

**CONTRACT DOCUMENTS,  
PROPOSAL and SPECIFICATIONS**

**City of Orange Beach  
REC Center Drainage and  
Tennis Center Court Improvements**



**April 2020**

**Prepared by:**



**City of Orange Beach, Alabama  
CONTRACT DOCUMENTS,  
PROPOSAL AND SPECIFICATIONS**

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REC Center Drainage and  
Tennis Center Court Improvements***

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## SECTION I

### ADVERTISEMENT FOR BIDS

Sealed bids will be received by the City of Orange Beach, AL at the City of Orange Beach City Hall, 4099 Orange Beach Boulevard; P.O. Box 458, Orange Beach, Alabama 36561 until 10:00 a.m. CDT on **Thursday, April 30, 2020** and then publicly opened and read in the Council Chambers for:

### **CITY OF ORANGE BEACH REC CENTER DRAINAGE AND TENNIS CENTER COURT IMPROVEMENTS**

**This project consists of the renovation and upgrading of the existing drainage infrastructure, detention areas, outfall ditches and the existing tennis courts located at the City of Orange Beach Recreation Center property. The existing drainage infrastructure improvement includes 1300 LF of pipe upgrades, excavation of existing detention basin (5,550 CY of unclassified excavation), 1,360 LF of ditch widening, stabilization and grass establishment for disturbed areas, and 2,600 SY of parking lot resurfacing. The Tennis Center improvements include removal of all fencing, furniture, existing asphalt, backfilling and grading base to proposed elevations, new asphalt surface, new fence, new lighting poles and fixtures, new nets and furniture, and court painting and striping.**

**A total of Eighty (80) working days will be allowed for completion of work.**

Drawings and specifications may be obtained at Sawgrass Consulting, LLC, 30673 Sgt. E.I. "Boots" Thomas Drive, Spanish Fort, Alabama, 36527 for a non-refundable fee of \$85.00. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including Addenda, if any, obtained from sources other than this office. For more information, call (251) 544-7900 or email [jrobertson@sawgrassllc.com](mailto:jrobertson@sawgrassllc.com) and/or [lgazzier@sawgrassllc.com](mailto:lgazzier@sawgrassllc.com). Prospective bidders may examine the Bidding Documents at this office Monday through Friday between 9:00 a.m. and 4:00 p.m.

**A mandatory pre-bid conference call will be held at 10:00 a.m. – 11:30 a.m. (CDT) on Thursday, April 16, 2020 do the current Covid-19 restrictions. Please join the meeting from your computer, tablet, or smartphone <https://global.gotomeeting.com/join/831371629> The call-in number is 1 (872) 240-3212, Access code number 831-371-629. In the pre-bid conference, the City will review the scope of work and the desired result.**

To be eligible for consideration, bids must be submitted on complete original proposal forms found in the Invitation to Bid package. **The specifications and all executed bid forms must be submitted in a sealed envelope, clearly marked, identifying the Contractor's license number, the Contractor's name and address, the bid name, and the date of the bid opening.** It shall be the sole responsibility of the bidder to assure receipt of the bid at Orange Beach City Hall prior to the published time for the bid opening. **The envelopes must also be "Date and Time" stamped at the receptionist's desk when the bid packages are turned in.**

All Bidders must file with their bids either a cashier's check drawn on an Alabama bank or a bid bond executed by a surety company duly authorized and qualified to make bonds in the State of Alabama and made payable to the City of Orange Beach in the amount of five (5%) percent of the Contractor's bid but in no event more than \$10,000, and shall have a current State of Alabama General Contractors License. Furthermore, any Contractor that desires to bid as prime Contractor must have at least one of the following major classifications of license per Section 230-X-.27 of the State of Alabama Licensing Board for General Contractors Administrative Code:

- a) Highways and Streets
- b) Municipal and Utility

If awarded the bid and prior to beginning work, the Contractor is required to have a current City of Orange Beach Business License, furnish a Certificate of General Liability Insurance and Workers Compensation Insurance, and proof of Automobile General Liability Insurance. Insurance Certificate provided to the City shall list the City of

Orange Beach as an additional insured. A Performance Bond and Payment Bond must be executed upon award of the bid with a penalty equal to one hundred (100%) percent of the amount of the contract price

No bids will be considered unless the bidder, whether resident or non-resident of Alabama, is properly qualified to submit a proposal for this type of work in accordance with all applicable laws of the State of Alabama. Where applicable, this shall include evidence of holding a current license from the State Licensing Board for General Contractors, Montgomery, Alabama, as required by Chapter 8 of Title 34, of the Code of Alabama, 1975. In addition, the awarded vendor, if non-resident of the State, and if a corporation, shall show evidence of having qualified with the Secretary of State to do business in the State of Alabama, <http://sos.alabama.gov/business-entities>. No proposals shall be withdrawn for the period of ninety (90) days subsequent to the opening of proposals without the consent of the City of Orange Beach. All bidders bidding in amounts exceeding that established by the State Licensing Board for General Contractors must be licensed under the provisions of Title 34, Chapter 8, Code of Alabama, 1975, and must provide evidence by including a copy of his or her current license in the sealed envelope in which the proposal is delivered.

The City of Orange Beach reserves the right to accept or reject any or all bids and to waive technical errors if, in the City's judgment, the best interests of the City will thereby be promoted.

Owner: City of Orange Beach, Alabama

## SECTION II

### INSTRUCTIONS TO BIDDERS

Hereinafter Contract Documents shall include "Contract Documents, Proposal and Specifications", Sections I through Appendix; Owner shall be City of Orange Beach; Engineer shall be Sawgrass Consulting, LLC.

#### **1. RECEIPT AND OPENING OF BIDS:**

The Owner invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at City of Orange Beach City Hall until 10:00 A.M., local time on April 30, 2020. The envelopes containing the bids must be sealed and addressed to City of Orange Beach. The **Contractor's name, license number, project number, and Bid date** must be clearly shown on the outside of the envelope. **The entire booklet must be submitted as the bid.**

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered.

Forms furnished, or copies thereof shall be used, and strict compliance with requirements of the invitation, these instructions and the general specifications for material and construction are necessary. Bidders must make their own estimates of the facilities and difficulties attending the proposed contract, including local conditions, uncertainty of weather, quantities and all other contingencies. All designations and prices shall be fully and clearly set forth. The proper blank spaces in the bid and guaranty forms shall be suitably filled in.

#### **2. TELEGRAPHIC MODIFICATION:**

Any bidder may modify his bid by telegraphic communication at any time prior to the scheduled closing time for receipt of bids, provided such telegraphic communication is received by the Owner prior to the closing time and provided further, the Owner is satisfied that a written confirmation of the telegraphic communication of the telegraphic modification over the signature of the bidder was mailed prior to closing time. If written confirmation is not received with two (2) days from the closing time, no consideration will be given to the telegraphic modification.

#### **3. LABOR AND MATERIALS:**

The Owner will not furnish any labor, material, or supplies unless specifically provided for in the contract. This obligation is strictly upon the bidder unless otherwise noted.

#### **4. SIGNATURE TO BIDS:**

Each bid must give the full business address of the bidder and be signed by him with his usual signature. Bids by partnerships must furnish the full names of all partners and must be signed with the partnership name by one of the members of the partnership, or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed with the legal name of the corporation followed by the name of the State of Incorporation and by the signature and designation of the president, secretary, or other person authorized to bind it into the matter. The name of each person shall also be typed or printed below the signature. A bid by a person who affixes to his signature the word "president", "secretary", "agent", or other designation without disclosing his principal, may be held to the bid of the individual signing. When requested by the Owner, satisfactory evidence of the authority of the officer signing on behalf of the corporation shall be furnished.

**5. BIDDER QUALIFICATIONS:**

The Owner may make a request as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. It is the preference of the City of Orange Beach that the bidder be pre-qualified by the Consultant to perform the work. **If awarded and prior to beginning work, the Contractor is required to have a current City of Orange Beach Business License.**

**6. GUARANTY AND INSURANCE:**

Security is required to ensure the execution of the Contract and bond for performance of the services, and no bid will be considered unless it is so guaranteed. The bidders must furnish with their bid a Guaranty Bond or certified check in the amount of five (5%) percent of their bid price, but in no event more than ten thousand (\$10,000.00) dollars, payable to the Owner. Certified check or Bid Bonds, will, at the option of the Owner, be deposited into the funds of the Owner, as liquidated damages upon failure of the successful bidder to execute the written Contract and furnish the insurance coverage as hereinafter required, within ten consecutive calendar days following written notice of the award of the Contract.

**7. BONDS AND INSURANCE:**

The bonds and insurance policies of any surety company or insurance company respectively, authorized to do business in the State of Alabama will be accepted as security and insurance as required, for any bid or contract. See the instruction hereinafter contained and the applicable standard forms with respect to the type, form and amounts of required bonds and insurance policies.

**8. SPECIFICATIONS AND SCHEDULES:**

The specifications, conditions, schedules and drawings which form the basis of any bid will be considered as a part thereof and will form a part of the Contract. Copies of these papers, together with a copy of the standard contract form, including authorized additions, or deletions, if any, will be furnished to or made available for the inspection of bidders by the office indicated in the advertisement or invitation.

**9. CORRECTIONS:**

Erasures or other changes in the bids must be explained or noted over the signature of the bidder.

**10. WITHDRAWAL OF BIDS:**

Bids may be withdrawn by written or telegraphic request received from bidders prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

**11. BIDDERS PRESENT:**

At the time fixed for the opening of the bids, their contents will be made public for the information of bidders and others properly interested, who may be present either in person or by representation.

**12. AWARD OR REJECTION OF BIDS:**

The contract will be awarded to the lowest responsible bidder complying with the conditions of the invitation for bids, provided his bid is reasonable and it is to the best interest of the Owner to accept it. The bidder to whom the award is made will be notified at the earliest possible date. The Owner, however, reserves the right to reject any and all bids and to waive informality in bids received whenever such rejection or waiver is in the interest of the Owner.

It also reserves the right to reject the bid of a bidder who has previously failed to perform properly or complete on time a contract of a similar nature, or a bid of a bidder who is not in a position to perform the contract.

**13. BIDDERS INTERESTED IN MORE THAN ONE BID:**

If more than one bid be offered by any one party, by or in the name of his or their clerk, partner or other person, all such bids may be rejected. A party who has quoted prices on materials to a bidder is not thereby disqualified from quoting prices to other bidders or from submitting a bid directly for the materials or work.

**14. ERRORS IN BID:**

Bidders or their authorized agents are expected to examine the maps, drawings, specifications, and all other instructions pertaining to the work, which will be open to their inspection. Failure to do so will be at the Bidder's own risk, and he cannot secure relief on the plea of error in the bid. In case of error in the extension of prices, the unit price, will govern.

**15. CONTRACT AND BOND:**

The bidder to whom award is made must, when required, enter into written contract on the Contract Document provide herein with satisfactory security of 100 Percent Payment and Performance Bond in the amount required, within the period specified or, if no period is specified, within then (10) days after the prescribed forms are presented to him for signature.

**16. COLLUSION:**

If there is any reason for believing that collusion exists among the Bidders, any or all proposals may be rejected, and those participating in such collusion may be barred from submitting bids on the same or other work with the Owner.

**17. SUBLETTING OR ASSIGNING OF CONTRACT:**

(a) Limitations: The Contractor shall not sublet, assign, transfer, convey, sell or otherwise dispose of any portion of the contract, his right, title, or interest therein, or his power to execute such contract, to any person, firm or corporation without written consent of the Owner and such written consent shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the contract. Unless otherwise stipulated in the proposal or special provisions and with the assistance of workmen under his immediate superintendence and reported on his payroll, all contract work of a value not less than forty percent (40%) of the total contract amount, except that any items designated in the contract as "Specialty Items" may be performed by subcontract, may be deducted from the total contract amount before computing the amount of work required to be performed by the contractor with his own organization.

(b) Subcontractor's Status: A subcontractor shall be recognized only in the capacity of an employee or agent of the contractor and the contractor will be responsible to the Owner for all of the subcontractor's work, including failures or omissions; and his removal may be required by the Engineer, as in case of an employee.

**18. TIME OF COMPLETION:**

Bidders must agree to commence on or before a date to be specified in written "work order" of the Owner and to fully complete the project within **EIGHTY (80) working days** thereafter. The bidder must agree also to pay as liquidated damages, the sum shown in this document for each calendar day required thereafter.

**19. ADDENDA AND INTERPRETATIONS:**

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

Every request for such interpretation should be in writing, addressed to Sawgrass Consulting, LLC, 30673 Sgt. E.I. Boots Thomas Drive, Spanish Fort, Alabama 36527, and to be given consideration, must be received at least TWO (2) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which if issued, will be forwarded by emailed or mailed by certified mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purposes). Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

**20. POWER OF ATTORNEY:**

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

**21. LAWS AND REGULATIONS:**

The bidders attention is directed to the fact that all applicable state laws, municipal ordinances, and rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

**22. OBLIGATION OF BIDDER:**

At the time of the opening of bids each bidder will be presumed to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his bid.

**23. QUANTITIES:**

The quantities indicated are to aid the contractor in bidding only and any variance upward or downward in quantities shown will not alter the contract unit price.

**24. UTILITIES:**

All information given on the drawings or in the contract documents relative to existing utilities and other structures is from the best source at present available. All such information is furnished only for the information and convenience of the bidders.

The Contractor shall be responsible for any damages to existing utilities and shall repair and/or replace any damages to said utilities at his own expense.

**25. MAINTENANCE PERIOD:**

The Contractor will be required to maintain the project for a period of ninety (90) calendar days after acceptance by the Owner and warranty the project for one full calendar year upon substantial completion.



**SECTION III**

**CERTIFICATE OF  
CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE TO OWNER**

OWNER: \_\_\_\_\_ DATE: \_\_\_\_\_

This is to certify that the policies designated below have been issued by the \_\_\_\_\_ and are in full force on the date borne by this certificate.

1. Location and designation of project:  
**City of Orange Beach REC Center Drainage  
And Tennis Center Court Improvements  
City of Orange Beach, Alabama**

2. Name and address of insured for whom this certificate is issued:  
\_\_\_\_\_

3. Type of insurance/Limits of Liability

(a) Workmen's Compensations:

\_\_\_\_\_  
(policy number) (exp. date) (coverage) (aggregate)  
(one person) (one accident)

(b) Contractor's Public Liability:

1. Bodily Injury:

\_\_\_\_\_  
(each person) (each occurrence) (total coverage)

2. Property Damage:

\_\_\_\_\_  
(each accident) (aggregate)

(c) Automobile (Motor Vehicle):

1. Bodily Injury:

\_\_\_\_\_  
(each person) (each occurrence) (total coverage)

2. Property Damage:

\_\_\_\_\_  
(each accident) (aggregate)

(d) Owner's Protective Liability:

_____ (Each Occurrence) (Bodily Injury)	_____ (Each Occurrence) (Property Damage)
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Such insurance as is afforded by the above policies covers the operations undertaken by the insured with respect to the construction of the project above designated. The insurance afforded by the above designated policies, specimen copies of which have been filed with the Owner, and to each of which is attached for following endorsement.

The insurer agrees with the insured as follows:

1. That it will furnish to said Owner a certificate of insurance in triplicate on a form approved for such purpose by said Owner, setting forth the pertinent information regarding the policy to which this endorsement is attached, for each project of said Owner to which the policy applies.
2. That it will attach to each said certificate of insurance executed copies of any endorsement other than this endorsement which are attached to said policy at the time said policy is issued, provided only that said endorsements affect the coverage of said policy in respect of operations involved in the construction of the projects of said Owner to which the policy applies.
3. That it will mail to the Owner three executed copies of each endorsement subsequently issued to become a part of said policy provided only that endorsement affects the coverage of said policy in respect of operations involved in the construction of the project of said Owner which the policy applies, and provided further that such endorsement shall not be effective unless such notice is given to the Owner at the same time that notice thereof is given to the insured.
4. That it will mail to the Owner at least ten (10) days before the effective date thereof notice of cancellation of said policy, provided no cancellation shall be effective unless such notice is given to the Owner.

\_\_\_\_\_  
Insurer

BY \_\_\_\_\_  
Authorized Representative

## SECTION IV

### **INSTRUCTIONS TO CONTRACTORS AND INSURERS**

#### **CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE:**

The Contractor shall not commence work under this Contract until he has obtained all the insurance required under this certificate and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until the insurance required of the subcontractor has been so obtained and approved.

#### **COMPENSATION INSURANCE:**

The Contractor shall procure and shall maintain during the life of this Contract Workmen's Compensation Insurance for all his employees to be engaged in work on the project under this Contract, and in case of any such work sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Statute, the Contractor shall provide and shall cause each subcontractor to provide adequate Employer's General Liability Insurance for the protection of such of his employees as are not otherwise protected.

#### **CONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE:**

The Contractor shall procure and shall maintain during the life of this Contract a Comprehensive Liability Policy providing bodily injury coverage on an occurrence basis and property damage coverage on an accident basis, including damage arising from blasting, explosion or collapse, mechanical equipment digging in streets or highways, and including completed operations, independent Contractors, and Contractual General Liability Insurance shall be \$1,000,000 combined single limit per occurrence for bodily injury and property damage; \$2,000,000 aggregate.

The Contractor agrees to maintain such completed operations coverage as is required in this section for a period of one year from the date of acceptance of the work by the Owner or at the date of the final amounts owed the Contractor by the Owner, whichever occurs first.

#### **COMPREHENSIVE AUTOMOBILE LIABILITY INSURANCE:**

The Contractor agrees to carry a Comprehensive Automobile Liability Policy providing bodily injury liability on an occurrence basis, and providing property damage liability on an accident basis. This policy shall protect the Contractor against all liability arising out of the use of automobiles, both private, passenger, and commercial, regardless of whether such vehicles shall be owned by the Contractor, owned by others or be hired. Limits of liability for Comprehensive Automobile Liability Insurance shall be \$1,000,000 combined single limit per occurrence for bodily injury and property damage.

**OWNER'S PROTECTIVE LIABILITY INSURANCE:** The Contractor shall at his expense provide Owner Protective Liability Policies issued in the names of the *Owner and Engineer* covering their liability for operation of the Contractor. These policies shall provide limits of liability in the amount of \$1,000,000 combined single limit per occurrence for bodily injury and property damage; \$2,000,000 aggregate.

*The following items should be listed in "Description of Operations" section of the certificate:*

*Name of Owner listed as Additional Insured*

*Description of the REC Center Drainage and Tennis Center Court Improvements shall be listed for insurance coverage clarification*

#### **INDEMNITY PROVISIONS:**

The Contractor shall indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses, demands, payments, suits, actions, recoveries and judgments of every nature and description and expensed including attorneys' fees arising out of or resulting from the performance of

the Work, provided that any such claim, damage, loss or expense: (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom; and (2) is caused in whole or in part by a negligent act or omission of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

The Contractor shall assume all risk and bear any loss or injury to property or persons occasioned by neglect or accident during the progress of Work until the same shall have been completed and accepted. He shall also assume all blame or loss by reason of neglect or violation of any state or federal law or municipal rule, regulation or order. The Contractor shall give to the proper authorities all required notices relating to the Work, obtain all official permits and licenses and pay all proper fees. He shall make good any injury that may have occurred to any adjoining building, structure or utility in consequence of the Work.

In any and all claims against the Owner or the Engineer or any of their agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under the "INDEMNITY PROVISIONS" shall not be limited in any way by any limitation on the amount or types of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workmen's compensation acts, disability benefit acts or other employee benefit acts.

The obligations of the Contractor under these Paragraphs shall not extend to the liability of the Engineer's negligent acts, errors or omissions, or those of his employees or agents.

**SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE:**

The Contractor shall require each of his subcontractors to produce and maintain during the life of his subcontract, subcontractor's Public Liability and Property Damage Insurance of the type specified in the above paragraph hereof in amounts approved by the Owner.

This certificate shall be used in submitting evidence of compliance with the above requirements. The insurance company's representative shall execute four signed copies of the certificate plus such additional copies as may be required for the company's records. One executed copy shall be forwarded to the Contractor for attachment to the original policy as an endorsement and three copies shall be submitted to The Owner.

Three executed copies of each subsequent endorsement affecting the coverage of policies, and of each cancellation shall be forwarded to The Owner in accordance with Items 3 and 4 of the insurer's agreement contained in this certificate.

**SECTION V**

**PROPOSAL**

DATE: \_\_\_\_\_

Proposal of \_\_\_\_\_

Alabama License No. \_\_\_\_\_ for constructing **Orange Beach REC Center Drainage and Tennis Center Court Improvements**, for the performance of all work and the furnishing of all labor and materials required by the Contract terms, specifications, and special provisions.

The specifications are attached hereto and specified and made a part hereof.

TO: **City of Orange Beach, Alabama**

Dear Sirs:

The following proposal is made on behalf of \_\_\_\_\_ and no others. Evidence of authority to submit the proposal is herewith furnished. The proposal is made without collusion on the part of any person, firm, or corporation.

\_\_\_ certify that \_\_\_\_\_ have carefully examined the plans for this project and the specifications hereto attached including the special provisions, and have also personally examined the site of work. On the basis of the specifications and plans \_\_\_\_\_ propose to furnish all necessary machinery, tools, apparatus, and other means of construction, and do all the work and furnish all the material in the manner specified.

\_\_\_ further agree to complete all the work in **EIGHTY (80) working days**.

\_\_\_ understand that the quantities below are approximate only and are subject to either increase or decrease, and hereby propose to perform any increased or decreased quantities of work at the unit prices bid.

\_\_\_ further propose to perform all "Force Account or Extra Work" that may be required of \_\_\_ on the basis provided in the specifications hereto attached, and to give such work \_\_\_\_\_ personal attention in order to see that it is economically performed.

\_\_\_ further propose to execute the attached Contract Agreement as soon as the work is awarded to \_\_\_\_\_ and to begin and complete the work within the respective time limit provided for in the specifications and Notice to Contractors hereto attached.

The following items shall be constructed in accordance with the State of Alabama Department of Transportation Standard Specifications for Highway Construction, Latest Edition, and the City of Orange Beach Design and Construction Standard, with all the latest additions and amendments, except as modified herein:

NOTES:

1. The following unit prices shall include all labor, materials, equipment removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.
2. Bidder understands that the Owner reserves the right to reject any and all bids.
3. The Bidder understands that he must submit this entire booklet with the bid.
4. The Bidder understands that the unit prices govern for all pay items pricing submitted.

