

- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

*C. Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

*D. Reduction in Payment*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
  - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - c. the Contractor's performance or furnishing of the Work is inconsistent with funding Agency requirements;
  - d. there are other items entitling Owner to a set-off against the amount recommended; or
  - e. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.
3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Agency, Contractor, and Engineer shall make a prefinal inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

#### 14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

#### 14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner, Agency, and Contractor and will notify Contractor in writing of all

particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 14.07 Final Payment

##### A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
  - b. consent of the surety, if any, to final payment;
  - c. a list of all Claims against Owner that Contractor believes are unsettled; and
  - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

##### B. Engineer's Review of Application and Acceptance

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

##### C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

#### 14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.0 1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims. The remaining balance of any sum included in the final Application for Payment but held by OWNER for Work not fully completed and accepted will become due when the Work is fully completed and accepted.

#### 14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
  2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

### ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

#### 15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

#### 15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
  2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
  3. Contractor's disregard of the authority of Engineer; or
  4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),
  2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and
  3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

#### 15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
  2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
  3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
  4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

#### 15.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

### ARTICLE 16 – DISPUTE RESOLUTION

#### 16.01 Methods and Procedures

- A. Owner and Contractor may mutually request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
  - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or
  - 2. agrees with the other party to submit the Claim to another dispute resolution process, or
  - 3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

### ARTICLE 17 – MISCELLANEOUS

#### 17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
  - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or
  - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

#### 17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

#### 17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

#### 17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

#### 17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located. 17.06

#### *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

### **ARTICLE 18 – FEDERAL REQUIREMENTS**

#### 18.01 *Agency Not a Party*

- A. This Contract is expected to be funded in part with funds provided by Agency. Neither Agency, nor any of its departments, entities, or employees is a party to this Contract.

#### 18.02 *Contract Approval*

- A. Owner and Contractor will furnish Owner's attorney such evidence as required so that Owner's attorney can complete and execute the following "Certificate of Owner's Attorney" (Exhibit GC-A) before Owner submits the executed Contract Documents to Agency for approval.

*B. Concurrence by Agency in the award of the Contract is required before the Contract is effective. 18.03 *Conflict of Interest**

- A. Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate or financial affiliation with the supplier or manufacturer.
- B. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee,

officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

#### 18.04 *Gratuities*

- A. If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.
- B. In the event this Contract is terminated as provided in paragraph 18.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

#### 18.05 *Audit and Access to Records*

- A. For all negotiated contracts and negotiated modifications (except those of \$10,000 or less), Owner, Agency, the Comptroller General, or any of their duly authorized representatives, shall have access to any books, documents, papers, and records of the Contractor, which are pertinent to the Contract, for the purpose of making audits, examinations, excerpts and transcriptions. Contractor shall maintain all required records for three years after final payment is made and all other pending matters are closed.

#### 18.06 *Small, Minority and Women's Businesses*

- A. If Contractor intends to let any subcontracts for a portion of the work, Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall consist of: (1) including qualified small, minority and women's businesses on solicitation lists; (2) assuring that small, minority and women's businesses are solicited whenever they are potential sources; (3) dividing total requirements when economically feasible, into small tasks or quantities to permit maximum participation of small, minority, and women's businesses; (4) establishing delivery schedules, where the requirements of the work permit, which will encourage participation by small, minority and women's businesses; (5) using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce; (6) requiring each party to a subcontract to take the affirmative steps of this section; and (7) Contractor is encouraged to procure goods and services from labor surplus area firms.

#### 18.07 *Anti-Kickback*

- A. Contractor shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

#### 18.08 *Clean Air and Pollution Control Acts*

- A. If this Contract exceeds \$100,000, Contractor shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 USC 7401 *et seq.*) and the Federal Water Pollution Control Act as amended (33 USC 1251 *et seq.*). Contractor will report violations to the Agency and the Regional Office of the EPA.

#### 18.09 *State Energy Policy*

- A. Contractor shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan, shall be utilized.

#### 18.10 *Equal Opportunity Requirements*

- A. If this Contract exceeds \$10,000, Contractor shall comply with Executive Order 11246, "Equal Employment Opportunity," as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."
- B. Contractor's compliance with Executive Order 11246 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4 and its efforts to meet the goals established for the geographical area where the Contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting Contractor's goals shall be a violation of the Contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.
- C. Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the Contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the Contract is to be performed.

#### 18.11 *Restrictions on Lobbying*

- A. Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable Agency regulations. This Law applies to the recipients of contracts and subcontracts that exceed \$100,000 at any tier under a Federal loan that exceeds \$150,000 or a Federal grant that exceeds \$100,000. If applicable, Contractor must complete a certification form on lobbying activities related to a specific Federal loan or grant that is a funding source for this Contract. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member 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 1352. Each tier shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Certifications and disclosures are forwarded from tier to tier up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.

18.12 *Environmental Requirements*

- A. When constructing a project involving trenching and/or other related earth excavations, Contractor shall comply with the following environmental constraints:
1. Wetlands – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.
  2. Floodplains – When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency Floodplain Maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey Maps.
  3. Historic Preservation – Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the State Historic Preservation Officer (SHPO).
  4. Endangered Species – Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

**EXHIBIT GC - A**  
Certificate of Owner's Attorney

I, the undersigned, \_\_\_\_\_, the duly authorized and acting legal representative of \_\_\_\_\_

I have examined the attached Contract(s) and performance and payment bond(s) and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements is adequate and has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with the terms, conditions, and provisions thereof.

Date: \_\_\_\_\_

\_\_\_\_\_





DOCUMENT 00800  
**SUPPLEMENTARY CONDITIONS**



**SUPPLEMENTARY CONDITIONS**

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. 1910-8, 1996 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary conditions will have the meanings indicated in the General Conditions. Additional terms used in these supplementary conditions have the meanings indicated below, which are applicable to both the singular and plural thereof.

SC-2.01 Delivery of Bonds

*N/A*

SC-2.02 Copies of Documents

*Delete paragraph 2.02 in its entirety and insert the following paragraph in its place:*

OWNER shall furnish CONTRACTOR up to three copies of the Contract Documents.  
Additional copies will be furnished upon request at the cost of reproduction.

SC-5.04 CONTRACTOR's Liability Insurance

*Add the following new paragraph immediately after paragraph 5.04.B:*

C. The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under paragraphs 5.04.A.1 and A.2 of the General Conditions:

(a) State:	Statutory
(b) Applicable Federal (e.g., Longshoreman's):	Statutory
(c) Employer's Liability:	<u>\$100,000</u>

2. Contractor's Liability Insurance under paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor:

(a) General Aggregate	<u>\$ 1,000,000</u>
(b) Products - Completed Operations Aggregate	<u>\$ 1,000,000</u>
(c) Personal and Advertising Injury	<u>\$ 1,000,000</u>

- (d) Each Occurrence \$ 1,000,000  
 (Bodily Injury and Property Damage)
- (e) Property Damage liability insurance will provide Explosion, Collapse and Underground coverages where applicable.
- (f) Excess or Umbrella Liability
- (1) General Aggregate \$ 1,000,000
- (2) Each Occurrence \$ 1,000,000

3. Automobile Liability under paragraph 5.04.A.6 of the General Conditions:

- (a) Bodily Injury:
  - Each person \$ 250,000
  - Each Accident \$ 500,000
- (b) Property Damage:
  - Each Accident \$ 250,000
- (c) Combined Single Limit of: \$ 1,000,000

4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

- (a) Bodily Injury:
  - Each Accident \$ 250,000
  - Annual Aggregate \$ 1,000,000
- (b) Property Damage:
  - Each Accident \$ 250,000
  - Annual Aggregate \$ 1,000,000

SC-5.06.A Property Insurance

*Delete Paragraph 5.06.A in its entirety and insert the following in its place:*

A. CONTRACTOR shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. This insurance shall:

1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
2. be written on a Builder's Risk All-risk or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws

and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions.

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER; and
5. allow for partial utilization of the Work by OWNER;
6. include testing and startup; and
7. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. CONTRACTOR shall be responsible for any deductible or self-insured retention.

C. The policies of insurance required to be purchased and maintained by CONTRACTOR in accordance with this paragraph SC 5.06 shall comply with the requirements of paragraph 5.06.C of the General Conditions.

SC-5.06.E                      Property Insurance

*Delete Paragraph 5.06.E in its entirety.*

SC-6.10                      Taxes

*Add the following sentence at the end of 6.10.A:*

The Owner may obtain rebate on taxes paid by the Contractor on certain Products or items: provide administrative assistance and cooperation to the Owner in this regard.

