

**STATE OF NEW HAMPSHIRE
DEPARTMENT OF NATURAL AND CULTURAL RESOURCES**

172 Pembroke Road
Concord, NH 03301
Tel. (603) 271-3556 Fax (603) 271-3553

PROJECT MANUAL

Project No.: ARP-2431

Greenfield State Park

**ARPA – GREENFIELD SP
ROADWAY & SITEWORK
FEDERAL AID PROJECT**

52 Campground Road
Greenfield NH 03047

June 20, 2024

DOCUMENT 000102

TABLE OF CONTENTS

SERIES 0 DOCUMENTS

000102	TABLE OF CONTENTS
000103	PROJECT DIRECTORY
000104	DRAWING LIST
001116	INVITATION TO BID
002113	INSTRUCTIONS TO BIDDERS
004100	BID PROPOSAL FORM
007200	GENERAL CONDITIONS
007300	SUPPLEMENTARY CONDITIONS FOR FEDERALLY FUNDED PROJECTS

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

061000	ROUGH CARPENTRY
061500	WOOD DECKING

DIVISION 31 – EARTHWORK

311000	SITE CLEARING
312000	EARTH MOVING

DIVISION 32 – EXTERIOR IMPROVEMENTS

321216	ASPHALT PAVING
321313	SITE CONCRETE
329115	SOIL PREPARATION
329200	TURF AND GRASSES

DIVISION 33 – UTILITIES

334200	STORMWATER CONVEYANCE
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END OF SECTION

PROJECT DIRECTORY

ARPA – Greenfield SP Roadway & Sitework
52 Campground Road
Greenfield, NH 03047

CONTRACT

ADMINISTRATOR:

Department of Natural and Cultural Resources
172 Pembroke Road
Concord, New Hampshire 03301
Telephone: 603-271-3973
Contact: Edward Mussey
E-mail: Edward.v.mussey@dncr.nh.gov

CONSULTANTS:

CIVIL ENGINEER:

Oak Point Associates
231 Main Street
Biddeford, Maine 04005
Telephone: 207 283-0193
Fax: 207 283-4283
Contact: Paul J. Miller, P.E.
E-mail: pmiller@oakpoint.com



END OF PROJECT DIRECTORY

DOCUMENT 000104

DRAWING LIST

SERIES 0 DOCUMENTS

CONSTRUCTION DOCUMENTS

GENERAL

G-001	TITLE SHEET
G-002	MAPS, DRAWING LIST, NOTES, LEGENDS, AND ABBREVIATIONS

CIVIL

C-001	OVERALL SITE PLAN
C-002	SITE PLAN – SOUTH
C-003	SITE PLAN – NORTH
C-004	SITE PLAN – WEST
C-101	SITE PLANS – AREA 1
C-102	SITE PLANS – AREA 2
C-103	SITE PLANS – AREA 3
C-104	EXISTING CONDITIONS/REMOVALS PLAN – AREA 4
C-105	SITE PLAN AND PROFILE – AREA 4
C-106	SITE PLANS – AREA 5
C-107	SITE PLANS – AREA 6
C-108	EXISTING CONDITIONS/REMOVALS PLAN – AREA 7
C-109	SITE/GRADING PLAN – AREA 7
C-110	ROAD PROFILE – AREA 7
C-111	SITE PLANS – AREA 8
C-112	SITE PLANS – AREA 9
C-113	EXISTING CONDITIONS/REMOVAL PLANS – AREA 10
C-114	SITE/GRADING PLAN – AREA 10
C-115	EXISTING CONDITIONS/REMOVALS PLAN – AREA 11
C-116	SITE/GRADING PLANS – AREA 11
C-501	SITE DETAILS – 1
C-502	SITE DETAILS – 2
C-503	SITE DETAILS – 3

END OF DOCUMENT

SECTION 00 11 16

INVITATION TO BID

**ARPA-GREENFIELD SP ROADWAY & SITEWORK FEDERAL AID PROJECT
PROJECT NO. ARP-2431
GREENFIELD, NH**

1. **Sealed Bids:** Proposals for a General Contract for the Construction of the above project will be received by the Owner until 2:00 P.M. prevailing time on August 29, 2024, at which time they will be publicly opened and read aloud. All Bids shall be made out only on the form included in the specifications package and delivered in a sealed, labeled envelope marked: Bid Proposal for ARP-2431 and deposited in the bid box located at the reception desk of the Department of Natural and Cultural Resources (DNCR) offices at 172 Pembroke Road in Concord, NH. Bidders are invited to attend the Bid opening. Bids received after the above stated time and date will not be accepted.
2. **Technical Questions:** Questions regarding the Bidding Documents shall be referred to: Department of Natural and Cultural Resources, 172 Pembroke Road, Concord New Hampshire, 03301, attention Edward Mussey, Public Works Project Manager II, Telephone (603) 271-3973, email: Edward.V.Mussey@dn-cr.nh.gov
3. **Documents:** Bidding Documents may be examined at the Capital Projects & Maintenance, Section of DNCR, 172 Pembroke Road, Concord NH and at the following locations:

Construction Summary of New Hampshire Inc.: 734 Chestnut Street, Manchester, New Hampshire 03104, (603) 627-8856, www.constructionsummary.com

Alpha Graphics: 933 Islington Street, Portsmouth, NH 03801, (800) 581-2712 or (603) 436-3030, www.planroom.agportsmouth.com

McGraw-Hill Construction: www.construction.com

Signature Digital Imaging: 45 Londonderry Turnpike, Hooksett, NH 03106, (603) 624-4025, www.signaturesnh.com

Works in Progress: 20 Farrell Street, Suite 103, South Burlington, VT 05403. (800) 286 3633 or (802) 658-3797

New Hampshire Department of Administrative Services Bureau of Purchase and Property Website: <http://admin.state.nh.us/purchasing/vendorresources.asp>

New Hampshire State Parks Website: <https://www.nhstateparks.org/about-nh-parks/projects-and-improvements>.
4. **Qualifications:** All companies, corporations, and trade names bidding must be registered and have a Certificate of Existence from the New Hampshire Secretary of State's Office, Corporate Division (telephone 603-271-3244) in order to do business with the State of New Hampshire

5. Bid Security: A Bid Bond in the amount of five (5%) percent of the total amount of the lump sum bid price shall accompany each Bid Proposal in accordance with the Instructions to Bidders.
6. Bonds: Bidders shall be required to provide the Owner with financial responsibility as security for the completion of the contract in accordance with the plans, specifications, and contract documents, in the form of a Performance and Payment Bond in the amount of One Hundred (100%) Percent of the contract award, if the contract award is seventy-five thousand dollars (\$75,000) or more, the cost of which shall be a part of the Base Bid. The form of bond and the surety shall be acceptable to the Commissioner. No contract bond shall be required on contract awards of less than seventy-five thousand dollars (\$75,000).
7. Inspection of Site: Bidders are expected to thoroughly inspect existing construction and site conditions prior to submission of Proposals. A pre-bid tour of the existing building/site will be conducted by the Owner and Project Manager on August 13, 2024 at 9:00 a.m. The tour will depart from The Greenfield State Park Maintenance Garage. Attendance by Bidders shall be considered mandatory.
8. Awards: In most cases the proposal submitted by the qualified bidder with the lowest base bid price shall be selected. However, the Department of Natural and Cultural Resources (DNCR) reserves the right to reject any or all proposals or advertise for new proposals as it judges to be in the best interest of the state.
9. Regulations: Bidders' attention is called to the fact that this Project is required to comply with, in addition to all other requirements of the Contract Documents, Equal Employment Opportunity Regulations and Davis Bacon Wage Rates.
10. Domestic Preference for Procurement: The Contractor, consistent with 2 CFR 200.322, should, to the greatest extent practicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products).

END OF INVITATION TO BID

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

DEFINITIONS

1. Definitions set forth in the Specification Section 00 72 00 "General Conditions" or in other Contract Documents are applicable to the Bidding Documents.
2. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements include the Invitation to Bid, Instructions to Bidders, the Proposal Form and other sample Bidding and Contract forms.
3. Addenda are written or graphic instruments issued prior to the execution of the Contract. They modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed.
4. A Bid is a complete and properly signed Proposal to do the Work or designated portion thereof for the sums stipulated therein, submitted in accordance with the Bidding Documents.
5. The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or deducted for sums stated in Alternate Bids.
6. An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in Work, as described in the Bidding Documents, is accepted.
7. A Unit Price is an amount stated in the Bid as a possible price per unit of measurement for materials, equipment, services, or a portion of the Work as described in Bidding Documents. The choice of using Unit Prices, or an alternative method of payment, for additional Work shall be left solely to the Owner's discretion.
8. A Bidder is a person or entity who submits a Bid.
9. A Sub-Bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

BIDDER'S REPRESENTATION

1. Each Bidder by making his Bid represents that he has examined and understands the Bidding Documents, that the Bidding Documents are adequate to produce the required results, and that his Bid is in accordance therewith.

2. Each Bidder by making his Bid represents that he has visited and thoroughly inspected the existing roadway and] site and familiarized himself with the local conditions under which the Work will be performed. Bidders are encouraged to make any and all inspections and tests as they feel necessary to achieve such familiarization prior to submitting Bids. Such inspections and tests shall be conducted at times mutually acceptable to the Owner and Bidder. Unless waived by the Owner, Bidders shall make repairs following their testing, as necessary to restore tested areas to pre-testing condition. Should a Bidder conclude that time or other factor(s) prohibits him from performing sufficient tests, he shall so notify the Owner, in writing, prior to the receipt of Bids.
3. The submission of a Bid will be construed as conclusive evidence that the Bidder has made all such examinations and inspections necessary for a complete and proper assessment of the Work required, and that the Bidder has included in his Bid a sum sufficient to cover the cost of all items necessary to perform the Work as set forth in the proposed Contract Documents. No allowance will be made to a Bidder because of lack of such examination, inspection, or knowledge.
4. Each Bidder by making his Bid represents that he has assessed the conditions of the current construction marketplace, and verified that an adequate, experienced workforce is available to suitably man the Work of this Project and complete it in a timely fashion.
5. Each Bidder is assumed to have made himself familiar with all Federal, State and Local laws, ordinances, and regulations which in any manner affect those engaged in or upon the Work, or in any way affect those engaged or employed in the Work, and no plea of misunderstanding will be considered on account of ignorance thereof. The Contractor shall comply with all taxes, fees and assessments as levied by Federal, State and Local authorities.

BIDDING PROCEDURES

1. All Bids must be prepared on the Bid Proposal Form provided in the Specification and submitted in accordance with the Notice to Bidders and Instructions to Bidders. **Any bids submitted that are not on the official bid proposal forms will not be accepted.**
2. A Bid shall be invalid if it has not been deposited at the designated location prior to the time and date in the Invitation to Bid, or prior to any extension thereof issued to the Bidders.
3. Each copy of a Bid shall be signed by the person or persons legally authorized to bind the Bidder to a Contract. A Bid by a corporation shall further give the state of incorporation and have a corporate seal affixed.
4. Unless otherwise provided in any supplement to these Instructions to Bidders, no Bidder shall modify, withdraw, or cancel his Bid or any part thereof for Ninety (90) days after the time designated for the receipt of Bids in the Notice to Bidders.
5. Prior to the receipt of Bids, Addenda will be e-mailed, mailed, or delivered to each person or firm recorded by the Owner as having received the Bidding Documents and will be available for inspection wherever the Bidding Documents are kept available for that purpose.

BID SECURITY

1. Bid Security shall be made payable to the Owner, in the amount of five percent (5%) of the Bid Sum and shall be attached to the Bid. Security shall be either a certified check made payable to the "Treasurer, State of New Hampshire," or Bid Bond issued by surety licensed to conduct business in the State of New Hampshire. The successful Bidder's security will be retained until he has signed the Agreement or Contract and furnished the required Performance and Payment Bonds and Certificates of Insurance. The Owner reserves the right to retain the Security of the next two lowest Bidders until the low Bidder enters into a Contract, or until Sixty (60) days after Bid opening, whichever occurs first. Bid Security of all other Bidders will be returned as soon as practicable. If any Bidder refuses to enter into an Agreement or Contract, the Owner will retain his Bid Security as liquidated damages, but not as a penalty.

EXAMINATION OF BIDDING DOCUMENTS

1. Each Bidder shall examine the Bidding Documents carefully and, not later than seven (7) days prior to the date of receipt of Bids, shall make written request to the Owner for interpretation or correction of any ambiguity, inconsistency, or error therein, which he may discover. Any interpretation or correction will be issued as an Addendum by the Owner. Only a written interpretation or correction by Addendum will be binding. No Bidder shall rely upon any interpretation or correction given by any other method. Bidders are encouraged to direct any questions which may arise to the Owner, in order to provide necessary clarifications prior to the receipt of Bids. Bidders shall promptly notify the Owner of any ambiguity, inconsistency, or error which they may discover upon examination of the Bidding Documents, or the existing building, site, or local conditions. Should a Bidder fail to notify the Owner of errors, discrepancies, or contradictions, he shall be assumed to have bid the more expensive alternative.

SUBSTITUTIONS

1. Each Bidder represents that his Bid is based upon the materials and equipment described in the Bidding Documents. Where the language "or approved equal" is used in the Bidding Documents, it is intended to require that all such materials and equipment shall be submitted as required by these Instructions to Bidders and approved by the Owner prior to the receipt of Bids.
2. No substitution will be considered unless written request has been submitted to the Owner for approval at least seven (7) days prior to the date for receipt of Bids. Each such request shall conform to the requirements of Section 01 25 00 "Substitution Procedure."
3. If a Bidder proposes to use a material which, while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, he shall inform the Owner in writing of the nature of such deviations at the time the material is submitted for approval. It shall be the responsibility of the Bidder to notify the Owner, in writing, of the presence of Asbestos or any other hazardous materials in any proposed substitution. Such written notice shall be in the form of a cover letter attached to the related documents.

4. In requesting approval of deviations or substitutions, a Bidder shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation will provide a quality of result at least equal to that otherwise attainable. If, in the opinion of the Owner, the evidence presented by the Bidder does not provide a sufficient basis for such reasonable certainty, the Owner may reject such substitution or deviation without further investigation.
5. In requesting approval of substitutions, a Bidder represents that he will provide the same warranty and/or guarantee for the substitution that he would for that specified.
6. The Contract Documents are intended to produce a building and site improvements of consistent character and quality of design. The Owner shall judge the design and appearance of proposed substitutes on the basis of their suitability in relationship to the overall design of the Project, as well as for their intrinsic merits. The Owner will not approve proposed substitutions which, in his opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the project.
7. The Contractor shall be solely responsible for coordinating the installation of accepted substitutions, making such changes as may be required for the Work to be complete in all respects. Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the Contractor, notwithstanding approval or acceptance of such substitution by the Owner, unless such substitution was made at the written request or direction of the Owner.
8. The burden of proof of the merit of a proposed substitution is upon the proposer. Approval of a proposed substitution is valid only upon issuance by the Owner in written form, and the Owner's decision of approval or disapproval of a proposed substitution shall be considered final.

DETERMINATION OF RIGHT TO DO BUSINESS WITH STATE OF NEW HAMPSHIRE

1. If selected as the low bidder, the bidder must be registered and have a Certificate of Good Standing from the Secretary of State, Corporate Division (telephone 603-271-3244) in order to do business with the State of New Hampshire.

PROPOSAL SELECTION

1. In most cases the proposal submitted by the qualified bidder with the lowest base bid price shall be selected. However, the Department of Natural and Cultural Resources (DNCR) reserves the right to reject any or all proposals or advertise for new proposals as it judges to be in the best interest of the State of New Hampshire.

CONTRACTORS QUALIFICATIONS

1. Upon the Owner's request, the successful bidder shall provide evidence that they have been successfully performing this type, scale, and quality of Work for a minimum of five (5) years. Upon request by the Owner, a comprehensive list of all similar projects worked on in the past two (2) years by the Contractor shall be submitted along with contact information for three (3)

references or owners representatives involved with three (3) different projects completed by the Contractor.

EXECUTION OF AGREEMENT

1. Execution and Approval of Agreement: The Agreement shall be signed by the successful Bidder and returned, together with Bonds if applicable, within fifteen (15) Days after the Agreement has been mailed or otherwise delivered to the Bidder. No Agreement shall be considered as in effect until it has been fully executed by all Parties thereto and, when the Price Limitation is more than \$10,000, the Agreement has been concurred in by Governor and Council.
2. Failure to Execute Agreement: Failure to execute the Agreement within fifteen (15) Days after the Agreement has been mailed or otherwise delivered to the successful Bidder shall be just cause for the cancellation of the bid and the forfeiture of the Bid Security which shall become the property of the Department, not as a penalty, but in liquidation of damages sustained. Award of the Contract may then be made to the next lowest Bidder, or the Work may be re-advertised as the Commissioner of the Department of Natural and Cultural Resources may decide.

PRECONSTRUCTION CONFERENCE

1. Either before or soon after the actual award of the Contract (but in any event prior to the start of construction), the Contractor or his representative and his principal subcontractors shall attend a preconstruction conference with representatives of the Owner. The conference will serve to acquaint the participants with the general plan of contract administration and requirements under which the construction operation is to proceed.

END OF INSTRUCTIONS TO BIDDERS

SECTION 00 41 00

BID PROPOSAL FORM

Project No. **ARP-2431**

PROJECT: **ARPA_Greenfield SP Roadway & Sitework**
Greenfield, NH

BID OPENING DATE: **August 29, 2024**, at 2:00 pm at DNCR's office at 172 Pembroke Road, Concord, NH

START DATE: **October 16, 2024**

COMPLETION DATE: **June 30. 2025**

Sealed bid proposals for the above project will be accepted until the time and date indicated above. Bids may be deposited in the bid box at DNCR's offices in Concord or mailed to the attention of Edward Mussey, Project Manager II, Department of Natural and Cultural Resources (DNCR), 172 Pembroke Road, Concord NH 03301. Please note on the outside of the sealed envelope: Bid Proposal for ARP-2431.

