type 2: Native Prairiegrass Mixture – Provided by owner. Install at rate supplier's
19 recommendation. 20

21
22 TOPSOIL

23 Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content;
24 free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant
25 growth.

26
27 Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled
28 surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay
29 lumps, and other extraneous materials harmful to plant growth.

30
31 Supplement with on-site topsoil if available, consult with Owner for location and
32 availability. If on-site topsoil not available, utilize imported or manufactured
33 topsoil from off-site sources when
34 quantities are insufficient. Obtain topsoil displaced from naturally well-drained
35 sites where topsoil occurs at least 4 inches deep.

36 PLANTING ACCESSORIES – PERFORMED BY OWNER

37 Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for
38 application.

39 FERTILIZER – PERFORMED BY OWNER

40 Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of
41 fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea
42 formaldehyde, phosphorous, and potassium.

43
44 EROSION-CONTROL MATERIALS

1 Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed
2 in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6
3 inches long.
4
5

6 PART 3 - EXECUTION
7

8 EXAMINATION

9 Examine areas to receive grass for compliance with requirements and other conditions affecting
10 performance. Proceed with installation only after unsatisfactory conditions have been corrected.
11

12 PREPARATION

13 Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings
14 from damage caused by planting operations.
15

16 Protect adjacent and adjoining areas from hydroseeding overspray.
17

18 Provide erosion-control measures to prevent erosion or displacement of soils and discharge of
19 soil-bearing water runoff or airborne dust to adjacent properties and walkways.
20

21 LAWN PREPARATION

22 Limit lawn subgrade preparation to areas to be planted.
23

24 Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones
25 larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and
26 legally dispose of them off Owner's property.
27

28 Apply fertilizer directly to subgrade before loosening.

29 Thoroughly blend planting soil before spreading or spread topsoil, apply soil amendments
30 and fertilizer on surface, and thoroughly blend planting soil mix.
31

32 Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly
33 fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove
34 ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted
35 in the immediate future.
36

37 Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface
38 to dry before planting. Do not create muddy soil.
39

40 Restore areas if eroded or otherwise disturbed after finish grading and before planting.
41

42 SEEDING – PERFORMED BY OWNER

43 Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity
44 exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right
45 angles to each other.
46

1 Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.

2

3 Protect seeded areas with slopes exceeding 1:6 with erosion-control fiber mesh and 1:4 with
4 erosion-control blankets installed and stapled according to manufacturer's written instructions.

5

6 Protect seeded areas with slopes not exceeding 1:6 with erosion control blankets installed and
7 stapled according to manufacturer's written instructions.

8

9

10 HYDROSEEDING – PERFORMED BY OWNER

11 Hydroseeding: At contractor's option, seeding may be by hydroseeding. Mix specified seed,
12 fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed
13 application. Continue mixing until uniformly blended into homogeneous slurry suitable for
14 hydraulic application.

15

16 Mix slurry with nonasphaltic tackifier.

17 Apply slurry uniformly to all areas to be seeded in a one-step process. Apply mulch at a
18 minimum rate of 1500-lb/acre dry weight but not less than the rate required to obtain
19 specified seed-sowing rate.

20

21 SATISFACTORY LAWNS

22 Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of
23 grass has been established, free of weeds and surface irregularities, with coverage exceeding 90
24 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

25

26 Reestablish lawns that do not comply with requirements and continue maintenance until lawns
27 are satisfactory.

28

29 CLEANUP AND PROTECTION

30 Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of
31 vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

32

33 Erect barricades and warning signs as required to protect newly planted areas from traffic.

34 Maintain barricades throughout maintenance period and remove after lawn is established.

35

36 Remove erosion-control measures after grass establishment period.

37

38

39 END OF SECTION 32 92 00

1 Moisten subbase to provide a uniform dampened condition at the time concrete is placed. Do not
2 place concrete around manholes or other structures until they are at the required finish elevation
3 and alignment.

4
5 Comply with requirements and with recommendations in ACI 304R for measuring, mixing,
6 transporting, and placing concrete.

7
8 Do not add water to concrete during delivery, at Project site, or during placement.

9
10 Deposit and spread concrete in a continuous operation between transverse joints. Do not push or
11 drag concrete into place or use vibrators to move concrete into place.

12
13 Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading,
14 rodding, or tamping. Use equipment and procedures to consolidate concrete according to
15 recommendations in ACI 309R.

16
17 Consolidate concrete along face of forms and adjacent to transverse joints with an
18 internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side
19 forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate
20 with care to prevent dislocating reinforcement, dowels, and joint devices.