**SCHEDULE OF ITEMS**  
**Orange Beach REC Center Drainage and Tennis Center Court Improvements**

ITEM #	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT
<b>TENNIS COURT DRAINAGE CONSTRUCTION ITEMS</b>					
1	CLEARING AND GRUBBING (201-A)	LS	1		
2	ASPHALT REMOVAL (PARKING LOT AND ROAD) (206-C)	SY	400		
3	CONCRETE CURB REMOVAL (206-D1)	LF	40		
4	PIPE REMOVAL (206-D2)	LF	2,332		
5	CONCRETE REMOVAL (206-C)	SY	17		
6	INLET/BOX REMOVAL (206-E)	EA	3		
7	UNCLASSIFIED EXCAVATION (PONDS AND DITCH (210-A)	CY	5,550		
8	STRUCTURE EXCAVATION (214-A)	CY	75		
9	FOUNDATION BACKFILL, COMMERCIAL (12" THICK) (214-B1)	CY	300		
10	FOUNDATION BACKFILL, COMMERCIAL (6" THICK) (ALDOT #57) (214-B2)	CY	65		

11	CRUSHED AGGREGATE BASE COURSE, 825-B, 6" THICK (301-A)	SY	510		
12	TACK COAT (PARKING LOT, ROADWAY) (405-A)	GAL	310		
13	MILLING/PLANING EXISTING PAVEMENT (1" THICK) (408-A)	SY	150		
14	BITUMINOUS CONCRETE WARING SURFACE LAYER, 1.0" THICK (1103/SY) (424-A)	TONS	200		
15	BITUMINOUS BINDER LAYER, 2.0" THICK (220#/SY) (424-B)	TONS	60		
16	12" STORM SEWER PIPE, HDPE (INCLUDES INLET CONNECTION) (533-A1)	LF	10		
17	30" STORM SEWER PIPE, RCP (533-A2)	LF	304		
18	28"X18" STORM SEWER ARCH PIPE, RCP (533-B1)	LF	176		
19	36"X22" STORM SEWER ARCH PIPE, RCP (533-B2)	LF	152		
20	44"X27" STORM SEWER ARCH PIPE, RCP (533-B3)	LF	624		
21	51"X31" STORM SEWER ARCH PIPE, RCP (533-B4)	LF	40		
22	MOBILIZATION (FOR DRAINAGE AND TENNIS COURTS) (600-A)	LS	1		
23	RIP-RAP, CLASS II, 2 FT THICK (610-A)	TONS	88		
24	FILTER BLANKET, 7OZ. NON-WOVEN (610-D)	SY	72		
25	SLOPE PAVING (CONCRETE FLUME) (614-A)	CY	7		

26	CONCRETE SIDEWALKS, 4" THICK (618-A)	SY	15		
27	SLOPED PAVED HEADWALL (DOUBLE 30") (619-A)	EA	1		
28	SLOPED PAVED HEADWALL (SINGLE 36"X22") (619-B1)	EA	2		
29	SLOPED PAVED HEADWALL (SINGLE 44"X27") (619-B2)	EA	3		
30	SLOPED PAVED HEADWALL (SINGLE 51"X31") (619-B3)	EA	1		
31	WEIR INLETS (621-C1)	EA	1		
32	OUTFALL CONTROL BOX (POND 2) (621-C2)	EA	1		
33	GRATE INLETS (621-G)	EA	4		
34	COMBINATION CURB AND GUTTER, TYPE K (623-C)	LF	40		
35	MINOR UTILITY ADJUSTMENT (WATER) (640-B1)	LS	1		
36	MINOR UTILITY ADJUSTMENT (SEWER) (640-B2)	LS	1		
37	TOPSOIL FROM STOCKPILES (4" THICK) (650-B)	CY	1,500		
38	SEEDING (652-A1)	ACRE	1		
39	HYDROSEED (DITCH, POND BOTTOMS) (652-A2)	ACRE	2		
40	SOLID SODDING (POND SLOPES) (654-A)	SY	3,200		



41	MULCHING (656-A)	ACRE	4		
42	ROLLED EROSION CONTROL BLANKET (NORTH AMERICAN GREEN SC 150BN) (659-C)	SY	2,750		
43	TEMPORARY SEEDING (665-A)	ACRE	4		
44	TEMPORARY MULCHING (665-B)	ACRE	4		
45	HAY BALES (665-F)	EA	25		
46	SAND BAGS (665-G)	EA	100		
47	SILT FENCE, TYPE A (665-J)	LF	3,840		
48	WATTLES (665-Q)	LF	400		
49	STONE CONSTRUCTION ENTRANCE (INCLUDES MAINTENANCE) (999-1)	EA	2		
50	PARKING LOT STRIPING (999-2)	LS	1		
<b>DRAINAGE SUBTOTAL</b>					
<b>TENNIS COURT IMPROVEMENT ITEMS</b>					
51	REMOVE EXISTING PLAYING SURFACE, DISPOSE OF MATERIALS APPROPRIATLEY (D-101)	SF	56,746		
52	REMOVE EXISTING LIGHT POLE & BASE, DISPOSE OF MATERIALS APPROPRIATLEY (D-102)	EA	48		
53	REMOVE EXISTING FENCING & GATES, DISPOSE OF MATERIALS APPROPRIATLEY (D-103)	LF	1,892		

54	REMOVE EXISTING POST & NET ASSEMBLY, DISPOSE OF MATERIALS APPROPRIATELY (D-104)	EA	8		
55	DETACH SHADEW STRUCTURE FROM EXISTING BENCH, COORDINATE STORAGE LOCATION W/OWNER FOR FUTURE RE-USE. REMOVE EXISTING BENCH, DISPOSE OF MATERIAL APPROPRIATELY (D-105)	EA	4		
56	REMOVE EXISTING TREE, DISPOSE OF MATERIALS APPROPRIATELY (D-106)	EA	30		
57	REMOVE EXISTING CONCRETE, SAW CUT EDGE TO ENSURE CLEAN TRANSITION, DISPOSE OF MATERIALS APPROPRIATELY (D-107)	SF	1,055		
58	REMOVE EXISTING NETTING, CABLE & ASSOCIATED HARDWARE, COORDINATE STORAGE LOCATION WITH OWNER FOR FUTURE RE-USE (D-108)	LF	99		
59	REMOVE EXISTING ROCK MULCH, DISPOSE OF MATERIALS APPROPRIATELY (D-109)	SF	7,533		
60	ASPHALT (WEARING SURFACE 110 LBS/SY), ATHLETIC SURFACING WITH LAYKOLD CUSHION PLUS W/TREME SYSTEM FINISH, COLORS TO MATCH EXISTING AND APPROVED BY LANDSCAPE ARCHITECT OR OWNERS AGENT (32-01)	SY	6,235		
61	ASPHALT BINDER LAYER, 220 LBS/SY, INCLUDES TACK COAT LAYER (429-B) (32-01)	TONS	717		
62	CRUSHED AGGREGATE BASE COURSE, 825-B, 6" THICK (301-A) (32-01)	SY	6,235		
63	SEPARATION FABRIC (MIRAFI 500 X) (608-A) (32-01)	SY	6,235		
64	10' BLACK PVC COATED ALUMINUM CHAINLINK WITH 9' BLACK WINDSCREENS (32-02)	LF	1,585		
65	FENCE, 4' BLACK PVC COATED ALUMINUM CHAINLINK (32-03)	LF	309		
66	7' HT GATE, BLACK PVC COATED ALUMINUM CHAINLINK (32-04)	EA	8		

67	GATE, 10' WIDE DOUBLE, BLACKPVC COATED ALUMINUM CHAINLINK (32-05)	EA	4		
68	ASPHALT POST & NET ASSEMBLY, EQUAL TO OR BETTER THAN EDWARDS 40LS (32-06)	EA	8		
69	4' CONCRETE SIDEWALK, 3,000 PSI CONCRETE (32-07)	SF	717		
70	CONCRETE, 16" RIBBON CURB, 3,000 PSI (32-08)	LF	1,909		
71	REINSTALL NETTING, CABLE & ASSOCIATED HARDWARE (32-09)	LF	104		
72	ROCK MULCH, 1"-3" OVERSIZED SMOOTH WHITE ROCK, 3" DEPTH (32-10)	CY	87		
73	POST SLEEVE, SHADE STRUCTURE SLEEVE, CONTRACTOR TO VERIFY SLEEVE SPACING PER EXISTING SHADE STRUCTURE POST SPACING (32-11)	EA	8		
74	4" PVC UNDERDRAIN (INCLUDES PERFORATED PIPE, PIPE FITTINGS, ROCK BACKFILL, FILTER FABRIC, CONNECTION TO INLET)	LF	645		
75	LIGHTING (SHEETS 27-28)	LS	1		
76	FURNITURE (SHEET 29)	LS	1		
<b>TENNIS COURT IMPROVEMENTS SUBTOTAL</b>					
<b>BASE BID (DRAINAGE AND TENNIS COURT IMPROVEMENTS) TOTAL</b>					

<b>ADDITIVE/DEDUCTIVE ALTERNATE NO. 1</b>					
1	ASPHALT (WEARING SURFACE 110 LBS/SY), ATHLETIC SURFACING WITH LAYKOLD MASTERS GEL SYSTEM FINISH, COLORS TO MATCH EXISTING AND APPROVED BY LANDSCAPE ARCHITECT OR OWNERS AGENT (32-01)	SY	6,235		

**CONTRACTOR'S NAME & GENERAL CONTRACTOR'S LICENSE NUMBER**

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\_\_\_\_ also propose to furnish a Contract Performance Bond, approved by the Owner in an amount equal to the total amount of the bid. This bond shall serve not only to guarantee the completion of the work on \_\_\_\_ part, but also to guarantee the excellence of both workmanship, and materials until the work is finally accepted.

Signature of Bidder (If Firm or Individual) \_\_\_\_\_

By: \_\_\_\_\_

Address of Bidder \_\_\_\_\_

Names and Addresses of Members of Firm \_\_\_\_\_

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\*\*\*\*\*  
\*\*\*\*\*

Signature of Bidder (Corporation) \_\_\_\_\_

\_\_\_\_ Business Address \_\_\_\_\_  
President

\_\_\_\_ Business Address \_\_\_\_\_  
Sect. & Treas.

Attest: \_\_\_\_\_ Incorporated in \_\_\_\_\_  
State

(CORPORATE SEAL)

**ITEM VI**

**BID BOND**

KNOW ALL MEN BY THESE PRESENTS:

That \_\_\_\_\_ of  
(Name of Contractor)

\_\_\_\_\_  
(Address)

as Principal, and \_\_\_\_\_ of  
(Name of Surety)

\_\_\_\_\_, as Surety, are held and  
(Address)

firmly bound unto **CITY OF ORANGE BEACH ALABAMA** as Obligee, in the full and just sum of FIVE PERCENT (5%) OF AMOUNT BID lawful money of the United States, for the payment (maximum amount of bond \$10,000) of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal is herewith submitting its proposal for:

**Orange Beach REC Center Drainage and Tennis Center Court Improvements**

The condition of this obligation is such that if the aforesaid Principal shall be awarded the Contract the said Principal will, within the time required, enter into a formal Contract and give a good and sufficient bond to secure the performance of the terms of and conditions of the Contract, then this obligation to be void; otherwise, the Principal and the Surety will pay unto the Obligee the difference in money between the amount of the Contract as awarded and the amount of the proposal of the next lowest bidder, which amount shall not exceed ten thousand (\$10,000.00) dollars. If no other bids are received, the full amount of the proposal guarantee shall be so retained or recovered as liquidated damages for such default.

Signed, Sealed and Delivered \_\_\_\_\_  
Date

Witness as to Principal: \_\_\_\_\_  
Contracting Firm

BY: \_\_\_\_\_ (SEAL)

COUNTERSIGNED: \_\_\_\_\_ (SEAL)  
Name of Surety

BY: \_\_\_\_\_

**BIDS WILL NOT BE CONSIDERED UNLESS BID BOND IS SIGNED BY PRINCIPAL AND SURETY.**

**SECTION VII**

**PERFORMANCE BOND**

KNOW ALL MEN: That we \_\_\_\_\_  
(Insert here the name and address or legal title of the Contractor)

\_\_\_\_\_ hereinafter called the Principal,

\_\_\_\_\_ (Insert here the name and address or legal title of one or more Sureties)

\_\_\_\_\_ and

\_\_\_\_\_ and

\_\_\_\_\_ hereinafter called the Surety or Sureties, are held and firmly bound unto the Owner in the sum of \_\_\_\_\_ (\$ \_\_\_\_\_) for the payment whereof the Principal and the Surety or Sureties bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal has, by means of a written agreement, dated \_\_\_\_\_ entered into a Contract with the Owner for **Orange Beach REC Center Drainage and Tennis Center Court Improvements**, which agreement is by reference made a part hereof,

NOW THEREFORE, The conditions of this obligation are such that if the Principal shall faithfully perform the Contract on his part, and satisfy all claims and demands, incurred for the same, and shall fully indemnify and save harmless the Owner from all cost and damage which he may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good for any such default thence this obligation shall be null and void; otherwise, it shall remain in full force and effect.

PROVIDED, HOWEVER, that no suit, action or proceedings, by reason of any default whatever be brought on his bond after twelve months from the day on which the final payment under the Contract falls due.

PROVIDED, further, that the said Surety or Sureties, for value received hereby stipulate and agree that no change, extension of time, or addition to the terms of the Contract or to the work to be performed thereunder of the specifications thereof shall in any way effect their obligations on this bond, and they do hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the work, or to the specifications.

SIGNED, SEALED, AND DELIVERED this \_\_\_\_\_ day of \_\_\_\_\_.

(Individual Principals Sign Here)

Witnesses:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_(SEAL)  
\_\_\_\_\_(SEAL)  
\_\_\_\_\_(SEAL)  
\_\_\_\_\_(SEAL)

Attest:

\_\_\_\_\_  
\_\_\_\_\_

(Corporate Principal Sign Here)

\_\_\_\_\_  
BY: \_\_\_\_\_

Attest:

\_\_\_\_\_

(Surety Sign Here)

\_\_\_\_\_  
BY: \_\_\_\_\_

COUNTERSIGNED:

\_\_\_\_\_

**SECTION VIII**

**LABOR AND MATERIALS BOND**

KNOW ALL MEN BY THESE PRESENTS, THAT WE \_\_\_\_\_ as Principal, and \_\_\_\_\_ as Surety, are held and firmly bound unto said Owner, hereinafter called the Obligee, in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) lawful money of the United States, for the payment of which sum and truly to be made, we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal has entered into a certain Contract with said Obligee, dated \_\_\_\_\_ (hereinafter called the Contract) for **Orange Beach REC Center Drainage and Tennis Center Court Improvements**, and the specifications for said work shall be deemed a part hereof as fully as if set out herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH THAT if the said Principal and all subcontractors to whom any portion of the work in said Contract is sublet and all assignees of said Principal and of such subcontractors shall promptly make payments to all persons supplying him or them with labor, materials, or supplies for or in the prosecution of the work provided for in such Contract, or any amendment or extension of or addition to said Contract, and for the payment of reasonable attorney's fees incurred by the successful claimant or plaintiffs in suits or claims against the Contractor arising out of or in connection with the said Contract, then the above obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is subject to the following conditions and limitations.

(a) Any person, firm or corporation that has furnished labor, materials, or supplies for or in the prosecution of the work provided for in said Contract shall have a direct right to action against the Principal and Surety on this bond, which right of action shall be asserted in a proceeding, instituted in the County in which the work provided for in said Contract is to be performed or in any County in which said Principal or Surety does business. Such right of action shall be asserted in a proceeding instituted in the name of the claimant or claimants for his or their use and benefit against the Principal and Surety or either of them (but not later than one (1) year after the final settlement of said Contract falls due) in which action such claim or claims shall be adjusted and judgment rendered thereon.

(b) The Principal and Surety hereby designate and appoint \_\_\_\_\_, or his successor or representative as the agent of each of them to receive and accept services of process or other pleading issued, or filed in any proceeding instituted on this bond and hereby consent that such service shall be the same as personal service on the Principal and/or Surety.

(c) The Surety shall not be liable hereunder for any damages or compensation recoverable under Workmen's Compensation or Employer's Liability Statute.

(d) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or proceeding thereon that is instituted later than one year after the final settlement of said Contract.

(e) This bond is given pursuant to the terms of an Act of the Legislature of the State of Alabama approved February 8, 1935, entitled: "An Act to further provide for Bonds and Contractors on State and other public works and suits thereon".

(f) The full name and residence of each individual party to the bond must be inserted in the first paragraph.



(g) If the Principal is a partnership, the full name of all partners must be inserted in the first paragraph which must recite that they are the partners composing the partnership (to be named) and all partners must execute the bond as individuals.

(h) The State of Incorporation of each corporate party to bond must be inserted in the first paragraph and the bond must be executed under the Corporate Seal of each party attested by its secretary or other appropriate officer.

(i) The date of the bond must not be prior to the date of the Contract.

SIGNED, SEALED, AND DELIVERED this \_\_\_\_\_ day of \_\_\_\_\_.

(Individual Principals Sign Here)

Witnesses:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_(SEAL)  
\_\_\_\_\_(SEAL)  
\_\_\_\_\_(SEAL)  
\_\_\_\_\_(SEAL)

Attest:

\_\_\_\_\_

(Corporate Principal Sign Here)

\_\_\_\_\_  
BY: \_\_\_\_\_

Attest:

\_\_\_\_\_

(Surety Sign Here)

\_\_\_\_\_  
BY: \_\_\_\_\_

**SECTION IX**

**CONTRACT FOR CONSTRUCTION**

THIS CONTRACT, entered into this \_\_\_\_\_ day of \_\_\_\_\_, by **CITY OF ORANGE BEACH, ALABAMA**, hereinafter called the Owner, Party of the First Part, and \_\_\_\_\_ a Corporation organized and existing under the laws of the State of \_\_\_\_\_, a Partnership consisting of \_\_\_\_\_ of the City of \_\_\_\_\_ in the State of \_\_\_\_\_ hereinafter called the Contractor, Party of the Second Part.

WITNESSETH: That the parties hereto do mutually agree as follows:

The Contractor shall furnish the labor, materials and perform the work for the construction of:

**City of Orange Beach**

**Orange Beach REC Center Drainage and Tennis Court Improvements**

and other work, complete in place with all appurtenances, for the consideration of the unit prices set forth in the Contractor's proposal (estimated to total \$ \_\_\_\_\_) for the various items of work and in strict and entire conformity with the provisions of the Contract, the advertisement and proposal, the plans, general conditions, special provisions and supplemental specifications, and specifications prepared (or approved) and submitted by the Owner, copies of which are hereto attached, and which said plans and specifications and the advertisement and the proposal are hereby made a part of this agreement as fully and to the same effect as if the same has been set forth at length in the body of this Agreement.

The work shall be commenced within ten (10) days of the date specified in a work order to be issued to the Contractor by the Owner, or its authorized representative, and shall be completed within **EIGHTY (80) working days** from and after the commencement date stipulated in said work order. It is mutually agreed between the parties hereto that time is the essence of this Contract, and in the event the construction of the Work is not completed within the time herein specified, it is agreed that from the compensation otherwise to be paid to the Contractor, the first party may retain as liquidated damages, \$1,900.00 for each working day beyond the required date of completion.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the day and year first above written.

WITNESS:

CITY OF ORANGE BEACH

\_\_\_\_\_

BY: \_\_\_\_\_

\_\_\_\_\_  
Official Title

WITNESS:

\_\_\_\_\_

BY: \_\_\_\_\_

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Federal ID #

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_ of the corporation named as Contractor herein that \_\_\_\_\_, who signed this Contract on behalf of the Contractor, was then \_\_\_\_\_ of said corporation: that said Contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporation by authority of its corporate powers.

\_\_\_\_\_  
(CORPORATE SEAL)

STATE OF ALABAMA

COUNTY OF \_\_\_\_\_)

I, the undersigned authority, a Notary Public in and for said State and County, hereby certify that \_\_\_\_\_  
\_\_\_\_\_ whose name as \_\_\_\_\_ of \_\_\_\_\_, is  
signed to the foregoing instrument, and who is known to me, acknowledged before me on this day, that being  
informed of the contents of the within instrument, he, as such officer and with full authority executed the same  
voluntarily and as the act of said corporation.

Given under my hand and Official Seal this the \_\_\_\_\_ day of \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

\_\_\_\_\_  
MY COMMISSION EXPIRES

STATE OF ALABAMA

COUNTY OF \_\_\_\_\_)

I, the undersigned authority, a Notary Public in and for said State and County, hereby certify that \_\_\_\_\_  
\_\_\_\_\_ whose name as \_\_\_\_\_, of \_\_\_\_\_  
\_\_\_\_\_, acknowledged before me on this day that, being informed of the contents of the within instrument he, in  
his capacity as such, executed the same voluntarily on the day the same bears date.

Given under my hand and seal this \_\_\_\_\_ day of \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

\_\_\_\_\_  
MY COMMISSION EXPIRES

## SECTION X

### GENERAL CONDITIONS

#### **1. CONTRACT AND CONTRACT DOCUMENTS:**

The Plans, Specifications and Addenda, hereinafter enumerated in Paragraph 1 of the General Conditions shall form part of this Contract the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in the said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

#### Contents

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3. Shop Drawings
4. Materials, Services, and Facilities
5. Contractor's Title to Materials
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8. Patents
9. Surveys, Permits and Regulations
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50. Plans and Specifications Furnished
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52. Equipment
53. Determination of Lines and Grades
54. Contract Close-Out

The following terms are used in this contract are respectively defined as follows:

- (a) "Contractor": A person, firm or corporation with whom the contract is made by the Owner.
- (b) "Subcontractor": A person, firm or corporation supplying labor and materials or only labor for work at the site of the project for, and under separate contract or agreement with the Contractor.
- (c) "Work on at the project": Work to be performed at the location of the project, including the transportation of materials and supplies to or from the location of the project by employees of the Contractor and any Subcontractor.