DATE: _____

PROPOSAL OF: _____

GRAND TOTAL / LUMP SUM BASE BID (A+B and Alternates): _____

PROPOSAL

Proposal of...

(name)

(address)

To furnish and deliver all materials, except as noted, and to perform all work in accordance with the Contract of the State of New Hampshire, Department of Natural and Cultural Resources for the construction of...

Project: ARP#2431 **ARP-GREENFIELD SP ROADWAY & SITEWORK**
Greenfield, NH

Commissioner
Department of Natural and Cultural Resources
172 Pembroke Road
Concord, N.H. 03301

Commissioner:

In accordance with the advertisement of the Department of Natural and Cultural Resources inviting proposals for the project herein before named and in conformity with the Plans and Specifications on file in the office of the Department of Natural and Cultural Resources, _____
(firm name) hereby certifies that _____ is/are the only person, or persons, interested in this proposal as principals; that this proposal is made without collusion with any person, firm, or corporation; that an examination has been made of the Plans, of the Standard Specifications, and Special Attentions, Supplemental Specifications, and Special Provisions, all of which are attached hereto, and also of the site of the work; and I, or we, propose to furnish all necessary machinery, equipment, tools, labor, and other means of construction, and to furnish all materials specified in the manner and at the time prescribed; and understand that the quantities of work as shown herein are approximate only and are subject to increase or decrease, and further understand that all work is to be performed at the quoted lump sum total price.

To execute the form of contract and begin work within 15 (fifteen) days after the notice to proceed has been received or otherwise delivered to the contractor and to prosecute said work until its completion.

It is further proposed:

To furnish a contract bond in the amount of one hundred percent (100%) of the contract award, if the contract award is seventy-five thousand dollars (\$75,000) or more, as security for the completion of the contract in accordance with the plans and specifications and contract documents. The form of bond and the surety shall be acceptable to the Commissioner. No contract bond shall be required on contract awards of less than seventy-five thousand dollars (\$75,000).

To guarantee all of the work performed under this contract to be done in accordance with the plans and specifications and contract documents.

Enclosed, herewith, find certified check or bid bond in the amount of 5% of the total amount of the Lump Sum Price made payable to the "Treasurer, State of New Hampshire" as a proposal guarantee which is understood, will be forfeited in the event the form of contract is not executed, if awarded to the undersigned. Note: Personal checks will not be accepted as a proposal guarantee.

The undersigned acknowledges receipt of the following addenda, issued during the bidding time, and states that these have been incorporated in the proposal:

Addendum #1 dated _____

Addendum #2 dated _____

Addendum #3 dated _____

Dated _____

ALLOWANCE #1: Unanticipated Modification and/or Additions to Contract Items:

Include in the Contract, a stipulated sum/price of \$50,000 for use upon the Project Managers instruction. This Allowance will make money available for modifications and/or additions to contract items due to owner-initiated changes, or for unknown, latent, or differing existing conditions, or for the removal of hazardous materials that are encountered by construction.

- a. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Allowance. The cost of the bond for the amount of Allowance shall be included as part of the lump sum base bid.
- b. Funds will be drawn from an Allowance only by Change Order. Contractor can proceed with Change Order Work against Allowance with direction from the Project Manager. The Contractor shall not proceed with any work that will exceed the amount of Allowance remaining.
- c. Credits can only be added to an Allowance by Change Order. The Contractor may not use a credit until a Change Order is fully executed.
- d. Notwithstanding the Contractors objection, the Project Manager may at any time reduce the funds remaining in the Allowance by Change Order.
- e. At Final Payment of the Contract, funds remaining in the Allowance will be credited to the State.

SCHEDULE OF VALUES: ARPA-Greenfield SP Roadway & Sitework

INDICATE DOLLAR AMOUNT OF CONTRACT SUM ALLOCATED TO EACH CATEGORY OF WORK AS DESIGNATED BELOW:

Specification Sections	Total
BASE BID – SITE AREAS 1-10	
General Conditions	
Bond Cost	
Insurance	
Overhead and Profit	
Subtotal Division 01	
Division 03 Concrete	
03 Concrete Dumpster Pads	
Subtotal Division 03	
Division 31 - Earthwork	
Tree Clearing & Grubbing	
Remove Pavement	
Remove CMP Culvert	
Remove & Reset Wheel Stops	
Strip & Stockpile Surface Soil	
Excavation	
Haul Excess Soil	
Disposal	
Subtotal Division 31	
DIVISION 32- Exterior Improvements	
Asphalt Concrete Pavement, Full Depth	
Asphalt Concrete Pavement, Resurface	
Asphalt Concrete Pavement, Sidewalk	
Asphalt Concrete Pavement, Haul	
Gravel Surface	
Riprap Inlet/Outlet	
Riprap Swale	
Vegetated Swale	
Screen, Condition Existing Topsoil	
Topsoil, Reuse Existing	
Fine Grade, Seed, and Mulch	
Subtotal Division 32	
DIVISION 33 - UTILITIES	
Culvert, 12" incl Exc & Backfill	
Culvert, 18" incl Exc & Backfill	
Subtotal - Division 33	
Base Bid Subtotal (A)	
Bid Alternate 1- Site Area 11 Boardwalk & Sidewalk	

Division 03-Concrete	
Concrete Landing Pads	
Concrete Piers	
Subtotal – Division 3	
Division 06 – Wood, Plastics, and Composites	
Wood Boardwalk	
Subtotal Division 6	
Division 31 – Earthwork	
Remove Asphalt Concrete Sidewalk	
Disposal	
Subtotal Division 31	
Division 32 – Exterior Improvements	
Asphalt Concrete Pavement, Sidewalk	
Asphalt Concrete Pavement, Haul	
Restoration	
Subtotal Division 32	
Bid Alternate 1 Subtotal	
Bid Alternate 2 – Campground Road	
Bid Alternate 3- Beach Road	
Bid Alternate 4 - Campers Beach Road	
Bid Alternate 5 - Campsite Area #1	
Bid Alternate 6 – Campsite Area #2	
Bid Alternate 7 – Campsite Area #3	
Bid Alternate 8 – Campsite Area #4	
Bid Alternate 9 – Other Roads	
Allowance #1 (B)	\$50,000

Sub Total (A):

Allowance #1(B): \$50,000

Grand Total: lump sum base bid (A + B + Bid Alternates)

NOTE: This Schedule of Values must be completely filled out in order for bid proposal to be considered responsive.

SIGNATURE PAGE

Company Name: _____

Address: _____

Phone: _____

E-mail Address: _____

Signature of Authorized Bidder:

Print: _____

Title: _____

Address of Bidder: _____
(If different than company)

Names and Addresses of Members of the Firm/Corporation

Name	address
------	---------

Name	address
------	---------

Name	address
------	---------

SECTION 00 72 00

GENERAL CONDITIONS

TABLE OF ARTICLES

1. GENERAL PROVISIONS
2. CONTRACTOR'S RESPONSIBILITIES
3. OWNER'S RESPONSIBILITIES
4. SUBCONTRACTS
5. TIME
6. CHANGES
7. PAYMENT
8. INDEMNITY, INSURANCE, AND BONDS
9. SUSPENSION, NOTICE TO CURE, AND TERMINATION
10. DISPUTE MITIGATION AND RESOLUTION
11. MISCELLANEOUS
12. CONTRACT DOCUMENTS

ARTICLE 1 – GENERAL PROVISIONS

1.01 Definitions

- A. Addenda: Written or graphic instruments issued prior to opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
- B. Agreement: The written agreement between the Parties, executed on New Hampshire Form Number P-37, and these General Conditions, as modified, and exhibits and attachments made part of the agreement upon execution.
- C. Allowance: The sum stipulated in the Contract Documents, for use by the Owner to pay for unanticipated Modifications or Changes to the Contract Price.
- D. Architect: The term "Project Manager", where used throughout the Contract Documents, shall indicate the Professional retained or employed by the Owner and having the authority to make decisions about the design intent of the Project.
- E. Bidding Requirements: The Invitation to Bid, Instructions to Bidders, bid bond or other bid security, if any, the Bid Proposal Form, and the bid with any attachments.
- F. Business Day: All Days, except Saturdays, Sundays, and legal holidays indicated in the Contract Documents.
- G. Change Order: A written order signed by the Parties after execution of the Agreement, indicating changes in the scope of Work, the Contract Price, or Contract Time.
- H. Construction Change Directive: A change to the Work directed by the Owner pursuant to Section 6.03.

New Hampshire Department of Natural and Cultural Resources
ARP-2431. ARPA-Greenfield SP Roadway & Sitework

- I. Construction Schedule: A schedule, prepared and maintained by the Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Time.
- J. Contract: The entire and integrated written Agreement between the Owner and Contractor concerning the Work.
- K. Contract Documents: Consist of the Agreement, Invitation to Bid, Instructions to Bidders, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract.
- L. Contract Price: The stated amount in the Contractors bid, excluding Allowances, to perform the Work under the Contract Documents, as modified by any Alternates.
- M. Contract Time: The period of time between the Date of Commencement and the total time authorized to achieve Final Completion.
- N. Contractor: The person or entity identified in the Agreement and includes the Contractor's Representative.
- O. Date of Commencement: The date of commencement of the Work as identified in the Notice to Proceed.
- P. Day: A calendar day.
- Q. Defective Work: Any portion of the Work that does not conform to the requirements of the Contract Documents.
- R. Design Professional: The licensed architect or engineer, and its consultants, retained or employed by the Owner to perform design services for the Project.
- S. Final Completion: The date when the Contractor's obligations under this Agreement are complete and accepted by the Owner and final payment becomes due and payable, as enumerated in Box 1.7 "Completion Date" of the Agreement.
- T. Hazardous Material: Any substance or material identified now or in the future as hazardous under the Law, or any other substance or material that may be considered hazardous or otherwise subject to statutory or regulatory requirement governing handling, transportation, disposal, or cleanup.
- U. Law: Federal, state, or local law, ordinance, code, rule, and regulations applicable to the Work with which the Contractor must comply that are enacted as of the Agreement date.
- V. Modification: A written amendment to the Contract signed by both Parties, a Change Order, a Construction Change Directive, or a written order for a minor change in the Work issued by the Design Professional.
- W. Notice to Proceed: A written notice by the Owner to the Contractor fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform the Work.

- X. Others: Other contractors, suppliers, and persons or entities at the Site who are not employed by the Contractor or Subcontractors.
- Y. Owner: The State Agency indicated in Box 1.1 "State Agency Name" of the Agreement and includes the Owner's Representative.
- Z. Owner's Representative: The Owners appointed representative having authority to act on the Owners behalf and shall be responsible for general supervision and administration of the Contract.
- AA. Parties: Collectively the Owner and the Contractor.
- BB. Price Limitation: The amount indicated in Box 1.8 "Price Limitation" of the Agreement. The Price Limitation is the grand total lump sum, comprised of the Contract Price and the Allowance, available to pay for the Work under the Construction Documents.
- CC. Project: The building, facility, or other improvements for which the Contractor is to perform Work under the Agreement. It may also include construction by the Owner or Others.
- DD. Site: The area of the Project location where the Work is to be performed.
- EE. Subcontractor: A person or entity retained by the Contractor as an independent contractor to provide labor, materials, equipment, or services necessary to complete a specific portion of the work.
- FF. Substantial Completion: The date when the Work (or a specified part thereof) is sufficiently complete in accordance with the Contract Documents so that the Owner may occupy or utilize the Project, or a designated portion, for the use for which it is intended, without unapproved disruption.
- GG. Sub-Subcontractor: A person or entity who has an agreement with a Subcontractor, another Sub-subcontractor, or Supplier to perform a portion of the Subcontractor's Work or to supply material or equipment.
- HH. Supplier: A person or entity retained by the Contractor to provide material or equipment for the Work.
- II. Work: The construction and services necessary or incidental to fulfill the Contractor's obligations for the Project in conformance with and reasonably inferable from the Agreement and the Contract Documents. The Work may refer to the whole Project or only a part of the Project if work is also being performed by the Owner or Others.

1.02 Parties Relationship

- A. The Parties agree to proceed with the Project on the basis of mutual trust, good faith, and fair dealing. The parties shall each endeavor to promote harmony and cooperation among all Project participants.
- B. The Contractor represents that it is an independent contractor and that in its performance of the Work it shall act as an independent contractor.

- C. Neither the Contractor nor any of its agents or employees shall act on behalf of or in the name of the Owner.

1.03 Ethics

- A. The Parties shall perform their obligations with integrity, ensuring at a minimum that each:
 - 1. Avoids conflicts of interest and promptly discloses any to the other Party.
 - 2. Warrants that it has not and shall not pay or receive any contingent fees or gratuities to or from the other Party, including its agents, officers, and employees, Subcontractors, or others for whom they may be liable, to secure preferential treatment.

1.04 Design Professional

- A. The Owner, through its Design Professional, shall provide all architectural and engineering design services necessary for completion of the Work, excluding however:
 - 1. Design services delegated to the Contractor in accordance with Section 2.15.
 - 2. Services within the construction means, methods, techniques, sequences, and procedures employed by the Contractor, its Subcontractors, and Sub-subcontractors in connection with their construction operations.

1.05 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

- A. The Owners design professionals, including the Architect, the Architects consultants, Engineers, and other professionals providing services shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and Suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the design professionals reserved rights.
- B. The Contractor, Subcontractors, Sub-subcontractors, and Suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and Suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of Work without the specific written consent of the Owner, and Owner's design professionals.

1.06 Digital Data Use and Transmission

- A. Except as otherwise stated elsewhere in the Agreement, the Parties may transmit and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to shop drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

- B. If the Agreement does not establish protocols for electronic or digital transmittals, the Parties shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 2 – CONTRACTOR'S RESPONSIBILITIES

2.01 General Responsibilities

- A. The Contractor shall use its diligent efforts to perform the Work in an expeditious manner consistent with the Contract Documents. Such Work includes furnishing construction administration and management services.
- B. The Contractor shall provide all labor, materials, equipment, and services necessary to complete the Work, all of which shall be provided in full accord with and reasonably inferable from the Contract Documents.
- C. Unless the Contract Documents instruct otherwise, the Contractor shall solely be responsible for and have control over the construction means, methods, techniques, sequences, procedures, site security, and safety precautions, and for coordinating all portions of the Work under the Agreement.
- D. The Contractor shall perform Work only within locations allowed by the Contract Documents, Law, and applicable permits unless otherwise directed by the Owner.

2.02 Construction Personnel and Supervision

- A. The Contractor shall provide competent supervision for the performance of the Work. Before commencing the Work, or making a change in the supervisory personnel, the Contractor shall notify the Owner in writing of the name and qualifications of its proposed superintendent(s) and project manager so the Owner may review the individual's qualifications. If, for reasonable cause, the Owner refuses to approve the individual, or withdraws its approval after once giving it, the Contractor shall name a different superintendent or project manager for the Owner's review. Any disapproved superintendent shall not perform in that capacity thereafter at the Site. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.
- B. The Contractor shall be responsible to the Owner for acts or omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors and Suppliers.
- C. The Contractor shall permit only qualified persons to perform the Work. The Contractor shall enforce safety procedures, strict discipline, and good order among persons performing the Work. If the Owner determines that a particular person does not follow safety procedures, or is unfit or

unskilled for the assigned Work, the Contractor shall immediately reassign the person upon receipt of the Owner's written notice to do so.

- D. The Contractor's representative shall possess full authority to receive instructions from the Owner and to act on those instructions.
- E. The Contractor shall coordinate and supervise the work performed by Subcontractors to ensure that the Work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. The Contractors and all Subcontractors at all times shall afford each trade, any separate contractor, or the Owner and Others, every reasonable opportunity for the installation of their work and the storage of materials, subject to the specific limitations or restrictions of a particular site.

2.03 Cooperation with Work of Owner and Others

- A. The Owner may perform work at the Site directly or by Others. Any agreements with Others to perform construction or operations related to the Project shall include provisions pertaining to insurance, indemnification, waiver of subrogation, consequential damages, coordination, interference, cleanup, and safety that are substantively the same as the corresponding provisions of the Agreement.
- B. If the Owner elects to perform work at the Site directly or by Others, the Parties shall coordinate the activities of all forces at the Site and agree upon fair and reasonable schedules and operational procedures for Site activities. The Owner shall require each separate contractor to cooperate with the Contractor and assist with the coordination of activities and the review of construction schedules and operations. The Contract Price and Contract Time may be equitably adjusted for changes resulting from the coordination of construction activities, and the Construction Schedule shall be revised accordingly.
- C. With regard to work of the Owner and Others, the Contractor shall:
 - 1. Proceed with the Work in a manner that does not hinder, delay, or interfere with the work of the Owner or Others or cause the work of the Owner or Others to become defective;
 - 2. Afford the Owner or Others reasonable access for introduction and storage of their materials and equipment and performance of their activities; and
 - 3. Coordinate the Contractor's Work with theirs.
- D. Before proceeding with any portion of the Work affected by the construction or operations of the Owner or Others, the Contractor shall give the Owner prompt written notification of any defects the Contractor discovers in their work which will prevent the proper execution of the Work. The Contractor's obligations in this subsection do not create a responsibility for the work of the Owner or Others but are for the purpose of facilitating the Work. If the Contractor does not notify the Owner of defects interfering with the performance of the Work, the Contractor acknowledges that the work of the Owner or Others is not defective and is acceptable for the proper execution of the Work. Following receipt of written notice from the Contractor of defects, the Owner shall promptly inform the Contractor what action, if any, the Contractor shall take with regard to the defects.