SC-16                      Dispute Resolution

*Add the following new paragraph immediately after paragraph 16.01:*

SC-16.2                      Mediation

A. OWNER and CONTRACTOR agree that they shall submit any and all unsettled Claims or counterclaims, disputes, or other matters in question between them arising out of or relating to the Contract Documents or the breach thereof to mediation prior to either of them initiating against the other a demand for arbitration pursuant to paragraph SC-16.03, unless delay in initiating arbitration would irrevocably prejudice one of the parties. The 30 day time limit within which to file a demand for arbitration as provided in paragraphs SC-16.03.B and 16.03.C shall be

suspended with respect to a dispute submitted to mediation within that time limit and shall remain suspended until 10 days after the termination of the mediation. The mediator of any dispute submitted to mediation under this agreement shall not serve as arbitrator of such dispute unless otherwise agreed.

SC-16                      Dispute Resolution

*Add the following new paragraph immediately after paragraph 16.02:*

SC-16.03                      Arbitration

A. All Claims or counterclaims, disputes, or other matters in question between OWNER and CONTRACTOR arising out of or relating to the Contract Documents or the breach thereof (except for Claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.09) not resolved under the provisions of paragraph SC-16.02 will be decided by binding arbitration in accordance with the American Arbitration Association's Construction Rules then obtaining, subject to the limitations of this paragraph SC-16.03. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. No demand for arbitration of any claim or counterclaim, dispute, or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.09 will be made until the earlier of: (1) the date on which ENGINEER has rendered a written decision, or (2) the 31<sup>st</sup> day after the parties have presented their final evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such Claim or counterclaim, dispute, or other matter will be made later than 30 days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 10.05; and the failure to demand arbitration within said 30 day period will result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned.

C. Notice of the demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the 30 day period specified in paragraph SC-16.03.B, and in all other cases within a reasonable time after the Claim or counterclaim, dispute, or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such Claim or other dispute or matter in question would be barred by the applicable statute of limitations.

D. Except as provided in paragraph SC-16.03.E, no arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder, or in any other manner any other individual or entity (including ENGINEER, and ENGINEER's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this

Contract unless:

1. The inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and
2. Such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings; and
3. The written consent of the other individual or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

E. Notwithstanding paragraph SC-16.03.D, if a claim or counterclaim, dispute, or other matter in question between OWNER and CONTRACTOR involves the Work of a subcontractor, either OWNER or CONTRACTOR may join such Subcontractor as a party to the arbitration between OWNER and CONTRACTOR hereunder. CONTRACTOR shall include in all subcontracts required by paragraph 6.06.G a specific provision whereby the Subcontractor consents to being joined in an arbitration between OWNER and CONTRACTOR involving the Work of such Subcontractor. Nothing in this paragraph SC-16.03.E nor in the provisions of such subcontract consenting to joiner shall create any claim, right, or cause of action in favor of Subcontractor against OWNER, ENGINEER, or ENGINEER's Consultants that does not otherwise exist.

F. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal.

END OF SUPPLEMENTARY CONDITIONS



DOCUMENT 01000  
**GENERAL REQUIREMENTS**



SECTION 01010

SUMMARY OF WORK

PART 1) GENERAL

1.1 SECTION INCLUDES

- A) Contract Description.
- B) Work by Owner.
- C) Owner supplied Products.
- D) Contractor use of site.
- E) Future work.
- F) Work Sequence.
- G) Owner occupancy.
- H) Definitions.

1.2 CONTRACT DESCRIPTION

- A) Contract Type: Agreement - EJCDC.

1.3 WORK BY OWNER

- A) The Owner will award a contract installation of the Project indicated in the Bid Documents
- B) Work under this contract includes all work associated with the Project as indicated on the Contract Drawings.

1.4 CONTRACTOR USE OF SITE

- A) Access to Site: Contractor to have necessary access to site to complete the Work.
- B) Others Access to Site: Contractor to ensure that roads necessary for others ingress/egress to property is left open or alternate access provided. Ensure all construction on or near DOT maintained roads is coordinated with local DOT personnel and is in accordance with local DOT procedures.

- C) Utility Outages and Shutdown: Work that requires interference with other utilities to be coordinated with utility owner.

1.6 OWNER USE

- A) The Owner intends to begin operation of the system by the date indicated in the Bid and Contract Documents.
- B) Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- C) Schedule the Work to accommodate owner operation.

PART 2) PRODUCTS

Not Used.

PART 3) EXECUTION

Not Used.

END OF SECTION

## SECTION 01025

### MEASUREMENT AND PAYMENT

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A Measurement and payment criteria applicable to the Work performed under a unit price payment method.
- B Defect assessment and non-payment for rejected work.

##### 1.2 AUTHORITY

- A Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of this section governs.
- B Take all measurements and compute quantities. The Engineer will verify measurements and quantities.
- C Assist by providing necessary equipment, workers, and survey personnel as required.

##### 1.3 UNIT QUANTITIES SPECIFIED

- A Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer determine payment.
- B If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

##### 1.4 MEASUREMENT OF QUANTITIES

- A Measurement Devices:
  - (1) Weigh Scales: Inspected, tested and certified by the applicable agency within the past year.
  - (2) Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
  - (3) Metering Devices: Inspected, tested and certified by the applicable agency within the past year.
- B Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- C Measurement by Volume: Measured by cubic dimension using mean length, width and

height or thickness.

- D Measurement by Area: Measured by square dimension using mean length and width or radius.
- E Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- F Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

## 1.5 PAYMENT

- A Payment Includes: Full compensation for all required labor, Products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.
- B Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.

## 1.6 DEFECT ASSESSMENT

- A Replace the Work, or portions of the Work, not conforming to specified requirements.
- B If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct one of the following remedies:
  - (1) The defective Work may remain, but the unit sum/price will be adjusted to a new sum/price at the discretion of the Owner.
  - (2) The defective Work will be partially repaired to the instructions of the Engineer, and the unit sum/price will be adjusted to a new sum/price at the discretion of the Owner.
- C The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.
- D The authority of the Engineer and Owner to assess the defect and identify payment adjustment, is final.

## 1.7 NON-PAYMENT FOR REJECTED PRODUCTS

- A Payment will not be made for any of the following:
- (1) Products wasted or disposed of in a manner that is not acceptable.
  - (2) Products determined as unacceptable before or after placement.
  - (3) Products not completely unloaded from the transporting vehicle.
  - (4) Products placed beyond the lines and levels of the required Work.
  - (5) Products remaining on hand after completion of the Work.
  - (6) Loading, hauling, and disposing of rejected Products.

END OF SECTION



## SECTION 01039

### COORDINATION AND MEETINGS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A Coordination and project conditions.
- B Field engineering.
- C Preconstruction meeting.
- D Site mobilization meeting.
- E Progress meetings.
- F Reinstallation meetings.
- G Equipment electrical characteristics and components.
- H Examination.
- I Preparation.
- J Cutting and Patching.
- K Alteration project procedures.

##### 1.2 RELATED SECTIONS

- A Section 01300 - Submittals.
- B Section 01400 - Quality Control.

##### 1.3 COORDINATION AND PROJECT CONDITIONS

- A Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements , with provisions for accommodating items installed later.

- B Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C Coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.
- F After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

#### 1.4 FIELD ENGINEERING

- A Employ a Land Surveyor registered in the State of the Work and acceptable to Engineer.
- B Contractor shall locate and protect survey control and reference points.
- C Control datum for survey is that shown on Drawings.
- D Verify set-backs and easements; confirm drawing dimensions and elevations.
- E Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

#### 1.5 PRECONSTRUCTION MEETING

- A Engineer will schedule a meeting after Notice of Award.
- B Attendance Required: Engineer, and Contractor.
- C Agenda:
  - (1) Execution of Owner-Contractor Agreement.
  - (2) Submission of executed bonds and insurance certificates.
  - (3) Distribution of Contract Documents.
  - (4) Submission of list of Products, schedule of values, and progress schedule.
  - (5) Designation of personnel representing the parties in Contract and the Engineer.
  - (6) Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  - (7) Scheduling.