**2. ADDITIONAL INSTRUCTION AND DETAIL DRAWINGS:**

The Contractor will be furnished additional instructions and detail drawings as necessary to carry out the work included in the contract. The additional drawings and instruction thus supplied to the Contractor will coordinate with the Contract Documents and will be so prepared that they can be reasonably interpreted as part thereof. The Contractor shall carry out the work in accordance with the additional detail drawing and instructions. The Contractor and the Engineer will prepare jointly (a) schedule, fixing the dates at which special detail drawings will be required, such drawings, if any, to be furnished by the Engineer in accordance with said schedule, and (b) a schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment, and the completion of the various parts of the work; each such schedule to be subject to change from time to time in accordance with the progress of the work.

**3. SHOP DRAWINGS:**

The Contractor shall submit to the Engineer for review, five (5) copies of all Shop Drawings, plus the number of copies the Contractor wishes to have returned to him after the Engineer's review, collated according to the organization of the accepted schedule of Shop Drawings, which has written indication that the Contractor has satisfied their responsibilities under the Contract. All Shop Drawing submissions shall be identified on enclosure and show Project name and Project number. The information shown on the Shop Drawings will be complete with respect to all design criteria, materials, and similar data to enable the Engineer to review the information as required.

The Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar data prior to submission to the Engineer for review.

The Contractor shall furnish five (5) complete sets of the corrected copies of Shop Drawings including parts list, operation and maintenance manuals, lubrication charts and descriptive literature for all equipment. Also, any manufacturer's drawings of special materials required for the job shall be submitted to the Engineer for review prior to installation.

**4. MATERIALS, SERVICES AND FACILITIES:**

- (a) It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time.
- (b) Any work necessary to be performed after regular working hours, on Sundays or Legal Holidays, shall be performed without additional expense to the Owner.

**5. CONTRACTOR'S TITLE TO MATERIALS:**

No materials or supplies for the work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the work, free from all liens, claims or encumbrances.

**6. INSPECTION AND TESTING OF MATERIALS:**

- (a) All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Owner. The Owner will pay for all laboratory inspection service direct, and not as a part of the contract.
- (b) Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specification and suitability for uses intended.

**7. "OR EQUAL" CLAUSE:**

Whenever a material, article or piece of equipment is identified on the plans or in the specifications by reference to manufacturer's or vendor's names, trade names, catalogue numbers, etc., it is intended merely to establish a standard; and, any materials, article, or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, as determined by the Engineer is of equal substance and function. It shall not be purchased or installed by the Contractor without the Engineer's written approval.

**8. PATENTS:**

- (a) The Contractor shall hold and save the Owner and its officer, agents, servants, and employees harmless for liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article or appliance manufactured or used in the performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents.
- (b) License or Royalty Fees: License and/or Royalty Fees for the use of a process which is authorized by the Owner of the project must be reasonable, and paid to the holder of the patent, or his authorized licensee, direct by the Owner and not by or through the Contractor.
- (c) If the Contractor uses any design, device or materials covered by letters, patent or copyright, he shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device or material. It is mutually agreed and understood, that, without exception, the contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his Sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented

or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract, and shall indemnify the Owner for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

**9. SURVEYS, PERMITS, AND REGULATIONS:**

Unless otherwise expressly provided for in the Specifications, the Owner will furnish to the Contractor centerline, clearing limits, and control points for project. The Contractor shall procure and pay all permits, licenses and approval necessary for the execution of his contract. Rules, orders, and regulations relating to performance of the work, the protection of adjacent property, and the maintenance of passageways, guard fences or other protective facilities.

Construction staking will be provided for only one time. Additional survey work will be provided by Contractor with no additional cost to the Owner. Contractor will be provided coordinates for said project upon request.

**10. CONTRACTOR'S OBLIGATIONS:**

The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the provisions of this contract and said specifications and in accordance with the plans and drawings covered by this contract any and all supplemental plans and drawings, and in the progress of the work. He shall furnish, erect, maintain, and remove such construction plant and such temporary works as may be required.

The Contractor shall observe, comply with and be subject to all terms, conditions, requirements and limitations of the contract and specifications, and shall do, carry on, and complete the entire work to the satisfaction of the Engineer and the Owner.

**11. WEATHER CONDITIONS:**

In the event of temporary suspension of work, or during inclement weather, or whenever the Engineer shall direct, the Contractor will, and will cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If in the opinion of the Engineer, any work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any of his Subcontractors so to protect his work, such materials shall be removed and replaced at the expense of the Contractor.

**12. PROTECTION OF WORK AND PROPERTY—EMERGENCY:**

The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work, and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in the contract or by the Owner, or his duly authorized representatives.

In case of any emergency which threatens loss or injury of property, and/or safety of life, the Contractor will be allowed to act, without previous instructions from the Engineer, in a diligent manner. He shall notify the Engineer immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted to the Engineer for approval.

Where the Contractor has not taken action but has notified the Engineer of any emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Engineer.



The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in Paragraph 15 of the General Conditions.

**13. REPORTS, RECORDS, AND DATA:**

The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this contract.

**14. SUPERVISION BY CONTRACTOR:**

At the site of the work the Contractor shall employ a construction superintendent or foreman who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the Engineer and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll.

**15. CHANGES IN WORK:**

No changes in the work covered by the approved Contract Documents shall be made without having prior written approval of the Owner. Charges or credits for the work covered by the approved change shall be determined by one or more, or a combination of the following methods:

- (a) Unit bid prices previously approved.
- (b) An agreed lump sum.
- (c) The actual cost of:
  - 1. Labor, including foremen;
  - 2. Materials entering permanently into the work;
  - 3. The ownership or rental cost of construction plant and equipment during the time of use on the extra work;
  - 4. Power and consumable supplies for the operation of power equipment;
  - 5. Insurance; and
  - 6. Social Security and old age and unemployment contribution. To the cost under (c) there shall be added a fixed fee to be agreed upon but not to exceed fifteen (15%) percent of the actual cost of the work. The fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expenses.

**16. EXTRAS:**

Without invalidating the contract, the Owner may order extra work or make changes by altering, adding to or deducting from the work, the contract sum being adjusted accordingly and the consent of the Surety being first obtained where necessary or desirable. All the work of the kind bid upon shall be paid for at the price stipulated in the proposal, and no claims for any extra work or materials, shall be allowed unless the work is ordered in writing by the Owner or its Engineer, acting officially for the Owner, and the price is stated in such order.

**17. OWNER'S RIGHT TO PERFORM WORK:**

It is understood that the Owner may delete any and/or all of the items listed above and the Contractor agrees to construct the remaining items at the bid price for each item.

**18. TIME FOR COMPLETION AND LIQUIDATED DAMAGES:**

It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the contract of the work to be done hereunder are

ESSENTIAL CONDITIONS of this contract; and it is further mutually understood and agreed that the work embraced in his contract shall be commenced on a date to be specified in the "Notice to Proceed".

The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part of his consideration for the awarding of this contract, to pay to the Owner the amount specified in the contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work.

It is mutually agreed between the parties hereto that time is the essence of this Contract, and in the event the construction of the Work is not completed within the time herein specified, it is agreed that from the compensation otherwise to be paid to the Contractor, the second party may retain as liquidated damages, the amount specified in Section 108 of the State of Alabama Standard Specifications for Highway Construction, for each working day beyond the required date of completion or \$500 dollars, whichever is greater.

It is further agreed that time is of the essence of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this contract. Provided that the Contractor shall not be charged with liquidated damages or any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner; Provided, further, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

- (a) To any preference, priority or allocation order duly issued by the Government;
- (b) To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and
- (c) To any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article.

Provided, further, that the Contractor shall, within five (5) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the contract, notify the Owner, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter.

**19. CORRECTION OF WORK:**

All work, all materials, whether incorporated in the work or not, all processes of manufacture, and all methods of construction shall be at all times and places subject to the inspection of the Engineer who shall be the final judge of the quality and suitability of the work, materials, processes of manufacture, and methods of construction for the purposes for which they are used. Should they fail to meet his approval they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by the Contractor at his own expense. Rejected materials shall immediately be removed from the site. If in the opinion of the Engineer, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work injured or not performed in accordance with the Contract Documents, the compensation

to be paid the Contractor hereunder shall be reduced by such amount as in the judgment of the Engineer shall be equitable.

**20. SUBSURFACE CONDITIONS FOUND DIFFERENT:**

Should the Contractor encounter sub-surface and/or latent conditions at the site materially differing from those shown on the Plans or indicated in the Specifications, he shall immediately give notice to the Engineer of such conditions before they are disturbed. The Engineer will thereupon promptly investigate the conditions, and if he finds that they materially differ from those shown on the Plans or indicated in the Specifications, he will at once make such changes in the Plans and/or Specifications as he may find necessary, any increase or decrease of cost resulting from such changes to be adjusted in the manner provided in Paragraph 15 of the General Conditions.

**21. CLAIMS FOR EXTRA COST:**

No claim for extra work or cost shall be allowed unless the same was done in pursuance of a written order of the Engineer approved by the Owner, as aforesaid, and the claim presented with the first estimate after the changed or extra work is done. When work is performed under the terms of subparagraph 15(c) of the General Conditions, the Contractor shall furnish satisfactory bills, payrolls and vouchers covering all items of cost and when requested by the Owner, give the Owner access to accounts relating thereto.

**22. RIGHT OF THE OWNER TO TERMINATE CONTRACT:**

In the event that any of the provisions of this contract are violated by the Contractor, or by any of his subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate the contract, such notices to contain the reasons for such intention to terminate the contract, and unless within three (3) days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement of correction be made, the contract shall upon the expiration of said three (3) days, cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the Surety and the Contractor and the Surety shall have the right to take over and perform the contract; Provided, however, that if the Surety does not commence performance thereof within five (5) days from the mailing to such Surety of notice of termination, the Owner may take over the work and prosecute the same to completion by contract or by force account for the account and at the expense of the Contractor and the Contractor and his Surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefor.

**23. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES:**

Immediately after execution and delivery of the contract, and before the first partial payment is made, the Contractor shall deliver to the Owner an estimated construction progress schedule in form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents and the anticipated amount of each monthly payment that will be come due the Contractor in accordance with the progress schedule. The Contractor shall also furnish on forms to be supplied by the Owner (a) detailed estimate giving a complete breakdown of the contract price and (b) periodic itemized estimates of work done for the purpose of making partial payment thereon. The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

**24. PAYMENTS TO CONTRACTOR:**

- (a) Not later than the 15th day of each calendar month the Owner shall make a progress payment to the Contractor on the basis of a duly certified and approved estimate of the work performed during the preceding calendar month under this contract, but to insure the proper performance of this contract, the Owner shall retain ten (10%) percent of the amount of each estimate until final

completion and acceptance of all work covered by this contract: Provided, that the Contractor shall submit his estimate not later than the first day of the month:

- (b) In preparing estimates the material delivered on the site and preparatory work done may be taken into consideration.
- (c) All material and work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the contract.
- (d) **Owner's Right to Withhold Certain Amounts and Make Application Thereof:** The Contractor agrees that he will indemnify and save the Owner harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails so to do, then the Owner may, after having served written notice on the said Contractor, either pay unpaid bills, of which the Owner has written notice, direct or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the contractor shall be resumed, in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor or his Surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the Owner shall be considered as a payment made under the contract by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.

**25. ACCEPTANCE OF FINAL PAYMENT CONSTITUTES RELEASE:**

The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and other relating to or arising out of this work. No payment, however, final or otherwise, shall operate to release the Contractor or his sureties from any obligations under this contract or the Performance and Payment Bond.

**26. PAYMENTS BY CONTRACTOR:**

The Contractor shall pay (a) for all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered, (b) for all materials, tools, and other expendable equipment to the extent of ninety (90%) percent of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the project and the balance of the cost thereof, not later than the 30th day following the completion of that party of the work in or on which such materials, tools, and equipment are incorporated or used, and (c) to each of his subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his subcontractors to the extent of each subcontractor's interest therein.

**27. INSURANCE:**

The Contractor shall not commence work under this contract until he has obtained all the insurance required under this paragraph and such insurance has been approved by the Owner, nor shall the Contractor allow any

subcontractor to commence work on his subcontract until the insurance required of the subcontractor has been so obtained and approved.

- (a) **Compensation Insurance:** The Contractor shall procure and shall maintain during the life of this contract Workmen's Compensation Insurance as required by applicable State or territorial law for all of his employees to be engaged in work at the site of the project under this contract and, in case of any such work sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this contract is not protected under the Workmen's Compensation Statute, the Contractor shall provide and shall cause each subcontractor to provide adequate employer's liability insurance for the protection of such of his employees as are not otherwise protected.
- (b) **Contractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance:** The Contractor shall procure and shall maintain during the life of this contract Contractor's Public Liability Insurance, Contractor's Property Damage Insurance and Vehicle Liability Insurance in the amounts specified in the Supplemental General Conditions. (c) **Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance:** The Contractor shall either (1) require each of his subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's Public Liability and Property Damage Insurance and Vehicle Liability Insurance of the type and in the amounts specified in the Supplemental General Conditions specified in subparagraph (b) hereof or, (2) insure the activities of his policy, specified in subparagraph (b) hereof.
- (c) **Scope of Insurance and Special Hazards:** The insurance required under subparagraphs (b) and (c) hereof shall provide adequate protection for the Contractor and his subcontractors, respectively, against damage claims which may arise from operations under this contract, whether such operations be by the insured or by anyone directly or indirectly employed by him and, also against any of the special hazards which may be encountered in the performance of this contract as enumerated in the Supplemental General Conditions.
- (d) **Builder's Risk Insurance (Fire and Extended Coverage):** Until the project is completed and accepted by the Owner, the Owner, or Contractor (at the Owner's option as indicated in the Supplemental General Conditions), is required to maintain Builder's Risk Insurance (fire and extended coverage) on a 100 percent completed value basis on the insurable portion of the project for the benefit of the Owner, the Contractor, subcontractors as their interest may appear. The Contractor shall not include any costs for Builder's Risk Insurance (fire and extended coverage premiums during construction unless the Contractor is required to provide such insurance; however, this provision shall not release the Contractor from his obligation to complete, according to plans and specifications, the project covered by the contract, and the Contractor and his Surety shall be obligated to full performance of the Contractor's undertaking.
- (e) **Proof of Carriage of Insurance:** The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and date of expiration of policies. Such certificates shall also contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered except after fifteen (15) days written notice has been received by the Owner."

**28. CONTRACT SECURITY:**

The Contractor shall furnish a performance bond in an amount at least equal to one hundred (100%) percent of the contract prices as security for the faithful performance of this contract and also a payment bond in an amount not less than one hundred (100%) percent of the contract price or in a penal sum not less than that prescribed by State, territorial or local law, as security for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract. The performance bond and the payment bond may be in one or separate instruments in accordance with local law.

**29. ADDITIONAL OR SUBSTITUTE BOND:**

If at any time the Owner, for justifiable cause, shall be or become dissatisfied with any surety or sureties, and then upon the Performance or Payment Bonds, the Contractor shall within five (5) days after notice from the Owner so to do, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such an acceptable bond to the Owner.

**30. ASSIGNMENTS:**

The Contractor shall not assign the whole or any part of this contract or any moneys due or become due hereunder without written consent of the Owner. In case the Contractor assigns all or part of any moneys due or to become due under this contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to prior claims of all persons, firms and corporations of services rendered or materials supplied for the performance of the work called for in this contract.

**31. MUTUAL RESPONSIBILITY OF CONTRACTORS:**

If, through acts of neglect on the part of the Contractor, any other Contractor or any subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other Contractor or subcontractor by agreement or arbitration if such other Contractor or subcontractors will so settle. If such other Contractor or subcontractor shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.

**32. SEPARATE CONTRACT:**

The Contractor shall coordinate his operations with those of other Contractors. Cooperation will be required in the arrangement for the storage of materials and in the detailed execution of the work. The Contractor, including his subcontractors, shall keep informed of the progress and the detail work of other Contractors and shall notify the Engineer immediately of lack of progress or defective workmanship on the part of other Contractors. Failure of a contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with his own work.

**33. SUBCONTRACTING:**

(a) The Contractor may utilize the services of specialty subcontractors only on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors. The amount of work performed by a subcontractor shall be limited to forty (50%) percent of the Contract price, unless authorized by the Owner and/or Engineer.

(b) The Contractor shall not award any work to any subcontractor without prior written approval of the Owner, which approval will not be given until the Contractor submits to the Owner a written

statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Owner may require.

- (c) The Contractor shall be as fully responsible to the Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- (d) The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and other contract documents insofar as applicable to the work of subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the contract documents.
- (e) Nothing contained in this contract shall create any contractual relation between any subcontractor and the Owner.

**34. ENGINEER'S AUTHORITY:**

The Engineer shall give all orders and directions contemplated under this contract and specifications, relative to the execution of the work. The Engineer shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Engineer's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any question shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the Engineer's shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

The Engineer shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the Contractor under this contract and other Contractors performing work for the Owner shall be adjusted and determined by the Engineer.

**35. STATED ALLOWANCES:**

The Contractor shall include in his proposal the cash allowances stated in the Supplemental General Conditions. The Contractor shall purchase the "Allowed Materials" as directed by the Owner on the basis of the lowest and best bid of at least three competitive bids. If the actual price for purchasing the "allowed Materials" is more or less than the "Cash Allowance", the contract price shall be adjusted accordingly. The adjustment in contract price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance or any other incidental expenses. The cost of installation of the "Allowed Materials" shall be included in the applicable sections of the Contract Specifications covering this work.

**36. USE OF PREMISES AND REMOVAL OF DEBRIS:**

The Contractor expressly undertakes at his own expense:

- (a) to take every precaution against injuries to persons or damage to property;
- (b) to store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractors;
- (c) to place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work; materials, and debris caused by his operations, to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance;

- (d) before final payment to remove all surplus material, false-work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition;
- (e) to effect all cutting, fitting or patching of his work required to make the same to conform to the plans and specifications and, except with the consent of the Engineer, not to cut or otherwise alter the work of any other Contractor.

**37. LANDS AND RIGHTS-OF-WAY:**

Prior to the start of construction, the Owner shall obtain all lands and rights-of-way necessary for the carrying out and completion of work to be performed under this contract.

**38. GENERAL GUARANTY:**

Neither the final certificate of payment nor any provision in the Contract Documents, nor partial or entire occupancy of the premises by the Owner, shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the work unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness.

**39. CONFLICTING CONDITIONS:**

Order of precedence of Sections of the Contract Documents shall be in descending order as follows: CONTRACT, GENERAL CONDITIONS, SPECIAL PROVISIONS, all other Sections. Any provision in any Section which may be in conflict or inconsistent with any provision in any Section of greater precedence shall be void to the extent of such conflict or inconsistency.

**40. NOTICE AND SERVICE THEREOF:**

Any notice to any Contractor from the Owner relative to any part of this contract shall be in writing and considered delivered and the service thereof completed, when said notice is posted, by certified or registered mail to the said Contractor at his last given address, or delivered in person to the said Contractor or his authorized representative on the work.

**41. PROVISIONS REQUIRED BY LAW DEEMED INSERTED:**

Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion or correction.

**42. PROTECTION OF LIVES AND HEALTH:**

"The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes, in addition to specific safety and health regulations described by Chapter XIII, Bureau of Labor Standards, Department of Labor, Part 1518, Safety and Health Regulations for Construction, as outlined in the Federal Register, Volume 36, No. 75, Saturday, April 17, 1971. Title 29 - LABOR, shall be observed and the Contractor shall take or cause to be taken, such additional safety and health measures as the Contracting Authority may determine to be reasonably necessary."



**43. OTHER PROHIBITED INTERESTS:**

No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting or approving any architectural, engineering, inspection, construction or material supply contracts or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part hereof. No officer, employee, architect, attorney, engineer or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

**44. USE AND OCCUPANCY PRIOR TO ACCEPTANCE BY OWNER:**

The Contractor agrees to the use and occupancy of a portion or unit of the project before formal acceptance by the Owner, provided the Owner:

- (a) Secures written consent of the Contractor except in the event, in the opinion of the Engineer, the Contractor is chargeable with unwarranted delay in final cleanup of punch list items or other contract requirements.
- (b) Secures endorsement from the insurance-carrier and consent of the surety permitting occupancy of the building or use of the project during the remaining period of construction, or,
- (c) When the project consists of more than one building, and one of the buildings is occupied, secures permanent fire and extended coverage insurance, including a permit to complete construction. Consent of the surety must also be obtained.

**45. PROJECT DOCUMENTATION:**

- (a) General: Prior to start of construction, the Project right-of-way or easement shall be documented by the use of photographs or videotapes. Pictures (photo or video), in color, shall be taken at 100 feet on centers and shall be taken along the centerline of the Project looking up station. At least one station marker shall be visible for identification purposes and station markers shall be set by the Contractor. During the course of the documentation, any features or items of interest or importance which may be encountered shall be photographed or videotaped. Prints or tapes shall be delivered to the Engineer within one week after they are made. The Contractor will not be paid any portion of a partial payment request until prints or tapes are delivered to the Engineer's office.
- (b) Photographs: Clear, legible photographs shall be taken by a skilled technician using a wide angle lens. Each photograph shall be identified on the back with Project number, location, date and time of day that photograph was taken. One color print approximately 4" x 6" and the negative shall be delivered to the Engineer.
- (c) Digital Recording: The purpose of the videotape recordings shall be a supply of continuous visual and audio record of problem areas, items, and features found within any particular area. This video record may be supplemented with photographs to exactly identify and locate specific bad features or items.

The video recordings shall be concise depicting the check images of the affected area.. The video recording shall include both sound and video information. The recording shall shall produce a visual image equal to or better than the quality of the picture on a television monitor. The replay of the recorded video information, when reviewed on a monitor/receiver, shall be free of electrical interference and shall produce clear, stable images. The audio portion of the composite signal shall be sufficiently free of electrical interference and background noise to provide an oral report that is clear and completely and easily discernible. The audio portion of the recording shall include the

location or identification of the section being viewed, the station-to-station direction of travel, the distance traveled on the specific run, and any problems encountered.

Videotape recordings shall be enclosed in a vinyl plastic container which shall clearly indicate the date the tape was taken and the designated section(s) of the Project contained on the tape.

There shall be no separate payment for photographic and/or videotape work.

**46. SUSPENSION OF WORK:**

Should the Owner be prevented or enjoined from proceeding with work either before or after the start of construction by reason of any litigation or other reason beyond the control of the Owner, the Contractor shall not be entitled to make or assert claim for damage by reason of said delay; but time for completion of the work will be extended to such reasonable time as the Owner may determine will compensate for time lost by such delay with such determination to be set forth in writing.