2.04 Contract Document Review

- A. Prior to commencing the Work, the Contractor shall examine and compare all Contract Documents as well as information furnished by the Owner, shall take field measurements of any existing conditions related to the Work, and shall observe any conditions at the Site affecting the Work. These obligations are for the purpose of facilitating coordination and construction of the Work by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Owner and, if directed, the Design Professional in the form of a request for information (RFI) any errors, inconsistencies, or omissions discovered by or made known to the Contractor by such examination. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.
- B. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, ordinances, codes, rules and regulations, or lawful orders of authorities having jurisdiction, but the Contractor shall promptly report to the Owner any nonconformity discovered by or made known to the Contractor as a request for information.
- C. Nothing in this section shall relieve the Contractor of responsibility for its own errors, inconsistencies, and omissions.

2.05 Workmanship

- A. The Work shall be executed in accordance with the Contract Documents in a workmanlike manner. All materials used in the Work shall be furnished in sufficient quantities to facilitate the proper and expeditious execution of the Work and shall be new except as otherwise provided in the Contract Documents.
- B. Work for which no explicit quality of standards of materials and/or workmanship is defined in the Contract Documents shall be of best quality for the intended use and consistent with the quality of surrounding work and of the construction of the Project generally.
- C. All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with manufacturer's written instructions, unless specifically indicated otherwise in the Contract Documents.
- D. Where the Work is to fit with existing conditions or work to be performed by Others, the Contractor shall join the Work fully and completely with such conditions or work, unless otherwise specified.
- E. The Contractor shall be responsible for inspection of portions of the Work already performed to determine that such portions are in proper condition to receive subsequent Work.
- F. The Contractor shall study and compare all Drawings and verify all figures shown thereon before laying out or constructing the Work. The Contractor shall be responsible for errors in its work and the work of its Subcontractors that might reasonably have been avoided thereby. The Contractor shall establish and be responsible for the accuracy of all lines, grades, measurements, levels, column lines, wall and partition lines required by the various Subcontractors in laying out their Work

and shall protect and preserve all permanent bench and other markers. Checking of the figures or layout by the Design Professional shall not relieve the Contractor of these responsibilities.

2.06 Material Furnished by the Owner or Others

- A. If the Work includes installation of materials or equipment furnished by the Owner or Others, it shall be the responsibility of the Contractor to examine the items so provided and thereupon handle, store, and install the items, unless otherwise provided in the Contract Documents, with such skill and care as to provide a satisfactory and proper installation. Loss or damage due to acts or omissions of the Contractor shall be the responsibility of the Contractor and may be deducted from any amounts due or to become due the Contractor. Any defects discovered in such materials or equipment shall be reported at once to the Owner. Following receipt of written notice from the Contractor of defects, the Owner shall promptly inform the Contractor what action, if any, the Contractor shall take with regard to the defects.

2.07 Tests and Inspections

- A. The Contractor shall schedule all tests, inspections, and approvals of the Work required by the Contract Documents, Law, or orders of authorities having jurisdiction at an appropriate time so as to not delay the progress of the Work. The Contractor shall give proper notice to all required parties of such tests, inspections, and approvals. If feasible, the Owner and Others may timely observe the tests at the normal place of testing. The Contractor shall bear all expenses associated with tests, inspections, and approvals required by the Contract Documents, which, unless otherwise agreed to, shall be conducted by an independent testing laboratory or entity retained by the Contractor, and approved by the Owner. Unless otherwise required by the Contract Documents, required certificates of testing, inspection, or approval shall be secured by the Contractor and promptly delivered to the Owner.
- B. If the Owner or appropriate authorities determine that tests, inspections, or approvals in addition to those required by the Contract Documents will be necessary, the Contractor shall arrange for the procedures and give timely notice to the Owner and others who may observe the procedures. Costs of the additional tests, inspections, or approvals are at the Owner's expense except as provided in the subsection below.
- C. If the procedures described in the two subsections immediately above indicate that portions of the Work fail to comply with the Contract Documents, the Contractor shall be responsible for costs of correction and retesting.

2.08 Warranty

- A. The Contractor warrants that all materials and equipment shall be new unless otherwise specified, of good quality, in conformance with the Contract Documents, and free from defective workmanship and materials. At the Owner's request, the Contractor shall furnish satisfactory evidence of the quality and type of materials and equipment furnished. The Contractor further warrants that the Work shall be free from material defects not intrinsic in the design or materials required in the Contract Documents. The Contractor's warranty does not include remedies for defects or damages caused by normal wear and tear during normal usage, use for a purpose for which the Project was not intended, improper or insufficient maintenance, modifications performed by the Owner or Others, or abuse. The Contractor's warranty shall commence on the Date of Substantial

Completion of the Work. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.

- B. With respect to any portion of the Work performed after Substantial Completion, the Contractor's warranty obligation shall be extended by the period of time between Substantial Completion and the actual performance of the later Work.
- C. The Contractor shall obtain from its Subcontractors and Suppliers any special or extended warranties required by the Contract Documents. The Contractor's liability for such warranties shall be limited to the one-year correction period as provided in Section 2.09. After that period, the Contractor shall provide reasonable assistance to the Owner in enforcing the obligations of Subcontractors or Suppliers for such extended warranties.

2.09 Correction of Work Within One Year

- A. If, prior to Substantial Completion and within one year after the date of Substantial Completion of the Work, any Defective Work is found, the Owner shall promptly notify the Contractor in writing. Unless the Owner provides written acceptance of the condition, the Contractor shall promptly correct the Defective Work at its own cost and time and bear the expense of additional services required for correction of any Defective Work for which it is responsible. If within the one-year correction period the Owner discovers and does not promptly notify the Contractor or give the Contractor an opportunity to test or correct Defective Work as reasonably requested by the Contractor, the Owner waives the Contractor's obligation to correct the Defective Work as well as the Owner's right to claim a breach of the warranty with respect to that Defective Work.
- B. With respect to any portion of Work performed after Substantial Completion, the one-year correction period shall be extended by the period of time between Substantial Completion and the actual performance of the later Work. Correction periods shall not be extended by corrective work performed by the Contractor.
- C. If the Contractor fails to correct Defective Work within a reasonable time after receipt of written notice from the Owner prior to final payment, the Owner may correct it in accordance with the Owners right to carry out the Work. In such case, an appropriate Change Order shall be issued deducting the cost of correcting the Defective Work from payments then or thereafter due the Contractor. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.
- D. The Contractor's obligations and liability, if any, with respect to any Defective Work discovered after the one-year correction period shall be determined by the Law. If, after the one-year correction period but before applicable limitation period has expired, the Owner discovers any Work which the Owner considers Defective Work, the Owner shall, unless the Defective Work requires emergency correction, promptly notify the Contractor, and allow the Contractor an opportunity to correct the Work if the Contractor elects to do so. If the Contractor elects to correct the Work, it shall provide written notice of such intent within fourteen (14) Days of its receipt of notice from the Owner and shall complete the correction of Work within a mutually agreed timeframe. If the Contractor does not elect to correct the Work, the Owner may have the Work corrected by itself or Others, and, if the Owner intends to seek recovery of those costs from the Contractor, the Owner shall promptly provide the Contractor with an accounting of the correction costs it incurs.

- E. If the Contractor's correction or removal of Defective Work causes damage to or destroys other completed or partially completed Work or existing buildings, the Contractor shall be responsible for the cost of correcting the destroyed or damaged property.
- F. The one-year period for correction of Defective Work does not constitute a limitation period with respect to enforcement of the Contractor's other obligations under the Contract Documents.
- G. At the Owners option and with the Contractor's agreement, the Owner may elect to accept Defective Work rather than require its removal and correction. In such case, the Contract Price shall be equitably adjusted for any diminution in the value of the Project caused by such Defective Work. Such adjustment shall be effected whether or not final payment has been made.

2.10 Correction of Covered Work

- A. On request of the Owner, Work that has been covered without a requirement that it be inspected prior to being covered shall be uncovered for the Owner's inspection. The Owner shall pay for the costs of uncovering and replacement if the Work proves to be in conformance with the Contract Documents, or if the defective condition was caused by the Owner or Others. If the uncovered Work proves to be defective, the Contractor shall pay the costs of uncovering and replacement.
- B. If any Work is covered contrary to requirements in the Contract Documents, the Owner may issue an order to uncover the Work for the Owner's observation and re-cover the Work all at the Contractor's expense and with no adjustment to the Contract Time.

2.11 Safety

- A. Safety Programs: The Contractor holds overall responsibility for safety programs. However, such obligation does not relieve the Subcontractors of their safety responsibilities or requirements to comply with the Law. The Contractor shall seek to avoid injury, loss, or damage to persons or property by taking reasonable steps to protect:
 - 1. Its employees and other persons at the Site;
 - 2. Materials and equipment stored at onsite or offsite locations for use in the Work; and
 - 3. Property located at the Site and adjacent to work areas, whether or not the property is part of the Site.
- B. The Contractor shall designate an individual at the Site in its employ as its safety representative. Unless otherwise identified by the Contractor in writing to the Owner, the Contractor's superintendent shall serve as its safety representative. When the Contractor is required to file an accident report with a public authority, the Contractor shall furnish a copy of the report to the Owner.
- C. The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of authorities having jurisdiction bearing on safety or persons or property or their protection from damage, injury, or loss.
- D. Damage or loss not insured under property insurance which may arise from the Work to the extent caused by negligent acts or omissions of the Contractor, or anyone for whose acts the Contractor may be liable, shall be promptly remedied by the Contractor.

- E. The Contractor shall erect and maintain, as required by existing conditions and performance of the Work, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.
- F. When use or storage of explosives or other Hazardous Materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.
- G. If the Owner deems any part of the Work or Site unsafe, the Owner, without assuming responsibility for the Contractor's safety program, may require the Contractor to stop performance of the Work, take corrective measures satisfactory to the Owner, or both. If the Contractor does not adopt corrective measures, the Owner may perform them and deduct their cost from the Contract Price. The Contractor agrees to make no claim for damages, for an increase in the Contract Price or Contract Time based on the Contractor's compliance with the Owners reasonable request.

2.12 Emergencies

- A. In an emergency affecting the safety of persons or property, the Contractor shall act in a reasonable manner to prevent threatened damage, injury, or loss. Any change in the Contract Price or Contract Time resulting from the actions of the Contractor in an emergency situation shall be determined as provided for in Article 6.

2.13 Hazardous Materials

- A. The Contractor shall not be obligated to commence or continue Work until any Hazardous Material discovered at Site has been removed, rendered, or determined to be harmless by the Owner as certified by an independent testing laboratory and approved by the appropriate governmental agency.
- B. If after commencing the Work, Hazardous Material is discovered at the Site, the Contractor shall be entitled to immediately stop Work in affected area. The Contractor shall promptly report the condition to the Owner, the Design Professional, and, if required, the authority having jurisdiction.
- C. The Contractor shall not resume nor be required to continue any Work affected by any Hazardous Material without written mutual agreement between the Parties after the Hazardous Material has been removed or rendered harmless and only after approval, if necessary, of the authorities having jurisdiction.
- D. The Owner shall be responsible for retaining an independent testing laboratory to determine the nature of the material encountered and whether the material requires corrective measures or remedial action. Such measures shall be the sole responsibility of the Owner and shall be performed in a manner minimizing any adverse effect upon the Work.
- E. If the Contractor incurs additional costs or is delayed due to the presence or remediation of Hazardous Material, the Contractor shall be entitled to an equitable adjustment in the Contract Price, the Contract Time, or both.

2.14 Submittals

- A. The Contractor shall submit to the Owner and the Design Professional all shop drawings, samples, product data, and similar submittals required by the Contract Documents for review and approval. The Contractor shall prepare and deliver its submittals in a manner consistent with the Construction Schedule and in such time and sequence so as not to delay the performance of the Work or the work of the Owner and Others. If the Contract Documents do not contain specific submittal requirements pertaining to portions of the Work, the Contractor agrees upon request to submit in a timely fashion to the Owner and Design Professional for review any shop drawings, samples, product data, or similar submittals as may reasonably be required by the Owner.
- B. The Contractor shall be responsible for the accuracy and conformity of its submittals. By submitting shop drawings, samples, product data, and similar submittals, the Contractor represents to the Owner that the Contractor has:
 - 1. Reviewed and approved them;
 - 2. Determined and verified materials, field measurements and field construction criteria related thereto, or will do so; and
 - 3. Checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- C. The Contractor shall perform all Work strictly in accordance with approved submittals. Approval of submittals is not an authorization to perform changed work, unless the procedures of Article 6 are followed. Approval does not relieve the Contractor from responsibility for Defective Work resulting from errors or omissions on the approved shop drawings.
- D. No substitutions shall be made in the Work unless permitted in the Contract Documents and then only after the Contractor obtains approvals required under the Contract Documents for substitutions. All such substitutions shall be promptly memorialized in a Change Order following approval by the Owner and, if applicable, the Design Professional to provide for an adjustment in the Contract Price or Contract Time.

2.15 Design Delegation

- A. If the Contract Documents specify that the Contractor is responsible for the design of a particular system or component to be incorporated into the Project, the Owner shall provide all required performance and design criteria. The Contractor shall not be responsible for the adequacy of such performance and design criteria.
- B. As required by Law, the Contractor shall procure design services and certifications necessary to satisfactorily complete the Work from a licensed design professional. The signature and seal of the Contractor's design professional shall appear on all drawings, calculations, specifications, certifications, shop drawings, and other submittals related to the Work designed or certified by the Contractor's design professional.

2.16 Site Conditions

- A. Site Visit: The Contractor acknowledges that it has visited, or has had the opportunity to visit, the Site to visually inspect the general and local conditions which could affect the Work.

- B. Concealed or Unknown Site Conditions: If the conditions encountered at the Site are (a) subsurface or other physical conditions materially different from those indicated in the Contract Documents, or (b) unusual and unknown physical conditions materially different from conditions ordinarily encountered and generally recognized as inherent in Work provided for in the Contract Documents, the Contractor shall stop affected Work after the condition is first observed and give prompt written notice of the condition to the Owner and the Design Professional. The Contractor shall not be required to perform any Work relating to the unknown condition without the written mutual agreement of the parties. Any change in the Contract Price or the Contract Time as a result of the unknown condition shall be determined as provided in Article 6.
- C. The Owner maintains possession of the premises and any improvements made by the Contractor. Under the Contract Documents, the Owner grants the Contractor the right to enter and use the premises. The Contractor shall confine its apparatus, the storage of materials, and the operations of the Contractor's workers to limits indicated by Law, ordinance, the Contract Documents, permits, and/or directions of the Owner and shall not unreasonably encumber the premises with the Contractor's materials or equipment.
- D. The Contractor shall remove snow or ice within the limits of the Site indicated in the Contract Documents that might result in damage or delay.

2.17 Permits, Fees, Notices and Compliance with Laws

- A. Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by authorities having jurisdiction necessary for proper execution and completion of the Work that are customarily secured after execution of the Agreement and legally required at the time bids are received or negotiations concluded.
- B. The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of authorities having jurisdiction applicable to performance of the Work.
- C. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules, and regulations, or lawful orders of authorities having jurisdiction, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

2.18 Cutting, Fitting, and Patching

- A. The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.
- B. The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Others by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or Others except with written consent of the Owner and Others. Consent shall not be unreasonably

withheld. The Contractor shall not unreasonably withhold, from the Owner or Others, its consent to cutting or otherwise altering the Work.

2.19 Cleaning Up

- A. The Contractor shall regularly remove debris and waste materials at the Site resulting from the Work. Prior to discontinuing Work in an area, the Contractor shall clean the area and remove all rubbish and its construction equipment, tools, machinery, waste, and surplus material. The Contractor shall minimize and confine dust and debris resulting from construction activities. At the completion of the Work, the Contractor shall remove from the Site all construction equipment, tools, surplus materials, waste materials, and debris. All debris from the Project shall be cleaned up daily and removed from the Site at least on a weekly basis.
- B. If the Contractor fails to commence compliance with cleanup duties within two (2) Business Days after written notification from the Owner of non-compliance, the Owner may implement appropriate cleanup measures without further notice and shall deduct the reasonable costs from any amounts due or to become due the Contractor in the next payment period.

2.20 Access to Work

- A. The Contractor shall facilitate the access of the Owner, Design Professional, and Others to Work in progress.

2.21 Compliance with Laws

- A. The Contractor shall comply with the Law at its own costs. The Contractor shall be liable to the Owner for all loss, cost, or expense attributable to any acts or omissions by the Contractor, its employees, subcontractors, and agents for failure to comply with the Law, including fines, penalties, or corrective measures. However, liability under this subsection shall not apply if prior approval by appropriate authorities and the Owner is received.
- B. The Contract Price or Contract Time shall be equitably adjusted by Change Order for additional costs or time needed resulting from any changes in Law, including increased taxes, enacted after the date of the Agreement.

2.22 Royalties, Patents, and Copyrights

- A. The Contractor shall pay all royalties and license fees which may be due on the inclusion of any patented or copyrighted materials, methods, or systems selected by the Contractor and incorporated in the Work. The Contractor shall defend, indemnify, and hold the Owner harmless from all suits or claims for infringement of any patent rights or copyrights arising out of such selection.

ARTICLE 3 – OWNER’S RESPONSIBILITIES

3.01 Information and Services

- A. The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under

the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

3.02 Site Information

- A. To the extent the Owner has obtained or is required elsewhere in the Contract Documents to obtain, Site information, the Owner shall furnish surveys describing physical characteristics, legal limitations, and utility locations for the Site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information provided by the Owner but shall exercise proper precautions relating to the safe performance of the Work.
- B. The Owner shall provide tests, inspections, and other reports dealing with environmental matters, Hazardous Material, and other existing conditions, including structural, mechanical, and chemical tests, required by the Contract Documents or by Law.

3.03 Permits, Fees, and Approvals

- A. Except for those permits and fees related to the Work which are the responsibility of the Contractor, the Owner shall secure and pay for necessary approvals, easements, assessments, and fees required for the development, construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

3.04 Mechanics and Construction Lien Information

- A. The Owner shall furnish to the Contractor within fifteen (15) Days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

3.05 Owner's Representative

- A. The Owner's Representative shall be fully acquainted with the Project and shall have authority to bind the Owner in all matters requiring the Owner's approval, authorization, or written notice. If the Owner changes its Representative or its Representative's authority, the Owner shall immediately notify the Contractor in writing.