21
22 Screed pavement surfaces with a straightedge and strike off. Commence initial floating using
23 bull floats or darbies to form an open textured and uniform surface plane before excess moisture
24 or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning
25 finishing operations or spreading dry-shake surface treatments.

26
27 When adjoining pavement lanes are placed in separate pours, do not operate equipment on
28 concrete until pavement has attained 85 percent of its 28-day compressive strength.

29
30 Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as
31 follows when hot-weather conditions exist:

32
33 Cool ingredients before mixing to maintain concrete temperature at time of placement
34 below 90 deg F. Chilled mixing water or chopped ice may be used to control
35 temperature, provided water equivalent of ice is calculated to total amount of mixing
36 water. Using liquid nitrogen to cool concrete is Contractor's option.

37
38 Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed
39 ambient air temperature immediately before embedding in concrete.

40
41 Fog-spray forms, reinforcement steel, and subgrade just before placing concrete. Keep
42 subgrade moisture uniform without standing water, soft spots, or dry areas.

43
44 CONCRETE FINISHING

45 General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations
46 is prohibited.

1 SECTION 33 41 00 - STORM DRAINAGE

2
3 PART 1 - GENERAL

4
5 SUMMARY

6 This Section includes storm drainage outside the building. The 2019 Statewide Urban Design
7 and Specifications (SUDAS) for Public Works Improvements and the 2019 City of Council
8 Bluffs Supplemental Specifications shall apply.

9
10 SUBMITTALS

11 Shop Drawings: For precast concrete manholes and other structures, including frames, covers,
12 and grates.

13
14
15 PROJECT CONDITIONS

16 Site Information: Perform site survey, research public utility records, and verify existing utility
17 locations.

18
19
20 PART 2 - PRODUCTS

21
22 PIPES AND FITTINGS

23 Corrugated Metal Pipe (CMP):

24
25 Use pipe complying with the following:

26
27 AASHTO M 36, Type 1;

28
29 Zinc coating complying with AASHTO M 218;

30
31 Corrugated steel circular section with annular or helical corrugations;

32
33 Gage of pipe according to Iowa DOT Standard Road Plan DR-104 or as specified
34 in the contract documents; and

35
36 Coupling bands with annular or helical corrugations to match pipe ends.

37
38 Spiral pipe is not allowed.

39
40
41 PART 3 - EXECUTION

42
43 EARTHWORK

44 Excavating, trenching, backfilling, and identification materials and their installation are specified
45 in Urban Standard Specifications, Division 2 Section "Earthwork."

46
47 INSTALLATION, GENERAL

1 General Locations and Arrangements: Drawing plans and details indicate general location and
2 arrangement of underground storm drainage piping. Location and arrangement of piping layout
3 take design considerations into account. Install piping as indicated.
4

5 Install piping beginning at low point, true to grades and alignment indicated with unbroken
6 continuity of invert. Place bell ends of piping facing upstream. Apply jointing material to
7 bottom half of groove and top half of matching tongue, and force pipe together.
8

9 Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch
10 connections, unless direct tap into existing sewer is indicated.
11

12 Use proper size increasers, reducers, and couplings where different sizes or materials of pipes
13 and fittings are connected. Reducing size of piping in direction of flow is prohibited.
14

15 Install piping pitched down in direction of flow, at minimum slope of 1 percent, unless otherwise
16 indicated.
17

18 MANHOLE INSTALLATION

19 Install complete with appurtenances and accessories indicated.
20

21 Set tops of frames and covers flush with finished surface of manholes that occur in pavements.
22 Set tops 3 inches above finished surface elsewhere, unless otherwise indicated.
23

24 Install precast concrete manhole sections with gaskets according to ASTM C 891.
25

26 CATCH-BASIN INSTALLATION

27 Set frames and grates to elevations indicated.
28

29 CONCRETE PLACEMENT

30 Place cast-in-place concrete according to Urban Standard Specifications, Division 6,
31 Section 6010, Part 3.
32

33 DRAINAGE SYSTEM INSTALLATION

34 Install piping where indicated according to Urban Standard Specifications and as detailed in the
35 drawings.
36

37 FIELD QUALITY CONTROL

38 Inspect interior of piping to determine whether line displacement or other damage has occurred.
39 Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
40

41 Defects requiring correction include the following:
42

43 Deflection: Shall not exceed 5% of average inside diameter as established by
44 ASTM Standards.
45

46 Alignment: Less than full diameter of inside of pipe is visible between structures.
47

1 Crushed, broken, cracked, or otherwise damaged piping.

2
3 Infiltration: Water leakage into piping.

4
5 Exfiltration: Water leakage from or around piping.