**47. UNDERGROUND UTILITIES AND SERVICES:**

The plans show certain features of the topography and certain underground utilities, but they do not propose to show in complete detail all such lines or obstructions. Such topography and notes on the plans were inserted from records available and are for the contractor's convenience, and shall not be used as a basis for claims or extra compensation.

Minor obstructions are not shown on the plans. Their presence, and the required removal and the resetting thereof shall be considered incidental to the overall project and the cost for the work noted above shall be included in the overall bid price for the project (no separate payment).

Mailboxes, signs and other minor obstructions are not shown on the plans. Their presence, and the required removal and the resetting thereof shall be considered incidental to the overall project and the cost for the work noted above shall be included in the overall bid price for the project (no separate payment).

**48. EXISTING UTILITIES:**

The existing utilities as shown on the plans are for the Contractor's benefit. These utilities have been plotted from the best available records. However, failure to show any utility on the construction plans does not justify additional payment to the Contractor if said utility is damaged. The Contractor must notify the utility companies involved prior to starting construction and shall make every effort not to damage any utilities. If utilities are damaged by the Contractor, the Contractor must pay all expenses incurred in the repair at no cost to the Owner or Engineer.

**49. EROSION CONTROL:**

Immediately prior to any clearing and grubbing or any excavation which could disturb the soils, the Contractor shall install the erosion control items in locations indicated on the construction plans.

The Contractor will be responsible for identifying and installing erosion control in areas where erosion may be encountered during construction of the project. The Contractor shall take all necessary precautions to insure that the construction of the project and the erosion/sediment from the project are adequately controlled and do not damage streams or adjacent property.

The erosion control items installed shall be maintained by the Contractor throughout the course of the project.

**50. PLANS AND SPECIFICATIONS FURNISHED:**

The Engineer shall provide the Contractor with three (3) sets of construction plans and specifications. Any additional plans and specifications required by the Contractor must be paid for by the Contractor.

**51. PUBLIC CONVENIENCE:**

No attempt is made to restrict work hours of the Contractor's operations, but he is reminded that it will be necessary to arrange his work schedule to provide the least inconvenience to the public and individual residents.

The Contractor shall take extra precaution to insure that traffic is protected by the use of, but not limited to, flashing signs and barrels.

No direct payment will be made for any of the work described in this section.

**52. EQUIPMENT:**

Choice of equipment for excavation or other project work shall be the responsibility of the Contractor, however, any equipment that results in waste of material, inaccurate work, or otherwise proves objectionable shall be replaced as directed by the Engineer at no additional cost to the Owner.

**53. DETERMINATION OF LINES AND GRADES:**

The Engineer will set one set of construction stakes for the Contractor establishing all lines and grades necessary for the proper prosecution of the work. The location, alignment and elevation of all parts of the work will be established by the Engineer, but the Contractor shall assume full responsibility for construction to alignment, grade, and dimensions indicated in the plans. These stakes shall constitute the field control by which the Contractor shall govern and execute his work.

**54. CONTRACT CLOSE-OUT:**

Subsequent to the final inspection of this project by the Engineer, the following requirements must be satisfied by the Contractor before final payment can be made.

- a. The Contractor must publicly advertise the NOTICE OF COMPLETION furnished by the Engineer a minimum of once a week for four consecutive weeks.
- b. The Contractor must execute copies of CONTRACTOR'S AFFIDAVIT OF PAYMENT OF CLAIMS AND DEBTS on the form furnished by the Engineer.
- c. The Contractor must have his surety execute copies of CONSENT OF SURETY TO FINAL PAYMENT on the form furnished by the Engineer.
- d. The Contractor must furnish a letter on his letterhead acknowledging that acceptance of final payment by the Contractor constitutes a waiver of all claims, present or future, in connection with this project as per Item 25 of this section.
- e. If any purchase items have been incorporated in the work, the Contractor must furnish a letter on his letterhead assigning those warranties to the OWNER. Copies of said warranties shall be bound in one binder and submitted along with the letter assignment.
- f. The Contractor must provide one complete set of "as built" covering all utility routing, structural, mechanical, and electrical aspects of the work, including wiring schematics.

## SECTION XI

### SPECIAL PROVISIONS

1. All insurance and bonds must be furnished by a Surety licensed to do business in the State of Alabama, signed or countersigned by a licensed Resident Agent of Alabama and have a minimum rating of A Class VI as reported in the latest issue of Best's Key Rating Guide Property and Casualty.
2. Payment for any work incidental to the completion of this contract, for which no item was set up, shall be a subsidiary of other related bid items.
3. The City of Orange Beach reserves the right to add to or reduce quantities or delete any item or items in this contract without any adjustment in unit price. Additional items of work that is necessary for the completion of this contract and is not a part of the bid contract may be added by Change Order.
4. Failure to complete the work in this contract within the time stipulated will result in a deduction for money due the contractor. Such liquidated damages will be assessed as provided for in Item 108 of the Alabama Department of Transportation Standard Specifications for Highway Construction, 2012 Edition, with all latest additions.
5. The contractor shall provide maintenance for a period of one year from final acceptance of the work. This maintenance work shall include furnishing all materials, labor, and incidentals necessary to maintain the project in acceptable condition as determined by the City Engineering Department. This maintenance for a one year period shall be provided with no additional compensation.
6. Any asphalt used on the project shall have an approved mix design and shall not contain shingles (RAS).
7. The quantities shown on the proposal and plans are approximate. The Contractor will be paid only for the amount of each item to complete the project.
8. It shall be the Contractor's responsibility to determine if the required construction can be performed within the area provided and comply with requirements of the Occupational Safety and Health Regulations (OSHA) for construction projects of this type. Any safety measures or methods of construction that are necessary in the construction of this project to comply with these regulations are the Contractor's responsibility and shall be provided with all costs to be included in the various pay items of the contract (no direct payment).
9. The Contractor shall submit a Traffic Control Scheme for the City Traffic Engineer's approval prior to commencement of any work on this project. The scheme shall be in full compliance with all the provisions and requirements as designated in Item 740 and Article 104.04 of the Standard Specifications, the Federal MUTCD Manual, Millennium Edition, and other requirements set forth by the Traffic Engineer. Payment for items in Section 740 shall be full compensation for all materials, signage, lights, hardware, drums, equipment, labor, handling and maintenance until project completion and any other incidentals necessary to complete the job. The Contractor shall restore existing traffic mechanisms to original condition.

10. Any damage caused by the Contractor or his subcontractors to the existing bituminous asphalt surface and/or base structure on local streets leading to or associated with this project shall be repaired by the Contractor at no cost to the owner.
11. It shall be the responsibility of the contractor to provide a substantial stand of grass at the time of the Final Inspection. Any sod that is not living and/or viable in the opinion of the Engineer shall be replaced at no additional cost to the project.
12. Contactor shall remove and dispose of all waste and unsuitable material, from the project site. The Contractor will be held responsible for disposal of debris and construction materials in an appropriate manner and at an approved, permitted location. The Contractor will be responsible for compliance with applicable laws or ordinances regarding material type and disposal site. Disposal of construction materials and debris is specified in Subarticles 206.4(c) and 201.03(d) of the Standard Specifications.
13. If provided in the Bid Schedule, mix design for bituminous Concrete Wearing Surface, Item 429-A, shall be based on the Alabama Department of Transportation Standard Specifications for Highway Construction, 2006 edition. The successful bidder will be required to submit mix designs to comply with Item 429-A, based on the Alabama Department of Transportation Standard Specifications for Highway Construction, 2006 Edition, with all latest additions and modifications of the Engineering Department for the City of Orange Beach, to the City's Testing Lab for approval.
14. Any damage to private property beyond the limits required to construct the project as determined by the Engineer shall be repaired at the Contractor's expense.
15. All pipe joints shall be wrapped to City of Orange Beach specifications. Pipes shall not have lifting holes.
16. There shall be **NO** adjustment to fuel or asphalt index for this project.
17. The Contractor shall provide, install and maintain all temporary erosion control measures shown on the drawings. Hay bales, silt fences and other approved erosion control devices shall be installed by the Contractor and shall be maintained throughout the course of this project. Adjustments to the methods and types of erosion control will be necessary during the course of the construction, and it will be the responsibility of the Contractor to provide, install and maintain these as well. The Engineer shall approve methods of erosion control. It will be the responsibility of the Contractor to satisfy himself that all Federal, State and Local Codes and Ordinances are abided by at all times during construction. Additionally, the Contractor shall implement any and all other Best Management Practices applicable per Federal, State, County and Municipal laws concerning water pollution.

18. The Contractor shall be required to have an acceptable Steel Wheel Roller that has all the mechanical parts working properly. In addition, a backup Steel Wheel roller in case of breakdown so as not to interrupt the continuous placing of asphalt. The tack truck shall, at all times during working hours, have the tack heated to a temperature suitable for placing. The spreader will be required to have all mechanical parts working properly. Mechanical parts are defined as hydraulics, tamper bars, burners, etc. A backup spreader shall be readily available so as not to interrupt the continuous placing of asphalt in case of breakdown.
19. Tack coat shall be emulsified asphalt grade CRS-2, CRS-2h, CSS-1, CSS-1h, CQS-1h, or CQS-1hp, or one of the Performance Graded Asphalt Binders shown in Article 804.07 in accordance with requirements of Section 405 of the State of Alabama Highway Department Standard Specifications for Highway Construction, 2012 Edition.
20. Contractor shall use a mechanical broom with blower in operating condition for cleaning streets prior to tacking and resurfacing operations.
21. All temporary stop work joints shall be made using paper. At the beginning of the next work day the contractor shall make every effort to make a joint that will conform to the existing road surface.

**SECTION 011000  
SUMMARY**

**PART 1 GENERAL**

**1.01 PROJECT**

- A. Project Name: OBA Tennis Center Renovations
- B. Owner's Name: City of Orange Beach.
- C. Landscape Architect's Name: WAS Design, Inc..
- D. The Project consists of the renovation of the community tennis center's court areas.

**1.02 CONTRACT DESCRIPTION**

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 005200 - Agreement Form.

**1.03 DESCRIPTION OF ALTERATIONS WORK**

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 024100.
- B. Owner will remove the following items before start of work:
  - 1. Existing fencing and gates at Owner's discretion..
  - 2. Existing windscreens at Owner's discretion..
  - 3. Existing landscape material at Owner's discretion..
- C. Contractor shall remove and deliver the following to Owner prior to start of work:
  - 1. Tennis court separation netting, cable and associated hardware..
- D. Contractor shall remove and store the following prior to start of work, for later reinstallation by Contractor:
  - 1. All non-permanent site furniture..
  - 2. Existing shade structures between courts..

**1.04 WORK BY OWNER**

- A. Items noted NIC (Not in Contract) will be supplied and installed by Owner before Substantial Completion. Some items include:
  - 1. Benches..
- B. Owner will supply and install the following:
  - 1. Landscape plantings..
  - 2. Landscape irrigation..

**1.05 FUTURE WORK**

- A. Provide [ ] for future installation of [ ].

**1.06 OWNER OCCUPANCY**

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

**1.07 CONTRACTOR USE OF SITE AND PREMISES**

- A. Provide access to and from site as required by law and by Owner:
  - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
  - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.

**END OF SECTION**

**SECTION 012000  
PRICE AND PAYMENT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress payments.

**1.02 SCHEDULE OF VALUES**

- A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Landscape Architect for approval.
- B. Forms filled out by hand will not be accepted.

**1.03 APPLICATIONS FOR PROGRESS PAYMENTS**

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Landscape Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Execute certification by signature of authorized officer.
- E. Submit one electronic and three hard-copies of each Application for Payment.

**END OF SECTION**



**SECTION 012200  
UNIT PRICES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Measurement and payment criteria applicable to Work performed under a unit price payment method.

**1.02 RELATED REQUIREMENTS**

- A. Section 012000 - Price and Payment Procedures: Additional payment and modification procedures.

**1.03 COSTS INCLUDED**

- A. Unit Prices included on the Bid Form shall include 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.

**1.04 MEASUREMENT OF QUANTITIES**

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Assist by providing necessary equipment, workers, and survey personnel as required.

**1.05 PAYMENT**

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Landscape Architect, multiplied by the unit price.
- B. 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.

**1.06 DEFECT ASSESSMENT**

- A. Replace Work, or portions of the Work, not complying with specified requirements.
- B. If, in the opinion of Landscape Architect, it is not practical to remove and replace the Work, Landscape Architect will direct one of the following remedies:
  - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Landscape Architect.
  - 2. The defective Work will be partially repaired to the instructions of the Landscape Architect, and the unit price will be adjusted to a new unit price at the discretion of Landscape Architect.
- C. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct one of the following remedies:
  - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Owner.
  - 2. The defective Work will be partially repaired to the instructions of the Owner, and the unit price will be adjusted to a new unit price at the discretion of Owner.
- D. The authority of Landscape Architect to assess the defect and identify payment adjustment is final.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 012300  
ALTERNATES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

A. Description of Alternates.

**1.02 ACCEPTANCE OF ALTERNATES**

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

**1.03 SCHEDULE OF ALTERNATES**

A. Alternate No. 1 - Tennis Court Surfacing:

1. Base Bid Item: Section 321823 2.01.A.1 and Drawing number 15 including 32-01 Laykold Cushion Plus System, Xtreme System.

2. Alternate Item: Section 321823 2.01.A.2 and Drawing number 15 including 32-01 Laykold Masters Gell System.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 012500  
SUBSTITUTION PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedural requirements for proposed substitutions.

**1.02 RELATED REQUIREMENTS**

- A. Section 012200 - Unit Prices, for additional unit price requirements.
- B. Section 012300 - Alternates, for product alternatives affecting this section.
- C. Section 013000 - Administrative Requirements: Submittal procedures, coordination.
- D. Section 016000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

**1.03 DEFINITIONS**

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies and equipment.
  - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
  - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.

**1.04 REFERENCE STANDARDS**

- A. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase) Current Edition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 GENERAL REQUIREMENTS**

- A. A Substitution Request for products, assemblies, materials and equipment constitutes a representation that the submitter:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
  - 2. Agrees to provide the same warranty for the substitution as for the specified product.
  - 3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
- D. Limit each request to a single proposed substitution item.

**3.02 SUBSTITUTION PROCEDURES DURING CONSTRUCTION**

- A. Submittal Form (after award of contract):
  - 1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Landscape Architect, in order to stay on approved project schedule.
- C. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Landscape Architect, in order to stay on approved project schedule.
  - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.

2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
3. Bear the costs engendered by proposed substitution of:
  - a. Owner's compensation to the Landscape Architect for any required redesign, time spent processing and evaluating the request.

**3.03 RESOLUTION**

- A. Landscape Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Landscape Architect will notify Contractor in writing of decision to accept or reject request.

**3.04 ACCEPTANCE**

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

**END OF SECTION**

**SECTION 013000  
ADMINISTRATIVE REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Construction progress schedule.
- E. Progress photographs.
- F. Submittals for review, information and project closeout.
- G. Requests for Interpretation (RFI) procedures.
- H. Submittal procedures.

**1.02 RELATED REQUIREMENTS**

- A. Section 016000 - Product Requirements: General product requirements.
- B. Section 017000 - Execution and Closeout Requirements: Additional coordination requirements.
- C. Section 017800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

**1.03 REFERENCE STANDARDS**

- A. AIA G716 - Request for Information 2004.
- B. AIA G810 - Transmittal Letter 2001.

**1.04 GENERAL ADMINISTRATIVE REQUIREMENTS**

- A. Comply with requirements of Section 017000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Landscape Architect:
  - 1. Requests for Interpretation (RFI).
  - 2. Requests for substitution.
  - 3. Shop drawings, product data, and samples.
  - 4. Test and inspection reports.
  - 5. Design data.
  - 6. Manufacturer's instructions and field reports.
  - 7. Applications for payment and change order requests.
  - 8. Progress schedules.
  - 9. Coordination drawings.
  - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
  - 11. Closeout submittals.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 PRECONSTRUCTION MEETING**

- A. Landscape Architect will schedule a meeting after Notice of Award.
- B. Attendance Required. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work:
  - 1. Owner or authorized representatives.
  - 2. Landscape Architect and their consultants.
  - 3. Contractor and its superintendent
  - 4. Major subcontractors
  - 5. Suppliers.
- C. Agenda: Discuss items of significance that could affect progress, including the following:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Submission of executed bonds and insurance certificates.
  - 3. Distribution of Contract Documents.

4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
  5. Tentative construction schedule.
  6. Phasing.
  7. Critical work sequencing and long lead times.
  8. Designation of personnel representing the parties to Contract and their duties.
  9. Lines of communication.
  10. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  11. Procedures for testing and inspecting.
  12. Distribution of Contract Documents.
  13. Use of premises and existing building.
  14. Work restrictions.
  15. Working hours.
  16. Owner's occupancy requirements.
  17. Responsibility for temporary facilities and controls.
  18. Procedures for disruptions and shutdowns.
  19. Construction waste management and recycling.
  20. Parking availability.
  21. Office, work and storage areas.
  22. Equipment deliveries and priorities.
  23. First aid.
  24. Security.
  25. Progress Cleaning.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Landscape Architect, Owner, participants, and those affected by decisions made.

### 3.02 **PROGRESS MEETINGS**

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Attendance Required:
  1. Contractor.
  2. Owner.
  3. Landscape Architect.
  4. Contractor's superintendent.
  5. Major subcontractors.
- C. Agenda:
  1. Review minutes of previous meetings.
  2. Review of work progress.
  3. Field observations, problems, and decisions.
  4. Identification of problems that impede, or will impede, planned progress.
  5. Review of submittals schedule and status of submittals.
  6. Review of RFIs log and status of responses.
  7. Maintenance of progress schedule.
  8. Corrective measures to regain projected schedules.
  9. Planned progress during succeeding work period.
  10. Maintenance of quality and work standards.
  11. Effect of proposed changes on progress schedule and coordination.
  12. Other business relating to work.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Landscape Architect, Owner, participants, and those affected by decisions made.

### 3.03 **CONSTRUCTION PROGRESS SCHEDULE**

- A. If preliminary schedule requires revision after review, submit revised schedule within 5 days.

- B. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
  - 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- C. Within 5 days after joint review, submit complete schedule.
- D. Submit updated schedule with each Application for Payment.

**3.04 PROGRESS PHOTOGRAPHS**

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Photography Type: Digital; electronic files.
- C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Landscape Architect.
- D. In addition to periodic, recurring views, take photographs of each of the following events:
  - 1. Completion of site clearing.
  - 2. Completion of subgrade prep.
  - 3. Completion of subbase.
  - 4. Completion of separation fabric.
  - 5. Completion of layout.
  - 6. Completion of fence bases, posts and light bases.
  - 7. Completion of bituminous binder layer.
  - 8. Completion of tack coat.
  - 9. Completion of bituminous wearing surface.
  - 10. Progress and completion of tennis court surfacing.
  - 11. Completion of fencing and lighting.
  - 12. Final completion, minimum of ten (10) photos.
- E. Views:
  - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
  - 2. Consult with Landscape Architect for instructions on views required.
  - 3. Provide factual presentation.
  - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
  - 1. Delivery Medium: Via email.
  - 2. File Naming: Include project identification, date and time of view, and view identification.
  - 3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
  - 4. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

**3.05 REQUESTS FOR INTERPRETATION (RFI)**

- A. Definition: A request seeking one of the following:
  - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
  - 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
  - 1. Prepare a separate RFI for each specific item.
    - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
    - b. Do not forward requests which solely require internal coordination between subcontractors.
  - 2. Prepare in a format and with content acceptable to the Landscape Architect.
  - 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
  - 1. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
    - a. Approval of submittals (use procedures specified elsewhere in this section).
    - b. Approval of substitutions (see Section - 016000 - Product Requirements)
    - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
    - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
  - 2. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
  - 3. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
    - a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Landscape Architect, and any of its consultants, due to processing of such RFIs.
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
  - 1. Official Project name and number, and any additional required identifiers established in Contract Documents.
  - 2. Owner's, Landscape Architect's, and Contractor's names.
  - 3. Discrete and consecutive RFI number, and descriptive subject/title.
  - 4. Issue date, and requested reply date.
  - 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
  - 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
  - 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
  - 1. Indicate current status of every RFI. Update log promptly and on a regular basis.
  - 2. Note dates of when each request is made, and when a response is received.



3. Highlight items requiring priority or expedited response.
  4. Highlight items for which a timely response has not been received to date.
  5. Identify and include improper or frivolous RFIs.
- H. Review Time: Landscape Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
  2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
  3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
  4. Notify Landscape Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

### **3.06 SUBMITTAL SCHEDULE**

- A. Submit to Landscape Architect for review a schedule for submittals in tabular format.
1. Coordinate with Contractor's construction schedule and schedule of values.
  2. Format schedule to allow tracking of status of submittals throughout duration of construction.
  3. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered and role and name of subcontractor.
  4. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.

### **3.07 SUBMITTALS FOR REVIEW**

- A. When the following are specified in individual sections, submit them for review:
1. Product data.
  2. Shop drawings.
  3. Samples for selection.
  4. Samples for verification.
- B. Submit to Landscape Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 017800 - Closeout Submittals.

### **3.08 SUBMITTALS FOR INFORMATION**

- A. When the following are specified in individual sections, submit them for information:
1. Design data.
  2. Certificates.
  3. Test reports.
  4. Inspection reports.
  5. Manufacturer's instructions.

- 6. Manufacturer's field reports.
  - 7. Other types indicated.
  - B. Submit for Landscape Architect's knowledge as contract administrator or for Owner.
- 3.09 SUBMITTALS FOR PROJECT CLOSEOUT**
- A. Submit Correction Punch List for Substantial Completion.
  - B. Submit Final Correction Punch List for Substantial Completion.
  - C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 017800 - Closeout Submittals:
    - 1. Project record documents.
    - 2. Operation and maintenance data.
    - 3. Warranties.
    - 4. Bonds.
    - 5. Other types as indicated.
  - D. Submit for Owner's benefit during and after project completion.
- 3.10 SUBMITTAL PROCEDURES**
- A. General Requirements:
    - 1. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
    - 2. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
    - 3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
    - 4. 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.
      - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
    - 5. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
      - a. Send submittals in electronic format via email to Landscape Architect.
    - 6. Schedule submittals to expedite the Project, and coordinate submission of related items.
      - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
      - b. For sequential reviews involving Landscape Architect's consultants, Owner, or another affected party, allow an additional 7 days.
      - c. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Landscape Architect's approval, allow an additional 30 days.
    - 7. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
    - 8. Provide space for Contractor and Landscape Architect review stamps.
    - 9. When revised for resubmission, identify all changes made since previous submission.
    - 10. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
    - 11. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
  - B. Product Data Procedures:
    - 1. Submit only information required by individual specification sections.
    - 2. Collect required information into a single submittal.
    - 3. Do not submit (Material) Safety Data Sheets for materials or products.