3.06 Owner's Right to Stop the Work

- A. If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents or repeatedly fails to carry out the Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

3.07 Owner's Right to Carry Out the Work

- A. If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. The Owner may, pursuant to Section 7.3, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Design Professional's additional services made necessary by such default, neglect, or failure. If current or future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

3.08 Submittals

- A. The Owner or its Design Professional will review and approve, or take other appropriate action upon, the Contractor's submittals such as shop drawings, product data, and samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Owner's action will be taken with reasonable promptness while allowing sufficient time in the Owner's judgement to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Owner's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Owner's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

ARTICLE 4 – SUBCONTRACTS

4.01 Award of Subcontracts and Other Contracts for Portions of the Work

- A. Promptly after the award of the Agreement, the Contractor shall provide the Owner and, if directed, the Design Professional with a written list of the proposed Subcontractors and significant Suppliers. If the Owner has a reasonable objection to any proposed Subcontractor or Supplier, the Owner shall notify the Contractor in writing. Failure to promptly object shall constitute acceptance.
- B. If the Owner has reasonably and promptly objected, the Contractor shall not contract with the proposed Subcontractor or Supplier, and the Contractor shall propose another acceptable Subcontractor or Supplier to the Owner. No adjustment in the Contract Price or Contract Time shall be made because of such substitution.
- C. The Contractor shall not change a Subcontractor or Supplier previously selected without the prior written approval of the Owner.

4.02 Binding of Subcontractors and Suppliers

- A. The Contractor agrees to bind every Subcontractor and Supplier (and require every Subcontractor to so bind its subcontractors and suppliers) to the Contract Document's applicable provisions to

that portion of the Work. Each subcontract agreement shall preserve and protect the rights of the Owner and its Design Professional under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors.

4.03 Contingent Assignment of Subcontracts

- A. If the Agreement is terminated, each subcontract and supply agreement shall be assigned by the Contractor to the Owner, subject to the prior rights of any surety, provided that:
 - 1. The Agreement is terminated by the Owner pursuant to Sections 9.03 or 9.04; and
 - 2. The Owner accepts such assignment after termination by notifying the Contractor and Subcontractor or Contractor and Supplier in writing and assumes all rights and obligations of the Contractor pursuant to each subcontract or supply agreement.
- B. If the Owner accepts such an assignment, and the Work has been suspended for more than thirty (30) consecutive Days, following termination, if appropriate, the Subcontractor's or Supplier's compensation shall be equitably adjusted as a result of the suspension.

ARTICLE 5 – TIME

5.01 General

- A. Time is of the essence with regard to the obligations of the Contract Documents. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.
- B. Unless instructed by the Owner in writing, the Contractor shall not knowingly commence the Work before the effective date of insurance and Bonds to be provided by the Contractor as required by the Contract Documents.
- C. Date of Commencement: The Contractor shall commence the Work after the Notice to Proceed has been received by the Contractor. The Notice to Proceed shall be issued immediately after the Agreement has been approved by the Governor and Council and shall establish the actual construction start date. Failure to commence the Work within fifteen (15) Calendar Days after the Date of Commencement shall be considered a Default of the Agreement. If the Date of Commencement is later than the advertised start date, the date of Final Completion shall be extended by an equivalent number of Days.

5.02 Construction Schedule

- A. Before submitting the first application for payment, the Contractor shall submit to the Owner, and if directed, the Design Professional, a Construction Schedule showing the dates on which the Contractor plans to commence and complete various parts of the Work, including dates on which information and approvals are required from the Owner. Except as directed by the Owner, the Contractor shall comply with the approved Construction Schedule. Unless otherwise agreed, the

Construction Schedule shall be formatted in a detailed precedence-style critical path method that (a) provides a graphic representation of all activities and events, including float values that will affect the critical path of the Work, and (b) identifies dates that are critical to ensure timely and orderly completion of the Work.

- B. The Contractor shall revise the Construction Schedule at appropriate intervals as required by the conditions of the Work and Project. At a minimum, an updated schedule shall be submitted with each application for payment, and within seven (7) Days following receipt of information by the Contractor, which the Contractor believes may result in a change of completion date.

5.03 Delays and Extensions of Time

- A. If the Contractor is delayed at any time in the commencement or progress of the Work by any cause beyond the control of the Contractor, the Contractor shall be entitled to an equitable extension of the Contract Time. Examples of causes beyond the control of the Contractor include, but are not limited to, the following:
1. Acts or omissions of the Owner, Design Professional, or Others.
 2. Changes in the Work or the sequencing of the Work ordered by the Owner or arising from decisions of the Owner that impact the time of performance of the Work.
 3. Encountering Hazardous Materials or concealed or unknown conditions.
 4. Delay authorized by the Owner pending dispute resolution or suspension by the Owner under Section 9.01.
 5. Transportation delays not reasonably foreseeable.
 6. Labor disputes not involving the Contractor.
 7. General labor disputes impacting the Project but not specifically related to the Site.
 8. Fire.
 9. Terrorism.
 10. Epidemics.
 11. Adverse governmental actions.
 12. Unavoidable accidents or circumstances.
 13. Adverse weather conditions not reasonably anticipated. Such conditions do not include typical weather conditions of remote mountain top sites.
- B. The Contractor shall submit any requests for equitable extensions of the Contract Time in accordance with Article 6. The Contractor shall have the burden of demonstrating such impact and shall furnish to the Owner such documentation relating thereto as the Owner may reasonably require.
- C. If the Contractor incurs additional costs as a result of a delay that is caused by items 1 through 13 above, the Contractor shall be entitled to an equitable adjustment in the Contract Price.
- D. If delays to the Work are encountered for any reason, the Contractor shall provide prompt written notice to the Owner within five (5) Days of the cause of such delays after the Contractor first recognized the delay. The Parties agree to take reasonable steps to mitigate the effect of such delays.

- E. Any changes in time that extend past Completion Date of the Contract, shall be formalized in a Change Order in accordance with Article 6, and subsequent Contract Amendment for approval by Governor and Council.

5.04 Liquidated Damages

- A. The Contractor understands that if the date of Final Completion established in the Agreement, as may be amended by subsequent Change Order and approval by Governor and Council, is not attained, the Owner will suffer damages which are difficult to determine and accurately specify. The Contractor agrees that if the date of Final Completion is not attained, the Contractor shall pay the Owner the amount specified in the below Section as liquidated damages, and not as a penalty, for each Day that completion extends beyond the date of Final Completion. Should the amount of money otherwise due the Contractor be less than the amount of such liquidated damages, the Contractor and its Surety shall be liable to the Owner for such deficiency. When final acceptance of the Work has been duly made by the Owner, any liquidated damage charges shall end.
- B. Allowing the Contractor to continue executing the Work after the date of Final Completion, shall in no way obligate the Owner to waive any of its rights under the Agreement.
- C. Schedule of Liquidated Damages: The fixed, agreed, liquidated damages shall be assessed in accordance with the following:

<u>Price Limitation</u>		<u>Amount of Liquidated Damages per Day</u>
From more than:	To and Including:	
\$0.00	\$25,000.00	\$300.00
\$25,000.00	\$50,000.00	\$400.00
\$50,000.00	\$100,000.00	\$500.00
\$100,000.00	\$500,000.00	\$600.00
\$500,000.00	\$1,000,000.00	\$800.00
\$1,000,000.00	\$2,000,000.00	\$1,200.00
\$2,000,000.00	\$5,000,000.00	\$1,600.00

ARTICLE 6 – CHANGES

6.01 General

- A. Changes in the Work that are within the general scope of the Agreement shall be accomplished, without invalidating the Agreement, by Change Order, and Construction Change Directive.

6.02 Change Orders

- A. The Contractor may request, or the Owner may order, changes in the Work or the timing or sequencing of the Work that impacts the Contract Price or the Contract Time. All such changes in the Work that affect Contract Price or Contract Time shall be formalized in a Change Order and processed in accordance with this Article.
- B. For changes in the Work, the Parties shall negotiate an appropriate adjustment to the Contract Price or the Contract Time, in good faith and conclude negotiations as expeditiously as possible.

Acceptance of the Change Order and any adjustment in the Contract Price or Contract Time shall not be unreasonably withheld.

- C. The Contractor shall not be obligated to perform changes in the Work that impact Contract Price or Contract Time until a Change Order has been executed or a written Construction Change Directive has been issued.

6.03 Construction Change Directives

- A. The Owner may issue a written Construction Change Directive directing a change in the Work before agreeing on an adjustment to Contract Price or Contract Time or directing the Contractor to perform Work that the Owner believes is not a change. If the Parties disagree that the Construction Change Directive work is within the scope of the Work, the Contractor shall perform the disputed Work and furnish the Owner with an estimate of the costs to perform the disputed work in accordance with Owner's interpretations.
- B. The Parties shall negotiate expeditiously and in good faith for appropriate adjustments, as applicable, to the Contract Price or the Contract Time arising out of a Construction Change Directive. As the directed Work is performed, the Contractor shall submit its costs for such Work with its application for payment beginning with the next application for payment within thirty (30) Days of the issuance of the Construction Change Directive. If there is a dispute as to the cost to the Owner, the Parties shall resolve the disputed amount, subject to the requirements of Article 10. Undisputed amounts may be included in applications for payment and shall be paid by the Owner in accordance with the Agreement.
- C. When the Parties agree upon the adjustment in the Contract Price or the Contract Time, for a change in the Work directed by a Construction Change Directive, such agreement shall be the subject of a Change Order. The Change Order shall include all outstanding Construction Change Directives on which the Parties have reached agreement on Contract Price or Contract Time issued since the last Change Order.

6.04 Determination of Cost

- A. An increase or decrease in the Contract Price or the Contract Time resulting from a change in the Work shall be determined as follows:
 - 1. A mutually accepted lump sum properly itemized and supported by sufficient substantiating data, as determined by the Owner, to permit evaluation.
 - 2. If the price change is an increase in the Contract Price, and the Work is performed by the Contractor and not a Subcontractor, it shall include the following indirect costs for Work performed by the Contractor: Workmen's Compensation and Employee Liability, and Unemployment and Social Security Taxes.
 - a. In addition to the above indirect costs, the Contractor shall be allowed a markup not to exceed ten percent (10%). This markup shall be all inclusive for overhead, supervision, and profit.
 - 3. If the price change is an increase in the Contract Price, and the Work is performed by both the Contractor and a Subcontractor, the Contractor shall be allowed a markup of ten percent (10%) on that portion of the Work performed by the Contractor, and a markup of

five percent (5%) on the portion of the Work performed by the Subcontractor. The same percentages shall apply to Sub-subcontractors.

4. On any change that involves a decrease in the Contract Price, no overhead and profit shall be figured.

6.05 Changes Notice

- A. Except as provided in Subsection 5.03 C for any claim for an increase in the Contract Price or Contract Time, the Contractor shall give the Owner written notice of the claim within fourteen (14) Days after the occurrence giving rise to the claim or within fourteen (14) Days after the Contractor first recognizes the condition giving rise to the claim, whichever is later. Except in an emergency, notice shall be given before proceeding with the Work. Thereafter, the Contractor shall submit written documentation of its claim, including appropriate supporting documentation, within twenty-one (21) Days after giving notice, unless the Parties mutually agree upon a longer period of time. The Owner shall respond in writing denying or approving the Contractor's claim no later than fourteen (14) Days after receipt of the Contractor's claim. Owner's failure to so respond shall be deemed a denial of the claim. Any change in the Contract Price or the Contract Time resulting from such claim shall be authorized by Change Order.

6.06 Incidental Changes

- A. The Owner may direct the Contractor to perform incidental changes in the Work, upon concurrence with the Contractor that such changes do not involve adjustments in the Contract Price or Contract Time. Incidental changes shall be consistent with the scope and intent of the Contract Documents. The Owner shall initiate an incidental change in the Work by issuing a written order to the Contractor. Such written notice shall be carried out promptly and is binding on the Parties.

ARTICLE 7 – PAYMENT

7.01 Schedule of Values

- A. Within fifteen (15) Days of receiving the Notice to Proceed and before the first application for payment, the Contractor shall submit to the Owner, for approval, a schedule of values allocating the Contract Price to various portions of the Work. This schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Owner may require. Upon approval by the Owner, this schedule shall be used as the basis for reviewing the Contractor's applications for payment and shall be revised if later found by the Owner to be inaccurate.

7.02 Progress Payments

- A. Applications for Payment: The Contractor shall submit to the Owner and, if directed, the Design Professional a monthly application for payment no later than the first Day of the calendar month for the preceding calendar month. Contractor's applications for payment shall be itemized and supported by the Contractor's schedule of values based on a percentage of completion and shall include any other substantiating data as required by the Agreement. Applications for payment shall be notarized and include payment requests on account of properly authorized Change Orders or Construction Change Directives. The Owner shall pay the amount otherwise due on any payment application no later than thirty (30) Days after the Contractor has submitted a complete and accurate payment application, or such shorter time period as required by applicable state statute.

The Owner may deduct from any progress payment amounts that may be retained pursuant to Subsection 7.02 D.

- B. **Stored Materials and Equipment:** Unless otherwise provided in the Contract Documents, applications for payment may include materials and equipment not yet incorporated into the Work but delivered to and suitably stored onsite including applicable insurance, storage, and costs incurred transporting the materials to an offsite storage facility. Approval of payment applications for stored materials and equipment stored offsite shall be conditioned on a submission by the Contractor of bills of sale and proof of required insurance, or such other documentation satisfactory to the Owner to establish proper valuation of the stored materials and equipment, the Owner's title to such materials and equipment, and to otherwise protect the Owner's interest therein, including transportation to the Site.
- C. **Lien Waivers and Liens**
 - 1. **Partial Lien Waivers and Affidavits:** If required by the Owner, as a prerequisite for payment, the Contractor shall provide partial lien and claim waivers in the amount of the application for payment and affidavits from its Subcontractors and Suppliers for the completed Work. Such waivers shall be conditional upon payment. In no event shall the Contractor be required to sign an unconditional waiver of lien or claim, either partial or final, prior to receiving payment or in an amount in excess of what it has been paid.
 - 2. **Removing Liens:** If the Owner has made payments in the time required by this article, the Contractor shall, within thirty (30) Days after filing, cause the removal of any liens filed against the premises or public improvement fund by any party or parties performing labor or services or supplying materials in connection with the Work. If the Contractor fails to take such action on a lien, the Owner may cause the lien to be removed at the Contractor's expense, including bond costs and reasonable attorney's fees. This subsection shall not apply if there is a dispute pursuant to Article 10 relating to the subject matter of the lien.
- D. **Retainage:** From each progress payment made prior to Substantial Completion, the Owner shall retain ten percent (10%) of the amount otherwise due after deduction of any amounts as provided in Section 7.02, and in no event shall such percentage exceed any applicable statutory requirements.

7.03 Adjustment of Contractor's Payment Application

- A. The Owner may adjust or reject a payment application or nullify a previously approved payment application, in whole or in part, as may reasonably be necessary to protect the Owner from loss or damage based upon the following, to the extent that the Contractor is responsible under the Agreement:
 - 1. The Contractor's repeated failure to perform the Work as required by the Contract Documents;
 - 2. Except as accepted by the insurer providing builders risk or other property insurance covering the project, loss or damage arising out of or relating to the Agreement and caused by the Contractor to the Owner or to Others to whom the Owner may be liable;
 - 3. The Contractor's failure to properly pay Subcontractors and Suppliers following receipt of such payment from the Owner;
 - 4. Rejected, nonconforming or Defective Work not corrected in a timely fashion;

5. Reasonable evidence of delay in performance of the Work such that the Work will not be completed within the Contract Time;
 6. Reasonable evidence demonstrating that the unpaid balance of the Contract Price is insufficient to fund the cost to complete the Work; and
 7. Uninsured third-party claims involving the Contractor, or reasonable evidence demonstrating that third-party claims are likely to be filed unless and until the Contractor furnishes the Owner with adequate security in the form of a surety bond, letter of credit, or other collateral or commitment sufficient to discharge such claims if established.
- B. No later than seven (7) Days after receipt of an application for payment, the Owner shall give written notice to the Contractor, at the time of disapproving or nullifying all or part of an application for payment, stating its specific reasons for such disapproval or nullification, and the remedial actions to be taken by the Contractor in order to receive payment. When the above reasons for disapproving or nullifying an application for payment are removed, payment will be promptly made for the amount previously withheld.

7.04 Acceptance of Work

- A. Neither the Owner's payment of progress payments nor its partial or full use or occupancy of the Project constitutes acceptance of Work not complying with the Contract Documents.

7.05 Payment Delay

- A. If for any reason not the fault of the Contractor, the Contractor does not receive a progress payment from the Owner within seven (7) Days after the time such payment is due, then the Contractor, upon giving seven (7) Days written notice to the Owner, and without prejudice to and in addition to any other legal remedies, may stop Work until payment of the full amount owing to the Contractor has been received.

7.06 Substantial Completion

- A. The Contractor shall notify the Owner and, if directed, the Design Professional, when it considers Substantial Completion of the Work or a designated portion to have been achieved. The Owner, with the assistance of its Design Professional, shall promptly conduct an inspection to determine whether the Work or its designated portion can be occupied or used for its intended use by the Owner without excessive interference in completing any remaining unfinished Work. If the Owner determines that the Work or designated portion has not reached Substantial Completion, the Owner shall promptly compile a list of items to be completed or corrected so the Owner may occupy or use the Work or designated portion for its intended use. The Contractor shall promptly complete all items on the list.
1. The Contractor's notification of Substantial Completion shall include (a) a list of items to be completed or corrected, and (b) all permits, certificates, and special warranties required by the Contract Documents, endorsed by the Contractor and in a form reasonably acceptable to the Owner.
- B. When Substantial Completion of the Work or a designated portion is achieved, the Owner or Design Professional shall prepare a Certificate of Substantial Completion establishing the date of Substantial Completion and the respective responsibilities of each Party for interim items such as

security, maintenance, utilities, insurance, and damage to the Work and fixing the time for completion of all items on the list accompanying the Certificate of Substantial Completion. In the absence of a clear delineation of responsibilities, the Owner shall assume all responsibilities for items such as security, maintenance, utilities, insurance, and damage to the Work. The Certificate of Substantial Completion shall also list any items to be completed or corrected and establish the time for their completion or correction.