## 1.6 SITE MOBILIZATION MEETING

- A Engineer will schedule a meeting at the Project site prior to Contractor occupancy.
- B Attendance Required: Engineer, Contractor, Contractor's Superintendent, and major Subcontractors.
- C Agenda:
  - (1) Use of premises by Owner and Contractor.
  - (2) Owner's requirements.
  - (3) Construction facilities and controls provided by Owner.
  - (4) Temporary utilities provided by Owner.
  - (5) Survey and layout.
  - (6) Security and housekeeping procedures.
  - (7) Schedules.
  - (8) Application for payment procedures.
  - (9) Procedures for testing.
  - (10) Procedures for maintaining record documents.
  - (11) Requirements for start-up of equipment.
  - (12) Inspection and acceptance of equipment put into service during construction period.

## 1.7 PROGRESS MEETINGS

- A Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B Engineer will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C Attendance Required: Job superintendent, major Subcontractors and suppliers, Engineer, as appropriate to agenda topics for each meeting.
- D Agenda:
  - (1) Review minutes of previous meetings.
  - (2) Review of Work progress.
  - (3) Field observations, problems, and decisions.
  - (4) Identification of problems which impede planned progress.
  - (5) Review of submittals schedule and status of submittals.
  - (6) Review of off-site fabrication and delivery schedules.
  - (7) Maintenance of progress schedule.
  - (8) Corrective measures to regain projected schedules.
  - (9) Planned progress during succeeding work period.
  - (10) Coordination of projected progress.
  - (11) Maintenance of quality and work standards.
  - (12) Effect of proposed changes on progress schedule and coordination.
  - (13) Other business relating to Work.

## 1.8 REINSTALLATION MEETING

- A When required in individual specification sections, convene a reinstallation meeting at the site prior to commencing work of the section.
- B Require attendance of parties directly affecting, or affected by, work of the specific section.
- C Notify Engineer four days in advance of meeting date.
- D Prepare agenda and preside at meeting:
  - (1) Review conditions of installation, preparation and installation procedures.
  - (2) Review coordination with related work.

## PART 2 PRODUCTS

### 2.1 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A Motors: Refer to Section 15170, NEMA MG1 Type. Specific motor type is specified in individual specification sections.
- B Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to NFPA 70, include lugs for terminal box.
- C Cord and Plug: Provide minimum 6 foot cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

## PART 3 EXECUTION

### 3.1 CUTTING AND PATCHING

- A Employ skilled and experienced installer to perform cutting and patching.
- B Submit written request in advance of cutting or altering elements which affect:
  - (1) Structural integrity of element.
  - (2) Integrity of weather-exposed or moisture-resistant elements.
  - (3) Efficiency, maintenance, or safety of element.
  - (4) Visual qualities of sight exposed elements.
  - (5) Work of Owner or separate contractor.
- C Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
  - (1) Fit the several parts together, to integrate with other Work.
  - (2) Uncover Work to install or correct ill-timed Work.
  - (3) Remove and replace defective and non-conforming Work.
  - (4) Remove samples of installed Work for testing.
  - (5) Provide openings in elements of Work for penetrations of mechanical and electrical Work.

- D Execute work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- E Cut masonry and concrete materials using masonry saw or core drill.
- F Restore Work with new Products in accordance with requirements of Contract Documents.
- G Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- J Identify hazardous substances or conditions exposed during the Work to the Engineer for decision or remedy.

### 3.2 ALTERATION PROJECT PROCEDURES

- A Materials: As specified in Product sections; match existing Products and work for patching and extending work.
- B Employ skilled and experienced installer to perform alteration work.
- C Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- D Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring Products and finishes to original or specified condition.
- E Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- F When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Engineer for review.
- G Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- H Finish surfaces as specified in individual Product sections.

END OF SECTION



SECTION 01090

REFERENCE STANDARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

A Quality assurance.

1.2 RELATED SECTIONS

A Document 00700 - General Conditions

1.3 QUALITY ASSURANCE

A For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B Conform to reference standard by date of issue current on date of Contract Documents.

C Obtain copies of standards when required by the Contract Documents.

D Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.

F Neither the contractual relationship, duties, and responsibilities of the parties in Contract nor those of the Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION



## SECTION 01300

### SUBMITTALS

#### PART 1) GENERAL

##### 4.1 SECTION INCLUDES

- A Submittal procedures.
- B Construction progress schedules.
- C Proposed Products list.
- D Product Data.
- E Shop Drawings.
- F Samples.
- G Design data.
- H Test reports.
- I Certificates.
- J Manufacturer's instructions.
- K Manufacturer's field reports.
- L Erection drawings.

##### 4.2 RELATED SECTIONS

- A Section 01400 - Quality Control: Manufacturers' field services and reports.
- B Section 01700 - Contract Closeout: Contract warranties, bonds, manufacturers' certificates, and closeout submittals.

##### 4.3 REFERENCES

- A AGC (Associated General Contractors of America) publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

#### 4.4 SUBMITTAL PROCEDURES

- A Transmit each submittal with Engineer accepted form.
- B Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- D Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- E Schedule submittals to expedite the Project, and deliver to Engineer.
- F For each submittal for review, allow 15 days excluding delivery time to and from the contractor.
- G Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- H Provide space for Contractor and Engineer review stamps.
- I When revised for resubmission, identify all changes made since previous submission.
- J Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- K Submittals not requested will not be recognized or processed.

#### 4.5 CONSTRUCTION PROGRESS SCHEDULES

- A Submit initial schedule in duplicate within 15 days after date of Owner-Contractor Agreement.
- B Revise and resubmit as required.
- C Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D Submit a horizontal bar chart with separate line for each major portion of Work or operation section of Work, identifying first work day of each week.
- E Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

- F Indicate estimated percentage of completion for each item of Work at each submission.
- G Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.

#### 4.6 PROPOSED PRODUCTS LIST

- A Within 15 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

#### 4.7 PRODUCT DATA

- A Product Data For Review:
  - (1) Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
  - (2) After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B Product Data For Information:
  - (1) Submitted for the Engineer's knowledge as contract administrator or for the Owner.
- C Product Data For Project Close-out:
  - (1) Submitted for the Owner's benefit during and after project completion.
- D Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Engineer.
- E Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- F Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- G After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01700 - CONTRACT CLOSEOUT.

#### 4.8 SHOP DRAWINGS

- A Shop Drawings For Review:
  - (1) Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
  - (2) After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B Shop Drawings For Information:
  - (1) Submitted for the Engineer's knowledge as contract administrator or for the Owner.
- C Shop Drawings For Project Close-out:
  - (1) Submitted for the Owner's benefit during and after project completion.
- D Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
  - (1) Submit the number of opaque reproductions which Contractor requires, plus two copies which will be retained by Engineer.

#### 4.9 SAMPLES

- A Samples For Review:
  - (1) Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
  - (2) After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- B Samples For Information:
  - (1) Submitted for the Engineer's knowledge as contract administrator or for the Owner.
- C Samples For Selection:
  - (1) Submitted to Engineer for aesthetic, color, or finish selection.
  - (2) Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Engineer selection.
  - (3) After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSEOUT.
- D Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- E Include identification on each sample, with full Project information.

- F Submit the number of samples specified in individual specification sections; one of which will be retained by Engineer.
- G Reviewed samples which may be used in the Work are indicated in individual specification sections.
- H Samples will not be used for testing purposes unless specifically stated in the specification section.

#### 4.10 DESIGN DATA

- A Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

#### 4.11 TEST REPORTS

- A Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

#### 4.12 CERTIFICATES

- A When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Engineer, in quantities specified for Product Data.
- B Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

#### 4.13 MANUFACTURER'S INSTRUCTIONS

- A When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to owner in quantities specified for Product Data.
- B Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C Refer to Section 01400 - Quality Control, Manufacturers' Field Services article.

#### 4.14 MANUFACTURER'S FIELD REPORTS

- A Submit reports for the Engineer's benefit as contract administrator or for the Owner.
- B Submit report within 30 days of observation to Engineer for information.
- C Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

#### 4.15 ERECTION DRAWINGS

- A Submit drawings for the Engineer's benefit as contract administrator.
- B Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- C Data indicating inappropriate or unacceptable Work may be subject to action by the Engineer or Owner.

END OF SECTION

SECTION 01400  
QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A Quality assurance - control of installation.
- B Tolerances
- C References and standards.
- D Mock-up.
- E Inspecting and testing laboratory services.
- F Manufacturers' field services.

1.2 RELATED SECTIONS

- A Section 01090 - Reference Standards.
- B Section 01300 - Submittals: Submission of manufacturers' instructions and certificates.
- C Section 01410 - Testing Services.
- D Section 01600 - Material and Equipment: Requirements for material and product quality.
- E Section 01650 - Starting of Systems.

1.3 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B Comply with manufacturers' instructions, including each step in sequence.
- C Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E Perform Work by persons qualified to produce required and specified quality.