### 3.11 SUBMITTAL REVIEW

- A. Submittals for Review: Landscape Architect will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Landscape Architect will acknowledge receipt and review. See below for actions to be taken.
- C. Landscape Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. Landscape Architect's and consultants' actions on items submitted for review:
  - 1. Authorizing purchasing, fabrication, delivery, and installation:
    - a. "Approved", or language with same legal meaning.
    - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
      - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
    - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.
      - 1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
  - 2. Not Authorizing fabrication, delivery, and installation:
    - a. "Revise and Resubmit".
      - 1) Resubmit revised item, with review notations acknowledged and incorporated.
    - b. "Rejected".
      - 1) Submit item complying with requirements of Contract Documents.
- E. Landscape Architect's and consultants' actions on items submitted for information:
  - 1. Items for which no action was taken:
    - a. "Received" - to notify the Contractor that the submittal has been received for record only.
  - 2. Items for which action was taken:
    - a. "Reviewed" - no further action is required from Contractor.

**END OF SECTION**

**SECTION 013114  
FACILITY SERVICES COORDINATION**

**PART 1 GENERAL**

**1.01 MECHANICAL AND ELECTRICAL COORDINATOR**

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 COORDINATION REQUIRED**

**3.02 OBSERVATION OF WORK**

**3.03 EQUIPMENT START-UP**

**END OF SECTION**

**SECTION 013216  
CONSTRUCTION PROGRESS SCHEDULE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

**1.02 RELATED SECTIONS**

- A. Section 011000 - Summary: Work sequence.

**1.03 REFERENCE STANDARDS**

- A. AGC (CPSM) - Construction Planning and Scheduling Manual 2004.
- B. M-H (CPM) - CPM in Construction Management - Project Management with CPM 2015.

**1.04 SUBMITTALS**

- A. Within 5 days after date of Agreement, submit preliminary schedule.
- B. If preliminary schedule requires revision after review, submit revised schedule within 5 days.
- C. Within 10 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
  - 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 5 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.
- F. Submit in PDF format.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 PRELIMINARY SCHEDULE**

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

**3.02 CONTENT**

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- D. Indicate delivery dates for owner-furnished products.
- E. Provide legend for symbols and abbreviations used.

**3.03 BAR CHARTS**

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

**3.04 UPDATING SCHEDULE**

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

**3.05 DISTRIBUTION OF SCHEDULE**

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Landscape Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

**END OF SECTION**

**SECTION 014000  
QUALITY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Submittals.
- B. Quality assurance.
- C. References and standards.
- D. Testing and inspection agencies and services.
- E. Control of installation.
- F. Manufacturers' field services.
- G. Defect Assessment.

**1.02 RELATED REQUIREMENTS**

- A. Section 013000 - Administrative Requirements: Submittal procedures.
- B. Section 014216 - Definitions.
- C. Section 014219 - Reference Standards.
- D. Section 016000 - Product Requirements: Requirements for material and product quality.

**1.03 REFERENCE STANDARDS**

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants 2008 (Reapproved 2014).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation 2017.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry 2019.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction 2019.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection 2020.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing 2015.
- G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components 2016.
- H. IAS AC89 - Accreditation Criteria for Testing Laboratories 2018.

**1.04 DEFINITIONS**

- A. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

**1.05 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Test Reports: After each test/inspection, promptly submit two copies of report to Landscape Architect and to Contractor.
  - 1. Include:
    - a. Date issued.
    - b. Project title and number.
    - c. Name of inspector.
    - d. Date and time of sampling or inspection.
    - e. Identification of product and specifications section.
    - f. Location in the Project.
    - g. Type of test/inspection.
    - h. Date of test/inspection.
    - i. Results of test/inspection.
    - j. Compliance with Contract Documents.
    - k. When requested by Landscape Architect, provide interpretation of results.

2. Test report submittals are for Landscape Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- C. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- D. Manufacturer's Field Reports: Submit reports for Landscape Architect's benefit as contract administrator or for Owner.
  1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

#### 1.06 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
  1. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

#### 1.07 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- 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 Landscape Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Landscape Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

#### 1.08 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- C. Contractor Employed Agency:
  1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3740 and [\_\_\_\_\_].
  2. Inspection agency: Comply with requirements of ASTM D3740, ASTM E329 and [\_\_\_\_\_].
  3. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
  4. Laboratory: Authorized to operate in the State in which the Project is located.
  5. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
  6. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

### PART 3 EXECUTION

#### 2.01 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 Landscape Architect 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. Have work performed 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, and disfigurement.

## **2.02 TESTING AND INSPECTION**

- A. Testing Agency Duties:
  - 1. Provide qualified personnel at site. Cooperate with Landscape Architect and Contractor in performance of services.
  - 2. Perform specified sampling and testing of products in accordance with specified standards.
  - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 4. Promptly notify Landscape Architect and Contractor of observed irregularities or non-compliance of Work or products.
  - 5. Perform additional tests and inspections required by Landscape Architect.
  - 6. Submit reports of all tests/inspections specified.
- B. Limits on Testing/Inspection Agency Authority:
  - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
  - 2. Agency may not approve or accept any portion of the Work.
  - 3. Agency may not assume any duties of Contractor.
  - 4. Agency has no authority to stop the Work.
- C. Contractor Responsibilities:
  - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
  - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
  - 3. Provide incidental labor and facilities:
    - a. To provide access to Work to be tested/inspected.
    - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
    - c. To facilitate tests/inspections.
    - d. To provide storage and curing of test samples.
  - 4. Notify Landscape Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
  - 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
  - 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Landscape Architect.
- E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.



**2.03 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, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

**2.04 DEFECT ASSESSMENT**

- A. Replace Work or portions of the Work not complying with specified requirements.

**END OF SECTION**

**SECTION 014100  
REGULATORY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SUMMARY OF REFERENCE STANDARDS**

- A. Regulatory requirements applicable to this project including, but not limited to, the following:
- B. 28 CFR 35 - Nondiscrimination on the Basis of Disability in State and Local Government Services; Final Rule; Department of Justice current edition.
- C. 28 CFR 36 - Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice current edition.
- D. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines current edition.
- E. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- F. 29 CFR 1910 - Occupational Safety and Health Standards current edition.
- G. ICC (IFC) - International Fire Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. NFPA 101 - Life Safety Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. ICC (IPC) - International Plumbing Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.02 RELATED REQUIREMENTS**

- A. Section 014000 - Quality Requirements.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 014216  
DEFINITIONS**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Other definitions are included in individual specification sections.

**1.02 DEFINITIONS**

- A. **Furnish:** To supply, deliver, unload, and inspect for damage.
- B. **Install:** To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.
- C. **Product:** Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
- D. **Provide:** To furnish and install.
- E. **Supply:** Same as Furnish.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 015000  
TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Dewatering
- B. Temporary sanitary facilities.
- C. Temporary Controls: Barriers, enclosures and fencing.
- D. Security requirements.
- E. Vehicular access and parking.
- F. Waste removal facilities and services.

**1.02 TEMPORARY SANITARY FACILITIES**

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.
- C. At end of construction, return facilities to same or better condition as originally found.

**1.03 BARRIERS**

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

**1.04 FENCING**

- A. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

**1.05 SECURITY**

- A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

**1.06 VEHICULAR ACCESS AND PARKING**

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Designated existing on-site roads may be used for construction traffic.
- F. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

**1.07 WASTE REMOVAL**

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

**1.08 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to specified condition.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 016000  
PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations.
- F. Procedures for Owner-supplied products.
- G. Maintenance materials, including extra materials, spare parts, tools, and software.

**1.02 RELATED REQUIREMENTS**

- A. Section 011000 - Summary: Lists of products to be removed from existing building.
- B. Section 012500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- C. Section 017419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

**1.03 SUBMITTALS**

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
  - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

**PART 2 PRODUCTS**

**2.01 EXISTING PRODUCTS**

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
- C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
- D. Specific Products to be Reused: The reuse of certain materials and equipment already existing on the project site is required.
  - 1. See Section 011000 for list of items required to be salvaged for reuse and relocation.

**2.02 NEW PRODUCTS**

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
- C. Where other criteria are met, Contractor shall give preference to products that:
  - 1. If used on interior, have lower emissions, as defined in Section 016116.
  - 2. If wet-applied, have lower VOC content, as defined in Section 016116.

**2.03 PRODUCT OPTIONS**

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the 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.

#### **2.04 MAINTENANCE MATERIALS**

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

### **PART 3 EXECUTION**

#### **3.01 SUBSTITUTION LIMITATIONS**

- A. See Section 012500 - Substitution Procedures.

#### **3.02 OWNER-SUPPLIED PRODUCTS**

- A. Owner's Responsibilities:
  - 1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
  - 2. Arrange and pay for product delivery to site.
  - 3. On delivery, inspect products jointly with Contractor.
  - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
  - 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
  - 1. Review Owner reviewed shop drawings, product data, and samples.
  - 2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
  - 3. Handle, store, install and finish products.
  - 4. Repair or replace items damaged after receipt.

#### **3.03 TRANSPORTATION AND HANDLING**

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

#### **3.04 STORAGE AND PROTECTION**

- A. Provide protection of stored materials and products against theft, casualty, or deterioration.
- B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 017419.
- C. Store and protect products in accordance with manufacturers' instructions.
- D. Store with seals and labels intact and legible.
- E. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- F. For exterior storage of fabricated products, place on sloped supports above ground.
- G. Provide off-site storage and protection when site does not permit on-site storage or protection.

- H. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- I. Comply with manufacturer's warranty conditions, if any.
- J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- K. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- L. Prevent contact with material that may cause corrosion, discoloration, or staining.
- M. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- N. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

**END OF SECTION**



**SECTION 017000  
EXECUTION AND CLOSEOUT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Cutting and patching.
- C. Surveying for laying out the work.
- D. Cleaning and protection.
- E. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

**1.02 RELATED REQUIREMENTS**

- A. Section 011000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 013000 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- C. Section 014000 - Quality Requirements: Testing and inspection procedures.
- D. Section 017123 - Field Engineering: Additional requirements for field engineering and surveying work.
- E. Section 017419 - Construction Waste Management and Disposal: Additional procedures for trash/waste removal, recycling, salvage, and reuse.
- F. Section 017800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.
- G. Section 024100 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.

**1.03 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
  - 1. Structural integrity of any element of Project.
  - 2. Integrity of weather exposed or moisture resistant element.
  - 3. Efficiency, maintenance, or safety of any operational element.
  - 4. Visual qualities of sight exposed elements.
  - 5. Work of Owner or separate Contractor.

**1.04 QUALIFICATIONS**

- A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Landscape Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,
- B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.

**1.05 PROJECT CONDITIONS**

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. Perform dewatering activities, as required, for the duration of the project.
- D. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

- E. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
- F. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

#### **1.06 COORDINATION**

- 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. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new 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.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated 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.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. 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.

### **PART 2 PRODUCTS**

#### **2.01 PATCHING MATERIALS**

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 016000 - Product Requirements.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of 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. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

#### **3.02 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.

### 3.03 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Landscape Architect of any discrepancies discovered.
- C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- D. Promptly report to Landscape Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Landscape Architect.
- F. Utilize recognized engineering survey practices.
- G. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
  - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations; and [\_\_\_\_\_].
  - 2. Grid or axis for structures.
  - 3. Building foundation, column locations, ground floor elevations, and [\_\_\_\_\_].
- H. Periodically verify layouts by same means.
- I. Maintain a complete and accurate log of control and survey work as it progresses.

### 3.04 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

### 3.05 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
  - 1. Complete the work.
  - 2. Fit products together to integrate with other work.
  - 3. Provide openings for penetration of mechanical, electrical, and other services.
  - 4. Match work that has been cut to adjacent work.
  - 5. Repair areas adjacent to cuts to required condition.
  - 6. Repair new work damaged by subsequent work.
  - 7. Remove samples of installed work for testing when requested.
  - 8. Remove and replace defective and non-complying work.
- C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- D. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 078400, to full thickness of the penetrated element.

- I. Patching:
  - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
  - 2. Match color, texture, and appearance.
  - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

### 3.06 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

### 3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

### 3.08 ADJUSTING

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

### 3.09 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, drainage systems and [\_\_\_\_\_].
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

### 3.10 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.

- B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- C. Notify Landscape Architect when work is considered ready for Landscape Architect's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Landscape Architect's Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Landscape Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Landscape Architect.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Landscape Architect when work is considered finally complete and ready for Landscape Architect's Substantial Completion final inspection.
- H. Complete items of work determined by Landscape Architect listed in executed Certificate of Substantial Completion.

**END OF SECTION**

**SECTION 017123  
FIELD ENGINEERING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Field engineering services by Contractor.

**1.02 DESCRIPTION OF SERVICES**

- A. Specific services listed in this section are in addition to, and do not supersede, general Execution and Closeout Requirements.
- B. Sole responsibility for establishing all locations, dimensions and levels of items of work.
- C. Sole responsibility for provision of all materials required to establish and maintain benchmarks and control points, including batter boards, grade stakes, structure elevation stakes, and other items.
- D. Having a skilled instrument person(s) available on short notice when necessary for laying out the work.
- E. Keeping a transit, theodolite, or TST (total station theodolite with electronic distance measurement device); leveling instrument; and related implements such as survey rods and other measurement devices, at the project site at all times.
- F. Provision of facilities and assistance necessary for Landscape Architect to check lines and grade points placed by Contractor.
  - 1. Performance of excavation or embankment work until after all cross-sectioning necessary for determining payment quantities for Unit Price work have been completed and accepted by Landscape Architect.
- G. Preparation and maintenance of daily reports of activity on the work. Submission of reports containing key progress indicators and job conditions to Landscape Architect.
  - 1. Major equipment and materials installed as part of the work.
  - 2. Location of areas in which construction was performed.
  - 3. Work performed, including field quality control measures and testing.
  - 4. Weather conditions.
  - 5. Delays encountered, amount of delay incurred, and the reasons for the delay.
  - 6. Instructions received from Landscape Architect or Owner, if any.
- H. Preparation and maintenance of professional-quality, accurate, well organized, legible notes of all measurements and calculations made while surveying and laying out the work.
- I. Prior to backfilling operations, surveying - locating, and recording on a copy of Contract Documents - an accurate representation of buried work and Underground Facilities encountered.

**1.03 REFERENCE STANDARDS**

- A. FGDC-STD-007.1 - Geospatial Positioning Accuracy Standards - Part 1: Reporting Methodology 1998.
- B. FGDC-STD-007.2 - Geospatial Positioning Accuracy Standards - Part 2: Standards for Geodetic Networks 1998.
- C. FGDC-STD-007.4 - Geospatial Positioning Accuracy Standards - Part 4: Architecture, Engineering, Construction, and Facilities Measurement 2002.
- D. State Plane Coordinate System for the State in which the Project is located.

**1.04 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Submit in addition to items required in Section 017000 - Execution and Closeout Requirements.
- C. Informational Submittals: Submit the following:
  - 1. Field Engineering: Submit daily reports, with content as indicated in this section.

**1.05 QUALITY ASSURANCE**

- A. Field Engineer's Qualifications: As established in Section 017000 - Execution and Closeout Requirements.

- B. Minimum accuracy for required work is as follows:
  - 1. Tennis Court Grade: Horizontal Tolerance: Plus or minus 0.1 feet, Vertical Tolerance: Plus or minus 0.025 feet.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. Notify Owner's Representative and Landscape Architect of any discrepancies immediately in writing before proceeding to lay out the work. Locate and protect existing benchmarks and base line. Preserve permanent reference points during construction.

### **3.02 FIELD ENGINEERING**

- A. Maintain field office files, drawings, specifications, and record documents.
- B. Coordinate field engineering services with Contractor's subcontractors, installers, and suppliers as appropriate.
- C. Prepare layout and coordination drawings for construction operations.
- D. Check and coordinate the work for conflicts and interferences, and immediately advise Landscape Architect and Owner of all discrepancies of which Contractor is aware.
- E. Cooperate as required with Landscape Architect and Owner in observing the work and performing field inspections.
- F. Review and coordinate work on a regular basis with shop drawings and Contractor's other submittals.
- G. In general, match existing adjacent grades and maintain existing flow lines.
- H. Check the location, line and grade of every major element as the work progresses. Notify the Landscape Architect when deviations from required lines or grades exceed allowable tolerances. Include in such notifications a thorough explanation of the problem, and a proposed plan and schedule for remedying the deviation. Do not proceed with remedial work without Owner's concurrence of the remediation plan.
- I. Check all formwork, reinforcing, inserts, structural steel, bolts, sleeves, piping, other materials and equipment for compliance with shop drawings and Contract Documents requirements.

### **3.03 LAND SURVEYING**

- A. General: Follow standards for geospatial positioning accuracy.
  - 1. FGDC-STD-007.1 as amended by Authority Having Jurisdiction.
  - 2. FGDC-STD-007.2 as amended by Authority Having Jurisdiction.
  - 3. FGDC-STD-007.4 as amended by Authority Having Jurisdiction.
- B. Coordinate survey data with the State Plane Coordinate System of the State in which the Project is located.
- C. Contractor is responsible for the restoration of all property corners and control monuments damaged or destroyed by construction-related activities. Any disturbed monuments must be replaced at Contractor's expense by a surveyor licensed in the State in which the Project is located, and approved by the Landscape Architect.
  - 1. Temporarily suspend work at such points and for such reasonable times as the Owner may require for resetting monuments. The Contractor will not be entitled to any additional compensation or extension of time.

### **3.04 REPORTS**

- A. Submit a PDF of Contractor's daily reports, electronically, by 9:00 AM the next working day after the day covered in the associated report. Daily report shall be signed by responsible member of Contractor's staff, such as project manager or superintendent, or foreman designated by Contractor as having authority to sign daily reports.

### **3.05 RECORDS**

- A. Maintain at the Site a complete and accurate log of control and survey work as it progresses.

1. Organize and record survey data in accordance with recognized professional surveying standards, Laws and Regulations, and prevailing standards of practice in the State in which the Project is located. Record Contractor's surveyor's original field notes, computations, and other surveying data in Contractor-furnished hard-bound field books. Contractor is solely responsible for completeness and accuracy of survey work, and completeness and accuracy of survey records, including field books. Survey records,(including field books) may be rejected by Owner due to failure to organize and maintain survey records in a manner that allows reasonable and independent verification of calculations, and/or allows identification of elevations, dimensions, and grades of the work.
2. Illegible notes or data, and erasures on any page of field books, are unacceptable. Do not submit copied notes or data. Corrections by ruling or lining out errors will be unacceptable unless initialed by the surveyor. Violation of these requirements may require re-surveying the data questioned by Landscape Architect.

**3.06 CLOSEOUT ACTIVITIES**

- A. See Section 017800 - Closeout Submittals, for closeout submittals.

**END OF SECTION**



**SECTION 017800  
CLOSEOUT SUBMITTALS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

**1.02 RELATED REQUIREMENTS**

- A. Section 013000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Individual Product Sections: Specific requirements for operation and maintenance data.
- C. Individual Product Sections: Warranties required for specific products or Work.

**1.03 SUBMITTALS**

- A. Project Record Documents: Submit documents to Landscape Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
  - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Landscape Architect will review draft and return one copy with comments.
  - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
  - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Landscape Architect comments. Revise content of all document sets as required prior to final submission.
  - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 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.
- 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. Product substitutions or alternates utilized.
  - 2. Changes made by Addenda and modifications.

- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
  - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  - 3. Field changes of dimension and detail.
  - 4. Details not on original Contract drawings.

**3.02 OPERATION AND MAINTENANCE DATA**

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

**3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES**

- A. For Each Product, Applied Material, and Finish:
  - 1. Product data, with catalog number, size, composition, and color and texture designations.
  - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Additional information as specified in individual product specification sections.
- D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

**3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS**

- A. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- B. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- C. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- D. Provide servicing and lubrication schedule, and list of lubricants required.
- E. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- F. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

**3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS**

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Landscape Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
  - 1. Project Directory.
  - 2. Table of Contents, of all volumes, and of this volume.
  - 3. Operation and Maintenance Data: Arranged by system, then by product category.
    - a. Source data.
    - b. Product data, shop drawings, and other submittals.
    - c. Operation and maintenance data.
    - d. Field quality control data.
    - e. Photocopies of warranties and bonds.
  - 4. Design Data: To allow for addition of design data furnished by Landscape Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

### 3.06 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

**END OF SECTION**

**SECTION 024100  
DEMOLITION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Selective demolition of built site elements.

**1.02 RELATED REQUIREMENTS**

- A. Section 011000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 011000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- C. Section 015000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 016000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 017000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- F. Section 312323 - Fill: Filling holes, pits, and excavations generated as a result of removal operations.

**1.03 REFERENCE STANDARDS**

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations 2019.

**PART 3 EXECUTION**

**2.01 SCOPE**

- A. Refer to the Demolition Plan for items to be removed.
- B. Remove other items indicated, for salvage, relocation and recycling.

**2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS**

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
  - 1. Obtain required permits.
  - 2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
  - 3. Provide, erect, and maintain temporary barriers and security devices.
  - 4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
  - 5. Do not close or obstruct roadways or sidewalks without permit.
  - 6. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
  - 7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Protect existing structures and other elements that are not to be removed.
  - 1. Provide bracing and shoring.
  - 2. Prevent movement or settlement of adjacent structures.
  - 3. Stop work immediately if adjacent structures or anything else appears to be in danger.

**2.03 DEBRIS AND WASTE REMOVAL**

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**

**SECTION 033000  
CAST-IN-PLACE CONCRETE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Concrete formwork.
- B. Concrete reinforcement.
- C. Miscellaneous concrete elements, including equipment pads, equipment pits, light pole bases, flagpole bases, thrust blocks and manholes.
- D. Concrete curing.

**1.02 RELATED REQUIREMENTS**

- A. Section 321313 - Concrete Paving: Sidewalks, curbs and gutters.