- C. Unless otherwise provided in the Certificate for Substantial Completion, warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or a designated portion.
- D. Upon the Owner's acceptance of Substantial Completion, the Owner shall pay to the Contractor the remaining retainage held by the Owner for the Work described in the Certificate of Substantial Completion, less a sum equal to two hundred percent (200%) of the estimated cost of completing or correcting remaining items on that part of the Work, as agreed to by the Parties as necessary to achieve Final Completion. The Owner shall pay the Contractor monthly the amount retained for unfinished items as each item is completed.

7.07 Partial Occupancy or Use

- A. The Owner may occupy, or use completed or partially completed portions of the Work when:
 - 1. The portion of the Work is designated in a Certificate of Substantial Completion;
 - 2. Appropriate insurer(s) consent to the occupancy or use, and
 - 3. Appropriate authorities having jurisdiction authorize the occupancy or use.

7.08 Final Completion and Final Payment

- A. Upon notification from the Contractor that the Work is complete and ready for final inspection and acceptance, the Owner with the assistance of its Design Professional shall promptly conduct an inspection to determine if the Work has been completed and is acceptable under the Contract Documents.
- B. When Final Completion has been achieved, the Contractor shall prepare for the Owner's written acceptance a final application for payment stating that to the best of the Contractor's knowledge, and based on the Owner's inspections, the Work has reached Final Completion in accordance with the Contract Documents.
- C. Final payment of the balance of the Contract Price shall be made to the Contractor within thirty (30) Days after the Contractor has submitted a complete and accurate application for final payment, including submissions required under the subsection below.
- D. Final payment shall be due on the Contractor's submission of the following to the Owner:
 - 1. An affidavit declaring any indebtedness connected with the Work to have been paid, satisfied, or to be paid with the proceeds of final payment, so as not to encumber the Owner's property;
 - 2. As-built record drawings, manuals, copies of warranties, and all other close-out documents required by the Contract Documents;

3. Release of any liens, conditioned on final payment being received;
 4. Consent of any surety; and
 5. Any outstanding known and unreported accidents or injuries experienced by the Contractor or its Subcontractors at the Site.
- E. If, after Substantial Completion of the Work, the Final Completion of a portion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the balance due for portions of the Work fully completed and accepted. If the remaining contract balance for Work not fully completed and accepted is less than the retained amount prior to payment, the Contractor shall submit to the Owner and, if directed, the Design Professional, the written consent of any surety to payment of the balance due for portions of the Work that are fully completed and accepted. Such payment shall not constitute a waiver of claims, but otherwise shall be governed by these final payment provisions.
- F. Contractor Acceptance of Final Payment: Unless the Contractor provides written identification of unsettled claims with an application for final payment, its acceptance of final payment constitutes a waiver of all claims by the Contractor arising out of or related to the Agreement or the Work.

ARTICLE 8 – INDEMNITY, INSURANCE, AND BONDS

8.01 Indemnity

- A. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, the Owner's officers, directors, members, consultants, agents, and employees, the Design Professional, and Others (the Indemnitees) from all claims for bodily injury and property damage, other than to the Work itself and other property insured, including reasonable attorney's fees, costs, and expenses, that may arise from the performance of the Work, but only to the extent caused by the negligent acts or omissions of the Contractor, Subcontractors, or anyone employed directly or indirectly by any of them or by anyone for whose acts any of them may be liable.
- B. No Limitation on Liability: The limits and types of insurance set forth in this Article are the minimum required amounts and in no way limit the liability of the Contractor or Subcontractors. In any and all claims against the Indemnitees by any employee of the Contractor, anyone directly or indirectly employed by the Contractor or anyone for whose acts the Contractor may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor under workers' compensation acts, disability benefit acts, or other employment benefit acts.

8.02 Insurance

- A. The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement and Section 8.03 "Insurance Requirements."
- B. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where Project is located.

- C. The Owner, its trustees, their officers, employees, representatives, and agents including the Design Professional, shall be included as additional insureds (except under worker's compensation and employer's liability insurance) for and relating to the Work to be performed by the Contractor.
- D. Proof of Coverage: Certificates of Insurance, as evidence of the insurance required by these Contract Documents, shall be submitted by the Contractor to the Owner prior to the date of the Agreement and in all cases prior to the commencement of Work.
- E. Subcontractor Insurance: The Contractor shall either require subcontractors to carry the insurance or the Contractor shall insure the activities of the Subcontractors in the types and form of insurance required under the Contract Documents, and in such amounts as the Contractor shall deem appropriate.
- F. Notice of Cancellation or Expiration: Within ten (10) Days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide required coverage.
- G. Workers Compensation Insurance: Workers compensation insurance is required for all workers on the Site of this Project. Per RSA 21-I:80-VI, at the outset of Work on any State construction project, the Contractor shall provide to the Owner a current list of all Subcontractors and Sub-subcontractors the Contractor has agreed to use on the Project, with a record of the entity to whom such Subcontractor is insured for workers compensation purposes. This list shall be posted on the Project Site and updated as needed to reflect any new Subcontractors or Sub-subcontractors.
 - 1. If it is determined that a Subcontractor or Sub-subcontractor is present on the Site without their name and direct contracting relationship being posted in a visible location at the Site, the Contractor shall require the Subcontractor or Sub-subcontractor to provide the information within thirty-six (36) hours and to post the information in a visible location at the Site. If the information is not provided within thirty-six (36) hours of its request, the Contractor shall suspend the Subcontractor or Sub-subcontractor until the information is provided and posted.

8.03 Insurance Requirements

- A. Workers Compensation Insurance: In accordance with RSA 281-A.
 - 1. Employers' Liability:
 - a. \$100,000 Each accident
 - b. \$500,000 Disease-policy limit
 - c. \$100,000 Disease-each employee
- B. Commercial General Liability Insurance: Occurrence Form Policy; Include full Contractual Liability, Broad Form Property Damage, Explosion, Collapse, and Underground Hazard coverage
 - 1. Limits of Liability:
 - a. \$1,000,000 Each Occurrence; Bodily Injury & Property Damage

New Hampshire Department of Natural and Cultural Resources
ARP-2431. ARPA-Greenfield SP Roadway & Sitework

- b. \$2,000,000 General Aggregate; Include Per Project Aggregate Endorsement
 - c. \$2,000,000 Products/Completed Operations Aggregate
- C. Owners Protective Liability:
 - 1. Limits of Liability:
 - a. \$2,000,000 Each Occurrence
 - b. \$3,000,000 Aggregate
- D. Commercial Automobile Liability: Covering all motor vehicles including owned, hired, borrowed, and non-owned vehicles
 - 1. Limits of Liability:
 - a. \$1,000,000 Combined Single Limit for Bodily Injury & Property Damage
- E. Commercial Umbrella Liability:
 - 1. Limits of Liability:
 - a. \$1,000,000 Each Occurrence
 - b. \$1,000,000 Aggregate
 - c. \$1,000,000 Completed Operations Aggregate
- F. Other Insurance: If blasting and/or demolition are required by the Contract Documents, the Contractor or Subcontractor shall obtain the respective coverage for those activities and shall furnish to the Owner a Certificate of Insurance evidencing the required coverage's prior to commencement of any operations involving blasting and/or demolition.

8.04 Property Insurance

- A. Builder's Risk: The Contractor shall insure the Work included in the Contract Documents, including modifications and Change Orders, on an "All Risk" basis, on a one hundred percent (100%) completed value basis of the Contract, as modified. Builder's Risk coverage shall include materials located at the Contractor's premises, onsite, in-transit, and at any temporary site. The policy by its own terms or by endorsement shall specifically permit partial or beneficiary occupancy prior to completion or acceptance of the entire Work. The policy shall be in the name of the State of New Hampshire Department of Natural and Cultural Resources and the Contractor. The policy shall provide for the inclusion of the names of all other Contractors, Subcontractors, and Others employed on the premises as insureds. The policy shall stipulate that the insurance company shall have no right of subrogation against any Contractors, Subcontractors, or other parties employed on the premises.

8.05 Owner's Insurance

- A. Owner Liability Insurance: The Owner shall either self-insure or obtain and maintain its own liability insurance for protection against claims arising out of the performance of the Agreement, including, without limitation, loss of use and claims, losses, and expenses arising out of the Owner's acts or omissions.

8.06 Bonds

- A. Performance and Payment Bond: In the event a bid is \$75,000 or more, the Contractor shall furnish security by bond or otherwise in an amount equal to 100% of the Contract Price guaranteeing

performance and payment. The payment security shall meet the requirements of New Hampshire RSA 447:16.

- B. The fully executed performance and payment bond must be returned to the Owner a minimum of fifteen (15) Days prior to the Date of Commencement for the Work.

8.07 Professional Liability Insurance

- A. To the extent the Contractor is required to procure design services in accordance with Section 2.15, the Contractor shall require its design professional to obtain professional liability insurance for claims arising from the negligent performance of design services under the Agreement, with a company reasonably satisfactory to the Owner, including coverage for all professional liability caused by any consultants to the Contractor's design professional, written for not less than the limits required for general liability. The Contractor's design professional shall be responsible for payment of any applicable retention or deductible. The Professional Liability Insurance shall contain a retroactive date providing prior acts coverage sufficient to cover all services performed by the Contractor's design professional for the Project. Coverage shall be continued in effect for eight years following the date of Substantial Completion.

ARTICLE 9 – SUSPENSION, NOTICE TO CURE, AND TERMINATION

9.01 Suspension by Owner for Convenience

- A. The Owner may, without cause, order the Contractor in writing to suspend, delay, or interrupt the performance of the Work, for the convenience of the Owner and not due to any act or omission of the Contractor or any person or entity for whose acts or omissions the Contractor may be liable, then the Contractor shall immediately suspend, delay, or interrupt that portion of the Work for the time period ordered by the Owner. The Contract Price and the Contract Time shall be equitably adjusted by Change Order for the cost and delay resulting from any such suspension.
- B. Any action taken by the Owner that is permitted by any other provision of the Contract Documents and that results in a suspension of part of the Work does not constitute a suspension of Work under this section.

9.02 Termination by Owner for Convenience

- A. The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.
- B. Upon receipt of Notice from the Owner of such termination for the Owner's convenience, the Contractor shall:
 - 1. Cease operations as directed by the Owner in the notice;
 - 2. Take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
 - 3. Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

- C. In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

9.03 Default

- A. The Owner may terminate this Contract for default if the Contractor materially breaches this Contract by:
1. Refusing, failing, or being unable to commence the Work within the time specified in the Contract Documents
 2. Refusing, failing, or being unable to properly manage the Work;
 3. Refusing, failing, or being unable to supply the Work with sufficient numbers of properly skilled workers, proper materials, or construction equipment, or to maintain the Construction Schedule;
 4. Refusing, failing, or being unable to make prompt payment to Subcontractors or Suppliers;
 5. Disregarding Laws, ordinances, rules, regulations, or orders of any authority having jurisdiction or quasi-public authority having jurisdiction over the Project; or,
 6. Refusing, failing, or being unable to substantially perform in accordance with the terms of the Agreement and Contract Documents, as determined by the Owner, or as otherwise defined elsewhere herein.
- B. Upon the occurrence of any of the events described in Section 9.03 A, the Owner shall give written Notice to the Contractor setting forth the nature of the default and requesting cure within seven (7) Days from the date of notice. Within seven (7) Days of receipt of the Owner's notice of default, the Contractor shall furnish the Owner with either:
1. Written evidence that the default has been cured; or,
 2. A written plan demonstrating steps to be taken by the Contractor to cure the default and accomplish completion of the Work in accordance with the requirements of the Contract Documents and within established cost and schedule requirements.

9.04 Owner's Remedies

- A. If the Contractor fails to cure the default or provide a written plan to cure the default satisfactory to the Owner, or if the Contractor fails to expeditiously continue such cure until complete, the Owner may give written Notice to the Contractor of immediate termination, and the Owner, without prejudice to any other rights or remedies, may take any or all of the following actions:
1. Exclude the Contractor from the Site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
 2. Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.
 3. Require the Contractor to assign the Contractor's right, title, and interest in any or all of the Contractor's subcontracts or orders to the Owner.
- B. When the Owner terminates the Agreement for default, the Owner shall be entitled to collect from the Contractor all direct, indirect, and consequential damages suffered by the Owner on account of

the Contractor's default, including without limitation additional services and expenses of the Design Professional and attorney's fees and expenses made necessary thereby. The Owner shall be entitled to hold all amounts due the Contractor at the date of termination until all of the Owner's damages have been established, and to apply such amounts to such damages. In no case shall the Contractor be entitled to receive further payment until the Work is finished.

9.05 Contractor's Right to Terminate

- A. Upon seven (7) Days written notice to the Owner, the Contractor may terminate the Agreement if the Work has been stopped for a thirty (30) Day period through no fault of the Contractor for any of the following reasons:
1. Under court order or order of other governmental authorities having jurisdiction;
 2. As a result of the declaration of a national emergency or other governmental act during which, through no act or fault of the Contractor, materials are not available; or
 3. Suspension by the Owner for convenience pursuant to Section 9.01
- B. In addition, if the Work is stopped for a period of 60 consecutive Days through no act or fault of the Contractor, and upon seven (7) Days written notice to the Owner, the Contractor may terminate the Agreement if the Owner:
1. Has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work;
 2. Fails to pay the Contractor in accordance with the Agreement; or
 3. Otherwise materially breaches the Agreement
- C. Upon termination by the Contractor in accordance with this Section, the Contractor is entitled to recover from the Owner payment for all Work executed and for any proven loss, cost, or expense in connection with the Work, including all demobilization.

9.06 Obligations Arising Before Termination

- A. Even after termination, the provisions of this Agreement still apply to any Work performed, payments made, events occurring, costs charged or incurred, or obligations arising before the termination date.

ARTICLE 10 – DISPUTE MITIGATION AND RESOLUTION

10.01 Work Continuance and Payment

- A. Unless otherwise agreed in writing, the Contractor shall continue the Work and maintain the Construction Schedule during any dispute mitigation or resolution proceedings. If the Contractor continues to perform, the Owner shall continue to make payments in accordance with the Agreement.

10.02 Direct Discussions

- A. If the Parties cannot reach resolution on a matter relating to or arising out of the Agreement, the Parties shall endeavor to reach resolution through good faith direct discussions between the

Parties' representatives, who shall possess the necessary authority to resolve such matters and who shall record the date of first discussions. If the Parties' representatives are not able to resolve such matter within five (5) Business Days from the date of first discussion, the Parties' representatives shall immediately inform senior executives of each of the parties in writing that a resolution could not be reached. Upon receipt of such notice, the senior executives of the Parties shall meet within five (5) Business Days to endeavor to reach resolution. If the dispute remains unresolved after fifteen (15) Days from the date of first discussion, the Parties shall submit such matter to the dispute mitigation and dispute resolution procedures selected below.

10.03 Mediation

- A. If direct discussions pursuant to Section 10.02 do not result in resolution of the matter, the Parties shall endeavor to resolve the matter by mediation through the current Construction Industry Mediation Rules of the American Arbitration Association, or the Parties may mutually agree to select another set of mediation rules. The parties shall mutually agree upon the mediator and the mediation process. The mediation shall be convened within thirty (30) Business Days of the matter first being discussed and shall conclude within forty-five (45) Business Days of the matter first being discussed. Either party may terminate the mediation at any time after the first session by written notice to the non-terminating Party and mediator. The costs of the mediation shall be shared equally by the Parties.

10.04 Binding Dispute Resolution

- A. If the matter is unresolved after submission of the matter to mediation, the Parties shall submit the matter to litigation in either the state or federal court having jurisdiction of the matter in the location of the Project.

10.05 Costs

- A. The Parties shall pay their own costs and attorneys' fees of any binding dispute resolution procedures unless otherwise determined by the adjudicator.

10.06 Multiparty Proceeding

- A. All parties necessary to resolve a matter agree to be parties to the same dispute resolution proceeding, if possible. Appropriate provisions shall be included in all other contracts relating to the Work to provide for the joinder or consolidation of such dispute resolution procedures.

10.07 Lien Rights

- A. Nothing in this article shall limit any rights or remedies not expressly waived by the Contractor that Contractor may have under lien laws.

ARTICLE 11 – MISCELLANEOUS

11.01 Conflicting Terms

- A. These General Conditions are supplementary to the General Provisions of the New Hampshire Form P-37 Agreement, and in no case shall be construed or interpreted to reduce or supersede

the requirements thereof. In all cases these General Conditions shall be considered as additions to those described in the Agreement.

ARTICLE 12 – CONTRACT DOCUMENTS

12.01 Interpretation of Contract Documents

- A. The Contract Documents are complimentary. If Work is shown only on one of the Contract Documents but not on the other, the Contractor shall perform the Work as though fully described on both.
- B. In case of conflict between the drawings and specifications, the specifications shall govern. In any case of omissions or errors in figures, drawings, or specifications, the Contractor shall submit the matter to the Owner for clarification. The Owners clarifications are final and binding.
- C. The Drawings are generally made to scale, but all working dimensions shall be taken from the figured dimensions, or by actual measurements taken at the Site, and in no case by scaling. Whether or not an error is believed to exist, deviation from the drawings and dimensions given thereon shall be made only after approval in writing from the Owner and its Design Professional.
- D. Unless otherwise specifically defined in the Agreement, any terms that have well-known technical or trade meanings shall be interpreted in accordance with their well-known meanings.