- F Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

#### 1.4 TOLERANCES

- A Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
- B Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C Adjust Products to appropriate dimensions; position before securing Products in place.

#### 1.5 REFERENCES AND STANDARDS

- A For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C Obtain copies of standards where required by product specification sections.
- D Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

#### 1.6 MOCK-UP

- A Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- B Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C Accepted mock-ups shall be a comparison standard for the remaining Work.
- D Where mock-up has been accepted by Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

#### 1.7 TESTING SERVICES

- A Owner may appoint, employ, and pay for specified services of an independent firm to perform testing.

- B The independent firm will perform tests and other services specified in individual specification sections and as required by the Engineer.
- C Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the Engineer or the Owner.
- D Reports will be submitted by the independent firm to the Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- E Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
  - (1) Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services.
  - (2) Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F Testing does not relieve Contractor to perform Work to contract requirements.
- G Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for re-testing will be charged to the Contractor by deducting testing charges from the Contract Sum/Price.

#### 1.8 INSPECTION SERVICES

- A Owner may appoint, employ, and pay for specified services of an independent firm to perform inspection.
- B The independent firm will perform inspections and other services specified in individual specification sections and as required by the Engineer.
- C Inspecting may occur on or off the project site. Perform off-site inspecting as required by the Engineer or the Owner.
- D Reports will be submitted by the independent firm to the Engineer and Contractor, in duplicate, indicating inspection observations and indicating compliance or non-compliance with Contract Documents.
- E Cooperate with independent firm; furnish safe access and assistance by incidental labor as requested.
  - (1) Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services.
- F Inspecting does not relieve Contractor to perform Work to contract requirements.

## 1.9 MANUFACTURERS' FIELD SERVICES

- A When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment and test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B Submit qualifications of observer to Engineer 30 days in advance of required observations.
- C Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D Refer to Section 01300 - SUBMITTALS, MANUFACTURERS' FIELD REPORTS article.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C Examine and verify specific conditions described in individual specification sections.
- D Verify that utility services are available, of the correct characteristics, and in the correct locations.

### 3.2 PREPARATION

- A Clean substrate surfaces prior to applying next material or substance.
- B Seal cracks or openings of substrate prior to applying next material or substance.
- C Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

## SECTION 01600

### MATERIAL AND EQUIPMENT

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A Products.
- B Transportation and handling.
- C Storage and protection.
- D Product options.
- E Substitutions.

##### 1.2 RELATED SECTIONS

- A Document 00105 - Instructions to Bidders: Product options and substitution procedures.
- B Section 01400 - Quality Control: Product quality monitoring.

##### 1.3 PRODUCTS

- A Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B Provide interchangeable components of the same manufacture for components being replaced.

##### 1.4 TRANSPORTATION AND HANDLING

- A Transport and handle Products in accordance with manufacturer's instructions.
- B Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- C Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

##### 1.5 STORAGE AND PROTECTION

- A Store and protect Products in accordance with manufacturers' instructions.
- B Store with seals and labels intact and legible.
- C Store sensitive Products in weather tight, climate controlled, enclosures in an

environment favorable to Product.

- D For exterior storage of fabricated Products, place on sloped supports above ground.
- E Provide off-site storage and protection when site does not permit on-site storage or protection.
- F Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- G Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- I Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

## 1.6 PRODUCT OPTIONS

- A Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

## 1.7 SUBSTITUTIONS

- A Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.
- B Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D A request constitutes a representation that the Bidder:
  - (1) Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
  - (2) Will provide the same warranty for the Substitution as for the specified Product.
  - (3) Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
  - (4) Waives claims for additional costs or time extension which may subsequently

become apparent.

- (5) Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.

E Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

F Substitution Submittal Procedure:

- (1) Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
- (2) Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
- (3) The Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION



## SECTION 01650

### STARTING OF SYSTEMS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A Starting systems.
- B Demonstration and instructions.
- C Testing, adjusting, and balancing.

##### 1.2 RELATED SECTIONS

- A Section 01400 - Quality Control: Manufacturers field reports.
- B Section 01700 - Contract Closeout: System operation and maintenance data and extra materials.

##### 1.3 STARTING SYSTEMS

- A Coordinate schedule for start-up of various equipment and systems.
- B Notify Engineer seven days prior to start-up of each item.
- C Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E Verify that wiring and support components for equipment are complete and tested.
- F Execute start-up under supervision of applicable manufacturer's representative [in accordance with manufacturers' instructions.
- G When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H Submit a written report in accordance with Section 01300 that equipment or system has been properly installed and is functioning correctly.

#### 1.4 DEMONSTRATION AND INSTRUCTIONS

- A Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of Substantial Completion.
- B For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- D Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time designated location.
- E Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- F The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

#### 1.5 TESTING, ADJUSTING, AND BALANCING

- A Owner may appoint, employ, and pay for services of an independent firm to perform testing, adjusting, and balancing.
- B Reports will be submitted by the independent firm to the Engineer indicating observations and results of tests and indicating compliance or non-compliance with the requirements of the Contract Documents.

#### PART 2 PRODUCTS

Not Used.

END OF SECTION

## SECTION 01700

### CONTRACT CLOSEOUT

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A Closeout procedures.
- B Final cleaning.
- C Adjusting.
- D Project record documents.
- E Operation and maintenance data.
- F Spare parts and maintenance Products.
- G Warranties and bonds.
- H Maintenance service.

##### 1.2 RELATED SECTIONS

- A Section 01650 - Starting of Systems: System start-up, testing, adjusting, and balancing.
- B Section 01700 - Contract Closeout

##### 1.3 CLOSEOUT PROCEDURES

- A Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.
- B Provide submittals to Engineer Owner that are required by governing or other authorities.
- C Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

##### 1.4 FINAL CLEANING

- A Execute final cleaning prior to final project assessment.
- B Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances and polish transparent and glossy surfaces.

- C Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D Clean filters of operating equipment.
- E Clean debris from roofs, gutters, downspouts, and drainage systems.
- F Clean site; sweep paved areas, rake clean landscaped surfaces.
- G Remove waste and surplus materials, rubbish, and construction facilities from the site.

#### 1.5 ADJUSTING

- A Adjust operating Products and equipment to ensure smooth and unhindered operation.

#### 1.6 PROJECT RECORD DOCUMENTS

- A Maintain on site one set of the following record documents; record actual revisions to the Work:
  - (1) Drawings.
  - (2) Specifications.
  - (3) Addenda.
  - (4) Change Orders and other modifications to the Contract.
  - (5) Reviewed Shop Drawings, Product Data, and Samples.
  - (6) Manufacturer's instruction for assembly, installation, and adjusting.
- B Ensure entries are complete and accurate, enabling future reference by Owner.
- C Store record documents separate from documents used for construction.
- D Record information concurrent with construction progress.
- E Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
  - (1) Manufacturer's name and product model and number.
  - (2) Product substitutions or alternates utilized.
  - (3) Changes made by Addenda and modifications.
- F Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
  - (1) Measured depths of foundations in relation to finish floor datum.
  - (2) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - (3) Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  - (4) Field changes of dimension and detail.
  - (5) Details not on original Contract drawings.
- G Submit documents to Engineer with claim for final Application for Payment.

## 1.7 OPERATION AND MAINTENANCE DATA

- A Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.
- B Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project , and subject matter of binder when multiple binders are required.
- C Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, typed on pound white paper, in three parts as follows:
  - (1) Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
  - (2) Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
    - (a) Significant design criteria.
    - (b) List of equipment.
    - (c) Parts list for each component.
    - (d) Operating instructions.
    - (e) Maintenance instructions for equipment and systems.
    - (f) Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
  - (3) Part 3: Project documents and certificates, including the following:
    - (a) Shop drawings and product data.
    - (b) Air and water balance reports.
    - (c) Certificates.
    - (d) Originals of warranties and bonds.
- E Submit 1 draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
- F Submit two sets of revised final volumes, within 10 days after final inspection.

## 1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

- A Provide spare parts, maintenance, and extra Products in quantities specified in individual specification sections.
- B Deliver to Engineer; obtain receipt prior to final payment.

## 1.9 WARRANTIES AND BONDS

- A Provide duplicate notarized copies.
- B Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
- D Submit prior to final Application for Payment.
- E For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

## 1.10 MAINTENANCE SERVICE

- A Furnish service and maintenance of components indicated in specification sections for one year from date of Substantial Completion.
- B Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

Not Used.