**1.03 REFERENCE STANDARDS**

- A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).
- C. ACI 301 - Specifications for Structural Concrete 2016.
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).
- E. ACI 305R - Guide to Hot Weather Concreting 2010.
- F. ACI 308R - Guide to External Curing of Concrete 2016.
- G. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- H. ACI 347R - Guide to Formwork for Concrete 2014, with Errata (2017).
- I. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2018, with Editorial Revision.
- J. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- K. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2012.
- L. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- M. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2020.
- N. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2019a.
- O. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2015a.
- P. ASTM C150/C150M - Standard Specification for Portland Cement 2019a.
- Q. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.
- R. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).
- S. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete 2017a.
- T. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019.
- U. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.
- V. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2017.
- W. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures 2016.
- X. ASTM C845/C845M - Standard Specification for Expansive Hydraulic Cement 2018.

- Y. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2017.
- Z. ASTM C1311 - Standard Specification for Solvent Release Sealants 2014.
- AA. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete 2019.
- BB. ASTM C1582/C1582M - Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete 2011, with Editorial Revision (2017).
- CC. ASTM D471 - Standard Test Method for Rubber Property--Effect of Liquids 2016a.
- DD. ASTM D994/D994M - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type) 2011 (Reapproved 2016).
- EE. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) 2018.
- FF. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction 2018.
- GG. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover 2008a, with Editorial Revision (2013).
- HH. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers 2014.
- II. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs 2018a.
- JJ. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair 2013.

#### 1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix Design: Submit proposed concrete mix design.
  - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
- D. Test Reports: Submit report for each test or series of tests specified.
- E. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- F. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.
- G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### 1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Follow recommendations of ACI 305R when concreting during hot weather.

#### 1.06 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

### PART 2 PRODUCTS

#### 2.01 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
  - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
  - 2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.

3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
4. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

#### **2.02 REINFORCEMENT MATERIALS**

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
- B. Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
- C. Reinforcement Accessories:
  1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch.

#### **2.03 CONCRETE MATERIALS**

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
  1. Acquire cement for entire project from same source.
- B. Blended, Expansive Hydraulic Cement: ASTM C845/C845M, Type K.
- C. Fine and Coarse Aggregates: ASTM C33/C33M.
  1. Acquire aggregates for entire project from same source.
- D. Lightweight Aggregate: ASTM C330/C330M.
- E. Fly Ash: ASTM C618, Class C or F.
- F. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

#### **2.04 ADMIXTURES**

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.

#### **2.05 ACCESSORY MATERIALS**

- A. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
  1. Grout: Comply with ASTM C1107/C1107M.

#### **2.06 CURING MATERIALS**

#### **2.07 CONCRETE MIX DESIGN**

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
  1. For trial mixtures method, employ independent testing agency acceptable to Landscape Architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- D. Normal Weight Concrete:
  1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3500 pounds per square inch.
  2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
  3. Water-Cement Ratio: Maximum 40 percent by weight.
  4. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
  5. Maximum Slump: 3 inches.
  6. Maximum Aggregate Size: 5/8 inch.

#### **2.08 MIXING**

- A. Transit Mixers: Comply with ASTM C94/C94M.
- B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

### **3.02 PREPARATION**

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Prepare existing concrete surfaces to be repaired according to ICRI 310.2R, [\_\_\_\_\_].
- D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.

### **3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS**

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

### **3.04 PLACING CONCRETE**

- A. Place concrete in accordance with ACI 304R.
- B. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- C. Ensure reinforcement, inserts, waterstops, embedded parts and formed construction joint devices will not be disturbed during concrete placement.
- D. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

### **3.05 CONCRETE FINISHING**

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
  - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

### **3.06 CURING AND PROTECTION**

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

### **3.07 FIELD QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.



**3.08 DEFECTIVE CONCRETE**

- A. Test Results: The testing agency shall report test results in writing to Landscape Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Landscape Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Landscape Architect for each individual area.

**3.09 PROTECTION**

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

**END OF SECTION**

**SECTION 312200  
GRADING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Removal of topsoil.
- B. Rough grading the site for site structures.
- C. Finish grading.

**1.02 RELATED REQUIREMENTS**

- A. Section 312323 - Fill: Filling and compaction.
- B. Section 329223 - Sodding: Finish ground cover.
- C. Section 329300 - Plants: Topsoil in beds and pits.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Topsoil: See Section 312323.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.

**3.02 PREPARATION**

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- E. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving and curbs, from damage by grading equipment and vehicular traffic.
- F. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.
- G. Protect plants, lawns and other features to remain as a portion of final landscaping.

**3.03 ROUGH GRADING**

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.
- E. When excavating through roots, perform work by hand and cut roots with sharp axe.
- F. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- G. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

**3.04 FINISH GRADING**

- A. Before Finish Grading:
  - 1. Verify building and trench backfilling have been inspected.
  - 2. Verify subgrade has been contoured and compacted.
    - a. Finish grading contractor shall receive rough grade within +/-1" of finish grade.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
- C. Where topsoil is to be placed, scarify surface to depth of 3 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.
- E. Place topsoil in areas where sodding and planting are indicated.

- F. Place topsoil where required to level finish grade.
- G. Place topsoil to the following compacted thicknesses:
  - 1. Areas to be Sodded: 3 inches.
  - 2. Planting Areas: 4 inches.
- H. Place topsoil during dry weather.
- I. Remove roots, weeds, rocks, and foreign material while spreading.
- J. Near plants and buildings spread topsoil manually to prevent damage.
- K. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- L. Lightly compact placed topsoil.
- M. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

**3.05 TOLERANCES**

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

**3.06 REPAIR AND RESTORATION**

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Landscape Architect as to remedy.
- C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

**3.07 FIELD QUALITY CONTROL**

- A. See Section 312323 for compaction density testing.

**3.08 CLEANING**

- A. Leave site clean and raked, ready to receive landscaping.

**END OF SECTION**

## SECTION 312323

### FILL

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for building volume below grade and landscaped areas.
- B. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

##### 1.02 RELATED REQUIREMENTS

- A. Section 312200 - Grading: Site grading.

##### 1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.

##### 1.04 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses 2017.
- B. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop 2018.
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates 2019.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)) 2012, with Editorial Revision (2015).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method 2015, with Editorial Revision (2016).
- F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)) 2012, with Editorial Revision (2015).
- G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method 2015.
- H. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System) 2017.
- I. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils 2017, with Editorial Revision (2018).
- J. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth) 2017a.

##### 1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Soil Samples: 10 pounds sample of each type of fill; submit in air-tight containers to testing laboratory.
- C. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.
- D. Compaction Density Test Reports.
- E. Testing Agency Qualification Statement.

##### 1.06 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

##### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
  - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
  - 2. Prevent contamination.
  - 3. Protect stockpiles from erosion and deterioration of materials.

## **PART 2 PRODUCTS**

### **2.01 FILL MATERIALS**

- A. General Fill: Subsoil excavated on-site.
  - 1. Graded.
  - 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
  - 3. Complying with ASTM D2487 Group Symbol CL.
- B. Topsoil: Topsoil excavated on-site.
  - 1. Unclassified.
  - 2. Graded.
  - 3. 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 inorganic matter.
  - 6. Complying with ASTM D2487 Group Symbol OH.

### **2.02 SOURCE QUALITY CONTROL**

- A. See Section 014000 - Quality Requirements or ALDOT specifications, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, testing of samples for compliance will be provided before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Identify required lines, levels, contours, and datum locations.
- B. Verify areas to be filled are not compromised with surface or ground water.

### **3.02 PREPARATION**

- A. Scarify subgrade surface to a depth of 6 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

### **3.03 FILLING**

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- F. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- G. Correct areas that are over-excavated.
  - 1. Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- H. Compaction Density Unless Otherwise Specified or Indicated:
  - 1. Under paving, slabs-on-grade and similar construction: 97 percent of maximum dry density unless otherwise directed by Geotechnical Report.
  - 2. Landscape areas: 80 percent of maximum dry density unless otherwise directed by Geotechnical Report.
- I. Reshape and re-compact fills subjected to vehicular traffic.
- J. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Landscape Architect or other Owner's

Representative. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

**3.04 FILL AT SPECIFIC LOCATIONS**

**3.05 TOLERANCES**

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

**3.06 FIELD QUALITY CONTROL**

- A. See Section 014000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Soil Fill Materials:
  - 1. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167 or ASTM D6938.
  - 2. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor") or AASHTO T 180.
  - 3. If tests indicate work does not meet specified requirements, remove work, replace and retest.
  - 4. Frequency of Tests: Per Geotechnical report.

**3.07 CLEANING**

- A. See Section 017419 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

**END OF SECTION**

**SECTION 321123  
AGGREGATE BASE COURSES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Aggregate base course.
- B. Paving aggregates.

**1.02 RELATED REQUIREMENTS**

- A. Section 312323 - Fill: Topsoil fill at areas adjacent to aggregate base course.
- B. Section 312323 - Fill: Compacted fill under base course.
- C. Section 321216 - Asphalt Paving: Finish and binder asphalt courses.

**1.03 REFERENCE STANDARDS**

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses 2017.
- B. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop 2018.
- C. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)) 2012, with Editorial Revision (2015).
- D. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)) 2012, with Editorial Revision (2015).

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Coarse Aggregate: Coarse aggregate, complying with State of Alabama Highway Department standard 825 per Geotechnical report.

**2.02 SOURCE QUALITY CONTROL**

- A. See Section 014000 - Quality Requirements, for general requirements for testing and analysis of aggregate materials.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that survey bench marks and intended elevations for the work are as indicated.
- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

**3.02 PREPARATION**

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

**3.03 INSTALLATION**

- A. Under Bituminous Concrete Paving:
  - 1. Place coarse aggregate to a total compacted thickness of 6 inches.
- B. Place aggregate in maximum 4 inch layers and roller compact to specified density.
- C. Level and contour surfaces to elevations and gradients indicated.
- D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

**3.04 FIELD QUALITY CONTROL**

- A. See Section 014000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor") or ASTM D1557 ("modified Proctor").

- C. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- D. Frequency of Tests: as required by Geotechnical Report.

**3.05 CLEANING**

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

**END OF SECTION**



**SECTION 321216  
ASPHALT PAVING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Aggregate base course.
- B. Single course bituminous concrete paving.
- C. Double course bituminous concrete paving.
- D. Surface sealer.

**1.02 RELATED REQUIREMENTS**

- A. Section 312200 - Grading: Preparation of site for paving and base.
- B. Section 312323 - Fill: Compacted subgrade for paving.
- C. Section 321823 - Tennis Court Surfacing

**1.03 PRICE AND PAYMENT PROCEDURES**

- A. See Section 012200 - Unit Prices for requirements applicable to this section. Measurement and payment will be as follows:
- B. Asphalt Pavement Mix (Base Course): By the ton. Includes preparing base, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.
- C. Asphalt Pavement Mix (Binder Course): By the ton. Includes preparing base, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.
- D. Asphalt Pavement Mix (Leveling Course): By the ton. Includes preparing base, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.
- E. Seal Coat: By the square yard. Includes preparing surfaces and applying.

**1.04 REFERENCE STANDARDS**

- A. AI MS-2 - Asphalt Mix Design Methods 2015.
- B. AI MS-19 - Basic Asphalt Emulsion Manual 2008.
- C. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction 2009a.

**1.05 QUALITY ASSURANCE**

- A. Perform Work in accordance with State of Alabama Highways standard.
- B. Mixing Plant: Complying with State of Alabama Highways standard.
- C. Obtain materials from same source throughout.

**1.06 FIELD CONDITIONS**

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.
- B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

**PART 2 PRODUCTS**

**2.01 REGULATORY REQUIREMENTS**

- A. Comply with applicable code for paving work on public property.

**2.02 MATERIALS**

- A. Asphalt Cement: ASTM D946.
- B. Aggregate for Base Course: In accordance with State of Alabama Highways standards.
- C. Aggregate for Binder Course: In accordance with State of Alabama Highways standards.
- D. Aggregate for Leveling Course : Angular crushed washed stone; free of shale, clay, friable material and debris.
- E. Primer: In accordance with State of Alabama Highways standards.
- F. Tack Coat: Homogeneous, medium curing, liquid asphalt.

**2.03 ASPHALT PAVING MIXES AND MIX DESIGN**

- A. Base Course: 3.0 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.
- B. Binder Course: 4.5 to 6 percent of asphalt cement by weight in mixture in accordance with AI [\_\_\_\_\_].
- C. Leveling Course: 5 to 7 percent of asphalt cement by weight in mixture in accordance with AI MS-2.
- D. Submit proposed mix design of each class of mix for review prior to beginning of work.

**2.04 SOURCE QUALITY CONTROL**

- A. Test mix design and samples in accordance with AI MS-2.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

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

**3.02 BASE COURSE**

- A. Place and compact base course.

**3.03 PREPARATION - PRIMER**

- A. Apply primer in accordance with manufacturer's instructions.
- B. Apply primer on aggregate base or subbase at uniform rate of 1/3 gal/sq yd.
- C. Use clean sand to blot excess primer.

**3.04 PREPARATION - TACK COAT**

- A. Apply tack coat in accordance with manufacturer's instructions.
- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd.

**3.05 PLACING ASPHALT PAVEMENT - SINGLE COURSE**

- A. Install Work in accordance with State of [\_\_\_\_\_] Highways standards.
- B. Place asphalt within 24 hours of applying primer or tack coat.
- C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

**3.06 PLACING ASPHALT PAVEMENT - DOUBLE COURSE**

- A. Place asphalt binder course within 24 hours of applying primer or tack coat.
- B. Place Leveling course within two hours of placing and compacting binder course.
- C. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

**3.07 SEAL COAT**

- A. Apply seal coat to surface course and asphalt curbs in accordance with AI MS-19.

**3.08 TOLERANCES**

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

**3.09 FIELD QUALITY CONTROL**

- A. See Section 014000 - Quality Requirements, for general requirements for quality control.
- B. Provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.

**3.10 PROTECTION**

- A. Immediately after placement, protect pavement from mechanical injury for 3 days or until surface temperature is less than 140 degrees F.

**END OF SECTION**

**SECTION 321313  
CONCRETE PAVING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Concrete sidewalks, integral curbs and gutters.

**1.02 RELATED REQUIREMENTS**

- A. Section 033000 - Cast-in-Place Concrete.
- B. Section 312200 - Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.
- C. Section 312323 - Fill: Compacted subbase for paving.
- D. Section 321123 - Aggregate Base Courses: Tennis court base course.
- E. Section 321216 - Asphalt Paving: Asphalt wearing course.

**1.03 REFERENCE STANDARDS**

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).
- B. ACI 301 - Specifications for Structural Concrete 2016.
- C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).
- D. ACI 305R - Guide to Hot Weather Concreting 2010.
- E. ACI 306R - Guide to Cold Weather Concreting 2016.
- F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- G. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- H. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2020.
- I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2019a.
- J. ASTM C150/C150M - Standard Specification for Portland Cement 2019a.
- K. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.
- L. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).
- M. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete 2019.
- N. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2019.
- O. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2017.
- P. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) 2018.
- Q. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction 2018.

**1.04 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Design Data: Indicate pavement thickness, designed concrete strength, reinforcement, and typical details.

**PART 2 PRODUCTS**

**2.01 PAVING ASSEMBLIES**

- A. Comply with applicable requirements of ACI 301.
- B. Concrete Sidewalks and Median Barrier: Thickness as indicated on Drawings, natural grey color Portland cement, broom finish.

## 2.02 FORM MATERIALS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
  - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.
- C. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
  - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.
  - 2. Thickness: 1/2 inch.

## 2.03 REINFORCEMENT

- A. Steel Welded Wire Reinforcement: Plain type, ASTM A1064/A1064M; in flat sheets; unfinished.

## 2.04 CONCRETE MATERIALS

- A. Obtain cementitious materials from same source throughout.
- B. Concrete Materials: As specified in Section 033000.

## 2.05 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1, Class A.
- B. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
  - 1. Material: ASTM D1751, cellulose fiber.

## 2.06 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
  - 1. For trial mixtures method, employ independent testing agency acceptable to Landscape Architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
- D. Concrete Properties:
  - 1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 3500 psi.
  - 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
  - 3. Water-Cement Ratio: Maximum 40 percent by weight.
  - 4. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
  - 5. Maximum Slump: 4 inches.
  - 6. Maximum Aggregate Size: 1 inch.

## 2.07 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.

## PART 3 EXECUTION

### 3.01 EXAMINATION

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

### 3.02 SUBBASE

- A. See Section 321123 for construction of base course for work of this Section.

### 3.03 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Notify Landscape Architect minimum 24 hours prior to commencement of concreting operations.

### 3.04 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.

### 3.05 REINFORCEMENT

- A. Place reinforcement as indicated.
- B. Interrupt reinforcement at contraction joints.

### 3.06 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

### 3.07 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Do not place concrete when base surface is wet.
- C. Place concrete using the slip form technique.
- D. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- E. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
- F. Apply surface retarder to all exposed surfaces in accordance with manufacturer's instructions.

### 3.08 JOINTS

- A. Align curb, gutter, and sidewalk joints.
- B. Place 1/2 inch wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.
  - 1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
  - 2. Secure to resist movement by wet concrete.
- C. Provide sawn joints.
  - 1. At 5 feet intervals.
- D. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

### 3.09 FINISHING

- A. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.

### 3.10 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- B. Maximum Variation From True Position: 1/4 inch.

### 3.11 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000 - Quality Requirements.
  - 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
  - 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

**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 traffic over pavement until 75 percent design strength of concrete has been achieved.

**END OF SECTION**

**SECTION 321823  
TENNIS COURT SURFACING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Tennis court surfacing.

**1.02 RELATED REQUIREMENTS**

- A. Section 321216 – Asphalt Paving.

**1.03 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.
  - 1. Product specifications.
  - 2. System components Technical Data Sheets (TDS).
  - 3. Material Safety Data Sheets.
  - 4. ISO Quality Management System Certification.
  - 5. ITF surface classification

**1.04 INFORMATION SUBMITTALS**

- A. Qualification Data: For qualified factory-authorized service representative.
- B. Warranty: Sample of special warranty.

**1.05 QUALITY ASSURANCE**

- A. Soil testing: A geotechnical engineering firm shall be hired, by the Owner, to perform soil testing to determine, at minimum, the following items:
  - 1. Depth and type of base material required.
  - 2. Drainage system requirements
- B. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review required testing, inspecting, and certifying procedures.
- C. All work shall be done in accordance with American Sports Builders Association (ASBA) guidelines.
- D. The contractor shall record the batch number of each product used on the site and maintain it through the warranty period.
- E. The contractor shall provide the inspector, upon request, an estimate of the volume of each product to be used on the site.

**1.06 PROJECT CONDITIONS**

- A. Field Measurements: Verify layout information shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.
- B. Asphalt and concrete substrates shall be allowed to cure a minimum of 30 days before application of any coatings.
- C. The substrate shall be CLEAN and DRY before coatings are applied. The surface of the substrate shall be inspected and made sure to be free of grease, oil, dust, dirt and other foreign matter before any coatings are applied.
- D. Water used in all mixtures shall be fresh and potable.
- E. No part of the surfacing system shall be applied during a rainfall, or when rainfall is imminent.
- F. Do not apply coatings to a cold surface. Surface and air temperatures must be at least 50°F (10°C) and rising.
- G. Do not apply coatings if extremely high humidity prevents drying.
- H. No coatings are to be applied if surface temperatures exceed 130°F (54°C).
- I. All materials shall be delivered to the job site in sealed containers with the manufacturer's label affixed.
- J. Color(s) of acrylic color coating system is to be selected by owner from manufacturer's product color card.
  - a.
- K.

## 1.07 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which Installer agrees to repair or replace built elements that fail in materials or workmanship within specified warranty period
1. Warranty Period: One year from date of Substantial Completion.

## PART 2 PRODUCTS

### 2.01 GENERAL

- A. Provide surfacing system for a single manufacturer of a product that is equivalent to that indicated below. Product shall not contain any lead, mercury, nor any heavy metals, PCBs, or formaldehyde.

1. Base bid basis-of-design product: Subject to approval, provide product that is equivalent or better than:
  - 1) Laykold (or approved equal) Cushion Plus System, Xtreme System, materials include:
    - (a) Laykold (or approved equal) Epoxy Concrete Primer (concrete courts only). Shall be a two-component, 100% solids, solvent-free epoxy primer. Laykold (or approved equal) Acrylic Concrete Primer may be substituted if approved by owner and/or design professional where hydrostatic pressure, efflorescence and staining are not a concern.
      - (1) Percent Solids by Weight 98% (minimum)
      - (2) Weight 9.01 lbs./gallon
    - (b) Laykold (or approved equal) Acrylic Resurfacer. Acrylic based emulsion used for smoothing rough pavements. 1 to 2-coats as required. Laykold (or approved equal) NuSurf is recommended for use on new asphalt pavements and is an acceptable substitute for Acrylic Resurfacer.
      - (1) Percent Solids by Weight 52% (minimum)
      - (2) Weight 10.68 lbs/gallon
    - (c) Laykold (or approved equal) Cushion Plus Granule. Acrylic emulsion fortified with 0.5-1.5mm EPDM rubber granules that add resiliency to a hard court surface. 2 to 4 coats required based on Cushion Plus system specified: Standard System - 2 coats Cushion Plus Granule, Xtreme System - 3 coats Cushion Plus Granule, and Supreme System - 4 coats Cushion Plus Granule
      - (1) Percent Solids by Weight 47.9% (minimum)
      - (2) Weight 8.34 lbs/gallon
    - (d) Laykold (or approved equal) Cushion Plus Powder. Acrylic emulsion fortified with 0.0-0.5mm EPDM rubber powder used to fill, smooth and prepare the Cushion Plus Granule coats for the application of the color coats. 3 coats required.
      - (1) Percent Solids by Weight 39.8% (minimum)
      - (2) Weight 8.34 lbs/gallon
    - (e) Laykold (or approved equal) ColorCoat Concentrate textured batch mixture. Pigmented wear-resistant acrylic emulsion. 2-coats required. Advantage Laykold (or approved equal) factory textured color is an acceptable substitute. Laykold (or approved equal) Colorflex textured batch mixture is a recommended alternative to Laykold (or approved equal) ColorCoat due to its highly flexible physical properties.
      - (1) Percent Solids by Weight 49 % (minimum)
      - (2) Weight: 12.9 (+/- 3) lbs/gallon
    - (f) Optional Laykold (or approved equal) ColorCoat Concentrate finish batch mixture. Pigmented wear-resistant acrylic emulsion. 1-coat. Laykold (or approved equal) Colorflex finish batch mixture is a highly



recommended substitute. A finish coat will speed up the surface pace of the court.