12.02 Order of Precedence

- A. In case of any inconsistency, conflict, or ambiguity among the Contract Documents, the documents shall govern in the following order:
 - 1. Change Orders and written amendments to the Agreement;
 - 2. The Agreement;
 - 3. The drawings (large scale governing over small scale), specifications, and addenda issued and acknowledged before the execution of the Agreement;
 - 4. Approved submittals;
 - 5. Information furnished by the Owner;
 - 6. Other Contract Documents listed in the Agreement.
- B. Among categories of documents having the same order of precedence, the term or provision that is strictest shall control.

END OF GENERAL CONDITIONS

SECTION 00 73 00

SUPPLEMENTARY CONDITIONS FOR FEDERALLY FUNDED PROJECTS

PART 1 – GENERAL

1.01 NOTICE OF FEDERAL FUNDING

- A. This Project is being performed in whole or in part using federal funds. Therefore, all work or services performed by the Contractor and its subcontractors shall be subject to the terms and conditions set forth in this Section in addition to all terms and conditions in the Agreement, General Conditions, and other contract documents. The concepts, rules and guidelines set forth in 2 CFR 200 describing allowable costs and administrative requirements apply.

1.02 DEFINITIONS

- A. As used herein, “Federal Government” means the government of the United States of America. “Federal Agency” means an agency, entity, department, or division of the Federal Government that is providing funding for this Project. All other terms shall have the meanings established in the Agreement, General Conditions, and Project Manual, unless such definitions conflict with a definition provided in an applicable statute or regulation.

1.03 CONFLICTING TERMS OR CONDITIONS

- A. To the extent that any terms or conditions set forth herein conflict with the Agreement or its General Conditions, the more stringent of the two terms shall govern.

1.04 NO OBLIGATION BY FEDERAL GOVERNMENT

- A. The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, Contractor, or any other party pertaining to any matter resulting from the contract.

1.05 COMPLIANCE WITH FEDERAL LAWS, REGULATIONS AND EXECUTIVE ORDERS

- A. The Contractor and its subcontractors and suppliers shall comply with all applicable Federal laws, regulations, and executive orders, regardless of whether set forth herein. The Contractor shall assist and enable the State in complying with any requirements imposed by the Federal Agency as a condition of funding.

1.06 NONDISCRIMINATION

- A. Per Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.), Contractors are prohibited from discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance.
- B. Contractors shall not discriminate against individual with disabilities and shall provide goods and services in a manner that is accessible to and usable by individuals with disabilities, in compliance with Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), and its

implementing regulations, and Title II of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.)

1.07 EQUAL EMPLOYMENT OPPORTUNITY

A. Equal Opportunity in Construction Projects: Pursuant to 41 CFR Part 60, during the performance of this contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. 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, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:
 - a. 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. 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 consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
3. The Contractor will not discharge or in any other manner discriminate against an employee or applicant for employment because such employee or applicant has inquired about, or discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.
4. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract of 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.
5. 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.
6. 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.
7. 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, and such other sanctions may be imposed and remedies invoked as provided 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.

8. The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) 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. 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:
 - a. 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.

1.08 MINORITY BUSINESSES

- A. The Contractor must take all necessary affirmative steps to ensure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.
- B. Affirmative steps must include:
 1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
 2. Ensuring that small and minority businesses and women's business enterprises are solicited whenever there are potential sources;
 3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;
 4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority business and women's business enterprises;
 5. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and
 6. Requiring subcontractors to take the affirmative steps listed above.

1.09 PROHIBITION ON SEGREGATED FACILITIES

- A. By submission of this Bid, the Contractor certifies that it does not and will not maintain or provide for its employees and segregated facilities at any of its establishments, and it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agree that a breach of this certification is a violation of the Equal Employment opportunity clause of this Agreement. The Contractor further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.
- B. "Segregated facilities," as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage

or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

1.10 COPELAND ANTI-KICKBACK ACT

- A. The Contractor shall comply with all applicable provisions of the Copeland Anti-Kickback Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"), which are incorporated into this Agreement by reference. This act provides that each contractor or subcontractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which they are otherwise entitled. The Contractor shall report all suspected or reported violations to the State and the U.S. Department of Treasury.

1.11 CONTRACT WORK HOURS AND SAFETY STANDARD ACT

- A. The Contractor shall comply with all applicable provisions of 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, the Contractor is required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

1.12 SUSPENSION AND DEBARMENT

- A. Universal Identifier and System for Award Management (SAM): The Contractor shall maintain active registration in the System for Award Management (SAM) throughout the term of this contract and provide evidence of active registration and assignment of a Universal Entity Identified (UEI) to the State as requested.
- B. By signing the Agreement the Contractor attests that in accordance with 2 CFR 180.220, to the best of the Contractors knowledge, the Contractor is not debarred, suspended, excluded, disqualified, or otherwise ineligible from participation in covered transactions as defined in 2 CFR 180. Should the Contractor become debarred, suspended, excluded, disqualified, or otherwise ineligible at any point during the contract term, the Contractor shall immediately notify the State.

1.13 LOBBYING RESTRICTIONS

- A. The Contractor certifies by signing the Agreement, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the Contractor, to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 USC 1253.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection this Federal contract, grant, loan, or cooperative agreement, the Contractor shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," OMB Number 4040-0013, in accordance with its instructions.
3. The Contractor shall require that the language of this certification is included in all subcontracts, sub-subcontracts, and material supply agreements, at all tiers, and that all such sub agreements shall certify and disclose accordingly.

1.14 PROCUREMENT OF RECOVERED MATERIALS

- A. The Contractor shall comply with the requirements of Section 6002 of the Solid Waste Disposal Act, as prescribed in 2 CFR 200.323, including procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeds \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

1.15 FAIR LABOR STANDARDS ACT

- A. All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, of the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers. The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

1.16 ACCESS TO RECORDS AND REPORTS

- A. The Contractor shall maintain an acceptable cost accounting system. The Contractor agrees to provide the State, the Federal Agency, and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts, and transcriptions. The Contractor shall maintain all books, records, and reports required under this contract for a period of not less than five years after final payment is made and all pending matters are closed.

1.17 SAFETY AND ACCIDENT PREVENTION

New Hampshire Department of Natural and Cultural Resources
ARP-2431, ARPA-Greenfield SP Roadway & Sitework

- A. All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR part 1910 with the same force and effect as if given in full text. The employer must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The employer retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR part 1910). The employer must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.
- B. Seat Belt Use: The Contractor is encouraged to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented, or personally owned vehicles.
- C. Text Messaging: The Contractor is encouraged to adopt and enforce policies that ban text messaging while driving and to establish workplace policies to decrease accidents caused by distracted drivers.

1.18 RIGHTS TO INVENTIONS

- A. Contracts or Agreements that include the performance of experimental, developmental, or research work must provide for the rights of the Federal Government and the State in any resulting inventions as established by 37 CFR part 401, Rights to Inventions Made by Non-profit Organizations and Small Business Firms under Government Grants, Contracts, and Cooperative Agreements. This Agreement incorporates by reference the patent and inventions rights as specified within 37 CFR 401.14, Contractor must include this requirement in all sub-tier contracts involving experimental, developmental, or research work.

1.19 ENERGY CONSERVATION

- A. The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201 et seq.).

1.20 CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

- A. If the amount of the Contract exceeds \$100,000, the Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387), and to take any necessary actions to ensure compliance. The Contractor shall promptly notify the State and Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA) of any violations of these standards, orders, or regulations.
- B. Environmental Laws and Regulations: The Contractor must comply with all generally applicable environmental laws and regulations unless explicitly exempted under the U.S. Department of Treasury's SLFRF Final Rule, supplemental guidance, or the terms and conditions of the Agreement or the prime agreement between Treasury and the State.
 - 1. The Contractor will include this clause in all subcontracts and will ensure subcontractor compliance with these terms.

1.21 PROTECTIONS FOR WHISTLEBLOWERS

- A. In accordance with 41 USC 4712, an employee of a contractor, subcontractor, grantee, or subgrantee, or personal services contractor may not be discharged, demoted, or otherwise discriminated against as reprisal for disclosing to a person or entity listed below information that the employee reasonably believes is evidence of gross mismanagement of a federal contract or grant, a gross waste of federal funds, an abuse of authority relating to a federal contract or grant, a substantial or specific danger to public health or safety, or a violation of law, rule, or other regulation related to a federal contract (including the competition or negotiation of a contract) or grant.
- B. The list of persons and entities referenced in the paragraph above includes the following:
1. A member of Congress or a representative of a committee of Congress;
 2. An Inspector General;
 3. The Government Accountability Office;
 4. A Treasury employee responsible for contract or grant oversight or management;
 5. An authorized official of the US Department of Justice or other law enforcement agency;
 6. A court or grand jury; or
 7. A management official or employee of the State, subrecipient, contractor, or subcontractor, who has the responsibility to investigate, discover, or address misconduct.
- C. The Contractor and all subcontractors shall inform their employees in writing of the rights and remedies provided in 41 USC 4712 in the predominant language of the workforce.

1.22 DRUG FREE WORKPLACE ACT

- A. The Contractors shall provide a drug free workplace in accordance with the Drug Free Workplace Act of 1988, 41 U.S.C. Chapter 81, and all applicable regulations. The Contractor shall report any conviction of the Contractor's personnel under a criminal drug statute for violations occurring on the Contractor's premises or off the Contractor's premises while conducting official business. A report of a conviction shall be made to the State within five (5) business days after the conviction.

1.23 ACCESS REQUIREMENTS FOR PERSONS WITH DISABILITIES

- A. The Contractor shall comply with 49 U.S.C. 5301 (d), stating Federal policy that the elderly and persons with disabilities have the same rights as other persons to use mass transportation services and facilities and that special efforts shall be made in planning and designing those services and facilities to implement that policy. The Contractor shall also comply with all applicable requirements of Sec. 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. 794, which prohibits discrimination on the basis of handicaps, and the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. et seq., which requires that accessible facilities and services be made available to persons with disabilities, including and subsequent amendments thereto.

1.24 DOMESTIC PREFERENCES FOR PROCUREMENT

- A. The Contractor shall, to the greatest extent practicable and as applicable, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products) as

prescribed by 2 CFR 200.322. For the purposes of this requirement, “produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States, and “manufactured products” means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

1. For the purposes of this Project the requirements of 2 CFR 200.322 (c) Buy America preferences for infrastructure projects, set forth in 2 CFR 184, do not apply.

1.25 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE EQUIPMENT

- A. The Contractor shall adhere to the requirements of 2 CFR 200.216 regarding certain telecommunications and video surveillance equipment. The Contractor is prohibited from procuring, obtaining, or extending, renewing, or entering into a contract that involves equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).

END OF SUPPLEMENTARY CONDITIONS FOR FEDERALLY FUNDED PROJECTS

MASTERWORKS SUBMITTAL LOG																			
PROJECT: ARPA – GREENFIELD SP ROADWAY & SITEWORK 973 FOREST ROAD, GREENFIELD, NH 03047 OWNER: NH DEPARTMENT OF PUBLIC WORKS									PROJECT NO: 22209.03 CONTRACTOR:										
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION					DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.	CONTRACTOR		OWNER	FIELD	FILE	
	061000	ROUGH CARPENTRY																	
		Product Data																	
		Material Certificates																	
	061500	WOOD DECKING																	
		Product Data																	
	311000	SITE CLEARING																	
		Existing Conditions																	
	312000	EARTH MOVING																	
		Product Data																	
		Material Test Reports																	
		Field Quality Control Tests																	
		Qualification Data																	
	321216	ASPHALT PAVING																	
		Product Data																	
		Field Quality Control Tests																	
		Qualification Statements																	
		Material Delivery Tickets																	
	321313	SITE CONCRETE																	
		Product Data																	
		Design Mixtures																	
		Field Quality Control Tests																	
		Qualification Data																	
		Material Certificates																	
		Material Test Reports																	
	329115	SOIL PREPARATION (PERFORMANCE SPECIFICATION)																	
		Product Data																	
		Qualification Statements																	
		Preconstruction Test Reports																	
	329200	TURF AND GRASSES																	
		Qualification Statements																	
		Certification of Grass Seed																	
		Product Certificates																	
		Pesticides and Herbicides																	

MASTERWORKS SUBMITTAL LOG																		
PROJECT: ARPA – GREENFIELD SP ROADWAY & SITEWORK 973 FOREST ROAD, GREENFIELD, NH 03047					PROJECT NO: 22209.03													
OWNER: NH DEPARTMENT OF PUBLIC WORKS					CONTRACTOR:													
DATE REC'D.	SPECIFICATION SECTION NO.	SUBMITTAL ITEM	CONTRACTOR SUBCONTRACTOR	NO. RECEIVED	OTHER REVIEWER					ACTION				DATE RETURNED	COPIES TO			
					DATE SENT	FIRM	NO. COPIES	DUE DATE	DATE REC'D.	APPROVED	APPROVED AS NOTED	REVISE & RESUBMIT	NOT APP' D.		CONTRACTOR	OWNER	FIELD	FILE
		Maintenance Data																
	334200	STORMWATER CONVEYANCE																
		Product Data																

END OF SECTION

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Framing with dimension lumber.
 - 2. Framing with timber.
 - 3. Wood blocking and nailers.
 - 4. Fasteners.
 - 5. Metal framing anchors.

1.3 DEFINITIONS

- A. Exposed Framing: Framing not concealed by other construction.
- B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- C. Timber: Lumber of 5 inches nominal or greater in least dimension.
- D. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.

1.4 ACTION SUBMITTALS

- A. Submittals shall comply with the requirements of the Construction Contract Clauses, Section 013000 "Submittal Procedures" and the individual sections specifying the work.
- B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer. Indicate type of preservative used and net amount of preservative retained.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals shall comply with the requirements of the Construction Contract Clauses, Section 013000 "Submittal Procedures" and the individual sections specifying the work.
- B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
 - 3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 4. Provide dressed lumber, S4S, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
 - 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.

D. Application: Treat all wood members.

2.3 DIMENSION LUMBER FRAMING

A. Joists and Other Framing: No. 2 grade.

- 1. Species:
 - a. Spruce-pine-fir; NLGA.

2.4 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Wood Screws: Flat head, ASME B18.6.1.
- D. Lag Bolts: ASME B18.2.1.
- E. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

2.5 METAL FRAMING ANCHORS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. [Cleveland Steel Specialty Co.](#)
 - 2. [KC Metals Products, Inc.](#)
 - 3. [Phoenix Metal Products, Inc.](#)
 - 4. [Simpson Strong-Tie Co., Inc.](#)
 - 5. [USP Structural Connectors.](#)
- B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be

determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

- C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation.
- D. Joist Hangers: U-shaped joist hangers as indicated.
- E. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch above base and with 2-inch- minimum side cover, socket 0.062 inch thick, and standoff and adjustment plates 0.108 inch thick. Provide as indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Metal Framing Anchors: Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- D. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- E. Comply with AWP A M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- F. Use galvanized hot dip zinc-coated steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 JOIST FRAMING INSTALLATION

- A. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches of bearing on wood.

1. Where supported on wood members, by using metal framing anchors.
2. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.

END OF SECTION

SECTION 061500 - WOOD DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Wood planks for boardwalk decking.

- B. Related Sections:

- 1. Section 061000 "Rough Carpentry" for dimension lumber items associated with wood decking.

1.3 ACTION SUBMITTALS

- A. Submittals shall comply with the requirements of the Construction Contract Clauses, Section 013000 "Submittal Procedures" and the individual sections specifying the work.

- B. Product Data: For each type of product indicated.

- 1. For preservative-treated wood products, include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.

1.4 QUALITY ASSURANCE

- A. Standard for Wood Decking: Comply with AITC 112.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery of wood decking to avoid extended on-site storage and to avoid delaying the Work.

- B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings. Stack wood decking with surfaces that are to be exposed in the final Work protected from exposure to sunlight.

PART 2 - PRODUCTS

2.1 WOOD DECKING, GENERAL

- A. General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Moisture Content: Provide wood decking with 19 percent maximum moisture content at time of dressing.

2.2 SOLID-SAWN WOOD DECKING

- A. Decking Species: Douglas fir larch or spruce pine fir.
- B. Decking Nominal Size: As indicated.
- C. Decking Grade: Dense Select Decking.
- D. Grade Stamps: Factory mark each item with grade stamp of grading agency. Apply grade stamp to surfaces that will not be exposed to view.
- E. Face and Edge Surface: Smooth.

2.3 ACCESSORY MATERIALS

- A. Fasteners for Solid-Sawn Decking: Provide fastener size and type complying with decking standard for thickness of deck used. Provide fasteners with hot-dip zinc coating complying with ASTM A153.
- B. Nails: Common; complying with ASTM F 1667, Type I, Style 10.
- C. Spikes: Round; complying with ASTM F 1667, Type III, Style 3.
- D. Penetrating Sealer: Clear sanding sealer complying with Section 099300 "Staining and Transparent Finishing" and compatible with topcoats specified for use over it.

2.4 FABRICATION

- A. Shop Fabrication: Where preservative-treated decking is indicated, complete cutting, trimming, surfacing, and sanding before treating.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine support framing in areas to receive wood decking for compliance with installation tolerances and other conditions affecting performance of wood decking.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install wood decking to comply with referenced decking standard. Random lay-up and butt joints are not allowed.

3.3 ADJUSTING

- A. Repair damaged surfaces and finishes after completing erection. Replace damaged decking if repairs are not approved by Contract Administrator.

END OF SECTION

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Clearing and grubbing.
3. Stripping and stockpiling topsoil.
4. Removing above- and below-grade site improvements.
5. Temporary erosion and sedimentation control.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.