END OF SECTION

DOCUMENT 02000

**SPECIFICATIONS**



**SECTION 02110**  
**SITE CLEARING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Removal of surface debris.
- B. Removal of paving, curbs, and structures
- C. Removal of trees, shrubs, and other plant life.
- D. Removal of underground storage tanks.
- E. Topsoil excavation.

**1.2 RELATED SECTIONS**

- A. Section 02211 - Rough Grading.
- B. Section 02229 - Rock Removal.

**1.3 REGULATORY REQUIREMENTS**

- A. Conform to Owner, County, Department of Transportation, local fire department, and any other applicable codes for environmental requirements, disposal of debris, burning debris on site, and use of herbicides.
- B. Coordinate clearing Work with applicable utility companies.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Herbicide: as indicated on plans.

**PART 3 EXECUTION**

**3.1 PREPARATION**

- A. Verify that existing plant life designated to remain is tagged or identified.
- B. Identify a waste area for placing removed materials.

### 3.2 PROTECTION

- A. Locate, identify, and protect utilities that remain from damage.
- B. Protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect bench marks, and survey control points, and existing remaining structures from damage or displacement.

### 3.3 CLEARING

- A. Clear areas required for access to site and execution of Work.
- B. Remove trees and shrubs as indicated on plans. Remove stumps and root systems to an adequate depth. Remove surface rocks and other debris.
- C. Clear undergrowth and deadwood, without disturbing subsoil.
- D. Apply herbicide to remaining stumps to inhibit growth.

### 3.4 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Remove demolished pavement and curb and other debris from site.
- C. Excavate and remove underground storage tanks, restraining straps, associated plumbing, and other debris.

### 3.5 TOPSOIL EXCAVATION

- A. Excavate topsoil from marked areas in accordance with the plans without mixing with foreign materials.
- B. Do not excavate wet topsoil.
- C. Stockpile in area designated on the plans to depth not exceeding 8 feet and protect from erosion.
- D. Remove topsoil not intended for reuse from site to an appropriate and permitted site.

END OF SECTION

**SECTION 02205**  
**SOIL MATERIALS**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Subsoil materials.
- B. Topsoil materials.

**1.2 RELATED SECTIONS**

- A. Section 02207 - Aggregate Materials.
- B. Section 02223 - Backfilling.
- C. Section 02225 - Trenching.
- D. Section 02275 - Riprap.
- E. Section 02936 - Seeding.

**1.3 QUALITY ASSURANCE**

- A. Perform work in accordance with all references, Owner requirements, and applicable state agency requirements.

**1.4 REFERENCES**

- A. ASTM D698 – Laboratory Compaction Characterizes of Soil Using Standard Effort
- B. ASTM D2487 - Classification of Soils for Engineering Purposes.
- C. ASTM D4318 – Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- D. ASTM D422 – Standard Test Method for Particle-Size Analysis of Soils
- E. ASTM D2974 – Standard Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils

## 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with State of North Carolina, Owner and the NCDOT. Maintain one copy of all approved permits on site during construction.

## PART 2 PRODUCTS

### 2.1 SUBSOIL MATERIALS

- A. Subsoil Type S1: Conforming to North Carolina Department of Transportation requirements.
- B. Subsoil Type S2:
  - 1. Excavated and re-used material, imported borrows, or select or local borrow.
  - 2. Graded.
  - 3. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
  - 4. Relatively free of organic material.
  - 5. Group symbols GM, SW, SP, SM, SC, ML, CL, MH and CH may be satisfactory with engineers approval. OL, OH and PT are unsatisfactory.

### 2.2 TOPSOIL MATERIALS

- A. Topsoil Type S3: Conforming to North Carolina Department of Transportation requirements.
- B. Topsoil Type S4:
  - 1. Excavated and reused material.
  - 2. Graded.
  - 3. Free of roots, rocks larger than ½ inch, subsoil, debris, large weeds and foreign matter.
  - 4. Containing a minimum of 4 percent and a maximum of 25 percent organic matter.

- C. Topsoil Type S5:
  - 1. Imported borrow.
  - 2. Friable loam.
  - 3. Reasonably free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
  - 4. Acidity range (pH) of 5.5 to 7.5.
  - 5. Containing a minimum of 4 percent and a maximum of 25 percent organic matter.

### 2.3 SOURCE QUALITY CONTROL

- A. Testing and Analysis of Topsoil Material: Perform testing as referenced in Section 1.4 of 02205.
- B. If tests indicate materials do not meet specified requirements, change material and retest.

Provide materials of each type from same source throughout the Work.

## PART 3 EXECUTION

### 3.1 SOIL REMOVAL

- A. Excavate subsoil and topsoil from areas designated.
- B. Remove lumped soil, boulders, and rock.
- C. Either stockpile or removal soil as required by design plans.
- D. Separate differing materials with dividers or stockpile apart to prevent mixing.
- E. Prevent intermixing of soil types or contamination.
- F. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

### 3.2 STOCKPILE CLEANUP

- A. As specified on design plans either direct surface water away from stockpile site to prevent erosion or deterioration of materials or leave unused materials in a neat, compact stockpile.

- B. If a borrow area is indicated, leave area in a clean and neat condition. Grade site surface to prevent freestanding surface.

END OF SECTION

## SECTION 02207

### AGGREGATE MATERIALS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Aggregate materials.

##### 1.2 RELATED SECTIONS

- A. Geotechnical Report (if provided); bore hole locations and findings of subsurface materials.
- B. Section 02205 - Soil Materials.
- C. Section 02225 - Trenching.
- D. Section 02275 - Riprap.
- E. Section 02667 - Site Water Lines.
- F. Section 02732 - Site Sanitary Sewerage Systems.

##### 1.3 REFERENCES

- A. AASHTO - M147 - Materials for Aggregate and Soil-Aggregate.
- B. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18 inch Drop.
- D. ASTM D2487 - Classification of Soils for Engineering Purposes.
- E. ASTM D4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

##### 1.4 QUALITY ASSURANCE

- A. Perform work in accordance with all references, Town requirements, and applicable state agency requirements.

## PART 2 PRODUCTS

### 2.1 COARSE AGGREGATE MATERIALS

- A. Coarse Aggregate Type A1: Aggregate Base Course (ABC) conforming North Carolina Department of Transportation Standard.
- B. Coarse Aggregate Type A2 (Gravel): AASHTO M147, 35% or less passing the No. 200.
- C. Coarse Aggregate Type A3 (Gravel): Washed stone; free of shale, clay, friable material and debris; graded in accordance with ASTM C136, ASTM D2487 Group Symbol GP.
- D. Aggregate Type A4 (Pea Gravel): Natural stone; washed, free of clay, shale, organic matter; graded in accordance with ASTM C136, ASTM D2487 Group Symbol GM.

### 2.2 FINE AGGREGATE MATERIALS

- A. Fine Aggregate Type A5: Conforming to North Carolina Department of Transportation standard.
- B. Fine Aggregate Type A6 (Sand): Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; graded in accordance with ASTM C136, ASTM D2487 Group Symbol SP.

### 2.3 SOURCE QUALITY CONTROL

- A. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D1557.
- B. Fine Aggregate Material - Testing and Analysis: Perform in accordance with ASTM D1557.
- C. If tests indicate materials do not meet specified requirements, change material or material source and retest.
- D. Provide materials of each type from same source throughout the Work.

## PART 3 EXECUTION

### 3.1 STOCKPILING

- A. Stockpile materials on site at locations designated by Engineer.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.

### 3.2 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.
- B. If a borrow area is indicated, leave area in a clean and neat condition. Grade site surface to prevent freestanding surface water.

END OF SECTION



**SECTION 02211**  
**ROUGH GRADING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Removal of topsoil and subsoil.
- B. Cutting, grading, filling, rough contouring, and compacting the site for site structures, building pads, and other required grading.

**1.2 RELATED SECTIONS**

- A. Section 02110 - Site Clearing.
- B. Section 02205 - Soil Materials.
- C. Section 02207 - Aggregate Materials.
- D. Section 02229 - Rock Removal.
- E. Section 02222 - Excavating.
- F. Section 02223 - Backfilling.
- G. Section 02225 - Trenching.
- H. Section 02923 - Landscape Grading.

**1.3 REFERENCES**

- A. ASTM C136 - Method For Sieve Analysis of Fine and Coarse Aggregates.
- B. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
- C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- D. ASTM D2419 - Test Method For Sand Equivalent Value of Soils and Fine Aggregate.

- E. ASTM D2434 - Test Method For Permeability of Granular Soils (Constant Head).
- F. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

#### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C136, ASTM D2419, ASTM D2434, and any other applicable local standards. Maintain one copy of all required permits on site.