- (1) Percent Solids by Weight 49 % (minimum)
  - (2) Weight: 9.47-9.52 lbs/gallon
  - (g) Laykold (or approved equal) Line Prime. Clear drying acrylic emulsion line primer. 1-coat required.
    - (1) Percent Solids by Weight 29%
    - (2) Weight: 8.9 lbs/gallon
  - (h) Laykold (or approved equal) Textured White Line Paint. Factory textured, wear-resistant acrylic emulsion line marking paint. 1-2 coats as required.
    - (1) Percent Solids by Weight 67% (minimum)
    - (2) Weight: 11.4 lbs/gallon
2. Bid alternate basis-of-design product: Subject to approval, provide product that is equivalent or better than:
- 1) Laykold (or approved equal) Masters Gel System, materials include:
    - (a) All components of Laykold Masters GEL system shall be supplied by Advanced Polymer Technology, an ISO 9001 and 14001 certified manufacturer. Masters GEL system components shall not contain ANY lead, mercury, nor any heavy metals, PCB, or formaldehyde.
    - (b) LM PU Primer: a two-component polyurethane primer for use on concrete substrates only.
    - (c) Laykold Acrylic Basecoat: a 100% acrylic-based emulsion blended with selected fibers and fillers to use for smoothing rough pavements. Used on pitted and new asphalt substrates only.
    - (d) LM GEL: a two-component polyurethane used to make a resilient, seamless shock pad.
    - (e) LM Wearcoat: a resilient, polyurethane coating used to seal the shock pad and protect it from the damage.
    - (f) LM Bond-Kote: a two-component water-based adhesion promoter between polyurethanes and acrylic coatings.
    - (g) LM Topcoat: a flexible, pigmented, wear and weather resistant color coat emulsion for use with Laykold Masters GEL Systems.
    - (h) Laykold Line Prime: a clear drying acrylic emulsion line primer.
    - (i) Laykold Textured White Line Paint: a factory textured, wear-resistant acrylic line marking paint.

### **PART 3 EXECUTION**

#### **3.01 SITE CLEARING**

- A. In accordance with soil test recommendations, remove existing vegetation and required depth of topsoil.

#### **3.02 EARTH WORK**

- A. Slope subgrade 1" in 10' end to end.
- B. Compact subgrade to 95% Standard Proctor test compaction.
- C. Install recommended depth of crushed limestone as base material across the entire court, then fine grade and compact to 95%.
- D. Sterilize the asphalt subsurface using Primatol or equal soil sterilizer.
- E. Install asphalt per ALDOT specs to a minimum of 1-1/2" thick.
- F. Finished asphalt surface shall not deflect more than 1/8" in 10'.

#### **3.03 INSPECTION**

- A. Inspect concrete or asphalt substrate for dryness. Report any discrepancies to general contractor.
- B. Surface of substrate shall be cleaned by general contractor as required.

- C. Surfacing contractor to approve site and surface conditions prior to proceeding with application of any coatings.

### 3.04 INSTALLATION

- A. Base bid Laykold (or approved equal) Cushion Plus System, Xtreme System, installation:
1. Primer (concrete substrates only): When installing the Laykold (or approved equal) Cushion Plus system over concrete, Laykold (or approved equal) Epoxy Concrete Primer must be applied as the first layer of the system. Laykold (or approved equal) Epoxy Concrete Primer is mixed by pouring the "B" component into the "A" component and mixing using a low speed jiffy mixer (400 to 600 rpm) for 2 minutes. Scrape down the sides of the bucket and mix for an additional minute. Do not incorporate air when mixing. Spread the mixed primer on the substrate using a high-quality, medium nap roller to achieve a total coverage of approximately 0.025 gal/yd<sup>2</sup> (0.12 kg/m<sup>2</sup> - 360 ft<sup>2</sup>/gal). The working time for Laykold (or approved equal) Epoxy Primer is approximately 40 - 50 minutes and is reduced in high temperatures. Lightly broadcast 40 to 60 mesh silica sand onto the wet primer at the rate of 5 pounds per 100 sq. ft. (0.24 kg/m<sup>2</sup>) to create a rough texture. Allow 5 to 7 hours drying time before proceeding. Acrylic Concrete Primer may be substituted under certain conditions when approved by owner and/or design professional. If approved for use, see Acrylic Concrete Primer technical data sheet for application details.
  2. Patching: Once the surface has been thoroughly cleaned and is free of all loose material, dirt, or dust, the court shall be flooded and allowed to drain a minimum of 30 minutes and a maximum of 1 hour. Any area that holds water (birdbaths) in a depth greater than 1/16 inch (1.6 mm or the thickness of a nickel) shall be outlined and patched.
    - 1) Surface Leveling: Birdbaths shall be leveled using a Laykold (or approved equal) Acrylic Deep Patch court patch binder slurry. Prime area with a 50/50 mixture of Laykold (or approved equal) Acrylic Deep Patch and water. Primer shall be brushed into place and allowed to dry prior to patching. Patch mix shall consist of Laykold (or approved equal) Acrylic Deep Patch, 50-mesh sand and Type 1 Portland Cement. Mix as per manufacturer directions.
    - 2) If cracks are 1/16 inch or less. If greater than 1/16 inch, Laykold (or approved equal) Acrylic Deep Patch court patch binder slurry should be used to fill cracks. Mix as per manufacturer's directions. Refer to Laykold (or approved equal) Deep Patch technical data sheet for additional mixing details and application instructions for filling various sized cracks.
    - 3) All areas that are repaired/leveled/corrected using a court patch binder mixture shall be allowed to fully cure and then ground smooth and level with the substrate by stone or an acceptable mechanical method.
  3. Filler Coat(s): Apply one coat of Laykold (or approved equal) Acrylic Resurfacer using a 24", 30" or 36" wide 70 Durometer flexible rubber squeegee. Batch mix shall consist of 55 gallons (260 kg) of Laykold (or approved equal) LAYKOLD (OR APPROVED EQUAL) Cushion Plus Revision 4 Page 5 of 6 Issued 08/22/12 Supersedes 11/02/11 Acrylic Resurfacer, 30 to 40 gallons (115-130 kg) of potable water, and 600 to 900 pounds (270- 400 kg) of clean, bagged silica sand (60 to 80 mesh). The application rate shall be 0.05-0.07 gal/yd<sup>2</sup> (0.29-0.40 kg/m<sup>2</sup> - 129-180 ft<sup>2</sup>/gal) of undiluted Laykold (or approved equal) Acrylic Resurfacer per coat. NOTE: If the asphalt is very porous, an optional 2nd application of Laykold (or approved equal) Acrylic Resurfacer may be applied. Each coat should be completely dry before applying subsequent coats. Laykold (or approved equal) NuSurf is an acceptable substitute for Laykold (or approved equal) Acrylic Resurfacer and is highly recommended for use on new asphalt pavements, older asphalt pavements, older

asphalt pavements with hairline surface cracking, slip-sheet/free floating surfaces, and/or repair methods and over cushioned courts.

4. Cushion Plus Granule Rubber: Apply 2 to 4 coats of Laykold (or approved equal) Cushion-Plus Granule (based on system desired: 2 coats Cushion Plus Standard, 3 coats Cushion Plus Xtreme, 4 coats Cushion Plus Supreme) using a 24", 30" or 36" wide 50 Durometer flexible rubber squeegee or manufacturer approved mechanical spray equipment. Batch mix shall consist of 55 gallons (240 kg) of Cushion Plus Granule and 22-27 gallons (83-90 kg) of potable water. DO NOT ADD SAND to any cushion coats! The AVERAGE application rate for the Cushion Plus Granule coats shall equal .20 gal/yd<sup>2</sup> (.91 kg/m<sup>2</sup> - 45 ft<sup>2</sup>/gal) per coat. Allow each coat to dry completely (minimum 5 hours) before proceeding with the next coat of Cushion-Plus or water vapor may become trapped between the cushion layers causing peeling and blisters.
5. Cushion Plus Powder Rubber: Apply 3 coats of Laykold (or approved equal) Cushion Plus Powder using a 24", 30" or 36" wide 50 Durometer flexible rubber squeegee or manufacturer approved mechanical spray equipment. Batch mix shall consist of 55 gallons (235 kg) of Cushion Plus Powder to 22 gallons (83 kg) of potable water. DO NOT ADD SAND to cushion coats! The average application rate for the Cushion Plus Powder coats shall equal 0.12 gal/yd<sup>2</sup> (0.61 kg/m<sup>2</sup> - 75 ft<sup>2</sup>/gal) per coat. Apply cushion coats using a soft rubber, or notched squeegee. Each coat shall be applied perpendicular (90 degrees) to the previous coat. Please note that the first application of Cushion Plus Powder will use the greatest amount of material as it begins to fill the rough texture created by the larger base rubber coats. The 2nd and 3rd applications of the small filler rubber will use less material with each coat for an overall average consumption rate of 0.12 gal/yd<sup>2</sup> (0.61 kg/m<sup>2</sup> - 75 ft<sup>2</sup>/gal) per coat. Allow each coat to dry completely (minimum 5 hours) before proceeding with the next coat of Cushion-Plus or water vapor may become trapped between the cushion layers causing peeling and blisters.
6. Textured Color Coats: Apply two coats of Laykold (or approved equal) ColorCoat Concentrate textured batch mixture using a 24", 30" or 36" 50 Durometer flexible rubber squeegee. Batch mix shall consist of 55 gallons (260 kg) of ColorCoat Concentrate, 25 to 35 gallons (95-115 kg) of potable water and 300 to 450 pounds (135-203 kg) of clean, bagged silica sand (70 to 100 mesh). The application rate shall be 0.04-0.05 gal/yd<sup>2</sup> (0.23-0.29 kg/m<sup>2</sup> - 180-225 ft<sup>2</sup>/gal) of undiluted ColorCoat Concentrate per coat. Each coat should be completely dry before applying subsequent coats. Due to its superior flexibility Laykold (or approved equal) ColorFlex is a highly recommended substitute for ColorCoat Concentrate on cushioned courts.
7. Optional Finish Color Coat: Apply one coat of Laykold (or approved equal) ColorCoat Concentrate finish batch mixture using a 24", 30" or 36" 50 Durometer flexible rubber squeegee. Batch mix shall consist of 55 gallons (260 kg) of ColorCoat Concentrate and 55 gallons (210 kg) of potable water. The application rate shall be 0.03-0.04 gal/yd<sup>2</sup> (0.17-0.23 kg/m<sup>2</sup> - 225-300 ft<sup>2</sup>/gal) of undiluted Laykold (or approved equal) ColorCoat Concentrate per coat. Each coat should be completely dry before applying game lines. Allow topcoat to cure a minimum of 24 hours before applying game lines. Due to its superior flexibility Laykold (or approved equal) ColorFlex is a highly recommended substitute for ColorCoat Concentrate on cushioned courts. A finish coat WILL produce a faster surface pace.
8. Game Lines:
  - 1) Wait a minimum of 24 hours after final color coat before applying line paint.
  - 2) All lines are to be applied by painting between masking tape with a paintbrush or roller according to U.S.T.A. and A.S.B.A. specifications

- 3) Prime masked lines with Laykold (or approved equal) Line Prime and allow a minimum drying time of 1-hour.
  - 4) Apply 1 to 2 coats as needed of Laykold (or approved equal) Textured White Line Paint with a brush or roller.
  - 5) Remove masking tape immediately after lines are dry.
  - 6) Allow lines to dry a minimum of 24 hours before allowing play on court.
9. Remove all excess and waste materials from the area of work. Dispose of empty containers in accordance with federal and local statutes.
- B. Bid alternate Laykold (or approved equal) Masters Gel System, installation:
1. Laykold Acrylic Basecoat is only required for Pitted and New Asphalt. Apply the Laykold Flexfill using a 36" wide 55 Durometer flexible rubber squeegee. Thoroughly mix the Laykold Acrylic Basecoat until the material is consistent in color and texture. The application rate shall be 0.05-07 gal/yd<sup>2</sup> or 130-180 ft<sup>2</sup>/gal of undiluted Laykold, per coat. Each coat should be completely dry before applying subsequent coats.
  2. LM PU Primer: Must be used when installing the Laykold Masters Gel system. LM PU Primer is mixed by pouring the "B" component into the "A" component and mixing using a low speed jiffy mixer (400 to 600 rpm) for 2 minutes. Scrape down the sides of the bucket and mix for an additional minute. Do not incorporate air when mixing. Spread the mixed primer on the substrate using a high-quality, medium nap roller to achieve a total coverage of approximately 0.025 gal/yd<sup>2</sup> (0.12 kg/m<sup>2</sup> - 360 ft<sup>2</sup>/gal). The working time for LM PU Primer is approximately 40 - 50 minutes and is reduced in high temperatures. Lightly broadcast 40 to 60 mesh silica sand onto the wet primer at the rate of 5 pounds per 100 sq. ft. (0.24 kg/m<sup>2</sup>) to create a rough texture. Allow 5 to 7 hours drying time before proceeding.
  3. Laykold Epoxy VTB must be used when installing a Laykold Masters system over new concrete substrates where RH value exceeds 75% according to ASTM F 2170. Laykold Epoxy VTB is mixed by pouring the "B" component into the "A" component and mixing using a low speed jiffy mixer (400 to 600 rpm) for 2 minutes. Scrape down the sides of the bucket and mix for an additional minute. Do not incorporate air when mixing. Spread Laykold Epoxy VTB on the substrate using a notched trowel and high-quality, medium nap roller to achieve a total coverage of approximately 0.10 gal/yd<sup>2</sup> (0.50 kg/m<sup>2</sup> - 90 ft<sup>2</sup>/gal). The working time for Laykold Epoxy Primer is approximately 40 - 50 minutes and is reduced in high temperatures. Allow 16 to 18 hours drying time before proceeding with LM GEL.
  4. Patching: Once the surface has been thoroughly cleaned and is free of all loose material, dirt, or dust, the court shall be flooded and allowed to drain a minimum of 20 minutes and a maximum of 1 hour. Any area that holds water (birdbaths) in a depth greater than 1/8 inch shall be outlined and patched.
    - 1) Surface Leveling: Birdbaths shall be leveled using Laykold Acrylic Deep Patch court patch binder slurry. Prime area with a 50/50 mixture of Laykold Acrylic Deep Patch and water. Primer shall be brushed into place and allowed to dry prior to patching. Patch mix shall consist of Laykold Acrylic Deep Patch, 50-mesh sand and Type 1 Portland Cement. Mix as per manufacturer directions.
    - 2) Crack Filling: Cracks shall be cleaned, primed, and filled using Laykold Acrylic Resurfacer if cracks are 1/16 inch or less. If greater than 1/16 inch, Laykold Acrylic Deep Patch court patch binder slurry should be used to fill cracks. Mix as per manufacturer's directions. Refer to Laykold Deep Patch technical data sheet for additional mixing details and application instructions for filling various sized cracks.

3) All areas that are repaired/leveled/corrected using a court patch binder mixture shall be allowed to fully cure and then ground smooth and level with the substrate by stone or an acceptable mechanical method.

5. Install Laykold Masters GEL system according to guidelines provided by Advanced Polymer Technology Corp., Harmony, PA.

**3.05 PROTECTION**

- A. **Cure Time.** No traffic or other trades shall be allowed on the surface for a period of one week following completion to allow for complete and proper cure of the finish.
- B. **Other Trades.** It is the responsibility of the general contractor to protect the surface from damage by other trades before acceptance by the owner or the owner's authorized agent.
- C. Do not allow surrounding sprinkler systems to spray water on the newly applied court surface for a period of one week after completion.
- D. Do not place any benches, chairs, ball baskets, or any other type of court equipment on the newly applied court surface for a period of one week after completion.
- E. Do not allow black soled shoes, bicycles, rollerblades, etc. on the court surface. Black scuff marks cannot be removed.
- F. Leave site in clean condition, ready for subsequent work.
- G. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**

**SECTION 323113**  
**CHAIN LINK FENCES AND GATES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Posts, rails, and frames.
- B. Wire fabric.
- C. Concrete.
- D. Manual gates with related hardware.
- E. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 033000 - Cast-in-Place Concrete: Concrete anchorage for posts.

**1.03 REFERENCE STANDARDS**

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- C. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric 2011a (Reapproved 2017).
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2019a.
- E. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2019a.
- F. ASTM F567 - Standard Practice for Installation of Chain-Link Fence 2014a.
- G. ASTM F668 - Standard Specification for Polyvinyl Chloride (PVC) and Other Organic Polymer-Coated Steel Chain-Link Fence Fabric 2017.
- H. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework 2018.
- I. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures 2018.
- J. CLFMI CLF-FIG0111 - Field Inspection Guide 2014.
- K. CLFMI CLF-PM0610 - Product Manual 2017.
- L. CLFMI WLG 2445 - Wind Load Guide for the Selection of Line Post and Line Post Spacing 2018.

**1.04 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- C. Design Calculations: For high wind load areas, provide calculations for fence fabric and accessory selection as well as line post spacing and foundation details. See CLFMI WLG 2445 for line post and spacing guidance.
- D. Samples: Submit two samples of fence fabric, slat infill, [\_\_\_\_] inch by [\_\_\_\_] inch in size illustrating construction and colored finish.
- E. Fence Installer Qualification Statement.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Fence Installer: Company with demonstrated successful experience installing similar projects and products, with not less than five years of documented experience.

**1.06 WARRANTY**

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for all components of chain-link fences and gates.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Chain Link Fences and Gates:
  - 1. Master-Halco, Inc; [\_\_\_\_\_]: [www.masterhalco.com/#sle](http://www.masterhalco.com/#sle).
  - 2. Merchants Metals; [\_\_\_\_\_]: [www.merchantsmetals.com/#sle](http://www.merchantsmetals.com/#sle).
  - 3. Substitutions: See Section 016000 - Product Requirements.

### **2.02 MATERIALS**

- A. Posts, Rails, and Frames: {\_\_\_\_\_}:
  - 1. Formed from hot-dipped galvanized steel sheet, ASTM A653/A653M, HSLAS, Grade 50, with G90 (Z275) zinc coating.
  - 2. Line Posts: Type I round.
  - 3. Terminal, Corner, Rail, Brace, and Gate Posts: Type I round.
  - 4. Comply with CLFMI CLF-PM0610.
- B. Wire Fabric:
  - 1. ASTM A392 zinc coated steel chain link fabric.
  - 2. Comply with CLFMI CLF-PM0610.
- C. Concrete:
  - 1. Ready-mixed, complying with ASTM C94/C94M; normal Portland cement; 3500 psi strength at 28 days, 3 inch slump; 2 inch nominal size aggregate.

### **2.03 COMPONENTS**

- A. Line Posts: 3 inch diameter.
- B. Corner and Terminal Posts: 3 inch diameter.
- C. Gate Posts: 3 inch diameter.
- D. Top and Brace Rail: 1.66 inch diameter, plain end, sleeve coupled.
- E. Bottom Rail: 1.66 inch diameter, plain end, sleeve coupled.
- F. Gate Frame: 1.88 inch diameter for welded fabrication.
- G. Fabric: 1-3/4 inch diamond mesh interwoven wire, 9 gage, 0.1483 inch thick, top selvage knuckle end closed, bottom selvage twisted tight.
- H. Tension Wire: 7 gage, 0.177 inch thick steel, single strand.
- I. Tension Rod 3/8 inch thick steel.
- J. Tension Bar: 1/4 x 3/4 inch thick steel.
- K. Tie Wire: Aluminum alloy steel wire.

### **2.04 MANUAL GATES AND RELATED HARDWARE**

- A. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; fork latch with gravity drop and padlock hasp; keeper to hold gate in fully open position.
- B. Hardware for Double Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; drop bolt on inactive leaf engaging socket stop set in concrete, active leaf latched to inactive leaf preventing raising of drop bolt, padlock hasp; keepers to hold gate in fully open position.
- C. Hinges: Finished to match fence components.
  - 1. Brackets: Round.
  - 2. Mounting: Center.
  - 3. Closing: Manual.
  - 4. Products:
    - a. D&D Technologies USA, Inc; SHUT IT, Model [\_\_\_\_\_]: [www.ddtech.com/#sle](http://www.ddtech.com/#sle).
    - b. Substitutions: See Section 016000 - Product Requirements.
- D. Latches: Finished to match fence components.
  - 1. Brackets: Round.
  - 2. Locking: Mechanical.
  - 3. Products:
    - a. D&D Technologies USA, Inc; LokkLatch, Model [\_\_\_\_\_]: [www.ddtech.com/#sle](http://www.ddtech.com/#sle).

- b. Substitutions: See Section 016000 - Product Requirements.

## 2.05 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.

## 2.06 FINISHES

- A. Hardware: Hot-dip galvanized to weight required by ASTM A153/A153M.
- B. Accessories: Same finish as framing.
- C. Color(s): Black.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verification of Conditions: Verify that areas are clear of obstructions or debris.

### 3.02 PREPARATION

- A. Removal: Obstructions or debris.

### 3.03 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with ASTM F567.
- B. Place fabric on outside of posts and rails.
- C. Line Post Footing Depth Below Finish Grade: ASTM F567.
- D. Corner, Gate and Terminal Post Footing Depth Below Finish Grade: ASTM F567.
- E. Brace each gate and corner post to adjacent line post with horizontal center brace rail [\_\_\_\_]. Install brace rail one bay from end and gate posts.
- F. Install center brace rail on corner gate leaves.
- G. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.
- H. Position bottom of fabric 1 inches above finished grade.
- I. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 18 inches on centers.
- J. Install bottom tension wire stretched taut between terminal posts.
- K. Install hardware and gate with fabric to match fence.
- L. Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings.
- M. Peen all bolts upon installation.

### 3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.

### 3.05 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Layout: Verify that fence installation markings are accurate to design, paying attention to gate locations, underground utilities, and property lines.
- C. Post Settings: Randomly inspect three locations against design for:
  - 1. Hole diameter.
  - 2. Hole depth.
  - 3. Hole spacing.
- D. Fence Height: Randomly measure fence height at three locations or at areas that appear out of compliance with design.
- E. Gates: Inspect for level, plumb, and alignment.
- F. Workmanship: Verify neat installation free of defects. See CLFMI CLF-FIG0111 for field inspection guidance.