1.3 DEFINITIONS

- A. Subsoil: Soil beneath the level of topsoil subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.
- D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction.
- E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction.
- F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

- A. Except for materials indicated to remain Contract Administrator's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section "Submittal Procedures" and the individual sections specifying the work.
- B. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or video recordings.

1.6 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Contract Administrator and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed trafficways if required by Contract Administrator or authorities having jurisdiction.
- B. Utility Locator Service: Notify Dig Safe System for area where Project is located before site clearing.
- C. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.
- D. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly identify trees, shrubs, and other vegetation to remain. Review the clearing limits with the Contract Administrator prior to clearing.
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to the Contract Administrator.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
 - 1. The erosion and sedimentation control measures indicated on the drawings are the minimum required. Provide additional measures as necessary to prevent erosion and sedimentation from leaving the site.
- B. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- C. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. Protect trees and plants remaining on-site.
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations.

3.4 EXISTING UTILITIES

- A. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Contract Administrator not less than two days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Contract Administrator's written permission.
- B. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 2. Grind down or remove stumps and remove roots larger than 2 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
 3. Remove wood, stumps, branches, and other materials resulting from clearing and grubbing, and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Remove existing vegetation before stripping topsoil.
- B. Strip topsoil to the depth encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
 1. Limit height of topsoil stockpiles to 15 feet.
 2. Do not stockpile topsoil within protection zones.
 3. At Contractor's option, reuse surplus topsoil on-site or dispose of surplus topsoil off site. Surplus topsoil is that which exceeds quantity to be reused.

3.7 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove paving and aggregate base as indicated.
 1. Saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, cleared and demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property. Burning materials on site is not allowed.

END OF SECTION

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for slabs-on-grade, walks, pavements, turf and grasses.
3. Excavating and backfilling for boardwalk piers.
4. Base course for walks and concrete pads.
5. Subbase course and base course for asphalt paving.
6. Excavating and backfilling trenches for utilities and pits for buried utility structures.

- B. Related Requirements:

1. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
2. Section 329200 "Turf and Grasses" for finish grading in turf and meadow areas, including preparing and placing planting soil.

1.3 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

- B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving, or layer placed above subgrade and below walks and slabs-on-ground.

- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

- D. Borrow Soil: Soil imported from off-site.

- E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Contract Administrator. Authorized additional excavation and replacement material will be paid for according to Contract changes in the work.
 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Contract Administrator. Unauthorized excavation, as well as remedial work directed by Contract Administrator, shall be without additional compensation.
- F. Fill: Soil materials used to raise existing grades.
- G. NHDOT: New Hampshire Department of Transportation.
- H. Standard Specifications: State of New Hampshire Department of Transportation Standard Specifications for Roads and Bridges, Latest Edition.
- I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 2 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D 1586.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- K. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement.
- L. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below pavement subbase course, base course, or topsoil materials.
- M. Unsuitable Soil: Soil materials determined by the Contract Administrator that are not suitable to support the new construction and not otherwise suitable to be reused on the project.
- N. Utilities: On-site underground pipes, conduits, ducts, and cables.

1.4 ACTION SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Product Data: For each type of the following manufactured products required:
1. Geotextiles.
 2. Warning tapes.
- C. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
1. Classification according to ASTM D 2487.

2. Laboratory compaction curve according to ASTM D 1557.
3. Gradation according to ASTM C 136.

D. Field Quality Control Tests.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Qualification Data: For qualified testing agency.

1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

1.7 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Contract Administrator and authorities having jurisdiction.
 2. Provide alternate routes around closed or obstructed traffic ways if required by Contract Administrator or authorities having jurisdiction.
- B. Utility Locator Service: Notify "Dig Safe System" for area where Project is located before beginning earth-moving operations.
- C. Do not commence earth-moving operations until temporary erosion- and sedimentation-control measures are in place.
- D. The following practices are prohibited within protection zones:
 1. Storage of construction materials, debris, or excavated material.
 2. Parking vehicles or equipment.
 3. Erection of sheds or structures.
 4. Impoundment of water.
 5. Excavation or other digging unless otherwise indicated.
 6. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- E. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 6 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material and Structural Fill: NHDOT Standard Specifications Section 304, Table 304.1, Item 304.2, except with 100-percent passing the 3-inch sieve.
- E. Base Course: NHDOT Standard Specifications Section 304, Table 304.1, Item 304.3.
- F. Aggregate Surface Course: NHDOT Standard Specifications Section 304, Table 304.1, Item 304.32.
- G. Sand: Shall be sand of hard durable particles free from vegetable matter, lumps, or balls of clay and other deleterious substances conforming to the following gradation.

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
3/8 inch	100
No. 200	*0-12

* Fraction passing the No. 4 Sieve

- H. Wetland Soil: Composed of compost, sand, and fine soils with 15 percent minimum organic matter, greater than 15 percent silt, and a hydraulic conductivity of 0.1 to 0.01 ft/day.
- I. Crushed Stone: Shall be rock of uniform quality and shall consist of clear angular fragments of quarried rock, free from soft disintegrated pieces or the objectionable matter conforming to the following gradation.

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
1 inch	100
3/4 inch	90-100
3/8 inch	20-50
No. 4	0-10

2.2 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
1. Survivability:
 - a. Class 2; AASHTO M 288.
 - b. As follows:
 - 1) Grab Tensile Strength: 157 lbf; ASTM D 4632.
 - 2) Sewn Seam Strength: 142 lbf; ASTM D 4632.
 - 3) Tear Strength: 56 lbf; ASTM D 4533.
 - 4) Puncture Strength: 56 lbf; ASTM D 4833.
 2. Apparent Opening Size: No. 60 or No. 70 sieve; ASTM D 4751.
 3. Permittivity: 0.2 per second, minimum; ASTM D 4491.
 4. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
1. Survivability:
 - a. Class 2; AASHTO M 288.
 - b. As follows:
 - 1) Grab Tensile Strength: 247 lbf; ASTM D 4632.
 - 2) Sewn Seam Strength: 222 lbf; ASTM D 4632.
 - 3) Tear Strength: 90 lbf; ASTM D 4533.
 - 4) Puncture Strength: 90 lbf; ASTM D 4833.
 - c. Apparent Opening Size: No. 60 or No. 70 sieve; ASTM D 4751.
 - d. Permittivity: 0.02 per second, minimum; ASTM D 4491.
 - e. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.3 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems and storm drainage systems.

- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems and storm drainage systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding the Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- C. Provide dewatering systems to keep subgrades dry and convey groundwater away from excavations.
- D. Complete dewatering in compliance with state and federal codes and requirements.
- E. When necessary, provide and operate a dewatering system to permit excavation, construction of piers and placement of fill materials on dry subgrades, maintain water level at or below the excavated subgrade.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with soil materials as directed by the Contract Administrator.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavation for Boardwalk Piers: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the clearances indicated on the drawings.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of bedding material and pipe. Remove projecting stones and sharp objects along trench subgrade.

3.8 SUBGRADE INSPECTION

- A. Notify the Contract Administrator when excavations have reached required subgrade and permit inspection of subgrades by the Contract Administrator or an authorized representative.
- B. If Contract Administrator determines that unsuitable soil is present, continue excavation and replace with material as directed.

- C. Proof-roll subgrade below pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the Contract Administrator, and replace with material as directed.
- D. Compact subgrade below piers by hand.
 - 1. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping, as determined by the Contract Administrator, and replace with structural fill as directed.
- E. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the work.
- F. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Contract Administrator, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation as directed by the Contract Administrator.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Coordinate stockpile location with the Contract Administrator. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees. Do not stockpile materials within the protected shoreland.

3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing and inspecting underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring, bracing, and sheeting.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.

- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Backfill voids with satisfactory soil while removing shoring and bracing.
- D. Initial Backfill:
 - 1. Soil Backfill: Place and compact initial backfill of bedding material, free of particles larger than 1 inch in any dimension, to a height of 6 inches over the pipe or conduit.
 - a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- E. Final Backfill:
 - 1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
- F. Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade.

3.13 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within the range of optimum moisture content to allow for compaction of the density specified.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.14 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment and not more than 6 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
 - 1. Under structures, steps, walks, and pavements, compact existing subgrade and each layer of backfill or fill soil material at 95 percent.

2. Under turf or unpaved areas, compact each layer of backfill or fill soil material at 90 percent.
3. For utility trenches, compact each layer of initial and final backfill soil material at 92 percent.

3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
 1. Turf or Unpaved Areas: Plus or minus 1 inch.
 2. Walks: Plus or minus 1/2 inch.
 3. Pavements: Plus or minus 1/2 inch.

3.16 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
 1. Place base course material over subbase course under hot-mix asphalt pavement and walks and place subbase course material on subgrade under concrete pads.
 2. Shape subbase course and base course to required crown elevations and cross-slope grades.
 3. Place subbase course and base course 6 inches or less in compacted thickness in a single layer.
 4. Place subbase course and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 5. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
- C. Pavement Shoulders: Place shoulders course along edges of pavement where indicated. Compact shoulder courses to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.17 STRUCTURAL FILL

- A. Place structural fill on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact structural fill as follows:
 - 1. Place structural fill 6 inches or less in compacted thickness in a single layer.
 - 2. Place structural fill that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 3. Compact each layer of structural fill to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.18 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- B. Coordinate and provide for testing agency to inspect and test each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C. Testing agency must test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests must be performed at the following locations and frequencies:
 - 1. Paved Areas: At each compacted subbase and base course, at least one test for every 2,000 sq. ft. or less of paved area but in no case fewer than three tests.
 - 2. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length but no fewer than two tests.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.19 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Contract Administrator; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

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

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Hot-mix asphalt paving.
 - 2. Traffic signs.

- B. Related Requirements:

- 1. Section 312000 "Earth Moving" for subgrade preparation, fill material, aggregate subbase and base courses, and aggregate pavement shoulders.

1.3 DEFINITIONS

- A. NHDOT: New Hampshire Department of Transportation.
- B. Standard Specifications: State of New Hampshire Department of Transportation Standard Specifications for Roads and Bridges.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
 - a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
 - b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

1.5 ACTION SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section "Submittal Procedures" and the individual sections specifying the work.
- B. Product Data: For each type of product.

1. Include technical data and tested physical and performance properties.
2. Job-Mix Designs: Certification, by NHDOT, of approval of each job mix proposed for the Work.
3. Job-Mix Designs: For each job mix proposed for the Work.

C. Field Quality Control Tests.

1.6 INFORMATIONAL SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Qualification Data: For manufacturer, testing agency and installer.
- C. Material Delivery Tickets: For each load of paving material delivered to the site.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by NHDOT.
- B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.
- C. Comply with material, workmanship and other applicable requirements of NHDOT Standard Specifications.
 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to the section.

1.8 SYSTEM DESCRIPTION

- A. Provide hot-mix asphalt paving according to materials, workmanship and other applicable requirements of NHDOT Standard Specifications. Utilize a NHDOT approved job mix formula.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 1. Tack Coat: Minimum surface temperature of 50 deg F.
 2. Asphalt Binder Course: Minimum surface temperature of 40 deg F and rising at time of placement.
 3. Asphalt Wearing Course: Minimum surface temperature of 50 deg F at time of placement.

PART 2 - PRODUCTS

2.1 AGGREGATES

- A. According to NHDOT Standard Specifications.

2.2 ASPHALT MATERIALS

- A. According to NHDOT Standard Specifications.
- B. Asphalt Binder: PG 64-28.
- C. Tack Coat: ASTM D 977, emulsified asphalt or ASTM D 2397 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

2.3 MIXES

- A. According to NHDOT Standard Specifications.
 - 1. Binder Course: NHDOT binder mix (3/4 inch).
 - 2. Wearing Course: NHDOT wearing mix (1/2 inch).
 - 3. Wearing Course for Walkways: NHDOT wearing mix (3/8 inch).

2.4 TRAFFIC SIGNS

- A. Provide according to NHDOT Standard Specification Section 615 and Manual on Uniform Traffic Control Devices, latest edition.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proof-roll subgrade below pavements to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Limit vehicle speed to 3 mph.
 - 2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 - 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the Contract Administrator, and replace with satisfactory soil as directed.
- C. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade has been proof-rolled and is ready to receive paving.
- B. Tack Coat: Apply uniformly to cut vertical edges of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd..
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.3 HOT-MIX ASPHALT PLACEMENT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
 - 1. Place hot-mix asphalt binder course in single lift.
 - 2. Place hot-mix asphalt wearing course in single lift.
 - 3. Spread mix at a minimum temperature of 250 deg F.
 - 4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
 - 5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 9 feet wide unless infill edge strips of a lesser width are required.
 - 1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
 - 2. Complete a section of asphalt binder course before placing asphalt wearing course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.4 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
 - 1. Clean contact surfaces and apply tack coat to joints.
 - 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
 - 3. Offset transverse joints, in successive courses, a minimum of 24 inches.

4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."
5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.5 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
 1. Average Density: Minimum average of 92 percent of reference maximum theoretical density according to ASTM D 2041, with no tests less than 90 percent or greater than 98 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Binder Course: Plus or minus 1/4 inch.
 2. Wearing Course: Plus 1/4 inch, no minus.
 3. Total thickness of binder and wearing course shall not be less than the thickness indicated on the Drawings.
- B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
1. Binder Course: 1/4 inch.
 2. Wearing Course: 1/8 inch.
 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.7 TRAFFIC SIGNS

- A. Provide traffic signs according to NHDOT Standard Specification Section 615.

3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Thickness: Determine in-place compacted thickness of hot-mix asphalt courses according to ASTM D 3549.
- C. Surface Smoothness: Test finished surface of each hot-mix asphalt course for compliance with smoothness tolerances at locations identified by the Contract Administrator.
- D. In-Place Density: Testing agency will take samples of compacted pavement according to ASTM D 979.
1. Determine reference maximum theoretical density of each mix in accordance with ASTM D 2041 as part of the mix design procedure and indicate on the job mix design submittal.
 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
 - a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than three cores taken.
 - b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
- E. Replace and compact hot-mix asphalt where core tests were taken.
- F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION

SECTION 321313 – SITE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast in place concrete including the following:

1. Pads.
2. Slabs-on-ground.
3. Piers for boardwalk.

1.2 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
1. Review methods and procedures related to concrete work, including but not limited to, the following:
 - a. Concrete mixture design.
 - b. Quality control of concrete materials and concrete construction practices.
 2. Require representatives of each entity directly concerned with site concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency.
 - c. Site concrete Subcontractor.

1.4 ACTION SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Product Data: For each type of product.

- C. Design Mixtures: For each concrete mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- D. Field quality-control tests.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.
- C. Material Certificates: For the following, from manufacturer:
 - 1. Cementitious materials.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Admixtures.
 - 4. Curing compounds.
 - 5. Bonding agent or epoxy adhesive.
 - 6. Joint fillers.
- D. Material Test Reports: For each of the following:
 - 1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

1.6 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- B. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.
 - 1. Personnel conducting field tests must be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete mixtures.

1.8 FIELD CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 - 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. Galvanized Reinforcing Bars: ASTM A767/A767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A615/A615M, Grade 60 deformed bars.
- B. Joint Dowel Bars: ASTM A615/A615M, Grade 60 plain-steel bars; zinc coated (galvanized) after fabrication according to ASTM A767/A767M, Class I coating. Cut bars true to length with ends square and free of burrs.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
- D. Zinc Repair Material: ASTM A780/A780M.

2.4 CONCRETE MATERIALS

- A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:
 - 1. Portland Cement: ASTM C150/C150M, gray portland cement Type I/II.
 - 2. Fly Ash: ASTM C618, Class C or Class F.
 - 3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
 - 4. Blended Hydraulic Cement: ASTM C595/C595M, Type IS, portland blast-furnace slag or Type IP, portland-pozzolan cement.
- B. Normal-Weight Aggregates: ASTM C33/C33M, Class 4S, uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
 - 1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Air-Entraining Admixture: ASTM C260/C260M.
- D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
 - 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 2. Retarding Admixture: ASTM C494/C494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

- E. Water: Potable and complying with ASTM C94/C94M.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.
- F. White, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 2, Class B, dissipating.

2.6 RELATED MATERIALS

- A. Joint Fillers: ASTM D1751, asphalt-saturated cellulosic fiber, ASTM D1752, cork or self-expanding cork in preformed strips.
- B. Bonding Agent: ASTM C1059/C1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy-Bonding Adhesive: ASTM C881/C881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:
 - 1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.7 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - 1. Fly Ash or Pozzolan: 25 percent.

2. Slag Cement: 50 percent.
 3. Combined Fly Ash or Pozzolan, and Slag Cement: 50 percent, with fly ash or pozzolan not exceeding 25 percent.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
1. Air Content, 1-1/2-inch Nominal Maximum Aggregate Size: 5-1/2 percent plus or minus 1 percent.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
1. Use admixtures in concrete as required for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- F. Concrete Mixtures: Normal-weight concrete.
1. Compressive Strength (28 Days): 4000 psi.
 2. Flexural Strength (28 Days): 600 psi.
 3. Maximum W/C Ratio at Point of Placement: 0.45.
 4. Slump Limit: 4 inches, plus or minus 1 inch.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94/C94M. Furnish batch certificates for each batch discharged and used in the Work.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Prepare subgrade and base course below site concrete as specified in Section 312000 "Earth Moving," and as indicated.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 INSTALLATION OF STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Zinc-Coated Reinforcement: Use galvanized-steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.

3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
- B. Construction Joints: Set construction joints at locations where placement operations are stopped for more than one-half hour.
 - 1. Do not continue steel reinforcement across construction joints unless otherwise indicated.
 - 2. Doweled Joints: Install dowel bars and support assemblies at construction joints. Lubricate entire length of dowels to prevent concrete bonding to dowels.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete structures and other fixed objects, and where indicated.
 - 1. Extend joint fillers full width and depth of joint.
 - 2. Terminate joint filler 1/2 inch below finished surface to allow for installation of joint sealant.
 - 3. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.

4. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
- E. Edging: After initial floating, tool edges where indicated with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
- B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten base to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- E. Deposit and spread concrete in a continuous operation between construction joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- F. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.
- G. Screed surface with a straightedge and strike off.
- H. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations.

3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, to provide a uniform, fine-line texture.

3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these as follows:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.9 TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-feet-long; unleveled straightedge not to exceed 1/2 inch.
4. Lateral Alignment and Spacing of Dowels: 1 inch.
5. Vertical Alignment of Dowels: 1/4 inch.
6. Alignment of Dowel-Bar End Relative to Line Perpendicular to Edge: 1/4 inch per 12 inches of dowel.
7. Joint Spacing: 3 inches.
8. Contraction Joint Depth: Plus 1/4 inch, no minus.
9. Joint Width: Plus 1/8 inch, no minus.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C172/C172M will be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C143/C143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C31/C31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C39/C39M; test one specimen at seven days and two specimens at 28 days.
 - a. A compressive-strength test to be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

- D. Test results to be reported in writing to Contract Administrator, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests to contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Contract Administrator but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency will make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Contract Administrator.
- G. Concrete will be considered defective if it does not pass tests and inspections.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- I. Prepare test and inspection reports.

3.11 REPAIR AND PROTECTION

- A. Remove and replace concrete that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Contract Administrator.
- B. Drill test cores, where directed by Contract Administrator, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory concrete areas with portland cement concrete bonded with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from concrete for at least 14 days after placement. When construction traffic is permitted, maintain concrete as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete free of stains, discoloration, dirt, and other foreign material. Sweep concrete not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 329115 - SOIL PREPARATION (PERFORMANCE SPECIFICATION)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes planting soils specified according to performance requirements of the mixes.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for topsoil stripping and stockpiling.
 - 2. Section 329200 "Turf and Grasses" for turf (lawn) and meadow planting.

1.3 DEFINITIONS

- A. AAPFCO: Association of American Plant Food Control Officials.
- B. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- C. CEC: Cation exchange capacity.
- D. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- E. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.
- F. Imported Soil: Soil that is transported to Project site for use.
- G. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.
- H. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- I. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- J. SSSA: Soil Science Society of America.

- K. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- L. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- M. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- N. USCC: U.S. Composting Council.

1.4 ACTION SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section "Submittal Procedures" and the individual sections specifying the work.
- B. Product Data: For each type of product.
 - 1. Include recommendations for application and use.
 - 2. Include test data substantiating that products comply with requirements.
 - 3. Include sieve analyses for aggregate materials.
 - 4. Material Certificates: For each type of imported soil and soil amendment and fertilizer before delivery to the site, according to the following:
 - a. Manufacturer's qualified testing agency's certified analysis of standard products.
 - b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SU1P #25.
 - c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals shall comply with the requirements of the Section 013300 "Submittal Procedures" and the individual sections specifying the work.
- B. Qualification Data: For each testing agency.
- C. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.
 - 1. Multiple Laboratories: At Contractor's option, work may be divided among qualified testing laboratories specializing in physical testing, chemical testing, and fertility testing.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on imported soil and stripped/stockpiled on-site soils.
- B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
 - 1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

1.8 SOIL-SAMPLING REQUIREMENTS

- A. Sample Collection and Labeling: Obtain and label samples in presence of Contract Administrator under the direction of the testing agency.
 - 1. Number and Location of Samples: Minimum of three representative soil samples from varied locations for each soil to be used or amended for landscaping purposes.
 - 2. Procedures and Depth of Samples: According to USDA-NRCS's "Field Book for Describing and Sampling Soils."
 - 3. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.9 TESTING REQUIREMENTS

- A. General: Perform tests on soil samples according to requirements in this article.
- B. Physical Testing:
 - 1. Soil Texture: Soil-particle, size-distribution analysis by the following method according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
 - a. Hydrometer Method: Report percentages of sand, silt, and clay.
- C. Fertility Testing: Soil fertility analysis according to standard laboratory protocol of SSSA NAPT NEC-67, including the following:
 - 1. Percentage of organic matter.
 - 2. CEC, calcium percent of CEC, and magnesium percent of CEC.
 - 3. Soil reaction (acidity/alkalinity pH value).
 - 4. Buffered acidity or alkalinity.
 - 5. Nitrogen ppm.
 - 6. Phosphorous ppm.
 - 7. Potassium ppm.
 - 8. Manganese ppm.
 - 9. Manganese-availability ppm.
 - 10. Zinc ppm.
 - 11. Zinc availability ppm.

12. Copper ppm.
 13. Sodium ppm and sodium absorption ratio.
 14. Soluble-salts ppm.
 15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
 16. Other deleterious materials, including their characteristics and content of each.
- D. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3-Chemical Methods."
- E. Recommendations: Based on the test results, state recommendations for organic soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable turf and meadow indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil.
 2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inch depth of soil.
- 1.10 DELIVERY, STORAGE, AND HANDLING
- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.
- B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 3. Do not move or handle materials when they are wet or frozen.
 4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 - PRODUCTS

2.1 PLANTING SOILS SPECIFIED ACCORDING TO PERFORMANCE REQUIREMENTS

- A. Planting-Soil Type: Existing on-site surface soil or imported, naturally formed soil from off-site sources and consisting of sandy loam or loam soil according to USDA textures; and modified to produce viable planting soil. Amend soil with materials specified in other articles of this Section to become planting soil complying with the following requirements:
1. Source: Existing on-site surface soil from areas indicated to be stripped.

2. Source: Imported, unamended soil from sources that are naturally well-drained sites where topsoil occurs at least 4 inches deep, not from bogs, or marshes; and that do not contain undesirable organisms; disease-causing plant pathogens; or obnoxious weeds and invasive plants including, but not limited to, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, ground ivy, perennial sorrel, and brome grass.
3. Additional Properties of Existing and Imported Soil before Amending: Minimum of 6 percent organic-matter content, friable, and with sufficient structure to give good tilth and aeration. Clean soil of the following:
 - a. Unacceptable Materials: Concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
 - b. Unsuitable Materials: Stones, roots, plants, sod, clay lumps, and pockets of coarse sand that exceed a combined maximum of 8 percent by dry weight of the imported soil.
 - c. Large Materials: Stones, clods, roots, clay lumps, and pockets of coarse sand exceeding 2 inches in any dimension.
4. Percentage of Organic Matter: Minimum 10 percent by volume.
5. Soil Reaction: pH of 6 to 7.
6. CEC of Total Soil: Minimum 12 meq/100 mL at pH of 7.0.
7. Soluble-Salt Content: Maximum 8 dS/m measured by electrical conductivity.

2.2 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
 1. Class: T, with a minimum of 99 percent passing through a No. 8 sieve and a minimum of 75 percent passing through a No. 60 sieve.
 2. Form: Provide lime in form of ground dolomitic limestone.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 sieve.
- E. Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to ASTM C 33/C 33M.

2.3 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
 - 1. Organic-Matter Content: 50 to 60 percent of dry weight.
- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture with 100 percent passing through a 1/2-inch sieve, a pH of 3.4 to 4.8, and a soluble-salt content measured by electrical conductivity of maximum 5 dS/m.
- C. Wood Derivatives: Shredded and composted, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture and free of chips, stones, sticks, soil, or toxic materials.
- D. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

2.4 FERTILIZERS

- A. Organic Fertilizer:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified testing agency.
 - a. Nitrogen: Blood meal, soybean meal or fish meal.
 - b. Phosphorus: Rock phosphate or bone meal.
 - c. Potassium: Sul-Po-Mag or unleached wood ashes.

PART 3 - EXECUTION

3.1 GENERAL

- A. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.
- B. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 6 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

- C. Mixing: Spread unamended soil to total depth of 6 inches, but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
 - 1. Amendments: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
 - a. Mix lime and sulfur with dry soil before mixing fertilizer.
 - b. Mix fertilizer with planting soil no more than seven days before planting.
- D. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.3 PROTECTION

- A. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Vehicle traffic.
 - 4. Foot traffic.
 - 5. Erection of sheds or structures.
 - 6. Impoundment of water.
 - 7. Excavation or other digging unless otherwise indicated.
- B. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Contract Administrator and replace contaminated planting soil with new planting soil.

3.4 CLEANING

- A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.

END OF SECTION

SECTION 329200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Seeding.
2. Hydroseeding.
3. Turf and meadow.
4. Turf renovation.
5. Erosion-control material(s).

- B. Related Requirements:

1. Section 329115 "Soil Preparation (Performance Specification)" for procuring and testing planting soils.

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329115 "Soil Preparation (Performance Specification)" and drawing designations for planting soils.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 INFORMATIONAL SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Qualification Data: For landscape Installer.
- C. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
- D. Product Certificates: For fertilizers, from manufacturer.
- E. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.5 CLOSEOUT SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf and meadows during a calendar year. Submit before expiration of required maintenance periods.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf and meadow establishment.
 - 1. Experience: Five years' experience in turf installation.
 - 2. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 3. Personnel Certifications: Installer's field supervisor shall have certification in the following categories from the Professional Landcare Network:
 - a. Landscape Industry Certified Technician - Exterior.
 - 4. Pesticide Applicator: State licensed, commercial.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.8 FIELD CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
1. Spring Planting: March 1 to May 30.
 2. Fall Planting: August 15 to October 31.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. The use of seeds treated with neonicotinoids or other insecticides is prohibited.
- C. Turf Seed Mix:
1. Quality: State-certified seed of grass species as listed below for solar exposure.
 2. Sun and Partial Shade: Proportioned by weight as follows:
 - a. 50 percent Kentucky bluegrass (*Poa pratensis*).
 - b. 30 percent chewings red fescue (*Festuca rubra* variety).
 - c. 10 percent perennial ryegrass (*Lolium perenne*).
 - d. 10 percent redtop (*Agrostis alba*).
- D. Meadow Seed Mix: Basis-of-Design product: Ernst Seed Company Mix #ERNMX-123 or seed of species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
1. 35% Big Bluestem, 'Prairie View'-IN Ecotype (*Andropogon gerardii*, 'Prairie View'-IN Ecotype)
 2. 21% Virginia Wildrye, PA Ecotype (*Elymus virginicus*, PA Ecotype)
 3. 18% Switchgrass, 'Shawnee' (*Panicum virgatum*, 'Shawnee')

4. 10% Coastal Panicgrass, 'Atlantic'-VA Ecotype (*Panicum amarum*, 'Atlantic'-VA Ecotype)
5. 5% Partridge Pea, PA Ecotype (*Chamaecrista fasciculata* (Cassia f.), PA Ecotype)
6. 3% Blackeyed Susan, Coastal Plain NC Ecotype (*Rudbeckia hirta*, Coastal Plain NC Ecotype)
7. 3% Indiangrass, PA Ecotype (*Sorghastrum nutans*, PA Ecotype)
8. 2% Oxeye Sunflower, PA Ecotype (*Heliopsis helianthoides*, PA Ecotype)
9. 1.5% Showy Ticktrefoil, PA Ecotype (*Desmodium canadense*, PA Ecotype)
10. 1% Plains Coreopsis (*Coreopsis tinctoria*)
11. 0.4% Panicleleaf Ticktrefoil, PA Ecotype (*Desmodium paniculatum*, PA Ecotype)
12. 0.1% Common Milkweed, PA Ecotype (*Asclepias syriaca*, PA Ecotype)

E. Seed Carrier: Inert material, sharp clean sand or perlite.

2.2 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.3 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.
- C. Muck Peat Mulch: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.
- D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 1. Organic Matter Content: 50 to 60 percent of dry weight.
 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

- E. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- F. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

2.4 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
 - 1. The use of neonicotinoids is prohibited.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.5 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.
- B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Contract Administrator and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329115 "Soil Preparation (Performance Specification)."
- B. Placing Planting Soil: Place planting soil over exposed subgrade.
- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- D. Before planting, obtain Contract Administrator's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

- A. Prepare area as specified in "Turf Area Preparation" Article.
- B. For erosion-control blanket or mesh, install as indicated, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
 - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

- B. Sow seed at a total rate of 3 to 4 lb/1000 sq. ft.
- C. Rake seed lightly into top 1/4 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with erosion-control blankets where indicated on Drawings; install and anchor according to manufacturer's written instructions.
- E. Protect seeded areas with slopes not exceeding 1:4 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
 - 1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
- F. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.6 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, commercial fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
 - 2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.7 TURF RENOVATION

- A. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 - 1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
 - 2. Install new planting soil as required.
- B. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
- C. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- D. Mow, dethatch, core aerate, and rake existing turf.
- E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

- F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
- H. Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
 - 1. Soil Amendment(s): According to requirements of Section 329115 "Soil Preparation (Performance Specification)."
 - 2. Initial Fertilizer: Commercial fertilizer applied according to manufacturer's recommendations.
- I. Apply seed and protect with straw mulch as required for new turf.
- J. Water newly planted areas and keep moist until new turf is established.

3.8 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Provide water and equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 - 1. Mow Kentucky bluegrass, ryegrass, and chewings red fescue to a height of 1-1/2 to 2 inches.

- D. Turf Postfertilization: Apply commercial fertilizer after initial mowing and when grass is dry.
 - 1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.9 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Contract Administrator:
 - 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.10 MEADOW

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
 - 1. Before sowing, mix seed with seed carrier at a ratio of not less than three parts seed carrier to one part seed.
 - 2. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 3. Do not use wet seed or seed that is moldy or otherwise damaged.
- B. Brush seed into top 1/16 inch of soil, roll lightly, and water with fine spray.
- C. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.
- D. Water newly planted areas and keep moist until meadow is established.

3.11 MEADOW MAINTENANCE

- A. Maintain and establish meadow by watering, weeding, mowing, trimming, replanting, and performing other operations as required to establish a healthy, viable meadow. Roll, regrade, and replant bare or eroded areas and remulch. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and meadow damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep meadow and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

- B. Watering: Provide water and watering equipment to convey water from sources and to keep meadow uniformly moist.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water meadow with fine spray at a minimum rate of 1/2 inch per week for eight weeks after planting unless rainfall precipitation is adequate.

3.12 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Contract Administrator before each application is performed.
- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.13 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

3.14 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
 - 1. Seeded Turf: 60 days from date of Substantial Completion.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
- B. Meadow Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Meadow Maintenance" Article. Begin maintenance

immediately after each area is planted and continue until acceptable meadow is established, but for not less than maintenance period below.

1. Maintenance Period: 60 days from date of Substantial Completion.

END OF SECTION

SECTION 334200 - STORMWATER CONVEYANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Corrugated-steel pipe and fittings.
 - 2. PE pipe and fittings.

1.3 DEFINITIONS

- A. FRP: Fiberglass-reinforced plastic.

1.4 ACTION SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Product Data: For each type of product.

1.5 INFORMATIONAL SUBMITTALS

- A. Submittals shall comply with the requirements of Division 01 Section “Submittal Procedures” and the individual sections specifying the work.
- B. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not store plastic pipe and fittings in direct sunlight.

- B. Protect pipe, pipe fittings, and seals from dirt and damage.

PART 2 - PRODUCTS

2.1 CORRUGATED-STEEL PIPE AND FITTINGS

- A. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. American Piping Products.
 - 2. Specialty Pipe & Tube.
 - 3. Steel Mart, Inc.
 - 4. Contech Engineered Solutions, LLC.
- B. Source Limitations: Obtain corrugated-steel pipe and fittings from single manufacturer.
- C. Corrugated-Steel Pipe and Fittings: ASTM A760/A760M, Type I with fittings of similar form and construction as pipe.
 - 1. Standard-Joint Bands: Corrugated steel.
 - 2. Coating: Zinc.

2.2 CORRUGATED-PE PIPE AND FITTINGS

- A. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Emco Industrial Plastics.
 - 2. Industrial Specialties Mfg, Inc.
 - 3. Advanced Drainage Systems, Inc.
- B. Source Limitations: Obtain corrugated-PE pipe and fittings from single manufacturer.
- C. Corrugated-PE Drainage Pipe and Fittings **NPS 3 to NPS 10**: AASHTO M 252, Type S, with smooth waterway for coupling joints.
- D. Corrugated-PE Pipe and Fittings **NPS 12 to NPS 60**: AASHTO M 294, Type S, with smooth waterway for coupling joints.
- E. Corrugated-PE Couplings: Silt-tight PE Sleeve with ASTM D1056, Type 2, Class A, Grade 2 gasket material that mates with pipe, or soil-tight coupling, AASHTO M 294, corrugated, matching pipe and fittings.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
- C. Install gravity-flow, nonpressure drainage piping in accordance with the following:
 - 1. Install piping pitched down in direction of flow.
 - 2. Install piping as indicated on the drawings.
 - 3. Install corrugated-steel piping in accordance with ASTM A798/A798M.
 - 4. Install PE corrugated sewer piping in accordance with ASTM D2321.

3.3 PIPE JOINT CONSTRUCTION

- A. Join gravity-flow, nonpressure drainage piping in accordance with the following:
 - 1. Join corrugated-steel sewer piping in accordance with ASTM A798/A798M.
 - 2. Join corrugated-PE piping in accordance with ASTM D3212 for push-on joints.

3.4 IDENTIFICATION

- A. Materials and their installation are specified in Section 312000 "Earth Moving." Arrange for installation of green warning tape directly over piping.
 - 1. Use warning tape or detectable warning tape over ferrous piping.
 - 2. Use detectable warning tape over nonferrous piping and over edges of underground structures.

3.5 FIELD QUALITY CONTROL

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

1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible.
 - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
 - c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
 - d. Infiltration: Water leakage into piping.
 - e. Exfiltration: Water leakage from or around piping.
3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Reinspect and repeat procedure until results are satisfactory.

3.6 CLEANING

- A. Clean interior of piping of dirt and superfluous materials.

END OF SECTION