#### 1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- A. Topsoil: Type S3, S4 or S5 as specified in Section 02205.
- B. Subsoil Fill: Type S1 or S2 as specified in Section 02205.
- C. Structural Fill: Type S1 or S2 as specified in Section 02205.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify site conditions conform to site plans.
- B. Verify that survey bench mark and intended elevations for the Work are as indicated.

#### 3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect utilities that remain, from damage.
- D. Notify applicable utility company to remove and relocate utilities.
- E. Protect above and below grade utilities that remain.

- F. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.
- G. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

### 3.3 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, re-landscaped, or re-graded.
- B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.
- C. When excavating through roots, perform work by hand and cut roots with sharp axe.
- D. Remove subsoil from site or stockpile in area designated on site to depth not exceeding eight feet and protect from erosion. Remove from site, subsoil not being reused.
- E. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key placed fill material to slope to provide firm bearing.
- F. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

### 3.4 FILLING

- A. Install Work in accordance with applicable local standards.
- B. Fill areas to contours and elevations with unfrozen materials.
- C. Place fill material on continuous layers and compact.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Slope grade away from building minimum 1.5:100 unless noted otherwise.
- F. Make grade changes gradual. Blend slope into level areas.
- G. Remove surplus fill materials from site.

3.5 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

3.6 FIELD QUALITY CONTROL

- A. Testing: In accordance with ASTM D1557.
  - B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- i. Frequency of Tests: Perform tests as required by Owner and/or Engineer.

END OF SECTION

## SECTION 02222

### EXCAVATING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Excavating for site structures.

##### 1.2 RELATED SECTIONS

- A. Section 02110 - Site Clearing.
- B. Section 02223 - Backfilling.
- C. Section 02225 - Trenching.
- D. Section 02229 - Rock Removal.
- E. Section 02607: Manholes and Covers.
- F. Section 02667 - Site Water Lines.

##### 1.3 FIELD MEASUREMENTS

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.

#### PART 2 PRODUCTS

Not Used.

#### PART 3 EXECUTION

##### 3.1 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain from damage.
- C. Notify utility company to remove and relocate utilities.
- D. Protect plant life, lawns, rock outcroppings and other features remaining as a portion of final landscaping.
- E. Protect bench marks, survey control points, existing structures, fences, sidewalks,

paving, and curbs from excavating equipment and vehicular traffic.

### 3.2 EXCAVATING

- A. Excavate subsoil to accommodate building foundations, slabs-on-grade paving and site structures.
- B. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 02223 and 02225.
- C. Grade top perimeter of excavating to prevent surface water from draining into excavation.
- D. Hand trim excavation. Remove loose matter.
- E. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume. Larger material will be removed under Section 02229.
- F. Notify Owner of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- G. Correct areas over excavated in accordance with Section 02223.
- H. Stockpile excavated material in area designated on site in accordance with Section 02205.

### 3.3 FIELD QUALITY CONTROL

- A. Provide for visual inspection of bearing surfaces.

### 3.4 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

## SECTION 02223

### BACKFILLING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Building perimeter and site structure backfilling to subgrade elevations.
- B. Site filling and backfilling.
- C. Fill under slabs-on-grade and paving.
- D. Fill for over-excavation.
- E. Consolidation and compaction as scheduled.

##### 1.2 RELATED SECTIONS.

- A. Section 02222 - Excavating.
- B. Section 02225 - Trenching.
- C. Section 02229 - Rock Removal.
- D. Section 02275 - Riprap.
- E. Section 2607: Manholes and Covers.
- F. Section 02667 - Site Water Lines.
- G. Section 02923 - Landscape Grading.

##### 1.3 REFERENCES

- A. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.

#### PART 2 PRODUCTS

##### 2.1 FILL MATERIALS

- A. Fill Type: As specified in Section 02205.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- B. Verify underground tanks and manholes are anchored to their own foundations to avoid flotation after backfilling.
- C. Verify structural ability of unsupported walls to support imposed loads by the fill.

### 3.2 PREPARATION

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Type A3 fill and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify and proof roll subgrade surface to identify soft spots. Fill and compact to density equal to or greater than requirements for subsequent fill material.

### 3.3 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Employ a placement method that does not disturb or damage other work.
- D. Place geotextile fabric over Type A2 fill prior to placing next lift of fill.
- E. Granular Fill Type A3: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- F. Soil Fill Type S2: Place and compact material in equal continuous layers not exceeding 12 inches compacted depth.
- G. Maintain optimum moisture content of backfill materials to attain required compaction density.
- H. Remove surplus backfill materials from site.

I. Leave fill material stockpile areas free of excess fill materials.

### 3.4 TOLERANCES

- A. Top Surface of Backfilling Under Paved Areas: Plus or minus 0.5 inches from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

### 3.5 FIELD QUALITY CONTROL

- A. Compaction testing will be performed in accordance with ASTM D1557.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- C. Proof roll compacted fill surfaces under slabs-on-grade and paving.

### 3.6 PROTECTION OF FINISHED WORK

- A. Protect finished Work.
- B. Reshape and re-compact fills subjected to vehicular traffic.

### 3.7 SCHEDULE

- A. All fill and compaction to comply with approved design plans.

END OF SECTION



## SECTION 02225

### TRENCHING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Excavating trenches for utilities from clean out outside building to municipal utilities.
- B. Compacted fill from top of utility bedding to subgrade elevations.
- C. Backfilling and compaction.

##### 1.2 RELATED SECTIONS

- A. Section 02110 - Site Clearing.
- B. Section 02205 - Soil Materials.
- C. Section 02222 - Excavating.
- D. Section 02223 - Backfilling.
- E. Section 02229 - Rock Removal.
- F. Section 02275 - Riprap.
- G. Section 02667 - Site Water Lines.
- H. Section 02732 - Site Sanitary Sewerage Systems.
- I. Section 02923 - Landscape Grading.

##### 1.3 REFERENCES

- A. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.

##### 1.4 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.

## 1.5 FIELD MEASUREMENTS

- A. Verify that survey bench mark, control point, and intended elevations for the work are as shown on drawings.

## 1.6 COORDINATION

- A. Verify work associated with lower elevation utilities is complete before placing higher elevation utilities.

## PART 2 PRODUCTS

### 2.1 FILL MATERIALS

- A. Fill Type S2: As specified in Section 02205.

### 2.2 ACCESSORIES

- A. Geotextile Fabric: Non-biodegradable fabric in accordance with plans.
- B. Filter Fabric: Non-biodegradable fabric in accordance with plans.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.
- C. Protect bench marks, existing structures, paving, and curbs from excavating equipment and vehicular traffic.
- D. Maintain and protect above and below grade utilities that are to remain.
- E. Cut out soft areas of subgrade not capable of compaction in place. Backfill and compact to density equal to or greater than requirements for subsequent backfill material.

### 3.2 EXCAVATING

- A. Excavate subsoil required for municipal utilities.
- B. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.

- C. Do not interfere with 45 degree bearing splay of foundations.
- D. In trenches where water is present or where dewatering is required, the trench bottom shall be undercut and stabilized with No. 67 stone, having a minimum depth of 8 inches.
- E. Hand trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- F. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd, measured by volume. Larger material will be removed under Section 02229.
- G. Stockpile excavated material in area designated on site and remove excess material not being used, from site.

### 3.3 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place geotextile fabric over Fill Type A2 prior to placing next lift of fill.
- D. Granular Fill Type A6: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- E. Soil Fill Type S2: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- F. Employ a placement method that does not disturb or damage foundation perimeter drainage, utilities in trench, or any other existing structures.
- G. Maintain optimum moisture content of fill materials to attain required compaction density.
- H. Remove surplus fill materials from site.
- I. Leave fill material stockpile areas completely free of excess fill materials.

### 3.4 TOLERANCES

- A. Top Surface of Backfilling Under Paved Areas: Plus or minus 0.5 inches from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.5 FIELD QUALITY CONTROL

- A. Compaction testing will be performed in accordance with ASTM D1557.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.
- C. Frequency of Tests: Compaction tests will be conducted as required by the Owner's Representative.

3.6 PROTECTION OF FINISHED WORK

- A. Protect finished Work.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

## SECTION 02229

### ROCK REMOVAL

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Removal of discovered rock during excavation.
- B. Explosives to assist rock removal.

##### 1.2 RELATED SECTIONS

- A. Section 02225 - Trenching: Trenching and backfilling for utilities.
- B. Section 02275 - Riprap.