6
7 Tolerances:

8
9 A. Horizontal and vertical alignment of gravity sewer lines shall not vary
10 from design line and grade at any point along the pipe by more than
11 1% of the inside diameter of the pipe or ¼", which is larger.

12
13 B. Tolerance allowed only if design line and grade is sufficient to prevent
14 backslope when tolerance limits are reached.

15
16 C. Reverse slope on pipe is prohibited.

17
18 D. Pipe laid in violations of items A, B, and C above shall be removed
19 and re-laid.

20
21 Replace defective piping using new materials, and repeat inspections until defects are
22 within allowances specified.

23
24 Reinspect and repeat procedure until results are satisfactory.

25
26 Test new piping systems according to authorities having jurisdiction.

27
28
29 PROTECTION AND CLEANING

30 Protect existing piping and structures to prevent concrete or debris from entering while making
31 tap connections. Remove debris or other extraneous material that may accumulate.

32
33 Clear interior of piping and structures of dirt and superfluous material as work progresses.
34 Maintain swab or drag in piping, and pull past each joint as it is completed.

35
36 Place plug in end of incomplete piping at end of day and when work stops.

37
38 Flush piping between manholes and other structures to remove collected debris, if
39 required by authorities having jurisdiction.

40
41
42 END OF SECTION 33 41 00

1 Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and
2 the concrete surface has stiffened sufficiently to permit operations. Float surface with power-
3 driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces
4 to true planes. Cut down high spots, and fill low spots. Refloat surface immediately to uniform
5 granular texture.

6
7 Sidewalks: Medium-to-Textured Broom Finish: Draw a soft bristle broom across float-
8 finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line
9 texture.

10
11 Streets and parking: Burlap finish: Drag a seamless strip of damp burlap across float-
12 finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.

13 14 15 COLD WEATHER PROTECTION

16 The Contractor shall protect concrete pavement less than 36 hours old from cold weather. Please
17 one layer of burlap on concrete with night temperature forecast 35°F to 32°F. Please two layers
18 of burlap or one layer of plastic on one layer of burlap on concrete with night temperature
19 forecast 31°F to 25°F. Do not place concrete if overnight temperature forecast is below 25°F.

20 21 RAIN PROTECTION

22 The Contractor shall protect the new pavement from rain damage. The Contractor shall have
23 burlap available near the work site for protection of the concrete surface.

24 25 FIELD QUALITY CONTROL

26 Testing Agency: Engage a qualified independent testing and inspecting agency to perform field
27 tests and inspections and prepare test reports.

28
29 Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM
30 C 172 shall be performed according to the following requirements:

31
32 Testing Frequency: Obtain at least 1 composite sample for each 100 cu. Yd. or 5000 sq.
33 ft. or fraction thereof of each concrete mix placed each day.

34
35 When frequency of testing will provide fewer than five compressive-strength tests
36 for each concrete mixture, testing shall be conducted from at least five randomly
37 selected batches or from each batch if fewer than five are used.

38
39 Slump: ASTM C 143/C 143M; one test at point of placement for each composite
40 sample, but not less than one test for each day's pour of each concrete mix. Perform
41 additional tests when concrete consistency appears to change.

42
43 Air Content: ASTM C 231, pressure method; one test for each composite sample, but
44 not less than one test for each day's pour of each concrete mix.

45
46 Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of
47 three standard cylinder specimens for each composite sample.

1 Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2
2 specimens at 28 days.

3
4 A compressive-strength test shall be the average compressive strength from 2
5 specimens obtained from same composite sample and tested at 28 days.

6
7 Strength of each concrete mix shall be satisfactory if average of any 3 consecutive compressive-
8 strength tests equals or exceeds specified compressive strength and no compressive-strength test
9 value falls below specified compressive strength by more than 500 psi (3.4 MPa)

10
11 Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor
12 within 48 hours of testing. Reports of compressive-strength tests shall contain Project
13 identification name and number, date of concrete placement, name of concrete testing and
14 inspecting agency, location of concrete batch in Work, design compressive strength at 28 days,
15 concrete mixture proportions and materials, compressive breaking strength, and type of break for
16 both 7-and 28-day tests.

17
18 Remove and replace concrete pavement where tests results indicate that it does not comply with
19 specified requirements.

20
21 Additional testing and inspecting, at Contractor's expense, will be performed to determine
22 compliance of replaced or additional work with specified requirements.

23
24 REPAIRS AND PROTECTION

25 Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet
26 requirements in this Section.

27
28 Protect concrete from damage. Exclude traffic from pavement for at least 7 days after
29 placement. When construction traffic is permitted, maintain pavement as clean as possible by
30 removing surface stains and spillage of materials as they occur.

31
32
33 END OF SECTION 32 13 13