### 3.06 CLEANING

- A. Leave immediate work area neat at end of each work day.
- B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- C. Clean fence with mild household detergent and clean water rinse well.



- D. Remove mortar from exposed posts and other fencing material using a 10 percent solution of muriatic acid followed immediately by several rinses with clean water.
- E. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.

**3.07 CLOSEOUT ACTIVITIES**

- A. See Section 017800 - Closeout Submittals, for closeout submittals.

**END OF SECTION**

**SECTION 328423  
UNDERGROUND SPRINKLERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Pipe and fittings, valves, sprinkler heads, drip irrigation specialties, emitters, and accessories.

**1.02 PRICE AND PAYMENT PROCEDURES**

- A. See Section 012200 - Unit Prices, for additional unit price requirements.
- B. Piping:
  - 1. Basis of Measurement: By the linear foot.
- C. Sprinkler Heads:
  - 1. Basis of Measurement: By the unit.

**1.03 REFERENCE STANDARDS**

- A. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series) 2015.
- B. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems 2012 (Reapproved 2018).

**1.04 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component and control system and wiring diagrams. Include specific model numbers to be provided.
- C. Operation and Maintenance Data:
  - 1. Provide instructions for operation and maintenance of system and controls, seasonal activation and shutdown, and manufacturer's parts catalog.
  - 2. Provide schedule indicating length of time each valve is required to be open to provide a determined amount of water.
- D. Record Documents: Record actual locations of all concealed components piping system.

**1.05 QUALITY ASSURANCE**

- A. A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

**PART 2 PRODUCTS**

**2.01 IRRIGATION SYSTEM**

**2.02 PIPE MATERIALS**

- A. PVC Pipe 2 inch & smaller: ASTM D2241; 200 psi pressure rated upstream from controls, 200 psi downstream; solvent welded sockets.
- B. PVC Pipe 2.5 inch & larger: ASTM D2241; 200 psi pressure rated upstream from controls, [200] psi downstream; rubber gasketed joints.
- C. Fittings: Type and style of connection to match pipe.
- D. Pipe Risers at Valves: 160 psi PVC pipe.
- E. Solvent Cement: ASTM D2564 for PVC pipe and fittings.
- F. Sleeve Material: PVC Schedule 40.

**2.03 SPRINKLERS**

- A. Manufacturers:
  - 1. Substitutions: See Section 016000 - Product Requirements.
- B. Rotary Type Sprinkler Head: Fixed type with screens; fully adjustable for flow and pressure; size as indicated; with letter or symbol designating degree of arc and arrow indicating center of spray pattern.
- C. Spray Type Sprinkler Head: Fixed surface head.
- D. Quick Coupler: Rainbird..

**2.04 MANUAL VALVES**

- A. Plastic Ball Valves:
  - 1. Description:

- a. Standard: MSS SP-122.
- b. Pressure Rating: 150 psig.
- c. Body Material: PVC.
- d. Type: Union.
- e. End Connections: Socket or threaded.
- f. Port: Full.

## 2.05 AUTOMATIC CONTROL VALVES

- A. Manufacturers:
  - Rainbird.
- 1. Description: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid.
- 2. Substitutions: See Section 016000 - Product Requirements.
- B. Valve Box and Cover:
  - 1. Plastic Boxes:
    - a. Description: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.
      - 1) Size: As required for valves and service.
      - 2) Shape: Round Rectangular.
      - 3) Sidewall Material: PE, ABS, or FRP.
      - 4) Cover Material: PE, ABS, or FRP.
        - (a) Lettering: " IRRIGATION".
        - (b) Must be sized to allow for 2" clearance in any direction of operable, movable parts or parts requiring maintenance within the box, such as a solenoid or valve top replacement.
  - 2. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4 inch minimum to 3 inches maximum.

## 2.06 DRIP IRRIGATION SPECIALTIES

- A. Manufacturers:
  - Rainbird
- B. Manifold Emitter Systems: Manifold with tubing and emitters.
  - 1. Manifold: With multiple outlets to deliver water to emitters.
    - a. Body Material: Plastic.
    - b. Outlet Caps: Plastic, for outlets without installed tubing.
    - c. Operation: Automatic pressure compensating.
  - 2. Tubing: PE or PVC; 1/8-inch minimum ID.
  - 3. Emitter: Device to deliver water at approximately 20 psig.
    - a. Body Material: PE or vinyl, with flow control.
- C. Drip Tubes with Direct-Attached Emitters:
  - 1. Tubing: Flexible PE or PVC with plugged end.
  - 2. Emitters: Devices to deliver water at approximately 20 psig.
    - a. Body Material: PE or vinyl, with flow control.
    - b. Mounting: Inserted into tubing at set intervals.
  - 3. Capacities and Characteristics:
    - a. Tubing Size: ID: 0.536" (13.6mm).
    - b. Length: 100' or 500'.
    - c. Emitter Spacing: 12 inches.
    - d. Emitter Flow: 0.6 GPH.
- D. Off-Ground Supports: Plastic stakes.
- E. Application Pressure Regulators: Brass or plastic housing, NPS 3/4, with corrosion-resistant internal parts; capable of controlling outlet pressure to approximately 20 psig.
- F. Filter Units: Brass or plastic housing, with corrosion-resistant internal parts; of size and capacity required for devices downstream from unit.

- G. Air Relief Valves: Brass or plastic housing, with corrosion-resistant internal parts.
- H. Vacuum Relief Valves: Brass or plastic housing, with corrosion-resistant internal parts.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify location of existing utilities.
- B. Verify that required utilities are available, in proper location, and ready for use.

#### **3.02 PREPARATION**

- A. Piping layout indicated is diagrammatic only. Route piping to avoid plants, ground cover, and structures.
- B. Layout and stake locations of system components.
- C. Review layout requirements with other affected work. Coordinate locations of sleeves under paving to accommodate system.

#### **3.03 TRENCHING**

- A. Trench Size:
  - 1. Minimum Cover Over Installed Main Piping: 24 inches or not less than 18 inches below average local frost depth, whichever is deeper.
  - 2. Minimum Cover Over Installed Circuit Piping: 18 inches.
  - 3. Minimum Cover Over Installed Drain Piping: 18 inches.
  - 4. Minimum Cover Over Installed Sleeve Piping: 24 inches
- B. Trench to accommodate grade changes and slope to drains.
- C. Maintain trenches free of debris, material, or obstructions that may damage pipe.
- D. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.

#### **3.04 INSTALLATION**

- A. Install pipe, valves, controls, and outlets in accordance with manufacturer's instructions.
- B. Connect to utilities.
- C. Set outlets and box covers at finish grade elevations.
- D. Provide for thermal movement of components in system.
- E. Slope piping for self drainage to drain valves at a minimum uniform slope of 0.5 percent.
- F. Use threaded nipples for risers to each outlet.
- G. Install piping free of sags and bends.
- H. Install groups of pipes parallel to each other, spaced to permit valve servicing.
- I. Install fittings for changes in direction and branch connections.
- J. Install underground thermoplastic piping according to ASTM D 2774 and ASTM F 690.
- K. Install expansion loops in control-valve boxes for plastic piping.
- L. Lay piping on solid subbase, uniformly sloped without humps or depressions.
- M. Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperatures above 40 deg F before testing.
- N. After piping is installed, but before outlets are installed and backfilling commences, open valves and flush system with full head of water.

#### **3.05 JOINT CONSTRUCTION**

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

- D. Flanged Joints: Select rubber gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
  - E. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
    1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
    2. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
    3. PVC Nonpressure Piping: Join according to ASTM D 2855.
- 3.06 VALVE INSTALLATION**
- A. Drain Valves: Install in underground piping in boxes for automatic control valves.
- 3.07 SPRINKLER INSTALLATION**
- A. Install sprinklers after hydrostatic test is completed.
  - B. Install sprinklers at manufacturer's recommended heights.
  - C. Locate part-circle sprinklers to maintain a minimum distance of 4 inches from walls and 2 inches from other boundaries unless otherwise indicated.
- 3.08 DRIP IRRIGATION SPECIALTY INSTALLATION**
- A. Install freestanding emitters on pipe riser to mounting height indicated.
  - B. Install manifold emitter systems with tubing to emitters. Plug unused manifold outlets. Install emitters on off-ground supports at height indicated.
  - C. Install multiple-outlet emitter systems with tubing to outlets. Plug unused emitter outlets. Install outlets on off-ground supports at height indicated.
  - D. Install drip tubes with direct-attached emitters on ground.
  - E. Install drip tubes with remote-discharge on ground with outlets on off-ground supports at height indicated.
  - F. Install off-ground supports of length required for indicated mounted height of device.
  - G. Install application pressure regulators and filter units in piping near device being protected, and in control-valve boxes.
  - H. Install air relief valves and vacuum relief valves in piping, and in control-valve boxes.
- 3.09 AUTOMATIC IRRIGATION-CONTROL SYSTEM INSTALLATION**
- A. Equipment Mounting: Install interior controllers on wall.
    1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
    2. Install anchor bolts to elevations required for proper attachment to supported equipment.
  - B. Equipment Mounting: Install exterior freestanding controllers on precast concrete bases.
    1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
    2. Install anchor bolts to elevations required for proper attachment to supported equipment.
  - C. Install control cable in same trench as irrigation piping and at least 2 inches below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.
- 3.10 IDENTIFICATION**
- A. Identify system components. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."
  - B. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplates and signs on each automatic controller.
    1. Text: In addition to identifying unit, distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

- C. Valve Tags: Valves should be labeled with printed plastic tags.
- D. Warning Tapes: Arrange for installation of continuous, underground, detectable warning tapes over underground piping during backfilling of trenches.

### 3.11 FIELD QUALITY CONTROL

- A. Perform test and inspections.
- B. Test and inspections:
  - 1. System is acceptable if no leakage or loss of pressure occurs during test period.
  - 2. Sprinkler coverage Test: After installation, the system will be observed to meet the following criteria. Adjustments to system shall be made until criteria are met to satisfy either Landscape Architect or Owner's Representative.
    - a. All sprinklers must be adjusted to minimize overspray onto buildings and paved areas.
    - b. All sprinkler controls must be adjusted to minimize runoff of irrigated water.
    - c. All sprinklers must operate at their design radius of throw. Nozzle sizes and types called for in the system design must have been used.
    - d. Spray patterns must overlap as designed.
    - e. Sprinklers must be connected, as designed, to the appropriate zone.
  - 3. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
  - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Any irrigation product will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

### 3.12 SYSTEM STARTUP

- A. Perform startup service.
  - 1. Prepare and start system in accordance with manufacturer's instructions.
  - 2. Verify that controllers are installed and connected according to the Contract Documents.
  - 3. Verify that electrical wiring installation complies with manufacturer's submittal.

### 3.13 ADJUSTING

- A. Adjust control system to achieve time cycles required.
- B. Adjust head types for full water coverage as directed.
- C. Adjust settings of controllers.
- D. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.
- E. Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/2 inch above, finish grade.

### 3.14 CLEANING

- A. Flush dirt and debris from piping before installing sprinklers and other devices.

### 3.15 PIPING SCHEDULE

- A. Install components having pressure rating equal to or greater than system operating pressure.
- B. Piping in control-valve boxes and aboveground may be joined with flanges or unions instead of joints indicated.
- C. Underground irrigation main piping, NPS 2 and smaller, shall be the following:
  - 1. Class 200 SDR 21, PVC, pressure-rated pipe; Schedule 80, PVC socket fittings; and solvent-cemented joints.
- D. Underground irrigation main piping, NPS 2.5 and larger, shall be the following:
  - 1. NPS 2.5 and larger Class 200 SDR 21, PVC, push-on-joint pipe; push-on-joint fittings and gaskets; and gasketed joints.
- E. Circuit piping, NPS 2 and smaller, shall be the following:
  - 1. Class 200 SDR 21, PVC pipe and socket fittings; and solvent-cemented joints.

- F. Underground Branches and Offsets at Sprinklers and Devices: Schedule 80, PVC pipe; threaded PVC fittings; and threaded joints.
- G. Risers to Aboveground Sprinklers and Specialties: Schedule 80, PVC pipe and socket fittings; and solvent-cemented joints.

**3.16 CLOSEOUT ACTIVITIES**

- A. Instruct Owner's personnel in operation and maintenance of system, including adjusting of sprinkler heads. Use operation and maintenance data as basis for demonstration.

**END OF SECTION**

**SECTION 329223  
SODDING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Fertilizing.
- D. Sod installation.

**1.02 RELATED REQUIREMENTS**

- A. Section 312200 - Grading: Topsoil material.
- B. Section 312200 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.
- C. Section 312323 - Fill: Topsoil material.
- D. Section 320190 - Operation and Maintenance of Planting: Post-occupancy maintenance.

**1.03 PRICE AND PAYMENT PROCEDURES**

- A. See Section 012200 - Unit Prices, for additional unit price requirements.
- B. Sodded Areas:
  - 1. Basis of Measurement: By the square foot.

**1.04 REFERENCE STANDARDS**

- A. TPI (SPEC) - Guideline Specifications to Turfgrass Sodding 2006.

**1.05 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Certificate: Certify grass species and location of sod source.

**1.06 QUALITY ASSURANCE**

- A. Sod Producer: Company specializing in sod production and harvesting with minimum five years experience, and certified by the State of Alabama.
- B. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.
  - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  - 2. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:
    - a. Landscape Industry Certified Technician - Exterior.
    - b. Landscape Industry Certified Lawn Care Manager.
    - c. Landscape Industry Certified Lawn Care Technician.
  - 3. Pesticide Applicator: State licensed, commercial.

**1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver sod on pallets. Protect exposed roots from dehydration.
- B. Do not deliver more sod than can be laid within 24 hours. Protect from breakage.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Sod: TPI (SPEC), Certified Turfgrass Sod quality; cultivated grass sod; type indicated in plant schedule on Drawings; with strong fibrous root system, free of stones, burned or bare spots; containing no more than 5 weeds per 1000 sq ft. Minimum age of 18 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners.
- B. Fertilizer: Slow-Release Fertilizer; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, to the following proportions:
  - 1. Nitrogen: 20 percent.
  - 2. Phosphoric Acid: 10 percent.
  - 3. Soluble Potash: 10 percent.



**PART 3 EXECUTION**

**3.01 PREPARATION**

- A. Prepare subgrade in accordance with Section 312200.
- B. Place topsoil in accordance with Section 312200.

**3.02 FERTILIZING**

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after smooth raking of topsoil and prior to installation of sod.
- C. Apply fertilizer no more than 48 hours before laying sod.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

**3.03 LAYING SOD**

- A. Moisten prepared surface immediately prior to laying sod.
- B. Lay sod immediately after delivery to site to prevent deterioration.
- C. Lay sod smooth and tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.
- D. Where new sod adjoins existing grass areas, align top surfaces.
- E. Where sod is placed adjacent to hard surfaces, such as curbs, pavements, etc., place top elevation of sod 1/2 inch below top of hard surface.
- F. Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.
- G. After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities.

**3.04 SATISFACTORY TURF**

- A. Turf installations shall meet the following criteria as determined by Landscape Architect:
  - 1. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

**END OF SECTION**

**SECTION 329300  
PLANTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Preparation of subsoil.
- B. Topsoil bedding.
- C. New trees, plants and ground cover.
- D. Mulch and Fertilizer.
- E. Tree Pruning.

**1.02 RELATED REQUIREMENTS**

- A. Section 312200 - Grading: Topsoil material.
- B. Section 312323 - Fill: Topsoil material.
- C. Section 320190 - Operation and Maintenance of Planting: Post-occupancy maintenance.

**1.03 PRICE AND PAYMENT PROCEDURES**

- A. Unit Prices:
  - 1. See Section 012200 - Unit Prices, for additional unit price requirements.
  - 2. Topsoil: By the cubic yard. Includes topsoil, placing topsoil.
  - 3. Plants: By the unit. Includes preparation of subsoil, placing topsoil, planting, watering and maintenance to specified time period.
  - 4. Mulch: By the square foot. Includes mulch, placing mulch.

**1.04 DEFINITIONS**

- A. Weeds: Any plant life not specified or scheduled.
- B. Plants: Living trees, plants, and ground cover specified in this Section , and described in ANSI Z60.1.

**1.05 REFERENCE STANDARDS**

- A. ANSI/AHIA Z60.1 - American National Standard for Nursery Stock 2014.
- B. Florida Grades & Standards for Nursery Plants - Florida Grades and Standards for Nursery Plants 2015 Edition.
- C. ANSI A300 Part 1 - American National Standard for Tree Care Operations -- Tree, Shrub and Other Woody Plant Maintenance -- Standard Practices 2017.

**1.06 SUBMITTALS**

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Submit list of plant life sources.
- C. Submit photos of plant material that is to be installed. Photos should be of plant at nursery from which it is sourced.

**1.07 QUALITY ASSURANCE**

- A. Nursery Qualifications: Company specializing in growing and cultivating the plants with three years documented experience.
- B. Installer Qualifications: Company specializing in installing and planting the plants with 5 years experience.
- C. Non-native, Invasive Plant Species: Do not introduce, grow, or cultivate plant species that are non-native to the ecosystem of the project site, and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
  - 1. Comply with laws regulating non-native and invasive plant species in the State in which the Project is located.

**1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.
- B. Protect and maintain plant life until planted.
- C. Deliver plant life materials immediately prior to placement. Keep plants moist.

**1.09 FIELD CONDITIONS**

- A. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.

**1.10 WARRANTY**

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Provide one year warranty.
  - 1. Warranty: Include coverage for one continuous growing season; replace dead or unhealthy plants.
  - 2. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

**1.11 MAINTENANCE (SEE END OF SECTION)**

- A. Provide a separate maintenance contract for specified maintenance service.

**PART 2 PRODUCTS**

**2.01 REGULATORY REQUIREMENTS**

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

**2.02 PLANTS**

- A. Plants: Species and size identified in plant schedule, grown in climatic conditions similar to those in locality of the work.

**2.03 SOIL MATERIALS**

- A. Topsoil: Type as specified in Section 312323.

**2.04 SOIL AMENDMENT MATERIALS**

- A. Fertilizer: Containing fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated in analysis.
  - 1. Nitrogen: 1 lb/1,000 sq. ft.
  - 2. Phosphoric Acid: 4 percent.
  - 3. Soluble Potash: 2 percent.
- B. Compost: (fill in reqs)
- C. Water: Clean, fresh, and free of substances or matter that could inhibit vigorous growth of plants.

**2.05 MULCH MATERIALS**

- A. Mulching Material: Long leaf pine straw, free from weeds and foreign matter, and dry.

**2.06 ACCESSORIES**

- A. Stakes: Softwood lumber, pointed end.
- B. Cable, Wire, Eye Bolts and Turnbuckles: Non-corrosive, of sufficient strength to withstand wind pressure and resulting movement of plant life.
- C. Palm Bracing: Battens or blocks, struts, straps, and protective padding.
  - 1. Battens or Blocks and struct: Rough sawn, sound, new hardwood or softwood, free of knots, holes, cross grain, and other defects, 2 by 4 inch nominal by lengths indicated.
  - 2. Straps: Adjustable steel or plastic package banding.
  - 3. Padding: Burlap.

**2.07 TOP SOIL MIX**

- A. A uniform mixture of 1 part compost and 3 parts topsoil by volume.

**2.08 SOURCE QUALITY CONTROL**

- A. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt and organic matter; pH value.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that prepared subsoil are ready to receive work.
- B. Saturate soil with water to test drainage.
- C. Verify that required underground utilities and/or water wells are available, in proper location, and ready for use.

- D. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
- E. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
- F. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
- G. Uniformly moisten excessively dry soil that is not workable or which is dusty.

#### 3.02 PREPARATION OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas. Maintain 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 subsoil.
- C. Scarify subsoil to a depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.
- D. Dig pits and beds 6 inches larger than plant root system.

#### 3.03 PLACING TOPSOIL

- A. Spread topsoil to a minimum depth of 4 inches over area to be planted. Rake 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 topsoil into pits and beds intended for plant root balls, to a minimum thickness of 6 inches.

#### 3.04 FERTILIZING

- A. Apply fertilizer in accordance with manufacturer's instructions.
- B. Apply after initial raking of topsoil.
- C. Mix thoroughly into upper 2 inches of topsoil.
- D. Lightly water to aid the dissipation of fertilizer.

#### 3.05 PLANTING

- A. Place plants for best appearance for review and final orientation by Landscape Architect.
- B. Set plants vertical.
- C. Remove non-biodegradable root containers.
- D. Set plants in pits or beds, partly filled with prepared plant mix, at a minimum depth as indicated on drawings under each plant. Remove burlap, ropes, and wires, from the root ball.
- E. Saturate soil with water when the pit or bed is half full of topsoil and again when full.

#### 3.06 PLANT SUPPORT

- A. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:
  1. 1. Tree Caliper: 2 to 4 inches ( 50 to 100 mm ); Tree Support Method: 3 guy wires with eye bolts and turn buckles.
  2. 2. Tree Caliper: Over 4 inches ( 100 mm ); Tree Support Method: 4 guy wires with eye bolts and turn buckles.
  3. Palm Bracing: Install bracing system at three or more places equally spaced around perimeter of trunk to secure each palm until established unless otherwise indicated.
    - a. Site-Fabricated Palm Bracing Method:
      - 1) Place battens over padding and secure battens in place around trunk perimeter with at least two straps, tightened to prevent displacement. Ensure that straps do not contract trunk.
      - 2) Place diagonal braces and cut to length. Secure upper ends of diagonal braces with galvanized nails into battens or into nail attached blocks on battens. Do not drive nails, screws, or other securing devices into palm trunk; do not penetrate palm trunk in any fashion. Secure lower ends of

diagonal braces with stakes driven into ground to prevent outward slippage of braces.

**3.07 TREE PRUNING**

- A. Prune trees as recommended in ANSI A300 Part 1.
- B. Prune newly planted trees as required to remove dead, broken, and split branches.

**3.08 FIELD QUALITY CONTROL**

- A. Plants will be rejected if a ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

**3.09 MAINTENANCE**

- A. See Section 320190 - Operation and Maintenance of Planting for post-occupancy maintenance.

**END OF SECTION**