##### 1.3 REFERENCES

- A. NFPA 495 - Code for Manufacture, Transportation, Storage, and Use of Explosive Materials.

##### 1.4 DEFINITIONS

- A. Rock Excavation: Any material that cannot be excavated with a single tooth ripper drawn by a crawler tractor having a minimum flywheel power rated at not less than 310 horse power (Caterpillar D-8T or equivalent), occupying an original volume of at least one cubic yard or more, and requires blasting.
- B. Trench Excavation: Any Material which cannot be excavated with a Caterpillar 345C with flywheel power of 345 horse power or equivalent occupying an original volume of at least ½ cubic yard or more, and which requires blasting or other rock excavation methods.

##### 1.5 SUBMITTALS FOR REVIEW

- A. Shop Drawings: Indicate the proposed method of blasting, delay pattern, explosive types, type of blasting mat or cover, and intended rock removal method. Owner's Representative must approve prior to any blasting.

##### 1.6 QUALITY ASSURANCE

- A. Seismic Survey Firm: Company specializing in seismic surveys with five years experience or approval by Owner's Representative.

- B. Explosives Firm: Company specializing in explosives for disintegration of rock, with five years documented experience or approval by Owner's Representative.

## 1.7 REGULATORY REQUIREMENTS

- A. Conform to applicable safety codes for explosive disintegration of rock and to NFPA 495 for handling explosive materials.
- B. Blasting Procedures shall conform to all applicable local, state, and Federal laws and ordinances. The Contractor shall take all necessary precautions to protect life and property, including the use of an approved blasting mat where there exists the danger of throwing rock or overburden.
- C. Obtain permits from authorities having jurisdiction before explosives are brought to site or drilling is started.

## 1.8 PROJECT CONDITIONS

- A. The Contractor shall keep explosive materials that are needed on the job site in specially constructed boxes provided with locks. These boxes shall be painted red and plainly identified as to their contents. After working hours, the boxes containing explosive materials shall be removed from the job site. Failure to comply with this specification shall be grounds for suspension of blasting operations until full compliance is made.
- B. Conduct survey and document conditions of buildings near locations of rock removal, prior to blasting, and photograph existing conditions identifying existing irregularities.
- C. Advise owners of adjacent buildings or structures in writing, prior to executing seismographic survey. Explain planned blasting and seismic operations.
- D. Where blasting takes place within 500 feet of a utility, structure, or property which could be damaged by vibration, concussion, or falling rock, the Contractor shall be required to keep a blasting log containing the following information for each and every shot:
  - 1. Date of shot.
  - 2. Time of shot.
  - 3. Foreman's name.

4. Number and depth of holes.
  5. Approximate depth of overburden.
  6. Amount and type of explosive used in each hole.
  7. Type of caps used (instant or delay).
  8. The weather.
- E. Blasting log shall be made available to the Owner's Representative upon request and shall be kept in an orderly manner. Compliance by the Contractor with these specifications does in no way relieve him of legal liabilities relative to blasting operations.
- F. Obtain a seismic survey prior to rock excavation to determine maximum charges that can be used at different locations in area of excavation without damaging adjacent properties or other work.
- G. No blasting shall be allowed unless a galvanometer is employed to check cap circuits.
- H. The Owner reserves the right to require removal of rock by means other than blasting where any utility, residence, structure, etc. is either too close to, or so situated with respect to the blasting as to make blasting hazardous.

## 1.9 SCHEDULING

- A. Schedule Work to avoid disruption to occupied buildings nearby.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Explosives: Type recommended by explosive firm following seismic survey and required by authorities having jurisdiction.
- B. Delay Device: Type recommended by explosives firm.
- C. Blast Mat Materials: Type recommended by explosives firm.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify site conditions and note subsurface irregularities affecting work of

this section.

### 3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.

### 3.3 ROCK REMOVAL BY A MECHANICAL METHOD

- A. Excavate and remove rock by the mechanical method.
  - B. Drill holes and utilize wedges or mechanical disintegration compound to fracture rock.
  - C. Cut away rock at bottom of excavation to form level bearing.
  - D. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.
  - E. Remove excavated materials from site or reuse for site landscaping.
  - F. Correct unauthorized rock removal to directions of Owner's Representative.
- 

### 3.4 ROCK REMOVAL BY EXPLOSIVE METHODS

- A. If rock is uncovered requiring the explosives method for rock disintegration, notify the Owner.
- B. Provide seismographic monitoring during progress of blasting operations.
- C. Drill blasting holes within 12 feet of finished slope.
- D. Disintegrate rock and remove from excavation.
- E. Remove rock at excavation bottom to form level bearing.
- F. In utility trenches, excavate to 6 inches below invert elevation of pipe and 24 inches wider than pipe diameter.
- G. Remove excavated material from site or reuse for site landscaping.
- H. Correct unauthorized rock removal to directions of Owner's Representative.

### 3.5 FIELD QUALITY CONTROL

- A. Provide for visual inspection of foundation bearing surfaces and cavities

formed by removed rock.

END OF SECTION



## SECTION 02275

### RIPRAP

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Riprap.

##### 1.2 RELATED SECTIONS

- A. Section 02225 – Trenching.

#### PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Riprap: Sized in accordance with design plans.
- B. Geotextile fabric.

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Do not place riprap over frozen or spongy subgrade surfaces.

##### 3.2 PLACEMENT

- A. Place geotextile fabric over substrate, lap edges and ends.
- B. Place riprap at culvert pipe ends and other locations as indicated on design plans.
- C. Place riprap into position. Key into grade so that top of riprap is at same grade as surrounding ground.
- D. Install to indicated thickness.
- E. Place rock evenly and carefully to minimize voids (do not tear fabric) and place in one consistent operation to preclude disturbance or displacement of substrate.
- F. After placement, spray with water to moisten the bagged mix. Maintain moist for 24 hour.

END OF SECTION



## SECTION 02510

### ASPHALTIC CONCRETE PAVING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Asphaltic concrete paving, wearing binder or base course.
- B. Surface sealer.
- C. Aggregate base course.

##### 1.2 RELATED SECTIONS

- A. Section 02231 - Aggregate Base Course.
- B. Section 02607 - Manholes and Covers.

##### 1.3 REFERENCES

- A. ASTM D946 - Penetration-Graded Asphalt Cement for Use in Pavement Construction.
- B. TAI - (The Asphalt Institute) - MS-2 Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

##### 1.4 PERFORMANCE REQUIREMENTS

- A. Paving: Designed in accordance with Owner Requirements and/or North Carolina Department of Transportation.
- B. Patching: Designed in accordance with approved design plans. Patching in Owner streets or DOT roads must meet appropriate requirements.

##### 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with Owner and/or North Carolina Department of Transportation standard.
- B. Mixing Plant: Conform to Owner and/or North Carolina Department of Transportation standard.
- C. Obtain materials from same source throughout.

## 1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for paving work on public property.

## 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F or surface is wet or frozen.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Asphalt Cement: ASTM D946. In accordance with North Carolina Department of Transportation standards.
- B. Aggregate for Base Course Mix: In accordance with Section 02207 Type A1.
- C. Aggregate for Binder Course Mix: In accordance with North Carolina Department of Transportation standards.
- D. Aggregate for Wearing Course Mix: In accordance with North Carolina Department of Transportation standards.
- E. Fine Aggregate: In accordance with Section 02207 Type A5.
- F. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.
- G. Primer: In accordance with North Carolina Department of Transportation standards.
- H. Tack Coat: In accordance with North Carolina Department of Transportation standards.
- I. Seal Coat: In accordance with North Carolina Department of Transportation standards.

### 2.2 ASPHALT PAVING MIX

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Base Course: 3.0 to 6.0 percent of asphalt cement by weight in mixture in accordance with North Carolina Department of Transportation standards.
- C. Binder Course: 4.5 to 6.0 percent of asphalt cement by weight in mixture

in accordance with North Carolina Department of Transportation standards.

- D. Wearing Course: 5.0 to 7.0 percent of asphalt cement by weight in mixture in accordance with North Carolina Department of Transportation standards.]

### 2.3 SOURCE QUALITY CONTROL AND TESTS

- A. Submit proposed mix design of each class of mix for review prior to beginning of work.
- B. Test samples in accordance with TAI MS-2.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify base conditions satisfactory.
- B. Verify that compacted granular base is dry and ready to support paving and imposed loads.
- C. Verify gradients and elevations of base are correct.

### 3.2 SUBBASE

- A. Section 02231 - Aggregate Base Course forms the base construction for work of this section.

### 3.3 PREPARATION - PRIMER

- A. Apply primer in accordance with North Carolina Department of Transportation standards

### 3.4 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with North Carolina Department of Transportation standards

### 3.5 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with North Carolina Department of Transportation standards
- B. Place asphalt within 24 hours of applying primer or tack coat.

- C. Place asphalt to thickness shown on approved design plans.
- D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- E. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

### 3.6 SEAL COAT

- A. Apply seal coat to surface course in accordance with North Carolina Department of Transportation standards.

### 3.7 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch .
- C. Variation from True Elevation: Within 1/2 inch .

### 3.8 FIELD QUALITY CONTROL

- A. Take samples and perform tests in accordance with TAI MS-2.

### 3.9 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury until surface temperature is less than 140 degrees F.

END OF SECTION

## SECTION 02520

### PORTLAND CEMENT CONCRETE PAVING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Concrete sidewalks and driveways.
- B. Aggregate base course.

##### 1.2 RELATED SECTIONS

- A. Section 02231 - Aggregate Base Course
- B. Section 02510 - Asphaltic Concrete Paving.
- C. Section 02607 - Manholes and Covers.
- D. Section 02923 - Landscape Grading.

##### 1.3 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings.
- B. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- C. ASTM C33 - Concrete Aggregates.
- D. ASTM C94 - Ready Mix Concrete.
- E. ASTM C150 - Portland Cement
- F. ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.
- G. ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

##### 1.4 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301.
- B. Obtain cementitious materials from same source throughout.

## 1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when base surface temperature is less than 40 degrees F or surface is wet or frozen.

## PART 2 PRODUCTS

### 2.1 FORM MATERIALS

- A. Form Materials: Conform to ACI 301.

### 2.2 REINFORCEMENT

### 2.3 CONCRETE MATERIALS

- A. Cement: ASTM C150 Portland type, white color.
- B. Fine and Coarse Mix Aggregates: ASTM C33.
- C. Water: Potable, not detrimental to concrete.

### 2.4 ACCESSORIES

- A. Curing Compound: ASTM C309.
- B. Liquid Surface Sealer.
- C. Surface Retarder.
- D. Joint Sealers.

### 2.5 CONCRETE MIX - BY PERFORMANCE CRITERIA

- A. Mix and deliver concrete in accordance with ASTM C94, Alternative No. 2.
- B. Select proportions for normal weight concrete in accordance with ACI 301 Method 1.
- C. Provide concrete to the specifications given on the approved design plans.
- D. Use accelerating admixtures in cold weather only when approved by Owner. Use of admixtures will not relax cold weather placement requirements.
- E. Use calcium chloride only when approved by Owner.
- F. Use set retarding admixtures during hot weather only when approved by Owner.

## 2.6 SOURCE QUALITY CONTROL AND TESTS

- A. Submit proposed mix design to Owner for review prior to commencement of work.
- B. Tests on cement and aggregates will be performed to ensure conformance with specified requirements.
- C. Test samples in accordance with ACI 301.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify compacted stabilized soil is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

### 3.2 SUBBASE

- A. Section 02231 - Aggregate Base Course forms the base construction for work of this Section.

### 3.3 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole or catch basin (if applicable) frames with oil to prevent bond with concrete pavement.
- C. Notify Owner minimum 24 hours prior to commencement of concreting operations.

### 3.4 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

### 3.5 REINFORCEMENT

- A. Place reinforcement as indicated.
- B. Interrupt reinforcement at expansion joints.
- C. Place reinforcement to achieve pavement and curb alignment as detailed.

### 3.6 PLACING CONCRETE

- A. Place concrete in accordance with ACI 301.

### 3.7 JOINTS

- A. Place expansion joints at 20 foot intervals. Align curb, gutter, and sidewalk joints.
- B. Place joint filler between paving components and building or other appurtenances.
- C. Provide sawn joints at 3 foot intervals, between sidewalks and curbs, and between curbs and pavement.
- D. Provide keyed joints as indicated.

### 3.8 EXPOSED AGGREGATE

- A. Wash exposed aggregate surface with clean water and scrub with stiff bristle brush to match sample panel.

### 3.9 FINISHING

- A. Finish as stated on design plans or to match existing surfaces.

### 3.10 JOINT SEALING

- A. Separate pavement from vertical surfaces with 1/4 inch thick joint filler.
- B. Place joint filler in pavement pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- C. Extend joint filler from bottom of pavement to within 1/4 inch of finished surface.

### 3.11 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/2 inch in 10 ft.

B. Maximum Variation From True Position: 1/2 inch.

### 3.12 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian or vehicular traffic over pavement for 3 days minimum after finishing.

END OF SECTION



**SECTION 02923**  
**LANDSCAPE GRADING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Final grade topsoil for finish landscaping.

**1.2 RELATED SECTIONS**

- A. Section 02205 - Soil Materials.
- B. Section 02211 - Rough Grading.
- C. Section 02223 - Backfilling.
- D. Section 02225 - Trenching.
- E. Section 02936 - Seeding.

**PART 2 PRODUCTS**

**2.1 MATERIAL**

- A. Topsoil: Fill Type S3, S4 or S5 as specified in Section 02205.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- A. Verify building and trench backfilling have been inspected.
- B. Verify substrate base has been contoured and compacted.

**3.2 SUBSTRATE PREPARATION**

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove subsoil contaminated with petroleum products.
- C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

### 3.3 PLACING TOPSOIL

- A. Place topsoil in areas where seeding is required. Place topsoil during dry weather.
- B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to plant life, buildings, and other structures to prevent damage.
- E. Lightly compact placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

### 3.4 TOLERANCES

- A. Top of Topsoil: Plus or minus 12 inch.

### 3.5 PROTECTION

- A. Protect landscaping and other features remaining as final work.
- B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

END OF SECTION

## SECTION 02936

### SEEDING

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Seeding, Hydroseeding, mulching and fertilizer.
- D. Maintenance.

##### 1.2 RELATED SECTIONS

- A. Section 02205 - Soil Materials: Topsoil material.
- B. Section 02223 - Backfilling: Rough grading of site.
- C. Section 02225 - Trenching: Rough grading over cut.

##### 1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Grassed Areas:
  - 1. Basis of Measurement: By the acre.
  - 2. Basis of Payment: Includes preparation of topsoil, and seeding, and maintenance until full growth achieved.

##### 1.4 REFERENCES

- A. FS O-F-241 - Fertilizers, Mixed, Commercial.

##### 1.5 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quack grass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambs quarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.6 MAINTENANCE DATA

- A. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.7 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.8 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- B. Deliver fertilized in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.10 COORDINATION

- A. Coordinate with installation of underground sprinkler system piping and watering heads.

1.11 MAINTENANCE SERVICE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition cuttings.

PART 2 PRODUCTS

2.1 SEED REQUIREMENTS

- A. Tall Fescue: 200 lbs/acre.
- B. Kentucky Blue Grass: 20 lbs/acre.
- C. Rye: 40 lbs/acre.

2.2 SOIL MATERIALS

- A. Topsoil: Excavated from site and free of weeds.

## 2.3 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable. Use 400 lbs/acre.
- B. Fertilizer: Recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil. Use 1200 lbs/acre.
- C. Lime: Use 4000 lbs/acre.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.

### 3.2 PREPARATION OF SUBSOIL

- A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.
- C. Scarify subsoil to a depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

### 3.3 PLACING TOPSOIL

- A. Spread topsoil to a minimum depth of 8 inches over area to be seeded. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.
- E. Install edging at periphery of seeded areas in straight lines to consistent depth.

### 3.4 FERTILIZING

- A. Apply fertilizer at a rate of 4000 lbs/acre.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

### 3.5 SEEDING

- A. Apply seed, at the rates identified in Part 2.2 of this section, in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Roll seeded area with roller not exceeding 112 lbs.
- E. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

### 3.6 HYDROSEEDING

- A. Apply seeded slurry with a hydraulic seeder at a rate to be approved by Engineer evenly in two intersecting directions.
- B. Immediately following seeding, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.
- C. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

### 3.7 SEED PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 6 inches.

- B. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- C. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12 inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- D. Secure outside edges and overlaps at 36 inch intervals with stakes.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

### 3.8 MAINTENANCE

- A. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming.
- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove minor depressions or irregularities.
- F. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- G. Immediately reseed areas which show bare spots.
- H. Protect seeded areas with warning signs during maintenance period.

END OF SECTION

